

AID ANALYSIS OF NATIONAL ACCIDENT SUMMARY DATA

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16. Abstract The National Accident summary file was analyzed using HSRI's Statistical Analysis package-and particularly the AID algorithm. The major conclusion is that we have effectively demonstrated that this analysis approach can be successfully used to identify sub-groups of crashes which differ with reference to their severity. Single vehicle crashes, in this file, had an injury rate (injuries/involvement) almost double that for involvements in multiple vehicle crashes.			
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TABLE OF CONTENTS

Section 1 - Introduction	1
Section 2 - Analysis Procedure	2
Section 3 - Discussion of Results	3
Appendix	

LIST OF ILLUSTRATIONS

Figure 1 - AID Analysis of National Accident Summary Using Injury Rate as the Dependent Variable	9
Figure 2 - AID Analysis of National Accident Summary Using Fatality Rate as the Dependent Variable	10
Figure 3 - Injuries per Involvement vs. Hour of Day	11
Figure 4 - Fatalities per Involvement vs. Hour Group	12
Figure 5 - Injuries per Involvement vs. Age Group	13
Figure 6 - Fatalities per Involvement vs. Age Group	14

LIST OF TABLES

Table 1 - Accident Type Location	6
Table 2 - Collision Type	6
Table 3 - Road Surface	6
Table 4 - Light Conditions	6
Table 5 - Day of Week	7
Table 6 - Hour Group	7
Table 7 - Vehicle Type	7
Table 8 - Sex	7
Table 9 - Age Group	8

SECTION 1
INTRODUCTION

The National Accident summary file was analyzed using HSRI's Statistical Analysis package-and particularly the AID algorithm. The major conclusion is that we have effectively demonstrated that this analysis approach can be successfully used to identify subgroups of crashes which differ with reference to their severity. Single vehicle crashes, in this file, had an injury rate (injuries/involvement) almost double that for involvements* in multiple vehicle crashes. This might result from an under reporting bias for minor single vehicle crashes; however it could also be due to single vehicle crashes occurring at higher speeds in areas of lower traffic volume. Within the multiple vehicle crashes those occurring at night had a higher injury rate. Persons aged 65 and above had a fatality rate which was twice that for other age groups, however their injury rate tended to be lower than that of other age groups. The analysis also pointed out some coding errors in the basic file. Included in this category were crashes identified as single vehicle head-on and rear end and multiple vehicle striking fixed object crashes. Thus an additional benefit of the analysis is a capability for identifying-and correcting-errors in the original data sources. This report includes figures 1 and 2 which present the AID generated subgroups using both injury rate and fatality rate as dependent variables. In addition tables 1 through 9 present the one way relationships between the independent variables and the dependent variables - injury and fatality rates.

*The file used for this analysis had been previously rebuilt to include only ten predictor variables. One of these-accident severity-was not used since it was obviously highly correlated with dependent variables actually used-injuries per involvement and fatalities per involvement. In addition the cases containing any missing data codes were eliminated.

SECTION 2

ANALYSIS PROCEDURE

The file provided, by NHTSA, for this analysis consisted of approximately 24×10^6 involvements which were classified into 83,782 cells using the nine independent variables shown in tables 1 through 9. Within each of the cells was recorded the number of involvements, responsibilities, injuries and fatalities for the crashes included in that cell as defined by the associated independent variables. An involvement was defined for each vehicle or pedestrian participating in a particular crash. (e.g. a two vehicle crash has two involvements while a single vehicle crash has one; however a pedestrian crash was defined as a single vehicle crash having two involvements) The analysis was based upon defining each of the cells as a single observation in a multivariate space defined by the independent variables. For each of these observations a severity rate was computed by dividing the number of injuries and fatalities by the number of involvements for that cell. Thus we have a nine way factorial design with some missing cells.

If each of the cells had contained the same number of involvements the severity rates per cell would be combined directly (i.e. averaged) to obtain crash severities for crashes identified by combinations of a number of observations or cells. However since the number of involvements varied greatly from one cell to another a direct combination of the severity rates per cell could have resulted in biased measures of crash severity. To overcome this problem the dependent variable -severity rate- was weighted by the number of involvements in the cell. This resulted in cell means and squared variability terms based upon the number of involvements rather than the number of cells. Therefore the dependent variables presented in this discussion are in terms of injuries per involvement and fatalities per involvement.*

*The AID algorithm was also run using injuries per cell as a dependent variable. These results are not included here since the cell means and squared variability terms will be somewhat biased due to the unequal numbers of involvements per cell. Thus the interpretation of these results would be somewhat uncertain. However they are available on request.

SECTION 3

DISCUSSION OF RESULTS

Tables 1 through 9 indicate the one way relationships between the independent variables and the severity rates. Thus for the crashes in this subset various comparisons of crash severity are possible. From table one it can be seen that single vehicle and rural crashes have higher severity both in regard to fatalities and injuries. Table 2 shows pedestrian crashes with the highest fatality severity (although not for injury) while angle and rear end crashes are lowest. Crashes identified as "run off the road", and "striking fixed object" had the highest injury severity. The lower severity crashes (rear-end and angle) account for approximately seventy-five percent of the crashes in the file. Dry roads have the highest severity crashes while snowy and icy roads have the lowest, no doubt due to differences in velocity. Crashes which occurred after dark have higher severity. Similarly weekend crashes had a greater severity than did weekday crashes.

Table 6 and figures 3 and 4 indicate the relationship between hour of the day and injury severity. Injury rates are relatively flat over the various time intervals. However the fatality rates are much higher during the late night and early morning.

It is not surprising that pedestrians and motorcycle crashes have a high severity rate, as shown in table 7. Male and female injury rates are quite similar, however males have a much higher fatality rate than do females. Table 9 and figures 5 and 6 indicate the relationships between severity and age group. Injury severity is quite uniform except for a small increase for young drivers involved in single vehicle crashes. However the fatality rate curve indicates a large increase for drivers over age 64.

Figure 1 indicates the subgroups defined by the AID algorithm using injuries per involvement as a dependent variable. The single versus multiple vehicle split is the most pronounced of those considered. Within the multiple vehicle subgroup the crashes

occurring at night were of greater severity. However in the single vehicle category bus, motorcycle and pedestrian crashes had a much higher severity than did car or truck crashes. Within the former group pedestrian crashes had a lower injury rate than did motorcycle and bus crashes involving overturning, run off road, and striking fixed objects. This higher injury severity is also noted for cars and trucks involved in those crash types, as indicated in subgroup 9.

Figure 2 presents the subgroups resulting from applying the AID algorithm with fatalities per involvement as the dependent variable. The strongest predictor was collision type. However the lowest fatality rate subgroup occurred for angle and rear end crashes - which are multiple vehicle type crashes - while the highest fatality rate occurred for single vehicle type crashes. The subgroup with the highest rate occurred for subgroup 5 which contained persons over age 64.

Tables A-1 through A-37 in this Appendix present the bivariate distributions of involvements using all combinations of independent variables used in the analysis. It should be noted that the involvement frequencies have all been divided by a factor of 100. The expected frequencies are based upon the standard assumption of independence of the two variables which define the table. Thus the expected values are obtained from the following relationship.

$$\begin{array}{l} \text{Expected} \\ \text{Frequency} \\ \text{for cell} \\ \text{defined by} \\ \text{row i and} \\ \text{column j.} \end{array} = \left(\begin{array}{l} \text{Total \# of} \\ \text{Involvements} \end{array} \right) \times \left(\begin{array}{l} \text{Percentage of} \\ \text{cases in} \\ \text{row i} \end{array} \right) \times \left(\begin{array}{l} \text{Percentage} \\ \text{of cases in} \\ \text{column j} \end{array} \right)$$

The expected frequencies for a particular cell can be compared with the actual frequencies for that cell to determine if certain combinations of variables (cells) are over represented in

crash involvements. For example from Table A-1 passenger cars are over-represented in multi-vehicle urban crash involvements since the expected frequency is 11,789.1 and the actual frequency is 12,245. This finding can also be obtained from an examination of the Row Percent Table.

Conversely Trucks are over-represented in both single and multiple vehicle rural crashes. In addition, Pedestrians are highly over-represented in urban single vehicle crashes (324 vs. 31.0).

National Accident Summary
(one way relationships)

Table 1 Accident Type Location

	Number of Involvements	Injuries per Involvement	Fatalities per Involvement
Single Vehicle - Rural	249,442	.60	.0281
Urban	178,216	.52	.0174
Multi Vehicle - Rural	643,475	.39	.0097
Urban	1,341,884	.30	.0015

Table 2 Collision Type

Pedestrian	87,615	.50	.0322
Non Motor Vehicle	38,725	.28	.0161
Fixed Object	129,767	.42	.0131
Run Off Road	210,913	.63	.0245
Overtuned	13,568	.81	.0225
Head-On	125,513	.46	.0245
Angle Collision	1,010,582	.32	.0037
Rear End	796,334	.33	.0012

Table 3 Road Surface

Dry	1,606,972	.38	.0088
Wet	533,975	.38	.0065
Snowy or Icy	272,070	.26	.0032

Table 4 Light Conditions

Daylight	1,594,843	.33	.0052
Dawn or Dusk	106,075	.38	.0078
Darkness	712,099	.45	.0129

Table 5 Day of Week

	Number of Involvements	Injuries per Involvement	Fatalities per Involvement
Weekday (Monday-Friday)	1,688,557	.34	.0065
Weekend (Saturday&Sunday)	724,460	.44	.0102

Table 6 Hour Group

0101-0400	125,319	.55	.0207
0401-0700	73,983	.42	.0144
0701-1000	292,248	.30	.0046
1001-1300	328,402	.32	.0050
1301-1600	478,767	.34	.0052
1601-1900	575,785	.35	.0057
1901-2200	324,885	.42	.0094
2201-0100	213,628	.48	.0138

Table 7 Vehicle Type

Passenger Car	2,120,062	.37	.0066
Truck	218,709	.26	.0081
Bus	12,734	.44	.0038
Motorcycle	19,565	.81	.0250
Pedestrian	41,947	.88	.0508

Table 8 Sex

Male	1,823,137	.36	.0083
Female	589,880	.41	.0054

Table 9 Age Group

	Number of Involvements	Injuries per Involvement	Fatalities per Involvement
Less than 20	432,097	.41	.0082
20-24	418,262	.39	.0084
25-34	489,270	.39	.0069
35-44	397,295	.36	.0059
45-54	333,244	.33	.0061
55-64	216,517	.32	.0072
Greater than 64	126,332	.33	.0162

Fig 1
AID ANALYSIS of NATIONAL
ACCIDENT SUMMARY
USING INJURY RATE AS THE
DEPENDENT VARIABLE

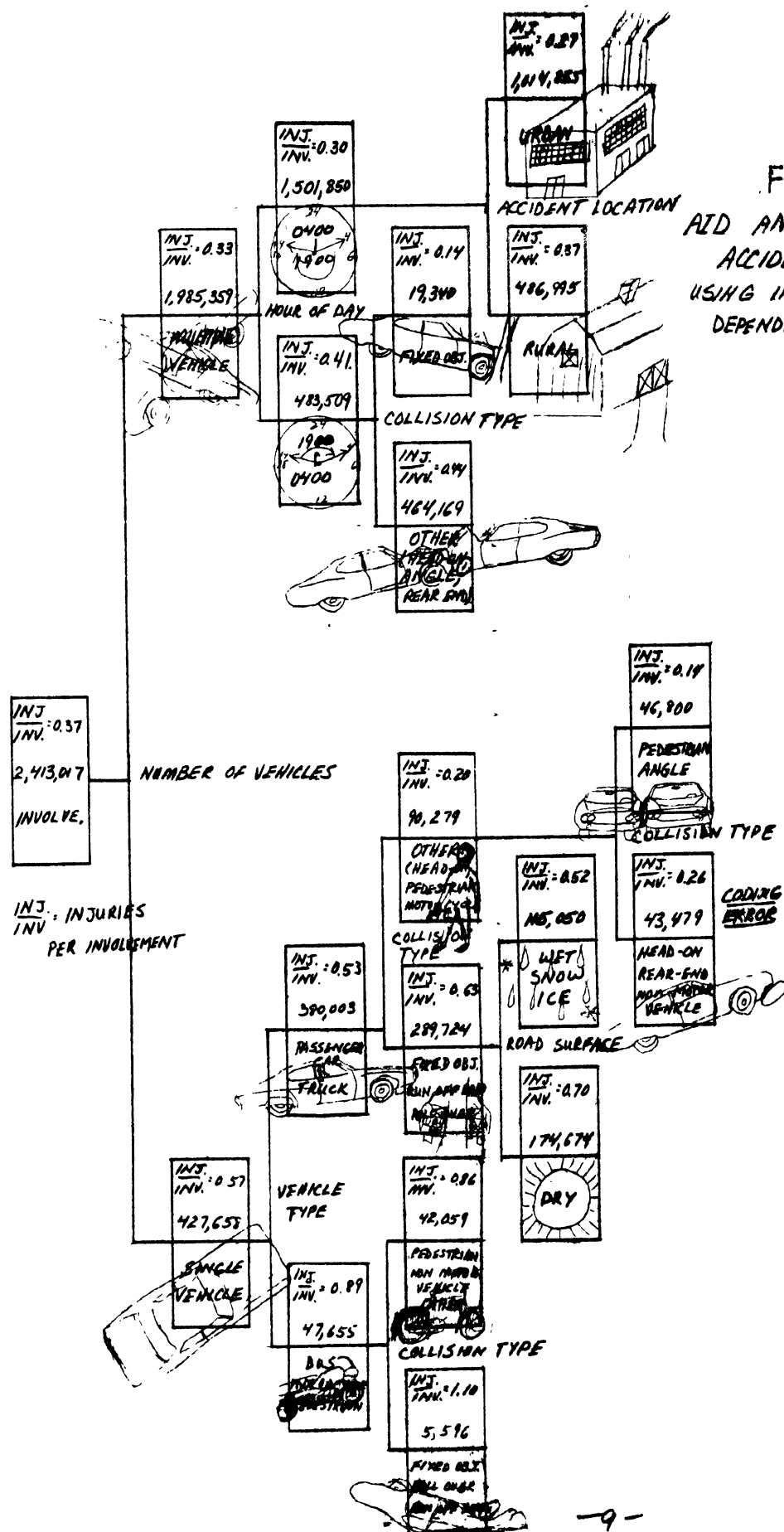


Fig 2

AID ANALYSIS of NATIONAL ACCIDENT SUMMARY USING FATALITY RATE AS THE ~~THE~~ INDEPENDENT VARIABLE

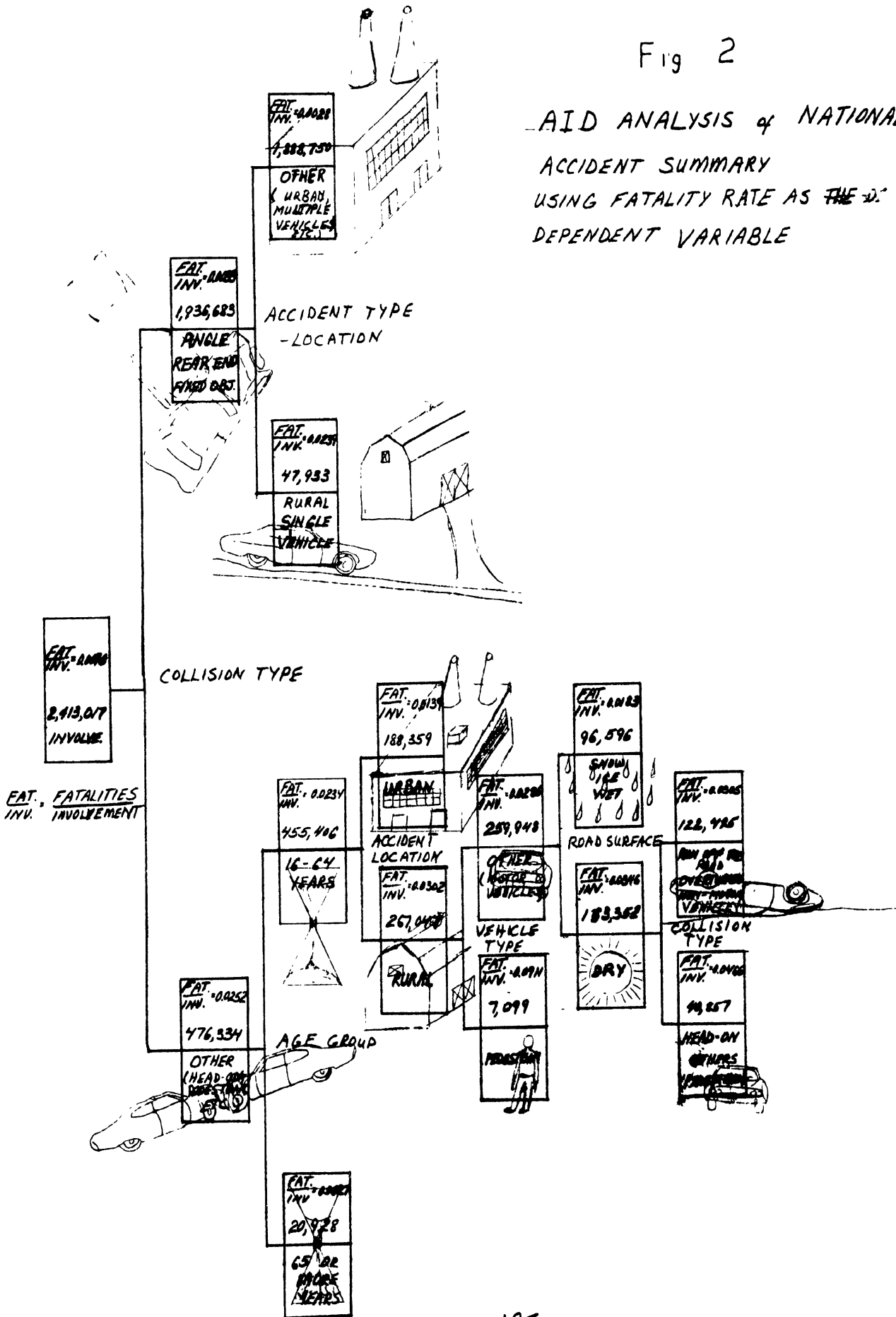
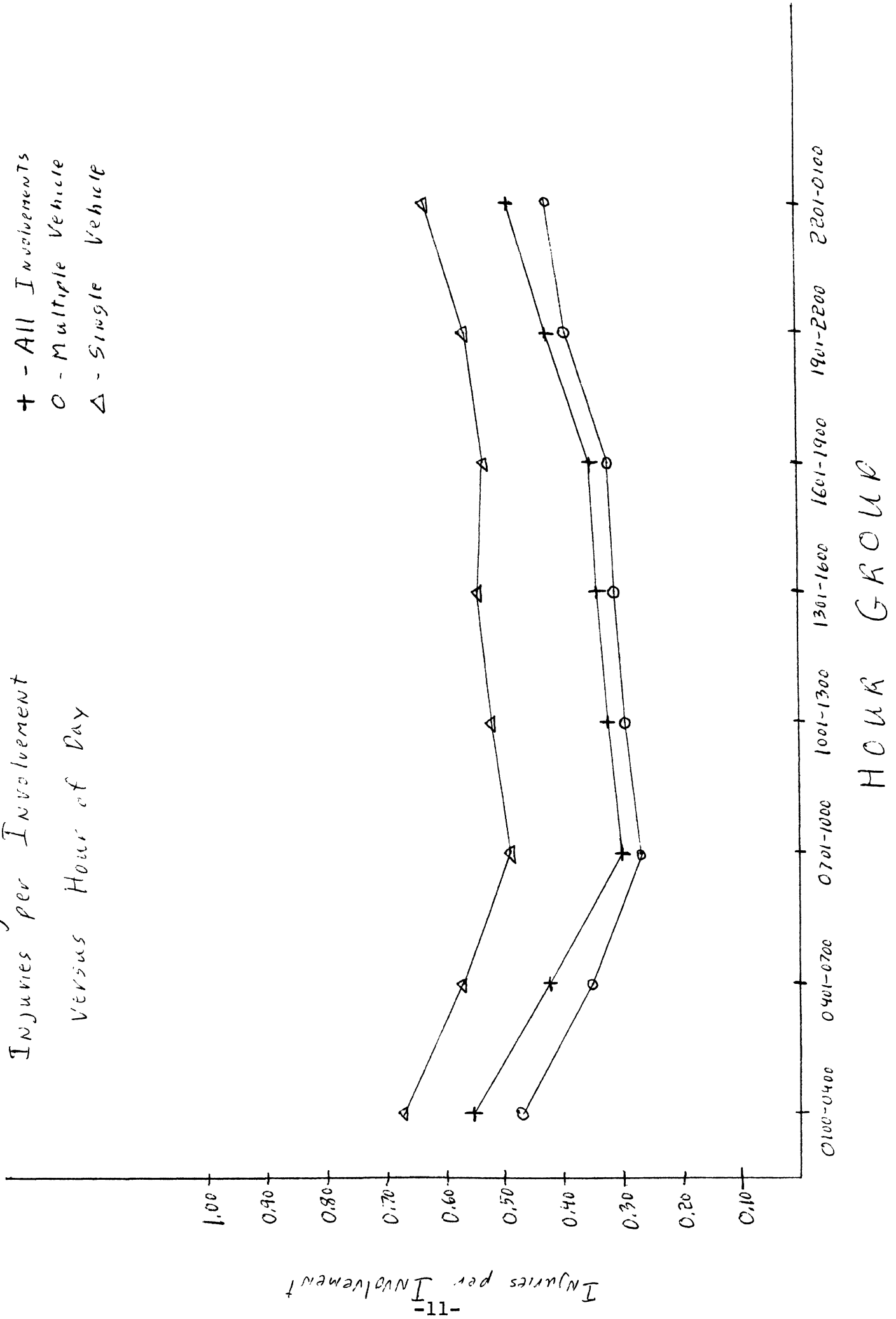
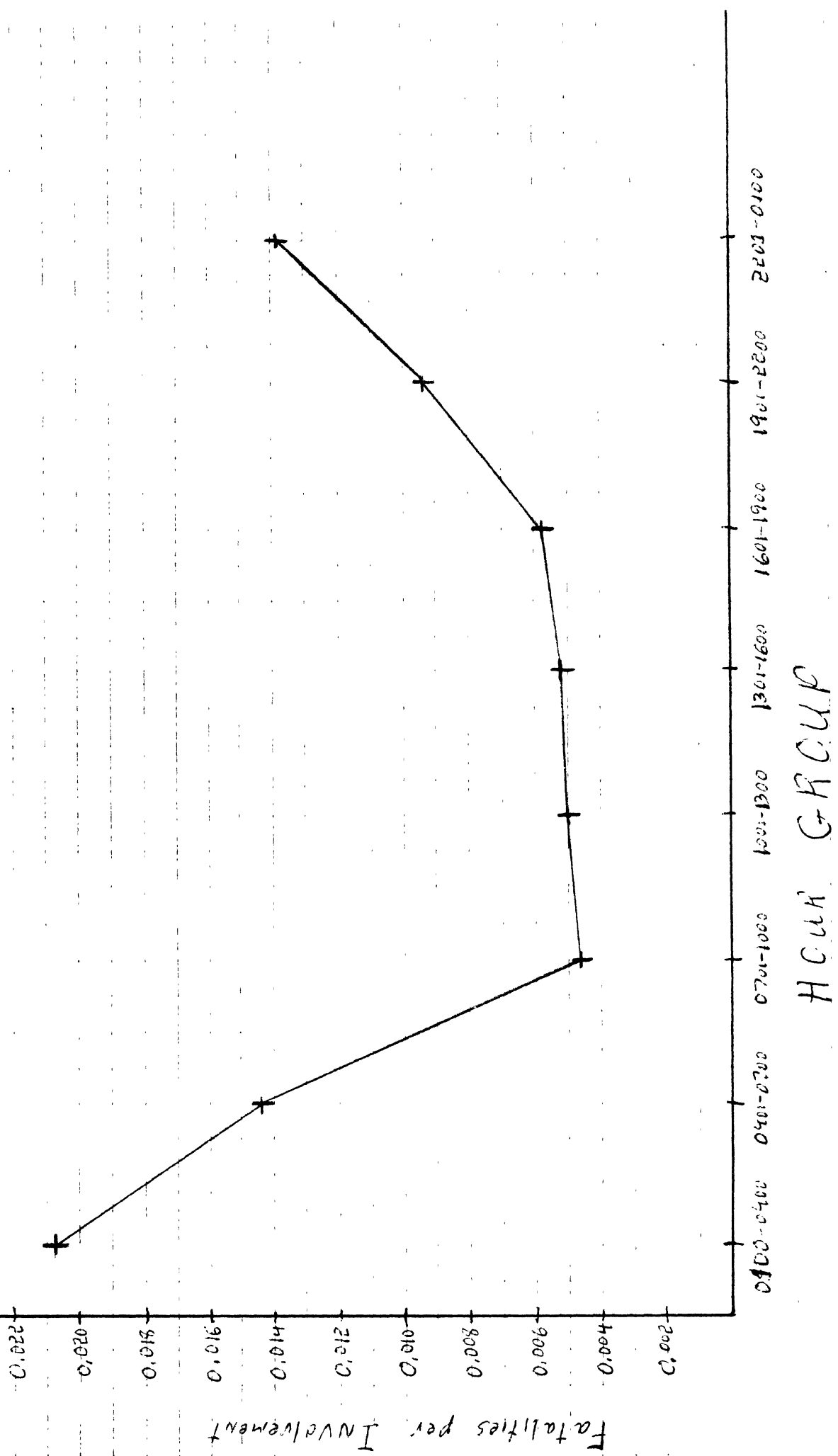


Figure 3
 Injuries per Involvement
 Versus Hour of Day



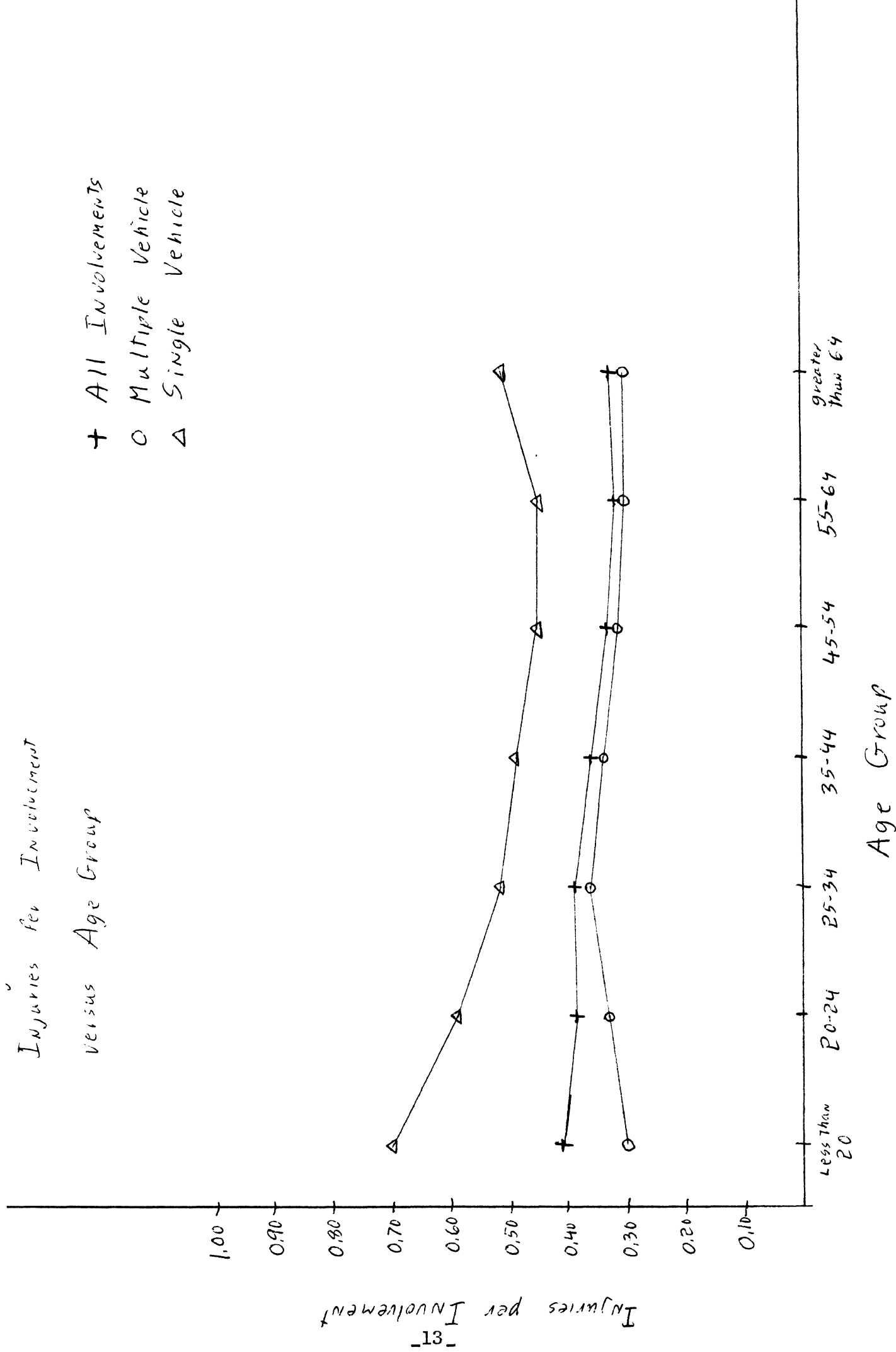
HOUR GROUP

Fatalities per Involvement
versus Hour Group



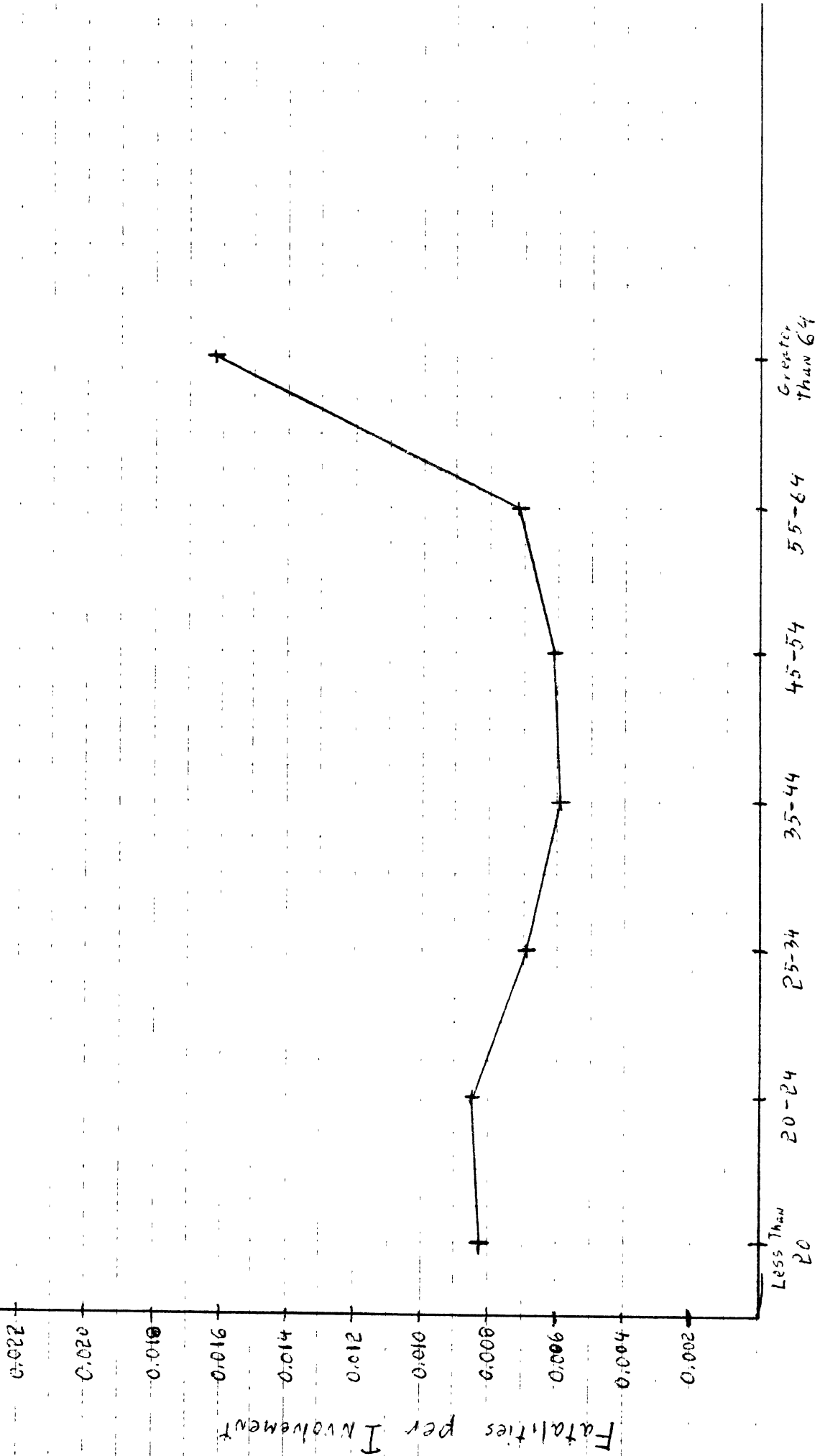
Injuries per Involvement
versus Age Group

- + All Involvements
- o Multiple Vehicle
- Δ Single Vehicle



Fatalities per Involvement

versus Age Group



APPENDIX

Bivariate Analysis of Independent Variables

Table A-1
 Vehicle Type vs. Accident Type and Location
 (Involvements ÷ 100.)

13, 5, 7
 Passenger Car.
 Truck
 Bus
 Motorcycle
 Pedestrian

FREQUENCY TABLE

	1	2	3	4	5	
1	2077	306	6	33	73	2495
						Single Vehicle - Rural
2	1288	129	14	27	324	1782
						Urban
3	5590	760	34	45	6	6435
						Multi Vehicle - Rural
4	12245	993	73	91	17	13419
						Urban
TOTAL	21200	2188	127	196	420	24131

ROW PERCENT TABLE

	1	2	3	4	5
1	83.2	12.3	0.2	1.3	2.9
2	72.3	7.2	0.8	1.5	18.2
3	86.9	11.8	0.5	0.7	0.1
4	91.3	7.4	0.5	0.7	0.1

EXPECTED FREQUENCIES

	1	2	3	4	5
1	2192.0	226.2	13.1	20.3	43.4
2	1565.6	161.6	9.4	14.5	31.0
3	5653.4	583.5	33.9	52.3	112.0
4	11789.1	1216.7	70.6	109.0	233.6

Table A-2
Sex vs. Accident Type and Location
(Involvements ÷ 100.)

		Male	Female	
		, TYPE-LOC/SEX		
FREQUENCY TABLE				
	1	2		
1	2000	494	2494	Single Vehicle - Rural
2	1374	409	1783	Urban
3	4849	1585	6434	Multi Vehicle - Rural
4	10010	3410	13420	Urban
TOTAL	18233	5898	24131	

ROW PERCENT TABLE				
	1	2		
1	80.2	19.8		
2	77.1	22.9		
3	75.4	24.6		
4	74.6	25.4		

EXPECTED FREQUENCIES				
	1	2		
1	1884.4	609.6		
2	1347.2	435.8		
3	4861.4	1572.6		
4	10139.9	3280.1		

Table A-3
 Light Conditions vs. Road Surface
 (Involvements ÷ 100.)

Daylight
 Dawn or Dusk
 Darkness
 16 SU LITE CONDS

FREQUENCY TABLE

	1	2	3	
1	10985	646	4440	16071 Dry
2	3315	277	1748	5340 Wet
3	1649	138	933	2720 Snowy or Icy
TOTAL	15949	1061	7121	24131

ROW PERCENT TABLE

	1	2	3
1	68.4	4.0	27.6
2	62.1	5.2	32.7
3	60.6	5.1	34.3

EXPECTED FREQUENCIES

	1	2	3
1	110621.9	706.6	4742.5
2	3529.4	234.8	1575.8
3	1797.7	119.6	802.7

Table A-4
 Day of Week vs. Road Surface
 (Involvements ÷ 100.)

	HOUR/DAY OF WK		
	Weekday (Monday-Friday)	Weekend (Saturday&Sunday)	
	1	2	
1	11182	4889	16071 Dry
2	3748	1592	5340 Wet
3	1957	763	2720 Snowy or Icy
TOTAL	16887	7244	24131

ROW PERCENT TABLE		
	1	2
1	69.6	30.4
2	70.2	29.8
3	71.9	28.1

EXPECTED FREQUENCIES		
	1	2
1	11246.6	4824.4
2	3737.0	1603.0
3	1903.5	816.5

Table A-5
 Vehicle Type vs. Road Surface
 (Involvements ÷ 100.)

1,2,09-09,
 Passenger Car
 Truck
 SU, BUS
 Motorcycle
 Pedestrian

FREQUENCY TABLE

	1	2	3	4	5	
1	13974	1502	85	181	329	16071 Dry
2	4806	426	24	14	69	5339 Wet
3	2422	259	18	1	21	2721 Snowy or Icy
TOTAL	21202	2187	127	196	419	24131

ROW PERCENT TABLE

	1	2	3	4	5
1	87.0	9.3	0.5	1.1	2.0
2	90.0	8.0	0.4	0.3	1.3
3	89.0	9.5	0.7	0.0	0.8

EXPECTED FREQUENCIES

	1	2	3	4	5
1	114120.3	1456.5	84.6	130.5	279.0
2	4691.0	483.9	28.1	43.4	92.7
3	2390.7	246.6	14.3	22.1	47.2

Table A-6
 Sex vs. Road Surface
 (Involvements ÷ 100.)

	SUR/SEX		
	Male	Female	
	1	2	
1	12135	3935	16070 Dry
2	4034	1306	5340 Wet
3	2063	658	2721 Snowy or Icy
TOTAL	18232	5899	24131

ROW PERCENT TABLE		
	1	2
1	75.5	24.5
2	75.5	24.5
3	75.8	24.2

EXPECTED FREQUENCIES		
	1	2
1	11214.6	3928.4
2	4034.6	1305.4
3	2055.8	665.2

Table A-7
 Day of Week vs. Light Conditions
 (Involvements ÷ 100.)

REQ. TABLE

Weekday (Monday-Friday)
 Weekend (Saturday&Sunday)

PER DAY OF WK

	1	2	
1	11737	4213	15950 Daylight
2	767	293	1060 Dawn or Dusk
3	4383	2738	7121 Darkness
TOTAL	16887	7244	24131

ROW PERCENT TABLE

	1	2
1	73.6	26.4
2	72.4	27.6
3	61.6	38.4

EXPECTED FREQUENCIES

	1	2
1	11161.9	4788.1
2	741.8	318.2
3	4983.3	2137.7

Table A-8
 Hour Group vs. Light Conditions
 (Involvements ÷ 100.)

0101-0400 0401-0700 0701-1000 1001-1300 1301-1600 1601-1900 1901-2200 2201-0100
23 100 242 2060

FREQUENCY TABLE

	1	2	3	4	5	6	7	8		
1	33	292	2814	3246	4750	4221	534	58	15948	Daylight
2	9	131	68	3	14	531	287	18	1061	Dawn or Dusk
3	1212	317	41	35	23	1006	2428	2060	7122	Darkness
TOTAL	1254	740	2923	3284	4787	5758	3249	2136	24131	

ROW PERCENT TABLE

	1	2	3	4	5	6	7	8
1	0.2	1.8	17.6	20.4	29.8	26.5	3.3	0.4
2	0.8	12.3	6.4	0.3	1.3	50.0	27.0	1.7
3	17.0	4.5	0.6	0.5	0.3	14.1	34.1	28.9

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7	8
1	828.8	489.1	1931.8	2170.4	3163.7	3805.4	2147.2	1411.7
2	55.1	32.5	128.5	144.4	210.5	253.2	142.9	93.9
3	370.1	218.4	862.7	969.2	1412.8	1699.4	958.9	630.4

Table A-9
 Vehicle Type vs. Light Conditions
 (Involvements ÷ 100.)

Passenger Car
 Truck
 BUS
 Motorcycle
 Pedestrian

FREQUENCY TABLE

	1	2	3	4	5	
1	13774	1647	105	138	285	15949 Daylight
2	941	87	4	9	20	1061 Dawn or Dusk
3	6486	454	18	48	115	7121 Darkness
TOTAL	21201	2188	127	195	420	24131

ROW PERCENT TABLE

	1	2	3	4	5
1	66.4	10.3	0.7	0.9	1.8
2	88.7	8.2	0.4	0.8	1.9
3	91.1	6.4	0.3	0.7	1.6

EXPECTED FREQUENCIES

	1	2	3	4	5
1	114012.5	1446.1	83.9	128.9	277.6
2	932.2	96.2	5.6	8.6	18.5
3	6256.4	645.7	37.5	57.5	123.9

Table A-10
Sex vs. Light Conditions
(Involvements ÷ 100.)

		Male	Female	
		25	25	COND/SEX
FREQUENCY TABLE				
	1	2		
1	11552	4397	15949	Daylight
2	815	246	1061	Dawn or Dusk
3	5865	1256	7121	Darkness
TOTAL	18232	5899	24131	

ROW PERCENT TABLE				
	1	2		
1	72.4	27.6		
2	76.8	23.2		
3	82.4	17.6		

EXPECTED FREQUENCIES				
	1	2		
	112050.1	3898.9		
2	801.6	259.4		
3	5380.2	1740.8		

Table A-11
Age Group vs. Light Conditions
(Involvements ÷ 100.)

2348 1615 1028
 191 188 218 179 149 93 43
 1434 1530 1554 1118 835 457 193 7121
 4321 4183 4892 3973 3332 2165 1264 24130

Less than 20
 20-24
 25-34
 35-44
 45-54
 55-64
 Greater than 64

FREQUENCY TABLE

	1	2	3	4	5	6	7		
1	2696	2465	3120	2676	2348	1615	1028	15948	Daylight
2	191	188	218	179	149	93	43	1061	Dawn or Dusk
3	1434	1530	1554	1118	835	457	193	7121	Darkness
TOTAL	4321	4183	4892	3973	3332	2165	1264	24130	

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	16.9	15.5	19.6	16.8	14.7	10.1	6.4
2	18.0	17.7	20.5	16.9	14.0	8.8	4.1
3	20.1	21.5	21.8	15.7	11.7	6.4	2.7

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	2855.8	2764.6	3233.2	2625.8	2202.2	1430.9	835.4
2	190.0	183.9	215.1	174.7	146.5	95.2	55.6
3	1275.2	1234.4	1443.7	1172.5	983.3	638.9	373.0

Table A-12

Hour Group vs. Day of Week
(Involvements ÷ 100.)

0101-0400 227
0401-0700 346
0701-1000 44
1001-1300 21
1301-1600 20
1601-1900 11
1901-2200 11
2201-0100 11

FREQUENCY TABLE

	1	2	3	4	5	6	7	8		
1	497	512	2460	2231	3346	4321	2210	1308	16885	Weekday (Monday-Friday)
2	757	228	462	1053	1441	1437	1039	828	7245	Weekend (Saturday&Sunday)
TOTAL	1254	740	2922	3284	4787	5758	3249	2136	24130	

ROW PERCENT TABLE

1	2.9	3.0	14.6	13.2	19.8	25.6	13.1	7.7	
2	10.4	3.1	6.4	14.5	19.9	19.8	14.3	11.4	

EXPECTED FREQUENCIES

1	877.5	517.8	2044.7	2298.0	3349.7	4029.2	2273.5	1494.7	
2	376.5	222.2	877.3	986.0	1437.3	1728.8	975.5	641.3	

Table A-13
 Vehicle Type vs. Day of Week
 (Involvements ÷ 100.)

Passenger Car 10,
 28 Truck
 OF BUS
 VE Motorcycle
 TYPE Pedestrian

FREQUENCY TABLE

	1	2	3	4	5	
1	14593	1749	108	127	310	16887 Weekday (Monday-Friday)
2	6609	438	19	69	109	7244 Weekend (Saturday&Sunday)
TOTAL	21202	2187	127	196	419	24131

ROW PERCENT TABLE

	1	2	3	4	5
1	86.4	10.4	0.6	0.8	1.8
2	91.2	6.0	0.3	1.0	1.5

EXPECTED FREQUENCIES

	1	2	3	4	5
1	114837.3	1530.5	88.9	137.2	293.2
2	6364.7	656.5	38.1	58.8	125.8

Table A-14
 Sex vs. Day of Week
 (Involvements ÷ 100.)

		Male		Female		
		29				DAY OF WK/SEX
FREQUENCY TABLE						
	1	2				
	1	12500	4387	16887	Weekday (Monday-Friday)	
	2	5733	1511	7244	Weekend (Saturday&Sunday)	
TOTAL		18233	5898	24131		

		ROW PERCENT TABLE	
		1	2
	1	74.0	26.0
	2	79.1	20.9

		EXPECTED FREQUENCIES	
		1	2
	1	11275.5	4127.5
	2	5473.5	1770.5

Table A-15
 Age Group vs. Day of Week
 (Involvements ÷ 100,)

Less than 20 20-24 25-34 35-44 45-54 55-64 Greater than 64

FREQUENCY TABLE

	1	2	3	4	5	6	7	
1	2884	2788	3412	2853	2424	1583	942	16886 Weekday (Monday-Friday)
2	1437	1395	1480	1120	908	582	322	7244 Weekend (Saturday&Sunday)
TOTAL	4321	4183	4892	3973	3332	2165	1264	24130

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	17.1	16.5	20.2	16.9	14.4	9.4	5.6
2	19.8	19.3	20.4	15.5	12.5	8.0	4.4

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	3023.8	2927.2	3423.4	2780.3	2331.7	1515.1	884.5
2	1297.2	1255.8	1468.6	1192.7	1000.3	649.9	379.5

Table A-16
 Vehicle Type vs. Hour of Day
 (Involvements + 100.)

17-6-21

Passenger Car
Truck
BUS
Motorcycle
Pedestrian

#3

FREQUENCY TABLE

	1	2	3	4	5	
1	1150	81	2	8	13	1254 0101-0400
2	632	94	3	3	7	739 0401-0700
3	2492	353	32	12	33	2922 0701-1000
4	2798	395	15	21	54	3283 1001-1300
5	4124	495	33	43	93	4788 1301-1600
6	5095	456	28	55	124	5758 1601-1900
7	2944	192	9	36	67	3248 1901-2200
8	1965	121	5	17	28	2136 2201-0100
TOTAL	21200	2187	127	195	419	24128

ROW PERCENT TABLE

	1	2	3	4	5
1	91.7	6.5	0.2	0.6	1.0
2	85.5	12.7	0.4	0.4	0.9
3	85.3	12.1	1.1	0.4	1.1
4	85.2	12.0	0.5	0.6	1.6
5	86.1	10.3	0.7	0.9	1.9
6	88.5	7.9	0.5	1.0	2.2
7	90.6	5.9	0.3	1.1	2.1
8	92.0	5.7	0.2	0.8	1.3

EXPECTED FREQUENCIES

	1	2	3	4	5
1	1101.8	113.7	6.6	10.1	21.8
2	649.3	67.0	3.9	6.0	12.8
3	2567.4	264.9	15.4	23.6	50.7
4	2884.6	297.6	17.3	26.5	57.0
5	4207.0	434.0	25.2	38.7	83.1
6	5059.3	521.9	30.3	46.5	100.0
7	2853.8	294.4	17.1	26.2	56.4
8	1876.8	193.6	11.2	17.3	37.1

Table A-17
Sex vs. Hour of Day
(Involvements ÷ 100.)

		Male		Female		GRP/SEX
		1	2			
	1	1101	152	1253		0101-0400
11	2	620	120	740		0401-0700
10	3	2123	800	2923		0701-1000
9	4	2360	924	3284		1001-1300
8	5	3432	1355	4787		1301-1600
7	6	4225	1533	5758		1601-1900
6	7	2575	674	3249		1901-2200
5	8	1795	341	2136		2201-0100
4	TOTAL	18231	5899	24130		

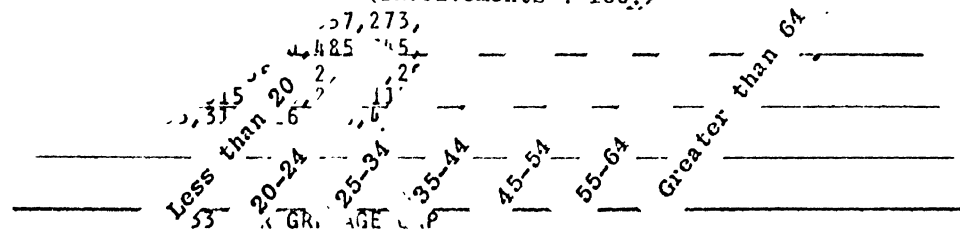
		ROW PERCENT TABLE	
		1	2
	1	87.9	12.1
	2	83.8	16.2
	3	72.6	27.4
	4	71.9	28.1
	5	71.7	28.3
	6	73.4	26.6
	7	79.3	20.7
	8	84.0	16.0

		EXPECTED FREQUENCIES	
		1	2
	1	946.7	306.3
	2	559.1	180.9
	3	2208.4	714.6
	4	2481.2	802.8
	5	3616.7	1170.3
	6	4350.4	1407.6
	7	2454.7	794.3
	8	1613.8	522.2

Table A-18

Age Group vs. Hour of Day

(Involvements ÷ 100.)



FREQUENCY TABLE

	1	2	3	4	5	6	7	
1	211	369	324	183	107	46	14	1254 0101-0400
2	83	153	181	132	106	65	19	739 0401-0700
3	400	458	620	537	458	295	155	2923 0701-1000
4	491	481	639	556	488	357	273	3285 1001-1300
5	873	717	894	783	690	485	345	4787 1301-1600
6	1039	932	1131	955	842	560	298	5757 1601-1900
7	718	595	650	515	415	241	115	3249 1901-2200
8	507	476	453	313	226	116	46	2137 2201-0100
TOTAL	4322	4181	4892	3974	3332	2165	1265	24131

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	16.8	29.4	25.8	14.6	8.5	3.7	1.1
2	11.2	20.7	24.5	17.9	14.3	8.8	2.6
3	13.7	15.7	21.2	18.4	15.7	10.1	5.3
4	14.9	14.6	19.5	16.9	14.9	10.9	8.3
5	18.2	15.0	18.7	16.4	14.4	10.1	7.2
6	18.0	16.2	19.6	16.6	14.6	9.7	5.2
7	22.1	18.3	20.0	15.9	12.8	7.4	3.5
8	23.7	22.3	21.2	14.6	10.6	5.4	2.2

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	224.6	217.3	254.2	206.5	173.2	112.5	65.7
2	132.4	128.0	149.8	121.7	102.0	66.3	38.7
3	523.5	506.4	592.6	481.4	403.6	262.2	153.2
4	588.4	569.2	666.0	541.0	453.6	294.7	172.2
5	857.4	829.4	970.5	788.3	661.0	429.5	250.9
6	1031.1	997.5	1167.1	946.1	794.9	516.5	301.8
7	581.9	562.9	658.7	535.1	448.6	291.5	170.3
8	382.7	370.3	433.2	351.9	295.1	191.7	112.0

Table A-19
 Sex vs. Vehicle Type
 (Involvements + 100.)

Male
 Female
 TYPE/SEX

FREQUENCY TABLE

	1	2	
1	15540	5661	21201 Passenger Car
2	2113	74	2187 Truck
3	115	12	127 Bus
4	190	6	196 Motorcycle
5	274	146	420 Pedestrian
TOTAL	18232	5899	24131

ROW PERCENT TABLE

	1	2
1	73.3	26.7
2	96.6	3.4
3	90.6	9.4
4	96.9	3.1
5	65.2	34.8

EXPECTED FREQUENCIES

	1	2
1	116018.3	5182.7
2	1652.4	534.6
3	96.0	31.0
4	148.1	47.9
5	317.3	102.7

Table A-20
 Age Group vs. Vehicle Type
 (Involvements ÷ 100.)

Less than 20
 20-24
 25-34
 35-44
 45-54
 55-64
 Greater than 64

FREQUENCY TABLE

	1	2	3	4	5	6	7		
1	3800	3838	4228	3406	2892	1899	1137	21200	Passenger Car
2	184	257	567	500	382	222	75	2187	Truck
3	3	10	34	32	28	18	3	128	Bus
4	87	56	36	11	4	2	0	196	Motorcycle
5	247	21	27	25	26	26	47	419	Pedestrian
TOTAL	4321	4182	4892	3974	3332	2167	1262	24130	

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	17.9	18.1	19.9	16.1	13.6	9.0	5.4
2	8.4	11.8	25.9	22.9	17.5	10.2	3.4
3	2.3	7.8	26.6	25.0	21.9	14.1	2.3
4	44.4	28.6	18.4	5.6	2.0	1.0	0.0
5	58.9	5.0	6.4	6.0	6.2	6.2	11.2

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	3796.3	3674.2	4298.0	3491.5	2927.4	1903.9	1108.8
2	391.6	379.0	443.4	360.2	302.0	196.4	114.4
3	22.9	22.2	26.0	21.1	17.7	11.5	6.7
4	35.1	34.0	39.7	32.3	27.1	17.6	10.3
5	75.0	72.6	84.9	69.0	57.9	37.6	21.9

Table A-21
 Age Group vs. Sex
 (Involvements ÷ 100.)

	Less than 20	20-24	25-34	35-44	45-54	55-64	Greater than 64	
	3267	3168	3734	2901	2473	1668	1019	18230
1	3267	3168	3734	2901	2473	1668	1019	18230
2	1054	1014	1159	1072	859	497	244	5899
TOTAL	4321	4182	4893	3973	3332	2165	1263	24129

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	17.9	17.4	20.5	15.9	13.6	9.1	5.6
2	17.9	17.2	19.6	18.2	14.6	8.4	4.1

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	3264.6	3159.6	3696.8	3001.7	2517.4	1635.7	954.2
2	1056.4	1022.4	1196.2	971.3	814.6	529.3	308.8

Table A-22

Collision Type vs. Accident Type - Location
(Involvements ÷ 100.)

Pedestrian 3002
 Fixed Object 582
 Non Motor Vehicle 30
 Run Off Road
 Overturned
 Head-On
 Angle Collision
 Rear End

FREQUENCY TABLE

	1	2	3	4	5	6	7	8		
1	147	227	444	1536	98	7	14	21	2494	Single Vehicle - Rural
2	685	129	403	438	33	11	24	58	1781	Urban
3	12	11	98	88	2	641	3002	2582	6436	Multi Vehicle - Rural
4	33	19	352	47	3	596	7065	5302	13417	Urban
L	877	386	1297	2109	136	1255	10105	7963	24128	

ROW PERCENT TABLE

	1	2	3	4	5	6	7	8
1	5.9	9.1	17.8	61.6	3.9	0.3	0.6	0.8
2	38.5	7.2	22.6	24.6	1.9	0.6	1.3	3.3
3	0.2	0.2	1.5	1.4	0.0	10.0	46.6	40.1
4	0.2	0.1	2.6	0.4	0.0	4.4	52.7	39.5

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7	8
	90.7	39.9	134.1	218.0	14.1	129.7	1044.5	823.1
	64.7	28.5	95.7	155.7	10.0	92.6	745.9	587.8
	233.9	103.0	346.0	562.6	36.3	334.8	2695.4	2124.1
	487.7	214.6	721.2	1172.8	75.6	697.9	5619.1	4428.0

Table A-23

Road Surface vs. Accident Type - Location
(Involvements ÷ 100.)

	Dry	Wet	Snowy or Icy	
	1	2	3	
1	1578	571	346	2495
				Single Vehicle - Rural
2	1262	352	168	1782
				Urban
3	4188	1423	823	6434
				Multi Vehicle - Rural
4	9041	2994	1384	13419
				Urban
TOTAL	16069	5340	2721	24130

ROW PERCENT TABLE

	1	2	3
1	63.2	22.9	13.9
2	70.8	19.8	9.4
3	65.1	22.1	12.8
4	67.4	22.3	10.3

EXPECTED FREQUENCIES

	1	2	3
1	1661.5	552.1	281.3
2	1186.7	394.4	200.9
3	4284.6	1423.9	725.5
4	8936.2	2969.6	1513.2

Table A-24

Light Conditions vs. Accident Type - Location
 (Involvements ÷ 100.)

Daylight
 Dawn or Dusk
 Darkness

FREQUENCY TABLE

	1	2	3	
1	1152	129	1214	2495 Single Vehicle - Rural
2	984	76	723	1783 Urban
3	4453	314	1669	6436 Multi Vehicle - Rural
4	9361	543	3516	13420 Urban
TOTAL	15950	1062	7122	24134

ROW PERCENT TABLE

	1	2	3
1	46.2	5.2	48.7
2	55.2	4.3	40.5
3	69.2	4.9	25.9
4	69.8	4.0	26.2

EXPECTED FREQUENCIES

	1	2	3
1	1648.9	109.8	736.3
2	1178.4	78.5	526.2
3	4253.5	283.2	1899.3
4	8869.2	590.5	3960.3

Table A-25

Day of Week vs. Accident Type - Location
(Involvements ÷ 100.)

	Weekday (Monday-Friday)		Weekend (Saturday&Sunday)		
	1	2	1	2	
1	1533	962	2495		Single Vehicle - Rural
2	1218	564	1782		Urban
3	4368	2067	6435		Multi Vehicle - Rural
4	9767	3652	13419		Urban
TOTAL	16886	7245	24131		

ROW PERCENT TABLE

	1	2
1	61.4	38.6
2	68.4	31.6
3	67.9	32.1
4	72.8	27.2

EXPECTED FREQUENCIES

	1	2
1	1745.9	749.1
2	1247.0	535.0
3	4503.0	1932.0
4	9390.1	4028.9

Table A-26

Hour of Day vs. Accident Type - Location
(Involvements ÷ 100.)

	0101-0400	0401-0700	0701-1000	1001-1300	1301-1600	1601-1900	1901-2200	2201-0100		
FREQUENCY TABLE										
	1	2	3	4	5	6	7	8		
1	339	164	218	232	327	427	392	395	2494	Single Vehicle - Rural
2	187	79	146	196	303	382	272	217	1782	Urban
3	229	180	802	902	1356	1630	851	485	6435	Multi Vehicle - Rural
4	497	317	1757	1954	2801	3319	1734	1039	13418	Urban
Al	1252	740	2923	3284	4787	5758	3249	2136	24129	

ROW PERCENT TABLE

	1	2	3	4	5	6	7	8
1	13.6	6.6	8.7	9.3	13.1	17.1	15.7	15.8
2	10.5	4.4	8.2	11.0	17.0	21.4	15.3	12.2
3	3.6	2.8	12.5	14.0	21.1	25.3	13.2	7.5
4	3.7	2.4	13.1	14.6	20.9	24.7	12.9	7.7

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7	8
129.4	76.5	302.1	339.4	494.8	595.2	335.8	220.8	
92.5	54.7	215.9	242.5	353.5	425.2	239.9	157.8	
333.9	197.4	779.5	875.8	1276.7	1535.6	866.5	569.7	
696.2	411.5	1625.5	1826.2	2662.0	3202.0	1806.8	1187.8	

Table A-27

Age Group vs. Accident Type - Location
(Involvements ÷ 100.)

Less than 20, 20-24, 25-34, 35-44, 45-54, 55-64, Greater than 64

FREQUENCY TABLE

	1	2	3	4	5	6	7	
1	651	575	499	330	238	133	70	2496 Single Vehicle - Rural
2	491	313	335	237	188	122	95	1781 Urban
3	1060	1042	1290	1124	931	606	381	6434 Multi Vehicle - Rural
4	2120	2252	2768	2282	1975	1304	718	13419 Urban
TAL	4322	4182	4892	3973	3332	2165	1264	24130

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	26.1	23.0	20.0	13.2	9.5	5.3	2.8
2	27.6	17.6	18.8	13.3	10.6	6.9	5.3
3	16.5	16.2	20.0	17.5	14.5	9.4	5.9
4	15.8	16.8	20.6	17.0	14.7	9.7	5.4

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	447.1	432.6	506.0	411.0	344.7	223.9	130.7
2	319.0	308.7	361.1	293.2	245.9	159.8	93.3
3	1152.4	1115.1	1304.4	1059.4	888.4	577.3	337.0
4	2403.5	2325.7	2720.5	2209.4	1853.0	1204.0	702.9

Table A-28
 Road Surface vs. Collision Type
 (Involvements + 100.)

	Dry			Wet			Snowy or Icy		
	FREQUENCY TABLE								
	1	2	3						
1	694	142	40	876					Pedestrian
2	319	52	17	388					Non Motor Vehicle
3	782	285	231	1298					Fixed Object
4	1303	514	293	2110					Run Off Road
5	102	22	12	136					Overtuned
6	724	298	234	1256					Head-On
7	6921	2160	1025	10106					Angle Collision
8	5226	1868	870	7964					Rear End
TOTAL	16071	5341	2722	24134					

	ROW PERCENT TABLE		
	1	2	3
1	79.2	16.2	4.6
2	82.2	13.4	4.4
3	60.2	22.0	17.8
4	61.8	24.4	13.9
5	75.0	16.2	8.8
6	57.6	23.7	18.6
7	68.5	21.4	10.1
8	65.6	23.5	10.9

	EXPECTED FREQUENCIES		
	1	2	3
1	583.3	193.9	98.8
2	258.4	85.9	43.8
3	864.3	287.3	146.4
4	1405.1	467.0	238.0
5	90.6	30.1	15.3
6	836.4	278.0	141.7
7	6729.7	2236.5	1139.8
8	5303.3	1762.5	898.2

Table A-29
 Light Conditions vs. Collision Type
 (Involvements + 100.)

	Daylight			Dawn or Dusk			Darkness			
	1	2	3	1	2	3	1	2	3	
1	600	42	234	876						Pedestrian
2	196	33	158	387						Non Motor Vehicle
3	580	59	659	1298						Fixed Object
4	960	86	1063	2109						Run Off Road
5	74	6	56	136						Overtaken
6	794	55	406	1255						Head-On
7	7263	432	2411	10106						Angle Collision
8	5481	348	2134	7963						Rear End
TOTAL	15948	1061	7121	24130						

ROW PERCENT TABLE

	1	2	3
1	68.5	4.8	26.7
2	50.6	8.5	40.8
3	44.7	4.5	50.8
4	45.5	4.1	50.4
5	54.4	4.4	41.2
6	63.3	4.4	32.4
7	71.9	4.3	23.9
8	68.8	4.4	26.8

EXPECTED FREQUENCIES

	1	2	3
1	579.0	38.5	258.5
2	255.8	17.0	114.2
3	857.9	57.1	383.1
4	1393.9	92.7	622.4
5	89.9	6.0	40.1
6	820.5	55.2	370.4
7	6670.3	444.4	2982.4
8	5262.9	356.1	2350.0

Table A-30

Day of Week vs. Collision Type

(Involvements :-100.)

Weekday (Monday-Friday)
 Weekend (Saturday&Sunday)

FREQUENCY TABLE

	1	2		
1	650	226	876	Pedestrian
2	270	118	388	Non Motor Vehicle
3	821	477	1298	Fixed Object
4	1269	841	2110	Run Off Road
5	87	49	136	Overtuned
6	850	405	1255	Head-On
7	7225	2881	10106	Angle Collision
8	5714	2249	7963	Rear End
TOTAL	16886	7246	24132	

EXPECTED FREQUENCIES

	1	2
1	613.0	263.0
2	271.5	116.5
3	908.3	389.7
4	1476.4	633.6
5	95.2	40.8
6	878.2	376.8
7	7071.5	3034.5
8	5572.0	2391.0

ROW PERCENT TABLE

	1	2
1	74.2	25.8
2	69.6	30.4
3	63.3	36.7
4	60.1	39.9
5	64.0	36.0
6	67.7	32.3
7	71.5	28.5
8	71.8	28.2

Table A-31
 Hour of Day vs. Collision Type
 (Involvements ÷ 100.)

	0101-0400	0401-0700	0701-1000	1001-1300	1301-1600	1601-1900	1901-2200	2201-0100		
	565,2	71,21	2,12	711						
FREQUENCY TABLE										
	1	2	3	4	5	6	7	8		
1	24	15	71	116	195	260	138	58	877	Pedestrian
2	25	24	27	37	53	94	81	46	387	Non Motor Vehicle
3	197	83	120	131	169	191	196	211	1298	Fixed Object
4	316	139	187	193	274	334	313	353	2109	Run Off Road
5	16	7	12	15	21	24	21	19	135	Overtuned
6	61	37	146	156	240	305	193	117	1255	Head-On
7	325	245	1355	1563	2171	2482	1254	711	10106	Angle Collision
8	290	191	1004	1072	1665	2068	1053	621	7964	Rear End
TOTAL	1254	743	2922	3283	4788	5758	3249	2136	24131	

ROW PERCENT TABLE									
	1	2	3	4	5	6	7	8	
1	2.7	1.7	8.1	13.2	22.2	29.6	15.7	6.6	
2	6.5	6.2	7.0	9.6	13.7	24.3	20.9	11.9	
3	15.2	6.4	9.2	10.1	13.0	14.7	15.1	16.3	
4	15.0	6.6	8.9	9.2	13.0	15.8	14.8	16.7	
5	11.9	5.2	8.9	11.1	15.6	17.8	15.6	14.1	
6	4.9	2.9	11.6	12.4	19.1	24.3	15.4	9.3	
7	3.2	2.4	13.4	15.5	21.5	24.6	12.4	7.0	
8	3.6	2.4	12.6	13.5	20.9	26.0	13.2	7.8	

EXPECTED FREQUENCIES									
	1	2	3	4	5	6	7	8	
1	49.6	26.9	106.2	119.3	174.0	209.3	118.1	77.6	
2	20.1	11.9	46.9	52.7	76.8	92.3	52.1	34.3	
3	67.5	39.9	157.2	176.6	257.5	309.7	174.8	114.9	
4	109.6	64.8	255.4	286.9	418.5	503.2	284.0	166.7	
5	7.0	4.1	16.3	18.4	26.8	32.2	18.2	11.9	
6	65.2	32.5	152.0	170.7	249.0	299.5	169.0	111.1	
7	525.2	310.3	1223.7	1371.9	2005.2	2411.4	1360.7	894.6	
8	413.9	244.6	964.4	1069.8	1560.2	1900.3	1072.3	704.9	

Table A-32
 Vehicle Type vs. Collision Type
 (Involvements + 100.)

	Passenger Car	Truck	Bus	Motorcycle	Pedestrian	
FREQUENCY TABLE						
	1	2	3	4	5	
1	417	39	8	4	409	877 Pedestrian
2	329	41	6	7	5	388 Non Motor Vehicle
3	1170	114	5	8	1	1298 Fixed Object
4	1831	250	4	23	1	2109 Run Off Road
5	84	32	0	19	0	135 Overturned
6	1103	133	5	14	0	1255 Head-On
7	9082	880	56	87	1	10106 Angle Collision
8	7187	698	43	33	3	7964 Rear End
TOTAL	21203	2187	127	195	420	24132

ROW PERCENT TABLE						
	1	2	3	4	5	
1	47.5	4.4	0.9	0.5	46.6	
2	84.8	10.6	1.5	1.8	1.3	
3	90.1	8.8	0.4	0.6	0.1	
4	86.8	11.9	0.2	1.1	0.0	
5	62.2	23.7	0.0	14.1	0.0	
6	87.9	10.6	0.4	1.1	0.0	
7	89.9	8.7	0.6	0.9	0.0	
8	90.2	8.8	0.5	0.4	0.0	

EXPECTED FREQUENCIES						
	1	2	3	4	5	
1	776.6	79.5	4.6	7.1	15.3	
2	340.9	35.2	2.0	3.1	6.8	
3	1140.5	117.6	6.8	10.5	22.6	
4	1853.0	191.1	11.1	17.0	36.7	
5	118.6	12.2	0.7	1.1	2.3	
6	1102.7	113.7	6.6	10.1	21.8	
7	8879.4	915.9	53.2	81.7	175.0	
8	6997.4	721.7	41.9	64.4	138.6	

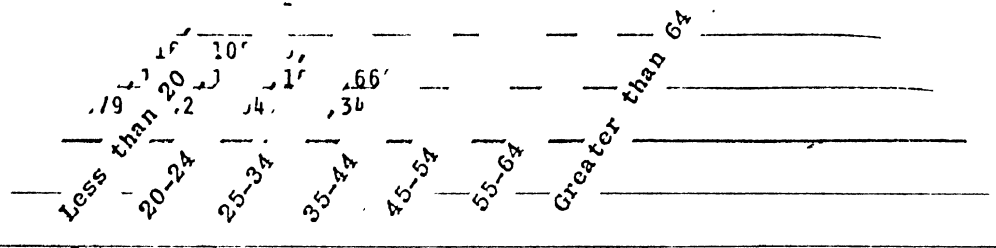
Table A-33
Sex vs. Collision Type
(Involvements + 100.)

		Male		Female		
FREQUENCY TABLE						
	1	2				
1	640	236	876			Pedestrian
2	309	78	387			Non Motor Vehicle
3	1028	270	1298			Fixed Object
4	1708	401	2109			Run Off Road
5	116	20	136			Overtuned
6	965	290	1255			Head-On
7	7416	2690	10106			Angle Collision
8	6048	1915	7963			Rear End
TOTAL	18230	5900	24130			

ROW PERCENT TABLE						
	1	2				
1	73.1	26.9				
2	79.8	20.2				
3	79.2	20.8				
4	81.0	19.0				
5	85.3	14.7				
6	76.9	23.1				
7	73.4	26.6				
8	76.0	24.0				

EXPECTED FREQUENCIES						
	1	2				
1	661.8	214.2				
2	292.4	94.6				
3	980.6	317.4				
4	1593.3	515.7				
5	102.7	33.3				
6	948.1	306.9				
7	7635.0	2471.0				
8	6016.0	1947.0				

Table A-34
Age Group vs. Collision Type
(Involvements + 100.)



FREQUENCY TABLE

	1	2	3	4	5	6	7		
1	301	92	134	110	98	72	70	877	Pedestrian
2	61	63	86	69	59	34	16	388	Non Motor Vehicle
3	249	265	277	206	159	92	50	1298	Fixed Object
4	563	521	420	264	186	103	52	2109	Run Off Road
5	38	33	29	17	11	6	2	136	Overturned
6	226	216	265	204	166	108	70	1255	Head-On
7	1648	1660	2004	1662	1449	1023	660	10106	Angle Collision
8	1235	1334	1679	1442	1204	727	343	7964	Rear End
TOTAL	4321	4184	4894	3974	3332	2165	1263	24133	

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	34.3	10.5	15.3	12.5	11.2	8.2	8.0
2	15.7	16.2	22.2	17.8	15.2	8.8	4.1
3	19.2	20.4	21.3	15.9	12.2	7.1	3.9
4	26.7	24.7	19.9	12.5	8.8	4.9	2.5
5	27.9	24.3	21.3	12.5	8.1	4.4	1.5
6	18.0	17.2	21.1	16.3	13.2	8.6	5.6
7	16.3	16.4	19.8	16.4	14.3	10.1	6.5
8	15.5	16.8	21.1	18.1	15.1	9.1	4.3

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	157.0	152.0	177.8	144.4	121.1	78.7	45.9
2	69.5	67.3	78.7	63.9	53.6	34.8	20.3
3	232.4	225.0	263.2	213.7	179.2	116.4	67.9
4	377.6	365.6	427.7	347.3	291.2	189.2	110.4
5	24.4	23.6	27.6	22.4	18.8	12.2	7.1
6	224.7	217.6	254.5	206.7	173.3	112.6	65.7
7	1809.5	1752.1	2049.4	1664.2	1395.3	900.6	528.9
8	1425.9	1380.7	1615.0	1311.4	1099.6	714.5	416.8

Table A-35
Hour of Day vs. Road Surface
(Involvements ÷ 100.)

417, 1022, 617, 490, 542, 310, 214, 2721, 1424,
 0101-0400 0401-0700 0701-1000 1001-1300 1301-1600 1601-1900 1901-2200 2201-0100

FREQUENCY TABLE

	1	2	3	4	5	6	7	8		
1	836	455	1768	2164	3276	3955	2193	1424	16071	Dry
2	286	179	641	706	1022	1261	747	498	5340	Wet
3	132	105	514	414	490	542	310	214	2721	Snowy or Icy
TOTAL	1254	739	2923	3284	4788	5758	3250	2136	24132	

ROW PERCENT TABLE

	1	2	3	4	5	6	7	8
1	5.2	2.8	11.0	13.5	20.4	24.6	13.6	8.9
2	5.4	3.4	12.0	13.2	19.1	23.6	14.0	9.3
3	4.9	3.9	18.9	15.2	18.0	19.9	11.4	7.9

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7	8
1	835.1	492.1	1946.6	2187.0	3188.6	3834.6	2164.4	1422.5
2	277.5	163.5	646.8	726.7	1059.5	1274.1	719.2	472.7
3	141.4	83.3	329.6	370.3	539.9	649.2	366.5	240.8

Table A-36
Age Group vs. Road Surface
(Involvements ÷ 100.)

72,4 80,2 82,2 71,1 91,1
 Less than 20 20-24 25-34 35-44 45-54 55-64 Greater than 64

FREQUENCY TABLE

	1	2	3	4	5	6	7		
1	2915	2739	3212	2602	2217	1472	913	16070	Dry
2	935	945	1109	895	741	467	248	5340	Wet
3	471	498	572	475	374	226	103	2719	Snowy or Icy
TOTAL	4321	4182	4893	3972	3332	2165	1264	24129	

ROW PERCENT TABLE

	1	2	3	4	5	6	7
1	18.1	17.0	20.0	16.2	13.8	9.2	5.7
2	17.5	17.7	20.8	16.8	13.9	8.7	4.6
3	17.3	18.3	21.0	17.5	13.8	8.3	3.8

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7
1	2877.8	2785.2	3258.8	2645.4	2219.1	1441.9	841.8
2	956.3	925.5	1082.9	879.0	737.4	479.1	279.7
3	486.9	471.3	551.4	447.6	375.5	244.0	142.4

Table A-37
 Hour of Day vs. Light Conditions
 (Involvements ÷ 100.)

	0101-0400	0401-0700	0701-1000	1001-1300	1301-1600	1601-1900	1901-2200	2201-0100		
	1,254	740	2,923	3,284	4,787	5,758	3,249	2,136	24,131	
FREQUENCY TABLE										
	1	2	3	4	5	6	7	8		
1	33	292	2814	3246	4750	4221	534	58	15948	Daylight
2	9	131	68	3	14	531	287	18	1061	Dawn or Dusk
3	1212	317	41	35	23	1006	2428	2060	7122	Darkness
TOTAL	1254	740	2923	3284	4787	5758	3249	2136	24131	

ROW PERCENT TABLE

	1	2	3	4	5	6	7	8
1	0.2	1.8	17.6	20.4	29.8	26.5	3.3	0.4
2	0.8	12.3	6.4	0.3	1.3	50.0	27.0	1.7
3	17.0	4.5	0.6	0.5	0.3	14.1	34.1	28.9

EXPECTED FREQUENCIES

	1	2	3	4	5	6	7	8
1	828.8	489.1	1931.8	2170.4	3163.7	3805.4	2147.2	1411.7
2	55.1	32.5	128.5	144.4	210.5	253.2	142.9	93.9
3	370.1	218.4	862.7	969.2	1412.8	1699.4	958.9	630.4

