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16. Abstract

A trip-log survey of driving exposure was conducted in Michigan in 1973. Responses were obtained from 959 licensed drivers, a 30% response rate. The survey was a satisfactory test of feasibility. Data analyses showed both similarities and discrepancies in comparison to previous data. The new data cannot be considered as valid because of the low response rate. Future efforts should be made to improve the response rate.

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INTRODUCTION

The main objective of this research is to determine the feasibility of a trip-log survey method for the estimation of driving exposure on an annual, statewide basis. The trip-log method was recommended by the Highway Safety Research Institute in its final report to the National Highway Traffic Safety Administration entitled "Acquisition of Information on Exposure and on Non-Fatal Crashes," under contract No. FH-11-7293.

Other objectives include the refinement of trip-log survey procedures, determination of driver-vehicle-road-environment classifications of exposure in a state for the first time, comparison of trip-log results with other means of exposure estimation, and comparison of exposure data with corresponding accident data from a state's official records.

The three main sections which follow include a description of the 1973 survey in Michigan, an analysis of exposure results, and an analysis of accident rates.

DESCRIPTION OF SURVEY

The trip-log survey was conducted in Michigan during the calendar year 1973. A random sample of 3650 licensed drivers were selected as subjects, ten per day for 365 days. Each driver was assigned to a specific day of the year, and the trip-log form was mailed to the driver eight days in advance of the assigned day. Instructions on the form and in the official cover letter indicated that trips should be recorded or logged for all of the trips on which the person drove on the assigned date, and only on that date. An addressed, stamped envelope was included. Responses were received from 959 subjects, or 26.3% of the mailings, of which 216 indicated that they did not drive on the assigned date. There were also 35 invalid responses, primarily cases of trips being recorded for more than one day. Another 332 forms were returned because the addressees had moved, were absent or deceased. When the 35 invalid cases are counted and the 332 others are excluded, the equivalent response rate is 30.0%, compared to the 30-40% anticipated.

The subject drivers were identified by random selection from current lists of licensed Michigan drivers. Each month, a computer tape of the driver files was randomly selected at the Department of State computer facility. To accomplish the tape selection, a random number was generated within the range of the total number of tapes required for the full state file (this number increased from 54 to 57 during the year, as the number of drivers increased). For each month, the required number of subjects was determined, e.g., 310 for January, 280 for February. Depending on the number of records per tape (usually about 100,000), an interval was determined so that the sample would be uniformly distributed throughout the tape. A starting number was then randomly selected, and the required set of names and addresses was printed out on mailing labels. The first ten mailings for each month were assigned to the first day of the

month, the second ten to the second day, and so on through the month. The rationale for mailing each set eight days in advance of the assigned date was based on criteria of four days for delivery and four days for the recipient to prepare or anticipate completion of the form on the correct date.

The trip-log form is designed for ease of understanding and recording. The two driver variables - age and sex - are separated from the trip variables, and can be completed at any time before return mailing. The three vehicle variables (type, make/model, year) are at the left side for each trip. Most subjects use only one vehicle, and need not repeat the variables. The odometer reading at the beginning of each trip comes next, and is completed before the driving begins. At the end of the trip, the driver then records the odometer reading again, and checks day/night and road type. The only complexity involves trips which extend from dark to day (or vice versa) or include more than one road type. Most drivers were able to estimate the mileage breakdowns within a trip when necessary, and the totals were almost always correct. There were very few cases requiring more than the allotted eight trips, and they all followed instructions to record additional trips on the reverse side. There were no comments regarding difficulty of the form. However, some people made useful comments about the nature of their trips, and several indicated their support of the project.

Coding of the forms was done by first calculating the mileage of each trip to the nearest tenth of a mile, and then breaking it down into the eight possible day/night vs. road type combinations. Thus many forms required only one data case, e.g., all mileage in day, and on a city street. Other forms required several separate data cases for each trip, e.g., part day/city street, part day/rural freeway, part night/city street. The 743 forms with recorded trips required 1617 separate data cases, which were assembled in a computer file.

OMB 04-S72038

Highway Safety Research Institute
The University of Michigan

Complete on

If unable to complete on above date please note the actual date: _____

Age: _____ Sex: ☐ Female ☐ Male

DRIVER'S RECORD OF TRIPS

Please keep this with you during the day and record information about each trip in which you are the driver. Do not include off-road driving (e.g., fields and trails). Record mileage readings at the beginning and end of each trip. A single trip is ended when you park the vehicle and stop the engine. (If you do not drive on this date, check here: ☐)

	VEHICLE DESCRIPTION: Check vehicle type, write down its make and model (e.g., Ford Fairlane Chevrolet Impala) and model year.							MILEAGE READINGS: Be sure to record mileage before starting each trip, and again at the end. EXAMPLES (32,566.7) (32,568.5)		DAY OR NIGHT: Check DAY if trip is in daylight. Check NIGHT if before dawn or after dark (headlights on). If part day and part night estimate mileage in each.		ROAD TYPE: If entire trip is on one road type, check that type. Otherwise estimate mileage on each road type.			
	Type					Make and Model	Model Year	Beginning of Trip	End of Trip	Day	Night	City Street	Urban Freeway	Rural Freeway	Other Rural Road or Highway
	Car	Truck	Bus	Motor-cycle	Other										
1															
2															
3															
4															
5															
6															
7															
8															

Use reverse side for additional trips.

Please return this form in the stamped envelope.

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, GOVERNOR

DEPARTMENT OF STATE POLICE

OFFICE OF HIGHWAY SAFETY PLANNING

541 E. GRAND RIVER AVE. EAST LANSING, MICH. 48823

Dear Driver:

I am pleased to cooperate with the Highway Safety Research Institute at the University of Michigan in a survey to determine the types of driving and distances travelled by drivers in Michigan.

Your name has been selected at random among the licensed drivers in the state for participation in this survey. Nearly 2,000 other drivers will be involved throughout 1974 to represent the driving population in Michigan.

I urge you to share in this important work by completing the enclosed form. The information you supply will be held in the strictest confidence. The University research team will use the information collected to help in finding ways of reducing traffic accident losses (over 300,000 accidents occur in Michigan each year).

On the enclosed Driver's Record of Trips, a day and date are specified. Please complete the form for your driving on that day. Record only the trips when you are the driver, but not when you are a passenger. It is important that you return the form even if you have not driven on the selected day. A pre-addressed envelope is enclosed for your convenience.

If you do drive on the selected day but for some reason cannot complete the form, select another date and complete your Record. Do not pass the form on to another driver.

I hope you will find the survey interesting and that you will support this vital effort toward highway safety.

Sincerely,

Noel C. Bufe
Executive Director
Office of Highway Safety Planning

NCB/vlt

Enclosures

MICHIGAN
THE GREAT LAKE STATE

SUMMARY OF SURVEY RESPONSES

	Trips Recorded	No Trip	Invalid Records	Returned Blank	Returned Unopened	Absent or Dead
January	76	10	5	2	17	6
February	60	18	1	1	18	4
March	56	27	4	1	26	3
April	57	13	2	4	32	6
May	61	26	2	2	16	8
June	59	20	4	1	25	5
July	58	21	7	0	23	2
August	60	15	3	1	27	1
September	51	16	3	0	23	4
October	76	11	2	1	28	5
November	68	21	0	0	32	5
December	61	18	2	3	13	3
Total	743	216	35	16	280	52

EXPOSURE RESULTS

The total exposure recorded by the 743 one-day trip-logs is 37,564.4 miles. The mean exposure per day per driver in Michigan is estimated by dividing this total by 959 (number of valid responses, including no-trip cases), resulting in 39.17 miles/day per driver. Based on a 365 day year, the estimate for mean exposure per driver in 1973 is 14,297 miles.

The number of licensed drivers in Michigan as of July 1973 is estimated by the Michigan Department of State as 5,660,000 drivers. Thus, the total statewide exposure for 1973 is estimated as 81,000,000,000 miles, based on the exposure survey. On the other hand, the current estimate of 1973 statewide exposure by the Michigan Department of Highways is approximately 60,000,000,000 miles, based on fuel consumption data (25.9% less than the trip-log survey estimate). Possible reasons for the discrepancy are discussed in Appendix B.

Seasonal and day-of-the-week trends in the exposure survey are shown in Tables 1 and 2. These and the other univariate tables of Appendix C were derived using an analysis of variance computer program. The months of February, March and April show the lowest exposure, probably because of bad weather. The following month, May, has the highest exposure, perhaps because people are anxious to do more travelling in nice spring weather, following the months of relative restriction. Surprisingly, January shows the second highest exposure, even though January weather is typically poor. Travel in the summer months of June, July and August is fairly constant—the increase in vacation trips probably being compensated for by a decrease in commuting to work. A gradual decrease in travel is noticeable from October to December, as cooler weather reduces the motives for trips.

Thursdays show the greatest exposure among days of the week, while Sundays have the least. Among work days, Fridays have the least exposure perhaps because of a traditionally high rate of work absences on Fridays.

TABLE 1

Month	Mileage	Percentage
January	4019.8	10.7%
February	2097.1	5.6%
March	2139.3	5.7%
April	2441.3	6.5%
May	5375.7	14.3%
June	3269.4	8.7%
July	2938.1	7.8%
August	3165.6	8.4%
September	2378.5	6.3%
October	3757.8	10.0%
November	3224.7	8.6%
December	2757.1	7.3%

TABLE 2

Day	Mileage	Percentage
Sunday	3833.0	10.3%
Monday	5643.3	15.2%
Tuesday	5890.6	15.9%
Wednesday	5371.9	14.5%
Thursday	6409.9	17.3%
Friday	4642.5	12.5%
Saturday	5308.6	14.3%

(463.7 miles not classified by day)

Figure 1 is a chart of unique exposure classes produced by an Automatic Interaction Detector (AID) run on the trip-log survey computer file. It shows that the largest variability among data classes exists between the distributions of exposure values for the various types of road (street, urban freeway , rural freeway and other rural road or highway). In contrast, the previous national survey data showed greatest variability between male and female driving; nevertheless, it does include road type as an important predictor of exposure (second or third splitting variable in all branches of the national hierarchy). On the other hand, though driver sex is the most important variable nationally, it appears at only the fifth level, and in only two minor branches of the Michigan exposure hierarchy. Another discrepancy is the absence of vehicle type as a splitting variable in Figure 1, even though it was quite important in the national data. However, it appears that passenger-car size may in fact serve as a surrogate in the Michigan hierarchy. Light condition (day vs. night) is a second splitting variable in Figure 1, even though it was absent in the national hierarchy. Model year and driver age seem to have fairly consistent importance as predictors in the two sets of exposure data.

In the previously cited report, "Acquisition of Information on Exposure and on Non-Fatal Crashes," 18 unique exposure classes were recommended for use in future exposure analyses, based on AID runs from national exposure data collected in 1970. Table 3 presents the 1973 Michigan exposure estimates for these classes. It is not possible to compare the percentages of exposure in most of the classes with those in the cited report because of a change in road-type variables (the current data divides mileages by actual road type, whereas the previous data used variables of percent driving on each road type). However, at the first level of division leading to Table 3, males account for 65.6% of mileage, whereas the previous report indicated 83.6% for males. The discrepancy may be due to a disproportionately low response rate for

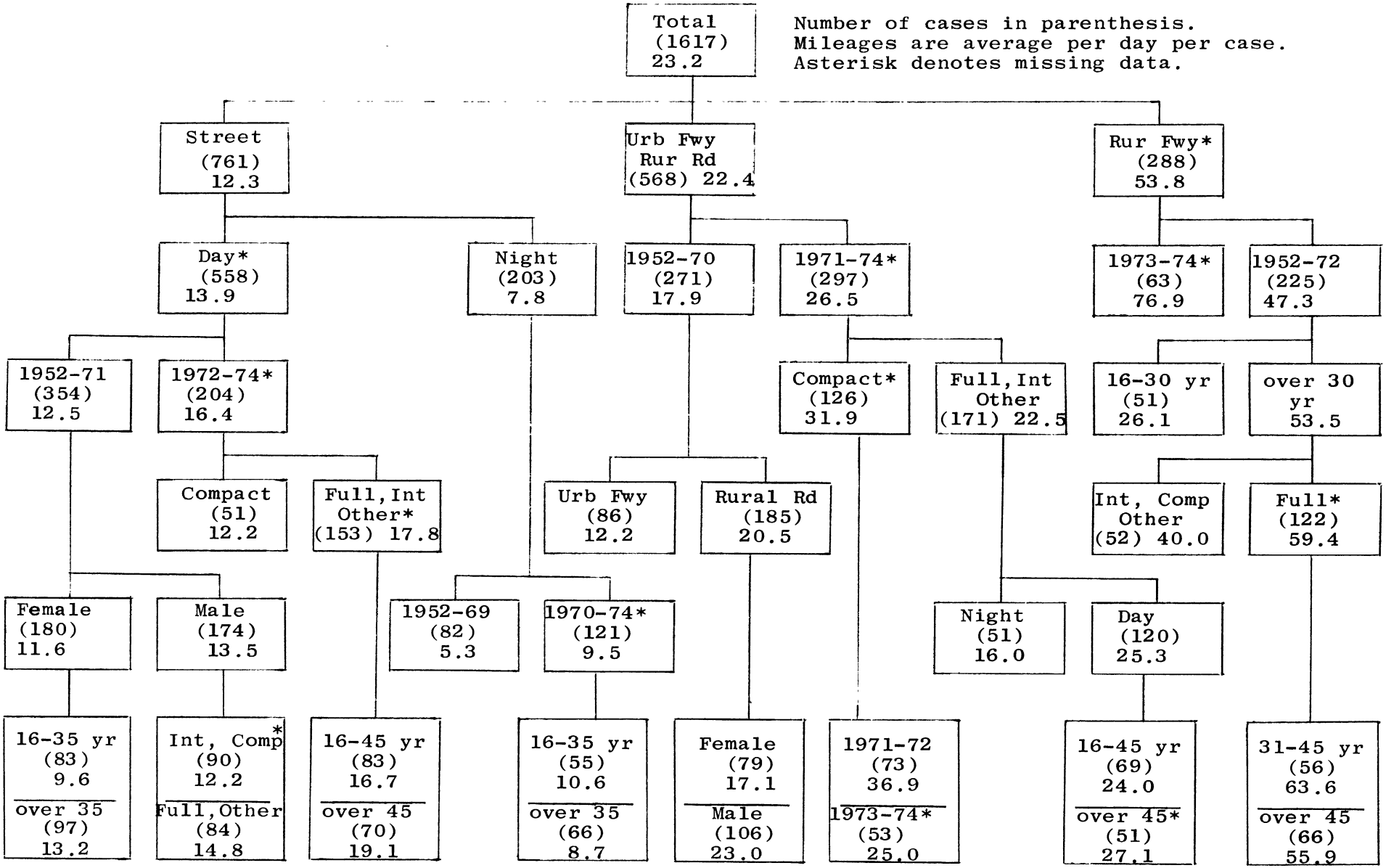

Figure 1 - Exposure Hierarchy

TABLE 3

Eighteen Exposure Classes, Michigan 1973

Class	Mileage	Percent
Male, Passenger Car, Age 16-25, Street	529.1	1.9%
Male, Passenger Car, Age 16-25, Other Road	1642.1	6.0
Male, Passenger Car, Age 26-40, Street, Day	992.5	3.6
Male, Passenger Car, Age 26-40, Street, Night	410.6	1.5
Male, Passenger Car, Age 26-40, Other Road, Day	2720.2	9.9
Male, Passenger Car, Age 26-40, Other Road, Night	674.4	2.5
Male, Passenger Car, Age over 40, Street	2626.9	9.6
Male, Passenger Car, Age over 40, Other Road	5284.8	19.3
Male, Other Vehicle, Street, Model Year 69-74	516.3	1.9
Male, Other Vehicle, Street, Model Year 52-68	104.1	0.4
Male, Other Vehicle, Other Road, Model Year 69-74	1445.0	5.3
Male, Other Vehicle, Other Road, Model Year 52-68	274.0	1.0
Female, Age 16-25, Street	1197.9	4.4
Female, Age 16-25, Other Road	1138.7	4.2
Female, Age 26-40, Street	997.4	3.6
Female, Age 26-40, Other Road	1456.0	5.3
Female, Age over 40, Street	1496.3	5.5
Female, Age over 40, Other Road	3836.2	14.0
	27,342.5	

10,221.9 miles unclassified due to missing data

males in the trip-log survey, or to a real difference in Michigan driving by males and females in comparison to national patterns. Also, the second level of division leading to Table 3 shows 85.8% of mileage driven by males to be in passenger cars, whereas the national survey indicated only 65.7% in cars. Again, this could be due to a low response by drivers of vehicles other than passenger cars, or it could reflect a lower proportion of truck drivers in Michigan than in the nation as a whole.

COMPARABLE ACCIDENT DATA

In order to make comparisons of estimated Michigan accident rates with the national rates presented in the previous report, a 15% sample of Michigan accident data was obtained from the Department of State. The data represents all reported traffic accidents in Michigan during January-August 1973. It includes 61,022 cases in the 15% sample. The distribution of these cases among the 18 specified classes is presented in Table 4. The accident rates for the same 18 classes are presented in Table 5.

In the previous report, two different methods were used to determine the unique hierarchy of accident-rate classes. One method is the use of the AID algorithm, as used for the exposure data in Figure 1. The second method used here is the group accident-rate difference method, which determines the unique predictor variables at each level of the hierarchy by computation of the maximum relative difference between all possible group combinations at each level. It was necessary to use the group accident-rate method for 1973 Michigan data because the exposure and accident data came from different sources. Thus, it is not possible to compute an individual accident rate for each person in the Michigan survey (as was the case in the national survey), and hence we cannot use accident rate as a dependent variable in the AID algorithm.

Results of the group accident-rate method are shown in Figure 2. This accident-rate hierarchy is quite different from the one derived in the previous report. Possible reasons for the discrepancy include actual differences between Michigan and national driving patterns, and biases in the Michigan exposure data due to the low survey response rate. The first split in the hierarchy of Figure 2 is between age groups (16-25 vs. 26 and over), whereas the national hierarchy split first on driver sex. At the second level in Figure 2 the splits were on model year and road type variables, whereas the national hierarchy split next on vehicle type and age.

TABLE 4

Eighteen Accident Classes, Michigan 1973

Class	Accidents	Percent
Male, Passenger Car, Age 16-25, Street	8974	16.7
Male, Passenger Car, Age 16-25, Other Road	5473	10.1
Male, Passenger Car, Age 26-40, Street, Day	3344	6.2
Male, Passenger Car, Age 26-40, Street, Night	1556	2.9
Male, Passenger Car, Age 26-40, Other Road, Day	1583	2.9
Male, Passenger Car, Age 26-40, Other Road, Night	980	1.8
Male, Passenger Car, Age over 40, Street	6568	12.2
Male, Passenger Car, Age over 40, Other Road	3106	5.8
Male, Other Vehicle, Street, Model year 69-74	1949	3.6
Male, Other Vehicle, Street, Model Year 40-68	1173	2.2
Male, Other Vehicle, Other Road, Model Year 69-74	1027	1.9
Male, Other Vehicle, Other Road, Model Year 40-68	1867	3.5
Female, Age 16-25, Street	4486	8.3
Female, Age 16-25, Other Road	2443	4.5
Female, Age 26-40, Street	2469	4.6
Female, Age 26-40, Other Road	1581	2.9
Female, Age over 40, Street	3518	6.5
Female, Age over 40, Other Road	1687	3.1
	53,784	

Accident data is a 15% sample, January - August 1973
(7238 accidents unclassified due to missing data)

TABLE 5

Eighteen Accident-Rate Classes, Michigan 1973

Class	Accidents per million miles
Male, Passenger Car, Age 16-25, Street	78.7
Male, Passenger Car, Age 16-25, Other Road	15.5
Male, Passenger Car, Age 26-40, Street, Day	15.6
Male, Passenger Car, Age 26-40, Street, Night	17.6
Male, Passenger Car, Age 26-40, Other Road Day	2.7
Male, Passenger Car, Age 26-40, Other Road, Night	6.7
Male, Passenger Car, Age over 40, street	11.6
Male, Passenger Car, Age over 40, Other Road	2.7
Male, Other Vehicle, Street, Model Year 69-74	17.5
Male, Other Vehicle, Street, Model Year 40-68	52.3
Male, Other Vehicle, Other Road, Model Year 69-74	3.3
Male, Other Vehicle, Other Road, Model Year 40-68	31.6
Female, Age 16-25, Street	17.4
Female, Age 16-25, Other Road	10.0
Female, Age 26-40, Street	11.5
Female, Age 26-40, Other Road	5.0
Female, Age over 40, Street	10.9
Female, Age over 40, Other Road	2.0

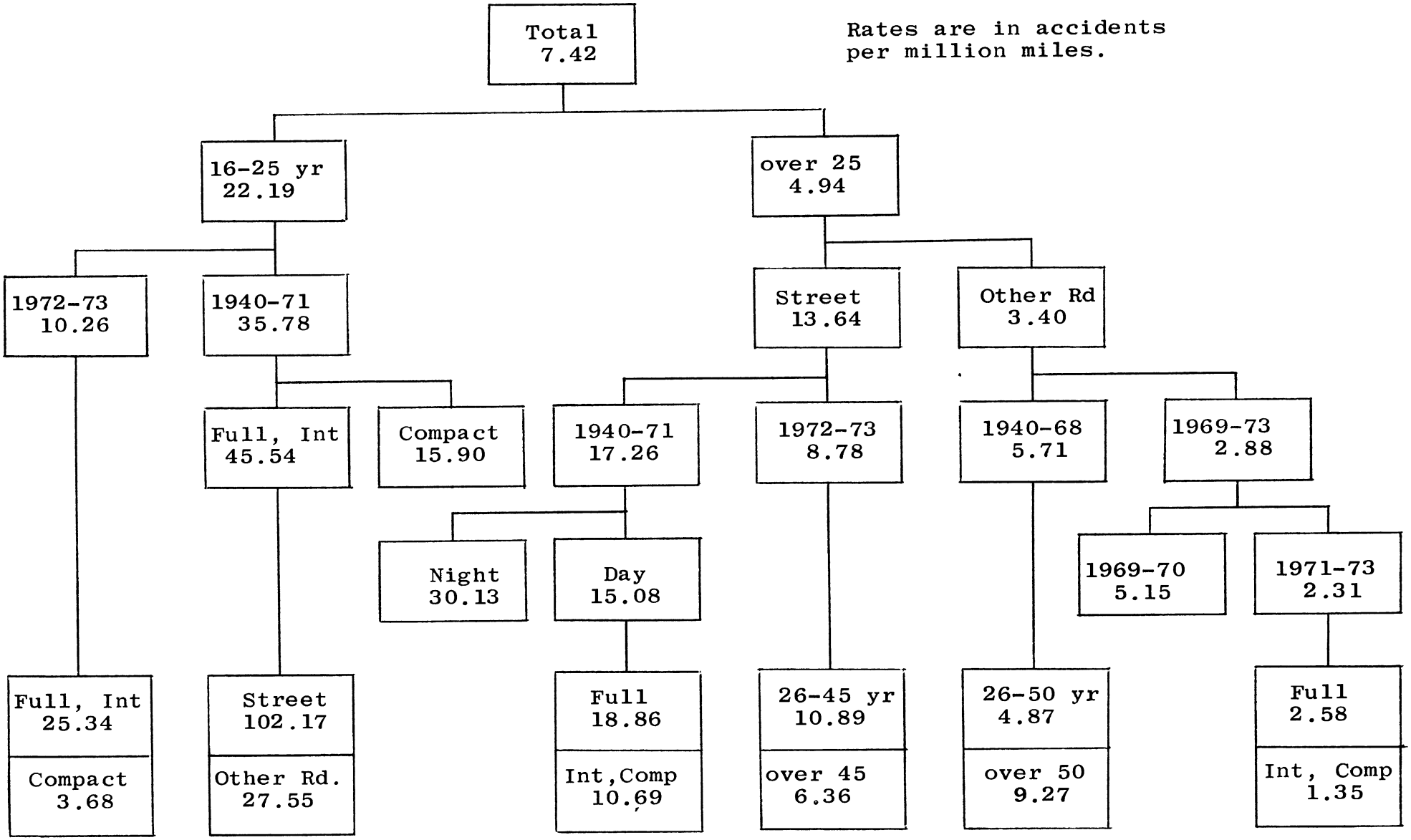

Figure 2 - Accident-Rate Hierarchy

CONCLUSIONS AND RECOMMENDATIONS

1. Conducting a trip-log exposure survey by mail on an annual, statewide basis is feasible and relatively inexpensive. The experience in this survey strengthens the previous conclusion that a one-day trip-log is the best method for an exposure survey. The survey should be continued in Michigan, and should be extended to other states.

2. Sampling of official driver record lists in state computer files is an efficient method for selection of survey subjects. More research should be done on the best frequency of sampling (e.g., one a month). Sampling from non-computerized lists should be attempted.

3. The survey response rate was 30%, which is not satisfactory for generation of valid statistics. If this survey method is to be used for official exposure estimates, the response rate must be improved. Use of reminder letters to non-respondents are recommended for the future.

4. The estimates of total 1973 Michigan exposure from the survey differs by 25% from the State Highway Department estimate (based on fuel sales). Discrepancies may be due to errors in both methods. Improvements should be made in both methods.

5. There are large discrepancies in both exposure and accident rate between 1973 Michigan data and 1970 national data within 18 unique data classes (driver-vehicle-roadway-environment combinations). The differences may be due to non-response bias or actual differences in driving patterns. The 18-class data from the survey should not be used for official state analyses because of their uncertainty.

6. The derived exposure hierarchy and accident-rate hierarchy differ radically from those for the 1970 national data. However, the new Michigan hierarchies should not be adopted because of the possible non-response bias.

7. Survey data collection should continue in 1974. If similar analyses are performed on 1974 data and if comparisons are favorable, the stability (but not extent) of the non-response bias will be known. Extension of survey data collection into 1975 should be considered only if measures can be taken to improve the response rate.

APPENDIX A

Contract Tasks

1. Conduct a driver exposure survey over a 12-month period in Michigan using the trip-log method. The seven (7) variables recommended in Volume VI of the Highway Safety Research Institute study ("Acquisition of Information on Exposure and on Non-Fatal Crashes," contract FH-11-7293) must be included in the survey. These variables are as follows:

Driver Sex	Vehicle Type
Driver Age	Model Year
Road Type	Model Make
Day/Night	

The random sample must be of sufficient size to provide significant differences among the 18 classes recommended in Volume VI.

2. Using the sample data from TASK 1, estimate total statewide exposure, mean exposure per driver, seasonal and day of the week trends, and exposure in the 18 classes recommended in Volume VI (page 20).

3. Compare the results of TASK 2 with current estimates, especially statewide exposure based on fuel consumption estimates.

4. Use mass accident data to estimate accident-involvement in the same 18 classes over the same time period.

5. Using the results of Tasks 2 and 4 (exposure in the 18 classes and accident-involvement in the 18 classes) calculate accident rates in the 18 classes.

6. Perform AID analyses (as described in Volume I) to check the hierarchy of the exposure classes and the accident rate classes as predictor variables.

APPENDIX B

DISCREPANCY BETWEEN SURVEY RESULT AND MILEAGE ESTIMATE BASED ON MICHIGAN FUEL SALES

Possible Reasons for High Survey Result

1. People who know they are going to drive on the designated day are more likely to plan on completing the trip-log form than those who are uncertain whether they will be driving on the designated day.

2. People who expect to drive longer distances on the designated day are more likely to plan on completing the form than those who expect to drive shorter distances.

3. People who do drive on the designated day are more likely to complete the form than those who do not drive.

4. People who drive longer distances on the designated day are more likely to complete the form than those who drove shorter distances.

5. People who drive (and complete the form) are more likely to mail their response than those who don't drive (and mark "no trip").

6. People who drive longer distances are more likely to mail their completed form than those who drive and record shorter distances.

7. People who fail to complete the form on the designated day are more likely to choose an alternate day on which they intend to drive, rather than a day when they don't intend to drive.

8. Possession of the trip-log form on the designated day tends to motivate slightly more driving than normal.

9. People who tend to do more driving than average are also more likely to consider their survey response important.

TABLE C6

Year	Mileage	Percentage
52	6.2	---
55	186.0	0.5
58	27.0	0.1
59	19.8	0.1
60	46.4	0.1
61	36.3	0.1
62	132.2	0.4
63	340.9	0.9
64	309.8	0.8
65	874.9	2.3
66	1309.7	3.5
67	1514.9	4.1
68	3439.5	9.2
69	3725.4	10.0
70	2813.9	7.5
71	4463.3	11.9
72	8797.8	23.5
73	8618.9	23.1
74	763.5	2.0

(190.6 miles not classified by year)

TABLE C7

Time of Day	Mileage	Percentage
Daylight	29,502.9	80.8
Night	7,030.1	19.2

(1301.4 miles not classified by time of day)

TABLE C8

Road Type	Mileage	Percentage
Street	9364.5	32.0
Urban Freeway	4017.8	13.7
Rural Freeway	7210.5	24.6
Other Rural Road	8689.7	29.7

(8281.9 miles not classified by road type)

APPENDIX D

EXPOSURE BY BIVARIATE CLASSES

The following tables are presented for use in interpreting the approximate relationships between pairs of independent variables in predicting exposure patterns. Percentages of mileage are shown to the nearest tenth of a percent, based on the total mileage which is classified by a response for each variable in a given table, i.e., missing data for either of the variables is excluded from the total. Because many of the tables have a large number of subclasses, some entries are based on small numbers of cases, and comparisons among small percentages should be made with caution.

MONTH VS. DAY OF WEEK

	J	F	M	A	M	J	J	A	S	O	N	D
Sunday	.2	.4	.7	1.0	2.7	1.7	.7	.3	.2	.4	1.5	.5
Monday	4.8	.7	.7	1.0	.8	.4	.7	1.4	.8	1.5	.9	1.5
Tuesday	1.1	1.7	.8	.9	3.0	1.2	1.4	.2	.5	2.0	2.4	.6
Wednesday	.8	.5	.4	.6	1.7	2.8	1.3	1.8	.9	1.2	1.6	.9
Thursday	.8	1.1	1.6	1.7	2.4	1.1	2.8	2.2	.6	.7	.3	1.9
Friday	1.2	.5	1.0	.9	1.1	.8	.4	1.3	1.1	2.0	.5	1.7
Saturday	2.0	.4	.6	.4	2.2	.7	.7	1.2	2.2	2.4	1.4	.3

MONTH VS. AGE

	J	F	M	A	M	J	J	A	S	O	N	D
16-20	.2	.4	.5	.2	.7	1.0	.2	.3	.2	.3	.6	.3
21-25	.7	.3	.1	.7	2.1	1.9	1.4	.1	.2	1.1	.6	.2
26-30	1.9	.2	1.2	1.1	1.1	.3	.7	1.1	.4	.9	.4	.1
31-35	4.1	.9	.9	.7	.8	1.0	.9	1.4	.6	.8	.5	.4
36-40	.7	.3	.5	.5	.6	.6	.6	.8	.9	1.4	1.1	1.0
41-45	.2	.6	1.0	1.1	4.5	.8	.6	.6	.5	.8	.5	.6
46-50	.4	1.3	.4	1.0	.7	.3	.9	1.5	.2	1.1	2.0	2.3
51-60	1.7	1.1	.8	1.1	3.7	1.6	1.2	.7	2.1	1.2	2.0	.6
61-70	.4	.3	.5	.2	.7	.9	1.3	.7	.4	.8	1.0	1.1
over 70	.3	.0	-	.3	-	.1	.3	1.5	.8	.2	.2	.2

MONTH VS. SEX

	J	F	M	A	M	J	J	A	S	O	N	D
Female	2.8	1.8	1.8	2.1	4.9	3.7	3.0	2.4	2.9	3.0	3.8	2.1
Male	7.7	3.8	3.6	4.7	9.8	4.9	5.1	6.2	3.5	6.1	5.2	4.9

MONTH VS. VEHICLE TYPE

	J	F	M	A	M	J	J	A	S	O	N	D
Car	10.1	3.8	5.2	5.7	13.1	8.5	6.7	8.0	5.3	7.5	7.2	7.2
Truck	.4	1.8	.4	.8	1.2	.2	1.2	.5	1.0	2.2	1.2	.0
Bus	.2	-	-	-	-	-	-	-	-	.3	-	-
Cycle	-	-	-	-	.0	-	-	-	-	.1	-	-
Other	-	-	-	-	-	-	-	-	-	-	.2	-

MONTH VS. CAR SIZE

	J	F	M	A	M	J	J	A	S	O	N	D
Full	4.9	2.4	4.4	4.0	9.5	4.1	5.1	6.3	2.2	4.4	3.8	5.4
Inter.	3.4	1.1	1.2	1.4	1.7	1.5	1.7	.4	1.1	1.4	1.7	.7
Compact	1.7	1.1	1.0	1.6	4.5	3.6	1.3	1.0	2.4	2.0	2.8	1.7
Other	-	-	.1	.2	.1	-	.2	.0	.3	.3	.2	.2

MONTH VS. MAKE

	J	F	M	A	M	J	J	A	S	O	N	D
Buick	2.2	.6	.5	.3	1.7	.0	1.0	.2	.8	1.0	.8	.8
Cadillac	-	.0	-	.0	-	-	.2	-	-	-	.1	.2
Chevrolet	3.2	.8	1.4	1.6	1.4	1.4	2.3	3.4	1.5	1.1	1.6	1.1
Oldsmobile	.5	.3	.2	.2	1.3	2.1	.7	1.2	.4	.7	1.4	.4
Pontiac	.6	.6	.7	.5	.6	.8	.6	.3	.1	.4	.7	.9
Ford	1.2	.8	1.6	1.9	4.9	1.3	.9	1.3	2.2	2.5	1.5	2.1
Lincoln	.2	-	-	-	-	.0	.5	-	-	.3	.1	.0
Mercury	.3	.1	.0	.3	.2	.1	-	.3	.1	1.1	-	.2
Chrysler	.4	-	.1	.6	.5	.1	.3	.6	.1	.2	.4	.1
Dodge	.4	.5	.2	.3	2.5	.3	-	.7	.4	.2	.6	.1
Imperial	.1	-	-	-	-	-	-	-	-	.0	-	-
Plymouth	.6	.3	.6	.1	.3	.6	.9	.1	.3	1.0	.4	.4
American	.4	.1	.3	.2	-	.8	-	.2	.1	.3	.1	.4
Volkswagen	.1	.3	-	.0	1.8	-	.0	.3	.1	.4	.3	.5
Other	.1	1.1	.0	.6	.1	1.1	.6	-	.2	1.0	.8	-

MONTH VS. YEAR

	J	F	M	A	M	J	J	A	S	O	N	D
1952	-	-	-	-	-	.0	-	-	-	-	-	-
1955	-	-	-	-	-	.4	-	.1	-	-	-	-
1958	-	-	-	-	-	-	-	-	-	.1	-	-
1959	.1	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	-	-	-	-	-	-	-	-	.1
1961	-	.1	.0	-	-	-	-	-	-	-	-	-
1962	-	.1	-	.1	.1	-	-	-	-	-	.1	.0
1963	.1	.0	.2	.2	.1	.0	.3	-	-	.0	.0	-
1964	.1	.0	-	.1	.1	.2	.1	.1	-	.1	.0	.1
1965	.2	.2	.4	.2	.1	-	.0	.4	.1	.4	.2	.1
1966	.2	.1	.0	.4	1.9	.2	.3	.1	.0	.1	-	.1
1967	.3	.2	.4	.3	.3	.4	-	.5	.2	.3	.9	.2
1968	1.8	.4	.4	.0	2.0	.8	.8	.7	.3	.3	.6	1.2
1969	1.0	.7	.3	.7	1.1	.6	.4	2.3	.8	1.0	.7	.5
1970	.9	.3	.7	.6	.5	.1	.8	.5	.5	.9	.9	.9
1971	.9	.7	1.9	1.5	1.2	.9	1.3	.5	.5	1.5	.8	.4
1972	3.7	1.0	.9	1.3	3.6	1.5	3.1	3.0	1.5	1.9	1.3	.9
1973	1.6	1.8	.4	1.2	3.3	3.6	.9	.4	2.5	3.4	2.6	1.3
1974	-	-	-	-	-	-	-	-	-	.1	.4	1.5

Possible Reasons for Low Estimates Based on Fuel Sales

1. The miles-per-gallon figure used in computation may be lower than the actual fuel consumption rate.

2. The amount of fuel sales accounted for as lost (leaked, spilled, etc.) may be too high.

3. The amount of fuel sales accounted for as used in non-motor vehicles (boats, power mowers, etc.) may be too high.

4. The amount of fuel sales accounted for as used in driving in neighboring states may be too high.

5. The amount of fuel consumption accounted for as purchased in neighboring states may be too low.

APPENDIX C
EXPOSURE BY UNIVARIATE CLASSES

TABLE C1

Age	Mileage	Percentage
16-20	1827.1	5.1
21-25	3318.8	9.3
26-30	3421.2	9.6
31-35	4627.7	13.0
36-40	3205.4	9.0
41-45	4158.9	11.6
46-50	4376.3	12.2
51-60	6370.5	17.8
61-70	3036.8	8.5
over 70	1383.4	3.9

(1838.3 miles not classified by age)

TABLE C2

Sex	Mileage	Percentage
Female	12,298.0	34.4
Male	23,437.6	65.6

(1828.8 miles not classified by sex)

TABLE C3

Vehicle Type	Mileage	Percentage
Passenger Car	33,098.1	88.2
Truck	4,096.8	10.9
Bus	197.1	0.5
Motorcycle	30.2	0.1
Other	83.0	0.2

(59.2 miles not classified by vehicle type)

TABLE C4

Manufacturer	Mileage	Percentage
Buick	3703.6	9.9
Cadillac	161.0	0.4
Chevrolet	7735.7	20.6
Oldsmobile	3511.7	9.4
Pontiac	2530.0	6.8
Ford	8082.6	21.6
Lincoln	442.9	1.2
Mercury	989.3	2.6
Chrysler	1268.1	3.4
Dodge	2308.2	6.2
Imperial	32.1	0.1
Plymouth	2098.6	5.6
American	1095.7	2.9
Volkswagen	1455.4	3.9
Other	2064.5	5.5

(85.0 miles not classified by manufacturer)

TABLE C5

Car Size	Mileage	Percentage
Full Size	16,409.2	56.5
Intermediate	5,011.3	17.3
Compact	7,148.2	24.6
Other	472.3	1.6

(4057.1 miles not classified by car size)

MONTH VS. LIGHT

	J	F	M	A	M	J	J	A	S	O	N	D
Day	7.0	4.2	4.5	5.4	11.5	8.5	6.7	7.6	5.7	7.7	6.8	5.2
Night	3.5	1.5	1.1	1.1	3.2	.4	1.2	.8	.8	1.5	1.9	2.0

MONTH VS. ROAD TYPE

	J	F	M	A	M	J	J	A	S	O	N	D
Street	3.4	2.5	2.3	2.0	3.5	2.2	2.6	1.9	2.0	4.2	2.8	2.7
Urban Frwy	1.2	.6	.8	1.1	2.1	.8	1.1	.8	.5	2.5	1.0	1.3
Rural Frwy	1.7	.7	.6	1.9	4.0	3.8	2.0	2.9	2.5	1.4	1.3	1.8
Other Rural Road	3.4	1.2	2.3	2.4	3.4	1.3	2.3	2.4	1.6	2.5	5.0	1.8

DAY OF WEEK VS. AGE

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
16-20	.5	.7	1.3	.6	.5	.5	.8
21-25	2.3	.6	.8	1.6	2.5	.5	1.2
26-30	.1	1.8	1.0	.7	2.0	1.6	2.4
31-35	1.3	4.7	1.0	1.3	1.4	1.8	1.8
36-40	.4	1.4	.9	2.8	1.2	1.1	1.4
41-45	.2	1.2	4.9	.8	2.0	.6	1.9
46-50	1.5	1.0	2.1	1.6	3.1	1.4	1.3
51-60	3.8	2.4	2.2	3.3	1.9	2.3	2.0
61-70	.4	.8	1.5	2.0	1.7	1.5	.9
over 70	.4	.5	.1	.2	1.5	.4	.9

DAY OF WEEK VS. SEX

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Female	4.7	4.1	5.0	5.4	4.0	4.4	6.6
Male	6.2	10.9	11.3	9.4	13.7	6.6	7.9

DAY OF WEEK VS. VEHICLE TYPE

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Car	9.3	14.2	13.0	13.4	15.2	10.5	12.5
Truck	.9	.6	2.9	1.0	2.1	2.0	1.5
Bus	---	.2	---	---	---	---	.3
Cycle	---	---	---	.1	---	---	---
Other	---	.2	---	---	---	---	---

DAY OF WEEK VS. CAR SIZE

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Full	7.5	7.8	8.9	6.7	10.5	8.0	7.7
Inter.	.7	4.4	3.4	2.0	1.8	2.5	2.8
Compact	2.9	2.5	2.9	4.8	4.5	2.3	4.0
Other	.2	.3	.1	.2	.5	.1	.3

DAY OF WEEK VS. MAKE

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Buick	1.1	2.3	1.1	.3	1.7	.4	3.2
Cadillac	.2	.1	.2	---	.0	---	.1
Chevrolet	2.1	6.2	2.2	3.7	2.0	3.3	1.3
Oldsmobile	.6	.8	1.7	2.9	1.6	1.0	1.0
Pontiac	.4	.5	.2	1.3	1.9	.9	1.3
Ford	2.3	1.8	5.0	1.8	3.0	3.9	3.9
Lincoln	.0	.1	.0	.0	.5	.2	.3
Mercury	.3	.1	.8	.5	.4	.5	.1
Chrysler	.1	.5	.4	.4	1.1	.7	.4
Dodge	1.6	.9	.8	.8	.9	.2	.5
Imperial	---	.1	---	---	---	.0	---
Plymouth	.3	.6	1.1	.8	.7	1.1	1.0
American	.3	.4	.7	1.0	.5	---	.1
Volkswagen	.2	.6	.3	.7	1.7	.2	.1
Other	1.0	.3	1.4	.3	1.2	.1	1.1

DAY OF WEEK VS. YEAR

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1952	---	.0	---	---	---	---	---
1955	.4	---	---	---	.1	---	---
1958	---	---	---	---	.1	---	---
1959	---	---	---	---	.1	---	---
1960	.1	---	---	---	---	---	---
1961	---	.0	---	---	.1	.0	---
1962	.0	.1	---	.0	.1	---	.1
1963	.0	.2	.1	.0	.2	.2	.2
1964	.0	.1	.0	.2	.1	.1	.1
1965	.4	.3	.4	.3	.1	.6	.2
1966	1.8	.5	.1	.2	.2	.4	.4
1967	.1	.2	.5	.6	.8	.6	1.3
1968	.0	2.1	1.9	.8	1.5	1.4	1.6
1969	1.3	2.2	1.4	.4	1.3	1.8	1.6
1970	.6	1.3	1.2	1.4	1.7	.6	.9
1971	1.0	1.4	1.4	2.8	2.1	.9	1.9
1972	1.7	4.6	3.4	3.8	5.6	2.1	2.3
1973	2.3	2.1	5.6	3.4	2.3	3.8	3.7
1974	.4	---	.1	.3	1.2	.1	.0

DAY OF WEEK VS. LIGHT

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Day	8.2	11.3	13.0	11.9	13.7	10.1	12.5
Night	2.2	4.1	3.1	2.6	3.5	2.0	1.7

DAY OF WEEK VS. ROAD TYPE

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Street	1.6	4.3	6.3	5.7	5.2	5.1	4.1
Urban Frwy.	.9	1.5	2.2	1.9	2.9	2.1	1.9
Rural Frwy.	5.2	2.6	2.2	3.2	3.8	3.2	4.5
Other Rural Road	2.4	5.3	4.1	4.4	5.7	4.2	3.6

SEX VS. AGE

	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	over 70
Female	3.1	4.0	2.8	2.4	3.0	3.5	4.2	7.3	3.2	.4
Male	2.1	5.2	6.4	10.7	6.0	8.2	8.1	10.7	5.3	3.5

SEX VS. VEHICLE TYPE

	Car	Truck	Bus	Cycle	Other
Female	32.5	1.3	.2	.0	.2
Male	56.4	8.9	.3	.1	---

SEX VS. CAR SIZE

	Full	Inter	Compact	Other
Female	19.6	7.5	11.8	.2
Male	37.1	9.6	12.7	1.5

SEX VS. MAKE

	Female	Male
Buick	3.6	6.2
Cadillac	.1	.3
Chevrolet	5.8	14.7
Oldsmobile	3.8	5.3
Pontiac	2.4	8.7
Ford	5.8	15.2
Lincoln	.1	1.1
Mercury	2.0	.7
Chrysler	1.1	2.3
Dodge	3.1	3.4
Imperial	--	.1
Plymouth	2.5	3.3
American	1.5	1.3
Volkswagen	.9	2.9
Other	1.5	4.3

SEX VS. YEAR

	Female	Male
1952	---	.0
1955	---	.5
1958	.1	--
1959	--	--
1960	.1	--
1961	--	.1
1962	.1	.3
1963	.1	.9
1964	.3	.5
1965	.7	1.6
1966	2.5	1.1
1967	2.6	1.5
1968	3.8	5.9
1969	3.1	7.0
1970	3.1	4.0
1971	4.6	7.3
1972	7.2	16.8
1973	5.8	16.5
1974	.1	1.9

SEX VS. LIGHT

	Female	Male
Day	29.5	51.2
Night	5.5	13.7

SEX VS. ROAD TYPE

	Female	Male
Street	13.7	19.0
Urban Frwy	4.7	9.4
Rural Frwy	8.8	15.4
Other Rural Road	10.2	18.8

TYPE OF VEHICLE VS. AGE

	Car	Truck	Bus	Cycle	Other
16-20	4.8	.3	--	--	--
21-25	8.9	.5	--	.0	--
26-30	8.3	1.2	--	--	--
31-35	12.0	.7	.2	--	--
36-40	6.1	2.6	--	.1	.2
41-45	11.3	.3	--	--	--
46-50	10.4	1.4	.3	--	--
51-60	15.9	1.9	--	--	--
61-70	7.2	1.3	--	--	--
over 70	3.9	--	--	--	--

TYPE OF VEHICLE VS. LIGHT

	Car	Truck	Bus	Cycle	Other
Day	71.3	8.9	.4	.1	.2
Night	17.6	1.4	.2	.0	.1

TYPE OF VEHICLE VS. ROAD TYPE

	Car	Truck	Bus	Cycle	Other
Street	28.9	2.8	.2	.0	.0
Urban Frwy	12.7	.8	--	--	.2
Rural Frwy	22.4	2.2	--	--	--
Other Rural Road	24.5	4.8	.3	.1	.0

Type of Vehicle vs. Make, Car Size, and Year not included.

CAR SIZE VS. AGE

	Full	Inter.	Compact	Other
16-20	1.7	1.0	2.9	---
21-25	2.0	2.2	6.8	.3
26-30	6.0	2.7	1.4	--
31-35	6.3	3.4	1.6	.5
36-40	3.8	.8	1.4	.3
41-45	9.9	1.0	2.0	--
46-50	7.7	2.4	2.7	.3
51-60	11.2	1.9	3.4	.2
61-70	5.3	1.1	1.4	.1
over 70	2.9	.7	.9	--

CAR SIZE VS. ROAD TYPE

	Full	Inter.	Compact	Other
Street	17.6	5.7	7.9	.8
Urban Frwy	7.4	2.0	4.1	.1
Rural Frwy	14.1	3.7	8.2	.6
Other Rural Road	13.7	6.7	7.4	.7

CAR SIZE VS. MAKE

	Full	Inter	Compact	Other
Buick	8.2	3.7	.0	--
Cadillac	.6	--	--	--
Chevrolet	11.2	1.6	3.6	.3
Oldsmobile	4.7	4.4	.5	--
Pontiac	5.8	1.1	.5	--
Ford	12.9	3.2	6.6	.5
Lincoln	1.5	--	--	--
Mercury	1.4	.9	.4	--
Chrysler	3.8	--	--	--
Dodge	2.8	.2	2.0	.1
Imperial	.1	--	--	--
Plymouth	3.0	1.4	2.0	--
American	.4	.7	2.1	--
Volkswagen	--	--	4.8	.2
Other	.0	--	2.1	.5

CAR SIZE VS. LIGHT

	Full	Inter.	Compact	Other
Day	45.2	14.6	19.7	1.3
Night	11.2	2.7	4.7	.3

CAR SIZE VS. YEAR

	Full	Inter.	Compact	Other
1952	--	--	--	--
1955	.6	--	--	--
1958	--	--	--	--
1959	--	--	--	--
1960	.2	--	--	--
1961	.1	--	.0	--
1962	--	.2	.0	--
1963	.4	.1	.4	.0
1964	.2	.3	.3	--
1965	1.8	.4	.6	--
1966	3.1	.2	.8	--
1967	2.9	1.4	.5	.0
1968	5.5	3.0	1.3	.1
1969	7.8	.9	1.1	.3
1970	5.1	1.0	1.3	.1
1971	4.9	2.0	3.3	.2
1972	11.3	4.9	7.3	.4
1973	10.4	2.8	7.2	.4
1974	2.1	--	.5	--

LIGHT VS. AGE

	Day	Night
16-20	4.3	.7
21-25	7.0	2.4
26-30	8.0	1.7
31-35	8.5	4.6
36-40	7.3	1.2
41-45	9.3	2.5
46-50	10.4	2.1
51-60	14.3	3.2
61-70	7.9	.6
over 70	3.7	.2

LIGHT VS. ROAD TYPE

	Day	Night
Street	26.4	5.6
Urban Frwy	10.0	3.5
Rural Frwy	20.9	3.9
Other Rural Road	24.5	5.1

LIGHT VS. MAKE

	Day	Night
Buick	8.5	1.4
Cadillac	.4	.1
Chevrolet	16.6	4.3
Oldsmobile	8.7	.8
Plymouth	4.9	2.0
Ford	16.6	4.3
Lincoln	1.0	.2
Mercury	2.3	.4
Chrysler	2.6	.5
Dodge	4.8	1.5
Imperial	---	.1
Plymouth	4.7	.9
American	2.5	.4
Volkswagen	2.1	1.7
Other	4.7	.5

LIGHT VS. YEAR

	Day	Night
1952	.0	--
1955	.5	.1
1958	.1	--
1959	.0	.0
1960	.1	--
1961	.1	.0
1962	.4	--
1963	.8	.1
1964	.5	.2
1965	1.9	.3
1966	2.5	1.0
1967	3.5	.6
1968	7.0	2.2
1969	8.6	1.7
1970	6.2	1.4
1971	9.7	1.8
1972	18.1	5.6
1973	19.4	3.5
1974	1.4	.7

ROAD TYPE VS. AGE

	Street	Urban Frwy	Rural Frwy	Other Rural Road
16-20	2.8	.6	.8	1.7
21-25	3.7	2.6	2.1	2.8
26-30	3.9	2.1	2.1	3.4
31-35	2.7	.9	3.4	3.5
36-40	3.6	1.5	1.6	2.6
41-45	2.8	1.4	2.9	4.0
46-50	3.6	2.1	3.3	3.5
51-60	5.5	1.7	5.6	4.2
61-70	3.2	.5	1.9	3.2
over 70	.5	.3	.7	1.0

ROAD TYPE VS. MAKE

	Street	Urban Frwy	Rural Frwy	Other Rural Road
Buick	2.0	1.0	3.9	2.8
Cadillac	.4	.0	.1	.1
Chevrolet	5.7	2.3	5.2	7.1
Oldsmobile	4.1	1.1	2.5	2.6
Pontiac	2.2	.7	1.1	2.7
Ford	7.7	2.0	6.3	6.4
Lincoln	.3	.5	.0	.1
Mercury	1.0	1.4	.2	.5
Chrysler	1.6	.7	.6	.5
Dodge	2.0	1.2	.0	1.6
Imperial	.1	.1	--	--
Plymouth	1.8	1.1	1.4	1.5
American	1.2	.4	1.1	.5
Volkswagen	.9	1.1	.4	2.0
Other	1.0	.3	1.7	1.4

ROAD TYPE VS. YEAR

	Street	Urban Frwy	Rural Frwy	Other Rural Road
1952	--	--	--	.0
1955	.1	.1	.1	.3
1958	.0	--	.1	.0
1959	--	--	--	--
1960	.2	--	--	--
1961	.1	--	--	.0
1962	.1	--	--	.3
1963	.4	.1	--	.3
1964	.4	.2	--	.2
1965	1.1	.2	.1	1.5
1966	1.3	.2	.3	.4
1967	1.5	.3	.3	2.2
1968	2.7	1.1	3.3	3.2
1969	2.8	.8	3.4	1.7
1970	3.8	.8	.4	2.7
1971	3.2	2.1	2.7	4.1
1972	6.9	4.3	6.1	8.0
1973	6.9	3.8	6.4	4.1
1974	.4	.0	1.4	.4

AGE VS. MAKE

	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	over 70
Buick	--	.1	.9	1.6	.7	1.3	.2	2.2	1.5	1.3
Cadillac	--	--	--	--	--	.0	.2	--	.1	.1
Chevrolet	1.1	1.8	2.2	5.0	2.1	1.6	1.2	3.4	2.0	.6
Oldsmobile	.2	.6	.7	.4	.6	.3	2.3	3.1	.8	.1
Pontiac	.5	.8	.1	1.3	1.0	1.3	.5	1.1	.4	.0
Ford	1.8	1.7	2.1	2.0	1.9	4.2	3.0	3.2	1.2	.2
Lincoln	--	--	.3	--	.1	--	.6	.2	.1	--
Mercury	.1	.1	.3	.1	--	.3	.9	.3	.1	--
Chrysler	--	.2	.4	--	.2	.2	.3	1.5	.1	.6
Dodge	.3	.5	.0	.7	.3	.8	.8	1.7	.7	.5
Imperial	--	--	--	--	--	--	--	.1	.0	--
Plymouth	.4	.5	1.1	1.2	.1	.7	.6	.6	.7	.0
American	.1	.5	.2	.3	.2	.2	.2	.0	.8	.2
Volkswagen	.4	1.2	.2	.4	--	.8	.1	.5	--	.1
Other	.2	1.4	.9	.0	1.6	--	1.1	.2	.1	.1

AGE VS. YEAR

	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	over 70
1952	--	--	.0	--	--	--	--	--	--	--
1955	--	.5	.1	--	--	--	--	--	--	--
1958	--	--	--	.1	--	--	--	--	--	--
1959	--	--	--	--	--	--	--	--	--	--
1960	--	--	--	--	--	--	--	--	--	--
1961	--	--	--	--	.1	--	--	--	.0	--
1962	--	--	--	.1	--	--	--	.1	.2	--
1963	.1	.0	.2	.2	--	.2	.1	--	.1	.0
1964	.2	.1	.1	.2	.1	.2	--	.0	.0	.1
1965	.5	.1	.1	.3	.3	.3	.3	.2	.2	.0
1966	.3	.2	.2	.2	.1	.2	.1	1.9	.1	.3
1967	.4	.1	.5	.8	.3	.4	.8	.4	.4	.0
1968	.3	.8	.2	2.4	.7	2.3	1.4	.6	.4	.4
1969	.5	.2	1.5	1.0	.3	.4	.5	2.5	1.8	1.4
1970	.7	.4	1.0	.5	.6	.4	.6	1.2	1.3	.3
1971	.2	1.1	1.9	.7	2.4	1.7	1.1	1.9	1.2	--
1972	1.1	3.3	1.2	3.5	3.3	2.1	2.7	3.7	1.6	1.0
1973	.9	2.5	2.5	2.6	.8	3.4	3.3	5.0	1.2	.2
1974	--	--	--	.4	--	--	1.3	.2	--	.1

YEAR VS. MAKE

	1952-1963	64	65	66	67	68	69	70	71	72	73	74
Buick	.0	.0	.3	.1	.4	3.0	2.0	.8	.2	1.4	1.4	.2
Cadillac	.1	--	--	--	--	.1	.0	.1	.0	.0	.0	--
Chevrolet	.8	.3	.6	.4	.6	1.2	2.1	1.2	2.6	6.7	3.9	.4
Oldsmobile	.1	.1	.1	.2	.8	.4	.5	.6	.6	2.8	3.1	--
Pontiac	.2	.0	--	.2	.4	.9	.7	.6	.8	1.5	1.4	--
Ford	.4	.0	.6	.5	.3	1.9	1.1	2.6	1.8	5.1	6.0	1.1
Lincoln	--	--	--	--	.0	--	--	--	.0	.5	.6	--
Mercury	--	.0	.1	--	.3	.5	.1	.1	.1	.7	.7	--
Chrysler	--	--	--	.1	.6	.4	1.5	.2	.2	.4	.1	--
Dodge	--	--	--	1.7	.1	.4	.4	.4	1.4	.5	1.2	--
Imperial	--	--	--	--	--	--	--	--	--	--	.1	--
Plymouth	.3	--	.2	.0	.5	.3	.6	.3	1.1	1.2	1.0	.0
American	--	.2	.2	--	.1	.1	.1	.3	.9	.4	.6	--
Volkswagen	--	.1	.1	.2	--	.1	.6	.2	.3	1.8	.2	.2
Other	.1	.0	.1	.0	.0	--	.2	.0	1.9	.3	2.6	.1