

END 478

SAFETY BELT USAGE: SURVEY OF THE TRAFFIC POPULATION

**Carol Stowell
Joseph Bryant**

**Kirschner Associates, Inc.
1100 17th Street, N.W.
Washington, D.C. 20036**

**Contract No. DOT HS-6-01340
Contract Amt. \$196,382**



**JANUARY 1978
FINAL REPORT**

This document is available to the U.S. public through the
National Technical Information Service,
Springfield, Virginia 22161

Prepared For
**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Washington, D.C. 20590**

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

1. Report No. DOT HS-803 354		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle SAFETY BELT USAGE: SURVEY OF THE TRAFFIC POPULATION			5. Report Date January 1978		
			6. Performing Organization Code		
7. Author(s) Carol Stowell and Joseph Bryant			8. Performing Organization Report No.		
9. Performing Organization Name and Address Kirschner Associates, Inc. 1100 17th Street, N.W. Washington, D.C. 20036			10. Work Unit No. (TRAIS)		
			11. Contract or Grant No. DOT-HS-6-01340		
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590			13. Type of Report and Period Covered Final Report May 1976 to January 1978		
			14. Sponsoring Agency Code		
15. Supplementary Notes					
16. Abstract <p>The objectives of this study were to assess safety belt usage in cars manufactured between 1964 and 1977 and to examine usage as a function of type of car, driver characteristics, and driving environment. A survey of passenger cars in 16 cities was conducted across an 8-month period by observing safety belt usage by drivers as they stopped for traffic signals at primary road intersections and freeway exits. A supplementary survey was conducted at O'Hare airport rental car check-ins to compare usage of single versus dual retractor safety belts. Overall safety belt usage was found to be 18.5%, with usage of the lap-shoulder combination belt system significantly higher than that of the lap-shoulder separate or lap-belt only systems. In terms of model year, usage was highest for 1974 cars. Usage in terms of car style was higher for smaller than larger cars. This finding paralleled a differential usage by car manufacturer in terms of the size of cars these manufacturers produced. Other findings were that usage was higher on the West Coast than on the East Coast, higher at freeway exits than at primary road intersections, and higher during rush hours than during other times of the day. Men tended to wear safety belts less often than women, and older drivers used safety belts less often than younger ones. Drivers with correctly positioned head restraints tended to wear safety belts more often than those with head restraints incorrectly positioned. Finally, the results of the O'Hare rental car survey indicated no difference in usage rates between the single and dual retractor systems.</p>					
17. Key Words car occupant restraint systems safety belt usage traffic population survey vehicle safety standards			18. Distribution Statement Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 84	22. Price

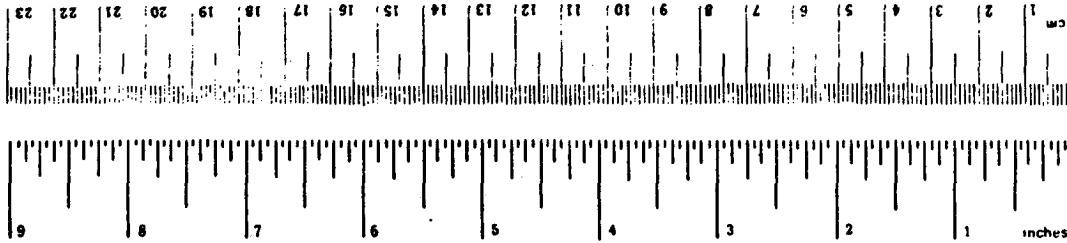
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
m ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tblsp	teaspoons	5	milliliters	ml
fl oz	fluid ounces	15	milliliters	ml
c	cups	30	milliliters	ml
pt	pints	0.24	liters	l
qt	quarts	0.47	liters	l
gal	gallons	0.95	liters	l
ft ³	cubic feet	3.8	liters	l
yd ³	cubic yards	0.03	cubic meters	m ³
		0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



* 1 inch = 2.54 centimeters. For other exact conversions and more detailed information, see NIST Special Publication 800-43, Units of Weights and Measures, Part 2, 2008, NIST Special Publication 800-43-2008.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION: BACKGROUND AND OBJECTIVES.....	1
SUMMARY OF FINDINGS.....	4
GENERAL POPULATION SURVEY.....	7
METHODOLOGY.....	7
DETAILED FINDINGS.....	14
RENTAL CAR STUDY - CHICAGO'S O'HARE AIRPORT.....	38
METHODOLOGY.....	38
DETAILED FINDINGS.....	41
APPENDICES.....	47
Observation Forms.....	47
Statistical Table of Sampling Tolerances.....	51
Usage By Car Make and Year.....	52
American Motors Models By Year.....	53
Plymouth Models By Year.....	54
Dodge Models By Year.....	55
Chrysler Models By Year.....	55
Ford Models By Year.....	56
Mercury Models By Year.....	57
Lincoln Models By Year.....	57
General Motors Models By Year.....	58
Chevrolet Models By Year.....	59
Buick Models By Year.....	60
Pontiac Models By Year.....	61
Oldsmobile Models By Year.....	62
Cadillac Models By Year.....	62
All Foreign Models By Year.....	63
Volkswagen Models By Year.....	64
Subcompact Models By Year.....	65
Compact Models By Year.....	66

TABLE OF CONTENTS

	<u>Page</u>
APPENDICES (Cont'd)	
Intermediate Models By Year.....	67
Standard Models By Year.....	68
Luxury Models By Year.....	69
Safety Belt Usage - Two Door vs. Four Door Cars.....	70
Safety Belt Usage - Two Door Cars.....	71
Safety Belt Usage - Four Door Cars.....	72
Car Make By Region.....	73
Usage By City.....	74
Safety Belt Usage By Correct Head Restraint Position and Model Year.....	75
Usage By Model Year - Adjusted By Estimated Number of Cars in Population.....	76
Usage By Model Year - According to Number of Cars Sampled.....	77

LIST OF FIGURES

	<u>Figure</u>	<u>Page</u>
<u>General Population Study</u>		
Overall Safety Belt Usage.....	1	15
Total Usage By Month.....	2	16
Usage By Safety Belt System (By Month).....	3	17
Usage By Model Year.....	4	18
Usage By Manufacturer (All Model Years and 1976-77 Cars).....	5	19
Usage By Car Make (American Makes).....	6	20
Usage By Major Car Models.....	7	22
Usage By Car Style.....	8	24
List of Models Within Car Styles.....	9	25
Usage By Two Door and Four Door Cars (By Manufacturer).....	10	26
Safety Belt Usage By Region.....	11	27
Car Style By Region.....	12	28
Usage By Road Type.....	13	29
Usage By Time of Day.....	14	30
Usage By Sex of Driver.....	15	31
Usage of Men and Women By Type of Safety Belt System.....	16	32
Usage By Age of Driver.....	17	33
Car Style By Age.....	18	34
Head Restraint Positions (1969+ Models).....	19	35
Correct Head Restraint Positions By Car Make.....	20	36
Safety Belt Usage By Head Restraint Position.....	21	37
<u>Rental Car Study</u>		
Usage in Single vs. Dual Retractor Systems.....	22	41
Usage in Chrysler Four Door Cars.....	23	43
Usage in Non Chrysler Cars.....	24	43
Usage By Car Make.....	25	44
Driver Usage By Various Factors.....	26	46

INTRODUCTION: BACKGROUND AND OBJECTIVES

Research on automobile accidents and safety belt tests have clearly proven that utilization of safety belt equipment can considerably reduce deaths and injuries. Recognizing the advantage of some form of restraint system, many State governments required the installation of safety belts in the front seats of all cars beginning in 1964. With the passage of the National Motor Vehicle Safety Act of 1966, the National Highway Traffic Safety Administration (NHTSA) established Federal Safety standards for all vehicles purchased in the United States, including requirements for safety belts for 1968 models and newer cars. According to Federal Motor Vehicle Safety Standard No. 208, auto manufacturers are now permitted to install either safety belts or passive restraint systems in new cars. Safety belts are considered "active" systems that require action on the part of the user. "Passive" refers to the public health strategies that do not require action by the person protected, such as air cushion restraint systems. Given the option to install either active or passive systems, most car manufacturers have opted to use active systems, i.e., the safety belts.

In spite of safety belts being available to almost all vehicle occupants and improvements made in them over the years, many of the yearly deaths and injuries due to automobile accidents could have been prevented, if these belts were only worn. In an attempt to encourage increased usage of safety belts, NHTSA has continually modified its standards, using the following basic approaches:

- Requiring effective occupant protection
- Requiring improved belt systems such as webbing retractors, and the three point lap and shoulder belt combination with an inertia reel that allows greater freedom of the upper torso
- Requiring various use-inducing or reminder systems, such as buzzers, warning lights, and starter interlocks

If we examine the safety belt systems by model years, we can note how the systems changed over time:

- 1964-1967: Lap-belt only systems required.
- 1968-1971: Lap-shoulder separate systems.
- 1972-1973: The combination light and buzzer reminder system was required in all cars as of January, 1972. This system is activated once the ignition is "on" and the transmission is in drive, unless the lap belt has been buckled or withdrawn from its retractor. Locking type lap belt retractors and shoulder belts were required to attach to the lap belt rather than a separate buckle.
- 1974: The lap-shoulder combination system (a nondetachable shoulder belt connected to an inertia reel) was now required with the starter interlock. The starter interlock prevented a car from being started unless the front seat occupants buckle the safety belt after being seated.
- 1975: Production of the starter interlock was halted after February, 1975. Cars continued to have the lap-shoulder combination belt and a 4-8 second reminder system.
- Late 1975 and newer cars: The lap-shoulder combination system was installed with a light and buzzer reminder system with a 4-8 second duration.

Various independent and NHTSA sponsored surveys have been conducted in previous years to follow the effects of the changes in the safety belt systems on usage. These surveys indicated that each of the reminder systems was initially effective, but usage then declined as the cars got older and people developed methods of circumventing the system.

In this current study of the traffic population in sixteen cities, usage in all model years from 1964 was observed. Thus, we were able to obtain information on all cars with various types of safety belt systems. During this period of observations (August, 1976 - March, 1977), there were no new regulations impacting on the cars on the roads.

Hence, the specific objectives of this study were:

- To assess safety belt usage in cars in the traffic population
- To examine usage by certain variables connected with the:
 - a. Type of car (year, model, seat belt system)
 - b. Characteristics of occupants (age, sex)
 - c. Driving environment (type of road, hour, etc.)

A supplementary study was conducted at O'Hare airport rental car check-ins to compare usage of single versus dual retractor safety belts. Certain Chrysler four door models and a few Ford and General Motors models came out with a single retractor system in 1977 models. All other 1976 and 1977 models had the dual retractor system.

SUMMARY OF FINDINGS

This Summary of Findings is based mainly on the data obtained in the sixteen city study of the general traffic population which represents the major findings from this research project. The studies of rental cars at O'Hare airport in Chicago were supplemental to provide an early indication of safety belt usage of the new single retractor system installed in some 1977 models.

Overall Usage

Overall safety belt usage for drivers of all cars analyzed was 18.5%. This usage level did not vary much over the data collection period. Usage of the lap-shoulder combination belt system at 22.0% was significantly higher than usage of the lap-shoulder separate system (15.7%) or the lap belt only system (10.4%). The usage level of the lap-shoulder combination may have been inflated by the starter interlock and continuous light and buzzer reminder system in 1974 and some 1975 models.

Usage By Model Year

Usage was significantly higher among drivers of 1974 models (the year of the starter interlock) than of even the newer cars. In fact, usage was seen to peak with the 1974 models and then decline with the 4-8 second buzzer and light reminder. This usage configuration was consistent among observers throughout the cities in the survey.

Usage By Car Style and Model

By car style, usage was significantly higher among subcompact models (29.0%) than of any other style. Usage among compact models also was higher than that of the remaining car styles (intermediate, standard, and luxury). The lowest usage rate (13.6%) was found in the large, full-size luxury model cars such as full-size Cadillacs and cars like the Lincoln Continental.

Usage by car make and model generally followed usage by car style. The top twenty-two car models, in terms of safety belt usage, were either subcompact or compact models.

Usage was higher among foreign manufacturers than among the American cars. Regarding specific car models, Volvo reported the highest safety belt usage of all (44.6%). Among the American manufacturers, usage was highest among American Motors (20.3%).

Usage By Other Variables

By region, usage was highest on the West Coast (27.3%) and lowest on the East Coast (12.0%). This does not appear to be due to the mix of cars within each region, even though the West Coast had proportionately more foreign cars than the East Coast and usage is higher in foreign cars. The somewhat larger proportion of foreign cars could not begin to account for the large difference in regional usage rates.

Usage observed at freeway exits was higher than usage at primary road intersections. Usage tended to be highest during the evening rush hours (4-7 PM) and second highest in the morning rush hour period (7-10 AM).

Men tended to wear safety belts less often than women (17.3% versus 20.6%, respectively). By age, drivers over fifty used safety belts less often than their younger counterparts. Compared with the younger drivers, these older drivers owned more luxury models and fewer foreign, subcompact cars.

Head Restraint Positions

Among the adjustable type of head restraints (about 70% of the 1969+ models observed), about half were correctly positioned for the driver. A correct head restraint position is where the head restraint rests about level with the driver's ears. Drivers with correctly positioned head restraints tended to wear their safety belts more often than those with incorrectly positioned head restraints (22.9% versus 12.4%), indicating the possibility of the existence of a "safety conscious" personality.

O'Hare Rental Car Study

In the fall of 1976, Chrysler, Ford, and General Motors introduced the single retractor system in some of their 1977 models. (A single retractor system has no retractor attached to the floor of the car, only on the side of the car.) Other models had the dual retractor system. A comparison of 1976 and 1977 models indicated that there was no difference in usage rates between the single and dual retractor systems.

GENERAL POPULATION SURVEY

METHODOLOGY

The purpose of this survey of the traffic population was to determine the level of safety belt usage and the characteristics of users/nonusers in terms of type of car driven, driver characteristics, and location of observation. This study represents a 16-city survey of passenger cars in the traffic population. Usage in 1964 and later model cars was tracked on a continuous basis over an eight-month period by observing drivers as they stopped for traffic signals at primary road intersections and freeway exits. By observing cars from 1964 on, this study covered observations of all passenger cars in which some type of safety belt system was required. Hence, the study was able to assess usage by the various types of safety belt system installed. In the previous safety belt usage survey, only certain model year cars were observed.

To meet the study objectives, the project had a number of major tasks:

- Select the observation sites
- Recruit and train the observers
- Observe safety belt usage over an eight-month period (August, 1976 - March, 1977)
- Monitor the observations
- Process the data collected
- Obtain additional information from the DMV license files
- Verify car make through the DMV search

These tasks are discussed briefly on the following pages.

Selection of Observation Sites

The metropolitan areas used in this study were selected prior to the survey by NHTSA, primarily because of their use in an earlier safety belt study. These particular cities were initially chosen on the basis of geographic location, population, climate, availability of field staff, and known cooperation from the State Division of Motor Vehicles on license registration checks.

The sixteen metropolitan areas used in the sample for the traffic population were:

Atlanta, Ga.	Los Angeles, Ca.
Baltimore, Md.	Minneapolis-St. Paul, Mn.
Birmingham, Al.	New York, N.Y.
Boston, Ma.	Phoenix, Az.
Chicago, Il.	Pittsburgh, Pa.
Fargo-Morehead, N.D.	San Diego, Ca.
Dallas, Tx.	San Francisco, Ca.
Houston, Tx.	Seattle, Wa.

Within each metropolitan area, the objective was to select representative observation sites based on:

- Roadway types
- Traffic volume
- City vs. suburban locations

To achieve this objective, maps were obtained which showed both the city and its suburban areas. To include the suburbs, the sample parameters were extended approximately five miles beyond the city limits, the distance depending upon the urban sprawl of a particular city.

The specifications for site selection within each city were for observations to be conducted each month at two (2) primary roads and two (2) freeway exit intersections. Only intersections with a stop light or stop sign where cars come to a complete stop were used. Sampling techniques for selecting the two types of intersections differed because of the unique characteristics of these two road types.

Primary roads, or major arterials, are those roads which move traffic through the city and between areas of the city. There is direct access to abutting property and control of entrance and exits and curb use. As such, they generally have traffic lights at the major intersections. For the selection of primary roads, the maps were laid out in grid patterns, approximately one-inch square, and the squares were numbered. Then a random selection of squares was made. Within each sample square, the KAI Field Research Associate was given the latitude to select a workable intersection.

It was the responsibility of the Field Research Associate (FRA) or field supervisor to select the actual observation site to ensure that the site would be satisfactory in terms of collecting the observations and for observer safety. Specifically, the FRA checked out the site to ensure: sufficient volume of traffic for observations; a safe observation site for the observer; a safe position where the observer could stand and watch on-coming traffic; and the avoidance of such biased intersections as those near shopping centers, car rental agencies and car dealers.

With freeway exits, a different sampling procedure was followed. Since the primary function of a freeway is to move traffic through an area, there is limited access, i.e., a limited number of entrances and exits. These freeway exits were numbered and the numbers were randomly drawn for the sample. For each freeway exit, the FRA was instructed to select the first stop light or stop sign after exiting the freeway as the observation site.

In those cases where a stop light or stop sign was too remote from the exit or otherwise unsuitable for observing cars coming primarily from the freeway, the FRA was instructed to follow the traffic stream on the freeway to the ensuing exit to find an appropriate stop light for observation.

In each city, the observation schedules were rotated to cover all daylight hours and all days of the week. Daylight hours were segmented into four time blocks: 7-10 AM (morning rush), 10-1 PM, 1-4 PM, and 4-7 PM (evening rush).

Personnel and Training

A multi-layered personnel system was established for the project in order to maintain control of a large and geographically dispersed field staff, and to ensure accuracy, completeness, and timeliness of data collection.

Two observers were selected in each of the sixteen cities. These observers worked under the direction of a local supervisor, one of KAI's Field Research Associates (FRA). The FRA conducted all local administrative matters and monitored observer activities. The FRA also was responsible for the recruitment of observers and training of observer replacements when necessary.

Since KAI has three fully-staffed offices located in Albuquerque, Chicago, and Washington, it was advantageous to use a full-time employee in each of these offices to supervise the field work. These three survey managers each had responsibility for specific cities in his/her area which were visited periodically for monitoring the observations and for training new field personnel. Final responsibility for the project rested with the central staff in Washington.

All observers received personal on-the-job training either from a KAI survey manager or from the local FRA. In addition to the on-the-job training at an observation site, each observer was provided with a detailed instruction booklet which covered the observation and recording procedures to be used in the study. This booklet also listed some of the probable problems that might arise in observing and gave suggestions on how to solve them.

Observation Techniques

Observation hours were from 7 AM to 7 PM, allowing for observations in both morning and evening rush hours. As observations were permitted only during daylight hours, most of the evening rush hour period was excluded during the winter months because of darkness.

For primary intersections, the observer was positioned on the curb side of the road with the greatest traffic flow. For freeway exits, the location was always at the curb side from which the flow of traffic stemmed mainly from the freeway.

At these sites, each observer recorded the required observational data for the first eligible car to stop at the red light at that intersection. An eligible car was any 1964 or later model passenger vehicle with license plates from the state in which the observations were made. By including all models from 1964 on, all types of safety belt systems were covered. Excluded from the survey were trucks, vans, and any passenger vehicles used for commercial purposes such as taxi cabs and company owned cars.

Each observer and field supervisor participated in an intensive training program to develop the skills to record accurate and complete observations. Emphasis was placed on developing the ability to identify the different safety belt systems and to aggressively determine the actual safety belt usage of the driver.

In each city, two observers were trained to observe and record specific information about the driver and the car. When the vehicle stopped, the observer, stationed at the right hand curb, viewed the interior of the car from the passenger side. Each observer carried a clipboard with a "Traffic Survey" sign pasted on the back, and DOT booklets on road signs to be used as handouts when needed. For each vehicle, the observer noted the following items:

- Type of safety belt system installed (lap-shoulder combination, lap-shoulder separate, and lap belt only)
- Driver usage (lap-shoulder on, lap belt only, no usage)
- Sex and approximate age of driver
- Head restraint position for driver
- License number and model of vehicle

The license number and model of the vehicle were used to permit DMV verification of the car and to provide data on car manufacturer, model year, and vehicle identification number (VIN).

DMV Search

All data coming in from the observations were keypunched, put on tape, and tabulated for monthly reports. At the end of the eight-month observational period, the license plate numbers, which were recorded by observers, were sent to the respective state Division of Motor Vehicles (DMV). The DMV provided data on car manufacturer, model year and vehicle identification number (VIN).

Observations were "verified" when the license plate and car make matched that of the data reported from the DMV records. Only "verified" data were processed further. Using the 1977 Vindicator program to decode the VIN numbers, information on the actual car model and number of car doors was obtained. The data were then analyzed by a number of variables relating to the type of car, driver characteristics, and the location of the observation.

DETAILED FINDINGS

The data reported for the 16-city survey were based on 84,682 verified observations. These observations were verified as to car make and model year by the DMV (Department/Division of Motor Vehicles) in each state where the study was conducted. First, the observed car make had to match that reported by the state DMV, then all pre 1964 models, as reported by the DMV data, were eliminated. Of the reported data collected for these cities, 78% of the observations were verified.

Throughout this report, tests of statistical significance (at the 95% confidence level) have been applied. Thus, any statements to the effect that something is larger, or smaller, can be taken as having met the test of statistical significance.

Overall Safety Belt Usage

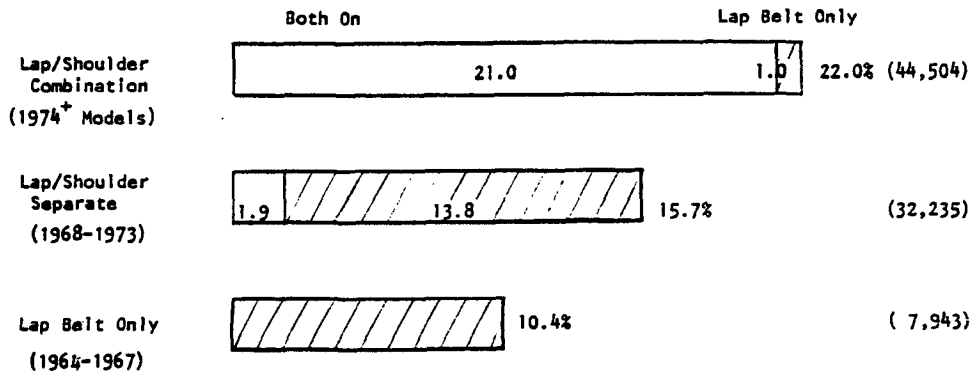
Overall safety belt usage for drivers of all cars analyzed (84,682 verified observations) was 18.5%. This includes usage of both the lap belt and the shoulder harness (11.7%) and of the lap belt only (6.8%).

Three types of seat belt systems were observed: lap-shoulder combination (1974+ models), lap-shoulder separate (1968-1973), and lap belt only (1964-1967). These three systems covered all model years in which a safety belt system was required. By type of system installed, usage of the lap-shoulder combination belt system, at 22.0%, was significantly higher than usage of either the lap-shoulder separate system (15.7%) or the lap belt only system (10.4%). As seen from the chart, combination usage (both on) was more prevalent when the shoulder belt could not be detached from the lap belt. In cars where the lap shoulder belts could be separated, users generally wore only the lap belt.

Figure 1
OVERALL SAFETY BELT USAGE



BY TYPE OF SAFETY BELT SYSTEM INSTALLED



Monthly Trends in Usage

Overall safety belt usage varied little during the eight-month data collection period, with usage fluctuating within a range of 17.7% to 19.4% (Figure 2). This lack of any noticeable trend suggests that usage has leveled off within this range. By type of safety belt system installed (Figure 3), the usage rates over the data collection period generally showed little variance. In any given month, the usage level of the lap-shoulder combination system was higher than the usage of the lap-shoulder separate system which, in turn, was higher than usage of the lap belt only system. For the lap-shoulder combination system, there appeared to be a possible, slight downtrend in usage occurring during the last half of the data collection period. This might be due to changes in traffic composition as the 1977 models entered the traffic population.

Figure 2
TOTAL USAGE BY MONTH

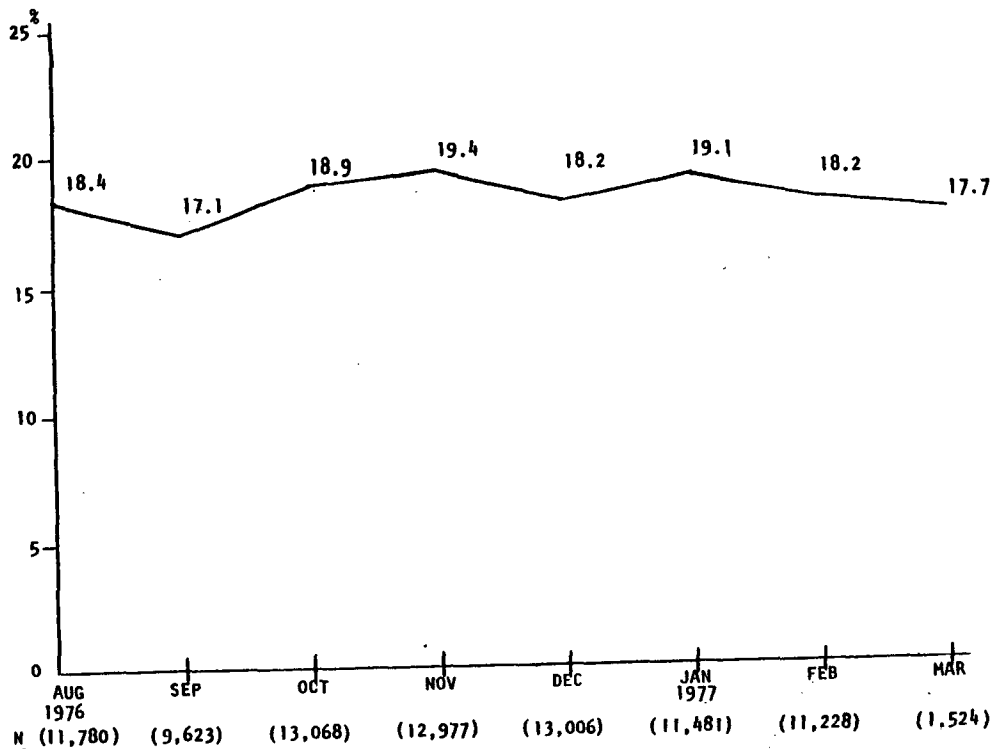
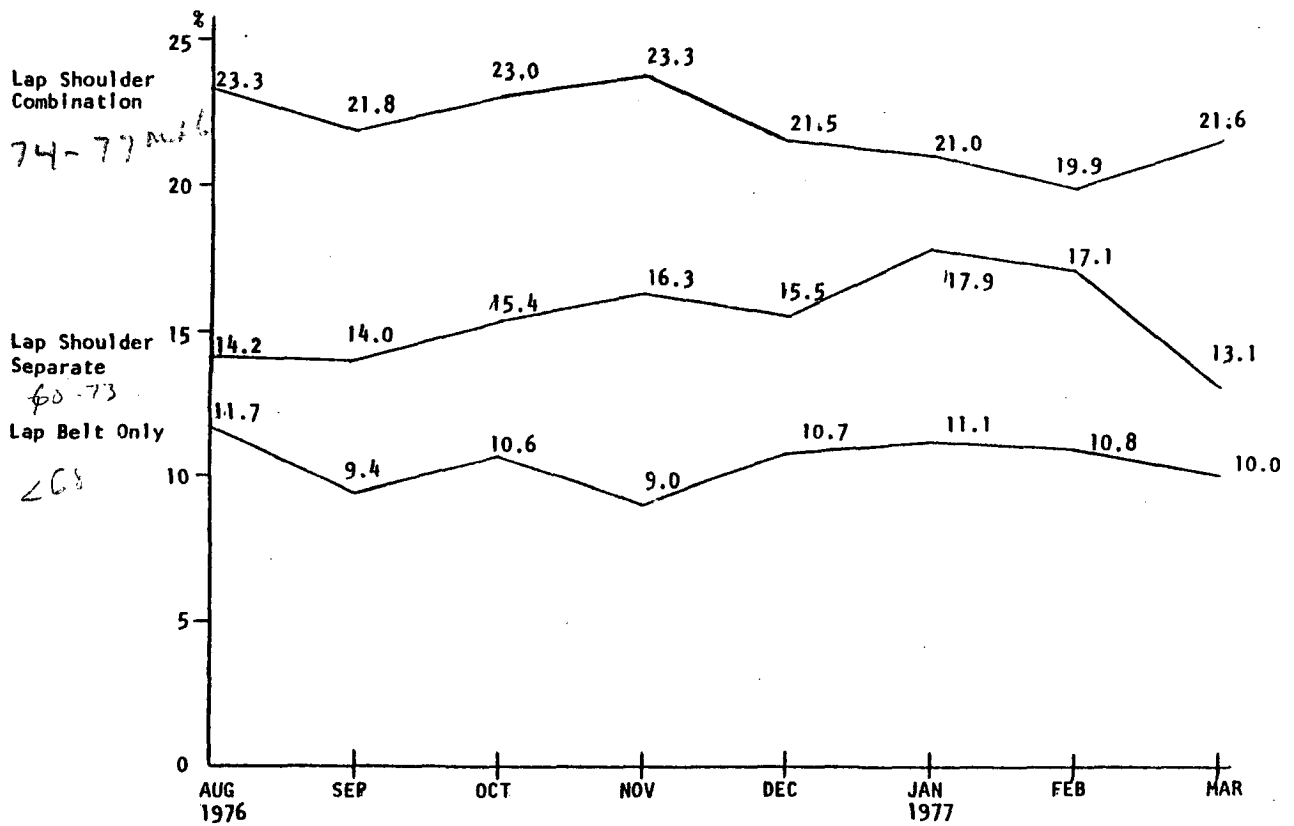


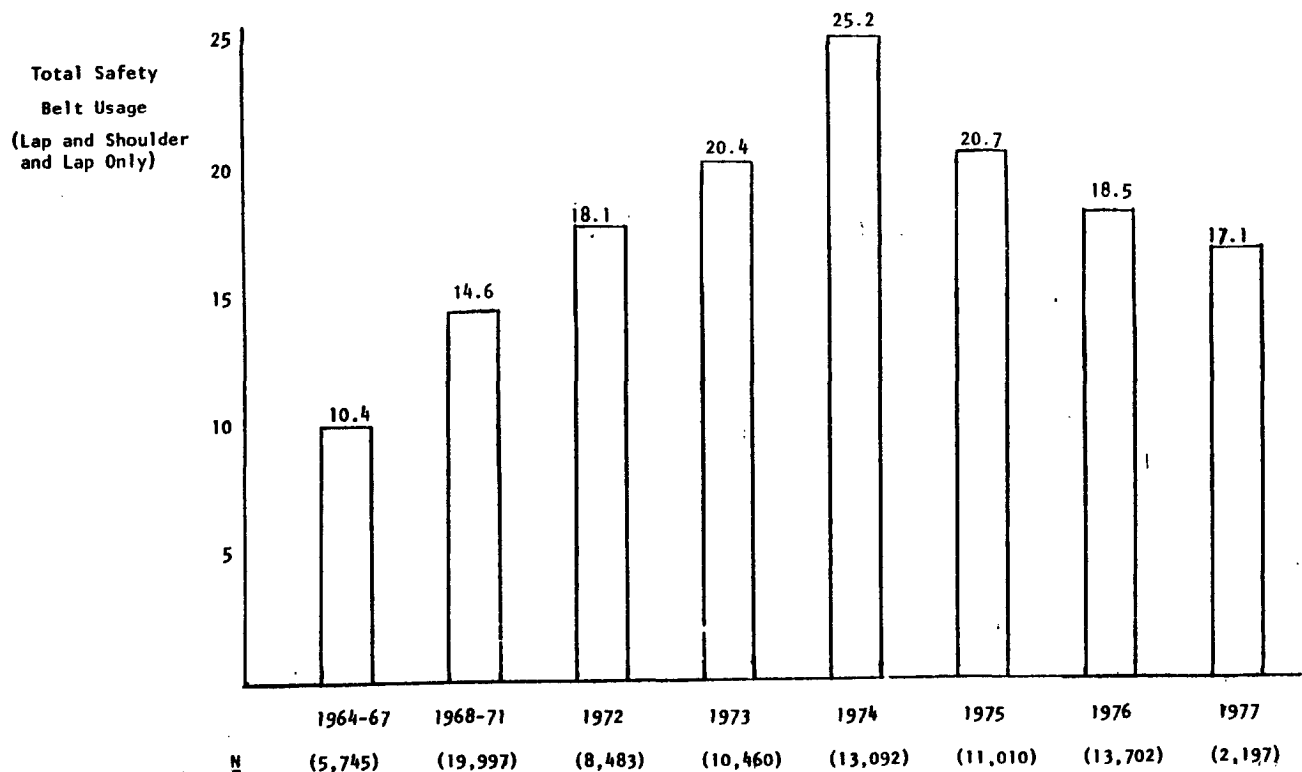
Figure 3
 USAGE BY SAFETY BELT SYSTEM
 (By Month)



Usage By Model Year

Figure 4 represents total safety belt usage by model year, showing the peaking of usage with the 1974 model year cars. Usage among drivers of the 1974 models (the year of the starter interlock) was significantly higher than usage of even the newer car models. As seen in the previous charts, lowest usage was found among the lap belt only models (1964-1967), followed by the lap-shoulder separate models (1968-1971). Usage then increased with the 1972 models which had a lap-shoulder combination system and a continuous light and buzzer reminder system (as of January, 1972). Usage peaked with the 1974 models, then declined as the starter interlock and continuous light and buzzer reminder system were phased out in 1975. With the eight-second buzzer and light reminder in the 1976 and 1977 models, usage again declined. This usage configuration was consistent among observers throughout the cities. With the exception of the 1976 and 1977 model years, the differences between years were significant.

Figure 4
USAGE BY MODEL YEAR



Usage By Manufacturer

In the analysis of usage by car manufacturer for all model years, the usage rates for automobiles produced by foreign manufacturers were considerably higher than the usage rates found in American models. Among the American manufacturers, usage was highest for AMC cars at 20.3%. The other American manufacturers (Chrysler, Ford, and General Motors) all reported usage rates below the average of 18.5%.

When only 1976 and 1977 models were examined, the usage relationships remained basically the same, with higher usage among the foreign manufacturers. Two changes, though, are worth noting. Usage for Volkswagen models jumped from 23.7% (all model years) to 37.8% for the newer models. This increase probably was due to the introduction of a passive restraint system in the 1976 and 1977 Volkswagen Rabbits. (Higher usage for Rabbits can be seen in the Volkswagen table listed in the Appendices of this report.) Also, usage for Chrysler cars improved with the later model cars. This traced to higher usage among certain Plymouth and Dodge models, as discussed in the paragraphs that follow.

Figure 5

USAGE BY MANUFACTURER

	<u>All Model Years</u>		<u>1976 - 1977</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Total	18.5%	(84,681)	18.3%	(15,898)
AMC	20.3	(2,475)	21.2	(424)
Chrysler	16.7	(10,850)	19.2	(1,716)
Ford	16.9	(20,013)	15.2	(3,453)
General Motors	16.4	(38,696)	15.5	(8,541)
Datsun	29.7	(1,876)	26.1	(429)
Toyota	29.7	(2,466)	26.3	(601)
Volkswagen	23.7	(4,047)	37.8	(323)
Other Foreign	33.0	(4,258)	32.6	(771)

Usage By Make

The observations were further broken down by American makes for all years and for 1976 and 1977 models (Figure 7). Among the American makes, AMC cars continued to have the highest usage rates for all model years and for the newer model cars.

Usage among the Chrysler manufacturer's cars revealed an increase in usage for 1976 and 1977 Plymouths and Dodges. Tables in the Appendices of this report provide usage rates for individual models by year for years 1973 - 1977. These tables suggest that the increased usage for Plymouth was caused by the introduction of Volare. Dodge usage probably increased as a result of the 1976 introduction of the Aspen and the continued high usage for Colt models.

Usage by style will be discussed in a later section. However, it is appropriate to note here that Figure 7 suggests a lower usage rate among those makes which produce the larger, luxury models -- Chrysler, Lincoln, and Cadillac.

Figure 6

USAGE BY CAR MAKE (AMERICAN MAKES)

	<u>All Model Years</u>		<u>1976 - 1977</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
AMC	20.3	(2,475)	21.2	(424)
Plymouth	16.6	(4,901)	20.8	(736)
Dodge	18.0	(4,378)	22.1	(607)
Chrysler	13.1	(1,571)	11.5	(373)
Ford	17.1	(15,859)	15.1	(2,585)
Mercury	17.0	(3,455)	16.4	(714)
Lincoln	12.5	(699)	10.4	(154)
Chevrolet	17.7	(18,201)	17.5	(3,524)
Buick	15.2	(6,054)	15.6	(1,228)
Pontiac	14.6	(5,218)	14.0	(1,056)
Oldsmobile	16.6	(6,431)	15.9	(1,715)
Cadillac	13.0	(2,792)	14.3	(658)

Usage By Major Models

Usage was examined by major car models, taking into account those models with at least 250 observations. (This eliminated some new models such as the Plymouth Arrow which had fewer than 250 observations.) Usage for these selected major models (Figure 8) ranged from 44.6% in the Volvo to 14.0% in the Cadillac. (The high usage in Volvo might be attributed to the type of person who drives a Volvo. Volvo has over the years advertised their car within the framework of a safety campaign, and, hence, might be attracting a more "safety conscious" owner and driver.)

Of the six major models with usage rates above the 30% level, all except the Mercury Capri were produced by foreign manufacturers. (Although distributed by Dodge, the Colt is manufactured in Japan.) Also, all six of these higher usage models are subcompacts. In fact, the top twenty-two cars in this list (almost half of the list) were either subcompact or compact models.

With some exceptions, an examination of usage by major models roughly supports the position that usage might be directly correlated with the size of the car. The highest usage rates were observed in subcompacts, while the lowest usage rates were found in luxury models. This is confirmed by an analysis of usage according to car style, as discussed in the next section.

Figure 7
 USAGE BY MAJOR CAR MODELS
 (1973+ Model Years)

<u>MODEL</u>		<u>N</u>
Volvo	44.6%	(523)
Colt (C)	33.9%	(266)
Toyota	33.5%	(1,654)
Volkswagen	31.4%	(1,639)
Capri (F)	31.3%	(361)
Datsun	31.1%	(1,342)
Vega (GM)	28.4%	(1,360)
Hornet (AMC)	24.6%	(525)
Volare (C)	24.2%	(446)
Maverick (F)	23.6%	(902)
Gremlin (AMC)	23.6%	(509)
Nova (GM)	23.4%	(1,783)
Pinto (F)	23.4%	(1,821)
Mazda	23.1%	(384)
Aspen (C)	23.0%	(348)
Skylark (GM)	22.6%	(398)
Omega (GM)	22.3%	(273)
Camaro (GM)	21.8%	(822)
Mustang (F)	21.4%	(1,075)
Monza (GM)	21.3%	(267)
Dart (C)	20.5%	(969)
Pacer (AMC)	19.5%	(293)
Fury (C)	19.1%	(341)
Impala (GM)	18.7%	(1,721)

USAGE BY MAJOR CAR MODELS (CONTINUED)
(1973+ Model Years)

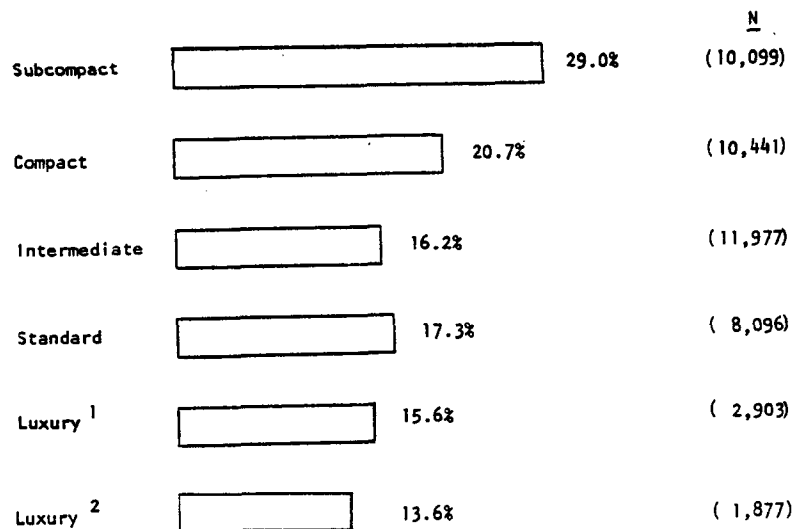
<u>MODEL</u>			<u>N</u>
Delta 88 (GM)	████████████████████	18.7%	(784)
Caprice (GM)	████████████████████	18.1%	(856)
Chevelle (GM)	████████████████████	18.0%	(1,766)
Ninety-Eight (GM)	████████████████████	17.8%	(482)
Valiant (C)	████████████████████	17.7%	(1,231)
Marquis (F)	████████████████████	17.7%	(357)
Monarch (F)	████████████████████	17.6%	(364)
Cutlass (G1)	████████████████████	17.5%	(2,302)
LTD (F)	████████████████████	17.5%	(1,191)
Torino (F)	████████████████████	17.3%	(1,388)
LeMans (G1)	████████████████████	16.7%	(557)
Bonneville/ Catalina (GM)	████████████████████	16.5%	(569)
LeSabre (GM)	████████████████████	16.2%	(697)
Newport (C)	████████████████████	15.9%	(258)
Astre (GM)	████████████████████	15.9%	(107)
Firebird (GM)	████████████████████	15.5%	(376)
Satellite (C)	████████████████████	15.4%	(520)
Century (GM)	████████████████████	15.3%	(1,275)
Granada (F)	████████████████████	15.3%	(1,138)
Electra (GM)	████████████████████	15.3%	(580)
Monte Carlo (GM)	████████████████████	15.2%	(1,768)
Grand Prix (GM)	████████████████████	15.2%	(744)
Lincoln (F)	████████████████████	14.9%	(437)
Cougar (F)	████████████████████	14.1%	(396)
Cadillac (G1)	████████████████████	14.0%	(1,789)

Usage By Style

Analysis of usage by style demonstrated an apparent inverse relationship between style (determined by car size and weight class) and safety belt usage. The highest usage rate (29.0%) was found among the smallest cars, the subcompacts, while the lowest usage rate (13.6%) was found in the large, full-size luxury models. An exception to this suggested relationship was that usage was slightly greater in standard models than in intermediates. (Not all foreign manufacturers were included in this classification or the usage rate of the subcompacts and compacts would be even higher.)

It was not within the scope of this study to determine causes of the relationship between size and usage. Although speculative, it is possible that the design of the safety belt system, and, more importantly, the attitude of the driver toward safety are directly related to the high usage rate in subcompacts and subsequently, the low usage rate in luxury models. Tables in the Appendices report usage by make for each of the five style categories: subcompact, compact, intermediate, standard, and luxury. Only 1973 and later model cars have been included in these lists. The 1964-1972 cars were not examined by models.

Figure 8
USAGE BY CAR STYLE*
(1973+ Models)



* Includes major foreign manufacturers

¹ Top of Line

² Full size Cadillacs, Lincoln Continental and Chrysler Imperial

A list of the models used for each of the style categories is presented below:

Figure 9
LIST OF MODELS WITHIN CAR STYLES[#]

<u>Subcompact</u>	<u>Intermediate</u>	<u>Luxury¹ (Top of Line)</u>
Gremlin (AMC)	Matador (AMC)	Imperial (C)
Pacer (AMC)	Cordoba (C)	Continental (F)
Colt (C)	Charger (C)	Electra (GM)
Arrow (C)	Coronet (C)	Estate Wagon (GM)
Pinto (F)	Satellite (C)	Calais (GM)
Bobcat (F)	Elite (F)	DeVille (GM)
Capri (F)	Torino (F)	Fleetwood (GM)
Opel (GM)	Comet (F)	Ninety-Eight (GM)
Skyhawk (GM)	*Cougar (F)	*Grand Ville (GM)
Chevette (GM)	Montego (F)	
Monza (GM)	Century (GM)	
Vega (GM)	Chevelle (GM)	
Starfire (GM)	Malibu (GM)	
Astre (GM)	Monte Carlo (GM)	
Sunbird (GM)	Cutlass (GM)	
Datsun	Vista Cruiser (GM)	<u>Luxury²</u>
Toyota	Grand Am (GM)	Imperial (C)
Mazda	Grand Prix (GM)	Continental (F)
Volkswagen	LeMans (GM)	Calais (GM)
Volvo		DeVille (GM)
		Fleetwood (GM)
<u>Compact</u>	<u>Standard</u>	
Hornet (AMC)	Ambassador (AMC)	
Javelin (AMC)	Newport (C)	
Aspen (C)	New Yorker (C)	
Challenger (C)	Town and Country (C)	
Dart (C)	Monaco (C)	
Barracuda (C)	Polara (C)	
Valiant (C)	*Fury (C)	
Volare (C)	Custom 500 (F)	
Granada (F)	Galaxie (F)	
Maverick (F)	LTD (F)	
Mustang (F)	Thunderbird (F)	
Monarch (F)	XL (F)	
*Skylark (GM)	Mark Series (F)	
Camaro (GM)	Marquis (F)	
Corvette (GM)	Monterey (F)	
Nova (GM)	LeSabre (GM)	
Omega (GM)	Riviera (GM)	
Firebird (GM)	Wildcat (GM)	
	Eldorado (GM)	
	Seville (GM)	
	Bel Air (GM)	
	Caprice (GM)	
	Impala (GM)	
	Delta 88/Royal (GM)	
	Dynamic (GM)	
	Toronado (GM)	
	Bonneville (GM)	
	Catalina (GM)	

[#]Source: MDAI Make Model Code

*Classification based on latest model

Usage for American manufacture cars was also examined by number of car doors (1973+ models, using the Vincolator decoder program). It was found that there was no difference in the usage rates of two door cars versus four door cars (18.5% and 18.8%, respectively).

Figure 10
USAGE BY
TWO DOOR AND FOUR DOOR CARS
(By Manufacturer)

MANUFACTURER	TWO DOOR	N	FOUR DOOR	N
Total	18.5%	(25,477)	18.8%	(12,160)
AMC	22.1%	(1,142)	21.8%	(252)
Chrysler	17.5%	(3,038)	19.3%	(2,059)
Ford	18.0%	(6,541)	19.1%	(3,298)
GM	18.7%	(14,756)	18.4%	(6,551)

Safety Belt Usage By Region

The sixteen cities used in this survey were grouped into three major regions:

East Coast: Atlanta, Baltimore, Boston,
New York, and Pittsburgh

Midwest: Birmingham, Chicago, Dallas, Houston,
 Fargo-Morehead, and Minneapolis-St. Paul

West Coast: Phoenix, Los Angeles, San Diego,
 San Francisco, and Seattle

When these cities were grouped by region, the East Coast had the lowest overall usage rate (12.0%), followed by the Midwest (17.4%), with the West Coast reporting the highest usage (27.3%).

Figure 11
SAFETY BELT USAGE BY REGION

	Both	Lap Belt Only		<u>N</u>
TOTAL	11.7	6.8	18.5%	(84,682)
East Coast	7.9	4.1	12.0%	(27,887)
Midwest	10.8	6.6	17.4%	(32,028)
West Coast	17.3	10.0	27.3%	(24,767)

The mix of cars was examined by car make and by car style for each region. By car make, there are not many differences among regions except that the West Coast has proportionately more foreign cars (however, more Volkswagens are on the East Coast). A breakdown of car makes by region can be found in the Appendices. By car style, a very definite picture emerges. The West Coast has a higher percentage of subcompact cars than the East Coast. In turn, the West Coast has fewer large cars--in the intermediate, standard and luxury categories. However, based on this examination of vehicle mix, it is unlikely that regional variations are due to style variations among regions. The difference between regional usage rates is far greater than can be accounted for by variations in car style.

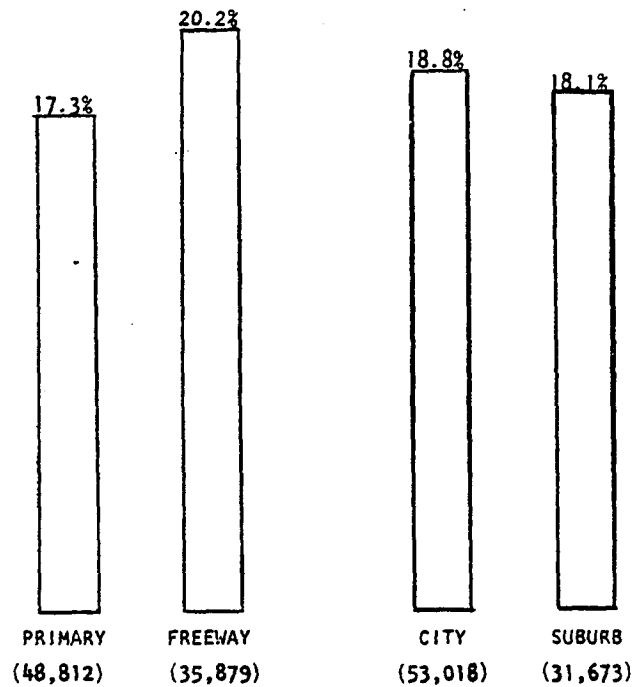
Figure 12
CAR STYLE BY REGION
(All Model Years)

Style	East Coast		Mid-West		West Coast		Total	
	%	N	%	N	%	N	%	N
Subcompact	20.6	(5,154)	20.6	(6,910)	29.1	(4,857)	22.5	(16,921)
Compact	22.2	(5,539)	19.3	(6,493)	21.7	(3,629)	20.8	(15,661)
Intermediate	26.7	(6,687)	26.1	(8,756)	23.0	(3,839)	25.6	(19,282)
Standard	23.0	(5,753)	26.9	(9,028)	20.3	(3,382)	24.1	(18,163)
Luxury	7.5	(1,864)	7.1	(2,403)	5.9	(991)	7.0	(5,258)
TOTAL	100.0	(24,997)	100.0	(33,590)	100.0	(16,698)	100.0	(75,285)

Usage By Road Type and Time of Day

Two road type characteristics were selected as part of the sampling plan for observers to follow: primary road intersections versus freeway exits and city versus suburban locations. The data were analyzed to determine the difference, if any, in safety belt usage on these roads. Usage among drivers observed at freeway exits (20.2%) was higher than usage among drivers observed at primary road intersections (17.3%). For drivers in the city and the suburbs, the usage rates were roughly the same (18.8% and 18.1% respectively). As the sampling plan extended only around five miles outside the city limits, this may not give a complete indication of all driving on suburban roads. Yet, the intended emphasis of this sampling plan was upon urban driving. The representation of nearby suburban areas, while possibly not typical of all suburban areas, nevertheless did allow for an examination of seat belt usage as a function of geographic location.

Figure 13
USAGE BY ROAD TYPE



There were four time blocks in which observations could be recorded: 7 - 10AM (morning rush hours), 10 - 1PM, 1 - 4PM, and 4 - 7PM (evening rush hours). Usage could then be examined by the time of day of the observation. Safety belt usage tended to be highest during the 4 - 7PM time period (22.1%), followed by the early morning time period of 7 - 10AM (18.8%), indicating higher safety belt usage at rush hours, particularly during the evening, than at other times of the day.

Figure 14
USAGE BY TIME OF DAY

	<u>Both On</u>	<u>Lap Belt Only</u>		<u>N</u>
7-10 AM	11.7	7.1	18.8%	(13,812)
10-1 PM	10.9	6.3	17.2%	(28,647)
1-4 PM	11.8	6.4	18.2%	(29,423)
4-7 PM	13.7	8.4	22.1%	(12,638)

Usage By Sex of Driver

Usage of a safety belt system tended to be higher among women (20.6%) than men (17.3%). The difference traced to a larger percentage of women wearing the lap belt.

Figure 15
USAGE BY SEX OF DRIVER

	<u>Both On</u>	<u>Lap Belt Only</u>		<u>N</u>
Men	11.7	5.6	17.3%	(53,769)
Women	11.9	8.7	20.6%	(30,819)

Usage by sex was examined by type of safety belt system to determine which system the additional lap belt only usage traced to. Among women, lap belt only usage was somewhat higher in all three systems. However, the only place where lap belt usage was found to be significantly higher turned out to be with the lap-shoulder separate systems.

Figure 16

USAGE OF MEN AND WOMEN
BY TYPE OF SAFETY BELT SYSTEM

<u>System/Usage</u>	<u>%</u>	<u>Men</u>	<u>Women</u>
		<u>N</u>	<u>%</u> <u>N</u>
Lap-Shoulder Combination		(28,734)	(15,718)
Both On	20.5		21.9
Lap Belt Only	<u>0.8</u>		<u>1.2</u>
Total	21.3		23.1
Lap-Shoulder Separate		(19,842)	(12,361)
Both On	2.0		1.8
Lap Belt Only	<u>11.6</u>		<u>17.4</u>
Total	13.6		19.2
Lap Belt Only		(5,189)	(2,740)
Lap Belt Only	9.3		12.6

Usage By Age of Driver

Drivers over the age of 50 (estimated age) tended to use their safety belts less often than those in the younger age categories. Usage by drivers in the 25-49 age bracket was slightly higher (19.3%) than those in the 16-24 age bracket (18.8%). Usage among those over the age of 50 was lowest (15.4%).

Figure 17
USAGE BY AGE OF DRIVER

	<u>Both On</u>	<u>Lap Belt Only</u>		<u>N</u>
16-24	11.7	7.1	18.8%	(15,292)
25-49	12.7	6.6	19.3%	(54,408)
Over 50	8.3	7.1	15.4%	(14,847)

When age is examined by type of car driven, it is seen that the older driver is less likely to be in a subcompact and more likely to be in a luxury or standard model. In the same vein, the older person is less likely to be driving a foreign car.

Figure 18

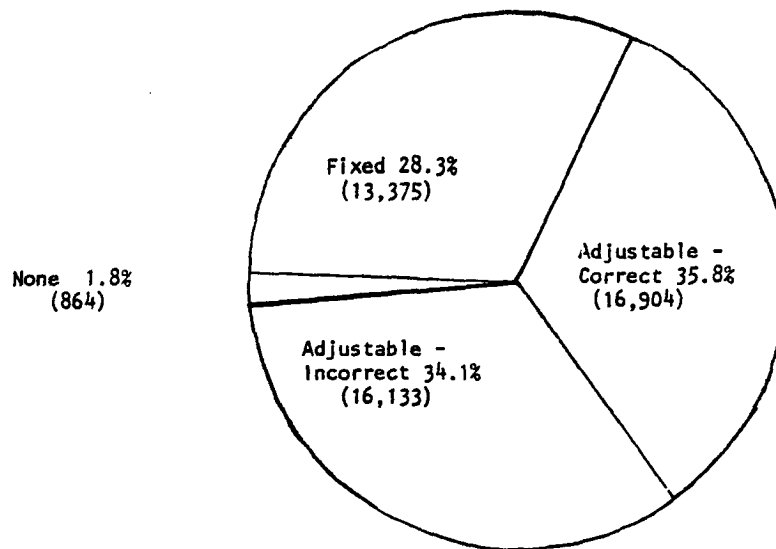
CAR STYLE BY AGE
(All Model Years)

<u>Style</u>	<u>16-24</u>		<u>25-49</u>		<u>50 & Over</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Subcompact	33.7	(4,526)	22.8	(10,991)	10.2	(1,367)
Compact	26.6	(3,581)	19.5	(9,398)	19.8	(2,662)
Intermediate	23.6	(3,170)	26.4	(12,758)	24.7	(3,324)
Standard	13.7	(1,843)	24.3	(11,731)	33.9	(4,562)
Luxury 1	2.4	(323)	7.0	(3,395)	11.4	(1,525)
Total	100.0	(13,443)	100.0	(48,273)	100.0	(13,440)

Head Restraint Positions

One of the items recorded for each observation, during the first half of the observation period, was the type and position of the head restraint. Among the head restraints listed for drivers, almost 70% were the adjustable type (69.9%), 28.3% were fixed, and 1.8% had no head restraint (removed from the car). About half of the adjustable head restraints were reported positioned correctly; that is, the top of the head restraint rested at the base of the driver's skull, about level with the driver's ears.

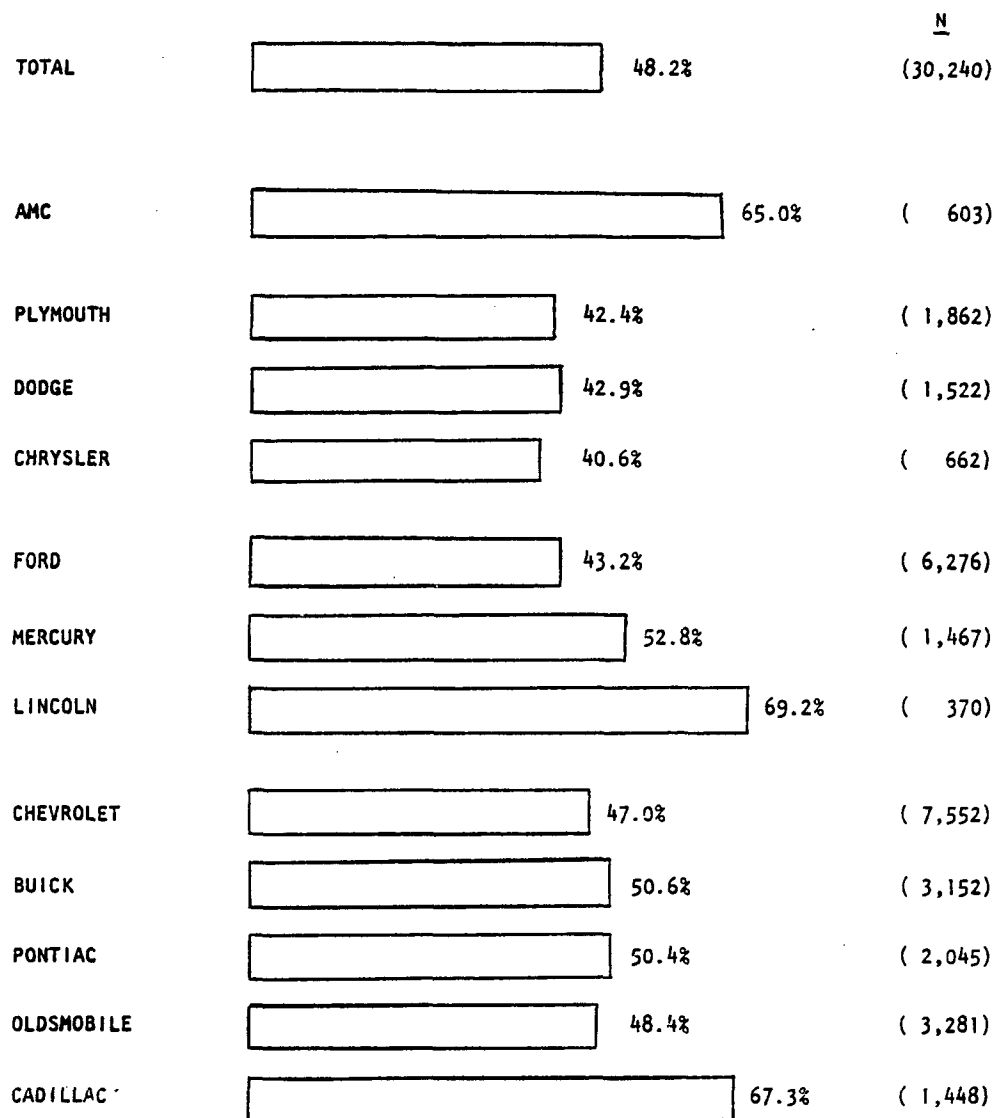
Figure 19
HEAD RESTRAINT POSITIONS*
(1969⁺ Models)



* Foreign Cars Included (Total N = 47,276)

In American models, 48.2%, or about half of the adjustable type head restraints, were positioned correctly. Car makes with higher than average correctly positioned head restraints were the Lincoln (69.2%), Cadillac (67.3%), and American Motors (65.0%). For the larger cars, this might be due to the fact that the seats, themselves, are higher. None of the American makes had less than a 40% correct position rate.

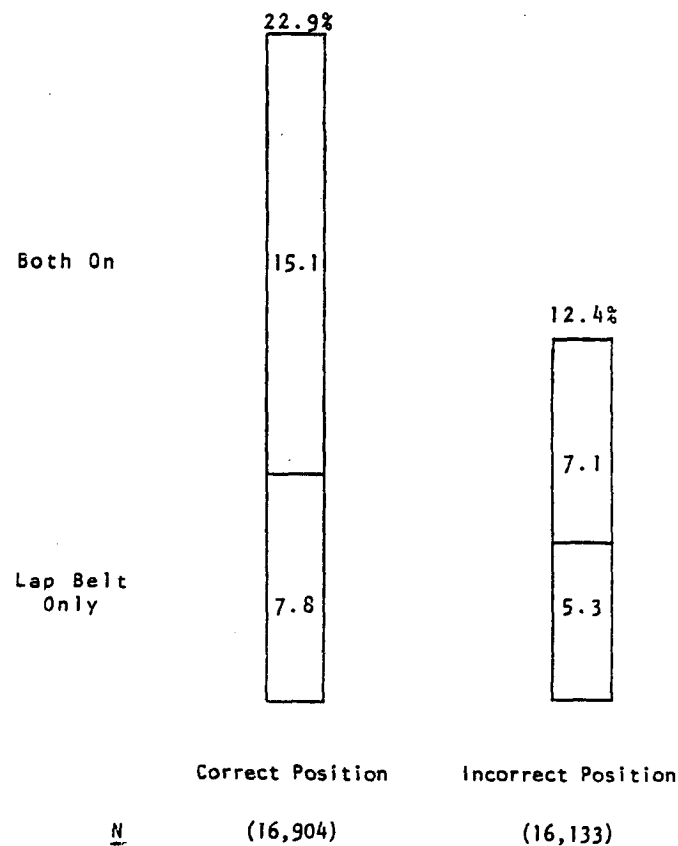
Figure 20
CORRECT HEAD RESTRAINT POSITIONS *
BY CAR MAKE



* Adjustable Type of Head Restraint

Drivers with correctly positioned head restraints tended to wear their safety belts more often than those with incorrectly positioned head restraints (22.9% versus 12.4%). This indicates the possibility of the existence of a safety conscious personality which is particularly concerned with driver protection.

Figure 21
SAFETY BELT USAGE BY
HEAD RESTRAINT POSITION *



* Adjustable Head Restraints

RENTAL CAR STUDY - CHICAGO'S O'HARE AIRPORT

METHODOLOGY

Prior to 1977, American car models had dual retractors for the lap-shoulder combination safety belt system. In the fall of 1976, Chrysler, Ford, and General Motors introduced the single retractor in some of their 1977 models. This study, a supplement to the sixteen city survey, was designed to obtain a fast measure of the usage level for these new retractor systems. The objective was to compare usage of the new single retractor with that of the dual retractor in the same model cars. The rental car agencies provided both 1976 and 1977 model cars, thus allowing for a comparison of both systems.

Observations were conducted at both the Avis and Hertz rental car lots at Chicago's O'Hare Airport. Observations were first conducted at Avis for six weeks to pick up four door Chrysler models with the single and dual retractor systems. (Two door Chrysler models did not have the single retractor system.) Avis had the largest fleet of Chrysler cars among the rental agencies. Later, it was discovered that some Ford models also had single retractors. Observers were then stationed at the Hertz rental check-in to record usage in cars there for six weeks. (Hertz uses mostly Ford cars.) During the Hertz phase of this study, observers were stationed at both Avis and Hertz for two weeks to ensure comparability of data; then, the observers worked only at Hertz for the remainder of the time period.

A total of 12,286 observations of safety belt usage among drivers of rental cars at Hertz and Avis were made during this study. Beginning and ending dates and number of observations conducted at Hertz and Avis are listed below:

	<u>Avis</u>	<u>Hertz</u>
Wave I : Began	9/23/76	
Ended	11/5/76	
Wave II: Began	11/15/76	11/15/76
Ended	11/26/76	12/24/76
Observations	7,395	4,891

The days and hours for observing were scheduled according to the traffic flow of returns at the rental car agencies. Certain days (Thursday and Friday) were peak days and certain hours (4 - 6PM) were peak periods. During the peak hours, two observers were assigned to check the cars, while only one observer handled the non peak morning hours. Observations were made from 9AM to 7PM Monday through Friday; in the winter, the evening hours were cut as the daylight hours became shorter.

Training and Monitoring of Observers

The observers for the rental car study were recruited and trained by the Chicago survey manager. Throughout the study, the observers worked under the direction of the survey manager who visited the site every other day in order to monitor the observers and to collect the observation forms.

Observation Techniques

Observers were trained to observe the safety belt usage of the driver as he/she returned the car and to note the sex of the driver. As the driver vacated the car, the observer was to note the car model, number of doors, type of retractor system installed, and if the safety belt system was properly stored.

Initially, observers were to watch to see how occupants removed the belt system to determine if the lap belt was used if the shoulder belt was not worn. Shoulder belt usage was easily discernible. However, it turned out that usage of lap belt only was difficult to identify because the car was not stopped where the observer could note the driver seated in the car. Once the car stopped, the driver usually dashed out of the car, in a rush to catch a plane.

To check what type of retractor system was installed in the car, observers were trained to open the car door and examine the floor attachment of the safety belt in order to determine if there was a retractor on the floor. If there was not a retractor on the floor, then the system had only a single retractor.

Single retractor systems were not produced in two door Aspen and Volare cars, but were produced in the four door versions. However, this was not the case in some other Chrysler models. These cars had sheaths where the safety belt hooks onto the floor giving these sheaths the appearance of a dual retractor system. Hence, observers had to be trained to not only open the car door in order to observe the system, but also to tug at the belt near the floor attachment in order to confirm whether or not the sheath held a retractor.

Observers also were asked to note if the safety belt was properly stored-- that is, if the buckle was not tangled and the system neatly rested against the car door. While we trained and checked observers in this method, there were differences in the individual observers' perceptions of "proper" storage. Thus, this measure turned out to be somewhat hazy.

While our interest was in specific car models having the single retractor system, observers were asked to collect safety belt usage on all rental cars as they came in. This procedure was easier than requiring observers to remember certain model categories.

At Avis, the observation system was rather simple. The cars had to park in two lanes under a shelter where the occupants got out to go to the check-in counter. The observers could stand in this shelter area and note the cars as they drove up. The Hertz lot, though, had five lanes instead of two, and the cars didn't stop at a particular location like at Avis. Hence, the observer had to figure out where the car would land in order to check out the car's system. This made observing at Hertz more difficult as the observer had to walk between the traffic lanes to examine the cars.

DETAILED FINDINGS

Overall Usage of Single vs. Dual Retractor Systems

Most of the cars observed that could be compared on the basis of single vs. dual retractors were Chrysler four door models. Both Avis and Hertz carried a number of Chrysler models with both systems. Hertz had some non Chrysler models with single retractor systems, though not as many as anticipated. The fleet of new Ford cars expected at Hertz didn't arrive until a month after the study began. Hence, most of the comparative data were for four door Chrysler cars observed at Avis and Hertz and two and four door non Chrysler cars: Granada (F), Impala (GM), Monarch (F), and two door Pinto (F).

Figure 22 presents the results of retractor system observations. The results for two door and four door non Chryslers are presented separately in order not to confound seat belt usage as a function of type of retraction system with usage as a function of number of doors. Although in this study no significant difference was discovered in the usage rates for two versus four door cars, some previous investigations have suggested differential usage rates using different samples.

The rental car observations indicated that there was no difference in overall usage between the single retractor and the dual retractor systems. (Overall usage was determined by lap-shoulder usage observed on the driver as he/she drove up to check-in; lap belt only usage was not recorded.) The total usage levels for Chrysler single vs. dual retractors were almost identical. The usage levels for non Chrysler cars were not significantly different.

Figure 22

USAGE IN SINGLE
VS. DUAL RETRACTOR SYSTEMS

	<u>Single Retractor</u>		<u>Dual Retractor</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
FOUR DOOR CHRYSLERS				
Avis	23%	(1,391)	22%	(605)
Hertz	23%	(378)	23%	(64)
Both A & H	<u>23%</u>	<u>(1,769)</u>	<u>22%</u>	<u>(669)</u>
TWO DOOR NON CHRYSLERS				
Avis	100%	(1)	100%	(2)
Hertz	20%	(76)	25%	(585)
Both A & H	<u>21%</u>	<u>(77)</u>	<u>25%</u>	<u>(587)</u>
FOUR DOOR NON CHRYSLERS				
Avis	25%	(103)	9%	(21)
Hertz	26%	(334)	24%	(424)
Both A & H	<u>26%</u>	<u>(437)</u>	<u>23%</u>	<u>(445)</u>

The following figures (Figures 23,24) provide supporting data for the summary information presented in Figure 22.

Figure 23
USAGE IN
CHRYSLER FOUR DOOR CARS

	Avis				Hertz				TOTAL			
	Single		Dual		Single		Dual		Single		Dual	
	%	N	%	N	%	N	%	N	%	N	%	N
Aspen	23	(213)	--	--	24	(114)	--	--	23	(327)	--	--
Coronet	15	(127)	21	(225)	--	(1)	25	(20)	15	(128)	22	(245)
Dart	24	(87)	32	(37)	28	(18)	27	(11)	25	(105)	31	(48)
Fury	20	(191)	14	(202)	14	(21)	21	(33)	20	(212)	15	(235)
Newport	15	(221)	54	(13)	--	--	--	--	15	(221)	54	(13)
Valiant	32	(148)	12	(17)	--	--	--	--	32	(148)	12	(17)
Volare	26	(349)	--	--	23	(223)	--	--	25	(572)	--	--
Other (colt, etc.)	29	(55)	30	(111)	100	(1)	--	--	30	(56)	30	(111)
TOTAL	23	(1,391)	22	(605)	23	(378)	23	(64)	23	(1,769)	22	(660)

Figure 24
USAGE IN
NON CHRYSLER CARS
(Two Doors and Four Doors)

	Avis				Hertz				TOTAL			
	Single		Dual		Single		Dual		Single		Dual	
	%	N	%	N	%	N	%	N	%	N	%	N
Granada	--	--	--	--	17	(6)	23	(201)	17	(6)	23	(201)
Pinto	--	--	--	--	25	(4)	26	(282)	25	(4)	26	(282)
Impala	100	(1)	100	(2)	--	(8)	29	(17)	11	(9)	37	(19)
Monarch	--	--	--	--	22	(581)	26	(85)	22	(58)	26	(85)
TOTAL	100	(1)	100	(2)	20	(76)	25	(585)	21	(77)	25	(587)
Four Doors	25	(4)	14	(7)	22	(102)	25	(329)	22	(106)	24	(336)
Granada	25	(99)	7	(14)	42	(40)	--	(3)	30	(139)	6	(17)
Impala	--	--	--	--	24	(192)	24	(92)	24	(192)	24	(92)
Monarch	25	(103)	9	(21)	26	(334)	24	(424)	26	(437)	23	(445)
TOTAL												

Usage By Make

Overall usage in all of the cars observed at the rental car check-ins was somewhat higher than the usage level found in the sixteen city survey. Among car makes, there appeared to be no significant difference in usage for rental car drivers. Also, there appeared to be no difference between two door versus four door makes.

Figure 25
USAGE BY CAR MAKE

<u>MAKE</u>	<u>TWO DOOR</u>		<u>FOUR DOOR</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
AMC	23%	(787)	16%	(345)
Plymouth	20%	(445)	22%	(1,193)
Dodge	22%	(760)	23%	(1,019)
Chrysler	18%	(363)	18%	(239)
Ford	22%	(1,260)	22%	(782)
Mercury	22%	(495)	23%	(442)
Chevrolet	20%	(1,342)	24%	(333)
Buick	26%	(343)	18%	(185)
Pontiac	22%	(616)	38%	(13)
Oldsmobile	18%	(814)	21%	(138)
Foreign	23%	(43)	25%	(200)
TOTAL	21%	(7,268)	22%	(4,889)

Driver Usage By Various Factors

Driver usage of safety belts was examined by various other factors: time of return, sex of driver, and proper storage of safety belt system. With the exception of the time factor, there was no difference seen in usage.

Possibly a difference in type of driver, region visited, or perhaps observer bias accounted for the difference in belt usage by time of day the car was returned. Drivers who returned the car in the afternoon were more likely to be wearing the safety belt than drivers returning the car in the morning (25% and 17%, respectively). This difference was consistent at both Avis and Hertz.

Comparatively few women were observed driving a rental car during the observation period. Difference in belt usage among men and women rental car drivers was negligible. (In the general population survey, women wore safety belts more often than men. However, this traced to use of the lap belt only. Usage of the lap-shoulder combination, as observed in the rental car survey, was the same.)

There was some question as to whether or not proper storage affected safety belt usage. It was hypothesized that people would be more likely to use a safety belt if it had retracted properly and wasn't all tangled when the driver tried to put it on. When overall usage was examined by proper storage of the system, there was a slight, though not significant, tendency for usage to be higher when the belt was seen to retract properly.

Figure 26

DRIVER USAGE BY VARIOUS FACTORS

	<u>Avis</u>		<u>Hertz</u>		<u>Total</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
<u>TIME</u>						
AM	14	(2,583)	20	(2,610)	17	(5,193)
PM	24	(4,934)	26	(2,190)	25	(7,124)
<u>SEX</u>						
Male	21	(7,314)	23	(4,681)	22	(11,995)
Female	25	(198)	22	(116)	24	(314)
<u>STORAGE</u>						
Yes	22	(5,450)	23	(4,517)	22	(9,967)
No	18	(1,756)	19	(281)	18	(2,037)

APPENDICES

SEAT BELT OBSERVATION FORM

Observer _____

Date _____
(Month/Day/Year)

Intersection _____

Location: 1-Primary Road 2-Freeway Exit
1-City 2-Suburb

City _____

Time Started _____ A.M.
P.M.

TIME

- 1 - 7 A.M. to 10 A.M.
- 2 - 10 A.M. to 1 P.M.
- 3 - 1 P.M. to 4 P.M.
- 4 - 4 P.M. to 7 P.M.

Time Ended _____ A.M.
P.M.

Conditions: 1-Daylight 2-Twilight 3-Snow/Ice
1-Dry 2-Rain

1	2	3	4	5	6	7	8	9	10	11	12	13	14

#	MODEL (15-16) (17-19)	LICENSE NUMBER (20-29)	SEX		AGE		BELT USAGE		BELT SYSTEM		HEAD RESTRAINT	
			1-MALE 2-FEMALE (30-31)	1-5 TO 14 2-15 TO 24 3-25 TO 49 4-50 & OVER (32-33)	1-BOTH ON 2-LAP BELT ONLY 3-BOTH OFF (34-35)	1-LAP/SHLDR. COMB. 2-LAP/SHLDR. SEP. 3-LAP BELT ONLY (36)	1-ADJ.-CORRECT 2-ADJ.-WRONG 3-FIXED 4-NONE (37-38)					
01												
02												
03												
04												
05												
06												
07												
08												
09												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												

# (15-16)	MODEL (17-19)	LICENSE NUMBER (20-29)	SEX		AGE		BELT USAGE		BELT SYSTEM		HEAD RESTRAINT	
			1-MALE 2-FEMALE (30-31)	1-5 TO 14 2-15 TO 24 3-25 TO 49 4-50 & OVER (32-33)	1-BOTH ON 2-LAP BELT ONLY 3-BOTH OFF (34-35)	1-LAP/SHLDR. COMB. 2-LAP/SHLDR. SEP. 3-LAP BELT ONLY (36)	1-ADJ.-CORRECT 2-ADJ.-WRONG 3-FIXED 4-NONE (37-38)					
26			Driver	Driver	Driver							
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												

SEAT BELT OBSERVATION FORM
AVIS RENTAL CAR STUDY--O'HARE AIRPORT

Observer _____

Date _____

Time Started _____ A.M.
 _____ P.M.

Time Ended _____ A.M.
 _____ P.M.

Conditions: 1-Daylight 2-Twilight 3-Snow/Ice
 1-Dry 2-Rain

1	2	3	4	5	6	7	8	9	10	11	12

# (11-16)	SEX 1-MALE 2-FEMALE (15-16)		BELT USAGE 1-BOTH ON 2-LAP BELT ONLY 3-BOTH OFF (17-18)		DOORS 2 4 (19)	MODEL (20-22)	RETRACTOR 1-SINGLE 2-DUAL (23)	PROPER STORAGE 1-YES 2-NO (24)
	Driver	Pssgr.	Driver	Pssgr.				
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

# (13-16)	SEX		SELT USAGE		DOORS 2 4 (19)	MODEL (20-22)	RETRACTOR		PROPER STORAGE	
	1-MALE 2-FEMALE (15-16)		1-BOTH ON 2-LAP BELT ONLY 3-BOTH OFF (17-18)				1-SINGLE 2-DUAL (23)		1-YES 2-NO (24)	
	Driver	Pssgr.	Driver	Pssgr.						
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										
53										
54										
55										

STATISTICAL TABLE OF SAMPLING TOLERANCES

Difference Between Percentages in Two Groups
Required for Significance at .05 Level

Sample size- Smaller group	Percentage for larger group					
	1	2	5	10	20	50
100	2.77	3.90	6.09	8.34	11.1	13.9
200	1.95	2.75	4.29	5.88	7.84	9.80
400	1.38	1.94	3.04	4.16	5.54	6.93
800	*	1.37	2.15	2.94	3.92	4.90
1,000	*	1.15	1.80	2.46	3.29	4.38
2,000	*	*	1.31	1.86	2.48	3.10
4,000	*	*	*	1.31	1.75	2.19
8,000	*	*	*	*	1.24	1.55
10,000	*	*	*	*	1.11	1.39

*less than 1.0

Above figures are conservative. If larger sample is 1.5 times smaller sample, multiply by .91; if larger sample is 2.0 times smaller sample, multiply by .86; if 4.0 times multiply by .79; if 10.0 times multiply by .74 for more exact requirements.

USAGE BY CAR MAKE AND YEAR

<u>MAKE</u>	<u>1964-67</u>	<u>1968-71</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>N</u>
AMERICAN MOTORS									
AMC	10.5	16.0	17.0	21.4	24.6	22.8	21.7	16.7	20.3 (2,475)
CHRYSLER MOTORS									
Chrysler	9.7	11.6	15.1	23.1	12.5	12.4	11.8	10.1	13.1 (1,571)
Dodge	12.5	14.3	18.2	22.4	19.5	20.7	23.1	15.4	18.0 (4,378)
Plymouth	11.8	13.8	18.0	21.9	14.8	16.6	20.6	21.7	16.6 (4,901)
FORD MOTORS									
Ford	10.7	15.0	16.0	19.1	24.4	16.9	15.1	15.1	17.1 (15,859)
Lincoln	3.1	6.2	13.9	15.9	17.0	17.1	11.3	6.6	12.5 (699)
Mercury	8.3	13.8	17.7	18.2	22.4	17.2	16.7	13.8	17.0 (3,455)
GENERAL MOTORS									
Buick	9.2	11.8	14.8	16.4	19.2	19.5	15.1	18.2	15.2 (6,054)
Cadillac	7.2	10.2	15.7	16.3	13.3	12.3	14.2	14.6	13.0 (2,792)
Chevrolet	10.1	13.0	17.9	17.5	26.7	19.5	17.4	18.2	17.7 (18,201)
Oldsmobile	9.6	13.5	15.0	19.4	23.1	18.3	15.6	17.5	16.6 (6,431)
Pontiac	8.9	12.0	14.8	18.2	20.9	14.8	14.5	11.5	14.6 (5,218)
FOREIGN CARS									
Datsun	25.0	29.0	23.8	25.7	35.9	35.2	25.8	33.3	29.7 (1,876)
Toyota	15.8	20.4	24.2	21.2	49.4	34.0	26.4	24.3	29.7 (2,466)
Volkswagen	10.5	18.0	24.7	27.4	27.1	38.3	38.6	32.5	23.7 (4,047)
Other Foreign	18.3	27.6	31.4	35.8	35.6	35.1	32.5	32.0	33.0 (4,258)
TOTAL	10.4 (5,742)	14.6 (19,997)	18.1 (8,485)	20.4 (10,459)	25.2 (13,091)	20.7 (11,009)	18.5 (13,701)	17.1 (2,197)	18.6 (84,681)

AMERICAN MOTORS MODELS BY YEAR*

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Ambassador	17.2	(29)	24.0	(25)	--	--	--	--	--	--	20.4	(54)
Gremlin	21.0	(105)	24.0	(225)	25.7	(74)	23.7	(93)	25.0	(12)	23.6	(509)
Hornet	22.1	(113)	28.1	(207)	22.4	(98)	23.2	(95)	16.7	(12)	24.6	(525)
Javelin	31.3	(16)	25.9	(27)	--	--	--	--	--	--	27.9	(43)
Matador	19.5	(36)	18.2	(88)	22.2	(72)	26.4	(34)	12.5	(8)	20.6	(238)
Pacer	--	--	--	--	21.6	(125)	18.9	(159)	0.0	(9)	19.5	(293)
TOTAL	21.4	(299)	24.7	(572)	22.8	(369)	21.8	(381)	14.6	(41)	22.7	(1,662)

*Totals on this and following charts (pages 27-38) are based on data where car model could be obtained from the VIN decoder program.

PLYMOUTH MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	%	N	%	N	%	N	%	N	%	N	%	N
Arrow	--	--	--	--	--	--	12.5	(40)	0.0	(1)	12.2	(41)
Barracuda	14.3	(7)	37.5	(8)	--	--	--	--	--	--	26.6	(15)
Fury	24.1	(166)	10.0	(90)	20.0	(55)	14.3	(21)	22.2	(9)	19.1	(341)
Satellite	24.3	(140)	11.1	(135)	13.6	(133)	11.6	(95)	11.8	(17)	15.4	(520)
Valiant	20.0	(316)	16.2	(499)	17.1	(310)	19.8	(106)	--	--	17.7	(1,231)
Volare	--	--	--	--	--	--	24.2	(367)	24.1	(79)	24.2	(446)
TOTAL	21.9	(629)	14.8	(732)	16.5	(498)	20.5	(629)	21.7	(106)	18.5	(2,594)

DODGE MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	%	N	%	N	%	N	%	N	%	N	%	N
Aspen	--	--	--	--	--	--	23.8	(289)	18.7	(59)	23.0	(348)
Challenger	25.0	(28)	13.4	(15)	--	--	--	--	--	--	21.0	(43)
Charger	20.6	(63)	23.6	(55)	15.5	(71)	12.8	(39)	0.0	(6)	18.0	(234)
Coronet	16.4	(61)	10.9	(55)	21.2	(33)	12.0	(25)	0.0	(5)	14.5	(179)
Dart	27.0	(256)	18.2	(380)	19.2	(276)	14.0	(57)	--	--	20.5	(969)
Monaco/Polara	14.6	(82)	8.0	(50)	21.0	(38)	6.9	(29)	0.0	(5)	12.8	(204)
Colt	13.3	(15)	31.5	(108)	35.3	(51)	39.3	(89)	33.3	(3)	33.9	(266)
TOTAL	22.4	(505)	19.3	(663)	20.7	(469)	23.1	(528)	15.4	(78)	21.0	(2,243)

CHRYSLER MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	%	N	%	N	%	N	%	N	%	N	%	N
Cordoba	--	--	--	--	10.6	(179)	11.5	(226)	13.0	(46)	11.3	(451)
Imperial	28.6	(14)	0.0	(7)	66.7	(3)	--	--	--	--	25.0	(24)
Newport	22.6	(93)	14.5	(62)	7.0	(57)	15.8	(38)	12.5	(8)	15.9	(258)
New Yorker	25.0	(36)	13.4	(15)	29.4	(17)	8.6	(35)	0.0	(13)	16.4	(116)
Town & Country	20.0	(20)	0.0	(4)	50.0	(4)	0.0	(4)	0.0	(2)	17.7	(34)
TOTAL	23.3	(163)	12.5	(88)	12.3	(260)	11.6	(303)	10.1	(69)	13.9	(883)

FORD MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Custom 500	23.2	(43)	17.4	(23)	23.1	(26)	33.3	(9)	--	--	22.8	(101)
Elite	--	--	--	--	7.8	(128)	10.9	(147)	--	--	9.5	(275)
Galaxie	18.2	(159)	10.8	(102)	--	--	--	--	--	--	15.3	(261)
Granada	--	--	--	--	17.0	(454)	14.2	(674)	20.0	(10)	15.3	(1,138)
LTD	20.4	(333)	19.1	(257)	16.7	(245)	14.4	(312)	13.6	(44)	17.5	(1,191)
Maverick	23.0	(231)	30.6	(330)	20.8	(183)	14.3	(140)	5.6	(18)	23.6	(902)
Mustang	23.2	(82)	25.2	(539)	17.6	(244)	15.3	(203)	14.3	(7)	21.4	(1,075)
Pinto	19.7	(458)	30.8	(678)	19.2	(303)	18.1	(382)	--	--	23.4	(1,821)
Thunderbird	10.3	(78)	13.4	(67)	13.2	(53)	6.0	(67)	13.2	(53)	11.0	(318)
Torino	17.0	(404)	17.8	(493)	15.9	(264)	17.8	(224)	33.3	(3)	17.3	(1,388)
TOTAL	19.4	(1,788)	24.4	(2,489)	16.9	(1,900)	15.0	(2,158)	13.3	(135)	19.1	(8,470)

800 11 004

MERCURY MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	%	N	%	N	%	N	%	N	%	N	%	N
Bobcat	--	--	--	--	13.2	(38)	12.5	(32)	0.0	(1)	12.7	(71)
Comet	18.8	(64)	23.7	(93)	25.0	(40)	14.3	(21)	100.0	(2)	22.3	(220)
Cougar	21.4	(56)	13.1	(130)	15.4	(78)	11.2	(116)	12.5	(16)	14.1	(396)
Marquis	21.1	(90)	23.9	(46)	14.1	(92)	15.8	(114)	13.3	(15)	17.7	(357)
Monarch	--	--	--	--	21.4	(135)	15.2	(204)	16.0	(25)	17.6	(364)
Montego	10.5	(124)	11.9	(93)	12.5	(80)	14.0	(50)	--	--	11.8	(347)
Monterey	13.7	(29)	13.6	(22)	0.0	(1)	--	--	--	--	13.5	(52)
Capri	24.3	(103)	35.6	(160)	100.0	(1)	30.9	(97)	--	--	31.3	(361)
TOTAL	18.2	(466)	22.2	(544)	17.2	(465)	16.7	(634)	16.9	(59)	18.5	(2,168)

LINCOLN MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	%	N	%	N	%	N	%	N	%	N	%	N
Continental/Versailles	20.0	(40)	22.0	(41)	16.7	(48)	8.2	(61)	0.0	(5)	15.4	(195)
Mark Series	13.3	(60)	14.3	(70)	18.0	(50)	12.9	(62)	--	--	14.5	(242)
TOTAL	16.0	(100)	17.1	(111)	17.3	(98)	10.6	(123)	0.0	(5)	14.9	(437)

GENERAL MOTORS MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Chevrolet	17.6	(2,043)	26.8	(2,835)	19.4	(2,409)	17.3	(2,929)	18.2	(576)	20.4	(10,792)
Buick	16.4	(794)	19.3	(745)	19.5	(754)	15.2	(1,037)	18.3	(180)	17.4	(3,510)
Pontiac	18.1	(613)	20.8	(529)	14.9	(544)	14.1	(796)	10.9	(138)	16.4	(2,620)
Oldsmobile	19.3	(822)	23.3	(761)	18.3	(849)	15.6	(1,381)	17.5	(331)	18.4	(4,144)
Cadillac	16.3	(338)	13.3	(371)	12.3	(422)	14.2	(535)	14.6	(123)	14.0	(1,789)
TOTAL	17.7	(4,610)	23.6	(5,241)	18.1	(4,978)	16.0	(6,678)	17.0	(1,348)	18.6	(22,855)

CHEVROLET MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Bel Air	10.6	(57)	26.2	(42)	28.0	(25)	--	--	--	--	19.3	(124)
Camaro	21.1	(76)	30.9	(188)	18.4	(212)	20.0	(295)	13.8	(51)	21.8	(822)
Caprice	16.9	(207)	25.4	(197)	16.5	(170)	16.0	(218)	10.9	(64)	18.1	(856)
Chevelle	11.4	(290)	23.5	(451)	18.4	(419)	16.6	(508)	18.4	(98)	18.0	(1,766)
Chevette	--	--	--	--	--	--	20.4	(216)	26.0	(23)	20.9	(239)
Corvette	27.3	(11)	33.3	(24)	22.7	(22)	14.3	(21)	25.0	(8)	24.4	(86)
Impala	16.1	(564)	23.1	(465)	17.6	(329)	17.6	(302)	21.3	(61)	18.7	(1,721)
Monza	--	--	--	--	24.2	(182)	13.6	(81)	50.0	(4)	21.3	(267)
Monte Carlo	14.4	(230)	19.8	(373)	13.3	(400)	13.8	(618)	15.7	(147)	15.2	(1,768)
Nova	21.9	(288)	27.2	(519)	22.5	(381)	21.1	(486)	22.0	(109)	23.4	(1,783)
Vega	24.7	(320)	35.4	(576)	26.4	(269)	16.3	(184)	27.3	(11)	28.4	(1,360)
TOTAL	17.6	(2,043)	26.8	(2,835)	19.4	(2,409)	17.3	(2,929)	18.2	(576)	20.4	(10,792)

BUICK MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Century	15.1	(292)	15.3	(256)	14.8	(264)	15.7	(413)	16.0	(50)	15.3	(1,275)
Electra	11.7	(136)	16.4	(116)	17.6	(131)	13.0	(154)	25.6	(43)	15.3	(580)
Estate Wagon	26.9	(41)	23.0	(26)	10.7	(28)	35.5	(31)	16.7	(6)	24.3	(132)
Le Sabre	16.3	(209)	20.0	(135)	18.2	(132)	13.0	(177)	11.4	(44)	16.2	(697)
Opel	25.9	(54)	21.6	(102)	30.0	(40)	7.1	(14)	0.0	(1)	23.2	(211)
Riviera	11.5	(35)	25.0	(28)	13.6	(22)	8.0	(25)	28.6	(7)	15.4	(117)
SkyLark	25.9	(27)	29.3	(82)	30.1	(83)	15.5	(181)	24.0	(25)	22.6	(398)
Skyhawk	--	--	--	--	33.3	(54)	19.1	(42)	0.0	(4)	26.0	(100)
TOTAL	16.4	(794)	19.3	(745)	19.5	(754)	15.2	(1,037)	18.3	(180)	17.4	(3,510)

PONTIAC MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Astre	--	--	--	--	19.7	(66)	7.9	(38)	33.3	(3)	15.9	(107)
Bonneville/Catalina	19.5	(190)	14.7	(116)	13.5	(96)	14.9	(141)	23.0	(26)	16.5	(569)
Firebird	12.9	(39)	25.1	(80)	15.4	(91)	12.6	(143)	4.3	(23)	15.5	(376)
Grand Am	16.7	(24)	9.5	(21)	16.7	(12)	--	--	--	--	14.0	(57)
Grand Prix	17.9	(134)	22.7	(119)	15.8	(120)	13.1	(299)	5.6	(72)	15.2	(744)
Grand Ville	22.2	(63)	29.0	(31)	16.3	(43)	--	--	--	--	21.8	(137)
Le Mans	16.5	(163)	21.6	(162)	11.2	(116)	15.3	(105)	18.2	(11)	16.7	(557)
Sunbird	--	--	--	--	--	--	21.4	(70)	33.3	(3)	21.9	(73)
TOTAL	18.1	(613)	20.8	(529)	14.9	(544)	14.1	(796)	10.9	(138)	16.4	(2,620)

OLDSMOBILE MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Cutlass	17.5	(377)	23.3	(416)	16.9	(449)	15.0	(852)	16.8	(208)	17.5	(2,302)
Delta 88/Dynamic	19.8	(202)	21.6	(153)	17.8	(157)	14.2	(218)	27.8	(54)	18.7	(784)
Omega	20.0	(50)	30.0	(70)	16.4	(55)	21.2	(85)	23.1	(13)	22.3	(273)
Ninety-Eight	20.7	(121)	18.0	(78)	20.9	(96)	15.9	(138)	10.2	(49)	17.8	(482)
Starfire	--	--	--	--	40.0	(40)	19.4	(31)	0.0	(3)	29.7	(74)
Toronado	23.6	(55)	25.0	(28)	14.8	(27)	13.8	(29)	0.0	(4)	19.6	(143)
Vista Cruiser	29.4	(17)	31.3	(16)	8.0	(25)	21.5	(28)	--	--	20.9	(86)
TOTAL	19.3	(822)	23.3	(761)	18.3	(849)	15.6	(1,381)	17.5	(331)	18.4	(4,144)

CADILLAC MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Seville	--	--	--	--	0.0	(1)	25.4	(114)	18.8	(16)	24.4	(131)
Other Cadillacs	16.3	(338)	13.3	(371)	12.3	(421)	11.2	(421)	14.0	(107)	13.2	(1,658)
TOTAL	16.3	(338)	13.3	(371)	12.3	(422)	14.2	(535)	14.6	(123)	14.0	(1,789)

ALL FOREIGN MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Volkswagen	27.6	(467)	26.6	(530)	38.1	(323)	38.7	(279)	32.5	(40)	31.4	(1,639)
Datsun	25.7	(198)	35.9	(396)	35.2	(319)	25.8	(414)	33.3	(15)	31.1	(1,342)
Toyota	21.2	(236)	49.4	(441)	34.0	(376)	26.4	(564)	24.3	(37)	33.5	(1,654)
Mazda	22.4	(165)	22.1	(145)	40.0	(25)	20.4	(49)	--	--	23.1	(384)
Volvo	46.9	(113)	49.3	(144)	41.7	(175)	40.0	(90)	0.0	(1)	44.6	(523)
All Other Foreign	38.7	(323)	35.7	(696)	32.6	(542)	32.4	(607)	33.3	(24)	34.4	(2,192)
TOTAL	29.6	(1,502)	36.2	(2,352)	35.4	(1,760)	30.3	(2,003)	29.9	(117)	33.1	(7,734)

VOLKSWAGEN MODELS BY YEAR

<u>MODEL</u>	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>TOTAL</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
Rabbit	--	--	--	--	42.9	(168)	40.9	(193)	33.3	(33)	41.1	(394)
Other VW's	27.6	(467)	26.6	(530)	32.9	(155)	33.7	(86)	28.6	(7)	28.3	(1,245)
TOTAL	27.6	(467)	26.6	(530)	38.1	(323)	38.7	(279)	32.5	(40)	31.4	(1,639)

SUBCOMPACT MODELS BY YEAR

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
AMERICAN MOTORS						
AMC	21.0	24.0	23.1	20.6	14.3	22.1 (802)
CHRYSLER MOTORS						
Chrysler	-	-	-	-	-	-
Dodge	13.3	31.5	35.3	39.3	33.3	33.9 (266)
Plymouth	-	-	-	12.5	0.0	12.2 (41)
FORD MOTORS						
Ford	19.7	28.5	20.7	17.7	-	22.5 (1,100)
Lincoln	-	-	-	-	-	-
Mercury	24.3	35.6	17.4	27.0	0.0	29.1 (402)
GENERAL MOTORS						
Buick	21.3	23.3	32.9	16.1	0.0	23.9 (280)
Cadillac	-	-	-	-	-	-
Chevrolet	25.8	35.4	26.8	18.4	29.7	26.8 (1,523)
Oldsmobile	-	-	40.0	19.4	0.0	29.7 (74)
Pontiac	-	-	22.0	17.2	20.0	19.0 (163)
FOREIGN CARS						
Datsun	25.7	35.9	35.2	25.8	33.3	31.1 (1,342)
Toyota	21.2	49.4	34.0	26.4	24.3	33.5 (1,654)
Volkswagen	26.2	26.2	36.8	38.0	32.5	30.4 (1,545)
Other Foreign	32.3	35.6	41.5	33.1	0.0	35.5 (907)
TOTAL	24.8 (1,940)	33.7 (3,042)	31.5 (2,212)	24.9 (2,736)	25.5 (169)	29.0 (10,099)

COMPACT MODELS BY YEAR

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>N</u>
AMERICAN MOTORS						
AMC	22.5	25.4	23.2	15.8	12.5	23.0 (352)
CHRYSLER MOTORS						
Chrysler	-	-	-	-	-	-
Dodge	26.8	18.0	19.2	22.3	18.7	21.1 (1,360)
Plymouth	19.9	16.6	17.1	21.5	22.2	18.6 (1,520)
FORD MOTORS						
Ford	23.0	27.3	17.9	14.5	11.4	19.8 (3,115)
Lincoln	-	-	-	-	-	-
Mercury	-	-	21.4	15.2	16.0	17.6 (364)
GENERAL MOTORS						
Buick	25.9	29.3	30.1	15.5	24.0	22.6 (398)
Cadillac	-	-	-	-	-	-
Chevrolet	21.6	28.5	21.2	20.7	19.8	22.9 (2,683)
Oldsmobile	20.0	30.0	16.4	21.2	23.1	22.3 (273)
Pontiac	12.9	25.1	15.4	12.6	14.3	15.5 (376)
TOTAL	22.3 (1,499)	24.4 (2,892)	19.3 (2,501)	17.8 (3,149)	18.3 (400)	20.7 (10,441)

INTERMEDIATE MODELS BY YEAR

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
AMERICAN MOTORS						
AMC	19.5	18.2	22.2	26.4	12.5	20.6 (238)
CHRYSLER MOTORS						
Chrysler	-	-	10.6	11.5	13.0	11.3 (451)
Dodge	18.5	17.3	17.3	12.5	0.0	16.4 (413)
Plymouth	25.0	11.7	13.5	10.8	12.5	15.7 (453)
FORD MOTORS						
Ford	17.0	16.5	13.7	14.3	33.3	15.6 (1,339)
Lincoln	-	-	-	-	-	-
Mercury	14.9	16.2	15.7	12.6	25.0	15.2 (927)
GENERAL MOTORS						
Buick	15.1	15.3	14.8	15.7	16.0	15.3 (1,275)
Cadillac	-	-	-	-	-	-
Chevrolet	13.1	21.6	15.1	15.0	17.3	16.5 (3,267)
Oldsmobile	17.9	24.0	16.5	15.6	17.2	17.9 (2,316)
Pontiac	17.3	21.0	14.2	13.6	7.2	15.8 (1,298)
TOTAL	16.5 (2,300)	19.2 (2,784)	15.0 (2,682)	14.6 (3,556)	15.4 (655)	16.2 (11,977)

STANDARD MODELS BY YEAR

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>N</u>
AMERICAN MOTORS						
AMC	20.8	22.2	-	-	-	21.4 (42)
CHRYSLER MOTORS						
Chrysler	22.8	13.6	14.1	11.7	4.3	16.2 (408)
Dodge	14.6	8.0	21.0	6.9	0.0	12.8 (204)
Plymouth	24.1	6.5	23.1	18.8	25.0	18.8 (277)
FORD MOTORS						
Ford	18.9	15.8	16.6	13.5	13.4	16.3 (1,843)
Lincoln	13.3	14.3	18.0	12.9	-	14.5 (242)
Mercury	21.2	16.3	15.1	13.5	10.0	16.5 (327)
GENERAL MOTORS						
Buick	15.5	20.9	17.5	12.4	13.8	16.1 (814)
Cadillac	14.5	14.8	8.8	20.6	12.5	16.1 (400)
Chevrolet	16.0	25.5	18.5	15.9	17.5	19.1 (2,216)
Oldsmobile	20.4	21.8	16.4	15.0	24.4	18.7 (821)
Pontiac	19.2	15.7	14.5	14.7	26.0	17.0 (502)
TOTAL	18.3 (2,525)	19.1 (1,864)	16.8 (1,517)	14.8 (1,797)	16.0 (393)	17.3 (8,096)

LUXURY MODELS BY YEAR

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>N</u>
AMERICAN MOTORS						
AMC	-	-	-	-	-	-
CHRYSLER MOTORS						
Chrysler	28.6	0.0	66.7	-	-	(24)
Dodge	-	-	-	-	-	-
Plymouth	-	-	-	-	-	-
FORD MOTORS						
Ford	20.0	22.0	16.7	8.2	0.0	(195)
Lincoln	-	-	-	-	-	-
Mercury	-	-	-	-	-	-
GENERAL MOTORS						
Buick	15.3	17.6	16.4	16.7	24.5	(712)
Cadillac	16.7	12.9	13.2	11.0	15.3	(1,384)
Chevrolet	-	-	-	-	-	-
Oldsmobile	20.7	18.0	20.9	15.9	10.2	(482)
Pontiac	21.6	27.3	15.1	-	-	(106)
TOTAL	17.8 (684)	15.7 (599)	15.5 (681)	13.1 (738)	15.9 (201)	15.6 (2,903)

SAFETY BELT USAGE
TWO DOOR VS. FOUR DOOR CARS

<u>MAKE</u>	<u>TWO DOOR</u>		<u>FOUR DOOR</u>	
	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>
AMERICAN MOTORS				
AMC	22.0	(1,142)	21.8	(252)
CHRYSLER MOTORS				
Chrysler	12.0	(527)	16.8	(322)
Dodge	20.8	(1,159)	20.2	(798)
Plymouth	16.9	(1,352)	19.5	(939)
FORD MOTORS				
Ford	18.0	(4,905)	19.7	(2,492)
Lincoln	13.5	(318)	18.5	(119)
Mercury	19.1	(1,318)	17.3	(687)
GENERAL MOTORS				
Buick	17.7	(1,958)	16.2	(1,294)
Cadillac	13.0	(1,024)	15.5	(608)
Chevrolet	20.5	(7,042)	20.1	(2,733)
Oldsmobile	18.2	(2,589)	19.1	(1,291)
Pontiac	16.8	(2,143)	16.1	(625)
FOREIGN CARS				
Volkswagen	24.5	(1,027)	--	--
Other Foreign	33.9	(859)	45.3	(338)
TOTAL	19.2	(27,363)	19.5	(12,498)

SAFETY BELT USAGE -- TWO DOOR CARS

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
						<u>N</u>
AMERICAN MOTORS						
AMC	21.4	23.5	24.2	19.0	15.8	22.1 (1,142)
CHRYSLER MOTORS						
Chrysler	39.1	10.5	9.6	11.3	12.5	12.0 (527)
Dodge	25.2	18.8	20.0	19.5	18.5	20.8 (1,159)
Plymouth	21.5	14.7	13.8	16.0	21.4	16.9 (1,352)
FORD MOTORS						
Ford	17.7	23.5	15.6	13.7	12.2	18.0 (4,905)
Lincoln	13.2	13.8	16.2	12.1	0.0	13.5 (318)
Mercury	18.8	23.6	15.3	17.0	23.1	19.1 (1,318)
GENERAL MOTORS						
Buick	14.7	21.4	20.0	15.5	18.1	17.7 (1,958)
Cadillac	15.8	13.3	11.4	11.9	15.3	13.0 (1,024)
Chevrolet	19.4	26.8	19.6	16.5	17.7	20.5 (7,042)
Oldsmobile	19.1	24.0	18.3	14.3	17.1	18.2 (2,589)
Pontiac	18.3	21.5	16.5	14.4	9.3	16.8 (2,143)
FOREIGN CARS						
Volkswagen	25.6	24.4	19.2	24.5	33.3	24.4 (1,027)
Other Foreign	40.0	35.3	31.2	32.8	40.0	33.9 (859)
TOTAL	19.7	23.3	18.1	15.9	16.3	19.2 (27,363)

SAFETY BELT USAGE -- FOUR DOOR CARS

<u>MAKE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>N</u>
AMERICAN MOTORS						
AMC	18.5	22.8	19.3	31.5	18.2	21.8 (252)
CHRYSLER MOTORS						
Chrysler	20.9	13.9	19.0	13.3	5.3	16.8 (322)
Dodge	19.9	18.5	19.8	23.4	17.2	20.2 (798)
Plymouth	22.8	14.6	20.2	21.5	19.0	19.5 (939)
FORD MOTORS						
Ford	23.2	21.3	19.7	16.4	14.8	19.7 (2,492)
Lincoln	21.9	25.9	20.8	6.3	--	18.5 (119)
Mercury	16.3	18.0	20.8	15.4	15.4	17.3 (687)
GENERAL MOTORS						
Buick	16.4	16.6	19.2	13.3	19.2	16.2 (1,294)
Cadillac	12.5	12.7	15.4	18.5	14.3	15.5 (608)
Chevrolet	14.0	26.9	19.3	19.5	21.8	20.1 (2,733)
Oldsmobile	18.6	21.4	18.8	19.0	17.9	19.1 (1,291)
Pontiac	17.9	18.1	11.6	15.3	18.7	16.1 (625)
FOREIGN CARS						
Foreign, other than Volkswagen	64.2	50.0	37.7	36.9	--	45.3 (338)
TOTAL	19.2	21.7	19.8	18.1	18.1	19.5 (12,498)

CAR MAKE BY REGION
(All Model Years)

Make	East Coast		Mid-West		West Coast		Total	
	%	N	%	N	%	N	%	N
AMERICAN MOTORS								
AMC	2.9	(748)	3.0	(1,041)	2.5	(441)	2.8	(2,230)
CHRYSLER MOTORS								
Chrysler	2.0	(518)	1.7	(578)	1.9	(334)	1.8	(1,430)
Dodge	6.2	(1,614)	4.9	(1,682)	4.3	(765)	5.2	(4,061)
Plymouth	7.3	(1,900)	5.1	(1,764)	5.3	(930)	5.9	(4,594)
FORD MOTORS								
Ford	14.2	(3,673)	18.7	(6,478)	18.5	(3,255)	17.1	(13,406)
Lincoln	0.6	(150)	0.9	(325)	0.9	(158)	0.8	(633)
Mercury	3.7	(947)	4.6	(1,595)	4.2	(738)	4.2	(3,280)
GENERAL MOTORS								
Buick	8.2	(2,118)	7.5	(2,608)	5.7	(999)	7.3	(5,725)
Cadillac	3.8	(978)	3.3	(1,157)	3.7	(657)	3.6	(2,792)
Chevrolet	20.9	(5,407)	22.3	(7,737)	21.5	(3,787)	21.7	(16,931)
Oldsmobile	8.2	(2,124)	8.8	(3,059)	5.4	(958)	7.9	(6,141)
Pontiac	6.2	(1,604)	6.2	(2,142)	4.2	(731)	5.7	(4,477)
FOREIGN CARS								
Datsun	1.6	(414)	2.2	(762)	4.0	(700)	2.4	(1,876)
Mazda	0.2	(55)	0.7	(229)	1.0	(169)	0.6	(453)
Toyota	2.6	(681)	2.8	(964)	4.7	(821)	3.2	(2,466)
Volkswagen	6.7	(1,741)	3.2	(1,113)	5.7	(997)	4.9	(3,851)
Volvo	1.3	(326)	1.0	(356)	1.5	(260)	1.2	(942)
Other Foreign	3.4	(892)	3.1	(1,082)	5.0	(889)	3.7	(2,863)
TOTAL	100.0	(25,890)	100.0	(34,672)	100.0	(17,589)	100.0	(78,151)

USAGE BY CITY

<u>CITY</u>	% L/S		% L/B		TOTAL USAGE	
	<u>Usage</u>		<u>Usage</u>		<u>%</u>	<u>N</u>
Seattle	24.4		9.0		33.4	(3,491)
San Diego	17.7		11.9		29.6	(5,611)
Phoenix	13.6		12.9		26.5	(9,376)
Los Angeles	19.5		3.9		23.4	(3,823)
San Francisco	17.3		5.3		22.6	(2,466)
Dallas	12.7		9.7		22.4	(5,191)
Birmingham	17.9		4.3		22.2	(2,439)
Minn. - St. Paul	12.4		7.1		19.5	(10,543)
Atlanta	11.2		4.9		16.1	(3,068)
Chicago	9.1		5.4		14.5	(3,187)
Houston	8.8		5.3		14.1	(6,256)
Baltimore	9.6		3.5		13.1	(3,656)
Boston	10.2		2.9		13.1	(3,165)
New York	6.0		5.2		11.2	(8,981)
Fargo - Moorhead	5.2		5.9		11.1	(4,412)
Pittsburgh	7.1		3.2		10.3	(9,017)
TOTAL	11.7		6.8		18.5	(84,682)

SAFETY BELT USAGE BY
CORRECT HEAD RESTRAINT POSITION AND MODEL YEAR

	<u>1969-71</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>TOTAL</u>
	%	%	%	%	%	%	%	%
Both On	4.5	7.6	7.1	28.0	24.9	23.0	19.3	15.1 (2,562)
Lap Belt Only	11.8	14.6	16.5	1.7	1.7	1.5	2.0	7.8 (1,316)
TOTAL	16.3 (4,658)	22.2 (1,852)	23.6 (2,196)	29.7 (2,758)	26.6 (2,238)	24.5 (2,906)	21.3 (296)	22.9 (16,904)

USAGE BY MODEL YEAR - ADJUSTED BY ESTIMATED NUMBER OF CARS IN POPULATION

Model Year	Estimated Number of Cars In Population ('000)*	Percent of Cars In Population (A)	Observed Lap Belt Usage Rate (B)	Percent Lap Belt Usage In Population (AxB/100)	Observed Lap/Shoulder Usage Rate (C)	Percent Lap/Shoulder Usage In Population (AxC/100)	Observed Total Usage Rate (D)	Percent Total Usage In Population (AxD/100)
1964-67	15,038	16.1%	9.6%	1.5%	.8%	.1%	10.4%	1.7%
1968-71	29,607	31.7	10.2	3.2	4.4	1.4	14.6	4.6
1972	9,698	10.4	12.4	1.3	5.7	.6	18.1	1.9
1973	11,005	11.8	14.2	1.7	6.2	.7	20.4	2.4
1974	9,659	10.3	2.0	.2	23.2	2.4	25.2	2.6
1975	7,676	8.2	1.4	.1	19.3	1.6	20.7	1.7
1976	8,544	9.2	1.1	.1	17.4	1.6	18.5	1.7
1977	2,145	2.3	1.4	.0	15.7	.4	17.1	.4
TOTALS	93,372	100.0%	N/A	8.2%**	N/A	8.8%	N/A	17.0%

NOTE: The usage rates presented in this appendix can be compared with those in the following appendix to examine rate differences as a function of whether data are weighted according to population estimates or are left unweighted according to the obtained sample.

* Population estimates of cars in operation provided by NHTSA.

** Corrected for rounding errors.

USAGE BY MODEL YEAR - ACCORDING TO NUMBER OF CARS SAMPLED

Model Year	Number of Cars Sampled	Percent of Cars Sampled (A)	Observed Lap Belt Usage Rate (B)	Percent Lap Belt Usage In Sample (AxB/100)	Observed Lap/Shoulder Usage Rate (C)	Percent Lap/Shoulder Usage In Sample (AxC/100)	Observed Total Usage Rate (D)	Percent Total Usage In Sample (AxD/100)
1964-67	5,745	6.8%	9.6%	.7%	.8%	.1%	10.4%	.7%
1968-71	19,997	23.6	10.2	2.4	4.4	1.0	14.6	3.4
1972	8,483	10.0	12.4	1.2	5.7	.6	18.1	1.8
1973	10,460	12.4	14.2	1.8	6.2	.8	20.4	2.5
1974	13,092	15.5	2.0	.3	23.2	3.6	25.2	3.9
1975	11,010	13.0	1.4	.2	19.3	2.5	20.7	2.7
1976	13,702	16.2	1.1	.2	17.4	2.8	18.5	3.0
1977	2,197	2.6	1.4	.0	15.7	.4	17.1	.4
TOTALS	84,686	100.0%*	N/A	6.8%	N/A	11.7%*	N/A	18.5%*

NOTE: The usage rates presented in this appendix can be compared with those in the preceding appendix to examine rate differences as a function of whether data are weighted according to population estimates or are left unweighted according to the obtained sample.

* Corrected for rounding errors.