

**FEDERAL GOVERNMENT'S ROAD SAFETY INITIATIVE**

**YOUNG DRIVER RESEARCH PROGRAM -  
MASS CRASH DATA ANALYSIS**

**FORS FATALITY FILE (1988) - NSW, VICTORIA AND  
SOUTH AUSTRALIA COMBINED**

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**Abstract**

This report is sixth 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 fatality crashes for NSW, Victoria and South Australia combined (1988) 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.

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**Key Words**

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

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**Notes**

- (1) FORS reports are disseminated in the interest of information exchange
- (2) The view expressed are those of the author(s) and do not necessarily represent those of the Commonwealth Government.
- (3) The Federal Office of Road Safety publishes four series of research reports:
  - (a) reports generated as a result of research done within FORS are published in the OR series
  - (b) reports of research conducted by other organizations on behalf of FORS are published in the CR series
  - (c) reports based on analyses of FORS' statistical databases are published in the SR series
  - (d) minor reports of research conducted by other organizations on behalf of FORS are published in the MR series.

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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**

<b>Report N<sup>o</sup></b>	<b>Data File</b>	<b>State</b>	<b>Year(s)</b>
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**

<b>Report N<sup>o</sup></b>	<b>Data File</b>	<b>US Region</b>	<b>Year(s)</b>
7	GES	North-west	1989
8	"	Mid-west	"
9	"	West	"
10	"	South	"

### **Overview report**

<b>Report N<sup>o</sup></b>	
11	Reviews the main findings presented in Report N <sup>os</sup> 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 N<sup>o</sup> 11 contains an overview of results comprising two sections: the first notes similarities and differences in results between States and compared to the US data; the second compares results with the the main literature findings (see Macdonald; 1994a and 1994b).

This report (Nº 6 in the series) presents combined results for NSW, Victorian and South Australian fatality crashes during 1988, 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 FORS FATALITY FILE (1988) - NSW, VICTORIA AND SOUTH AUSTRALIA COMBINED - BIVARIATE ANALYSES**

### **2.1 INTRODUCTION**

The results of analysis of the FORS Fatality File (1988) for NSW, Victoria and South Australia have been presented individually in Reports 3, 4 and 5 of this series. Because frequencies for some variable levels such as Definition for Classifying Accidents (DCA) were quite low on an individual State basis due to the relatively low number of fatality crashes compared to casualty crashes, this report combines the fatality data for the three States to enhance any age group differences.

Prior to conducting bivariate analyses (age by variable of interest), the data was modified as follows:

- As the focus of primary interest was young *car* drivers, a driver-based file consisting of car and car derivative drivers was created. Included were drivers of cars (sedans and tourers), station wagons, panel vans and utilities.
- Age of drivers was grouped as follows: 16 to 25 (16 being the minimum licensing age in South Australia), 26 to 55 years and 'other' drivers. While all other reports in this series have shown five age groups, age was collapsed into three groups here to emphasise any young driver differences. (The reports for fatality crashes for NSW, Victoria and South Australia have maintained the five age groups.)
- All 'not known' cases (eg. not known age group, not known day of week, etc) were collapsed with other missing cases. The proportion of not known or missing data generally formed only 1-2% of the total sample.
- Reporting of all categories within some variables (eg. Definition for Classifying Accidents) would have been unwieldy and often unnecessary due to low frequency counts for certain categories. The general practice has been to present categories with a reasonable number of cases and collapse all others. A guide to how variables were collapsed appears in Appendix 1.

### **2.2 TABLES - BIVARIATE ANALYSES**

The tables on the following pages present frequencies for each variable of interest distributed by age group. Consistent with the data presented in the first report, the tables have been grouped as follows (page numbers have been included here for the convenience of the reader):

	<b>Page</b>
<b>DESCRIPTION OF CRASH</b>	
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Number of persons injured in crash	9
Number of persons injured in this vehicle	10
Number of fatalities in crash	11
Number of fatalities in this vehicle	12

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<b>WHAT OTHER FACTORS SURROUNDED THE CRASH?</b>	
Primary Accident Class	41
DCA event	42
Major factor	43
Origin of trip	44
Destination of trip	45

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**PERSON RESPONSIBLE FOR CRASH BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
This driver responsible	418	420	183	1021
This driver not responsible	117	239	75	431
Pedestrian responsible	80	112	17	209
More than one person responsible	31	33	8	72
No fault	6	8	2	16
Unit/person in prior event only	8	11	3	22
	660	823	288	1771

Missing cases = 38

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF VEHICLES INVOLVED BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
1	334	340	75	749
2	311	451	207	969
3	18	36	9	63
4		3	1	4
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS IN CRASH BY DRIVER AGE GROUP**

N=1809

	16-25	26-55	Others	Total
1	77	112	36	225
2	230	262	90	582
3	151	164	72	387
4	91	119	47	257
5	52	75	19	146
6	29	40	17	86
7 or more	26	55	9	90
	656	827	290	1773

Missing cases = 36

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS INJURED IN CRASH BY DRIVER AGE GROUP**  
N=1809

	16-25	26-55	Others	Total
0	280	381	120	781
1	179	187	81	447
2	94	105	44	243
3	60	71	23	154
4	20	52	8	80
5	13	12	9	34
6 or more	13	20	6	39
	659	828	291	1778

Missing cases = 31

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS INJURED IN THIS VEHICLE BY DRIVER**  
**AGE GROUP** N=1809

	16-25	26-55	Others	Total
0	355	486	175	1016
1	178	209	76	463
2	81	68	30	179
3	28	33	7	68
4 or more	18	33	4	55
	660	829	292	1781

Missing cases = 28

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF FATALITIES IN CRASH BY DRIVER AGE GROUP**  
N=1809

	16-25	26-55	Others	Total
1	584	726	260	1570
2	67	79	26	172
3 or more	12	25	6	43
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF FATALITIES IN THIS VEHICLE BY DRIVER AGE GROUP**  
N=1809

	16-25	26-55	Others	Total
0	284	401	86	771
1	330	377	181	888
2	42	37	20	99
3	6	12	4	22
4	1	1		2
5		2	1	3
	663	830	292	1785

Missing cases = 24

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DAY OF WEEK BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Monday	55	99	36	190
Tuesday	75	97	42	214
Wednesday	66	90	46	202
Thursday	81	104	37	222
Friday	110	151	52	313
Saturday	141	145	43	329
Sunday	135	144	36	315
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**WEEKDAY VERSUS WEEKEND BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Weekday	387	541	213	1141
Weekend	276	289	79	644
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**TIME PERIOD BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
12 am - 6 am	165	123	18	306
6 am - 12 pm	126	184	88	398
12 pm - 6 pm	158	259	128	545
6 pm - 12 am	214	263	57	534
	663	829	291	1783

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**TIME PERIOD BY WEEKDAY/WEEKEND BY AGE GROUP**

N=1809

	<b>WEEKDAY</b>			
	16-25	26-55	Others	Total
12 am - 6 am	67	48	8	123
6 am - 12 pm	92	137	63	292
12 pm - 6 pm	98	171	104	373
6 pm - 12 am	130	185	38	353
	387	541	213	1141

	<b>WEEKEND</b>			
	16-25	26-55	Others	Total
12 am - 6 am	98	75	10	183
6 am - 12 pm	34	47	25	106
12 pm - 6 pm	60	88	24	172
6 pm - 12 am	84	78	19	181
	276	288	78	642

Missing cases = 26

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**CITY/RURAL BOUNDARIES BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Capital city	333	391	117	841
Provincial urban	89	86	47	222
General rural	238	346	128	712
Remote rural	2	6		8
Remote town	1	1		2
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ROAD TYPE BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
National highway	53	71	34	158
State highway	95	149	61	305
Other rural road	174	217	70	461
Major arterial city road	162	195	55	412
Other urban	179	197	70	446
	663	829	290	1782

Missing cases = 27

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**LOCATION BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Mid-block	472	617	179	1268
Within intersection	136	159	92	387
Related to intersection	54	51	20	125
	662	827	291	1780

Missing cases = 29

---

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**INTERSECTION TYPE BY AGE GROUP** N=1809

	16-25	26-55	56-98	Total
X-intersection	85	107	61	253
Y-intersection	6	5	4	15
T-intersection	95	97	47	239
Multi-intersection	2	2	1	5
	188	211	113	512

Missing cases = 1297\*\*

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\* Frequencies comprise drivers of cars and car derivatives only

\*\* It appears that coders have coded non-intersection accidents as missing rather than the category of 'not applicable' as specified in the Documentation of File Structure. Thus the high number of missing cases.

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ROAD CONFIGURATION BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
One way	4	7	3	14
Two way undivided	388	519	148	1055
Divided road (dual carriageway)	75	75	19	169
Single carriageway - freeway	1	1	1	3
Dual carriageway - freeway	7	15	7	29
Other		1		1
	475	618	178	1271

Missing cases = 538

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**SPEED LIMIT (KPH) BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
30-60	330	360	126	816
65-95	81	102	28	211
100-110	247	363	137	747
	658	825	291	1774

Missing cases = 35

- 
- Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**LAND USE BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Residential	219	229	86	534
Part residential/part commercial	76	98	24	198
Non-residential-commercial/industrial	29	40	9	78
Urban parkland	23	13	3	39
Urban parkland-highway/freeway	15	25	8	48
Rural	257	373	144	774
	619	778	274	1671

Missing cases = 138

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**HORIZONTAL ROAD ALIGNMENT BY DRIVER AGE GROUP**  
N=1809

	16-25	26-55	Others	Total
Straight	453	568	218	1239
Curved	208	261	74	543
	661	829	292	1782

Missing cases = 27

- 
- Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**VERTICAL ROAD ALIGNMENT BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Level	477	611	208	1296
Crest of hill	30	44	16	90
Bottom of hill	9	14		23
Slope - gentle	81	89	39	209
Slope - steep	4	10	4	18
Slope - undefined	44	45	16	105
	645	813	283	1741

Missing cases = 68

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ROAD SURFACE TYPE BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Sealed/paved	637	800	286	1723
Unsealed	22	30	6	58
	659	830	292	1781

Missing cases = 28

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**TRAFFIC CONTROLS BY AGE BY YEAR**

N=1809

	16-25	26-55	Others	Total
None present mid-block	428	555	163	1146
None present at intersection	76	65	30	171
Stop sign	30	42	31	103
Give way sign	29	46	25	100
Double unbroken lines	29	39	13	81
Roundabout		1		1
Flashing signals	2	1	2	5
Traffic control signals - car only	20	27	9	56
Traffic control signals with walk/don't walk	19	25	8	52
Give way to right sign	1		3	4
Railway crossing lights	1	3	4	8
Pedestrian crossing with lights	3	2		5
Pedestrian crossing (no lights)	5	4		9
School crossing	1	1		2
Police officer/road patrol/railway worker	1		1	2
Warning signs	8	15	2	25
Traffic control/road scheme/chicane	2	1		3
	653	826	291	1773

Missing cases = 36

---

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ELECTRONIC TRAFFIC CONTROLS FUNCTIONING BY AGE GROUP**  
N=1809

	16-25	26-55	Others	Total
On, fully functioning	46	56	22	124
On, reduced functioning		1	1	2
Off, not functioning	1	1		2
No electronic traffic controls	612	772	269	1653
	659	830	292	1781

Missing cases = 28

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**SEX OF DRIVER BY AGE GROUP** N=1809

	16-25	26-55	Other	Total
Male	528	633	211	1372
Female	135	197	59	391
	663	830	270	1763

Missing cases = 46

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**BAC GROUP OF DRIVER BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
<.05	352	457	183	992
>.05	178	190	38	406
	530	647	221	1398

Missing cases = 411

- 
- Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**RESTRAINT USE BY DRIVER BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Restraint worn	437	606	200	1243
Restraint not worn	92	94	31	217
	529	700	231	1460

Missing cases = 349

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**LICENCE TYPE BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Standard	409	727	249	1385
Learner's permit	17	1		18
Provisional	150	10	1	161
Disqualified	10	10	2	22
Other	4	4	1	9
	590	752	253	1595

Missing cases = 214

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**YEARS DRIVING EXPERIENCE BY AGE GROUP**

N=1098

	16-25	26-55	Others	Total
Less than 1	60	3		63
1	79	8	1	88
2	65	3	1	69
3	40	2	1	43
4	42	5		47
5	41	5		46
6 or more	301	789	272	1362
	628	815	275	1718

Missing cases = 90

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS IN THIS VEHICLE BY DRIVER AGE GROUP**

N=1809

	16-25	26-55	Others	Total
0			10	10
1	312	449	139	900
2	189	191	91	471
3	77	92	34	203
4	48	58	12	118
5	21	21	4	46
6 or more	12	17	2	31
	659	828	292	1779

Missing cases = 30

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**SPEED CATEGORY BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Stationary	1	21	24	46
Reversing	1	3	3	7
Not over/unlikely over speed limit	362	560	220	1142
Possibly over speed limit	88	87	15	190
Definitely over speed limit	138	77	10	225
Within legal limit, but excessive for road conditions	15	13	1	29
	605	761	273	1639

Missing cases = 170

---

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ESTIMATED SPEED (KPH) OF VEHICLE BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
0-20	20	45	43	108
21-40	22	37	20	79
41-60	97	121	35	253
61-80	62	68	21	151
81-100	56	92	16	164
>100	50	18	4	72
	307	381	139	827

Missing cases = 982

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**YEAR OF VEHICLE MANUFACTURE BY AGE GROUP** N=918

	16-25	26-55	Others	Total
1986-1988	47	139	34	220
1981-1985	136	210	81	427
1976-1980	150	161	48	359
1971-1975	153	101	38	292
1970 and earlier	57	36	18	111
	543	647	219	1409

Missing cases = 400

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NATURAL LIGHT BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Day	273	441	209	923
Night	359	345	65	769
Dawn	17	7	5	29
Dusk	14	33	12	59
	663	826	291	1780

Missing cases = 29

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**STREET LIGHTING CONDITIONS BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Operating (visibility good)	86	82	18	186
Poor/inadequate (visibility impaired)	33	35	6	74
Operating (visibility status not stated)	82	67	20	169
Not operating (visibility impaired - dark)	16	16	5	37
Street lighting doesn't exist (visibility impaired - dark)	159	170	28	357
Not known whether operating or not	2	2	1	5
Existence unknown	12	17	3	32
	390	389	81	860

Missing cases = 949\*\*

---

\* Frequencies comprise drivers of cars and car derivatives only

\*\* It appears that coders have coded daylight accidents as missing rather than the category of 'not applicable' as specified in the Documentation of File Structure. Thus the high number of missing cases.

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**WEATHER CONDITIONS BY AGE GROUP** N=1809

	16-25	26-55	Others	Total
Fine	560	673	253	1486
Light/moderate rain	77	114	29	220
Heavy rain	20	27	6	53
Fog	1	9	1	11
Strong winds	1	2		3
Other (smoke, dust)		1		1
	659	826	289	1774

Missing cases = 35

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**PRIMARY ACCIDENT CLASS BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
<b>Motor vehicles - collisions</b>				0
- other motor vehicle	309	456	201	966
- other road vehicle	9	14	5	28
- tram			1	1
- train	1	2	4	7
- pedestrian	127	153	24	304
- object	186	164	47	397
- animal	1	1		2
<b>Motor vehicles - non-collisions</b>				0
- overturn on carriageway	6	7	3	16
- overturn off carriageway	21	29	4	54
- run off road	2	1		3
- falling from	1		1	2
- other		1	1	2
<b>Non-motor vehicles - collisions</b>				0
- other road vehicle		2	1	3
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DCA EVENT BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
<b>Pedestrian on foot or in toy/pram</b>				
- near side	52	46	9	107
- emerging	11	18	3	32
- far side	42	62	7	111
- other	22	27	5	54
<b>Vehicles from adjacent directions (intersection only)</b>				
- cross traffic	58	68	45	171
- right near	14	25	22	61
- other	6	7	4	17
<b>Vehicles from opposing directions</b>				
- head on	138	245	70	453
- right thru	25	36	19	80
- left thru	1			1
<b>Vehicles from same direction</b>				
- rear end	18	17	13	48
- other	13	19	6	38
<b>Manoeuvring</b>	12	16	11	39
<b>Overtaking</b>				
- head on	17	20	3	40
- other	11	11	2	24
<b>On path</b>	8	15	11	34
<b>Off path, on straight</b>				
- left off carriageway into object/parked vehicle	39	40	16	95
- right off carriageway into object/parked vehicle	45	38	8	91
- other	15	21	6	42
<b>Off path, on curve or turning</b>				
- off carriageway, left on right bend into object/parked vehicle	30	24	12	66
- off carriageway, right on right bend into object/parked vehicle	21	14	4	39
- off carriageway, right on left bend into object/parked vehicle	34	19	4	57
- off carriageway, left on left bend into object/parked vehicle	11	15	4	30
- other	15	17	1	33
<b>Passengers/miscellaneous</b>	5	10	7	22
	663	830	292	1785

Missing cases = 24

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**MAJOR FACTOR BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Driver				
- death		1		1
- blackout			2	2
- illness	1	8	7	16
- intoxication	169	203	33	405
- other drug	5	6	2	13
- alcohol + drug	3	4		7
- asleep or fatigued	32	24	18	74
Passenger - high risk behaviour	1		1	2
Attention distracted	25	9	8	42
Error manipulating controls	10	11	7	28
Too close to other vehicle	5	7	2	14
Inadequate supervision (learner)	20	5	3	28
Excessive speed	80	70	15	165
Skylarking/drag racing	1			1
Dangerous manoeuvre	13	14	6	33
Failure to observe person or vehicle	42	68	42	152
Vision obscured	19	38	6	63
Driverless vehicle			1	1
Road surface problem	13	45	10	68
Pedestrian or cyclist at fault	87	112	20	219
Failure to observe traffic control (car/m/cycle)	38	63	49	150
Failure to observe traffic control (cyclist)	1	1	1	3
Pedestrian failed to observe don't walk sign	6		1	7
Critical vehicle defect malfunction	5	15	2	22
Other	51	84	39	174
	627	788	275	1690

Missing cases = 119

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ORIGIN OF TRIP BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Home	95	117	49	261
Work	47	84	8	2
Recreation	207	183	41	431
Private business	7	18	13	38
Other	3	2	8	13
	359	404	119	882

Missing cases = 927

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DESTINATION OF TRIP BY AGE GROUP**

N=1809

	16-25	26-55	Others	Total
Home	158	203	50	411
Work	43	66	11	120
Recreation	105	69	31	205
Private business	18	39	13	70
Other	3	3	10	16
	327	380	115	822

Missing cases = 987

---

\* Frequencies comprise drivers of cars and car derivatives only

### **3 FORS FATALITY FILE (1988) - NSW, VICTORIA AND SOUTH AUSTRALIA - DAY/NIGHT COMPARISONS**

#### **3.1 INTRODUCTION**

Bivariate analyses which showed drivers who were involved in fatality crashes in NSW, Victoria and South Australia combined during 1988 split by age group appeared in the previous chapter. There are numerous ways in which the data can be analyzed 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 current chapter re-examines the fatality crash data with the following modification:

- 'day' was operationally defined as the period between 6.00 am and 5.59 pm while 'night' 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 other missing cases. Missing and unknown cases make up approximately 1-2% of the total sample for most variables.

#### **3.2 INTERPRETATION OF TABLES**

The day/night comparisons revealed that young drivers (drivers aged between 16 and 25 years) were formed 30% of all drivers involved in daytime crashes and 45% of all drivers involved in night-time crashes.

What information can be gleaned from these tables? As an example, the table listing person responsible for the crash showed that young drivers made up 31% of all drivers responsible for fatal daytime crashes and 51% of drivers responsible for fatal night-time crashes. The total number of drivers responsible for daytime and night-time crashes was similar (501 and 519 respectively). Young drivers, however, showed a substantial increase in numbers from day to night (154 and 264 respectively). Hence, in absolute terms, there was a 71% increase in the number of young drivers causing crashes at night.

A proportional increase was also observed in young drivers involved in daytime (29%) and night-time (41%) crashes during the working week. The actual number of drivers involved in such daytime crashes (n=665), however, was greater than the number of drivers involved in similar night-time crashes (n=476). Care must be taken, therefore, in interpreting proportions resulting from different sample sizes because an apparently large proportional increase may actually address the same number (or fewer) crashes.

Ratio comparisons between drivers is another way of interpreting results. The number of young male drivers involved in daytime crashes resulting in a fatality was 211 compared to 73 young female drivers. This gives a ratio of 3:1. Where night-time crashes were concerned, the number of young male drivers involved in fatal crashes was 317 compared to 62 young female drivers: a ratio of 5:1. This difference between daytime and night-time ratios between male and female drivers indicates that the probability of young male drivers being involved in fatal crashes relative to young female drivers 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.

### 3.3 TABLES - DAY/NIGHT COMPARISONS

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

	<b>Page</b>
<b>DESCRIPTION OF CRASH</b>	
Person responsible for crash	49
Number of vehicles involved	50
Number of persons in crash	51
Number of persons injured in crash	52
Number of persons injured in this vehicle	53
Number of fatalities in crash	54
Number of fatalities in this vehicle	55
<b>WHEN DID THE CRASHES OCCUR?</b>	
Day of week	56
Weekday versus weekend	57
Time period by weekday/weekend	58
<b>WHERE DID THE CRASHES OCCUR?</b>	
City/rural boundaries	59
Road type	60

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Intersection type	62
Road configuration	63
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Horizontal road alignment	66
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Road surface	68
Traffic controls	69
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<b>WHAT WERE THE FACTORS WITHIN THE VEHICLE - DRIVER</b>	
Sex of driver	71
BAC group	72
Restraint use by driver	73
Licence type	74
Years driving experience	75
<b>WHAT WERE THE FACTORS WITHIN THE VEHICLE - PASSENGERS</b>	
Number of persons in this vehicle	76
<b>WHAT WERE THE VEHICLE FACTORS?</b>	
Speed category	77
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Year of vehicle manufacture	79
<b>WHAT WERE THE ENVIRONMENTAL CONDITIONS?</b>	
Street lighting conditions	80
Weather	81
<b>WHAT OTHER FACTORS SURROUNDED THE CRASH?</b>	
Primary Accident Class	82
DCA event	83
Major factor	85
Origin of trip	87
Destination of trip	88

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**PERSON RESPONSIBLE FOR CRASH BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
This driver responsible	154	204	143	501
This driver not responsible	67	147	52	266
Pedestrian responsible	39	59	12	110
More than one person responsible	14	15	5	34
No fault	5	7	1	13
Unit/person in prior event only	4	6	2	12
	283	438	215	936

	NIGHT			
	16-25	26-55	Others	Total
This driver responsible	264	216	39	519
This driver not responsible	50	91	23	164
Pedestrian responsible	41	53	5	4
More than one person responsible	17	18	3	38
No fault	1	1	1	3
Unit/person in prior event only	4	5	1	10
	377	384	72	833

Missing cases = 40

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF VEHICLES INVOLVED BY AGE GROUP**      N=1809

	DAY			
	16-25	26-55	Others	Total
1	122	143	51	316
2	152	280	157	589
3	10	17	7	34
4		3	1	4
	284	443	216	943

	NIGHT			
	16-25	26-55	Others	Total
1	212	197	24	433
2	159	170	49	378
3	8	19	2	29
4				
	379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS IN CRASH BY DRIVER AGE GROUP**

N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
1	14	33	21	68
2	117	141	68	326
3	70	86	53	209
4	32	70	39	141
5	20	44	13	77
6	16	33	12	61
7 or more	13	35	8	56
	282	442	214	938

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
1	63	79	15	157
2	113	121	22	256
3	81	77	18	176
4	59	49	8	116
5	32	31	6	69
6	13	7	5	25
7 or more	13	20	1	34
	374	384	75	833

Missing cases = 38

---

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS INJURED IN CRASH BY DRIVER AGE**  
**GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
0	112	188	81	381
1	84	101	62	247
2	41	53	35	129
3	19	40	19	78
4	12	35	8	55
5 or more	16	24	10	50
	284	441	215	940

	NIGHT			
	16-25	26-55	Others	Total
0	168	192	38	398
1	95	86	19	200
2	53	52	9	114
3	41	31	4	76
4	8	17		25
5 or more	10	8	5	23
	375	386	75	836

Missing cases = 33

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS INJURED IN THIS VEHICLE BY DRIVER**  
**AGE GROUP** N=1809

	DAY			
	16-25	26-55	Others	Total
0	146	251	124	521
1	81	109	62	252
2	37	39	23	99
3	10	20	5	35
4 or more	10	23	2	35
	284	442	216	942

	NIGHT			
	16-25	26-55	Others	Total
0	209	234	50	493
1	97	100	14	211
2	44	29	7	80
3	18	13	2	33
4 or more	8	10	2	20
	376	386	75	837

Missing cases = 30

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF FATALITIES IN CRASH BY DRIVER AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
1	258	395	195	848
2	24	39	18	81
3 or more	2	9	3	14
	284	443	216	943

	NIGHT			
	16-25	26-55	Others	Total
1	326	330	64	720
2	43	40	8	91
3 or more	10	16	3	29
	379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF FATALITIES IN THIS VEHICLE BY DRIVER AGE GROUP**  
N=1809

	DAY			
	16-25	26-55	Others	Total
0	150	235	60	445
1	117	185	139	441
2	16	17	14	47
3	1	4	3	8
4				0
5		2		2
	284	443	216	943

	NIGHT			
	16-25	26-55	Others	Total
0	134	166	25	325
1	213	191	42	446
2	26	20	6	52
3	5	8	1	14
4	1	1		2
5			1	1
	379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DAY OF WEEK BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Monday	30	56	29	115
Tuesday	37	58	34	129
Wednesday	40	65	37	142
Thursday	39	56	31	126
Friday	44	73	36	153
Saturday	46	73	26	145
Sunday	48	62	23	133
	284	443	216	943

	NIGHT			
	16-25	26-55	Others	Total
Monday	25	43	7	75
Tuesday	38	39	8	85
Wednesday	26	25	9	60
Thursday	42	48	6	96
Friday	66	78	16	160
Saturday	95	71	16	182
Sunday	87	82	13	182
	379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**WEEKDAY VS WEEKEND BY AGE GROUP** N=1809

	DAY			
	16-25	26-55	Others	Total
Weekday	190	308	167	665
Weekend	94	135	49	278
	284	443	216	943

	NIGHT			
	16-25	26-55	Others	Total
Weekday	197	233	46	476
Weekend	182	153	29	364
	379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**TIME BY DAY BY AGE GROUP**

N=1809

		DAY			
		16-25	26-55	Others	Total
Weekday:	6 am - 12 pm	92	137	63	292
	12 pm - 6 pm	98	171	104	373
Weekend:	6 am - 12 pm	34	47	25	106
	12 pm - 6 pm	60	88	24	172
		284	443	216	943

		NIGHT			
		16-25	26-55	Others	Total
Weekday:	6 pm - 12 am	130	185	38	353
	12 am - 6 am	67	48	8	123
Weekend:	6 pm - 12 am	84	78	19	181
	12 am - 6 am	98	75	10	183
		379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**CITY/RURAL BOUNDARIES BY AGE GROUP** N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
Capital city	137	206	80	423
Provincial urban	42	44	36	122
General rural	104	190	100	394
Remote rural	1	3		4
	284	443	216	943

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
Capital city	196	184	36	416
Provincial urban	47	42	11	100
General rural	134	156	28	318
Remote rural	1	3		4
Remote town	1	1		2
	379	386	75	840

Missing cases = 26

---

\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ROAD TYPE BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
National highway	27	43	23	93
State highway	48	90	52	190
Other rural road	68	101	55	224
Major arterial city road	64	95	33	192
Other urban	77	113	51	241
	284	442	214	940

	NIGHT			
	16-25	26-55	Others	Total
National highway	26	28	11	65
State highway	47	59	9	115
Other rural road	106	116	15	237
Major arterial city road	98	99	21	218
Other urban	102	84	19	205
	379	386	75	840

Missing cases = 29

- 
- Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**LOCATION BY AGE GROUP** N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
Mid-block	200	317	126	643
Within intersection	63	94	75	232
Related to intersection	21	31	15	67
	284	442	216	942

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
Mid-block	272	299	52	7
Within intersection	73	65	17	155
Related to intersection	33	20	5	2
	378	384	74	836

Missing cases = 31

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**INTERSECTION TYPE BY AGE GROUP** N=1809

	DAY			
	16-25	26-55	Others	Total
X-intersection	45	71	49	165
Y-intersection	1	4	3	8
T-intersection	36	48	37	121
Multi-intersection		2	1	3
	82	125	90	297

	NIGHT			
	16-25	26-55	Others	Total
X-intersection	40	36	12	88
Y-intersection	5	1	1	7
T-intersection	59	49	10	118
Multi-intersection	2			2
	106	86	23	215

Missing cases = 1297\*\*

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\* Frequencies comprise drivers of cars and car derivatives only

\*\* It appears that coders have coded non-intersection accidents as miss than the category of 'not applicable' as specified in the Documentation Structure. Thus the high number of missing cases.

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ROAD CONFIGURATION BY AGE GROUP** N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
One way	3	4	1	8
Two way undivided	158	271	110	539
Divided road (dual carriageway)	37	33	11	81
Single carriageway - freeway	1	1	1	3
Dual carriageway - freeway	3	8	3	14
Other		1		1
	202	318	126	646

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
One way	1	3	2	6
Two way undivided	230	247	37	514
Divided road (dual carriageway)	38	42	8	88
Dual carriageway - freeway	4	7	4	15
	273	299	51	623

Missing cases = 540

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**SPEED LIMIT (KPH) BY AGE GROUP** N=1809

	DAY			
	16-25	26-55	Others	Total
30-60	140	192	89	421
65-95	30	54	16	100
100-110	113	194	110	417
	283	440	215	938

	NIGHT			
	16-25	26-55	Others	Total
30-60	190	167	36	393
65-95	51	48	12	111
100-110	134	169	27	330
	375	384	75	834

Missing cases = 37

- 
- Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**LAND USE BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Residential	88	113	61	262
Part residential/part commercial	35	49	17	101
Non-residential-commercial/industrial	12	22	7	41
Urban parkland	9	8	2	19
Urban parkland-highway/freeway	4	13	3	20
Rural	114	205	115	434
	262	410	205	877

	NIGHT			
	16-25	26-55	Others	Total
Residential	131	116	25	272
Part residential/part commercial	41	48	6	95
Non-residential-commercial/industrial	17	18	2	37
Urban parkland	14	5	1	20
Urban parkland-highway/freeway	11	12	5	28
Rural	143	168	29	340
	357	367	68	792

Missing cases = 140

- 
- Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**HORIZONTAL ROAD ALIGNMENT BY AGE GROUP** N=1809

		DAY			
		16-25	26-55	Others	Total
Straight		213	305	167	685
Curved		71	137	49	257
		284	442	216	942

		NIGHT			
		16-25	26-55	Others	Total
Straight		240	262	50	552
Curved		137	124	25	286
		377	386	75	838

Missing cases = 29

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**VERTICAL ROAD ALIGNMENT BY AGE GROUP**

N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
Level	220	313	157	690
Crest of hill	12	25	11	48
Bottom of hill	6	7		13
Slope - gentle	25	54	26	105
Slope - steep	3	7	4	14
Slope - undefined	14	30	12	56
	280	436	210	926

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
Level	257	297	50	604
Crest of hill	18	19	5	42
Bottom of hill	3	7		10
Slope - gentle	56	35	13	104
Slope - steep	1	3		4
Slope - undefined	30	15	4	49
	365	376	72	813

Missing cases = 70

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\* Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ROAD SURFACE BY AGE GROUP**

N=1809

		<b>DAY</b>			
		16-25	26-55	Others	Total
Sealed/paved		272	427	212	911
Unsealed		9	16	4	29
		281	443	216	940

  

		<b>NIGHT</b>			
		16-25	26-55	Others	Total
Sealed/paved		365	372	73	810
Unsealed		13	14	2	29
		378	386	75	839

Missing cases = 30

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**TRAFFIC CONTROLS BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
None present mid-block	180	280	110	570
None present at intersection	31	34	22	87
Stop sign	14	28	27	69
Give way sign	18	29	21	68
Double unbroken lines	11	21	13	45
Roundabout		1		1
Flashing signals		1	2	3
Traffic control signals - car only	7	18	5	30
Traffic control signals with walk/don't walk	6	11	6	23
Give way to right sign	1		3	4
Railway crossing lights		3	4	7
Pedestrian crossing with lights	2	1		3
Pedestrian crossing (no lights)	4	2		6
School crossing	1			1
Police officer/road patrol/railway worker	1		1	2
Warning signs	3	11	2	16
Traffic control/road scheme/chicane	1			1
	279	440	216	936

	NIGHT			
	16-25	26-55	Others	Total
None present mid-block	248	274	52	574
None present at intersection	45	31	8	84
Stop sign	16	14	4	34
Give way sign	11	17	4	32
Double unbroken lines	18	18		36
Roundabout				0
Flashing signals	2			2
Traffic control signals - car only	13	9	4	26
Traffic control signals with walk/don't walk	13	14	2	29
Give way to right sign				0
Railway crossing lights	1			1
Pedestrian crossing with lights	1	1		2
Pedestrian crossing (no lights)	1	2		3
School crossing		1		1
Police officer/road patrol/railway worker				0
Warning signs	5	4		9
Traffic control/road scheme/chicane	1	1		2
	374	385	74	835

Missing cases = 38

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ELECTRONIC TRAFFIC CONTROLS FUNCTIONING BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
On, fully functioning	15	33	16	64
On, reduced functioning		1	1	2
No electronic traffic controls	268	409	199	876
	283	443	216	942

	NIGHT			
	16-25	26-55	Others	Total
On, fully functioning	31	23	6	60
Off, not functioning	1	1		2
No electronic traffic controls	344	362	69	775
	376	386	75	837

Missing cases = 30

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**SEX OF DRIVER BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Male	211	317	155	683
Female	73	126	50	249
	284	443	205	932

	NIGHT			
	16-25	26-55	Others	Total
Male	317	315	56	688
Female	62	71	9	142
	379	386	65	830

Missing cases = 47

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**BAC GROUP OF DRIVER BY AGE GROUP**

N=1809

		<b>DAY</b>			
		16-25	26-55	Others	Total
<.05		185	295	147	627
>.05		20	25	16	61
		205	320	163	688

		<b>NIGHT</b>			
		16-25	26-55	Others	Total
<.05		167	162	36	365
>.05		158	165	21	344
		325	327	57	709

Missing cases = 412

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**RESTRAINT USE BY DRIVER BY AGE GROUP** N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
Restraint worn	210	351	152	713
Restraint not worn	20	32	23	75
	230	383	175	788

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
Restraint worn	227	254	48	529
Restraint not worn	72	62	8	142
	299	316	56	671

Missing cases = 350

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**LICENCE TYPE BY AGE GROUP**

N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
Standard	182	400	190	772
Learner's permit	7			7
Provisional	63	5	1	69
Disqualified	4	2		6
Other	2	2	1	5
	258	409	192	859

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
Standard	227	326	58	611
Learner's permit	10	1		11
Provisional	87	5		92
Disqualified	6	8	2	16
Other	2	2		4
	332	342	60	734

Missing cases = 216

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**YEARS DRIVING EXPERIENCE BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Less than 1	21	1		22
1	39	4		43
2	25	2	1	28
3	17	2		19
4	23	2		25
5	19	3		22
6 or more	129	423	209	761
	273	437	210	920

	NIGHT			
	16-25	26-55	Others	Total
Less than 1	39	2		41
1	40	4	1	45
2	40	1		41
3	23		1	24
4	19	3		22
5	22	2		24
6 or more	172	365	62	599
	355	377	64	796

Missing cases = 93

- 
- Frequencies comprise drivers of cars and car derivatives only



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**NUMBER OF PERSONS IN THIS VEHICLE BY DRIVER AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
0			3	3
1	146	228	104	478
2	76	101	70	247
3	29	49	29	107
4	18	40	7	65
5	7	14	2	23
6 or more	6	11	1	18
	282	443	216	941

	NIGHT			
	16-25	26-55	Others	Total
0			7	7
1	166	220	35	421
2	113	90	20	223
3	48	43	5	96
4	30	18	5	53
5	14	7	2	23
6 or more	6	6	1	13
	377	384	75	836

Missing cases = 32

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**SPEED CATEGORY BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Stationary		14	9	23
Reversing	1	3	2	6
Not over/unlikely over speed limit	189	335	176	700
Possibly over speed limit	30	23	11	64
Definitely over speed limit	36	24	4	64
Within legal limit, but excessive for road conditions	7	9		16
	263	408	202	873

	NIGHT			
	16-25	26-55	Others	Total
Stationary	1	7	15	23
Reversing			1	1
Not over/unlikely over speed limit	173	224	44	441
Possibly over speed limit	58	64	4	126
Definitely over speed limit	102	53	5	160
Within legal limit, but excessive for road conditions	8	4	1	13
	342	352	70	764

Missing cases = 172

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ESTIMATED SPEED OF VEHICLE (KPH) BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
0-20	11	30	26	67
21-40	12	22	14	48
41-60	49	71	32	152
61-80	33	39	16	88
81-100	25	58	14	97
>100	19	7	1	27
	149	227	103	479

	NIGHT			
	16-25	26-55	Others	Total
0-20	9	15	17	41
21-40	10	15	6	31
41-60	48	50	3	101
61-80	29	29	5	63
81-100	31	34	2	67
>100	31	11	3	45
	158	154	36	348

Missing cases = 982

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**YEAR OF VEHICLE MANUFACTURE BY AGE GROUP** N=1809

	<b>DAY</b>			
	16-25	26-55	Others	Total
1986-1988	24	79	23	126
1981-1985	65	120	61	246
1976-1980	61	81	31	173
1971-1975	54	51	26	131
1970 and earlier	20	16	15	51
	224	347	156	727

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
1986-1988	23	60	11	94
1981-1985	71	90	20	181
1976-1980	89	80	17	186
1971-1975	99	50	12	161
1970 and earlier	37	20	3	60
	319	300	63	682

Missing cases = 400

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**STREET LIGHTING CONDITIONS BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Operating (visibility good)	1	6	3	10
Poor/inadequate (visibility impaired)	2	1		3
Operating (visibility status not stated)	6	5	3	14
Not operating (visibility impaired - dark)	6	4	1	11
Street lighting doesn't exist (visibility impaired - dark)	15	23	9	47
Not known whether operating or not	1	2	1	4
Existence unknown	4	3	2	9
	35	44	19	98

	NIGHT			
	16-25	26-55	Others	Total
Operating (visibility good)	85	76	15	176
Poor/inadequate (visibility impaired)	31	34	6	71
Operating (visibility status not stated)	76	62	17	155
Not operating (visibility impaired - dark)	10	12	4	26
Street lighting doesn't exist (visibility impaired - dark)	144	147	19	310
Not known whether operating or not	1			1
Existence unknown	8	13		21
	355	344	61	760

Missing cases = 951\*\*

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\* Frequencies comprise drivers of cars and car derivatives only

\*\* It appears that coders have coded daylight accidents as missing rather than the category of 'not applicable' as specified in the Documentation of File Structure. Thus the high number of missing cases.

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**WEATHER CONDITIONS BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Fine	241	349	189	779
Light/moderate rain	32	69	21	122
Heavy rain	9	20	4	33
Fog		4	1	5
Strong winds		1		1
	282	443	215	940

	NIGHT			
	16-25	26-55	Others	Total
Fine	319	323	63	705
Light/moderate rain	45	45	8	98
Heavy rain	11	7	2	20
Fog	1	5		6
Strong winds	1	1		2
Other (smoke, dust)		1		1
	377	382	73	832

Missing cases = 37

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**PRIMARY ACCIDENT CLASS BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
<b>Motor vehicles - collisions</b>				
- other motor vehicle	155	281	152	588
- other road vehicle	5	6	5	16
- tram			1	1
- train		2	4	6
- pedestrian	65	78	17	160
- object	52	56	30	138
- animal		1		1
<b>Motor vehicles - non-collisions</b>				
- overturn on carriageway	3	3	3	9
- overturn off carriageway	4	13	3	20
- run off road		1		1
- falling from				
- other				
<b>Non-motor vehicles - collisions</b>				
- other road vehicle		2	1	3
	284	443	216	943

	NIGHT			
	16-25	26-55	Others	Total
<b>Motor vehicles - collisions</b>				
- other motor vehicle	154	174	48	376
- other road vehicle	4	8		12
- tram				0
- train	1			1
- pedestrian	62	75	7	144
- object	134	108	17	259
- animal	1			1
<b>Motor vehicles - non-collisions</b>				
- overturn on carriageway	3	4		7
- overturn off carriageway	17	16	1	34
- run off road	2			2
- falling from	1		1	2
- other		1	1	2
<b>Non-motor vehicles - collisions</b>				
- other road vehicle				
	379	386	75	840

Missing cases = 26

\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DCA EVENT BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
<b>Pedestrian on foot or in toy/pram</b>				
- near side	31	28	6	65
- emerging	9	15	2	26
- far side	22	28	4	54
- other	3	7	5	15
<b>Vehicles from adjacent directions (Intersection only)</b>				
- cross traffic	29	47	39	115
- right near	10	14	20	44
- other	3	6	3	12
<b>Vehicles from opposing directions</b>				
- head on	69	145	55	269
- right thru	11	20	11	42
- left thru				0
<b>Vehicles from same direction</b>				
- rear end	8	11	9	28
- other	6	11	5	22
<b>Manoeuvring</b>	8	14	8	30
<b>Overtaking</b>				
- head on	9	11	3	23
- other	6	7	2	15
<b>On path</b>	1	4	4	9
<b>Off path, on straight</b>				
- left off carriageway into object/parked vehicle	12	12	11	35
- right off carriageway into object/parked vehicle	17	17	5	39
- other	6	14	5	25
<b>Off path, on curve or turning</b>				
- off carriageway, left on right bend into object/parked vehicle	6	9	8	23
- off carriageway, right on right bend into object/parked vehicle	9	4	1	14
- off carriageway, right on left bend into object/parked vehicle	3	4	1	8
- off carriageway, left on left bend into object/parked vehicle	2	3	3	8
- other	2	4	1	7
<b>Passengers/miscellaneous</b>	2	8	5	15
	284	443	216	943



**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DCA EVENT BY AGE GROUP**

N=1809

	<b>NIGHT</b>			
	16-25	26-55	Others	Total
<b>Pedestrian on foot or in toy/pram</b>				
- near side	21	18	3	42
- emerging	2	3	1	6
- far side	20	34	3	57
- other	19	20		39
<b>Vehicles from adjacent directions (Intersection only)</b>				
- cross traffic	29	21	6	56
- right near	4	11	2	17
- other	3	1	1	5
<b>Vehicles from opposing directions</b>				
- head on	69	100	15	184
- right thru	14	16	8	38
- left thru	1			1
<b>Vehicles from same direction</b>				
- rear end	10	5	3	18
- other	7	8	1	16
<b>Manoeuvring</b>	4	2	3	9
<b>Overtaking</b>				
- head on	8	9		17
- other	5	4		9
<b>On path</b>	7	11	7	25
<b>Off path, on straight</b>				
- left off carriageway into object/parked vehicle	27	28	5	60
- right off carriageway into object/parked vehicle	28	21	3	52
- other	9	7	1	17
<b>Off path, on curve or turning</b>				
- off carriageway, left on right bend into object/parked vehicle	24	15	4	43
- off carriageway, right on right bend into object/parked vehicle	12	10	3	25
- off carriageway, right on left bend into object/parked vehicle	31	15	3	49
- off carriageway, left on left bend into object/parked vehicle	9	12	1	22
- other	13	13		26
<b>Passengers/miscellaneous</b>	3	2	2	7
	379	386	75	840

Missing cases = 26

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**MAJOR FACTOR BY AGE GROUP**

N=1809

	DAY			Total
	16-25	26-55	Others	
Driver				
- death		1		1
- blackout			1	1
- illness	1	6	7	14
- intoxication	19	29	10	58
- other drug	1	5	1	7
- alcohol + drug	1			1
- asleep or fatigued	12	14	12	38
Attention distracted	12	7	6	25
Error manipulating controls	7	10	5	22
Too close to other vehicle	3	6	2	11
Inadequate supervision (learner)	9	4	1	14
Excessive speed	36	33	7	76
Stylarking/drag racing	1			1
Dangerous manoeuvre	5	10	5	20
Failure to observe person or vehicle	33	52	39	124
Vision obscured	13	26	5	44
Driverless vehicle			1	1
Road surface problem	7	33	8	48
Pedestrian or cyclist at fault	42	56	14	112
Failure to observe traffic control (car/m/cycle)	23	47	41	111
Failure to observe traffic control (cyclist)	1	1	1	3
Failure to observe traffic control (pedestrian)	2		1	3
Critical vehicle defect	4	14	2	20
Other	34	64	32	130
	266	418	201	885

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**MAJOR FACTOR BY AGE GROUP**

N=1809

	NIGHT			Total
	16-25	26-55	Others	
Driver				
- blackout			1	1
- illness		2		2
- intoxication	150	173	22	345
- other drug	4	1	1	6
- alcohol + drug	2	4		6
- asleep or fatigued	20	10	6	36
Passenger - high risk behaviour	1		1	2
Attention distracted	13	2	2	17
Error manipulating controls	3	1	2	6
Too close to other vehicle	2	1		3
Inadequate supervision (learner)	11	1	2	14
Excessive speed	44	37	8	89
Dangerous manoeuvre	8	4	1	13
Failure to observe person or vehicle	9	16	3	28
Vision obscured	6	12	1	19
Road surface problem	6	12	2	20
Pedestrian or cyclist at fault	45	56	6	107
Failure to observe traffic control (car/m/cycle)	15	16	8	39
Failure to observe traffic control (pedestrian)	4			4
Critical vehicle defect	1	1		2
Other	17	20	7	44
	361	369	73	803

Missing cases = 121

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**ORIGIN OF TRIP BY AGE GROUP**

N=1809

	DAY			
	16-25	26-55	Others	Total
Home	64	74	38	176
Work	25	46	8	79
Recreation	49	56	27	132
Private business	4	13	12	29
Other	1	1	3	5
	143	190	88	421

	NIGHT			
	16-25	26-55	Others	Total
Home	31	43	11	85
Work	22	38		60
Recreation	158	127	14	299
Private business	3	5	1	9
Other	2	1	5	8
	216	214	31	461

Missing cases = 927

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\* Frequencies comprise drivers of cars and car derivatives only

**FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED\***  
**DESTINATION OF TRIP BY AGE GROUP**

N=1809

	<b>DAY</b>			<b>Total</b>
	<b>16-25</b>	<b>26-55</b>	<b>Others</b>	
Home	49	65	36	150
Work	35	49	10	94
Recreation	41	44	25	110
Private business	12	25	12	49
Other		2	4	6
	137	185	87	409

	<b>NIGHT</b>			<b>Total</b>
	<b>16-25</b>	<b>26-55</b>	<b>Others</b>	
Home	109	138	14	261
Work	8	17	1	26
Recreation	64	25	6	95
Private business	6	14	1	21
Other	3	1	6	10
	190	195	28	413

Missing cases = 987

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\* Frequencies comprise drivers of cars and car derivatives only

## REFERENCES

- Cameron, M (1992), Accident Data Analysis to Develop Target Groups for Countermeasures, Clayton: Accident Research Centre, Monash University (draft report)
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**APPENDIX 1: GUIDE TO COLLAPSING OF VARIABLES FOR FORS FATAL  
FILE (1988) - NSW, VICTORIA AND SA COMBINED**

**DAY OF WEEK**

<b>Working week:</b>	Monday Tuesday Wednesday Thursday Friday	<b>Weekend:</b>	Saturday Sunday
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**TIME**

<b>Day:</b>	0600-1759 hours	<b>Night:</b>	1800-0559 hours
<b>12 am - 6 am</b>	2400 - 0559 hours	<b>12 pm - 6 pm</b>	1200 - 1759 hours
<b>6 am - 12 pm</b>	0600 - 1159 hours	<b>6 pm - 12 am</b>	1800 - 2359 hours

**ROAD USER MOVEMENT**

**Pedestrian on foot or in toy/pram**

far side

near side

emerging

other:                      playing, working, lying, standing on carriageway  
                                 walking with traffic  
                                 facing traffic  
                                 on footpath/median  
                                 driveway  
                                 other

**Vehicles from adjacent directions (intersection only)**

cross traffic

right near

other:                      right far

**Vehicles from opposing directions**

head on (not overtaking)

right thru

left thru

**Vehicles from same direction**

- same lane

rear end

other:                      left rear  
                                 right rear

# **APPENDIX 1: GUIDE TO COLLAPSING OF VARIABLES FOR FORS FATAL FILE (1988) - NSW, VICTORIA AND SA COMBINED**

**Manoeuvring:** U-turn  
U-turn into fixed object/parked vehicle  
leaving/entering parking  
parked vehicles only  
reversing  
reversing into fixed object/parked vehicle  
emerging from driveway  
from footpath  
other manoeuvring

**Overtaking:**  
head on  
other: out of control  
pulling out  
overtake turning  
cutting in  
pulling out rear end  
other overtaking

**On path:** parked  
double parked  
accident or broken down  
vehicle door  
permanent obstruction on carriageway  
temporary roadworks  
struck object on carriageway  
animal (not ridden)  
other on path

**Off path, on straight**  
left off carriageway into object/parked vehicle  
right off carriageway into object/parked vehicle  
other: off carriageway to left or right (rollover)  
out of control on carriageway (rollover)  
off end of road/t-intersection  
other straight

**Off path, on curve or turning**  
off carriageway, left on right bend into object/parked vehicle  
off carriageway, right on right bend into object/parked vehicle  
off carriageway, right on left bend into object/parked vehicle  
off carriageway, left on left bend into object/parked vehicle  
other: off carriageway to left on right bend  
off carriageway to right on right bend  
off carriageway to right on left bend  
off carriageway to left on left bend  
out of control on carriageway  
other curve



**APPENDIX 1: GUIDE TO COLLAPSING OF VARIABLES FOR FORS FATAL  
FILE (1988) - NSW, VICTORIA AND SA COMBINED**

**Passengers/miscellaneous:**

- fell in/from vehicle
- load or missile struck vehicle
- struck train/aeroplane
- parked vehicle run away into object/parked vehicle
- parked vehicle run away into vehicle
- struck while boarding or alighting vehicle
- any accident not classified above