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Title and sub-title

Young Driver Research Program - Mass Crash Data Analyses:
General Estimates System (1989) - North-West Region

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Abstract

This report is eighth in a series examining young versus older driver differences in car crashes for both Australian and USA data. Bivariate analyses examining the similarities and differences between drivers of various age groups involved in casualty crashes according to the General Estimates System for the Mid-West Region of the USA (1989) were conducted. Results are presented as a series of tables. The data was also examined for day and night-time differences. Conclusions and comparisons between the two data sets are not presented as the 11th report of the series provides an overview of all findings.

Key Words

YOUNG DRIVER, CRASH ANALYSIS, DAY, NIGHT, CAR DRIVER

Notes

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FEDERAL GOVERNMENT'S ROAD SAFETY INITIATIVE

YOUNG DRIVER RESEARCH PROGRAM -

MASS CRASH DATA ANALYSIS

GENERAL ESTIMATES SYSTEM (1989) - MID-WEST REGION

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FOR THE FEDERAL OFFICE OF ROAD SAFETY

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1 CHARACTERISTICS OF YOUNG DRIVER CRASHES - MASS CRASH DATA ANALYSIS

1.1 INTRODUCTION

The Monash University Accident Research Centre was commissioned by the Federal Office of Road Safety to undertake the Young Driver Research Program as part of the Federal Government's Road Safety Initiative.

One of the research projects in the Young Driver Research Program involved identifying the characteristics of young driver crashes through supplementing previous literature reviews which identify the known characteristics of young driver crashes, behaviour and performance from experimental, field and evaluation studies.

In addition, this project involved deriving information from a systematic analysis of Australian and US mass crash data to complement information from the literature review. The results of this analysis are presented in a series of reports which are outlined below:

Australian data

Report Nº	Data File	State	Year(s)
1	Casualty crash	New South Wales	1986-1990
	"	Victoria	1984-1989
2	"	South Australia	1986-1990
3	FORS Fatality	New South Wales	1988
4	"	Victoria	
5	"	South Australia	"
6	"	NSW, Victoria and SA combined	

USA data

Report Nº	Data File	US Region	Year(s)
7	GES	North-west	1989
8	"	Mid-west	"
9	"	West	"
10	"	South	"

Overview report

Report Nº	
11	Reviews the main findings presented in Report Nºs 1 to 10

The tables presented in the first report are accompanied by a discussion of results highlighting the main findings contained in that report, as well as noting some of the difficulties inherent in analysis of large data sets. Reports 2 to 10 contain results presented in tabular form only, although a brief description of the data used is given. Report Nº 11 contains an overview of results comprising two sections: the first compares results with the main literature findings (see Macdonald; 1994a 1994b); the second notes similarities and differences in results between States and compared to the US data.

This report (Nº 8 in the series) presents results for casualty crashes which occurred in the Mid-western region of the US in 1989, and outlines, in turn:

- the role of mass crash data in identifying problem areas for young driver safety
- the data set used in the study
- the methodology used
- results:
  - general bivariate patterns
  - daytime vs night-time young driver crashes

This study provides a systematic analysis and review of young driver crashes as represented in mass crash data; to date only ad-hoc, fragmented investigations of young driver crashes using mass crash data have been undertaken. This series of reports, therefore, serve as a comprehensive source document on young driver crashes.

1.2 USING MASS CRASH DATA

Mass crash data provide the most complete and readily available details about crash events, in terms of:

- the temporal and spatial details about the crash incident (where and when it occurred)
- driver (and other involved road user) demographics
- environmental conditions when the crash occurred
- the sequence of events preceding the crash (crash types), including the traffic context and vehicle/road user actions.

Due to reporting criteria, these data are also more representative of crashes involving injury (particularly more serious injury) to the road user(s) involved in the crash than of less severe crashes (eg. property damage only crashes).

Information derived from analysis of mass crash data is essential for identifying target areas or 'problems' where countermeasures should be directed. Analysis of mass crash data allows:

- the magnitude of the 'problem' to be ascertained
- the stability of the 'problem' to be determined
- the generality/specificity of the 'problem' to be determined (eg. Are both males and females affected? Does the 'problem' occur at both day and night; in metropolitan and rural locations?).

In using mass crash data to describe the young driver 'problem' and identify target areas, it is important to balance the need to disaggregate the crash problem into homogeneous sub-problems (with similar characteristics), with the number of levels by which the problem is disaggregated. The more homogeneous the sub-problem, the more likely it is that an appropriate countermeasure can be developed that will be effective in reducing that sub-problem; however, in terms of cost-effectiveness, the sub-problem must be sufficiently large for the cost of the countermeasure to be distributed amongst sub-problem members to allow benefits of the countermeasure to, at least, match its costs (Cameron, 1990).

Countermeasures are also more likely to be cost-effective if they target a sub-problem which has a higher than average risk of crash involvement, or of severe injury when involved (Cameron, 1990). The lack of comparable exposure data to determine crash or severity risk of sub-problems compared with average risks, however, means that 'high' risk sub-problems cannot be identified directly in this study.

Information derived from analysis of mass crash data is inherently descriptive in nature; that is, it does not provide information regarding the causal mechanisms or factors leading to a crash occurring. Road user 'errors' or factors causally related to the behaviour and context identified in a crash may only be inferred.

To be successful, a countermeasure must either:

- control and decrease the opportunity for the occurrence of behaviour related to crash problem types via external impositions, or

- 'correct' the causes and behavioural problem related to the critical actions leading to the crash.

Although the former approach has been applied successfully to other road safety problems, it has not led to significant gains in the young driver area. This is because the over-involvement of young drivers in crashes is **not** limited to a small number of crash types (where each could be addressed by a specific strategy), but is a more general phenomenon (Drummond & Triggs, 1991).

In the case of young driver safety, the latter approach is more likely to lead to more **efficient** countermeasures (those which provide greater overlap between a behavioural problem and a countermeasure). However, this can only be achieved by obtaining a better understanding of the behavioural problem (a product of the interaction between performance and motivational factors). A better understanding of the driving process, skilled performance and motivational factors is the first step to achieving this. A description of the behavioural problem may lead to effective countermeasures, but these will be generally less efficient.

Notwithstanding the limitations of mass crash data analysis outlined above, the identification of sub-problems by their relative incidence within the population of young driver crashes is an important criterion for selecting targets for cost-beneficial countermeasures and understanding/interpreting other young driver performance findings.

2 GENERAL ESTIMATES SYSTEM (1989) - MID-WEST REGION - BIVARIATE ANALYSES

2.1 INTRODUCTION

Data collection for the General Estimates System (GES) file began in 1988 as an initiative by the Washington D.C. based National Highway Traffic Safety Administration (NHTSA). The file contains data on road crashes involving all types of motor vehicles.

The GES obtains its data from a nationally representative probability sample selected from an estimated 6.6 million police-reported crashes which occur annually in the United States, involving fatalities, injuries or major property damage. The 1989 sample data file comprised a subset of approximately 44,000 randomly selected Police Accident Reports.

Selection of this sample of Police Accident Reports followed three stages. The first stage involved the sampling of geographic *areas* called Primary Sampling Units (PSUs) from across the United States. A PSU is defined as either a central city, a county surrounding a central city, an entire county, or a group of contiguous counties. The U.S. was divided into 1,195 of these PSUs, which were then grouped into four geographic *regions*. These were the Northwestern, Midwestern, Southern and Western regions. Within each region, PSUs were further categorized into three types representing large central cities, large suburban areas, and all others.

In the second stage of selection, a sample of police jurisdictions was drawn from within the geographic areas. This was a probability sample from within each PSU, where the probability of a jurisdiction being selected was proportional to the number of crashes investigated within that jurisdiction. Therefore, as the number of reported crashes increased, the probability of selecting the particular jurisdiction also increased (an average of six or seven jurisdictions were selected from each PSU).

Stage three of the process involved the selection of Police Accident Reports from within the sampled jurisdictions. Accident Reports were classified into one of three categories comprising:

- all crashes involving a 'towed-away' vehicle
- all crashes not involving a 'towed-away' vehicle, but involving injury to at least one person
- all other crashes.

A systematic sample of crashes was selected from within each of the above categories, based on different sampling ratios. Where the number of police investigated crashes within any particular jurisdiction were too numerous to list, a subsample of Police Accident Reports were listed, and the final sample drawn from among these.

Data coded in the abovementioned form for the year 1989 was obtained from the NHTSA, and prior to being examined in bivariate analyses (age by variable of interest), was modified in the following manner:

- As the focus of primary interest was young *car* drivers, a driver-based file was created Included were drivers of cars, station-wagons, coupes, hatchbacks, convertibles, vans, utilities, pickups and 4WD vehicles.

- Most casualty crash files contain a variable which stipulates the severity of the crash ranging from a fatality to property damage, but this system creates problems in making across database comparisons due to differing reporting requirements for the lower severity levels. Because of this, it has been the practice for this series of reports to only include the three most severe crash levels in the analysis, which for the US data are: fatalities, incapacitating injuries and nonincapacitating injuries.

- Age of drivers was grouped as follows: 0 to 15, 16 to 25 (16 being the minimum licensing age in the US), 26 to 40 , 41 to 55 and 56 to 98 years (the latter being the oldest age found in the data). The benefit of this grouping is that there are only four age group categories of licensed drivers which facilitates presentation and discussion of results. The term 'young drivers' refers only to drivers aged between 16 and 25 years.

- Reporting of all categories coded within some variables (eg. first harmful event) was in some cases impractical due to low frequency counts on certain categories. The general practice has been to present categories with a reasonable number of coded cases, and collapse those with particularly low frequencies. A list of variables which have been collapsed for this reason is presented in Appendix A.

- All 'not known' cases (eg. not known age group, not known day of week, etc) were collapsed with other missing cases.

2.2 TABLES - BIVARIATE ANALYSES

The tables on the following pages present percentages for each variable of interest distributed by age group. As the GES file, unlike the Australian data, consists of only a *sample* of crashes from the US for 1989, it was considered more appropriate to present percentage tables in the main body of the report instead of frequency tables as was the case for the Australian data. Frequency tables for the GES data have, however, been included as Appendices. Variables have been grouped under headings which are consistent with those used in the first report, and page numbers have been included for convenience.

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (CRASH LEVEL) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-incapacitating injury	90.9%	70.5%	70.0%	67.4%	67.9%	69.6%
Incapacitating injury	9.1%	26.5%	27.2%	29.3%	28.6%	27.4%
Fatal injury	0.0%	2.6%	2.3%	2.2%	2.9%	2.5%
Unknown injury severity	0.0%	0.4%	0.4%	1.1%	0.7%	0.5%
	0.3%	39.0%	33.1%	15.0%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (VEHICLE LEVEL) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No injury	27.3%	28.9%	34.0%	36.3%	35.2%	32.5%
Possible injury	0.0%	6.5%	6.5%	9.8%	7.0%	7.0%
Non-incapacitating injury	63.6%	46.6%	43.3%	35.9%	40.3%	43.2%
Incapacitating injury	9.1%	15.9%	14.6%	16.0%	15.0%	15.4%
Fatal injury	0.0%	1.6%	1.4%	1.5%	1.5%	1.5%
Injured - severity unknown	0.0%	0.4%	0.2%	0.6%	0.9%	0.4%
	0.3%	39.1%	33.1%	15.0%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF VEHICLES INVOLVED BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	72.7%	36.5%	29.3%	28.1%	24.5%	31.5%
2	27.3%	53.7%	54.7%	53.4%	59.3%	54.6%
3	0.0%	7.1%	11.7%	13.6%	12.9%	10.3%
4	0.0%	2.2%	3.6%	4.0%	2.8%	3.0%
5	0.0%	0.3%	0.5%	0.5%	0.4%	0.4%
6	0.0%	0.1%	0.2%	0.4%	0.0%	0.2%
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN CRASH BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	0.0%	1.1%	1.4%	1.1%	0.4%	1.1%
1	63.6%	54.2%	55.9%	55.8%	52.1%	54.8%
2	18.2%	26.9%	26.8%	25.2%	26.7%	26.6%
3	18.2%	10.5%	9.5%	10.3%	12.3%	10.4%
4	0.0%	4.6%	3.6%	4.2%	6.3%	4.4%
5 or more	0.0%	2.6%	2.8%	3.4%	2.2%	2.7%
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN VEHICLE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	27.3%	29.8%	35.1%	37.3%	35.7%	33.4%
1	36.4%	51.8%	50.1%	49.6%	49.0%	50.5%
2	27.3%	13.6%	10.9%	9.4%	13.3%	12.1%
3	9.1%	2.9%	2.6%	2.5%	1.3%	2.6%
4 or more	0.0%	1.9%	1.3%	1.1%	0.7%	1.4%
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF PERSONS INVOLVED (IN CRASH) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	18.2%	15.3%	13.1%	8.8%	7.9%	12.7%
2	54.5%	33.2%	33.2%	38.1%	37.3%	34.5%
3	9.1%	23.0%	23.1%	26.0%	26.2%	23.8%
4	9.1%	13.6%	13.8%	11.7%	13.2%	13.3%
5	9.1%	8.0%	7.5%	7.7%	5.8%	7.5%
6	0.0%	3.9%	4.7%	3.5%	5.1%	4.2%
7 or more	0.0%	3.0%	4.7%	4.2%	4.6%	3.9%
	0.3%	39.3%	33.0%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DAY OF WEEK BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Monday	33.3%	13.1%	12.7%	15.0%	11.3%	13.1%
Tuesday	11.1%	15.0%	14.6%	17.8%	17.2%	15.6%
Wednesday	0.0%	16.7%	17.0%	14.4%	13.5%	16.0%
Thursday	22.2%	17.3%	17.5%	14.4%	19.4%	17.2%
Friday	11.1%	19.1%	21.0%	20.2%	21.9%	20.3%
Saturday	22.2%	18.8%	17.2%	18.0%	16.7%	17.9%
Sunday	22.2%	15.0%	11.7%	10.6%	12.3%	12.9%
	0.3%	38.3%	33.6%	15.3%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
WEEKDAY VERSUS WEEKEND BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Weekday	63.6%	70.6%	74.1%	74.1%	74.2%	72.7%
Weekend	36.4%	29.4%	25.9%	25.9%	25.8%	27.3%
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
12 am - 6 am	18.2%	14.6%	10.2%	7.4%	0.9%	10.4%
6 am - 12 pm	0.0%	18.9%	23.8%	21.8%	26.2%	21.8%
12 pm - 6 pm	54.5%	36.0%	38.7%	47.4%	49.2%	40.3%
6 pm - 12 am	27.3%	30.5%	27.3%	23.4%	23.7%	27.5%
	0.3%	39.0%	33.3%	15.0%	12.4%	100.0%

Missing cases = 146

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY WEEKDAY/WEEKEND BY AGE GROUP

N=3812

WEEKDAY

	0-15	16-25	26-40	41-55	56-98	Total
12 am - 6 am	14.3%	7.9%	5.8%	5.1%	0.9%	5.9%
6 am - 12 pm	0.0%	22.4%	26.8%	23.8%	27.2%	24.6%
12 pm - 6 pm	42.9%	37.8%	40.4%	50.0%	47.6%	41.8%
6 pm - 12 am	42.9%	31.9%	27.1%	21.1%	24.3%	27.7%
	0.3%	37.8%	33.9%	15.3%	12.7%	100.0%

WEEKEND

	0-15	16-25	26-40	41-55	56-98	Total
12 am - 6 am	25.0%	30.5%	22.8%	14.0%	0.9%	22.2%
6 am - 12 pm	0.0%	10.5%	15.2%	16.1%	23.1%	14.2%
12 pm - 6 pm	75.0%	31.7%	33.9%	39.9%	53.8%	36.3%
6 pm - 12 am	0.0%	27.4%	28.2%	30.1%	22.2%	27.3%
	0.4%	42.0%	31.6%	14.3%	11.7%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RURAL/URBAN BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Urban	54.5%	33.7%	42.1%	40.9%	40.3%	38.4%
10% Rural	0.0%	4.9%	6.7%	7.4%	7.2%	6.1%
20% Rural	9.1%	22.3%	20.1%	22.3%	20.1%	21.3%
30% Rural	9.1%	10.4%	8.8%	9.6%	7.2%	9.4%
60% Rural	9.1%	22.8%	18.5%	15.8%	16.4%	19.5%
70% Rural	18.2%	6.0%	3.8%	4.0%	8.8%	5.3%
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SPEED LIMIT IN MILES (AND KM/H) BY AGE GROUP

N=3812

		0-15	16-25	26-40	41-55	56-98	Total
0	(car-park, etc)	0.0%	0.1%	0.4%	0.7%	0.0%	0.3%
10	(17 km/h)	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
15	(24 km/h)	0.0%	1.1%	0.9%	0.4%	0.0%	0.8%
20	(32 km/h)	0.0%	2.4%	1.8%	1.4%	2.4%	2.1%
25	(40 km/h)	28.6%	18.6%	16.4%	17.9%	19.4%	17.9%
30	(48 km/h)	28.6%	5.6%	7.7%	7.7%	8.5%	7.0%
35	(56 km/h)	0.0%	18.8%	23.8%	19.6%	30.2%	21.9%
40	(64 km/h)	0.0%	4.7%	6.4%	6.7%	5.2%	5.6%
45	(72 km/h)	14.3%	12.3%	10.7%	10.9%	10.9%	11.4%
50	(80 km/h)	0.0%	4.9%	4.2%	3.5%	4.0%	4.3%
55	(89 km/h)	28.6%	30.6%	27.1%	30.2%	19.0%	28.0%
65	(105 km/h)	0.0%	0.7%	0.3%	1.1%	0.4%	0.6%
		0.3%	40.5%	33.0%	14.0%	12.2%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
INTERSTATE HIGHWAY BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No (not on highway)	100.0%	95.8%	94.7%	93.1%	98.0%	95.3%
Yes (on highway)	**0.0%**	**4.2%**	**5.3%**	**6.9%**	**2.0%**	**4.7%**
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LAND USE BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Population 25000-50000	9.1%	10.7%	12.3%	12.0%	11.1%	11.5%
Population 50000-100000	27.3%	7.3%	9.2%	10.7%	12.9%	9.2%
Population 100000+	18.2%	16.5%	19.3%	18.0%	17.0%	17.7%
Other Area	45.5%	65.5%	59.3%	59.3%	59.0%	61.6%
	0.3%	39.1%	33.3%	14.9%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY ALIGNMENT BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Straight	63.6%	89.0%	90.4%	91.1%	93.9%	90.3%
Curve	36.4%	11.0%	9.6%	8.9%	6.1%	9.7%
	0.3%	39.0%	33.3%	15.0%	12.3%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY PROFILE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Level	87.5%	74.8%	75.9%	80.2%	77.4%	76.3%
Grade	12.5%	24.3%	21.7%	18.6%	20.2%	22.1%
Hillcrest	0.0%	0.9%	2.3%	1.2%	2.5%	1.6%
	0.4%	40.0%	33.4%	13.5%	12.7%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFICWAY FLOW BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Two way undivided	80.0%	76.1%	70.6%	69.3%	81.4%	73.9%
Divided highway	20.0%	20.6%	25.0%	27.1%	16.3%	22.6%
Oneway	0.0%	3.2%	4.3%	3.6%	2.4%	3.6%
	0.2%	38.7%	33.7%	15.1%	12.3%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATION TO ROADWAY BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
On roadway	36.4%	74.7%	82.3%	85.5%	89.5%	80.6%
On shoulder/parking lane	9.1%	2.1%	2.0%	1.3%	1.3%	1.9%
Off roadway/shoulder/parking lane	**54.5%**	**22.7%**	**15.2%**	**12.7%**	**8.6%**	**17.0%**
On median	0.0%	0.4%	0.4%	0.2%	0.2%	0.4%
Other	0.0%	0.1%	0.2%	0.4%	0.4%	0.2%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATIONSHIP TO JUNCTION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-junction	36.4%	44.2%	41.0%	43.7%	33.3%	41.7%
Intersection	27.3%	37.3%	37.3%	37.7%	44.7%	38.3%
Intersection related	27.3%	9.5%	11.0%	9.3%	9.5%	10.0%
Interchange area	0.0%	0.5%	0.2%	0.0%	0.0%	0.2%
Driveway/alley	9.1%	7.3%	9.0%	8.2%	11.9%	8.6%
Entrance/exit ramp	0.0%	0.3%	0.8%	0.9%	0.0%	0.5%
Railway crossing	0.0%	0.5%	0.3%	0.2%	0.7%	0.4%
Other	0.0%	0.3%	0.2%	0.0%	0.0%	0.2%
	0.3%	39.1%	33.2%	14.9%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF TRAVEL LANES BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	14.3%	0.8%	2.0%	1.7%	0.8%	1.4%
2	71.4%	60.1%	54.7%	54.0%	53.2%	56.5%
3	14.3%	8.6%	8.3%	13.3%	8.7%	9.2%
4	0.0%	19.9%	23.0%	18.5%	22.6%	21.0%
5	0.0%	8.5%	9.9%	7.8%	13.1%	9.4%
6 or more	0.0%	2.2%	2.2%	4.6%	1.5%	2.5%
	0.2%	38.8%	33.1%	15.1%	12.8%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC CONTROL DEVICE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No controls	81.8%	62.0%	60.7%	63.6%	55.2%	61.0%
Traffic signals						
with pedestrian signal	0.0%	0.0%	0.2%	0.2%	0.0%	0.1%
pedestrian signal not known	9.1%	20.9%	22.0%	21.5%	25.7%	21.9%
flashing traffic signal/beacon	0.0%	0.8%	0.5%	0.5%	1.1%	0.7%
other traffic signal	0.0%	0.7%	1.2%	0.9%	0.4%	0.9%
unknown traffic signal	0.0%	0.1%	0.1%	0.2%	0.2%	0.1%
Regulatory, school zone or warning signs						
stop sign	9.1%	12.9%	13.6%	12.6%	15.2%	13.4%
yield sign	0.0%	0.8%	1.0%	0.0%	0.7%	0.7%
school zone sign	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%
warning sign	0.0%	0.6%	0.2%	0.0%	0.0%	0.3%
other sign	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Miscellaneous (not at railroad crossing)	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
At railroad grade crossing						
active devices	0.0%	0.3%	0.2%	0.2%	0.9%	0.3%
passive devices	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%
Traffic controls present - no details	0.0%	0.5%	0.2%	0.4%	0.4%	0.4%
Other traffic controls	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	0.3%	39.1%	33.1%	15.1%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC DEVICE FUNCTIONING BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No controls	81.8%	63.0%	61.9%	64.3%	56.0%	62.0%
Device not functioning	0.0%	0.2%	0.4%	0.6%	0.4%	0.4%
Device functioning	18.2%	36.8%	37.7%	35.2%	43.5%	37.6%
	0.3%	39.1%	33.0%	15.1%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SEX OF DRIVER BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Male	45.5%	59.3%	55.3%	55.8%	58.2%	57.3%
Female	54.5%	40.7%	44.7%	44.2%	41.8%	42.7%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL USE (DRIVER) BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	9.1%	10.0%	11.0%	6.6%	4.0%	9.1%
No alcohol involved	90.9%	90.0%	89.0%	93.4%	96.0%	90.9%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL INVOLVEMENT IN CRASH BY AGE GROUP

N = 3812

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	9.1%	14.2%	14.8%	11.4%	8.3%	13.2%
No alcohol involved	90.9%	85.8%	85.2%	88.6%	91.7%	86.8%
	0.3%	39.0%	33.3%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER PHYSICAL/MENTAL IMPAIRMENT BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No impairment	90.9%	93.8%	94.6%	96.9%	95.1%	94.7%
Drowsy/fatigued	0.0%	2.1%	0.9%	0.7%	1.1%	1.4%
Ill/blackout	0.0%	0.3%	0.1%	0.0%	1.3%	0.3%
Emotional	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Drugs/medication	0.0%	0.0%	0.0%	0.4%	0.4%	0.1%
Illicit drugs	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
Deaf	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Hit-and-run vehicle	0.0%	0.8%	1.0%	0.2%	0.2%	0.7%
Physical/mental impairment - no details	0.0%	0.3%	0.4%	0.0%	0.4%	0.3%
Other physical/mental impairment	9.1%	2.5%	2.8%	1.8%	1.3%	2.4%
	0.3%	39.0%	33.1%	15.1%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER'S ACTION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Not avoiding/swerving	100.0%	94.6%	95.0%	96.4%	97.8%	95.4%
Severe crosswind	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Slippery or loose surface	0.0%	1.7%	1.6%	1.4%	0.7%	1.5%
Blowout	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Ruts/holes/bumps	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Animals on road	0.0%	0.3%	0.4%	0.2%	0.4%	0.4%
Vehicle on road	0.0%	1.2%	0.7%	0.4%	0.4%	0.8%
Phantom vehicle	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Pedestrian/cyclist/non-motorist	0.0%	0.3%	0.4%	0.9%	0.2%	0.4%
Water/snow/oil slick	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%
Hit-and-run vehicle	0.0%	1.2%	1.5%	0.4%	0.2%	1.0%
Avoiding action - no details	0.0%	0.1%	0.1%	0.4%	0.0%	0.1%
Other cause	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VIOLATIONS CHARGED BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
None	18.2%	55.0%	68.7%	73.7%	72.4%	64.4%
Alcohol/drugs	0.0%	4.7%	5.1%	3.8%	0.9%	4.2%
Speeding	9.1%	5.0%	3.4%	2.5%	2.0%	3.7%
Alcohol or drugs and speeding	0.0%	0.1%	0.6%	0.4%	0.0%	0.3%
Reckless driving	0.0%	4.1%	2.1%	1.3%	0.4%	2.5%
Driving with suspended licence	0.0%	0.8%	0.4%	0.0%	0.0%	0.4%
Failure to giveway	18.2%	9.2%	5.7%	4.3%	12.1%	7.7%
Running traffic controls/stop sign	0.0%	4.6%	1.6%	3.6%	4.8%	3.5%
Other violation	54.5%	16.6%	12.3%	10.3%	7.5%	13.2%
	0.3%	39.0%	33.2%	15.1%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF OCCUPANTS IN VEHICLE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	45.5%	57.4%	61.3%	64.5%	61.8%	60.3%
2	36.4%	26.7%	21.1%	22.4%	28.3%	24.4%
3	18.2%	7.1%	8.9%	5.8%	2.6%	7.0%
4	0.0%	4.3%	3.5%	3.6%	1.8%	3.6%
5 or more	0.0%	1.3%	2.2%	1.1%	1.5%	1.6%
Unknown (only injured reported)	0.0%	3.3%	3.0%	2.5%	3.9%	3.2%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAVEL SPEED OF VEHICLE IN MILES (AND KM/H) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Stationary	0.0%	20.1%	34.8%	46.0%	33.9%	31.0%
01 - 12 (01 - 20 km/h)	50.0%	11.3%	11.3%	6.9%	14.2%	11.0%
13 - 24 (21 - 40 km/h)	0.0%	15.3%	15.2%	10.9%	19.7%	15.0%
25 - 35 (41 - 60 km/h)	50.0%	16.3%	12.0%	12.6%	13.4%	13.9%
36 - 50 (61 - 80 km/h)	0.0%	18.5%	16.8%	13.2%	15.0%	16.6%
51 - 60 (81 - 100 km/h)	0.0%	15.5%	7.9%	9.2%	3.1%	10.3%
Over 60 (>100 km/h)	0.0%	3.0%	2.1%	1.1%	0.8%	2.1%
	0.2%	36.8%	35.2%	16.1%	11.7%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MODEL YEAR BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1986 - 1989	9.1%	26.4%	34.5%	42.4%	37.7%	32.8%
1981 - 1985	36.4%	34.0%	32.3%	30.3%	37.2%	33.3%
1976 - 1980	54.5%	31.9%	26.8%	19.8%	17.8%	26.7%
1971 - 1975	0.0%	4.8%	4.6%	5.7%	5.1%	4.9%
1974 and earlier	0.0%	2.8%	1.7%	1.8%	2.2%	2.2%
	0.3%	39.0%	33.2%	15.0%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE DEFECTS BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No vehicle defects	100.0%	98.0%	98.1%	99.1%	98.2%	98.2%
Tyres	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%
Brakes	0.0%	0.2%	0.2%	0.2%	0.4%	0.2%
Steering	0.0%	0.1%	0.2%	0.2%	0.0%	0.1%
Suspension	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Other lights	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Hit-and-run vehicle	0.0%	1.1%	1.3%	0.4%	0.4%	1.0%
Vehicle defects - no details	0.0%	0.3%	0.1%	0.0%	0.4%	0.2%
Other vehicle defect	0.0%	0.1%	0.1%	0.2%	0.4%	0.1%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LIGHT CONDITIONS BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Daylight	54.5%	58.3%	64.9%	71.4%	80.1%	65.1%
Dark	18.2%	17.3%	12.4%	11.5%	6.8%	13.5%
Dark but lighted	18.2%	21.5%	18.2%	13.5%	10.6%	17.8%
Dawn	0.0%	0.5%	1.6%	1.3%	0.4%	1.0%
Dusk	9.1%	1.1%	1.8%	0.9%	1.3%	1.4%
Dawn or dusk	0.0%	1.3%	1.1%	1.5%	0.7%	1.2%
	0.3%	39.0%	33.3%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ATMOSPHERIC CONDITIONS BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No adverse conditions	90.9%	81.9%	80.6%	77.6%	84.6%	81.2%
Rain	9.1%	11.8%	12.4%	13.8%	11.2%	12.2%
Sleet	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Snow	0.0%	5.0%	5.9%	7.3%	4.0%	5.5%
Fog	0.0%	1.1%	0.8%	1.1%	0.0%	0.9%
Other	0.0%	0.1%	0.2%	0.2%	0.2%	0.1%
	0.3%	39.0%	33.2%	15.0%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VISUAL OBSTRUCTION BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No obstruction	100.0%	96.8%	96.4%	96.7%	96.3%	96.6%
Precipitation	0.0%	0.1%	0.1%	0.5%	0.2%	0.2%
Glare/sun/headlights	0.0%	0.1%	0.1%	0.5%	0.2%	0.2%
Curve/hill/embankment	0.0%	0.1%	0.4%	0.0%	0.4%	0.2%
Building/billboard	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
Trees/crops/vegetation	0.0%	0.2%	0.1%	0.2%	0.0%	0.1%
Moving vehicle	0.0%	0.9%	0.7%	0.9%	1.3%	0.9%
Parked vehicle	0.0%	0.1%	0.4%	0.4%	0.9%	0.4%
Splash/spray from passing vehicle	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
Inadequate demister	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%
Obstructing angles on vehicle	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Broken/dirty windscreen	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
Hit-and-run vehicle	0.0%	1.1%	1.4%	0.4%	0.2%	1.0%
Vision obscured - no details	0.0%	0.1%	0.1%	0.2%	0.2%	0.1%
Other obstruction	0.0%	0.1%	0.1%	0.2%	0.0%	0.1%
	0.3%	39.0%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROAD SURFACE CONDITION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Dry	63.6%	69.8%	66.3%	67.2%	75.6%	68.9%
Wet	27.3%	19.6%	21.4%	22.6%	16.9%	20.3%
Snow/slush	0.0%	0.9%	1.3%	0.6%	0.9%	1.0%
Ice	9.1%	8.8%	10.4%	9.7%	6.2%	9.1%
Sand/dirt/oil	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Other	0.0%	0.8%	0.6%	0.0%	0.4%	0.5%
	0.3%	39.0%	33.3%	14.9%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE MANOEUVRE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Going straight	36.4%	61.2%	59.8%	60.1%	60.3%	60.4%
Slowing/stopping	9.1%	1.7%	1.6%	2.0%	1.3%	1.7%
Starting in traffic lane	0.0%	0.3%	0.3%	0.0%	0.4%	0.3%
Stopped in traffic lane	0.0%	5.5%	10.9%	14.6%	9.5%	9.2%
Passing/overtaking	0.0%	1.3%	0.9%	0.4%	0.2%	0.9%
Leaving parking spot	0.0%	0.0%	0.1%	0.0%	0.2%	0.1%
Avoiding animal/pedestrian/object/vehicle	0.0%	2.5%	2.9%	2.7%	1.8%	2.6%
Turning right	0.0%	3.0%	2.2%	2.6%	1.8%	2.5%
Turning left	18.2%	11.4%	10.8%	10.2%	18.5%	11.9%
U-turn	0.0%	0.3%	0.1%	0.0%	0.4%	0.2%
Reversing	0.0%	0.3%	0.5%	0.4%	1.5%	0.5%
Changing lanes/merging	0.0%	1.3%	1.7%	0.7%	0.0%	1.2%
Negotiating curve	9.1%	3.5%	2.9%	3.5%	0.2%	2.9%
Other	27.3%	7.8%	5.2%	2.9%	3.8%	5.7%
	0.3%	39.0%	33.2%	15.1%	12.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - *MIDWEST REGION
MANNER OF COLLISION BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No collision with moving vehicle	72.7%	37.3%	30.4%	29.1%	25.6%	32.4%
Rear-end	0.0%	17.1%	22.5%	26.7%	16.8%	20.3%
Head-on	0.0%	3.9%	4.2%	3.1%	3.3%	3.8%
Angle	18.2%	39.5%	40.9%	39.7%	51.9%	41.5%
Sideswipe, same direction	9.1%	0.9%	0.9%	0.7%	0.9%	0.9%
Sideswipe, opposite direction	0.0%	1.2%	1.0%	0.7%	1.3%	1.1%
Other	0.0%	0.0%	0.1%	0.0%	0.2%	0.1%
	0.3%	39.0%	33.3%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
FIRST HARMFUL EVENT BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover	0.0%	2.2%	1.1%	1.3%	1.1%	1.6%
Other non-collision	0.0%	0.8%	0.7%	0.2%	0.2%	0.6%
Collision with object - not fixed						
Pedestrian	0.0%	7.1%	8.1%	8.2%	8.1%	7.7%
Cycle or cyclist	18.2%	4.0%	4.6%	7.1%	6.6%	5.0%
Motor vehicle on road	27.3%	62.9%	69.7%	71.1%	74.5%	67.7%
Motor vehicle parked	9.1%	1.7%	1.6%	0.9%	0.7%	1.5%
Other	0.0%	1.2%	0.8%	0.5%	1.1%	1.0%
Collision with fixed object						
Guardrail	0.0%	1.5%	1.3%	1.5%	0.4%	1.3%
Post/pole/support	9.1%	5.2%	5.0%	2.9%	2.6%	4.5%
Culvert/ditch	9.1%	4.7%	2.1%	2.2%	1.8%	3.1%
Curb	0.0%	1.0%	0.5%	0.4%	0.9%	0.7%
Embankment	0.0%	0.3%	0.2%	0.2%	0.0%	0.2%
Wall	0.0%	0.6%	0.3%	0.2%	0.0%	0.4%
Tree	27.3%	4.2%	2.5%	1.8%	0.4%	2.9%
Other fixed object	0.0%	2.7%	1.6%	1.6%	1.5%	2.0%
	0.3%	39.1%	33.2%	15.0%	12.4%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MOST HARMFUL EVENT (VEHICLE LEVEL) BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover	0.0%	4.7%	2.2%	2.5%	1.1%	3.1%
Other non-collision	0.0%	0.8%	0.5%	0.0%	0.2%	0.5%
Collision with object - not fixed						
Pedestrian	0.0%	7.4%	8.4%	8.4%	8.0%	7.9%
Cycle/cyclist	18.2%	4.3%	4.8%	7.4%	6.8%	5.3%
Motor vehicle on road	27.3%	66.0%	70.5%	72.4%	76.0%	69.7%
Parked motor vehicle	9.1%	2.0%	1.6%	1.0%	0.5%	1.5%
Other object not fixed	0.0%	1.0%	0.7%	0.4%	0.9%	0.8%
Collision with fixed object						
Guardrail	0.0%	0.8%	1.1%	1.0%	0.2%	0.9%
Post/pole/support	9.1%	3.9%	4.5%	2.5%	2.5%	3.7%
Culvert/ditch	9.1%	2.8%	1.3%	1.0%	0.9%	1.8%
Tree	27.3%	4.0%	2.8%	1.7%	0.9%	2.9%
Other fixed object	0.0%	2.3%	1.5%	1.9%	1.8%	1.9%
	0.3%	38.2%	33.7%	15.2%	12.6%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE ROLE BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Single vehicle crashes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
non collision	0.0%	2.9%	1.6%	1.6%	1.3%	2.1%
striking	63.6%	31.3%	24.6%	22.6%	18.0%	26.2%
struck	9.1%	2.2%	3.0%	3.6%	4.8%	3.1%
Multi-vehicle crashes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
non collision	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%
striking	0.0%	35.1%	33.4%	31.4%	30.8%	33.3%
struck	27.3%	25.6%	32.6%	33.9%	38.7%	30.8%
both	0.0%	2.8%	4.5%	6.6%	6.2%	4.3%
	0.3%	39.1%	33.2%	14.9%	12.4%	100.0%

3 GENERAL ESTIMATES SYSTEM CASUALTY FILE (1989) - MID-WEST REGION: DAY/NIGHT COMPARISONS

Bivariate analyses which examined the similarities and differences between drivers of various age groups involved in reported casualty crashes in the USA for 1989 were reported in the previous chapter. There are numerous ways in which the data can be analysed and an important consideration is any age group differences arising as a result of the time of day, given the increased risk of night-time driving relative to driving during the day. The following chapter re-examines the casualty crash data with the following modifications:

- 'day' was operationally defined as the period between 6.00 am and 5.59 pm while 'night' was defined was defined as the period between 6.00 pm and 5.59 am.

- all 'not known' cases (eg. not known age group, not known day of week, etc) were collapsed with all other missing cases. Missing and unknown cases make up approximately 10% of the total sample for most variables.

3.1 INTERPRETATION OF TABLES

A consistent pattern emerges when making day/night comparisons of crash involvement for young drivers by each variable. On average, 31-37% of drivers involved in daytime crashes were young drivers, while in night-time crashes they represented 42-47%. This pattern appears to hold for the US as well as Australian data.

When making day night comparisons from percentage tables, it is important also to refer to frequency tables (Appendix 3) in order to gain an idea of the sample sizes which these percentages represent. The following example has been included to illustrate the kind of supplementary information which can be extracted from frequency tables.

This example relates to the variable 'Relation to roadway' which indicates the location of the first harmful impact in the crash. From the frequency table (Appendix 3, p.156) it is apparent that from a total of 265 drivers involved in daytime crashes in the 'off roadway/shoulder/parking lane' category, 121 (46%) were young drivers. For night-time crashes in this 'off roadway' category, the total number of drivers increased to 356, which was also reflected in an increase in the number of young drivers involved (202, representing 57% of the night-time total). Hence, in absolute terms, there was an increase of about 67% in the number of young drivers involved in night-time, 'off roadway' crashes. This compares with a night-time increase of 53% for drivers in the 26-40 age group.

An increase in proportions is also apparent between young drivers involved in daytime (33%) and night-time (43%) crashes in the 'on roadway' category. The total number of drivers involved in night-time crashes within this category (n=984), however, is far less than the total number of drivers involved in similar daytime crashes (n=1969). Care must be exercised, therefore, in interpreting proportions resulting from different sample sizes because an apparently large proportional increase may actually address far fewer cases.

Ratio comparisons between drivers involved in 'off roadway' and 'on roadway' daytime crashes with those of corresponding night-time crashes is another way of interpreting the

results. The number of young drivers involved in daytime 'off roadway' crashes is 121, while young drivers involved in daytime 'on roadway' crashes is 650. This gives a ratio of 1:5. Where night-time crashes involving young drivers are concerned, the number involved in 'off roadway' collisions is 202 while the number involved in 'on roadway' collisions is 419, giving a ratio of 1:2. This difference between daytime and night-time ratios between 'off roadway' and 'on roadway' collisions clearly indicates that the probability of young drivers being involved in 'off roadway' crashes relative to crashes 'on road' is greater at night than during the day.

There are a few points to keep in mind when interpretation of these results are made:

- **It is necessary to note the sample size or the number of cases present when** making comparisons. For example, when making day/night comparisons, in most cases the sample size of drivers involved in night-time crashes is less than those of drivers involved in daytime crashes, despite the higher proportion of young drivers involved in night-time crashes.

- The number of years that make up each age group differ. For example, young drivers (16-25 years) covers ten years while the 26-55 age group covers 30 years. Thus, similar proportions between these age groups indicate an over-involvement of young drivers of almost three per year of age.

- The increase in young driver proportions involved in night-time crashes may be a result of any of the following reasons:

    - young drivers allocate a higher proportion of their total driving to night-time driving, and/or young drivers having a greater propensity to engage in risky driving behaviour at night

    - older drivers allocate a lower proportion of their total driving to night-time driving, and/or older drivers tend to engage in safe driving behaviour at night.

Hence, the over-involvement of one age group may be a result of a relative under-involvement of other age groups.

Variables and page numbers are listed here for the convenience of the reader:

3.2 TABLES - DAY/NIGHT COMPARISONS

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (CRASH LEVEL) BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-incapacitating injury	100.0%	74.5%	69.5%	68.2%	68.3%	70.9%
Incapacitating injury	0.0%	23.1%	28.6%	28.9%	28.4%	26.6%
Fatal injury	0.0%	2.1%	1.6%	1.6%	2.6%	1.9%
Unknown injury severity	0.0%	0.4%	0.4%	1.3%	0.6%	0.6%
	0.3%	34.5%	33.3%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-incapacitating injury	80.0%	65.4%	71.1%	66.1%	67.9%	40.8%
Incapacitating injury	20.0%	31.0%	24.9%	29.7%	27.7%	17.2%
Fatal injury	0.0%	3.3%	3.6%	3.6%	3.6%	2.1%
Unknown injury severity	0.0%	0.3%	0.4%	0.6%	0.9%	0.3%
	0.4%	46.4%	33.0%	12.1%	8.2%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (VEHICLE LEVEL) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No injury	50.0%	30.4%	37.5%	38.9%	36.2%	35.1%
Possible injury	0.0%	6.7%	6.9%	8.7%	7.4%	7.2%
Non-incapacitating injury	50.0%	48.4%	40.9%	33.9%	40.6%	42.3%
Incapacitating injury	0.0%	12.7%	13.7%	16.9%	13.5%	13.9%
Fatal injury	0.0%	1.3%	0.9%	1.1%	1.5%	1.2%
Injured - severity unknown	0.0%	0.5%	0.0%	0.5%	0.9%	0.4%
	0.3%	34.5%	33.3%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No injury	0.0%	27.0%	28.4%	29.9%	33.0%	17.1%
Possible injury	0.0%	6.2%	5.8%	12.2%	6.3%	4.1%
Non-incapacitating injury	80.0%	44.4%	47.1%	40.9%	40.2%	27.1%
Incapacitating injury	20.0%	20.1%	15.8%	14.0%	17.9%	10.8%
Fatal injury	0.0%	2.1%	2.2%	2.4%	1.8%	1.3%
Injured - severity unknown	0.0%	0.3%	0.7%	0.6%	0.9%	0.3%
	0.4%	46.4%	33.0%	12.0%	8.2%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF VEHICLES INVOLVED BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	83.3%	29.1%	23.6%	24.9%	23.3%	25.8%
2	16.7%	59.1%	58.3%	55.6%	61.2%	58.4%
3	0.0%	8.5%	12.6%	13.6%	12.0%	11.2%
4	0.0%	2.9%	5.0%	5.0%	2.9%	4.0%
5	0.0%	0.4%	0.5%	0.8%	0.6%	0.5%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1	60.0%	45.3%	38.9%	35.3%	26.8%	24.7%
2	40.0%	47.3%	48.7%	48.2%	54.5%	29.6%
3	0.0%	5.4%	10.3%	13.5%	16.1%	5.4%
4	0.0%	1.4%	1.3%	1.8%	2.7%	0.9%
5	0.0%	0.3%	0.4%	0.0%	0.0%	0.2%
6	0.0%	0.3%	0.4%	1.2%	0.0%	0.3%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN CRASH BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	0.0%	0.5%	1.2%	0.3%	0.6%	0.7%
1	83.3%	54.3%	55.4%	58.0%	51.0%	54.9%
2	0.0%	28.6%	28.0%	24.7%	28.6%	27.6%
3	16.7%	10.1%	9.6%	10.0%	12.5%	10.3%
4	0.0%	4.6%	3.4%	3.7%	5.8%	4.2%
5 or more	0.0%	1.9%	2.5%	3.4%	1.5%	2.3%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	0.0%	1.9%	1.7%	2.9%	0.0%	1.1%
1	40.0%	54.1%	56.8%	50.6%	55.4%	33.3%
2	40.0%	25.0%	25.1%	26.5%	21.4%	15.2%
3	20.0%	11.0%	9.2%	11.2%	10.7%	6.4%
4	0.0%	4.7%	3.9%	5.3%	8.0%	2.9%
5 or more	0.0%	3.4%	3.3%	3.5%	4.5%	2.1%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN VEHICLE BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	50.0%	31.0%	38.5%	39.4%	36.7%	35.8%
1	33.3%	54.5%	47.9%	47.8%	49.3%	50.3%
2	0.0%	11.1%	9.6%	9.7%	12.5%	10.5%
3 or more	16.7%	3.4%	4.1%	3.1%	1.5%	3.3%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
N0-one injured	0.0%	28.4%	29.7%	32.4%	33.0%	18.1%
1	40.0%	48.7%	53.7%	54.1%	48.2%	31.1%
2	60.0%	16.6%	12.9%	8.8%	16.1%	8.9%
3 or more	0.0%	6.4%	3.7%	4.7%	2.7%	3.0%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF PERSONS INVOLVED (IN CRASH) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	33.3%	11.2%	7.9%	6.6%	7.4%	8.8%
2	50.0%	36.9%	36.9%	38.4%	40.2%	37.7%
3	16.7%	24.4%	23.4%	29.0%	25.8%	25.0%
4	0.0%	12.7%	15.2%	12.3%	11.3%	13.2%
5	0.0%	8.1%	7.9%	6.6%	6.4%	7.5%
6	0.0%	3.7%	4.5%	2.2%	5.5%	4.0%
7 or more	0.0%	2.9%	4.3%	4.9%	3.4%	3.8%
	0.3%	34.7%	33.1%	16.8%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1	0.0%	20.3%	21.8%	14.3%	8.7%	11.4%
2	60.0%	28.9%	27.2%	37.0%	28.8%	17.6%
3	0.0%	20.8%	22.2%	18.8%	26.9%	12.8%
4	20.0%	14.9%	11.5%	10.4%	19.2%	8.1%
5	20.0%	7.9%	6.8%	10.4%	3.8%	4.5%
6	0.0%	4.1%	5.2%	6.5%	3.8%	2.8%
7 or more	0.0%	3.1%	5.4%	2.6%	8.7%	2.5%
	0.4%	46.8%	32.9%	11.9%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DAY OF WEEK BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Monday	20.0%	14.4%	13.2%	16.9%	12.3%	14.1%
Tuesday	0.0%	19.8%	17.2%	21.2%	17.9%	18.8%
Wednesday	0.0%	17.4%	17.9%	15.4%	11.7%	16.3%
Thursday	20.0%	18.8%	18.0%	15.4%	19.5%	18.1%
Friday	20.0%	15.4%	20.6%	18.6%	20.8%	18.5%
Saturday	40.0%	14.3%	13.2%	12.5%	17.9%	14.2%
Sunday	20.0%	10.7%	9.0%	10.8%	11.4%	10.3%
	0.2%	34.3%	33.9%	16.7%	14.9%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Monday	50.0%	11.2%	11.7%	11.0%	8.2%	6.4%
Tuesday	25.0%	8.8%	10.2%	9.7%	15.3%	5.7%
Wednesday	0.0%	15.9%	15.5%	12.3%	19.4%	8.9%
Thursday	25.0%	15.3%	16.5%	12.3%	19.4%	9.0%
Friday	0.0%	23.9%	21.6%	24.0%	24.5%	13.3%
Saturday	0.0%	25.0%	24.4%	30.5%	13.3%	14.1%
Sunday	25.0%	20.3%	16.5%	10.4%	14.3%	9.9%
	0.3%	45.2%	33.2%	13.0%	8.3%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
WEEKDAY VERSUS WEEKEND BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Weekend	50.0%	77.4%	79.7%	79.0%	73.8%	77.8%
Weekend	50.0%	22.6%	20.3%	21.0%	26.2%	22.2%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Weekend	80.0%	62.3%	64.8%	62.9%	75.9%	39.3%
Weekend	20.0%	37.7%	35.2%	37.1%	24.1%	21.7%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
6 am - 12 pm	16.7%	40.9%	47.5%	37.8%	44.0%	43.0%
12 pm - 6 pm	83.3%	59.1%	52.5%	62.2%	56.0%	57.0%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
6 pm - 12 am	100.0%	67.6%	72.7%	75.9%	96.4%	72.7%
12 am - 6 am		32.4%	27.3%	24.1%	3.6%	27.3%
	0.2%	46.5%	33.0%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION[a]
TIME PERIOD BY WEEKDAY/WEEKEND BY AGE GROUP N=3812

DAY

		0-15	16-25	26-40	41-55	56-98	Total
Weekday:	6 am - 12 pm		25.0%	27.8%	31.1%	31.7%	28.4%
	12 pm - 6 pm		45.5%	46.9%	46.2%	44.2%	45.7%
Weekend:	6 am - 12 pm		10.9%	8.1%	8.5%	4.7%	8.3%
	12 pm - 6 pm		18.6%	17.1%	14.2%	19.4%	17.6%
		0.0%	30.8%	29.1%	17.3%	22.7%	100.0%

NIGHT

		0-15	16-25	26-40	41-55	56-98	Total
Weekday:	12 am - 6 am	0.0%	14.6%	18.3%	11.0%	8.9%	14.9%
	6 pm - 12 am	50.0%	45.2%	41.2%	54.9%	57.0%	46.1%
Weekend:	12 am - 6 am	0.0%	20.1%	18.6%	14.3%	2.5%	17.1%
	6 pm - 12 am	50.0%	20.1%	21.9%	19.8%	31.6%	21.9%
		0.3%	43.2%	35.1%	11.5%	9.9%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RURAL/URBAN BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Urban	50.0%	32.5%	40.4%	38.8%	38.5%	37.2%
10% Rural	0.0%	5.7%	6.6%	7.3%	7.3%	6.5%
20% Rural	0.0%	22.8%	22.7%	23.9%	20.1%	22.5%
30% Rural	16.7%	10.1%	9.1%	9.4%	7.3%	9.2%
60% Rural	0.0%	23.6%	17.2%	15.7%	16.6%	19.0%
70% Rural	33.3%	5.2%	4.1%	4.7%	10.2%	5.6%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Urban	60.0%	35.5%	45.0%	45.9%	46.4%	25.0%
10% Rural	0.0%	3.9%	7.0%	7.6%	7.1%	3.4%
20% Rural	20.0%	21.7%	15.9%	18.2%	19.6%	11.7%
30% Rural	0.0%	10.5%	8.3%	10.0%	7.1%	5.8%
60% Rural	20.0%	21.6%	20.5%	15.9%	15.2%	12.2%
70% Rural	0.0%	6.8%	3.3%	2.4%	4.5%	3.0%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SPEED LIMIT IN MILES (AND KM/H) BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
0 (car-park, etc)	0.0%	0.2%	0.7%	1.0%	0.0%	0.5%
10 (17 km/h)	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
15 (24 km/h)	0.0%	1.1%	0.7%	0.0%	0.0%	0.6%
20 (32 km/h)	0.0%	2.0%	1.5%	1.5%	2.7%	1.8%
25 (40 km/h)	50.0%	15.4%	16.4%	18.0%	18.2%	16.7%
30 (48 km/h)	25.0%	7.0%	7.0%	7.5%	9.1%	7.4%
35 (56 km/h)	0.0%	19.5%	25.1%	20.5%	29.4%	22.9%
40 (64 km/h)	0.0%	5.0%	7.7%	6.0%	5.3%	6.1%
45 (72 km/h)	0.0%	12.1%	10.0%	10.0%	10.2%	10.7%
50 (80 km/h)	0.0%	4.4%	4.5%	4.5%	3.2%	4.2%
55 (89 km/h)	25.0%	32.5%	26.4%	29.5%	21.4%	28.3%
65 (105 km/h)	0.0%	0.7%	0.0%	1.5%	0.5%	0.6%
	0.3%	36.5%	32.2%	16.0%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
10 (17 km/h)	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%
15 (24 km/h)	0.0%	1.1%	1.1%	1.2%	0.0%	0.6%
20 (32 km/h)	0.0%	3.0%	2.2%	1.2%	1.7%	1.5%
25 (40 km/h)	0.0%	22.9%	16.4%	17.9%	23.7%	12.5%
30 (48 km/h)	33.3%	3.9%	9.0%	8.3%	6.8%	4.0%
35 (56 km/h)	0.0%	18.2%	22.0%	17.9%	33.9%	12.8%
40 (64 km/h)	0.0%	4.4%	4.5%	7.1%	5.1%	3.0%
45 (72 km/h)	33.3%	12.7%	11.9%	13.1%	11.9%	7.8%
50 (80 km/h)	0.0%	5.2%	3.7%	1.2%	6.8%	2.7%
55 (89 km/h)	33.3%	27.6%	28.0%	32.1%	10.2%	16.7%
65 (105 km/h)	0.0%	0.8%	0.7%	0.0%	0.0%	0.4%
	0.4%	46.6%	34.5%	10.8%	7.6%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
INTERSTATE HIGHWAY BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No (not on highway)	100.0%	95.5%	94.2%	92.4%	97.4%	94.9%
Yes (on highway)	0.0%	4.5%	5.8%	7.6%	2.6%	5.1%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No (not on highway)	100.0%	96.1%	95.4%	94.7%	100.0%	58.7%
Yes (on highway)	0.0%	3.9%	4.6%	5.3%	0.0%	2.4%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LAND USE BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Population 25000-50000	**16.7%**	**10.9%**	**14.0%**	**12.7%**	**11.7%**	**12.4%**
Population 50000-100000	**33.3%**	**6.6%**	**8.6%**	**10.3%**	**12.7%**	**8.9%**
Population 100000+	**16.7%**	**15.6%**	**18.3%**	**17.6%**	**15.7%**	**16.9%**
Other Area	33.3%	66.9%	59.0%	59.5%	59.9%	61.9%
	0.3%	34.4%	33.6%	16.7%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Population 25000-50000	**0.0%**	**10.2%**	**9.2%**	**9.9%**	**9.3%**	**5.9%**
Population 50000-100000	20.0%	8.3%	10.1%	11.7%	13.9%	6.0%
Population 100000+	20.0%	17.7%	21.0%	19.1%	21.3%	11.8%
Other Area	60.0%	63.8%	59.7%	59.3%	55.6%	37.4%
	0.4%	46.5%	33.1%	12.0%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY ALIGNMENT BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Straight	66.7%	91.4%	92.4%	91.9%	93.7%	92.1%
Curve	33.3%	8.6%	7.6%	8.1%	6.3%	7.9%
	0.3%	34.5%	33.6%	16.7%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Straight	60.0%	86.0%	87.1%	89.3%	94.4%	53.3%
Curve	40.0%	14.0%	12.9%	10.7%	5.6%	7.7%
	0.4%	46.4%	33.0%	12.4%	7.9%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY PROFILE BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Level	75.0%	76.0%	73.9%	79.4%	76.1%	75.9%
Grade	25.0%	23.0%	23.1%	18.9%	20.7%	22.1%
Hillcrest	0.0%	1.0%	2.9%	1.7%	3.3%	2.1%
	0.3%	36.1%	32.3%	15.5%	15.8%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Level	100.0%	73.9%	79.1%	82.1%	81.0%	49.4%
Grade	0.0%	25.2%	19.4%	17.9%	19.0%	13.9%
Hillcrest	0.0%	0.9%	1.5%	0.0%	0.0%	0.6%
	0.5%	45.8%	35.3%	10.5%	7.8%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC WAY FLOW BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Two way undivided	100.0%	76.3%	70.1%	68.7%	80.7%	73.7%
Divided highway	0.0%	20.5%	25.7%	27.7%	17.1%	22.8%
Oneway	0.0%	3.2%	4.2%	3.6%	2.2%	3.5%
	0.2%	35.0%	33.1%	16.5%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Two way undivided	50.0%	75.7%	71.3%	71.2%	83.6%	43.4%
Divided highway	50.0%	21.0%	24.1%	25.2%	13.4%	12.9%
Oneway	0.0%	3.3%	4.6%	3.6%	3.0%	2.2%
	0.2%	44.8%	34.8%	12.6%	7.6%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATION TO ROADWAY BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
On roadway	33.3%	82.9%	87.8%	89.8%	89.5%	86.5%
On shoulder/parking lane	0.0%	1.1%	1.8%	0.5%	1.2%	1.3%
Off roadway/shoulder/parking lane	66.7%	15.4%	9.6%	9.4%	9.1%	11.6%
On median	0.0%	0.4%	0.7%	0.0%	0.3%	0.4%
Other	0.0%	0.1%	0.1%	0.3%	0.0%	0.1%
	0.3%	34.5%	33.5%	16.7%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
On roadway	40.0%	65.0%	73.1%	75.7%	91.0%	43.3%
On shoulder/parking lane	20.0%	3.3%	2.2%	3.0%	1.8%	1.7%
Off roadway/shoulder/parking lane	40.0%	31.3%	24.5%	20.1%	5.4%	15.6%
On median	0.0%	0.5%	0.0%	0.6%	0.0%	0.2%
Other	0.0%	0.0%	0.2%	0.6%	1.8%	0.2%
	0.4%	46.5%	32.9%	12.2%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATION TO JUNCTION BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-junction	50.0%	38.8%	37.4%	40.4%	34.2%	37.9%
Intersection	16.7%	41.1%	40.7%	40.9%	45.6%	41.6%
Intersection related	16.7%	9.2%	10.9%	9.2%	8.5%	9.7%
Interchange area	0.0%	0.3%	0.1%	0.0%	0.0%	0.1%
Driveway/alley	16.7%	9.3%	9.6%	8.7%	11.1%	9.6%
Entrance/exit ramp	0.0%	0.5%	0.5%	0.5%	0.0%	0.4%
Railway crossing	0.0%	0.5%	0.3%	0.3%	0.6%	0.4%
Other	0.0%	0.3%	0.4%	0.0%	0.0%	0.2%
	0.3%	34.5%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-junction	20.0%	50.7%	47.3%	50.9%	29.1%	29.1%
Intersection	40.0%	32.7%	31.4%	30.5%	42.7%	20.0%
Intersection related	40.0%	9.8%	11.2%	9.6%	12.7%	6.4%
Interchange area	0.0%	0.8%	0.2%	0.0%	0.0%	0.3%
Driveway/alley	0.0%	5.0%	8.1%	7.2%	14.5%	4.3%
Entrance/exit ramp	0.0%	0.2%	1.3%	1.8%	0.0%	0.4%
Railway crossing	0.0%	0.5%	0.4%	0.0%	0.9%	0.3%
Other	0.0%	0.5%	0.0%	0.0%	0.0%	0.1%
	0.4%	46.7%	32.9%	12.1%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF TRAVEL LANES BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	25.0%	0.6%	1.4%	1.6%	0.3%	1.1%
2	75.0%	59.4%	52.6%	55.5%	54.3%	55.7%
3	0.0%	9.6%	8.9%	13.2%	9.6%	10.0%
4	**0.0%**	**18.6%**	**24.7%**	**17.1%**	**21.9%**	**20.9%**
5	0.0%	9.6%	10.7%	8.7%	12.6%	10.3%
6	0.0%	2.1%	1.6%	3.9%	1.3%	2.1%
	0.2%	34.5%	33.0%	16.3%	15.9%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1	0.0%	1.0%	2.9%	2.0%	2.3%	1.1%
2	66.7%	60.7%	58.2%	51.0%	48.8%	34.4%
3	33.3%	7.4%	7.2%	13.4%	5.8%	4.8%
4	0.0%	21.5%	19.9%	21.5%	25.6%	12.6%
5	0.0%	7.2%	8.5%	6.0%	15.1%	4.8%
6 or more	0.0%	2.3%	3.2%	6.0%	2.3%	1.8%
	0.3%	45.7%	33.2%	13.2%	7.6%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION[a]
TRAFFIC CONTROL DEVICE BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No control device	100.0%	61.2%	58.9%	62.3%	56.9%	60.1%
Traffic signals						
with pedestrian signal	0.0%	0.0%	0.1%	0.3%	0.0%	0.1%
pedestrian signal not known	0.0%	20.8%	22.3%	22.4%	25.8%	22.3%
flashing traffic controls/beacon	0.0%	1.0%	0.4%	0.3%	0.6%	0.6%
other traffic signal	0.0%	0.9%	0.8%	0.8%	0.6%	0.8%
unknown traffic signal	0.0%	0.0%	0.0%	0.3%	0.3%	0.1%
Regulatory, school zone or warning signs						
stop sign	0.0%	14.3%	15.6%	12.9%	13.5%	14.3%
yield sign	0.0%	0.6%	1.1%	0.0%	0.6%	0.7%
school zone sign	0.0%	0.1%	0.0%	0.0%	0.3%	0.1%
warning sign	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
other sign	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
At railroad grade crossing						
active devices	0.0%	0.3%	0.3%	0.3%	0.9%	0.4%
passive devices	0.0%	0.0%	0.3%	0.0%	0.0%	0.1%
Traffic control present - no details	0.0%	0.5%	0.1%	0.5%	0.6%	0.4%
Other traffic control	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	0.3%	34.4%	33.4%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No control device	60.0%	63.1%	63.8%	66.9%	50.0%	38.2%
Traffic signals						
with pedestrian signal	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
pedestrian signal not known	20.0%	21.1%	21.6%	19.5%	25.9%	13.1%
flashing traffic controls/beacon	0.0%	0.6%	0.7%	1.2%	2.7%	0.5%
other traffic signal	0.0%	0.5%	1.8%	1.2%	0.0%	0.6%
unknown traffic signal	0.0%	0.2%	0.2%	0.0%	0.0%	0.1%
Regulatory, school zone or warning signs						
stop sign	20.0%	11.1%	10.0%	11.2%	19.6%	7.0%
yield sign	0.0%	1.1%	0.9%	0.0%	0.9%	0.5%
warning sign	0.0%	1.1%	0.4%	0.0%	0.0%	0.4%
Miscellaneous (not at railroad crossing)	0.0%	0.2%	0.2%	0.0%	0.0%	0.1%
At railroad grade crossing						
active devices	0.0%	0.3%	0.0%	0.0%	0.9%	0.1%
passive devices	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Traffic control present - no details	0.0%	0.5%	0.2%	0.0%	0.0%	0.2%
	0.4%	46.5%	32.7%	12.3%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC DEVICE FUNCTIONING BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No controls	100.0%	62.4%	60.0%	62.9%	57.9%	61.1%
Device not functioning	0.0%	0.1%	0.4%	0.5%	0.6%	0.4%
Device functioning	0.0%	37.5%	39.6%	36.5%	41.5%	38.5%
	0.3%	34.4%	33.4%	16.9%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No controls	60.0%	63.7%	65.2%	67.7%	50.5%	38.9%
Device not functioning	0.0%	0.3%	0.5%	0.6%	0.0%	0.2%
Device functioning	40.0%	36.0%	34.3%	31.7%	49.5%	22.0%
	0.4%	46.7%	32.4%	12.3%	8.2%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SEX OF DRIVER BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Male	33.3%	53.1%	50.7%	52.5%	56.0%	52.6%
Female	66.7%	46.9%	49.3%	47.5%	44.0%	47.4%
	0.3%	34.4%	33.5%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Male	60.0%	67.3%	62.7%	62.9%	65.2%	39.7%
Female	40.0%	32.7%	37.3%	37.1%	34.8%	21.3%
	0.4%	46.5%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL USE (DRIVER) BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	0.0%	3.2%	3.3%	2.1%	2.1%	2.9%
No alcohol involved	100.0%	96.8%	96.7%	97.9%	97.9%	97.1%
	0.3%	34.5%	33.5%	16.8%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	20.0%	18.5%	24.1%	16.8%	9.8%	11.8%
No alcohol involved	80.0%	81.5%	75.9%	83.2%	90.2%	48.9%
	0.4%	46.4%	32.9%	12.1%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL INVOLVEMENT IN CRASH BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	0.0%	4.9%	4.9%	5.0%	4.4%	4.8%
No alcohol involved	100.0%	95.1%	95.1%	95.0%	95.6%	95.2%
	0.3%	34.4%	33.5%	16.8%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	20.0%	25.7%	31.4%	26.0%	20.5%	16.5%
No alcohol involved	80.0%	74.3%	68.6%	74.0%	79.5%	44.3%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER PHYSICAL/MENTAL IMPAIRMENT BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No impairment	100.0%	97.3%	97.6%	97.6%	95.6%	97.2%
Drowsy/fatigued	0.0%	1.4%	0.5%	1.1%	1.2%	1.0%
Ill/blackout	0.0%	0.1%	0.1%	0.0%	0.9%	0.2%
Drugs/medication	0.0%	0.0%	0.0%	0.3%	0.6%	0.1%
Illicit drugs	0.0%	0.0%	0.3%	0.0%	0.0%	0.1%
Deaf	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Hit-and-run vehicle	0.0%	0.4%	0.3%	0.3%	0.3%	0.3%
Physical/mental impairment - no details	0.0%	0.1%	0.0%	0.0%	0.6%	0.1%
Other physical/mental impairment	0.0%	0.5%	1.2%	0.8%	0.9%	0.8%
	0.3%	34.4%	33.5%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No impairment	80.0%	89.3%	89.4%	95.2%	93.6%	54.2%
Drowsy/fatigue	**0.0%**	**3.0%**	**1.6%**	**0.0%**	**0.9%**	**1.2%**
Ill/blackout	**0.0%**	**0.5%**	**0.0%**	**0.0%**	**2.7%**	**0.3%**
Emotional	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Drugs/medication	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
Illicit drugs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hit-and-run vehicle	0.0%	1.3%	2.3%	0.0%	0.0%	0.8%
Physical/mental impairment - no details	0.0%	0.5%	1.1%	0.0%	0.0%	0.4%
Other physical/mental impairment	20.0%	5.1%	5.6%	4.2%	2.7%	3.0%
	0.4%	46.4%	32.7%	12.4%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER'S ACTION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Not avoiding/swerving	100.0%	95.5%	95.3%	96.6%	97.7%	95.9%
Severe crosswind	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Slippery or loose surface	0.0%	1.5%	2.0%	1.3%	0.9%	1.5%
Ruts/holes/bumps	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Animals on road	0.0%	0.5%	0.5%	0.0%	0.3%	0.4%
Veh on road	0.0%	1.0%	0.5%	0.3%	0.6%	0.7%
Pedestrian/cyclist/non-motorist	0.0%	0.3%	0.7%	1.0%	0.3%	0.5%
Water/snow/oil slick	0.0%	0.3%	0.3%	0.0%	0.0%	0.2%
Hit-and-run vehicle	0.0%	0.4%	0.5%	0.3%	0.3%	0.4%
Avoiding action - no details	0.0%	0.1%	0.1%	0.5%	0.0%	0.2%
Other cause	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	0.3%	34.5%	33.5%	16.8%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Not avoiding/swerving	100.0%	93.8%	94.7%	95.9%	98.2%	58.0%
Slippery or loose surface	0.0%	1.7%	0.9%	1.8%	0.0%	0.8%
Blowout	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Animals on road	0.0%	0.2%	0.2%	0.6%	0.9%	0.2%
Veh on road	0.0%	1.2%	1.1%	0.6%	0.0%	0.6%
Phantom veh	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Pedestrian/cyclist/non-motorist	0.0%	0.3%	0.0%	0.6%	0.0%	0.1%
Hit-and-run vehicle	0.0%	2.2%	3.1%	0.6%	0.0%	1.3%
Avoiding action - no details	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Other cause	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VIOLATIONS CHARGED BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
None	33.3%	56.5%	72.7%	76.6%	71.9%	67.6%
Alcohol/drugs	0.0%	1.2%	1.4%	1.3%	0.6%	1.2%
Speeding	0.0%	5.4%	3.2%	2.6%	1.5%	3.6%
Alcohol or drugs and speeding	0.0%	0.1%	0.3%	0.3%	0.0%	0.2%
Reckless driving	0.0%	2.9%	2.0%	1.0%	0.6%	1.9%
Driving with suspended licence	0.0%	0.6%	0.3%	0.0%	0.0%	0.3%
Failure to giveway	0.0%	11.3%	7.0%	5.5%	12.6%	9.0%
Running traffic controls/stop sign	0.0%	5.6%	1.7%	3.1%	5.6%	3.9%
Other violation	66.7%	16.3%	11.6%	9.4%	7.3%	12.3%
	0.3%	34.4%	33.5%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
None	0.0%	53.1%	62.1%	67.1%	73.2%	36.1%
Alcohol/drugs	0.0%	9.0%	11.2%	9.4%	1.8%	5.6%
Speeding	20.0%	4.5%	3.9%	2.4%	3.6%	2.5%
Alcohol or drugs and speeding	0.0%	0.2%	1.1%	0.6%	0.0%	0.3%
Reckless driving	0.0%	5.5%	2.4%	1.8%	0.0%	2.2%
Driving with suspended licence	0.0%	0.9%	0.7%	0.0%	0.0%	0.4%
Failure to giveway	40.0%	6.7%	3.5%	1.8%	10.7%	3.3%
Running traffic controls/stop sign	0.0%	3.4%	1.5%	4.7%	2.7%	1.8%
Other violation	40.0%	16.7%	13.6%	12.4%	8.0%	8.9%
	0.4%	46.4%	32.9%	12.3%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF OCCUPANTS IN VEHICLE BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	83.3%	62.7%	62.9%	65.0%	65.5%	63.6%
2	0.0%	24.0%	19.0%	23.4%	26.9%	22.6%
3	16.7%	5.8%	9.1%	6.1%	2.0%	6.4%
4	0.0%	3.5%	4.0%	2.1%	1.5%	3.1%
5 or more	0.0%	0.9%	2.4%	1.3%	1.2%	1.5%
Unknown (only injured reported)	0.0%	3.2%	2.6%	2.1%	2.9%	2.8%
	0.3%	34.5%	33.4%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1	0.0%	50.8%	59.0%	63.3%	50.9%	33.5%
2	80.0%	30.1%	24.1%	20.1%	33.0%	16.7%
3	20.0%	8.6%	8.6%	5.3%	3.6%	4.8%
4	0.0%	5.5%	2.6%	7.1%	2.7%	2.7%
5 or more	0.0%	1.7%	2.0%	0.6%	2.7%	1.1%
Unknown (only injured reported)	0.0%	3.4%	3.7%	3.6%	7.1%	2.3%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAVEL SPEED OF VEHICLE IN MILES (AND KM/H) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Stationary	0.0%	21.3%	42.0%	47.9%	36.5%	35.3%
1 - 12 (1 - 20 km/h)	0.0%	15.4%	11.5%	7.4%	13.5%	12.3%
13 - 24 (21 - 40 km/h)	0.0%	14.0%	18.6%	12.4%	15.6%	15.5%
25 - 35 (41 - 60 km/h)	100.0%	16.3%	8.0%	9.9%	14.6%	12.2%
36 - 50 (61 - 80 km/h)	0.0%	19.9%	13.7%	13.2%	15.6%	15.9%
51 - 60 (81 - 100 km/h)	0.0%	12.2%	5.3%	8.3%	3.1%	7.8%
Over 60 (>100 km/h)	0.0%	0.9%	0.9%	0.8%	1.0%	0.9%
	0.2%	33.2%	34.0%	18.2%	14.4%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Stationary	0.0%	18.8%	24.5%	41.5%	26.7%	15.2%
1 - 12 (1 - 20 km/h)	100.0%	6.3%	11.0%	5.7%	16.7%	5.6%
13 - 24 (21 - 40 km/h)	0.0%	17.0%	10.3%	7.5%	33.3%	9.0%
25 - 35 (41 - 60 km/h)	0.0%	16.5%	18.1%	18.9%	10.0%	10.5%
36 - 50 (61 - 80 km/h)	0.0%	16.5%	20.6%	13.2%	13.3%	10.8%
51 - 60 (81 - 100 km/h)	0.0%	19.3%	11.6%	11.3%	0.0%	8.7%
Over 60 (>100 km/h)	0.0%	5.7%	3.9%	1.9%	0.0%	2.6%
	0.2%	42.4%	37.3%	12.8%	7.2%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MODEL YEAR BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1986 - 1989	0.0%	27.6%	35.6%	43.5%	36.1%	34.1%
1981 - 1985	50.0%	34.9%	33.5%	32.4%	39.6%	34.8%
1976 - 1980	50.0%	30.7%	25.5%	17.8%	16.1%	24.6%
1971 - 1975	0.0%	4.3%	3.9%	4.8%	5.6%	4.4%
1974 and earlier	0.0%	2.6%	1.6%	1.6%	2.6%	2.1%
	0.3%	34.4%	33.5%	16.8%	15.2%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1986 - 1989	20.0%	25.1%	32.3%	39.5%	42.3%	18.7%
1981 - 1985	20.0%	33.1%	30.5%	25.7%	30.6%	19.0%
1976 - 1980	60.0%	33.3%	29.2%	24.6%	22.5%	18.4%
1971 - 1975	0.0%	5.3%	6.0%	7.8%	3.6%	3.5%
1974 and earlier	0.0%	3.1%	2.0%	2.4%	0.9%	1.5%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE DEFECTS BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No vehicle defects	100.0%	99.1%	99.1%	98.9%	98.5%	99.0%
Tyres	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
Brakes	0.0%	0.1%	0.3%	0.3%	0.6%	0.3%
Steering	0.0%	0.1%	0.3%	0.3%	0.0%	0.2%
Hit-and-run vehicle	0.0%	0.4%	0.1%	0.3%	0.3%	0.3%
Vehicle defects - no details	0.0%	0.0%	0.1%	0.0%	0.3%	0.1%
Other vehicle defect	0.0%	0.1%	0.0%	0.3%	0.3%	0.1%
	0.3%	34.6%	33.5%	16.7%	14.9%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No vehicle defects	100.0%	96.7%	96.5%	99.4%	98.2%	59.2%
Tyres	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Brakes	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Suspension	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Other lights (on vehicle)	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Hit-and-run vehicle	0.0%	1.9%	3.3%	0.6%	0.9%	1.3%
Vehicle defects - no details	0.0%	0.6%	0.0%	0.0%	0.9%	0.2%
Other vehicle defect	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
	0.4%	46.2%	32.9%	12.4%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LIGHT CONDITIONS BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Daylight	100.0%	93.5%	91.8%	92.1%	95.9%	93.1%
Dark	0.0%	1.4%	1.2%	3.2%	1.5%	1.6%
Dark but lighted	0.0%	3.1%	2.4%	0.8%	1.5%	2.2%
Dawn	0.0%	0.8%	2.6%	1.8%	0.6%	1.5%
Dusk	0.0%	0.4%	0.9%	0.5%	0.3%	0.6%
Dawn or dusk	0.0%	0.9%	1.1%	1.6%	0.3%	1.0%
	0.3%	34.5%	33.5%	16.7%	15.0%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Daylight	0.0%	15.0%	19.8%	24.4%	31.5%	11.6%
Dark	40.0%	36.8%	31.2%	30.4%	23.4%	20.1%
Dark but lighted	40.0%	44.0%	44.6%	42.3%	38.7%	26.5%
Dawn	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Dusk	20.0%	2.0%	3.3%	1.8%	4.5%	1.6%
Dawn or dusk	0.0%	1.9%	1.1%	1.2%	1.8%	0.9%
	0.4%	46.3%	33.0%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ATMOSPHERIC CONDITIONS BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
No adverse conditions	100.0%	82.9%	79.8%	76.9%	82.7%	80.9%
Rain	0.0%	11.5%	12.8%	14.4%	12.6%	12.6%
Snow	0.0%	4.9%	6.3%	7.6%	4.4%	5.7%
Fog	0.0%	0.5%	0.8%	1.0%	0.0%	0.6%
Other	0.0%	0.1%	0.3%	0.0%	0.3%	0.2%
	0.3%	34.4%	33.5%	16.8%	15.1%	100.0%

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
No adverse conditions	80.0%	80.7%	82.3%	79.0%	91.0%	49.5%
Rain	20.0%	11.9%	11.5%	12.6%	7.2%	7.0%
Sleet	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Snow	0.0%	5.2%	5.3%	6.6%	1.8%	3.1%
Fog	0.0%	1.9%	0.9%	1.2%	0.0%	0.8%
Other	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
	0.4%	46.4%	32.9%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
***VISUAL OBSTRUCTION* BY AGE GROUP**

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No obstruction	100.0%	96.8%	97.2%	96.6%	95.3%	96.7%
Precipitation	0.0%	0.1%	0.1%	0.5%	0.3%	0.2%
Glare/sun/headlights	0.0%	0.1%	0.1%	0.5%	0.3%	0.2%
Curve/hill/embankment	0.0%	0.1%	0.1%	0.0%	0.6%	0.2%
Building/billboard	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Trees/crops/vegetation	0.0%	0.3%	0.1%	0.3%	0.0%	0.2%
Moving vehicle	0.0%	1.4%	0.9%	1.1%	1.8%	1.2%
Parked vehicle	0.0%	0.3%	0.3%	0.5%	0.9%	0.4%
Splash/spray from passing vehicle	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Inadequate demister	0.0%	0.1%	0.0%	0.0%	0.3%	0.1%
Obstructing angles on vehicle	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Broken/dirty windscreen	0.0%	0.3%	0.1%	0.0%	0.0%	0.1%
Hit-and-run vehicle	**0.0%**	**0.3%**	**0.5%**	**0.3%**	**0.3%**	**0.4%**
Vision obscured - no details	0.0%	0.0%	0.0%	0.3%	0.3%	0.1%
Other obstruction	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
	0.3%	34.5%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No obstruction	100.0%	96.7%	95.0%	97.0%	99.1%	58.8%
Precipitation	0.0%	0.2%	0.0%	0.6%	0.0%	0.1%
Glare/sun/headlights	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
Curve/hill/embankment	0.0%	0.0%	0.9%	0.0%	0.0%	0.2%
Building/billboard	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Trees/crops/vegetation	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Moving vehicle	0.0%	0.3%	0.2%	0.6%	0.0%	0.2%
Parked vehicle	0.0%	0.0%	0.7%	0.0%	0.9%	0.2%
Splash/spray from passing vehicle	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Hit-and-run vehicle	0.0%	2.2%	2.9%	0.6%	0.0%	1.2%
Vision obscured - no details	0.0%	0.2%	0.2%	0.0%	0.0%	0.1%
Other obstruction	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
	0.4%	46.3%	33.0%	12.2%	8.1%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROAD SURFACE CONDITION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Dry	83.3%	68.6%	63.2%	66.5%	73.8%	67.2%
Wet	0.0%	20.4%	23.6%	23.5%	18.7%	21.7%
Snow/slush	0.0%	1.1%	0.9%	0.5%	1.2%	1.0%
Ice	16.7%	9.2%	11.6%	9.5%	5.8%	9.6%
Other	0.0%	0.6%	0.8%	0.0%	0.6%	0.6%
	0.3%	34.5%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Dry	40.0%	71.3%	71.8%	69.1%	81.8%	43.4%
Wet	60.0%	18.4%	17.4%	20.6%	11.8%	10.8%
Snow/slush	0.0%	0.6%	2.0%	0.0%	0.0%	0.6%
Ice	0.0%	8.3%	8.6%	10.3%	6.4%	5.1%
Sand/dirt/oil	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
Other	0.0%	0.9%	0.2%	0.0%	0.0%	0.3%
	0.4%	46.4%	33.2%	12.1%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE MANOEUVRE BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Going straight	50.0%	60.5%	58.5%	59.6%	59.2%	59.5%
Slowing/stopping	16.7%	1.9%	2.1%	2.6%	1.2%	2.0%
Starting in traffic lane	0.0%	0.1%	0.3%	0.0%	0.0%	0.1%
Stopped in traffic lane	0.0%	5.8%	12.6%	15.3%	10.3%	10.3%
Passing/overtaking	0.0%	1.4%	0.7%	0.5%	0.3%	0.8%
Leaving parking spot	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
Avoiding animal/pedestrian/object/vehicle	0.0%	2.7%	3.2%	2.4%	1.8%	2.7%
Turning right	0.0%	2.8%	2.5%	3.2%	1.8%	2.6%
Turning left	0.0%	13.3%	11.7%	11.3%	19.4%	13.3%
U-turn	0.0%	0.0%	0.1%	0.0%	0.6%	0.1%
Reversing	0.0%	0.4%	0.3%	0.3%	1.5%	0.5%
Changing lanes/merging	0.0%	1.6%	1.6%	0.3%	0.0%	1.1%
Negotiating curve	0.0%	2.3%	2.1%	2.1%	0.3%	1.9%
Other	33.3%	7.0%	4.4%	2.4%	3.5%	4.9%
	0.3%	34.3%	33.5%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Going straight	20.0%	62.0%	61.8%	60.9%	63.6%	37.6%
Slowing/stopping	0.0%	1.4%	0.7%	0.6%	1.8%	0.7%
Starting in traffic lane	0.0%	0.3%	0.4%	0.0%	1.8%	0.3%
Stopped in traffic lane	0.0%	5.2%	8.2%	13.0%	7.3%	4.4%
Passing/overtaking	0.0%	1.3%	1.3%	0.0%	0.0%	0.6%
Leaving parking spot	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Avoiding animal/pedestrian/object/vehicle	0.0%	2.0%	2.4%	3.6%	1.8%	1.4%
Turning right	0.0%	3.1%	1.8%	1.2%	1.8%	1.4%
Turning left	40.0%	9.2%	9.3%	7.7%	16.4%	5.9%
U-turn	0.0%	0.6%	0.0%	0.0%	0.0%	0.2%
Reversing	0.0%	0.2%	0.9%	0.6%	1.8%	0.4%
Changing lanes/merging	0.0%	0.9%	2.0%	1.8%	0.0%	0.8%
Negotiating curve	20.0%	5.0%	4.2%	6.5%	0.0%	2.8%
Other	20.0%	8.8%	6.7%	4.1%	3.6%	4.3%
	0.4%	46.5%	32.8%	12.3%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MANNER OF COLLISION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No collision with moving vehicle	83.3%	29.8%	24.5%	25.7%	24.6%	26.7%
Rear-end	0.0%	18.8%	24.3%	28.0%	16.1%	21.7%
Head-on	0.0%	4.2%	4.0%	2.9%	3.5%	3.8%
Angle	0.0%	44.6%	45.4%	42.3%	53.2%	45.7%
Sideswipe, same direction	16.7%	0.9%	0.9%	0.5%	1.2%	0.9%
Sideswipe, opposite direction	0.0%	1.7%	0.9%	0.5%	1.5%	1.2%
	0.3%	34.4%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No collision with moving vehicle	60.0%	46.2%	40.4%	36.9%	28.2%	25.4%
Rear-end	0.0%	15.3%	19.5%	23.8%	19.1%	11.0%
Head-on	0.0%	3.4%	4.4%	3.6%	2.7%	2.3%
Angle	40.0%	33.5%	33.6%	33.3%	48.2%	21.2%
Sideswipe, same direction	0.0%	0.9%	0.9%	1.2%	0.0%	0.5%
Sideswipe, opposite direction	0.0%	0.6%	1.1%	1.2%	0.9%	0.5%
Other	0.0%	0.0%	0.2%	0.0%	0.9%	0.1%
	0.4%	46.4%	33.1%	12.2%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
FIRST HARMFUL EVENT (CRASH LEVEL) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover	0.0%	2.0%	0.5%	1.3%	0.9%	1.2%
Other non-collision	0.0%	0.8%	0.3%	0.0%	0.0%	0.4%
Collision with object - not fixed						
Pedestrian	0.0%	6.3%	8.3%	7.6%	7.6%	7.4%
Cycle or cyclist	33.3%	5.5%	5.0%	7.9%	6.7%	6.0%
Motor vehicle on road	16.7%	70.3%	75.6%	74.5%	75.5%	73.4%
Motor vehicle parked	0.0%	0.9%	0.5%	0.3%	0.6%	0.6%
Other object not fixed	0.0%	0.9%	0.3%	0.8%	0.9%	0.7%
Collision with fixed object						
Guardrail	0.0%	1.4%	0.8%	1.3%	0.6%	1.1%
Post/pole/support	0.0%	2.8%	2.8%	1.8%	2.9%	2.6%
Culvert/ditch	16.7%	3.7%	1.1%	1.3%	2.0%	2.2%
Fence	0.0%	0.4%	0.5%	0.3%	0.9%	0.5%
Tree	33.3%	2.3%	2.4%	1.3%	0.3%	1.9%
Other fixed object	0.0%	2.7%	2.0%	1.6%	1.2%	2.0%
	0.3%	34.4%	33.4%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover	0.0%	2.5%	2.0%	1.2%	1.8%	1.3%
Other non-collision	0.0%	0.8%	1.3%	0.6%	0.9%	0.6%
Collision with object - not fixed				0.0%		
Pedestrian	0.0%	7.9%	7.9%	9.5%	9.9%	5.0%
Cycle or cyclist	0.0%	2.2%	3.9%	5.3%	6.3%	2.1%
Motor vehicle on road	40.0%	54.1%	59.6%	63.3%	72.1%	35.6%
Motor vehicle parked	20.0%	2.8%	3.5%	2.4%	0.9%	1.8%
Other object not fixed	0.0%	1.6%	1.8%	0.0%	1.8%	0.9%
Collision with fixed object						
Guardrail	0.0%	1.6%	2.2%	1.8%	0.0%	1.0%
Post/pole/support	20.0%	8.1%	8.8%	5.3%	0.9%	4.5%
Culvert/ditch	0.0%	5.6%	3.7%	4.1%	0.9%	2.7%
Curb	0.0%	1.9%	0.9%	0.6%	1.8%	0.8%
Tree	20.0%	6.4%	2.6%	3.0%	0.9%	2.6%
Other fixed object	0.0%	4.7%	1.8%	3.0%	1.8%	2.0%
	0.4%	46.5%	32.9%	12.2%	8.0%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MOST HARMFUL EVENT BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover	0.0%	3.7%	1.4%	2.2%	0.9%	2.2%
Other non-collision	0.0%	0.7%	0.3%	0.0%	0.0%	0.3%
Collision with object - not fixed						
Pedestrian	0.0%	6.4%	8.6%	7.7%	7.3%	7.5%
Cycle or cyclist	33.3%	5.9%	5.2%	8.2%	7.0%	6.3%
Motor vehicle on road	16.7%	72.9%	76.3%	75.8%	77.4%	75.1%
Motor vehicle parked	0.0%	1.1%	0.5%	0.3%	0.3%	0.6%
Other object not fixed	0.0%	0.8%	0.3%	0.3%	0.6%	0.5%
Collision with fixed object						
Guardrail	0.0%	0.7%	0.8%	0.8%	0.3%	0.7%
Post/pole/support	0.0%	1.9%	2.6%	1.4%	2.8%	2.2%
Culvert/ditch	16.7%	2.1%	0.5%	0.8%	0.9%	1.2%
Tree	33.3%	2.3%	2.3%	1.4%	0.6%	2.0%
Other fixed object	0.0%	1.5%	1.2%	1.1%	1.8%	1.4%
	0.3%	33.8%	33.9%	16.8%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover	0.0%	6.0%	3.7%	3.1%	1.8%	2.7%
Other non-collision	0.0%	1.0%	0.9%	0.0%	0.9%	0.5%
Collision with object - not fixed						
Pedestrian	0.0%	8.5%	8.1%	9.9%	10.0%	5.2%
Cycle or cyclist	0.0%	2.4%	4.2%	5.6%	6.4%	2.2%
Motor vehicle on road	40.0%	57.7%	60.7%	64.6%	72.7%	36.4%
Motor vehicle parked	20.0%	3.1%	3.5%	2.5%	0.9%	1.8%
Other object not fixed	0.0%	1.2%	1.4%	0.6%	1.8%	0.7%
Collision with fixed object						
Guardrail	0.0%	1.0%	1.6%	1.2%	0.0%	0.7%
Post/pole/support	20.0%	6.5%	7.9%	5.0%	0.9%	3.8%
Culvert/ditch	0.0%	3.4%	2.5%	1.2%	0.9%	1.6%
Tree	20.0%	6.0%	3.7%	2.5%	1.8%	2.7%
Other fixed object	0.0%	3.2%	1.8%	3.7%	1.8%	1.6%
	0.4%	45.3%	33.4%	12.4%	8.5%	100.0%

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE ROLE BY AGE GROUP

N = 3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Single vehicle crashes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
non collision	0.0%	2.8%	0.9%	1.6%	0.9%	1.7%
striking	66.7%	23.4%	19.6%	18.7%	17.0%	20.5%
struck	16.7%	2.8%	3.0%	4.2%	5.3%	3.5%
Multi-vehicle crashes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
non collision	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%
striking	0.0%	40.3%	34.3%	33.2%	30.7%	35.6%
struck	16.7%	27.4%	36.3%	35.6%	40.4%	33.7%
both	0.0%	3.2%	5.7%	6.6%	5.8%	5.0%
	0.3%	34.5%	33.5%	16.7%	15.1%	100.0%

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Single vehicle crashes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
non collision	0.0%	3.1%	2.6%	1.8%	2.7%	1.7%
striking	60.0%	40.6%	33.1%	31.5%	20.5%	21.7%
struck	0.0%	1.6%	3.1%	2.4%	3.6%	1.4%
both	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Multi-vehicle crashes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
non collision	0.0%	0.0%	0.4%	0.6%	0.9%	0.2%
striking	0.0%	28.7%	32.0%	26.8%	31.3%	18.1%
struck	40.0%	23.7%	26.1%	30.4%	33.9%	16.0%
both	0.0%	2.3%	2.6%	6.5%	7.1%	2.0%
	0.4%	46.5%	32.9%	12.1%	8.1%	100.0%

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APPENDIX 1: GUIDE TO COLLAPSING OF VARIABLES FOR THE GES CASUALTY FILE (1989): MID-WEST REGION

FIRST HARMFUL EVENT

Non collision

rollover

other non collision:
- fire/explosion
- immersion
- gas inhalation
- jackknife
- non collision injury (injured in vehicle, or fell from vehicle)
- non collision - no details
- thrown or falling object

Collision with object not fixed

pedestrian

cycle or cyclist

motor vehicle on road

motor vehicle parked

other:
- railway train
- animal
- other type of non motorist
- object not fixed - no details

Collision with fixed object

guardrail

post/pole/support

curb

embankment

wall

tree

other fixed object:
- ground
- building
- impact attenuator/crash cushion
- bridge structure
- concrete traffic barrier
- culvert/ditch
- fence
- fire hydrant
- shrubbery or bush
- boulder
- fixed object - no details

MOST HARMFUL EVENT

Non collision
rollover
other non collision: fire/explosion
immersion
gas inhalation
jackknife
non collision injury (injured in vehicle, or fell from vehicle)
non collision - no details
thrown or falling object

Collision with object not fixed
pedestrian
cycle or cyclist
motor vehicle on road
motor vehicle parked
other: railway train
animal
other type of non motorist
object not fixed - no details

Collision with fixed object
guardrail
post/pole/support
tree
other fixed object: ground
building
impact attenuator/crash cushion
bridge structure
embankment
curb
concrete traffic barrier
culvert/ditch
wall
fence
fire hydrant
shrubbery or bush
boulder
fixed object - no details

APPENDIX 2: FREQUENCY TABLES -GES MIDWEST REGION (1989)

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (CRASH LEVEL) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-incapacitating injury	10	1001	844	368	309	2532
Incapacitating injury	1	377	328	160	130	996
Fatal injury		37	28	12	13	90
Unknown injury severity		5	5	6	3	19
	11	1420	1205	546	455	3637

Missing cases = 175

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (VEHICLE LEVEL) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No injury	3	409	409	197	160	1178
Possible injury		92	78	53	32	255
Non-incapacitating injury	7	661	520	195	183	1566
Incapacitating injury	1	226	175	87	68	557
Fatal injury		23	17	8	7	55
Injured - severity unknown		6	3	3	4	16
	11	1417	1202	543	454	3627

Missing cases = 185

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF VEHICLES INVOLVED BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	8	524	358	155	112	1157
2	3	771	669	295	271	2009
3		102	143	75	59	379
4		32	44	22	13	111
5		5	6	3	2	16
6		2	2	2		6
	11	1436	1222	552	457	3678

Missing cases = 134

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN CRASH BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured		16	17	6	2	41
1	7	779	683	308	238	2015
2	2	387	328	139	122	978
3	2	151	116	57	56	382
4		66	44	23	29	162
5 or more	0	37	34	19	10	100
	11	1436	1222	552	457	3678

Missing cases = 134

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN VEHICLE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	3	428	429	206	163	1229
1	4	744	612	274	224	1858
2	3	196	133	52	61	445
3	1	41	32	14	6	94
4 or more		27	16	6	3	52
	11	1436	1222	552	457	3678

Missing cases = 134

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF PERSONS INVOLVED (IN CRASH) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	2	209	150	46	34	441
2	6	454	381	198	161	1200
3	1	314	265	135	113	828
4	1	186	158	61	57	463
5	1	109	86	40	25	261
6		53	54	18	22	147
7 or more	0	41	54	22	20	137
	11	1366	1148	520	432	3477

Missing cases = 335

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DAY OF WEEK BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Monday	3	164	139	75	46	427
Tuesday	1	187	160	89	70	507
Wednesday		208	186	72	55	521
Thursday	2	216	191	72	79	560
Friday	1	239	230	101	89	660
Saturday	2	235	188	90	68	583
Sunday	2	187	128	53	50	420
	9	1249	1094	499	407	3258

Missing cases = 134

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
WEEKDAY VERSUS WEEKEND BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Weekday	7	1014	906	409	339	2675
Weekend	4	422	316	143	118	1003
	11	1436	1222	552	457	3678

Missing cases=134

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
12 am - 6 am	2	209	125	41	4	381
6 am - 12 pm	0	270	290	120	119	799
12 pm - 6 pm	6	514	472	261	224	1477
6 pm - 12 am	3	436	333	129	108	1009
	11	1429	1220	551	455	3666

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY WEEKDAY/WEEKEND BY AGE GROUP

N=3812

WEEKDAY

	0-15	16-25	26-40	41-55	56-98	Total
12 am - 6 am	1	80	52	21	3	157
6 am - 12 pm		226	242	97	92	657
12 pm - 6 pm	3	381	365	204	161	1114
6 pm - 12 am	3	322	245	86	82	738
	7	1009	904	408	338	2666

WEEKEND

	0-15	16-25	26-40	41-55	56-98	Total
12 am - 6 am	1	128	72	20	1	222
6 am - 12 pm		44	48	23	27	142
12 pm - 6 pm	3	133	107	57	63	363
6 pm - 12 am		115	89	43	26	273
	4	420	316	143	117	1000

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
PERCENTAGE RURAL BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Urban	6	484	514	226	184	1414
10% Rural		70	82	41	33	226
20% Rural	1	320	246	123	92	782
30% Rural	1	149	108	53	33	344
60% Rural	1	327	226	87	75	716
70% Rural	2	86	46	22	40	196
	11	1436	1222	552	457	3678

Missing cases = 134

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SPEED LIMIT IN MILES (AND KM/H) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
0 (car-park, etc)		1	3	2		6
10 (17 km/h)		1	1			2
15 (24 km/h)		9	6	1		16
20 (32 km/h)		20	12	4	6	42
25 (40 km/h)	2	153	110	51	48	364
30 (48 km/h)	2	46	52	22	21	143
35 (56 km/h)		155	160	56	75	446
40 (64 km/h)		39	43	19	13	114
45 (72 km/h)	1	101	72	31	27	232
50 (80 km/h)		40	28	10	10	88
55 (89 km/h)	2	252	182	86	47	569
65 (105 km/h)		6	2	3	1	12
	7	823	671	285	248	2034

Missing cases = 1778

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
INTERSTATE HIGHWAY BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No (not on highway)	11	1375	1157	514	448	3505
Yes (on highway)		60	65	38	9	172
	11	1435	1222	552	457	3677

Missing cases = 135

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LAND USE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Population 25000-50000	1	149	146	64	49	409
Population 50000-100000	3	102	109	57	57	328
Population 100000+	2	230	230	96	75	633
Other Area	5	914	706	316	261	2202
	11	1395	1191	533	442	3572

Missing cases = 240

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY ALIGNMENT BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Straight	7	1250	1082	493	416	3248
Curve	4	154	115	48	27	348
	11	1404	1197	541	443	3596

Missing cases = 216

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY PROFILE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Level	7	573	486	207	188	1461
Grade	1	186	139	48	49	423
Hillcrest						
	8	766	640	258	243	1915

Missing cases = 1897

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFICWAY FLOW BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Two way undivided	4	704	570	250	240	1768
Divided highway	1	191	202	98	48	540
Oneway		30	35	13	7	85
	5	925	807	361	295	2393

Missing cases = 1419

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATION TO ROADWAY BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
On roadway	4	1073	1005	471	407	2960
On shoulder/parking lane	1	30	24	7	6	68
Off roadway/shoulder/parking lane	6	326	185	70	39	626
On median		6	5	1	1	13
Other		1	2	2	2	7
	11	1436	1221	551	455	3674

Missing cases = 138

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATIONSHIP TO JUNCTION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-junction	4	633	499	239	151	1526
Intersection	3	535	454	206	203	1401
Intersection related	3	136	134	51	43	367
Interchange area		7	2			9
Driveway/alley	1	105	110	45	54	315
Entrance/exit ramp		5	10	5		20
Railway crossing		7	4	1	3	15
Other		5	3			8
	11	1433	1216	547	454	3661

Missing cases = 151

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF TRAVEL LANES BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	1	9	20	8	3	41
2	5	707	550	248	207	1717
3	1	101	83	61	34	280
4		234	231	85	88	638
5		100	99	36	51	286
6 or more		26	22	21	6	75
	7	1177	1005	459	389	3037

Missing cases = 775

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC CONTROL DEVICE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No controls	9	884	733	349	251	2226
Traffic signals						
with pedestrian signal			2	1		3
pedestrian signal not known	1	298	265	118	117	799
flashing traffic signal/beacon		12	6	3	5	26
other traffic signal		10	14	5	2	31
unknown traffic signal		1	1	1	1	4
Regulatory, school zone or warning signs						
stop sign	1	184	164	69	69	487
yield sign		12	12		3	27
school zone sign		1			1	2
warning sign		8	2			10
other sign			1			1
Miscellaneous (not at railroad crossing)		1	1			2
At railroad grade crossing						
active devices		4	2	1	4	11
passive devices		2	2			4
Traffic controls present - no details		7	2	2	2	13
Other traffic controls		1				1
	11	1425	1207	549	455	3647

Missing cases = 165

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC DEVICE FUNCTIONING BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No controls	9	884	733	349	251	2226
Device not functioning		3	5	3	2	13
Device functioning	2	517	446	191	195	1351
	11	1404	1184	543	448	3590

Missing cases = 222

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SEX OF DRIVER BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Male	5	851	673	308	266	2103
Female	6	583	545	244	191	1569
	11	1434	1218	552	457	3672

Missing cases = 140

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL USE (DRIVER) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	1	143	134	36	18	332
No alcohol involved	10	1284	1080	512	436	3322
	11	1427	1214	548	454	3654

Missing cases = 158

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL INVOLVEMENT IN CRASH BY AGE GROUP

N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	1	203	180	63	38	485
No alcohol involved	10	1228	1040	488	418	3184
	11	1431	1220	551	456	3669

Missing cases = 143

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER PHYSICAL/MENTAL IMPAIRMENT BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No impairment	10	1325	1136	531	431	3433
Drowsy/fatigued		30	11	4	5	50
Ill/blackout		4	1		6	11
Emotional		2				2
Drugs/medication				2	2	4
Illicit drugs			2			2
Deaf		1				1
Hit-and-run vehicle		11	12	1	1	25
Physical/mental impairment - no details		4	5		2	11
Other physical/mental impairment	1	36	34	10	6	87
	11	1413	1201	548	453	3626

Missing cases = 186

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER'S ACTION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Not avoiding/swerving	11	1357	1157	532	445	3502
Severe crosswind			1			1
Slippery or loose surface		24	20	8	3	55
Blowout		1				1
Ruts/holes/bumps		2				2
Animals on road		5	5	1	2	13
Vehicle on road		17	9	2	2	30
Phantom vehicle		2				2
Pedestrian/cyclist/non-motorist		4	5	5	1	15
Water/snow/oil slick		2	2			4
Hit-and-run vehicle		17	18	2	1	38
Avoiding action - no details		2	1	2		5
Other cause		1			1	2
	11	1434	1218	552	455	3670

Missing cases = 142

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VIOLATIONS CHARGED BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
None	2	786	838	407	330	2363
Alcohol/drugs		67	62	21	4	154
Speeding	1	71	42	14	9	137
Alcohol or drugs and speeding		2	7	2		11
Reckless driving		58	26	7	2	93
Driving with suspended licence		11	5			16
Failure to giveway	2	131	69	24	55	281
Running traffic controls/stop sign		66	20	20	22	128
Other violation	6	237	150	57	34	484
	11	1429	1219	552	456	3667

Missing cases = 145

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF OCCUPANTS IN VEHICLE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1	5	821	746	355	282	2209
2	4	382	256	123	129	894
3	2	101	108	32	12	255
4		62	42	20	8	132
5 or more		18	27	6	7	58
Unknown (only injured reported)		47	37	14	18	116
	11	1431	1216	550	456	3664

Missing cases = 148

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAVEL SPEED OF VEHICLE IN MILES (AND KM/H) BY AGE GROUP N=3812

		0-15	16-25	26-40	41-55	56-98	Total
Stationary			80	133	80	43	336
01 - 12	(01 - 20 km/h)	1	45	43	12	18	119
13 - 24	(21 - 40 km/h)		61	58	19	25	163
25 - 35	(41 - 60 km/h)	1	65	46	22	17	151
36 - 50	(61 - 80 km/h)		74	64	23	19	180
51 - 60	(81 - 100 km/h)		62	30	16	4	112
Over 60	(>100 km/h)		12	8	2	1	23
		2	399	382	174	127	1084

Missing cases = 2728

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MODEL YEAR BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
1986 - 1989	1	374	416	231	171	1193
1981 - 1985	4	482	390	165	169	1210
1976 - 1980	6	452	324	108	81	971
1971 - 1975		68	56	31	23	178
1974 and earlier		40	21	10	10	81
	11	1416	1207	545	454	3633

Missing cases = 179

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE DEFECTS BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No vehicle defects	11	1394	1187	543	442	3577
Tyres		3	1			4
Brakes		3	2	1	2	8
Steering		1	2	1		4
Suspension		1				1
Other lights		1				1
Hit-and-run vehicle		15	16	2	2	35
Vehicle defects - no details		4	1		2	7
Other vehicle defect		1	1	1	2	5
	11	1423	1210	548	450	3642

Missing cases = 170

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LIGHT CONDITIONS BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Daylight	6	831	789	391	363	2380
Dark	2	247	151	63	31	494
Dark but lighted	2	306	221	74	48	651
Dawn		7	20	7	2	36
Dusk	1	16	22	5	6	50
Dawn or dusk		19	13	8	3	43
	11	1426	1216	548	453	3654

Missing cases = 158

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ATMOSPHERIC CONDITIONS BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No adverse conditions	10	1166	978	426	385	2965
Rain	1	168	151	76	51	447
Sleet		2				2
Snow		71	72	40	18	201
Fog		16	10	6		32
Other		1	2	1	1	5
	11	1424	1213	549	455	3652

Missing cases = 160

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VISUAL OBSTRUCTION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No obstruction	11	1384	1173	531	439	3538
Precipitation		2	1	3	1	7
Glare/sun/headlights		1	1	3	1	6
Curve/hill/embankment		1	5		2	8
Building/billboard		2	1			3
Trees/crops/vegetation		3	1	1		5
Moving vehicle		13	8	5	6	32
Parked vehicle		2	5	2	4	13
Splash/spray from passing vehicle			2			2
Inadequate demister		1			1	2
Obstructing angles on vehicle		1				1
Broken/dirty windscreen		2	1			3
Hit-and-run vehicle		16	17	2	1	36
Vision obscured - no details		1	1	1	1	4
Other obstruction		1	1	1		3
	11	1430	1217	549	456	3663

Missing cases = 149

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROAD SURFACE CONDITION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Dry	7	995	806	366	344	2518
Wet	3	279	260	123	77	742
Snow/slush		13	16	3	4	36
Ice	1	125	127	53	28	334
Sand/dirt/oil		2				2
Other		11	7		2	20
	11	1425	1216	545	455	3652

Missing cases = 160

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE MANOEUVRE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Going straight	4	868	721	330	273	2196
Slowing/stopping	1	24	19	11	6	61
Starting in traffic lane		4	4		2	10
Stopped in traffic lane		78	132	80	43	333
Passing/overtaking		19	11	2	1	33
Leaving parking spot			1		1	2
Avoiding animal/pedestrian/object/vehicle		35	35	15	8	93
Turning right		42	27	14	8	91
Turning left	2	162	130	56	84	434
U-turn		4	1		2	7
Reversing		4	6	2	7	19
Changing lanes/merging		18	21	4		43
Negotiating curve	1	50	35	19	1	106
Other	3	110	63	16	17	209
	11	1418	1206	549	453	3637

Missing cases = 175

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MANNER OF COLLISION BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
No collision with moving vehicle	8	531	369	159	116	1183
Rear-end		244	273	146	76	739
Head-on		56	51	17	15	139
Angle	2	563	497	217	235	1514
Sideswipe, same direction	1	13	11	4	4	33
Sideswipe, opposite direction		17	12	4	6	39
Other			1		1	2
	11	1424	1214	547	453	3649

Missing cases = 163

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
FIRST HARMFUL EVENT BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover		32	13	7	5	57
Other non-collision		11	8	1	1	21
Collision with object - not fixed						
Pedestrian		101	99	45	37	282
Cycle or cyclist	2	57	56	39	30	184
Motor vehicle on road	3	901	848	391	339	2482
Motor vehicle parked	1	25	20	5	3	54
Other		17	10	3	5	35
Collision with fixed object						
Guardrail		21	16	8	2	47
Post/pole/support	1	74	61	16	12	164
Culvert/ditch	1	67	25	12	8	113
Curb		15	6	2	4	27
Embankment		4	2	1		7
Wall		8	4	1		13
Tree	3	60	30	10	2	105
Other fixed object		39	19	9	7	74
	11	1432	1217	550	455	3665

Missing cases = 147

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MOST HARMFUL EVENT (VEHICLE LEVEL) BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover		62	26	13	5	106
Other non-collision		11	6		1	18
Collision with object - not fixed						
Pedestrian		98	98	44	35	275
Cycle/cyclist	2	57	56	39	30	184
Motor vehicle on road	3	874	824	381	333	2415
Parked motor vehicle	1	26	19	5	2	53
Other object not fixed		13	8	2	4	27
Collision with fixed object						
Guardrail		11	13	5	1	30
Post/pole/support	1	52	53	13	11	130
Culvert/ditch	1	37	15	5	4	62
Tree	3	53	33	9	4	102
Other fixed object		30	17	10	8	65
	11	1324	1168	526	438	3467

Missing cases = 345

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE ROLE BY AGE GROUP N=3812

	0-15	16-25	26-40	41-55	56-98	Total
Single vehicle crashes						0
non collision		42	19	9	6	76
striking	7	449	300	124	82	962
struck	1	32	37	20	22	112
Multi vehicle crashes						0
non collision		1	3	1	1	6
striking		503	407	172	140	1222
struck	3	367	397	186	176	1129
both		40	55	36	28	159
	11	1434	1218	548	455	3666

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

APPENDIX 3: FREQUENCY TABLES FOR GES MIDWEST REGION (1989): DAY/NIGHT COMPARISONS

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (CRASH LEVEL) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-incapacitating injury	6	581	523	259	233	1602
Incapacitating injury		180	215	110	97	602
Fatal injury		**16**	**12**	**6**	**9**	**43**
Unknown injury severity		3	3	5	2	13
	6	780	753	380	341	2260

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-incapacitating injury	4	414	320	109	76	923
Incapacitating injury	1	196	112	49	31	389
Fatal injury		**21**	**16**	**6**	**4**	**47**
Unknown injury severity		2	2	1	1	6
	5	633	450	165	112	1365

Missing cases = 187

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MAXIMUM INJURY SEVERITY (VEHICLE LEVEL) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No injury	3	236	281	147	123	790
Possible injury		52	52	33	25	162
Non-incapacitating injury	3	376	307	128	138	952
Incapacitating injury		99	103	64	46	312
Fatal injury		10	7	4	5	26
Injured - severity unknown		4		2	3	9
	6	777	750	378	340	2251

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No injury		171	128	49	37	385
Possible injury		39	26	20	7	92
Non-incapacitating injury	4	281	212	67	45	609
Incapacitating injury	1	127	71	23	20	242
Fatal injury		13	10	4	2	29
Injured - severity unknown		2	3	1	1	7
	5	633	450	164	112	1364

Missing cases = 197

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF VEHICLES INVOLVED BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	5	228	180	95	80	588
2	1	463	444	212	210	1330
3		67	96	52	41	256
4		23	38	19	10	90
5		3	4	3	2	12
	6	784	762	381	343	2276

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1	3	292	178	60	30	563
2	2	305	223	82	61	673
3		35	47	23	18	123
4		9	6	3	3	21
5		2	2			4
6		2	2	2		6
	5	645	458	170	112	1390

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN CRASH BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured		4	9	1	2	16
1	5	426	422	221	175	1249
2		224	213	94	98	629
3	1	79	73	38	43	234
4		36	26	14	20	96
5 or more	0	15	19	13	5	52
	6	784	762	381	343	2276

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No-one injured		12	8	5		25
1	2	349	260	86	62	759
2	2	161	115	45	24	347
3	1	71	42	19	12	145
4		30	18	9	9	66
5 or more	0	22	15	6	5	48
	5	645	458	170	112	1390

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER INJURED IN VEHICLE BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
No-one injured	3	243	293	150	126	815
1	2	427	365	182	169	1145
2		87	73	37	43	240
3 or more	1	27	31	12	5	76
	6	784	762	381	343	2276

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
N0-one injured		183	136	55	37	411
1	2	314	246	92	54	708
2	3	107	59	15	18	202
3 or more	0	41	17	8	3	69
	5	645	458	170	112	1390

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF PERSONS INVOLVED (IN CRASH) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	2	84	57	24	24	191
2	3	278	265	140	131	817
3	1	184	168	106	84	543
4		96	109	45	37	287
5		61	57	24	21	163
6		28	32	8	18	86
7 or more	0	22	31	18	11	82
	6	753	719	365	326	2169

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1		123	93	22	9	247
2	3	175	116	57	30	381
3		126	95	29	28	278
4	1	90	49	16	20	176
5	1	48	29	16	4	98
6		25	22	10	4	61
7 or more	0	19	23	4	9	55
	5	606	427	154	104	1296

Missing cases = 347

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DAY OF WEEK BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
Monday	1	102	92	58	38	291
Tuesday		140	120	73	55	388
Wednesday		123	125	53	36	337
Thursday	1	133	126	53	60	373
Friday	1	109	144	64	64	382
Saturday	2	101	92	43	55	293
Sunday	1	76	63	37	35	212
	5	708	699	344	308	2064

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
Monday	2	60	46	17	8	133
Tuesday	1	47	40	15	15	118
Wednesday		85	61	19	19	184
Thursday	1	82	65	19	19	186
Friday		128	85	37	24	274
Saturday		134	96	47	13	290
Sunday	1	109	65	16	14	205
	4	536	393	154	98	1185

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
WEEKDAY VERSUS WEEKEND BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
Weekend	3	607	607	301	253	1771
Weekend	3	177	155	80	90	505
	6	784	762	381	343	2276

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
Weekend	4	402	297	107	85	895
Weekend	1	243	161	63	27	495
	5	645	458	170	112	1390

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY AGE GROUP

N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
6 am - 12 pm	1	321	362	144	151	979
12 pm - 6 pm	5	463	400	237	192	1297
	6	784	762	381	343	2276

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
6 pm - 12 am	3	436	333	129	108	1009
12 am - 6 am		209	125	41	4	379
	3	645	458	170	112	1388

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TIME PERIOD BY WEEKDAY/WEEKEND BY AGE GROUP N=3812

DAY

		0-15	16-25	26-40	41-55	56-98	Total
Weekday:	6 am - 12 pm		94	99	66	88	347
	12 pm - 6 pm		171	167	98	123	559
Weekend:	6 am - 12 pm		41	29	18	13	101
	12 pm - 6 pm		70	61	30	54	215
		0	376	356	212	278	1222

NIGHT

		0-15	16-25	26-40	41-55	56-98	Total
Weekday:	12 am - 6 am		50	51	10	7	118
	6 pm - 12 am	1	155	115	50	45	366
Weekend:	12 am - 6 am		69	52	13	2	136
	6 pm - 12 am	1	69	61	18	25	174
		2	343	279	91	79	794

Missing cases = 129

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RURAL/URBAN BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Urban	3	255	308	148	132	846
10% Rural		45	50	28	25	148
20% Rural		179	173	91	69	512
30% Rural	1	79	69	36	25	210
60% Rural		185	131	60	57	433
70% Rural	2	41	31	18	35	127
	6	784	762	381	343	2276

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Urban	3	229	206	78	52	568
10% Rural		25	32	13	8	78
20% Rural	1	140	73	31	22	267
30% Rural		68	38	17	8	131
60% Rural	1	139	94	27	17	278
70% Rural		44	15	4	5	68
	5	645	458	170	112	1390

Missing cases = 146

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SPEED LIMIT IN MILES (AND KM/H) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
0 (car-park, etc)		1	3	2		6
10 (17 km/h)		1				1
15 (24 km/h)		5	3			8
20 (32 km/h)		9	6	3	5	23
25 (40 km/h)	2	70	66	36	34	208
30 (48 km/h)	1	32	28	15	17	93
35 (56 km/h)		89	101	41	55	286
40 (64 km/h)		23	31	12	10	76
45 (72 km/h)		55	40	20	19	134
50 (80 km/h)		20	18	9	6	53
55 (89 km/h)	1	148	106	59	40	354
65 (105 km/h)		3		3	1	7
	4	456	402	200	187	1249

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
10 (17 km/h)			1			1
15 (24 km/h)		4	3	1		8
20 (32 km/h)		11	6	1	1	19
25 (40 km/h)		83	44	15	14	156
30 (48 km/h)	1	14	24	7	4	50
35 (56 km/h)		66	59	15	20	160
40 (64 km/h)		16	12	6	3	37
45 (72 km/h)	1	46	32	11	7	97
50 (80 km/h)		19	10	1	4	34
55 (89 km/h)	1	100	75	27	6	209
65 (105 km/h)		3	2			5
	3	362	268	84	59	776

Missing cases = 1787

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
INTERSTATE HIGHWAY BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No (not on highway)	6	748	718	352	334	2158
Yes (on highway)		35	44	29	9	117
	6	783	762	381	343	2275

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No (not on highway)	5	620	437	161	112	1335
Yes (on highway)		25	21	9		55
	5	645	458	170	112	1390

Missing cases = 147

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LAND USE BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
Population 25000-50000	1	83	104	47	39	274
Population 50000-100000	2	50	64	38	42	196
Population 100000+	1	119	136	65	52	373
Other Area	2	509	438	220	199	1368
	6	761	742	370	332	2211

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
Population 25000-50000		64	41	16	10	131
Population 50000-100000	1	52	45	19	15	132
Population 100000+	1	111	94	31	23	260
Other Area	3	400	267	96	60	826
	5	627	447	162	108	1349

Missing cases = 252

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY ALIGNMENT BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Straight	4	702	690	341	313	2050
Curve	2	66	57	30	21	176
	6	768	747	371	334	2226

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Straight	3	542	390	151	101	1187
Curve	2	88	58	18	6	172
	5	630	448	169	107	1359

Missing cases = 227

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROADWAY PROFILE BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Level	3	320	278	143	140	884
Grade	1	97	87	34	38	257
Hillcrest		4	11	3	6	24
	4	421	376	180	184	1165

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Level	4	252	208	64	47	575
Grade		86	51	14	11	162
Hillcrest		3	4			7
	4	341	263	78	58	744

Missing cases = 1903

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC WAY FLOW BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Two way undivided	3	403	350	171	184	1111
Divided highway		108	128	69	39	344
Oneway		17	21	9	5	52
	3	528	499	249	228	1507

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Two way undivided	1	299	219	79	56	654
Divided highway	1	83	74	28	9	195
Oneway		13	14	4	2	33
	2	395	307	111	67	882

Missing cases = 1423

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATION TO ROADWAY BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
On roadway	2	650	669	342	306	1969
On shoulder/parking lane		9	14	2	4	29
Off roadway/shoulder/parking lane	4	121	73	36	31	265
On median		3	5		1	9
Other		1	1	1		3
	6	784	762	381	342	2275

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
On roadway	2	419	334	128	101	984
On shoulder/parking lane	1	21	10	5	2	39
Off roadway/shoulder/parking lane	2	202	112	34	6	356
On median		3		1		4
Other			1	1	2	4
	5	645	457	169	111	1387

Missing cases = 150

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
RELATION TO JUNCTION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-junction	3	303	284	153	117	860
Intersection	1	321	309	155	156	942
Intersection related	1	72	83	35	29	220
Interchange area		2	1			3
Driveway/alley	1	73	73	33	38	218
Entrance/exit ramp		4	4	2		10
Railway crossing		4	2	1	2	9
Other		2	3			5
	6	781	759	379	342	2267

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-junction	1	327	215	85	32	660
Intersection	2	211	143	51	47	454
Intersection related	2	63	51	16	14	146
Interchange area		5	1			6
Driveway/alley		32	37	12	16	97
Entrance/exit ramp		1	6	3		10
Railway crossing		3	2		1	6
Other		3				3
	5	645	455	167	110	1382

Missing cases = 163

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF TRAVEL LANES BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	1	4	9	5	1	20
2	3	389	330	172	164	1058
3		63	56	41	29	189
4		122	155	53	66	396
5		63	67	27	38	195
6 or more		14	10	12	4	40
	4	655	627	310	302	1898

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1		5	11	3	2	21
2	2	314	219	76	42	653
3	1	38	27	20	5	91
4		111	75	32	22	240
5		37	32	9	13	91
6 or more		12	12	9	2	35
	3	517	376	149	86	1131

Missing cases = 783

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC CONTROL DEVICE BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
No control device	6	476	445	236	194	1357
Traffic signals						
with pedestrian signal			1	1		2
pedestrian signal not known		162	168	85	88	503
flashing traffic controls/beacon		8	3	1	2	14
other traffic signal		7	6	3	2	18
unknown traffic signal				1	1	2
Regulatory, school zone or warning signs						
stop sign		111	118	49	46	324
yield sign		5	8		2	15
school zone sign		1			1	2
warning sign		1				1
other sign			1			1
At railroad grade crossing						
active devices		2	2	1	3	8
passive devices			2			2
Traffic control present - no details		4	1	2	2	9
Other traffic control		1				1
	6	778	755	379	341	2259

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
No control device	3	404	287	113	56	863
Traffic signals						
with pedestrian signal			1			1
pedestrian signal not known	1	135	97	33	29	295
flashing traffic controls/beacon		4	3	2	3	12
other traffic signal		3	8	2		13
unknown traffic signal		1	1			2
Regulatory, school zone or warning signs						
stop sign	1	71	45	19	22	158
yield sign		7	4		1	12
warning sign		7	2			9
Miscellaneous (not at railroad crossing)		1	1			2
At railroad grade crossing						
active devices		2			1	3
passive devices		2				2
Traffic control present - no details		3	1			4
	5	640	450	169	112	1376

Missing cases = 177

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAFFIC DEVICE FUNCTIONING BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No controls	6	476	445	236	194	1357
Device not functioning		1	3	2	2	8
Device functioning		286	294	137	139	856
	6	763	742	375	335	2221

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No controls	3	404	287	113	56	863
Device not functioning		2	2	1		5
Device functioning	2	228	151	53	55	489
	5	634	440	167	111	1357

Missing cases = 234

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
SEX OF DRIVER BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Male	2	415	385	200	192	1194
Female	4	367	375	181	151	1078
	6	782	760	381	343	2272

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Male	3	434	286	107	73	903
Female	2	211	170	63	39	485
	5	645	456	170	112	1388

Missing cases = 152

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL USE (DRIVER) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved		25	25	8	7	65
No alcohol involved	6	756	734	372	333	2201
	6	781	759	380	340	2266

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	1	118	109	28	11	267
No alcohol involved	4	521	344	139	101	1109
	5	639	453	167	112	1376

Missing cases = 170

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ALCOHOL INVOLVEMENT IN CRASH BY AGE GROUP N = 3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved		**38**	**37**	**19**	**15**	**109**
No alcohol involved	6	744	725	362	327	2164
	6	782	762	381	342	2273

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Alcohol involved	1	165	143	44	23	376
No alcohol involved	4	477	313	125	89	1008
	5	642	456	169	112	1384

Missing cases = 155

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER PHYSICAL/MENTAL IMPAIRMENT BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No impairment	6	756	738	370	326	2196
Drowsy/fatigued		11	4	4	4	23
Ill/blackout		1	1		3	5
Drugs/medication				1	2	3
Illicit drugs			2			2
Deaf		1				1
Hit-and-run vehicle		3	2	1	1	7
Physical/mental impairment - no details		1			2	3
Other physical/mental impairment		4	9	3	3	19
	6	777	756	379	341	2259

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No impairment	4	562	396	160	103	1225
Drowsy/fatigue		19	7		1	27
Ill/blackout		3			3	6
Emotional		2				2
Drugs/medication				1		1
Illicit drugs						0
Hit-and-run vehicle		8	10			18
Physical/mental impairment - no details		3	5			8
Other physical/mental impairment	1	32	25	7	3	68
	5	629	443	168	110	1355

Missing cases = 198

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
DRIVER'S ACTION BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Not avoiding/swerving	6	747	723	368	333	2177
Severe crosswind			1			1
Slippery or loose surface		12	15	5	3	35
Ruts/holes/bumps		2				2
Animals on road		4	4		1	9
Vehicle on road		8	4	1	2	15
Pedestrian/cyclist/non-motorist		2	5	4	1	12
Water/snow/oil slick		2	2			4
Hit-and-run vehicle		3	4	1	1	9
Avoiding action - no details		1	1	2		4
Other cause		1				1
	6	782	759	381	341	2269

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Not avoiding/swerving	5	605	433	163	110	1316
Slippery or loose surface		11	4	3		18
Blowout		1				1
Animals on road		1	1	1	1	4
Vehicle on road		8	5	1		14
Phantom vehicle		2				2
Pedestrian/cyclist/non-motorist		2		1		3
Hit-and-run vehicle		14	14	1		29
Avoiding action - no details		1				1
Other cause					1	1
	5	645	457	170	112	1389

Missing cases = 154

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VIOLATIONS CHARGED BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
None	2	441	553	292	246	1534
Alcohol/drugs		9	11	5	2	27
Speeding		42	24	10	5	81
Alcohol or drugs and speeding		1	2	1		4
Reckless driving		23	15	4	2	44
Driving with suspended licence		5	2			7
Failure to giveway		88	53	21	43	205
Running traffic controls/stop sign		44	13	12	19	88
Other violation	4	127	88	36	25	280
	6	780	761	381	342	2270

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
None		341	283	114	82	820
Alcohol/drugs		58	51	16	2	127
Speeding	1	29	18	4	4	56
Alcohol or drugs and speeding		1	5	1		7
Reckless driving		35	11	3		49
Driving with suspended licence		6	3			9
Failure to giveway	2	43	16	3	12	76
Running traffic controls/stop sign		22	7	8	3	40
Other violation	2	107	62	21	9	201
	5	642	456	170	112	1385

Missing cases = 157

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
NUMBER OF OCCUPANTS IN VEHICLE BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1	5	490	477	247	224	1443
2		188	144	89	92	513
3	1	45	69	23	7	145
4		27	30	8	5	70
5 or more	0	7	18	5	4	34
Unknown (only injured reported)		25	20	8	10	63
	6	782	758	380	342	2268

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1		326	269	107	57	759
2	4	193	110	34	37	378
3	1	55	39	9	4	108
4		35	12	12	3	62
5 or more	0	11	9	1	3	24
Unknown (only injured reported)		22	17	6	8	53
	5	642	456	169	112	1384

Missing cases = 160

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
TRAVEL SPEED OF VEHICLE IN MILES (AND KM/H) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Stationary		47	95	58	35	235
01 - 12 (01 - 20 km/h)		34	26	9	13	82
13 - 24 (21 - 40 km/h)		31	42	15	15	103
25 - 35 (41 - 60 km/h)	1	36	18	12	14	81
36 - 50 (61 - 80 km/h)		44	31	16	15	106
51 - 60 (81 - 100 km/h)		27	12	10	3	52
Over 60 (>100 km/h)		2	2	1	1	6
	1	221	226	121	96	665

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Stationary		33	38	22	8	101
01 - 12 (01 - 20 km/h)	1	11	17	3	5	37
13 - 24 (21 - 40 km/h)		30	16	4	10	60
25 - 35 (41 - 60 km/h)		29	28	10	3	70
36 - 50 (61 - 80 km/h)		29	32	7	4	72
51 - 60 (81 - 100 km/h)		34	18	6		58
Over 60 (>100 km/h)		10	6	1		17
	1	176	155	53	30	415

Missing cases = 2732

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MODEL YEAR BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
1986 - 1989		213	268	164	123	768
1981 - 1985	3	270	252	122	135	782
1976 - 1980	3	237	192	67	55	554
1971 - 1975		33	29	18	19	99
1974 and earlier		20	12	6	9	47
	6	773	753	377	341	2250

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
1986 - 1989	1	160	146	66	47	420
1981 - 1985	1	211	138	43	34	427
1976 - 1980	3	212	132	41	25	413
1971 - 1975		34	27	13	4	78
1974 and earlier		20	9	4	1	34
	5	637	452	167	111	1372

Missing cases = 190

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE DEFECTS BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No vehicle defects	6	774	748	373	331	2232
Tyres		1	1			2
Brakes		1	2	1	2	6
Steering		1	2	1		4
Hit-and-run vehicle		3	1	1	1	6
Vehicle defects - no details			1		1	2
Other vehicle defect		1		1	1	3
	6	781	755	377	336	2255

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No vehicle defects	5	614	437	169	110	1335
Tyres		2				2
Brakes		1				1
Suspension		1				1
Other lights (on vehicle)		1				1
Hit-and-run vehicle		12	15	1	1	29
Vehicle defects - no details		4			1	5
Other vehicle defect			1			1
	5	635	453	170	112	1375

Missing cases = 182

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
LIGHT CONDITIONS BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Daylight	6	731	698	349	326	2110
Dark		11	9	12	5	37
Dark but lighted		24	18	3	5	50
Dawn		6	20	7	2	35
Dusk		3	7	2	1	13
Dawn or dusk		7	8	6	1	22
	6	782	760	379	340	2267

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Daylight		96	90	41	35	262
Dark	2	235	142	51	26	456
Dark but lighted	2	281	203	71	43	600
Dawn		1				1
Dusk	1	13	15	3	5	37
Dawn or dusk		12	5	2	2	21
	5	638	455	168	111	1377

Missing cases = 168

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ATMOSPHERIC CONDITIONS BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No adverse conditions	6	647	606	293	283	1835
Rain		90	97	55	43	285
Snow		38	48	29	15	130
Fog		4	6	4		14
Other		1	2		1	4
	6	780	759	381	342	2268

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No adverse conditions	4	514	372	132	101	1123
Rain	1	76	52	21	8	158
Sleet		2				2
Snow		33	24	11	2	70
Fog		12	4	2		18
Other				1		1
	5	637	452	167	111	1372

Missing cases = 172

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VISUAL OBSTRUCTION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No obstruction	6	757	738	366	326	2193
Precipitation		1	1	2	1	5
Glare/sun/headlights		1	1	2	1	5
Curve/hill/embankment		1	1		2	4
Building/billboard			1			1
Trees/crops/vegetation		2	1	1		4
Moving vehicle		11	7	4	6	28
Parked vehicle		2	2	2	3	9
Splash/spray from passing vehicle			1			1
Inadequate demister		1			1	2
Obstructing angles on vehicle		1				1
Broken/dirty windscreen		2	1			3
Hit-and-run vehicle		2	4	1	1	8
Vision obscured - no details				1	1	2
Other obstruction		1	1			2
	6	782	759	379	342	2268

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No obstruction	5	620	433	164	111	1333
Precipitation		1		1		2
Glare/sun/headlights				1		1
Curve/hill/embankment			4			4
Building/billboard		2				2
Trees/crops/vegetation		1				1
Moving vehicle		2	1	1		4
Parked vehicle			3		1	4
Splash/spray from passing vehicle			1			1
Hit-and-run vehicle		14	13	1		28
Vision obscured - no details		1	1			2
Other obstruction				1		1
	5	641	456	169	112	1383

Missing cases = 161

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
ROAD SURFACE CONDITION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Dry	5	537	480	252	253	1527
Wet		160	179	89	64	492
Snow/slush		9	7	2	4	22
Ice	1	72	88	36	20	217
Other		5	6		2	13
	6	783	760	379	343	2271

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Dry	2	453	326	114	90	985
Wet	3	117	79	34	13	246
Snow/slush		4	9			13
Ice		53	39	17	7	116
Sand/dirt/oil		2				2
Other		6	1			7
	5	635	454	165	110	1369

Missing cases = 172

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE MANOEUVRE BY AGE GROUP N=3812

	DAY					
	0-15	16-25	26-40	41-55	56-98	Total
Going straight	**3**	**468**	**441**	**226**	**202**	**1340**
Slowing/stopping	**1**	**15**	**16**	**10**	**4**	**46**
Starting in traffic lane		1	2			3
Stopped in traffic lane		**45**	**95**	**58**	**35**	**233**
Passing/overtaking		11	5	2	1	19
Leaving parking spot					1	1
Avoiding animal/pedestrian/object/vehicle		**21**	**24**	**9**	**6**	**60**
Turning right		**22**	**19**	**12**	**6**	**59**
Turning left		**103**	**88**	**43**	**66**	**300**
U-turn			1		2	3
Reversing		3	2	1	5	11
Changing lanes/merging		**12**	**12**	**1**		**25**
Negotiating curve		18	16	8	1	43
Other	2	54	33	9	12	110
	6	773	754	379	341	2253

	NIGHT					
	0-15	16-25	26-40	41-55	56-98	Total
Going straight	1	396	278	103	70	848
Slowing/stopping		9	3	1	2	15
Starting in traffic lane		2	2		2	6
Stopped in traffic lane		33	37	22	8	100
Passing/overtaking		8	6			14
Leaving parking spot			1			1
Avoiding animal/pedestrian/object/vehicle		13	11	6	2	32
Turning right		20	8	2	2	32
Turning left	2	59	42	13	18	134
U-turn		4				4
Reversing		1	4	1	2	8
Changing lanes/merging		6	9	3		18
Negotiating curve	1	32	19	11		63
Other	1	56	30	7	4	98
	5	639	450	169	110	1373

Missing cases = 186

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MANNER OF COLLISION BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
No collision with moving vehicle	5	232	185	97	84	603
Rear-end		146	184	106	55	491
Head-on		33	30	11	12	86
Angle		347	343	160	182	1032
Sideswipe, same direction	1	7	7	2	4	21
Sideswipe, opposite direction		13	7	2	5	27
	6	778	756	378	342	2260

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
No collision with moving vehicle	3	295	184	62	31	575
Rear-end		98	89	40	21	248
Head-on		22	20	6	3	51
Angle	2	214	153	56	53	478
Sideswipe, same direction		6	4	2		12
Sideswipe, opposite direction		4	5	2	1	12
Other			1		1	2
	5	639	456	168	110	1378

Missing cases = 174

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
FIRST HARMFUL EVENT (CRASH LEVEL) BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover		16	4	5	3	28
Other non-collision		6	2			8
Collision with object - not fixed						
Pedestrian		49	63	29	26	167
Cycle or cyclist	2	43	38	30	23	136
Motor vehicle on road	1	550	574	283	259	1667
Motor vehicle parked		7	4	1	2	14
Other object not fixed		7	2	3	3	15
Collision with fixed object						
Guardrail		11	6	5	2	24
Post/pole/support		22	21	7	10	60
Culvert/ditch	1	29	8	5	7	50
Fence		3	4	1	3	11
Tree	2	18	18	5	1	44
Other fixed object		21	15	6	4	46
	6	782	759	380	343	2270

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover		16	9	2	2	29
Other non-collision		5	6	1	1	13
Collision with object - not fixed						
Pedestrian		51	36	16	11	114
Cycle or cyclist		14	18	9	7	48
Motor vehicle on road	2	348	272	107	80	809
Motor vehicle parked	1	18	16	4	1	40
Other object not fixed		10	8		2	20
Collision with fixed object						
Guardrail		10	10	3		23
Post/pole/support	1	52	40	9	1	103
Culvert/ditch		36	17	7	1	61
Curb		12	4	1	2	19
Tree	1	41	12	5	1	60
Other fixed object		30	8	5	2	45
	5	643	456	169	111	1384

Missing cases = 158

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
MOST HARMFUL EVENT BY AGE GROUP N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover		27	10	8	3	48
Other non-collision		5	2			7
Collision with object - not fixed						
Pedestrian		47	63	28	24	162
Cycle or cyclist	2	43	38	30	23	136
Motor vehicle on road	1	533	559	276	253	1622
Motor vehicle parked		8	4	1	1	14
Other object not fixed		6	2	1	2	11
Collision with fixed object						
Guardrail		5	6	3	1	15
Post/pole/support		14	19	5	9	47
Culvert/ditch	1	15	4	3	3	26
Tree	2	17	17	5	2	43
Other fixed object		11	9	4	6	30
	6	731	733	364	327	2161

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Non-collision						
Rollover		35	16	5	2	58
Other non-collision		6	4		1	11
Collision with object - not fixed						
Pedestrian		50	35	16	11	112
Cycle or cyclist		14	18	9	7	48
Motor vehicle on road	2	338	263	104	80	787
Motor vehicle parked	1	18	15	4	1	39
Other object not fixed		7	6	1	2	16
Collision with fixed object						
Guardrail		6	7	2		15
Post/pole/support	1	38	34	8	1	82
Culvert/ditch		20	11	2	1	34
Tree	1	35	16	4	2	58
Other fixed object		19	8	6	2	35
	5	586	433	161	110	1295

Missing cases = 356

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes

GENERAL ESTIMATES SYSTEM (1989) - MIDWEST REGION*
VEHICLE ROLE BY AGE GROUP

N=3812

DAY

	0-15	16-25	26-40	41-55	56-98	Total
Single vehicle crashes						0
non collision		22	7	6	3	38
striking	4	183	149	71	58	465
struck	1	22	23	16	18	80
Multi vehicle crashes						0
non collision		1	1			2
striking		315	261	126	105	807
struck	1	214	276	135	138	764
both		25	43	25	20	113
	6	782	760	379	342	2269

NIGHT

	0-15	16-25	26-40	41-55	56-98	Total
Single vehicle crashes						0
non collision		20	12	3	3	38
striking	3	262	151	53	23	492
struck		10	14	4	4	32
both						0
Multi vehicle crashes						0
non collision			2	1	1	4
striking		185	146	45	35	411
struck	2	153	119	51	38	363
both		15	12	11	8	46
	5	645	456	168	112	1386

Missing cases = 147

* Frequencies comprise drivers of cars and car derivatives involved in reported casualty crashes