



Analysis of Road Crash Statistics
Western Australia
1990 to 1999

Report

December 2000

Project: Transport/21

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Executive Summary

This report summarises ten years of road crash data from 1 January 1990 to 31 December 1999. The data was obtained from the Road Crash database maintained by Main Roads Western Australia and the Western Australian Police Service. This report covers a broad range of road crash factors statewide including:

- The demographics of road user types;
- Road user behavioural factors;
- Road factors; and
- Vehicle factors.

In addition regional summaries are provided for road user demographics, road user behavioural factors and road factors.

An important addition to this report is an analysis of Police enforcement patterns. This gives insight into how legal driving behaviours are enforced on a regional level. The style of Police enforcement influences the degree to which a road user behavioural factor is identified at a regional level. In this report we examine this issue at a macro level. A more detailed analysis of this issue will greatly assist the Office of Road Safety in the analysis of Police enforcement strategies and their impact upon road safety.

1. Introduction

There are many factors which contribute to the occurrence of road crashes. These include demographic factors (such as the gender and age of road users), the behaviour of road users, road conditions, vehicle factors and other variables. The aim of this report is to examine the trends in the occurrence of these factors during the ten year period from 1 January 1990 to 31 December 1999. A similar study was conducted by Data Analysis Australia for the ten year period from 1 July 1987 to 30 June 1997. The identification of any long term trends will assist in developing strategies to decrease the number of road crashes.

The principal data source for this report was the Road Crash database maintained by Main Roads Western Australia on their Traffic Accident System. Analysis was conducted using the accident research files. Data for the incidence of Aboriginal people involved in road crashes was obtained from Roadwatch, the Road Accident Prevention Research Unit of The University of Western Australia.

In this report specific emphasis is given on examining the trends in road user behaviours. The four main behavioural factors investigated are speeding, drink driving, fatigue and the wearing of restraints and helmets. Trends identified for these behavioural factors will assist the Office of Road Safety in their road safety strategies. These factors are explored on a statewide and regional level.

An important addition to this report is an analysis of Police enforcement patterns. This gives insight into how legal driving behaviours are enforced on a regional level. The style of Police enforcement influences the degree to which a road user behavioural factor is identified at a regional level.

2. Definitions

The definition of a *crash* used throughout this report is the definition used by the Road Safety Council in their annual *Reported Road Crashes Western Australia* reports. That is, a crash is *any apparently unpremeditated collision reported to police which resulted from the movement of at least one road vehicle on a road open to and used by the public, and involving death or injury to any person, or property damage.*

Crashes are rated according to the most serious injury incurred in the crash. In this report the following crash severity ratings are used:

- A *fatal* crash is one where at least one fatality results;
- A *hospitalisation* crash is one where no fatalities occur, but there was at least one injury requiring hospitalisation;
- A *serious* crash is one where a fatality or an injury requiring hospitalisation occurred; and
- An *other* crash is one where no fatality or injury requiring hospitalisation occurred. This crash rating includes those crashes rated as *medical* (an injury occurred requiring medical attention, but not hospitalisation), *non-medical* (an injury occurred which did not require medical treatment) and *property damage only* crashes. There were no crashes with an unknown crash severity rating.

Similarly, the level of injury sustained by road users in crashes are also rated according to a severity of injury ranking. In this report the following injury severity ratings are used:

- *Fatalities*;
- A *hospitalisation* injury where hospitalisation was required;
- A *serious* injury is a fatality or an injury requiring hospitalisation;
- A *minor* injury is an injury which did not require hospitalisation. These include injuries requiring medical attention without hospitalisation and injuries that did not require any medical treatment;
- *None*, where the crashes resulted in property damage only; and
- *Unknown* injuries.

3. Methodology

The results in this report are based upon data obtained from the following sources:

- Main Roads Western Australia provided accident research files for the years 1990 to 1999, which were extracted from the Traffic Accident System (TAS).
- Roadwatch, the Road Accident Prevention Research Unit, Department of Public Health, The University of Western Australia provided road crash data specific to the involvement of Aboriginal people in Western Australian road crashes.
- Transport provided vehicle registration data which enabled an analysis of the contribution of vehicular factors in road crashes.

Apart from the data summaries presented in this report, the above data sources were used to descriptively analyse factors contributing to road crashes in Western Australia.

4. Demographic Factors

4.1 Road Crash and Injury Summaries

The following observations arise from the following series of tables and figures:

- From 1992 to 1999 there has been an overall increasing trend in the number of reported road crashes (Figure 1 and Table 1);
- There was a marked increase in the number of road crash fatalities during 1996 (Figure 4 and Table 4);
- Males aged 17 to 39 made up 50% of drivers and motorcycle riders involved in fatal crashes. This same age group made up 30% of all drivers and motorcycle riders involved in all crashes (Table 5);
- There has been a general increasing trend in the number of drivers and motorcycle riders involved in all crashes for the age groups 17 to 24, 25 to 39 and 40 to 59 (Figure 6 and Figure 7).

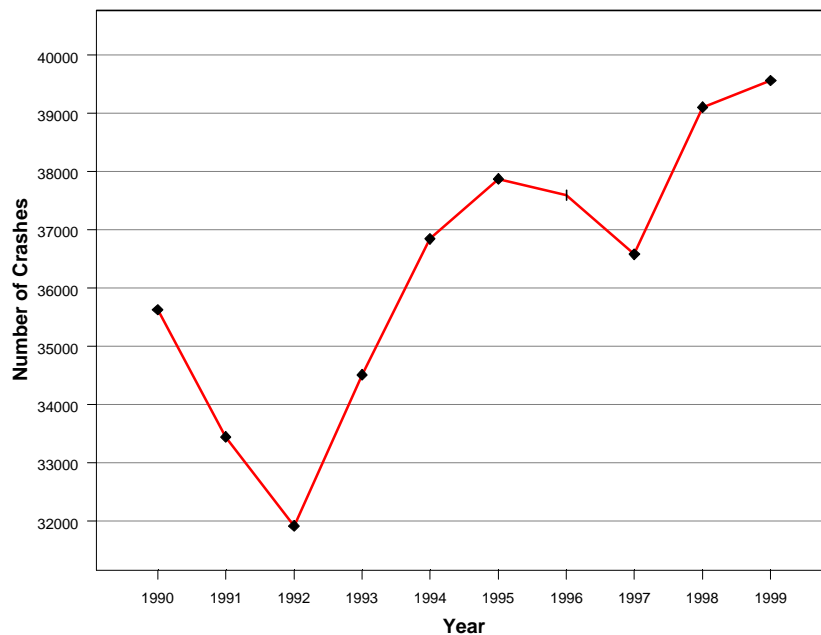


Figure 1. Total number of reported road crashes in WA by year.
(Source: Main Roads WA Traffic Accident System)

Year	Crash Severity								Total n
	Fatal n	Fatal (%)*	Hospitalisation n	Hospitalisation (%)*	Total Serious n	Total Serious (%)*	Other n	Other (%)*	
1990	181	(0.5)	2,116	(5.9)	2,297	(6.4)	33,334	(93.6)	35,631
1991	186	(0.6)	2,013	(6.0)	2,199	(6.6)	31,245	(93.4)	33,444
1992	171	(0.5)	1,967	(6.2)	2,138	(6.7)	29,781	(93.3)	31,919
1993	190	(0.6)	1,999	(5.8)	2,189	(6.3)	32,322	(93.7)	34,511
1994	195	(0.5)	2,033	(5.5)	2,228	(6.0)	34,618	(94.0)	36,846
1995	194	(0.5)	2,275	(6.0)	2,469	(6.5)	35,408	(93.5)	37,877
1996	220	(0.6)	2,043	(5.4)	2,263	(6.0)	35,331	(94.0)	37,594
1997	184	(0.5)	2,222	(6.1)	2,406	(6.6)	34,176	(93.4)	36,582
1998	199	(0.5)	2,268	(5.8)	2,467	(6.3)	36,642	(93.7)	39,109
1999	189	(0.5)	1,880	(4.8)	2,069	(5.2)	37,498	(94.8)	39,567
Total	1,909	(0.5)	20,816	(5.7)	22,725	(6.3)	340,355	(93.7)	363,080

Table 1. Number of reported road crashes in WA by year and crash severity.
(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

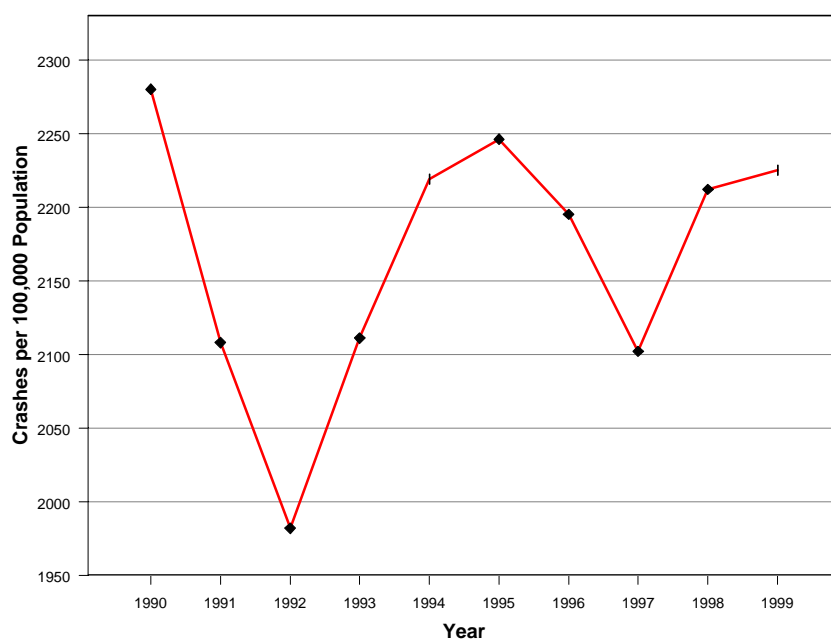


Figure 2. Total number of reported road crashes in WA per hundred thousand population* by year.

(Source: Main Roads WA Traffic Accident System; Australian Bureau of Statistics Census of Population and Housing 1991, 1996)

*Population estimates obtained by interpolation/extrapolation from 1991 and 1996 Census figures.

Year	Crash Severity								Total n	Total Rate	Estimated Population*
	Fatal		Hospitalisation		Total Serious		Other				
	n	Rate	n	Rate	n	Rate	n	Rate			
1990	181	11.6	2,116	135.4	2,297	147.0	33,334	2,133.1	35,631	2,280.1	1,562,680
1991	186	11.7	2,013	126.9	2,199	138.6	31,245	1,969.8	33,444	2,108.4	1,586,219
1992	171	10.6	1,967	122.1	2,138	132.8	29,781	1,849.4	31,919	1,982.1	1,610,343
1993	190	11.6	1,999	122.3	2,189	133.9	32,322	1,976.8	34,511	2,110.7	1,635,069
1994	195	11.7	2,033	122.4	2,228	134.2	34,618	2,084.9	36,846	2,219.1	1,660,416
1995	194	11.5	2,275	134.9	2,469	146.4	35,408	2,099.6	37,877	2,246.0	1,686,404
1996	220	12.8	2,043	119.3	2,263	132.1	35,331	2,062.5	37,594	2,194.6	1,713,053
1997	184	10.6	2,222	127.7	2,406	138.2	34,176	1,963.7	36,582	2,102.0	1,740,383
1998	199	11.3	2,268	128.3	2,467	139.5	36,642	2,072.0	39,109	2,211.5	1,768,417
1999	189	10.6	1,880	105.7	2,069	116.4	37,498	2,108.9	39,567	2,225.2	1,778,109
Total	1,909		20,816		22,725		340,355		363,080		

Table 2. Number of reported road crashes in WA per hundred thousand population* by year and crash severity.

(Source: Main Roads WA Traffic Accident System; Australian Bureau of Statistics Census of Population and Housing 1991, 1996)

*Population estimates obtained by interpolation/extrapolation from 1991 and 1996 Census figures.

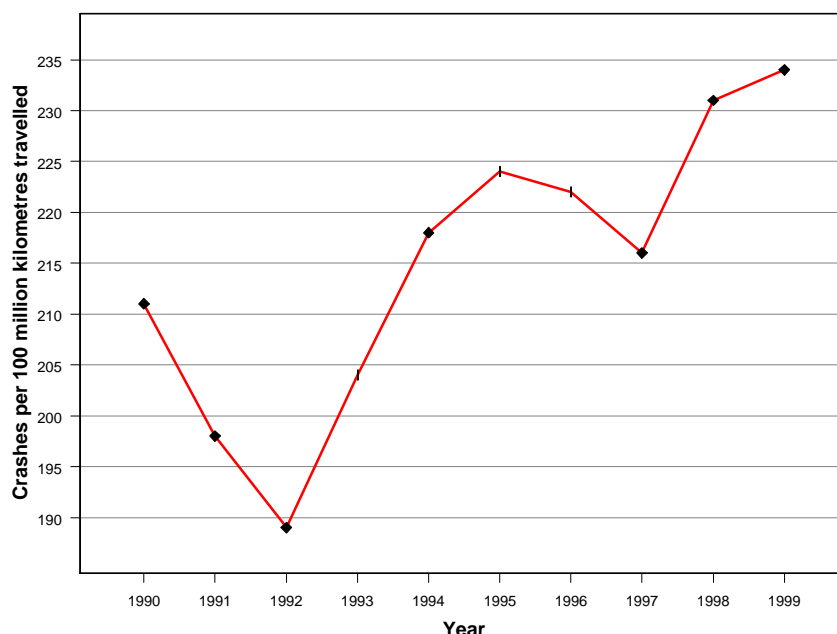


Figure 3. Total number of reported road crashes in WA per hundred million kilometres travelled by year.

(Source: Main Roads WA Traffic Accident System; Australian Bureau of Statistics Survey of Motor Vehicle Use twelve months ended 31 July 1998)

*Rates are based on the total number of kilometres travelled in the twelve months ended 31 July 1998, as earlier figures available are unreliable.

Year	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other			
	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate
1990	181	1.1	2,116	12.5	2,297	13.6	33,334	197.0	35,631	210.6
1991	186	1.1	2,013	11.9	2,199	13.0	31,245	184.7	33,444	197.7
1992	171	1.0	1,967	11.6	2,138	12.6	29,781	176.0	31,919	188.6
1993	190	1.1	1,999	11.8	2,189	12.9	32,322	191.0	34,511	204.0
1994	195	1.2	2,033	12.0	2,228	13.2	34,618	204.6	36,846	217.8
1995	194	1.1	2,275	13.4	2,469	14.6	35,408	209.3	37,877	223.9
1996	220	1.3	2,043	12.1	2,263	13.4	35,331	208.8	37,594	222.2
1997	184	1.1	2,222	13.1	2,406	14.2	34,176	202.0	36,582	216.2
1998	199	1.2	2,268	13.4	2,467	14.6	36,642	216.6	39,109	231.1
1999	189	1.1	1,880	11.1	2,069	12.2	37,498	221.6	39,567	233.8
Total	1,909		20,816		22,725		340,355		363,080	

Table 3. Number of reported road crashes in WA per hundred million kilometres travelled* by year and crash severity.

(Source: Main Roads WA Traffic Accident System; Australian Bureau of Statistics Survey of Motor Vehicle Use twelve months ended 31 July 1998)

*Rates are based on the total number of kilometres travelled in the twelve months ended 31 July 1998, (ie 16,920,000,000 km) as earlier figures available are unreliable.

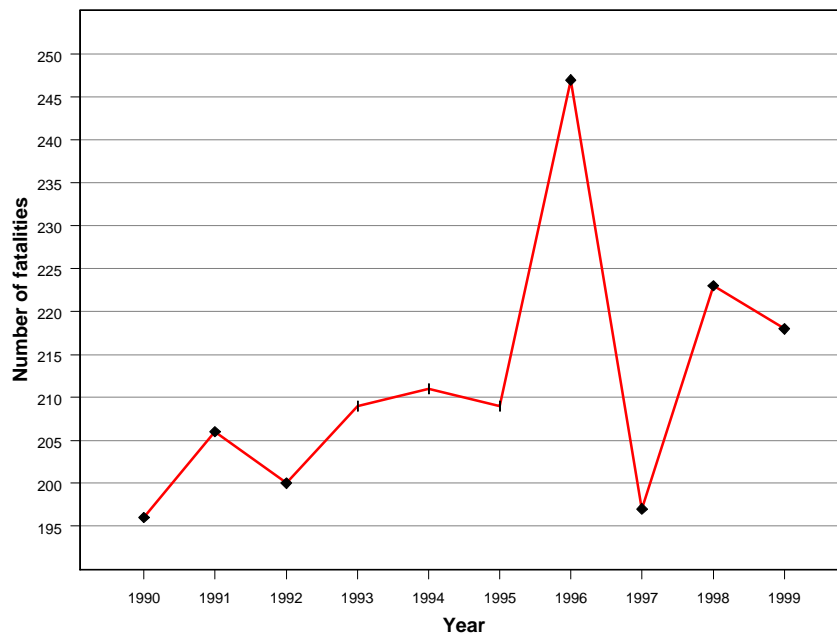


Figure 4. Total number of reported road crash fatalities in WA by year.

(Source: Main Roads WA Traffic Accident System)

Year	Injury Severity										
	Fatality		Hospitalised		Total Serious		Minor		None/Unknown		Total
	n	(%)*	n	(%)*	n	(%)*	n	(%)*	n	(%)*	n
1990	196	(0.3)	2,697	(3.7)	2,893	(4.0)	11,177	(15.3)	59,154	(80.8)	73,224
1991	206	(0.3)	2,583	(3.8)	2,789	(4.1)	10,548	(15.3)	55,465	(80.6)	68,802
1992	200	(0.3)	2,575	(3.9)	2,775	(4.2)	10,491	(15.9)	52,627	(79.9)	65,893
1993	209	(0.3)	2,601	(3.7)	2,810	(4.0)	10,924	(15.4)	57,375	(80.7)	71,109
1994	211	(0.3)	2,668	(3.5)	2,879	(3.8)	11,637	(15.4)	61,186	(80.8)	75,702
1995	209	(0.3)	2,907	(3.7)	3,116	(4.0)	10,868	(14.0)	63,583	(82.0)	77,567
1996	247	(0.3)	2,595	(3.4)	2,842	(3.7)	11,480	(14.9)	62,473	(81.4)	76,795
1997	197	(0.3)	2,904	(3.9)	3,101	(4.1)	11,403	(15.2)	60,575	(80.7)	75,079
1998	223	(0.3)	2,958	(3.7)	3,181	(4.0)	11,971	(14.9)	65,185	(81.1)	80,337
1999	218	(0.3)	2,522	(3.1)	2,740	(3.3)	12,994	(15.9)	66,150	(80.8)	81,884
Total	2,116	(0.3)	27,010	(3.6)	29,126	(3.9)	113,493	(15.2)	603,773	(80.9)	746,392

Table 4. Number of road users reported to be involved in road crashes in WA by year and injury severity.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

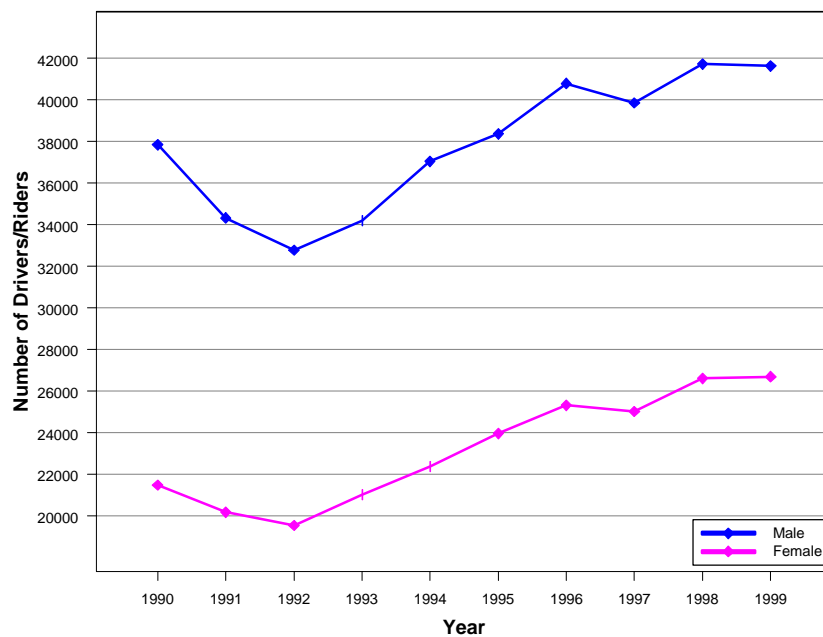


Figure 5. Number of drivers and motorcycle riders reported to be involved in road crashes in WA by year and gender.

(Source: Main Roads WA Traffic Accident System)

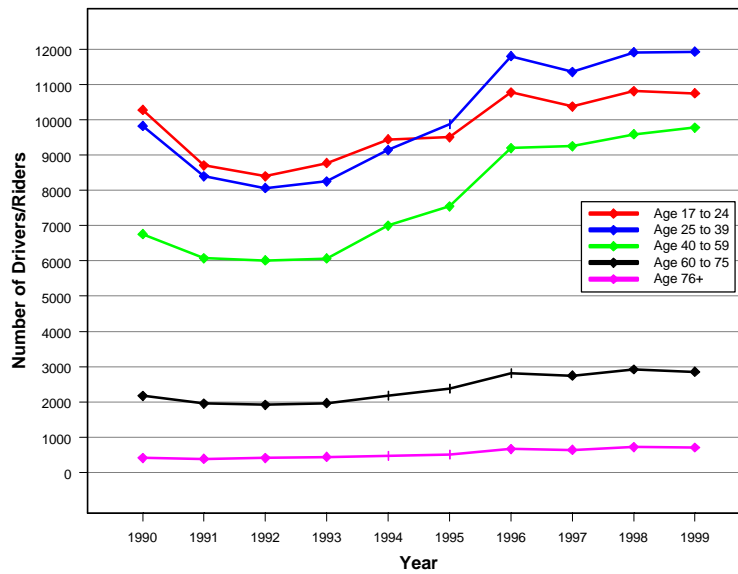


Figure 6. Number of male drivers and motorcycle riders reported to be involved in road crashes in WA by year and age.
 (Source: Main Roads WA Traffic Accident System)

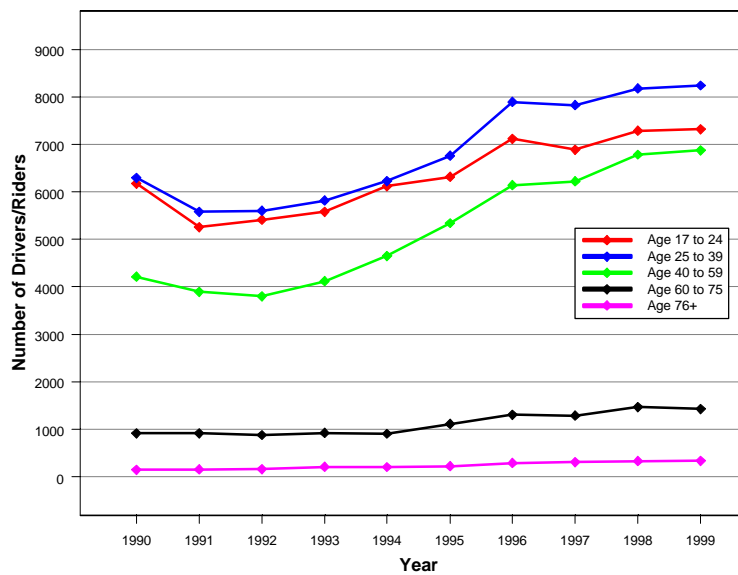


Figure 7. Number of female drivers and motorcycle riders reported to be involved in road crashes in WA by year and age.
 (Source: Main Roads WA Traffic Accident System)

Gender/Age	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Male										
<17	33	(1.3)	234	(0.8)	267	(0.8)	1,177	(0.2)	1,444	(0.2)
17-24	628	(23.9)	6,675	(21.4)	7,303	(21.6)	90,592	(14.7)	97,895	(15.0)
25-39	698	(26.6)	6,626	(21.3)	7,324	(21.7)	93,290	(15.1)	100,614	(15.5)
40-59	433	(16.5)	4,288	(13.8)	4,721	(14.0)	72,580	(11.8)	77,301	(11.9)
60-75	145	(5.5)	1,356	(4.4)	1,501	(4.4)	22,348	(3.6)	23,849	(3.7)
>75	54	(2.1)	407	(1.3)	461	(1.4)	4,830	(0.8)	5,291	(0.8)
Unknown	11	(0.4)	666	(2.1)	677	(2.0)	70,410	(11.4)	71,087	(10.9)
Total Male	2,002	(76.2)	20,252	(65.1)	22,254	(65.9)	355,227	(57.6)	377,481	(58.0)
Female										
<17	6	(0.2)	66	(0.2)	72	(0.2)	390	(0.1)	462	(0.1)
17-24	196	(7.5)	3,216	(10.3)	3,412	(10.1)	60,072	(9.7)	63,484	(9.8)
25-39	190	(7.2)	3,199	(10.3)	3,389	(10.0)	65,050	(10.5)	68,439	(10.5)
40-59	131	(5.0)	2,339	(7.5)	2,470	(7.3)	49,579	(8.0)	52,049	(8.0)
60-75	50	(1.9)	652	(2.1)	702	(2.1)	10,436	(1.7)	11,138	(1.7)
>75	11	(0.4)	196	(0.6)	207	(0.6)	2,139	(0.3)	2,346	(0.4)
Unknown	4	(0.2)	285	(0.9)	289	(0.9)	33,802	(5.5)	34,091	(5.2)
Total Female	588	(22.4)	9,953	(32.0)	10,541	(31.2)	221,468	(35.9)	232,009	(35.7)
Unknown	38	(1.4)	914	(2.9)	952	(2.8)	40,028	(6.5)	40,980	(6.3)
Total	2,628		31,119		33,747		616,723		650,470	

Table 5. Gender and age of drivers and motorcycle riders involved in road crashes by crash severity, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

4.2 Road User Types

From Table 6 and Table 7 the following observations were made:

- Almost three quarters of all fatalities (72%) and 60% of persons seriously injured were male;
- 43% of fatalities and 36% of persons seriously injured were males aged 17 to 39; and
- 21% of pedestrian fatalities were aged 70 or over.

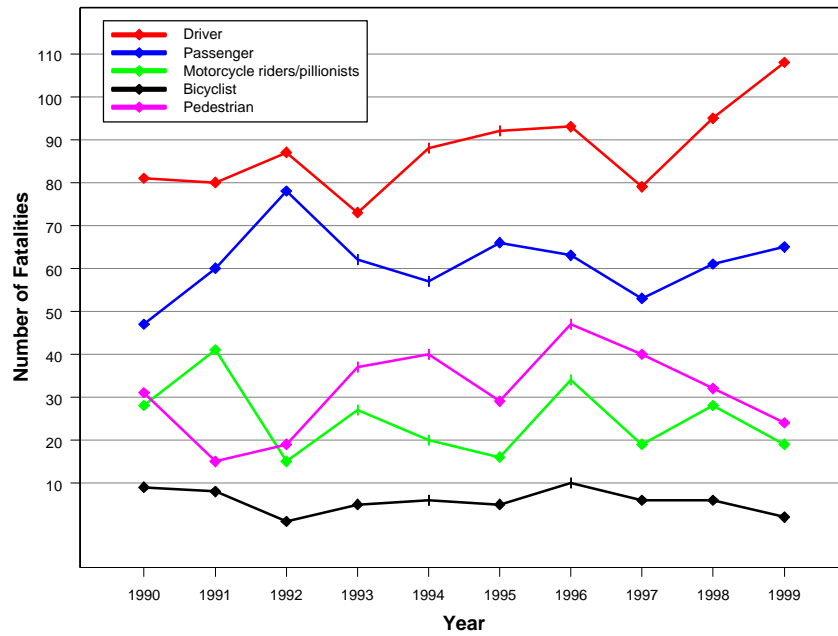


Figure 8. Number of reported road crash fatalities in WA by year and road user type.

(Source: Main Roads WA Traffic Accident System)

Gender/Age	Road User Type														Total n (%)	
	Driver		Passenger		Motorcycle Rider		Motorcycle Pillion		Bicycle rider		Pedestrian		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)		
Male																
<6	-	-	16	(2.6)	-	-	-	-	1	(1.7)	17	(5.4)	-	-	34	(1.6)
6-11	-	-	9	(1.5)	-	-	-	-	5	(8.6)	12	(3.8)	-	-	26	(1.2)
12-16	10	(1.1)	37	(6.0)	7	(3.0)	2	(11.8)	11	(19.0)	15	(4.8)	-	-	82	(3.9)
17-20	102	(11.6)	81	(13.2)	37	(16.1)	1	(5.9)	5	(8.6)	30	(9.6)	1	(11.1)	257	(12.1)
21-24	88	(10.0)	59	(9.6)	46	(20.0)	5	(29.4)	5	(8.6)	20	(6.4)	1	(11.1)	224	(10.6)
25-29	84	(9.6)	41	(6.7)	51	(22.2)	2	(11.8)	1	(1.7)	22	(7.0)	-	-	201	(9.5)
30-39	118	(13.5)	37	(6.0)	50	(21.7)	-	-	3	(5.2)	20	(6.4)	3	(33.3)	231	(10.9)
40-49	84	(9.6)	24	(3.9)	21	(9.1)	-	-	5	(8.6)	20	(6.4)	1	(11.1)	155	(7.3)
50-59	62	(7.1)	12	(2.0)	4	(1.7)	-	-	6	(10.3)	20	(6.4)	-	-	104	(4.9)
60-69	52	(5.9)	10	(1.6)	3	(1.3)	-	-	2	(3.4)	19	(6.1)	1	(11.1)	87	(4.1)
>69	61	(7.0)	13	(2.1)	1	(0.4)	-	-	3	(5.2)	36	(11.5)	2	(22.2)	116	(5.5)
Unknown	-	-	1	(0.2)	1	(0.4)	-	-	-	-	-	-	-	-	2	(0.1)
Total Male	661	(75.5)	340	(55.6)	221	(96.1)	10	(58.8)	47	(81.0)	231	(73.6)	9	(100.0)	1,519	(71.8)
Female																
<6	-	-	25	(4.1)	-	-	-	-	-	-	2	(0.6)	-	-	27	(1.3)
6-11	-	-	10	(1.6)	-	-	-	-	-	-	4	(1.3)	-	-	14	(0.7)
12-16	5	(0.6)	30	(4.9)	-	-	-	-	6	(10.3)	2	(0.6)	-	-	43	(2.0)
17-20	41	(4.7)	32	(5.2)	-	-	-	-	-	-	8	(2.5)	-	-	81	(3.8)
21-24	24	(2.7)	24	(3.9)	-	-	1	(5.9)	-	-	6	(1.9)	-	-	55	(2.6)
25-29	22	(2.5)	25	(4.1)	1	(0.4)	3	(17.6)	3	(5.2)	7	(2.2)	-	-	61	(2.9)
30-39	39	(4.5)	26	(4.2)	2	(0.9)	1	(5.9)	2	(3.4)	5	(1.6)	-	-	75	(3.5)
40-49	28	(3.2)	22	(3.6)	2	(0.9)	2	(11.8)	-	-	8	(2.5)	-	-	62	(2.9)
50-59	16	(1.8)	22	(3.6)	2	(0.9)	-	-	-	-	5	(1.6)	-	-	45	(2.1)
60-69	18	(2.1)	21	(3.4)	1	(0.4)	-	-	-	-	7	(2.2)	-	-	47	(2.2)
>69	21	(2.4)	32	(5.2)	1	(0.4)	-	-	-	-	29	(9.2)	-	-	83	(3.9)
Unknown	1	(0.1)	2	(0.3)	-	-	-	-	-	-	-	-	-	-	3	(0.1)
Total Female	215	(24.5)	271	(44.3)	9	(3.9)	7	(41.2)	11	(19.0)	83	(26.4)	-	-	596	(28.2)
Unknown	-	-	1	(0.2)	-	-	-	-	-	-	-	-	-	-	1	(0.0)
Total	876		612		230		17		58		314		9		2,116	

Table 6. Gender and age of road crash fatalities reported in WA by road user type, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Road User Type														Total	
	Driver		Passenger		Motorcycle Rider		Motorcycle Pillion		Bicycle rider		Pedestrian		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Male																
<6	-	-	201	(2.4)	-	-	3	(0.9)	18	(1.4)	122	(4.3)	2	(0.5)	346	(1.2)
6-11	-	-	228	(2.7)	5	(0.2)	1	(0.3)	155	(12.0)	215	(7.6)	6	(1.6)	610	(2.1)
12-16	93	(0.7)	435	(5.1)	95	(3.3)	17	(5.3)	246	(19.0)	147	(5.2)	5	(1.4)	1,038	(3.6)
17-20	1,416	(10.9)	868	(10.2)	459	(15.9)	32	(10.0)	110	(8.5)	217	(7.7)	41	(11.3)	3,143	(10.8)
21-24	1,154	(8.9)	567	(6.7)	575	(19.9)	37	(11.5)	81	(6.3)	150	(5.3)	38	(10.4)	2,602	(8.9)
25-29	1,009	(7.8)	383	(4.5)	532	(18.5)	22	(6.9)	84	(6.5)	143	(5.1)	28	(7.7)	2,201	(7.6)
30-39	1,292	(10.0)	350	(4.1)	646	(22.4)	13	(4.0)	110	(8.5)	187	(6.6)	41	(11.3)	2,639	(9.1)
40-49	886	(6.8)	187	(2.2)	250	(8.7)	2	(0.6)	93	(7.2)	131	(4.6)	27	(7.4)	1,576	(5.4)
50-59	584	(4.5)	117	(1.4)	81	(2.8)	1	(0.3)	40	(3.1)	92	(3.3)	9	(2.5)	924	(3.2)
60-69	392	(3.0)	86	(1.0)	32	(1.1)	-	-	30	(2.3)	89	(3.2)	9	(2.5)	638	(2.2)
>69	492	(3.8)	77	(0.9)	8	(0.3)	-	-	17	(1.3)	151	(5.4)	15	(4.1)	760	(2.6)
Unknown	140	(1.1)	591	(7.0)	63	(2.2)	30	(9.3)	90	(6.9)	167	(5.9)	17	(4.7)	1,098	(3.8)
Total Male	7,458	(57.5)	4,090	(48.3)	2,746	(95.2)	158	(49.2)	1,074	(82.9)	1,811	(64.2)	238	(65.4)	17,575	(60.3)
Female																
<6	-	-	193	(2.3)	-	-	-	-	1	(0.1)	50	(1.8)	3	(0.8)	247	(0.8)
6-11	-	-	236	(2.8)	-	-	2	(0.6)	32	(2.5)	90	(3.2)	4	(1.1)	364	(1.2)
12-16	34	(0.3)	436	(5.1)	8	(0.3)	9	(2.8)	58	(4.5)	126	(4.5)	3	(0.8)	674	(2.3)
17-20	1,090	(8.4)	674	(8.0)	16	(0.6)	30	(9.3)	17	(1.3)	107	(3.8)	14	(3.8)	1,948	(6.7)
21-24	744	(5.7)	394	(4.7)	24	(0.8)	30	(9.3)	17	(1.3)	56	(2.0)	11	(3.0)	1,276	(4.4)
25-29	644	(5.0)	314	(3.7)	34	(1.2)	24	(7.5)	21	(1.6)	70	(2.5)	11	(3.0)	1,118	(3.8)
30-39	998	(7.7)	348	(4.1)	27	(0.9)	23	(7.2)	28	(2.2)	87	(3.1)	18	(4.9)	1,529	(5.2)
40-49	794	(6.1)	301	(3.6)	12	(0.4)	14	(4.4)	11	(0.8)	63	(2.2)	14	(3.8)	1,209	(4.2)
50-59	508	(3.9)	238	(2.8)	8	(0.3)	2	(0.6)	5	(0.4)	45	(1.6)	8	(2.2)	814	(2.8)
60-69	291	(2.2)	241	(2.8)	3	(0.1)	1	(0.3)	12	(0.9)	51	(1.8)	8	(2.2)	607	(2.1)
>69	305	(2.4)	289	(3.4)	2	(0.1)	-	-	2	(0.2)	161	(5.7)	14	(3.8)	773	(2.7)
Unknown	104	(0.8)	659	(7.8)	2	(0.1)	25	(7.8)	16	(1.2)	99	(3.5)	15	(4.1)	920	(3.2)
Total Female	5,512	(42.5)	4,323	(51.0)	136	(4.7)	160	(49.8)	220	(17.0)	1,005	(35.6)	123	(33.8)	11,479	(39.4)
Unknown	4	(0.0)	56	(0.7)	1	(0.0)	3	(0.9)	1	(0.1)	4	(0.1)	3	(0.8)	72	(0.2)
Total	12,974		8,469		2,883		321		1,295		2,820		364		29,126	

Table 7. Gender and age of persons seriously injured in reported road crashes in WA by road user type, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

4.3 Origin of Road Users

The origin of a road user refers to the region in which they live, not to the origin of the journey. Table 8 compares the origin of drivers and riders involved in crashes with the region in which the crashes occurred. Data was restricted to the time period 1 January 1996 to 31 December 1999 because many address records in Main Roads' Traffic Accident System for road users were missing for the years 1990 through to 1995.

Origin has been broken down into Local Government Areas (LGA) and Main Roads WA regions. Within Western Australia there are eleven Main Roads regions, each containing several LGAs. Further regional breakdowns are presented in the regional section of this report (Chapter 9).

From Table 8 it can be seen that:

- Just over one third of drivers and motorcycle riders involved in fatal crashes (35%) lived within the LGA in which the crash occurred;
- A further third of drivers and motorcycle riders involved in fatal crashes (34%) lived outside the LGA but within the region in which the crash occurred;
- Only 5% of drivers and motorcycle riders involved in all crashes lived outside the region in which the crash occurred; and
- Over half of pedestrians fatally injured (55%) lived within the LGA in which the crash occurred.

Origin of Road User	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Drivers and Motorcycle riders										
Within LGA	384	(34.9)	4,506	(34.8)	4,890	(34.8)	74,773	(28.3)	79,663	(28.6)
Outside LGA										
<i>Within Region</i>	380	(34.5)	5,514	(42.6)	5,894	(42.0)	119,089	(45.0)	124,983	(44.8)
<i>Outside Region</i>	204	(18.5)	1,258	(9.7)	1,462	(10.4)	13,518	(5.1)	14,980	(5.4)
Total Outside LGA	584	(53.0)	6,772	(52.3)	7,356	(52.4)	132,607	(50.1)	139,963	(50.2)
Unknown	133	(12.1)	1,665	(12.9)	1,798	(12.8)	57,246	(21.6)	59,044	(21.2)
Total	1,101		12,943		14,044		264,626		278,670	
Bicycle riders										
Within LGA	18	(66.7)	248	(50.7)	266	(51.6)	762	(34.8)	1,028	(38.0)
Outside LGA										
<i>Within Region</i>	6	(22.2)	156	(31.9)	162	(31.4)	474	(21.7)	636	(23.5)
<i>Outside Region</i>	-	-	3	(0.6)	3	(0.6)	28	(1.3)	31	(1.1)
Total Outside LGA	6	(22.2)	159	(32.5)	165	(32.0)	502	(22.9)	667	(24.7)
Unknown	3	(11.1)	82	(16.8)	85	(16.5)	924	(42.2)	1,009	(37.3)
Total	27		489		516		2,188		2,704	
Pedestrians										
Within LGA	83	(55.3)	445	(44.5)	528	(46.0)	448	(25.1)	976	(33.3)
Outside LGA										
<i>Within Region</i>	32	(21.3)	336	(33.6)	368	(32.0)	371	(20.8)	739	(25.2)
<i>Outside Region</i>	6	(4.0)	41	(4.1)	47	(4.1)	35	(2.0)	82	(2.8)
Total Outside LGA	38	(25.3)	377	(37.7)	415	(36.1)	406	(22.8)	821	(28.0)
Unknown	29	(19.3)	177	(17.7)	206	(17.9)	929	(52.1)	1,135	(38.7)
Total	150		999		1,149		1,783		2,932	

Table 8. Origin of road users involved in reported road crashes in WA by crash severity, 1996 to 1999.

(Source: Main Roads WA Traffic Accident System)

4.4 Experience of Drivers and Riders

As a measure of a driver's or rider's driving experience, the probationary driving status of the driver and motorcycle rider was used. A probationary driver is a first year driver restricted to a maximum speed of 90km/h and a blood alcohol concentration of 0.02g/100ml.

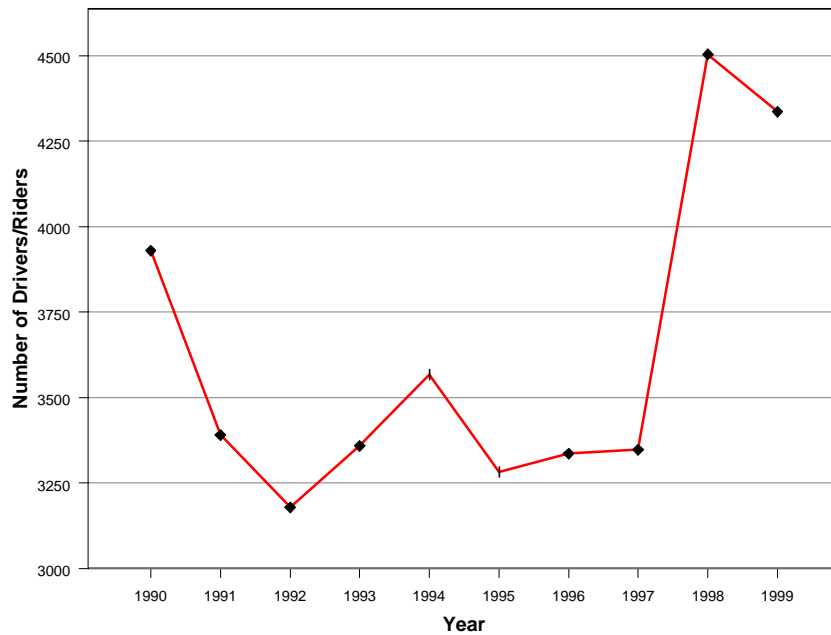


Figure 9. Probationary drivers and motorcycle riders involved in reported road crashes in WA, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Overall, 6% of drivers and motorcycle riders involved in all crashes were of probationary status (Table 11). Refer to Table 9, Table 10 and Table 11 for a breakdown of crash severity by age, gender and probationary status.

Gender/Age	Driver on Probation						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	1	(3.0)	16	(48.5)	16	(48.5)	33
17-20	87	(25.6)	220	(64.7)	33	(9.7)	340
21-24	7	(2.4)	251	(87.2)	30	(10.4)	288
25-29	4	(1.3)	260	(82.8)	50	(15.9)	314
30-39	3	(0.8)	348	(90.6)	33	(8.6)	384
40-49	-	-	261	(93.2)	19	(6.8)	280
50-59	-	-	144	(94.1)	9	(5.9)	153
60-69	-	-	100	(93.5)	7	(6.5)	107
>69	-	-	87	(94.6)	5	(5.4)	92
Unknown	-	-	6	(54.5)	5	(45.5)	11
Total Male	102	(5.1)	1,693	(84.6)	207	(10.3)	2,002
Female							
<17	-	-	2	(33.3)	4	(66.7)	6
17-20	47	(37.0)	68	(53.5)	12	(9.4)	127
21-24	5	(7.2)	59	(85.5)	5	(7.2)	69
25-29	4	(5.7)	63	(90.0)	3	(4.3)	70
30-39	1	(0.8)	108	(90.0)	11	(9.2)	120
40-49	1	(1.3)	72	(94.7)	3	(3.9)	76
50-59	-	-	52	(94.5)	3	(5.5)	55
60-69	-	-	29	(87.9)	4	(12.1)	33
>69	-	-	27	(96.4)	1	(3.6)	28
Unknown	-	-	-	-	4	(100.0)	4
Total Female	58	(9.9)	480	(81.6)	50	(8.5)	588
Unknown	-	-	12	(31.6)	26	(68.4)	38
Total	160	(6.1)	2,185	(83.1)	283	(10.8)	2,628

Table 9. Gender and age of drivers and motorcycle riders involved in fatal road crashes in WA by probationary status, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Driver on Probation						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	57	(21.3)	94	(35.2)	116	(43.4)	267
17-20	1,177	(29.3)	2,453	(61.0)	393	(9.8)	4,023
21-24	78	(2.4)	2,879	(87.8)	323	(9.8)	3,280
25-29	43	(1.4)	2,765	(88.6)	313	(10.0)	3,121
30-39	40	(1.0)	3,766	(89.6)	397	(9.4)	4,203
40-49	11	(0.4)	2,736	(92.0)	227	(7.6)	2,974
50-59	3	(0.2)	1,598	(91.5)	146	(8.4)	1,747
60-69	4	(0.4)	963	(91.0)	91	(8.6)	1,058
>69	3	(0.3)	833	(92.1)	68	(7.5)	904
Unknown	16	(2.4)	253	(37.4)	408	(60.3)	677
Total Male	1,432	(6.4)	18,340	(82.4)	2,482	(11.2)	22,254
Female							
<17	8	(11.1)	18	(25.0)	46	(63.9)	72
17-20	717	(35.2)	1,154	(56.7)	165	(8.1)	2,036
21-24	67	(4.9)	1,178	(85.6)	131	(9.5)	1,376
25-29	29	(2.3)	1,126	(88.4)	119	(9.3)	1,274
30-39	23	(1.1)	1,897	(89.7)	195	(9.2)	2,115
40-49	10	(0.6)	1,454	(91.6)	123	(7.8)	1,587
50-59	11	(1.2)	787	(89.1)	85	(9.6)	883
60-69	1	(0.2)	419	(89.0)	51	(10.8)	471
>69	4	(0.9)	397	(90.6)	37	(8.4)	438
Unknown	12	(4.2)	108	(37.4)	169	(58.5)	289
Total Female	882	(8.4)	8,538	(81.0)	1,121	(10.6)	10,541
Unknown	12	(1.3)	156	(16.4)	784	(82.4)	952
Total	2,326	(6.9)	27,034	(80.1)	4,387	(13.0)	33,747

Table 10. Gender and age of drivers and motorcycle riders involved in serious road crashes in WA by probationary status, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Driver on Probation						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	340	(23.5)	562	(38.9)	542	(37.5)	1,444
17-20	17,156	(30.6)	34,258	(61.2)	4,574	(8.2)	55,988
21-24	938	(2.2)	37,061	(88.4)	3,908	(9.3)	41,907
25-29	457	(1.1)	35,887	(88.6)	4,145	(10.2)	40,489
30-39	395	(0.7)	52,831	(87.9)	6,899	(11.5)	60,125
40-49	155	(0.3)	40,996	(87.1)	5,909	(12.6)	47,060
50-59	58	(0.2)	25,701	(85.0)	4,482	(14.8)	30,241
60-69	45	(0.3)	13,980	(80.0)	3,453	(19.8)	17,478
>69	32	(0.3)	9,076	(77.8)	2,554	(21.9)	11,662
Unknown	1,685	(2.4)	14,837	(20.9)	54,565	(76.8)	71,087
Total Male	21,261	(5.6)	265,189	(70.3)	91,031	(24.1)	377,481
Female							
<17	115	(24.9)	191	(41.3)	156	(33.8)	462
17-20	11,570	(32.1)	21,939	(60.9)	2,521	(7.0)	36,030
21-24	807	(2.9)	24,452	(89.1)	2,195	(8.0)	27,454
25-29	376	(1.5)	22,905	(89.5)	2,323	(9.1)	25,604
30-39	360	(0.8)	37,782	(88.2)	4,693	(11.0)	42,835
40-49	175	(0.5)	30,329	(87.4)	4,203	(12.1)	34,707
50-59	62	(0.4)	14,739	(85.0)	2,541	(14.7)	17,342
60-69	33	(0.4)	6,515	(80.5)	1,541	(19.1)	8,089
>69	27	(0.5)	4,197	(77.8)	1,171	(21.7)	5,395
Unknown	1,081	(3.2)	7,389	(21.7)	25,621	(75.2)	34,091
Total Female	14,606	(6.3)	170,438	(73.5)	46,965	(20.2)	232,009
Unknown	359	(0.9)	4,833	(11.8)	35,788	(87.3)	40,980
Total	36,226	(5.6)	440,460	(67.7)	173,784	(26.7)	650,470

Table 11. Gender and age of drivers and motorcycle riders involved in all road crashes in WA by probationary status, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

4.5 Crash Nature

From Table 12 and Table 13, the following observations were made:

- The majority of fatal crashes (63%) were single vehicle crashes with the most common crash nature types being “Hit Pedestrian”, “Hit Tree” and “Overturns” with percentages of 16%, 15% and 14% respectively (Table 12);
- Multi-vehicle crashes made up 75% of the all crashes. The most common crash nature types were “Rear End” and “Right Angle” crashes with percentages of 35% and 20% respectively (Table 12);
- In general, the proportion of single vehicle crashes amongst fatal crashes decreases as the age of the drivers and riders involved increases (Table 13); and
- Of those drivers and motorcycle riders aged 70 or more and involved in fatal crashes, 50% of males and 82% of females were involved in “Right Angle” or “Indirect Right Angle” crashes (Table 13).

Nature of Crash	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other		n	(%)
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	63	(3.3)	2,253	(10.8)	2,316	(10.2)	123,193	(36.2)	125,509	(34.6)
Head on	230	(12.0)	661	(3.2)	891	(3.9)	5,885	(1.7)	6,776	(1.9)
Sideswipe opp. dir.	25	(1.3)	243	(1.2)	268	(1.2)	4,454	(1.3)	4,722	(1.3)
Sideswipe same dir.	46	(2.4)	870	(4.2)	916	(4.0)	34,321	(10.1)	35,237	(9.7)
Right angle	219	(11.5)	3,879	(18.6)	4,098	(18.0)	68,801	(20.2)	72,899	(20.1)
Indirect Right Angle	71	(3.7)	2,065	(9.9)	2,136	(9.4)	25,485	(7.5)	27,621	(7.6)
Total Multi-Vehicle	654	(34.3)	9,971	(47.9)	10,625	(46.8)	262,139	(77.0)	272,764	(75.1)
Single Vehicle Crashes										
Hit pedestrian	308	(16.1)	2,397	(11.5)	2,705	(11.9)	4,218	(1.2)	6,923	(1.9)
Hit animal	11	(0.6)	225	(1.1)	236	(1.0)	4,968	(1.5)	5,204	(1.4)
Hit object										
<i>Pole/Post</i>	89	(4.7)	853	(4.1)	942	(4.1)	6,785	(2.0)	7,727	(2.1)
<i>Tree</i>	292	(15.3)	1,506	(7.2)	1,798	(7.9)	6,543	(1.9)	8,341	(2.3)
<i>Wall/Fence</i>	22	(1.2)	292	(1.4)	314	(1.4)	4,036	(1.2)	4,350	(1.2)
<i>Traffic Island</i>	34	(1.8)	262	(1.3)	296	(1.3)	2,120	(0.6)	2,416	(0.7)
<i>Kerb</i>	30	(1.6)	582	(2.8)	612	(2.7)	5,468	(1.6)	6,080	(1.7)
<i>Drainage Ditch</i>	19	(1.0)	206	(1.0)	225	(1.0)	1,613	(0.5)	1,838	(0.5)
<i>Embankment</i>	44	(2.3)	400	(1.9)	444	(2.0)	2,243	(0.7)	2,687	(0.7)
<i>Other object</i>	58	(3.0)	667	(3.2)	725	(3.2)	6,020	(1.8)	6,745	(1.9)
Total hit object	588	(30.8)	4,768	(22.9)	5,356	(23.6)	34,828	(10.2)	40,184	(11.1)
Non collision										
<i>Overturns</i>	265	(13.9)	2,072	(10.0)	2,337	(10.3)	8,584	(2.5)	10,921	(3.0)
<i>Falls from vehicle</i>	24	(1.3)	468	(2.2)	492	(2.2)	966	(0.3)	1,458	(0.4)
<i>Other non collision</i>	14	(0.7)	228	(1.1)	242	(1.1)	2,273	(0.7)	2,515	(0.7)
Total non collision	303	(15.9)	2,768	(13.3)	3,071	(13.5)	11,823	(3.5)	14,894	(4.1)
Total Single Vehicle	1,210	(63.4)	10,158	(48.8)	11,368	(50.0)	55,837	(16.4)	67,205	(18.5)
Other	45	(2.4)	687	(3.3)	732	(3.2)	22,379	(6.6)	23,111	(6.4)
Total Crashes	1,909		20,816		22,725		340,355		363,080	

Table 12. Nature of crash by crash severity, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Nature of Crash												
	Multi Vehicle Crash							Single Vehicle Crash					Total
	Rear End %	Head On %	S-swipe (Opp.) %	S-swipe (Same) %	Right Angle %	Ind. Rt Angle %	Total Multi %	Hit Pedest. %	Hit Animal %	Hit Object %	Non Collision %	Total Single %	%
Male													
<17	-	6.1	-	6.1	18.2	3.0	33.3	-	-	30.3	30.3	60.6	100.0
17-20	5.6	12.9	1.5	2.6	9.4	5.9	37.9	14.1	-	34.7	10.3	59.1	100.0
21-24	5.6	19.1	2.1	4.5	11.5	4.9	47.6	9.0	0.3	28.8	11.8	50.0	100.0
25-29	5.7	19.7	1.6	3.2	14.3	5.4	50.0	12.7	-	25.2	11.1	49.0	100.0
30-39	5.5	23.2	2.3	3.4	15.4	5.2	54.9	9.1	1.8	20.1	11.7	42.7	100.0
40-49	5.0	21.1	1.1	4.3	15.0	4.3	50.7	14.3	0.7	17.5	12.5	45.0	100.0
50-59	4.6	30.1	1.3	4.6	18.3	5.9	64.7	7.2	-	14.4	8.5	30.1	100.0
60-69	4.7	29.9	0.9	5.6	12.1	6.5	59.8	8.4	0.9	19.6	8.4	37.4	100.0
>69	5.4	15.2	-	4.3	40.2	9.8	75.0	6.5	-	13.0	5.4	25.0	100.0
Unknown	27.3	-	-	-	27.3	9.1	63.6	18.2	-	9.1	9.1	36.4	100.0
Total Male	5.4	20.1	1.5	3.8	14.9	5.5	51.2	10.8	0.5	23.6	11.1	46.1	100.0
Female													
<17	-	16.7	-	-	-	-	16.7	-	-	33.3	50.0	83.3	100.0
17-20	0.8	18.1	1.6	1.6	15.7	7.1	44.9	15.7	-	27.6	10.2	53.5	100.0
21-24	-	14.5	2.9	1.4	14.5	7.2	40.6	11.6	-	27.5	20.3	59.4	100.0
25-29	2.9	15.7	5.7	2.9	11.4	5.7	44.3	17.1	-	17.1	20.0	54.3	100.0
30-39	3.3	20.0	0.8	0.8	18.3	5.8	49.2	12.5	-	23.3	15.0	50.8	100.0
40-49	6.6	14.5	2.6	3.9	23.7	6.6	57.9	17.1	-	15.8	7.9	40.8	100.0
50-59	1.8	20.0	1.8	3.6	25.5	-	52.7	21.8	-	16.4	9.1	47.3	100.0
60-69	6.1	12.1	9.1	-	27.3	9.1	63.6	3.0	-	12.1	15.2	30.3	100.0
>69	-	-	-	-	60.7	21.4	82.1	3.6	-	14.3	-	17.9	100.0
Unknown	-	-	-	-	-	-	-	75.0	-	25.0	-	100.0	100.0
Total Female	2.6	16.2	2.6	1.9	20.1	6.6	49.8	14.5	-	21.4	13.3	49.1	100.0
Total	4.9	19.3	1.8	3.3	15.9	5.7	50.9	12.1	0.4	22.8	11.5	46.8	100.0

Table 13. Gender and age of drivers and motorcycle riders involved in fatal road crashes by nature of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Nature of Crash												Total %
	Multi Vehicle Crash							Single Vehicle Crash					
	Rear End %	Head On %	S-swipe (Opp.) %	S-swipe (Same) %	Right Angle %	Ind. Rt Angle %	Total Multi %	Hit Pedest. %	Hit Animal %	Hit Object %	Non Collision %	Total Single %	
Male Age													
<17	9.4	4.5	2.2	5.6	12.4	5.2	39.3	3.4	0.4	32.2	21.0	56.9	100.0
17-20	11.2	5.2	1.3	4.6	18.4	11.4	52.1	8.1	0.6	25.4	10.4	44.5	100.0
21-24	12.3	5.3	1.6	5.0	17.5	11.3	53.0	6.4	0.8	24.3	12.3	43.8	100.0
25-29	13.5	6.3	1.4	5.9	19.3	10.8	57.1	7.6	0.8	19.4	12.0	39.8	100.0
30-39	15.1	6.6	1.6	6.0	20.9	11.9	62.1	6.9	1.5	15.4	10.5	34.4	100.0
40-49	18.2	6.9	1.4	6.1	22.4	12.3	67.2	9.2	1.2	10.7	8.1	29.4	100.0
50-59	18.2	8.4	1.2	5.8	25.8	11.9	71.3	7.1	1.1	9.3	7.3	24.7	100.0
60-69	14.0	6.8	1.7	5.5	30.7	13.9	72.6	6.3	0.4	11.2	6.6	24.6	100.0
>69	13.2	4.4	1.3	4.6	36.9	18.4	78.9	4.4	0.2	11.6	3.1	19.4	100.0
Unknown	25.6	4.0	1.6	7.7	23.0	12.9	74.7	5.8	0.1	10.9	3.8	20.7	100.0
Total Male	14.5	6.1	1.5	5.5	21.4	11.9	61.0	7.3	0.9	17.7	9.8	35.7	100.0
Female Age													
<17	6.9	4.2	0.0	1.4	11.1	2.8	26.4	6.9	0.0	40.3	20.8	68.1	100.0
17-20	13.6	3.6	1.2	3.3	22.0	15.3	59.0	8.1	0.3	21.5	8.8	38.8	100.0
21-24	15.7	3.9	0.9	3.1	23.9	13.5	61.0	9.4	0.7	14.9	12.1	37.0	100.0
25-29	16.2	4.6	2.1	4.5	22.8	15.4	65.5	8.0	0.3	12.8	11.0	32.1	100.0
30-39	18.3	5.1	1.0	4.0	26.2	13.9	68.6	9.4	0.4	11.9	7.2	28.8	100.0
40-49	18.5	5.7	1.1	4.6	30.5	15.1	75.5	7.2	0.2	8.7	5.7	21.8	100.0
50-59	17.8	5.0	1.4	3.7	31.0	14.9	73.8	7.0	0.5	11.1	5.2	23.8	100.0
60-69	13.4	4.7	1.3	5.9	34.4	17.0	76.6	4.9	0.2	10.8	5.3	21.2	100.0
>69	8.0	2.3	1.1	3.7	44.1	19.9	79.0	5.3	0.0	9.8	4.1	19.2	100.0
Unknown	31.8	1.7	0.0	6.9	23.9	13.8	78.2	6.2	0.0	8.3	4.5	19.0	100.0
Total Female	16.4	4.4	1.2	4.0	26.7	14.9	67.6	8.0	0.3	13.7	8.0	30.0	100.0
Total	15.3	5.5	1.4	5.1	22.9	12.7	63.0	7.8	0.7	16.2	9.2	33.9	100.0

Table 14. Gender and age of drivers and motorcycle riders involved in serious road crashes by nature of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Nature of Crash												Total %
	Multi Vehicle Crash							Multi Vehicle Crash					
	Rear End %	Head On %	S-swipe (Opp.) %	S-swipe (Same) %	Right Angle %	Ind. Rt Angle %	Total Multi %	Hit Pedest. %	Hit Animal %	Hit Object %	Non Collision %	Total Single %	
Male Age													
<17	16.3	3.0	2.4	8.0	14.5	5.2	49.6	1.0	0.4	34.4	9.6	45.4	100.0
17-20	33.2	2.1	1.2	9.0	19.9	9.1	74.4	1.1	0.6	15.6	4.2	21.4	100.0
21-24	34.4	2.3	1.3	10.0	19.1	9.0	76.1	1.1	1.0	11.9	4.6	18.6	100.0
25-29	35.7	2.4	1.3	10.4	19.7	8.9	78.3	1.2	1.5	9.3	4.1	16.1	100.0
30-39	38.2	2.4	1.3	10.7	20.3	8.2	81.1	1.1	1.8	6.6	3.5	13.0	100.0
40-49	40.3	2.3	1.3	10.8	21.2	8.3	84.1	1.3	1.5	4.8	2.5	10.1	100.0
50-59	40.6	2.1	1.1	10.9	23.0	8.7	86.4	1.0	1.1	3.6	2.2	7.9	100.0
60-69	36.3	1.9	1.4	10.5	27.4	10.0	87.5	1.1	0.8	3.7	1.8	7.4	100.0
>69	28.9	1.4	1.3	10.7	34.5	12.8	89.6	0.8	0.4	3.5	1.1	5.8	100.0
Unknown	48.7	2.4	1.7	12.7	18.3	5.8	89.6	0.3	0.1	1.8	0.5	2.7	100.0
Total Male	38.8	2.3	1.3	10.7	20.7	8.3	82.1	1.0	1.0	7.3	2.9	12.2	100.0
Female Age													
<17	20.3	2.2	1.1	6.3	18.0	6.3	54.1	1.9	0.2	31.2	8.4	41.8	100.0
17-20	38.1	1.4	1.1	8.7	22.9	10.9	83.2	1.1	0.4	8.1	2.6	12.2	100.0
21-24	41.3	1.5	1.1	9.3	22.0	9.5	84.7	1.1	0.7	5.9	2.5	10.2	100.0
25-29	41.6	1.6	1.3	8.8	22.7	9.4	85.4	1.1	0.8	5.0	2.1	9.1	100.0
30-39	41.9	1.7	1.2	8.8	23.8	8.8	86.3	1.3	0.8	4.1	1.6	7.7	100.0
40-49	43.7	1.7	1.1	8.7	24.0	8.5	87.6	1.1	0.7	3.5	1.3	6.5	100.0
50-59	42.0	1.5	1.1	8.9	25.4	9.3	88.3	0.9	0.6	3.4	1.4	6.3	100.0
60-69	35.8	1.4	1.3	8.9	30.6	11.2	89.0	0.9	0.5	3.6	1.4	6.4	100.0
>69	24.7	1.3	1.2	9.6	37.8	14.4	89.0	0.7	0.1	4.2	1.2	6.3	100.0
Unknown	50.6	1.4	1.8	10.2	21.2	6.4	91.6	0.3	0.1	1.0	0.4	1.7	100.0
Total Female	42.1	1.6	1.2	9.1	23.6	9.1	86.7	1.0	0.6	4.5	1.7	7.7	100.0
Total	39.7	2.0	1.4	10.3	21.4	8.4	83.2	1.0	0.8	6.5	2.4	10.7	100.0

Table 15. Gender and age of drivers and motorcycle riders involved in all road crashes by nature of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

4.6 Aboriginality

The following series of tables summarising crash data by Aboriginality is based upon data provided from Roadwatch. In order to determine the Aboriginality of people involved in road crashes, data from the Hospital Morbidity Data System (Health Department of Western Australia) was linked to the Road Crash data base maintained by Main Roads Western Australia. The Hospital Morbidity Data System contains some records of fatalities and hospitalisation injuries from crashes that are not included in the Main Roads' database. One possible explanation for this arises from the fact that some crashes are not reported to the Police:

- There has been a general increase in the number of serious crashes involving Aboriginal persons from 1988 to 1997 (Table 16);
- The majority of Aboriginal crash fatalities were male (Table 17);
- Over 60% of Aboriginal crash fatalities were aged 12 to 39 (Table 17); and
- Passengers were the most common Aboriginal fatality, whereas drivers were the most common non-Aboriginal fatality (Table 18).

Year	Fatal Crashes			Hospitalisation Crashes			Total Serious Crashes		
	Non-Aboriginal	Aboriginal	Unknown	Non-Aboriginal	Aboriginal	Unknown	Non-Aboriginal	Aboriginal	Unknown
1988	232	9	-	1,618	71	-	1850	80	-
1989	204	12	-	1,700	69	-	1904	81	-
1990	167	12	-	1,502	67	-	1669	79	-
1991	172	11	-	1,557	97	-	1729	108	-
1992	166	17	-	1,331	78	-	1497	95	-
1993	193	21	-	1,698	122	-	1891	143	-
1994	211	12	-	1,819	97	-	2030	109	-
1995	223	19	-	1,698	115	-	1921	134	-
1996	267	15	1	1,688	96	-	1955	111	-
1997	302	22	10	1,599	90	28	1901	112	38
Total	2,137	150	11	16,210	902	28	18,347	1,052	39

Table 16. Number of serious road crashes by year, severity of crash and Aboriginality from 1 January 1988 to 31 December 1997.

(Source: Roadwatch, The University of Western Australia).

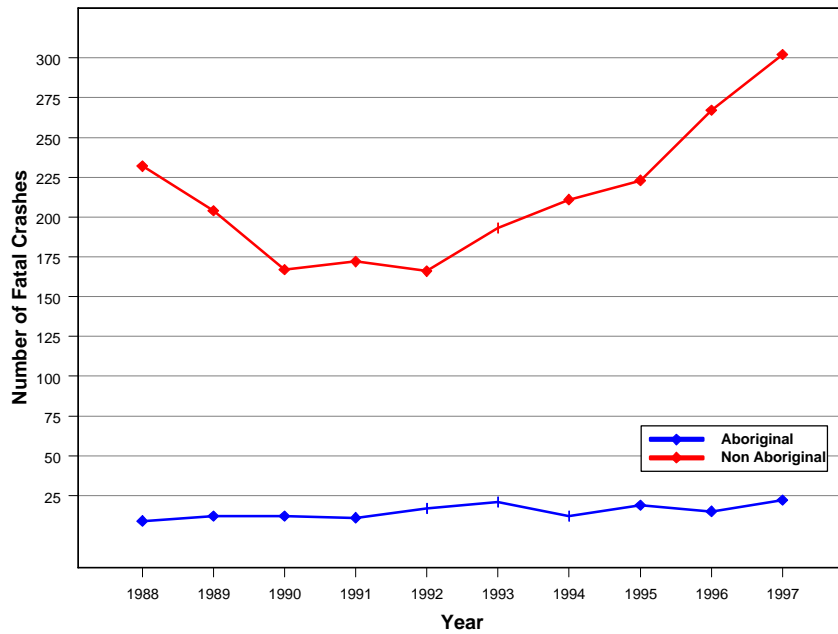


Figure 10. Number of fatal crashes by year and Aboriginality.
 (Source: Roadwatch, The University of Western Australia).

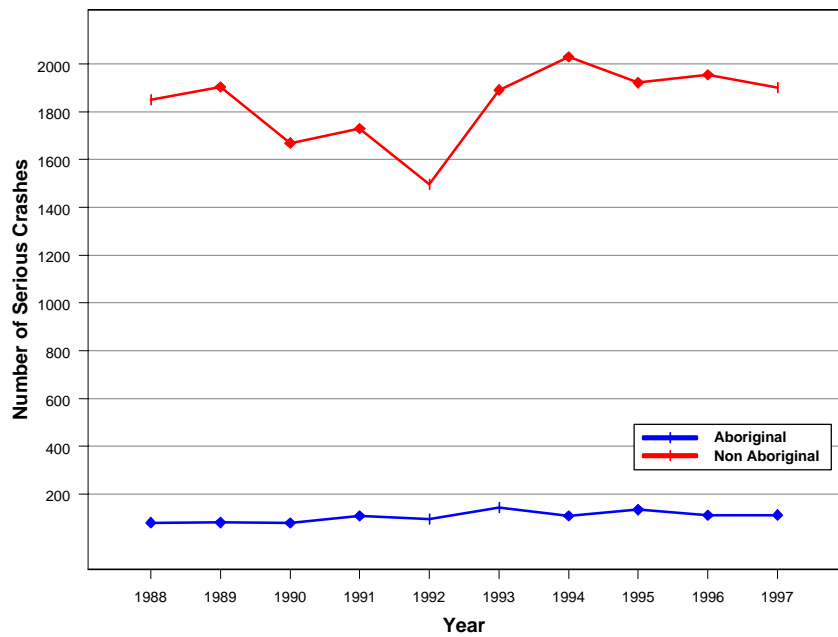


Figure 11. Number of serious crashes by year and Aboriginality.
 (Source: Roadwatch, The University of Western Australia).

Gender/Age	Injury Severity		Total Serious Injuries
	Fatal	Hospitalised	
Male			
<6	10	186	196
6-11	6	203	209
12-16	16	218	234
17-20	16	221	237
21-24	10	235	245
25-29	13	235	248
30-39	23	258	281
40-49	9	140	149
50-59	5	72	77
60-69	7	39	46
>69	1	11	12
Unknown	1	240	241
Total Male	117	2,058	2,175
Female			
<6	3	133	136
6-11	2	89	91
12-16	5	107	112
17-20	2	107	109
21-24	7	99	106
25-29	1	119	120
30-39	11	147	158
40-49	9	81	90
50-59	4	51	55
60-69	2	18	20
>69	1	8	9
Unknown	-	107	107
Total Female	47	1,066	1,113
Total	164	3,124	3,288

Table 17. Gender and age of Aboriginal casualties in serious crashes, 1988 to 1997.

(Source: Roadwatch, The University of Western Australia).

Road User Type	Injury Severity						Total Serious Injuries		
	Fatal			Hospitalised					
	Non-Aboriginal	Aboriginal	Unknown	Non-Aboriginal	Aboriginal	Unknown	Non-Aboriginal	Aboriginal	Unknown
Driver	776	22	3	8,649	326	26	9,425	348	29
Passenger	432	69	1	6,868	867	20	7,300	936	21
Motorcycle Rider	228	3	1	5,046	92	10	5,274	95	11
Motorcycle Pillion	10	2	1	431	17	1	441	19	2
Bicycle rider	54	3	1	6,266	331	2	6,320	334	3
Pedestrian	257	38	2	2,999	623	7	3,256	661	9
Other	527	27	2	9,468	868	6	9,995	895	8
Total	2,284	164	11	39,727	3,124	72	42,011	3,288	83

Table 18. Number of casualties by road user type and Aboriginality, 1988 to 1997.

(Source: Roadwatch, The University of Western Australia).

5. Road User Behavioural Factors

5.1 Speed

Whether speed is a factor in causing a crash is usually determined by the Attending Officer's Report. Hence a summary of the number of crashes attended by Police is provided for comparison. From the following tables it can be observed that:

- Although speed was recorded as a factor in only 18% of all Police attended crashes, it was a factor in 32% of Police attended fatal crashes (Table 19);
- Male drivers and motorcycle riders were more likely to be involved in a speed related crash than female drivers and motorcycle riders (Table 22);
- Younger age groups were more likely to be involved in speed related crashes (Table 22).

Factor	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other		n	(%)
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Police Attendance										
Yes	1,897	(99.4)	17,821	(85.6)	19,718	(86.8)	60,905	(17.9)	80,623	(22.2)
No	12	(0.6)	2,995	(14.4)	3,007	(13.2)	279,450	(82.1)	282,457	(77.8)
Speed a factor										
Yes	620	(32.5)	3,109	(14.9)	3,729	(16.4)	10,904	(3.2)	14,633	(4.0)
No	1,090	(57.1)	13,624	(65.4)	14,714	(64.7)	115,884	(34.0)	130,598	(36.0)
Unknown	199	(10.4)	4,083	(19.6)	4,282	(18.8)	213,567	(62.7)	217,849	(60.0)
Total	1,909		20,816		22,725		340,355		363,080	
Speed a factor for Police attended crashes										
Yes	617	(32.5)	3,073	(17.2)	3,690	(18.7)	10,598	(17.4)	14,288	(17.7)
No	1,084	(57.1)	12,820	(71.9)	13,904	(70.5)	43,851	(72.0)	57,755	(71.6)
Unknown	196	(10.3)	1,928	(10.8)	2,124	(10.8)	6,456	(10.6)	8,580	(10.6)
Total Police Attended	1,897		17,821		19,718		60,905		80,623	

Table 19. Severity of crash by Police attendance and speed a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)



Figure 12. Road crashes with speed a factor, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Speed a Factor						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	20	(60.6)	12	(36.4)	1	(3.0)	33
17-20	160	(47.1)	144	(42.4)	36	(10.6)	340
21-24	137	(47.6)	115	(39.9)	36	(12.5)	288
25-29	127	(40.4)	150	(47.8)	37	(11.8)	314
30-39	128	(33.3)	224	(58.3)	32	(8.3)	384
40-49	59	(21.1)	191	(68.2)	30	(10.7)	280
50-59	26	(17.0)	115	(75.2)	12	(7.8)	153
60-69	17	(15.9)	80	(74.8)	10	(9.3)	107
>69	9	(9.8)	79	(85.9)	4	(4.3)	92
Unknown	3	(27.3)	5	(45.5)	3	(27.3)	11
Total Male	686	(34.3)	1,115	(55.7)	201	(10.0)	2,002
Female							
<17	3	(50.0)	1	(16.7)	2	(33.3)	6
17-20	36	(28.3)	76	(59.8)	15	(11.8)	127
21-24	19	(27.5)	42	(60.9)	8	(11.6)	69
25-29	22	(31.4)	42	(60.0)	6	(8.6)	70
30-39	25	(20.8)	86	(71.7)	9	(7.5)	120
40-49	12	(15.8)	58	(76.3)	6	(7.9)	76
50-59	9	(16.4)	39	(70.9)	7	(12.7)	55
60-69	1	(3.0)	29	(87.9)	3	(9.1)	33
>69	3	(10.7)	21	(75.0)	4	(14.3)	28
Unknown	-	-	4	(100.0)	-	-	4
Total Female	130	(22.1)	398	(67.7)	60	(10.2)	588
Unknown	16	(42.1)	16	(42.1)	6	(15.8)	38
Total	832	(31.7)	1,529	(58.2)	267	(10.2)	2,628

Table 20. Gender and age of drivers and motorcycle riders involved in fatal crashes by speed a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

* Row percentages provided

Gender/Age	Speed a Factor						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	102	(38.2)	125	(46.8)	40	(15.0)	267
17-20	1,015	(25.2)	2,287	(56.8)	721	(17.9)	4,023
21-24	822	(25.1)	1,891	(57.7)	567	(17.3)	3,280
25-29	647	(20.7)	1,965	(63.0)	509	(16.3)	3,121
30-39	694	(16.5)	2,786	(66.3)	723	(17.2)	4,203
40-49	328	(11.0)	2,179	(73.3)	467	(15.7)	2,974
50-59	164	(9.4)	1,293	(74.0)	290	(16.6)	1,747
60-69	84	(7.9)	818	(77.3)	156	(14.7)	1,058
>69	43	(4.8)	750	(83.0)	111	(12.3)	904
Unknown	78	(11.5)	317	(46.8)	282	(41.7)	677
Total Male	3,977	(17.9)	14,411	(64.8)	3,866	(17.4)	22,254
Female							
<17	22	(30.6)	34	(47.2)	16	(22.2)	72
17-20	251	(12.3)	1,409	(69.2)	376	(18.5)	2,036
21-24	129	(9.4)	983	(71.4)	264	(19.2)	1,376
25-29	138	(10.8)	918	(72.1)	218	(17.1)	1,274
30-39	168	(7.9)	1,584	(74.9)	363	(17.2)	2,115
40-49	109	(6.9)	1,238	(78.0)	240	(15.1)	1,587
50-59	58	(6.6)	672	(76.1)	153	(17.3)	883
60-69	24	(5.1)	380	(80.7)	67	(14.2)	471
>69	24	(5.5)	359	(82.0)	55	(12.6)	438
Unknown	25	(8.7)	156	(54.0)	108	(37.4)	289
Total Female	948	(9.0)	7,733	(73.4)	1,860	(17.6)	10,541
Unknown	167	(17.5)	471	(49.5)	314	(33.0)	952
Total	5,092	(15.1)	22,615	(67.0)	6,040	(17.9)	33,747

Table 21. Gender and age of drivers and motorcycle riders involved in serious crashes by speed a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Speed a Factor						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	438	(30.3)	524	(36.3)	482	(33.4)	1,444
17-20	4,268	(7.6)	21,063	(37.6)	30,657	(54.8)	55,988
21-24	2,577	(6.1)	16,360	(39.0)	22,970	(54.8)	41,907
25-29	1,911	(4.7)	16,709	(41.3)	21,869	(54.0)	40,489
30-39	2,009	(3.3)	24,884	(41.4)	33,232	(55.3)	60,125
40-49	1,038	(2.2)	19,298	(41.0)	26,724	(56.8)	47,060
50-59	489	(1.6)	12,675	(41.9)	17,077	(56.5)	30,241
60-69	230	(1.3)	7,231	(41.4)	10,017	(57.3)	17,478
>69	133	(1.1)	5,349	(45.9)	6,180	(53.0)	11,662
Unknown	493	(0.7)	15,312	(21.5)	55,282	(77.8)	71,087
Total Male	13,586	(3.6)	139,405	(36.9)	224,490	(59.5)	377,481
Female							
<17	73	(15.8)	194	(42.0)	195	(42.2)	462
17-20	840	(2.3)	13,910	(38.6)	21,280	(59.1)	36,030
21-24	471	(1.7)	10,549	(38.4)	16,434	(59.9)	27,454
25-29	394	(1.5)	10,008	(39.1)	15,202	(59.4)	25,604
30-39	583	(1.4)	16,677	(38.9)	25,575	(59.7)	42,835
40-49	399	(1.1)	13,756	(39.6)	20,552	(59.2)	34,707
50-59	201	(1.2)	6,972	(40.2)	10,169	(58.6)	17,342
60-69	75	(0.9)	3,397	(42.0)	4,617	(57.1)	8,089
>69	70	(1.3)	2,531	(46.9)	2,794	(51.8)	5,395
Unknown	119	(0.3)	7,522	(22.1)	26,450	(77.6)	34,091
Total Female	3,225	(1.4)	85,516	(36.9)	143,268	(61.8)	232,009
Unknown	2,907	(7.1)	11,243	(27.4)	26,830	(65.5)	40,980
Total	19,718	(3.0)	236,164	(36.3)	394,588	(60.7)	650,470

Table 22. Gender and age of drivers and motorcycle riders involved in all road crashes by speed a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

5.2 Alcohol

In this section two measures of alcohol involvement in crashes were used; the blood alcohol concentration (BAC) of drivers and riders and a surrogate measure for alcohol related crashes, those which occur during *alcohol related hours* (as defined by the National Drug Research Institute, Curtin University of Technology).

For BAC of drivers, it should be noted that prior to 1 September 1996 that there was no distinction between a nil and unknown BAC in the Main Roads Road Crash Database. Hence data presented is restricted to the period from 1 September 1996 to 31 December 1999 in the analysis of BAC.

From the tables relating to BAC the following observations were made:

- Alcohol was present in 35% of fatal crashes and 4% of all crashes (Table 23);
- In 31% of fatal crashes and in 3% of all crashes the highest recorded BAC was at least 0.05g/100ml (Table 23);
- Drivers and motorcycle riders involved in crashes where alcohol was present were more likely to be male than female (Table 26);
- Drivers and riders aged 17 to 29 were more likely to be involved in crashes where alcohol was present than those in other age groups (Table 26).

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospitalisation		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	364	(56.6)	4,168	(59.1)	4,532	(58.9)	14,127	(11.8)	18,659	(14.6)
< 0.05	26	(4.0)	246	(3.5)	272	(3.5)	764	(0.6)	1,036	(0.8)
0.05 - 0.079	14	(2.2)	126	(1.8)	140	(1.8)	509	(0.4)	649	(0.5)
0.08 - 0.149	59	(9.2)	383	(5.4)	442	(5.7)	1,521	(1.3)	1,963	(1.5)
≥ 0.15	127	(19.8)	271	(3.8)	398	(5.2)	1,056	(0.9)	1,454	(1.1)
Subtotal ≥ 0.05	200	(31.1)	780	(11.1)	980	(12.7)	3,086	(2.6)	4,066	(3.2)
Unknown	53	(8.2)	1,855	(26.3)	1,908	(24.8)	101,777	(85.0)	103,685	(81.4)
Total	643		7,049		7,692		119,754		127,446	

Table 23. Crash severity by highest recorded BAC in crash, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

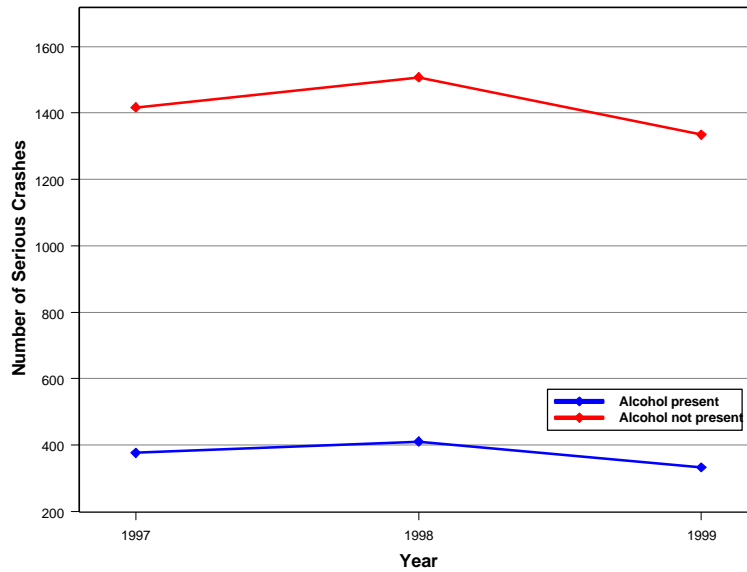


Figure 13. Number of serious road crashes where alcohol was present in the crash by year.
(Source: Main Roads WA Traffic Accident System)

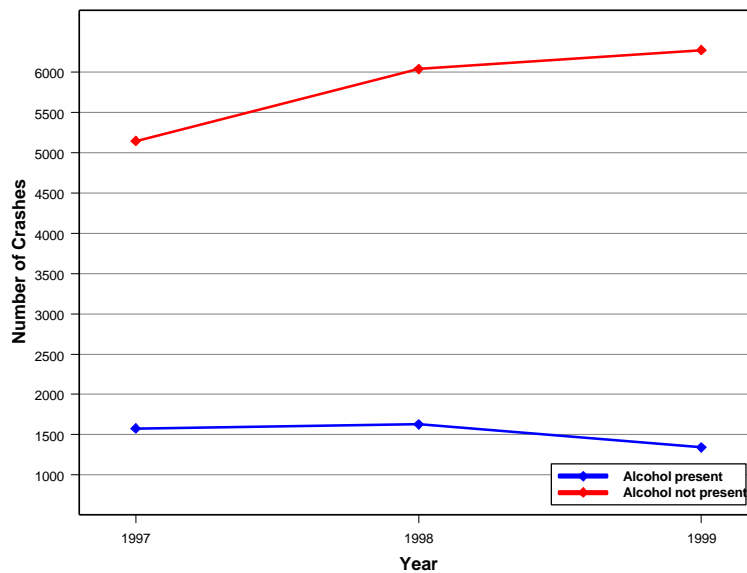


Figure 14. Number of road crashes where alcohol was present in the crash by year.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Blood Alcohol Concentration (g/100ml)												Total n		
	Nil		< 0.05		0.05 - 0.079		0.08 - 0.149		≥0.15		Subtotal ≥0.05			Unknown	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	
Male															
<17	6	(60.0)	-	-	-	-	-	-	1	(10.0)	1	(10.0)	3	(30.0)	10
17-20	74	(63.8)	7	(6.0)	4	(3.4)	13	(11.2)	8	(6.9)	25	(21.6)	10	(8.6)	116
21-24	46	(56.1)	2	(2.4)	2	(2.4)	11	(13.4)	9	(11.0)	22	(26.8)	12	(14.6)	82
25-29	56	(55.4)	6	(5.9)	2	(2.0)	8	(7.9)	21	(20.8)	31	(30.7)	8	(7.9)	101
30-39	80	(58.4)	6	(4.4)	5	(3.6)	9	(6.6)	24	(17.5)	38	(27.7)	13	(9.5)	137
40-49	77	(72.0)	2	(1.9)	-	-	5	(4.7)	10	(9.3)	15	(14.0)	13	(12.1)	107
50-59	51	(76.1)	1	(1.5)	-	-	-	-	7	(10.4)	7	(10.4)	8	(11.9)	67
60-69	28	(71.8)	-	-	-	-	1	(2.6)	5	(12.8)	6	(15.4)	5	(12.8)	39
>69	32	(91.4)	-	-	-	-	-	-	-	-	-	-	3	(8.6)	35
Unknown	1	(33.3)	-	-	-	-	-	-	1	(33.3)	1	(33.3)	1	(33.3)	3
Total Male	451	(64.7)	24	(3.4)	13	(1.9)	47	(6.7)	86	(12.3)	146	(20.9)	76	(10.9)	697
Female															
<17	2	(66.7)	-	-	-	-	-	-	-	-	-	-	1	(33.3)	3
17-20	30	(83.3)	-	-	1	(2.8)	2	(5.6)	-	-	3	(8.3)	3	(8.3)	36
21-24	14	(73.7)	1	(5.3)	-	-	2	(10.5)	1	(5.3)	3	(15.8)	1	(5.3)	19
25-29	14	(60.9)	2	(8.7)	-	-	2	(8.7)	2	(8.7)	4	(17.4)	3	(13.0)	23
30-39	34	(68.0)	1	(2.0)	-	-	3	(6.0)	8	(16.0)	11	(22.0)	4	(8.0)	50
40-49	16	(76.2)	-	-	-	-	-	-	-	-	-	-	5	(23.8)	21
50-59	11	(73.3)	-	-	-	-	-	-	-	-	-	-	4	(26.7)	15
60-69	9	(75.0)	-	-	-	-	-	-	-	-	-	-	3	(25.0)	12
>69	7	(58.3)	-	-	-	-	-	-	-	-	-	-	5	(41.7)	12
Unknown	1	(50.0)	-	-	-	-	-	-	-	-	-	-	1	(50.0)	2
Total Female	138	(71.5)	4	(2.1)	1	(0.5)	9	(4.7)	11	(5.7)	21	(10.9)	30	(15.5)	193
Unknown	3	(21.4)	-	-	-	-	-	-	-	-	-	-	11	(78.6)	14
Total	592	(65.5)	28	(3.1)	14	(1.5)	56	(6.2)	97	(10.7)	167	(18.5)	117	(12.9)	904

Table 24. Gender and age of drivers and motorcycle riders involved in fatal crashes by BAC from 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Blood Alcohol Concentration (g/100ml)														
	Nil		< 0.05		0.05 - 0.079		0.08 - 0.149		≥0.15		Subtotal ≥0.05		Unknown		Total n
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	
Male															
<17	40	(54.1)	2	(2.7)	3	(4.1)	6	(8.1)	1	(1.4)	10	(13.5)	22	(29.7)	74
17-20	794	(58.3)	61	(4.5)	36	(2.6)	91	(6.7)	29	(2.1)	156	(11.5)	350	(25.7)	1,361
21-24	533	(52.1)	46	(4.5)	28	(2.7)	93	(9.1)	54	(5.3)	175	(17.1)	269	(26.3)	1,023
25-29	612	(57.0)	38	(3.5)	16	(1.5)	81	(7.5)	66	(6.1)	163	(15.2)	261	(24.3)	1,074
30-39	905	(60.5)	39	(2.6)	18	(1.2)	67	(4.5)	86	(5.7)	171	(11.4)	381	(25.5)	1,496
40-49	719	(65.8)	12	(1.1)	6	(0.5)	20	(1.8)	33	(3.0)	59	(5.4)	303	(27.7)	1,093
50-59	438	(65.6)	10	(1.5)	5	(0.7)	7	(1.0)	19	(2.8)	31	(4.6)	189	(28.3)	668
60-69	271	(68.4)	8	(2.0)	-	-	8	(2.0)	8	(2.0)	16	(4.0)	101	(25.5)	396
>69	231	(68.5)	3	(0.9)	-	-	1	(0.3)	3	(0.9)	4	(1.2)	99	(29.4)	337
Unknown	65	(36.9)	1	(0.6)	2	(1.1)	6	(3.4)	6	(3.4)	14	(8.0)	96	(54.5)	176
Total Male	4,608	(59.9)	220	(2.9)	114	(1.5)	380	(4.9)	305	(4.0)	799	(10.4)	2,071	(26.9)	7,698
Female															
<17	11	(55.0)	-	-	1	(5.0)	-	-	-	-	1	(5.0)	8	(40.0)	20
17-20	456	(64.6)	15	(2.1)	7	(1.0)	17	(2.4)	6	(0.8)	30	(4.2)	205	(29.0)	706
21-24	308	(66.8)	14	(3.0)	4	(0.9)	10	(2.2)	10	(2.2)	24	(5.2)	115	(24.9)	461
25-29	285	(60.9)	11	(2.4)	4	(0.9)	10	(2.1)	10	(2.1)	24	(5.1)	148	(31.6)	468
30-39	493	(63.9)	14	(1.8)	8	(1.0)	14	(1.8)	19	(2.5)	41	(5.3)	223	(28.9)	771
40-49	430	(68.9)	5	(0.8)	2	(0.3)	4	(0.6)	12	(1.9)	18	(2.9)	171	(27.4)	624
50-59	243	(71.9)	-	-	-	-	1	(0.3)	1	(0.3)	2	(0.6)	93	(27.5)	338
60-69	129	(64.5)	2	(1.0)	-	-	-	-	1	(0.5)	1	(0.5)	68	(34.0)	200
>69	119	(67.2)	1	(0.6)	1	(0.6)	-	-	-	-	1	(0.6)	56	(31.6)	177
Unknown	31	(35.2)	-	-	-	-	2	(2.3)	3	(3.4)	5	(5.7)	52	(59.1)	88
Total Female	2,505	(65.0)	62	(1.6)	27	(0.7)	58	(1.5)	62	(1.6)	147	(3.8)	1,139	(29.6)	3,853
Unknown	8	(3.5)	-	-	-	-	-	-	-	-	-	-	220	(96.5)	228
Total	7,121	(60.5)	282	(2.4)	141	(1.2)	438	(3.7)	367	(3.1)	946	(8.0)	3,430	(29.1)	11,779

Table 25. Gender and age of drivers and motorcycle riders involved in serious crashes by BAC, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Blood Alcohol Concentration (g/100ml)														
	Nil		< 0.05		0.05 - 0.079		0.08 - 0.149		≥0.15		Subtotal ≥0.05		Unknown		Total
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n
Male															
<17	144	(35.0)	16	(3.9)	17	(4.1)	20	(4.9)	5	(1.2)	42	(10.2)	209	(50.9)	411
17-20	3,532	(17.2)	244	(1.2)	174	(0.8)	468	(2.3)	168	(0.8)	810	(3.9)	15,937	(77.7)	20,523
21-24	2,286	(15.2)	167	(1.1)	94	(0.6)	362	(2.4)	221	(1.5)	677	(4.5)	11,872	(79.1)	15,002
25-29	2,427	(15.5)	133	(0.8)	72	(0.5)	302	(1.9)	226	(1.4)	600	(3.8)	12,523	(79.9)	15,683
30-39	3,526	(15.1)	152	(0.7)	74	(0.3)	253	(1.1)	268	(1.1)	595	(2.5)	19,067	(81.7)	23,340
40-49	2,645	(14.1)	63	(0.3)	37	(0.2)	97	(0.5)	138	(0.7)	272	(1.5)	15,767	(84.1)	18,747
50-59	1,734	(13.3)	32	(0.2)	27	(0.2)	60	(0.5)	65	(0.5)	152	(1.2)	11,098	(85.3)	13,016
60-69	948	(13.9)	25	(0.4)	9	(0.1)	32	(0.5)	18	(0.3)	59	(0.9)	5,788	(84.9)	6,820
>69	815	(16.6)	14	(0.3)	8	(0.2)	15	(0.3)	18	(0.4)	41	(0.8)	4,046	(82.3)	4,916
Unknown	281	(1.6)	25	(0.1)	26	(0.1)	63	(0.4)	42	(0.2)	131	(0.7)	17,329	(97.5)	17,766
Total Male	18,338	(13.5)	871	(0.6)	538	(0.4)	1,672	(1.2)	1,169	(0.9)	3,379	(2.5)	113,636	(83.4)	136,224
Female															
<17	40	(28.4)	3	(2.1)	3	(2.1)	3	(2.1)	3	(2.1)	9	(6.4)	89	(63.1)	141
17-20	1,987	(14.6)	61	(0.4)	35	(0.3)	77	(0.6)	26	(0.2)	138	(1.0)	11,456	(84.0)	13,642
21-24	1,287	(12.6)	35	(0.3)	15	(0.1)	50	(0.5)	24	(0.2)	89	(0.9)	8,783	(86.2)	10,194
25-29	1,218	(11.8)	28	(0.3)	17	(0.2)	48	(0.5)	47	(0.5)	112	(1.1)	8,962	(86.8)	10,320
30-39	1,917	(11.7)	37	(0.2)	18	(0.1)	48	(0.3)	60	(0.4)	126	(0.8)	14,374	(87.4)	16,454
40-49	1,669	(11.6)	16	(0.1)	11	(0.1)	28	(0.2)	48	(0.3)	87	(0.6)	12,576	(87.6)	14,348
50-59	937	(12.4)	5	(0.1)	3	(0.0)	11	(0.1)	12	(0.2)	26	(0.3)	6,577	(87.2)	7,545
60-69	438	(13.0)	8	(0.2)	3	(0.1)	1	(0.0)	5	(0.1)	9	(0.3)	2,917	(86.5)	3,372
>69	413	(17.9)	4	(0.2)	1	(0.0)	2	(0.1)	2	(0.1)	5	(0.2)	1,882	(81.7)	2,304
Unknown	148	(1.8)	5	(0.1)	2	(0.0)	11	(0.1)	8	(0.1)	21	(0.3)	7,950	(97.9)	8,124
Total Female	10,054	(11.6)	202	(0.2)	108	(0.1)	279	(0.3)	235	(0.3)	622	(0.7)	75,566	(87.4)	86,444
Unknown	50	(0.5)	2	(0.0)	-	-	10	(0.1)	9	(0.1)	19	(0.2)	9,343	(99.2)	9,414
Total	28,442	(12.3)	1,075	(0.5)	646	(0.3)	1,961	(0.8)	1,413	(0.6)	4,020	(1.7)	198,545	(85.5)	232,082

Table 26. Gender and age of drivers and motorcycle riders involved in all road crashes by BAC, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Alcohol related hours as defined by the National Drug Research Institute are summarised in Table 27 below.

Alcohol Related Hours		Non-alcohol Related Hours	
From	To	From	To
Sunday 10pm	Monday 6am	Monday 6am	Monday 2pm
Monday 10pm	Tuesday 2am	Tuesday 6am	Tuesday 10pm
Tuesday 10pm	Wednesday 6am	Wednesday 6am	Wednesday 2pm
Wednesday 10pm	Thursday 2am	Thursday 10am	Thursday 2pm
Friday 10pm	Saturday 2am	Friday 10am	Friday 2pm
Saturday 10pm	Sunday 6am	Saturday 10am	Saturday 2pm

Table 27. Alcohol related hours as defined by the National Drug Research Institute, Curtin University of Technology.

From the series of tables summarising crash occurrence during alcohol related hours, the following observations arise:

- One in five fatal crashes and 7% of all crashes occurred during alcohol related hours (Table 28);
- Male drivers and motorcycle riders were more likely to be involved in crashes occurring during alcohol related hours than female drivers and riders (Table 31);
- Males aged 17 to 39 were more likely to be involved in crashes occurring during alcohol related hours than males in other age groups (Table 31).

Did crash occur during alcohol related hours ?	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Yes	372	(19.5)	2,749	(13.2)	3,121	(13.7)	21,521	(6.3)	24,642	(6.8)
No										
Non-alcohol related hours	451	(23.6)	6,332	(30.4)	6,783	(29.8)	135,022	(39.7)	141,805	(39.1)
Neutral hours	1,086	(56.9)	11,735	(56.4)	12,821	(56.4)	183,812	(54.0)	196,633	(54.2)
Sub-total	1,537	(80.5)	18,067	(86.8)	19,604	(86.3)	318,834	(93.7)	338,438	(93.2)
Total	1,909		20,816		22,725		340,355		363,080	

Table 28. Severity of crash by occurrence of the crash during alcohol related hours, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

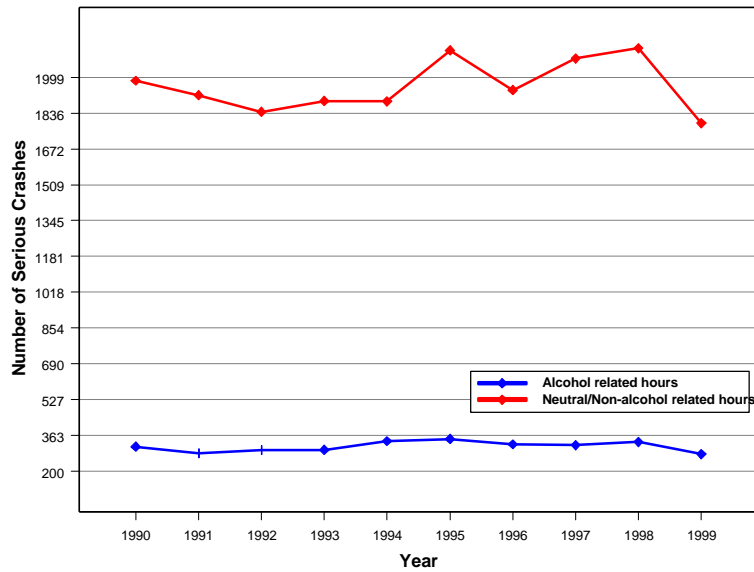


Figure 15. Number of serious road crashes occurring during alcohol related hours by year.
(Source: Main Roads WA Traffic Accident System)

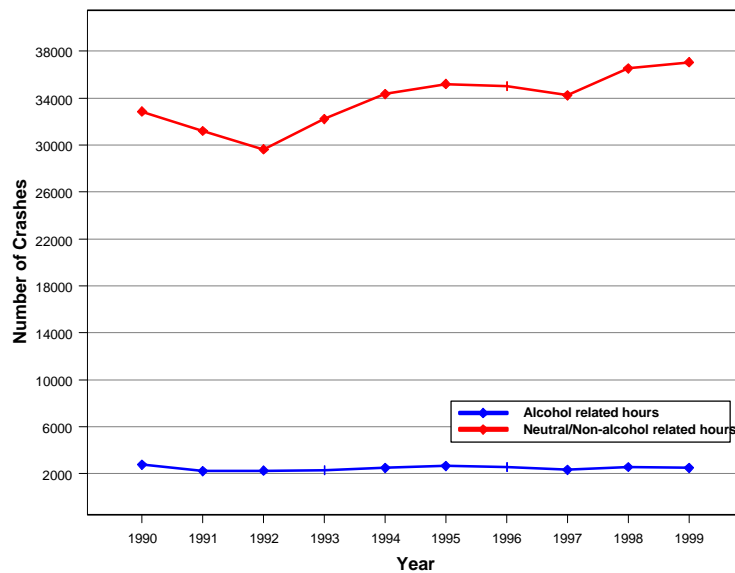


Figure 16. Number of road crashes occurring during alcohol related hours by year.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Time Period								Total n
	Alcohol Related Hours (1)		Non-Alcohol Related Hours (2)		Neutral Hours / Unknown (3)		Sub-Total (2) + (3)		
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<17	9	(27.3)	5	(15.2)	19	(57.6)	24	(72.7)	33
17-20	102	(30.0)	64	(18.8)	174	(51.2)	238	(70.0)	340
21-24	65	(22.6)	56	(19.4)	167	(58.0)	223	(77.4)	288
25-29	57	(18.2)	56	(17.8)	201	(64.0)	257	(81.8)	314
30-39	79	(20.6)	69	(18.0)	236	(61.5)	305	(79.4)	384
40-49	38	(13.6)	66	(23.6)	176	(62.9)	242	(86.4)	280
50-59	12	(7.8)	52	(34.0)	89	(58.2)	141	(92.2)	153
60-69	11	(10.3)	32	(29.9)	64	(59.8)	96	(89.7)	107
>69	1	(1.1)	45	(48.9)	46	(50.0)	91	(98.9)	92
Unknown	-	-	5	(45.5)	6	(54.5)	11	(100.0)	11
Total Male	374	(18.7)	450	(22.5)	1,178	(58.8)	1,628	(81.3)	2,002
Female									
<17	1	(16.7)	1	(16.7)	4	(66.7)	5	(83.3)	6
17-20	27	(21.3)	25	(19.7)	75	(59.1)	100	(78.7)	127
21-24	8	(11.6)	23	(33.3)	38	(55.1)	61	(88.4)	69
25-29	8	(11.4)	20	(28.6)	42	(60.0)	62	(88.6)	70
30-39	15	(12.5)	40	(33.3)	65	(54.2)	105	(87.5)	120
40-49	6	(7.9)	34	(44.7)	36	(47.4)	70	(92.1)	76
50-59	9	(16.4)	20	(36.4)	26	(47.3)	46	(83.6)	55
60-69	-	-	14	(42.4)	19	(57.6)	33	(100.0)	33
>69	-	-	9	(32.1)	19	(67.9)	28	(100.0)	28
Unknown	-	-	1	(25.0)	3	(75.0)	4	(100.0)	4
Total Female	74	(12.6)	187	(31.8)	327	(55.6)	514	(87.4)	588
Unknown	8	(21.1)	10	(26.3)	20	(52.6)	30	(78.9)	38
Total	456	(17.4)	647	(24.6)	1,525	(58.0)	2,172	(82.6)	2,628

Table 29. Gender and age of drivers and motorcycle riders involved in fatal crashes by alcohol related hours, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Time Period								
	Alcohol Related Hours (1)		Non-Alcohol Related Hours (2)		Neutral Hours / Unknown (3)		Sub-Total (2) + (3)		Total n
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<17	63	(23.6)	53	(19.9)	151	(56.6)	204	(76.4)	267
17-20	777	(19.3)	948	(23.6)	2,298	(57.1)	3,246	(80.7)	4,023
21-24	597	(18.2)	825	(25.2)	1,858	(56.6)	2,683	(81.8)	3,280
25-29	469	(15.0)	857	(27.5)	1,795	(57.5)	2,652	(85.0)	3,121
30-39	475	(11.3)	1,310	(31.2)	2,418	(57.5)	3,728	(88.7)	4,203
40-49	261	(8.8)	1,001	(33.7)	1,712	(57.6)	2,713	(91.2)	2,974
50-59	87	(5.0)	697	(39.9)	963	(55.1)	1,660	(95.0)	1,747
60-69	46	(4.3)	446	(42.2)	566	(53.5)	1,012	(95.7)	1,058
>69	25	(2.8)	422	(46.7)	457	(50.6)	879	(97.2)	904
Unknown	55	(8.1)	249	(36.8)	373	(55.1)	622	(91.9)	677
Total Male	2,855	(12.8)	6,808	(30.6)	12,591	(56.6)	19,399	(87.2)	22,254
Female									
<17	18	(25.0)	15	(20.8)	39	(54.2)	54	(75.0)	72
17-20	286	(14.0)	609	(29.9)	1,141	(56.0)	1,750	(86.0)	2,036
21-24	152	(11.0)	437	(31.8)	787	(57.2)	1,224	(89.0)	1,376
25-29	96	(7.5)	446	(35.0)	732	(57.5)	1,178	(92.5)	1,274
30-39	127	(6.0)	808	(38.2)	1,180	(55.8)	1,988	(94.0)	2,115
40-49	73	(4.6)	605	(38.1)	909	(57.3)	1,514	(95.4)	1,587
50-59	41	(4.6)	362	(41.0)	480	(54.4)	842	(95.4)	883
60-69	4	(0.8)	211	(44.8)	256	(54.4)	467	(99.2)	471
>69	9	(2.1)	205	(46.8)	224	(51.1)	429	(97.9)	438
Unknown	17	(5.9)	104	(36.0)	168	(58.1)	272	(94.1)	289
Total Female	823	(7.8)	3,802	(36.1)	5,916	(56.1)	9,718	(92.2)	10,541
Unknown	157	(16.5)	289	(30.4)	506	(53.2)	795	(83.5)	952
Total	3,835	(11.4)	10,899	(32.3)	19,013	(56.3)	29,912	(88.6)	33,747

Table 30. Gender and age of drivers and motorcycle riders involved in serious crashes by alcohol related hours, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Time Period								Total n
	Alcohol Related Hours (1)		Non-Alcohol Related Hours (2)		Neutral Hours / Unknown (3)		Sub-Total (2) + (3)		
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<17	298	(20.6)	351	(24.3)	795	(55.1)	1,146	(79.4)	1,444
17-20	6,282	(11.2)	17,735	(31.7)	31,971	(57.1)	49,706	(88.8)	55,988
21-24	4,065	(9.7)	14,309	(34.1)	23,533	(56.2)	37,842	(90.3)	41,907
25-29	3,173	(7.8)	14,853	(36.7)	22,463	(55.5)	37,316	(92.2)	40,489
30-39	3,401	(5.7)	24,188	(40.2)	32,536	(54.1)	56,724	(94.3)	60,125
40-49	1,883	(4.0)	19,720	(41.9)	25,457	(54.1)	45,177	(96.0)	47,060
50-59	829	(2.7)	13,397	(44.3)	16,015	(53.0)	29,412	(97.3)	30,241
60-69	400	(2.3)	8,279	(47.4)	8,799	(50.3)	17,078	(97.7)	17,478
>69	187	(1.6)	5,933	(50.9)	5,542	(47.5)	11,475	(98.4)	11,662
Unknown	2,238	(3.1)	30,126	(42.4)	38,723	(54.5)	68,849	(96.9)	71,087
Total Male	22,756	(6.0)	148,891	(39.4)	205,834	(54.5)	354,725	(94.0)	377,481
Female									
<17	65	(14.1)	134	(29.0)	263	(56.9)	397	(85.9)	462
17-20	2,396	(6.7)	13,139	(36.5)	20,495	(56.9)	33,634	(93.3)	36,030
21-24	1,452	(5.3)	10,886	(39.7)	15,116	(55.1)	26,002	(94.7)	27,454
25-29	929	(3.6)	10,647	(41.6)	14,028	(54.8)	24,675	(96.4)	25,604
30-39	1,130	(2.6)	19,125	(44.6)	22,580	(52.7)	41,705	(97.4)	42,835
40-49	800	(2.3)	15,413	(44.4)	18,494	(53.3)	33,907	(97.7)	34,707
50-59	356	(2.1)	8,043	(46.4)	8,943	(51.6)	16,986	(97.9)	17,342
60-69	124	(1.5)	3,994	(49.4)	3,971	(49.1)	7,965	(98.5)	8,089
>69	64	(1.2)	2,821	(52.3)	2,510	(46.5)	5,331	(98.8)	5,395
Unknown	790	(2.3)	15,076	(44.2)	18,225	(53.5)	33,301	(97.7)	34,091
Total Female	8,106	(3.5)	99,278	(42.8)	124,625	(53.7)	223,903	(96.5)	232,009
Unknown	3,995	(9.7)	15,256	(37.2)	21,729	(53.0)	36,985	(90.3)	40,980
Total	34,857	(5.4)	263,425	(40.5)	352,188	(54.1)	615,613	(94.6)	650,470

Table 31. Gender and age of drivers and motorcycle riders involved in all road crashes by alcohol related hours, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

5.3 Fatigue

Crashes were not recorded as being fatigue related prior to 1993. In most crashes not attended by Police, fatigue was not recorded as a contributing factor. Many drivers may have been reluctant to report that they were fatigued for fear that they would be charged with an offence. Therefore it is highly likely that the number of fatigue related crashes is underestimated.

From the tables summarising fatigue related crashes, the following observations are made:

- Of Police attended fatal crashes, less than 2% were fatigue related. For all Police attended crashes less than 1% were recorded as fatigue related (Table 32);
- Male drivers and motorcycle riders aged 17 to 20 and male drivers were more likely to be involved in a fatigue related fatal crash (Table 33).

Factor	Crash Severity								Total n (%)	
	Fatal		Hospitalisation		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Police Attendance										
Yes	1,897	(99.4)	17,821	(85.6)	19,718	(86.8)	60,905	(17.9)	80,623	(22.2)
No	12	(0.6)	2,995	(14.4)	3,007	(13.2)	279,450	(82.1)	282,457	(77.8)
Fatigue a factor										
Yes	23	(1.2)	243	(1.2)	266	(1.2)	926	(0.3)	1,192	(0.3)
No	1,882	(98.6)	20,500	(98.5)	22,382	(98.5)	336,825	(99.0)	359,207	(98.9)
Unknown	4	(0.2)	73	(0.4)	77	(0.3)	2,604	(0.8)	2,681	(0.7)
Total	1,909		20,816		22,725		340,355		363,080	
Fatigue a factor for Police attended crashes										
Yes	22	(1.2)	223	(1.3)	245	(1.2)	465	(0.8)	710	(0.9)
No	1,871	(98.6)	17,542	(98.4)	19,413	(98.5)	60,151	(98.8)	79,564	(98.7)
Unknown	4	(0.2)	56	(0.3)	60	(0.3)	289	(0.5)	349	(0.4)
Total Police Attended	1,897		17,821		19,718		60,905		80,623	

Table 32. Crash severity by Police attendance and fatigue a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

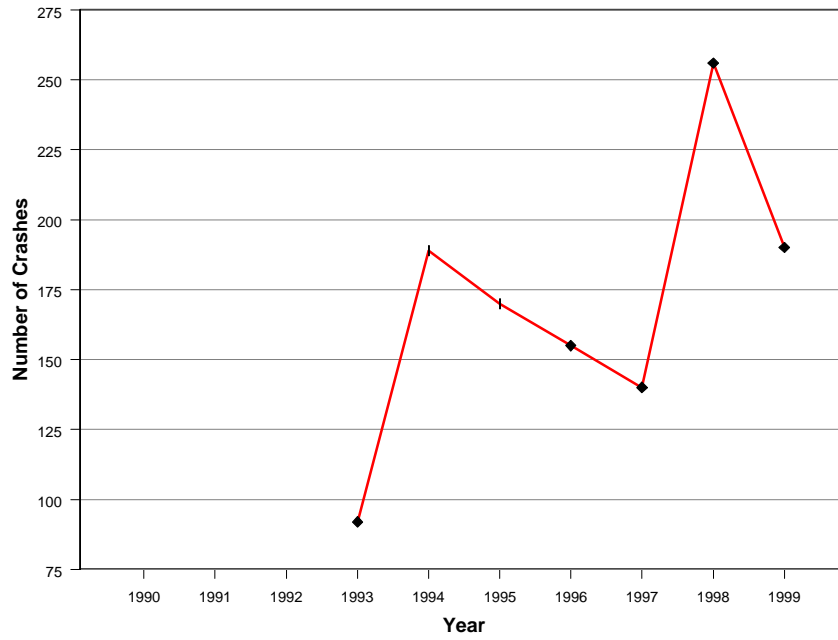


Figure 17. Road crashes with a fatigue factor by year.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Fatigue a Factor						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	1	(3.0)	32	(97.0)	-	-	33
17-20	9	(2.6)	331	(97.4)	-	-	340
21-24	-	-	288	(100.0)	-	-	288
25-29	3	(1.0)	309	(98.4)	2	(0.6)	314
30-39	2	(0.5)	380	(99.0)	2	(0.5)	384
40-49	2	(0.7)	277	(98.9)	1	(0.4)	280
50-59	2	(1.3)	151	(98.7)	-	-	153
60-69	2	(1.9)	104	(97.2)	1	(0.9)	107
>69	2	(2.2)	90	(97.8)	-	-	92
Unknown	-	-	11	(100.0)	-	-	11
Total Male	23	(1.1)	1,973	(98.6)	6	(0.3)	2,002
Female							
<17	-	-	6	(100.0)	-	-	6
17-20	1	(0.8)	126	(99.2)	-	-	127
21-24	1	(1.4)	68	(98.6)	-	-	69
25-29	2	(2.9)	68	(97.1)	-	-	70
30-39	-	-	118	(98.3)	2	(1.7)	120
40-49	-	-	76	(100.0)	-	-	76
50-59	-	-	55	(100.0)	-	-	55
60-69	-	-	33	(100.0)	-	-	33
>69	-	-	28	(100.0)	-	-	28
Unknown	-	-	4	(100.0)	-	-	4
Total Female	4	(0.7)	582	(99.0)	2	(0.3)	588
Unknown	-	-	38	(100.0)	-	-	38
Total	27	(1.0)	2,593	(98.7)	8	(0.3)	2,628

Table 33. Gender and age of drivers and motorcycle riders involved in fatal crashes by fatigue a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Fatigue a Factor						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	3	(1.1)	263	(98.5)	1	(0.4)	267
17-20	62	(1.5)	3,944	(98.0)	17	(0.4)	4,023
21-24	40	(1.2)	3,231	(98.5)	9	(0.3)	3,280
25-29	37	(1.2)	3,079	(98.7)	5	(0.2)	3,121
30-39	31	(0.7)	4,152	(98.8)	20	(0.5)	4,203
40-49	20	(0.7)	2,944	(99.0)	10	(0.3)	2,974
50-59	10	(0.6)	1,729	(99.0)	8	(0.5)	1,747
60-69	6	(0.6)	1,049	(99.1)	3	(0.3)	1,058
>69	9	(1.0)	892	(98.7)	3	(0.3)	904
Unknown	3	(0.4)	671	(99.1)	3	(0.4)	677
Total Male	221	(1.0)	21,954	(98.7)	79	(0.4)	22,254
Female							
<17	-	-	72	(100.0)	-	-	72
17-20	12	(0.6)	2,017	(99.1)	7	(0.3)	2,036
21-24	9	(0.7)	1,359	(98.8)	8	(0.6)	1,376
25-29	11	(0.9)	1,257	(98.7)	6	(0.5)	1,274
30-39	8	(0.4)	2,094	(99.0)	13	(0.6)	2,115
40-49	8	(0.5)	1,571	(99.0)	8	(0.5)	1,587
50-59	8	(0.9)	874	(99.0)	1	(0.1)	883
60-69	2	(0.4)	465	(98.7)	4	(0.8)	471
>69	1	(0.2)	437	(99.8)	-	-	438
Unknown	1	(0.3)	286	(99.0)	2	(0.7)	289
Total Female	60	(0.6)	10,432	(99.0)	49	(0.5)	10,541
Unknown	-	-	940	(98.7)	12	(1.3)	952
Total	281	(0.8)	33,326	(98.8)	140	(0.4)	33,747

Table 34. Gender and age of drivers and motorcycle riders involved in serious crashes by fatigue a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Fatigue a Factor						Total n
	Yes		No		Unknown		
	n	(%)	n	(%)	n	(%)	
Male							
<17	5	(0.3)	1,429	(99.0)	10	(0.7)	1,444
17-20	306	(0.5)	55,484	(99.1)	198	(0.4)	55,988
21-24	212	(0.5)	41,478	(99.0)	217	(0.5)	41,907
25-29	142	(0.4)	40,106	(99.1)	241	(0.6)	40,489
30-39	142	(0.2)	59,625	(99.2)	358	(0.6)	60,125
40-49	79	(0.2)	46,707	(99.2)	274	(0.6)	47,060
50-59	42	(0.1)	30,036	(99.3)	163	(0.5)	30,241
60-69	31	(0.2)	17,359	(99.3)	88	(0.5)	17,478
>69	26	(0.2)	11,589	(99.4)	47	(0.4)	11,662
Unknown	31	(0.0)	70,774	(99.6)	282	(0.4)	71,087
Total Male	1,016	(0.3)	374,587	(99.2)	1,878	(0.5)	377,481
Female							
<17	1	(0.2)	459	(99.4)	2	(0.4)	462
17-20	56	(0.2)	35,843	(99.5)	131	(0.4)	36,030
21-24	39	(0.1)	27,252	(99.3)	163	(0.6)	27,454
25-29	28	(0.1)	25,422	(99.3)	154	(0.6)	25,604
30-39	29	(0.1)	42,551	(99.3)	255	(0.6)	42,835
40-49	25	(0.1)	34,493	(99.4)	189	(0.5)	34,707
50-59	26	(0.1)	17,230	(99.4)	86	(0.5)	17,342
60-69	10	(0.1)	8,043	(99.4)	36	(0.4)	8,089
>69	8	(0.1)	5,360	(99.4)	27	(0.5)	5,395
Unknown	15	(0.0)	33,936	(99.5)	140	(0.4)	34,091
Total Female	237	(0.1)	230,589	(99.4)	1,183	(0.5)	232,009
Unknown	29	(0.1)	40,005	(97.6)	946	(2.3)	40,980
Total	1,282	(0.2)	645,181	(99.2)	4,007	(0.6)	650,470

Table 35. Gender and age of drivers and motorcycle riders involved in all road crashes by fatigue a factor, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

5.4 Restraints (Seatbelts and Helmets)

It should be noted that the use or non-use of restraints is only recorded when an injury has occurred. Hence for the majority of people involved in crashes, their restraint use was unknown.

From the tables relating to seatbelt use (by drivers and passengers) and helmet use (by motorcycle riders, motorcycle pillion passengers and bicycle riders), the following observations were made:

- Male driver and passenger fatalities were more likely to not have worn seatbelts than their female counterparts (Table 36);
- Males and females aged 6 to 16 who were fatally injured were more likely to have not worn seatbelts than other age groups (64% and 44% respectively) (Table 36); and
- Motorcycle rider, motorcycle pillion and bicycle rider fatalities were predominantly male (91%) (Table 39).

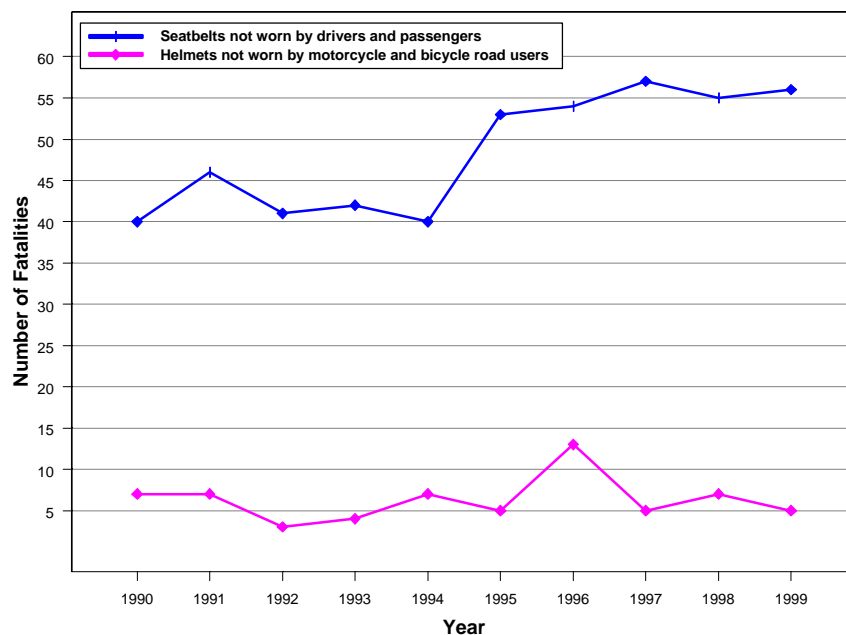


Figure 18. Number of fatalities by year where seatbelts were not worn by drivers and passengers; and helmets were not worn by motorcycle riders, motorcycle passengers and bicycle riders.
(Source: Main Roads WA Traffic Accident System)

Gender/Age	Seatbelt Usage								Total n
	Worn		Not worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<6	8	(50.0)	5	(31.3)	-	-	3	(18.8)	16
6-11	4	(44.4)	5	(55.6)	-	-	-	-	9
12-16	10	(21.3)	31	(66.0)	-	-	6	(12.8)	47
17-20	82	(44.8)	63	(34.4)	-	-	38	(20.8)	183
21-24	67	(45.6)	46	(31.3)	-	-	34	(23.1)	147
25-29	56	(44.8)	47	(37.6)	1	(0.8)	21	(16.8)	125
30-39	41	(26.5)	73	(47.1)	2	(1.3)	39	(25.2)	155
40-49	45	(41.7)	48	(44.4)	-	-	15	(13.9)	108
50-59	37	(50.0)	25	(33.8)	-	-	12	(16.2)	74
60-69	35	(56.5)	13	(21.0)	-	-	14	(22.6)	62
>69	51	(68.9)	10	(13.5)	-	-	13	(17.6)	74
Unknown	1	(100.0)	-	-	-	-	-	-	1
Total Male	437	(43.7)	366	(36.6)	3	(0.3)	195	(19.5)	1,001
Female									
<6	12	(48.0)	8	(32.0)	1	(4.0)	4	(16.0)	25
6-11	4	(40.0)	4	(40.0)	-	-	2	(20.0)	10
12-16	13	(37.1)	16	(45.7)	-	-	6	(17.1)	35
17-20	41	(56.2)	17	(23.3)	-	-	15	(20.5)	73
21-24	24	(50.0)	12	(25.0)	1	(2.1)	11	(22.9)	48
25-29	26	(55.3)	13	(27.7)	-	-	8	(17.0)	47
30-39	37	(56.9)	20	(30.8)	-	-	8	(12.3)	65
40-49	26	(52.0)	14	(28.0)	-	-	10	(20.0)	50
50-59	20	(52.6)	8	(21.1)	-	-	10	(26.3)	38
60-69	32	(82.1)	4	(10.3)	1	(2.6)	2	(5.1)	39
>69	44	(83.0)	1	(1.9)	-	-	8	(15.1)	53
Unknown	1	(33.3)	1	(33.3)	-	-	1	(33.3)	3
Total Female	280	(57.6)	118	(24.3)	3	(0.6)	85	(17.5)	486
Unknown	-	-	-	-	-	-	1	(100.0)	1
Total	717	(48.2)	484	(32.5)	6	(0.4)	281	(18.9)	1,488

Table 36. Gender and age of drivers and passengers fatally injured by seatbelt usage, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Seatbelt Usage								
	Worn		Not worn		Failed		Unknown		Total
	n	(%)	n	(%)	n	(%)	n	(%)	n
Male									
<6	120	(59.7)	27	(13.4)	-	-	54	(26.9)	201
6-11	131	(57.5)	43	(18.9)	-	-	54	(23.7)	228
12-16	224	(42.4)	136	(25.8)	1	(0.2)	167	(31.6)	528
17-20	1,183	(51.8)	313	(13.7)	6	(0.3)	782	(34.2)	2,284
21-24	839	(48.8)	240	(13.9)	4	(0.2)	638	(37.1)	1,721
25-29	683	(49.1)	194	(13.9)	3	(0.2)	512	(36.8)	1,392
30-39	829	(50.5)	234	(14.3)	4	(0.2)	575	(35.0)	1,642
40-49	593	(55.3)	134	(12.5)	-	-	346	(32.2)	1,073
50-59	445	(63.5)	61	(8.7)	-	-	195	(27.8)	701
60-69	309	(64.6)	33	(6.9)	2	(0.4)	134	(28.0)	478
>69	388	(68.2)	27	(4.7)	-	-	154	(27.1)	569
Unknown	334	(45.7)	98	(13.4)	1	(0.1)	298	(40.8)	731
Total Male	6,078	(52.6)	1,540	(13.3)	21	(0.2)	3,909	(33.9)	11,548
Female									
<6	111	(57.5)	23	(11.9)	1	(0.5)	58	(30.1)	193
6-11	152	(64.4)	26	(11.0)	-	-	58	(24.6)	236
12-16	248	(52.8)	69	(14.7)	1	(0.2)	152	(32.3)	470
17-20	1,061	(60.1)	142	(8.0)	3	(0.2)	558	(31.6)	1,764
21-24	712	(62.6)	71	(6.2)	2	(0.2)	353	(31.0)	1,138
25-29	604	(63.0)	54	(5.6)	1	(0.1)	299	(31.2)	958
30-39	886	(65.8)	91	(6.8)	1	(0.1)	368	(27.3)	1,346
40-49	773	(70.6)	36	(3.3)	1	(0.1)	285	(26.0)	1,095
50-59	550	(73.7)	29	(3.9)	1	(0.1)	166	(22.3)	746
60-69	412	(77.4)	13	(2.4)	1	(0.2)	106	(19.9)	532
>69	461	(77.6)	21	(3.5)	-	-	112	(18.9)	594
Unknown	467	(61.2)	63	(8.3)	1	(0.1)	232	(30.4)	763
Total Female	6,437	(65.4)	638	(6.5)	13	(0.1)	2,747	(27.9)	9,835
Unknown	36	(60.0)	7	(11.7)	-	-	17	(28.3)	60
Total	12,551	(58.5)	2,185	(10.2)	34	(0.2)	6,673	(31.1)	21,443

Table 37. Gender and age of drivers and passengers seriously injured by seatbelt usage, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Seatbelt Usage								Total n
	Worn		Not worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<6	663	(48.4)	59	(4.3)	-	-	648	(47.3)	1,370
6-11	746	(46.4)	76	(4.7)	1	(0.1)	784	(48.8)	1,607
12-16	915	(30.8)	241	(8.1)	1	(0.0)	1,817	(61.1)	2,974
17-20	4,615	(8.0)	518	(0.9)	9	(0.0)	52,332	(91.1)	57,474
21-24	3,267	(7.8)	373	(0.9)	5	(0.0)	38,059	(91.3)	41,704
25-29	2,923	(7.3)	301	(0.8)	4	(0.0)	36,645	(91.9)	39,873
30-39	3,910	(6.6)	360	(0.6)	6	(0.0)	55,056	(92.8)	59,332
40-49	2,745	(5.9)	204	(0.4)	-	-	43,968	(93.7)	46,917
50-59	1,883	(6.2)	90	(0.3)	1	(0.0)	28,480	(93.5)	30,454
60-69	1,200	(6.8)	46	(0.3)	2	(0.0)	16,468	(93.0)	17,716
>69	1,128	(9.5)	46	(0.4)	-	-	10,759	(90.2)	11,933
Unknown	1,210	(1.7)	180	(0.2)	2	(0.0)	70,767	(98.1)	72,159
Total Male	25,205	(6.6)	2,494	(0.7)	31	(0.0)	355,783	(92.8)	383,513
Female									
<6	608	(43.2)	52	(3.7)	2	(0.1)	744	(52.9)	1,406
6-11	828	(45.4)	58	(3.2)	-	-	939	(51.5)	1,825
12-16	1,166	(38.0)	155	(5.0)	3	(0.1)	1,746	(56.9)	3,070
17-20	5,490	(13.9)	230	(0.6)	3	(0.0)	33,805	(85.5)	39,528
21-24	3,892	(13.1)	125	(0.4)	3	(0.0)	25,599	(86.4)	29,619
25-29	3,509	(12.8)	100	(0.4)	2	(0.0)	23,729	(86.8)	27,340
30-39	5,036	(11.2)	129	(0.3)	2	(0.0)	39,808	(88.5)	44,975
40-49	4,091	(11.2)	68	(0.2)	3	(0.0)	32,478	(88.6)	36,640
50-59	2,526	(13.4)	44	(0.2)	2	(0.0)	16,308	(86.4)	18,880
60-69	1,489	(16.0)	25	(0.3)	1	(0.0)	7,775	(83.7)	9,290
>69	1,327	(20.6)	46	(0.7)	-	-	5,078	(78.7)	6,451
Unknown	1,900	(5.1)	150	(0.4)	6	(0.0)	34,894	(94.4)	36,950
Total Female	31,862	(12.4)	1,182	(0.5)	27	(0.0)	222,903	(87.1)	255,974
Unknown	146	(0.4)	35	(0.1)	-	-	40,958	(99.6)	41,139
Total	57,213	(8.4)	3,711	(0.5)	58	(0.0)	619,644	(91.0)	680,626

Table 38. Gender and age of drivers and passengers in all road crashes by seatbelt usage, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Helmet Usage								Total n
	Worn		Not worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<6	-	-	1	(100.0)	-	-	-	-	1
6-11	3	(60.0)	2	(40.0)	-	-	-	-	5
12-16	7	(35.0)	13	(65.0)	-	-	-	-	20
17-20	32	(74.4)	8	(18.6)	1	(2.3)	2	(4.7)	43
21-24	46	(82.1)	7	(12.5)	1	(1.8)	2	(3.6)	56
25-29	47	(87.0)	5	(9.3)	-	-	2	(3.7)	54
30-39	41	(77.4)	11	(20.8)	-	-	1	(1.9)	53
40-49	18	(69.2)	4	(15.4)	-	-	4	(15.4)	26
50-59	8	(80.0)	2	(20.0)	-	-	-	-	10
60-69	5	(100.0)	-	-	-	-	-	-	5
>69	1	(25.0)	3	(75.0)	-	-	-	-	4
Unknown	-	-	-	-	-	-	1	(100.0)	1
Total Male	208	(74.8)	56	(20.1)	2	(0.7)	12	(4.3)	278
Female									
<6	-	-	-	-	-	-	-	-	-
6-11	-	-	-	-	-	-	-	-	-
12-16	3	(50.0)	2	(33.3)	-	-	1	(16.7)	6
17-20	-	-	-	-	-	-	-	-	-
21-24	1	(100.0)	-	-	-	-	-	-	1
25-29	5	(71.4)	2	(28.6)	-	-	-	-	7
30-39	2	(40.0)	2	(40.0)	-	-	1	(20.0)	5
40-49	4	(100.0)	-	-	-	-	-	-	4
50-59	2	(100.0)	-	-	-	-	-	-	2
60-69	-	-	1	(100.0)	-	-	-	-	1
>69	1	(100.0)	-	-	-	-	-	-	1
Total Female	18	(66.7)	7	(25.9)	-	-	2	(7.4)	27
Total	226	(74.1)	63	(20.7)	2	(0.7)	14	(4.6)	305

Table 39. Gender and age of motorcycle and bicycle riders (including pillion passengers) fatally injured by helmet usage, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Helmet Usage								Total n
	Worn		Not worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Male									
<6	6	(28.6)	7	(33.3)	-	-	8	(38.1)	21
6-11	54	(33.5)	52	(32.3)	-	-	55	(34.2)	161
12-16	152	(42.5)	123	(34.4)	-	-	83	(23.2)	358
17-20	368	(61.2)	93	(15.5)	2	(0.3)	138	(23.0)	601
21-24	460	(66.4)	60	(8.7)	1	(0.1)	172	(24.8)	693
25-29	419	(65.7)	66	(10.3)	-	-	153	(24.0)	638
30-39	490	(63.7)	77	(10.0)	2	(0.3)	200	(26.0)	769
40-49	225	(65.2)	33	(9.6)	1	(0.3)	86	(24.9)	345
50-59	72	(59.0)	14	(11.5)	-	-	36	(29.5)	122
60-69	32	(51.6)	16	(25.8)	1	(1.6)	13	(21.0)	62
>69	16	(64.0)	6	(24.0)	-	-	3	(12.0)	25
Unknown	65	(35.5)	22	(12.0)	-	-	96	(52.5)	183
Total Male	2,359	(59.3)	569	(14.3)	7	(0.2)	1,043	(26.2)	3,978
Female									
<6	-	-	-	-	-	-	1	(100.0)	1
6-11	15	(44.1)	12	(35.3)	-	-	7	(20.6)	34
12-16	34	(45.3)	21	(28.0)	-	-	20	(26.7)	75
17-20	31	(49.2)	9	(14.3)	-	-	23	(36.5)	63
21-24	43	(60.6)	7	(9.9)	-	-	21	(29.6)	71
25-29	48	(60.8)	10	(12.7)	-	-	21	(26.6)	79
30-39	46	(59.0)	8	(10.3)	-	-	24	(30.8)	78
40-49	23	(62.2)	2	(5.4)	-	-	12	(32.4)	37
50-59	9	(60.0)	3	(20.0)	-	-	3	(20.0)	15
60-69	8	(50.0)	4	(25.0)	-	-	4	(25.0)	16
>69	2	(50.0)	-	-	-	-	2	(50.0)	4
Unknown	27	(62.8)	5	(11.6)	-	-	11	(25.6)	43
Total Female	286	(55.4)	81	(15.7)	-	-	149	(28.9)	516
Unknown	3	(60.0)	-	-	-	-	2	(40.0)	5
Total	2,648	(58.9)	650	(14.4)	7	(0.2)	1,194	(26.5)	4,499

Table 40. Gender and age of motorcycle and bicycle riders (including pillion passengers) seriously injured by helmet usage, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Gender/Age	Helmet Usage								Total	
	Worn		Not worn		Failed		Unknown			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Male										
<6	9	(18.0)	14	(28.0)	-	-	27	(54.0)	50	(0.3)
6-11	135	(26.9)	89	(17.7)	1	(0.2)	277	(55.2)	502	(2.6)
12-16	359	(24.5)	243	(16.6)	-	-	866	(59.0)	1,468	(7.6)
17-20	714	(35.0)	150	(7.4)	2	(0.1)	1,174	(57.5)	2,040	(10.5)
21-24	880	(34.9)	104	(4.1)	1	(0.0)	1,539	(61.0)	2,524	(13.0)
25-29	828	(34.1)	110	(4.5)	-	-	1,489	(61.4)	2,427	(12.5)
30-39	920	(33.4)	132	(4.8)	3	(0.1)	1,702	(61.7)	2,757	(14.2)
40-49	421	(32.9)	55	(4.3)	1	(0.1)	804	(62.8)	1,281	(6.6)
50-59	146	(30.5)	27	(5.6)	-	-	305	(63.8)	478	(2.5)
60-69	59	(30.3)	25	(12.8)	1	(0.5)	110	(56.4)	195	(1.0)
>69	35	(40.7)	14	(16.3)	-	-	37	(43.0)	86	(0.4)
Unknown	156	(6.8)	62	(2.7)	-	-	2,084	(90.5)	2,302	(11.9)
Total Male	4,662	(28.9)	1,025	(6.4)	9	(0.1)	10,414	(64.6)	16,110	(83.0)
Female										
<6	2	(33.3)	1	(16.7)	-	-	3	(50.0)	6	-
6-11	48	(32.4)	18	(12.2)	-	-	82	(55.4)	148	(0.8)
12-16	86	(26.2)	40	(12.2)	-	-	202	(61.6)	328	(1.7)
17-20	84	(32.9)	17	(6.7)	-	-	154	(60.4)	255	(1.3)
21-24	107	(36.9)	14	(4.8)	-	-	169	(58.3)	290	(1.5)
25-29	99	(34.6)	16	(5.6)	-	-	171	(59.8)	286	(1.5)
30-39	99	(33.6)	14	(4.7)	-	-	182	(61.7)	295	(1.5)
40-49	50	(32.7)	7	(4.6)	-	-	96	(62.7)	153	(0.8)
50-59	18	(30.0)	3	(5.0)	-	-	39	(65.0)	60	(0.3)
60-69	14	(37.8)	5	(13.5)	-	-	18	(48.6)	37	(0.2)
>69	4	(44.4)	2	(22.2)	-	-	3	(33.3)	9	-
Unknown	70	(19.6)	13	(3.6)	-	-	274	(76.8)	357	(1.8)
Total Female	681	(30.6)	150	(6.7)	-	-	1,393	(62.6)	2,224	(11.5)
Unknown	6	(0.6)	-	-	-	-	1,072	(99.4)	1,078	(5.6)
Total	5,349	(27.6)	1,175	(6.1)	9	(0.0)	12,879	(66.3)	19,412	

Table 41. Gender and age of motorcycle and bicycle riders (including pillion passengers) in all road crashes by helmet usage, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

6. Road Factors

From Table 42 the following observations have been made:

- Although 82% of crashes occurred in the Metropolitan area, 55% of fatal crashes occurred in rural areas;
- Most crashes occurred on sealed roads and on straight roads (96% and 82% respectively);
- Over three quarters of all crashes (77%) occurred on level roads;
- Almost half (49%) of all crashes occurred at intersections, however 72% of fatal crashes occurred where there was “No Special Feature”;
- Most crashes (62%) occurred where there were no traffic controls; and
- Although only 6% of all crashes occurred in 110km/h speed zones, 42% of fatal crashes occurred in 110km/h speed zones.

Road Factor	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Country/Metro										
Country	1,058	(55.4)	7,416	(35.6)	8,474	(37.3)	56,710	(16.7)	65,184	(18.0)
Metro	851	(44.6)	13,400	(64.4)	14,251	(62.7)	283,645	(83.3)	297,896	(82.0)
Road Classification										
Highway	748	(39.2)	6,227	(29.9)	6,975	(30.7)	108,686	(31.9)	115,661	(31.9)
Main Road	175	(9.2)	925	(4.4)	1,100	(4.8)	5,104	(1.5)	6,204	(1.7)
Other	986	(51.7)	13,664	(65.6)	14,650	(64.5)	226,565	(66.6)	241,215	(66.4)
Road Surface										
Sealed	1,714	(89.8)	19,194	(92.2)	20,908	(92.0)	326,206	(95.8)	347,114	(95.6)
Unsealed	190	(10.0)	1,537	(7.4)	1,727	(7.6)	11,087	(3.3)	12,814	(3.5)
Unknown	5	(0.3)	85	(0.4)	90	(0.4)	3,062	(0.9)	3,152	(0.9)
Road Alignment										
Curve	604	(31.6)	4,609	(22.1)	5,213	(22.9)	56,385	(16.6)	61,598	(17.0)
Straight	1,296	(67.9)	16,099	(77.3)	17,395	(76.5)	279,886	(82.2)	297,281	(81.9)
Unknown	9	(0.5)	108	(0.5)	117	(0.5)	4,084	(1.2)	4,201	(1.2)
Road Gradient										
Level	1,379	(72.2)	15,326	(73.6)	16,705	(73.5)	263,899	(77.5)	280,604	(77.3)
Crest Of Hill	70	(3.7)	878	(4.2)	948	(4.2)	12,945	(3.8)	13,893	(3.8)
Slope	446	(23.4)	4,462	(21.4)	4,908	(21.6)	59,123	(17.4)	64,031	(17.6)
Unknown	14	(0.7)	150	(0.7)	164	(0.7)	4,388	(1.3)	4,552	(1.3)
Road Feature										
Intersection (4 Way)	184	(9.6)	3,814	(18.3)	3,998	(17.6)	78,800	(23.2)	82,798	(22.8)
Intersection (3 Way)	234	(12.3)	4,334	(20.8)	4,568	(20.1)	87,154	(25.6)	91,722	(25.3)
Intersection (>4 Way)	-	-	59	(0.3)	59	(0.3)	2,848	(0.8)	2,907	(0.8)
Roundabout	10	(0.5)	229	(1.1)	239	(1.1)	7,339	(2.2)	7,578	(2.1)
Median Opening	8	(0.4)	124	(0.6)	132	(0.6)	4,721	(1.4)	4,853	(1.3)
Railway Level Crossing	20	(1.0)	41	(0.2)	61	(0.3)	862	(0.3)	923	(0.3)
Bridge	22	(1.2)	164	(0.8)	186	(0.8)	3,130	(0.9)	3,316	(0.9)
Subway	1	(0.1)	5	(0.0)	6	(0.0)	144	(0.0)	150	(0.0)
Driveway	44	(2.3)	969	(4.7)	1,013	(4.5)	31,873	(9.4)	32,886	(9.1)
No Special Feature	1,378	(72.2)	10,867	(52.2)	12,245	(53.9)	118,808	(34.9)	131,053	(36.1)
Unknown	8	(0.4)	210	(1.0)	218	(1.0)	4,676	(1.4)	4,894	(1.3)
Traffic Control										
Traffic/Pelican Lights	87	(4.6)	2,413	(11.6)	2,500	(11.0)	64,913	(19.1)	67,413	(18.6)
Stop Sign	106	(5.6)	2,107	(10.1)	2,213	(9.7)	39,431	(11.6)	41,644	(11.5)
Give Way Sign	42	(2.2)	646	(3.1)	688	(3.0)	21,150	(6.2)	21,838	(6.0)
Zebra Crossing	2	(0.1)	37	(0.2)	39	(0.2)	568	(0.2)	607	(0.2)
Railway Crossing	20	(1.0)	43	(0.2)	63	(0.3)	884	(0.3)	947	(0.3)
School Crossing	4	(0.2)	47	(0.2)	51	(0.2)	606	(0.2)	657	(0.2)
No Sign Or Control	1,643	(86.1)	15,448	(74.2)	17,091	(75.2)	209,259	(61.5)	226,350	(62.3)
Pointsman	-	-	3	(0.0)	3	(0.0)	21	(0.0)	24	(0.0)
Traffic Lights/Signs	1	(0.1)	16	(0.1)	17	(0.1)	1,717	(0.5)	1,734	(0.5)
Stop/Give Way Sign	-	-	1	(0.0)	1	(0.0)	8	(0.0)	9	(0.0)
Unknown	4	(0.2)	55	(0.3)	59	(0.3)	1,798	(0.5)	1,857	(0.5)
Speed Limit (km/h)										
< 60	17	(0.9)	125	(0.6)	142	(0.6)	2,599	(0.8)	2,741	(0.8)
60	585	(30.6)	11,045	(53.1)	11,630	(51.2)	205,792	(60.5)	217,422	(59.9)
70	137	(7.2)	1,725	(8.3)	1,862	(8.2)	24,795	(7.3)	26,657	(7.3)
80	165	(8.6)	1,360	(6.5)	1,525	(6.7)	14,708	(4.3)	16,233	(4.5)
90	107	(5.6)	591	(2.8)	698	(3.1)	5,123	(1.5)	5,821	(1.6)
100	34	(1.8)	285	(1.4)	319	(1.4)	4,622	(1.4)	4,941	(1.4)
110	805	(42.2)	4,045	(19.4)	4,850	(21.3)	18,018	(5.3)	22,868	(6.3)
Unknown	59	(3.1)	1,640	(7.9)	1,699	(7.5)	64,698	(19.0)	66,397	(18.3)
Total Crashes	1,909		20,816		22,725		340,355		363,080	

Table 42. Summary of all crashes by road factors and crash severity, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

7. Vehicle Factors

7.1 Vehicle Type

Most vehicles involved in crashes were sedans or hatchbacks (65%). Although less than 2% of all crashes involved motorcycles, 9% of fatal crashes involved motorcycles (Table 43).

Vehicle Type	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Sedan/Hatchback	1,288	(46.6)	18,326	(55.1)	19,614	(54.4)	430,197	(65.8)	449,811	(65.2)
Station Wagon	243	(8.8)	3,599	(10.8)	3,842	(10.7)	66,220	(10.1)	70,062	(10.2)
Utility	330	(11.9)	2,836	(8.5)	3,166	(8.8)	47,928	(7.3)	51,094	(7.4)
Panel Van, 4WD	201	(7.3)	1,699	(5.1)	1,900	(5.3)	31,893	(4.9)	33,793	(4.9)
Rigid truck	95	(3.4)	630	(1.9)	725	(2.0)	13,493	(2.1)	14,218	(2.1)
Articulated truck	146	(5.3)	491	(1.5)	637	(1.8)	4,684	(0.7)	5,321	(0.8)
Bus (>=12 seats)	36	(1.3)	273	(0.8)	309	(0.9)	5,161	(0.8)	5,470	(0.8)
Multi seater Van	27	(1.0)	368	(1.1)	395	(1.1)	8,598	(1.3)	8,993	(1.3)
Motorcycle	255	(9.2)	2,828	(8.5)	3,083	(8.6)	8,158	(1.2)	11,241	(1.6)
Moped	1	(0.0)	52	(0.2)	53	(0.1)	220	(0.0)	273	(0.0)
Bicycle	65	(2.3)	1,294	(3.9)	1,359	(3.8)	5,701	(0.9)	7,060	(1.0)
Other	39	(1.4)	88	(0.3)	127	(0.4)	889	(0.1)	1,016	(0.1)
Unknown	40	(1.4)	800	(2.4)	840	(2.3)	30,941	(4.7)	31,781	(4.6)
Total	2,766		33,284		36,050		654,083		690,133	

Table 43. Vehicle types involved in all road crashes by crash severity, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

7.2 Vehicle Age

Most vehicles involved in crashes were aged between one and ten years (Table 44).

Age of Vehicle (years)	Crash Severity								Total	
	Fatal		Hospitalisation		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
< 1	45	(1.4)	561	(1.5)	606	(1.5)	12,796	(1.9)	13,402	(1.9)
1 - 5	463	(14.7)	5,898	(16.3)	6,361	(16.2)	141,650	(21.3)	148,011	(21.0)
6 - 10	353	(11.2)	4,874	(13.5)	5,227	(13.3)	124,097	(18.7)	129,324	(18.4)
11 - 15	286	(9.1)	4,228	(11.7)	4,514	(11.5)	102,868	(15.5)	107,382	(15.3)
16 - 20	193	(6.1)	2,603	(7.2)	2,796	(7.1)	53,606	(8.1)	56,402	(8.0)
> 20	103	(3.3)	1,314	(3.6)	1,417	(3.6)	23,539	(3.5)	24,956	(3.5)
Unknown	1,698	(54.1)	16,751	(46.2)	18,449	(46.9)	205,350	(30.9)	223,799	(31.8)
Total	3,141		36,229		39,370		663,906		703,276	

Table 44. Age of vehicles involved in all road crashes by crash severity, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

7.3 Vehicle Colour

In assessing the impact of vehicle colour as a contributing factor in road crashes, data was restricted to sedans, hatchbacks, station wagons, utilities, panel vans and four wheel drives. This was done to screen out other effects such as vehicle size. The number of registrations for each colour was obtained from Transport vehicle registration data as at 10 October 2000. As a basis of comparison, the rates of occurrence of different coloured vehicles in road crashes per thousand vehicles registered have been calculated.

From Table 45 it can be seen that tan, brown, cream and fawn coloured vehicles had a higher rate of crash involvement than any other coloured vehicles. Tan, cream and bronze coloured vehicles have the highest rates of involvement in fatal crashes.

To gauge the impact of vehicle colour on the nature of the crash the data was further restricted to only those vehicles involved in multi-vehicle crashes and hit pedestrian crashes. This is because the colour of vehicles in single vehicle crashes is irrelevant. Further, for rear end and right angle crashes only the target vehicles were considered. This is because the colour of the collision vehicle is less relevant than that of the target vehicle.

From Table 46 it can be seen that tan, brown, cream and fawn coloured vehicles have the highest rates of involvement in multi-vehicle crashes. The highest rate of vehicle involvement in pedestrian crashes is by turquoise coloured vehicles.

Colour	Number of Registrations	Crash Severity								Total	
		Fatal		Hospitalisation		Serious		Other		n	Rate*
		n	Rate*	n	Rate*	n	Rate*	n	Rate*	n	Rate*
Tan	2,276	4	1.8	50	22.0	54	23.7	1,177	517.1	1,231	540.9
Brown	23,191	28	1.2	442	19.1	470	20.3	11,883	512.4	12,353	532.7
Cream	15,266	21	1.4	268	17.6	289	18.9	7,204	471.9	7,493	490.8
Fawn	3,394	3	0.9	73	21.5	76	22.4	1,559	459.3	1,635	481.7
Yellow	44,499	54	1.2	810	18.2	864	19.4	19,264	432.9	20,128	452.3
Bronze	7,204	9	1.2	104	14.4	113	15.7	3,101	430.5	3,214	446.1
Turquoise	1,755	1	0.6	28	16.0	29	16.5	750	427.4	779	443.9
Beige	41,132	49	1.2	650	15.8	699	17.0	14,910	362.5	15,609	379.5
Orange	7,582	6	0.8	99	13.1	105	13.8	2,604	343.4	2,709	357.3
Blue	173,758	128	0.7	2,245	12.9	2,373	13.7	59,685	343.5	62,058	357.2
Red	153,512	122	0.8	1,889	12.3	2,011	13.1	51,944	338.4	53,955	351.5
Gold	31,186	13	0.4	424	13.6	437	14.0	10,377	332.7	10,814	346.8
Green	109,803	99	0.9	1,273	11.6	1,372	12.5	32,380	294.9	33,752	307.4
Maroon	17,395	14	0.8	183	10.5	197	11.3	5,082	292.2	5,279	303.5
Pink	1,437	1	0.7	19	13.2	20	13.9	412	286.7	432	300.6
Silver	114,285	79	0.7	1,142	10.0	1,221	10.7	32,027	280.2	33,248	290.9
White	535,229	411	0.8	5,990	11.2	6,401	12.0	146,064	272.9	152,465	284.9
Grey	42,357	36	0.8	466	11.0	502	11.9	11,538	272.4	12,040	284.3
Black	13,161	13	1.0	127	9.6	140	10.6	3,045	231.4	3,185	242.0
Purple	4,492	3	0.7	37	8.2	40	8.9	1,016	226.2	1,056	235.1
Khaki	18	-	-	-	-	-	-	1	55.6	1	55.6
Mauve	385	-	-	1	0.0	1	2.6	11	28.6	12	31.2
Unknown	110	968		10,140		11,108		160,204		171,312	

Table 45. Number of road crashes per thousand vehicles registered by crash severity, 1990 to 1999.

NB. Excluding vehicles other than sedans, hatchbacks, station wagons, utilities, panel vans and four wheel drives.

(Source: Main Roads WA Traffic Accident System)

*Rates based on number of registered vehicles as at 10 October 2000

Colour	Number of Registrations	Nature of Crash										Total	
		Rear End		Head On		Side Swipe		Right Angle		Hit Pedestrian		n	Rate*
		n	Rate*	n	Rate*	n	Rate*	n	Rate*	n	Rate*		
Tan	2,276	258	113.4	16	7.0	120	52.7	209	91.8	14	6.2	617	271.1
Brown	23,191	2,407	103.8	220	9.5	1,390	59.9	2,066	89.1	144	6.2	6,227	268.5
Cream	15,266	1,485	97.3	137	9.0	847	55.5	1,155	75.7	81	5.3	3,705	242.7
Fawn	3,394	270	79.6	29	8.5	192	56.6	277	81.6	15	4.4	783	230.7
Yellow	44,499	3,867	86.9	396	8.9	2,320	52.1	3,105	69.8	235	5.3	9,923	223.0
Bronze	7,204	666	92.4	52	7.2	334	46.4	490	68.0	35	4.9	1,577	218.9
Turquoise	1,755	164	93.4	8	4.6	74	42.2	125	71.2	12	6.8	383	218.2
Beige	41,132	3,066	74.5	264	6.4	1,763	42.9	2,480	60.3	172	4.2	7,745	188.3
Blue	173,758	12,935	74.4	1,068	6.1	6,760	38.9	9,444	54.4	560	3.2	30,767	177.1
Red	153,512	11,480	74.8	921	6.0	5,788	37.7	8,325	54.2	497	3.2	27,011	176.0
Gold	31,186	2,169	69.6	193	6.2	1,180	37.8	1,713	54.9	117	3.8	5,372	172.3
Orange	7,582	476	62.8	42	5.5	283	37.3	422	55.7	31	4.1	1,254	165.4
Pink	1,437	96	66.8	12	8.4	44	30.6	70	48.7	1	0.7	223	155.2
Green	109,803	7,133	65.0	561	5.1	3,620	33.0	5,132	46.7	343	3.1	16,789	152.9
Maroon	17,395	1,143	65.7	83	4.8	530	30.5	849	48.8	40	2.3	2,645	152.1
Silver	114,285	7,220	63.2	498	4.4	3,613	31.6	5,147	45.0	328	2.9	16,806	147.1
Grey	42,357	2,495	58.9	197	4.7	1,347	31.8	1,818	42.9	97	2.3	5,954	140.6
White	535,229	30,096	56.2	2,892	5.4	17,269	32.3	22,032	41.2	1,658	3.1	73,947	138.2
Purple	4,492	219	48.8	13	2.9	111	24.7	154	34.3	10	2.2	507	112.9
Black	13,161	603	45.8	63	4.8	366	27.8	419	31.8	20	1.5	1,471	111.8
Khaki	18	1	55.6	-	-	-	-	-	-	-	-	1	55.6
Mauve	385	1	2.6	-	-	3	7.8	1	2.6	-	-	5	13.0
Unknown	110	27,303		4,045		18,607		24,942		1,629		76,526	

Table 46. Number of road crashes per thousand vehicles registered in all road crashes by nature of crash, 1990 to 1999. NB. Excluding vehicles other than sedans, hatchbacks, station wagons, utilities, panel vans and four wheel drives. Multi-vehicle and pedestrian crashes only.

(Source: Main Roads WA Traffic Accident System)

*Rates based on number of registered vehicles as at 10 October 2000

8. Other Factors

From Table 47 the following observations were made:

- The incidence of fatal crashes was highest during September, October, November and December. For all crashes the incidence was highest during May, June, July and August;
- Around 36% of fatal crashes occur on the weekend, whereas only 23% of all crashes occurred on the weekend;
- Only 9% of all crashes occurred between 10pm and 6am, however 27% of fatal crashes occurred during these hours;
- The majority of crashes occurred on clear days;
- The majority of crashes occurred during daylight; and
- Only 3% of all crashes, but almost a quarter of fatal crashes (23%) occurred at night in areas with no street lights.

	Crash Severity									
	Fatal		Hospitalisation		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Month										
January	162	(8.5)	1,588	(7.6)	1,750	(7.7)	23,974	(7.0)	25,724	(7.1)
February	133	(7.0)	1,664	(8.0)	1,797	(7.9)	25,872	(7.6)	27,669	(7.6)
March	151	(7.9)	1,873	(9.0)	2,024	(8.9)	29,436	(8.6)	31,460	(8.7)
April	157	(8.2)	1,693	(8.1)	1,850	(8.1)	26,212	(7.7)	28,062	(7.7)
May	133	(7.0)	1,788	(8.6)	1,921	(8.5)	31,826	(9.4)	33,747	(9.3)
June	156	(8.2)	1,679	(8.1)	1,835	(8.1)	30,909	(9.1)	32,744	(9.0)
July	163	(8.5)	1,710	(8.2)	1,873	(8.2)	31,678	(9.3)	33,551	(9.2)
August	159	(8.3)	1,716	(8.2)	1,875	(8.3)	30,750	(9.0)	32,625	(9.0)
September	176	(9.2)	1,687	(8.1)	1,863	(8.2)	27,675	(8.1)	29,538	(8.1)
October	174	(9.1)	1,803	(8.7)	1,977	(8.7)	27,442	(8.1)	29,419	(8.1)
November	167	(8.7)	1,819	(8.7)	1,986	(8.7)	27,614	(8.1)	29,600	(8.2)
December	178	(9.3)	1,796	(8.6)	1,974	(8.7)	26,967	(7.9)	28,941	(8.0)
Day Of Week										
Sunday	311	(16.3)	2,922	(14.0)	3,233	(14.2)	32,053	(9.4)	35,286	(9.7)
Monday	213	(11.2)	2,596	(12.5)	2,809	(12.4)	46,553	(13.7)	49,362	(13.6)
Tuesday	203	(10.6)	2,701	(13.0)	2,904	(12.8)	49,086	(14.4)	51,990	(14.3)
Wednesday	222	(11.6)	2,764	(13.3)	2,986	(13.1)	51,168	(15.0)	54,154	(14.9)
Thursday	243	(12.7)	2,888	(13.9)	3,131	(13.8)	54,669	(16.1)	57,800	(15.9)
Friday	344	(18.0)	3,601	(17.3)	3,945	(17.4)	62,076	(18.2)	66,021	(18.2)
Saturday	373	(19.5)	3,344	(16.1)	3,717	(16.4)	44,750	(13.1)	48,467	(13.3)
Time Of Day										
6am to 2pm	551	(28.9)	7,092	(34.1)	7,643	(33.6)	147,007	(43.2)	154,650	(42.6)
2pm to 10pm	827	(43.3)	9,649	(46.4)	10,476	(46.1)	160,953	(47.3)	171,429	(47.2)
10pm to 6am	524	(27.4)	3,778	(18.1)	4,302	(18.9)	29,302	(8.6)	33,604	(9.3)
Unknown	7	(0.4)	297	(1.4)	304	(1.3)	3,093	(0.9)	3,397	(0.9)
School Holidays										
Yes	486	(25.5)	4,963	(23.8)	5,449	(24.0)	76,658	(22.5)	82,107	(22.6)
No	1,423	(74.5)	15,853	(76.2)	17,276	(76.0)	263,697	(77.5)	280,973	(77.4)
Weather										
Clear	1,582	(82.9)	17,129	(82.3)	18,711	(82.3)	261,446	(76.8)	280,157	(77.2)
Raining	130	(6.8)	1,667	(8.0)	1,797	(7.9)	41,238	(12.1)	43,035	(11.9)
Fog, Smoke, Dust	15	(0.8)	183	(0.9)	198	(0.9)	2,116	(0.6)	2,314	(0.6)
Overcast	155	(8.1)	1,568	(7.5)	1,723	(7.6)	31,305	(9.2)	33,028	(9.1)
Unknown	27	(1.4)	269	(1.3)	296	(1.3)	4,250	(1.2)	4,546	(1.3)
Light										
Daylight	978	(51.2)	13,034	(62.6)	14,012	(61.7)	253,409	(74.5)	267,421	(73.7)
Dawn Or Dusk	84	(4.4)	1,013	(4.9)	1,097	(4.8)	18,954	(5.6)	20,051	(5.5)
Night										
<i>Street Lights On</i>	342	(17.9)	4,071	(19.6)	4,413	(19.4)	48,606	(14.3)	53,019	(14.6)
<i>Street Lights Off</i>	44	(2.3)	416	(2.0)	460	(2.0)	3,868	(1.1)	4,328	(1.2)
<i>No Street Lights</i>	437	(22.9)	1,957	(9.4)	2,394	(10.5)	8,842	(2.6)	11,236	(3.1)
Unknown	24	(1.3)	325	(1.6)	349	(1.5)	6,676	(2.0)	7,025	(1.9)
Total Crashes	1,909		20,816		22,725		340,355		363,080	

Table 47. Summary of all road crashes by crash timing, environmental factors and crash severity, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

9. Regional Summaries

In this section the crash data has been broken down into ten regions as defined by Main Roads WA. Summaries are provided for the demographic, behavioural, road and other factors discussed previously. Table 48 provides a summary of the ten regions by crash severity. Regional summaries of all crashes are found in Table 49, Table 50 and Table 51. Summaries of serious crashes are similarly found in Table 52, Table 53 and Table 54. Regional summaries of drivers and motorcycle riders involved in all crashes and in serious crashes are shown in Table 55 and Table 56 respectively. Table 57 provides a regional summary of seatbelt and helmet use by persons fatally injured in road crashes.

Region	Crash Severity								Total n
	Fatal		Hospitalisation		Total Serious		Other		
	n	(%)*	n	(%)*	n	(%)*	n	(%)*	
Great Southern	66	(0.9)	678	(9.7)	744	(10.6)	6,259	(89.4)	7,003
South West	284	(1.2)	2,363	(10.2)	2,647	(11.4)	20,596	(88.6)	23,243
Gascoyne	25	(2.0)	164	(12.8)	189	(14.8)	1,088	(85.2)	1,277
Mid West	84	(1.2)	732	(10.6)	816	(11.8)	6,112	(88.2)	6,928
Goldfields	139	(1.5)	907	(9.5)	1,046	(10.9)	8,524	(89.1)	9,570
Kimberley	97	(3.8)	420	(16.6)	517	(20.4)	2,020	(79.6)	2,537
Metropolitan	851	(0.3)	13,400	(4.5)	14,251	(4.8)	283,645	(95.2)	297,896
Wheatbelt South	89	(2.3)	575	(14.8)	664	(17.1)	3,224	(82.9)	3,888
Wheatbelt North	189	(2.7)	1,018	(14.3)	1,207	(16.9)	5,920	(83.1)	7,127
Pilbara	83	(2.3)	550	(15.4)	633	(17.7)	2,944	(82.3)	3,577
Unknown	2	(5.9)	9	(26.5)	11	(32.4)	23	(67.6)	34
Total	1,909	(0.5)	20,816	(5.7)	22,725	(6.3)	340,355	(93.7)	363,080

Table 48. Number of crashes by Main Roads' regions and crash severity, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

All Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Severity Of Crash (%)											
Fatal	0.9	1.2	2.0	1.2	1.5	3.8	0.3	2.3	2.7	2.3	0.5
Hospitalisation	9.7	10.2	12.8	10.6	9.5	16.6	4.5	14.8	14.3	15.4	5.7
Other	89.4	88.6	85.2	88.2	89.1	79.6	95.2	82.9	83.1	82.3	93.7
Police Attendance (%)											
Yes	28.5	32.2	38.1	38.4	34.9	38.7	19.5	32.8	39.7	39.0	22.2
No	71.5	67.8	61.9	61.6	65.1	61.3	80.5	67.2	60.3	61.0	77.8
Alcohol Present (%)											
Yes	5.2	5.6	8.9	6.8	7.8	10.8	3.5	4.7	5.8	10.7	3.9
No	94.8	94.4	91.1	93.2	92.2	89.2	96.5	95.3	94.2	89.3	96.1
<i>High BAC(>0.05)</i>	4.6	4.7	7.5	5.5	6.8	9.6	2.7	3.5	4.9	9.2	3.1
Severity When Alcohol Present (%)											
Fatal	5.0	6.5	7.9	8.4	8.5	19.8	2.6	8.3	14.4	7.5	4.4
Hospitalisation	32.6	24.7	23.7	22.7	25.6	27.4	17.4	21.7	33.1	28.1	20.1
Other	62.4	68.8	68.4	68.8	65.9	52.8	80.1	70.0	52.5	64.4	75.5
Alcohol Related Hours (%)											
Yes	8.6	8.2	10.6	10.2	9.0	9.0	6.2	10.1	12.9	11.8	6.8
No	91.4	91.8	89.4	89.8	91.0	91.0	93.8	89.9	87.1	88.2	93.2
Severity When In Alcohol Related Hours (%)											
Fatal	2.0	2.6	3.7	2.3	3.7	8.3	0.9	4.1	3.5	4.3	1.5
Hospitalisation	14.9	17.2	14.8	13.5	15.9	24.9	9.2	15.6	18.0	23.5	11.2
Other	83.1	80.2	81.5	84.2	80.4	66.8	89.9	80.3	78.5	72.2	87.3
Speed A Factor (%)											
Yes	5.0	5.5	7.5	6.9	6.1	8.1	3.6	4.3	5.9	8.2	4.0
No	40.1	42.5	43.4	43.0	43.0	43.3	34.5	41.0	46.6	43.7	36.0
Unknown	54.9	51.9	49.1	50.1	50.9	48.6	61.9	54.7	47.5	48.0	60.0
Fatigue A Factor (%)											
Yes	1.1	0.9	1.3	0.8	0.7	0.9	0.2	1.8	1.9	0.6	0.3
No	98.4	98.6	98.4	98.9	98.2	98.5	99.0	97.9	97.6	98.7	98.9
Unknown	0.5	0.5	0.3	0.4	1.1	0.6	0.8	0.3	0.5	0.7	0.7

Table 49. Regional summary of all road crashes by crash severity, police attendance and alcohol, speed and fatigue factors, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

All Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Road Classification (%)											
Highway	25.3	30.9	42.8	33.8	31.2	40.7	32.2	21.0	31.1	26.9	31.9
Main	9.0	9.6	5.6	5.1	0.9	3.2	0.0	22.6	19.1	12.2	1.7
Other	65.7	59.5	51.6	61.1	67.9	56.1	67.8	56.4	49.8	60.9	66.4
Road Surface (%)											
Sealed	81.2	89.4	81.0	84.8	87.4	77.5	98.2	66.0	78.1	79.0	95.6
Unsealed	18.3	9.9	18.3	14.5	11.7	21.9	0.9	33.5	21.2	20.3	3.5
Unknown	0.5	0.7	0.6	0.7	0.9	0.6	0.9	0.5	0.6	0.7	0.9
Road Alignment (%)											
Curve	26.3	26.3	21.5	22.6	14.3	22.1	15.2	30.9	31.5	27.5	17.0
Straight	72.1	72.2	77.5	76.2	84.1	76.5	83.6	68.3	67.7	71.2	81.9
Unknown	1.6	1.4	1.0	1.1	1.6	1.3	1.1	0.7	0.8	1.3	1.2
Nature Of Crash (%)											
Multi Vehicle											
Read end	14.2	20.4	7.2	14.9	13.8	9.8	39.0	3.7	6.0	11.9	34.6
Head on	3.0	3.1	3.4	2.0	2.3	3.3	1.7	1.6	3.2	3.3	1.9
Sideswipe opp. dir.	1.8	1.6	1.9	1.5	2.7	1.5	1.2	1.2	1.7	1.9	1.3
Sideswipe same dir.	8.0	7.7	8.0	7.3	9.9	4.9	10.2	4.2	5.6	4.8	9.7
Right angle	15.8	18.9	10.4	17.2	18.7	13.0	21.0	8.0	9.4	13.3	20.1
Indirect right angle	3.7	5.4	2.1	4.6	6.6	2.3	8.3	1.2	1.7	2.5	7.6
Total Multi Vehicle	46.5	57.1	33.0	47.5	54.0	34.8	81.4	19.9	27.6	37.7	75.2
Single Vehicle											
Hit pedestrian	1.8	1.8	3.1	2.2	2.7	8.0	1.8	1.0	1.0	3.3	1.9
Hit animal	6.9	4.3	12.8	7.4	4.5	7.9	0.4	8.7	7.7	10.2	1.4
Hit object	25.2	22.1	19.5	20.7	15.4	15.5	8.3	45.0	35.6	18.5	11.1
Non-collision	12.9	8.4	25.4	16.6	13.1	25.5	1.8	21.2	22.4	22.8	4.1
Total Single Vehicle	46.8	36.6	60.8	46.9	35.7	56.9	12.3	75.9	66.7	54.8	18.5
Other	6.7	6.2	6.1	5.6	10.3	8.4	6.3	4.1	5.8	7.5	6.4

Table 50. Regional summary of all road crashes by road configuration and nature of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

All Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Month Of Year (%)											
January	8.9	9.0	8.5	7.2	7.1	6.4	6.9	7.3	7.5	6.8	7.1
February	7.8	7.7	5.1	7.8	8.2	5.2	7.6	7.7	7.1	6.6	7.6
March	8.3	9.0	5.7	7.8	8.7	6.5	8.7	8.2	8.4	7.4	8.7
April	8.8	8.7	11.4	8.2	7.6	6.2	7.6	8.8	8.0	8.1	7.7
May	7.8	8.1	8.5	8.4	8.5	8.6	9.5	8.3	8.7	8.1	9.3
June	7.7	8.1	9.0	8.5	8.8	10.3	9.2	7.3	8.2	8.7	9.0
July	8.3	8.1	10.5	9.3	9.0	12.1	9.4	8.3	8.2	9.7	9.2
August	7.9	7.2	9.8	8.6	7.9	11.1	9.2	9.4	8.2	10.6	9.0
September	7.9	8.0	7.2	8.7	9.3	8.8	8.1	7.3	8.7	8.5	8.1
October	7.8	8.3	9.0	8.5	8.1	9.5	8.0	8.7	9.3	9.3	8.1
November	8.6	8.6	7.7	7.9	8.4	8.1	8.1	9.0	8.4	9.1	8.2
December	10.2	9.2	7.7	9.2	8.3	7.3	7.7	9.9	9.2	7.2	8.0
Day Of Week (%)											
Monday	11.9	12.8	12.7	12.5	13.1	12.4	13.8	13.4	13.6	12.9	13.6
Tuesday	13.6	12.7	13.5	12.6	12.8	12.9	14.7	11.8	11.7	12.9	14.3
Wednesday	13.5	13.0	14.0	13.1	14.1	13.9	15.3	11.8	12.4	14.7	14.9
Thursday	14.9	14.6	15.2	14.8	15.7	15.5	16.2	13.0	13.2	14.2	15.9
Friday	17.8	17.9	15.0	18.5	17.5	17.4	18.3	17.4	16.8	17.8	18.2
Saturday	16.3	16.6	17.1	15.7	14.8	16.0	12.7	17.2	16.9	14.3	13.3
Sunday	12.0	12.4	12.5	12.7	11.9	12.0	9.0	15.4	15.4	13.2	9.7
Time Of Day (%)											
6am to 2pm	43.1	41.7	39.2	39.9	39.5	36.7	43.1	38.7	38.5	35.2	42.6
2pm to 10pm	43.9	46.0	45.0	44.9	46.5	49.0	47.6	46.0	42.8	47.7	47.2
10pm to 6am	12.9	12.4	15.8	15.3	14.0	14.4	9.3	15.3	18.7	17.1	10.2
School Holidays (%)											
Yes	26.6	26.0	28.0	24.8	23.0	23.5	22.1	25.7	24.9	23.2	22.6
No	73.4	74.0	72.0	75.2	77.0	76.5	77.9	74.3	75.1	76.8	77.4

Table 51. Regional summary of all road crashes by timing of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Serious Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Crash Severity (%)											
Fatal	8.9	10.7	13.2	10.3	13.3	18.8	6.0	13.4	15.7	13.1	8.4
Hospitalisation	91.1	89.3	86.8	89.7	86.7	81.2	94.0	86.6	84.3	86.9	91.6
Police Attendance (%)											
Yes	80.0	85.5	87.8	84.9	87.8	82.4	88.3	77.7	83.8	83.6	86.8
No	20.0	14.5	12.2	15.1	12.2	17.6	11.7	22.3	16.2	16.4	13.2
Alcohol Present (%)											
Yes	21.4	17.1	20.7	19.3	25.6	28.4	14.4	8.8	17.7	24.8	16.3
No	78.6	82.9	79.3	80.7	74.4	71.6	85.6	91.2	82.3	75.2	83.7
<i>High BAC (>0.05)</i>	<i>18.6</i>	<i>13.9</i>	<i>17.3</i>	<i>15.3</i>	<i>22.4</i>	<i>26.1</i>	<i>10.6</i>	<i>6.8</i>	<i>14.9</i>	<i>21.8</i>	<i>12.6</i>
Severity When Alcohol Present (%)											
Fatal	13.2	20.8	25.0	27.1	25.0	42.0	12.9	27.8	30.3	21.2	18.1
Hospitalisation	86.8	79.2	75.0	72.9	75.0	58.0	87.1	72.2	69.7	78.8	81.9
Alcohol Related Hours (%)											
Yes	13.7	14.3	13.2	13.7	16.1	14.7	13.1	11.6	16.3	18.5	13.7
No	86.3	85.7	86.7	86.3	83.9	85.3	86.9	88.4	83.7	81.5	86.2
Severity When In Alcohol Related Hours (%)											
Fatal	11.8	13.0	20.0	14.3	19.0	25.0	9.2	20.8	16.2	15.4	11.9
Hospitalisation	88.2	87.0	80.0	85.7	81.0	75.0	90.8	79.2	83.8	84.6	88.1
Speed A Factor (%)											
Yes	14.9	16.0	15.9	18.0	19.9	19.0	16.3	12.5	15.4	17.9	16.4
No	62.5	66.0	66.1	62.6	61.2	61.3	65.4	62.5	65.1	60.7	64.8
Unknown	22.6	18.0	18.0	19.4	18.9	19.7	18.3	25.0	19.5	21.5	18.8
Fatigue A Factor (%)											
Yes	2.4	2.4	4.2	0.7	1.7	2.1	0.5	3.6	3.1	1.1	1.2
No	97.6	97.3	95.8	99.3	97.8	97.7	99.1	96.4	96.7	98.3	98.5
Unknown	-	0.3	-	-	0.5	0.2	0.4	-	0.2	0.6	0.3

Table 52. Regional summary of serious crashes by crash severity, police attendance and alcohol, speed and fatigue factors, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Serious Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Road Classification (%)											
Highway	29.3	34.6	43.9	37.3	39.9	44.1	28.5	23.2	31.9	32.4	30.7
Main	12.9	12.2	7.9	6.7	2.2	4.3	0.1	24.1	24.9	14.7	4.8
Other	57.8	53.2	48.1	56.0	57.9	51.6	71.4	52.7	43.2	52.9	64.4
Road Surface (%)											
Sealed	78.9	89.1	78.3	81.7	78.6	75.6	98.6	67.8	79.3	74.1	92.0
Unsealed	20.8	10.6	21.7	17.6	20.8	24.4	1.0	31.9	20.4	25.8	7.6
Unknown	0.3	0.3	-	0.6	0.6	-	0.4	0.3	0.3	0.2	0.4
Road Alignment (%)											
Curve	31.7	32.9	25.9	28.1	22.4	24.0	18.4	30.6	36.8	31.6	22.9
Straight	67.5	66.5	73.5	71.2	76.9	75.2	81.2	68.8	62.7	67.9	76.6
Unknown	0.8	0.6	0.5	0.7	0.8	0.8	0.4	0.6	0.5	0.5	0.5
Nature Of Crash (%)											
Multi Vehicle											
Rear end	5.6	6.8	-	5.0	4.8	2.3	13.5	2.1	2.2	3.3	10.2
Head on	4.3	5.3	3.2	2.9	4.6	2.7	3.7	3.2	5.0	2.8	3.9
Sideswipe opp. dir.	1.5	1.7	1.6	1.1	1.3	0.6	1.1	0.5	1.4	1.4	1.2
Sideswipe same dir.	3.5	3.9	1.6	2.9	3.3	1.5	4.6	1.8	2.8	2.4	4.0
Right angle	8.3	15.3	2.1	9.6	11.4	4.8	22.9	5.0	5.9	6.2	18.0
Indirect right angle	2.0	5.4	1.6	3.9	3.9	1.9	13.0	0.8	1.3	2.2	9.4
Total Multi Vehicle	25.2	38.4	10.1	25.4	29.3	13.8	58.8	13.4	18.6	18.3	46.7
Single Vehicle											
Hit pedestrian	6.5	7.4	9.5	9.8	11.3	23.0	14.0	2.1	3.4	10.9	11.9
Hit animal	3.1	1.6	4.8	2.5	1.7	3.1	0.4	1.4	1.7	4.1	1.0
Hit object	40.6	35.4	23.3	24.8	23.0	17.2	17.7	53.5	43.4	20.9	23.6
Non-collision	22.4	14.4	51.3	33.9	30.9	38.9	5.8	26.1	29.8	41.5	13.5
Total Single Vehicle	72.6	58.8	88.9	71.0	66.9	82.2	37.9	83.1	78.3	77.4	50.0
Other	2.2	2.9	1.1	3.6	3.7	3.9	3.2	3.8	3.1	4.3	3.2

Table 53. Regional summary of serious crashes by road configuration and nature of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Serious Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Month Of Year (%)											
January	10.6	8.7	14.3	6.5	10.5	6.2	7.1	8.3	8.0	7.6	7.7
February	9.0	8.3	2.6	7.1	8.6	5.4	7.9	9.3	7.8	7.7	7.9
March	9.3	11.0	2.6	7.6	8.9	7.2	8.9	6.8	8.9	7.3	8.9
April	8.6	8.6	8.5	9.2	8.0	6.6	8.0	8.6	8.3	8.4	8.1
May	7.3	7.7	4.8	8.2	6.4	8.5	8.9	7.7	8.5	8.1	8.4
June	8.1	7.0	9.0	8.2	7.2	8.5	8.3	6.3	8.1	9.5	8.1
July	8.9	7.4	11.6	8.6	7.5	11.0	8.3	6.5	7.9	8.8	8.2
August	5.4	6.8	10.1	8.6	6.7	9.5	8.7	9.2	6.8	9.6	8.3
September	7.9	7.9	6.3	9.4	10.0	9.9	8.0	8.1	8.1	9.8	8.2
October	6.7	8.2	10.1	9.8	8.6	10.1	8.7	9.9	9.0	9.2	8.7
November	8.2	9.2	11.1	8.3	9.4	8.7	8.6	8.0	8.9	9.0	8.7
December	10.1	9.2	9.0	8.5	8.2	8.5	8.5	11.3	9.6	5.1	8.7
Day Of Week (%)											
Monday	10.9	11.9	11.6	12.7	12.5	11.0	12.5	12.8	12.9	11.7	12.4
Tuesday	11.4	11.4	14.8	11.0	12.2	11.8	13.4	12.5	11.4	13.3	12.8
Wednesday	12.8	10.8	11.6	10.2	13.2	13.5	14.0	11.0	12.0	12.8	13.1
Thursday	10.6	13.3	11.1	14.8	13.5	13.2	14.2	13.1	11.7	14.5	13.8
Friday	17.7	17.3	14.8	17.4	14.7	16.1	17.7	16.6	16.6	17.5	17.4
Saturday	19.0	18.6	19.0	17.9	17.7	19.0	15.4	17.0	17.8	15.6	16.4
Sunday	17.6	16.7	16.9	15.9	16.2	15.5	12.8	17.0	17.6	14.5	14.2
Time Of Day (%)											
6am to 2pm	33.5	34.3	37.6	34.9	31.6	25.0	34.1	32.1	33.6	28.9	33.6
2pm to 10pm	44.6	44.2	42.3	44.2	45.5	51.8	46.7	47.4	43.1	45.3	46.1
10pm to 6am	21.9	21.5	20.1	20.8	22.8	23.2	19.1	20.5	23.3	25.8	20.3
School Holidays (%)											
Yes	29.7	24.8	32.8	24.6	27.2	24.2	22.9	27.3	25.2	23.1	24.0
No	70.3	75.2	67.2	75.4	72.8	75.8	77.1	72.7	74.8	76.9	76.0

Table 54. Regional summary of serious crashes by timing of crash, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Drivers: All Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Gender Of Driver By Severity (%)											
Male											
<i>Fatal</i>	1.0	1.3	1.8	1.2	1.6	3.2	0.3	2.9	3.0	2.3	0.5
<i>Hospitalisation</i>	9.4	10.2	10.5	10.2	9.3	15.5	4.6	14.0	13.9	14.6	5.6
Total Serious	10.4	11.5	12.3	11.4	10.9	18.7	4.9	16.9	16.9	16.9	6.1
Other	89.6	88.5	87.7	88.6	89.1	81.3	95.1	83.1	83.1	83.1	93.9
Total Male	58.1	59.8	65.8	59.9	60.0	64.9	57.7	61.7	66.2	66.0	58.2
Female											
<i>Fatal</i>	0.7	0.8	1.4	0.7	0.7	2.6	0.1	1.5	1.8	1.5	0.3
<i>Hospitalisation</i>	7.2	7.9	10.7	8.5	6.1	12.6	3.7	13.8	13.0	11.7	4.4
Total Serious	7.9	8.7	12.1	9.2	6.8	15.2	3.8	15.3	14.8	13.2	4.7
Other	92.1	91.3	87.9	90.8	93.2	84.8	96.2	84.6	85.2	86.8	95.4
Total Female	35.4	34.3	28.6	33.0	32.0	29.1	35.9	34.6	29.3	28.4	35.5
Unknown	6.5	5.9	5.6	7.1	8.0	5.9	6.3	3.7	4.5	5.5	6.3
Age Of Driver (%)											
< 13	0.3	0.3	0.6	0.2	0.2	0.3	0.2	0.2	0.3	0.7	0.2
13 - 17	5.7	6.4	4.8	4.8	4.2	2.8	3.7	5.6	4.9	4.6	3.9
18 - 25	24.3	24.5	25.3	25.7	27.7	24.1	23.5	31.1	28.0	25.4	23.8
26 - 39	25.5	24.2	30.3	27.7	29.4	34.3	23.5	26.8	29.0	34.9	24.0
40 - 59	20.1	19.9	20.7	18.8	16.4	20.3	20.3	20.3	20.6	18.9	20.2
60 - 75	8.2	7.3	6.9	7.2	3.7	4.7	5.3	6.6	6.2	2.9	5.5
> 75	2.5	2.0	1.2	1.4	0.8	0.3	1.1	2.2	1.3	0.2	1.2
Unknown	13.5	15.4	10.1	14.1	17.6	13.2	22.4	7.2	9.7	12.4	21.2
Probation (%)											
Yes	6.9	7.6	4.8	5.5	5.7	3.9	5.4	6.8	6.2	5.3	5.6
No	72.5	70.0	76.7	73.4	68.9	73.0	66.9	79.1	78.5	73.9	67.7
Unknown	20.6	22.4	18.5	21.1	25.4	23.1	27.7	14.0	15.3	20.8	26.7
Driver Origin (%)											
Within LGA	53.5	42.9	41.4	40.1	56.8	43.7	25.8	35.6	31.4	53.8	28.7
Outside LGA											
<i>Within Region</i>	10.0	17.2	1.9	13.6	5.8	4.9	50.4	12.2	11.8	5.3	44.7
<i>Outside Region</i>	13.8	16.5	27.1	17.1	12.8	12.6	3.0	36.3	36.6	13.6	5.3
Total Outside LGA	23.8	33.6	29.0	30.7	18.6	17.6	53.5	48.5	48.4	18.8	50.0
Unknown	22.7	23.5	29.6	29.2	24.6	38.7	20.8	15.9	20.2	27.4	21.3

Table 55. Regional summary of all road crashes by gender, age, probationary status and origin of drivers and motorcycle riders involved, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Drivers: Serious Crashes	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Gender Of Driver By Severity (%)											
Male											
Fatal	9.8	11.4	14.5	10.7	14.7	17.3	6.6	17.0	17.7	13.4	8.8
Hospitalisation	90.2	88.6	85.5	89.3	85.3	82.7	93.4	83.0	82.3	86.6	91.2
Total Male	67.0	68.1	66.7	68.2	72.9	71.5	65.3	65.3	71.1	74.0	66.6
Female											
Fatal	8.7	9.0	11.9	8.0	10.1	16.9	3.8	10.0	12.0	11.2	5.6
Hospitalisation	91.3	91.0	88.1	92.0	89.9	83.1	96.2	90.0	88.0	88.8	94.4
Total Female	30.7	29.5	28.5	30.3	24.1	26.0	31.7	33.4	27.5	24.8	30.7
Unknown	2.3	2.5	4.8	1.5	3.0	2.5	3.0	1.3	1.4	1.2	2.7
Age Of Driver (%)											
< 13	0.7	0.7	1.0	0.4	0.6	0.2	0.9	0.4	0.5	2.1	0.8
13 - 17	6.6	8.1	5.8	6.7	5.6	4.6	5.7	5.8	5.4	6.4	6.0
18 - 25	30.9	30.2	34.8	29.6	34.4	32.1	29.5	36.3	31.4	30.3	30.1
26 - 39	27.7	27.6	32.9	32.3	31.7	37.7	27.8	26.7	31.2	36.6	28.5
40 - 59	18.5	19.8	15.9	19.6	18.9	17.6	21.9	17.7	21.1	19.2	21.1
60 - 75	8.2	7.3	3.9	6.4	3.7	3.5	6.6	7.2	6.8	2.9	6.5
> 75	3.1	2.8	1.0	1.8	0.7	0.2	1.9	2.5	1.6	0.1	1.9
Unknown	4.4	3.5	4.8	3.3	4.4	4.2	5.8	3.4	2.1	2.4	5.1
Probation (%)											
Yes	7.6	9.0	4.4	6.1	7.0	4.6	6.6	7.8	6.3	7.2	6.9
No	82.7	80.0	80.3	83.7	78.4	77.4	79.6	81.8	85.2	81.7	80.1
Unknown	9.7	11.0	15.3	10.2	14.7	18.0	13.8	10.4	8.5	11.1	13.0
Driver Origin (%)											
Within LGA	47.5	44.3	42.7	36.8	53.8	50.4	32.1	30.0	28.1	56.9	35.4
Outside LGA											
<i>Within Region</i>	<i>17.0</i>	<i>21.5</i>	<i>2.4</i>	<i>18.9</i>	<i>10.1</i>	<i>5.5</i>	<i>52.5</i>	<i>11.0</i>	<i>13.9</i>	<i>6.7</i>	<i>41.6</i>
<i>Outside Region</i>	<i>19.5</i>	<i>19.6</i>	<i>35.4</i>	<i>23.2</i>	<i>18.4</i>	<i>8.8</i>	<i>4.2</i>	<i>46.2</i>	<i>43.3</i>	<i>17.7</i>	<i>10.1</i>
Total Outside LGA	36.5	41.1	37.8	42.2	28.5	14.3	56.7	57.1	57.2	24.4	51.7
Unknown	16.0	14.6	19.5	21.1	17.7	35.3	11.2	12.8	14.7	18.7	12.9

Table 56. Regional summary of serious crashes by gender, age, probationary status and origin of drivers and motorcycle riders involved, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Fatalities	Great Southern	South West	Gascoyne	Mid West	Goldfields	Kimberley	Perth	Wheatbelt South	Wheatbelt North	Pilbara	Total
Seatbelt Usage By Fatalities (%)											
Worn	59.7	56.5	29.2	30.1	28.3	22.9	58.5	47.8	48.4	20.0	48.3
Not worn	26.4	25.7	45.8	54.8	50.8	62.7	18.7	31.5	38.0	56.9	32.4
Failed	-	-	4.2	1.4	-	-	0.4	1.1	-	1.5	0.4
Unknown	13.9	17.8	20.8	13.7	20.8	14.5	22.4	19.6	13.6	21.5	18.9
Helmet Usage By Fatalities (%)											
Worn	50.0	72.3	100.0	83.3	60.0	-	75.5	100.0	87.5	61.5	74.1
Not worn	50.0	19.1	-	16.7	35.0	-	20.1	-	6.3	23.1	20.7
Failed	-	-	-	-	5.0	-	0.5	-	-	-	0.7
Unknown	-	8.5	-	-	-	-	3.8	-	6.3	15.4	4.6

Table 57. Regional summary of seatbelt and helmet usage of persons fatally injured in road crashes, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

9.1 Great Southern

For the Great Southern region:

- Alcohol was present in 35% of all fatal crashes (Table 60);
- Speed was a factor in 24% of all fatal crashes (Table 61);
- Fatigue was a factor in 2% of all serious crashes (Table 61);
- Of all driver and passenger fatalities, 27% were not wearing seatbelts. Further, 50% of all motorcycle rider, motorcycle pillion passenger and bicycle rider fatalities were not wearing helmets (Table 62); and
- The most common fatal crash nature types were “Hit Tree” and “Overturn” crashes, which made up 26% and 20% of all fatal crashes respectively (Table 63).

LGA	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other		n	(%)
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Albany	14	(21.2)	269	(39.7)	283	(38.0)	3,547	(56.7)	3,830	(54.7)
Broomehill	2	(3.0)	14	(2.1)	16	(2.2)	72	(1.2)	88	(1.3)
Cranbrook	4	(6.1)	34	(5.0)	38	(5.1)	170	(2.7)	208	(3.0)
Denmark	6	(9.1)	51	(7.5)	57	(7.7)	401	(6.4)	458	(6.5)
Gnowangerup	3	(4.5)	26	(3.8)	29	(3.9)	238	(3.8)	267	(3.8)
Katanning	3	(4.5)	40	(5.9)	43	(5.8)	435	(6.9)	478	(6.8)
Kent	3	(4.5)	19	(2.8)	22	(3.0)	69	(1.1)	91	(1.3)
Kojonup	5	(7.6)	65	(9.6)	70	(9.4)	302	(4.8)	372	(5.3)
Plantagenet	13	(19.7)	61	(9.0)	74	(9.9)	475	(7.6)	549	(7.8)
Tambellup	2	(3.0)	13	(1.9)	15	(2.0)	62	(1.0)	77	(1.1)
Woodanilling	3	(4.5)	20	(2.9)	23	(3.1)	96	(1.5)	119	(1.7)
Jerramungup	4	(6.1)	19	(2.8)	23	(3.1)	161	(2.6)	184	(2.6)
Ravensthorpe	4	(6.1)	47	(6.9)	51	(6.9)	228	(3.6)	279	(4.0)
Fitzgerald N.P.	-	-	-	-	-	-	1	(0.0)	1	(0.0)
Stirling Range N.P.	-	-	-	-	-	-	1	(0.0)	1	(0.0)
West Cape Howe N.P.	-	-	-	-	-	-	1	(0.0)	1	(0.0)
Total Crashes	66	(0.9)	678	(9.7)	744	(10.6)	6,259	(89.4)	7,003	

Table 58. Crash severity by Local Government Area, Great Southern region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Albany	27,003	(54.7)	(54.7)
Broomehill	470	(1.0)	(1.3)
Cranbrook	1,121	(2.3)	(3.0)
Denmark	3,686	(7.5)	(6.5)
Gnowangerup	1,724	(3.5)	(3.8)
Jerramungup	1,338	(2.7)	(2.6)
Katanning	4,506	(9.1)	(6.8)
Kent	780	(1.6)	(1.3)
Kojonup	2,214	(4.5)	(5.3)
Plantagenet	4,117	(8.3)	(7.8)
Ravensthorpe	1,389	(2.8)	(4.0)
Tambellup	701	(1.4)	(1.1)
Woodanilling	354	(0.7)	(1.7)
Total	49,403		

Table 59. Population by Local Government Area, Great Southern region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	12	(60.0)	107	(47.1)	119	(48.2)	322	(13.1)	441	(16.3)
< 0.05	2	(10.0)	5	(2.2)	7	(2.8)	9	(0.4)	16	(0.6)
0.05 - <0.079	-	-	6	(2.6)	6	(2.4)	14	(0.6)	20	(0.7)
0.08 - 0.149	2	(10.0)	19	(8.4)	21	(8.5)	39	(1.6)	60	(2.2)
0.15	3	(15.0)	16	(7.0)	19	(7.7)	26	(1.1)	45	(1.7)
Subtotal 0.05	5	(25.0)	41	(18.1)	46	(18.6)	79	(3.2)	125	(4.6)
Unknown	1	(5.0)	74	(32.6)	75	(30.4)	2,048	(83.3)	2,123	(78.5)
Total Crashes	20	(0.7)	227	(8.4)	247	(9.1)	2,458	(90.9)	2,705	

Table 60. Crash severity by highest recorded BAC in crash, Great Southern region, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Time Period										
Alcohol related hours	12	(18.2)	90	(13.3)	102	(13.7)	503	(8.0)	605	(8.6)
Non-Alc related hours	14	(21.2)	216	(31.9)	230	(30.9)	2,526	(40.4)	2,756	(39.4)
Neutral/Unkn. hours	40	(60.6)	372	(54.9)	412	(55.4)	3,230	(51.6)	3,642	(52.0)
Speed A Factor										
Yes	16	(24.2)	95	(14.0)	111	(14.9)	236	(3.8)	347	(5.0)
No	43	(65.2)	422	(62.2)	465	(62.5)	2,344	(37.5)	2,809	(40.1)
Unknown	7	(10.6)	161	(23.7)	168	(22.6)	3,679	(58.8)	3,847	(54.9)
Fatigue A Factor										
Yes	1	(1.5)	17	(2.5)	18	(2.4)	58	(0.9)	76	(1.1)
No	65	(98.5)	661	(97.5)	726	(97.6)	6,165	(98.5)	6,891	(98.4)
Unknown	-	-	-	-	-	-	36	(0.6)	36	(0.5)
Total Crashes	66	(0.9)	678	(9.7)	744	(10.6)	6,259	(89.4)	7,003	

Table 61. Crash severity by time of crash and measures for speed and fatigue, Great Southern region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n	
	Worn		Not Worn		Failed		Unknown			
	n	(%)	n	(%)	n	(%)	n	(%)		
Seatbelt										
Fatality	43	(58.9)	20	(27.4)	-	-	10	(13.7)	73	
Hospitalised	438	(57.8)	76	(10.0)	1	(0.1)	243	(32.1)	758	
Medical	664	(54.4)	51	(4.2)	-	-	506	(41.4)	1,221	
Non-Medical	237	(52.2)	4	(0.9)	1	(0.2)	212	(46.7)	454	
None	-	-	-	-	-	-	8,600	(100.0)	8,600	
Unknown	13	(36.1)	-	-	-	-	23	(63.9)	36	
Total Injuries	1,395	(12.5)	151	(1.4)	2	-	9,594	(86.1)	11,142	
Helmet										
Fatality	4	(50.0)	4	(50.0)	-	-	-	-	8	
Hospitalised	49	(52.7)	17	(18.3)	-	-	27	(29.0)	93	
Medical	30	(28.6)	4	(3.8)	-	-	71	(67.6)	105	
Non-Medical	7	(18.9)	-	-	-	-	30	(81.1)	37	
None	-	-	-	-	-	-	102	(100.0)	102	
Unknown	1	(33.3)	-	-	-	-	2	(66.7)	3	
Total Injuries	91	(26.1)	25	(7.2)	-	-	232	(66.7)	348	

Table 62. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Great Southern region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	2	(3.0)	40	(5.9)	42	(5.6)	952	(15.2)	994	(14.2)
Head on	10	(15.2)	22	(3.2)	32	(4.3)	180	(2.9)	212	(3.0)
Sideswipe opp. dir.	2	(3.0)	9	(1.3)	11	(1.5)	114	(1.8)	125	(1.8)
Sideswipe same dir.	1	(1.5)	25	(3.7)	26	(3.5)	536	(8.6)	562	(8.0)
Right angle	5	(7.6)	57	(8.4)	62	(8.3)	1,042	(16.6)	1,104	(15.8)
Indirect Right Angle	2	(3.0)	13	(1.9)	15	(2.0)	243	(3.9)	258	(3.7)
Total Multi-Vehicle	22	(33.3)	166	(24.5)	188	(25.3)	3,067	(49.0)	3,255	(46.5)
Single Vehicle Crashes										
Hit pedestrian	4	(6.1)	44	(6.5)	48	(6.5)	79	(1.3)	127	(1.8)
Hit animal	-	-	23	(3.4)	23	(3.1)	458	(7.3)	481	(6.9)
Hit object										
<i>Pole/Post</i>	1	(1.5)	30	(4.4)	31	(4.2)	155	(2.5)	186	(2.7)
<i>Tree</i>	17	(25.8)	110	(16.2)	127	(17.1)	486	(7.8)	613	(8.8)
<i>Wall/Fence</i>	1	(1.5)	16	(2.4)	17	(2.3)	101	(1.6)	118	(1.7)
<i>Traffic Island</i>	-	-	3	(0.4)	3	(0.4)	29	(0.5)	32	(0.5)
<i>Kerb</i>	-	-	10	(1.5)	10	(1.3)	67	(1.1)	77	(1.1)
<i>Drainage Ditch</i>	2	(3.0)	32	(4.7)	34	(4.6)	162	(2.6)	196	(2.8)
<i>Embankment</i>	2	(3.0)	43	(6.3)	45	(6.0)	215	(3.4)	260	(3.7)
<i>Other object</i>	1	(1.5)	34	(5.0)	35	(4.7)	248	(4.0)	283	(4.0)
Total hit object	24	(36.4)	278	(41.0)	302	(40.6)	1,463	(23.4)	1,765	(25.2)
Non collision										
<i>Overturns</i>	13	(19.7)	126	(18.6)	139	(18.7)	604	(9.7)	743	(10.6)
<i>Falls from vehicle</i>	-	-	12	(1.8)	12	(1.6)	20	(0.3)	32	(0.5)
<i>Other non collision</i>	2	(3.0)	14	(2.1)	16	(2.2)	114	(1.8)	130	(1.9)
Total non collision	15	(22.7)	152	(22.4)	167	(22.4)	738	(11.8)	905	(12.9)
Total Single Vehicle	43	(65.2)	497	(73.3)	540	(72.6)	2,738	(43.7)	3,278	(46.8)
Other	1	(1.5)	15	(2.2)	16	(2.2)	454	(7.3)	470	(6.7)
Total Crashes	66	(0.9)	678	(9.7)	744	(10.6)	6,259	(89.4)	7,003	

Table 63. Crash severity by nature of crash, Great Southern region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.2 South West

For the South West region:

- Alcohol was present in 31% of all fatal crashes (Table 66);
- Speed was a factor in 29% of all fatal crashes (Table 67);
- Fatigue was a factor in 2% of all serious crashes (Table 67);
- Of all driver and passenger fatalities, 26% were not wearing seatbelts. Further, 19% of all motorcycle rider, motorcycle pillion passenger and bicycle rider fatalities were not wearing helmets (Table 68); and
- The most common fatal crash nature types were “Hit Tree” and “Head On” crashes, which made up 27% and 14% of all fatal crashes respectively (Table 69).

LGA	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Augusta-Margaret River	18	(6.3)	123	(5.2)	141	(5.3)	973	(4.7)	1,114	(4.8)
Bridgetown-Greenbushes	13	(4.6)	81	(3.4)	94	(3.6)	380	(1.8)	474	(2.0)
Bunbury	13	(4.6)	346	(14.6)	359	(13.6)	4,567	(22.2)	4,926	(21.2)
Busselton	30	(10.6)	264	(11.2)	294	(11.1)	2,379	(11.6)	2,673	(11.5)
Capel	13	(4.6)	101	(4.3)	114	(4.3)	551	(2.7)	665	(2.9)
Collie	17	(6.0)	125	(5.3)	142	(5.4)	973	(4.7)	1,115	(4.8)
Dardanup	13	(4.6)	70	(3.0)	83	(3.1)	449	(2.2)	532	(2.3)
Waroona	12	(4.2)	54	(2.3)	66	(2.5)	435	(2.1)	501	(2.2)
Harvey	36	(12.7)	287	(12.1)	323	(12.2)	1,596	(7.7)	1,919	(8.3)
Mandurah	39	(13.7)	321	(13.6)	360	(13.6)	4,515	(21.9)	4,875	(21.0)
Manjimup	17	(6.0)	192	(8.1)	209	(7.9)	1,322	(6.4)	1,531	(6.6)
Boddington	10	(3.5)	54	(2.3)	64	(2.4)	279	(1.4)	343	(1.5)
Murray	31	(10.9)	172	(7.3)	203	(7.7)	1,191	(5.8)	1,394	(6.0)
Nannup	2	(0.7)	56	(2.4)	58	(2.2)	282	(1.4)	340	(1.5)
Donnybrook-Balingup	13	(4.6)	81	(3.4)	94	(3.6)	489	(2.4)	583	(2.5)
Boyup Brook	7	(2.5)	36	(1.5)	43	(1.6)	206	(0.9)	249	(1.1)
D'Entrecasteaux N.P.	-	-	-	-	-	-	2	(0.0)	2	(0.0)
Leeuwin-Naturaliste N.P.	-	-	-	-	-	-	3	(0.0)	3	(0.0)
Warren N.P.	-	-	-	-	-	-	1	(0.0)	1	(0.0)
Walpole-Nornalup N.P.	-	-	-	-	-	-	3	(0.0)	3	(0.0)
Total Crashes	284	(1.2)	2,363	(10.2)	2,647	(11.4)	20,596	(88.6)	23,243	

Table 64. Crash severity by Local Government Area, South West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Augusta-Margaret River	8,047	(5.0)	(4.8)
Boddington	1,522	(0.9)	(1.5)
Boyup Brook	1,604	(1.0)	(1.1)
Bridgetown-Greenbushes	3,904	(2.4)	(2.0)
Bunbury	26,556	(16.6)	(21.2)
Busselton	17,490	(10.9)	(11.5)
Capel	5,692	(3.6)	(2.9)
Collie	8,636	(5.4)	(4.8)
Dardanup	6,344	(4.0)	(2.3)
Donnybrook-Balingup	4,029	(2.5)	(2.5)
Harvey	14,766	(9.2)	(8.3)
Mandurah	37,925	(23.7)	(21.0)
Manjimup	10,093	(6.3)	(6.6)
Murray	9,190	(5.7)	(6.0)
Nannup	1,144	(0.7)	(1.5)
Warooka	3,278	(2.0)	(2.2)
Total	160,220		

Table 65. Population by Local Government Area, South West region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	61	(59.2)	432	(54.2)	493	(54.8)	1,207	(15.2)	1,700	(19.3)
< 0.05	5	(4.9)	24	(3.0)	29	(3.2)	50	(0.6)	79	(0.9)
0.05 - <0.079	4	(3.9)	14	(1.8)	18	(2.0)	40	(0.5)	58	(0.7)
0.08 - 0.149	11	(10.7)	60	(7.5)	71	(7.9)	136	(1.7)	207	(2.3)
0.15	12	(11.7)	24	(3.0)	36	(4.0)	114	(1.4)	150	(1.7)
Subtotal 0.05	27	(26.2)	98	(12.3)	125	(13.9)	290	(3.7)	415	(4.7)
Unknown	10	(9.7)	243	(30.5)	253	(28.1)	6,374	(80.5)	6,627	(75.1)
Total Crashes	103	(1.2)	797	(9.0)	900	(10.2)	7,921	(89.8)	8,821	

Table 66. Crash severity by highest recorded BAC in crash, South West region, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Time Period										
Alcohol related hours	49	(17.3)	329	(13.9)	378	(14.3)	1,533	(7.4)	1,911	(8.2)
Non-Alc related hours	69	(24.3)	692	(29.3)	761	(28.7)	7,942	(38.6)	8,703	(37.4)
Neutral/Unkn. hours	166	(58.5)	1,342	(56.8)	1,508	(57.0)	11,121	(54.0)	12,629	(54.3)
Speed A Factor										
Yes	82	(28.9)	342	(14.5)	424	(16.0)	865	(4.2)	1,289	(5.5)
No	177	(62.3)	1,570	(66.4)	1,747	(66.0)	8,141	(39.5)	9,888	(42.5)
Unknown	25	(8.8)	451	(19.1)	476	(18.0)	11,590	(56.3)	12,066	(51.9)
Fatigue A Factor										
Yes	7	(2.5)	57	(2.4)	64	(2.4)	146	(0.7)	210	(0.9)
No	277	(97.5)	2,298	(97.2)	2,575	(97.3)	20,347	(98.8)	22,922	(98.6)
Unknown	-	-	8	(0.3)	8	(0.3)	103	(0.5)	111	(0.5)
Total Crashes	284	(1.2)	2,363	(10.2)	2,647	(11.4)	20,596	(88.6)	23,243	

Table 67. Crash severity by time of crash and measures for speed and fatigue, South West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total	
	Worn		Not Worn		Failed		Unknown			
	n	(%)	n	(%)	n	(%)	n	(%)	n	
Seatbelt										
Fatality	143	(56.5)	65	(25.7)	-	-	45	(17.8)	253	
Hospitalised	1,674	(63.3)	223	(8.4)	1	(0.0)	746	(28.2)	2,644	
Medical	2,751	(57.1)	155	(3.2)	3	(0.1)	1,905	(39.6)	4,814	
Non-Medical	1,003	(54.8)	36	(2.0)	1	(0.1)	789	(43.1)	1,829	
None	-	-	-	-	-	-	30,336	(100.0)	30,336	
Unknown	77	(39.9)	1	(0.5)	-	-	115	(59.6)	193	
Total Injuries	5,648	(14.1)	480	(1.2)	5	-	33,936	(84.7)	40,069	
Helmet										
Fatality	34	(72.3)	9	(19.1)	-	-	4	(8.5)	47	
Hospitalised	277	(58.9)	58	(12.3)	-	-	135	(28.7)	470	
Medical	163	(37.6)	26	(6.0)	-	-	244	(56.4)	433	
Non-Medical	23	(19.2)	8	(6.7)	-	-	89	(74.2)	120	
None	-	-	-	-	-	-	388	(100.0)	388	
Unknown	4	(36.4)	-	-	-	-	7	(63.6)	11	
Total Injuries	501	(34.1)	101	(6.9)	-	-	867	(59.0)	1,469	

Table 68. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, South West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	7	(2.5)	173	(7.3)	180	(6.8)	4,564	(22.2)	4,744	(20.4)
Head on	41	(14.4)	100	(4.2)	141	(5.3)	580	(2.8)	721	(3.1)
Sideswipe opp. dir.	5	(1.8)	41	(1.7)	46	(1.7)	318	(1.5)	364	(1.6)
Sideswipe same dir.	5	(1.8)	97	(4.1)	102	(3.9)	1,698	(8.2)	1,800	(7.7)
Right angle	39	(13.7)	365	(15.4)	404	(15.3)	3,992	(19.4)	4,396	(18.9)
Indirect Right Angle	10	(3.5)	132	(5.6)	142	(5.4)	1,123	(5.5)	1,265	(5.4)
Total Multi-Vehicle	107	(37.7)	908	(38.4)	1,015	(38.3)	12,275	(59.6)	13,290	(57.2)
Single Vehicle Crashes										
Hit pedestrian	30	(10.6)	166	(7.0)	196	(7.4)	214	(1.0)	410	(1.8)
Hit animal	1	(0.4)	41	(1.7)	42	(1.6)	960	(4.7)	1,002	(4.3)
Hit object										
<i>Pole/Post</i>	10	(3.5)	70	(3.0)	80	(3.0)	566	(2.7)	646	(2.8)
<i>Tree</i>	77	(27.1)	408	(17.3)	485	(18.3)	1,294	(6.3)	1,779	(7.7)
<i>Wall/Fence</i>	4	(1.4)	37	(1.6)	41	(1.5)	390	(1.9)	431	(1.9)
<i>Traffic Island</i>	3	(1.1)	21	(0.9)	24	(0.9)	119	(0.6)	143	(0.6)
<i>Kerb</i>	-	-	35	(1.5)	35	(1.3)	267	(1.3)	302	(1.3)
<i>Drainage Ditch</i>	4	(1.4)	42	(1.8)	46	(1.7)	390	(1.9)	436	(1.9)
<i>Embankment</i>	8	(2.8)	87	(3.7)	95	(3.6)	481	(2.3)	576	(2.5)
<i>Other object</i>	14	(4.9)	117	(5.0)	131	(4.9)	690	(3.4)	821	(3.5)
Total hit object	120	(42.3)	817	(34.6)	937	(35.4)	4,197	(20.4)	5,134	(22.1)
Non collision										
<i>Overturns</i>	16	(5.6)	280	(11.8)	296	(11.2)	1,242	(6.0)	1,538	(6.6)
<i>Falls from vehicle</i>	2	(0.7)	56	(2.4)	58	(2.2)	88	(0.4)	146	(0.6)
<i>Other non collision</i>	3	(1.1)	24	(1.0)	27	(1.0)	251	(1.2)	278	(1.2)
Total non collision	21	(7.4)	360	(15.2)	381	(14.4)	1,581	(7.7)	1,962	(8.4)
Total Single Vehicle	172	(60.6)	1,384	(58.6)	1,556	(58.8)	6,952	(33.8)	8,508	(36.6)
Other	5	(1.8)	71	(3.0)	76	(2.9)	1,369	(6.6)	1,445	(6.2)
Total Crashes	284	(1.2)	2,363	(10.2)	2,647	(11.4)	20,596	(88.6)	23,243	

Table 69. Crash severity by nature of crash, South West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.3 Gascoyne

For the Gascoyne region:

- Alcohol was present in 37% of all fatal crashes (Table 72);
- Speed was a factor in 28% of all fatal crashes (Table 73);
- Fatigue was a factor in 4% of all serious crashes (Table 73);
- Of all driver and passenger fatalities, 46% were not wearing seatbelts. Further, 17% of all motorcycle riders, motorcycle pillion passengers and bicycle riders who were seriously injured were not wearing helmets (Table 74); and
- The most common fatal crash nature type was “Overturn” crashes, which made up 56% of all fatal crashes (Table 75).

LGA	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Carnarvon	15	(60.0)	105	(64.0)	120	(63.5)	691	(63.5)	811	(63.5)
Shark Bay	5	(20.0)	25	(15.2)	30	(15.9)	187	(17.2)	217	(17.0)
Upper Gascoyne	4	(16.0)	2	(1.2)	6	(3.2)	20	(1.8)	26	(2.0)
Exmouth	1	(4.0)	32	(19.5)	33	(17.5)	189	(17.4)	222	(17.4)
Cape Range N.P.	-	-	-	-	-	-	1	(0.1)	1	(0.1)
Total Crashes	25	(2.0)	164	(12.8)	189	(14.8)	1,088	(85.2)	1,277	

Table 70. Crash severity by Local Government Area, Gascoyne region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Carnarvon	8,616	(58.3)	(63.5)
Exmouth	3,908	(26.4)	(17.4)
Shark Bay	1,943	(13.1)	(17.0)
Upper Gascoyne	309	(2.1)	(2.0)
Total	14,776		

Table 71. Population by Local Government Area, Gascoyne region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	5	(62.5)	32	(64.0)	37	(63.8)	96	(25.9)	133	(31.0)
< 0.05	-	-	2	(4.0)	2	(3.4)	4	(1.1)	6	(1.4)
0.05 - <0.079	1	(12.5)	2	(4.0)	3	(5.2)	6	(1.6)	9	(2.1)
0.08 - 0.149	1	(12.5)	3	(6.0)	4	(6.9)	8	(2.2)	12	(2.8)
0.15	1	(12.5)	2	(4.0)	3	(5.2)	8	(2.2)	11	(2.6)
Subtotal 0.05	3	(37.5)	7	(14.0)	10	(17.2)	22	(5.9)	32	(7.5)
Unknown	-	-	9	(18.0)	9	(15.5)	249	(67.1)	258	(60.1)
Total Crashes	8	(1.9)	50	(11.7)	58	(13.5)	371	(86.5)	429	

Table 72. Crash severity by highest recorded BAC in crash, Gascoyne region, 1 September 1996 to 31 December 1999.
(Source: Main Roads WA Traffic Accident System)

	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Time Period										
Alcohol related hours	5	(20.0)	20	(12.2)	25	(13.2)	110	(10.1)	135	(10.6)
Non-Alc related hours	6	(24.0)	54	(32.9)	60	(31.7)	378	(34.7)	438	(34.3)
Neutral/Unkn. hours	14	(56.0)	90	(54.9)	104	(55.0)	600	(55.1)	704	(55.1)
Speed A Factor										
Yes	7	(28.0)	23	(14.0)	30	(15.9)	66	(6.1)	96	(7.5)
No	15	(60.0)	110	(67.1)	125	(66.1)	429	(39.4)	554	(43.4)
Unknown	3	(12.0)	31	(18.9)	34	(18.0)	593	(54.5)	627	(49.1)
Fatigue A Factor										
Yes	1	(4.0)	7	(4.3)	8	(4.2)	8	(0.7)	16	(1.3)
No	24	(96.0)	157	(95.7)	181	(95.8)	1,076	(98.9)	1,257	(98.4)
Unknown	-	-	-	-	-	-	4	(0.4)	4	(0.3)
Total Crashes	25	(2.0)	164	(12.8)	189	(14.8)	1,088	(85.2)	1,277	

Table 73. Crash severity by time of crash and measures for speed and fatigue, Gascoyne region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n
	Worn		Not Worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	n
Seatbelt									
Fatality	7	(29.2)	11	(45.8)	1	(4.2)	5	(20.8)	24
Hospitalised	106	(48.0)	49	(22.2)	1	(0.5)	65	(29.4)	221
Medical	158	(56.6)	16	(5.7)	-	-	105	(37.6)	279
Non-Medical	50	(41.3)	5	(4.1)	-	-	66	(54.5)	121
None	-	-	-	-	-	-	1,362	(100.0)	1,362
Unknown	1	(50.0)	-	-	-	-	1	(50.0)	2
Total Injuries	322	(16.0)	81	(4.0)	2	(0.1)	1,604	(79.8)	2,009
Helmet									
Fatality	2	(100.0)	-	-	-	-	-	-	2
Hospitalised	12	(66.7)	3	(16.7)	-	-	3	(16.7)	18
Medical	10	(45.5)	5	(22.7)	-	-	7	(31.8)	22
Non-Medical	4	(50.0)	-	-	-	-	4	(50.0)	8
None	-	-	-	-	-	-	21	(100.0)	21
Unknown	-	-	-	-	-	-	1	(100.0)	1
Total Injuries	28	(38.9)	8	(11.1)	-	-	36	(50.0)	72

Table 74. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Gascoyne region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	-	-	-	-	-	-	92	(8.5)	92	(7.2)
Head on	2	(8.0)	4	(2.4)	6	(3.2)	38	(3.5)	44	(3.4)
Sideswipe opp. dir.	-	-	3	(1.8)	3	(1.6)	21	(1.9)	24	(1.9)
Sideswipe same dir.	1	(4.0)	2	(1.2)	3	(1.6)	99	(9.1)	102	(8.0)
Right angle	-	-	4	(2.4)	4	(2.1)	129	(11.9)	133	(10.4)
Indirect Right Angle	1	(4.0)	2	(1.2)	3	(1.6)	24	(2.2)	27	(2.1)
Total Multi-Vehicle	4	(16.0)	15	(9.1)	19	(10.1)	403	(37.0)	422	(33.0)
Single Vehicle Crashes										
Hit pedestrian	1	(4.0)	17	(10.4)	18	(9.5)	22	(2.0)	40	(3.1)
Hit animal	1	(4.0)	8	(4.9)	9	(4.8)	155	(14.2)	164	(12.8)
Hit object										
<i>Pole/Post</i>	<i>1</i>	<i>(4.0)</i>	<i>10</i>	<i>(6.1)</i>	<i>11</i>	<i>(5.8)</i>	<i>36</i>	<i>(3.3)</i>	<i>47</i>	<i>(3.7)</i>
<i>Tree</i>	-	-	5	(3.0)	5	(2.6)	25	(2.3)	30	(2.3)
<i>Wall/Fence</i>	-	-	-	-	-	-	24	(2.2)	24	(1.9)
<i>Traffic Island</i>	-	-	-	-	-	-	6	(0.6)	6	(0.5)
<i>Kerb</i>	-	-	2	(1.2)	2	(1.1)	24	(2.2)	26	(2.0)
<i>Drainage Ditch</i>	-	-	3	(1.8)	3	(1.6)	11	(1.0)	14	(1.1)
<i>Embankment</i>	<i>1</i>	<i>(4.0)</i>	<i>7</i>	<i>(4.3)</i>	<i>8</i>	<i>(4.2)</i>	<i>21</i>	<i>(1.9)</i>	<i>29</i>	<i>(2.3)</i>
<i>Other object</i>	-	-	15	(9.1)	15	(7.9)	58	(5.3)	73	(5.7)
Total hit object	2	(8.0)	42	(25.6)	44	(23.3)	205	(18.8)	249	(19.5)
Non collision										
<i>Overturns</i>	<i>14</i>	<i>(56.0)</i>	<i>71</i>	<i>(43.3)</i>	<i>85</i>	<i>(45.0)</i>	<i>202</i>	<i>(18.6)</i>	<i>287</i>	<i>(22.5)</i>
<i>Falls from vehicle</i>	2	(8.0)	5	(3.0)	7	(3.7)	6	(0.6)	13	(1.0)
<i>Other non collision</i>	-	-	5	(3.0)	5	(2.6)	19	(1.7)	24	(1.9)
Total non collision	16	(64.0)	81	(49.4)	97	(51.3)	227	(20.9)	324	(25.4)
Total Single Vehicle	20	(80.0)	148	(90.2)	168	(88.9)	609	(56.0)	777	(60.8)
Other	1	(4.0)	1	(0.6)	2	(1.1)	76	(7.0)	78	(6.1)
Total Crashes	25	(2.0)	164	(12.8)	189	(14.8)	1,088	(85.2)	1,277	

Table 75. Crash severity by nature of crash, Gascoyne region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.4 Mid West

For the Mid West region:

- Alcohol was present in 52% of all fatal crashes (Table 78);
- Speed was a factor in 31% of all fatal crashes (Table 79);
- Fatigue was a factor in less than 1% of all serious crashes (Table 79);
- Of all driver and passenger fatalities, 55% were not wearing seatbelts. Further, 17% of all motorcycle rider, motorcycle pillion passenger and bicycle rider fatalities were not wearing helmets (Table 80); and
- The most common fatal crash nature types were “Overturn” and “Hit Tree” crashes, which made up 38% and 11% of all fatal crashes respectively (Table 81).

LGA	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Carnamah	1	(1.2)	24	(3.3)	25	(3.1)	174	(2.8)	199	(2.9)
Geraldton	16	(19.0)	271	(37.0)	287	(35.2)	3,177	(52.0)	3,464	(50.0)
Greenough	13	(15.5)	71	(9.7)	84	(10.3)	504	(8.2)	588	(8.5)
Irwin	6	(7.1)	35	(4.8)	41	(5.0)	282	(4.6)	323	(4.7)
Mingenew	1	(1.2)	10	(1.4)	11	(1.3)	69	(1.1)	80	(1.2)
Morawa	1	(1.2)	19	(2.6)	20	(2.5)	73	(1.2)	93	(1.3)
Mullewa	-	-	20	(2.7)	20	(2.5)	125	(2.0)	145	(2.1)
Northampton	8	(9.5)	92	(12.6)	100	(12.3)	489	(8.0)	589	(8.5)
Perenjori	1	(1.2)	2	(0.3)	3	(0.4)	72	(1.2)	75	(1.1)
Three Springs	2	(2.4)	22	(3.0)	24	(2.9)	81	(1.3)	105	(1.5)
Chapman Valley	3	(3.6)	27	(3.7)	30	(3.7)	106	(1.7)	136	(2.0)
Coorow	3	(3.6)	20	(2.7)	23	(2.8)	163	(2.7)	186	(2.7)
Sandstone	2	(2.4)	6	(0.8)	8	(1.0)	49	(0.8)	57	(0.8)
Cue	3	(3.6)	11	(1.5)	14	(1.7)	129	(2.1)	143	(2.1)
Meekatharra	15	(17.9)	57	(7.8)	72	(8.8)	259	(4.2)	331	(4.8)
Mt Magnet	6	(7.1)	19	(2.6)	25	(3.1)	192	(3.1)	217	(3.1)
Murchison	-	-	4	(0.5)	4	(0.5)	9	(0.1)	13	(0.2)
Yalgoo	3	(3.6)	21	(2.9)	24	(2.9)	157	(2.6)	181	(2.6)
Kalbarri N.P.	-	-	1	(0.1)	1	(0.1)	2	(0.0)	3	(0.0)
Total Crashes	84	(1.2)	732	(10.6)	816	(11.8)	6,112	(88.2)	6,928	

Table 76. Crash severity by Local Government Area, Mid West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Carnamah	1,039	(2.1)	(2.9)
Chapman Valley	785	(1.6)	(2.0)
Coorow	1,395	(2.8)	(2.7)
Cue	731	(1.5)	(2.1)
Geraldton	19,816	(40.2)	(50.0)
Greenough	10,362	(21.0)	(8.5)
Irwin	2,453	(5.0)	(4.7)
Meekatharra	2,666	(5.4)	(4.8)
Mingenew	589	(1.2)	(1.2)
Morawa	1,058	(2.1)	(1.3)
Mt Magnet	833	(1.7)	(3.1)
Mullewa	1,192	(2.4)	(2.1)
Murchison	184	(0.4)	(0.2)
Northampton	3,787	(7.7)	(8.5)
Perenjori	684	(1.4)	(1.1)
Sandstone	295	(0.6)	(0.8)
Three Springs	806	(1.6)	(1.5)
Yalgoo	577	(1.2)	(2.6)
Total	49,252		

Table 77. Population by Local Government Area, Mid West region, 1996.
(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other		n	(%)
	n	(%)	n	(%)	n	(%)	n	(%)		
Nil	10	(40.0)	106	(47.5)	116	(46.8)	439	(21.8)	555	(24.6)
< 0.05	2	(8.0)	8	(3.6)	10	(4.0)	19	(0.9)	29	(1.3)
0.05 - <0.079	1	(4.0)	5	(2.2)	6	(2.4)	14	(0.7)	20	(0.9)
0.08 - 0.149	2	(8.0)	9	(4.0)	11	(4.4)	36	(1.8)	47	(2.1)
0.15	8	(32.0)	13	(5.8)	21	(8.5)	37	(1.8)	58	(2.5)
Subtotal 0.05	11	(44.0)	27	(12.1)	38	(15.3)	87	(4.3)	125	(5.5)
Unknown	2	(8.0)	82	(36.8)	84	(33.9)	1,465	(72.9)	1,549	(68.6)
Total Crashes	25	(1.1)	223	(9.9)	248	(11.0)	2,010	(89.0)	2,258	

Table 78. Crash severity by highest recorded BAC in crash, Mid West region, 1 September 1996 to 31 December 1999.
(Source: Main Roads WA Traffic Accident System)

	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Time Period										
Alcohol related hours	16	(19.0)	96	(13.1)	112	(13.7)	597	(9.8)	709	(10.2)
Non-Alc related hours	18	(21.4)	215	(29.4)	233	(28.6)	2,238	(36.6)	2,471	(35.7)
Neutral/Unkn. hours	50	(59.5)	421	(57.5)	471	(57.7)	3,277	(53.6)	3,748	(54.1)
Speed A Factor										
Yes	26	(31.0)	121	(16.5)	147	(18.0)	333	(5.4)	480	(6.9)
No	48	(57.1)	463	(63.3)	511	(62.6)	2,467	(40.4)	2,978	(43.0)
Unknown	10	(11.9)	148	(20.2)	158	(19.4)	3,312	(54.2)	3,470	(50.1)
Fatigue A Factor										
Yes	-	-	6	(0.8)	6	(0.7)	46	(0.8)	52	(0.8)
No	84		726	(99.2)	810	(99.3)	6,039	(98.8)	6,849	(98.9)
Unknown	-	-	-	-	-	-	27	(0.4)	27	(0.4)
Total Crashes	84	(1.2)	732	(10.6)	816	(11.8)	6,112	(88.2)	6,928	

Table 79. Crash severity by time of crash and measures for speed and fatigue, Mid West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total	
	Worn		Not Worn		Failed		Unknown			
	n	(%)	n	(%)	n	(%)	n	(%)	n	
Seatbelt										
Fatality	22	(30.1)	40	(54.8)	1	(1.4)	10	(13.7)	73	
Hospitalised	387	(47.4)	119	(14.6)	1	(0.1)	309	(37.9)	816	
Medical	635	(53.9)	63	(5.3)	1	(0.1)	480	(40.7)	1,179	
Non-Medical	273	(54.7)	16	(3.2)	-	-	210	(42.1)	499	
None	-	-	-	-	-	-	8,521	(100.0)	8,521	
Unknown	7	(29.2)	1	(4.2)	-	-	16	(66.7)	24	
Total Injuries	1,324	(11.9)	239	(2.2)	3	-	9,546	(85.9)	11,112	
Helmet										
Fatality	10	(83.3)	2	(16.7)	-	-	-	-	12	
Hospitalised	61	(58.7)	16	(15.4)	1	(1.0)	26	(25.0)	104	
Medical	43	(41.7)	5	(4.9)	-	-	55	(53.4)	103	
Non-Medical	10	(31.3)	1	(3.1)	-	-	21	(65.6)	32	
None	-	-	-	-	-	-	100	(100.0)	100	
Unknown	-	-	-	-	-	-	3	(100.0)	3	
Total Injuries	124	(35.0)	24	(6.8)	1	(0.3)	205	(57.9)	354	

Table 80. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Mid West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	4	(4.8)	37	(5.1)	41	(5.0)	994	(16.3)	1,035	(14.9)
Head on	4	(4.8)	20	(2.7)	24	(2.9)	113	(1.8)	137	(2.0)
Sideswipe opp. dir.	-	-	9	(1.2)	9	(1.1)	95	(1.6)	104	(1.5)
Sideswipe same dir.	4	(4.8)	20	(2.7)	24	(2.9)	481	(7.9)	505	(7.3)
Right angle	2	(2.4)	76	(10.4)	78	(9.6)	1,117	(18.3)	1,195	(17.2)
Indirect Right Angle	2	(2.4)	30	(4.1)	32	(3.9)	290	(4.7)	322	(4.6)
Total Multi-Vehicle	16	(19.0)	192	(26.2)	208	(25.5)	3,090	(50.6)	3,298	(47.6)
Single Vehicle Crashes										
Hit pedestrian	6	(7.1)	74	(10.1)	80	(9.8)	73	(1.2)	153	(2.2)
Hit animal	-	-	20	(2.7)	20	(2.5)	491	(8.0)	511	(7.4)
Hit object										
<i>Pole/Post</i>	2	(2.4)	23	(3.1)	25	(3.1)	168	(2.7)	193	(2.8)
<i>Tree</i>	9	(10.7)	54	(7.4)	63	(7.7)	279	(4.6)	342	(4.9)
<i>Wall/Fence</i>	2	(2.4)	9	(1.2)	11	(1.3)	159	(2.6)	170	(2.5)
<i>Traffic Island</i>	2	(2.4)	2	(0.3)	4	(0.5)	34	(0.6)	38	(0.5)
<i>Kerb</i>	1	(1.2)	14	(1.9)	15	(1.8)	99	(1.6)	114	(1.6)
<i>Drainage Ditch</i>	-	-	9	(1.2)	9	(1.1)	74	(1.2)	83	(1.2)
<i>Embankment</i>	5	(6.0)	27	(3.7)	32	(3.9)	175	(2.9)	207	(3.0)
<i>Other object</i>	2	(2.4)	41	(5.6)	43	(5.3)	243	(4.0)	286	(4.1)
Total hit object	23	(27.4)	179	(24.5)	202	(24.8)	1,231	(20.1)	1,433	(20.7)
Non collision										
<i>Overturns</i>	32	(38.1)	212	(29.0)	244	(29.9)	739	(12.1)	983	(14.2)
<i>Falls from vehicle</i>	2	(2.4)	18	(2.5)	20	(2.5)	20	(0.3)	40	(0.6)
<i>Other non collision</i>	-	-	13	(1.8)	13	(1.6)	112	(1.8)	125	(1.8)
Total non collision	34	(40.5)	243	(33.2)	277	(33.9)	871	(14.3)	1,148	(16.6)
Total Single Vehicle	63	(75.0)	516	(70.5)	579	(71.0)	2,666	(43.6)	3,245	(46.8)
Other	5	(6.0)	24	(3.3)	29	(3.6)	356	(5.8)	385	(5.6)
Total Crashes	84	(1.2)	732	(10.6)	816	(11.8)	6,112	(88.2)	6,928	

Table 81. Crash severity by nature of crash, Mid West region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.5 Goldfields

For the Goldfields region:

- Alcohol was present in 39% of all fatal crashes (Table 84);
- Speed was a factor in 38% of all fatal crashes (Table 85);
- Fatigue was a factor in 2% of all serious crashes (Table 85);
- Of all driver and passenger fatalities, 51% were not wearing seatbelts. Further, 35% of all motorcycle rider and motorcycle pillion and bicycle rider fatalities were not wearing helmets (Table 86); and
- The most common fatal crash nature types were “Overturns” and “Head On” crashes, which made up 24% and 16% of all fatal crashes respectively (Table 87).

LGA	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other		n	(%)
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Coolgardie	17	(12.2)	111	(12.2)	128	(12.2)	584	(6.9)	712	(7.4)
Dundas	16	(11.5)	93	(10.3)	109	(10.4)	458	(5.4)	567	(5.9)
Esperance	15	(10.8)	132	(14.6)	147	(14.1)	1,262	(14.8)	1,409	(14.7)
Kalgoorlie/Boulder	55	(39.6)	399	(44.0)	454	(43.4)	5,547	(65.1)	6,001	(62.7)
Laverton	7	(5.0)	50	(5.5)	57	(5.4)	150	(1.8)	207	(2.2)
Leonora	11	(7.9)	60	(6.6)	71	(6.8)	300	(3.5)	371	(3.9)
Menzies	10	(7.2)	28	(3.1)	38	(3.6)	109	(1.3)	147	(1.5)
Ngaanyatjarraku	4	(2.9)	3	(0.3)	7	(0.7)	21	(0.2)	28	(0.3)
Wiluna	4	(2.9)	30	(3.3)	34	(3.3)	91	(1.1)	125	(1.3)
Cape Arid N.P.	-	-	-	-	-	-	1	(0.0)	1	(0.0)
Cape Le Grand N.P.	-	-	1	(0.1)	1	(0.1)	1	(0.0)	2	(0.0)
Total Crashes	139	(1.5)	907	(9.5)	1,046	(10.9)	8,524	(89.1)	9,570	

Table 82. Crash severity by Local Government Area, Goldfields region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Coolgardie	5,652	(9.7)	(7.4)
Dundas	1,888	(3.3)	(5.9)
Esperance	11,837	(20.4)	(14.7)
Kalgoorlie/Boulder	29,683	(51.2)	(62.7)
Laverton	1,569	(2.7)	(2.2)
Leonora	3,511	(6.1)	(3.9)
Menzies	521	(0.9)	(1.5)
Ngaanyatjarraku	1,448	(2.5)	(0.3)
Wiluna	1,879	(3.2)	(1.3)
Total	57,988		

Table 83. Population by Local Government Area, Goldfields region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	29	(51.8)	139	(48.3)	168	(48.8)	519	(17.7)	687	(21.0)
< 0.05	3	(5.4)	8	(2.8)	11	(3.2)	21	(0.7)	32	(1.0)
0.05 - <0.079	1	(1.8)	8	(2.8)	9	(2.6)	14	(0.5)	23	(0.7)
0.08 - 0.149	3	(5.4)	29	(10.1)	32	(9.3)	57	(1.9)	89	(2.7)
0.15	15	(26.8)	21	(7.3)	36	(10.5)	78	(2.6)	114	(3.4)
Subtotal 0.05	19	(33.9)	58	(20.1)	77	(22.4)	149	(5.1)	226	(6.9)
Unknown	5	(8.9)	83	(28.8)	88	(25.6)	2,244	(76.5)	2,332	(71.2)
Total Crashes	56	(1.7)	288	(8.8)	344	(10.5)	2,933	(89.5)	3,277	

Table 84. Crash severity by highest recorded BAC in crash, Goldfields region, 1 September 1996 to 31 December 1999.
(Source: Main Roads WA Traffic Accident System)

Time Period	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Alcohol related hours	32	(23.0)	136	(15.0)	168	(16.1)	690	(8.1)	858	(9.0)
Non-Alc related hours	29	(20.9)	264	(29.1)	293	(28.0)	3,148	(36.9)	3,441	(36.0)
Neutral/Unkn. hours	78	(56.1)	507	(55.9)	585	(55.9)	4,686	(55.0)	5,271	(55.1)
Speed A Factor										
Yes	53	(38.1)	155	(17.1)	208	(19.9)	379	(4.4)	587	(6.1)
No	67	(48.2)	573	(63.2)	640	(61.2)	3,473	(40.7)	4,113	(43.0)
Unknown	19	(13.7)	179	(19.7)	198	(18.9)	4,672	(54.8)	4,870	(50.9)
Fatigue A Factor										
Yes	-	-	18	(2.0)	18	(1.7)	45	(0.5)	63	(0.7)
No	136	(97.8)	887	(97.8)	1,023	(97.8)	8,376	(98.3)	9,399	(98.2)
Unknown	3	(2.2)	2	(0.2)	5	(0.5)	103	(1.2)	108	(1.1)
Total Crashes	139	(1.5)	907	(9.5)	1,046	(10.9)	8,524	(89.1)	9,570	

Table 85. Crash severity by time of crash and measures for speed and fatigue, Goldfields region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n
	Worn		Not Worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Seatbelt									
Fatality	34	(28.3)	61	(50.8)	-	-	25	(20.8)	120
Hospitalised	440	(46.2)	174	(18.3)	2	(0.2)	336	(35.3)	952
Medical	764	(55.4)	74	(5.4)	1	(0.1)	540	(39.2)	1,379
Non-Medical	263	(45.7)	21	(3.6)	-	-	292	(50.7)	576
None	-	-	-	-	-	-	12,799	(100.0)	12,799
Unknown	19	(35.2)	4	(7.4)	-	-	31	(57.4)	54
Total Injuries	1,520	(9.6)	334	(2.1)	3	(0.0)	14,023	(88.3)	15,880
Helmet									
Fatality	12	(60.0)	7	(35.0)	1	(5.0)	-	-	20
Hospitalised	99	(60.4)	25	(15.2)	-	-	40	(24.4)	164
Medical	84	(45.2)	18	(9.7)	-	-	84	(45.2)	186
Non-Medical	14	(28.0)	1	(2.0)	-	-	35	(70.0)	50
None	-	-	-	-	-	-	218	(100.0)	218
Unknown	1	(25.0)	1	(25.0)	-	-	2	(50.0)	4
Total Injuries	210	(32.7)	52	(8.1)	1	(0.2)	379	(59.0)	642

Table 86. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Goldfields region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	5	(3.6)	45	(5.0)	50	(4.8)	1,272	(14.9)	1,322	(13.8)
Head on	22	(15.8)	26	(2.9)	48	(4.6)	171	(2.0)	219	(2.3)
Sideswipe opp. dir.	2	(1.4)	12	(1.3)	14	(1.3)	242	(2.8)	256	(2.7)
Sideswipe same dir.	3	(2.2)	32	(3.5)	35	(3.3)	916	(10.7)	951	(9.9)
Right angle	9	(6.5)	110	(12.1)	119	(11.4)	1,668	(19.6)	1,787	(18.7)
Indirect Right Angle	2	(1.4)	39	(4.3)	41	(3.9)	589	(6.9)	630	(6.6)
Total Multi-Vehicle	43	(30.9)	264	(29.1)	307	(29.3)	4,858	(57.0)	5,165	(54.0)
Single Vehicle Crashes										
Hit pedestrian	12	(8.6)	106	(11.7)	118	(11.3)	144	(1.7)	262	(2.7)
Hit animal	1	(0.7)	17	(1.9)	18	(1.7)	408	(4.8)	426	(4.5)
Hit object										
<i>Pole/Post</i>	4	(2.9)	29	(3.2)	33	(3.2)	188	(2.2)	221	(2.3)
<i>Tree</i>	16	(11.5)	53	(5.8)	69	(6.6)	289	(3.4)	358	(3.7)
<i>Wall/Fence</i>	1	(0.7)	6	(0.7)	7	(0.7)	119	(1.4)	126	(1.3)
<i>Traffic Island</i>	3	(2.2)	11	(1.2)	14	(1.3)	50	(0.6)	64	(0.7)
<i>Kerb</i>	4	(2.9)	15	(1.7)	19	(1.8)	118	(1.4)	137	(1.4)
<i>Drainage Ditch</i>	2	(1.4)	16	(1.8)	18	(1.7)	77	(0.9)	95	(1.0)
<i>Embankment</i>	4	(2.9)	23	(2.5)	27	(2.6)	140	(1.6)	167	(1.7)
<i>Other object</i>	4	(2.9)	50	(5.5)	54	(5.2)	248	(2.9)	302	(3.2)
Total hit object	38	(27.3)	203	(22.4)	241	(23.0)	1,229	(14.4)	1,470	(15.4)
Non collision										
<i>Overturns</i>	34	(24.5)	238	(26.2)	272	(26.0)	787	(9.2)	1,059	(11.1)
<i>Falls from vehicle</i>	4	(2.9)	30	(3.3)	34	(3.3)	34	(0.4)	68	(0.7)
<i>Other non collision</i>	-	-	17	(1.9)	17	(1.6)	113	(1.3)	130	(1.4)
Total non collision	38	(27.3)	285	(31.4)	323	(30.9)	934	(11.0)	1,257	(13.1)
Total Single Vehicle	89	(64.0)	611	(67.4)	700	(66.9)	2,715	(31.9)	3,415	(35.7)
Other	7	(5.0)	32	(3.5)	39	(3.7)	951	(11.2)	990	(10.3)
Total Crashes	139	(1.5)	907	(9.5)	1,046	(10.9)	8,524	(89.1)	9,570	

Table 87. Crash severity by nature of crash, Goldfields region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.6 Kimberley

For the Kimberley region:

- Alcohol was present in 51% of all fatal crashes (Table 90);
- Speed was a factor in 30% of all fatal crashes (Table 91);
- Fatigue was a factor in 2% of all serious crashes (Table 91);
- Of all driver and passenger fatalities, 63% were not wearing seatbelts. Further, 3% of all motorcycle rider, motorcycle pillion and bicycle rider fatalities were not wearing helmets (Table 92); and
- The most common fatal crash nature types were “Overturns” and “Hit Pedestrian” crashes, which made up 39% and 28% of all fatal crashes respectively (Table 93).

LGA	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Broome	17	(17.5)	117	(27.9)	134	(25.9)	873	(43.2)	1,007	(39.7)
Halls Creek	22	(22.7)	63	(15.0)	85	(16.4)	221	(10.9)	306	(12.1)
Derby-West Kimberley	32	(33.0)	110	(26.2)	142	(27.5)	417	(20.6)	559	(22.0)
Wyndham-East Kimberley	26	(26.8)	130	(31.0)	156	(30.2)	509	(25.2)	665	(26.2)
Total Crashes	97	(3.8)	420	(16.6)	517	(20.4)	2,020	(79.6)	2,537	

Table 88. Crash severity by Local Government Area, Kimberley region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Broome	13,717	(41.5)	(39.7)
Derby-West Kimberley	7,249	(21.9)	(22.0)
Halls Creek	3,302	(10.0)	(12.1)
Wyndham-East Kimberley	8,760	(26.5)	(26.2)
Total	33,028		

Table 89. Population by Local Government Area, Kimberley region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	15	(36.6)	57	(42.2)	72	(40.9)	140	(17.3)	212	(21.5)
< 0.05	-	-	4	(3.0)	4	(2.3)	8	(1.0)	12	(1.2)
0.05 - <0.079	-	-	3	(2.2)	3	(1.7)	3	(0.4)	6	(0.6)
0.08 - 0.149	1	(2.4)	10	(7.4)	11	(6.3)	23	(2.8)	34	(3.5)
0.15	20	(48.8)	12	(8.9)	32	(18.1)	22	(2.7)	54	(5.5)
Subtotal 0.05	21	(51.2)	25	(18.5)	46	(26.1)	48	(5.9)	94	(9.6)
Unknown	5	(12.2)	49	(36.3)	54	(30.7)	612	(75.7)	666	(67.7)
Total Crashes	41	(4.2)	135	(13.7)	176	(17.9)	808	(82.1)	984	

Table 90. Crash severity by highest recorded BAC in crash, Kimberley region, 1 September 1996 to 31 December 1999.
(Source: Main Roads WA Traffic Accident System)

Time Period	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Alcohol related hours	19	(19.6)	57	(13.6)	76	(14.7)	153	(7.6)	229	(9.0)
Non-Alc related hours	14	(14.4)	103	(24.5)	117	(22.6)	739	(36.6)	856	(33.7)
Neutral/Unkn. hours	64	(66.0)	260	(61.9)	324	(62.7)	1,128	(55.8)	1,452	(57.2)
Speed A Factor										
Yes	29	(29.9)	69	(16.4)	98	(19.0)	108	(5.3)	206	(8.1)
No	60	(61.9)	257	(61.2)	317	(61.3)	781	(38.7)	1,098	(43.3)
Unknown	8	(8.2)	94	(22.4)	102	(19.7)	1,131	(56.0)	1,233	(48.6)
Fatigue A Factor										
Yes	1	(1.0)	10	(2.4)	11	(2.1)	12	(0.6)	23	(0.9)
No	96	(99.0)	409	(97.4)	505	(97.7)	1,995	(98.8)	2,500	(98.5)
Unknown	-	-	1	(0.2)	1	(0.2)	13	(0.6)	14	(0.6)
Total Crashes	97	(3.8)	420	(16.6)	517	(20.4)	2,020	(79.6)	2,537	

Table 91. Crash severity by time of crash and measures for speed and fatigue, Kimberley region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n
	Worn		Not Worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Seatbelt									
Fatality	19	(22.9)	52	(62.7)	-	-	12	(14.5)	83
Hospitalised	139	(33.1)	119	(28.3)	2	(0.5)	160	(38.1)	420
Medical	196	(38.9)	57	(11.3)	-	-	251	(49.8)	504
Non-Medical	79	(51.0)	9	(5.8)	-	-	67	(43.2)	155
None	-	-	-	-	-	-	2,832	(100.0)	2,832
Unknown	1	(10.0)	-	-	-	-	9	(90.0)	10
Total Injuries	434	(10.8)	237	(5.9)	2	(0.0)	3,331	(83.2)	4,004
Helmet									
Fatality	40	(57.1)	2	(2.9)	-	-	28	(40.0)	70
Hospitalised	14	(24.6)	2	(3.5)	-	-	41	(71.9)	57
Medical	2	(16.7)	1	(8.3)	-	-	9	(75.0)	12
Non-Medical	-	-	-	-	-	-	30	(100.0)	30
None	-	-	-	-	-	-	1	(100.0)	1
Total Injuries	56	(32.9)	5	(2.9)	-	-	109	(64.1)	170

Table 92. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Kimberley region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	-	-	12	(2.9)	12	(2.3)	236	(11.7)	248	(9.8)
Head on	4	(4.1)	10	(2.4)	14	(2.7)	70	(3.5)	84	(3.3)
Sideswipe opp. dir.	-	-	3	(0.7)	3	(0.6)	36	(1.8)	39	(1.5)
Sideswipe same dir.	-	-	8	(1.9)	8	(1.5)	116	(5.7)	124	(4.9)
Right angle	1	(1.0)	24	(5.7)	25	(4.8)	304	(15.0)	329	(13.0)
Indirect Right Angle	1	(1.0)	9	(2.1)	10	(1.9)	48	(2.4)	58	(2.3)
Total Multi-Vehicle	6	(6.2)	66	(15.7)	72	(13.9)	810	(40.1)	882	(34.8)
Single Vehicle Crashes										
Hit pedestrian	27	(27.8)	92	(21.9)	119	(23.0)	83	(4.1)	202	(8.0)
Hit animal	1	(1.0)	15	(3.6)	16	(3.1)	184	(9.1)	200	(7.9)
Hit object										
<i>Pole/Post</i>	4	(4.1)	11	(2.6)	15	(2.9)	42	(2.1)	57	(2.2)
<i>Tree</i>	3	(3.1)	18	(4.3)	21	(4.1)	61	(3.0)	82	(3.2)
<i>Wall/Fence</i>	-	-	3	(0.7)	3	(0.6)	18	(0.9)	21	(0.8)
<i>Traffic Island</i>	-	-	1	(0.2)	1	(0.2)	3	(0.1)	4	(0.2)
<i>Kerb</i>	-	-	4	(1.0)	4	(0.8)	20	(1.0)	24	(0.9)
<i>Drainage Ditch</i>	1	(1.0)	2	(0.5)	3	(0.6)	24	(1.2)	27	(1.1)
<i>Embankment</i>	5	(5.2)	14	(3.3)	19	(3.7)	50	(2.5)	69	(2.7)
<i>Other object</i>	4	(4.1)	19	(4.5)	23	(4.4)	86	(4.3)	109	(4.3)
Total hit object	17	(17.5)	72	(17.1)	89	(17.2)	304	(15.0)	393	(15.5)
Non collision										
<i>Overturns</i>	38	(39.2)	133	(31.7)	171	(33.1)	396	(19.6)	567	(22.3)
<i>Falls from vehicle</i>	4	(4.1)	18	(4.3)	22	(4.3)	11	(0.5)	33	(1.3)
<i>Other non collision</i>	1	(1.0)	7	(1.7)	8	(1.5)	38	(1.9)	46	(1.8)
Total non collision	43	(44.3)	158	(37.6)	201	(38.9)	445	(22.0)	646	(25.5)
Total Single Vehicle	88	(90.7)	337	(80.2)	425	(82.2)	1,016	(50.3)	1,441	(56.8)
Other	3	(3.1)	17	(4.0)	20	(3.9)	194	(9.6)	214	(8.4)
Total Crashes	97	(3.8)	420	(16.6)	517	(20.4)	2,020	(79.6)	2,537	

Table 93. Crash severity by nature of crash, Kimberley region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.7 Metropolitan

For the Metropolitan region:

- Alcohol was present in 32% of all fatal crashes (Table 96);
- Speed was a factor in 36% of all fatal crashes (Table 97);
- Fatigue was a factor in less than 1% of all serious crashes (Table 97);
- Of all driver and passenger fatalities, 19% were not wearing seatbelts. Further, 20% of all motorcycle rider, motorcycle pillion and bicycle rider fatalities were not wearing helmets (Table 98); and
- The most common fatal crash nature types were “Hit Pedestrian” and “Right Angle” crashes, which made up 24% and 18% of all fatal crashes respectively (Table 99).

LGA	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Armadale	53	(6.2)	463	(3.5)	516	(3.6)	7,138	(2.5)	7,654	(2.6)
Kalamunda	43	(5.1)	417	(3.1)	460	(3.2)	5,825	(2.1)	6,285	(2.1)
Cockburn	48	(5.6)	520	(3.9)	568	(4.0)	9,390	(3.3)	9,958	(3.3)
Gosnells	43	(5.1)	678	(5.1)	721	(5.1)	13,542	(4.8)	14,263	(4.8)
Kwinana	27	(3.2)	252	(1.9)	279	(2.0)	3,390	(1.2)	3,669	(1.2)
Mundaring	36	(4.2)	305	(2.3)	341	(2.4)	3,881	(1.4)	4,222	(1.4)
Rockingham	46	(5.4)	504	(3.8)	550	(3.9)	7,391	(2.6)	7,941	(2.7)
Serpentine-Jarrahdale	28	(3.3)	172	(1.3)	200	(1.4)	1,156	(0.4)	1,356	(0.5)
Swan	66	(7.8)	711	(5.3)	777	(5.5)	12,697	(4.5)	13,474	(4.5)
Wanneroo	49	(5.8)	586	(4.4)	635	(4.5)	9,311	(3.3)	9,946	(3.3)
Bassendean	11	(1.3)	173	(1.3)	184	(1.3)	2,717	(1.0)	2,901	(1.0)
Bayswater	27	(3.2)	579	(4.3)	606	(4.3)	12,844	(4.5)	13,450	(4.5)
Belmont	19	(2.2)	395	(2.9)	414	(2.9)	9,464	(3.3)	9,878	(3.3)
Canning	44	(5.2)	689	(5.1)	733	(5.1)	18,475	(6.5)	19,208	(6.4)
Claremont	11	(1.3)	165	(1.2)	176	(1.2)	3,674	(1.3)	3,850	(1.3)
Cottesloe	6	(0.7)	85	(0.6)	91	(0.6)	2,093	(0.7)	2,184	(0.7)
East Fremantle	4	(0.5)	43	(0.3)	47	(0.3)	1,496	(0.5)	1,543	(0.5)
Fremantle	19	(2.2)	424	(3.2)	443	(3.1)	10,724	(3.8)	11,167	(3.7)
Melville	37	(4.3)	540	(4.0)	577	(4.0)	15,705	(5.5)	16,282	(5.5)
Mosman Park	3	(0.4)	50	(0.4)	53	(0.4)	972	(0.3)	1,025	(0.3)
Nedlands	3	(0.4)	206	(1.5)	209	(1.5)	4,123	(1.5)	4,332	(1.5)
Peppermint Grove	2	(0.2)	36	(0.3)	38	(0.3)	746	(0.3)	784	(0.3)
Perth City	27	(3.2)	1,096	(8.2)	1,123	(7.9)	26,702	(9.4)	27,825	(9.3)
Stirling	72	(8.5)	1,723	(12.9)	1,795	(12.6)	40,013	(14.1)	41,808	(14.0)
South Perth	33	(3.9)	408	(3.0)	441	(3.1)	11,675	(4.1)	12,116	(4.1)
Subiaco	8	(0.9)	207	(1.5)	215	(1.5)	6,197	(2.2)	6,412	(2.2)
Cambridge	18	(2.1)	343	(2.6)	361	(2.5)	5,966	(2.1)	6,327	(2.1)
Victoria Park	18	(2.1)	412	(3.1)	430	(3.0)	10,341	(3.6)	10,771	(3.6)
Vincent	18	(2.1)	436	(3.3)	454	(3.2)	10,854	(3.8)	11,308	(3.8)
Joondalup	30	(3.5)	765	(5.7)	795	(5.6)	14,933	(5.3)	15,728	(5.3)
King's Park	1	(0.1)	5	(0.0)	6	(0.0)	29	(0.0)	35	(0.0)
Rottnest Island	1	(0.1)	1	(0.0)	2	(0.0)	1	(0.0)	3	(0.0)
John Forrest N.P.	-	-	-	-	-	-	1	(0.0)	1	(0.0)
Yanchep N.P.	-	-	1	(0.0)	1	(0.0)	2	(0.0)	3	(0.0)
Unknown	-	-	10	(0.1)	10	(0.1)	177	(0.1)	187	(0.1)
Total Crashes	851	(0.3)	13,400	(4.5)	14,251	(4.8)	283,645	(95.2)	297,896	

Table 94. Crash severity by Local Government Area, Perth Metropolitan region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Armadale	49,703	(4.0)	(2.6)
Bassendean	13,230	(1.1)	(1.0)
Bayswater	43,756	(3.5)	(4.5)
Belmont	26,826	(2.2)	(3.3)
Cambridge	22,904	(1.8)	(2.1)
Canning	68,374	(5.5)	(6.4)
Claremont	8,805	(0.7)	(1.3)
Cockburn	57,335	(4.6)	(3.3)
Cottesloe	7,100	(0.6)	(0.7)
East Fremantle	6,245	(0.5)	(0.5)
Fremantle	24,276	(2.0)	(3.7)
Gosnells	73,705	(5.9)	(4.8)
Kalamunda	46,358	(3.7)	(2.1)
Kwinana	19,186	(1.5)	(1.2)
Melville	89,238	(7.2)	(5.5)
Mosman Park	7,420	(0.6)	(0.3)
Mundaring	31,613	(2.5)	(1.4)
Nedlands	20,876	(1.7)	(1.5)
Peppermint Grove	1,628	(0.1)	(0.3)
Perth City	10,095	(0.8)	(9.3)
Rockingham	58,167	(4.7)	(2.7)
Serpentine-Jarrahdale	9,783	(0.8)	(0.5)
South Perth	35,376	(2.8)	(4.1)
Stirling	174,088	(14.0)	(14.0)
Subiaco	15,076	(1.2)	(2.2)
Swan	69,112	(5.6)	(4.5)
Victoria Park	26,405	(2.1)	(3.6)
Vincent	24,721	(2.0)	(3.8)
Wanneroo/Joondalup	202,919	(16.3)	(8.6)
Total	1,244,320		

Table 95. Population by Local Government Area, Perth Metropolitan region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	175	(61.6)	2,958	(63.6)	3,133	(63.5)	10,535	(10.6)	13,668	(13.2)
< 0.05	12	(4.2)	177	(3.8)	189	(3.8)	616	(0.6)	805	(0.8)
0.05 - <0.079	5	(1.8)	77	(1.7)	82	(1.7)	398	(0.4)	480	(0.5)
0.08 - 0.149	29	(10.2)	207	(4.5)	236	(4.8)	1,149	(1.2)	1,385	(1.3)
0.15	46	(16.2)	158	(3.4)	204	(4.1)	691	(0.7)	895	(0.9)
Subtotal 0.05	80	(28.2)	442	(9.5)	522	(10.6)	2238	(2.3)	2760	(2.7)
Unknown	17	(6.0)	1,071	(23.0)	1,088	(22.1)	85,601	(86.5)	86,689	(83.4)
Total Crashes	284	(0.3)	4,648	(4.5)	4,932	(4.7)	98,990	(95.3)	103,922	

Table 96. Crash severity by highest recorded BAC in crash, Perth Metropolitan region, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

	Crash Severity								Total n (%)	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)		
Time Period										
Alcohol related hours	172	(20.2)	1,695	(12.6)	1,867	(13.1)	16,597	(5.9)	18,464	(6.2)
Non-Alc related hours	207	(24.3)	4,186	(31.2)	4,393	(30.8)	113,942	(40.2)	118,335	(39.7)
Neutral/Unkn. hours	472	(55.5)	7,519	(56.1)	7,991	(56.1)	153,106	(54.0)	161,097	(54.1)
Speed A Factor										
Yes	303	(35.6)	2,025	(15.1)	2,328	(16.3)	8,417	(3.0)	10,745	(3.6)
No	472	(55.5)	8,847	(66.0)	9,319	(65.4)	93,348	(32.9)	102,667	(34.5)
Unknown	76	(8.9)	2,528	(18.9)	2,604	(18.3)	181,880	(64.1)	184,484	(61.9)
Fatigue A Factor										
Yes	6	(0.7)	67	(0.5)	73	(0.5)	451	(0.2)	524	(0.2)
No	845	(99.3)	13,277	(99.1)	14,122	(99.1)	280,940	(99.0)	295,062	(99.0)
Unknown	-	-	56	(0.4)	56	(0.4)	2,254	(0.8)	2,310	(0.8)
Total Crashes	851	(0.3)	13,400	(4.5)	14,251	(4.8)	283,645	(95.2)	297,896	

Table 97. Crash severity by time of crash and measures for speed and fatigue, Perth Metropolitan region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n
	Worn		Not Worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Seatbelt									
Fatality	303	(58.4)	98	(18.9)	2	(0.4)	116	(22.4)	519
Hospitalised	7,258	(63.1)	613	(5.3)	17	(0.1)	3,619	(31.5)	11,507
Medical	27,162	(42.2)	658	(1.0)	15	(0.0)	36,525	(56.8)	64,360
Non-Medical	7,299	(38.6)	140	(0.7)	-	-	11,452	(60.6)	18,891
None	-	-	-	-	-	-	477,241	(100.0)	477,241
Unknown	728	(30.3)	31	(1.3)	-	-	1,645	(68.4)	2,404
Total Injuries	42,750	(7.4)	1,540	(0.3)	34	(0.0)	530,598	(92.3)	574,922
Helmet									
Fatality	139	(75.5)	37	(20.1)	1	(0.5)	7	(3.8)	184
Hospitalised	1,754	(57.9)	432	(14.3)	2	(0.1)	841	(27.8)	3,029
Medical	1,910	(34.9)	370	(6.8)	1	(0.0)	3,192	(58.3)	5,473
Non-Medical	256	(18.2)	56	(4.0)	1	(0.1)	1,091	(77.7)	1,404
None	-	-	-	-	-	-	5,392	(100.0)	5,392
Unknown	53	(29.3)	5	(2.8)	-	-	123	(68.0)	181
Total Injuries	4,112	(26.3)	900	(5.7)	5	(0.0)	10,646	(68.0)	15,663

Table 98. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Perth Metropolitan region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	38	(4.5)	1,891	(14.1)	1,929	(13.5)	114,144	(40.2)	116,073	(39.0)
Head on	103	(12.1)	424	(3.2)	527	(3.7)	4,422	(1.6)	4,949	(1.7)
Sideswipe opp. dir.	14	(1.6)	139	(1.0)	153	(1.1)	3,424	(1.2)	3,577	(1.2)
Sideswipe same dir.	26	(3.1)	631	(4.7)	657	(4.6)	29,800	(10.5)	30,457	(10.2)
Right angle	149	(17.5)	3,114	(23.2)	3,263	(22.9)	59,234	(20.9)	62,497	(21.0)
Indirect Right Angle	51	(6.0)	1,807	(13.5)	1,858	(13.0)	22,949	(8.1)	24,807	(8.3)
Total Multi-Vehicle	381	(44.8)	8,006	(59.7)	8,387	(58.9)	233,973	(82.5)	242,360	(81.4)
Single Vehicle Crashes										
Hit pedestrian	202	(23.7)	1,797	(13.4)	1,999	(14.0)	3,500	(1.2)	5,499	(1.8)
Hit animal	3	(0.4)	50	(0.4)	53	(0.4)	1,113	(0.4)	1,166	(0.4)
Hit object										
<i>Pole/Post</i>	57	(6.7)	599	(4.5)	656	(4.6)	5,280	(1.9)	5,936	(2.0)
<i>Tree</i>	74	(8.7)	449	(3.4)	523	(3.7)	2,744	(1.0)	3,267	(1.1)
<i>Wall/Fence</i>	9	(1.1)	191	(1.4)	200	(1.4)	2,941	(1.0)	3,141	(1.1)
<i>Traffic Island</i>	26	(3.1)	222	(1.7)	248	(1.7)	1,857	(0.7)	2,105	(0.7)
<i>Kerb</i>	22	(2.6)	479	(3.6)	501	(3.5)	4,718	(1.7)	5,219	(1.8)
<i>Drainage Ditch</i>	5	(0.6)	45	(0.3)	50	(0.4)	487	(0.2)	537	(0.2)
<i>Embankment</i>	1	(0.1)	58	(0.4)	59	(0.4)	536	(0.2)	595	(0.2)
<i>Other object</i>	20	(2.4)	268	(2.0)	288	(2.0)	3,693	(1.3)	3,981	(1.3)
Total hit object	214	(25.1)	2,311	(17.2)	2,525	(17.7)	22,256	(7.8)	24,781	(8.3)
Non collision										
<i>Overturns</i>	27	(3.2)	408	(3.0)	435	(3.1)	2,581	(0.9)	3,016	(1.0)
<i>Falls from vehicle</i>	6	(0.7)	270	(2.0)	276	(1.9)	717	(0.3)	993	(0.3)
<i>Other non collision</i>	3	(0.4)	112	(0.8)	115	(0.8)	1,282	(0.5)	1,397	(0.5)
Total non collision	36	(4.2)	790	(5.9)	826	(5.8)	4,580	(1.6)	5,406	(1.8)
Total Single Vehicle	455	(53.5)	4,948	(36.9)	5,403	(37.9)	31,449	(11.1)	36,852	(12.4)
Other	15	(1.8)	446	(3.3)	461	(3.2)	18,223	(6.4)	18,684	(6.3)
Total Crashes	851	(0.3)	13,400	(4.5)	14,251	(4.8)	283,645	(95.2)	297,896	

Table 99. Crash severity by nature of crash, Perth Metropolitan region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.8 Wheatbelt South

For the Wheatbelt South region:

- Alcohol was present in 18% of all fatal crashes (Table 102);
- Speed was a factor in 26% of all fatal crashes (Table 103);
- Fatigue was a factor in 4% of all serious crashes (Table 103);
- Of all driver and passenger fatalities, 32% were not wearing seatbelts. Further, 7% of all motorcycle riders, motorcycle pillion passengers and bicycle riders seriously injured were not wearing helmets (Table 104); and
- The most common fatal crash nature types were “Hit Tree” and “Overturn” crashes, which made up 37% and 19% of all fatal crashes respectively (Table 105).

LGA	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Dumbleyung	1	(1.1)	17	(3.0)	18	(2.7)	137	(4.2)	155	(4.0)
Lake Grace	9	(10.1)	52	(9.0)	61	(9.2)	218	(6.8)	279	(7.2)
Wagin	5	(5.6)	31	(5.4)	36	(5.4)	211	(6.5)	247	(6.4)
West Arthur	6	(6.7)	33	(5.7)	39	(5.9)	191	(5.9)	230	(5.9)
Beverley	6	(6.7)	34	(5.9)	40	(6.0)	191	(5.9)	231	(5.9)
Brookton	4	(4.5)	33	(5.7)	37	(5.6)	131	(4.1)	168	(4.3)
Bruce Rock	5	(5.6)	30	(5.2)	35	(5.3)	136	(4.2)	171	(4.4)
Corrigin	3	(3.4)	25	(4.3)	28	(4.2)	173	(5.4)	201	(5.2)
Cuballing	4	(4.5)	17	(3.0)	21	(3.2)	121	(3.8)	142	(3.7)
Kondinin	6	(6.7)	40	(7.0)	46	(6.9)	218	(6.8)	264	(6.8)
Kulin	4	(4.5)	21	(3.7)	25	(3.8)	133	(4.1)	158	(4.1)
Narembeen	5	(5.6)	35	(6.1)	40	(6.0)	141	(4.4)	181	(4.7)
Narrogin (T)	1	(1.1)	28	(4.9)	29	(4.4)	372	(11.5)	401	(10.3)
Narrogin	8	(9.0)	32	(5.6)	40	(6.0)	147	(4.6)	187	(4.8)
Pingelly	1	(1.1)	18	(3.1)	19	(2.9)	89	(2.8)	108	(2.8)
Quairading	4	(4.5)	18	(3.1)	22	(3.3)	111	(3.4)	133	(3.4)
Wandering	4	(4.5)	26	(4.5)	30	(4.5)	152	(4.7)	182	(4.7)
Wickepin	3	(3.4)	24	(4.2)	27	(4.1)	75	(2.3)	102	(2.6)
Williams	10	(11.2)	61	(10.6)	71	(10.7)	277	(8.6)	348	(9.0)
Total Crashes	89	(2.3)	575	(14.8)	664	(17.1)	3,224	(82.9)	3,888	

Table 100. Crash severity by Local Government Area, Wheatbelt South region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Beverley	1,399	(5.8)	(5.9)
Brookton	911	(3.8)	(4.3)
Bruce Rock	1,129	(4.7)	(4.4)
Corrigin	1,276	(5.3)	(5.2)
Cuballing	708	(3.0)	(3.7)
Dumbleyung	837	(3.5)	(4.0)
Kondinin	1,237	(5.2)	(6.8)
Kulin	893	(3.7)	(4.1)
Lake Grace	1,769	(7.4)	(7.2)
Narembeen	1,017	(4.2)	(4.7)
Narrogin	867	(3.6)	(4.8)
Narrogin (T)	4,491	(18.8)	(10.3)
Pingelly	1,135	(4.7)	(2.8)
Quairading	1,176	(4.9)	(3.4)
Wagin	1,868	(7.8)	(6.4)
Wandering	370	(1.5)	(4.7)
West Arthur	988	(4.1)	(5.9)
Wickepin	841	(3.5)	(2.6)
Williams	1,037	(4.3)	(9.0)
Total	23,949		

Table 101. Population by Local Government Area, Wheatbelt South region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	16	(59.3)	84	(47.5)	100	(49.0)	189	(17.5)	289	(22.5)
< 0.05	-	-	4	(2.3)	4	(2.0)	11	(1.0)	15	(1.2)
0.05 - <0.079	-	-	1	(0.6)	1	(0.5)	3	(0.3)	4	(0.3)
0.08 - 0.149	2	(7.4)	4	(2.3)	6	(2.9)	12	(1.1)	18	(1.4)
0.15	3	(11.1)	4	(2.3)	7	(3.4)	16	(1.5)	23	(1.8)
Subtotal 0.05	5	(18.5)	9	(5.1)	14	(6.9)	31	(2.9)	45	(3.5)
Unknown	6	(22.2)	80	(45.2)	86	(42.2)	849	(78.6)	935	(72.8)
Total Crashes	27	(2.1)	177	(13.8)	204	(15.9)	1,080	(84.1)	1,284	

Table 102. Crash severity by highest recorded BAC in crash, Wheatbelt South region, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Time Period										
Alcohol related hours	16	(18.0)	61	(10.6)	77	(11.6)	314	(9.7)	391	(10.1)
Non-Alc related hours	22	(24.7)	178	(31.0)	200	(30.1)	1,116	(34.6)	1,316	(33.8)
Neutral/Unkn. hours	51	(57.3)	336	(58.4)	387	(58.3)	1,794	(55.6)	2,181	(56.1)
Speed A Factor										
Yes	23	(25.8)	60	(10.4)	83	(12.5)	83	(2.6)	166	(4.3)
No	45	(50.6)	370	(64.3)	415	(62.5)	1,179	(36.6)	1,594	(41.0)
Unknown	21	(23.6)	145	(25.2)	166	(25.0)	1,962	(60.9)	2,128	(54.7)
Fatigue A Factor										
Yes	1	(1.1)	23	(4.0)	24	(3.6)	45	(1.4)	69	(1.8)
No	88	(98.9)	552	(96.0)	640	(96.4)	3,168	(98.3)	3,808	(97.9)
Unknown	-	-	-	-	-	-	11	(0.3)	11	(0.3)
Total Crashes	89	(2.3)	575	(14.8)	664	(17.1)	3,224	(82.9)	3,888	

Table 103. Crash severity by time of crash and measures for speed and fatigue, Wheatbelt South region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n	
	Worn		Not Worn		Failed		Unknown			
	n	(%)	n	(%)	n	(%)	n	(%)		
Seatbelt										
Fatality	44	(47.3)	30	(32.3)	1	(1.1)	18	(19.4)	93	
Hospitalised	419	(55.7)	64	(8.5)	1	(0.1)	268	(35.6)	752	
Medical	382	(51.3)	27	(3.6)	1	(0.1)	334	(44.9)	744	
Non-Medical	163	(46.2)	7	(2.0)	-	-	183	(51.8)	353	
None	-	-	-	-	-	-	3,453	(100.0)	3,453	
Unknown	10	(55.6)	-	-	-	-	8	(44.4)	18	
Total Injuries	1,018	(18.8)	128	(2.4)	3	(0.1)	4,264	(78.8)	5,413	
Helmet										
Fatality	3	(100.0)	-	-	-	-	-	-	3	
Hospitalised	19	(67.9)	2	(7.1)	-	-	7	(25.0)	28	
Medical	6	(31.6)	-	-	-	-	13	(68.4)	19	
Non-Medical	-	-	-	-	-	-	1	(100.0)	1	
None	-	-	-	-	-	-	25	(100.0)	25	
Unknown	-	-	-	-	-	-	2	(100.0)	2	
Total Injuries	28	(35.9)	2	(2.6)	-	-	48	(61.5)	78	

Table 104. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Wheatbelt South region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	2	(2.2)	12	(2.1)	14	(2.1)	131	(4.1)	145	(3.7)
Head on	14	(15.7)	7	(1.2)	21	(3.2)	43	(1.3)	64	(1.6)
Sideswipe opp. dir.	-	-	3	(0.5)	3	(0.5)	45	(1.4)	48	(1.2)
Sideswipe same dir.	-	-	12	(2.1)	12	(1.8)	150	(4.7)	162	(4.2)
Right angle	4	(4.5)	29	(5.0)	33	(5.0)	278	(8.6)	311	(8.0)
Indirect Right Angle	-	-	5	(0.9)	5	(0.8)	41	(1.3)	46	(1.2)
Total Multi-Vehicle	20	(22.5)	68	(11.8)	88	(13.3)	688	(21.3)	776	(20.0)
Single Vehicle Crashes										
Hit pedestrian	2	(2.2)	12	(2.1)	14	(2.1)	25	(0.8)	39	(1.0)
Hit animal	-	-	9	(1.6)	9	(1.4)	330	(10.2)	339	(8.7)
Hit object										
<i>Pole/Post</i>	3	(3.4)	19	(3.3)	22	(3.3)	96	(3.0)	118	(3.0)
<i>Tree</i>	33	(37.1)	159	(27.7)	192	(28.9)	562	(17.4)	754	(19.4)
<i>Wall/Fence</i>	3	(3.4)	13	(2.3)	16	(2.4)	91	(2.8)	107	(2.8)
<i>Traffic Island</i>	-	-	-	-	-	-	1	(0.0)	1	(0.0)
<i>Kerb</i>	-	-	5	(0.9)	5	(0.8)	20	(0.6)	25	(0.6)
<i>Drainage Ditch</i>	1	(1.1)	22	(3.8)	23	(3.5)	151	(4.7)	174	(4.5)
<i>Embankment</i>	4	(4.5)	46	(8.0)	50	(7.5)	237	(7.4)	287	(7.4)
<i>Other object</i>	3	(3.4)	44	(7.7)	47	(7.1)	238	(7.4)	285	(7.3)
Total hit object	47	(52.8)	308	(53.6)	355	(53.5)	1,396	(43.3)	1,751	(45.0)
Non collision										
<i>Overturns</i>	17	(19.1)	142	(24.7)	159	(23.9)	549	(17.0)	708	(18.2)
<i>Falls from vehicle</i>	1	(1.1)	4	(0.7)	5	(0.8)	15	(0.5)	20	(0.5)
<i>Other non collision</i>	-	-	9	(1.6)	9	(1.4)	88	(2.7)	97	(2.5)
Total non collision	18	(20.2)	155	(27.0)	173	(26.1)	652	(20.2)	825	(21.2)
Total Single Vehicle	67	(75.3)	484	(84.2)	551	(83.0)	2,403	(74.5)	2,954	(76.0)
Other	2	(2.2)	23	(4.0)	25	(3.8)	133	(4.1)	158	(4.1)
Total Crashes	89	(2.3)	575	(14.8)	664	(17.1)	3,224	(82.9)	3,888	

Table 105. Crash severity by nature of crash, Wheatbelt South region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.9 Wheatbelt North

For the Wheatbelt North region:

- Alcohol was present in 36% of all fatal crashes (Table 108);
- Speed was a factor in 29% of all fatal crashes (Table 109);
- Fatigue was a factor in 3% of all serious crashes (Table 109);
- Of all driver and passenger fatalities, 38% were not wearing seatbelts. Further, 13% of all motorcycle riders, motorcycle pillion passengers and bicycle riders seriously injured were not wearing helmets (Table 110); and
- The most common fatal crash nature types were “Hit Tree” and “Overturn” crashes, which made up 33% and 21% of all fatal crashes respectively (Table 111).

LGA	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Cunderdin	8	(4.2)	33	(3.2)	41	(3.4)	172	(2.9)	213	(3.0)
Dowerin	1	(0.5)	17	(1.7)	18	(1.5)	99	(1.7)	117	(1.6)
Goomalling	2	(1.1)	28	(2.8)	30	(2.5)	150	(2.5)	180	(2.5)
Kellerberrin	5	(2.6)	24	(2.4)	29	(2.4)	153	(2.6)	182	(2.6)
Koorda	1	(0.5)	12	(1.2)	13	(1.1)	50	(0.8)	63	(0.9)
Trayning	2	(1.1)	8	(0.8)	10	(0.8)	50	(0.8)	60	(0.8)
Merredin	5	(2.6)	44	(4.3)	49	(4.1)	365	(6.2)	414	(5.8)
Mt Marshall	2	(1.1)	7	(0.7)	9	(0.7)	64	(1.1)	73	(1.0)
Mukinbudin	1	(0.5)	5	(0.5)	6	(0.5)	55	(0.9)	61	(0.9)
Northam (T)	4	(2.1)	55	(5.4)	59	(4.9)	704	(11.9)	763	(10.7)
Northam	27	(14.3)	80	(7.9)	107	(8.9)	423	(7.1)	530	(7.4)
Nungarin	-	-	3	(0.3)	3	(0.2)	26	(0.4)	29	(0.4)
Tammin	5	(2.6)	28	(2.8)	33	(2.7)	86	(1.5)	119	(1.7)
Toodyay	13	(6.9)	74	(7.3)	87	(7.2)	381	(6.4)	468	(6.6)
Westonia	3	(1.6)	13	(1.3)	16	(1.3)	73	(1.2)	89	(1.2)
Wyalkatchem	3	(1.6)	12	(1.2)	15	(1.2)	69	(1.2)	84	(1.2)
York	6	(3.2)	71	(7.0)	77	(6.4)	321	(5.4)	398	(5.6)
Chittering	20	(10.6)	75	(7.4)	95	(7.9)	379	(6.4)	474	(6.7)
Dalwallinu	7	(3.7)	30	(2.9)	37	(3.1)	183	(3.1)	220	(3.1)
Dandaragan	14	(7.4)	97	(9.5)	111	(9.2)	497	(8.4)	608	(8.5)
Gingin	17	(9.0)	85	(8.3)	102	(8.5)	589	(9.9)	691	(9.7)
Moora	18	(9.5)	50	(4.9)	68	(5.6)	279	(4.7)	347	(4.9)
Victoria Plains	8	(4.2)	42	(4.1)	50	(4.1)	205	(3.5)	255	(3.6)
Wongan-Ballidu	2	(1.1)	23	(2.3)	25	(2.1)	150	(2.5)	175	(2.5)
Yilgarn	15	(7.9)	102	(10.0)	117	(9.7)	397	(6.7)	514	(7.2)
Total Crashes	189	(2.7)	1,018	(14.3)	1,207	(16.9)	5,920	(83.1)	7,127	

Table 106. Crash severity by Local Government Area, Wheatbelt North region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Chittering	2,264	(5.0)	(6.7)
Cunderdin	1,368	(3.0)	(3.0)
Dalwallinu	1,699	(3.7)	(3.1)
Dandaragan	2,607	(5.8)	(8.5)
Dowerin	824	(1.8)	(1.6)
Gingin	3,189	(7.0)	(9.7)
Goomalling	1,038	(2.3)	(2.5)
Kellerberrin	1,210	(2.7)	(2.6)
Koorda	602	(1.3)	(0.9)
Merredin	3,650	(8.1)	(5.8)
Moora	2,573	(5.7)	(4.9)
Mt Marshall	770	(1.7)	(1.0)
Mukinbudin	700	(1.5)	(0.9)
Northam	3,215	(7.1)	(7.4)
Northam (T)	6,300	(13.9)	(10.7)
Nungarin	272	(0.6)	(0.4)
Tammin	489	(1.1)	(1.7)
Toodyay	3,214	(7.1)	(6.6)
Trayning	469	(1.0)	(0.8)
Victoria Plains	957	(2.1)	(3.6)
Westonia	292	(0.6)	(1.2)
Wongan-Ballidu	1,545	(3.4)	(2.5)
Wyalkatchem	634	(1.4)	(1.2)
Yilgarn	2,668	(5.9)	(7.2)
York	2,788	(6.1)	(5.6)
Total	45,337		

Table 107. Population by Local Government Area, Wheatbelt North region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	31	(56.4)	167	(52.5)	198	(53.1)	449	(22.1)	647	(26.9)
< 0.05	1	(1.8)	9	(2.8)	10	(2.7)	12	(0.6)	22	(0.9)
0.05 - <0.079	2	(3.6)	3	(0.9)	5	(1.3)	9	(0.4)	14	(0.6)
0.08 - 0.149	5	(9.1)	25	(7.9)	30	(8.0)	30	(1.5)	60	(2.5)
0.15	12	(21.8)	9	(2.8)	21	(5.6)	22	(1.1)	43	(1.8)
Subtotal 0.05	19	(34.5)	37	(11.6)	56	(15.0)	61	(3.0)	117	(4.9)
Unknown	4	(7.3)	105	(33.0)	109	(29.2)	1,507	(74.3)	1,616	(67.3)
Total Crashes	55	(2.3)	318	(13.2)	373	(15.5)	2,029	(84.5)	2,402	

Table 108. Crash severity by highest recorded BAC in crash, Wheatbelt North region, 1 September 1996 to 31 December 1999.

(Source: Main Roads WA Traffic Accident System)

	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Time Period										
Alcohol related hours	32	(16.9)	165	(16.2)	197	(16.3)	719	(12.1)	916	(12.9)
Non-Alc related hours	50	(26.5)	275	(27.0)	325	(26.9)	1,963	(33.2)	2,288	(32.1)
Neutral/Unkn. hours	107	(56.6)	578	(56.8)	685	(56.8)	3,238	(54.7)	3,923	(55.0)
Speed A Factor										
Yes	54	(28.6)	132	(13.0)	186	(15.4)	233	(3.9)	419	(5.9)
No	115	(60.8)	671	(65.9)	786	(65.1)	2,537	(42.9)	3,323	(46.6)
Unknown	20	(10.6)	215	(21.1)	235	(19.5)	3,150	(53.2)	3,385	(47.5)
Fatigue A Factor										
Yes	4	(2.1)	33	(3.2)	37	(3.1)	100	(1.7)	137	(1.9)
No	184	(97.4)	983	(96.6)	1,167	(96.7)	5,788	(97.8)	6,955	(97.6)
Unknown	1	(0.5)	2	(0.2)	3	(0.2)	32	(0.5)	35	(0.5)
Total Crashes	189	(2.7)	1,018	(14.3)	1,207	(16.9)	5,920	(83.1)	7,127	

Table 109. Crash severity by time of crash and measures for speed and fatigue, Wheatbelt North region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n	
	Worn		Not Worn		Failed		Unknown			
	n	(%)	n	(%)	n	(%)	n	(%)		
Seatbelt										
Fatality	89	(48.1)	70	(37.8)	-	-	26	(14.1)	185	
Hospitalised	731	(56.5)	125	(9.7)	-	-	437	(33.8)	1,293	
Medical	880	(55.4)	61	(3.8)	1	(0.1)	646	(40.7)	1,588	
Non-Medical	341	(59.8)	14	(2.5)	-	-	215	(37.7)	570	
None	-	-	-	-	-	-	6,842	(100.0)	6,842	
Unknown	13	(34.2)	-	-	-	-	25	(65.8)	38	
Total Injuries	2,054	(19.5)	270	(2.6)	1	(0.0)	8,191	(77.9)	10,516	
Helmet										
Fatality	14	(87.5)	1	(6.3)	-	-	1	(6.3)	16	
Hospitalised	48	(47.5)	13	(12.9)	1	(1.0)	39	(38.6)	101	
Medical	25	(32.5)	10	(13.0)	-	-	42	(54.5)	77	
Non-Medical	5	(41.7)	2	(16.7)	-	-	5	(41.7)	12	
None	-	-	-	-	-	-	76	(100.0)	76	
Unknown	-	-	-	-	-	-	4	(100.0)	4	
Total Injuries	92	(32.2)	26	(9.1)	1	(0.3)	167	(58.4)	286	

Table 110. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Wheatbelt North region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	3	(1.6)	24	(2.4)	27	(2.2)	403	(6.8)	430	(6.0)
Head on	24	(12.7)	36	(3.5)	60	(5.0)	168	(2.8)	228	(3.2)
Sideswipe opp. dir.	1	(0.5)	16	(1.6)	17	(1.4)	101	(1.7)	118	(1.7)
Sideswipe same dir.	6	(3.2)	28	(2.8)	34	(2.8)	366	(6.2)	400	(5.6)
Right angle	6	(3.2)	65	(6.4)	71	(5.9)	596	(10.1)	667	(9.4)
Indirect Right Angle	2	(1.1)	14	(1.4)	16	(1.3)	102	(1.7)	118	(1.7)
Total Multi-Vehicle	42	(22.2)	183	(18.0)	225	(18.6)	1,736	(29.3)	1,961	(27.5)
Single Vehicle Crashes										
Hit pedestrian	9	(4.8)	32	(3.1)	41	(3.4)	30	(0.5)	71	(1.0)
Hit animal	2	(1.1)	18	(1.8)	20	(1.7)	528	(8.9)	548	(7.7)
Hit object										
<i>Pole/Post</i>	4	(2.1)	33	(3.2)	37	(3.1)	185	(3.1)	222	(3.1)
<i>Tree</i>	62	(32.8)	239	(23.5)	301	(24.9)	754	(12.7)	1,055	(14.8)
<i>Wall/Fence</i>	2	(1.1)	12	(1.2)	14	(1.2)	159	(2.7)	173	(2.4)
<i>Traffic Island</i>	-	-	-	-	-	-	8	(0.1)	8	(0.1)
<i>Kerb</i>	1	(0.5)	6	(0.6)	7	(0.6)	60	(1.0)	67	(0.9)
<i>Drainage Ditch</i>	3	(1.6)	26	(2.6)	29	(2.4)	199	(3.4)	228	(3.2)
<i>Embankment</i>	10	(5.3)	66	(6.5)	76	(6.3)	279	(4.7)	355	(5.0)
<i>Other object</i>	7	(3.7)	53	(5.2)	60	(5.0)	368	(6.2)	428	(6.0)
Total hit object	89	(47.1)	435	(42.7)	524	(43.4)	2,012	(34.0)	2,536	(35.6)
Non collision										
<i>Overturns</i>	40	(21.2)	275	(27.0)	315	(26.1)	1,034	(17.5)	1,349	(18.9)
<i>Falls from vehicle</i>	1	(0.5)	22	(2.2)	23	(1.9)	23	(0.4)	46	(0.6)
<i>Other non collision</i>	2	(1.1)	20	(2.0)	22	(1.8)	181	(3.1)	203	(2.8)
Total non collision	43	(22.8)	317	(31.1)	360	(29.8)	1,238	(20.9)	1,598	(22.4)
Total Single Vehicle	143	(75.7)	802	(78.8)	945	(78.3)	3,808	(64.3)	4,753	(66.7)
Other	4	(2.1)	33	(3.2)	37	(3.1)	376	(6.4)	413	(5.8)
Total Crashes	189	(2.7)	1,018	(14.3)	1,207	(16.9)	5,920	(83.1)	7,127	

Table 111. Crash severity by nature of crash, Wheatbelt North region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

9.10 Pilbara

For the Pilbara region:

- Alcohol was present in 46% of all fatal crashes (Table 114);
- Speed was a factor in 32% of all fatal crashes (Table 115);
- Fatigue was a factor in 1% of all serious crashes (Table 115);
- Of all driver and passenger fatalities, 57% were not wearing seatbelts. Further, 23% of all motorcycle and bicycle rider fatalities were not wearing helmets (Table 116); and
- The most common fatal crash nature types were “Overturn” and “Hit Pedestrian” crashes, which made up 41% and 16% of all fatal crashes respectively (Table 117).

LGA	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Ashburton	16	(19.3)	107	(19.5)	123	(19.4)	511	(17.4)	634	(17.7)
East Pilbara	33	(39.8)	104	(18.9)	137	(21.6)	495	(16.8)	632	(17.7)
Port Hedland	18	(21.7)	125	(22.7)	143	(22.6)	894	(30.4)	1,037	(29.0)
Roebourne	16	(19.3)	213	(38.7)	229	(36.2)	1,037	(35.2)	1,266	(35.4)
Karijini N.P.	-	-	1	(0.2)	1	(0.2)	7	(0.2)	8	(0.2)
Total Crashes	83	(2.3)	550	(15.4)	633	(17.7)	2,944	(82.3)	3,577	

Table 112. Crash severity by Local Government Area, Pilbara region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

LGA	Population		Total Crashes
	n	(%)	(%)
Ashburton	8,783	(19.6)	(17.7)
East Pilbara	7,945	(17.7)	(17.7)
Port Hedland	13,116	(29.3)	(29.0)
Roebourne	14,954	(33.4)	(35.4)
Total	44,798		

Table 113. Population by Local Government Area, Pilbara region, 1996.

(Source: Australian Bureau of Statistics, 1996 Census of Population and Housing)

Highest Recorded BAC in Crash (g/100ml)	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Nil	10	(41.7)	86	(46.2)	96	(45.7)	231	(20.0)	327	(24.0)
< 0.05	1	(4.2)	5	(2.7)	6	(2.9)	14	(1.2)	20	(1.5)
0.05 - <0.079	-	-	7	(3.8)	7	(3.3)	8	(0.7)	15	(1.1)
0.08 - 0.149	3	(12.5)	17	(9.1)	20	(9.5)	31	(2.7)	51	(3.7)
0.15	7	(29.2)	12	(6.5)	19	(9.0)	41	(3.6)	60	(4.4)
Subtotal 0.05	10	(41.7)	36	(19.4)	46	(21.9)	80	(6.9)	126	(9.2)
Unknown	3	(12.5)	59	(31.7)	62	(29.5)	829	(71.8)	891	(65.3)
Total Crashes	24	(1.8)	186	(13.6)	210	(15.4)	1,154	(84.6)	1,364	

Table 114. Crash severity by highest recorded BAC in crash, Pilbara region, 1 September 1996 to 31 December 1999.
(Source: Main Roads WA Traffic Accident System)

Time Period	Crash Severity									
	Fatal		Hospital		Total Serious		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Alcohol related hours	18	(21.7)	99	(18.0)	117	(18.5)	304	(10.3)	421	(11.8)
Non-Alc related hours	22	(26.5)	145	(26.4)	167	(26.4)	1,020	(34.6)	1,187	(33.2)
Neutral/Unkn. hours	43	(51.8)	306	(55.6)	349	(55.1)	1,620	(55.0)	1,969	(55.0)
Speed A Factor										
Yes	27	(32.5)	86	(15.6)	113	(17.9)	182	(6.2)	295	(8.2)
No	47	(56.6)	337	(61.3)	384	(60.7)	1,180	(40.1)	1,564	(43.7)
Unknown	9	(10.8)	127	(23.1)	136	(21.5)	1,582	(53.7)	1,718	(48.0)
Fatigue A Factor										
Yes	2	(2.4)	5	(0.9)	7	(1.1)	15	(0.5)	22	(0.6)
No	81	(97.6)	541	(98.4)	622	(98.3)	2,909	(98.8)	3,531	(98.7)
Unknown	-	-	4	(0.7)	4	(0.6)	20	(0.7)	24	(0.7)
Total Crashes	83	(2.3)	550	(15.4)	633	(17.7)	2,944	(82.3)	3,577	

Table 115. Crash severity by time of crash and measures for speed and fatigue, Pilbara region, 1990 to 1999.
(Source: Main Roads WA Traffic Accident System)

Injury Severity	Seatbelt/Helmet Use								Total n
	Worn		Not Worn		Failed		Unknown		
	n	(%)	n	(%)	n	(%)	n	(%)	
Seatbelt									
Fatality	13	(20.0)	37	(56.9)	1	(1.5)	14	(21.5)	65
Hospitalised	242	(41.4)	139	(23.8)	2	(0.3)	202	(34.5)	585
Medical	317	(49.5)	52	(8.1)	-	-	271	(42.3)	640
Non-Medical	168	(53.2)	22	(7.0)	-	-	126	(39.9)	316
None	-	-	-	-	-	-	3,897	(100.0)	3,897
Unknown	6	(46.2)	-	-	-	-	7	(53.8)	13
Total Injuries	746	(13.5)	250	(4.5)	3	(0.1)	4,517	(81.9)	5,516
Helmet									
Fatality	8	(61.5)	3	(23.1)	-	-	2	(15.4)	13
Hospitalised	62	(53.9)	18	(15.7)	1	(0.9)	34	(29.6)	115
Medical	30	(33.0)	8	(8.8)	-	-	53	(58.2)	91
Non-Medical	6	(20.0)	2	(6.7)	-	-	22	(73.3)	30
None	-	-	-	-	-	-	79	(100.0)	79
Total Injuries	106	(32.3)	31	(9.5)	1	(0.3)	190	(57.9)	328

Table 116. Seatbelt and helmet usage of drivers, passengers, motorcycle riders and bicycle riders by severity of injury, Pilbara region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System)

*Row percentages provided

Nature of Crash	Crash Severity								Total	
	Fatal		Hospital		Total Serious		Other			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Multi-Vehicle Crashes										
Rear end	2	(2.4)	19	(3.5)	21	(3.3)	405	(13.8)	426	(11.9)
Head on	6	(7.2)	12	(2.2)	18	(2.8)	99	(3.4)	117	(3.3)
Sideswipe opp. dir.	1	(1.2)	8	(1.5)	9	(1.4)	58	(2.0)	67	(1.9)
Sideswipe same dir.	-	-	15	(2.7)	15	(2.4)	158	(5.4)	173	(4.8)
Right angle	4	(4.8)	35	(6.4)	39	(6.2)	437	(14.8)	476	(13.3)
Indirect Right Angle	-	-	14	(2.5)	14	(2.2)	75	(2.5)	89	(2.5)
Total Multi-Vehicle	13	(15.7)	103	(18.7)	116	(18.3)	1,232	(41.8)	1,348	(37.7)
Single Vehicle Crashes										
Hit pedestrian	13	(15.7)	56	(10.2)	69	(10.9)	48	(1.6)	117	(3.3)
Hit animal	2	(2.4)	24	(4.4)	26	(4.1)	340	(11.5)	366	(10.2)
Hit object										
<i>Pole/Post</i>	3	(3.6)	28	(5.1)	31	(4.9)	68	(2.3)	99	(2.8)
<i>Tree</i>	1	(1.2)	11	(2.0)	12	(1.9)	47	(1.6)	59	(1.6)
<i>Wall/Fence</i>	-	(0.0)	5	(0.9)	5	(0.8)	34	(1.2)	39	(1.1)
<i>Traffic Island</i>	-	(0.0)	1	(0.2)	1	(0.2)	13	(0.4)	14	(0.4)
<i>Kerb</i>	2	(2.4)	12	(2.2)	14	(2.2)	75	(2.5)	89	(2.5)
<i>Drainage Ditch</i>	1	(1.2)	9	(1.6)	10	(1.6)	38	(1.3)	48	(1.3)
<i>Embankment</i>	4	(4.8)	28	(5.1)	32	(5.1)	107	(3.6)	139	(3.9)
<i>Other object</i>	3	(3.6)	24	(4.4)	27	(4.3)	148	(5.0)	175	(4.9)
Total hit object	14	(16.9)	118	(21.5)	132	(20.9)	530	(18.0)	662	(18.5)
Non collision										
<i>Overturns</i>	34	(41.0)	184	(33.5)	218	(34.4)	444	(15.1)	662	(18.5)
<i>Falls from vehicle</i>	2	(2.4)	33	(6.0)	35	(5.5)	32	(1.1)	67	(1.9)
<i>Other non collision</i>	3	(3.6)	7	(1.3)	10	(1.6)	75	(2.5)	85	(2.4)
Total non collision	39	(47.0)	224	(40.7)	263	(41.5)	551	(18.7)	814	(22.8)
Total Single Vehicle	68	(81.9)	422	(76.7)	490	(77.4)	1,469	(49.9)	1,959	(54.8)
Other	2	(2.4)	25	(4.5)	27	(4.3)	243	(8.3)	270	(7.5)
Total Crashes	83	(2.3)	550	(15.4)	633	(17.7)	2,944	(82.3)	3,577	

Table 117. Crash severity by nature of crash, Pilbara region, 1990 to 1999.

(Source: Main Roads WA Traffic Accident System).

10. Police Enforcement

The aim of this section is to highlight trends in Police enforcement of legal driver behaviour. Illegal driver behaviour may incur either a traffic infringement or a traffic conviction:

- A *traffic infringement* is an offence for which a fine is issued without a court appearance; and
- A *traffic conviction* results when a driver is found guilty of a traffic offence in court.

In this report attention is limited to traffic infringements and convictions incurred by drivers during the period 1 January 1997 to 30 November 1999. The information available for previous years is incomplete and therefore not used. Comparisons will be made between the trends of Police enforcement in the different Main Roads' regions. To facilitate the comparison, Table 118 summarises the number of licensed drivers, as of 1999, residing in each of the Main Roads' regions.

Region	Number of Drivers
Great Southern	34,657
South West	115,360
Gascoyne	6,081
Midwest	27,608
Goldfields	33,023
Kimberley	11,926
Metropolitan	871,608
Wheatbelt South	16,108
Wheatbelt North	31,482
Pilbara	21,507
Total	1,169,360

Table 118. Number of licensed drivers in each region for 1999.
(Source: WA Police Service)

10.1 Traffic Infringements

In Table 119 a summary is provided of the number of drivers that have incurred traffic infringements during the period 1 January 1997 to 30 November 1999. The summary is broken down by the region in which the drivers reside (not by the regions in which the infringements occurred) and by the number of infringements incurred by the drivers.

From Table 119 it can be seen that 60% of drivers based in the Perth Metropolitan region have received one or more traffic infringements during the three year period of interest. This contrasts sharply with the lower percentages recorded for the other regions.

Region of Residence	Number Of Infringements Per Driver					Total	
	1	2	3	4 to 9	10+	n	(%)*
Great Southern	6,951	2,375	944	839	23	11,132	(32.1)
South West	28,583	11,610	5,320	4,939	167	50,619	(43.9)
Gascoyne	1,420	421	152	106	4	2,103	(34.6)
Mid West	6,289	2,087	859	673	26	9,934	(36.0)
Goldfields	8,601	3,310	1,426	1,246	33	14,616	(44.3)
Kimberley	2,980	692	266	199	6	4,143	(34.7)
Perth	245,639	127,357	69,825	80,044	2,481	525,346	(60.3)
Wheatbelt South	3,591	1,341	539	484	8	5,963	(37.0)
Wheatbelt North	7,832	3,378	1,678	1,524	37	14,449	(45.9)
Pilbara	5,597	1,768	704	606	12	8,687	(40.4)
Total	317,483	154,339	81,713	90,660	2,797	646,992	

Table 119. Number of drivers with traffic infringements by region of residence and number of infringements incurred, January 1997 to November 1999.

(Source: WA Police Service)

*Percentage of all registered drivers within Region

Table 120 summarises the total number of traffic infringements incurred by drivers based in each of the Main Roads regions over the same period. It can be seen that drivers based in the Perth Metropolitan region have incurred the highest percentage of camera based traffic infringements (67%) and the lowest percentage of “on the spot” traffic infringements (32%).

Region of Residence	Infringement Type								Total n
	Multanova		Red Lt		On The Spot		Other		
	Camera n	Camera n	Total Camera n	(%)	n	(%)	n	(%)	
Great Southern	5,020	564	5,584	(29.5)	13,063	(69.0)	272	(1.4)	18,919
South West	43,174	3,016	46,190	(48.9)	47,305	(50.1)	935	(1.0)	94,430
Gascoyne	904	95	999	(30.6)	2,180	(66.7)	90	(2.8)	3,269
Mid West	4,651	452	5,103	(30.5)	11,329	(67.6)	320	(1.9)	16,752
Goldfields	6,118	581	6,699	(25.7)	19,019	(72.8)	396	(1.5)	26,114
Kimberley	1,314	134	1,448	(23.4)	4,562	(73.7)	184	(3.0)	6,194
Perth	703,377	61,448	764,825	(67.0)	366,703	(32.1)	9,523	(0.8)	1,141,051
Wheatbelt South	4,391	430	4,821	(46.7)	5,388	(52.2)	120	(1.2)	10,329
Wheatbelt North	13,648	1,022	14,670	(52.9)	12,770	(46.1)	278	(1.0)	27,718
Pilbara	3,467	308	3,775	(26.2)	10,336	(71.9)	271	(1.9)	14,382
Total	786,064	68,050	854,114	(62.8)	492,655	(36.2)	12,389	(0.9)	1,359,158

Table 120. Number of traffic infringements by infringement type and region of residence, January 1997 to November 1999.

(Source: WA Police Service)

*Row percentages provided

Table 121 gives a breakdown of the number of drivers which have incurred the different infringement types summarised in Table 120. The number of drivers summarised in Table 121 will be greater than the number of drivers summarised in Table 119. This is because, for example, a driver summarised in Table 119 as having incurred two traffic infringements may have incurred a

camera based infringement and an “on the spot infringement” and is counted once as receiving two infringements. However, in Table 121 this driver will be recorded as a driver having incurred one camera based infringement and as a driver having incurred one “on the spot fine”, that is the driver is counted twice in the table.

Region of Residence	Infringement Type	Number of Infringements of Each Type Per Driver					Total	
		1	2	3	4 to 9	10+	n	(%)*
Great Southern	Multanova Camera	3,512	523	108	30	-	4,173	(12.0)
	Red Light Camera	534	15	-	-	-	549	(1.6)
	On the spot	7,667	1,525	414	224	3	9,833	(28.4)
	Other	213	26	1	1	-	241	(0.7)
South West	Multanova Camera	25,755	5,488	1,405	506	-	33,154	(28.7)
	Red Light Camera	2,897	55	3	-	-	2,955	(2.6)
	On the spot	26,864	5,565	1,508	874	33	34,844	(30.2)
	Other	738	92	3	1	-	834	(0.7)
Gascoyne	Multanova Camera	596	105	23	7	-	731	(12.0)
	Red Light Camera	87	4	-	-	-	91	(1.5)
	On the spot	1,433	250	41	24	1	1,749	(28.8)
	Other	68	11	-	-	-	79	(1.3)
Mid West	Multanova Camera	3,426	448	64	29	-	3,967	(14.4)
	Red Light Camera	430	11	-	-	-	441	(1.6)
	On the spot	6,532	1,310	368	191	13	8,414	(30.5)
	Other	256	24	4	1	-	285	(1.0)
Goldfields	Multanova Camera	4,085	677	160	45	-	4,967	(15.0)
	Red Light Camera	553	11	2	-	-	566	(1.7)
	On the spot	10,556	2,398	634	338	12	13,938	(42.2)
	Other	321	36	1	-	-	358	(1.1)
Kimberley	Multanova Camera	835	164	24	18	-	1,041	(8.7)
	Red Light Camera	128	3	-	-	-	131	(1.1)
	On the spot	3,039	458	111	60	-	3,668	(30.8)
	Other	155	13	1	-	-	169	(1.4)
Perth	Multanova Camera	327,473	98,007	32,210	17,814	113	475,617	(54.6)
	Red Light Camera	56,704	2,066	147	21	1	58,939	(6.8)
	On the spot	222,761	42,795	10,549	5,327	113	281,545	(32.3)
	Other	7,032	1,032	96	23	-	8,183	(0.9)
Wheatbelt South	Multanova Camera	2,880	484	118	43	-	3,525	(21.9)
	Red Light Camera	417	5	1	-	-	423	(2.6)
	On the spot	3,379	599	152	76	1	4,207	(26.1)
	Other	103	7	1	-	-	111	(0.7)
Wheatbelt North	Multanova Camera	8,046	1,740	428	186	-	10,400	(33.0)
	Red Light Camera	983	18	1	-	-	1,002	(3.2)
	On the spot	7,713	1,452	388	168	10	9,731	(30.9)
	Other	217	24	3	1	-	245	(0.8)
Pilbara	Multanova Camera	2,276	370	92	38	-	2,776	(12.9)
	Red Light Camera	298	5	-	-	-	303	(1.4)
	On the spot	6,304	1,241	274	141	5	7,965	(37.0)
	Other	219	20	4	-	-	243	(1.1)

Table 121. Number of drivers with traffic infringements by number of infringements per driver, infringement type and region of residence, January 1997 to November 1999.

(NB: Drivers may have more than one infringement type and may be counted more than once).

(Source: WA Police Service)

***Percentage of all registered drivers within Region**

From Table 121 it can be seen the Perth Metropolitan region has the largest percentage (55%) of drivers who have incurred a Multanova based traffic

infringement. The percentage of drivers incurring “on the spot” fines is highest in the Goldfields and Pilbara regions at 42% and 37% respectively. For the remaining regions, the percentage of drivers incurring “on the spot” infringements falls between 26% and 32%.

10.2 Traffic Convictions

In Table 122 a summary is provided of the number of drivers that have incurred traffic convictions during the period 1 January 1997 to 30 November 1999. The summary is broken down by the region in which the drivers reside (not by the regions in which the convictions occurred) and by the number of convictions incurred by the drivers.

From Table 122 it can be seen that the Kimberley, Goldfields and Pilbara Main Roads’ regions have recorded the highest percentages (18%, 11% and 10% respectively) of licensed drivers incurring a traffic conviction.

Region of Residence	Number Of Traffic Convictions Per Driver					Total	
	1	2	3	4 to 9	10+	n	(%)*
Great Southern	1,006	361	129	155	4	1,655	(4.8)
South West	3,864	1,444	556	547	16	6,427	(5.6)
Gascoyne	279	163	74	82	4	602	(9.9)
Mid West	1,212	520	219	255	6	2,212	(8.0)
Goldfields	1,811	843	396	454	22	3,526	(10.7)
Kimberley	892	709	258	322	9	2,190	(18.4)
Perth	36,911	13,102	5,130	5,213	206	60,562	(6.9)
Wheatbelt South	449	204	84	66	2	805	(5.0)
Wheatbelt North	1,204	483	168	167	5	2,027	(6.4)
Pilbara	1,093	534	212	318	16	2,173	(10.1)
Total	48,721	18,363	7,226	7,579	290	82,179	

Table 122. Number of drivers with traffic convictions by region of residence and the number of convictions per driver, January 1997 to November 1999.

(Source: WA Police Service)

*Percentage of all registered drivers within Region

Table 123 summarises the total number of traffic convictions incurred by drivers based in each of the Main Roads’ regions over the same period. From Table 123 it can be seen that drivers based in the Kimberley and Pilbara regions have recorded the highest percentages (36% and 33%) of excess alcohol convictions amongst all traffic convictions incurred. The Perth Metropolitan region has recorded the lowest percentage (18%) of excess alcohol traffic convictions amongst all traffic convictions incurred.

Region of Residence	Conviction Type										
	Driving Under the Influence n	Other Excess Alcohol n	Total Excess Alcohol n (%)		Speeding n (%)		Reckless/Dangerous Driving n (%)		Other n (%)		Total n
Great Southern	222	526	748	(25.6)	73	(2.5)	220	(7.5)	1,884	(64.4)	2,925
South West	799	2,176	2,975	(26.2)	376	(3.3)	653	(5.7)	7,355	(64.8)	11,359
Gascoyne	156	217	373	(28.6)	13	(1.0)	73	(5.6)	844	(64.8)	1,303
Mid West	435	752	1,187	(27.7)	120	(2.8)	188	(4.4)	2,794	(65.1)	4,289
Goldfields	827	1,223	2,050	(28.1)	117	(1.6)	429	(5.9)	4,708	(64.5)	7,304
Kimberley	888	846	1,734	(36.3)	32	(0.7)	194	(4.1)	2,814	(58.9)	4,774
Perth	4,374	15,374	19,748	(18.4)	4,532	(4.2)	5,445	(5.1)	77,370	(72.2)	107,095
Wheatbelt Sth	111	248	359	(24.3)	41	(2.8)	109	(7.4)	967	(65.5)	1,476
Wheatbelt Nth	236	635	871	(24.5)	119	(3.3)	212	(6.0)	2,359	(66.2)	3,561
Pilbara	734	780	1,514	(32.6)	68	(1.5)	196	(4.2)	2,863	(61.7)	4,641
Total	8,782	22,777	31,559	(21.2)	5,491	(3.7)	7,719	(5.2)	103,958	(69.9)	148,727

Table 123. Number of traffic convictions by conviction type and region of residence, January 1997 to November 1999.

(Source: WA Police Service)

*Row percentages provided

Table 124 gives a breakdown of the number of drivers who have incurred the different traffic conviction types summarised in Table 123, excluding the “Other” category. The number of drivers summarised in Table 124 will be greater than the number of drivers summarised in Table 122. This is because, for example, a driver summarised in Table 122 as having incurred two traffic convictions may have incurred a speeding conviction and a Driving Under the Influence conviction and is counted once as having two convictions. In Table 124 however, such a driver will be recorded as a driver having incurred one speeding conviction and as a driver having incurred one “Driving Under the Influence” conviction, that is the driver will be counted twice in the table.

From Table 124 it can be seen that the Kimberley region has the highest percentages of licensed drivers which have recorded “Driving Under the Influence” and other excess alcohol convictions at 6% and 7% respectively.

Region	Type Of Offence	Number of Traffic Convictions of Each Type Per Driver				Total	
		1	2	3	4 to 9	n	(%)*
Great	Speeding	73	-	-	-	73	(0.2)
Southern	Driving Under the Influence	195	12	1	-	208	(0.6)
	Other Excess Alcohol	484	21	-	-	505	(1.5)
	Reckless/Dangerous Driving	214	3	-	-	217	(0.6)
South West	Speeding	365	4	1	-	370	(0.3)
	Driving Under the Influence	730	33	1	-	764	(0.7)
	Other Excess Alcohol	2,023	67	5	1	2,096	(1.8)
	Reckless/Dangerous Driving	637	8	-	-	645	(0.6)
Gascoyne	Speeding	13	-	-	-	13	(0.2)
	Driving Under the Influence	124	14	-	1	139	(2.3)
	Other Excess Alcohol	201	8	-	-	209	(3.4)
	Reckless/Dangerous Driving	68	1	1	-	70	(1.2)
Mid West	Speeding	120	-	-	-	120	(0.4)
	Driving Under the Influence	358	31	5	-	394	(1.4)
	Other Excess Alcohol	693	28	1	-	722	(2.6)
	Reckless/Dangerous Driving	182	3	-	-	185	(0.7)
Goldfields	Speeding	115	1	-	-	116	(0.4)
	Driving Under the Influence	636	67	13	4	720	(2.2)
	Other Excess Alcohol	1,144	35	3	-	1,182	(3.6)
	Reckless/Dangerous Driving	390	14	2	1	407	(1.2)
Kimberley	Speeding	32	-	-	-	32	(0.3)
	Driving Under the Influence	653	85	19	2	759	(6.4)
	Other Excess Alcohol	787	28	1	-	816	(6.8)
	Reckless/Dangerous Driving	184	5	-	-	189	(1.6)
Perth	Speeding	4,291	90	15	4	4,400	(0.5)
	Driving Under the Influence	3,887	227	11	-	4,125	(0.5)
	Other Excess Alcohol	14,316	487	28	-	14,831	(1.7)
	Reckless/Dangerous Driving	5,277	73	6	1	5,357	(0.6)
Wheatbelt South	Speeding	41	-	-	-	41	(0.3)
	Driving Under the Influence	105	3	-	-	108	(0.7)
	Other Excess Alcohol	238	5	-	-	243	(1.5)
	Reckless/Dangerous Driving	99	5	-	-	104	(0.6)
Wheatbelt North	Speeding	116	-	1	-	117	(0.4)
	Driving Under the Influence	211	11	1	-	223	(0.7)
	Other Excess Alcohol	597	19	-	-	616	(2.0)
	Reckless/Dangerous Driving	199	5	1	-	205	(0.7)
Pilbara	Speeding	66	1	-	-	67	(0.3)
	Driving Under the Influence	472	85	28	2	587	(2.7)
	Other Excess Alcohol	712	28	4	-	744	(3.5)
	Reckless/Dangerous Driving	188	4	-	-	192	(0.9)

Table 124. Number of drivers with traffic convictions by number of convictions per driver, conviction type (excluding “Other”) and region, January 1997 to November 1999.

(NB: Drivers may have more than one traffic conviction type and may be counted more than once).

(Source: WA Police Service)

***Percentage of all registered drivers within Region**

Region	Infringement/Conviction Type							Total
	Multanova Infringements or Speeding Convictions	Red Light Camera Infringements	Driving Under the Influence Convictions	Other Excess Alcohol Convictions	Total Excess Alcohol Convictions	Reckless/ Dangerous Driving Convictions	Other Infringements or Convictions (Includes On the Spot)	
Great Southern	5,093	564	222	526	748	220	15,219	21,844
South West	43,550	3,016	799	2,176	2,975	653	55,595	105,789
Gascoyne	917	95	156	217	373	73	3,114	4,572
Mid West	4,771	452	435	752	1,187	188	14,443	21,041
Goldfields	6,235	581	827	1,223	2,050	429	24,123	33,418
Kimberley	1,346	134	888	846	1,734	194	7,560	10,968
Perth	707,909	61,448	4,374	15,374	19,748	5,445	453,596	1,248,146
Wheatbelt South	4,432	430	111	248	359	109	6,475	11,805
Wheatbelt North	13,767	1,022	236	635	871	212	15,407	31,279
Pilbara	3,535	308	734	780	1,514	196	13,470	19,023
Total	791,555	68,050	8,782	22,777	31,559	7,719	609,002	1,507,885

Table 125. Number and type of traffic infringements plus convictions by region, January 1997 to November 1999.

(NB: Combined figures from Table 120 and Table 123).

(Source: WA Police Service)

11. Recommendations

The purpose of this report was to provide an analysis and summary of the factors contributing to road crashes in Western Australia. The following recommendations are based upon issues that have arisen from the analysis:

1. The monitoring of road user behaviours such as speeding, drink driving, driving while fatigued and the usage of seatbelts and helmets should be continued and reported upon annually. This would highlight progress in reducing road crash fatalities attributable to these key factors.
2. A surrogate measure for assessing the contribution of fatigue in road crashes is required. The number of crashes involving fatigue is currently underestimated. Developing such a measure would enable road safety researchers to develop counter measures to combat the contribution of fatigue in road crashes. The first stage would involve a more detailed analysis of factors indicating a fatigue related crash.
3. The continued effort by the Office of Road Safety and other agencies to educate key demographic groups such as males aged 17 to 24 must be maintained.
4. The cross linking of the Vehicle Licensing database to the Main Roads' Road Crash database would enable the investigation of additional vehicle factors on the incidence of road crashes.
5. This study be repeated every two to three years time to assess whether road safety strategies are impacting upon the behaviour of road users.