DOT HS 803 041

ACCIDENT INVOLVEMENT AND CRASH INJURY RATES BY MAKE, MODEL, AND YEAR OF CAR: A FOLLOW-UP

Amitabh K. Dutt
Donald W. Reinfurt

Highway Safety Research Center
University of North Carolina
Chapel Hill, NC 27514

Contract No. DOT HS-4-00897
Contract Amount $40,000

Final Report
January 1978

Prepared for
Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 803 041		

4. Title and Subtitle	5. Report Date
Accident Involvement and Crash Injury Rates by Make, Model, and Year of Car: A Follow-Up	June 30, 1977
	6. Performing Organization Code
	8. Performing Organization Report No.
7. Author(s)	
Amitabh K. Dutt, Donald W. Reinfurt	
9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Highway Safety Research Center University of North Carolina Chapel Hill, NC 27514	11. Contract or Grant No. DOT-HS-4-00897
	13. Type of Report and Period Covered Final Report December 1, 1975 - June 30, 1977
12. Sponsoring Agency Name and Address	14. Sponsoring Agency Code
Department of Transportation National Highway Traffic Safety Administration Nassif Building Washington, DC 20590	

15. Supplementary Notes

None

16. Abstract

This report, a follow-up to a recent study (Dutt and Reinfurt, 1977) presents estimates of annual mileages along with accident and injury rates for a variety of car sizes as well as for a number of specific vehicle makes and models. In addition, failure rates of four inspection items (headlights, stoplights, footbrakes and tires) for vehicles undergoing periodic motor vehicle inspection are examined.

The various estimates were derived using the North Carolina vehicle registration file, the North Carolina accident file, and a statewide collection of motor vehicle inspection receipts primarily from the month of December, 1975. Since the exposure period in the initial study encompassed the height of the energy crisis while the follow-up represented the post energy crisis, some useful exposure comparisons between the two periods were made possible.

With a few exceptions, the results of the two studies are quite consistent. All accident and injury rates declined with the newer models; as before, small cars generally had higher involvement and injury rates than either full or middle-sized cars. An investigation of accident driver age by size and model year of car suggests that driver age at least partially accounts for these differences. In addition, the follow-up rates were for the most part slightly higher than the rates for the initial study.

Older, small cars continued to have higher annual mileages than either full or middle-sized cars. However, in this follow-up study, the annual mileage for newer model, small-sized cars was lower than the annual mileages for the two other size groups. Also, except for new model small cars, there was an increase in estimated

(Cont' on reverse side)

17. Key Words	18. Distribution Statement
Exposure Vehicle miles of travel Crash involvement rates Driver injury and vehicle severity rates Item failure rates	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	146	

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

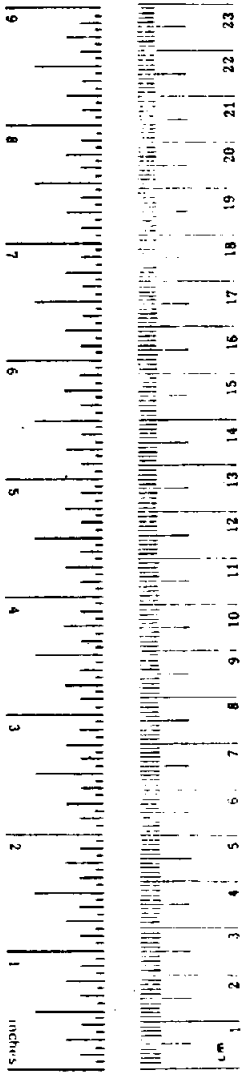
annual mileage in the post-energy crisis period.

The failure rates of the inspection items studied increased with increasing vehicle age and/or mileage, with headlight failure rates at least twice as great as those of any of the other items. The interaction between vehicle age and mileage on item failure rates found here is consistent with previous studies in this area.

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		
in^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		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	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

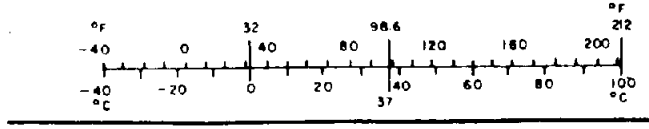


TABLE OF CONTENTS

ACKNOWLEDGEMENTS

Special recognition and thanks are expressed to many individuals whose contributions made this report possible. Particular recognition is due the North Carolina Division of Motor Vehicles, and particularly Mr. J. G. Wilson and Mr. Carl Greeson of the License and Theft Section for arranging to collect motor vehicle inspection receipts on a statewide basis. The authors also wish to especially acknowledge Ms. Jane Stutts of HSRC for her considerable help throughout this project.

Special gratitude is extended to members of the HSRC computer staff, who have devoted many hours to this project. In particular, the authors wish to thank Ms. Anita Leung, Mr. Willie Fischer, and Mr. Eric Rodgman for their efforts.

Several individuals contributed greatly during the final phase of the report presentation. These include typists Ms. Peggy James and Ms. Donna Suttles and graphic artists Ms. Rebecca Stutts and Ms. Lauren Ogle.

Finally, the authors are greatly indebted to Mr. Donald F. Mela, the Contract Technical Manager, for his guidance throughout the project.

The final report, with whatever errors and omissions it may contain, is the responsibility of the authors.

I. INTRODUCTION

This report is a follow-up to a recent study (Dutt and Reinfurt, 1977) and presents estimates of annual mileages along with crash and injury rates for a number of vehicle makes and models. As previously, vehicle-specific accident and injury rates are compared. Also in this report, failure rates of four inspection items for vehicles undergoing periodic motor vehicle inspection are examined by vehicle size, age, and accumulated mileage.

The initial Dutt and Reinfurt (1977) report discussed different measures of exposure used in highway safety and their relative merits. It is the authors' opinion that, in spite of some drawbacks, vehicle miles of travel remains the most suitable and obtainable measure of exposure. It is easily quantifiable and is proportional to the frequency of occurrence of risk situations -- two essential characteristics for any meaningful measure of exposure.

To derive the required estimates, several data sources were tapped. The exposure information was derived from paired odometer readings from a statewide sample of inspection receipts for the month of December, 1975. Using the mileage information derived from inspection receipts along with corresponding registration and accident data provided by the N.C. Division of Motor Vehicles, it was possible to obtain the necessary vehicle-specific crash and injury rates.

In the current study, the exposure period extended from January 1, 1975, to December 31, 1975, corresponding to the post energy crisis period. In contrast, the exposure period for the initial study, from October 16, 1973 to October 15, 1974, encompassed most of the energy crisis. This allowed some interesting exposure comparisons between the two periods.

The results of the current follow-up study are quite consistent with the results presented in the intial report, with a few exceptions. Thus, for example, small cars for the most part continue to have higher injury rates and higher involvement rates per million vehicle miles than full or

middle-sized cars. In terms of annual mileages, both studies indicate that in North Carolina older small-sized cars are relatively high mileage vehicles compared to full or middle-sized cars. However, a major exception in the follow-up report is that, for new model cars, the annual mileage for small-sized cars is lower than the annual mileages for the two other size groups. With this exception of new small-sized cars, regardless of car size, there was an increase in estimated annual mileage in the post energy crisis period. Evidently, this is a direct outgrowth of a diminishing concern of the motoring public over the continuing gasoline shortage.

Contrasting the involvement and injury rates for vehicles during the two exposure periods, the follow-up rates were found to be generally higher than the rates for the initial study. These higher accident and injury rates might be partially explained by the documented fact that more people were driving above the 55 mph speed limit after the energy crisis.

An examination of failure rates by vehicle size, age and accumulated mileage of four selected inspection items (headlights, stoplights, footbrakes, and tires) showed that failure rates increased with increasing age and/or mileage. Also, as expected, an interaction was found between vehicle age and mileage on failure rates.

Chapter II describes some of the procedures used in this study to estimate annual mileages, crash and injury rates and inspection failure rates by vehicle make and model year. The previous study (Dutt and Reinfurt, 1977) provides considerable details which are not repeated herein. In Chapter III, estimates of annual mileage by vehicle size and model along with the resulting comparisons are presented. Results of mileage comparisons for the two exposure periods are also included. Chapter IV presents comparisons of involvement ard injury rates by size, age, and body style of vehicle. Chapter V is a partial update of earlier work done at HSRC (Reinfurt and Pascarella, 1969; Reinfurt, House, and Levine, 1971).and contains a discussion of failure rates of some selected inspection items. Finally, Chapter VI summarizes some of the results of this study and includes recommendations for handling exposure

and accident data for future studies. Also included as a result of the investigation in Chapter V is a recommendation for consideration of a variable intensity inspection program for those states with periodic motor vehicle inspection.

II. PROCEDURE

In order to calculate the accident involvement or injury rates per million vehicle miles for any given vehicle make, three data elements are required. These are, first, the number of accidents and driver injuries associated with a particular make and model during a specified time period; second, the number of cars of that make and model registered during the same exposure period; and third, an estimate of the average mileage accumulated by these vehicles during the period.

The exposure period selected for the follow-up study extended from January 1, 1975 to December 31, 1975. This corresponded to the post energy crisis period, while the exposure period for the initial study (October 16, 1973 - October 15, 1974) included the peak of the energy crisis. Thus, comparison of annual mileage and crash and injury estimates from the two studies should provide (to some extent at least) a measure of some of the effects of the energy crisis -- especially exposure differences.

As for the initial study, accident and injury frequencies were obtained from the accident data files of the North Carolina Division of Motor Vehicles. The registration counts were determined from the North Carolina vehicle registration file, and the accumulated mileages were estimated from a statewide sample of motor vehicle inspection receipts for December 1975. Each of these data elements required rather extensive processing as outlined in the sections below. For full details, see Dutt and Reinfurt (1977).

Accident Data File

The North Carolina accident file consists of crashes reported by North Carolina city and county police officers and state highway patrolmen. Among the items included in each record in the file is the Vehicle Identification Number (VIN), which makes it possible to identify the various makes and thus to determine the number of crashes by vehicle make and model year groups.

As the exposure data essentially covered mileages accumulated over the period January 1, 1975 through December 31, 1975, the accidents

examined were those occurring during the same time period. When trucks, motorcycles, farm vehicles, bicycles and pedestrians were excluded along with those passenger cars with missing or incorrectly recorded VINs, the resulting file contained detailed accident information on approximately 140,000 passenger cars.

To examine possible biases arising from discarding accidents involving passenger cars with missing or unusable VINs, various characteristics of the two groups were compared. Tables 2.1 - 2.6 show that both groups of vehicles were similar in model year, dollar damage, vehicle severity (most severe vehicle occupant injury), and accident location by highway type distributions.

However, Table 2.2 comparing the vehicle damage severity rating (TAD) shows that the proportion of missing cases is much higher for bad VIN's. This might be explained by the fact that some enforcement agencies in a number of cities do not use the TAD system and also have relatively poor training programs. Thus, in addition to non-recording of TAD's, one would expect a lower reporting threshold for VINs, with their long string of alpha-numeric characters, from these agencies. This might account for the higher percentage of missing TAD's for the group of bad VIN's.

In Table 2.5 the proportion of vehicles with "0" occupancies is also much higher for the bad VIN's. These primarily involve parked vehicles where it is likely that the reporting officer did not have access to the driver's registration card, the usual source of VIN information. This might account for the relatively high proportion of vehicles with no occupants in the bad VIN group. With these two exceptions in Tables 2.2 and 2.5, the remaining distributions of good and bad VIN's are fairly similar. Thus, it can be assumed that, although the absolute accident involvement rates may be underestimated due to attrition in the numerators, their relative magnitudes are preserved.

For the crash rate comparisons, the accident variables considered were:

a) Type of involvement -- single vehicle accidents, multiple vehicle accidents, and <u>all</u> accidents combined.

Table 2.1. Model year distribution (percentage) for cars and station wagons.

Model Year (as noted by investigating officer)	Good VIN	Bad VIN
1960	0.3	0.4
1961	0.6	0.6
1962	1.4	1.2
1963	2.3	2.0
1964	3.5	2.8
1965	5.3	4.5
1966	6.8	5.7
1967	7.1	6.2
1968	8.9	7.8
1969	10.1	8.4
1970	7.7	15.1
1971	9.5	7.9
1972	11.5	10.4
1973	11.5	11.5
1974	9.7	10.2
1975	3.9	5.3
Total	138,984	42,440

Table 2.2. TAD severity distribution (percentage).

TAD Rating	Good VIN	Bad VIN
Unknown	32.5	63.1
1	20.8	11.2
2	17.2	9.2
3	12.1	6.5
4	8.7	5.0
5	4.2	2.4
6	2.8	1.7
7	1.6	0.9
Total	139,068	70,956

Table 2.3. Dollar damage distribution (percentage) for cars and station wagons.

Dollar Damage	Good VIN	Bad VIN
0- 199	30.0	33.8
200- 399	30.1	28.5
400- 699	20.2	18.4
700- 999	8.5	8.1
1000-1499	5.6	5.2
1500-2499	3.7	3.6
2500-4999	1.0	1.0
$\geq$ 5000	0.8	1.4
Total	139,068	70,956

Table 2.4. Vehicle severity (most severe occupant injury) distribution (percentage) for cars and station wagons.

Vehicle Severity	Good VIN	Bad VIN
Fatal	0.4	0.4
A Class	2.9	2.8
B Class	8.9	8.9
C Class	10.3	10.2
No Injury	77.5	77.6
Total	130,036	54,612

Table 2.5. Vehicle occupancy distribution (percentage) for cars and station wagons.

Vehicle Occupancy	Good VIN	Bad VIN
0	6.5	23.1
1	55.0	45.1
2	22.8	18.9
3	8.5	6.9
4	4.3	3.7
5	1.8	1.4
6 and greater	1.0	1.0
Total	139,001	70,885

Table 2.6. Highway type distribution (percentage) for cars and station wagons.

Highway Type	Good VIN	Bad VIN
Interstate	1.6	1.5
U.S.	15.3	13.1
N.C.	10.6	8.7
Rural paved road	17.4	14.6
Rural unpaved road	1.5	1.4
City street	48.3	51.0
Private property	5.2	9.7
Total	138,733	70,787

b) Driver injury -- no injury (O), any injury (C,B,A, or K), and serious injury (A or K)

where

O = no injury (property damage only)

C = slight injury

B = moderate (but no incapacitating injury)

A = incapacitating injury

K = fatal injury

(from the Manual on Classification of Motor Vehicle Traffic Accidents (ANSI D16.1), National Safety Council, Chicago, 1970.)

c) Vehicle severity (the injury level corresponding to the most severely injured occupant in the car) -- no injury, any injury, and serious injury.

In examining injury involvements, it was necessary to limit consideration to unbelted occupants. Otherwise, the evident protection offered by a given make and/or model year car might only be a reflection of particularly high belt usage (and correspondingly lower injury severities) for that make and/or model. Table 2.7 shows the distribution of belt usage by car size (luxury vs standard) and model year for the North Carolina data.

Finally, the Vehicle Identification Numbers (VIN's) from the accident records were decoded using a program developed by HSRC. The decoded vehicles were then assigned to one of 77 make/model groups (e.g., VW Beetle, Chevrolet Nova). Finally, the more common standard Chevrolet, Ford and Plymouth were additionally assigned to one of 21 body style groups (e.g., station wagon, 4-door sedan, 2-door cars).

As in the initial study, many individual vehicle makes were too few in number to enable any valid statistical comparison to be carried out. Hence, to obtain larger sample sizes, certain vehicle makes within given size groups were combined as shown in Table 2.8. The groups were formed from makes in that class with the largest number of

Table 2.7 Percentage belt usage by car size and model year.

Model Year	Luxury (e.g., Buick, Cadillac) % Use	Standard (e.g., Ford, Chevrolet) % Use
1960	0.0	0.9
1961	5.6	2.8
1962	4.7	2.0
1963	3.2	1.5
1964	2.1	3.3
1965	5.9	4.4
1966	6.0	4.6
1967	8.0	5.6
1968	8.5	6.8
1969	9.8	8.7
1970	11.7	9.4
1971	15.4	10.1
1972	16.5	13.9
1973	21.6	19.0
1974	28.3	31.7
1975	30.6	38.1

registered vehicles. Thus, for example, full-sized cars include luxury, medium and standard-sized cars, while luxury cars in turn include big Buicks, Cadillacs, and big Pontiacs. For the remainder of this report, the reader should refer to this table to determine the vehicle makes included in a particular group.

Vehicle Registration File

In order to determine the total mileage for a given make and model car (say, 1974 VW Beetles) during the period under consideration, both the estimated annual mileage for that make and model based on inspection data and the total number of such vehicles on North Carolina roads during the period was needed. By necessity, due to the scope of this study, it must be assumed that the out-of-state mileages accumulated by North Carolina vehicles will be balanced by mileages accumulated in the state by out-of-state vehicles. The extent to which this assumption is valid was examined in the RTI study (White et al., 1975).

Table 2.8 Vehicle make and size groups.

Main Group	Sub-Group		Make-Model (Example)
Full-sized cars	Luxury		Big Buick (Electra) Cadillac (Fleetwood) Big Pontiac (Bonneville)
	Medium		Medium Buick (LeSabre) Medium Oldsmobile (Delta 88) Medium Pontiac (Catalina)
	Standard		Standard Chevrolet (Impala) Standard Ford (Fairlane) Standard Plymouth (Fury)
Middle-sized cars	Intermediate		Chevrolet Chevelle (Chevelle Malibu) Intermediate Ford (Fairlane) Intermediate Oldsmobile (Cutlass) Intermediate Pontiac (LeMans)
	Compact		Chevrolet Nova Ford Maverick Ford Mustang Plymouth Valiant
Small-sized cars	Subcompact	Domestic	Chevrolet Vega Ford Pinto
		Foreign	Datsun Toyota VW Beetle VW Fastback

Vehicle - Make	Body Style
Standard Chevrolet Standard Ford Standard Plymouth	Station wagon Sedan (2-door, 4-door) Hardtop (2-door, 4-door)

In determining the total number of vehicles of a given make and model year combination exposed to accidents during the study period, HSRC used the statewide vehicle registration file maintained by the N.C. Division of Motor Vehicles. In the initial study (Dutt and Reinfurt, 1977), three vehicle registration files representing the beginning, middle and end of the exposure period were processed and a weighted registration count was derived for the various vehicle makes. Since processing an entire vehicle registration file to obtain the make-model frequencies is an expensive and time-consuming procedure, for the current follow-up study only one registration file from near the middle of the exposure period was used. (The extent to which this might affect the accident and injury rates was investigated in the initial report in Appendix G.where use of a single file was found to have no significant effect on the obtained rates other than for the newest model vehicles.) Due to administrative considerations, the registration file for May 5, 1975 was selected, although a file from the second week of June would have been preferable.

In the current follow-up study the registration frequencies for 1975 model year cars was unusually low due primarily to using the single registration file for the current model vehicles. This led to grossly inflated accident and injury rates. As a result, most of the comparisons in this report are confined to 1960-1974 model year cars.

Inspection File

In North Carolina, the previous inspection date and odometer reading along with the current inspection date, odometer reading and license plate number are recorded on the inspection receipt at the time of each car's annual inspection (see Figure 2.1). Thus, these inspection receipts provide an invaluable source of data for estimating the annual mileage of vehicles.

For this project, the North Carolina Division of Motor Vehicles collected over 260,000 inspection receipts for December 1975 from some 6,000 inspection stations throughout the state. The relevant information from these receipts (e.g., license plate number, dates of previous and current inspections, previous and current odometer readings, vehicle type and the status of headlights, stoplights, footbrakes

Figure 2.1

North Carolina Motor Vehicle Inspection Receipt

NORTH CAROLINA DEPARTMENT OF MOTOR VEHICLES

RECEIPT AND STATEMENT COVERING VEHICLE INSPECTION

OWNER John Doe

ADDRESS 17 University Lane

CITY Chapel Hill

LICENSE PLATE	MAKE OF VEHICLE	YEAR	VEHICLE IDENTIFICATION NUMBER
KAH 140	Plymouth	1973	VL41C5R206291

MILEAGE: 27,814

TYPE OF VEHICLE: ☑ AUTO ☐ TRUCK ☐ TRAILER ☐ STA. WAGON ☐ BUS ☐ MOTORCYCLE

COPY FROM PREVIOUS INSPECTION CERTIFICATE

MILEAGE: 16,925

Month of Previous Inspection: ☑ JAN ☐ FEB ☐ MAR ☐ APRIL ☐ MAY ☐ JUNE ☐ JULY ☐ AUG ☐ SEPT ☐ OCT ☐ NOV ☐ DEC

SAFETY EQUIPMENT	APPROVED INITIALLY	DISAPPROVED INITIALLY	CORRECTED DURING INSPECT.	REINSPECTED & APPROVED
HEADLIGHTS		✓	✓	
BEAM INDICATOR LIGHT	✓			
PARKING LIGHTS	✓			
LICENSE PLATE LIGHT	✓			
TAIL LIGHTS	✓			
STOP LIGHTS	✓			
CLEARANCE LIGHTS	✓			
DIRECTIONAL SIGNALS	✓			
FOOT BRAKE		✓	✓	
EMERGENCY BRAKE	✓			
STEERING MECHANISM	✓			
WINDSHIELD WIPER	✓			
HORN	✓			
TIRES	✓			
REAR VIEW MIRRORS	✓			
EXHAUST EMISSION CONTROLS	✓			
EXHAUST SYSTEM	✓	Defective	If defective, do not reject vehicle, inform operator of condition.	

INSPECTION FEE COLLECTED $3.00 REPAIR CHARGE MADE $

STATION NO.	DATE	MECHANIC'S SIGNATURE
1168	12-23-75	Ted Smith

INSPECTION NO. 1619854 CERTIFICATE

REINSPECTION DATE	MECHANIC'S SIGNATURE

DISAPPROVED EQUIPMENT MAY BE REPAIRED BY THE OWNER OR AT A FIRM OF THE OWNER'S CHOICE AND BE REINSPECTED FREE OF CHARGE WITHIN 90 DAYS UPON PRESENTATION OF THIS RECEIPT TO THE SAME STATION CONDUCTING THE ORIGINAL INSPECTION; HOWEVER, THE INSPECTION DEADLINE IS NOT EXTENDED. OPERATION WITHOUT CURRENT "INSPECTION CERTIFICATE" OR DEFECTIVE EQUIPMENT SUBJECTS THE OPERATOR TO ARREST ACTION. INSPECTION FEE $3.00.

YOUR SAFETY IS ON THE LINE! C522495

MOORE BUSINESS FORMS, INC., RALEIGH, N. C.

and tires) was then keypunched and stored on tape. As the inspection mechanic frequently erred in recording the VIN (a lengthy alpha-numeric string of characters), it was necessary to derive the VIN from the license plate number. This fairly involved process entailed using the very lengthy registration and title files maintained by the North Carolina Division of Motor Vehicles.

Once the vehicle inspection file had the VIN appended to each inspection record, only the mileage covered between the two inspection dates and the corresponding time period needed to be ascertained for obtaining an estimate of annual mileage by vehicle make and model year. Appendix A describes details involved in this process.

It should be noted that, as in the initial effort, a disappointingly large proportion of the inspection receipts could not be used for one reason or another -- missing data, illegible entries, non-passenger car, etc. To ascertain that the resulting sample was not biased, the usable receipts were compared with the unusable receipts, primarily by vehicle type and model year. The details of the comparisons are presented in Appendix B. As previously, there are generally no important differences between the two groups.

Involvement Rates

The procedures described in the preceding sections were used to obtain data on accident involvements and injury frequencies, registration counts, and average annual mileages for the 77 HSRC make/model groups along with the additional 21 body style groups for 1960 to 1975 model years. From these data elements, accident and injury rates per million vehicle miles were determined. Thus, for example, the overall accident rate for 1974 VW's was computed from the following expression.

$$\text{Acc. Rate ('74 VW)} = \frac{\left(\begin{array}{c}\text{Number of '74 VW's in accidents}\\ \text{during the exposure period}\end{array}\right)}{\left(\begin{array}{c}\text{Number of '74 VW's}\\ \text{registered in N.C.}\\ \text{during the exposure}\\ \text{period}\end{array}\right)\left(\begin{array}{c}\text{Estimated average}\\ \text{mileage of '74}\\ \text{VW's during the}\\ \text{exposure period}\end{array}\right)} \times 10^6$$

To obtain the single vehicle accident involvement of, for example, 1974 VW's required replacing the above numerator with "number of 1974 VW's involved in single vehicle accidents during the exposure period."

To enable comparisons of accident and injury rates for different vehicle sizes, the computer program was set up so that a variable number of make/model groups and/or model years could be combined. This was necessary because of a paucity of data for many of the groups. In addition, again due to the sparcity of inspection data in some of the less common groups, fitted estimates of the annual mileages were used in place of the observed average mileages.

Annual Mileage

As is illustrated in Table 2.9 (and was seen in Dutt, Reinfurt, 1977), the observed mileages based on the sample of inspection receipts

Table 2.9 Annual mileage of Standard Chevrolet -- observed vs. fitted (or smoothed).

Model Year	Sample Size	Observed Mileage	Fitted Mileage
1960	108	6194	6999
1961	131	6337	7322
1962	303	8092	7673
1963	382	9378	8053
1964	565	9405	8462
1965	623	9744	8900
1966	702	9381	9366
1967	696	9314	9861
1968	939	10079	10385
1969	887	10390	10938
1970	880	11291	11519
1971	458	11943	12129
1972	981	11870	12769
1973	999	13176	13436
1974	683	14617	14133
1975	252	15593	14858

are highly correlated with vehicle age. When there are ample observations, using the observed mileages would cause no difficulties. However, for many of the 77 HSRC groups and indeed for most of the 21 body style groups, the elapsed mileages derived from the inspection receipts are based on rather small sample sizes. In such cases, the observed annual mileages were replaced by "fitted" mileages. The fitted mileages were derived using least squares fitting techniques for those data points (model years) with adequate sample sizes. Thus, the make/model/year mileage estimates represent smoothed estimates.

Using the mid-point registration counts and the smoothed mileage estimates, along with the corresponding accident frequencies (e.g., overall, single vehicle), the derivation of the corresponding involvement rates is a straightforward process. Tables 2.10, 2.11, and 2.12 give illustrative results for various model year groups of standard-sized cars (Ford and Chevrolet), luxury cars (Cadillac, Buick Electra, and Pontiac Bonneville), and subcompact cars (Vega, Pinto, Toyota, Datsun, and VW Beetle).

A discussion of mileage differences by size and/or age of vehicle is presented in Chapter III, while the comparison of involvement rates is detailed in Chapter IV. Throughout comparisons are made with the results obtained in Dutt, Reinfurt (1977). There is generally a reassuring consistency in the results which should be comparable. Of special interest is the comparison of average annual mileages for the two periods since the first included the peak period of the "energy crisis" while the latter contained exposure derived from the so-called "post-energy crisis" period.

Adjustments for Driver Age Differences

Research has shown that younger drivers are more likely to be involved in accidents than other age drivers. The initial Dutt and Reinfurt (1977) study showed that in North Carolina in relation to their proportion in the driving population, younger drivers of both sexes are more involved in accidents than older drivers. Thus, if the proportion

Table 2.10 Standard Chevrolet and Ford.

	INSPECTION		REG. FILE		ACCIDENT INVOLVEMENT								
					ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (&+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (&+K)
1960	138	6947	5156	28	151	187	150	37	5	140	47	7
1961	194	7242	7067	44	277	326	267	59	12	248	78	18
1962	417	7611	14148	119	555	703	556	147	26	517	186	37
1963	593	7977	22971	207	897	1135	922	213	31	848	287	44
1964	919	8391	29962	249	1208	1518	1236	282	42	1175	343	55
1965	1104	8833	36032	326	1590	1989	1608	381	66	1488	501	79
1966	1272	9315	42568	331	1942	2471	1927	444	58	1798	573	83
1967	1301	9829	39807	336	1910	2529	1910	419	69	1786	543	91
1968	1530	10378	44209	316	1988	2376	2014	362	48	1898	478	61
1969	1736	10960	50480	316	2360	2789	2343	446	60	2231	558	76
1970	1651	11575	45408	209	1327	1604	1342	262	33	1266	338	46
1971	1271	12238	41218	211	1725	2016	1727	289	44	1625	391	54
1972	1833	12895	47588	209	1999	2300	1949	351	39	1855	445	49
1973	1824	13614	45778	187	1924	2204	1876	328	49	1776	428	62
1974	1107	14326	26605	122	1185	1366	1187	179	26	1121	245	34
1975	393	15100	7393	35	398	463	404	59	10	386	77	11
TOTAL	17283	10875	506330	3245	21436	25676	21418	4258	618	20158	5518	807

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.78	4.22	5.22	4.19	1.03	.14	3.91	1.31	.20
1961	.86	5.41	6.37	5.22	1.15	.23	4.85	1.52	.35
1962	1.11	5.15	6.53	5.16	1.37	.24	4.80	1.73	.34
1963	1.13	4.90	6.19	5.03	1.16	.17	4.63	1.57	.24
1964	.99	4.80	6.04	4.92	1.12	.17	4.67	1.36	.22
1965	1.02	5.00	6.25	5.05	1.20	.21	4.68	1.57	.25
1966	.83	4.90	5.98	4.86	1.12	.15	4.53	1.45	.21
1967	.86	4.88	5.95	4.68	1.07	.18	4.56	1.39	.23
1968	.69	4.33	5.18	4.39	.79	.10	4.14	1.04	.13
1969	.57	4.27	5.04	4.23	.81	.11	4.03	1.01	.14
1970	.40	2.52	3.05	2.55	.50	.06	2.41	.64	.09
1971	.42	3.42	4.00	3.42	.57	.09	3.22	.78	.11
1972	.34	3.26	3.75	3.18	.57	.06	3.02	.73	.08
1973	.30	3.09	3.54	3.01	.53	.08	2.85	.69	.10
1974	.32	3.11	3.58	3.11	.47	.07	2.94	.64	.09
1975	.31	3.57	4.15	3.62	.53	.09	3.46	.69	.10
TOTAL	.59	3.89	4.66	3.89	.77	.11	3.66	1.00	.15

Table 2.11 Luxury cars (Cadillac, Buick Electra, and Pontiac Bonneville).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
		FITTED		ACCIDENT TYPE			DRIVER INJURY		VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
60-65	472	7610	15679	94	641	767	641	126	21	603	164	24
66-70	1913	10176	56397	333	2609	3065	2609	456	53	2471	594	70
71-75	2151	12525	55807	181	2080	2370	2082	288	31	1982	388	40
TOTAL	4536	10888	127883	608	5330	6202	5332	870	105	5056	1146	134

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
60-65	.79	5.37	6.43	5.37	1.06	.18	5.05	1.37	.20
66-70	.58	4.55	5.34	4.55	.79	.09	4.30	1.03	.12
71-75	.26	2.98	3.39	2.98	.41	.04	2.84	.56	.06
TOTAL	.44	3.83	4.45	3.83	.62	.08	3.63	.82	.10

Table 2.12 Subcompact cars (Vega, Pinto, Toyota, Datsun, and VW Beetle)

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY	
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	17	9164	832	12	33	47	35	12	2	33	14	2
1961	22	9398	1166	13	50	65	46	19	2	40	25	2
1962	44	9648	1765	18	74	96	67	29	6	64	32	8
1963	69	9772	3205	31	131	169	133	36	9	119	50	11
1964	101	9967	4099	41	169	220	164	56	11	153	67	12
1965	163	10214	6061	80	270	363	261	102	21	239	124	28
1966	235	10295	7642	100	315	431	305	126	22	281	150	23
1967	281	10485	8908	102	376	484	347	137	21	329	155	26
1968	346	10835	10570	92	498	611	463	148	28	428	183	32
1969	492	11000	13936	125	676	820	600	220	29	568	252	35
1970	592	11331	15873	138	796	972	735	237	38	692	280	53
1971	1248	11564	34904	354	1949	2385	1845	540	80	1737	648	95
1972	1502	11895	40963	460	2594	3149	2494	655	92	2369	780	109
1973	1247	12216	42205	472	2519	3094	2437	657	88	2304	790	110
1974	1726	12568	44669	517	2586	3202	2524	678	89	2400	802	104
1975	290	13117	6370	166	745	949	723	226	32	691	258	38
TOTAL	8389	11683	243168	2721	13781	17057	13179	3878	570	12447	4610	688

	RATES PER BILLION MILES											
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY					
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.			
1960	1.57	4.33	6.16	4.59	1.57	.26	4.33	1.84	.26			
1961	1.19	4.56	5.93	4.20	1.73	.18	3.65	2.28	.18			
1962	1.06	4.35	5.64	3.93	1.70	.35	3.76	1.88	.47			
1963	.99	4.18	5.40	4.25	1.15	.29	3.80	1.60	.35			
1964	1.00	4.14	5.38	4.01	1.37	.27	3.74	1.64	.29			
1965	1.29	4.36	5.86	4.22	1.65	.34	3.86	2.00	.45			
1966	1.27	4.00	5.48	3.88	1.60	.28	3.57	1.91	.29			
1967	1.09	4.03	5.18	3.72	1.47	.22	3.52	1.66	.28			
1968	.80	4.35	5.34	4.04	1.29	.24	3.74	1.60	.28			
1969	.82	4.41	5.35	3.91	1.44	.19	3.71	1.64	.23			
1970	.77	4.43	5.40	4.09	1.32	.21	3.85	1.56	.29			
1971	.88	4.83	5.91	4.57	1.34	.20	4.30	1.61	.24			
1972	.94	5.32	6.46	5.12	1.34	.19	4.86	1.60	.22			
1973	.92	4.89	6.00	4.73	1.27	.17	4.47	1.53	.21			
1974	.92	4.61	5.70	4.50	1.21	.16	4.28	1.43	.19			
1975	1.99	8.92	11.36	8.65	2.70	.38	8.27	3.09	.45			
TOTAL	.96	4.85	6.00	4.64	1.67	.20	4.38	1.62	.24			

of young drivers varies substantially from one vehicle make to the next, then driver age is a factor that could differentially influence vehicle crash rates.

In the initial report two procedures were examined for taking into consideration driver characteristics when making accident rate comparisons. Neither seemed particularly satisfactory due to data limitations. Unfortunately, however, in the interim period, no additional suitable data source has become available, for example, to utilize in partitioning vehicle-specific exposure data by driver groups. Therefore, in the current study no attempt was made to adjust accident and injury rates for driver characteristics.

However, Table 2.13 (obtained from the North Carolina accident file for 1975) does show that the mean age of drivers involved in accidents for small-sized cars is consistently lower than the mean driver age for full or middle-sized cars. This should at least partially account for the higher involvement rates for small-sized cars. It also provides a plausible explanation for the especially high rates for the newer small-sized cars since the age differences (especially between full-sized and small-sized cars) become increasingly disparate.

Table 2.13 shows another interesting aspect of the vehicle size -- accident driver age distribution. While the mean driver age is low for the intermediate model years for full and middle-sized cars and starts rising for the newer model years, the average driver age for accident-involved small cars remains fairly constant. Possibly this is primarily a function of the VW Beetle dominating this size class up until the 1970 model.

Comparison of Involvement Rates

Chapter IV presents involvement rates for a variety of make/model/year combinations and results of statistical tests of significance for differences in rates by size of car, etc. The major assumption made in this analysis is that the number of involvements for a particular make/model/year with a given exposure has a Poisson distribution. See Sichel (1965) for background information.

Table 2.13 Average driver age by model year for accident-involved full, middle, and small-sized cars.

Model Year	Vehicle Size: Full-Sized Cars			Middle-Sized Cars			Small-Sized Cars		
	Mean	Standard Deviation	Sample Size	Mean	Standard Deviation	Sample Size	Mean	Standard Deviation	Sample Size
1960	38.00	19.11	292	40.03	22.29	30	26.35	14.83	48
1961	37.40	19.71	474	34.39	18.08	128	26.54	12.63	67
1962	35.73	18.05	1,035	34.63	18.98	426	26.68	12.74	99
1963	35.28	18.03	1,695	34.75	19.13	683	28.57	14.14	179
1964	35.27	17.86	2,406	33.56	18.21	1,125	28.14	13.24	222
1965	35.48	17.10	3,220	29.92	16.02	1,995	27.62	12.90	376
1966	36.18	17.64	3,976	29.29	15.42	2,871	26.80	12.50	455
1967	36.34	17.13	4,131	28.99	14.91	2,613	27.67	12.55	496
1968	37.05	17.14	4,727	29.35	14.47	3,481	27.05	11.96	624
1969	37.73	16.59	5,324	29.50	14.89	3,845	27.46	11.81	843
1970	38.15	16.41	3,287	29.88	14.72	3,244	29.07	13.34	1,017
1971	39.35	16.28	3,772	30.54	14.69	3,168	27.68	11.96	2,508
1972	40.76	15.78	4,211	30.58	14.42	3,843	27.28	11.81	3,284
1973	40.85	15.33	4,113	30.27	14.02	3,784	26.77	10.97	3,262
1974	40.07	15.01	2,386	32.05	14.54	2,916	26.68	11.34	3,350
1975	40.79	15.06	1,093	34.06	14.88	1,022	26.75	11.15	989
Overall	37.89	16.82	46,136	30.45	15.11	35,174	27.22	11.80	17,819

Specifically, for make/model/year group 1 and involvement type i (e.g., single vehicle accidents), let

n_{1i} = number of involvements

$\hat{M}_1$ = estimated annual mileage

N_1 = registration count

Then the accident involvement rate per million vehicle miles is given by

$$\lambda_{1i} = \frac{n_{1i}}{\hat{M}_1 N_1} \times 10^6$$

and correspondingly for make/model/year group 2. Then $\rho_i = \frac{\lambda_{1i}}{\lambda_{2i}}$ provides a natural estimate of the relative performance of the two groups (i.e., a relative mean occurrence rate). Thus, for example, if $\rho_i < 1$, then vehicle group 1 is less involved in accident type i than is vehicle group 2.

In Chapter IV, the hypotheses being tested are that $\rho_i = 1$ although the confidence interval setup allows for more general hypotheses, i.e., $\rho_i = \rho_0$. Statistical details are more completely described in Appendix E in Dutt and Reinfurt (1977).

III. ANNUAL MILEAGE

This chapter presents annual mileage estimates by vehicle age, make and body style. The estimates were derived from information recorded on motor vehicle inspection receipts collected for the month of December 1975. Thus, the exposure period covered is approximately January 1, 1975 to December 31, 1975. The estimates are presented both in graphical and tabular form, and then compared with corresponding estimates from the initial study, which was based on the exposure period October 16, 1973, to October 15, 1974, encompassing the peak of the "energy crisis".

As mentioned in Chapter II, the annual mileage estimates are obtained using a least squares fit; however, in this section the various mileage comparisons are based on actual sample means from the inspection receipts. The comparison methodology is based on the procedure described by Snedecor and Cochran (1968).

Vehicle Size Comparisons

Tables 3.1 - 3.3 (Figures 3.1 - 3.3) present annual mileages for the various vehicle size categories. (Refer to Table 2.8 for a listing of the vehicle makes included in each category.) Table 3.1 (Figure 3.1) shows trends which are similar to those found in the initial study, with the older small-sized cars having higher annual mileages than full or middle-sized cars, and the newer small-sized cars having lower annual mileages than their larger counterparts.

Table 3.2 (Figure 3.2) compares the annual mileage estimates for luxury, medium and standard-sized cars, while Table 3.3 (Figure 3.3) presents the corresponding estimates for intermediate, compact and subcompact-sized cars. The trends in these tables and graphs are again comparable to the trends in the initial study. A major exception would be the relatively lower mileages for the newer model subcompacts.

Body Style Comparisons

Tables 3.4 and 3.5 (Figures 3.4 and 3.5) compare the annual mileage estimates for sedans, hardtops and station wagons as well as two-door

Table 3.1 Annual mileage for full-sized, middle-sized, and small-sized cars by model year.

Model Year	Annual Mileage (in thousands)			Mileage Comparisons		
	Full (F)	Middle (M)	Small (S)	F-M	F-S	M-S
'60	6.6	6.9	9.2	*	S	S
'61	7.1	7.3	9.4	*	*	*
'62	7.5	7.5	9.6	*	S	S
'63	7.9	7.8	9.8	*	S	S
'64	8.3	8.4	10.0	*	*	*
'65	8.8	8.9	10.2	*	S	S
'66	9.2	9.2	10.3	*	*	*
'67	9.7	9.6	10.5	*	S	S
'68	10.3	10.0	10.8	*	S	*
'69	10.9	10.5	11.0	*	*	*
'70	11.5	11.0	11.3	*	*	*
'71	12.1	11.7	11.6	*	*	*
'72	12.7	12.5	11.9	*	*	*
'73	13.4	13.2	12.2	*	*	*
'74	14.0	13.9	12.6	F	F	*
'75	14.6	14.9	13.1	*	F	M
'60-'65	8.1	8.3	9.9	*	S	S
'66-'70	10.4	10.2	10.9	*	S	S
'71-'75	13.1	12.9	12.1	*	F	M
Overall	10.9	11.0	11.7	*	S	S

*No significant difference at α =.05;
F,M,S - vehicle having the higher annual mileage.

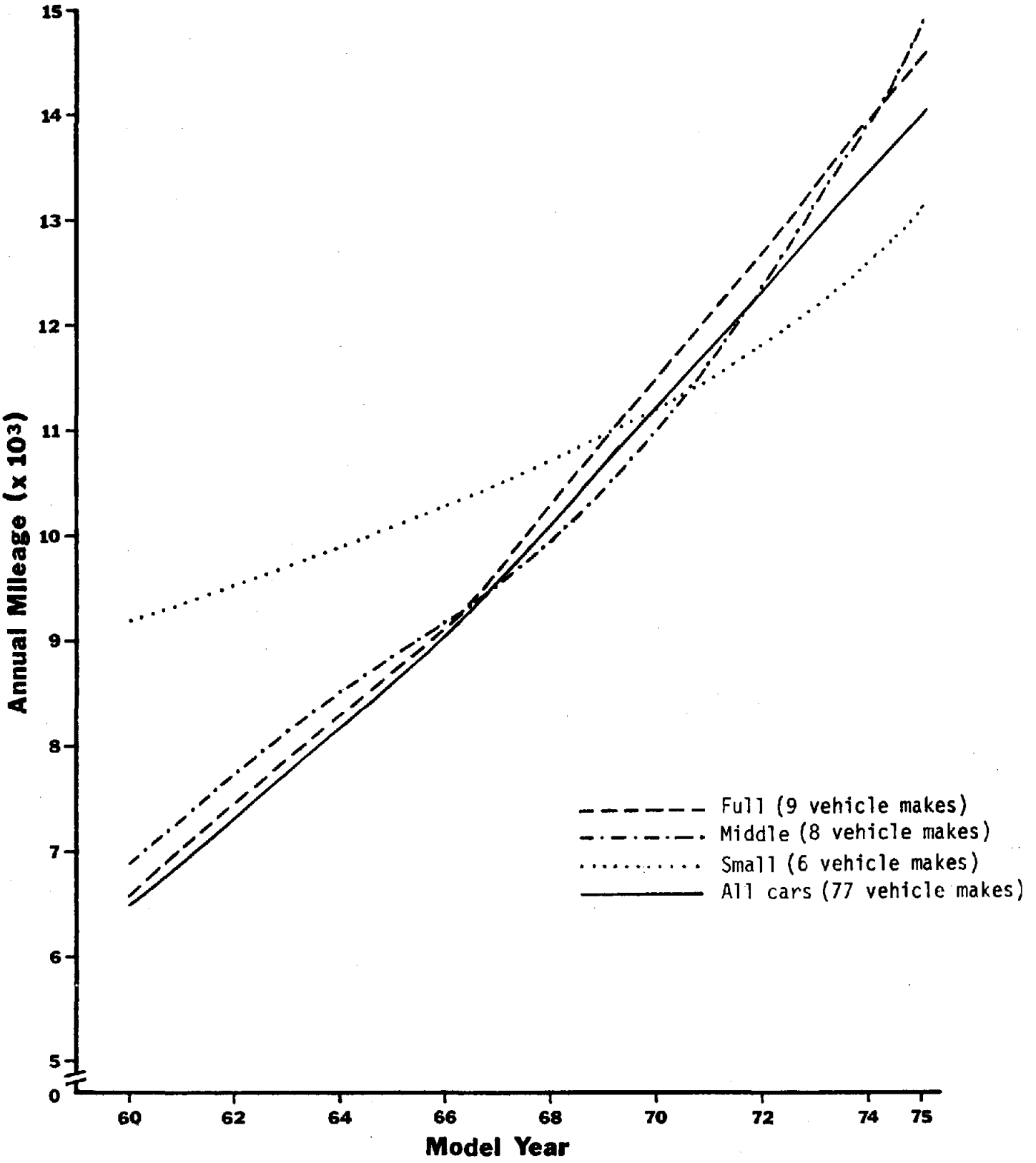


Figure 3.1 Annual mileage for full, middle, and small-sized cars and all cars combined.

Table 3.2 Annual mileage for luxury, medium, and standard cars by model year.

Model Years	Annual Mileage (in thousands)			Mileage Comparisons		
	Luxury (L)	Medium (M)	Standard (St)	L-M	L-St	M-St
'60	5.0	5.8	7.0	*	*	*
'61	6.1	6.5	7.3	*	*	*
'62	6.7	7.0	7.7	*	St	*
'63	7.3	7.5	8.0	*	St	St
'64	7.8	8.1	8.4	*	*	*
'65	8.4	8.6	8.8	*	*	*
'66	8.9	9.2	9.3	*	*	*
'67	9.5	9.8	9.8	*	*	*
'68	10.0	10.3	10.3	*	*	*
'69	10.6	10.9	10.9	*	*	*
'70	11.1	11.4	11.6	*	*	*
'71	11.6	12.0	12.3	*	*	St
'72	12.2	12.6	12.9	*	St	*
'73	12.7	13.1	13.7	*	*	*
'74	13.1	13.7	14.4	M	St	*
'75	13.7	14.2	15.2	*	*	*
'60-'65	7.6	7.8	8.3	*	*	*
'66-'70	10.2	10.4	10.4	*	*	*
'71-'75	12.5	12.9	13.3	*	St	St
Overall	10.9	11.0	10.9	*	*	*

*No significant difference at $\alpha = .05$;
L,M,St - vehicle having the higher annual mileage

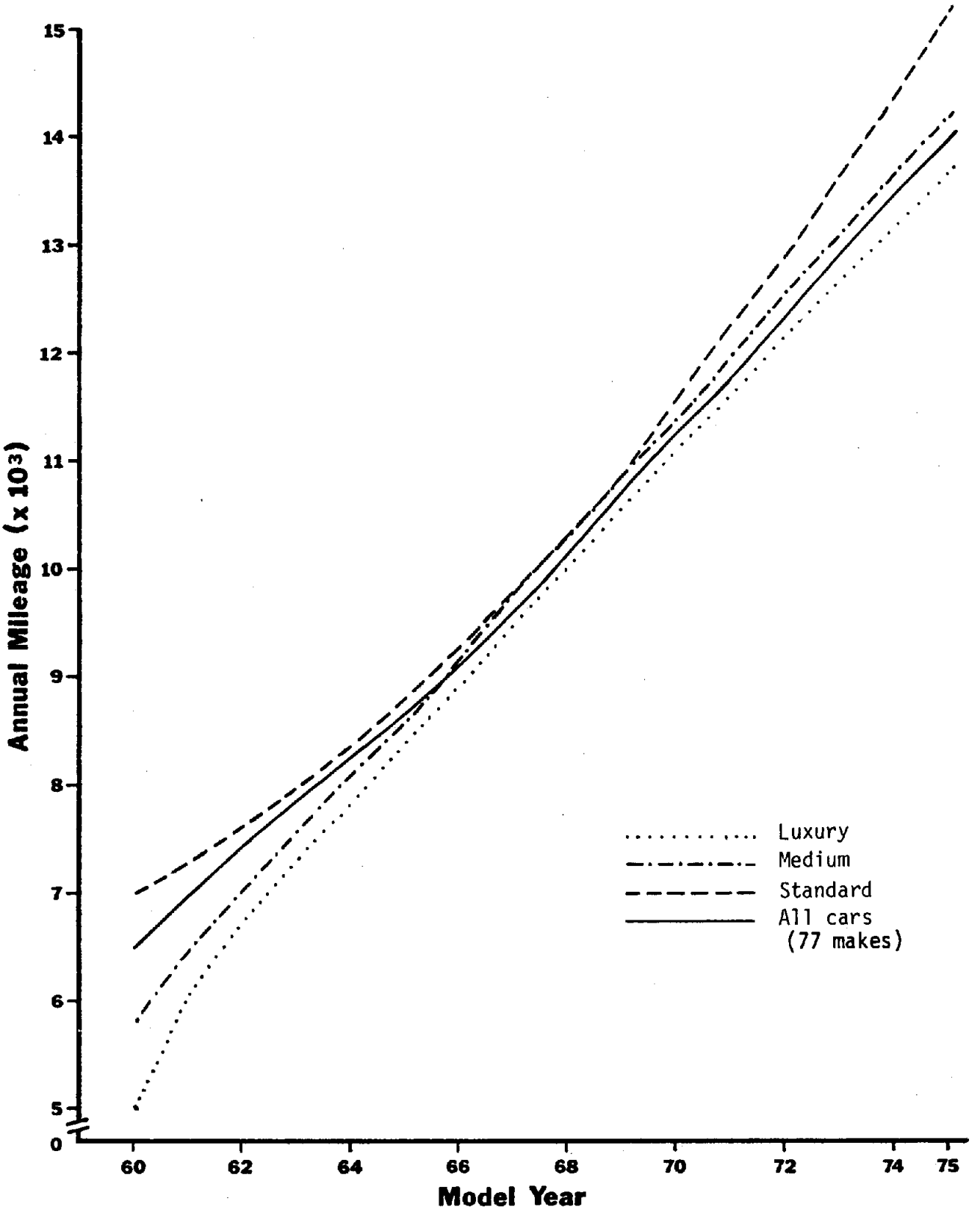


Figure 3.2 Annual mileage for luxury, medium, and standard-sized cars and all cars combined.

Table 3.3 Annual mileage for intermediate, compact and subcompact cars by model year.

Model Years	Annual Mileage (in thousands)			Mileage Comparisons		
	Intermediate (I)	Compact (C)	Subcompact (Sc)	I-C	I-Sc	C-Sc
'60	--	6.9	9.2	--	--	Sc
'61	6.4	7.4	9.4	*	Sc	Sc
'62	7.6	7.5	9.6	*	Sc	Sc
'63	7.8	7.7	9.8	*	Sc	Sc
'64	8.5	8.2	10.0	*	Sc	Sc
'65	8.7	9.0	10.2	*	Sc	Sc
'66	9.0	9.5	10.3	*	*	*
'67	9.4	10.0	10.5	*	Sc	Sc
'68	9.9	10.3	10.8	*	*	*
'69	10.5	10.8	11.0	*	*	*
'70	11.1	10.9	11.3	*	*	*
'71	11.9	11.6	11.6	*	*	*
'72	12.8	12.0	11.9	*	*	*
'73	13.6	12.4	12.2	I	I	*
'74	14.5	13.0	12.6	I	I	*
'75	15.5	13.1	13.1	I	I	*
'60-'65	8.4	8.2	9.9	*	Sc	Sc
'66-'70	10.1	10.3	10.9	*	Sc	Sc
'71-'75	13.4	12.3	12.1	I	I	*
Overall	11.3	10.6	11.7	I	Sc	Sc

*No significant difference at $\alpha = .05$
I,C,Sc - vehicle having the higher annual mileage.

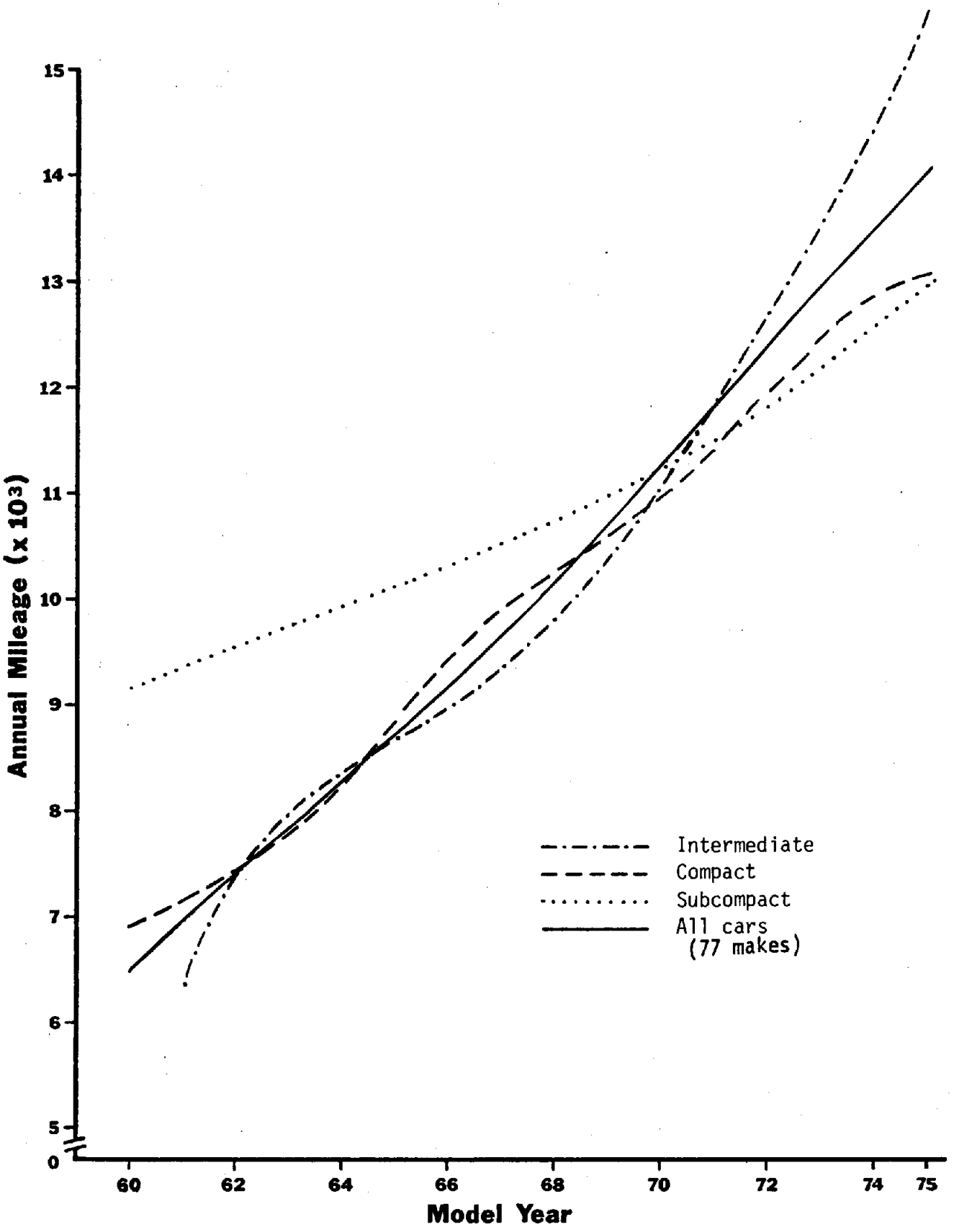


Figure 3.3 Annual mileage for intermediate, compact, and subcompact cars and all cars combined.

and four-door standard-sized cars. As expected, standard-sized station-wagons have higher annual mileages than standard-sized sedans or hard-tops. Also, new standard-sized four-door cars have higher annual mileages than their two-door counterparts.

Table 3.4 Annual mileage for standard-sized hardtops, sedans and stationwagons.

Model Years	Annual Mileage (in thousands)			Mileage Comparisons		
	Hardtop (Ht)	Sedans (Se)	Station Wagon(Sw)	Ht-Se	Ht-Sw	Se-Sw
'60	6.6	5.9	7.2	*	*	*
'61	7.4	6.5	7.5	*	*	*
'62	8.3	7.1	7.9	Ht	Ht	Sw
'63	8.6	7.7	8.3	*	*	*
'64	9.0	8.3	8.8	*	*	*
'65	9.3	8.9	9.3	*	*	*
'66	9.6	9.4	9.9	*	*	Sw
'67	9.9	10.0	10.5	*	*	*
'68	10.3	10.6	11.1	*	Sw	Sw
'69	10.7	11.2	11.7	*	*	*
'70	11.3	11.9	12.3	*	*	*
'71	11.9	12.5	13.0	*	*	*
'72	12.5	13.0	13.6	*	*	Sw
'73	13.2	13.6	14.3	*	Sw	*
'74	14.0	14.0	15.0	*	Sw	Sw
'75	14.6	14.4	15.8	*	Sw	Sw
'60-'65	8.8	7.8	9.3	Ht	*	*
'66-'70	10.4	10.5	11.3	*	Sw	Sw
'71-'75	12.8	13.4	13.8	Se	Sw	Sw
Overall	10.8	10.8	11.9	*	Sw	Sw

*No significant difference at $\alpha = .05$
Ht,Se,Sw - vehicle size having the higher annual mileage.

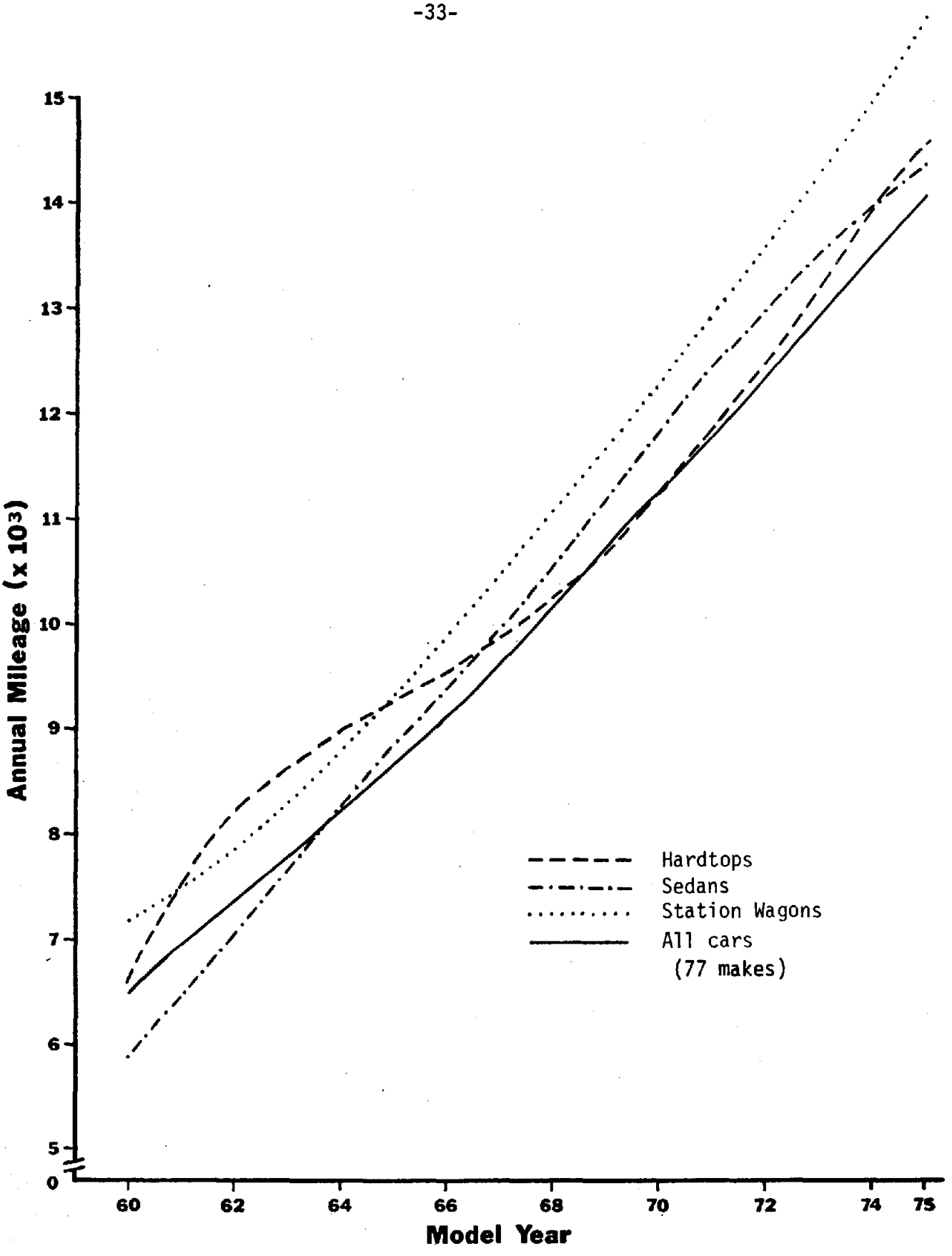


Figure 3.4 Annual mileage for standard-sized station wagons, hardtops, and sedans and all cars combined.

Table 3.5 Annual mileages for standard-sized four-door and two door vehicles by model year.

Model Year(s)	Annual Mileage (in thousands)		Mileage Comparisons
	Four-Door(4d)	Two-Door(2d)	4d-2d
'60	6.5	7.0	*
'61	6.8	7.2	*
'62	7.3	7.8	*
'63	7.7	8.2	2d
'64	8.2	8.6	*
'65	8.8	9.1	2d
'66	9.4	9.5	*
'67	9.9	10.0	*
'68	10.5	10.5	*
'69	11.2	10.9	*
'70	11.8	11.4	*
'71	12.5	11.9	*
'72	13.1	12.3	*
'73	13.8	12.8	4d
'74	14.6	13.2	4d
'75	15.3	13.7	4d
'60-'65	8.1	8.5	2d
'66-'70	10.8	10.3	*
'71-'75	13.6	12.6	4d
Overall	11.1	10.5	4d

*No significant difference at $\alpha = .05$
2d,4d - vehicle size having the higher annual mileage.

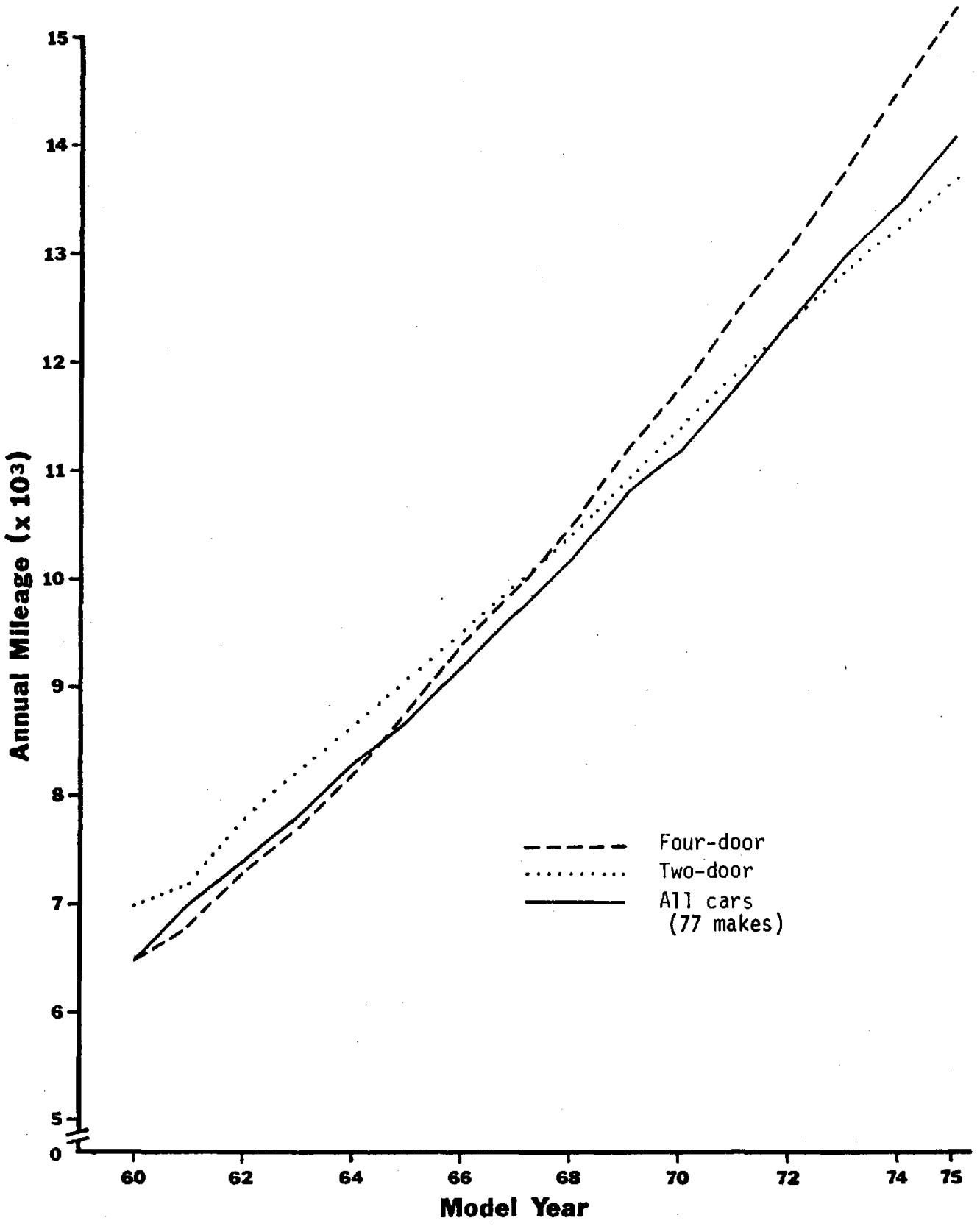


Figure 3.5 Annual mileage for standard-sized four-door, two-door cars and all cars combined.

Make Comparisons

Tables 3.6 and 3.7 (Figures 3.6 and 3.7) show the annual mileages for a representative make from each of the six basic vehicle size groups (luxury, medium, standard, intermediate, compact and subcompact). Note, for example, that the VW has the highest annual mileage for all but the latest model years. However, since the sample sizes were very small, no statistical tests were carried out for any of these individual vehicle makes.

Table 3.6 Annual mileage for the luxury big Buick (Electra), medium Buick (Le Sabre), and standard Chevrolet (Impala).

Model Years	Annual Mileage (in thousands)		
	Big Buick (Electra)	Medium Buick (Le Sabre)	Standard Chevrolet (Impala)
'60	--	6.2	7.0
'61	6.5	6.8	7.3
'62	7.0	7.3	7.7
'63	7.6	7.8	8.1
'64	8.1	8.3	8.5
'65	8.7	8.8	8.9
'66	9.2	9.3	9.4
'67	9.7	9.8	9.9
'68	10.3	10.4	10.4
'69	10.8	10.9	10.9
'70	11.4	11.4	11.5
'71	11.9	11.9	12.1
'72	12.4	12.4	12.8
'73	13.0	12.9	13.4
'74	13.5	13.4	14.1
'75	14.1	14.0	14.9
'60-'65	8.0	8.0	8.2
'66-'70	10.5	10.5	10.4
'71-'75	12.8	12.7	13.2
Overall	11.4	10.9	10.7

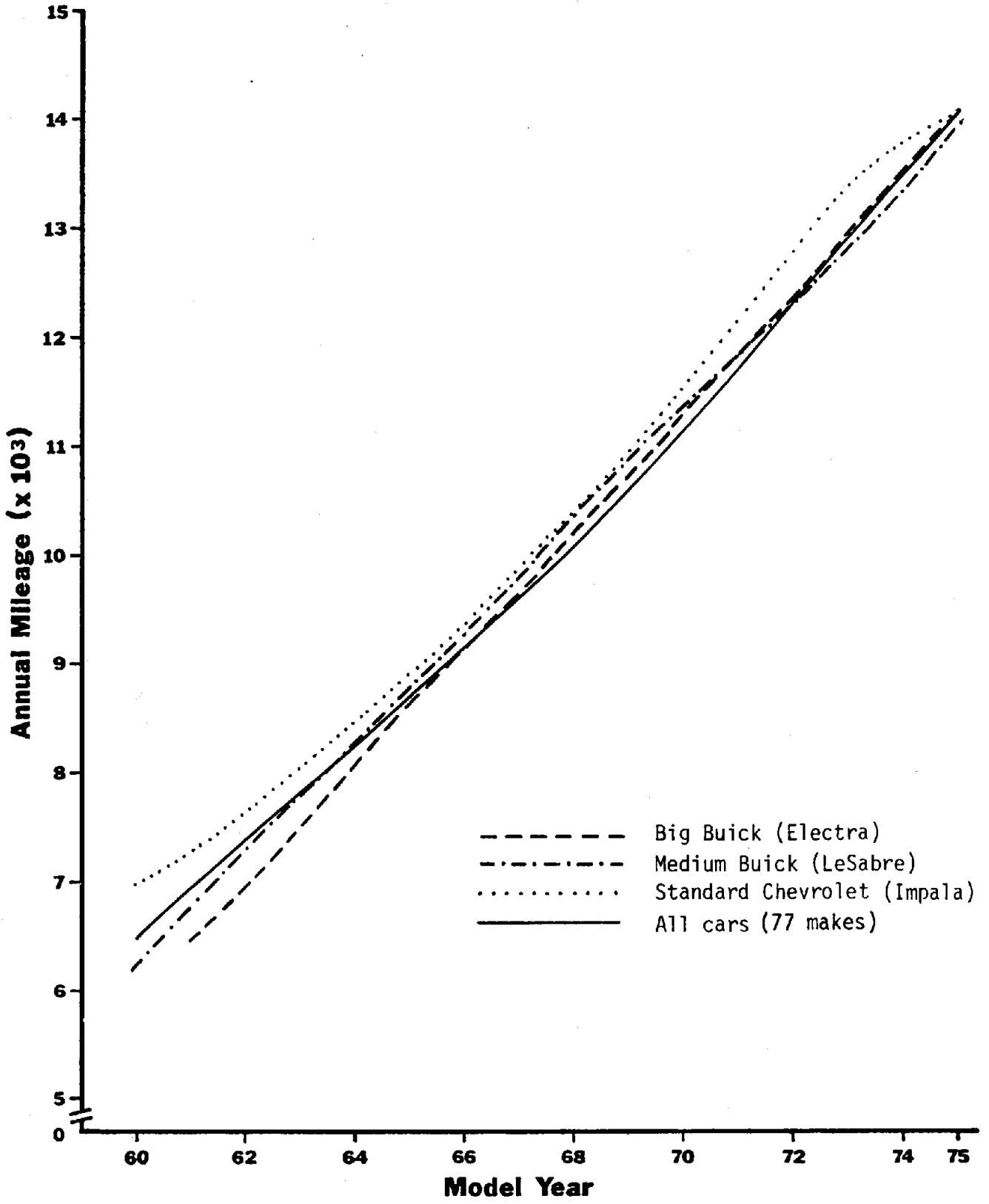


Figure 3.6 Annual mileage for big Buick, medium Buick, standard Chevrolet and all cars combined.

Table 3.7 Annual mileage for intermediate (Ford Fairlane), compact (Ford Falcon), and subcompact (V.W. Beetle).

Model Years	Annual Mileage (in thousands)		
	Intermediate Ford (Fairlane)	Compact Ford (Falcon)	Subcompact (V.W. Beetle)
'60	--	7.3	9.2
'61	--	7.6	9.4
'62	7.7	8.0	9.7
'63	7.9	8.3	9.9
'64	8.2	8.6	10.1
'65	8.5	9.0	10.4
'66	8.9	9.3	10.6
'67	9.5	9.6	10.8
'68	10.1	9.9	11.1
'69	10.8	10.3	11.3
'70	11.6	10.6	11.5
'71	12.5	10.9	11.8
'72	13.4	11.3	12.0
'73	14.5	11.6	12.2
'74	15.6	11.9	12.5
'75	16.9	12.2	12.7
'60-'65	8.1	8.3	10.0
'66-'70	10.3	10.2	11.1
'71-'75	14.2	11.4	12.1
Overall	11.8	10.1	11.3

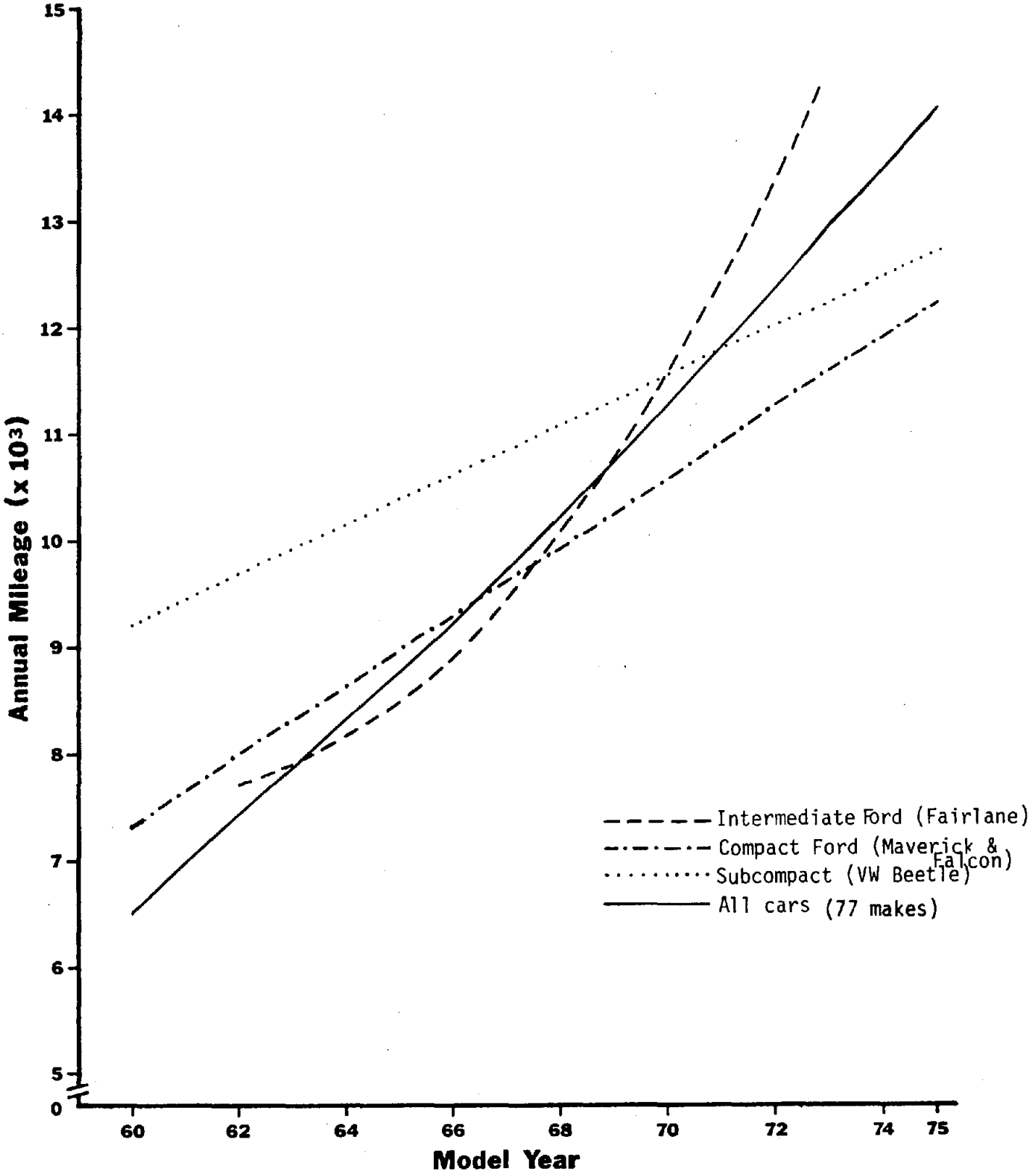


Figure 3.7 Annual mileage for intermediate Ford, compact Ford, VW Beetle and all cars combined.

Annual Mileage Estimates:
Initial vs. Follow-up Study

As has been previously noted, the initial study gathered exposure data from October 16, 1973 to October 15, 1974, covering most of the "energy crisis" period, while the follow-up study was based on exposure data from January 1, 1975 to December 31, 1975 - the post "energy crisis" period. Thus, a comparison of mileage estimates from these two studies should serve as an indication of one effect of the fuel crisis on motor vehicle travel. In another HSRC report (Seila, Entsminger and Silva, 1977), the authors have outlined some of the problems that were encountered in using statewide gasoline consumption to measure changes in vehicle mileage. Using motor vehicle inspection receipts, however, provides a direct measure of the change in annual vehicle miles of travel which does not depend on such a gross measure as gasoline consumption which must make certain assumptions about "average" miles per gallon for the "average" vehicle on the road.

Table 3.8 compares the annual mileages for all vehicles for the initial and follow-up studies. The increase in annual mileages across the two exposure periods varies from over five percent for new cars to about 3.6 percent for the old models. Tables 3.9 - 3.11 make similar comparisons for full, middle and small-sized cars, respectively. Again, full and middle-sized cars show an increase in annual mileage, particularly for the newer model years. The reverse is true for the newer small-sized cars -- there was actually a decrease in mileage after the energy crisis. For the older small-sized cars, the drastic increase in mileage may be mostly a function of limited sample size.

Table 3.8 Annual mileage by age of vehicle for all cars combined.

Age of Vehicle	Model Year		Annual Mileage		Percent Change
	Follow-up	Initial Study	Follow-up	Initial Study	
1	1975	1974	14,115	13,259	+6.46
2	1974	1973	13,465	12,756	+5.56
3	1973	1972	12,969	12,155	+6.70
4	1972	1971	12,390	11,642	+6.43
5	1971	1970	11,778	11,088	+6.22
6	1970	1969	11,294	10,655	+6.00
7	1969	1968	10,758	10,191	+5.56
8	1968	1967	10,203	9,714	+5.03
9	1967	1966	9,685	9,323	+3.88
10	1966	1965	9,154	8,910	+2.74
11	1965	1964	8,677	8,410	+3.17
12	1964	1963	8,262	7,937	+4.09
13	1963	1962	7,776	7,493	+3.78
14	1962	1961	7,360	6,991	+4.92
15	1961	1960	6,981	6,355	+9.86
16	1960	--	6,490	--	--
1-5	'71-'75	'70-'74	12,750	12,087	+5.48
6-10	'66-'71	'65-'69	10,315	9,848	+4.74
11-15	'61-'65	'60-'64	8,152	7,866	+3.64

Table 3.9 Annual mileage by age of vehicle for full-sized cars.

Age of Vehicle	Model Year		Annual Mileage		Percent Change
	Follow-up	Initial Study	Follow-up	Initial Study	
1	1975	1974	14,573	14,112	+3.27
2	1974	1973	14,015	13,241	+5.84
3	1973	1972	13,383	12,474	+7.29
4	1972	1971	12,728	11,831	+7.58
5	1971	1970	12,112	11,222	+7.93
6	1970	1969	11,465	10,712	+7.03
7	1969	1968	10,867	10,240	+6.12
8	1968	1967	10,280	9,804	+4.85
9	1967	1966	9,744	9,380	+3.88
10	1966	1965	9,236	8,970	+2.96
11	1965	1964	8,754	8,518	+2.77
12	1964	1963	8,312	8,060	+3.13
13	1963	1962	7,882	7,596	+3.76
14	1962	1961	7,464	7,021	+6.31
15	1961	1960	7,071	6,476	+9.19
16	1960	--	6,598	--	--
1-5	'71-'75	'70-'74	13,060	12,333	+5.89
6-10	'66-'70	'65-'69	10,388	9,890	+5.04
11-15	'61-'65	'60-'64	8,199	7,939	+3.27

Table 3.10 Annual mileage by age of vehicle for middle-sized cars.

Age of Vehicle	Model Year		Annual Mileage		Percent Change
	Follow-up	Initial Study	Follow-up	Initial Study	
1	1975	1974	14,882	12,742	+16.79
2	1974	1973	13,861	12,315	+12.55
3	1973	1972	13,150	11,838	+10.65
4	1972	1971	12,457	11,402	+ 9.25
5	1971	1970	11,748	10,925	+ 7.53
6	1970	1969	11,034	10,561	+ 4.48
7	1969	1968	10,538	10,142	+ 3.90
8	1968	1967	10,029	9,739	+ 2.98
9	1967	1966	9,610	9,363	+ 2.64
10	1966	1965	9,244	9,030	+ 2.37
11	1965	1964	8,873	8,365	+ 6.07
12	1964	1963	8,383	7,867	+ 6.56
13	1963	1962	7,757	7,496	+ 3.48
14	1962	1961	7,511	7,040	+ 6.69
15	1961	1960	7,323	6,516	+12.38
16	1960	--	6,903	--	--
1-5	'71-'75	'70-'74	12,937	11,722	+10.37
6-10	'66-'70	'65-'69	10,182	9,829	+ 3.59
11-15	'61-'65	'60-'64	8,323	7,906	+ 5.27

Table 3.11 Annual mileage by age of vehicle for small-sized cars.

Age of Vehicle	Model Year		Annual Mileage		Percent Change
	Follow-up	Initial Study	Follow-up	Initial Study	
1	1975	1974	13,117	13,301	- 1.38
2	1974	1973	12,568	12,711	- 1.12
3	1973	1972	12,216	12,118	+ 0.81
4	1972	1971	11,895	11,624	+ 2.33
5	1971	1970	11,564	11,366	+ 1.74
6	1970	1969	11,331	10,995	+ 3.06
7	1969	1968	11,000	10,801	+ 1.84
8	1968	1967	10,835	10,463	+ 3.55
9	1967	1966	10,485	10,248	+ 2.31
10	1966	1965	10,295	10,002	+ 2.93
11	1965	1964	10,214	9,722	+ 5.06
12	1964	1963	9,967	9,424	+ 5.76
13	1963	1962	9,772	9,128	+ 7.05
14	1962	1961	9,648	8,605	+10.77
15	1961	1960	9,398	7,992	+17.59
16	1960	--	9,164	--	--
1-5	'71-'75	'70-'74	12,130	12,233	- 0.84
6-10	'66-'70	'65-'69	10,886	10,593	+ 2.77
11-15	'61-'65	'60-'64	9,945	9,281	+ 7.15

IV. CRASH COMPARISONS

Accident involvement and injury rate comparisons are presented in this chapter for the various vehicle size groups and body style groups (for standard-sized cars). The size and body style groups are the same as those previously defined in Chapter II (see Table 2.8). In addition, overall accident and injury rates from the current study are compared with those from Dutt and Reinfurt (1977).

As in the initial study, the following accident and injury rates are examined:

a) Overall crash rate
b) Single vehicle crash rate
c) Driver injury (any)
d) Driver injury (serious; i.e., A or K)
e) Vehicle severity (any), where vehicle severity is the most serious injury sustained by any occupant in the vehicle
f) Vehicle severity (serious; i.e., A or K)

The comparisons in this chapter, based on tables presented in Appendix C, have been made using the statistical methodology presented in Appendix E of the initial report (Dutt and Reinfurt, 1977). The comparisons have been carried out at a 95 percent confidence level, and the letters indicate the vehicle makes, sizes or body styles which had significantly higher involvement or injury rates. Non-significant differences are indicated by asterisks(*), while hyphens indicate that the comparisons were not carried out -- due generally to inadequate sample sizes.

Table 4.1 and Figures 4.1 - 4.6 present the crash rate comparisons for full (e.g., Cadillac, Olds 88, Standard Chevrolet); middle (e.g., Chevelle, Plymouth Valiant); and small-sized (e.g., VW Beetle, Ford Pinto) cars for each model year. In Table 4.2 this information is further broken down by the six vehicle size groups, necessitating (due to sample size limitations) the grouping of individual model years into three categories. Tables 4.3 - 4.8 present crash rate comparisons for selected vehicle makes within each of the six size groups, and Table 4.9 displays

the comparisons for various standard-sized body styles. Finally, Tables 4.10 - 4.12 compare accident and injury rates from the initial and follow-up studies by age of vehicle for all vehicle makes combined.

The accident and injury comparisons in this follow-up study indicate virtually the same trends as in the initial study. The overall and single vehicle involvement rates decrease for the newer model years, with this pattern being more pronounced for full-sized cars than for middle or small-sized cars. However, both driver injury and vehicle severity rates show a marked decline for all three vehicle sizes.

As in the initial study, the comparisons by body style for the standard-sized cars show that hardtop cars have significantly higher involvement and injury rates than either sedans or station wagons. Similarly, two-door standard-sized cars had higher involvement and injury rates than their four-door counterparts.

In comparing the involvement and injury rates for vehicles during the two study periods, the follow-up rates were found to be generally higher than the rates for the initial study. This is especially true of the two 'any injury' categories -- driver injury (any) and vehicle severity (any) -- and to some extent of the overall accident involvement rate.

As mentioned earlier, the initial study reflects conditions during the "energy crisis", while the follow-up study reflects "post-energy crisis" conditions. Thus, the higher accident and injury rates might be partially explained by the fact that more people were driving above the 55 mph speed limit in the latter exposure period.

Table 4.1 Accident and injury rate comparisons for full, middle, and small-sized cars.

Accident Type	Model Year	Rates			Rate Comparisons		
		Full (F)	Middle (M)	Small (S)	F-M	F-S	M-S
Overall	'60	5.60	2.94	6.16	F	*	S
	'61	6.53	5.74	5.93	*	*	*
	'62	6.68	5.71	5.64	F	*	*
	'63	6.19	5.89	5.40	*	*	*
	'64	6.20	6.10	5.38	*	F	*
	'65	6.18	6.70	5.86	M	*	M
	'66	6.01	6.99	5.48	M	*	M
	'67	5.95	6.82	5.18	M	F	M
	'68	5.30	6.96	5.34	M	*	M
	'69	5.14	6.84	5.35	M	*	M
	'70	3.36	4.68	5.40	M	S	S
	'71	4.01	5.68	5.91	M	S	*
	'72	3.61	5.03	6.46	M	S	S
	'73	3.31	4.64	6.00	M	S	S
	'74	3.35	4.21	5.70	M	S	S
	'75	(4.36)[1]	(5.28)	(11.36)	--	--	--
	Overall	4.60	5.60	6.00			
Single Vehicle	'60	0.75	0.59	1.57	*	S	S
	'61	0.88	1.00	1.19	*	*	*
	'62	1.05	0.85	1.06	*	*	*
	'63	1.04	0.79	0.99	F	*	*
	'64	0.95	1.01	1.00	*	*	*
	'65	0.96	1.24	1.29	M	S	*
	'66	0.82	1.29	1.27	M	S	*
	'67	0.80	1.26	1.09	M	S	*
	'68	0.67	1.25	0.80	M	*	M
	'69	0.57	1.20	0.82	M	S	M
	'70	0.41	0.82	0.77	M	S	*
	'71	0.40	0.98	0.88	M	S	*
	'72	0.32	0.83	0.94	M	S	S
	'73	0.27	0.74	0.92	M	S	S
	'74	0.29	0.53	0.92	M	S	S
	'75	(0.35)	(0.65)	(1.99)	--	--	--
	Overall	0.55	0.94	0.96			

* Rates for '75 model vehicles are consistently inflated due to the underestimate of the registration frequency given by the mid-point registration file.

Table 4.1 Continued.

Injury Type	Model Year	Rates			Rate Comparisons		
		Full (F)	Middle (M)	Small (S)	F-M	F-S	M-S
Driver Injury (Any)	'60	0.97	0.59	1.57	*	*	S
	'61	1.07	1.90	1.73	M	*	*
	'62	1.38	1.18	1.70	*	*	*
	'63	1.16	1.24	1.15	*	*	*
	'64	1.14	1.43	1.37	M	*	*
	'65	1.15	1.60	1.65	M	S	*
	'66	1.06	1.45	1.60	M	S	*
	'67	1.02	1.35	1.47	M	S	*
	'68	0.79	1.28	1.29	M	S	*
	'69	0.77	1.21	1.44	M	S	S
	'70	0.55	0.84	1.32	M	S	S
	'71	0.56	1.05	1.34	M	S	S
	'72	0.50	0.89	1.34	M	S	S
	'73	0.45	0.84	1.27	M	S	S
	'74	0.44	0.72	1.21	M	S	S
	'75	(0.57)	(0.88)	(2.70)	--	--	--
	Overall	0.73	1.06	1.37			
Driver Injury (Serious)	'60	0.12	0.10	0.26	*	*	*
	'61	0.19	0.52	0.18	M	*	*
	'62	0.26	0.17	0.35	*	*	*
	'63	0.17	0.23	0.29	*	*	*
	'64	0.16	0.22	0.27	*	*	*
	'65	0.19	0.27	0.34	M	S	*
	'66	0.14	0.23	0.28	M	S	*
	'67	0.15	0.25	0.22	M	*	*
	'68	0.10	0.17	0.24	M	S	*
	'69	0.10	0.18	0.19	M	S	*
	'70	0.07	0.15	0.21	M	S	*
	'71	0.08	0.17	0.20	M	S	*
	'72	0.06	0.12	0.19	M	S	S
	'73	0.06	0.10	0.17	M	S	S
	'74	0.06	0.09	0.16	M	S	S
	'75	(0.08)	(0.13)	(0.38)	--	--	--
	Overall	0.10	0.16	0.20			

Table 4.1 Continued.

Injury Type	Model Year	Rates			Rate Comparisons		
		Full (F)	Middle (M)	Small (S)	F-M	F-S	M-S
Vehicle Severity (Any)	'60	1.29	0.78	1.84	*	*	S
	'61	1.47	2.23	2.28	M	S	*
	'62	1.77	1.58	1.88	*	*	*
	'63	1.53	1.57	1.60	*	*	*
	'64	1.42	1.81	1.64	M	*	*
	'65	1.51	1.92	2.00	M	S	*
	'66	1.38	1.77	1.91	M	S	*
	'67	1.30	1.69	1.66	M	S	*
	'68	1.05	1.59	1.60	M	S	*
	'69	0.99	1.53	1.64	M	S	*
	'70	0.70	1.05	1.56	M	S	S
	'71	0.74	1.30	1.61	M	S	S
	'72	0.64	1.08	1.60	M	S	S
	'73	0.60	1.01	1.53	M	S	S
	'74	0.61	0.87	1.43	M	S	S
	'75	(0.72)	(1.10)	(3.09)	--	--	--
	Overall	0.94	1.31	1.62			
Vehicle Severity (Serious)	'60	0.18	0.29	0.26	*	*	*
	'61	0.27	0.52	0.18	*	*	*
	'62	0.34	0.24	0.47	*	*	*
	'63	0.24	0.33	0.35	*	*	*
	'64	0.22	0.29	0.29	*	*	*
	'65	0.23	0.35	0.45	M	S	*
	'66	0.19	0.28	0.29	M	*	*
	'67	0.20	0.30	0.28	M	*	*
	'68	0.13	0.21	0.28	M	S	*
	'69	0.13	0.22	0.23	M	S	*
	'70	0.09	0.17	0.29	M	S	S
	'71	0.10	0.20	0.24	M	S	*
	'72	0.07	0.16	0.22	M	S	S
	'73	0.08	0.13	0.21	M	S	S
	'74	0.07	0.11	0.19	M	S	S
	'75	(0.09)	(0.17)	(0.45)	--	--	--
	Overall	0.13	0.20	0.24			

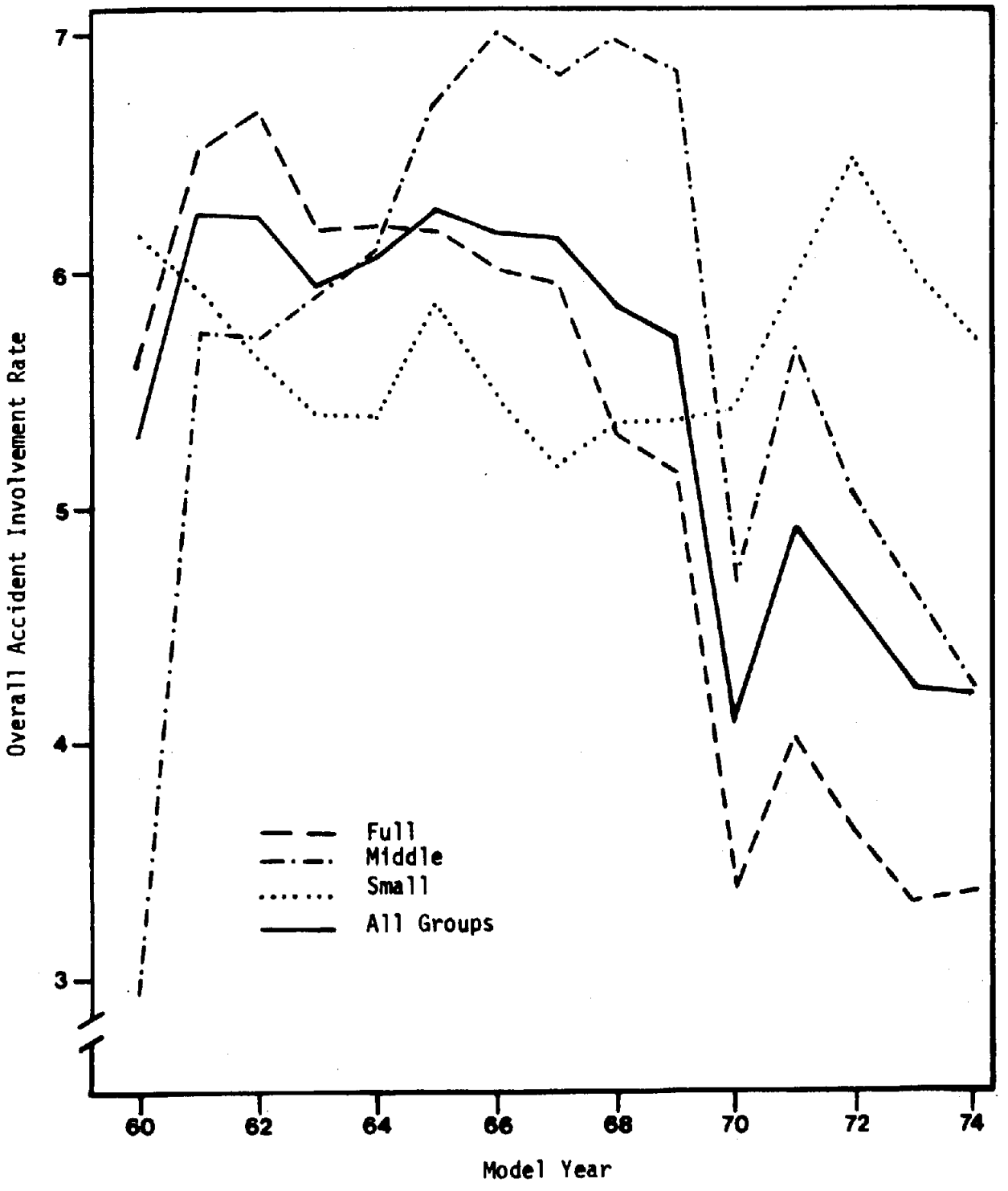


Figure 4.1 Overall accident rates for full, middle, and small-sized cars and all cars combined.

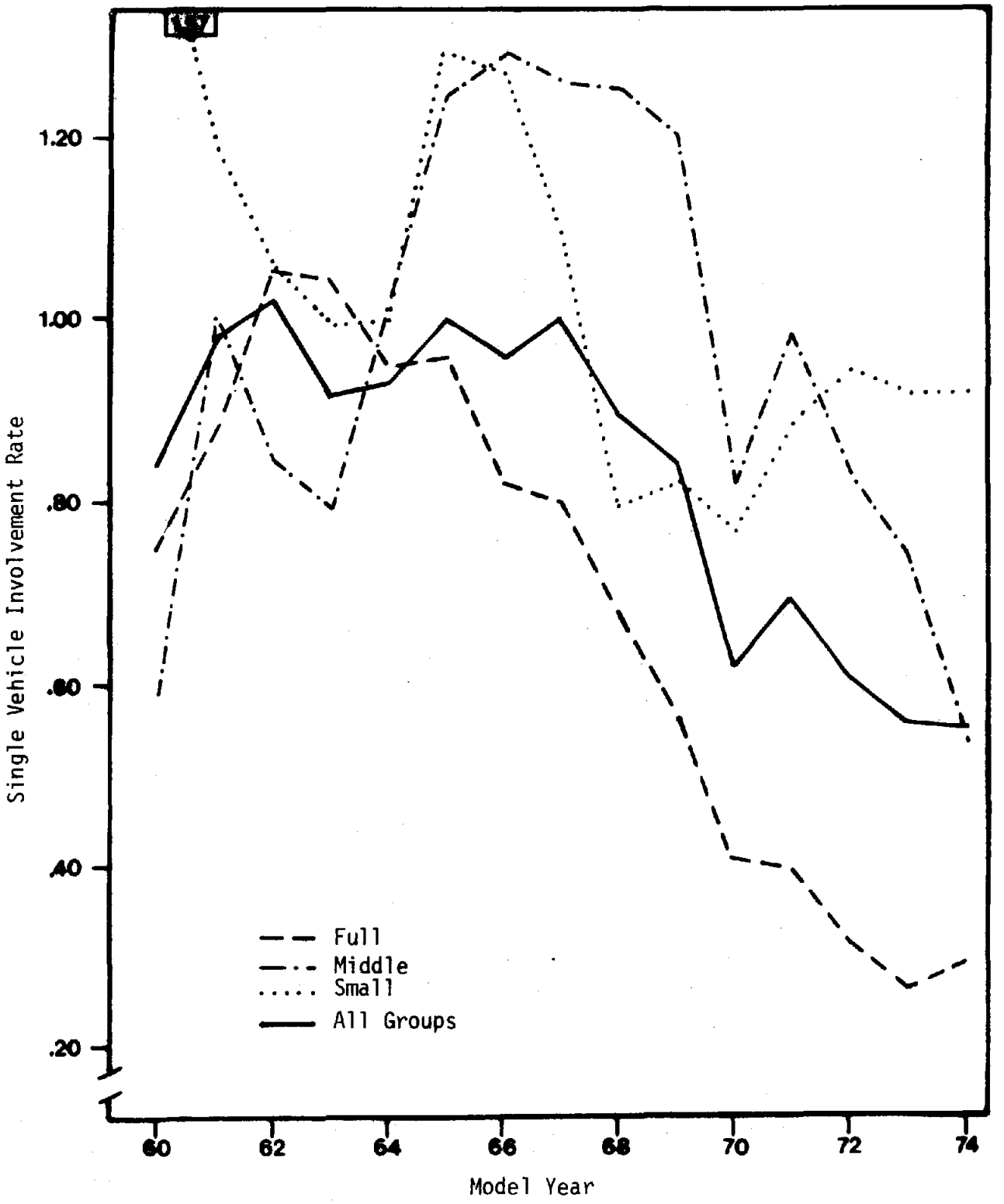


Figure 4.2 Single vehicle accident rates for full, middle, and small-sized cars and all cars combined.

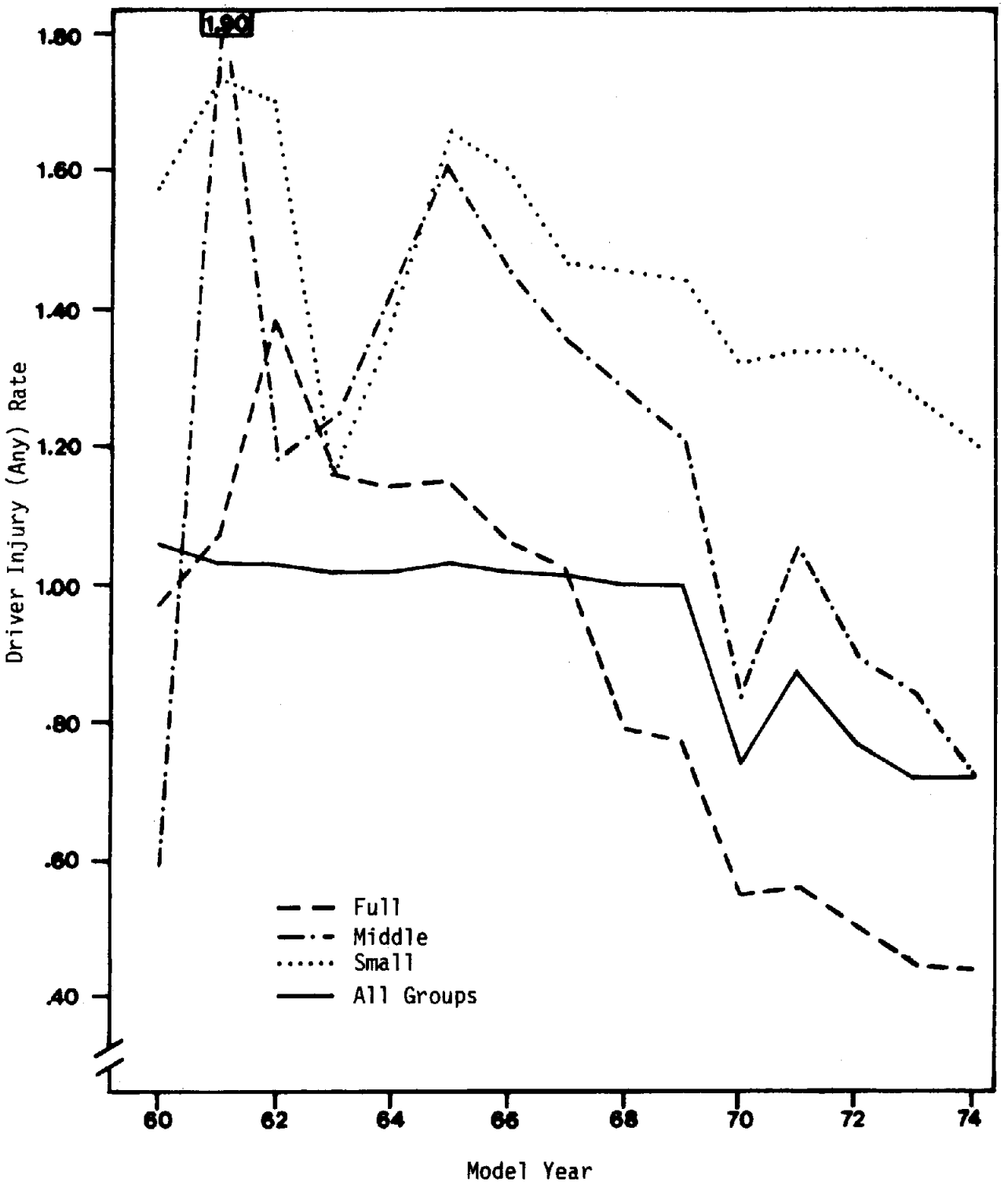


Figure 4.3 Driver injury (any) rate for full, middle, and small-sized cars and all cars combined.

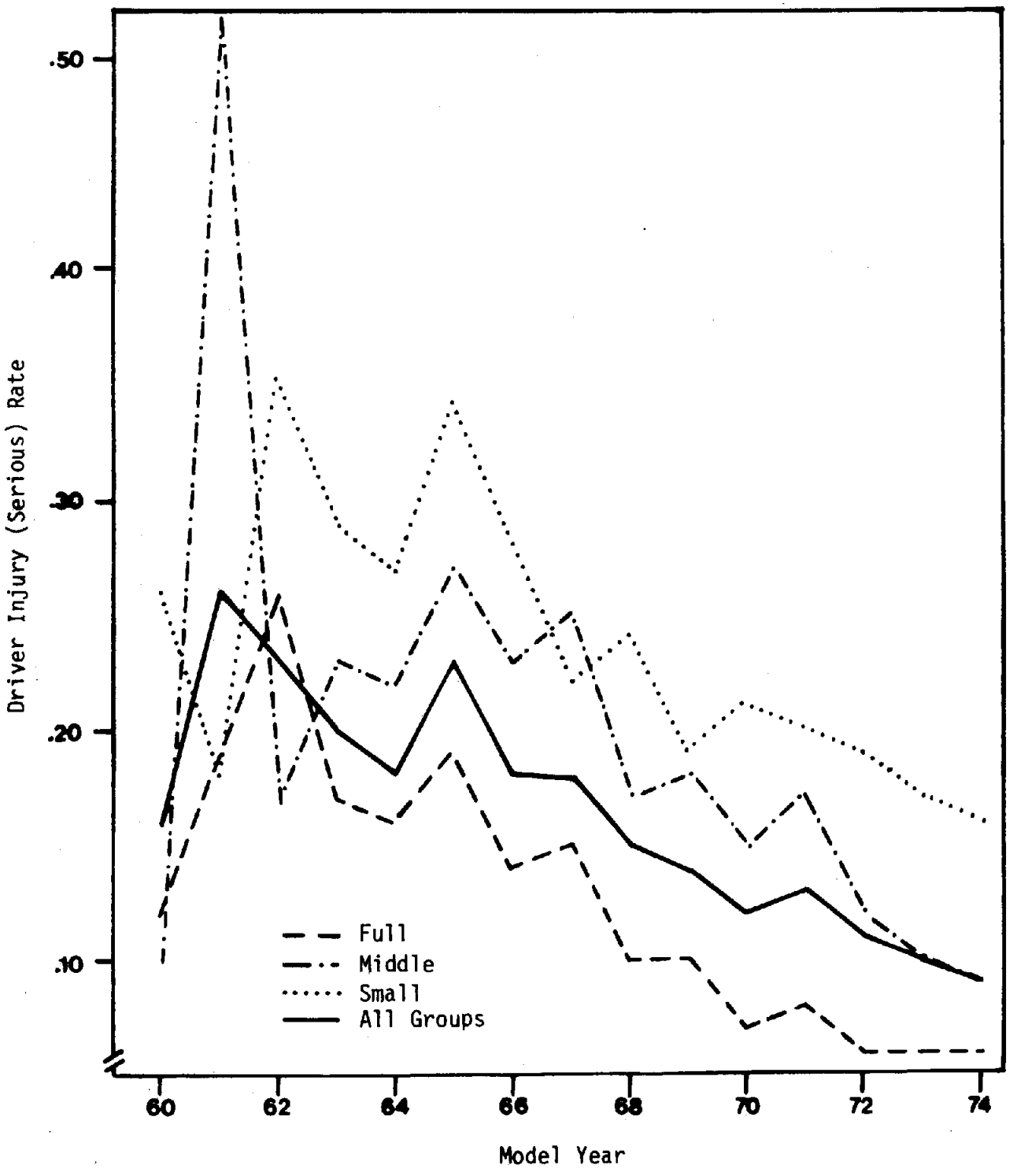


Figure 4.4 Driver injury (serious) rate for full, middle, and small-sized cars and all cars combined.

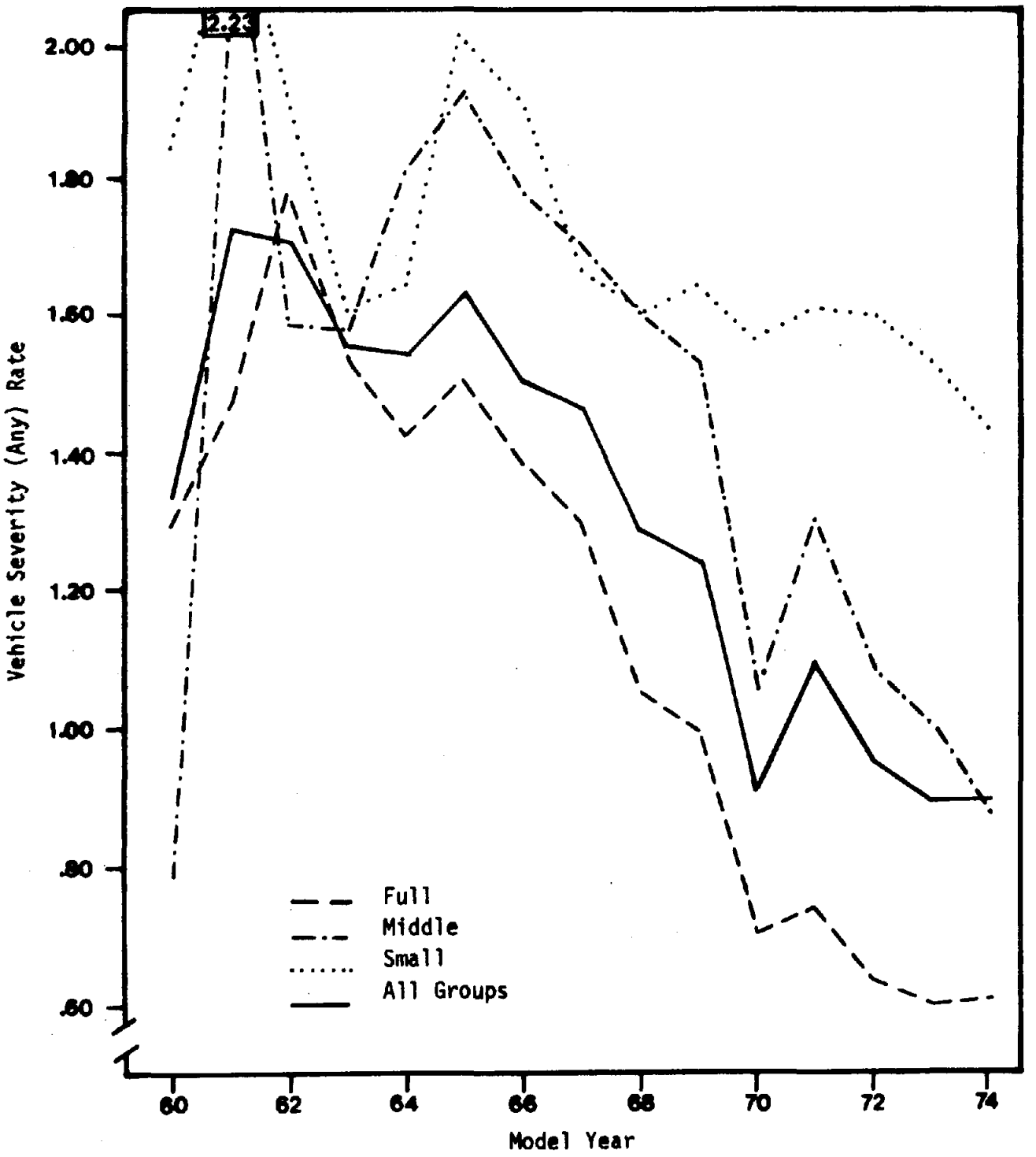


Figure 4.5 Vehicle severity (any) rate for full, middle, and small-sized cars and all cars combined.

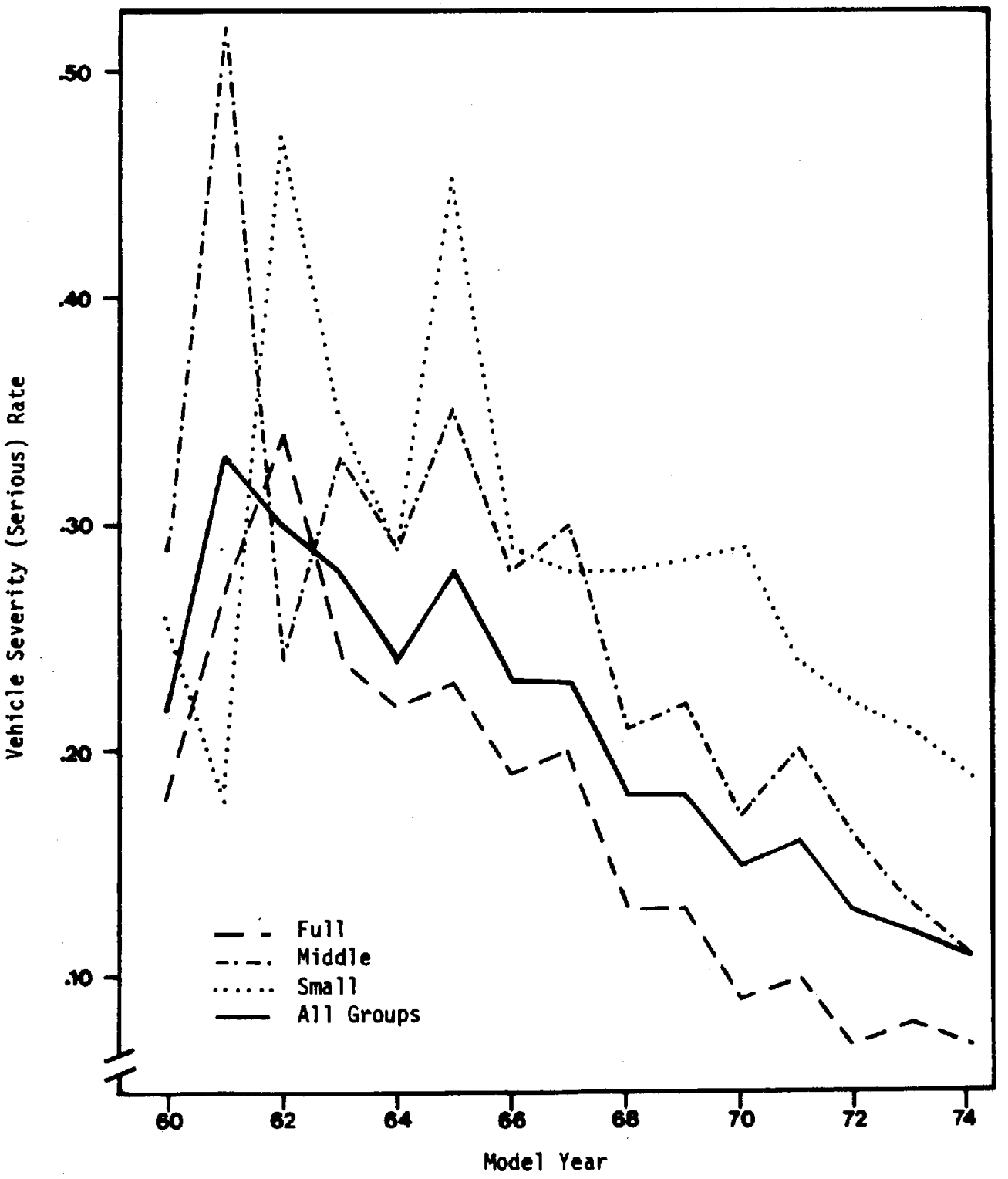


Figure 4.6 Vehicle severity (serious) rate for full, middle, and small-sized cars and all cars combined.

Table 4.2. Comparison of accident and injury rates for luxury, medium, standard, intermediate, compact, and subcompact cars.

Accident/ Injury Type	Model Years	Rates					
		Luxury (L)	Medium (M)	Standard (St)	Intermediate (I)	Compact (C)	Subcompact (Sc)
Overall	'60-'65	6.43	6.66	6.13	6.53	5.97	5.66
	'66-'70	5.34	5.02	4.97	6.40	6.12	5.35
	'71-'74	3.29	3.08	3.79	4.40	5.57	6.01
	Overall	4.46	4.34	4.71	5.45	5.86	5.84
Single Vehicle	'60'-65	0.79	0.86	1.01	1.06	1.03	1.15
	'66-'70	0.58	0.57	0.65	1.12	1.15	0.90
	'71-'74	0.25	0.22	0.37	0.59	1.04	0.92
	Overall	0.44	0.45	0.60	0.86	1.08	0.93
Driver Injury (Any)	'60-'65	1.06	1.12	1.19	1.41	1.47	1.50
	'66-'70	0.79	0.72	0.84	1.14	1.25	1.40
	'71-'74	0.40	0.39	0.55	0.68	1.17	1.29
	Overall	0.63	0.62	0.78	0.94	1.25	1.32
Driver Injury (Serious)	'60-'65	0.18	0.17	0.19	0.23	0.26	0.30
	'66-'70	0.09	0.09	0.12	0.18	0.20	0.22
	'71-'74	0.04	0.05	0.08	0.08	0.18	0.18
	Overall	0.08	0.08	0.11	0.14	0.20	0.20
Vehicle Severity (Any)	'60-'65	1.37	1.54	1.52	1.79	1.79	1.84
	'66-'70	1.03	0.92	1.08	1.44	1.53	1.65
	'71-'74	0.54	0.52	0.71	0.84	1.39	1.53
	Overall	0.83	0.82	1.01	1.18	1.51	1.58
Vehicle Severity (Serious)	'60-'65	0.20	0.21	0.25	0.32	0.32	0.37
	'66-'70	0.12	0.11	0.15	0.22	0.24	0.27
	'71-'74	0.06	0.06	0.10	0.11	0.21	0.21
	Overall	0.10	0.10	0.15	0.17	0.24	0.24

Table 4.2. Continued.

Accident/ Injury Type	Model Year	Rate Comparisons														
		L-M	L-St	L-I	L-C	L-Sc	M-St	M-I	M-C	M-Sc	St-I	St-C	St-Sc	I-C	I-Sc	C-Sc
Overall	'60-'65	*	*	*	*	L	M	*	M	M	I	*	St	I	I	*
	'66-'70	L	L	I	C	*	*	I	C	Sc	I	C	Sc	I	I	C
	'71-'74	L	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	Sc
		*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	*
Single Vehicle	'60-'65	*	St	I	C	Sc	St	I	C	Sc	*	*	*	*	*	*
	'66-'70	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	*	I	C
	'71-'74	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	C
	Overall	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	C
Driver Injury (Any)	'60-'65	*	*	I	C	Sc	*	I	C	Sc	I	C	Sc	*	*	*
	'66-'70	*	*	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	Sc
	'71-'74	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	Sc
	Overall	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	Sc
Driver Injury (Serious)	'60-'65	*	*	*	*	Sc	*	*	C	Sc	*	C	Sc	*	*	*
	'66-'70	*	*	I	C	Sc	St	I	C	Sc	I	C	Sc	*	Sc	*
	'71-'74	*	St	I	C	Sc	St	I	C	Sc	*	C	Sc	C	Sc	*
	Overall	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	*
Vehicle Severity (Any)	'60-'65	*	*	I	C	Sc	*	I	C	Sc	I	C	Sc	*	*	*
	'66-'70	L	*	I	C	Sc	St	I	C	Sc	I	C	Sc	*	Sc	*
	'71-'74	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	Sc
	Overall	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	*
Vehicle Severity (Serious)	'60-'65	*	*	I	C	Sc	*	I	C	Sc	*	C	Sc	*	*	*
	'66-'70	*	*	I	C	Sc	St	I	C	Sc	I	C	Sc	*	Sc	*
	'71-'74	*	St	I	C	Sc	St	I	C	Sc	*	C	Sc	C	Sc	*
	Overall	*	St	I	C	Sc	St	I	C	Sc	I	C	Sc	C	Sc	*

Note: For those cases where the rates are significantly different, generally the smaller vehicle in the comparison has higher overall and single vehicle accident rates along with elevated driver injury and vehicle severity rates.

Table 4.3 Comparison of accident and injury rates for luxury cars.

Accident/ Injury Type	Model Years	Rates				Rate Comparisons					
		Buick (B)	Pontiac (P)	Cadillac (C)	Olds (O)	B-P	B-C	B-O	P-C	P-O	C-O
Overall	'60-'65	6.19	6.76	6.21	6.74	*	*	*	*	*	*
	'66-'70	5.24	5.50	5.33	5.20	*	*	*	*	*	*
	'71-'74	3.44	3.11	3.21	3.51	*	*	*	*	*	*
	Overall	4.40	4.68	4.34	4.31	*	*	*	P	P	*
Single Vehicle	'60-'65	0.78	0.94	0.61	0.41	*	*	*	*	P	*
	'66-'70	0.56	0.66	0.53	0.57	*	*	*	*	*	*
	'71-'74	0.23	0.22	0.31	0.26	*	*	*	*	*	*
	Overall	0.41	0.51	0.43	0.38	P	*	*	*	P	*
Driver Injury (Any)	'60-'65	0.84	1.29	0.95	0.61	*	*	*	*	P	*
	'66-'70	0.79	0.89	0.69	0.65	*	*	*	P	P	*
	'71-'74	0.40	0.35	0.43	0.50	*	*	*	*	0	*
	Overall	0.60	0.72	0.58	0.56	P	*	*	P	P	*
Driver Injury (Serious)	'60-'65	0.22	0.19	0.13	0.07	*	*	*	*	*	*
	'66-'70	0.08	0.12	0.07	0.07	*	*	*	*	*	*
	'71-'74	0.05	0.02	0.06	0.08	*	*	*	*	0	*
	Overall	0.07	0.09	0.07	0.07	*	*	*	*	*	*
Vehicle Severity (Any)	'60-'65	1.09	1.66	1.25	0.95	P	*	*	*	*	*
	'66-'70	1.03	1.15	0.91	0.91	*	*	*	P	*	*
	'71-'74	0.56	0.50	0.54	0.64	*	*	*	*	*	*
	Overall	0.80	0.94	0.76	0.76	P	*	*	P	P	*
Vehicle Severity (Serious)	'60-'65	0.25	0.23	0.13	0.14	*	*	*	*	*	*
	'66-'70	0.12	0.14	0.10	0.12	*	*	*	*	*	*
	'71-'74	0.07	0.03	0.06	0.09	*	*	*	*	0	*
	Overall	0.10	0.11	0.08	0.10	*	*	*	*	*	*

Table 4.4 Comparison of accident and injury rates for medium-sized cars.

Accident/ Injury Type	Model Years	Rates				Rate Comparisons					
		Buick (B)	Pontiac (P)	Olds (O)	Chrysler (C)	B-P	B-O	B-C	P-O	P-C	O-C
Overall	'60-'65	6.45	6.75	6.82	5.79	*	*	*	*	P	O
	'66-'70	4.75	5.12	5.23	5.00	*	O	*	*	*	*
	'71-'74	3.15	2.84	3.25	3.52	B	*	C	O	C	*
	Overall	4.26	4.29	4.49	4.51	*	*	*	*	*	*
Single Vehicle	'60-'65	0.80	1.12	0.66	0.60	P	*	*	P	P	*
	'66-'70	0.52	0.59	0.61	0.53	*	*	*	*	*	*
	'71-'74	0.20	0.21	0.26	0.37	*	*	C	*	C	*
	Overall	0.41	0.48	0.45	0.48	*	*	*	*	*	*
Driver Injury (Any)	'60-'65	1.07	1.16	1.14	1.09	*	*	*	*	*	*
	'66-'70	0.68	0.78	0.71	0.81	*	*	*	*	*	*
	'71-'74	0.33	0.36	0.48	0.49	*	O	C	O	C	*
	Overall	0.58	0.63	0.66	0.72	*	*	C	*	*	*
Driver Injury (Serious)	'60-'65	0.19	0.13	0.19	0.20	*	*	*	*	*	*
	'66-'70	0.06	0.10	0.11	0.10	*	*	*	*	*	*
	'71-'74	0.04	0.04	0.06	0.07	*	*	*	*	*	*
	Overall	0.07	0.07	0.10	0.10	*	*	*	*	*	*
Vehicle Severity (Any)	'60-'65	1.50	1.50	1.64	1.32	*	*	*	*	*	*
	'66-'70	0.83	1.00	0.94	1.10	P	*	C	*	*	*
	'71-'74	0.48	0.49	0.60	0.67	*	O	C	*	C	*
	Overall	0.76	0.83	0.87	0.96	*	O	C	*	C	*
Vehicle Severity (Serious)	'60-'65	0.24	0.17	0.21	0.27	*	*	*	*	*	*
	'66-'70	0.09	0.11	0.14	0.11	*	*	*	*	*	*
	'71-'74	0.05	0.05	0.08	0.09	*	*	*	*	*	*
	Overall	0.09	0.09	0.12	0.12	*	*	*	*	*	*

Table 4.5 Comparison of accident and injury rates for standard-sized cars.

Accident/ Injury Type	Model Years	Rates			Rate Comparisons		
		Chevrolet (C)	Ford (F)	Plymouth (P)	C-F	C-P	F-P
Overall	'60-'65	6.06	6.39	5.70	*	*	F
	'66-'70	4.88	5.00	5.18	*	P	*
	'71-'74	3.44	4.02	4.36	F	P	P
	Overall	4.58	4.79	4.97	F	P	P
Single Vehicle	'60-'65	0.94	1.17	0.90	F	*	F
	'66-'70	0.62	0.68	0.69	*	*	*
	'71-'74	0.27	0.43	0.54	F	P	P
	Overall	0.55	0.65	0.66	F	P	*
Driver Injury (Any)	'60-'65	1.14	1.26	1.24	*	*	*
	'66-'70	0.83	0.84	0.86	*	*	*
	'71-'74	0.47	0.62	0.60	F	P	*
	Overall	0.76	0.81	0.82	F	P	*
Driver Injury (Serious)	'60-'65	0.17	0.23	0.17	F	*	*
	'66-'70	0.10	0.13	0.12	F	*	*
	'71-'74	0.07	0.08	0.09	*	*	*
	Overall	0.10	0.13	0.12	F	*	*
Vehicle Severity (Any)	'60-'65	1.48	1.59	1.46	*	*	*
	'66-'70	1.07	1.07	1.11	*	*	*
	'71-'74	0.62	0.81	0.74	F	P	*
	Overall	0.98	1.04	1.03	*	*	*
Vehicle Severity (Serious)	'60-'65	0.23	0.29	0.27	*	*	*
	'66-'70	0.14	0.17	0.16	*	*	*
	'71-'74	0.08	0.11	0.11	*	*	*
	Overall	0.14	0.16	0.16	F	*	*

Table 4.6 Comparison of accident and injury rates for intermediate cars.

Accident/ Injury Type	Model Years	Rates				Rate Comparisons					
		Ford (F)	Chevelle (C)	Olds (O)	Pontiac (P)	F-C	F-O	F-P	C-O	C-P	O-P
Overall	'60-'65	5.89	6.33	6.69	8.16	*	O	P	*	P	P
	'66-'70	6.12	6.93	5.74	6.55	C	F	P	C	C	P
	'71-'74	4.50	4.45	3.99	4.78	*	F	*	C	*	P
	Overall	5.25	5.88	4.84	5.92	C	F	P	C	*	P
Single Vehicle	'60-'65	0.92	1.14	1.10	1.21	*	*	*	*	*	*
	'66-'70	1.07	1.27	0.87	1.17	C	F	*	C	*	P
	'71-'74	0.58	0.65	0.45	0.74	*	F	P	C	*	P
	Overall	0.80	1.01	0.65	0.99	C	F	P	C	*	P
Driver Injury (Any)	'60-'65	1.40	1.15	1.63	1.73	*	*	*	O	P	*
	'66-'70	1.16	1.24	0.97	1.10	*	F	*	C	*	*
	'71-'74	0.70	0.73	0.56	0.77	*	F	*	C	*	P
	Overall	0.94	1.03	0.78	1.01	C	F	*	C	*	P
Driver Injury (Serious)	'60-'65	0.23	0.23	0.25	0.23	*	*	*	*	*	*
	'66-'70	0.16	0.21	0.14	0.18	C	*	*	C	*	*
	'71-'74	0.07	0.10	0.08	0.09	*	*	*	*	*	*
	Overall	0.12	0.17	0.11	0.14	C	*	*	C	*	*
Vehicle Severity (Any)	'60-'65	1.71	1.48	2.17	2.19	*	*	P	O	P	*
	'66-'70	1.51	1.52	1.28	1.37	*	F	*	C	*	*
	'71-'74	0.86	0.89	0.72	0.92	*	F	*	C	*	P
	Overall	1.19	1.26	1.02	1.24	*	F	*	C	*	P
Vehicle Severity (Serious)	'60-'65	0.29	0.33	0.36	0.32	*	*	*	*	*	*
	'66-'70	0.21	0.25	0.18	0.21	*	*	*	*	*	*
	'71-'74	0.09	0.13	0.09	0.12	*	*	*	*	*	*
	Overall	0.16	0.21	0.15	0.18	C	*	*	C	*	*

Table 4.7 Comparison of accident and injury rates for compact cars.

Accident/ Injury Type	Model Years	Rates				Rate Comparisons					
		Maverick (Ma)	Mustang (Mu)	Nova (N)	Valiant (V)	Ma-Mu	Ma-N	Ma-V	Mu-N	Mu-V	N-V
Overall	'60-'65	4.96	7.58	6.13	6.12	Mu	N	V	Mu	Mu	*
	'66-'70	4.84	7.18	6.46	4.09	Mu	N	Ma	Mu	Mu	N
	'71-'74	5.88	7.25	5.82	4.48	Mu	*	Ma	Mu	Mu	N
	Overall	5.31	7.25	6.08	4.60	Mu	N	Ma	Mu	Mu	N
Single Vehicle	'60-'65	0.88	1.73	0.89	0.71	Mu	*	*	Mu	Mu	*
	'66-'70	0.75	1.50	1.23	0.53	Mu	N	Ma	Mu	Mu	N
	'71-'74	0.97	1.91	1.10	0.74	Mu	*	Ma	Mu	Mu	N
	Overall	0.88	1.61	1.11	0.69	Mu	N	Ma	Mu	Mu	N
Driver Injury (Any)	'60-'65	1.19	1.90	1.46	1.59	Mu	*	V	Mu	*	*
	'66-'70	0.92	1.49	1.43	0.73	Mu	N	*	*	Mu	N
	'71-'74	1.30	1.35	1.25	0.90	*	*	Ma	*	Mu	N
	Overall	1.15	1.52	1.34	0.95	Mu	N	Ma	Mu	Mu	N
Driver Injury (Serious)	'60-'65	0.21	0.31	0.24	0.32	*	*	*	*	*	*
	'66-'70	0.16	0.25	0.22	0.06	Mu	*	Ma	*	Mu	N
	'71-'74	0.18	0.17	0.21	0.14	*	*	*	*	*	N
	Overall	0.18	0.24	0.22	0.14	Mu	*	*	*	Mu	N
Vehicle Severity (Any)	'60-'65	1.45	2.25	1.85	1.96	Mu	N	V	*	*	*
	'66-'70	1.14	1.80	1.75	0.92	Mu	N	*	*	Mu	N
	'71-'74	1.57	1.70	1.47	1.07	*	*	Ma	*	Mu	N
	Overall	1.40	1.84	1.62	1.15	Mu	N	Ma	Mu	Mu	N
Vehicle Severity (Serious)	'60-'65	0.27	0.39	0.32	0.35	*	*	*	*	*	*
	'66-'70	0.18	0.30	0.27	0.08	Mu	*	Ma	*	Mu	N
	'71-'74	0.22	0.24	0.26	0.16	*	*	*	*	*	N
	Overall	0.22	0.30	0.27	0.17	Mu	*	*	*	Mu	N

Table 4.8 Comparison of accident and injury rates for subcompact cars.

Accident/ Injury Type	Model Years	Rates				Rate Comparisons					
		VW Beetle (B)	Toyota (T)	Pinto (P)	Vega (V)	B-T	B-P	B-V	T-P	T-V	P-V
Overall	'60-'65	5.58	--[1]	--	--	--	--	--	--	--	--
	'66-'70	4.91	6.96	--	--	T	--	--	--	--	--
	'71-'74	5.62	6.70	6.00	4.87	T	P	B	T	T	P
	Overall	5.30	6.74	6.00	4.87	T	P	B	T	T	P
Single Vehicle	'60-'65	1.13	--[1]	--	--	--	--	--	--	--	--
	'66-'70	0.83	1.09	--	--	T	--	--	--	--	--
	'71-'74	0.92	0.87	0.90	0.90	*	*	*	*	*	*
	Overall	0.91	0.90	0.90	0.90	*	*	*	*	*	*
Driver Injury (Any)	'60-'65	1.50	--[1]	--	--	--	--	--	--	--	--
	'66-'70	1.28	1.74	--	--	T	--	--	--	--	--
	'71-'74	1.35	1.35	1.27	1.01	*	*	B	*	T	P
	Overall	1.35	1.40	1.27	1.01	*	*	B	*	T	P
Driver Injury (Serious)	'60-'65	0.30	--[1]	--	--	--	--	--	--	--	--
	'66-'70	0.19	0.32	--	--	T	--	--	--	--	--
	'71-'74	0.16	0.20	0.17	0.16	*	*	*	*	*	*
	Overall	0.20	0.22	0.17	0.16	*	*	*	*	T	*
Vehicle Severity (Any)	'60-'65	1.84	--[1]	--	--	--	--	--	--	--	--
	'66-'70	1.51	2.14	--	--	T	--	--	--	--	--
	'71-'74	1.62	1.63	1.47	1.24	*	*	B	*	T	P
	Overall	1.61	1.70	1.47	1.24	*	*	B	T	T	P
Vehicle Severity (Serious)	'60-'65	0.37	--[1]	--	--	--	--	--	--	--	--
	'66-'70	0.23	0.40	--	--	T	--	--	--	--	--
	'71-'74	0.19	0.23	0.21	0.20	*	*	*	*	*	*
	Overall	0.24	0.25	0.21	0.20	*	*	*	*	*	*

[1] Only 6 registered '60-'65 Toyotas.

Table 4.9. Comparison of accident and injury rates for standard-sized station wagons, sedans, hardtops; two and four-door cars.

Accident/ Injury Type	Model Years	Rates					Rate Comparisons			
		Station Wagon (Sw)	Sedan (Se)	Hardtop (Ht)	2-Door (2d)	4-Door (4d)	Sw-Se	Sw-Ht	Se-Ht	2d-4d
Overall	'60-'65	4.82	5.97	6.52	6.74	5.82	Se	Ht	Ht	2d
	'66-'70	4.10	4.65	5.30	5.52	4.54	Se	Ht	Ht	2d
	'71-'74	3.24	3.83	4.00	4.12	3.66	Se	Ht	*	2d
	Overall	3.92	4.55	5.02	5.30	4.38	Se	Ht	Ht	2d
Single Vehicle	'60-'65	0.75	0.84	1.23	1.40	0.80	*	Ht	Ht	2d
	'66-'70	0.50	0.58	0.73	0.81	0.56	*	Ht	Ht	2d
	'71-'74	0.29	0.34	0.42	0.48	0.33	*	Ht	Ht	2d
	Overall	0.48	0.53	0.70	0.81	0.50	*	Ht	Ht	2d
Driver Injury (Any)	'60-'65	1.00	1.08	1.30	1.38	1.09	*	Ht	Ht	2d
	'66-'70	0.60	0.76	0.93	0.98	0.74	Se	Ht	Ht	2d
	'71-'74	0.39	0.54	0.62	0.66	0.50	Se	Ht	Ht	2d
	Overall	0.61	0.73	0.88	0.95	0.70	Se	Ht	Ht	2d
Driver Injury (Serious)	'60-'65	0.15	0.17	0.22	0.24	0.16	*	*	*	2d
	'66-'70	0.06	0.12	0.12	0.14	0.10	Se	Ht	*	2d
	'71-'74	0.06	0.08	0.08	0.10	0.07	*	*	*	2d
	Overall	0.08	0.11	0.12	0.15	0.10	Se	Ht	*	2d
Vehicle Severity (Any)	'60-'65	1.24	1.41	1.65	1.75	1.39	*	Ht	Ht	2d
	'66-'70	0.80	1.00	1.18	1.24	0.96	Se	Ht	Ht	2d
	'71-'74	0.51	0.72	0.80	0.83	0.67	Se	Ht	Ht	2d
	Overall	0.78	0.96	1.12	1.20	0.91	Se	Ht	Ht	2d
Vehicle Severity (Serious)	'60-'65	0.22	0.22	0.29	0.33	0.21	*	*	Ht	2d
	'66-'70	0.08	0.16	0.17	0.18	0.14	Se	Ht	*	2d
	'71-'74	0.07	0.10	0.10	0.12	0.09	Se	Ht	*	2d
	Overall	0.10	0.15	0.16	0.19	0.13	Se	Ht	*	2d

Table 4.10. Comparison of total and single vehicle accident rates by vehicle age for all vehicles combined -- initial and follow-up studies.

Age	Model Year		Accident Type				Rate Comparison	
	Initial (I)	Follow-Up (F)	Overall (I)	Overall (F)	Single (I)	Single (F)	Overall (I)-(F)	Single (I)-(F)
<1	1974	1975	4.66	(5.99)[1]	0.60	(0.80)[1]	-	-
2	1973	1974	4.17	4.19	0.53	0.55	*	*
3	1972	1973	4.32	4.21	0.54	0.56	I	*
4	1971	1972	4.53	4.57	0.59	0.61	*	*
5	1970	1971	4.32	4.91	0.57	0.69	F	F
6	1969	1970	5.22	4.07	0.77	0.62	I	I
7	1968	1969	5.56	5.71	0.79	0.84	F	F
8	1967	1968	5.62	5.84	0.85	0.89	F	*
9	1966	1967	5.78	6.13	0.85	1.00	F	F
10	1965	1966	5.96	6.16	0.90	0.96	F	*
11	1964	1965	5.83	6.25	0.85	1.00	F	F
12	1963	1964	5.73	6.07	0.88	0.93	F	*
13	1962	1963	5.89	5.95	0.91	0.92	*	*
14	1961	1962	5.80	6.23	0.93	1.02	*	*
15	1960	1961	5.74	6.25	0.77	0.98	*	*

[1]Rate is inflated due to consistent underestimation of the registration counts in the denominator.

Table 4.11. Comparison of driver injury rates by vehicle age for all vehicles combined -- initial and follow-up studies.

Age	Model Year		Injury Type				Rate Comparison	
	Initial (I)	Follow-Up (F)	Dr. Inj. (Any) (I)	(F)	Dr. Inj. (Ser.) (I)	(F)	Dr. Inj (Any) (I)-(F)	Dr. Inj. (Ser.) (I)-(F)
≤1	1974	1975	0.38	(1.05)[1]	0.07	(0.17)[1]	-	-
2	1973	1974	0.46	0.72	0.07	0.09	*	F
3	1972	1973	0.51	0.72	0.08	0.10	F	F
4	1971	1972	0.56	0.77	0.10	0.11	F	*
5	1970	1971	0.55	0.87	0.09	0.13	F	F
6	1969	1970	0.68	0.74	0.12	0.12	F	*
7	1968	1969	0.74	0.99	0.13	0.14	F	*
8	1967	1968	0.81	1.00	0.13	0.15	F	*
9	1966	1967	0.84	1.16	0.15	0.18	F	F
10	1965	1966	0.92	1.20	0.18	0.18	F	*
11	1964	1965	0.99	1.30	0.20	0.23	F	*
12	1963	1964	0.97	1.22	0.19	0.18	F	*
13	1962	1963	1.04	1.19	0.23	0.20	F	*
14	1961	1962	1.10	1.29	0.24	0.23	F	*
15	1960	1961	0.93	1.33	0.18	0.26	F	*

[1]Rate is inflated to consistent underestimation of the registration counts in the denominator.

Table 4.12. Comparison of vehicle severity rates by vehicle age for all vehicles combined -- initial and follow-up studies.

Age	Model Year		Injury Type				Rate Comparison	
	Initial (I)	Follow-Up (F)	Veh.Sev. (Any) (I)	Veh.Sev. (Any) (F)	Veh.Sev. (Ser.) (I)	Veh.Sev. (Ser.) (F)	Veh.Sev. (Any) (I)-(F)	Veh.Sev. (Ser.) (I)-(F)
≤1	1974	1975	0.49	(1.27)[1]	0.09	(0.20)[1]	-	-
2	1973	1974	0.56	0.89	0.09	0.11	F	F
3	1972	1973	0.62	0.89	0.10	0.12	F	F
4	1971	1972	0.69	0.95	0.12	0.13	F	*
5	1970	1971	0.67	1.09	0.11	0.16	F	F
6	1969	1970	0.83	0.91	0.14	0.15	F	*
7	1968	1969	0.90	1.24	0.15	0.18	F	*
8	1967	1968	1.00	1.28	0.16	0.18	F	*
9	1966	1967	1.03	1.46	0.19	0.23	F	F
10	1965	1966	1.13	1.50	0.22	0.23	F	*
11	1964	1965	1.17	1.63	0.24	0.28	F	*
12	1963	1964	1.16	1.54	0.22	0.24	F	*
13	1962	1963	1.22	1.55	0.28	0.28	F	*
14	1961	1962	1.24	1.70	0.30	0.30	F	*
15	1960	1961	1.15	1.72	0.22	0.33	F	*

[1]Rate is inflated due to consistent underestimation of the registration counts in the denominator.

V. INSPECTION ITEM FAILURE RATES

A program of periodic motor vehicle inspection (PMVI) was initiated in North Carolina in 1966. The goal of this program is to reduce the number of mechanically unsafe vehicles on North Carolina roads and to thereby reduce the number of accidents that are primarily caused by mechanical failures. Figure 2.1 shows the items that are included in the PMVI program in North Carolina.

In this study, the analysis was restricted to four inspection items -- headlights, stoplights, footbrakes and tires. It was felt that these items were among those items most likely to be associated with accidents caused by mechanical failures. This section presents the results of an investigation of failure rates and their relationship to vehicle size, age and mileage, where failure rate has been defined as the proportion of vehicles that did not meet the specifications described in the North Carolina Motor Vehicle Inspection Handbook. For the convenience of the reader, the North Carolina Safety Inspection Regulations governing these four inspection items are indicated below.

Headlights. Inspect and disapprove if:

(1) There are not at least two headlamps (at least four on dual headlamp systems which require four units) on all self-propelled vehicles except that motorcycles and motor-driven cycles need only one.

(2) Lens produces other than a white or yellow light. Any lens is cracked, broken, discolored, missing, or rotated away from the proper position, or any reflector is not clean and bright.

(3) The high beam -- low beam dimmer switch does not operate properly.

(4) Lights can be moved easily by hand, due to a broken fender or hose support, or if a good ground is not made by the mounting.

(5) Foreign material such as shields, half of lens painted, etc., placed on headlamp lens interferes with light beam of lamp.

(6) Lights are improperly aimed. A light testing machine or light testing chart must be used to determine this.

(7) Lights project a dazzling or glaring light when on low beam.

Stoplights. Inspect and disapprove if:

(1) Lens is cracked, discolored or of a color other than red, amber, or yellow.

(2) Light does not come on when pressure is applied to footbrake.

(3) It is not securely mounted so as to project a light to the rear.

Footbrakes. Inspect and disapprove if:

(1) When applying brakes to moving vehicle, braking force is not distributed evenly to all wheels originally equipped with brakes by the manufacturer. (Mechanic must drive vehicle to make this test. May be checked while driving vehicle forward into the inspection area.)

(2) There is audible indication (metal on metal) that brake lining is worn to the extent that it is no longer serviceable. (Wheel must be pulled and brake lining examined when this occurs.)

(3) Pedal reserve is less than 1/3 of the total possible travel when the brakes are fully applied, or does not meet the manufacturer's specifications for power brakes or air brakes.

(4) Reservoir of master cylinder is not full.

(5) There is visible leakage or audible seepage in hydraulic, vacuum or air lines and cylinders, or visible cracked, chafed, worn, or weakened hoses.

(6) Vehicle has any part of the brake system removed or disconnected.

(7) Brake pedal moves slowly toward the toeboard (indicating fluid leakage) while pedal pressure is maintained for one minute.

Tires. Inspect and disapprove if:

(1) Any tire is worn to where less than 2/32 inch tread remains at three equally spaced intervals around the circumference of the tire when measured in two adjacent grooves nearest the center of the tire. (Exclusive of tire bars and tread wear indicators.) Any tire has a localized worn spot that exposes the cord.

(2) Any tire has cuts or snags in excess of one inch in any direction and deep enough to expose the cords.

(3) Any tire has a visible bump, bulge, or knot apparently related to tread or sidewall separation or partial failure of the tire structure including bead area.

Results

When crash and injury rates were being compared in Chapter IV, 1975 model vehicles were excluded from the comparisons. This was necessary, since as stated earlier, there appeared to be a problem in processing the registration files for the 1975 models. However, in this section the sample of inspection results is assumed to represent a random sample of all inspections carried out in North Carolina and hence the failure rate estimates should yield estimates of the condition of the entire fleet of N.C. autos and station wagons with respect to the condition of headlights, stoplights, footbrakes, and tires.

Figures 5.1 - 5.4 and Figures 5.5 - 5.8 present the various failure rates for full, middle and small-sized cars by model year and current odometer reading, respectively. These figures show that, in general, the failure rates for the four inspection items are highest for high mileage and/or older model vehicles. Similar results were obtained in previous HSRC reports (Reinfurt and Pascarella, 1969; Reinfurt, House and Levine, 1971). Tests of significance showed very few significant differences in defect rates for the three sizes within the same model year or mileage groups.

Note the initial decline in failure rates for stoplights and footbrakes for the lower mileage categories. Undoubtedly, many of these vehicles are older vehicles with recycled odometers and hence only appear

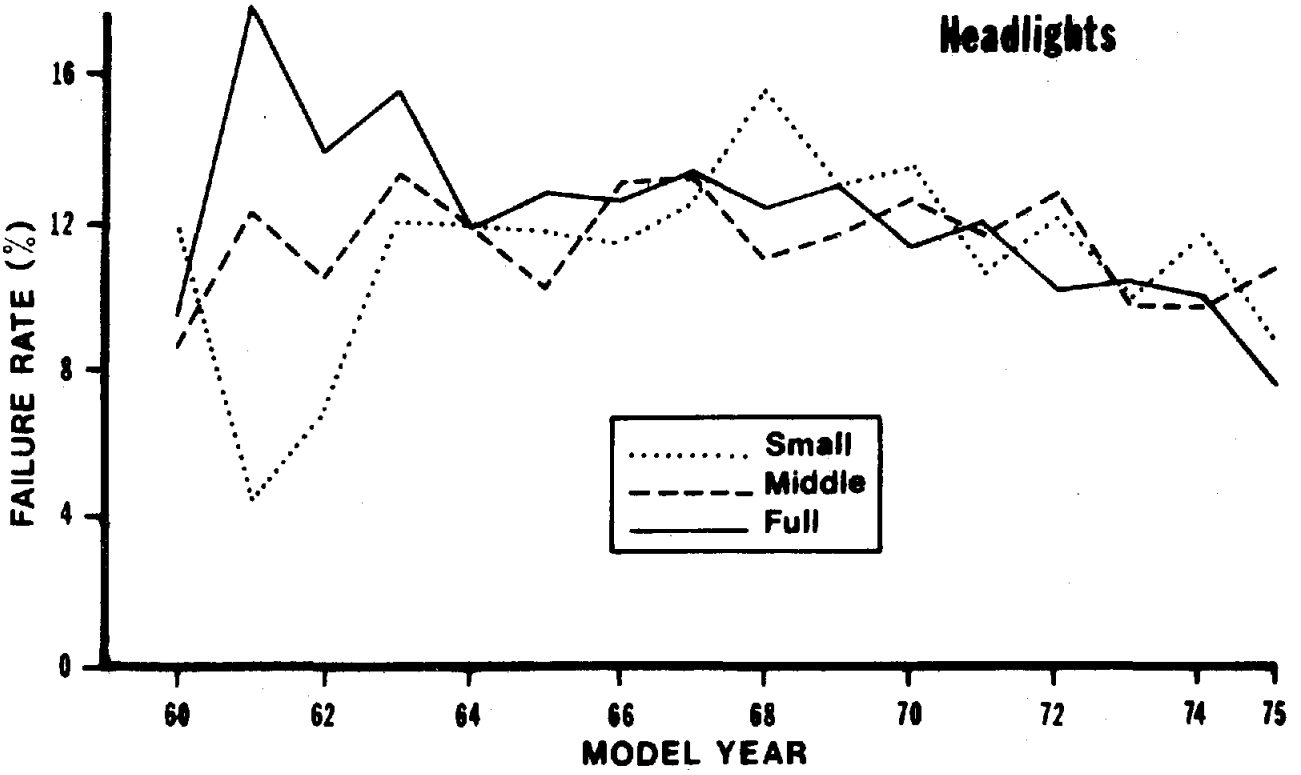


Figure 5.1 Headlight failure rates by model year for full, middle, and small-sized cars.

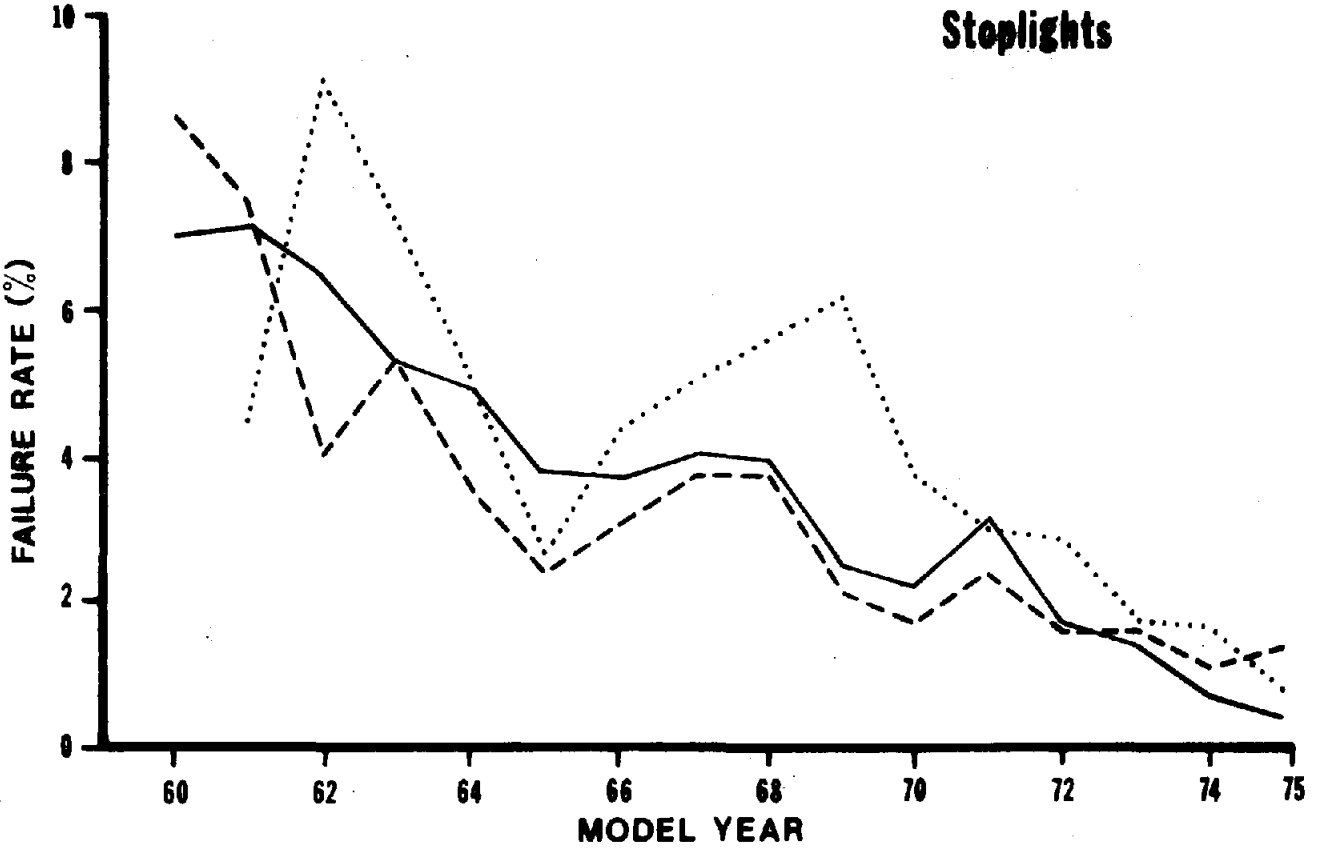


Figure 5.2 Stoplight failure rates by model year for full, middle, and small-sized cars.

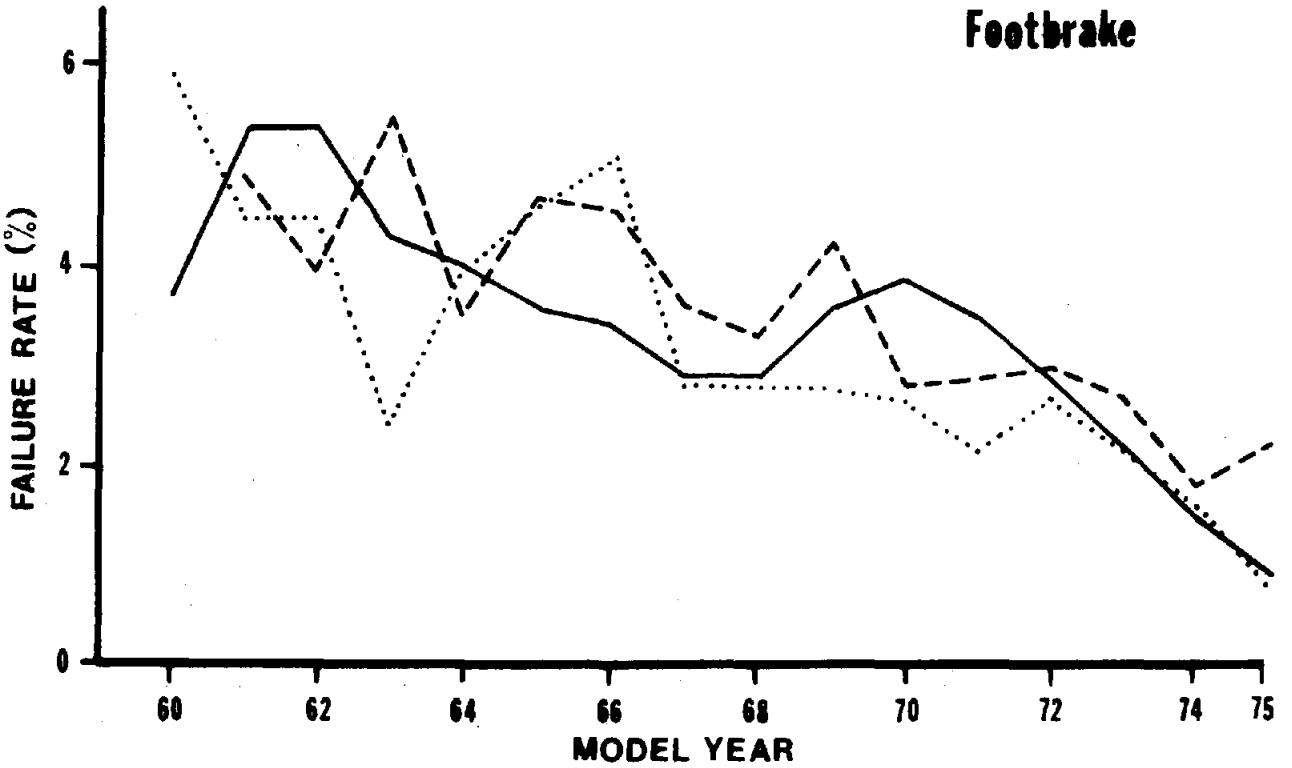


Figure 5.3 Footbrake failure rates by model year for full, middle and small-sized cars.

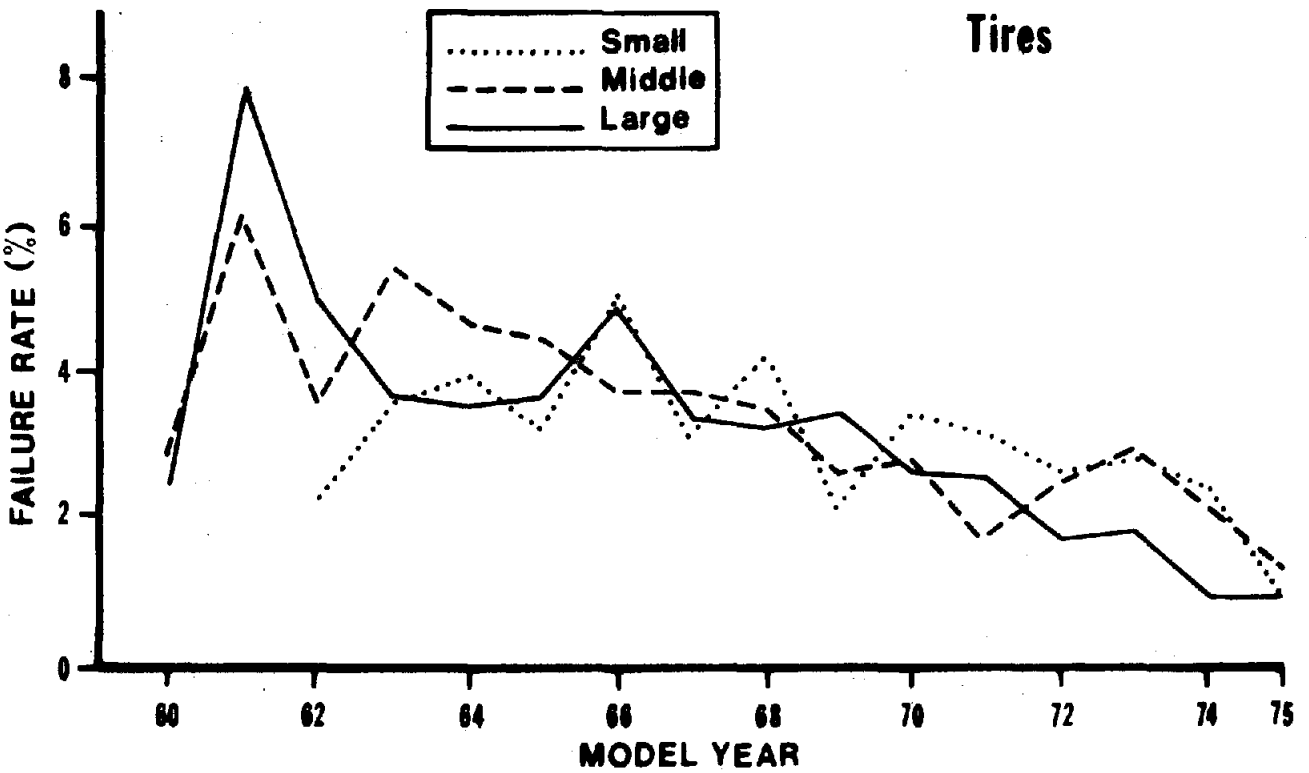


Figure 5.4 Tire failure rates by model year for full, middle, and small-sized cars.

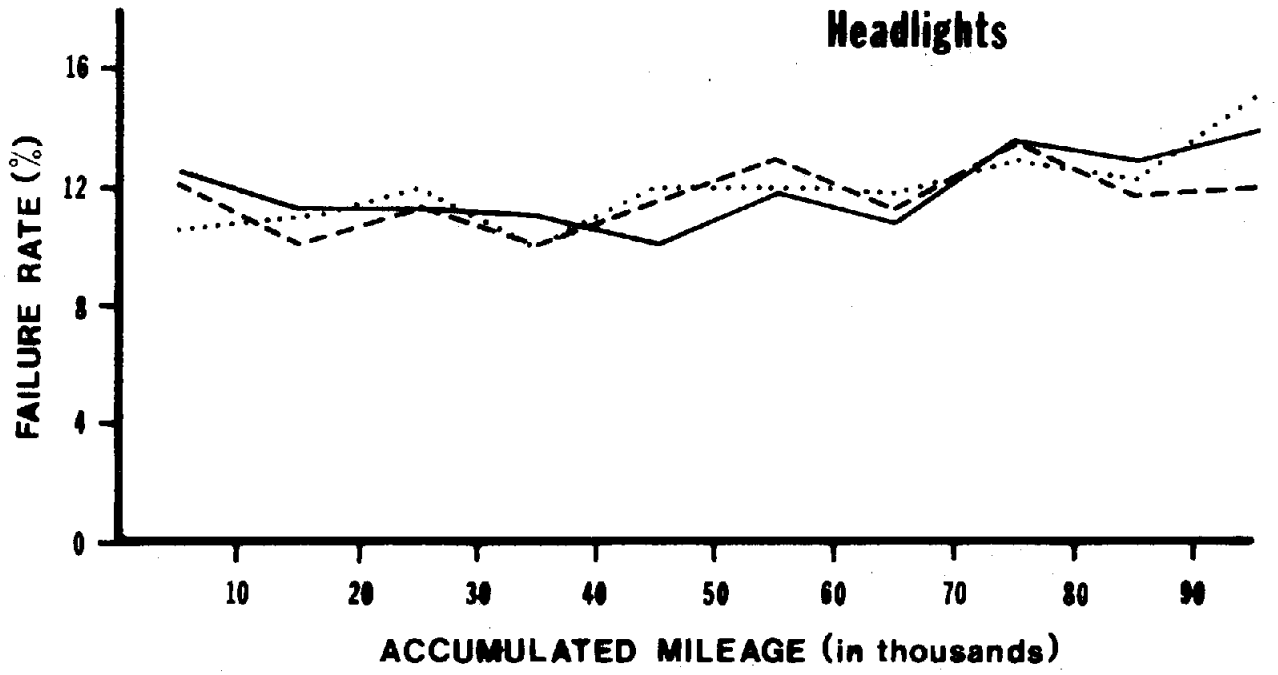


Figure 5.5 Headlight failure rates by accumulated mileage for full, middle, and small-sized cars.

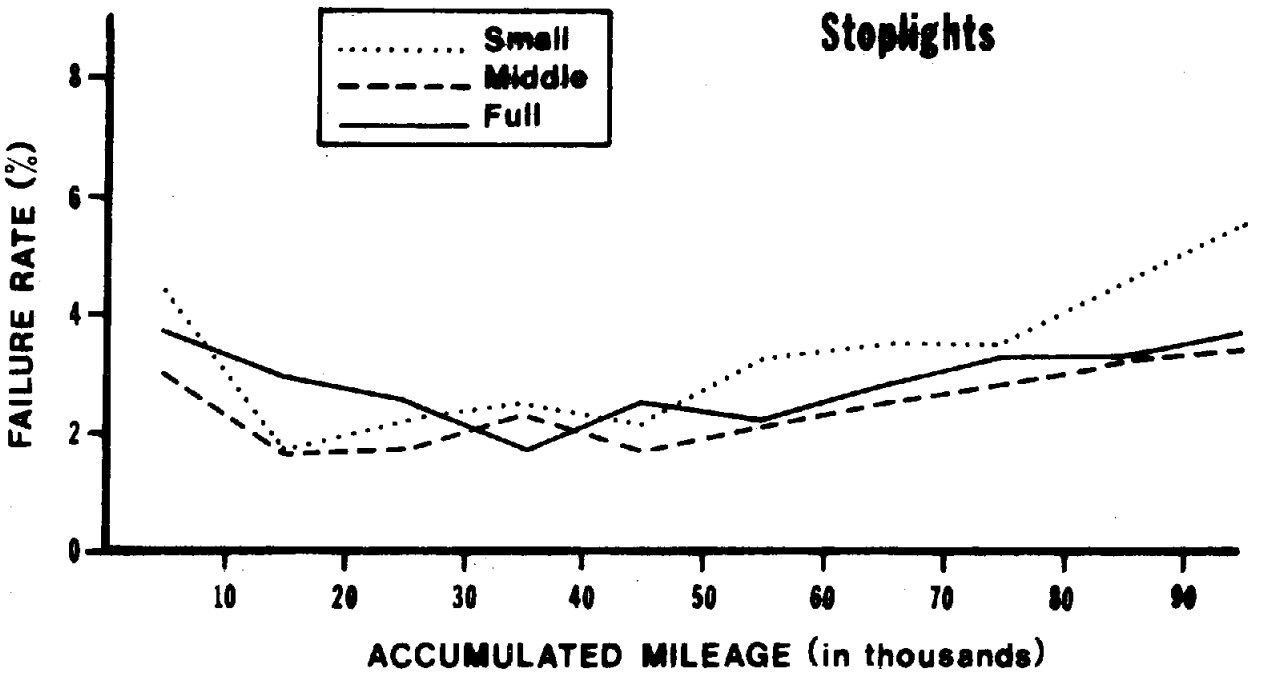


Figure 5.6 Stoplight failure rates by accumulated mileage for full, middle, and small-sized cars.

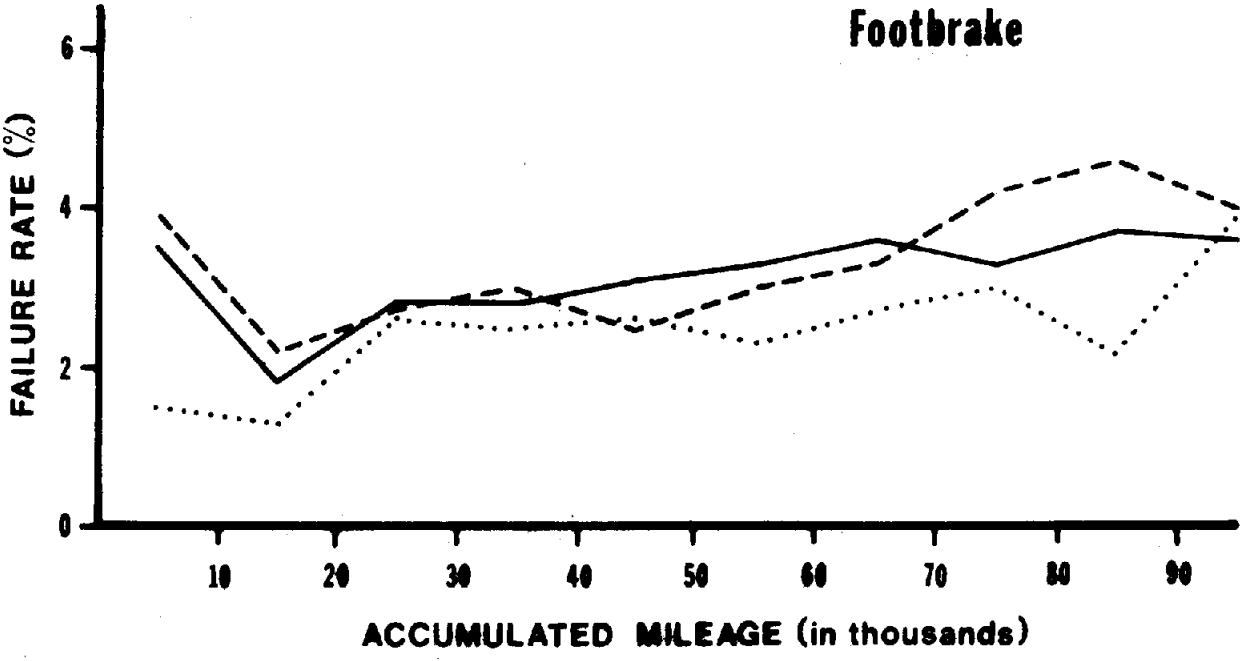


Figure 5.7 Footbrake failure rates by accumulated mileage for full, middle, and small-sized cars.

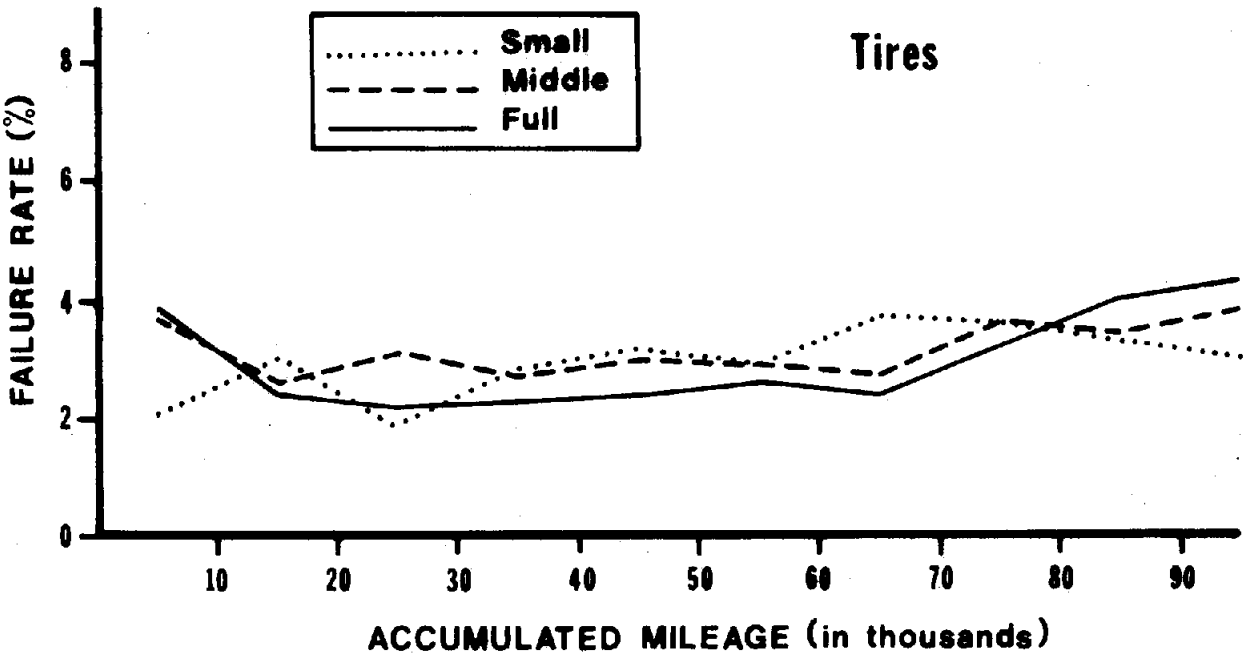


Figure 5.8 Tire failure rates by accumulated mileage for full, middle, and small-sized cars.

to be low mileage vehicles. Unfortunately, there is no precise mechanism for redistributing the recycled vehicles with their higher failure rates into the higher mileage categories (i.e., 100,000-plus miles).

Figures 5.9 - 5.12 show the failure rates for full, middle and small-sized cars by accumulated mileage for three model year groups (1960-65, 1966-70, and 1971-75). Old vehicles with extremely low accumulated mileages were eliminated from this part of the analysis due to the likelihood of recycled odometers. Also excluded were vehicles with odometer readings greater than 100,000 miles.

Due to sample size limitations, the failure rates for all cars and station wagons combined (Figures 5.9a-5.12a) are the most reliable. The large deviations from say one mileage category to the next in the figures within car size are assumed to be mainly random fluctuations -- the general slopes of the curves and relative positions constitute the main significance of the graphs.

Figures 5.9 - 5.12 confirm the association between increasing defect rates and increasing vehicle mileage and/or age. As expected, these figures also show that the effect of mileage on vehicle defects is not the same across all model years, i.e., that there is an interaction between age and mileage on failure rates. Generally, it appears that the mileage effect is most pronounced for new cars and least pronounced for the oldest car groups. This is consistent with previous HSRC studies in this area.

In connection with this association between high failure rates and vehicle age and/or accumulated mileage, perhaps there is a need to introduce a variable intensity inspection program. Under such programs, the inspection of some items could be less rigorous for a new vehicle compared to an old or a high mileage vehicle. Thus, if more rigorous inspection tests and standards were set up, this program would call for a more in-depth inspection of those vehicles where more defects are likely to be found.

In terms of relative magnitudes of defect rates, headlights have by far the highest defect rates for all vehicle size groups. This probably

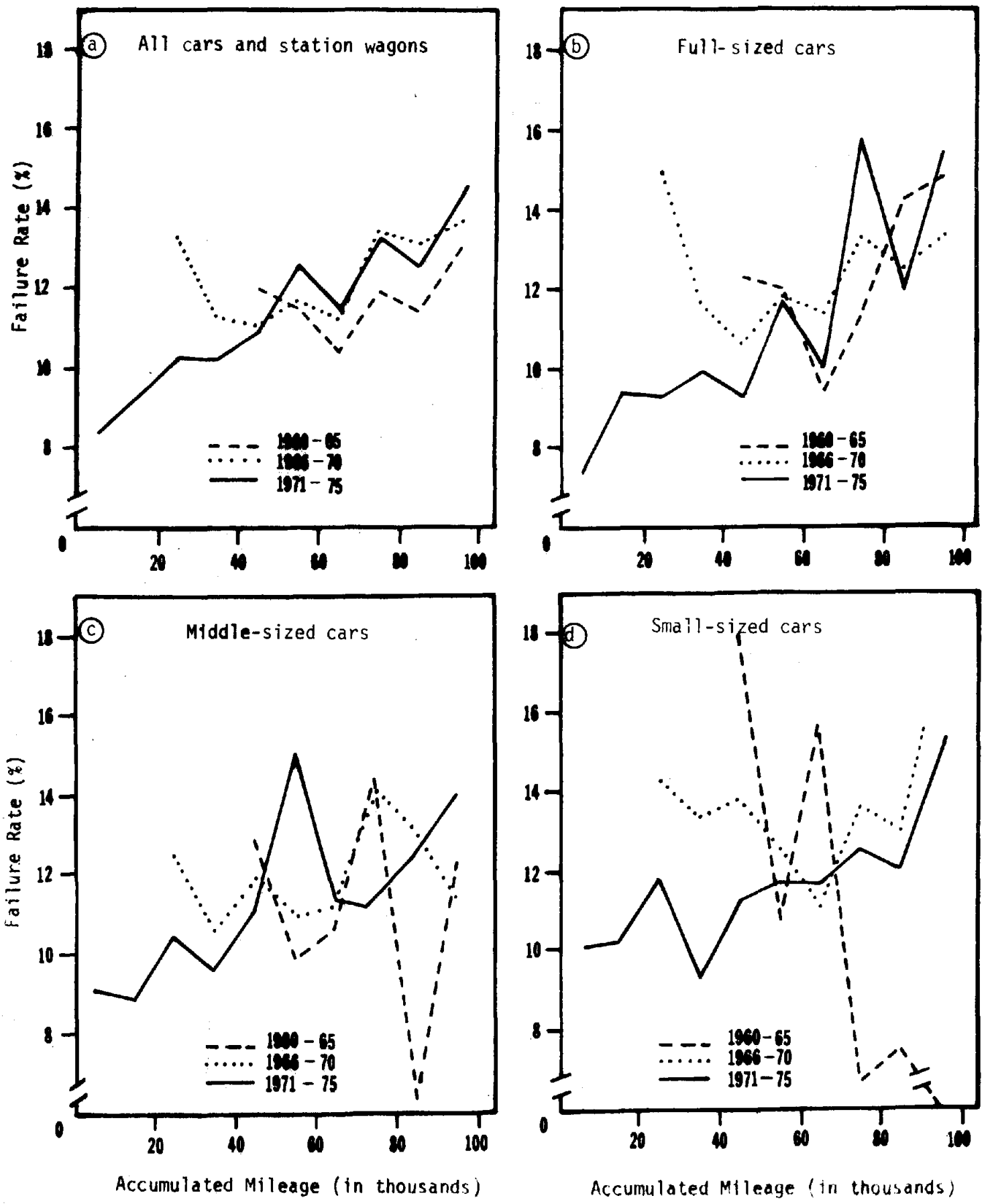


Figure 5.9 a-d. Headlight failure rates by model year and accumulated mileage for all vehicle makes and full, middle and small-sized cars.

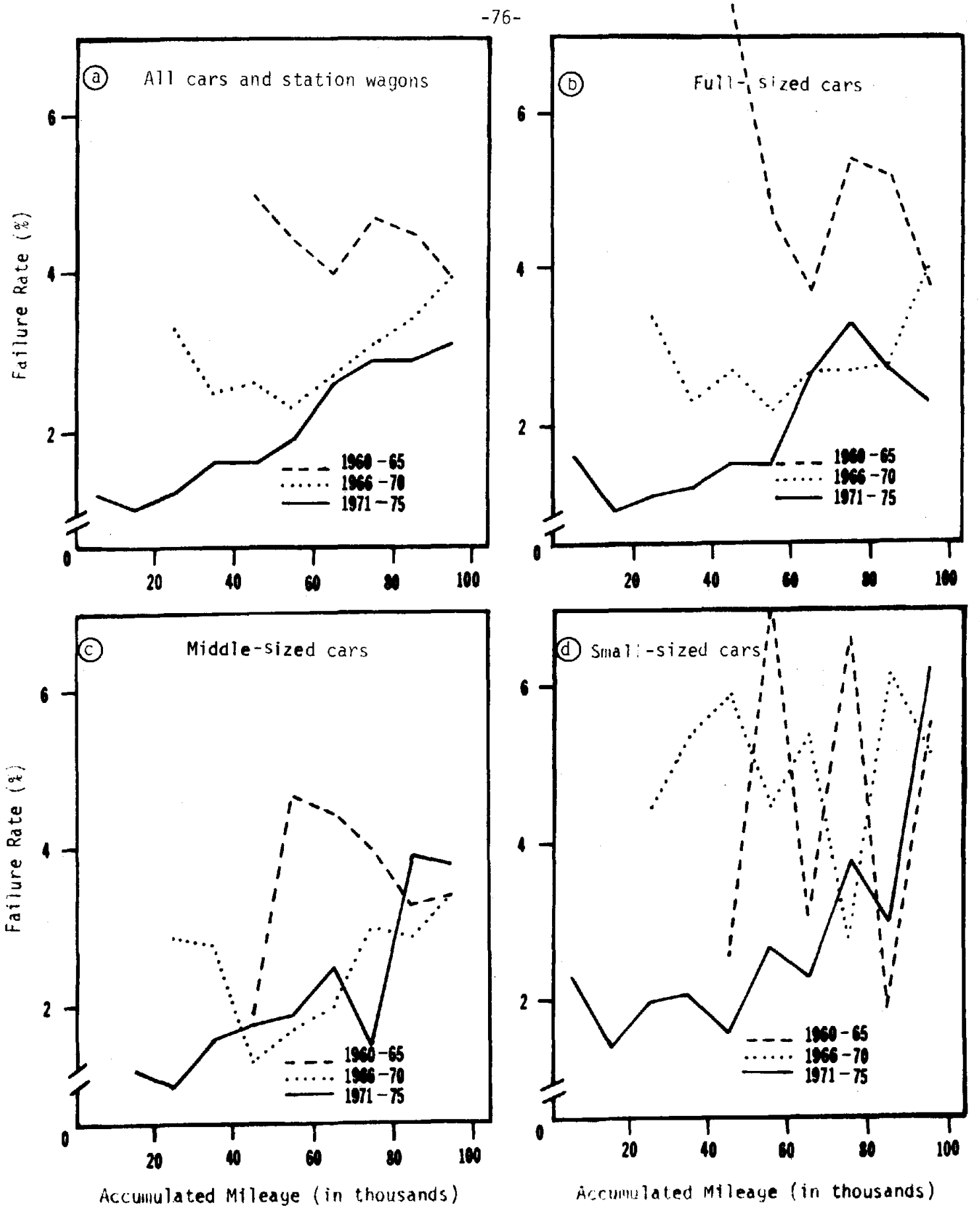


Figure 5.10 a-d. Stoplight failure rates by model year and accumulated mileage for all vehicle makes and full, middle and small-sized cars.

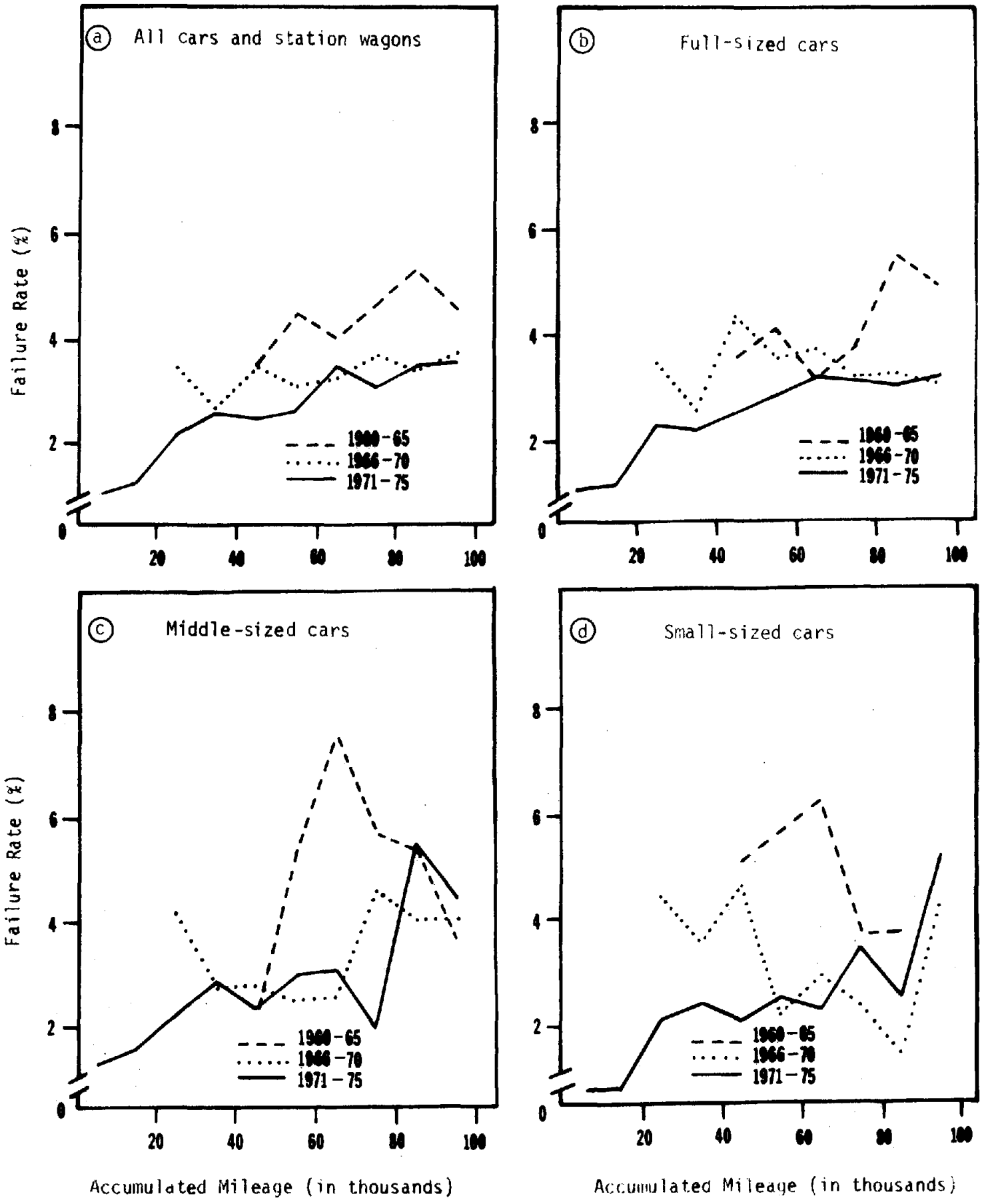


Figure 5.11 a-d. Footbrake failure rates by model year and accumulated mileage for all vehicle makes and full, middle, and small-sized cars.

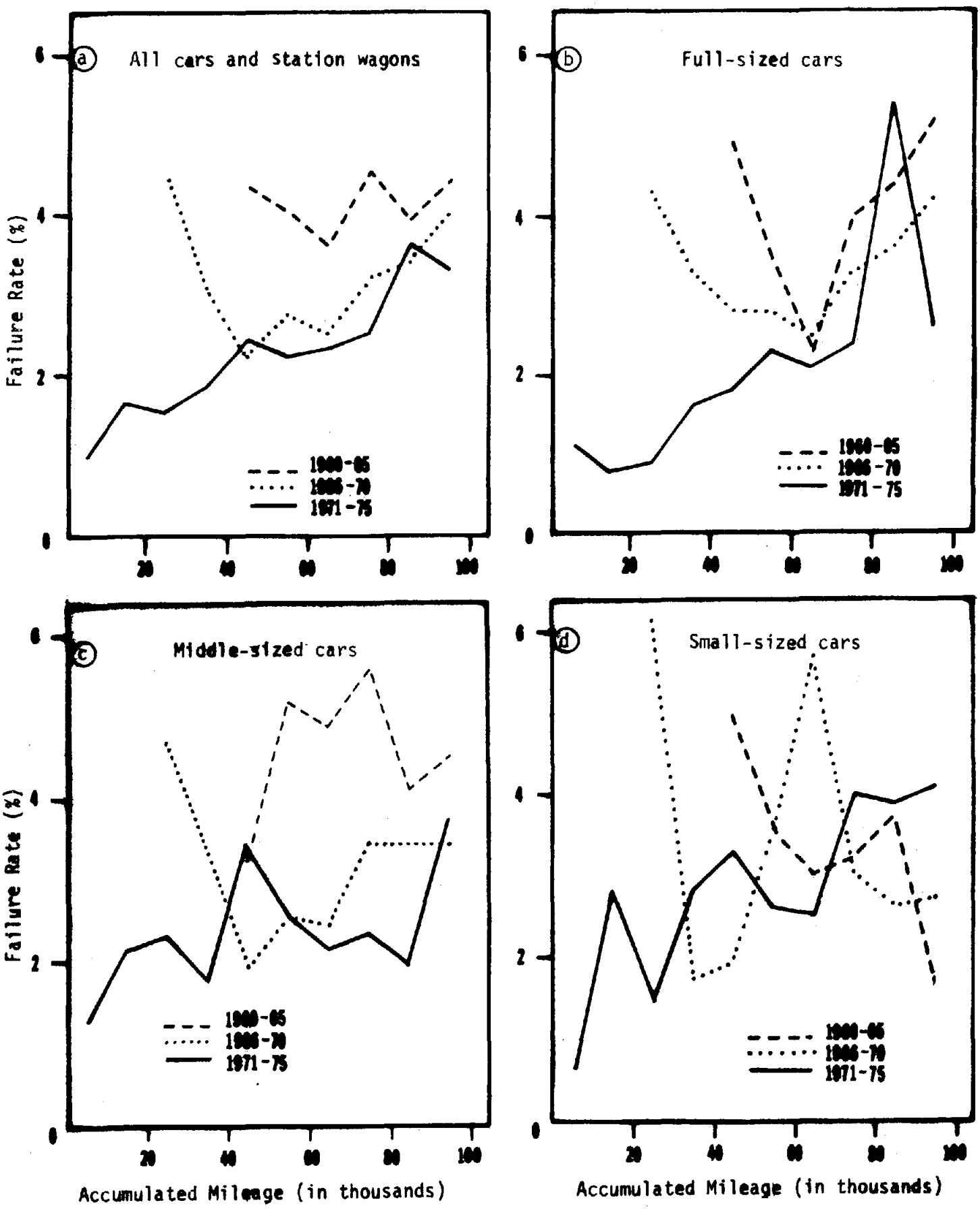


Figure 5.12 a-d. Tire failure rates by model year and accumulated mileage for all vehicle makes and full, middle and small-sized cars.

indicates problems in the structural features of the systems such that the headlights are unable to maintain the required alignment.

Since one would expect similar item failure rates within model years across body styles (e.g., two-door vs. four-door standard-sized cars) as they probably would have the same basic lighting systems, brakes, etc., no attempt was made to compare failure rates for the various body style groups.

VI. SUMMARY AND CONCLUSION

This report is a follow-up on a recent study (Dutt and Reinfurt, 1977) and presents estimates of annual mileages for a number of vehicle makes and models, along with accident and injury rates per million vehicle miles for the various makes and model years. In addition, various item failure rates by vehicle size and age are presented for vehicles undergoing periodic motor vehicle inspection.

The exposure period covered by this follow-up study extended from January 1, 1975 to December 31, 1975. This corresponded to the post energy crisis period, while the exposure period (October 16, 1973 - October 15, 1974) for the initial study encompassed the height of the energy crisis.

The estimates of annual mileages and failure rates were obtained from a statewide sample of motor vehicle inspection receipts representing primarily December, 1975 inspections. The derived estimated annual mileages for a large number of specific vehicle makes and models were then multiplied by the corresponding number of registered vehicles in the state to produce vehicle-specific fleet exposure estimates for the period under study.

In the initial report, the registration frequency utilized was a weighted average of registration counts from three different periods representing the beginning, middle and end of the exposure period. It was shown, however, that using a single registration count obtained from the middle of the exposure period did not alter the accident rates noticeably except for vehicles less than one year old. Consequently, in this follow-up study, a registration file from approximately the mid-point of the exposure period was used to determine the registration frequencies.

The 1975 North Carolina accident file provided information on the number and type of accidents along with extent of driver and occupant injury by vehicle make and model year. As in the previous study, overall accident rates for each make/model combination were found by dividing the total number of vehicles involved in accidents during the specified

time period by the estimated overall fleet mileage accumulated during that period. Similarly, driver injury rates were found by dividing the number of drivers involved in different injury categories by the overall fleet mileage accumulated for the given make/model combination during the exposure period.

Some of the results of the current study are highlighted below.

Annual Vehicle Mileage

As in the initial study, annual vehicle mileages were lower for the older model year cars. Thus, for example, the average annual mileage for all vehicle makes decreased from over 14,000 miles for 1975 models to less than 6,500 miles for 1960 models. This decreasing trend with increasing vehicle age was confirmed for all vehicle sizes and makes.

In comparing the annual mileage estimates by car size and body style, trends quite similar to those found in the initial study were observed. For example, old small-sized cars had higher annual mileages than old full or middle-sized cars, while the newer small-sized cars had lower annual mileages than their larger-sized counterparts. This last finding is in contrast to the previous study and may reflect the driving population switching back to the more comfortable, larger car for most of their driving; after all, the gas lines had disappeared and the motorist seemed accustomed by then to the higher gas prices. Whatever the reason, the newer ('70-'75) subcompacts had lower annual mileages than their larger counterparts.

Note that the estimates for older model subcompacts are essentially the estimates for VW Beetles, since during those years this was the only make of subcompact being sold in large numbers in the U.S.

Body style comparisons showed that most standard-sized station wagons again had higher annual mileages than standard-sized sedans or hardtops. Also, new standard-sized four-door cars had higher annual mileages than their two-door counterparts.

A comparison of the annual mileage estimates across the two exposure periods showed an increase of over five percent for new cars and

approximately 3.6 percent for old cars for all makes combined. Similar comparisons showed that, for full and middle-sized cars, there was an increase in annual mileage, particularly for the newer model years. However, as stated previously, for new model small-sized cars there was a slight decrease in mileage in the second exposure period. These changes reflect some of the effects of the energy crisis on vehicle travel and evidently its differential effect on annual mileage by vehicle size.

Accident and Injury Rates

In the initial report, a major effort was made to take into consideration driver age-sex characteristics while making accident rate comparisons. The main obstacle to this effort was the lack of adequate data required for the adjustment procedures. In the current follow-up study, no attempt was made to adjust the accident and injury rates for driver characteristics since in the interim period no additional data source became available. However, an examination of driver age by car size for vehicles involved in accidents showed that the mean driver age for small-sized cars is lower than those for middle or full-sized cars. This most likely at least partially explains the higher involvement rates for small-sized cars.

The accident and injury comparisons in the present study indicate virtually the same trends as in the earlier report. The involvement rates -- both overall and single vehicle -- decline for newer model cars with the trend being more pronounced for full-sized cars than for middle or small-sized cars. However, injury rates, including driver injury and vehicle severity measures, decreased for newer models across all vehicle sizes.

In contrasting accident and injury rates for different vehicle sizes for comparable model years, similar results were again obtained. Small-sized cars had not only higher injury rates (both driver injury and vehicle severity) but also higher involvement rates (both overall and single vehicle).

Comparisons by body style for the standard-sized cars showed that hardtops had significantly higher involvement and injury rates than either sedans or station wagons. Similarly, two-door standard-sized cars had higher involvement and injury rates than their four-door counterparts.

In comparing the accident and injury rates for vehicles across the two exposure periods, it was seen that the follow-up rates were generally

higher than the rates for the initial study. This is especially true for the two 'any injury' categories (driver and vehicle severity) -- and to some extent the overall accident involvement rate. These higher involvement and injury rates might be partially explained by the fact that more people were driving above the 55 mph speed limit in the latter exposure period which followed the energy crisis.

Failure Rates

In the current follow-up study, the failure rates of four inspection items -- headlights, stoplights, footbrakes and tires -- were investigated. The primary purpose was to study the relationship between item failure rates and vehicle size, age, and accumulated mileage. The failure rate was defined as the proportion of vehicles that did not meet the inspection specifications prescribed by the North Carolina Division of Motor Vehicles.

The results show that, in general, the failure rates for all four inspection items are highest for high mileage and/or older model cars. Also, there were very few significant differences in defect rates for the full, middle and small-sized cars within the same model year or mileage group. As expected, it was observed that the effect of mileage on vehicle defects is not the same across all model years, i.e., there is an interaction between age and mileage on failure rates.

Recommendations

The procedure used in the initial and follow-up studies for determining vehicle mileages from paired odometer readings currently appears to be the best method for gathering vehicle-specific exposure data. Unfortunately, this procedure is heavily dependent on current and past odometer readings being recorded by the inspection mechanic, and the two studies indicate that in North Carolina, with over 6000 inspection stations to monitor, a major portion of the inspection receipts have one or both mileages missing. Although a comparison of the usable and unusable receipts showed that the two groups were similar, a loss of data due to missing data elements unfortunately made for extremely small sample sizes

for many individual vehicle makes and model years. With such a large number of inspection stations involved, it appears unlikely that the percentage of usable inspection receipts could be increased dramatically.

A reasonable alternative could be to select a representative sample of inspection stations and to collect inspection receipts from these stations over a longer period of time, say six months. Special instructions could be given to each station and the quality of the receipts closely monitored during the data collection period.

Another problem has to do with discarding accident data due to incorrect reporting of VIN's by the investigating officer at the scene of an accident. Consequently, in processing the 1975 North Carolina accident file to determine the accident frequencies for the various vehicle makes and model years, a fairly large portion of the records had to be excluded. This problem could be alleviated to a great extent by using the license plate number (since it is easier to record and hence more likely to be correct) to obtain the VIN information through the registration file and then determine vehicle make and model year from that VIN. Thus, the numerators in the expressions for the accident rates would be inflated to represent more closely the true rates. However, for the initial and follow-up studies, the rejected records and the usable records were very comparable. Thus, although the absolute involvement and injury rates may have been underestimated, their relative magnitudes should have been preserved.

The relationship between increasing failure rates and vehicle age and/or mileage warrants consideration of some form of variable intensity inspection program. Under such a program old or high mileage vehicles would be more rigorously inspected than new or low mileage vehicles since more defects would be expected in the former group of vehicles.

REFERENCES

Dutt, A.K. and Reinfurt, D.W. Accident involvement and crash injury rates by make, model, and year of car. Chapel Hill: University of North Carolina Highway Safety Research Center, April 1977.

Reinfurt, D.W., House, E.G., and Levine, D.N. Periodic motor vehicle inspection in North Carolina: A follow-up study. Chapel Hill: University of North Carolina Highway Safety Research Center, November 1971.

Reinfurt, D.W. and Pascarella, E.A. Periodic motor vehicle inspection in North Carolina: A descriptive study. Chapel Hill: University of North Carolina Highway Safety Research Center, November 1969.

Seila, A.F., Entsminger, M.A. and Silva, C.Z. An examination of the lowered maximum speed limit and fuel shortage in North Carolina. Chapel Hill: University of North Carolina Highway Safety Research Center, June 1977.

Sichel, H.S. The statistical estimation of individual accident liability. Traffic Safety Research Review, 1965, 9, 8-15.

Snedecor, G.W. and Cochran, W.G. Statistical Methods. Ames, Iowa: The Iowa State University Press, 1968.

White, S.B., Clayton, C.A., Bressler, L.D. and Stewart, J.R. Improved exposure measurements. Research Triangle Park, N.C.: Research Triangle Institute, 1975.

Appendix A. Estimation of Annual Mileage.

Prior to computing the elapsed mileage between inspection dates (i.e., over the corresponding time period), various frequency tabulations were made to examine the distribution of vehicle type, odometer readings, and dates of inspection. Previous experience dictated that there would be problems with recycled odometers (i.e., those that have wrapped around), reversal of mileages (i.e., old mileage recorded as the current mileage), etc.

Table A.1 presents the distribution of the sample by vehicle type and model year. Trucks and "Other" vehicles are excluded from the subsequent analysis. Some of the "Unknown" cars and station wagons were later classified into a make/model/year group through the license plate number and subsequent VIN decoding program.

Table A.2 shows the distribution of cars and station wagons in a two-way table of past mileage versus present mileage. One would expect most of the vehicles to lie fairly close to the diagonal elements or below it. Table A.2 does follow this general pattern except for (a) odometer wrap-arounds (these lie mostly at the intersections of columns 7, 8, 9, 10 and the first 3 rows); (b) reversal of past and present mileage by the inspection mechanic (this accounts for the relatively high frequencies in the cells just above the diagonal elements), and (c) inclusion of the fractional part of the odometer readings as an integer (this was reflected in the higher frequencies in the lower cells of the first three columns).

Figure A.1 shows the algorithm used to salvage the recycled and odometer reversal cases and to compute the distance covered since the last motor vehicle inspection. This algorithm eliminates some records and the resulting sample distribution by make/model/year group was compared with the registration frequencies to ascertain that no serious biases were introduced in this redistribution process.

Table A.3 shows the number of cars and station wagons distributed by the two inspection months. Although the inspection books were collected in January (representing December 1975 inspections), a fair number of

Table A.1. Distribution of vehicle type by model year as indicated on the inspection receipt (see Figure 2.1).

Model Year \ Vehicle Type	Auto	Station Wagon	Truck	Bus	Trailer	Motor-Cycle	Unknown	Total	(%)
Unknown	15,803	1,554	5,122	109	225	203	1,210	24,226	(10.0)
Pre-'60	2,073	119	3,861	144	197	10	370	6,774	(2.8)
'60	618	51	636	33	25	2	59	1,424	(0.6)
'61	956	108	668	35	30	2	82	1,881	(0.8)
'62	2,173	199	1,015	33	34	4	137	3,595	(1.5)
'63	3,443	293	1,257	29	44	3	244	5,313	(2.2)
'64	5,142	417	1,573	36	73	8	343	7,592	(3.1)
'65	7,187	565	1,849	31	71	9	433	10,145	(4.5)
'66	8,766	672	2,260	51	96	9	514	12,368	(5.1)
'67	9,167	716	2,271	45	99	9	565	12,872	(5.3)
'68	11,390	830	2,530	45	128	16	630	15,569	(6.4)
'69	13,090	1,007	3,287	65	142	16	751	18,358	(7.5)
'70	13,525	934	3,074	62	112	44	800	18,551	(7.6)
'71	11,970	1,092	2,745	47	102	70	735	16,761	(6.9)
'72	16,320	1,462	4,180	80	191	147	971	23,351	(9.6)
'73	17,313	1,675	4,682	86	197	201	1,087	25,241	(10.4)
'74	16,583	1,646	5,074	71	172	303	1,017	24,866	(10.2)
'75	9,019	837	3,029	118	277	350	653	14,283	(5.9)
Total	164,583	14,177	49,113	1,120	2,215	1,406	10,406	243,170	(100.0)

Table A.1. Past mileage vs. present mileage frequency distribution (cars and station wagons).

Present Mileage \ Past Mileage	0 to 10,000 ①	10,001 to 20,000 ②	20,001 to 30,000 ③	30,001 to 40,000 ④	40,001 to 50,000 ⑤	50,001 to 60,000 ⑥	60,001 to 70,000 ⑦	70,001 to 80,000 ⑧	80,001 to 90,000 ⑨	90,001 to 100,000 ⑩	100,001 to 110,000 ⑪	110,001 to 120,000 ⑫	120,001 to Greater ⑬
0 to 10,000 ①	3268	54	38	26	34	44	77	206	964	2445	11	2	10
10,001 to 20,000 ②	6094	2011	35	24	19	26	37	59	187	834	19	9	5
20,001 to 30,000 ③	2047	6085	1746	18	18	10	28	22	50	162	6	8	17
30,001 to 40,000 ④	476	2494	5648	1644	33	15	15	25	22	36	-	3	16
40,001 to 50,000 ⑤	166	412	2355	5306	1685	37	18	18	16	21	1	1	23
50,001 to 60,000 ⑥	77	83	478	2019	5045	1739	28	20	17	17	-	2	22
60,001 to 70,000 ⑦	75	24	78	390	1972	4957	1809	25	22	16	-	2	17
70,001 to 80,000 ⑧	72	28	34	90	302	1605	4898	1719	32	17	-	-	28
80,001 to 90,000 ⑨	69	30	23	28	81	284	1524	4218	1473	19	1	-	18
90,001 to 100,000 ⑩	79	17	20	24	33	75	258	1408	3500	1132	5	2	16
100,001 to 110,000 ⑪	8	0	0	0	0	0	1	18	54	169	19	2	20
110,001 to 120,000 ⑫	9	1	0	2	0	1	1	3	13	46	28	5	1
120,001 and Greater ⑬	43	42	34	46	41	44	47	39	30	37	12	23	293

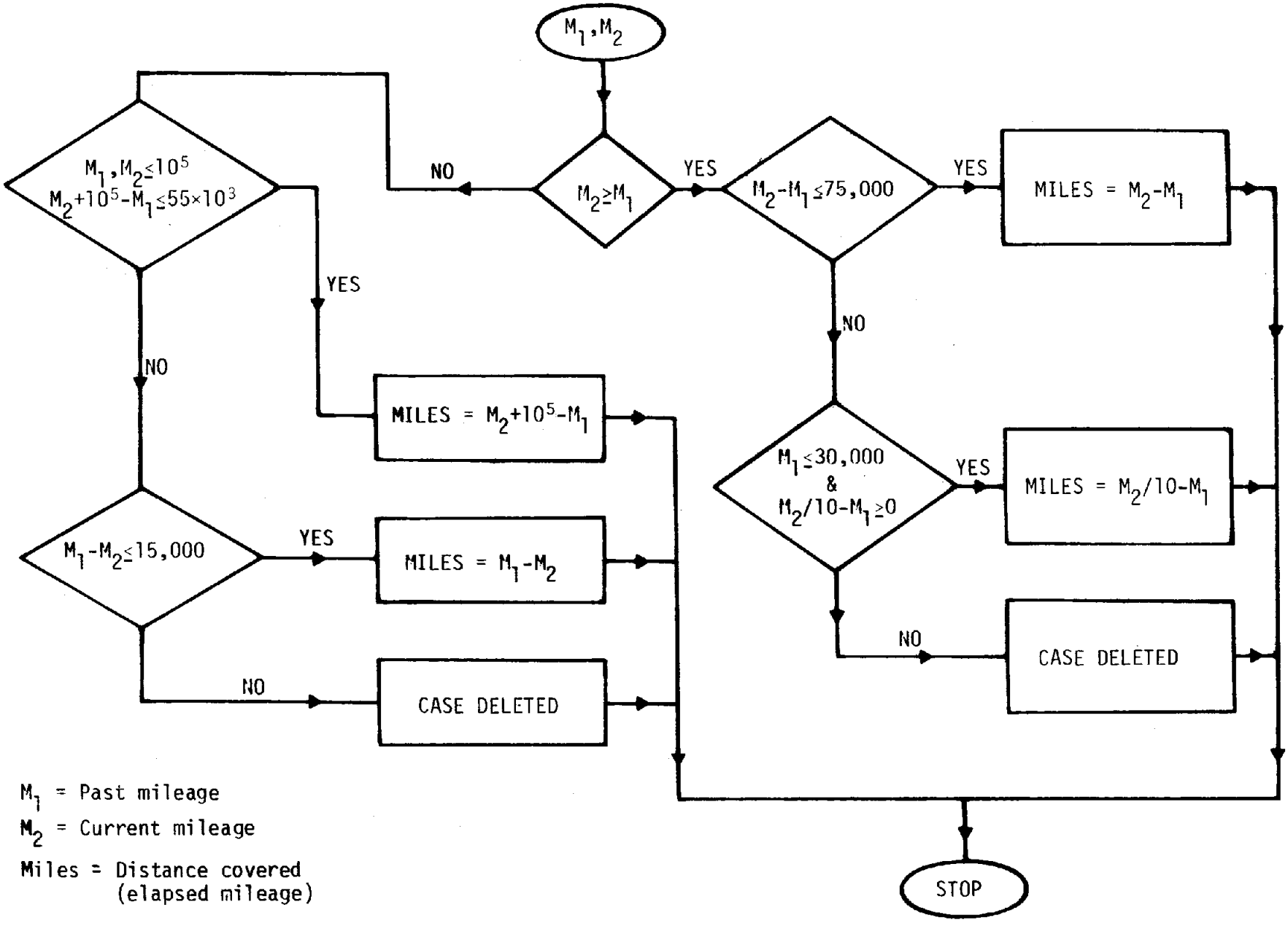


Figure A.1 Flow chart for computing distance covered by cars and station wagons.

Table A.3. Frequency distribution of cars and station wagons by inspection months.

PRESENT INSPECTION MONTH	PREVIOUS INSPECTION MONTH													
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Unknown [1]	Row Total
Jan.	9	2	0	0	0	1	0	0	1	3	3	19	5	43
Feb.	0	1	0	0	0	0	0	0	0	0	0	0	0	1
March	0	0	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0	0	0	2	2
May	0	0	1	0	0	0	0	0	0	0	0	0	0	1
June	0	0	0	0	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0	0	0	4	4
Aug.	0	1	0	0	0	0	1	4	0	0	2	1	14	23
Sept.	0	2	0	0	1	1	1	12 (13)	27 (12)	0	0	1	17	62
Oct.	2	0	1	0	0	2	3	19 (14)	47 (13)	193 (12)	7	3	75	352
Nov.	4	9	11	5	15	8	15 (16)	18 (15)	58 (14)	252 (13)	1559 (12)	100 (11)	956	3010
Dec.	1406 (11)	392	314	360	399	492 (18)	709 (17)	1023 (16)	1805 (15)	6419 (14)	36268 (13)	74014 (12)	51610	175210
Unknown	0	0	0	0	0	0	0	0	0	0	1	3	3	7
Column Total	1421	407	327	365	415	504	728	1076	1938	6867	37840	74141	52686	178715

[1] A large number of receipts lacked information on the previous inspection date. This is because the receipts were not pre-screened (as previously) to eliminate those receipts with only one inspection date.

inspection receipts for other months were turned in also. It is sometimes impossible to ascertain whether the elapsed time was X months or 12 + X months. The net result was that it was decided to consider only those vehicles inspected during the months enclosed within the double-lined cells. The corresponding time periods between inspections are circled in the upper right hand corner of each of these cells.

Appendix B. Comparison of "Usable" and "Unusable" Receipts

As a large proportion of the original inspection receipts were not usable in this study for a variety of reasons (e.g., illegible license plate number, missing odometer reading), it is critical to compare these groups to ensure that the sample of usable receipts is not a biased sample. The results of these comparisons (presented in this appendix) indicate that no serious biases should be present in the derived make/model annual mileages.

Table B.1 shows the proportion of "missing" data elements for the rejected receipts. As expected, not recording the previous mileage was the most common missing item in these rejected receipts.

Table B.1 Missing data percentage distribution for each required inspection item (N = 132,916).

Data Item	Percentage Recorded	Percentage Missing
License Plate Number	63.9	36.1
Previous Mileage	8.0	92.0
Current Mileage	92.3	7.3
Previous Inspection Date	70.2	29.8
Current Inspection Date	100.0	0.0

Surprisingly, the license plate number was the next most often neglected entry.

Table B.2 shows a comparison of the usable receipts versus the rejected receipts by vehicle type. The breakdown for the two groups is generally quite similar excepting a slightly higher proportion of autos in the unusable receipts.

Table B.2 Percentage distribution of vehicle type for "usable" receipts and "unusable" receipts.

Vehicle Type	Usuable Receipts (%)	Unusable Receipts (%)
Auto	66.3	69.3
Station Wagon	5.7	6.0
Truck	19.7	20.8
Other	8.3	3.7
Total	132916	110254

As is discussed in Chapter III, the annual mileage accumulated by a vehicle is highly correlated with its age. Therefore, it is important, especially in the present case with such a large proportion of unusable receipts, that the distribution by age for the two groups ("usuable" and "unusable" receipts) be similar. Table B.3 shows a comparison by model year for cars and station wagons for the "usable" and "unusable" receipts (excluding pre-1960 models).

Except for the 1975 model year, these distributions appear to be very comparable. The difference in the proportion of 1975 models is not unexpected since many of the "unusable" 1975 model receipts were for dealer autos which would not have old odometer readings, etc.

Failure rates of four inspection items (headlights, stoplights, footbrake, and tires) and their relationship to vehicle size, age, and mileage are presented in Chapter V. Since a large proportion of the inspection receipts collected were not usable for the study, it was necessary to compare the failure rates for the total sample of inspection receipts with the sample used in the study. Tables B.4 and B.5 present the various failure rates for the two groups of inspection receipts broken down by model year and current odometer readings. The corresponding rejection rates are most comparable in almost every case.

Table B.3 Percentage distribution of cars and station wagons by model year for "usable" receipts and "unusable" receipts.

Model Year	Usable Receipts (%)	Unusable Receipts (%)
1960	0.4	0.5
1961	0.6	0.7
1962	1.5	1.5
1963	2.3	2.5
1964	3.6	3.4
1965	5.0	4.8
1966	6.1	5.8
1967	6.5	6.0
1968	7.9	7.5
1969	9.2	8.5
1970	9.6	8.7
1971	8.4	8.0
1972	11.6	10.8
1973	12.1	11.9
1974	11.2	11.8
1975	4.1	8.5

All of these comparisons suggest that the usable sample of inspection receipts is representative of the entire statewide sample. Thus, the derived make/model/year estimates of annual mileage and defect rates should yield unbiased estimates for the overall population.

Table B.4 Failure rates for all inspection receipts and sample used in study by model year.

Model Years	No.of Inspection Receipts (N)		Inspection Items							
			Headlights		Stoplights		Footbrake		Tires	
	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total
'60-'65	10,238	21,152	12.2	11.8	4.5	4.5	4.2	4.1	4.2	4.7
'66-'70	30,029	60,097	12.5	11.8	3.2	3.2	3.4	3.1	3.4	3.6
'71-'75	35,941	77,917	10.8	10.1	1.7	1.5	2.4	1.9	2.1	1.9

Table B.5 Failure rates for all inspection receipts and sample used in study by current odometer reading.

Current* Odoemter Reading	No.of Inspection Receipts (N)		Inspection Items							
			Headlights		Stoplights		Footbrake		Tires	
	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total
0-20	13,588	45,359	11.1	11.8	2.6	1.7	2.4	1.4	2.9	3.7
20-40	17,517	36,449	10.8	10.2	2.0	2.0	2.7	2.3	2.4	3.6
40-70	24,666	50,267	11.5	11.0	2.4	2.5	3.1	2.7	2.6	2.6
70-100	19,773	39,860	13.1	9.6	3.5	3.4	3.8	3.3	3.6	3.7
>100	664	1,809	10.7	10.1	3.0	3.2	3.9	2.3	2.4	3.8

*(in thousands of miles)

Appendix C. Accident and Injury Frequencies and Rates.

The tables in this appendix present the accident and injury frequencies and rates that form the basis for the analysis in this report. The individual makes included within a particular group are listed above each table. Because of space limitations tables with some model years combined together have been excluded, although many of the comparisons in Chapter IV have been based on combined data. For the convenience of the reader an index for tables in this section follows.

LIST OF TABLES

LIST OF TABLES (Continued)

Overall table with all 77 individual makes combined.

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	291	6490	11728	64	323	404	323	81	12	302	102	17
1961	457	6981	17383	119	615	758	596	162	32	549	209	40
1962	1172	7360	39292	295	1442	1802	1429	373	67	1311	491	88
1963	1737	7776	63062	450	2372	2920	2338	582	98	2162	758	135
1964	2748	8262	88623	679	3615	4445	3551	894	132	3321	1124	178
1965	3633	8677	124366	1078	5429	6747	5343	1404	243	4987	1760	297
1966	4649	9154	153997	1358	6998	8683	6997	1686	253	6563	2120	319
1967	4862	9685	153762	1482	7320	9124	7398	1726	267	6949	2175	338
1968	6092	10203	191282	1737	9271	11405	9449	1956	285	8907	2498	355
1969	7126	10758	213633	1933	10728	13117	10850	2267	322	10271	2846	406
1970	7300	11294	207033	1449	7684	9511	7786	1725	282	7379	2132	352
1971	6365	11778	208003	1695	9993	12023	9889	2134	318	9347	2676	384
1972	9049	12390	255320	1938	11981	14445	12001	2444	334	11447	2998	412
1973	9232	12969	268219	1931	12151	14657	12150	2507	332	11566	3091	419
1974	8094	13465	216697	1601	10156	12228	10113	2115	275	9619	2609	334
1975	3181	14115	58494	661	4068	4947	4079	868	138	3900	1047	164
TOTAL	76228	11058	2270894	18470	1104046	1127216	1104292	22924	3390	98580	28636	4238

	BAILS PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.84	4.24	5.31	4.24	1.06	.16	3.97	1.34	.22
1961	.98	5.07	6.25	4.91	1.33	.26	4.52	1.72	.33
1962	1.02	4.99	6.23	4.94	1.29	.23	4.53	1.70	.30
1963	.92	4.84	5.95	4.77	1.19	.20	4.41	1.55	.28
1964	.93	4.94	6.07	4.85	1.22	.18	4.54	1.54	.24
1965	1.00	5.03	6.25	4.95	1.30	.23	4.62	1.63	.28
1966	.96	4.96	6.16	4.96	1.20	.18	4.66	1.50	.23
1967	1.00	4.92	6.13	4.97	1.16	.18	4.67	1.46	.23
1968	.89	4.75	5.84	4.84	1.00	.15	4.56	1.28	.18
1969	.84	4.67	5.71	4.72	.99	.14	4.47	1.24	.18
1970	.62	3.29	4.07	3.33	.74	.12	3.16	.91	.15
1971	.69	4.04	4.91	4.04	.87	.13	3.82	1.09	.16
1972	.61	3.79	4.57	3.79	.77	.11	3.62	.95	.13
1973	.56	3.49	4.21	3.49	.72	.10	3.32	.89	.12
1974	.55	3.48	4.19	3.47	.72	.09	3.30	.89	.11
1975	.80	4.93	5.99	4.94	1.05	.17	4.72	1.27	.20
TOTAL	.79	4.14	5.07	4.15	.91	.13	3.93	1.14	.17

Full-sized cars (Big Buick, Big Pontiac, Cadillac, Medium Buick, Medium Oldsmobile, Medium Pontiac, Standard Chevrolet, Standard Ford, Standard Plymouth).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	182	6598	7500	37	230	277	229	48	6	213	64	9
1961	268	7071	9936	62	383	459	384	75	13	356	103	19
1962	607	7464	20233	158	813	1009	801	208	39	741	268	52
1963	889	7882	33527	276	1310	1637	1330	307	45	1233	404	63
1964	1408	8312	44915	353	1874	2313	1887	426	61	1782	531	83
1965	1771	8754	56882	477	2484	3079	2504	575	97	2329	750	116
1966	2086	9236	68531	520	3131	3804	3132	672	89	2931	873	122
1967	2236	9744	67899	526	3251	3935	3262	673	99	3077	858	131
1968	2746	10280	82181	564	3755	4480	3810	670	86	3597	883	112
1969	3128	10867	90892	561	4326	5078	4318	760	101	4104	974	131
1970	2958	11465	81551	383	2613	3141	2626	515	63	2491	650	82
1971	2135	12112	73541	354	3071	3569	3067	502	72	2908	661	88
1972	3347	12728	87076	352	3479	3996	3444	552	66	3283	713	81
1973	3383	13383	88168	323	3402	3901	3367	534	74	3197	704	96
1974	1941	14015	47752	197	1959	2243	1946	297	39	1837	406	50
1975	935	14573	16239	82	886	1031	895	136	19	860	171	22
TOTAL	30820	10895	876823	5225	36267	43952	37002	6950	969	34939	9013	1257

	RATES PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.75	4.65	5.60	4.63	.97	.12	4.30	1.29	.18
1961	.88	5.45	6.53	5.47	1.07	.19	5.07	1.47	.27
1962	1.05	5.38	6.68	5.30	1.38	.26	4.91	1.77	.34
1963	1.04	4.96	6.19	5.03	1.16	.17	4.67	1.53	.24
1964	.95	5.02	6.20	5.05	1.14	.16	4.77	1.42	.22
1965	.96	4.99	6.18	5.03	1.15	.19	4.68	1.51	.23
1966	.82	4.95	6.01	4.95	1.06	.14	4.63	1.38	.19
1967	.80	4.91	5.95	4.93	1.02	.15	4.65	1.30	.20
1968	.67	4.44	5.30	4.51	.79	.10	4.26	1.05	.13
1969	.57	4.38	5.14	4.37	.77	.10	4.16	.99	.13
1970	.41	2.79	3.36	2.81	.55	.07	2.66	.70	.09
1971	.40	3.45	4.01	3.44	.56	.08	3.26	.74	.10
1972	.32	3.14	3.61	3.11	.50	.06	2.96	.64	.07
1973	.27	2.88	3.31	2.85	.45	.06	2.71	.60	.08
1974	.29	2.93	3.35	2.91	.44	.06	2.74	.61	.07
1975	.35	3.74	4.36	3.78	.57	.08	3.63	.72	.09
TOTAL	.55	3.87	4.60	3.87	.73	.10	3.66	.94	.13

Middle-sized cars (Chevrolet Chevelle, Intermediate Ford, Intermediate Oldsmobile, Intermediate Pontiac, Chevrolet Nova, Ford Maverick, Ford Mustang, Plymouth Valiant).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
		FITTED		ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMPLE	AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	35	6903	1477	6	21	30	24	6	1	22	8	3
1961	81	7323	2879	21	95	121	81	40	11	74	47	11
1962	283	7511	9605	61	332	412	327	85	12	298	114	17
1963	436	7757	14442	88	547	660	521	139	26	484	176	37
1964	681	8383	21320	181	883	1090	834	256	39	766	324	51
1965	1003	8873	31980	351	1487	1900	1447	453	78	1355	545	98
1966	1271	9244	42729	508	2162	2760	2187	573	91	2060	700	110
1967	1177	9610	38420	466	1959	2518	2021	497	91	1893	625	109
1968	1413	10029	47811	600	2621	3335	2720	615	82	2571	764	102
1969	1635	10538	50863	643	2903	3665	3016	649	95	2846	819	118
1970	2049	11034	60271	548	2438	3110	2554	556	98	2409	701	116
1971	1311	11748	44957	519	2386	2999	2446	553	89	2312	667	105
1972	1890	12457	58208	599	2905	3650	3003	647	90	2869	781	114
1973	1992	13150	59038	575	2886	3601	2951	650	81	2816	785	100
1974	1654	13861	48118	353	2539	2807	2328	479	59	2230	577	74
1975	666	14882	12559	121	832	986	822	164	24	780	206	31
TOTAL	17577	11027	544677	5640	26296	33694	27282	6362	967	25285	7859	1196

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.59	2.06	2.94	2.35	.59	.10	2.16	.78	.29
1961	1.00	4.51	5.74	3.84	1.90	.52	3.51	2.23	.52
1962	.85	4.60	5.71	4.53	1.13	.17	4.13	1.58	.24
1963	.79	4.88	5.89	4.65	1.24	.23	4.32	1.57	.33
1964	1.01	4.94	6.10	4.67	1.43	.22	4.29	1.81	.29
1965	1.24	5.24	6.70	5.10	1.60	.27	4.78	1.92	.35
1966	1.29	5.47	6.99	5.54	1.45	.23	5.22	1.77	.28
1967	1.26	5.31	6.82	5.47	1.35	.25	5.13	1.69	.30
1968	1.25	5.47	6.96	5.67	1.28	.17	5.36	1.59	.21
1969	1.20	5.42	6.84	5.63	1.21	.18	5.31	1.53	.22
1970	.82	3.67	4.68	3.84	.84	.15	3.62	1.05	.17
1971	.98	4.52	5.68	4.63	1.05	.17	4.38	1.30	.20
1972	.83	4.01	5.03	4.14	.89	.12	3.96	1.08	.16
1973	.74	3.72	4.64	3.80	.84	.10	3.63	1.01	.13
1974	.54	3.51	4.21	3.49	.72	.09	3.34	.87	.11
1975	.65	4.45	5.28	4.40	.88	.13	4.17	1.10	.17
TOTAL	.94	4.46	5.60	4.54	1.06	.16	4.29	1.31	.20

Small-sized cars (Chevrolet, Vega, Ford Pinto, Datsun, Toyota, VW Beetle, VW Fastback).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
				ACCIDENT			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	17	9164	832	12	33	47	35	12	2	33	14	2
1961	22	9398	1166	13	50	65	46	19	2	40	25	2
1962	44	9648	1765	18	74	96	67	29	6	64	32	8
1963	93	9772	3205	31	131	169	133	36	9	119	50	11
1964	101	9967	4099	41	169	220	164	56	11	153	67	12
1965	163	10214	6061	80	270	363	261	102	21	239	124	28
1966	235	10295	7642	100	315	431	305	126	22	281	150	23
1967	281	10485	8908	102	376	484	347	137	21	329	155	26
1968	346	10835	10570	92	498	611	463	148	28	428	183	32
1969	492	11000	13936	125	676	820	600	220	29	568	252	35
1970	592	11331	15873	138	796	972	735	237	38	692	280	53
1971	1248	11564	34904	354	1949	2385	1845	540	80	1737	648	95
1972	1502	11895	40963	460	2594	3149	2494	655	92	2369	780	109
1973	1247	12216	42205	472	2519	3094	2437	657	88	2304	790	110
1974	1726	12568	44669	517	2586	3202	2524	678	89	2400	802	104
1975	290	13117	6370	166	745	949	723	226	32	691	258	38
TOTAL	8389	11683	243168	2721	13781	17057	13179	3878	570	12947	4610	688

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	1.57	4.35	6.16	4.59	1.57	.26	4.33	1.84	.26
1961	1.19	4.56	5.93	4.20	1.73	.18	3.65	2.28	.18
1962	1.06	4.35	5.64	3.93	1.70	.35	3.76	1.88	.47
1963	.99	4.18	5.40	4.25	1.15	.29	3.80	1.60	.35
1964	1.00	4.14	5.38	4.01	1.37	.27	3.74	1.64	.29
1965	1.29	4.36	5.86	4.22	1.65	.34	3.86	2.00	.45
1966	1.27	4.00	5.48	3.88	1.60	.28	3.57	1.91	.29
1967	1.09	4.03	5.18	3.72	1.47	.22	3.52	1.66	.28
1968	.80	4.35	5.34	4.04	1.29	.24	3.74	1.60	.28
1969	.82	4.41	5.35	3.91	1.44	.19	3.71	1.64	.23
1970	.77	4.43	5.40	4.09	1.32	.21	3.85	1.56	.29
1971	.88	4.83	5.91	4.57	1.34	.20	4.30	1.61	.24
1972	.94	5.32	6.46	5.12	1.34	.19	4.86	1.60	.22
1973	.92	4.89	6.00	4.73	1.27	.17	4.47	1.53	.21
1974	.92	4.61	5.70	4.50	1.21	.16	4.28	1.43	.19
1975	1.99	8.92	11.36	8.65	2.70	.38	8.27	3.09	.45
TOTAL	.96	4.85	6.00	4.64	1.37	.20	4.38	1.62	.24

Luxury Cars (Big Buick, Cadillac, Big Pontiac).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	19	4970	720	4	15	19	17	2	1	16	3	1
1961	23	6139	883	4	25	32	29	3	0	26	6	0
1962	54	6740	1772	4	76	80	65	15	2	60	20	2
1963	60	7259	2551	19	97	117	99	18	3	94	23	5
1964	116	7822	3594	24	184	217	181	36	6	171	46	7
1965	200	8401	6159	39	245	302	250	52	9	236	66	9
1966	239	8928	7884	60	386	462	379	83	12	353	109	14
1967	298	9486	9312	59	426	506	442	64	7	416	90	11
1968	393	10022	11983	67	577	675	577	98	12	548	127	17
1969	489	10591	13882	85	717	825	715	110	12	679	146	16
1970	494	11112	13336	62	503	597	496	101	10	475	122	12
1971	257	11639	10682	43	430	490	427	63	5	409	81	6
1972	555	12166	14365	42	537	609	540	69	6	510	99	8
1973	623	12684	16126	53	533	619	544	75	11	523	96	13
1974	376	13191	9789	22	333	365	320	45	6	299	66	8
1975	340	13693	4845	21	247	287	251	36	3	241	46	5
TOTAL	4536	10848	127883	608	5330	6202	5382	870	105	5056	1146	139

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	1.12	4.19	5.31	4.75	.56	.28	4.47	.84	.28
1961	.74	4.61	5.50	5.45	.55	.00	4.80	1.11	.00
1962	.33	6.28	6.70	5.44	1.26	.17	5.02	1.67	.17
1963	1.03	5.24	6.32	5.35	.97	.16	5.08	1.24	.27
1964	.85	6.55	7.72	6.44	1.28	.21	6.08	1.64	.25
1965	.75	4.74	5.84	4.85	1.00	.17	4.56	1.28	.17
1966	.85	5.48	6.56	5.38	1.18	.17	5.02	1.55	.20
1967	.67	4.82	5.73	5.00	.72	.08	4.71	1.02	.12
1968	.56	4.80	5.62	4.80	.82	.10	4.56	1.06	.14
1969	.58	4.88	5.61	4.86	.75	.08	4.62	.99	.11
1970	.42	3.39	4.03	3.35	.66	.07	3.21	.82	.08
1971	.35	3.46	3.94	3.43	.51	.04	3.29	.65	.05
1972	.24	3.07	3.48	3.09	.39	.03	2.92	.57	.05
1973	.26	2.61	3.03	2.66	.37	.05	2.56	.47	.06
1974	.17	2.58	2.83	2.48	.35	.05	2.32	.51	.06
1975	.32	3.72	4.33	3.78	.54	.05	3.63	.69	.08
TOTAL	.44	3.83	4.45	3.83	.62	.08	3.63	.82	.10

Medium-sized cars (Medium Buick, Medium Oldsmobile, Medium Pontiac).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
				ACCIDENT TYPE			DRIVER INJURY		VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	23	5797	1395	5	57	64	56	8	0	52	12	1
1961	40	6481	1611	12	71	88	77	11	1	73	15	1
1962	113	6978	3442	29	160	196	155	41	9	139	57	10
1963	175	7534	5734	27	220	262	215	47	7	200	62	10
1964	239	8080	7633	53	316	383	321	62	8	291	92	11
1965	299	8619	8848	66	413	497	415	82	13	390	107	14
1966	341	9191	10811	75	507	602	513	89	8	487	115	12
1967	377	9759	11292	84	538	663	550	113	11	527	136	15
1968	446	10318	14389	100	662	797	690	107	17	655	142	19
1969	577	10879	16693	87	781	899	784	115	17	749	150	22
1970	556	11438	15939	65	569	660	563	97	11	539	121	13
1971	366	11995	14539	50	582	660	577	83	11	552	108	14
1972	711	12565	19024	57	662	753	661	92	12	634	119	13
1973	685	13124	19888	52	668	754	659	95	10	623	131	16
1974	366	13696	9348	21	276	305	263	42	5	246	59	5
1975	189	14231	3293	11	144	163	146	17	2	140	23	2
TOTAL	5503	10953	163879	794	6626	7746	6645	1101	142	6297	1499	178

	RATES PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.62	7.05	7.91	6.92	.99	.00	6.43	1.48	.12
1961	1.15	6.80	8.43	7.37	1.05	.10	6.99	1.44	.10
1962	1.21	6.66	8.16	6.45	1.71	.37	5.79	2.37	.42
1963	.63	5.09	6.06	4.98	1.09	.16	4.63	1.44	.23
1964	.86	5.12	6.21	5.20	1.01	.13	4.72	1.49	.18
1965	.87	5.42	6.52	5.44	1.08	.17	5.11	1.40	.18
1966	.75	5.10	6.06	5.16	.90	.08	4.90	1.16	.12
1967	.76	4.88	6.02	4.99	1.03	.10	4.78	1.23	.14
1968	.67	4.46	5.37	4.65	.72	.11	4.41	.96	.13
1969	.48	4.30	4.95	4.32	.63	.09	4.12	.83	.12
1970	.36	3.12	3.62	3.09	.53	.06	2.96	.66	.07
1971	.29	3.34	3.78	3.31	.48	.06	3.17	.62	.08
1972	.24	2.77	3.15	2.77	.38	.05	2.65	.50	.05
1973	.20	2.56	2.89	2.52	.36	.04	2.39	.50	.06
1974	.16	2.16	2.38	2.05	.33	.04	1.92	.46	.04
1975	.23	3.07	3.48	3.12	.36	.04	2.99	.49	.04
TOTAL	.44	3.69	4.32	3.70	.61	.08	3.51	.81	.10

Standard-sized cars (Standard Chevrolet, Standard Ford, Standard Plymouth).

	INSPECTION		REG.	ACCIDENT INVOLVEMENT								
				ACCIDENTS			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	140	7024	5385	28	158	194	156	38	5	145	49	7
1961	205	7309	7442	46	287	339	278	61	12	257	82	18
1962	440	7661	15019	125	578	733	581	152	28	542	191	40
1963	654	8025	25242	230	993	1258	1016	242	35	939	319	48
1964	1053	8417	33688	276	1374	1713	1385	328	47	1320	393	65
1965	1272	8834	41875	372	1826	2280	1839	441	75	1703	577	93
1966	1506	9294	49836	385	2338	2740	2240	500	69	2091	649	96
1967	1561	9792	47295	383	2287	2766	2270	496	81	2134	632	105
1968	1907	10326	55809	397	2516	3008	2543	465	57	2394	614	76
1969	2062	10927	60317	389	2528	3354	2819	535	72	2676	678	93
1970	1908	11564	52276	256	1541	1884	1567	317	42	1477	407	57
1971	1512	12251	48320	261	2059	2419	2063	356	56	1947	472	68
1972	2081	12936	53687	253	2280	2634	2243	391	48	2139	495	60
1973	2075	13698	52154	218	2201	2528	2164	364	53	2051	477	67
1974	1199	14405	28615	154	1350	1573	1363	210	28	1292	281	37
1975	406	15238	8101	50	495	581	498	83	14	479	102	15
TOTAL	19981	10881	585061	3823	25011	30004	25025	4979	722	23586	6918	945

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.74	4.18	5.13	4.12	1.00	.13	3.83	1.30	.19
1961	.85	5.28	6.23	5.11	1.12	.22	4.72	1.51	.33
1962	1.09	5.02	6.37	5.05	1.32	.24	4.71	1.66	.35
1963	1.14	4.90	6.21	5.02	1.19	.17	4.64	1.57	.24
1964	.97	4.85	6.04	4.88	1.16	.17	4.66	1.39	.23
1965	1.01	4.94	6.16	4.97	1.19	.20	4.60	1.56	.25
1966	.63	4.83	5.92	4.84	1.08	.15	4.51	1.40	.21
1967	.83	4.94	5.97	4.90	1.07	.17	4.61	1.36	.23
1968	.69	4.37	5.22	4.41	.81	.10	4.15	1.07	.13
1969	.59	4.29	5.09	4.28	.81	.11	4.06	1.03	.14
1970	.42	2.55	3.12	2.59	.52	.07	2.44	.67	.09
1971	.44	3.48	4.09	3.48	.60	.09	3.29	.80	.11
1972	.36	3.28	3.79	3.23	.56	.07	3.08	.71	.09
1973	.31	3.08	3.54	3.03	.51	.07	2.87	.67	.09
1974	.37	3.28	3.82	3.31	.51	.07	3.13	.68	.09
1975	.41	4.01	4.71	4.03	.67	.11	3.88	.83	.12
TOTAL	.60	3.93	4.71	3.93	.78	.11	3.70	1.01	.15

Intermediate-sized cars (Chevrolet Chevelle, Intermediate Ford, Intermediate Oldsmobile, Intermediate Pontiac).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	3	6354	147	0	3	3	1	2	1	1	2	1
1962	80	7647	2717	12	98	118	98	20	2	89	29	4
1963	135	7828	4714	36	189	233	182	51	12	172	61	16
1964	374	8528	11829	112	526	651	512	139	22	465	186	32
1965	495	8728	15588	153	732	925	719	206	32	674	251	41
1966	657	9025	22900	283	1096	1423	1142	281	44	1066	357	54
1967	752	9409	24853	301	1273	1635	1322	313	55	1237	398	69
1968	1009	9899	34003	436	1852	2375	1953	422	56	1841	534	71
1969	1167	10454	36451	421	2114	2623	2191	432	64	2070	553	78
197.	1152	11107	33698	273	1413	1748	1450	298	53	1379	369	64
1971	749	11877	26835	242	1393	1688	1412	276	44	1342	346	52
1972	1163	12753	35896	293	1721	2106	1796	310	33	1719	387	45
1973	1259	13585	36567	272	1712	2070	1745	325	37	1671	399	48
1974	963	14514	28484	185	1314	1566	1325	241	28	1276	290	33
1975	527	15545	9104	78	572	675	561	114	20	538	137	21
TOTAL	10485	11292	323786	3097	16008	19839	16409	3430	503	15540	4299	629

	RATES PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	.00	3.21	3.21	1.07	2.14	1.07	1.07	2.14	1.07
1962	.58	4.72	5.68	4.72	.96	.10	4.28	1.40	.19
1963	.98	5.12	6.31	4.93	1.38	.33	4.66	1.65	.43
1964	1.11	5.21	6.45	5.08	1.38	.22	4.61	1.84	.32
1965	1.12	5.38	6.80	5.28	1.51	.24	4.95	1.84	.30
1966	1.37	5.30	6.89	5.53	1.36	.21	5.16	1.73	.26
1967	1.29	5.44	6.99	5.65	1.34	.24	5.29	1.70	.30
1968	1.30	5.50	7.06	5.80	1.25	.17	5.47	1.59	.21
1969	1.10	5.55	6.88	5.75	1.13	.17	5.43	1.45	.20
1970	.73	3.78	4.67	3.87	.80	.14	3.68	.99	.17
1971	.76	4.37	5.30	4.43	.87	.14	4.21	1.09	.16
1972	.64	3.76	4.60	3.92	.68	.07	3.76	.85	.10
1973	.55	3.45	4.17	3.51	.65	.07	3.36	.80	.10
1974	.45	3.18	3.79	3.20	.58	.07	3.09	.70	.08
1975	.55	4.04	4.77	3.96	.81	.14	3.80	.97	.15
TOTAL	.85	4.38	5.43	4.49	.94	.18	4.25	1.18	.17

Compact-sized cars (Chevrolet Nova, Ford Maverick, Ford Mustang, Plymouth Valiant).

	INSPECTION		REG.	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	35	6903	1477	6	21	30	24	6	1	22	8	3
1961	78	7375	2732	21	92	118	80	38	10	73	45	10
1962	203	7458	6888	49	234	294	229	65	10	209	85	13
1963	301	7722	9728	52	358	427	339	88	14	312	115	21
1964	307	8204	9491	69	357	439	322	117	17	301	138	19
1965	508	9011	16392	198	755	975	728	247	46	681	294	57
1966	614	9496	19829	225	1066	1337	1045	292	47	994	343	56
1967	425	9977	13567	165	686	883	699	184	36	656	227	40
1968	404	10349	13808	164	769	960	767	193	26	730	230	31
1969	468	10750	14412	222	789	1042	825	217	31	776	266	40
1970	897	10941	26573	275	1025	1362	1104	258	45	1030	332	52
1971	562	11557	18122	277	993	1311	1034	277	45	970	341	53
1972	727	11980	22312	306	1184	1544	1207	337	57	1150	394	69
1973	733	12442	22471	303	1174	1531	1206	325	44	1145	386	52
1974	691	12913	19634	168	1025	1241	1003	238	31	954	287	41
1975	139	13136	3455	43	260	311	261	50	4	242	69	10
TOTAL	7092	10638	220891	2543	10788	13805	10873	2932	464	10245	3560	567

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.59	2.06	2.94	2.35	.59	.10	2.16	.78	.29
1961	1.04	4.57	5.86	3.97	1.89	.50	3.62	2.23	.50
1962	.95	4.56	5.72	4.46	1.27	.19	4.07	1.65	.25
1963	.69	4.77	5.68	4.51	1.17	.19	4.15	1.54	.28
1964	.89	4.58	5.64	4.14	1.50	.22	3.87	1.77	.24
1965	1.34	5.11	6.60	4.93	1.67	.31	4.61	1.99	.39
1966	1.19	5.66	7.10	5.55	1.55	.25	5.28	1.82	.30
1967	1.22	5.07	6.52	5.16	1.36	.27	4.85	1.66	.30
1968	1.15	5.38	6.72	5.37	1.35	.18	5.11	1.61	.22
1969	1.43	5.09	6.73	5.33	1.40	.20	5.01	1.72	.26
1970	.95	3.55	4.68	3.60	.89	.15	3.54	1.14	.18
1971	1.32	4.74	6.26	4.94	1.32	.21	4.63	1.63	.25
1972	1.14	4.43	5.78	4.52	1.26	.21	4.30	1.47	.26
1973	1.08	4.20	5.48	4.51	1.16	.16	4.10	1.38	.19
1974	.66	4.04	4.89	3.96	.94	.12	3.76	1.13	.16
1975	.95	5.73	6.85	5.75	1.10	.09	5.33	1.52	.22
TOTAL	1.08	4.59	5.87	4.63	1.25	.20	4.36	1.51	.24

Subcompact cars (Chevrolet, Vega, Ford Pinto, Datsun, Toyota, VW Beetle, VW Fastback).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
		FITTED		ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	17	9164	832	12	33	47	35	12	2	33	14	2
1961	22	9398	1166	13	50	65	46	19	2	40	25	2
1962	44	9648	1765	18	74	96	67	29	6	64	32	8
1963	83	9772	3205	31	131	169	133	36	9	119	50	11
1964	101	9967	4099	41	169	220	164	56	11	153	67	12
1965	163	10214	6061	80	270	363	261	102	21	239	124	28
1966	235	10295	7642	100	315	431	305	126	22	281	150	23
1967	281	10485	8908	102	376	484	347	137	21	329	155	26
1968	346	10835	10570	92	498	611	463	148	28	428	183	32
1969	492	11000	13956	125	676	820	600	220	29	568	252	35
1970	592	11331	15873	138	796	972	755	237	38	692	280	53
1971	1248	11564	34904	354	1949	2385	1845	540	80	1737	648	95
1972	1502	11895	40963	460	2594	3149	2494	655	92	2369	780	109
1973	1247	12216	42205	472	2519	3094	2457	657	88	2304	790	110
1974	1726	12568	44669	517	2586	3202	2524	678	89	2400	802	104
1975	290	13117	6370	166	745	949	723	226	32	691	258	38
TOTAL	8389	11683	243168	2721	13781	17057	13179	3878	570	12447	4610	688

RATES PER MILLION MILES

	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	1.57	4.33	6.16	4.59	1.57	.26	4.33	1.84	.26
1961	1.19	4.56	5.93	4.20	1.73	.18	3.65	2.28	.18
1962	1.06	4.35	5.64	3.93	1.70	.35	3.76	1.88	.47
1963	.99	4.18	5.40	4.25	1.15	.29	3.80	1.60	.35
1964	1.00	4.14	5.38	4.01	1.37	.27	3.74	1.64	.29
1965	1.29	4.36	5.86	4.22	1.65	.34	3.86	2.00	.45
1966	1.27	4.00	5.48	3.88	1.60	.28	3.57	1.91	.29
1967	1.09	4.03	5.18	3.72	1.47	.22	3.52	1.66	.28
1968	.80	4.35	5.34	4.04	1.29	.24	3.74	1.60	.28
1969	.82	4.41	5.35	3.91	1.44	.19	3.71	1.64	.23
1970	.77	4.43	5.40	4.09	1.32	.21	3.85	1.56	.29
1971	.88	4.83	5.91	4.57	1.34	.20	4.30	1.61	.24
1972	.94	5.32	6.46	5.12	1.34	.19	4.86	1.60	.22
1973	.92	4.89	6.00	4.73	1.27	.17	4.47	1.53	.21
1974	.92	4.61	5.70	4.50	1.21	.16	4.28	1.43	.19
1975	1.99	8.92	11.36	8.65	2.70	.38	8.27	3.09	.45
TOTAL	.96	4.85	6.00	4.69	1.37	.20	4.38	1.62	.24

Standard-sized station wagons (Standard Chevrolet, Standard Ford).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
				ACCIDENT TYPE			DRIVER INJURY		VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	14	7070	765	2	22	25	21	4	0	19	6	0
1961	22	7544	924	5	26	32	28	4	0	26	6	0
1962	62	8122	2052	10	58	70	57	13	4	53	17	6
1963	102	8787	4109	34	139	178	138	40	7	129	49	8
1964	207	9427	6140	41	246	294	237	57	7	228	66	14
1965	287	10021	9468	72	366	452	352	100	14	325	127	19
1966	174	10012	5114	27	180	220	188	32	5	176	44	5
1967	194	10608	5167	34	214	254	214	40	3	195	59	4
1968	222	11157	7052	44	274	331	281	50	4	266	65	8
1969	254	11734	7757	42	364	421	367	54	2	352	69	3
1970	220	12295	7064	36	219	262	221	41	7	210	52	8
1971	228	12953	7143	37	267	319	281	38	6	266	53	6
1972	314	13515	8346	39	326	382	325	57	8	316	66	10
1973	294	14144	8636	24	325	370	352	38	5	320	50	5
1974	164	14877	3767	11	156	173	155	18	3	147	26	4
1975	67	15548	1231	3	70	77	68	9	0	64	13	0
TOTAL	2825	11602	84735	461	3252	3860	3265	595	75	3092	768	100

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.37	4.07	4.62	3.88	.74	.00	3.51	1.11	.00
1961	.72	3.73	4.59	4.02	.57	.00	3.73	.86	.00
1962	.60	3.48	4.20	3.42	.78	.24	3.18	1.02	.36
1963	.94	3.85	4.93	3.82	1.11	.19	3.57	1.36	.22
1964	.71	4.25	5.08	4.09	.98	.12	3.94	1.14	.24
1965	.76	3.86	4.76	3.71	1.05	.15	3.43	1.34	.20
1966	.53	3.52	4.30	3.67	.62	.10	3.44	.86	.10
1967	.62	3.90	4.63	3.90	.73	.05	3.56	1.08	.07
1968	.56	3.48	4.21	3.57	.64	.05	3.38	.83	.10
1969	.46	4.00	4.63	4.03	.59	.02	3.87	.76	.03
1970	.41	2.52	3.02	2.54	.47	.08	2.42	.60	.09
1971	.40	2.89	3.45	3.04	.41	.06	2.87	.57	.06
1972	.35	2.89	3.39	2.88	.51	.07	2.80	.59	.09
1973	.20	2.66	3.03	2.72	.31	.04	2.62	.41	.04
1974	.20	2.78	3.09	2.77	.32	.05	2.62	.46	.07
1975	.16	3.66	4.02	3.55	.47	.00	3.34	.68	.00
TOTAL	.47	3.31	3.93	3.62	.61	.08	3.15	.78	.10

Standard-sized sedans (Standard Chevrolet, Standard Ford).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	81	5922	3195	15	98	113	91	22	3	86	27	4
1961	132	6508	4609	27	161	192	151	41	12	140	52	13
1962	227	7063	7523	57	270	334	276	58	11	256	78	14
1963	298	7667	11013	71	448	537	449	88	10	415	122	11
1964	399	8227	12617	71	456	548	444	104	12	420	128	19
1965	450	8857	14325	108	626	765	628	137	23	584	181	29
1966	559	9265	19163	121	844	1001	806	195	29	752	249	39
1967	568	9898	17827	125	648	1014	840	174	32	792	222	40
1968	646	10481	19167	124	812	969	828	141	27	774	195	32
1969	720	11187	21155	131	941	1114	941	173	27	885	229	36
1970	640	11846	18491	84	486	604	520	84	10	492	112	14
1971	530	12510	16912	83	743	849	730	119	15	689	160	22
1972	686	13100	19465	78	855	961	826	135	20	782	179	25
1973	798	13759	20544	69	892	1001	861	140	23	811	190	32
1974	633	14061	15471	100	748	891	765	126	18	728	163	22
1975	289	14570	6121	45	384	460	392	68	14	378	82	15
TOTAL	7656	10913	227598	1309	9607	11353	9548	1805	286	8984	2369	367

	RATES PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.79	4.92	5.97	4.01	1.16	.16	4.55	1.43	.21
1961	.90	5.37	6.40	5.03	1.37	.40	4.67	1.73	.43
1962	1.07	5.08	6.29	5.19	1.09	.21	4.82	1.47	.26
1963	.84	5.31	6.36	5.32	1.04	.12	4.91	1.44	.13
1964	.68	4.39	5.28	4.28	1.00	.12	4.05	1.23	.18
1965	.85	4.93	6.03	4.95	1.08	.18	4.60	1.43	.23
1966	.68	4.75	5.64	4.54	1.10	.16	4.24	1.40	.22
1967	.71	4.81	5.75	4.76	.99	.18	4.49	1.26	.23
1968	.62	4.04	4.82	4.12	.70	.13	3.85	.97	.16
1969	.55	3.98	4.71	3.98	.73	.11	3.74	.97	.15
1970	.38	2.22	2.76	2.57	.38	.05	2.25	.51	.06
1971	.39	3.51	4.01	3.45	.56	.07	3.26	.76	.10
1972	.31	3.35	3.77	3.24	.53	.08	3.07	.70	.10
1973	.24	3.16	3.54	3.05	.50	.08	2.87	.67	.11
1974	.46	3.44	4.10	3.52	.58	.08	3.35	.75	.10
1975	.50	4.31	5.16	4.40	.76	.16	4.24	.92	.17
TOTAL	.53	3.81	4.57	3.84	.73	.12	3.62	.95	.15

Standard-sized hardtops (Standard Chevrolet, Standard Ford).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	45	6629	1425	11	43	56	44	12	2	40	16	3
1961	51	7353	1909	14	100	115	99	16	0	91	24	5
1962	151	8262	5444	58	250	329	248	81	13	233	96	20
1963	254	8575	10120	125	406	543	429	114	18	395	148	29
1964	447	8984	14931	164	672	871	704	167	28	672	199	32
1965	535	9252	18082	192	834	1063	859	204	38	794	269	45
1966	773	9513	25559	237	1214	1519	1246	273	35	1163	356	52
1967	799	9903	24301	224	1225	1498	1216	282	46	1147	351	61
1968	1039	10288	29590	229	1439	1708	1434	274	26	1354	354	36
1969	1088	10745	31405	216	1523	1619	1511	308	43	1439	380	54
1970	1048	11277	26721	136	836	1918	826	192	25	775	243	35
1971	754	11970	24265	141	1049	1251	1052	199	35	992	259	40
1972	1081	12541	25876	136	1099	1291	1092	199	20	1041	250	25
1973	983	13264	22974	125	984	1157	971	186	25	920	237	30
1974	402	14079	9377	43	446	509	443	66	7	417	92	11
1975	50	14415	749	2	41	44	38	6	0	37	7	0
TOTAL	9500	10803	272728	2053	12152	14791	12212	2579	361	11510	3261	478

	RATES PER MILLION MILES											
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY					
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.			
1960	1.16	4.55	5.93	4.66	1.27	.21	4.23	1.69	.32			
1961	1.00	7.12	8.19	7.05	1.14	.00	6.48	1.71	.36			
1962	1.29	5.56	7.31	5.51	1.80	.29	5.18	2.13	.44			
1963	1.44	4.68	6.26	4.94	1.31	.21	4.55	1.71	.33			
1964	1.22	5.01	6.49	5.25	1.24	.21	5.01	1.48	.24			
1965	1.15	4.99	6.35	5.13	1.22	.23	4.75	1.61	.27			
1966	.97	4.99	6.25	5.12	1.12	.14	4.78	1.46	.21			
1967	.93	5.09	6.22	5.05	1.17	.19	4.77	1.46	.25			
1968	.75	4.70	5.61	4.71	.90	.09	4.45	1.16	.12			
1969	.64	4.51	5.39	4.48	.91	.13	4.26	1.13	.16			
1970	.45	2.77	3.58	2.74	.64	.08	2.57	.81	.12			
1971	.49	3.61	4.31	3.62	.69	.12	3.42	.89	.14			
1972	.42	3.39	4.98	3.37	.61	.06	3.21	.77	.08			
1973	.41	3.23	3.80	3.19	.61	.08	3.02	.78	.10			
1974	.33	3.38	3.66	3.36	.50	.05	3.16	.70	.08			
1975	.19	3.80	4.08	3.52	.56	.00	3.43	.65	.00			
TOTAL	.70	4.12	5.02	4.14	.88	.12	3.91	1.11	.16			

Standard-sized four door cars (Standard Chevrolet, Standard Ford).

	INSPECTION		REG.	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN SAMP.	FITTED AVE. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE PROP. DI	ANY INJ.	SER. INJ. (A+K)	NONE PROP. DI	ANY INJ.	SER. INJ. (A+K)
1960	88	6446	3705	14	113	133	105	28	3	99	34	4
1961	143	6834	5289	33	193	230	189	41	9	175	55	12
1962	302	7282	10094	73	351	435	352	83	13	326	109	18
1963	433	7779	16047	100	625	750	622	128	17	580	170	19
1964	656	8316	20429	121	793	944	769	175	25	734	210	38
1965	856	8924	27920	201	1200	1449	1168	281	42	1086	363	54
1966	917	9461	30422	200	1315	1576	1285	291	39	1200	376	52
1967	989	10075	30153	216	1414	1683	1383	300	45	1289	394	60
1968	1218	10711	35868	225	1519	1804	1549	255	34	1455	349	45
1969	1364	11333	40231	241	1843	2170	1839	331	45	1743	427	61
1970	1336	11947	37396	164	1065	1290	1084	206	27	1028	262	36
1971	1105	12633	34852	168	1466	1695	1466	229	31	1379	316	41
1972	1487	13244	38779	171	1657	1895	1617	278	34	1541	354	42
1973	1506	13965	37487	126	1568	1770	1537	233	39	1460	310	49
1974	842	14644	19966	112	952	1116	965	151	18	912	204	24
1975	300	15420	6183	40	365	435	375	60	9	363	72	10
TOTAL	13542	11197	394821	2205	16439	19375	16305	3070	430	15370	4005	565

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE PROP. DI	ANY INJ.	SER INJ.	NONE PROP. DI	ANY INJ.	SER. INJ.
1960	.59	4.76	5.57	4.40	1.17	.13	4.15	1.42	.17
1961	.91	5.34	6.36	5.23	1.13	.25	4.84	1.52	.33
1962	.99	4.78	5.92	4.79	1.13	.18	4.44	1.48	.24
1963	.80	5.01	6.01	4.98	1.03	.14	4.65	1.36	.15
1964	.71	4.67	5.56	4.53	1.03	.15	4.32	1.24	.22
1965	.81	4.82	5.82	4.69	1.13	.17	4.36	1.46	.22
1966	.69	4.57	5.48	4.46	1.01	.14	4.17	1.31	.18
1967	.71	4.65	5.54	4.55	.99	.15	4.24	1.30	.20
1968	.59	3.95	4.70	4.03	.66	.09	3.79	.91	.12
1969	.53	4.04	4.76	4.03	.73	.10	3.82	.94	.13
1970	.37	2.38	2.89	2.43	.46	.06	2.30	.59	.08
1971	.38	3.33	3.85	3.33	.52	.07	3.13	.72	.09
1972	.33	3.23	3.69	3.15	.54	.07	3.00	.69	.08
1973	.24	3.00	3.38	2.94	.45	.07	2.79	.59	.09
1974	.38	3.26	3.82	3.30	.52	.06	3.12	.70	.08
1975	.42	3.83	4.56	3.93	.63	.09	3.81	.76	.10
TOTAL	.50	3.72	4.38	3.69	.69	.10	3.48	.91	.13

Standard-sized two-door cars (Standard Chevrolet, Standard Ford).

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	52	6995	1680	14	45	61	51	10	2	46	15	3
1961	62	7243	2153	13	94	109	89	20	3	82	27	6
1962	138	7825	4925	52	227	298	229	69	15	216	82	22
1963	221	8177	9195	130	368	508	394	114	18	359	149	29
1964	397	8628	13259	155	581	769	616	153	22	586	183	27
1965	416	9097	13955	171	626	831	671	160	33	617	214	39
1966	589	9371	19414	185	923	1164	955	209	30	891	273	44
1967	572	9882	17142	167	873	1083	887	196	36	845	238	45
1968	689	10365	19941	172	997	1204	994	210	23	939	265	31
1969	698	10899	20086	148	985	1184	980	204	27	933	251	32
1970	572	11397	14680	92	476	594	483	111	15	449	145	21
1971	407	11964	13468	93	593	724	597	127	25	568	156	27
1972	594	12409	14908	82	623	739	626	113	14	598	141	18
1973	569	12902	14667	92	633	758	627	131	14	591	167	18
1974	357	13302	8649	42	398	457	398	59	10	380	77	13
1975	106	13782	1918	10	130	146	123	23	5	116	30	5
TOTAL	6439	10543	190240	1618	8572	10529	8720	1909	292	8216	2413	380

	RATES PER MILLION MILES											
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY					
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.			
1960	1.19	3.86	5.19	4.34	.85	.17	3.91	1.28	.26			
1961	.63	6.03	6.99	5.71	1.28	.19	5.26	1.73	.38			
1962	1.35	5.89	7.73	5.94	1.79	.39	5.60	2.13	.57			
1963	1.73	4.89	6.76	5.24	1.52	.24	4.77	1.98	.39			
1964	1.35	5.08	6.72	5.38	1.34	.19	5.12	1.60	.24			
1965	1.35	4.93	6.55	5.29	1.26	.26	4.86	1.69	.31			
1966	1.02	5.07	6.40	5.25	1.15	.16	4.90	1.50	.24			
1967	.99	5.15	6.39	5.24	1.16	.21	4.99	1.40	.27			
1968	.83	4.82	5.83	4.81	1.02	.11	4.54	1.28	.15			
1969	.68	4.58	5.41	4.48	.93	.12	4.26	1.15	.15			
1970	.54	2.81	3.50	2.65	.65	.09	2.65	.86	.12			
1971	.58	3.68	4.49	3.71	.79	.16	3.53	.97	.17			
1972	.44	3.37	3.99	3.38	.61	.08	3.23	.76	.10			
1973	.49	3.35	4.01	3.31	.69	.07	3.12	.88	.10			
1974	.37	3.46	3.97	3.46	.51	.09	3.30	.67	.11			
1975	.38	4.92	5.52	4.65	.87	.19	4.39	1.13	.19			
TOTAL	.81	4.27	5.30	4.35	.95	.15	4.10	1.20	.19			

Big Buick

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	75	0	1	1	1	0	0	1	0	0
1961	8	6505	215	1	3	4	3	1	0	3	1	0
1962	11	7044	385	1	18	19	15	4	0	15	4	0
1963	11	7584	478	3	20	23	21	2	0	20	3	0
1964	19	8123	722	3	33	40	36	4	2	33	7	3
1965	59	8663	2140	17	86	112	96	16	5	92	20	5
1966	62	9202	2569	22	128	156	122	34	5	114	42	6
1967	134	9741	3752	20	179	209	180	29	2	172	37	4
1968	166	10281	5013	33	267	314	268	46	5	253	61	9
1969	241	10820	6901	38	356	402	352	50	6	330	72	8
1970	245	11360	6557	32	242	286	239	47	4	229	57	5
1971	127	11899	5066	17	210	235	206	29	3	196	39	4
1972	233	12439	6728	17	282	314	279	35	2	261	53	2
1973	293	12978	7011	25	242	278	246	32	5	236	42	7
1974	197	13517	3853	8	148	161	141	20	4	133	28	6
1975	119	14057	1774	7	96	109	96	13	1	93	16	2
TOTAL	1925	11364	53239	244	2311	2663	2301	362	44	2181	482	61

	BASIS PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	.72	2.15	2.86	2.15	.72	.00	2.15	.72	.00
1962	.37	6.64	7.01	5.53	1.47	.00	5.53	1.47	.00
1963	.83	5.52	6.34	5.79	.55	.00	5.52	.83	.00
1964	.51	5.63	6.82	6.14	.68	.34	5.63	1.19	.51
1965	.92	4.64	6.04	5.18	.86	.27	4.96	1.08	.27
1966	.93	5.41	6.60	5.16	1.44	.21	4.82	1.78	.25
1967	.55	4.90	5.72	4.92	.79	.05	4.71	1.01	.11
1968	.64	5.18	6.09	5.20	.89	.10	4.91	1.18	.17
1969	.51	4.77	5.38	4.71	.67	.08	4.42	.96	.11
1970	.43	3.25	3.84	3.21	.63	.05	3.07	.77	.07
1971	.28	3.48	3.90	3.42	.48	.05	3.25	.65	.07
1972	.20	3.37	3.75	3.63	.42	.02	3.12	.63	.02
1973	.27	2.66	3.06	2.70	.35	.05	2.59	.46	.08
1974	.15	2.84	3.09	2.71	.38	.08	2.55	.54	.12
1975	.28	3.85	4.37	3.85	.52	.04	3.73	.64	.08
TOTAL	.40	3.82	4.40	3.80	.60	.07	3.60	.80	.10

Cadillac

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT										
		FITTED		ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (1&K)	NONE (P.D.)	ANY INJ.	SER. INJ. (1&K)
1960	6	5203	356	3	6	11	9	2	1	9	2	1
1961	10	5752	422	2	16	21	19	2	0	16	5	0
1962	22	6301	675	1	18	20	17	3	0	14	6	0
1963	24	6850	1012	4	40	44	37	7	2	36	8	2
1964	39	7399	1241	7	55	65	58	7	1	56	9	1
1965	66	7947	1819	7	73	82	66	16	1	63	19	1
1966	83	8496	2331	10	106	116	104	12	0	96	20	0
1967	76	9045	2527	13	105	124	113	11	1	107	17	2
1968	101	9594	3270	13	155	176	152	24	2	147	29	2
1969	118	10143	3269	20	160	183	158	25	3	150	33	5
1970	120	10692	3524	21	139	173	145	28	4	140	33	5
1971	70	11241	2892	19	113	135	112	23	2	108	27	2
1972	150	11789	4162	12	137	155	135	20	3	133	22	3
1973	176	12338	4903	16	127	158	138	20	4	133	25	4
1974	153	12887	3884	12	153	169	150	19	2	139	30	2
1975	153	13436	2271	10	104	124	104	20	2	100	24	3
TOTAL	1369	10545	38558	170	1509	1756	1517	239	28	1447	309	33

	BASED PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	1.62	4.32	5.94	4.86	1.08	.54	4.86	1.08	.54
1961	.82	6.59	6.65	7.83	.82	.00	6.59	2.06	.00
1962	.24	4.23	4.70	4.00	.71	.00	3.29	1.41	.00
1963	.58	5.77	6.35	5.34	1.01	.29	5.19	1.15	.29
1964	.76	5.99	7.08	6.32	.76	.11	6.10	.98	.11
1965	.48	5.05	5.67	4.57	1.11	.07	4.36	1.31	.07
1966	.50	5.35	5.86	5.25	.61	.00	4.85	1.01	.00
1967	.57	4.59	5.45	4.94	.48	.04	4.68	.74	.09
1968	.41	4.94	5.61	4.85	.77	.06	4.69	.92	.06
1969	.60	4.83	5.52	4.77	.75	.09	4.52	1.00	.15
1970	.56	3.69	4.59	3.85	.74	.11	3.72	.68	.13
1971	.58	3.48	4.15	3.45	.71	.06	3.32	.83	.06
1972	.24	2.79	3.16	2.75	.41	.06	2.71	.45	.06
1973	.26	2.10	2.61	2.28	.33	.07	2.20	.41	.07
1974	.24	3.06	3.38	3.00	.38	.04	2.78	.60	.04
1975	.33	3.41	4.06	3.41	.66	.07	3.28	.79	.10
TOTAL	.42	3.71	4.32	3.73	.59	.07	3.56	.76	.08

Oldsmobile 98

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	1	4525	46	0	2	2	2	0	0	2	0	0
1961	1	5236	61	0	2	2	2	0	0	2	0	0
1962	10	5947	167	1	6	7	6	1	0	6	1	0
1963	1	6657	311	2	16	18	15	3	0	13	5	1
1964	18	7368	422	0	19	19	18	1	0	18	1	0
1965	36	8078	989	3	43	51	47	4	1	44	7	1
1966	41	8769	1260	6	65	77	65	12	1	62	15	3
1967	57	9499	1371	13	55	70	62	8	3	56	14	3
1968	46	10210	1787	11	78	93	84	9	1	79	14	1
1969	87	10921	2680	15	147	167	146	21	2	138	29	3
1970	94	11631	2338	11	92	107	93	14	0	89	18	2
1971	46	12342	2194	10	92	107	93	14	3	90	17	3
1972	140	13052	3435	17	154	180	151	29	3	140	40	4
1973	198	13763	3945	7	154	170	150	20	2	144	26	2
1974	140	14473	1902	6	74	82	68	14	4	67	15	5
1975	75	15184	1061	9	45	56	48	8	1	48	8	1
TOTAL	991	11821	23969	111	1044	1208	1050	158	21	998	210	29

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.00	9.61	9.61	9.61	.00	.00	9.61	.00	.00
1961	.00	6.26	6.26	6.26	.00	.00	6.26	.00	.00
1962	1.01	6.04	7.05	6.04	1.01	.00	6.04	1.01	.00
1963	.97	7.73	8.69	7.25	1.45	.00	6.28	2.42	.48
1964	.00	6.11	6.11	5.79	.32	.00	5.79	.32	.00
1965	.38	5.38	6.38	5.88	.50	.13	5.51	.88	.13
1966	.54	5.87	6.95	5.87	1.08	.09	5.60	1.35	.27
1967	1.00	4.22	5.38	4.76	.61	.23	4.30	1.08	.23
1968	.60	4.28	5.10	4.60	.49	.05	4.33	.77	.05
1969	.51	5.02	5.71	4.99	.72	.07	4.72	.99	.10
1970	.40	3.38	3.93	3.42	.51	.00	3.27	.66	.07
1971	.37	3.40	3.95	3.43	.52	.11	3.32	.63	.11
1972	.38	3.43	4.01	3.37	.65	.07	3.12	.89	.09
1973	.13	2.84	3.13	2.76	.37	.04	2.65	.48	.04
1974	.22	2.69	2.98	2.47	.51	.15	2.43	.54	.18
1975	.56	2.79	3.48	2.98	.50	.06	2.98	.50	.06
TOTAL	.39	3.68	4.26	3.71	.56	.07	3.52	.74	.10

Big Pontiac

	INSPECTION			REG. FILE	ACCIDENT INVOLVEMENT									
					ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES		NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	
1960	13	5973		289	1	6	7	7	0	0	6	1	0	
1961	5	6483		246	1	6	7	7	0	0	7	0	0	
1962	21	6992		712	2	39	41	33	8	2	31	10	2	
1963	25	7502		1061	12	37	50	41	9	1	38	12	3	
1964	58	8011		1631	14	96	112	87	25	3	82	30	3	
1965	75	8521		2200	15	86	108	88	20	3	81	27	3	
1966	94	9030		2984	28	152	190	153	37	7	143	47	8	
1967	86	9539		3033	26	142	173	149	24	4	137	36	5	
1968	126	10049		3700	21	155	185	157	28	5	148	37	6	
1969	130	10558		3712	27	201	240	205	35	3	199	41	3	
1970	129	11068		3255	9	122	138	112	26	2	106	32	2	
1971	60	11577		2724	7	107	120	109	11	0	105	15	0	
1972	172	12087		3475	13	116	140	126	14	1	116	24	3	
1973	154	12596		4212	12	164	183	160	23	2	154	29	2	
1974	26	13106		2052	2	32	35	29	6	0	27	8	0	
1975	68	13615		800	4	47	54	51	3	0	48	6	0	
TOTAL	1242	10550		36086	194	1510	1783	1514	269	33	1428	355	40	

	RATES PER MILLION MILES									
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.	
1960	.58	3.48	4.06	4.06	.00	.00	3.48	.58	.00	
1961	.63	3.76	4.39	4.39	.00	.00	4.39	.00	.00	
1962	.40	7.63	8.24	6.63	1.61	.40	6.23	2.01	.40	
1963	1.51	4.65	6.28	5.15	1.13	.13	4.77	1.51	.38	
1964	1.07	7.35	8.57	6.66	1.91	.23	6.28	2.30	.23	
1965	.80	4.59	5.76	4.69	1.07	.16	4.32	1.44	.16	
1966	1.04	5.64	7.05	5.68	1.37	.26	5.31	1.74	.30	
1967	.90	4.91	5.98	5.15	.83	.14	4.74	1.24	.17	
1968	.56	4.17	4.98	4.22	.75	.13	3.98	1.00	.16	
1969	.69	5.13	6.12	5.23	.89	.08	5.08	1.05	.08	
1970	.25	3.39	3.83	3.11	.72	.06	2.94	.89	.06	
1971	.22	3.39	3.81	3.46	.35	.00	3.33	.48	.00	
1972	.31	2.81	3.33	3.00	.33	.02	2.76	.57	.07	
1973	.23	3.09	3.45	3.02	.43	.04	2.90	.55	.04	
1974	.07	1.19	1.30	1.08	.22	.00	1.00	.30	.00	
1975	.37	4.32	4.96	4.68	.28	.00	4.41	.55	.00	
TOTAL	.51	3.97	4.68	3.98	.71	.09	3.75	.93	.11	

Chrysler

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A&K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A&K)
1960	2	5672	98	1	2	3	2	1	0	2	1	0
1961	6	6207	203	1	4	5	3	2	0	3	2	0
1962	21	6742	600	2	23	25	24	1	0	21	4	0
1963	33	7277	861	5	35	43	34	9	2	31	12	3
1964	41	7812	1364	6	63	71	56	15	2	54	17	4
1965	79	8347	2632	12	92	112	91	21	5	89	23	5
1966	119	8883	3875	21	146	178	156	22	3	144	34	4
1967	128	9418	3371	21	163	187	152	35	3	141	46	4
1968	134	9953	4168	31	199	237	198	39	6	183	54	6
1969	191	10488	4681	20	221	254	212	42	5	200	54	6
1970	124	11023	3210	9	93	104	86	18	2	80	24	2
1971	114	11558	3258	15	132	153	131	22	2	122	31	3
1972	138	12093	3771	21	121	145	124	21	6	119	26	7
1973	132	12628	3767	17	133	157	134	23	1	123	34	1
1974	69	13163	1628	3	75	81	73	8	2	70	11	2
1975	20	13699	495	1	20	23	18	5	2	17	6	2
TOTAL	1351	10424	37982	186	1522	1778	1499	289	41	1399	379	49

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	1.80	3.60	5.40	3.60	1.80	.00	3.60	1.80	.00
1961	.79	3.17	3.97	2.38	1.59	.00	2.38	1.59	.00
1962	.49	5.69	6.18	5.93	.25	.00	5.19	.99	.00
1963	.80	5.59	6.86	5.43	1.44	.32	4.95	1.92	.48
1964	.56	5.91	6.66	5.26	1.41	.19	5.07	1.60	.38
1965	.55	4.19	5.10	4.14	.96	.23	4.05	1.05	.23
1966	.61	4.24	5.17	4.53	.64	.09	4.18	.99	.12
1967	.66	5.13	5.89	4.79	1.10	.09	4.44	1.45	.13
1968	.75	4.80	5.71	4.77	.94	.14	4.41	1.30	.14
1969	.41	4.50	5.17	4.62	.86	.10	4.07	1.10	.12
1970	.25	2.63	2.94	2.43	.51	.06	2.26	.68	.06
1971	.40	3.51	4.06	3.48	.58	.05	3.24	.82	.08
1972	.46	2.65	3.18	2.72	.46	.13	2.61	.57	.15
1973	.36	2.80	3.30	2.82	.48	.02	2.59	.71	.02
1974	.14	3.50	3.78	3.41	.37	.09	3.27	.51	.09
1975	.15	2.95	3.39	2.65	.74	.29	2.51	.88	.29
TOTAL	.47	3.84	4.49	3.77	.72	.10	3.53	.96	.12

Medium Buick

	INSPECTION		REG.	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN INSP. SAME	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	7	6246	426	2	12	15	12	3	0	12	3	0
1961	17	6760	825	5	32	38	34	4	1	33	5	1
1962	51	7274	1391	10	69	83	60	23	6	55	28	6
1963	76	7788	2298	16	83	105	85	20	4	78	27	5
1964	88	8302	2791	13	121	139	127	12	4	118	26	6
1965	95	8816	2568	20	122	149	123	26	1	115	34	2
1966	109	9330	3551	26	156	188	162	26	1	154	34	3
1967	152	9844	4078	31	184	231	187	44	2	183	48	5
1968	165	10358	5002	34	237	285	249	36	6	240	45	6
1969	207	10872	6063	24	264	300	257	43	3	248	52	5
1970	218	11387	6340	23	216	247	217	30	5	208	39	5
1971	151	11901	5758	15	232	254	225	29	4	213	41	5
1972	238	12415	6513	16	236	263	240	23	3	230	33	3
1973	245	12929	6956	15	221	248	218	30	4	206	42	5
1974	168	13443	3024	9	104	117	106	11	1	100	17	1
1975	71	13957	1242	5	48	58	52	6	1	50	8	1
TOTAL	2058	10922	58806	264	2334	2720	2354	366	46	2238	482	59

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.75	4.61	5.64	4.51	1.13	.00	4.51	1.13	.00
1961	.90	5.74	6.81	6.10	.72	.18	5.92	.90	.18
1962	.99	6.82	8.20	5.93	2.27	.59	5.44	2.77	.59
1963	.89	4.64	5.87	4.75	1.12	.22	4.36	1.51	.28
1964	.56	5.22	6.00	5.48	.52	.17	4.88	1.12	.26
1965	.88	5.39	6.58	5.43	1.15	.04	5.08	1.50	.09
1966	.78	4.62	5.67	4.89	.76	.03	4.65	1.03	.09
1967	.77	4.58	5.75	4.66	1.10	.05	4.56	1.20	.12
1968	.66	4.57	5.50	4.81	.69	.12	4.63	.87	.12
1969	.36	4.01	4.55	3.90	.65	.05	3.76	.79	.08
1970	.32	2.99	3.42	3.01	.42	.07	2.88	.54	.07
1971	.22	3.39	3.71	3.48	.42	.06	3.11	.60	.07
1972	.20	2.92	3.25	2.97	.28	.04	2.84	.41	.04
1973	.17	2.46	2.77	2.43	.33	.04	2.30	.47	.06
1974	.22	2.56	2.88	2.61	.27	.02	2.46	.42	.02
1975	.29	2.77	3.35	3.00	.35	.06	2.88	.46	.06
TOTAL	.41	3.63	4.23	3.67	.57	.07	3.48	.75	.09

Medium Oldsmobile

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	9	5649	419	0	17	18	17	1	0	17	1	0
1961	11	6230	356	5	18	26	21	5	0	19	7	0
1962	31	6811	979	4	42	48	43	5	1	38	10	2
1963	43	7392	1666	7	74	83	68	15	3	62	21	4
1964	65	7974	2447	14	107	125	97	28	3	89	36	3
1965	113	8555	3155	16	158	178	152	26	6	138	40	6
1966	108	9136	3372	21	169	196	172	24	3	160	36	5
1967	101	9717	3195	25	160	198	164	34	6	152	46	7
1968	128	10298	3946	29	168	208	183	25	4	175	33	4
1969	189	10879	5214	37	276	320	281	39	6	267	53	8
1970	161	11460	4272	14	146	166	141	25	4	138	28	6
1971	100	12041	4283	17	180	204	180	24	3	174	30	5
1972	226	12622	6143	22	229	262	222	40	6	216	46	6
1973	231	13203	6589	21	216	248	213	35	4	200	48	6
1974	169	13784	2955	8	109	120	95	25	3	90	30	3
1975	75	14366	1148	4	51	57	51	6	1	48	9	1
TOTAL	1760	11001	50139	244	2120	2457	2100	357	53	1983	474	66

RATES PER MILLION MILES

	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.00	7.18	7.60	7.18	.42	.00	7.18	.42	.00
1961	2.25	8.12	11.72	9.47	2.25	.00	8.57	3.16	.00
1962	.60	6.30	7.20	6.45	.75	.15	5.70	1.50	.30
1963	.57	6.01	6.74	5.52	1.22	.24	5.03	1.71	.32
1964	.72	5.48	6.41	4.97	1.43	.15	4.56	1.84	.15
1965	.59	5.85	6.59	5.63	.96	.22	5.11	1.48	.22
1966	.68	5.49	6.36	5.58	.78	.10	5.19	1.17	.16
1967	.81	5.15	6.38	5.28	1.10	.19	4.90	1.48	.23
1968	.71	4.13	5.12	4.50	.62	.10	4.31	.81	.10
1969	.65	4.87	5.64	4.95	.69	.11	4.71	.93	.14
1970	.29	2.98	3.39	2.88	.51	.08	2.82	.57	.12
1971	.33	3.49	3.96	3.49	.47	.06	3.37	.58	.10
1972	.28	2.95	3.38	2.86	.52	.08	2.79	.59	.08
1973	.24	2.48	2.85	2.45	.40	.05	2.30	.55	.07
1974	.20	2.68	2.95	2.53	.61	.07	2.21	.74	.07
1975	.24	3.09	3.46	3.09	.36	.06	2.91	.55	.06
TOTAL	.44	3.84	4.45	3.81	.65	.10	3.60	.86	.12

Medium Pontiac

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	7	5563	550	3	28	31	27	4	0	23	8	1
1961	12	6154	430	2	21	24	22	2	0	21	3	0
1962	31	6746	1072	15	49	65	52	13	2	46	19	2
1963	56	7338	1770	4	63	74	62	12	0	60	14	1
1964	86	7929	2395	26	88	119	97	22	1	89	30	2
1965	91	8521	3125	30	133	170	140	30	6	137	33	6
1966	124	9113	3888	28	185	218	179	39	4	173	45	4
1967	124	9705	4019	28	194	234	199	35	3	192	42	3
1968	153	10296	5441	37	257	304	258	46	7	240	64	9
1969	181	10888	5416	26	241	279	246	33	8	234	45	9
1970	177	11480	5327	28	207	247	205	42	2	193	54	2
1971	115	12072	4498	18	170	202	172	30	4	165	37	4
1972	247	12663	6368	19	197	228	199	29	3	188	40	4
1973	209	13255	6363	16	231	258	228	30	2	217	41	5
1974	29	13847	3369	4	63	68	62	6	1	56	12	1
1975	43	14438	903	2	45	48	43	5	0	42	6	0
TOTAL	1685	10942	54939	286	2172	2569	2131	378	43	2076	493	53

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.98	9.15	10.13	8.82	1.31	.00	7.52	2.61	.33
1961	.76	7.94	9.07	8.61	.76	.00	7.94	1.13	.00
1962	2.07	6.78	8.99	7.19	1.80	.28	6.36	2.63	.28
1963	.31	4.85	5.70	4.77	.92	.00	4.62	1.08	.08
1964	1.37	4.63	6.27	5.11	1.16	.05	4.69	1.58	.11
1965	1.13	4.99	6.38	5.26	1.13	.23	5.14	1.24	.23
1966	.79	5.22	6.15	5.05	1.10	.11	4.88	1.27	.11
1967	.72	4.97	6.00	5.10	.90	.08	4.92	1.08	.08
1968	.66	4.59	5.43	4.61	.82	.12	4.28	1.14	.16
1969	.44	4.09	4.73	4.17	.56	.14	3.97	.76	.15
1970	.46	3.38	4.04	3.35	.69	.03	3.16	.88	.03
1971	.33	3.13	3.72	3.17	.55	.07	3.04	.68	.07
1972	.24	2.44	2.83	2.47	.36	.04	2.33	.50	.05
1973	.19	2.74	3.06	2.70	.36	.02	2.57	.49	.06
1974	.09	1.35	1.46	1.33	.13	.02	1.20	.26	.02
1975	.15	3.45	3.68	3.30	.38	.00	3.22	.46	.00
TOTAL	.48	3.61	4.27	3.65	.63	.07	3.45	.82	.09

Standard Chevrolet

	INSPECTION		REG.	ACCIDENT INVOLVEMENT							
		FITTED		ACCIDENT TYPE			DRIVER INJURY		VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	108	6999	3949	24	130	160	127	33	4	120	40	6
1961	131	7322	4584	31	185	219	184	35	4	174	45	9
1962	303	7673	10149	80	412	511	405	106	14	372	139	22
1963	382	8053	14583	111	572	700	567	133	21	520	180	28
1964	565	8462	18468	132	709	880	712	168	24	670	210	29
1965	623	8900	20386	181	907	1131	931	200	34	864	267	44
1966	702	9366	24029	162	1094	1312	1064	248	34	984	328	48
1967	696	9861	21343	172	956	1176	955	221	30	895	281	43
1968	939	10385	25533	163	1136	1342	1142	200	19	1077	265	27
1969	887	10938	26392	154	1118	1316	1101	215	28	1053	263	36
1970	880	11519	23729	137	830	1013	852	161	16	799	214	24
1971	458	12129	18468	67	764	864	743	121	18	694	170	21
1972	981	12769	26512	94	1054	1203	1024	179	26	984	219	30
1973	999	13436	24420	82	938	1065	924	141	22	880	185	28
1974	683	14133	15989	55	625	713	628	85	10	592	121	12
1975	252	14858	4397	19	225	259	222	37	7	210	49	8
TOTAL	9589	10741	282931	1664	11655	13864	11581	2283	311	10888	2976	415

	RATES PER MILLION MILES											
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY					
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.			
1960	.87	4.70	5.79	4.59	1.19	.14	4.34	1.45	.22			
1961	.92	5.51	6.52	5.48	1.04	.12	5.18	1.34	.27			
1962	1.03	5.29	6.56	5.20	1.36	.18	4.78	1.78	.28			
1963	.95	4.87	5.96	4.83	1.13	.18	4.43	1.53	.24			
1964	.84	4.54	5.63	4.56	1.08	.15	4.29	1.34	.19			
1965	1.00	5.00	6.23	5.13	1.10	.19	4.76	1.47	.24			
1966	.72	4.86	5.83	4.73	1.10	.15	4.37	1.46	.21			
1967	.82	4.54	5.59	4.54	1.05	.14	4.25	1.34	.20			
1968	.61	4.28	5.06	4.81	.75	.07	4.06	1.00	.10			
1969	.53	3.87	4.56	3.81	.74	.10	3.65	.91	.12			
1970	.50	3.04	3.71	3.12	.59	.06	2.92	.78	.09			
1971	.30	3.41	3.86	3.52	.54	.08	3.10	.76	.09			
1972	.28	3.11	3.55	3.02	.53	.08	2.91	.65	.09			
1973	.25	2.86	3.25	2.82	.43	.07	2.68	.56	.09			
1974	.24	2.77	3.16	2.78	.38	.04	2.62	.54	.05			
1975	.29	3.44	3.96	3.40	.57	.11	3.21	.75	.12			
TOTAL	.55	3.84	4.56	3.81	.75	.10	3.58	.98	.14			

Standard Ford

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (PDO)	ANY INJ.	SER. INJ. (A+K)	NONE (PDO)	ANY INJ.	SER. INJ. (A+K)
1960	30	6776	1207	4	21	27	23	4	1	20	7	1
1961	63	7095	2483	13	92	107	83	24	8	74	33	9
1962	114	7452	3999	39	143	192	151	41	12	145	47	15
1963	211	7846	8388	96	325	435	355	80	10	328	107	16
1964	354	8277	11494	117	499	638	524	114	18	505	133	26
1965	481	8745	15646	145	683	858	677	181	32	624	234	35
1966	570	9249	18539	169	848	1059	863	196	24	814	245	35
1967	605	9791	18464	164	954	1153	955	198	39	891	262	48
1968	591	10369	18676	153	852	1034	872	162	29	821	213	34
1969	849	10985	24088	162	1242	1473	1242	231	32	1178	295	40
1970	771	11637	21679	72	497	591	490	101	17	467	124	22
1971	813	12327	22750	144	961	1152	984	168	26	931	221	33
1972	852	13053	21076	115	945	1097	925	172	18	871	226	19
1973	825	13817	21358	105	986	1139	952	187	27	896	243	34
1974	424	14617	10616	67	560	653	559	94	16	529	124	22
1975	141	15454	2996	16	173	204	182	22	3	176	28	3
TOTAL	7694	11046	263959	1581	9781	11812	9837	1975	307	9270	2542	392

	SALES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (PDO)	ANY INJ.	SER INJ.	NONE (PDO)	ANY INJ.	SER. INJ.
1960	.49	2.57	3.30	2.81	.49	.12	2.45	.86	.12
1961	.74	5.22	6.87	4.71	1.35	.45	4.20	1.87	.51
1962	1.31	4.80	6.44	5.07	1.33	.40	4.87	1.58	.50
1963	1.46	4.94	6.61	5.39	1.22	.15	4.98	1.63	.24
1964	1.23	5.25	6.71	5.51	1.20	.19	5.31	1.40	.27
1965	1.06	4.99	6.27	4.95	1.32	.23	4.56	1.71	.26
1966	.99	4.95	6.18	5.03	1.14	.14	4.75	1.43	.20
1967	.91	5.28	6.38	5.28	1.10	.22	4.96	1.45	.27
1968	.79	4.40	5.34	4.50	.84	.15	4.24	1.10	.18
1969	.61	4.69	5.57	4.69	.87	.12	4.45	1.11	.15
1970	.29	1.97	2.34	1.94	.40	.07	1.85	.49	.09
1971	.51	3.45	4.11	3.51	.60	.09	3.32	.79	.12
1972	.42	3.44	3.99	3.36	.63	.05	3.17	.82	.07
1973	.36	3.34	3.86	3.23	.63	.09	3.04	.82	.12
1974	.43	3.61	4.21	3.60	.61	.10	3.41	.80	.14
1975	.35	3.74	4.41	3.93	.48	.06	3.80	.60	.06
TOTAL	.64	3.96	4.78	3.99	.80	.12	3.76	1.03	.16

Standard Plymouth

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	2	8752	229	0	7	7	6	1	0	5	2	0
1961	11	8566	375	2	10	13	11	2	0	9	4	0
1962	23	8482	871	6	23	30	25	5	2	25	5	3
1963	61	8501	2271	23	96	123	94	29	4	91	32	4
1964	134	8622	3726	27	166	195	149	46	5	145	50	10
1965	168	8844	5843	46	236	291	231	60	9	215	76	14
1966	234	9169	7268	54	296	369	313	56	11	293	76	13
1967	260	9596	7488	47	377	437	360	77	12	348	89	14
1968	377	10125	11600	81	528	632	529	103	9	496	136	15
1969	326	10756	9837	73	468	565	476	89	12	445	120	17
1970	257	11489	6868	47	214	280	225	55	9	211	69	11
1971	241	12325	7102	50	334	403	336	67	12	322	81	14
1972	248	13262	6099	44	281	334	294	40	9	284	50	11
1973	251	14302	6376	31	277	324	288	36	4	275	49	5
1974	92	15444	2010	32	165	207	176	31	2	171	36	3
1975	13	16688	708	15	97	118	94	24	4	93	25	4
TOTAL	2698	10917	78671	578	3575	4328	3607	721	104	3928	900	138

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.00	3.49	3.49	2.99	.50	.00	2.49	1.00	.00
1961	.62	3.11	4.05	3.42	.62	.00	2.80	1.25	.00
1962	.81	3.11	4.06	3.38	.68	.27	3.38	.68	.41
1963	1.19	4.97	6.37	4.87	1.50	.21	4.71	1.66	.21
1964	.84	5.17	6.07	4.64	1.43	.16	4.51	1.56	.31
1965	.89	4.57	5.63	4.47	1.16	.17	4.16	1.47	.27
1966	.81	4.44	5.54	4.70	.84	.17	4.40	1.14	.20
1967	.65	5.25	6.08	5.01	1.07	.17	4.84	1.24	.19
1968	.69	4.50	5.38	4.50	.80	.08	4.22	1.16	.13
1969	.69	4.42	5.34	4.50	.84	.11	4.21	1.13	.16
1970	.60	2.71	3.55	2.85	.70	.11	2.67	.67	.14
1971	.57	3.82	4.60	3.84	.77	.14	3.68	.93	.16
1972	.54	3.47	4.13	3.63	.49	.11	3.51	.62	.14
1973	.34	3.04	3.55	3.16	.39	.04	3.02	.54	.05
1974	1.03	5.32	6.67	5.67	1.00	.06	5.51	1.16	.10
1975	1.27	8.21	9.99	7.96	2.03	.34	7.87	2.12	.34
TOTAL	.67	4.16	5.04	4.20	.84	.12	3.99	1.05	.16

Chevrolet Chevelle

	INSPECTION		REG.	ACCIDENT INVOLVEMENT									
		FITTED		ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO.IN INSP. SAME	AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	109	9436	4042	47	196	250	206	44	9	186	64	14
1965	166	9170	5391	53	242	304	247	57	11	238	66	15
1966	236	9090	7793	108	381	505	402	103	20	381	124	22
1967	264	9196	9213	117	463	626	513	113	22	480	146	27
1968	365	9486	11057	144	556	768	635	133	20	615	153	25
1969	422	9963	12577	167	744	945	793	152	24	753	192	26
1970	365	10625	11550	109	545	679	549	130	23	520	159	27
1971	218	11473	8226	88	466	574	482	92	19	465	111	22
1972	287	12506	8976	80	411	517	425	92	10	407	110	14
1973	257	13725	7365	57	304	392	336	56	10	316	76	13
1974	229	15129	6360	37	265	315	260	55	3	252	63	3
1975	155	16719	2267	19	148	168	148	20	2	141	27	2
TOTAL	3073	10946	94797	1026	4776	6043	4996	1047	173	4752	1291	210

RATES PER BILLION MILES

	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****
1964	1.23	5.14	6.55	5.40	1.15	.24	4.88	1.68	.37
1965	1.07	4.90	6.15	5.00	1.15	.22	4.81	1.34	.30
1966	1.52	5.38	7.13	5.67	1.45	.28	5.38	1.75	.31
1967	1.68	5.70	7.39	6.06	1.33	.26	5.67	1.72	.32
1968	1.37	5.68	7.32	6.05	1.27	.19	5.86	1.46	.24
1969	1.33	5.94	7.54	6.33	1.21	.19	6.01	1.53	.21
1970	.89	4.45	5.54	4.98	1.06	.19	4.24	1.30	.22
1971	.93	4.94	6.08	5.11	.97	.20	4.91	1.18	.23
1972	.71	3.66	4.61	3.79	.82	.09	3.63	.98	.12
1973	.56	3.01	3.88	3.52	.55	.10	3.13	.75	.13
1974	.38	2.75	3.27	2.70	.57	.03	2.62	.65	.03
1975	.50	3.77	4.43	3.90	.53	.05	3.72	.71	.05
TOTAL	99	4.60	5.82	4.81	1.01	17	4.58	1.24	20

Intermediate Oldsmobile

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	3	6354	147	0	3	3	1	2	1	1	2	1
1962	6	6891	270	2	9	12	10	2	0	9	3	0
1963	14	7428	560	2	22	25	18	7	0	15	10	1
1964	50	7964	1797	14	83	98	81	17	2	73	25	3
1965	88	8501	2759	31	132	170	125	45	8	113	57	11
1966	128	9038	3873	43	169	218	181	37	1	162	56	4
1967	164	9575	4889	45	239	299	231	68	10	217	82	13
1968	179	10112	6100	53	298	361	306	55	13	283	78	13
1969	225	10648	6714	60	374	445	373	72	9	352	93	11
1970	236	11185	6905	54	291	355	303	52	9	291	64	13
1971	162	11722	6306	36	302	355	308	47	8	291	64	9
1972	273	12259	8600	47	333	391	345	46	4	327	64	6
1973	306	12795	9513	48	415	477	406	71	8	389	88	11
1974	332	13332	8359	55	354	421	354	67	11	339	82	13
1975	204	13869	2968	26	168	202	165	37	6	156	46	7
TOTAL	2370	11343	69760	514	3192	3832	3207	625	90	3018	814	116

RATES PER MILLION MILES

	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	.00	3.21	3.21	1.07	2.14	1.07	1.07	2.14	1.07
1962	1.07	4.84	6.45	5.37	1.07	.00	4.84	1.61	.00
1963	.48	5.29	6.01	4.33	1.68	.00	3.61	2.40	.24
1964	.98	5.80	6.85	5.66	1.19	.14	5.10	1.75	.21
1965	1.32	5.63	7.25	5.53	1.92	.34	4.82	2.43	.47
1966	1.23	4.85	6.23	5.17	1.06	.03	4.63	1.60	.11
1967	.96	5.11	6.39	4.93	1.45	.21	4.64	1.75	.28
1968	.86	4.83	5.85	4.96	.89	.21	4.59	1.26	.21
1969	.84	5.25	6.22	5.22	1.01	.13	4.92	1.30	.15
1970	.70	3.77	4.60	3.92	.67	.12	3.77	.83	.17
1971	.49	4.09	4.80	4.17	.64	.11	3.94	.87	.12
1972	.45	3.16	3.71	3.27	.44	.04	3.10	.61	.06
1973	.39	3.41	3.92	3.34	.58	.07	3.20	.72	.09
1974	.48	3.18	3.78	3.18	.60	.10	3.04	.74	.12
1975	.63	4.08	4.91	4.01	.90	.15	3.79	1.12	.17
TOTAL	.65	4.04	4.85	4.06	.79	.11	3.82	1.03	.15

Intermediate Ford

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			OBJ. INJURY		VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	74	7730	2447	10	89	106	88	18	2	80	26	4
1963	117	7899	4020	33	159	199	158	41	10	151	48	13
1964	141	8157	4017	34	144	182	131	51	8	121	61	9
1965	134	8504	3864	30	154	198	145	53	7	134	64	8
1966	183	8940	6664	69	305	387	302	85	10	276	111	15
1967	171	9465	5566	67	256	334	273	61	8	256	78	12
1968	282	10076	10320	148	609	793	634	159	17	580	213	23
1969	325	10780	10847	132	651	814	674	140	22	632	182	31
1970	380	11571	9528	59	312	384	316	68	13	300	84	14
1971	261	12451	8325	77	420	511	417	94	13	393	118	16
1972	468	13420	13178	117	748	907	781	126	14.	747	160	18
1973	465	14477	12875	101	653	782	656	126	12	632	150	15
1974	259	15624	9590	63	481	576	491	85	7	473	103	8
1975	117	16859	2918	28	200	287	187	50	11	180	57	11
TOTAL	3327	11767	104159	968	5181	6410	5253	1157	154	4955	1455	197

	RATES PER MILLION MILES									
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.	
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****	
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****	
1962	.53	4.71	5.60	4.65	.95	.11	4.23	1.37	.21	
1963	1.04	5.01	6.27	4.98	1.29	.31	4.76	1.51	.41	
1964	1.04	4.39	5.55	4.00	1.56	.24	3.69	1.86	.27	
1965	.91	4.69	6.03	4.41	1.61	.21	4.08	1.95	.24	
1966	1.16	5.12	6.50	5.07	1.43	.17	4.63	1.86	.25	
1967	1.27	4.86	6.34	5.18	1.16	.15	4.86	1.48	.23	
1968	1.42	5.86	7.62	6.10	1.53	.16	5.58	2.05	.22	
1969	1.13	5.57	6.96	5.76	1.20	.19	5.40	1.56	.27	
1970	.54	2.83	3.48	2.87	.62	.12	2.72	.76	.13	
1971	.74	4.05	4.93	4.02	.91	.13	3.79	1.14	.15	
1972	.66	4.23	5.13	4.42	.71	.08	4.22	.90	.10	
1973	.54	3.50	4.20	3.52	.68	.06	3.39	.80	.08	
1974	.42	3.21	3.84	3.28	.57	.05	3.16	.69	.05	
1975	.57	4.07	4.82	3.80	1.02	.22	3.66	1.16	.22	
TOTAL	.79	4.23	5.23	4.29	.94	.13	4.04	1.19	.16	

Intermediate Pontiac

	INSPECTION		REG.	ACCIDENT INVOLVEMENT							
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY	
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	4	7387	134	1	8	9	6	3	2	6	3	2
1964	74	7934	1973	17	103	121	94	27	3	85	36	6
1965	107	8480	3574	39	204	253	202	51	6	189	64	7
1966	110	9026	4570	63	241	313	257	56	13	247	66	13
1967	153	9573	5185	72	295	376	305	71	15	284	92	17
1968	183	10119	6526	91	349	453	378	75	6	363	90	10
1969	195	10665	6313	62	345	419	351	68	9	333	86	10
1970	171	11212	5735	51	265	330	282	48	8	268	62	10
1971	108	11758	3978	41	205	248	205	43	4	195	53	5
1972	135	12304	5142	49	229	291	245	46	5	238	53	7
1973	231	12851	6814	66	340	419	347	72	7	334	85	9
1974	143	13397	4175	32	214	254	220	34	7	212	42	9
1975	51	13944	951	5	61	68	61	7	1	61	7	1
TOTAL	1665	10937	55070	589	2859	3559	2953	601	86	2815	759	106

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****
1963	1.01	8.08	9.09	6.06	3.03	2.02	6.06	3.03	2.02
1964	1.09	6.58	7.73	6.00	1.72	.19	5.43	2.30	.38
1965	1.29	6.73	8.35	6.67	1.68	.20	6.24	2.11	.23
1966	1.53	5.84	7.59	6.23	1.36	.32	5.99	1.60	.32
1967	1.45	5.94	7.58	6.14	1.43	.30	5.72	1.85	.34
1968	1.38	5.28	6.86	5.72	1.14	.09	5.50	1.36	.15
1969	.92	5.12	6.22	5.21	1.01	.13	4.95	1.28	.15
1970	.79	4.12	5.13	4.39	.75	.12	4.17	.96	.16
1971	.88	4.38	5.30	4.38	.92	.09	4.17	1.13	.11
1972	.77	3.62	4.60	3.87	.73	.08	3.76	.84	.11
1973	.75	3.88	4.78	3.96	.82	.08	3.81	.97	.10
1974	.57	3.83	4.54	3.93	.61	.13	3.79	.75	.16
1975	.38	4.60	5.13	4.60	.53	.08	4.60	.53	.08
TOTAL	98	4.75	5.90	4.90	1.00	14	4.67	1.23	18

Chevrolet Nova

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY	
	NO.IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	77	7077	2561	25	99	129	99	30	8	90	39	10
1963	116	7519	4356	24	162	190	148	42	4	134	56	7
1964	91	7961	2692	16	107	127	94	33	5	87	40	5
1965	42	8403	1754	13	78	92	69	23	4	65	27	6
1966	79	8845	2961	32	145	184	142	42	7	137	47	8
1967	73	9286	2241	18	104	127	99	28	5	94	33	5
1968	110	9728	3427	50	183	239	186	53	7	170	69	8
1969	162	10170	5008	63	257	330	253	77	12	238	92	16
1970	228	10612	6537	84	310	417	330	87	14	307	110	17
1971	119	11054	3840	66	217	294	230	64	14	214	80	16
1972	250	11496	7747	109	406	530	403	127	22	388	142	25
1973	223	11938	6934	87	373	477	375	102	14.	359	118	17
1974	224	12379	6982	68	365	448	364	84	13	347	101	19
1975	73	12821	1689	19	109	131	111	20	3	104	27	5
TOTAL	1669	10282	55829	674	2915	3715	2903	812	132	2734	981	164

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	1.33	5.26	6.85	5.26	1.59	.42	4.78	2.07	.53
1963	.73	4.95	5.80	4.52	1.28	.12	4.09	1.71	.21
1964	.75	4.99	5.93	4.39	1.54	.23	4.06	1.87	.23
1965	.88	5.29	6.24	4.68	1.56	.27	4.41	1.86	.41
1966	1.22	5.54	7.03	5.42	1.60	.27	5.23	1.79	.31
1967	.86	5.00	6.10	4.76	1.35	.24	4.52	1.59	.24
1968	1.50	5.49	7.17	5.58	1.59	.21	5.10	2.07	.24
1969	1.24	5.05	6.48	4.97	1.51	.24	4.67	1.81	.31
1970	1.21	4.47	6.01	4.76	1.25	.20	4.43	1.59	.25
1971	1.55	5.11	6.93	5.42	1.51	.33	5.04	1.88	.38
1972	1.22	4.56	5.95	4.53	1.43	.25	4.36	1.59	.28
1973	1.05	4.51	5.76	4.53	1.23	.17	4.34	1.46	.21
1974	.79	4.22	5.18	4.21	.97	.15	4.01	1.17	.22
1975	.86	5.03	6.05	5.13	.92	.14	4.80	1.25	.23
TOTAL	1.10	4.77	6.08	4.75	1.33	.22	4.48	1.61	.27

Ford Maverick & Falcon

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	29	7321	1183	5	17	25	21	4	0	19	6	2
1961	68	7649	2314	18	71	94	64	30	9	57	37	9
1962	109	7976	3430	22	115	143	110	33	2	103	40	3
1963	115	8304	3446	14	109	133	106	27	5	101	32	8
1964	134	8632	4138	38	154	195	148	47	5	140	55	6
1965	128	8960	3736	36	120	161	122	39	11	112	49	13
1966	108	9288	2951	28	157	202	162	40	8	158	44	9
1967	62	9615	1829	16	79	100	81	19	3	73	27	3
1968	55	9943	2095	13	105	122	105	17	2	101	21	2
1969	70	10271	1663	17	82	100	83	17	3	79	21	4
1970	406	10599	11868	82	386	486	387	99	18	361	125	20
1971	181	10927	6124	68	344	425	337	88	14	318	107	14
1972	194	11254	5658	66	292	370	284	86	17	269	101	20
1973	205	11582	6536	91	336	458	337	101	12	316	122	15
1974	203	11910	5459	39	307	362	283	79	7	267	95	10
1975	37	12238	950	20	75	99	82	17	1	75	24	3
TOTAL	2104	10198	63380	573	2749	3455	2712	743	117	2549	906	141

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.58	1.96	2.89	2.42	.46	.00	2.19	.69	.23
1961	1.02	4.01	5.31	3.62	1.69	.51	3.22	2.09	.51
1962	.80	4.20	5.23	4.02	1.21	.07	3.76	1.46	.11
1963	.49	3.81	4.65	3.70	.94	.17	3.53	1.12	.28
1964	1.06	4.31	5.46	4.14	1.32	.14	3.92	1.54	.17
1965	1.08	3.58	4.81	3.64	1.17	.33	3.35	1.46	.39
1966	1.02	5.73	7.37	5.91	1.46	.29	5.76	1.61	.33
1967	.91	4.49	5.69	4.61	1.08	.17	4.15	1.54	.17
1968	.62	5.04	5.86	5.04	.82	.10	4.85	1.01	.10
1969	1.00	4.80	5.85	4.86	1.00	.18	4.63	1.23	.23
1970	.65	3.07	3.86	3.08	.79	.14	2.87	.99	.16
1971	1.02	5.14	6.35	5.04	1.32	.21	4.75	1.60	.21
1972	1.04	4.59	5.81	4.46	1.35	.27	4.22	1.59	.31
1973	1.20	4.44	5.79	4.45	1.33	.16	4.17	1.61	.20
1974	.60	4.72	5.57	4.35	1.22	.11	4.11	1.46	.15
1975	1.72	6.45	8.52	7.05	1.46	.09	6.45	2.06	.26
TOTAL	.89	4.27	5.37	4.22	1.16	.18	3.96	1.41	.22

Ford Mustang

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
		FITTED		ACCIDENTS INVOLVED			DRIVER INJURY			VEHICLE SEVERITY			
	NO. IN SAMP.	AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	257	9303	8710	140	462	614	460	154	25	432	182	32
1966	350	9796	11685	151	677	847	662	185	30	627	220	37
1967	250	10290	8188	128	458	604	473	131	28	443	161	32
1968	199	10783	6885	94	423	533	424	109	14	408	125	18
1969	192	11277	6439	138	399	554	441	113	15	413	141	19
1970	138	11770	4147	79	202	295	247	48	12	233	62	12
1971	112	12264	3387	87	210	300	241	59	7	226	74	11
1972	95	12757	2840	68	186	266	215	51	6	203	63	9
1973	111	13251	2888	67	199	275	228	47	7	215	60	8
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1704	10721	55169	952	3216	4268	3391	897	144	3200	1088	178

	RATES PER BILLION MILES											
	ACCIDENT TYPE				DRIVER INJURY			VEHICLE SEVERITY				
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****
1964	*****	*****	*****	*****	*****	*****	*****	*****	*****
1965	1.73	5.70	7.58	5.68	1.90	.31	5.33	2.25	.39
1966	1.32	5.91	7.40	5.78	1.62	.26	5.48	1.92	.32
1967	1.52	5.44	7.17	5.61	1.55	.33	5.26	1.91	.38
1968	1.27	5.70	7.18	5.71	1.47	.19	5.50	1.68	.24
1969	1.90	5.49	7.63	6.07	1.56	.21	5.69	1.94	.26
1970	1.62	4.14	6.04	5.06	.98	.25	4.77	1.27	.25
1971	2.09	5.06	7.22	5.80	1.42	.17	5.44	1.78	.26
1972	1.88	5.13	7.34	5.93	1.41	.17	5.60	1.74	.25
1973	1.75	5.20	7.19	5.96	1.23	.18	5.62	1.57	.21
1974	*****	*****	*****	*****	*****	*****	*****	*****	*****
1975	*****	*****	*****	*****	*****	*****	*****	*****	*****
TOTAL	1.61	5.44	7.25	5.73	1.52	.24	5.41	1.84	.30

Plymouth Valiant

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	6	5219	294	1	4	5	3	2	1	3	2	1
1961	10	5860	418	3	21	24	16	8	1	16	8	1
1962	17	6501	797	2	20	22	20	2	0	16	6	0
1963	68	7142	1926	14	87	104	85	19	5	77	27	6
1964	82	7783	2661	15	96	117	80	37	7	74	43	8
1965	81	8424	2192	9	95	108	77	31	6	72	36	6
1966	77	9065	2232	14	87	104	79	25	2	72	32	2
1967	40	9706	1309	3	45	52	46	6	0	46	6	0
1968	40	10346	1401	7	58	66	52	14	3	51	15	3
1969	44	10987	1302	4	51	58	48	10	1	46	12	1
1970	125	11628	4021	30	127	164	140	24	1	129	35	3
1971	150	12269	4771	56	222	292	226	66	10	212	80	12
1972	188	12910	6067	63	300	378	305	73	12	290	88	15
1973	194	13551	6113	58	266	341	266	75	11	255	86	12
1974	264	14192	7193	61	353	431	356	75	11	340	91	12
1975	29	14833	816	4	76	81	68	13	0	63	18	2
TOTAL	1415	11594	43513	349	1908	2347	1867	480	71	1762	585	84

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	.65	2.61	3.26	1.96	1.30	.65	1.96	1.30	.65
1961	1.22	8.57	9.80	6.53	3.27	.41	6.53	3.27	.41
1962	.39	3.86	4.25	3.86	.39	.00	3.09	1.16	.00
1963	1.02	6.32	7.56	6.18	1.38	.36	5.60	1.96	.44
1964	.72	4.64	5.65	3.86	1.79	.34	3.57	2.08	.39
1965	.49	5.14	5.85	4.17	1.68	.32	3.90	1.95	.32
1966	.69	4.30	5.14	3.90	1.24	.10	3.56	1.58	.10
1967	.24	3.54	4.09	3.62	.47	.00	3.62	.47	.00
1968	.48	4.00	4.55	3.59	.97	.21	3.52	1.03	.21
1969	.28	3.57	4.05	3.36	.70	.07	3.22	.84	.07
1970	.64	2.72	3.51	2.99	.51	.02	2.76	.75	.06
1971	.96	3.79	4.99	3.86	1.13	.17	3.62	1.37	.21
1972	.80	3.83	4.83	3.89	.93	.15	3.70	1.12	.19
1973	.70	3.21	4.12	3.21	.91	.13	3.08	1.04	.14
1974	.60	3.46	4.22	3.49	.73	.11	3.33	.89	.12
1975	.33	6.28	6.69	5.62	1.07	.00	5.21	1.49	.17
TOTAL	.68	3.78	4.65	3.70	.95	.14	3.49	1.16	.17

Chevrolet Vega

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
		FITTED		ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN INSP. SAMP.	AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	119	10719	4863	50	187	244	190	54	10	177	67	10
1972	274	11202	7590	65	575	454	367	87	14	348	106	18
1973	337	11686	11509	144	552	714	549	165	26	517	197	38
1974	468	12169	11457	109	469	591	481	110	13	453	138	16
1975	94	12652	1633	33	119	158	115	43	3	110	48	4
TOTAL	1292	11652	37052	401	1702	2161	1702	459	68	1605	556	86

	BASED PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****
1964	*****	*****	*****	*****	*****	*****	*****	*****	*****
1965	*****	*****	*****	*****	*****	*****	*****	*****	*****
1966	*****	*****	*****	*****	*****	*****	*****	*****	*****
1967	*****	*****	*****	*****	*****	*****	*****	*****	*****
1968	*****	*****	*****	*****	*****	*****	*****	*****	*****
1969	*****	*****	*****	*****	*****	*****	*****	*****	*****
1970	*****	*****	*****	*****	*****	*****	*****	*****	*****
1971	.96	3.59	4.68	3.64	1.04	.19	3.40	1.29	.19
1972	.76	4.41	5.34	4.32	1.02	.16	4.09	1.25	.21
1973	1.07	4.10	5.31	4.08	1.23	.21	3.84	1.46	.28
1974	.78	3.36	4.24	3.45	.79	.09	3.25	.99	.11
1975	1.60	5.76	7.55	5.57	2.08	.15	5.32	2.32	.19
TOTAL	.93	3.94	5.01	3.94	1.06	.16	3.72	1.29	.20

Ford Pinto

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT									
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY			
	NO.IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	190	12061	6626	99	405	522	403	119	19	382	140	25
1972	341	12177	10792	134	702	853	678	175	24	650	203	29
1973	332	12294	10697	95	658	781	657	144	19	605	176	24
1974	412	12410	11717	110	636	776	594	182	23	576	200	26
1975	61	12527	1487	29	146	180	150	30	6	143	37	8
TOTAL	1336	12267	41319	467	2547	3112	2462	650	91	2356	756	112

	RATES PER MILLION MILES											
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY					
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.			
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1964	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1965	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1966	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1967	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1968	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1969	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1970	*****	*****	*****	*****	*****	*****	*****	*****	*****			
1971	1.24	5.07	6.53	5.04	1.49	.24	4.78	1.75	.31			
1972	1.02	5.34	6.49	5.16	1.33	.18	4.95	1.54	.22			
1973	.72	5.00	5.94	4.84	1.09	.14	4.60	1.34	.18			
1974	.76	4.37	5.34	4.09	1.25	.16	3.96	1.38	.18			
1975	1.56	7.84	9.66	8.05	1.61	.32	7.68	1.99	.43			
TOTAL	92	5.04	6.18	4.86	1.28	.18	4.65	1.49	.22			

Datsun

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT			DRIVER INJURY		VEHICLE SEVERITY	
	NO. IN SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	3	0	0	0	0	0	0	0	0	0
1961	0	0	4	0	0	0	0	0	0	0	0	0
1962	0	0	2	0	0	0	0	0	0	0	0	0
1963	0	0	15	0	0	1	1	0	0	1	0	0
1964	0	0	30	1	1	2	2	0	0	2	0	0
1965	1	6214	71	3	2	5	4	1	1	3	2	1
1966	5	6951	118	0	6	6	5	1	0	5	1	0
1967	13	7668	325	7	16	23	16	7	0	15	8	1
1968	11	8426	223	2	13	16	9	7	2	9	7	2
1969	37	9163	844	7	62	70	50	20	4	46	24	4
1970	47	9900	904	11	80	94	72	22	2	67	27	3
1971	164	10637	3441	40	244	295	224	71	9	207	88	11
1972	266	11374	4235	64	381	468	373	95	15	355	113	16
1973	84	12111	2562	39	199	260	208	52	3	199	61	6
1974	196	12848	3852	71	341	431	352	79	13	331	100	16
1975	32	13585	905	24	140	177	125	52	4	121	56	5
TOTAL	856	11401	17534	269	1455	1898	1441	407	53	1361	487	65

RATES PER MILLION MILES

	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****
1964	*****	*****	*****	*****	*****	*****	*****	*****	*****
1965	6.80	4.53	11.33	9.07	2.27	2.27	6.80	4.53	2.27
1966	.00	7.32	7.32	6.10	1.22	.00	6.10	1.22	.00
1967	2.80	6.40	9.21	6.40	2.80	.00	6.00	3.20	.40
1968	1.06	6.92	8.52	4.79	3.73	1.06	4.79	3.73	1.06
1969	.91	8.02	9.05	6.47	2.59	.52	5.95	3.10	.52
1970	1.23	8.94	10.50	8.05	2.46	.22	7.49	3.02	.34
1971	1.09	6.67	8.06	6.12	1.94	.25	5.66	2.40	.30
1972	1.33	7.91	9.72	7.74	1.97	.31	7.37	2.35	.33
1973	1.26	6.41	8.38	6.70	1.68	.10	6.41	1.97	.19
1974	1.43	6.89	8.71	7.11	1.60	.26	6.69	2.02	.32
1975	1.95	11.39	14.40	10.17	4.23	.33	9.84	4.55	.41
TOTAL	1.35	7.43	9.24	7.21	2.04	.27	6.81	2.44	.33

Toyota

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
		FITTED		ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO.IN INSP. SAMP.	AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	1	6748	2	0	0	0	0	0	0	0	0	0
1963	0	0	2	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	1	1	1	0	0	1	0	0
1965	0	0	2	1	1	2	2	0	0	2	0	0
1966	1	8907	43	1	3	4	3	1	0	3	1	0
1967	3	9447	172	3	8	11	8	3	1	7	4	1
1968	12	9986	452	0	29	31	24	7	1	21	10	1
1969	67	10526	1958	27	119	152	110	42	6	101	51	8
1970	187	11066	3679	43	219	274	209	65	14	195	79	17
1971	366	11606	8112	67	563	655	561	124	21	505	150	26
1972	320	12146	8694	102	629	755	589	166	20	558	197	22
1973	182	12685	7360	84	521	620	489	131	19	462	158	20
1974	280	13225	9554	112	657	781	656	145	24	604	177	28
1975	78	13765	2061	65	291	370	288	82	18	272	98	18
TOTAL	1497	12252	42091	505	3041	3656	2890	766	124	2731	925	141

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	.00	.00	.00	.00	.00	.00	.00	.00	.00
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****
1964	*****	*****	*****	*****	*****	*****	*****	*****	*****
1965	*****	*****	*****	*****	*****	*****	*****	*****	*****
1966	2.61	7.83	10.44	7.83	2.61	.00	7.83	2.61	.00
1967	1.85	4.92	6.77	4.92	1.85	.62	4.31	2.46	.62
1968	.00	6.42	6.87	5.32	1.55	.22	4.65	2.22	.22
1969	1.31	5.77	7.38	5.54	2.04	.29	4.90	2.47	.39
1970	1.06	5.38	6.73	5.13	1.60	.34	4.79	1.94	.42
1971	.71	5.98	6.96	5.64	1.32	.22	5.36	1.59	.28
1972	.97	5.96	7.15	5.58	1.57	.19	5.28	1.87	.21
1973	.90	5.58	6.64	5.24	1.40	.20	4.95	1.69	.21
1974	.89	5.20	6.18	5.03	1.15	.19	4.78	1.40	.22
1975	2.29	10.26	13.04	10.15	2.69	.63	9.59	3.45	.63
TOTAL	.98	5.90	7.09	5.60	1.49	.24	5.30	1.79	.27

VW Beetle

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT								
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	NO. IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO. IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	17	9197	829	12	33	47	35	12	2	33	14	2
1961	22	9430	1162	13	50	65	46	19	2	40	25	2
1962	43	9662	1761	18	73	95	66	29	6	63	32	8
1963	83	9895	3165	31	130	167	131	36	9	117	50	11
1964	99	10127	3948	40	160	210	155	55	11	144	66	12
1965	152	10359	5756	74	259	345	247	98	20	226	119	27
1966	208	10592	6563	91	271	378	266	112	19	243	135	20
1967	234	10824	7170	70	299	374	276	98	12	261	113	14
1968	282	11056	8525	73	404	492	372	120	23	343	149	26
1969	322	11289	9404	73	414	496	363	133	12	344	152	16
1970	307	11521	9547	74	412	507	383	124	20	366	141	27
1971	331	11753	9380	87	450	555	412	143	17	386	169	19
1972	260	11986	8360	81	434	531	421	110	17	394	137	22
1973	276	12218	8770	100	525	642	491	151	18	458	184	21
1974	370	12451	8089	115	483	623	461	162	16	436	187	18
1975	25	12683	284	15	49	64	45	19	1	45	19	3
TOTAL	3031	11282	92713	967	4446	5591	4170	1421	205	3892	1692	248

	RATES PER MILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	1.57	4.33	6.16	4.59	1.57	.26	4.33	1.84	.26
1961	1.19	4.56	5.93	4.20	1.73	.18	3.65	2.28	.18
1962	1.06	4.29	5.58	3.88	1.70	.35	3.70	1.88	.47
1963	.99	4.15	5.33	4.18	1.15	.29	3.74	1.60	.35
1964	1.00	4.00	5.25	3.88	1.38	.28	3.60	1.65	.30
1965	1.24	4.34	5.79	4.14	1.64	.34	3.79	2.00	.45
1966	1.31	3.90	5.44	3.83	1.61	.27	3.50	1.94	.29
1967	.90	3.85	4.82	3.56	1.26	.15	3.36	1.46	.18
1968	.77	4.29	5.22	3.95	1.27	.24	3.64	1.58	.28
1969	.69	3.90	4.67	3.42	1.25	.11	3.24	1.43	.15
1970	.67	3.75	4.61	3.48	1.13	.18	3.33	1.28	.25
1971	.79	4.08	5.03	3.74	1.30	.15	3.50	1.53	.17
1972	.81	4.33	5.30	4.20	1.10	.17	3.93	1.37	.22
1973	.93	4.90	5.99	4.58	1.41	.17	4.27	1.72	.20
1974	1.14	4.80	6.19	4.58	1.61	.16	4.33	1.86	.18
1975	4.16	13.60	17.77	12.49	5.27	.28	12.49	5.27	.83
TOTAL	.92	4.25	5.35	3.99	1.36	.20	3.73	1.62	.24

VW Fastback

	INSPECTION		REG. FILE	ACCIDENT INVOLVEMENT							
				ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY	
	NO.IN INSP. SAMP.	FITTED AVE. INSP. MILES	NO.IN REG. FILE	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)	NONE (P.D.)	ANY INJ.	SER. INJ. (A+K)
1960	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	1	1	1	0	0	1	0	0
1963	0	0	23	0	1	1	1	0	0	1	0	0
1964	2	7208	121	0	7	7	6	1	0	6	1	0
1965	10	7939	232	2	8	11	8	3	0	8	3	0
1966	21	8670	918	8	35	43	31	12	3	30	13	3
1967	31	9400	1241	22	53	76	47	29	8	46	30	10
1968	41	10131	1370	17	52	72	58	14	2	55	17	3
1969	66	10861	1730	18	81	102	77	25	7	77	25	7
1970	51	11592	1743	10	85	97	71	26	2	64	33	6
1971	78	12323	2482	11	100	114	85	29	4	80	34	4
1972	41	13053	1292	14	73	88	66	22	2	64	24	2
1973	36	13784	1307	10	64	77	63	14	1	63	14	1
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	377	11291	12459	112	560	689	514	175	29	495	194	36

	RATES PER BILLION MILES								
	ACCIDENT TYPE			DRIVER INJURY			VEHICLE SEVERITY		
	SING. VEH.	MULT. VEH.	TOTAL	NONE (P.D.)	ANY INJ.	SER INJ.	NONE (P.D.)	ANY INJ.	SER. INJ.
1960	*****	*****	*****	*****	*****	*****	*****	*****	*****
1961	*****	*****	*****	*****	*****	*****	*****	*****	*****
1962	*****	*****	*****	*****	*****	*****	*****	*****	*****
1963	*****	*****	*****	*****	*****	*****	*****	*****	*****
1964	.00	8.03	8.03	6.88	1.15	.00	6.88	1.15	.00
1965	1.09	4.34	5.97	4.34	1.63	.00	4.34	1.63	.00
1966	1.01	4.40	5.40	3.89	1.51	.38	3.77	1.63	.38
1967	1.89	4.54	6.51	4.03	2.49	.69	3.94	2.57	.66
1968	1.22	3.75	5.19	4.18	1.01	.14	3.96	1.22	.22
1969	.96	4.31	5.43	4.10	1.33	.37	4.10	1.33	.37
1970	.49	4.21	4.80	3.51	1.29	.10	3.17	1.63	.30
1971	.36	3.27	3.73	2.78	.95	.13	2.62	1.11	.13
1972	.83	4.33	5.22	3.91	1.30	.12	3.79	1.42	.12
1973	.56	3.55	4.27	3.50	.78	.06	3.50	.78	.06
1974	*****	*****	*****	*****	*****	*****	*****	*****	*****
1975	*****	*****	*****	*****	*****	*****	*****	*****	*****
TOTAL	.80	3.98	4.80	3.65	1.24	.21	3.52	1.38	.26