Local Road Crash Report 2012

METROPOLITAN REGION





Report prepared by



EXECUTIVE SUMMARY

The Local Government sector has a key role to play in road safety. It is responsible for over 128,000 kilometres of road representing 88% of the road network in Western Australia. This report provides contemporary road crash statistical information specific to the local road network and excludes state road lengths, and state and local road intersections. It will assist the Local Government sector to monitor road safety trends and performance; and improve the safety of its network.

This Local Road Crash Report for the Metropolitan Region has the following sections:

- 1. State level statistical summaries to enable comparison against the regional level.
- 2. Regional level statistical summaries for the local road network; statistical summaries for the four cornerstones in *Towards Zero*; and demographic statistical summaries.
- 3. Crash statistical summaries for each Local Government.

This Local Road Crash Report should be read in conjunction with the Metropolitan Region Local Road Crash Map Book 2012.

There were 2,655 people killed or seriously injured in crashes on Western Australian roads in 2012; of which 1,520 people were killed or seriously injured on the WA local road network representing 57%. In 2012 the cost of all crashes in Western Australia was \$2.7billion of which \$1.5billion (B) or 55% occurred on local roads. During the same period, 47% of vehicle kilometres travelled were on the local road network.

Metropolitan Region

Local roads constitute 94% of the Metropolitan Region road network.

From 2003 to 2012, there were a total of 323,317 crashes in the Metropolitan Region (State and Local roads) resulting in 12,688 people killed or seriously injured (KSI) on local roads. During this period, 63% of all crashes occurred on local roads including intersections where all legs were local roads. Midblock locations accounted for 29.2% of crashes on local roads.

The ten year trend for KSI on the Metropolitan Region local road network is decreasing.

In 2012, a total of 20,443 crashes occurred on the Metropolitan Region local road network, which included 1,106 crashes resulting in 52 people killed and 1,054 people seriously injured. In 2012, 36% of KSI outcomes resulted from multi-vehicle crashes of Right Angle and Right Turn Thru; 20% from single vehicle crashes of Hit Object; and 12% from Hit Pedestrian crashes.

The key road safety issues for the Metropolitan Region local road network are:

- 1. Multi-vehicle right angle KSI crashes at intersections.
- 2. Single vehicle KSI crashes of Hit Object.
- 3. Vulnerable road users KSI (motorcyclists, bicyclists and pedestrians).
- 4. KSI in 50 km/hr. and 60km/hr. speed zones.

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1. INTRODUCTION

The road network in Western Australia comprises state and national roads under the management of Main Roads Western Australia; local roads under the management of Local Government; and other roads such as forestry and national park roads under the management of the Department of Parks and Wildlife. Local Government is responsible for over 128,000 kilometres of roads, which is 88% of the Western Australian road network; therefore the sector has a key role to play in road safety.

This report provides contemporary annual road crash information dedicated to the local road network. The aim of this report is to provide informative road crash information to support strategic and operational decision-making on matters, such as, Safe System improvements to the local road network, network funding, road network management and performance monitoring. In addition, the information contained within this report will inform road safety partners of the issues faced by Local Government to deliver road safety outcomes.

This report will be a valuable tool in monitoring the road safety performance of the local road network in the Metropolitan Region, which is comprised of the following Local Governments:

City of Armadale; Town of Bassendean; City of Bayswater; City of Belmont; Town of Cambridge; City of Canning; Town of Claremont; City of Cockburn; Town of Cottesloe; Town of East Fremantle; City of Melville; Town of Mosman Park; Shire of Mundaring; City of Nedlands; Shire of Peppermint Grove; City of Fremantle; City of Gosnells; City of Joondalup; Shire of Kalamunda; City of Kwinana; City of Perth; City of Rockingham; Shire of Serpentine–Jarrahdale; City of South Perth; City of Stirling; City of Subiaco; City of Swan; Town of Victoria Park; City of Vincent; and City of Wanneroo.

1.1 Towards Zero WA State Road Safety Strategy

Towards Zero is the Western Australian Road Safety Strategy 2008-2020. *Towards Zero* incorporates the Safe System, which views the road transport system holistically by seeking to manage the interaction between road users, roads, travel speeds and vehicles. The Safe System recognises it is probably not possible to prevent all crashes but aims to prevent those resulting in death and serious injury. The 'Safe System' is diagrammatically displayed in Figure 1.



Figure 1: The Safe System (adapted from ATC, 2007)

1.2 Safe System Cornerstones

The Safe System identifies four cornerstones that should be adopted in a road safety strategy: safe road use, safe roads and roadsides, safe speeds, and safe vehicles.

1.2.1 Safe Road Use

Influencing road user behaviour by:

- advising, educating and encouraging road users to comply with road rules;
- encouraging road users to drive unimpaired and alert, and according to the prevailing conditions;
- managing the gradual introduction of new drivers into the system and understanding their specific needs; and
- taking action against those who break the rules.

1.2.2 Safe Roads and Roadsides

Improving road infrastructure by:

- designing and maintaining roads and roadsides to reduce the risk of crashes occurring and the severity of injury if a crash does occur; and
- providing a transport system that supports safe outcomes.

1.2.3 Safe Speeds

Ensuring speed limits and travel speeds reflect the safety of the road infrastructure by:

- undertaking speed enforcement and education; and
- establishing speed limits according to the features of the road and roadside, vehicle crash-worthiness and the functional performance and known limits of the road user.

1.2.4 Safe Vehicles

Improving the safety of the vehicles in the road system by:

- promoting safety features that reduce the likelihood of a crash (and reduce the impact of the crash on vehicle occupants as well as pedestrians and cyclists);
- encouraging consumers and businesses to purchase safer vehicles; and
- implementing mandatory safe vehicle procurement in Government fleets and recommending additional safety features to be considered.

1.3 Purpose of the Road Crash Report

The purpose of the Annual Road Crash Report is to provide meaningful road crash information aggregated at the Local Government road level. Prior to the production of this report, such road crash information was not easily accessible. It is hoped the information in this report will help to:

- Monitor road safety trends and performance on local roads;
- Raise the profile of Local Government's role in road safety;
- Improve our road safety partners' appreciation and understanding of the task required of Local Governments to deliver road safety outcomes;
- Support the implementation of *Towards Zero* by Local Government;
- Provide evidence and support for advocacy efforts for existing and new programs; and
- Identify areas for more research and action on the local road network such as network planning, works programs, asset management, behavioural interventions, planning and engineering countermeasures.

1.4 Crashes Summarised in the Local Road Crash Report

The emphasis of this Local Road Crash Report is on crashes occurring on roads managed by Local Government. Comparative summaries of crashes on other roads will be provided for comparison where useful.

In this report a local road crash is defined as a crash occurring at:

- a midblock location on a local road; or
- an intersection having no State road legs and at least one Local road leg.

Table 1 summarizes all crashes in WA from 2003 to 2012 by crash location and road manager. Note that the road manager for category "Other" includes privately owned or other Government managed roads, such as National Park roads.

Crash Location	Road Manager	Crashes	%
Midblock	State	61,877	15.9
Intersection	State, State	13,652	3.5
Intersection	State, LG	66,465	17.1
Intersection	State, LG, Other	404	0.1
Intersection	State, Other	546	0.1
Midblock	LG	118,084	30.4
Intersection	LG, LG	121,003	31.1
Intersection	LG, Other	1,611	0.4
Midblock	Other	568	0.1
Intersection	Other, Other	346	0.1
Other	Unknown	4,332	1.1
Total		388,888	100.0

Table 1: All crashes in WA by location and road manager 2003 to 2012



Figure 2: All crashes in WA by crash location and road manager 2003 to 2012

Ignoring crashes at "Other" locations, Figure 2 shows:

- 63% of crashes occurred at local road locations including intersections where all legs were local roads.
- 18% of crashes occurred at intersections having both Local and State road legs.
- 19% of crashes occurred at State road locations including intersections where all legs were State roads.

This report focuses on the 63% of crashes occurring on roads managed by Local Governments.

1.5 Road Safety issues for the Metropolitan Region

The road safety issues for the Metropolitan Region local road network are:

- 1. Multi-vehicle right angle KSI crashes at intersections.
- 2. Single vehicle KSI crashes of Hit Object.
- 3. Vulnerable road users KSI (motorcyclists, bicyclists and pedestrians).
- 4. KSI in 50 km/hr. and 60km/hr. speed zones.

2. STATE WIDE LOCAL ROAD CRASH AND KSI SUMMARIES

In this section, statistical summaries of local road crashes and people killed or seriously injured (KSI) on local roads are provided at the State level to enable a comparison against the regional level. Throughout the report, a *serious crash* is defined as a crash with at least one KSI; therefore, by definition, a serious crash can result in more than one KSI.

2.1 Road Network of Western Australia

Figures 3 and 4 summarise the Western Australian road network by road manager. The Accessibility Remoteness Index of Australia (ARIA) is used to define "Metro", "Rural" and "Remote" roads. The definitions used are consistent with *Towards Zero* regions defined by the Office of Road Safety.

Local roads constitute 88% of the Western Australian road network. The Local and State road networks have similar distributional profiles in terms of accessibility.



Figure 3: Length of road network in WA by road manager 2012



Figure 4: Percentage of road network in WA by road manager and accessibility 2012

2.2 Road Trauma on the Road Network

73% of KSI on local roads occurred in the Metropolitan Region as shown in Figure 5.



Figure 5: WA KSI by road manager and accessibility 2012

2.3 Crash Rates

Table 2 displays crash rates by road manager; Million Vehicle Kilometres Travelled (MVKT); and population for 2012. For consistency, the MVKT estimates were obtained from Main Roads WA as documented in the *Regional Digest 2011-12* and the population estimates were sourced from the *Main Roads Annual Report 2012*.

Road	Μνκτ	Population		Serious Cra	ishes	All Other Crashes			
Manager			n	Per 100 MVKT	Per 100,000 Population	n	Per 100 MVKT	Per 100,000 Population	
Local	12,898	2,144,000	1,322	10	62	22,472	174	1,048	
State	14,602	2,144,000	829	6	39	14,120	97	659	
Other		2,144,000	5	n.a.	0	157	n.a.	7	
Unknown		2,144,000	32	n.a.	1	219	n.a.	10	
Total	27,500	2,144,000	2,188	8	102	36,968	134	1,724	

Table 2: Crash rates by road manager 2012

The number of serious crashes on local roads is over-represented in terms of the travel undertaken on local roads compared to State roads.

Table 3 shows the rate of KSI on local roads by population at a regional level.

The Wheatbelt North, Kimberley, Wheatbelt South and Gascoyne Regions have the highest KSI rates on local roads per population.

Region		KSI Severity		Population	KSI per
	Killed	Seriously Injured	Total	-	100,000 Population
Great Southern	3	33	36	59,000	61
South West	9	152	161	233,000	69
Gascoyne	1	9	10	10,000	100
Mid-West	4	29	33	52,000	63
Goldfields-Esperance	3	30	33	55,000	60
Kimberley	3	33	36	34,000	106
Metropolitan	52	1,054	1,106	1,583,000	70
Wheatbelt South	2	22	24	23,000	104
Wheatbelt North	10	45	55	49,000	112
Pilbara	1	25	26	46,000	57
Total	88	1,432	1,520	2,144,000	71

 Table 3: KSI rates per population for local roads 2012

2.4 Trends in KSI

The ten year trend for KSI by road manager is shown in Table 4 and Figure 6.

Year	Road Manager										
	Local Roads	State Roads	Other Roads	Unknown	Total						
2003	1,827	1,152	2	73	3,054						
2004	1,927	1,368	5	61	3,361						
2005	1,924	1,223	2	91	3,240						
2006	1,699	1,203	4	59	2,965						
2007	1,726	1,234	6	55	3,021						
2008	1,718	1,332	7	40	3,097						
2009	1,594	1,121	5	39	2,759						
2010	1,573	1,110	7	34	2,724						
2011	1,507	1,111	5	25	2,648						
2012	1,520	1,085	11	39	2,655						

Table 4: Trend in KSI by road manager 2003 to 2012

In general, the trend in annual KSI decreases from 2003 for both Local and State roads, but plateaus out from 2009.



Figure 6: Trend in KSI by road manager 2003 to 2012

2.5 Crashes by Nature





Figure 7: Ten year serious crash totals by crash nature and road manager 2003 to 2012

Hit Object and Right Angle crashes are the most prevalent serious crash nature on local roads; however the trend in these crash natures has decreased from 2003 to 2012 as shown in Figure 8.



Figure 8: Trend in serious crashes on WA local roads by crash nature 2003 to 2012

Table 5 shows serious crashes by crash nature and region for local roads from 2003 to 2012.

- Single vehicle run-off road crashes and right angle intersection crashes are the dominant crash natures.
- Single vehicle run-off road crashes are the most frequent crash nature for nonmetropolitan regions.
- Right angle intersection crashes are the most frequent crash nature for the Metropolitan Region.
- Hit pedestrian crashes are also a high frequency crash nature for all regions.

Region	Crash Nature										
	Rear End	Head On	Side Swipe	Right Angle	Right TT	Hit Ped.	Hit Animal	Hit Obj.	Non Coll.	Run Off Rd	Total
Great Southern	13	14	2	27	7	24	6	7	4	187	301
South West	63	45	40	195	91	114	9	45	26	609	1,269
Gascoyne	2	1	1	2	1	2	2	1	2	45	61
Mid-West	15	7	5	43	9	30	4	13	8	147	293
Goldfields - Esperance	12	6	9	52	18	33	4	12	11	180	349
Kimberley	10	5	1	39	14	53	2	8	9	100	248
Wheatbelt South	6	6	3	8	0	3	4	4	5	221	264
Wheatbelt North	13	9	8	22	2	14	10	11	6	353	463
Pilbara	9	5	1	20	7	33	3	7	7	106	206
Rural Total	143	98	70	408	149	306	44	108	78	1,948	3,454
Metropolitan	1,232	366	470	2,717	1,461	1,210	33	228	185	2,417	10,593
Total	1,375	464	540	3,125	1,610	1,516	77	336	263	4,365	14,047

Table 5: Serious crashes by crash nature and Region on the local road network2003 to 2012

Denotes the highest crash frequency, by nature, for a region.

Denotes the second highest crash frequency, by nature, for a region.

Denotes the third highest crash frequency, by nature, for a region.

2.6 KSI by Road User

Figures 9 and 10 show the KSI trend and ten year totals by road user for the local road network in WA.

- The trend in vehicle driver and vehicle passenger KSI has decreased from 2003 to 2012.
- The trend in motorcyclist KSI has increased from 2003 to 2012.
- The trend in bicyclist and pedestrian KSI has remained constant from 2003 to 2012.
- Motorcyclist, bicyclist and pedestrian KSI are significantly higher on Local roads than State roads.



Figure 9: Trend in KSI on WA local roads by road user 2003 to 2012



Figure 10: KSI totals by road user 2003 to 2012

2.7 Estimated Cost of Road Crashes in Western Australia

Table 6 shows the estimated cost of crashes on the Western Australian road network for 2012. The unit crash costs in \$2012 were provided by the Office of Road Safety and are based upon the Willingness-to-Pay unit costs from the RTA NSW report entitled "*Economic Valuation of Safety Benefits: Serious injuries - Final Report*".

Crash Severity	Cost Per	Local	Roads	State	Roads	WA	
	Crash	Crashes	Cost	Crashes	Cost	Total Cost	
	\$	n	\$	n	\$	\$	
Metropolitan							
Fatal	6,898,492	51	352M	24	166M	559M	
Hospitalisation	292,766	936	274M	424	124M	401M	
Medical	74,991	2,583	194M	1,872	140M	336M	
PDO	11,330	16,873	191M	10,013	113M	308M	
Metropolitan Total		20,443	1,011M	12,333	544M	1,604M	
Rural							
Fatal	7,969,955	36	287M	50	398M	717M	
Hospitalisation	467,526	299	140M	331	155M	302M	
Medical	103,480	366	38M	372	38M	78M	
PDO	11,330	2,650	30M	1,863	21M	52M	
Rural Total		3,351	495M	2,616	613M	1,149M	
Total		23,794	1,505M	14,949	1,156M	2,753M	

 Table 6: Estimated cost of all crashes in WA by road manager 2012

The cost of crashes on the local road network in 2012 was \$1.5B (Figure 11), two-thirds of which was accrued in the Metropolitan Region. For State roads, the crash cost accrued in the Metropolitan region is half the total State road crash cost (Figure 12). Table 7 and Figure 13 show the distribution of crash costs from 2003 to 2012.



Figure 11: Estimated cost of all crashes on local roads 2012



Figure 12: Estimated cost of all crashes in WA by road manager 2012

Crash Severity	Cost Per	Loca	Roads	State	WA	
	Crash	Crashes	Cost	Crashes	Cost	Total Cost
	\$	n	\$	n	\$	\$
Metropolitan						
Fatal	6,898,492	462	3,187M	271	1,869M	5,195M
Hospitalisation	292,766	10,131	2,966M	4,963	1,453M	4,465M
Medical	74,991	27,285	2,046M	18,456	1,384M	3,458M
PDO	11,330	166,118	1,882M	92,262	1,045M	2,959M
Metropolitan Total		203,996	10,081M	115,952	5,752M	16,077M
Rural						
Fatal	7,969,955	367	2,925M	576	4,591M	7,842M
Hospitalisation	467,526	3,087	1,443M	3,202	1,497M	3,040M
Medical	103,480	4,256	440M	3,685	381M	847M
PDO	11,330	28,993	328M	19,529	221M	565M
Rural Total		36,703	5,137M	26,992	6,690M	12,295M
Total		240,699	15,219M	142,944	12,442M	28,372M

 Table 7: Cost of all crashes in WA by road manager 2003 to 2012



Figure 13: Cost of all crashes in WA by road manager 2003 to 2012

3. REGIONAL ROAD CRASH AND KSI SUMMARIES

In this section road crash and KSI summaries are provided for the Metropolitan Region local road network.

3.1 Metropolitan Region Road Network

Figure 14 shows that local roads constitute 94% of the Metropolitan Region road network.



Figure 14: Length of road network in Metropolitan Region by road manager 2012

3.2 Crashes by Location and Road Manager

Table 8 shows all crashes by crash location and road manager in the Metropolitan Region from 2003 to 2012. Note that the road manager of category "Other" includes privately owned or other Government managed roads, such as National Park roads.

Crash Location	Road Manager	Crashes	%
Midblock	State	44,522	13.8
Intersection	State, State	11,673	3.6
Intersection	State, LG	58,860	18.2
Intersection	State, LG, Other	389	0.1
Intersection	State, Other	508	0.2
Midblock	LG	94,301	29.2
Intersection	LG, LG	108,114	33.4
Intersection	LG, Other	1,580	0.5
Midblock	Other	513	0.2
Intersection	Other, Other	343	0.1
Other	Unknown	2,514	0.8
Total		323,317	100.0

 Table 8: Crashes by crash location and road manager 2003 – 2012



Figure 15: Crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 15 shows:

- 63% of crashes occurred at local road locations including intersections where all legs were local roads.
- 19% of crashes occurred at intersections having both Local and State road legs.
- 18% of crashes occurred at State road locations including intersections where all legs were State roads.

3.3 KSI Trend by Local Government

Table 9 shows the KSI trend by Local Government for the Metropolitan Region local road network. Figure 16 displays the total KSI trend across all Local Governments.

Local						Year					
Government	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Armadale (C)	39	46	35	36	41	32	34	39	32	35	369
Bassendean (T)	10	10	17	12	5	16	11	5	11	4	101
Bayswater (C)	60	56	68	63	59	50	59	42	40	35	532
Belmont (C)	30	31	20	29	41	10	28	22	28	26	265
Cambridge (T)	50	30	20	17	28	20	22	30	30	15	262
Canning (C)	80	93	81	49	51	59	49	54	59	52	627
Claremont (T)	6	6	4	10	4	2	6	6	2	4	50
Cockburn (C)	65	65	62	50	62	71	67	91	71	66	670
Cottesloe (T)	11	9	9	8	7	10	3	4	5	7	73
East Fremantle (T)	2	2	3	3	4	1	5	3	0	0	23
Fremantle (C)	34	31	41	26	31	31	27	29	25	30	305
Gosnells (C)	86	78	73	55	62	69	55	57	50	66	651
Joondalup (C)	158	143	102	89	87	107	89	86	67	75	1,003
Kalamunda	46	46	42	44	46	40	32	39	45	34	414
Kings Park*	2	0	1	1	0	0	0	0	1	1	6
Kwinana (C)	21	17	35	20	21	24	27	20	20	18	223
Melville (C)	41	65	42	34	46	42	47	47	15	28	407
Mosman Park (T)	2	1	4	3	3	3	4	1	2	3	26
Mundaring	23	40	26	24	29	35	30	24	21	17	269
Nedlands (C)	24	20	7	5	12	13	20	9	11	12	133
Peppermint Grove	2	0	0	1	1	0	2	0	0	0	6
Perth (C)	72	70	78	68	63	62	75	41	51	46	626
Rockingham (C)	75	75	130	100	96	92	62	71	74	71	846
Rottnest Island*	0	0	1	0	0	0	1	0	0	1	3
SerpJarrahdale	16	18	23	13	23	22	31	23	29	24	222
South Perth (C)	40	28	35	17	17	26	18	17	21	24	243
Stirling (C)	169	189	195	193	169	169	149	145	144	159	1,681
Subiaco (C)	19	25	20	18	16	18	28	13	15	11	183
Swan (C)	72	84	103	88	107	101	98	72	80	87	892
Victoria Park (T)	42	56	35	27	29	30	42	29	25	23	338
Vincent (C)	45	55	49	47	38	51	38	36	31	37	427
Wanneroo (C)	89	105	73	61	67	74	68	72	108	95	812
TOTAL	1,431	1,494	1,434	1,211	1,265	1,280	1,227	1,127	1,113	1,106	12,688

 Table 9: KSI trend by Local Government 2003 – 2012 (*These figures are included for completeness)





Figure 16: KSI trend for the Metropolitan Region 2003 - 2012

3.4 Crash Severity

Table 10 shows all crashes by crash severity for the Metropolitan Region local road network for 2012.

Crash Severity	Region							
	Metropolitan (MET)	State	% for MET					
	n	n	%					
Fatal	51	87	58.6					
Hospitalisation	936	1,235	75.8					
Medical	2,583	2,949	87.6					
PDO Major	10,316	12,106	85.2					
PDO Minor	6,557	7,417	88.4					
Total	20,443	23,794	85.9					

 Table 10: All crashes on local roads by crash severity 2012

3.5 Road Surface Type

Less than 1% of crashes occurred on unsealed roads on the Metropolitan Region local road network.

Crash Severity	Surface Type								
	Sealed		Unsealed		Unkr	Total			
	n	%	n	%	n	%	n		
Fatal	51	100.0	0	0.0	0	0.0	51		
Hospitalisation	929	99.3	5	0.5	2	0.2	936		
Medical	2,567	99.4	8	0.3	8	0.3	2,583		
PDO Major	10,188	98.8	97	0.9	31	0.3	10,316		
PDO Minor	6,428	98.0	68	1.0	61	0.9	6,557		
Total	20,163	98.6	178	0.9	102	0.5	20,443		

 Table 11: All crashes on local roads by surface type and crash severity 2012

3.6 Crash Nature

Table 12 shows KSI by crash nature for the Metropolitan Region local road network for 2012.

Crash Nature	Region					
	Metropolitan (MET)	State	% for MET			
	n	n	%			
Multi-Vehicle Crashes						
Rear End	141	163	87			
Head On	42	57	74			
Sideswipe	54	60	90			
Right Angle	259	315	82			
Right Turn Thru	137	149	92			
Multi-Vehicle Other	11	19	58			
Multi-Vehicle Total	644	763	84			
Single Vehicle Crashes						
Hit Pedestrian	132	159	83			
Hit Animal	0	3	0			
Hit Object	220	394	56			
Non-Collision	102	181	56			
Single Vehicle Other	8	20	40			
Single Vehicle Total	462	757	61			
Total	1,106	1,520	73			

Table 12: KSI on local roads by crash nature 2012

Table 12 shows:

- 36% of KSI occurred in multi-vehicle crashes of Right Angle, or Right Turn thru;
- 20% of KSI occurred in single vehicle crashes of Hit Object; and
- 12% of KSI occurred in Hit Pedestrian crashes.

3.7 Vehicle Type

Table 13 and Figure 17 show KSI by vehicle type and road manager for the Metropolitan Region local road network for 2012.

Vehicle Type	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Car	437	288	8	2	735		
Station Wagon	75	60	0	2	137		
Utility	61	37	0	2	100		
Panel Van	17	11	0	0	28		
Truck	3	5	0	0	8		
Prime Mover	0	0	0	0	0		
Bus	2	0	0	0	2		
Motorcycle	246	84	1	4	335		
Multi-Seated Van	5	1	0	0	6		
Truck Combination	1	4	0	0	5		
4WD	19	14	0	2	35		
Other	5	4	0	0	9		
Total	871	508	9	12	1,400		

 Table 13: KSI by vehicle type and road manager 2012



Figure 17: KSI by vehicle type and road manager 2012

3.8 Road User

Table 14 and Figure 18 show KSI by road user and road manager for the Metropolitan Region local road network for 2012.

Road User	Road Manager							
	Local	Local State Other Unknown Tota						
	n	n	n	n	n			
Driver	468	300	3	3	774			
Passenger	152	120	5	5	282			
Motorcyclist	246	84	1	4	335			
Bicyclist	101	14	0	0	115			
Pedestrian	134	21	0	3	158			
Other	5	4	0	0	9			
Total	1,106	543	9	15	1,673			

Table 14: KSI by road user and road manager 2012

Vulnerable road users - motorcyclists, bicyclists and pedestrians - account for 36% of KSI.



Figure 18: KSI by road user and road manager 2012

3.9 Speed

Figure 19 shows KSI where speed was considered a factor for the Metropolitan Region local road network. The determination of whether speed was a factor in a crash can only be reliably determined from police attended crashes.





11% of KSI occurred in crashes where speed was a factor.

3.10 Blood Alcohol Content (BAC)

Table 15 and Figure 20 show KSI by the highest BAC reading for a driver/rider for the Metropolitan Region local road network. The subset of police attended crashes was used in the summaries below.

Highest Driver/Rider	KSI Severity							
BAC in Police Attended Crash	Killed		Serious	ly Injured	Total			
(g/100ml)	n	%	n	%	n	%		
Nil	35	67	590	65	625	65		
0 ≤ BAC < 0.05	1	2	20	2	21	2		
0.05 ≤ BAC ≤ 0.08	2	4	25	3	27	3		
0.08 ≤ BAC < 0.15	5	10	40	4	45	5		
BAC ≥ 0.15	8	15	20	2	28	3		
Subtotal BAC ≥ 0.05	15	29	85	9	100	10		
Unknown	1	2	213	23	214	22		
Total KSI	52	100	908	100	960	100		

 Table 15: KSI by highest BAC reading in the crash 2012





10% of KSI occurred in crashes where the highest driver/rider BAC was 0.05g/100ml or above.

3.11 Seatbelt Use

Figure 21 shows KSI by seatbelt usage for the Metropolitan Region local road network. The subset of police attended crashes was used in the figure below.



Figure 21: KSI by seatbelt usage 2012 (police attended)

5% of driver or passenger KSI did not wear a seatbelt.

4. SAFE SYSTEM

In this section, KSI summaries are provided for the Metropolitan Region local road network for the four cornerstones of *Towards Zero* – Safe Roads and Roadsides, Safe Speeds, Safe Road Use, and Safe Vehicles.

4.1 Safe Roads and Roadsides

Table 16 shows KSI in intersection crashes on the Metropolitan Region local road network from 2003 to 2012. Intersection crashes are a road safety issue for both Local and State road managers.

Road Manager	KSI in Intersection Crashes				
	n	%			
Local	6,732	64.8			
State	3,642	35.1			
Other	10	0.1			
Unknown	0	0.0			
Total	10,384	100.0			

 Table 16: KSI in intersection crashes 2003 to 2012

4.2 Safe Speeds

Table 17 and Figure 22 show KSI by speed zone on the Metropolitan Region local road network where speed was a factor from 2003 to 2012. The analysis was restricted to police attended crashes for consistency.

Speed Zone		KSI Severity	
(km/hr.)	Killed	Seriously Injured	KSI Total
	n	n	n
< 50	4	15	19
50	27	569	596
60	58	405	463
70	41	233	274
80	22	99	121
90	5	17	22
100	4	8	12
110	4	15	19
Unknown	5	277	282
Total	170	1,638	1,808

 Table 17: KSI by speed zone 2003 to 2012 (police attended)



Figure 22: KSI by speed zone 2003 to 2012 (police attended)

Road segments with a speed limit of 50km/hr. and 60km/hr. had the highest number of KSI.

4.3 Safe Road Use

Table 18 identifies the contributing factors to KSI on the Metropolitan Region local road network. The analysis is restricted to police attended crashes for consistency. The contributing factors are not necessarily mutually exclusive – a crash might have more than one contributing factor.

Contributing Factor	Road Manager						
	Local State Other		Unknown	Total			
	n	n	n	n	n		
Inattention	2,022	1,130	4	27	3,183		
Seatbelts Not Worn	413	140	2	18	573		
Alcohol	1,230	550	5	17	1,802		
Speed	1,808	800	9	33	2,650		

Table 18: KSI by contributing factor 2003 to 2012 (police attended)

Inattention, alcohol and speed are the dominant contributing factors to KSI.

4.4 Safe Vehicles

Table 19 shows KSI by vehicle type and road manager on the Metropolitan Region local road network from 2003 to 2012.

Vehicle Type	Road Manager								
	Loca	al	Sta	ate	Ot	her	Unk	nown	Total
	n	Row %	n	Row %	n	Row %	n	Row %	n
Car	6,385	61.9	3,859	37.4	19	0.2	57	0.6	10,320
Station Wagon	858	60.5	543	38.3	7	0.5	10	0.7	1,418
Utility	574	58.1	404	40.9	3	0.3	7	0.7	988
Panel Van	213	60.2	138	39.0	0	0.0	3	0.8	354
Truck	58	50.4	57	49.6	0	0.0	0	0.0	115
Prime Mover	1	33.3	1	33.3	0	0.0	1	33.3	3
Bus	36	73.5	12	24.5	1	2.0	0	0.0	49
Motorcycle	2,088	72.7	738	25.7	7	0.2	40	1.4	2,873
Multi-Seated Van	64	62.7	38	37.3	0	0.0	0	0.0	102
Truck Combination	17	34.0	32	64.0	0	0.0	1	2.0	50
4WD	239	61.6	134	34.5	2	0.5	13	3.4	388
Other	97	61.4	59	37.3	0	0.0	2	1.3	158
Total	10,630	63.2	6,015	35.8	39	0.2	134	0.8	16,818

Table 19: KSI by vehicle type 2003 to 2012

Notwithstanding the KSI figures attributed to cars, approximately 20% of KSI on the Metropolitan Region local road network were motorcyclists. This is a significant road safety issue for metropolitan Local Governments.
5. DEMOGRAPHICS

In this section demographic summaries of KSI are provided for the Metropolitan Region local road network.

5.1 Gender

Table 20 shows the gender breakdown of KSI on the Metropolitan Region local road network from 2003 to 2012.

Road User	Gender		KSI Severity	
		Killed	Seriously Inj.	Total
		n	n	n
Driver	Female	39	2,809	2,848
	Male	130	3,022	3,152
	Unknown	0	33	33
	Total	169	5,864	6,033
Passenger	Female	30	814	844
	Male	47	552	599
	Unknown	1	974	975
	Total	78	2,340	2,418
Motorcyclist	Female	6	217	223
	Male	133	1,674	1,807
	Unknown	1	57	58
	Total	140	1,948	2,088
Bicyclist	Female	1	133	134
	Male	10	604	614
	Unknown	0	12	12
	Total	11	749	760
Pedestrian	Female	37	454	491
	Male	51	702	753
	Unknown	0	54	54
	Total	88	1,210	1,298
Other	Female	0	28	28
	Male	2	35	37
	Unknown	0	26	26
	Total	2	89	91
Total	Female	113	4,455	4,568
	Male	373	6,589	6,962
	Unknown	2	1,156	1,158
	Total	488	12,200	12,688

Table 20: KSI by road user and gender for 2003 to 2012

Table 20 shows that males represent 76% of all fatalities; 87% of motorcyclists KSI; and 81% of bicyclists KSI.

5.2 Age

Table 21 and Figure 23 show KSI by age and road manager for the Metropolitan Region local road network from 2003 to 2012.

Age	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
0 to 11	431	178	2	4	615				
12 to 16	584	179	2	14	779				
17 to 20	1,861	868	3	29	2,761				
21 to 24	1,476	773	2	21	2,272				
25 to 29	1,333	735	5	21	2,094				
30 to 39	2,029	1,036	10	24	3,099				
40 to 49	1,632	885	4	16	2,537				
50 to 59	1,132	618	6	16	1,772				
60 to 69	641	409	2	7	1,059				
70+	777	438	2	7	1,224				
Unknown	792	426	4	10	1,232				
Total	12,688	6,545	42	169	19,444				

Table 21: KSI by age 2003 to 2012

People in the 17 to 24 age group are most prevalent KSI in crashes followed by people in the 30 to 39 age group.



Figure 23: KSI by age 2003 to 2012

6. LOCAL GOVERNMENT ROAD CRASH AND KSI SUMMARIES

In this section, crash and KSI summaries are provided for each Local Government in the Metropolitan Region.

6.1 City of Armadale

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 22 displays all crashes in the City of Armadale by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,246	16.1
Intersection	State, State	354	4.6
Intersection	State, LG	1,823	23.6
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	2	0.0
Midblock	LG	2,221	28.7
Intersection	LG, LG	1,945	25.1
Intersection	LG, Other	18	0.2
Midblock	Other	18	0.2
Intersection	Other, Other	1	0.0
Other	Unknown	109	1.4
Total		7,737	100.0

Table 22: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 24 shows:

- 55% of crashes occurred at local road locations including intersections where all legs were local roads;
- 24% of crashes occurred at intersections having both Local and State road legs.
- 21% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 24 also shows 55% of all crashes in the City of Armadale occurred at intersections.

The KSI trend for the City of Armadale local road network from 2003 to 2012 is shown in Table 23.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	39	46	35	36	41	32	34	39	32	35	369

Table 23: KSI trend 2003 - 2012

6.1.1 Crash Nature

A summary of KSI by crash nature on the City of Armadale local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 36% of KSI occurred in single vehicle crashes of Hit Object.
- 25% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.

Crash Nature	Local Government and Region							
		2003 - 2012		2012				
	Armadale	Metropolitan	% for Armadale	Armadale				
	n	n	%	n				
Multi-Vehicle Crashes								
Rear End	31	1,465	2.1	3				
Head On	33	597	5.5	4				
Sideswipe	22	534	4.1	3				
Right Angle	67	3,318	2.0	2				
Right Turn Thru	24	1,858	1.3	0				
Multi-Vehicle Other	6	152	3.9	0				
Multi-Vehicle Total	183	7,924	2.3	12				
Single Vehicle Crashes								
Hit Pedestrian	36	1,257	2.9	4				
Hit Animal	1	34	2.9	0				
Hit Object	132	2,627	5.0	17				
Non-Collision	12	709	1.7	2				
Single Vehicle Other	5	137	3.6	0				
Single Vehicle Total	186	4,764	3.9	23				
Total	369	12,688	2.9	35				

Table 24: KSI by crash nature 2003 - 2012



Figure 25: KSI by crash nature 2003 - 2012

6.1.2 Road User Type

KSI by road user type on the City of Armadale local road network from 2003 to 2012 is shown in Table 25 and Figure 26.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	169	191	1	3	364				
Passenger	61	78	0	1	140				
Motorcyclist	82	27	0	0	109				
Bicyclist	17	13	0	2	32				
Pedestrian	40	13	0	0	53				
Other	0	3	0	0	3				
Total	369	325	1	6	701				

Table 25: KSI by road user 2003 - 2012



Figure 26: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 38% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 26.

Road User	Road Manager									
	Local	State	Unknown	Total						
	n	n	n	n	n					
Driver	16	13	0	0	29					
Passenger	4	3	0	0	7					
Motorcyclist	10	1	0	0	11					
Bicyclist	1	0	0	0	1					
Pedestrian	4	1	0	0	5					
Other	0	0	0	0	0					
Total	35	18	0	0	53					

Table 26: KSI by road user 2012

6.1.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Armadale local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Unknown	Total					
	n	n	n	n	n				
Inattention	57	66	0	0	123				
Seatbelts Not Worn	10	14	0	0	24				
Alcohol	62	31	1	2	96				
Speed	80	36	0	0	116				

Table 27: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, alcohol and speed are the significant contributing factors.

6.1.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User							
	Motorcyclist	Bicyclist	Pedestrian					
	n	n	n					
0 to 11	0	2	8					
12 to 16	6	3	3					
17 to 20	12	1	3					
21 to 24	12	1	5					
25 to 29	13	0	2					
30 to 39	17	3	8					
40 to 49	13	2	2					
50 to 59	6	1	2					
60 to 69	1	0	0					
70+	0	3	2					
Unknown	2	1	5					
Total	82	17	40					

 Table 28: KSI by vulnerable road user and age 2003 - 2012

Table 28 shows 73% of motorcyclists KSI are aged 39 years or younger.

6.2 Town of Bassendean

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 29 displays all crashes in the Town of Bassendean by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	166	9.3
Intersection	State, State	0	0.0
Intersection	State, LG	412	23.1
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	537	30.1
Intersection	LG, LG	667	37.4
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	1	0.1
Total		1,783	100.0

Table 29: All crashes by crash location and road manager 2003 - 2012



Figure 27: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 27 shows:

- 68% of crashes occurred at local road locations including intersections where all legs were local roads.
- 23% of crashes occurred at intersections having both Local and State road legs.
- 9% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 27 also shows 61% of all crashes in the Town of Bassendean occurred at intersections.

The KSI trend for the Town of Bassendean local road network from 2003 to 2012 is shown in Table 30.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	10	10	17	12	5	16	11	5	11	4	101

Table 30: KSI trend 2003 - 2012

6.2.1 Crash Nature

A summary of KSI by crash nature on the Town of Bassendean local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 60% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 16% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region							
		2003 - 2012		2012				
	Bassendean	Metropolitan	% for Bassendean	Bassendean				
	n	n	%	n				
Multi-Vehicle Crashes								
Rear End	6	1,465	0.4	0				
Head On	0	597	0.0	0				
Sideswipe	4	534	0.7	1				
Right Angle	50	3,318	1.5	0				
Right Turn Thru	11	1,858	0.6	0				
Multi-Vehicle Other	0	152	0.0	0				
Multi-Vehicle Total	71	7,924	0.9	1				
Single Vehicle Crashes								
Hit Pedestrian	10	1,257	0.8	3				
Hit Animal	0	34	0.0	0				
Hit Object	16	2,627	0.6	0				
Non-Collision	4	709	0.6	0				
Single Vehicle Other	0	137	0.0	0				
Single Vehicle Total	30	4,764	0.6	3				
Total	101	12,688	0.8	4				

Table 31: KSI by crash nature 2003 - 2012



Figure 28: KSI by crash nature 2003 - 2012

6.2.2 Road User Type

KSI by road user type on the Town of Bassendean local road network from 2003 to 2012 is shown in Table 32 and Figure 29.

Road User	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Driver	46	21	0	0	67	
Passenger	21	7	0	0	28	
Motorcyclist	14	5	0	0	19	
Bicyclist	5	1	0	0	6	
Pedestrian	11	2	0	0	13	
Other	4	0	0	0	4	
Total	101	36	0	0	137	

Table 32: KSI by road user 2003 - 2012



Figure 29: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 30% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists or pedestrians. KSI for 2012 is shown in Table 33.

Road User	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Driver	0	1	0	0	1	
Passenger	0	1	0	0	1	
Motorcyclist	0	0	0	0	0	
Bicyclist	1	1	0	0	2	
Pedestrian	3	0	0	0	3	
Other	0	0	0	0	0	
Total	4	3	0	0	7	

Table 33: KSI by road user 2012

6.2.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of Bassendean local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Inattention	22	10	0	0	32	
Seatbelts Not Worn	1	1	0	0	2	
Alcohol	7	0	0	0	7	
Speed	15	2	0	0	17	

Table 34: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and speed are the dominant contributing factors in KSI.

6.2.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	0	0	3			
12 to 16	0	1	2			
17 to 20	2	1	1			
21 to 24	0	0	0			
25 to 29	2	0	0			
30 to 39	6	2	0			
40 to 49	3	1	2			
50 to 59	1	0	1			
60 to 69	0	0	0			
70+	0	0	2			
Unknown	0	0	0			
Total	14	5	11			

 Table 35: KSI by vulnerable road user and age 2003 - 2012

Table 35 shows 78% of motorcyclists KSI were aged between 25 and 49.

6.3 City of Bayswater

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 36 displays all crashes in the City of Bayswater by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,302	9.5
Intersection	State, State	263	1.9
Intersection	State, LG	2,967	21.7
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	3,982	29.2
Intersection	LG, LG	5,022	36.8
Intersection	LG, Other	85	0.6
Midblock	Other	11	0.1
Intersection	Other, Other	0	0.0
Other	Unknown	18	0.1
Total		13,650	100.0

Table 36: All crashes by crash location and road manager 2003 - 2012



Figure 30: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 30 shows:

- 66% of crashes occurred at local road locations including intersections where all legs were local roads.
- 22% of crashes occurred at intersections having both Local and State road legs.
- 12% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 30 also shows 61% of all crashes in the City of Bayswater occurred at intersections.

The KSI trend for the City of Bayswater local road network from 2003 to 2012 is shown in Table 37.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	60	56	68	63	59	50	59	42	40	35	532

Table 37: KSI trend 2003 - 2012

6.3.1 Crash Nature

A summary of KSI by crash nature on the City of Bayswater local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 48% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 14% of KSI occurred in multi-vehicle crashes of Rear End; and
- 14% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region					
		2003 - 2012		2012		
	Bayswater	Metropolitan	% for Bayswater	Bayswater		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	76	1,465	5.2	5		
Head On	26	597	4.4	0		
Sideswipe	17	534	3.2	1		
Right Angle	138	3,318	4.2	6		
Right Turn Thru	115	1,858	6.2	9		
Multi-Vehicle Other	7	152	4.6	3		
Multi-Vehicle Total	379	7,924	4.8	24		
Single Vehicle Crashes						
Hit Pedestrian	50	1,257	4.0	1		
Hit Animal	0	34	0.0	0		
Hit Object	72	2,627	2.7	8		
Non-Collision	24	709	3.4	2		
Single Vehicle Other	7	137	5.1	0		
Single Vehicle Total	153	4,764	3.2	11		
Total	532	12,688	4.2	35		

Table 38: KSI by crash nature 2003 - 2012



Figure 31: KSI by crash nature 2003 - 2012

6.3.2 Road User Type

KSI by road user type on the City of Bayswater local road network from 2003 to 2012 is shown in Table 39 and Figure 32.

Road User	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Driver	267	165	0	0	432	
Passenger	113	64	0	1	178	
Motorcyclist	77	34	0	1	112	
Bicyclist	23	5	0	0	28	
Pedestrian	50	19	0	0	69	
Other	2	3	0	0	5	
Total	532	290	0	2	824	

Table 39: KSI by road user 2003 - 2012



Figure 32: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 28% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 40.

Road User	Road Manager					
	Local	I State Other		Unknown	Total	
	n	n	n	n	n	
Driver	16	12	0	0	28	
Passenger	6	6	0	0	12	
Motorcyclist	7	5	0	0	12	
Bicyclist	3	1	0	0	4	
Pedestrian	3	1	0	0	4	
Other	0	0	0	0	0	
Total	35	25	0	0	60	

Table 40: KSI by road user 2012

6.3.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Bayswater local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Inattention	87	57	0	0	144	
Seatbelts Not Worn	17	7	0	0	24	
Alcohol	32	22	0	0	54	
Speed	74	23	0	1	98	

Table 41: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and speed are significant contributing factors in KSI.

6.3.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	0	1	5			
12 to 16	2	2	3			
17 to 20	11	3	1			
21 to 24	11	2	1			
25 to 29	11	4	2			
30 to 39	18	1	6			
40 to 49	13	4	6			
50 to 59	5	1	5			
60 to 69	1	1	5			
70+	0	2	11			
Unknown	5	2	5			
Total	77	23	50			

Table 42: KSI by vulnerable road user and age 2003 - 2012

Table 42 shows:

- 55% of motorcyclists KSI were aged between 29 and 45.
- 22% of pedestrians KSI were aged 70 years or older.

6.4 City of Belmont

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 43 displays all crashes in the City of Belmont by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	2,005	15.9
Intersection	State, State	1,387	11.0
Intersection	State, LG	3,370	26.7
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	34	0.3
Midblock	LG	2,280	18.1
Intersection	LG, LG	2,481	19.7
Intersection	LG, Other	31	0.2
Midblock	Other	186	1.5
Intersection	Other, Other	333	2.6
Other	Unknown	498	4.0
Total		12,605	100.0

Table 43: All crashes by crash location and road manager 2003 - 2012



Figure 33: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 33 shows:

 42% of crashes occurred at local road locations including intersections where all legs were local roads.

29% of crashes occurred at intersections having both Local and State road legs.

 29% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 33 also shows 63% of all crashes in the City of Belmont occurred at intersections.

The KSI trend for the City of Belmont local road network from 2003 to 2012 is shown in Table 44.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	30	31	20	29	41	10	28	22	28	26	265

Table 44: KSI trend 2003 - 2012

6.4.1 Crash Nature

A summary of KSI 2012 by crash nature on the City of Belmont local road network from 2003 to is displayed in the table and figure below, which show:

- 53% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 19% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature		Local Governme	ent and Regio	n
		2003 - 2012		2012
	Belmont	Metropolitan	% for Belmont	Belmont
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	19	1,465	1.3	4
Head On	0	597	0.0	0
Sideswipe	8	534	1.5	0
Right Angle	105	3,318	3.2	14
Right Turn Thru	36	1,858	1.9	0
Multi-Vehicle Other	2	152	1.3	0
Multi-Vehicle Total	170	7,924	2.1	18
Single Vehicle Crashes				
Hit Pedestrian	28	1,257	2.2	3
Hit Animal	0	34	0.0	0
Hit Object	51	2,627	1.9	3
Non-Collision	7	709	1.0	0
Single Vehicle Other	9	137	6.6	2
Single Vehicle Total	95	4,764	2.0	8
Total	265	12,688	2.1	26

Table 45: KSI by crash nature 2003 - 2012



Figure 34: KSI by crash nature 2003 - 2012

6.4.2 Road User Type

KSI by road user type on the City of Belmont local road network from 2003 to 2012 is shown in Table 46 and Figure 35.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	132	182	9	2	325			
Passenger	47	69	7	1	124			
Motorcyclist	35	35	2	5	77			
Bicyclist	21	8	0	0	29			
Pedestrian	30	15	1	6	52			
Other	0	1	0	0	1			
Total	265	310	19	14	608			

Table 46: KSI by road user 2003 - 2012



Figure 35: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 32% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 47.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	14	16	3	0	33				
Passenger	3	9	5	0	17				
Motorcyclist	3	7	0	1	11				
Bicyclist	3	0	0	0	3				
Pedestrian	3	0	0	0	3				
Other	0	0	0	0	0				
Total	26	32	8	1	67				

Table 47: KSI by road user 2012

6.4.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Belmont local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	State	Unknown	Total				
	n	n	n	n	n			
Inattention	54	51	2	5	112			
Seatbelts Not Worn	10	4	0	1	15			
Alcohol	18	29	1	0	48			
Speed	48	43	8	3	102			

Table 48: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and speed are the dominant contributing factors in KSI.

6.4.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser
	Motorcyclist	Bicyclist	Pedestrian
	n	n	n
0 to 11	0	1	6
12 to 16	1	0	3
17 to 20	5	3	1
21 to 24	3	1	2
25 to 29	2	2	1
30 to 39	7	1	4
40 to 49	5	1	3
50 to 59	7	5	3
60 to 69	4	3	2
70+	1	2	4
Unknown	0	2	1
Total	35	21	30

 Table 49: KSI by vulnerable road user and age 2003 - 2012

Table 49 shows:

- 54% of motorcyclists KSI were aged between 30 and 59.
- 20% of pedestrians KSI were children aged 11 years or younger.

6.5 Town of Cambridge

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 50 displays all crashes in the Town of Cambridge by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,004	15.3
Intersection	State, State	4	0.1
Intersection	State, LG	606	9.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	3	0.0
Midblock	LG	1,893	28.8
Intersection	LG, LG	3,037	46.2
Intersection	LG, Other	4	0.1
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	16	0.2
Total		6,567	100.0

Table 50: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 36 shows:

- 76% of crashes occurred at local road locations including intersections where all legs were local roads.
- 9% of crashes occurred at intersections having both Local and State road legs.
- 15% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 36 also shows 56% of all crashes in the Town of Cambridge occurred at intersections.

The KSI trend for the Town of Cambridge local road network from 2003 to 2012 is shown in Table 51.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	50	30	20	17	28	20	22	30	30	15	262

Table 51: KSI trend 2003 - 2012

6.5.1 Crash Nature

A summary of KSI by crash nature on the Town of Cambridge local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 50% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 14% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region						
		2003 - 2012		2012			
	Cambridge	Metropolitan	% for Cambridge	Cambridge			
	n	n	%	n			
Multi-Vehicle Crashes							
Rear End	38	1,465	2.6	2			
Head On	7	597	1.2	1			
Sideswipe	16	534	3.0	1			
Right Angle	74	3,318	2.2	4			
Right Turn Thru	56	1,858	3.0	3			
Multi-Vehicle Other	2	152	1.3	0			
Multi-Vehicle Total	193	7,924	2.4	11			
Single Vehicle Crashes							
Hit Pedestrian	25	1,257	2.0	0			
Hit Animal	0	34	0.0	0			
Hit Object	37	2,627	1.4	2			
Non-Collision	7	709	1.0	2			
Single Vehicle Other	0	137	0.0	0			
Single Vehicle Total	69	4,764	1.4	4			
Total	262	12,688	2.1	15			

Table 52: KSI by crash nature 2003 - 2012



Figure 37: KSI by crash nature 2003 - 2012

6.5.2 Road User Type

KSI by road user type on the Town of Cambridge local road network from 2003 to 2012 is shown in Table 53 and Figure 38.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	121	40	0	0	161			
Passenger	44	17	0	0	61			
Motorcyclist	43	13	0	0	56			
Bicyclist	26	0	0	0	26			
Pedestrian	25	3	0	0	28			
Other	3	1	0	0	4			
Total	262	74	0	0	336			

Table 53: KSI by road user 2003 - 2012



Figure 38: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 36% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 54.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	5	2	0	0	7				
Passenger	1	2	0	0	3				
Motorcyclist	7	0	0	0	7				
Bicyclist	2	0	0	0	2				
Pedestrian	0	0	0	0	0				
Other	0	0	0	0	0				
Total	15	4	0	0	19				

Table 54: KSI by road user 2012

6.5.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of Cambridge local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Inattention	56	7	0	0	63			
Seatbelts Not Worn	6	1	0	0	7			
Alcohol	21	5	0	0	26			
Speed	24	12	0	0	36			

Table 55: KSI by contributing factor 2003 - 2012 (police attended)

Inattention is the dominant contributing factor in KSI. Speed and non-wearing of seatbelts are also significant contributing factors.

6.5.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	0	1	3			
12 to 16	0	2	1			
17 to 20	0	0	3			
21 to 24	9	4	2			
25 to 29	8	0	4			
30 to 39	9	5	1			
40 to 49	8	5	1			
50 to 59	5	5	1			
60 to 69	2	1	5			
70+	0	0	3			
Unknown	2	3	1			
Total	43	26	25			
Table 56: KSI by vulnerable road user and age 2003 - 2012						

Table 56 shows 79% of motorcyclists KSI were aged between 21 and 49.

6.6 City of Canning

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 57 displays all crashes in the City of Canning by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%	
Midblock	State	2,654	12.1	
Intersection	State, State	1,198	5.5	
Intersection	State, LG	4,887	22.4	
Intersection	State, LG, Other	14	0.1	
Intersection	State, Other	15	0.1	
Midblock	LG	5,460	25.0	
Intersection	LG, LG	7,274	33.3	
Intersection	LG, Other	193	0.9	
Midblock	Other	10	0.0	
Intersection	Other, Other	2	0.0	
Other	Unknown	144	0.7	
Total		21,851	100.0	

Table 57: All crashes by crash location and road manager 2003 - 2012



Figure 39: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 39 shows:

- 59% of crashes occurred at local road locations including intersections where all legs were local roads.
- 23% of crashes occurred at intersections having both Local and State road legs.
- 18% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 39 also shows 63% of all crashes in the City of Canning occurred at intersections.

The KSI trend for the City of Canning local road network from 2003 to 2012 is shown in Table 58.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	80	93	81	49	51	59	49	54	59	52	627

Table 58: KSI trend 2003 - 2012

6.6.1 Crash Nature

A summary of KSI by crash nature on the City of Canning local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 52% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 16% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region					
	2003 - 2012			2012		
	Canning	Metropolitan	% for Canning	Canning		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	71	1,465	4.8	2		
Head On	14	597	2.3	0		
Sideswipe	19	534	3.6	2		
Right Angle	221	3,318	6.7	13		
Right Turn Thru	106	1,858	5.7	9		
Multi-Vehicle Other	6	152	3.9	0		
Multi-Vehicle Total	437	7,924	5.5	26		
Single Vehicle Crashes						
Hit Pedestrian	58	1,257	4.6	10		
Hit Animal	0	34	0.0	0		
Hit Object	103	2,627	3.9	9		
Non-Collision	22	709	3.1	6		
Single Vehicle Other	7	137	5.1	1		
Single Vehicle Total	190	4,764	4.0	26		
Total	627	12,688	4.9	52		

Table 59: KSI by crash nature 2003 - 2012



Figure 40: KSI by crash nature 2003 - 2012

6.6.2 Road User Type

KSI by road user type on the City of Canning local road network from 2003 to 2012 is shown in Table 60 and Figure 41.

Road User	Road Manager						
	Local	State Other		Unknown	Total		
	n	n	n	n	n		
Driver	338	196	0	1	535		
Passenger	117	74	0	0	191		
Motorcyclist	77	48	0	4	129		
Bicyclist	33	11	0	0	44		
Pedestrian	60	26	0	3	89		
Other	2	4	0	0	6		
Total	627	359	0	8	994		

Table 60: KSI by road user 2003 - 2012


Figure 41: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 27% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 61.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	19	7	0	0	26				
Passenger	9	5	0	0	14				
Motorcyclist	12	3	0	0	15				
Bicyclist	3	0	0	0	3				
Pedestrian	9	2	0	0	11				
Other	0	1	0	0	1				
Total	52	18	0	0	70				

Table 61: KSI by road user 2012

6.6.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Canning local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Inattention	85	45	0	0	130				
Seatbelts Not Worn	18	6	0	0	24				
Alcohol	50	16	0	1	67				
Speed	80	34	0	0	114				

Table 62: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and speed are the dominant contributing factors in KSI. Alcohol is also a significant contributing factor.

6.6.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User							
	Motorcyclist	Bicyclist	Pedestrian					
	n	n	n					
0 to 11	0	1	4					
12 to 16	4	4	11					
17 to 20	6	4	8					
21 to 24	10	6	7					
25 to 29	14	1	2					
30 to 39	23	4	9					
40 to 49	11	2	3					
50 to 59	5	3	1					
60 to 69	3	2	2					
70+	1	0	5					
Unknown	0	6	8					
Total	77	33	60					

Table 63: KSI by vulnerable road user and age 2003 - 2012

Table 63 shows:

- 62% of motorcyclists KSI were aged 25 to 49.
- 25% of pedestrians KSI were aged 16 or younger.

6.7 Town of Claremont

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 64 displays all crashes in the Town of Claremont by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	506	19.3
Intersection	State, State	0	0.0
Intersection	State, LG	642	24.5
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	845	32.3
Intersection	LG, LG	618	23.6
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	6	0.2
Total		2,617	100.0

Table 64: All crashes by crash location and road manager 2003 - 2012



Figure 42: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 42 shows:

- 56% of crashes occurred at local road locations including intersections where all legs were local roads.
- 25% of crashes occurred at intersections having both Local and State road legs.
- 19% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 42 also shows approximately half of all crashes in the Town of Claremont occurred at intersections.

The KSI trend for the Town of Claremont local road network from 2003 to 2012 is shown in Table 65.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	6	6	4	10	4	2	6	6	2	4	50

Table 65: KSI trend 2003 - 2012

6.7.1 Crash Nature

A summary of KSI by crash nature on the Town of Claremont local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 32% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 26% of KSI occurred in single vehicle crashes of Hit Object; and
- 20% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature	Local Government and Region							
		2003 - 2012		2012				
	Claremont	Metropolitan	% for Claremont	Claremont				
	n	n	%	n				
Multi-Vehicle Crashes								
Rear End	3	1,465	0.2	1				
Head On	1	597	0.2	0				
Sideswipe	3	534	0.6	0				
Right Angle	10	3,318	0.3	1				
Right Turn Thru	6	1,858	0.3	0				
Multi-Vehicle Other	0	152	0.0	0				
Multi-Vehicle Total	23	7,924	0.3	2				
Single Vehicle Crashes								
Hit Pedestrian	10	1,257	0.8	2				
Hit Animal	0	34	0.0	0				
Hit Object	13	2,627	0.5	0				
Non-Collision	1	709	0.1	0				
Single Vehicle Other	3	137	2.2	0				
Single Vehicle Total	27	4,764	0.6	2				
Total	50	12,688	0.4	4				

Table 66: KSI by crash nature 2003 - 2012



Figure 43: KSI by crash nature 2003 - 2012

6.7.2 Road User Type

KSI by road user type on the Town of Claremont local road network from 2003 to 2012 is shown in Table 67 and Figure 44.

Road User	Road Manager								
	Local	Local State Other		Unknown	Total				
	n	n	n	n	n				
Driver	19	17	0	0	36				
Passenger	11	3	0	0	14				
Motorcyclist	3	7	0	0	10				
Bicyclist	6	8	0	0	14				
Pedestrian	10	7	0	0	17				
Other 1		0	0	0	1				
Total	50	42	0	0	92				

Table 67: KSI by road user 2003 - 2012



Figure 44: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 38% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 68.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	2	3	0	0	5				
Passenger	0	1	0	0	1				
Motorcyclist	0	0	0	0	0				
Bicyclist	0	1	0	0	1				
Pedestrian	2	0	0	0	2				
Other	0	0	0	0	0				
Total	4	5	0	0	9				

Table 68: KSI by road user 2012

6.7.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of Claremont local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Inattention	7	7	0	0	14				
Seatbelts Not Worn	3	2	0	0	5				
Alcohol	2	5	0	0	7				
Speed	4	7	0	0	11				

 Table 69: KSI by contributing factor 2003 - 2012 (police attended)

Inattention is the dominant contributing factor in KSI.

6.7.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	ser		
	Motorcyclist	Bicyclist	Pedestrian	
	n	n	n	
0 to 11	0	0	1	
12 to 16	0	0	1	
17 to 20	0	1	2	
21 to 24	2	0	0	
25 to 29	0	0	0	
30 to 39	0	1	2	
40 to 49	0	3	0	
50 to 59	0	0	0	
60 to 69	0	1	0	
70+	0	0	3	
Unknown	1	0	1	
Total	3	6	10	

 Table 70: KSI by vulnerable road user and age 2003 - 2012

Table 70 shows pedestrians represented 53% of vulnerable road users KSI.

6.8 City of Cockburn

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 71 displays all crashes in the City of Cockburn by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	2,266	16.3
Intersection	State, State	481	3.5
Intersection	State, LG	1,824	13.1
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	5	0.0
Midblock	LG	3,961	28.5
Intersection	LG, LG	4,893	35.2
Intersection	LG, Other	214	1.5
Midblock	Other	147	1.1
Intersection	Other, Other	3	0.0
Other	Unknown	123	0.9
Total		13,917	100.0

Table 71: All crashes by crash location and road manager 2003 - 2012



Figure 45: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 45 shows:

- 66% of crashes occurred at local road locations including intersections where all legs were local roads.
- 13% of crashes occurred at intersections having both Local and State road legs.
- 21% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 45 also shows 54% of all crashes in the City of Cockburn occurred at intersections.

The KSI trend for the City of Cockburn local road network from 2003 to 2012 is shown in Table 72.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	65	65	62	50	62	71	67	91	71	66	670

Table 72: KSI trend 2003 - 2012

The ten year KSI trend for the City of Cockburn is increasing.

6.8.1 Crash Nature

A summary of KSI by crash nature on the City of Cockburn local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 39% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 23% of KSI occurred in single vehicle crashes of Hit Object; and
- 10% of KSI occurred in multi-vehicle crashes of Head On nature. (This represents 11% of the total for this crash nature on the Metropolitan Region local road network).

Crash Nature	Local Government and Region					
	2003 - 2012			2012		
	Cockburn	Metropolitan	% for Cockburn	Cockburn		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	72	1,465	4.9	10		
Head On	64	597	10.7	5		
Sideswipe	26	534	4.9	8		
Right Angle	163	3,318	4.9	17		
Right Turn Thru	96	1,858	5.2	2		
Multi-Vehicle Other	9	152	5.9	0		
Multi-Vehicle Total	430	7,924	5.4	42		
Single Vehicle Crashes						
Hit Pedestrian	51	1,257	4.1	9		
Hit Animal	2	34	5.9	0		
Hit Object	155	2,627	5.9	12		
Non-Collision	27	709	3.8	3		
Single Vehicle Other	5	137	3.6	0		
Single Vehicle Total	240	4,764	5.0	24		
Total	670	12,688	5.3	66		

Table 73: KSI by crash nature 2003 - 2012



Figure 46: KSI by crash nature 2003 - 2012

6.8.2 Road User Type

KSI by road user type on the City of Cockburn local road network from 2003 to 2012 is shown in Table 74 and Figure 47.

Road User	Road Manager					
	Local	State Other		Unknown	Total	
	n	n	n	n	n	
Driver	357	174	0	4	535	
Passenger	109	69	0	3	181	
Motorcyclist	131	43	3	3	180	
Bicyclist	16	0	0	1	17	
Pedestrian	51	4	0	0	55	
Other	6	4	0	0	10	
Total	670	294	3	11	978	

Table 74: KSI by road user 2003 - 2012



Figure 47: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 30% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 75.

Road User	Road Manager					
	Local	State	State Other		Total	
	n	n	n	n	n	
Driver	33	16	0	0	49	
Passenger	7	7	0	0	14	
Motorcyclist	16	7	0	0	23	
Bicyclist	2	0	0	0	2	
Pedestrian	8	0	0	0	8	
Other	0	0	0	0	0	
Total	66	30	0	0	96	

Table 75: KSI by road user 2012

6.8.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Cockburn local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local State Other			Unknown	Total	
	n	n	n	n	n	
Inattention	106	46	0	1	153	
Seatbelts Not Worn	18	7	0	2	27	
Alcohol	70	21	0	1	92	
Speed	116	45	0	3	164	

Table 76: KSI by contributing factor 2003 - 2012 (police attended)

Speed and inattention are the dominant contributing factors in KSI. Alcohol is also a significant contributing factor.

6.8.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User				
	Motorcyclist	Bicyclist	Pedestrian		
	n	n	n		
0 to 11	0	1	3		
12 to 16	4	3	10		
17 to 20	13	1	5		
21 to 24	13	2	1		
25 to 29	31	3	9		
30 to 39	28	0	7		
40 to 49	28	6	6		
50 to 59	6	0	5		
60 to 69	5	0	1		
70+	1	0	3		
Unknown	2	0	1		
Total	131	16	51		

Table 77: KSI by vulnerable road user and age 2003 - 2012

Table 77 shows:

- 66% of motorcyclists KSI were aged 25 to 49.
- 20% of pedestrians KSI were aged 12 to 16.

6.9 Town of Cottesloe

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 78 displays all crashes in the Town of Cottesloe by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	48	2.6
Intersection	State, State	0	0.0
Intersection	State, LG	316	17.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	1	0.1
Midblock	LG	759	41.4
Intersection	LG, LG	703	38.3
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	7	0.4
Total		1,834	100.0

Table 78: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 48 shows:

- 80% of crashes occurred at local road locations including intersections where all legs were local roads.
- 17% of crashes occurred at intersections having both Local and State road legs.
- 3% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 48 also shows 55% of all crashes in the Town of Cottesloe occurred at Intersections.

The KSI trend for the Town of Cottesloe local road network from 2003 to 2012 is shown in Table 79.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	11	9	9	8	7	10	3	4	5	7	73

Table 79: KSI trend 2003 - 2012

6.9.1 Crash Nature

A summary of KSI by crash nature on the Town of Cottesloe local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 45% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 16% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature	ent and Regior	ı		
	2003 - 2012			2012
	Cottesloe	Metropolitan	% for Cottesloe	Cottesloe
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	7	1,465	0.5	1
Head On	0	597	0.0	0
Sideswipe	5	534	0.9	1
Right Angle	29	3,318	0.9	2
Right Turn Thru	4	1,858	0.2	0
Multi-Vehicle Other	0	152	0.0	0
Multi-Vehicle Total	45	7,924	0.6	4
Single Vehicle Crashes				
Hit Pedestrian	12	1,257	1.0	1
Hit Animal	1	34	2.9	0
Hit Object	8	2,627	0.3	1
Non-Collision	5	709	0.7	1
Single Vehicle Other	2	137	1.5	0
Single Vehicle Total	28	4,764	0.6	3
Total	73	12,688	0.6	7

Table 80: KSI by crash nature 2003 - 2012



Figure 49: KSI by crash nature 2003 - 2012

6.9.2 Road User Type

KSI by road user type on the Town of Cottesloe local road network from 2003 to 2012 is shown in Table 81 and Figure 50.

Road User	Road Manager					
	Local	State Other		Unknown	Total	
	n	n	n	n	n	
Driver	18	17	0	0	35	
Passenger	7	3	0	0	10	
Motorcyclist	22	1	0	0	23	
Bicyclist	14	0	0	0	14	
Pedestrian	12	0	0	0	12	
Other	0	1	0	0	1	
Total	73	22	0	0	95	

Table 81: KSI by road user 2003 - 2012



Figure 50: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 66% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 82.

Road User	Road Manager					
	Local	State	State Other		Total	
	n	n	n	n	n	
Driver	0	0	0	0	0	
Passenger	0	0	0	0	0	
Motorcyclist	3	0	0	0	3	
Bicyclist	3	0	0	0	3	
Pedestrian	1	0	0	0	1	
Other	0	0	0	0	0	
Total	7	0	0	0	7	

Table 82: KSI by road user 2012

6.9.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of Cottesloe local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	Local State Other		Unknown	Total	
	n	n	n	n	n	
Inattention	8	3	0	0	11	
Seatbelts Not Worn	1	1	0	0	2	
Alcohol	2	4	0	0	6	
Speed	3	4	0	0	7	

Table 83: KSI by contributing factor 2003 - 2012 (police attended)

Inattention is the dominant contributing factor in KSI.

6.9.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User				
	Motorcyclist	Bicyclist	Pedestrian		
	n	n	n		
0 to 11	0	0	0		
12 to 16	0	0	1		
17 to 20	1	0	0		
21 to 24	6	0	0		
25 to 29	3	3	1		
30 to 39	5	2	0		
40 to 49	6	4	2		
50 to 59	1	4	1		
60 to 69	0	0	2		
70+	0	0	3		
Unknown	0	1	2		
Total	22	14	12		

 Table 84: KSI by vulnerable road user and age 2003 - 2012

Table 84 shows 50% of motorcyclists KSI were aged 30 to 49.

6.10 Town of East Fremantle

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 85 displays all crashes in the Town of East Fremantle by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	233	17.1
Intersection	State, State	209	15.3
Intersection	State, LG	452	33.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	315	23.1
Intersection	LG, LG	151	11.1
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	3	0.2
Total		1,363	100.0

Table 85: All crashes by crash location and road manager 2003 - 2012



Figure 51: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 51 shows:

- 34% of crashes occurred at local road locations including intersections where all legs were local roads.
- 33% of crashes occurred at intersections having both Local and State road legs.
- 33% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 51 also shows 60% of all crashes in the Town of East Fremantle occurred at intersections.

The KSI trend for the Town of East Fremantle local road network from 2003 to 2012 is shown in Table 86.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	2	2	3	3	4	1	5	3	0	0	23

Table 86: KSI trend 2003 - 2012

6.10.1 Crash Nature

A summary of KSI by crash on the Town of East Fremantle local road network from 2003 to 2012 nature is displayed in the table and figure below, which show:

- 26% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 26% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region						
		2003 - 2012		2012			
	East Fremantle	Metropolitan	% for East Fremantle	East Fremantle			
	n	n	%	n			
Multi-Vehicle Crashes							
Rear End	4	1,465	0.3	0			
Head On	0	597	0.0	0			
Sideswipe	1	534	0.2	0			
Right Angle	4	3,318	0.1	0			
Right Turn Thru	2	1,858	0.1	0			
Multi-Vehicle Other	1	152	0.7	0			
Multi-Vehicle Total	12	7,924	0.2	0			
Single Vehicle Crashes							
Hit Pedestrian	4	1,257	0.3	0			
Hit Animal	0	34	0.0	0			
Hit Object	6	2,627	0.2	0			
Non-Collision	1	709	0.1	0			
Single Vehicle Other	0	137	0.0	0			
Single Vehicle Total	11	4,764	0.2	0			
Total	23	12,688	0.2	0			

Table 87: KSI by crash nature 2003 - 2012



Figure 52: KSI by crash nature 2003 - 2012

6.10.2 Road User Type

KSI by road user type on the Town of East Fremantle local road network from 2003 to 2012 is shown in Table 88 and Figure 53.

Road User	Road Manager							
	Local	State	Unknown	Total				
	n	n	n	n	n			
Driver	12	26	0	0	38			
Passenger	2	9	0	0	11			
Motorcyclist	1	4	0	0	5			
Bicyclist	4	3	0	0	7			
Pedestrian	4	1	0	0	5			
Other	0	0	0	0	0			
Total	23	43	0	0	66			

Table 88: KSI by road user 2003 - 2012



Figure 53: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 39% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 89.

Road User	Road Manager							
	Local	State	State Other Unknown					
	n	n	n	n	n			
Driver	0	0	0	0	0			
Passenger	0	0	0	0	0			
Motorcyclist	0	1	0	0	1			
Bicyclist	0	1	0	0	1			
Pedestrian	0	0	0	0	0			
Other	0	0	0	0	0			
Total	0	2	0	0	2			

Table 89: KSI by road user 2012

6.10.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of East Fremantle local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	Local State Other Unknown Total						
	n	n	n	n	n			
Inattention	6	9	0	0	15			
Seatbelts Not Worn	1	1	0	0	2			
Alcohol	6	3	0	0	9			
Speed	4	3	0	0	7			

Table 90: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and alcohol were the dominant contributing factors in KSI.

6.10.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser
	Motorcyclist	Bicyclist	Pedestrian
	n	n	n
0 to 11	0	1	0
12 to 16	0	0	0
17 to 20	0	0	1
21 to 24	0	0	1
25 to 29	0	1	1
30 to 39	0	1	0
40 to 49	1	1	0
50 to 59	0	0	1
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	0
Total	1	4	4

Table 91: KSI by vulnerable road user and age 2003 - 2012

6.11 City of Fremantle

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 92 displays all crashes in the City of Fremantle by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	938	9.4
Intersection	State, State	456	4.6
Intersection	State, LG	2,270	22.7
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	3,324	33.3
Intersection	LG, LG	2,896	29.0
Intersection	LG, Other	17	0.2
Midblock	Other	27	0.3
Intersection	Other, Other	1	0.0
Other	Unknown	65	0.7
Total		9,994	100.0

Table 92: All crashes by crash location and road manager 2003 - 2012



Figure 54: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 54 shows:

- 63% of crashes occurred at local road locations including intersections where all legs were local roads.
- 23% of crashes occurred at intersections having both Local and State road legs.
- 14% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 54 also shows 57% of all crashes in the City of Fremantle occurred at intersections.

The KSI trend for the City of Fremantle local road network from 2003 to 2012 is shown in Table 93.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	34	31	41	26	31	31	27	29	25	30	305

Table 93: KSI trend 2003 - 2012

6.11.1 Crash Nature

A summary of KSI by crash nature on the City of Fremantle local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 40% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 17% of KSI occurred in single vehicle crashes of Hit Pedestrian; and
- 17% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region						
		2003 - 2012		2012			
	Fremantle	Metropolitan	% for Fremantle	Fremantle			
	n	n	%	n			
Multi-Vehicle Crashes							
Rear End	44	1,465	3.0	6			
Head On	2	597	0.3	0			
Sideswipe	12	534	2.2	2			
Right Angle	79	3,318	2.4	5			
Right Turn Thru	43	1,858	2.3	5			
Multi-Vehicle Other	3	152	2.0	1			
Multi-Vehicle Total	183	7,924	2.3	19			
Single Vehicle Crashes							
Hit Pedestrian	51	1,257	4.1	2			
Hit Animal	0	34	0.0	0			
Hit Object	51	2,627	1.9	7			
Non-Collision	18	709	2.5	1			
Single Vehicle Other	2	137	1.5	1			
Single Vehicle Total	122	4,764	2.6	11			
Total	305	12,688	2.4	30			

Table 94: KSI by crash nature 2003 - 2012



Figure 55: KSI by crash nature 2003 - 2012

6.11.2 Road User Type

KSI by road user type on the City of Fremantle local road network from 2003 to 2012 is shown in Table 95 and Figure 56.

Road User	Road Manager							
	Local	State	Total					
	n	n	n	n	n			
Driver	121	87	5	2	215			
Passenger	47	39	1	3	90			
Motorcyclist	51	27	0	0	78			
Bicyclist	30	15	0	0	45			
Pedestrian	51	25	0	1	77			
Other	5	1	0	0	6			
Total	305	194	6	6	511			

Table 95: KSI by road user 2003 - 2012



Figure 56: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 43% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 96.

Road User	Road Manager							
	Local	State	State Other Unknown					
	n	n	n	n	n			
Driver	13	8	0	0	21			
Passenger	3	3	0	0	6			
Motorcyclist	3	2	0	0	5			
Bicyclist	9	2	0	0	11			
Pedestrian	2	0	0	0	2			
Other	0	1	0	0	1			
Total	30	16	0	0	46			

Table 96: KSI by road user 2012

6.11.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Fremantle local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager						
	Local State Other		Unknown	Total			
	n	n	n	n	n		
Inattention	39	36	0	0	75		
Seatbelts Not Worn	6	1	0	2	9		
Alcohol	24	15	0	1	40		
Speed	24	16	0	2	42		

Table 97: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, alcohol and speed are dominant contributing factors in KSI.

6.11.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Vulnerable Road User						
Motorcyclist	Bicyclist	Pedestrian				
n	n	n				
0	1	4				
2	1	3				
0	1	2				
9	2	6				
4	8	3				
14	5	7				
13	4	9				
8	4	3				
1	1	1				
0	0	5				
0	3	8				
51	30	51				
	Vu Motorcyclist	Vulnerable Road U Motorcyclist Bicyclist n n 0 1 2 1 0 1 2 1 0 1 9 2 4 8 14 5 13 4 8 4 1 1 0 0 0 3 51 30				

Table 98: KSI by vulnerable road user and age 2003 - 2012

Table 98 shows 53% of motorcyclists KSI were aged 30 to 49.

6.12 City of Gosnells

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 99 displays all crashes in the City of Gosnells by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,730	11.0
Intersection	State, State	286	1.8
Intersection	State, LG	2,401	15.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	4	0.0
Midblock	LG	4,797	30.4
Intersection	LG, LG	6,415	40.6
Intersection	LG, Other	39	0.2
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	112	0.7
Total		15,784	100.0

Table 99: All crashes by crash location and road manager 2003 - 2012



Figure 57: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 57 shows:

- 72% of crashes occurred at local road locations including intersections where all legs were local roads.
- 15% of crashes occurred at intersections having both Local and State road legs.
- 13% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 57 also shows 58% of all crashes in the City of Gosnells occurred at intersections.

The KSI trend for the City of Gosnells local road network from 2003 to 2012 is shown in Table 100.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	86	78	73	55	62	69	55	57	50	66	651

Table 100: KSI trend 2003 - 2012

6.12.1 Crash Nature

A summary of KSI by crash nature on the City of Gosnells local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 38% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 24% of KSI occurred in single vehicle crashes of Hit Object; and
- 10% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature	Local Government and Region					
		2003 - 2012		2012		
	Gosnells	Metropolitan	% for Gosnells	Gosnells		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	57	1,465	3.9	2		
Head On	48	597	8.0	6		
Sideswipe	23	534	4.3	2		
Right Angle	173	3,318	5.2	13		
Right Turn Thru	77	1,858	4.1	12		
Multi-Vehicle Other	7	152	4.6	0		
Multi-Vehicle Total	385	7,924	4.9	35		
Single Vehicle Crashes						
Hit Pedestrian	65	1,257	5.2	11		
Hit Animal	0	34	0.0	0		
Hit Object	155	2,627	5.9	17		
Non-Collision	43	709	6.1	3		
Single Vehicle Other	3	137	2.2	0		
Single Vehicle Total	266	4,764	5.6	31		
Total	651	12,688	5.1	66		

Table 101: KSI by crash nature 2003 - 2012



Figure 58: KSI by crash nature 2003 - 2012

6.12.2 Road User Type

KSI by road user type on the City of Gosnells local road network from 2003 to 2012 is shown in Table 102 and Figure 59.

Road User	Road Manager						
	Local	State	State Other		Total		
	n	n	n	n	n		
Driver	317	187	0	4	508		
Passenger	112	60	0	0	172		
Motorcyclist	118	33	0	1	152		
Bicyclist	27	7	0	2	36		
Pedestrian	70	15	0	1	86		
Other	7	3	0	0	10		
Total	651	305	0	8	964		

Table 102: KSI by road user 2003 - 2012


Figure 59: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 33% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 103.

Road User		Road Manager								
	Local	State	Other	Unknown	Total					
	n	n	n	n	n					
Driver	34	19	0	0	53					
Passenger	10	5	0	0	15					
Motorcyclist	9	3	0	0	12					
Bicyclist	1	1	0	0	2					
Pedestrian	12	2	0	0	14					
Other	0	1	0	0	1					
Total	66	31	0	0	97					

Table 103: KSI by road user 2012

6.12.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Gosnells local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Inattention	84	49	0	1	134				
Seatbelts Not Worn	26	5	0	0	31				
Alcohol	61	25	0	1	87				
Speed	104	46	0	1	151				

Table 104: KSI by contributing factor 2003 - 2012 (police attended)

Speed and inattention are dominant contributing factors in KSI. Alcohol is also a significant contributing factor.

6.12.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser	
	Motorcyclist	Bicyclist	Pedestrian	
	n	n	n	
0 to 11	0	3	14	
12 to 16	3	4	10	
17 to 20	16	3	8	
21 to 24	13	0	6	
25 to 29	13	2	5	
30 to 39	31	4	8	
40 to 49	29	5	3	
50 to 59	7	2	4	
60 to 69	4	0	0	
70+	0	1	6	
Unknown	2	3	6	
Total	118	27	70	

 Table 105: KSI by vulnerable road user and age 2003 - 2012

Table 105 shows:

- 51% of motorcyclists KSI were aged 30 to 49.
- 34% of pedestrians KSI were aged 16 or younger.

6.13 City of Joondalup

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 106 displays all crashes in the City of Joondalup by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	2,532	11.8
Intersection	State, State	29	0.1
Intersection	State, LG	3,624	16.9
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	12	0.1
Midblock	LG	5,812	27.0
Intersection	LG, LG	9,360	43.5
Intersection	LG, Other	46	0.2
Midblock	Other	6	0.0
Intersection	Other, Other	3	0.0
Other	Unknown	75	0.3
Total		21,499	100.0

 Table 106: All crashes by crash location and road manager 2003 - 2012



Figure 60: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 60 shows:

- 71% of crashes occurred at local road locations including intersections where all legs were local roads.
- 17% of crashes occurred at intersections having both Local and State road legs.
- 12% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 60 also shows 61% of all crashes in the City of Joondalup occurred at intersections.

The KSI trend for the City of Joondalup local road network from 2003 to 2012 is shown in Table 107.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	158	143	102	89	87	107	89	86	67	75	1,003

Table 107: KSI trend 2003 - 2012

6.13.1 Crash Nature

A summary of KSI by crash nature on the City of Joondalup local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 45% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 21% of KSI occurred in single vehicle crashes of Hit Object; and
- 7% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature	Local Government and Region						
		2003 - 2012		2012			
	Joondalup	Metropolitan	% for Joondalup	Joondalup			
	n	n	%	n			
Multi-Vehicle Crashes							
Rear End	132	1,465	9.0	10			
Head On	43	597	7.2	0			
Sideswipe	22	534	4.1	2			
Right Angle	231	3,318	7.0	20			
Right Turn Thru	224	1,858	12.1	14			
Multi-Vehicle Other	5	152	3.3	0			
Multi-Vehicle Total	657	7,924	8.3	46			
Single Vehicle Crashes							
Hit Pedestrian	69	1,257	5.5	7			
Hit Animal	2	34	5.9	0			
Hit Object	210	2,627	8.0	14			
Non-Collision	58	709	8.2	7			
Single Vehicle Other	7	137	5.1	1			
Single Vehicle Total	346	4,764	7.3	29			
Total	1,003	12,688	7.9	75			

Table 108: KSI by crash nature 2003 - 2012



Figure 61: KSI by crash nature 2003 - 2012

6.13.2 Road User Type

KSI by road user type on the City of Joondalup local road network from 2003 to 2012 is shown in Table 109 and Figure 62.

Road User			Road Manage	r	
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	488	192	1	1	682
Passenger	209	65	0	2	276
Motorcyclist	162	30	0	0	192
Bicyclist	68	9	0	1	78
Pedestrian	70	5	0	0	75
Other	6	1	0	1	8
Total	1,003	302	1	5	1,311

Table 109: KSI by road user 2003 - 2012



Figure 62: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 30% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 110.

Road User		Road Manager							
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	27	19	0	0	46				
Passenger	16	5	0	0	21				
Motorcyclist	17	5	0	0	22				
Bicyclist	8	0	0	0	8				
Pedestrian	7	0	0	0	7				
Other	0	0	0	0	0				
Total	75	29	0	0	104				

Table 110: KSI by road user 2012

6.13.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Joondalup local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Inattention	114	44	1	0	159				
Seatbelts Not Worn	29	6	0	2	37				
Alcohol	121	37	1	1	160				
Speed	144	43	1	1	189				

Table 111: KSI by contributing factor 2003 - 2012 (police attended)

Speed, alcohol and inattention are dominant contributing factors in KSI.

6.13.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser	
	Motorcyclist	Bicyclist	Pedestrian	
	n	n	n	
0 to 11	0	8	5	
12 to 16	10	7	11	
17 to 20	30	2	10	
21 to 24	27	5	4	
25 to 29	22	7	4	
30 to 39	35	11	12	
40 to 49	18	14	4	
50 to 59	15	8	5	
60 to 69	2	2	3	
70+	1	2	3	
Unknown	2	2	9	
Total	162	68	70	

Table 112: KSI by vulnerable road user and age 2003 - 2012

Table 112 shows:

- 70% of motorcyclists KSI were aged 17 to 39.
- 23% of pedestrians KSI were aged 16 or younger.
- 37% of bicyclists KSI were aged 30 to 49.

6.14 Shire of Kalamunda

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 113 displays all crashes in the Shire of Kalamunda by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	788	11.7
Intersection	State, State	614	9.1
Intersection	State, LG	1,327	19.7
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	2,203	32.7
Intersection	LG, LG	1,752	26.0
Intersection	LG, Other	1	0.0
Midblock	Other	15	0.2
Intersection	Other, Other	0	0.0
Other	Unknown	34	0.5
Total		6,734	100.0

 Table 113: All crashes by crash location and road manager 2003 - 2012



Figure 63: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 63 shows:

- 59% of crashes occurred at local road locations including intersections where all legs were local roads.
- 20% of crashes occurred at intersections having both Local and State road legs.
- 21% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 63 also shows 55% of all crashes in the Shire of Kalamunda occurred at intersections.

The KSI trend for the Shire of Kalamunda local road network from 2003 to 2012 is shown in Table 114.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	46	46	42	44	46	40	32	39	45	34	414

Table 114: KSI trend 2003 - 2012

6.14.1 Crash Nature

A summary of KSI by crash nature on the Shire of Kalamunda local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 37% of KSI occurred in single vehicle crashes of Hit Object.
- 25% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.

Crash Nature	Local Government and Region					
	2003 - 2012			2012		
	Kalamunda	Metropolitan	% for Kalamunda	Kalamunda		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	44	1,465	3.0	0		
Head On	35	597	5.9	5		
Sideswipe	11	534	2.1	0		
Right Angle	81	3,318	2.4	5		
Right Turn Thru	21	1,858	1.1	2		
Multi-Vehicle Other	4	152	2.6	1		
Multi-Vehicle Total	196	7,924	2.5	13		
Single Vehicle Crashes						
Hit Pedestrian	25	1,257	2.0	1		
Hit Animal	0	34	0.0	0		
Hit Object	155	2,627	5.9	17		
Non-Collision	32	709	4.5	3		
Single Vehicle Other	6	137	4.4	0		
Single Vehicle Total	218	4,764	4.6	21		
Total	414	12,688	3.3	34		

Table 115: KSI by crash nature 2003 - 2012



Figure 64: KSI by crash nature 2003 - 2012

6.14.2 Road User Type

KSI by road user type on the Shire of Kalamunda local road network from 2003 to 2012 is shown in Table 116 and Figure 65.

Road User	Road Manager						
	Local	Local State Other U			Total		
	n	n	n	n	n		
Driver	211	87	0	0	298		
Passenger	62	42	2	0	106		
Motorcyclist	96	19	1	3	119		
Bicyclist	19	5	0	0	24		
Pedestrian	25	3	0	1	29		
Other	1	2	0	0	3		
Total	414	158	3	4	579		

Table 116: KSI by road user 2003 - 2012



Figure 65: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 34% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 117.

Road User	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Driver	15	4	0	0	19		
Passenger	5	2	0	0	7		
Motorcyclist	11	5	0	0	16		
Bicyclist	2	0	0	0	2		
Pedestrian	1	0	0	0	1		
Other	0	0	0	0	0		
Total	34	11	0	0	45		

Table 117: KSI by road user 2012

6.14.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Kalamunda local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Unknown	Total		
	n	n	n	n	n	
Inattention	75	26	0	0	101	
Seatbelts Not Worn	11	7	0	0	18	
Alcohol	52	18	0	0	70	
Speed	89	34	0	0	123	

Table 118: KSI by contributing factor 2003 - 2012 (police attended)

Speed, inattention and alcohol are dominant contributing factors in KSI.

6.14.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	1	1	4			
12 to 16	4	4	3			
17 to 20	7	1	4			
21 to 24	13	1	2			
25 to 29	9	2	1			
30 to 39	26	0	1			
40 to 49	19	7	1			
50 to 59	12	2	1			
60 to 69	2	0	2			
70+	1	1	1			
Unknown	2	0	5			
Total	96	19	25			

Table 119: KSI by vulnerable road user and age 2003 - 2012

Table 119 shows 47% of motorcyclists KSI were aged 30 to 49.

6.15 City of Kwinana

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 120 displays all crashes in the City of Kwinana by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,138	25.9
Intersection	State, State	287	6.5
Intersection	State, LG	801	18.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	2	0.0
Midblock	LG	998	22.7
Intersection	LG, LG	1,105	25.1
Intersection	LG, Other	5	0.1
Midblock	Other	1	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	65	1.5
Total		4,402	100.0

 Table 120: All crashes by crash location and road manager 2003 - 2012



Figure 66: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 66 shows:

- 49% of crashes occurred at local road locations including intersections where all legs were local roads.
- 18% of crashes occurred at intersections having both Local and State road legs.
- 33% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 66 also shows approximately half of all crashes in the City of Kwinana occurred at intersections.

The KSI trend for the City of Kwinana local road network from 2003 to 2012 is shown in Table 121.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	21	17	35	20	21	24	27	20	20	18	223

Table 121: KSI trend 2003 - 2012

6.15.1 Crash Nature

A summary of KSI by crash nature on the City of Kwinana local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 38% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 25% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region					
		2012				
	Kwinana	Metropolitan	% for Kwinana	Kwinana		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	14	1,465	1.0	1		
Head On	16	597	2.7	2		
Sideswipe	11	534	2.1	5		
Right Angle	59	3,318	1.8	5		
Right Turn Thru	25	1,858	1.3	0		
Multi-Vehicle Other	2	152	1.3	0		
Multi-Vehicle Total	127	7,924	1.6	13		
Single Vehicle Crashes						
Hit Pedestrian	10	1,257	0.8	0		
Hit Animal	2	34	5.9	0		
Hit Object	56	2,627	2.1	1		
Non-Collision	25	709	3.5	4		
Single Vehicle Other	3	137	2.2	0		
Single Vehicle Total	96	4,764	2.0	5		
Total	223	12,688	1.8	18		

Table 122: KSI by crash nature 2003 - 2012



Figure 67: KSI by crash nature 2003 - 2012

6.15.2 Road User Type

KSI by road user type on the City of Kwinana local road network from 2003 to 2012 is shown in Table 123 and Figure 68.

Road User	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Driver	110	108	0	3	221		
Passenger	41	53	0	0	94		
Motorcyclist	54	22	0	2	78		
Bicyclist	5	2	0	1	8		
Pedestrian	12	8	0	0	20		
Other	1	2	0	0	3		
Total	223	195	0	6	424		

Table 123: KSI by road user 2003 - 2012



Figure 68: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 33% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 124.

Road User	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Driver	5	14	0	0	19		
Passenger	0	7	0	0	7		
Motorcyclist	12	0	0	0	12		
Bicyclist	1	0	0	0	1		
Pedestrian	0	2	0	0	2		
Other	0	0	0	0	0		
Total	18	23	0	0	41		

Table 124: KSI by road user 2012

6.15.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Kwinana local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Unknown	Total		
	n	n	n	n	n	
Inattention	40	36	0	1	77	
Seatbelts Not Worn	10	7	0	0	17	
Alcohol	28	28	0	1	57	
Speed	46	37	0	2	85	

Table 125: KSI by contributing factor 2003 - 2012 (police attended)

Speed, inattention and alcohol are significant contributing factors in KSI.

6.15.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Vulnerable Road User					
Motorcyclist	Bicyclist	Pedestrian			
n	n	n			
0	1	3			
1	1	2			
9	0	2			
6	0	1			
4	0	0			
15	0	1			
12	0	1			
5	1	0			
1	1	1			
0	0	1			
1	1	0			
54	5	12			
	Vu Motorcyclist	Vulnerable Road U Motorcyclist Bicyclist n n 0 1 1 1 9 0 6 0 15 0 12 0 5 1 1 1 0 0 12 0 5 1 1 1 0 0 1 1			

Table 126: KSI by vulnerable road user and age 2003 - 2012

Table 126 shows 50% of motorcyclists KSI were aged 30 to 49.

6.16 City of Melville

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 127 displays all crashes in the City of Melville by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	4,341	22.8
Intersection	State, State	774	4.1
Intersection	State, LG	5,741	30.1
Intersection	State, LG, Other	121	0.6
Intersection	State, Other	273	1.4
Midblock	LG	3,895	20.4
Intersection	LG, LG	3,719	19.5
Intersection	LG, Other	126	0.7
Midblock	Other	8	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	69	0.4
Total		19,067	100.0

 Table 127: All crashes by crash location and road manager 2003 - 2012



Figure 69: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 69 shows:

- 41% of crashes occurred at local road locations including intersections where all legs were local roads.
- 32% of crashes occurred at intersections having both Local and State road legs.
- 27% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 69 also shows 56% of all crashes in the City of Melville occurred at intersections.

The KSI trend for the City of Melville local road network from 2003 to 2012 is shown in Table 128.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	41	65	42	34	46	42	47	47	15	28	407

Table 128: KSI trend 2003 - 2012

6.16.1 Crash Nature

A summary of KSI by crash nature on the City of Melville local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 47% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 17% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature		Local Governme	ent and Regior	ı
		2003 - 2012		2012
	Melville	Metropolitan	% for Melville	Melville
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	46	1,465	3.1	3
Head On	11	597	1.8	0
Sideswipe	17	534	3.2	2
Right Angle	124	3,318	3.7	10
Right Turn Thru	69	1,858	3.7	3
Multi-Vehicle Other	4	152	2.6	0
Multi-Vehicle Total	271	7,924	3.4	18
Single Vehicle Crashes				
Hit Pedestrian	35	1,257	2.8	4
Hit Animal	0	34	0.0	0
Hit Object	68	2,627	2.6	2
Non-Collision	24	709	3.4	4
Single Vehicle Other	9	137	6.6	0
Single Vehicle Total	136	4,764	2.9	10
Total	407	12,688	3.2	28

Table 129: KSI by crash nature 2003 - 2012



Figure 70: KSI by crash nature 2003 - 2012

6.16.2 Road User Type

KSI by road user type on the City of Melville local road network from 2003 to 2012 is shown in Table 130 and Figure 71.

Road User	Road Manager							
	Local	Local State		Unknown	Total			
	n	n	n	n	n			
Driver	203	290	0	1	494			
Passenger	59	105	0	0	164			
Motorcyclist	57	53	0	0	110			
Bicyclist	43	11	0	1	55			
Pedestrian	41	47	0	1	89			
Other	4	8	0	0	12			
Total	407	514	0	3	924			

Table 130: KSI by road user 2003 - 2012



Figure 71: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 35% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 131.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	8	17	0	0	25				
Passenger	2	8	0	0	10				
Motorcyclist	7	6	0	0	13				
Bicyclist	6	0	0	0	6				
Pedestrian	4	3	0	0	7				
Other	1	0	0	0	1				
Total	28	34	0	0	62				

Table 131: KSI by road user 2012

6.16.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Melville local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Unknown	Total					
	n	n	n	n	n				
Inattention	57	73	0	0	130				
Seatbelts Not Worn	16	10	0	0	26				
Alcohol	20	38	0	0	58				
Speed	49	58	0	0	107				

Table 132: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and speed are dominant contributing factors in KSI.

6.16.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User						
	Motorcyclist	Bicyclist	Pedestrian				
	n	n	n				
0 to 11	0	1	4				
12 to 16	3	4	5				
17 to 20	2	2	0				
21 to 24	9	5	6				
25 to 29	8	3	4				
30 to 39	7	7	3				
40 to 49	12	7	5				
50 to 59	12	4	4				
60 to 69	2	5	1				
70+	1	1	4				
Unknown	1	4	5				
Total	57	43	41				

Table 133: KSI by vulnerable	road user and age	2003 - 2012
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Table 133 shows 42% of motorcyclists KSI are aged 40 to 59.

6.17 Town of Mosman Park

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 134 displays all crashes in the Town of Mosman Park by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	166	17.0
Intersection	State, State	0	0.0
Intersection	State, LG	331	33.8
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	323	33.0
Intersection	LG, LG	155	15.8
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	3	0.3
Total		978	100.0

 Table 134: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 72 shows:

- 49% of crashes occurred at local road locations including intersections where all legs were local roads.
- 34% of crashes occurred at intersections having both Local and State road legs.
- 17% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 72 also shows half of all crashes in the Town of Mosman Park occurred at intersections.

The KSI trend for the Town of Mosman Park local road network from 2003 to 2012 is shown in Table 135.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	2	1	4	3	3	3	4	1	2	3	26
<u> </u>											i

Table 135: KSI trend 2003 - 2012

6.17.1 Crash Nature

A summary of KSI by crash nature on the Town of Mosman Park local road network from 2003 to 2012 is displayed in the table and figure below, which show:

Crash Nature	ent and Regior	1		
		2003 - 2012		2012
	Mosman Pk	Metropolitan	% for Mosman Pk	Mosman Pk
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	1	1,465	0.1	1
Head On	1	597	0.2	0
Sideswipe	2	534	0.4	1
Right Angle	10	3,318	0.3	0
Right Turn Thru	1	1,858	0.1	0
Multi-Vehicle Other	0	152	0.0	0
Multi-Vehicle Total	15	7,924	0.2	2
Single Vehicle Crashes				
Hit Pedestrian	4	1,257	0.3	0
Hit Animal	0	34	0.0	0
Hit Object	2	2,627	0.1	0
Non-Collision	2	709	0.3	1
Single Vehicle Other	3	137	2.2	0
Single Vehicle Total	11	4,764	0.2	1
Total	26	12,688	0.2	3

• 38% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.

Table 136: KSI by crash nature 2003 - 2012



Figure 73: KSI by crash nature 2003 - 2012

6.17.2 Road User Type

KSI by road user type on the Town of Mosman Park local road network from 2003 to 2012 is shown in Table 137 and Figure 74.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	7	8	0	0	15				
Passenger	4	5	0	0	9				
Motorcyclist	6	4	0	0	10				
Bicyclist	5	0	0	0	5				
Pedestrian	4	6	0	0	10				
Other	0	1	0	0	1				
Total	26	24	0	0	50				

Table 137: KSI by road user 2003 - 2012



Figure 74: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 57% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 138.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	0	0	0	0	0			
Passenger	0	0	0	0	0			
Motorcyclist	1	1	0	0	2			
Bicyclist	2	0	0	0	2			
Pedestrian	0	0	0	0	0			
Other	0	0	0	0	0			
Total	3	1	0	0	4			

Table 138: KSI by road user 2012

6.17.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of Mosman Park local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Inattention	8	5	0	0	13			
Seatbelts Not Worn	0	0	0	0	0			
Alcohol	3	0	0	0	3			
Speed	2	2	0	0	4			

Table 139: KSI by contributing factor 2003 - 2012 (police attended)

Inattention is the dominant contributing factor in KSI.

6.17.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	0	0	1			
12 to 16	0	1	1			
17 to 20	0	0	1			
21 to 24	0	0	0			
25 to 29	1	1	0			
30 to 39	3	1	1			
40 to 49	1	1	0			
50 to 59	0	0	0			
60 to 69	0	0	0			
70+	0	0	0			
Unknown	1	1	0			
Total	6	5	4			

 Table 140: KSI by vulnerable road user and age 2003 - 2012

6.18 Shire of Mundaring

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 141 displays all crashes in the Shire of Mundaring by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	933	22.3
Intersection	State, State	416	9.9
Intersection	State, LG	737	17.6
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	3	0.1
Midblock	LG	1,304	31.1
Intersection	LG, LG	694	16.6
Intersection	LG, Other	0	0.0
Midblock	Other	14	0.3
Intersection	Other, Other	0	0.0
Other	Unknown	87	2.1
Total		4,188	100.0

 Table 141: All crashes by crash location and road manager 2003 - 2012



Figure 75: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 75 shows:

- 49% of crashes occurred at local road locations including intersections where all legs were local roads.
- 18% of crashes occurred at intersections having both Local and State road legs.
- 33% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 75 also shows 55% of all crashes in the Shire of Mundaring occured at midblock locations.

The KSI trend for the Shire of Mundaring local road network from 2003 to 2012 is shown in Table 142.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	23	40	26	24	29	35	30	24	21	17	269

Table 142: KSI trend 2003 - 2012

6.18.1 Crash Nature

A summary of KSI by crash nature on the Shire of Mundaring local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 47% of KSI occurred in single vehicle crashes of Hit Object.
- 17% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.

Crash Nature	Local Government and Region						
		2012					
	Mundaring	Metropolitan	% for Mundaring	Mundaring			
	n	n	%	n			
Multi-Vehicle Crashes							
Rear End	12	1,465	0.8	2			
Head On	30	597	5.0	0			
Sideswipe	5	534	0.9	2			
Right Angle	26	3,318	0.8	3			
Right Turn Thru	20	1,858	1.1	2			
Multi-Vehicle Other	3	152	2.0	0			
Multi-Vehicle Total	96	7,924	1.2	9			
Single Vehicle Crashes							
Hit Pedestrian	11	1,257	0.9	0			
Hit Animal	1	34	2.9	0			
Hit Object	126	2,627	4.8	4			
Non-Collision	32	709	4.5	4			
Single Vehicle Other	3	137	2.2	0			
Single Vehicle Total	173	4,764	3.6	8			
Total	269	12,688	2.1	17			

Table 143: KSI by crash nature 2003 - 2012



Figure 76: KSI by crash nature 2003 - 2012

6.18.2 Road User Type

KSI by road user type on the Shire of Mundaring local road network from 2003 to 2012 is shown in Table 144 and Figure 77.

Road User	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Driver	124	119	1	8	252		
Passenger	65	50	2	1	118		
Motorcyclist	58	16	1	0	75		
Bicyclist	5	0	1	0	6		
Pedestrian	11	10	0	0	21		
Other	6	1	0	0	7		
Total	269	196	5	9	479		

Table 144: KSI by road user 2003 - 2012


Figure 77: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 28% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 145.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	4	9	0	0	13				
Passenger	2	5	0	0	7				
Motorcyclist	10	3	1	0	14				
Bicyclist	0	0	0	0	0				
Pedestrian	0	0	0	0	0				
Other	1	0	0	0	1				
Total	17	17	1	0	35				

Table 145: KSI by road user 2012

6.18.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Mundaring local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	ocal State Other		Unknown	Total			
	n	n	n	n	n			
Inattention	44	47	0	0	91			
Seatbelts Not Worn	18	10	1	0	29			
Alcohol	36	16	1	0	53			
Speed	76	30	0	1	107			

Table 146: KSI by contributing factor 2003 - 2012 (police attended)

Speed is the most significant contributing factor in KSI. Inattention and alcohol are also dominant contributing factors.

6.18.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	lser	
	Motorcyclist	Bicyclist	Pedestrian	
	n	n	n	
0 to 11	0	1	2	
12 to 16	2	1	3	
17 to 20	10	0	1	
21 to 24	9	1	0	
25 to 29	7	0	0	
30 to 39	9	1	0	
40 to 49	15	1	0	
50 to 59	3	0	1	
60 to 69	2	0	2	
70+	1	0	0	
Unknown	0	0	2	
Total	58	5	11	
Table 147: KSI	by vulnerable ro	bad user and a	ge 2003 - 2012	

Table 147 shows 41% of motorcyclists KSI are aged from 30 to 49.

6.19 City of Nedlands

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 148 displays all crashes in the City of Nedlands by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	329	9.9
Intersection	State, State	0	0.0
Intersection	State, LG	515	15.5
Intersection	State, LG, Other	85	2.6
Intersection	State, Other	9	0.3
Midblock	LG	1,132	34.1
Intersection	LG, LG	1,128	34.0
Intersection	LG, Other	104	3.1
Midblock	Other	1	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	19	0.6
Total		3,322	100.0

 Table 148: All crashes by crash location and road manager 2003 - 2012



Figure 78: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 78 shows:

- 71% of crashes occurred at local road locations including intersections where all legs were local roads.
- 19% of crashes occurred at intersections having both Local and State road legs.
- 10% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 78 also shows 56% of all crashes in the City of Nedlands occurred at intersections.

The KSI trend for the City of Nedlands local road network from 2003 to 2012 is shown in Table 149.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	24	20	7	5	12	13	20	9	11	12	133

Table 149: KSI trend 2003 - 2012

6.19.1 Crash Nature

A summary of KSI by crash nature on the City of Nedlands local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 41% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 16% of KSI occurred in multi-vehicle crashes of Rear End; and
- 15% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region							
		2003 - 2012		2012				
	Nedlands	Metropolitan	% for Nedlands	Nedlands				
	n	n	%	n				
Multi-Vehicle Crashes								
Rear End	21	1,465	1.4	1				
Head On	10	597	1.7	0				
Sideswipe	7	534	1.3	1				
Right Angle	39	3,318	1.2	6				
Right Turn Thru	16	1,858	0.9	2				
Multi-Vehicle Other	4	152	2.6	0				
Multi-Vehicle Total	97	7,924	1.2	10				
Single Vehicle Crashes								
Hit Pedestrian	10	1,257	0.8	1				
Hit Animal	0	34	0.0	0				
Hit Object	20	2,627	0.8	1				
Non-Collision	6	709	0.8	0				
Single Vehicle Other	0	137	0.0	0				
Single Vehicle Total	36	4,764	0.8	2				
Total	133	12,688	1.0	12				

Table 150: KSI by crash nature 2003 - 2012



Figure 79: KSI by crash nature 2003 - 2012

6.19.2 Road User Type

KSI by road user type on the City of Nedlands local road network from 2003 to 2012 is shown in Table 151 and Figure 80.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	57	17	0	0	74				
Passenger	25	5	0	0	30				
Motorcyclist	23	2	0	0	25				
Bicyclist	18	2	0	0	20				
Pedestrian	10	3	0	1	14				
Other	0	0	0	0	0				
Total	133	29	0	1	163				

Table 151: KSI by road user 2003 - 2012



Figure 80: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 38% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 152.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	4	1	0	0	5				
Passenger	1	1	0	0	2				
Motorcyclist	2	0	0	0	2				
Bicyclist	4	0	0	0	4				
Pedestrian	1	0	0	0	1				
Other	Other 0		0	0	0				
Total	12	2	0	0	14				

Table 152: KSI by road user 2012

6.19.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Nedlands local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Inattention	17	3	0	0	20			
Seatbelts Not Worn	6	0	0	0	6			
Alcohol	16	1	0	0	17			
Speed	15	1	0	0	16			

Table 153: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, alcohol and speed are significant contributing factors in KSI.

6.19.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Vulnerable Road User						
Motorcyclist	Bicyclist	Pedestrian				
n	n	n				
0	1	1				
4	1	0				
2	2	2				
3	4	1				
5	1	1				
2	4	1				
4	1	1				
1	0	0				
1	2	0				
1	0	3				
0	2	0				
23	18	10				
	Motorcyclist n 0 4 2 3 5 2 4 1 1 0 23	Motorcyclist Bicyclist n n 0 1 4 1 2 2 3 4 5 1 2 4 1 0 1 0 1 0 1 0 2 4 5 1 2 4 1 0 1 2 1 2 1 1 2 1				

Table 154: KSI by vulnerable road user and age 2003 - 2012

Table 154 shows 48% of motorcyclists KSI are aged 25 to 49.

6.20 Shire of Peppermint Grove

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 155 displays all crashes in the Shire of Peppermint Grove by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	197	29.7
Intersection	State, State	0	0.0
Intersection	State, LG	285	43.0
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	129	19.5
Intersection	LG, LG	51	7.7
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	1	0.2
Total		663	100.0

 Table 155: All crashes by crash location and road manager 2003 - 2012



Figure 81: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 81 shows:

- 27% of crashes occurred at local road locations including intersections where all legs were local roads.
- 43% of crashes occurred at intersections having both Local and State road legs.
- 30% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 81 also shows approximately half of all crashes in the Shire of Peppermint Grove occurred at intersections.

The KSI trend for the Shire of Peppermint Grove local road network from 2003 to 2012 is shown in Table 156.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	2	0	0	1	1	0	2	0	0	0	6

Table 156: KSI trend 2003 - 2012

6.20.1 Crash Nature

A summary of KSI by crash nature on the Shire of Peppermint Grove local road network from 2003 to 2012 is displayed in the table and figure below.

Crash Nature	Local Government and Region				
		2003 - 2012		2012	
	Peppermint Grove	Metropolitan	% for Peppermint Grove	Peppermint Grove	
	n	n	%	n	
Multi-Vehicle Crashes					
Rear End	0	1,465	0.0	0	
Head On	2	597	0.3	0	
Sideswipe	0	534	0.0	0	
Right Angle	0	3,318	0.0	0	
Right Turn Thru	1	1,858	0.1	0	
Multi-Vehicle Other	0	152	0.0	0	
Multi-Vehicle Total	3	7,924	0.0	0	
Single Vehicle Crashes					
Hit Pedestrian	1	1,257	0.1	0	
Hit Animal	0	34	0.0	0	
Hit Object	1	2,627	0.0	0	
Non-Collision	1	709	0.1	0	
Single Vehicle Other	0	137	0.0	0	
Single Vehicle Total	3	4,764	0.1	0	
Total	6	12,688	0.0	0	

Table 157: KSI by crash nature 2003 - 2012



Figure 82: KSI by crash nature 2003 - 2012

6.20.2 Road User Type

KSI by road user type on the Shire of Peppermint Grove local road network from 2003 to 2012 is shown in Table 158 and Figure 83.

Road User	Road Manager					
	Local	Local State Other Unkno		Unknown	Total	
	n	n	n	n	n	
Driver	2	6	0	0	8	
Passenger	0	5	0	0	5	
Motorcyclist	3	5	0	0	8	
Bicyclist	0	0	0	0	0	
Pedestrian	1	3	0	0	4	
Other	0	0	0	0	0	
Total	6	19	0	0	25	

Table 158: KSI by road user 2003 - 2012



Figure 83: KSI by road user 2003 - 2012

From 2003 to 2012, two thirds of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. There was no KSI during 2012.

6.20.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Peppermint Grove local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Inattention	1	5	0	0	6	
Seatbelts Not Worn	0	0	0	0	0	
Alcohol	2	0	0	0	2	
Speed	2	1	0	0	3	

Table 159: KSI by contributing factor 2003 - 2012 (police attended)

6.20.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	0	0	1			
12 to 16	0	0	0			
17 to 20	0	0	0			
21 to 24	0	0	0			
25 to 29	0	0	0			
30 to 39	0	0	0			
40 to 49	2	0	0			
50 to 59	0	0	0			
60 to 69	1	0	0			
70+	0	0	0			
Unknown	0	0	0			
Total	3	0	1			

 Table 160: KSI by vulnerable road user and age 2003 - 2012

6.21 City of Perth

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 161 displays all crashes in the City of Perth by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	2,508	12.0
Intersection	State, State	685	3.3
Intersection	State, LG	1,419	6.8
Intersection	State, LG, Other	29	0.1
Intersection	State, Other	0	0.0
Midblock	LG	7,556	36.3
Intersection	LG, LG	8,119	39.0
Intersection	LG, Other	370	1.8
Midblock	Other	3	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	154	0.7
Total		20,843	100.0

 Table 161: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 84 shows:

- 78% of crashes occurred at local road locations including intersections where all legs were local roads.
- 7% of crashes occurred at intersections having both Local and State road legs.
- 15% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 84 also shows approximately half of all crashes in the City of Perth occurred at intersections.

The KSI trend for the City of Perth local road network from 2003 to 2012 is shown in Table 162.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	72	70	78	68	63	62	75	41	51	46	626

Table 162: KSI trend 2003 - 2012

6.21.1 Crash Nature

A summary of KSI by crash nature on the City of Perth local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 39% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 27% of KSI occurred in single vehicle crashes of Hit Pedestrian; and
- 14% of KSI occurred in multi-vehicle crashes of Rear End.

Crash Nature	Local Government and Region					
		2003 - 2012		2012		
	Perth	Metropolitan	% for Perth	Perth		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	89	1,465	6.1	9		
Head On	2	597	0.3	0		
Sideswipe	51	534	9.6	3		
Right Angle	151	3,318	4.6	6		
Right Turn Thru	91	1,858	4.9	4		
Multi-Vehicle Other	14	152	9.2	2		
Multi-Vehicle Total	398	7,924	5.0	24		
Single Vehicle Crashes						
Hit Pedestrian	166	1,257	13.2	17		
Hit Animal	0	34	0.0	0		
Hit Object	42	2,627	1.6	5		
Non-Collision	12	709	1.7	0		
Single Vehicle Other	8	137	5.8	0		
Single Vehicle Total	228	4,764	4.8	22		
Total	626	12,688	4.9	46		

Table 163: KSI by crash nature 2003 - 2012



Figure 85: KSI by crash nature 2003 - 2012

6.21.2 Road User Type

KSI by road user type on the City of Perth local road network from 2003 to 2012 is shown in Table 164 and Figure 86.

Road User	Road Manager					
	Local	Local State Other Uni		Unknown	Total	
	n	n	n	n	n	
Driver	207	109	0	3	319	
Passenger	115	39	0	0	154	
Motorcyclist	73	38	0	1	112	
Bicyclist	59	8	0	1	68	
Pedestrian	166	10	0	6	182	
Other	6	1	0	0	7	
Total	626	205	0	11	842	

Table 164: KSI by road user 2003 - 2012



Figure 86: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 27% of KSI on local roads were pedestrians. KSI for 2012 is shown in Table 165.

Road User	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Driver	10	4	0	0	14	
Passenger	5	1	0	0	6	
Motorcyclist	8	3	0	0	11	
Bicyclist	5	0	0	0	5	
Pedestrian	18	1	0	3	22	
Other	0	0	0	0	0	
Total	46	9	0	3	58	

Table 165: KSI by road user 2012

6.21.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Perth local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Inattention	103	48	0	0	151	
Seatbelts Not Worn	22	2	0	1	25	
Alcohol	39	29	0	1	69	
Speed	46	35	0	2	83	

Table 166: KSI by contributing factor 2003 - 2012 (police attended)

Inattention is the dominant contributing factor in KSI. The other factors are significant contributors.

6.21.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012. A vulnerable road user is defined as a motorcyclist, bicyclist or pedestrian.

Age	Vulnerable Road User						
	Motorcyclist	Bicyclist	Pedestrian				
	n	n	n				
0 to 11	0	0	2				
12 to 16	0	1	7				
17 to 20	2	3	28				
21 to 24	9	8	12				
25 to 29	13	9	20				
30 to 39	17	21	18				
40 to 49	17	7	17				
50 to 59	11	3	22				
60 to 69	1	2	3				
70+	1	0	12				
Unknown	2	5	25				
Total	73	59	166				

Table 167: KSI by vulnerable road user and age 2003 - 2012

Table 167 shows:

- 17% of pedestrians KSI are aged 17 to 20.
- 64% of motorcyclists KSI are aged 25 to 49.

6.22 City of Rockingham

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 168 displays all crashes in the City of Rockingham by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	843	6.9
Intersection	State, State	22	0.2
Intersection	State, LG	1,781	14.6
Intersection	State, LG, Other	76	0.6
Intersection	State, Other	3	0.0
Midblock	LG	3,915	32.2
Intersection	LG, LG	5,318	43.7
Intersection	LG, Other	58	0.5
Midblock	Other	3	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	157	1.3
Total		12,176	100.0

 Table 168: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 87 shows:

- 78% of crashes occurred at local road locations including intersections where all legs were local roads.
- 15% of crashes occurred at intersections having both Local and State road legs.
- 7% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 87 also shows 60% of all crashes in the City of Rockingham occurred at intersections.

The KSI trend for the City of Rockingham local road network from 2003 to 2012 is shown in Table 169.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	75	75	130	100	96	92	62	71	74	71	846

Table 169: KSI trend 2003 - 2012

6.22.1 Crash Nature

A summary of KSI by crash nature on the City of Rockingham local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 37% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru;
- 22% of KSI occurred in single vehicle crashes of Hit Object; and
- 13% of KSI occurred in multi-vehicle crashes of Rear End.

Crash Nature				
		2003 - 2012		2012
	Rockingham	Metropolitan	% for Rockingham	Rockingham
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	112	1,465	7.6	5
Head On	50	597	8.4	4
Sideswipe	25	534	4.7	1
Right Angle	216	3,318	6.5	16
Right Turn Thru	98	1,858	5.3	9
Multi-Vehicle Other	4	152	2.6	1
Multi-Vehicle Total	505	7,924	6.4	36
Single Vehicle Crashes				
Hit Pedestrian	77	1,257	6.1	8
Hit Animal	0	34	0.0	0
Hit Object	198	2,627	7.5	19
Non-Collision	58	709	8.2	7
Single Vehicle Other	8	137	5.8	1
Single Vehicle Total	341	4,764	7.2	35
Total	846	12,688	6.7	71

Table 170: KSI by crash nature 2003 - 2012



Figure 88: KSI by crash nature 2003 - 2012

6.22.2 Road User Type

KSI by road user type on the City of Rockingham local road network from 2003 to 2012 is shown in Table 171 and Figure 89.

Road User			Road Manage	r	
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	418	162	0	3	583
Passenger	165	70	0	3	238
Motorcyclist	131	26	0	3	160
Bicyclist	42	4	0	1	47
Pedestrian	79	6	0	0	85
Other	11	1	0	1	13
Total	846	269	0	11	1,126

Table 171: KSI by road user 2003 - 2012



Figure 89: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 30% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 172.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	29	20	0	0	49			
Passenger	6	7	0	0	13			
Motorcyclist	20	6	0	1	27			
Bicyclist	5	0	0	0	5			
Pedestrian	8	0	0	0	8			
Other	3	0	0	0	3			
Total	71	33	0	1	105			

Table 172: KSI by road user 2012

6.22.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Rockingham local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Inattention	135	67	0	0	202				
Seatbelts Not Worn	23	11	0	1	35				
Alcohol	108	23	0	0	131				
Speed	134	24	0	1	159				

Table 173: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, speed and alcohol are dominant contributing factors in KSI.

6.22.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Vulnerable Road User							
	Motorcyclist	Bicyclist	Pedestrian						
	n	n	n						
0 to 11	2	6	9						
12 to 16	10	10	20						
17 to 20	18	1	11						
21 to 24	13	2	6						
25 to 29	10	3	4						
30 to 39	29	5	6						
40 to 49	28	3	2						
50 to 59	12	3	3						
60 to 69	4	4	4						
70+	2	1	6						
Unknown	3	4	8						
Total	131	42	79						

 Table 174: KSI by vulnerable road user and age 2003 - 2012

Table 174 shows:

- 36% of motorcyclists KSI are aged 30 to 39.
- 37% of pedestrians KSI are aged 16 or younger.

6.23 Shire of Serpentine-Jarrahdale

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 175 displays all crashes in the Shire of Serpentine-Jarrahdale by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	393	20.3
Intersection	State, State	0	0.0
Intersection	State, LG	372	19.3
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	800	41.4
Intersection	LG, LG	352	18.2
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	15	0.8
Total		1,932	100.0

 Table 175: All crashes by crash location and road manager 2003 - 2012



Figure 90: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 90 shows:

- 60% of crashes occurred at local road locations including intersections where all legs were local roads.
- 19% of crashes occurred at intersections having both Local and State road legs.
- 21% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 90 also shows 63% of all crashes in the Shire of Serpentine-Jarrahdale occurred at midblock locations.

The KSI trend for the Shire of Serpentine-Jarrahdale local road network from 2003 to 2012 is shown in Table 176.

KSI 16 18 23 13 23 22 31 23 20 24 2 3	Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
NGI 10 10 23 13 23 22 31 23 29 24 22	KSI	16	18	23	13	23	22	31	23	29	24	222

Table 176: KSI trend 2003 - 2012

6.23.1 Crash Nature

A summary of KSI by crash nature on the Shire of Serpentine-Jarrahdale local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 36% of KSI occurred in single vehicle crashes of Hit Object.
- 27% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.

Crash Nature	Local Government and Region							
		2003 - 2012		2012				
	Serpentine- Jarrahdale	Metropolitan	% for Serpentine- Jarrahdale	Serpentine- Jarrahdale				
	n	n	%	n				
Multi-Vehicle Crashes								
Rear End	12	1,465	0.8	0				
Head On	10	597	1.7	1				
Sideswipe	16	534	3.0	0				
Right Angle	51	3,318	1.5	8				
Right Turn Thru	9	1,858	0.5	0				
Multi-Vehicle Other	1	152	0.7	0				
Multi-Vehicle Total	99	7,924	1.2	9				
Single Vehicle Crashes								
Hit Pedestrian	2	1,257	0.2	0				
Hit Animal	6	34	17.6	0				
Hit Object	79	2,627	3.0	7				
Non-Collision	34	709	4.8	8				
Single Vehicle Other	2	137	1.5	0				
Single Vehicle Total	123	4,764	2.6	15				
Total	222	12,688	1.7	24				

Table 177: KSI by crash nature 2003 - 2012



Figure 91: KSI by crash nature 2003 - 2012

6.23.2 Road User Type

KSI by road user type on the Shire of Serpentine-Jarrahdale local road network from 2003 to 2012 is shown in Table 178 and Figure 92.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	109	101	0	3	213			
Passenger	54	39	0	3	96			
Motorcyclist	49	7	0	3	59			
Bicyclist	5	0	0	0	5			
Pedestrian	2	3	0	0	5			
Other	3	0	0	0	3			
Total	222	150	0	9	381			

Table 178: KSI by road user 2003 - 2012



Figure 92: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 25% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 179.

Road User	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	11	10	0	0	21				
Passenger	7	5	0	0	12				
Motorcyclist	6	0	0	0	6				
Bicyclist	0	0	0	0	0				
Pedestrian	0	0	0	0	0				
Other	0	0	0	0	0				
Total	24	15	0	0	39				

Table 179: KSI by road user 2012

6.23.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Serpentine-Jarrahdale local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Inattention	44	30	0	0	74				
Seatbelts Not Worn	8	3	0	5	16				
Alcohol	23	5	0	0	28				
Speed	39	21	0	1	61				

Table 180: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, speed and alcohol are significant contributing factors in KSI.

6.23.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist Bicyclist		Pedestrian			
	n	n	n			
0 to 11	0	1	0			
12 to 16	1	1	1			
17 to 20	4	2	1			
21 to 24	4	0	0			
25 to 29	4	0	0			
30 to 39	9	0	0			
40 to 49	10	0	0			
50 to 59	10	0	0			
60 to 69	5	0	0			
70+	1	1	0			
Unknown	1	0	0			
Total	49	5	2			

Table 181: KSI by vulnerable road user and age 2003 - 2012

Table 181 shows 59% of motorcyclists KSI were aged 30 to 59.

6.24 City of South Perth

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 182 displays all crashes in the City of South Perth by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	4,551	40.6
Intersection	State, State	453	4.0
Intersection	State, LG	1,174	10.5
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	109	1.0
Midblock	LG	2,448	21.9
Intersection	LG, LG	2,317	20.7
Intersection	LG, Other	100	0.9
Midblock	Other	14	0.1
Intersection	Other, Other	0	0.0
Other	Unknown	33	0.3
Total		11,199	100.0

 Table 182: All crashes by crash location and road manager 2003 - 2012



Figure 93: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 93 shows:

- 44% of crashes occurred at local road locations including intersections where all legs were local roads.
- 11% of crashes occurred at intersections having both Local and State road legs.
- 45% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 93 also shows 63% of all crashes in the City of South Perth occurred at midblock locations.

The KSI trend for the City of South Perth local road network from 2003 to 2012 is shown in Table 183.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	40	28	35	17	17	26	18	17	21	24	243

Table 183: KSI trend 2003 - 2012

6.24.1 Crash Nature

A summary of KSI by crash nature on the City of South Perth local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 37% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 24% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region				
		2012			
	South Perth	Metropolitan	% for South Perth	South Perth	
	n	n	%	n	
Multi-Vehicle Crashes					
Rear End	28	1,465	1.9	4	
Head On	10	597	1.7	2	
Sideswipe	9	534	1.7	2	
Right Angle	65	3,318	2.0	3	
Right Turn Thru	26	1,858	1.4	3	
Multi-Vehicle Other	6	152	3.9	1	
Multi-Vehicle Total	144	7,924	1.8	15	
Single Vehicle Crashes					
Hit Pedestrian	33	1,257	2.6	4	
Hit Animal	1	34	2.9	0	
Hit Object	58	2,627	2.2	3	
Non-Collision	4	709	0.6	0	
Single Vehicle Other	3	137	2.2	2	
Single Vehicle Total	99	4,764	2.1	9	
Total	243	12,688	1.9	24	

Table 184: KSI by crash nature 2003 - 2012



Figure 94: KSI by crash nature 2003 - 2012

6.24.2 Road User Type

KSI by road user type on the City of South Perth local road network from 2003 to 2012 is shown in Table 185 and Figure 95.

Road User	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Driver	111	149	0	0	260		
Passenger	39	57	0	0	96		
Motorcyclist	29	27	0	0	56		
Bicyclist	28	4	0	0	32		
Pedestrian	34	15	1	0	50		
Other	2	4	0	0	6		
Total	243	256	1	0	500		

Table 185: KSI by road user 2003 - 2012


Figure 95: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 37% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 186.

Road User		Road Manager							
	Local	State	Other	Unknown	Total				
	n	n	n	n	n				
Driver	8	10	0	0	18				
Passenger	Passenger 1		0	0	8				
Motorcyclist	4	2	0	0	6				
Bicyclist	7	0	0	0	7				
Pedestrian	4	3	0	0	7				
Other	0	0	0	0	0				
Total	24	22	0	0	46				

Table 186: KSI by road user 2012

6.24.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of South Perth local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Unknown	Total					
	n	n	n	n	n				
Inattention	36	37	0	0	73				
Seatbelts Not Worn	5	5	0	0	10				
Alcohol	12	20	0	0	32				
Speed	41	30	0	0	71				

Table 187: KSI by contributing factor 2003 - 2012 (police attended)

Speed and inattention are significant contributing factors in KSI.

6.24.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser
	Motorcyclist	Bicyclist	Pedestrian
	n	n	n
0 to 11	0	1	2
12 to 16	1	1	4
17 to 20	7	1	3
21 to 24	2	2	6
25 to 29	3	6	2
30 to 39	5	7	4
40 to 49	5	3	1
50 to 59	4	2	0
60 to 69	1	3	4
70+	0	1	4
Unknown	1	1	4
Total	29	28	34

Table 188: KSI by vulnerable road user and age 2003 - 2012

Table 188 shows:

- 24% of motorcyclists KSI were aged 17 to 20.
- 46% of bicyclists KSI were aged 25 to 39.

6.25 City of Stirling

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 189 displays all crashes in the City of Stirling by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	4,919	11.3
Intersection	State, State	2,275	5.2
Intersection	State, LG	7,673	17.7
Intersection	State, LG, Other	46	0.1
Intersection	State, Other	4	0.0
Midblock	LG	12,992	29.9
Intersection	LG, LG	15,323	35.3
Intersection	LG, Other	30	0.1
Midblock	Other	2	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	132	0.3
Total		43,396	100.0

 Table 189: All crashes by crash location and road manager 2003 - 2012



Figure 96: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 96 shows:

- 66% of crashes occurred at local road locations including intersections where all legs were local roads.
- 18% of crashes occurred at intersections having both Local and State road legs.
- 16% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 96 also shows 59% of all crashes in the City of Stirling occurred at intersections.

The KSI trend for the City of Stirling local road network from 2003 to 2012 is shown in Table 190.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	169	189	195	193	169	169	149	145	144	159	1,681

Table 190: KSI trend 2003 - 2012

6.25.1 Crash Nature

A summary by crash nature of KSI on the City of Stirling local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 49% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 17% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region						
		2003 - 2012		2012			
	Stirling	Metropolitan	% for Stirling	Stirling			
	n	n	%	n			
Multi-Vehicle Crashes							
Rear End	205	1,465	14.0	20			
Head On	47	597	7.9	3			
Sideswipe	72	534	13.5	3			
Right Angle	484	3,318	14.6	49			
Right Turn Thru	339	1,858	18.2	29			
Multi-Vehicle Other	21	152	13.8	1			
Multi-Vehicle Total	1,168	7,924	14.7	105			
Single Vehicle Crashes							
Hit Pedestrian	158	1,257	12.6	16			
Hit Animal	3	34	8.8	0			
Hit Object	292	2,627	11.1	28			
Non-Collision	51	709	7.2	10			
Single Vehicle Other	9	137	6.6	0			
Single Vehicle Total	513	4,764	10.8	54			
Total	1,681	12,688	13.2	159			

Table 191: KSI by crash nature 2003 - 2012



Figure 97: KSI by crash nature 2003 - 2012

6.25.2 Road User Type

KSI on by road user type the City of Stirling local road network from 2003 to 2012 is shown in Table 192 and Figure 98.

Road User			Road Manage	r	
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	815	432	0	1	1,248
Passenger	issenger 357		0	0	503
Motorcyclist	250	78	0	0	328
Bicyclist	90	21	0	0	111
Pedestrian	159	32	0	1	192
Other	10	7	0	0	17
Total	1,681	716	0	2	2,399

Table 192: KSI by road user 2003 - 2012



Figure 98: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 30% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 193.

Road User		Road Manager								
	Local	State	Other	Unknown	Total					
	n	n	n	n	n					
Driver	80	32	0	0	112					
Passenger	senger 23		12 0		35					
Motorcyclist	31	11	0	0	42					
Bicyclist	10	1	0	0	11					
Pedestrian	15	3	0	0	18					
Other	0	0	0	0	0					
Total	159	59	0	0	218					

Table 193: KSI by road user 2012

6.25.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Stirling local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager								
	Local	State	Unknown	Total					
	n	n	n	n	n				
Inattention	298	121	0	0	419				
Seatbelts Not Worn	49	5	0	0	54				
Alcohol	151	58	0	0	209				
Speed	194	76	0	0	270				

Table 194: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, alcohol and speed are the dominant contributing factors in KSI.

6.25.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser	
	Motorcyclist	Bicyclist	Pedestrian	
	n	n	n	
0 to 11	3	1	18	
12 to 16	9	8	17	
17 to 20	17	5	17	
21 to 24	39	6	16	
25 to 29	27	11	9	
30 to 39	71	21	22	
40 to 49	49	22	10	
50 to 59	17	8	12	
60 to 69	8	4	8	
70+	4	1	17	
Unknown	6	3	13	
Total	250	90	159	

Table 195: KSI by vulnerable road user and age 2003 - 2012

Table 195 shows:

- 48% of motorcyclists KSI were aged 30 to 49.
- 48% of bicyclists KSI were aged 30 to 49.
- 22% of pedestrians KSI were aged 16 or younger.

6.26 City of Subiaco

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 196 displays all crashes in the City of Subiaco by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	62	1.2
Intersection	State, State	0	0.0
Intersection	State, LG	272	5.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	2,408	46.2
Intersection	LG, LG	2,363	45.3
Intersection	LG, Other	51	1.0
Midblock	Other	27	0.5
Intersection	Other, Other	0	0.0
Other	Unknown	33	0.6
Total		5,216	100.0

 Table 196: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 99 shows:

- 94% of crashes occurred at local road locations including intersections where all legs were local roads.
- 5% of crashes occurred at intersections having both Local and State road legs.
- 1% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 99 also shows 52% of all crashes in the City of Subiaco occurred at intersections.

The KSI trend for the City of Subiaco local road network from 2003 to 2012 is shown in Table 197.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	19	25	20	18	16	18	28	13	15	11	183

Table 197: KSI trend 2003 - 2012

6.26.1 Crash Nature

A summary of KSI by crash nature on the City of Subiaco local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 48% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 17% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region				
	2003 - 2012			2012	
	Subiaco	Metropolitan	% for Subiaco	Subiaco	
	n	n	%	n	
Multi-Vehicle Crashes					
Rear End	26	1,465	1.8	1	
Head On	2	597	0.3	0	
Sideswipe	9	534	1.7	2	
Right Angle	63	3,318	1.9	5	
Right Turn Thru	25	1,858	1.3	2	
Multi-Vehicle Other	3	152	2.0	0	
Multi-Vehicle Total	128	7,924	1.6	10	
Single Vehicle Crashes					
Hit Pedestrian	15	1,257	1.2	0	
Hit Animal	0	34	0.0	0	
Hit Object	31	2,627	1.2	0	
Non-Collision	6	709	0.8	1	
Single Vehicle Other	3	137	2.2	0	
Single Vehicle Total	55	4,764	1.2	1	
Total	183	12,688	1.4	11	

Table 198: KSI by crash nature 2003 - 2012



Figure 100: KSI by crash nature 2003 - 2012

6.26.2 Road User Type

KSI by road user type on the City of Subiaco local road network from 2003 to 2012 is shown in Table 199 and Figure 101.

Road User	Road Manager					
	Local	ocal State Other		Unknown	Total	
	n	n	n	n	n	
Driver	81	5	2	0	88	
Passenger	26	3	1	0	30	
Motorcyclist	31	1	0	0	32	
Bicyclist	26	0	0	0	26	
Pedestrian	17	2	0	0	19	
Other	2	0	0	0	2	
Total	183	11	3	0	197	

Table 199: KSI by road user 2003 - 2012



Figure 101: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 40% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 200.

Road User	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Driver	5	0	0	0	5	
Passenger	0	0	0	0	0	
Motorcyclist	3	0	0	0	3	
Bicyclist	3	0	0	0	3	
Pedestrian	0	0	0	0	0	
Other	0	0	0	0	0	
Total	11	0	0	0	11	

Table 200: KSI by road user 2012

6.26.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Subiaco local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Unknown	Total		
	n	n	n	n	n	
Inattention	28	1	1	0	30	
Seatbelts Not Worn	6	0	1	0	7	
Alcohol	23	5	1	0	29	
Speed	17	1	0	0	18	

Table 201: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, alcohol and speed are significant contributing factors in KSI.

6.26.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User				
	Motorcyclist	Bicyclist	Pedestrian		
	n	n	n		
0 to 11	0	0	2		
12 to 16	0	3	2		
17 to 20	5	2	0		
21 to 24	6	4	2		
25 to 29	4	3	0		
30 to 39	5	4	4		
40 to 49	5	5	0		
50 to 59	5	3	2		
60 to 69	1	0	1		
70+	0	1	2		
Unknown	0	1	2		
Total	31	26	17		

Table 202: KSI by vulnerable road user and age 2003 - 2012

6.27 City of Swan

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 203 displays all crashes in the City of Swan by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	2,805	14.5
Intersection	State, State	846	4.4
Intersection	State, LG	4,159	21.5
Intersection	State, LG, Other	18	0.1
Intersection	State, Other	4	0.0
Midblock	LG	5,549	28.7
Intersection	LG, LG	5,663	29.3
Intersection	LG, Other	12	0.1
Midblock	Other	15	0.1
Intersection	Other, Other	0	0.0
Other	Unknown	261	1.4
Total		19,332	100.0

 Table 203: All crashes by crash location and road manager 2003 - 2012



Figure 102: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 102 shows:

- 59% of crashes occurred at local road locations including intersections where all legs were local roads.
- 22% of crashes occurred at intersections having both Local and State road legs.
- 19% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 102 also shows 56% of all crashes in the City of Swan occured at intersections.

The KSI trend for the City of Swan local road network from 2003 to 2012 is shown in Table 204.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	72	84	103	88	107	101	98	72	80	87	892

Table 204: KSI trend 2003 - 2012

6.27.1 Crash Nature

A summary of KSI by crash nature on the City of Swan local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 32% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 26% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region				
		2003 - 2012		2012	
	Swan	Metropolitan	% for Swan	Swan	
	n	n	%	n	
Multi-Vehicle Crashes					
Rear End	108	1,465	7.4	19	
Head On	68	597	11.4	5	
Sideswipe	39	534	7.3	1	
Right Angle	200	3,318	6.0	19	
Right Turn Thru	88	1,858	4.7	10	
Multi-Vehicle Other	9	152	5.9	0	
Multi-Vehicle Total	512	7,924	6.5	54	
Single Vehicle Crashes					
Hit Pedestrian	59	1,257	4.7	9	
Hit Animal	9	34	26.5	0	
Hit Object	234	2,627	8.9	16	
Non-Collision	66	709	9.3	8	
Single Vehicle Other	12	137	8.8	0	
Single Vehicle Total	380	4,764	8.0	33	
Total	892	12,688	7.0	87	

Table 205: KSI by crash nature 2003 - 2012



Figure 103: KSI by crash nature 2003 - 2012

6.27.2 Road User Type

KSI by road user type on the City of Swan local road network from 2003 to 2012 is shown in Table 206 and Figure 104.

Road User	Road Manager					
	Local	State Other		Unknown	Total	
	n	n	n	n	n	
Driver	451	296	0	15	762	
Passenger	198	126	0	3	327	
Motorcyclist	135	54	0	4	193	
Bicyclist	41	21	0	1	63	
Pedestrian	63	25	0	0	88	
Other	4	2	0	0	6	
Total	892	524	0	23	1,439	

Table 206: KSI by road user 2003 - 2012



Figure 104: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 27% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 207.

Road User	Road Manager					
	Local	State	State Other		Total	
	n	n	n	n	n	
Driver	39	28	0	1	68	
Passenger	16	12	0	1	29	
Motorcyclist	14	6	0	0	20	
Bicyclist	9	2	0	0	11	
Pedestrian	9	2	0	0	11	
Other	0	0	0	0	0	
Total	87	50	0	2	139	

Table 207: KSI by road user 2012

6.27.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Swan local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Inattention	188	109	0	7	304	
Seatbelts Not Worn	35	14	0	0	49	
Alcohol	94	39	0	5	138	
Speed	126	58	0	4	188	

Table 208: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, speed and alcohol are dominant contributing factors in KSI.

6.27.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vu	Inerable Road U	ser
	Motorcyclist	Bicyclist	Pedestrian
	n	n	n
0 to 11	1	7	13
12 to 16	3	6	5
17 to 20	12	7	5
21 to 24	13	3	2
25 to 29	18	2	3
30 to 39	36	5	9
40 to 49	27	5	7
50 to 59	14	1	6
60 to 69	4	2	1
70+	0	1	7
Unknown	7	2	5
Total	135	41	63

 Table 209: KSI by vulnerable road user and age 2003 - 2012

Table 209 shows:

- 47% of motorcyclists KSI were aged 30 to 49.
- 20% of pedestrians KSI were aged 11 or younger.

6.28 Town of Victoria Park

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 210 displays all crashes in the Town of Victoria Park by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,198	11.3
Intersection	State, State	347	3.3
Intersection	State, LG	2,268	21.4
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	17	0.2
Midblock	LG	3,341	31.5
Intersection	LG, LG	3,301	31.2
Intersection	LG, Other	68	0.6
Midblock	Other	5	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	47	0.4
Total		10,592	100.0

 Table 210: All crashes by crash location and road manager 2003 - 2012



Figure 105: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 105 shows:

- 64% of crashes occurred at local road locations including intersections where all legs were local roads.
- 22% of crashes occurred at intersections having both Local and State road legs.
- 14% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 105 also shows 57% of all crashes in the Town of Victoria Park occurred at intersections.

The KSI trend for the Town of Victoria Park local road network from 2003 to 2012 is shown in Table 211.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	42	56	35	27	29	30	42	29	25	23	338

Table 211: KSI trend 2003 - 2012

6.28.1 Crash Nature

A summary of KSI by crash nature on the Town of Victoria Park local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 43% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 16% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature		Local Governme	ent and Region	1
		2003 - 2012		2012
	Victoria Park	Metropolitan	% for Victoria Park	Victoria Park
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	30	1,465	2.0	2
Head On	17	597	2.8	0
Sideswipe	28	534	5.2	2
Right Angle	99	3,318	3.0	8
Right Turn Thru	48	1,858	2.6	2
Multi-Vehicle Other	10	152	6.6	0
Multi-Vehicle Total	232	7,924	2.9	14
Single Vehicle Crashes				
Hit Pedestrian	54	1,257	4.3	5
Hit Animal	0	34	0.0	0
Hit Object	40	2,627	1.5	4
Non-Collision	9	709	1.3	0
Single Vehicle Other	3	137	2.2	0
Single Vehicle Total	106	4,764	2.2	9
Total	338	12,688	2.7	23

Table 212: KSI by crash nature 2003 - 2012



Figure 106: KSI by crash nature 2003 - 2012

6.28.2 Road User Type

KSI by road user type on the Town of Victoria Park local road network from 2003 to 2012 is shown in Table 213 and Figure 107.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	134	112	0	0	246			
Passenger	62	48	0	0	110			
Motorcyclist	57	24	0	0	81			
Bicyclist	25	14	0	1	40			
Pedestrian	59	21	0	1	81			
Other	1	2	0	0	3			
Total	338	221	0	2	561			

Table 213: KSI by road user 2003 - 2012



Figure 107: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 42% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 214.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	9	12	0	0	21			
Passenger	2	1	0	0	3			
Motorcyclist	5	0	0	0	5			
Bicyclist	2	3	0	0	5			
Pedestrian	5	1	0	0	6			
Other	0	1	0	0	1			
Total	23	18	0	0	41			

Table 214: KSI by road user 2012

6.28.3 Road User Behaviour

The following table shows factors contributing to KSI on the Town of Victoria Park local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager							
	Local	Local State Other Unknown Total						
	n	n	n	n	n			
Inattention	44	25	0	2	71			
Seatbelts Not Worn	9	3	0	0	12			
Alcohol	29	21	0	0	50			
Speed	44	28	0	0	72			

Table 215: KSI by contributing factor 2003 - 2012 (police attended)

Inattention, speed and alcohol are significant contributing factors in KSI.

6.28.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User					
	Motorcyclist	Bicyclist	Pedestrian			
	n	n	n			
0 to 11	0	1	2			
12 to 16	0	2	6			
17 to 20	6	1	4			
21 to 24	9	2	4			
25 to 29	10	5	5			
30 to 39	18	4	4			
40 to 49	6	2	6			
50 to 59	3	3	6			
60 to 69	2	0	1			
70+	0	1	11			
Unknown	3	4	10			
Total	57	25	59			

Table 216: KSI by vulnerable road user and age 2003 - 2012

Table 216 shows:

- 49% of motorcyclists KSI were aged 25 to 39.
- 18% of pedestrians KSI were aged 70 or older.

6.29 City of Vincent

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 217 displays all crashes in the City of Vincent by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,299	10.4
Intersection	State, State	287	2.3
Intersection	State, LG	1,297	10.3
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	3	0.0
Midblock	LG	4,404	35.1
Intersection	LG, LG	5,230	41.7
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	26	0.2
Total		12,546	100.0

 Table 217: All crashes by crash location and road manager 2003 - 2012





Ignoring crashes at "Other" locations, Figure 108 shows:

- 77% of crashes occurred at local road locations including intersections where all legs were local roads.
- 11% of crashes occurred at intersections having both Local and State road legs.
- 12% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 108 also shows 55% of all crashes in the City of Vincent occurred at intersections.

The KSI trend for the City of Vincent local road network from 2003 to 2012 is shown in Table 218.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	45	55	49	47	38	51	38	36	31	37	427

Table 218: KSI trend 2003 - 2012

6.29.1 Crash Nature

A summary of KSI by crash nature on the City of Vincent local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 47% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 17% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature	Local Government and Region					
		2003 - 2012		2012		
	Vincent	Metropolitan	% for Vincent	Vincent		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	55	1,465	3.8	8		
Head On	7	597	1.2	1		
Sideswipe	30	534	5.6	3		
Right Angle	134	3,318	4.0	6		
Right Turn Thru	67	1,858	3.6	7		
Multi-Vehicle Other	8	152	5.3	0		
Multi-Vehicle Total	301	7,924	3.8	25		
Single Vehicle Crashes						
Hit Pedestrian	72	1,257	5.7	8		
Hit Animal	0	34	0.0	0		
Hit Object	42	2,627	1.6	4		
Non-Collision	8	709	1.1	0		
Single Vehicle Other	4	137	2.9	0		
Single Vehicle Total	126	4,764	2.6	12		
Total	427	12,688	3.4	37		

Table 219: KSI by crash nature 2003 - 2012



Figure 109: KSI by crash nature 2003 - 2012

6.29.2 Road User Type

KSI by road user type on the City of Vincent local road network from 2003 to 2012 is shown in Table 220 and Figure 110.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	189	72	0	0	261			
Passenger	70	29	0	0	99			
Motorcyclist	69	21	0	0	90			
Bicyclist	22	4	0	0	26			
Pedestrian	75	6	0	0	81			
Other	2	1	0	0	3			
Total	427	133	0	0	560			

Table 220: KSI by road user 2003 - 2012



Figure 110: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 39% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 221.

Road User	Road Manager							
	Local	State	Other	Unknown	Total			
	n	n	n	n	n			
Driver	15	9	0	0	24			
Passenger	4	1	0	0	5			
Motorcyclist	6	3	0	0	9			
Bicyclist	2	0	0	0	2			
Pedestrian	10	0	0	0	10			
Other	0	0	0	0	0			
Total	37	13	0	0	50			

Table 221: KSI by road user 2012

6.29.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Vincent local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager						
	Local State Other I		Unknown	Total			
	n	n	n	n	n		
Inattention	68	28	0	0	96		
Seatbelts Not Worn	14	1	0	0	15		
Alcohol	22	6	0	0	28		
Speed	36	11	0	0	47		

Table 222: KSI by contributing factor 2003 - 2012 (police attended)

Inattention is the dominant contributing factor in KSI. Speed and alcohol are also significant contributing factors.

6.29.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User						
	Motorcyclist	Bicyclist	Pedestrian				
	n	n	n				
0 to 11	0	0	2				
12 to 16	0	0	3				
17 to 20	2	1	9				
21 to 24	8	3	9				
25 to 29	17	2	10				
30 to 39	17	7	9				
40 to 49	14	4	6				
50 to 59	8	4	4				
60 to 69	2	0	3				
70+	0	0	11				
Unknown	1	1	9				
Total	69	22	75				

Table 223: KSI by vulnerable road user and age 2003 - 2012

Table 223 shows:

- 49% of motorcyclists KSI were aged 25 to 39.
- 15% of pedestrians KSI were aged 16 or younger.

6.30 City of Wanneroo

Refer also to the Metropolitan Region Local Road Crash Map Book 2012.

Table 224 displays all crashes in the City of Wanneroo by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	1,422	9.2
Intersection	State, State	0	0.0
Intersection	State, LG	3,114	20.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	5	0.0
Midblock	LG	4,650	30.2
Intersection	LG, LG	6,040	39.2
Intersection	LG, Other	2	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	180	1.2
Total		15,413	100.0

 Table 224: All crashes by crash location and road manager 2003 - 2012



Figure 111: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 111 shows:

- 71% of crashes occurred at local road locations including intersections where all legs were local roads.
- 20% of crashes occurred at intersections having both Local and State road legs.
- 9% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 111 also shows 60% of all crashes in the City of Wanneroo occurred at intersections.

The KSI trend for the City of Wanneroo local road network from 2003 to 2012 is shown in Table 225.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	89	105	73	61	67	74	68	72	108	95	812

Table 225: KSI trend 2003 - 2012

6.30.1 Crash Nature

A summary of KSI by crash nature on the City of Wanneroo local road network from 2003 to 2012 is displayed in the table and figure below, which show:

- 35% of KSI occurred in multi-vehicle crashes of Right Angle or Right Turn Thru.
- 21% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region					
	2003 - 2012			2012		
	Wanneroo	Metropolitan	% for Wanneroo	Wanneroo		
	n	n	%	n		
Multi-Vehicle Crashes						
Rear End	102	1,465	7.0	19		
Head On	40	597	6.7	3		
Sideswipe	24	534	4.5	3		
Right Angle	172	3,318	5.2	13		
Right Turn Thru	114	1,858	6.1	8		
Multi-Vehicle Other	10	152	6.6	1		
Multi-Vehicle Total	462	7,924	5.8	47		
Single Vehicle Crashes						
Hit Pedestrian	55	1,257	4.4	6		
Hit Animal	6	34	17.6	0		
Hit Object	170	2,627	6.5	18		
Non-Collision	108	709	15.2	24		
Single Vehicle Other	11	137	8.0	0		
Single Vehicle Total	350	4,764	7.3	48		
Total	812	12,688	6.4	95		

Table 226: KSI by crash nature 2003 - 2012



Figure 112: KSI by crash nature 2003 - 2012

6.30.2 Road User Type

KSI by road user type on the City of Wanneroo local road network from 2003 to 2012 is shown in Table 227 and Figure 113.

Road User	Road Manager						
	Local	State Other		Unknown	Total		
	n	n	n	n	n		
Driver	395	189	0	7	591		
Passenger	175	84	0	9	268		
Motorcyclist	151	34	0	10	195		
Bicyclist	34	9	0	0	43		
Pedestrian	55	10	0	0	65		
Other	2	3	0	0	5		
Total	812	329	0	26	1,167		

Table 227: KSI by road user 2003 - 2012


Figure 113: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 30% of KSI on local roads were vulnerable road users defined as motorcyclists, bicyclists, or pedestrians. KSI for 2012 is shown in Table 228.

Road User	Road Manager					
	Local	State	Other	Unknown	Total	
	n	n	n	n	n	
Driver	46	14	0	2	62	
Passenger	19	4	0	3	26	
Motorcyclist	19	4	0	2	25	
Bicyclist	6	1	0	0	7	
Pedestrian	5	0	0	0	5	
Other	0	0	0	0	0	
Total	95	23	0	7	125	

Table 228: KSI by road user 2012

6.30.3 Road User Behaviour

The following table shows factors contributing to KSI on the City of Wanneroo local road network. The analysis is restricted to police attended crashes for consistency. Note that the contributing factors are not necessarily mutually exclusive, that is, it is possible that more than one factor contributed to the crash.

Contributing Factor	Road Manager						
	Local	State	Other	Unknown	Total		
	n	n	n	n	n		
Inattention	111	39	0	10	160		
Seatbelts Not Worn	35	6	0	4	45		
Alcohol	96	30	0	3	129		
Speed	130	39	0	11	180		

Table 229: KSI by contributing factor 2003 - 2012 (police attended)

Speed, inattention and alcohol are dominant contributing factors in KSI.

6.30.4 Vulnerable Road Users

The following table shows vulnerable road user KSI by age on local roads from 2003 to 2012.

Age	Vulnerable Road User				
	Motorcyclist	Bicyclist	Pedestrian		
	n	n	n		
0 to 11	1	7	14		
12 to 16	4	5	9		
17 to 20	21	2	5		
21 to 24	8	2	2		
25 to 29	24	3	3		
30 to 39	47	5	3		
40 to 49	26	7	8		
50 to 59	12	1	2		
60 to 69	5	1	5		
70+	0	0	2		
Unknown	3	1	2		
Total	151	34	55		

 Table 230: KSI by vulnerable road user and age 2003 - 2012

Table 230 shows:

- 48% of motorcyclists KSI were aged 25 to 39.
- 42% of pedestrians KSI were aged 16 or younger.

GLOSSARY

ARIA: (Accessibility Remoteness Index of Australia). A geographical measure of remoteness defined by the University of Adelaide.

BAC: Blood alcohol concentration measured as grams of alcohol per 100mL of blood. A BAC of 0.05 g/100mL is equivalent to a BAC of 0.05 gm%.

Bicycle: A vehicle with one or more wheels that is designed to be propelled by human power through a belt, chain or gears. It does not include a wheelchair, wheeled recreational device, wheeled toy, or any vehicle with an auxiliary motor capable of generating a power output over 200 watts (whether or not the motor is operating).

Bicyclist: A person riding a bicycle, including pillion passengers.

Crash: Any unpremeditated incident where in the course of the use of any vehicle on a road that was not temporarily closed off to the public, a person is injured or property is damaged. The crash must involve vehicle movement. Does not include collisions that occur due to a medical condition, deliberate acts such as suicide attempts, or police chases.

Crash Severity: Derived from the most serious injury in a crash. The five levels are:

- 1. <u>Fatal Crash</u> A road crash in which at least one person was killed immediately or died within 30 days of the crash, as a result of the crash.
- 2. <u>Hospitalisation Crash</u> A road crash that involved at least one serious injury but no fatalities.
- 3. <u>Medical Attention Crash</u> A road crash in which the most serious injury resulted in a person requiring medical treatment, but without being admitted to hospital.
- 4. <u>Property Damage Only Major Crash</u> A road crash in which no person was injured, but with estimated property damage exceeding \$3,000.
- 5. <u>Property Damage Only Minor Crash</u> A road crash in which no person was injured, but with estimated property damage not exceeding \$3,000.

Driver: Any person that is driving a vehicle (excluding a motorcycle, bicycle, animal or animal drawn vehicle).

Fatal Crash: A road crash in which at least one person was killed immediately or died within 30 days of the crash, as a result of the crash.

Fatality: A person who was killed immediately or died within 30 days of the day of a road crash as a result of the crash.

Hospitalisation Crash: A road crash that involved at least one serious injury but no fatalities.

KSI: Killed or seriously injured. See Persons Killed or Seriously Injured.

KSI Rate: Number of persons killed or seriously injured per specified unit. In this report the following KSI rates are provided:

- 1. KSI per 100 million vehicle kilometres travelled (MVKT) and
- 2. KSI per 100,000 population.

Motorcycle: A motor vehicle with two or three wheels. Includes motor vehicles that have a sidecar attached, motor scooters, mopeds, trail bikes and mini-bikes.

Motorcycle Rider: A person riding a motorcycle, motor scooter, moped, trail bike or minibike. Excludes pillion and sidecar passengers.

Motorcyclists: A motorcycle rider or motorcycle pillion.

Multi-Vehicle Crash: A crash involving two or more moving vehicles.

Passenger: Any person other than the driver travelling in a motor vehicle. Excludes persons riding on an animal, bicycle or motorcycle and persons in an animal drawn vehicle.

Pedestrian: A person on foot or sitting or lying, a person in or on a wheeled recreational device or wheeled toy, an occupant of a non-motorised wheelchair, an occupant of a motorized wheelchair/gopher, a person pushing a motorised or non-motorised wheelchair. Includes a person on roller skates, in-line skates or a skateboard, but excludes a person riding a bicycle. Also includes a person who has just alighted from a vehicle.

Persons Killed or Seriously Injured: The number of fatalities and persons seriously injured as the result of a crash. Includes persons who were killed outright or died within 30 days of the day of the road crash as a result of the crash and persons admitted to hospital as a result of a road crash and who did not die from injuries sustained in the crash within 30 days of the crash.

Person Seriously Injured: A person admitted to hospital as a result of a road crash and who does not die from injuries sustained in the crash within 30 days of the crash.

Region: Subdivisions of Western Australia used by Main Roads Western Australia.

Rider: Used as an abbreviation for Motorcycle Rider. A person riding a motorcycle, motor scooter, moped, trail bike or mini-bike. Excludes bicycle riders, motorcycle pillion and sidecar passengers.

Rigid Truck: A vehicle constructed primarily for load carrying with a gross vehicle mass (GVM) exceeding 3.5 tonnes.

Road: Any thoroughfare, highway or road that is open to or used by the public for the purpose of driving or riding of motor vehicles.

Road User: Includes drivers, passengers, motorcycle riders, motorcycle pillion, bicycle riders, persons riding an animal, persons in an animal drawn vehicle and pedestrians.

Road User Types: Categories used to separate different road users.

Run-Off Road Crash: Crashes in which a vehicle involved exits the carriageway, through a loss of control, swerving to avoid a collision or for other reasons. After the vehicle has left the carriageway it may also collide with a person, object, or vehicle, or it may roll over, and/or a person may fall or be ejected from the vehicle.

Seatbelt: A device designed to hold a person within the body of a vehicle and limit movement during a crash, thereby reducing severity of injury. Includes inertia reel and fixed lap or sash seat belts, and child car restraints. The device must meet the relevant Australian Vehicle Design Rules and the Australian Standards. Drivers and passengers of motor vehicles must wear seat belts.

Serious Crash: A road crash that resulted in at least one fatality and/or where at least one person was seriously injured. Includes *Fatal* crashes and *Hospitalisation* crashes.

Single-Vehicle Crash: A crash in which only one moving vehicle was involved. Includes collisions with pedestrians, animals and fixed objects such as a tree, pole, bridge, dropped load, or parked vehicle, and includes non-collisions such as a roll-over.

Vulnerable Road User: A motorcyclist, bicyclist or pedestrian.