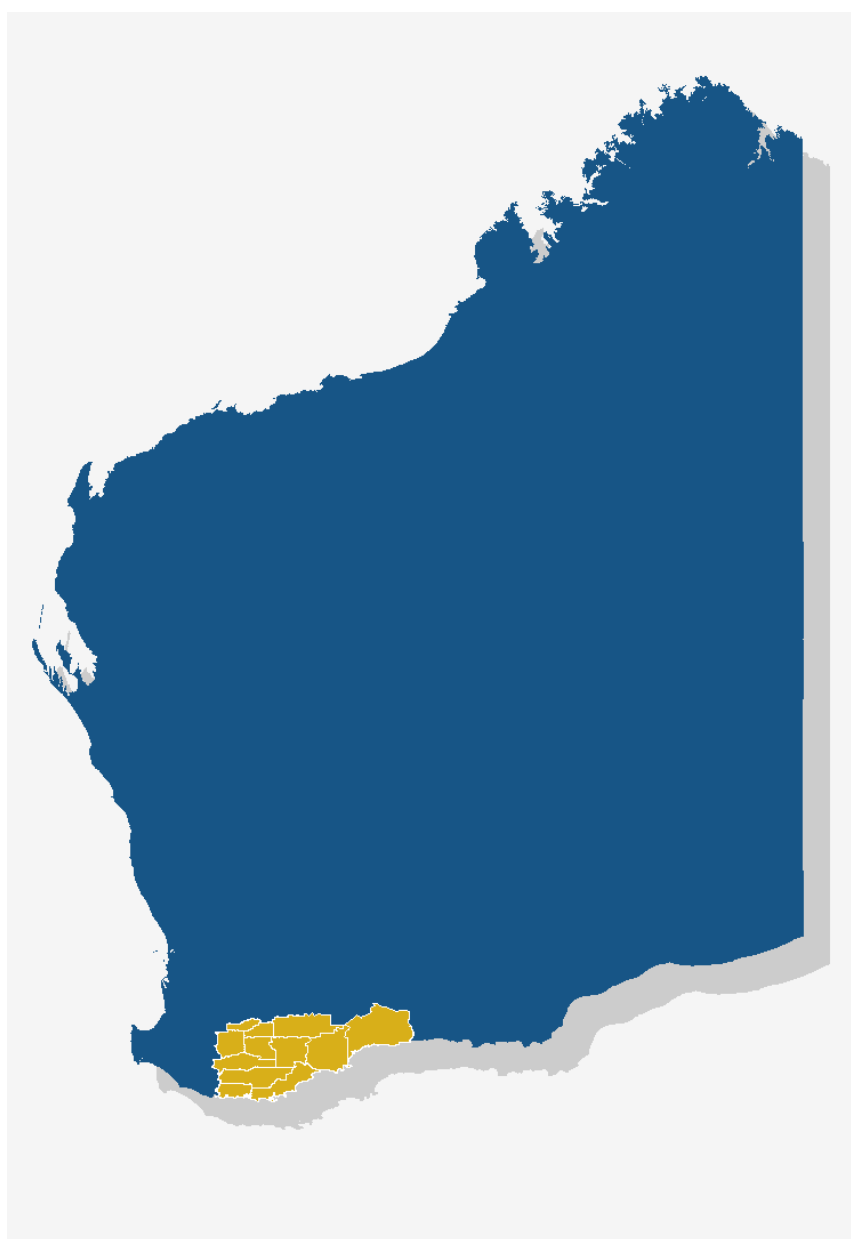


Local Road Crash Report 2012

GREAT SOUTHERN REGION



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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 Great Southern 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 Great Southern 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.

Great Southern Region

Local roads constitute 89% of the Great Southern Region road network.

From 2003 to 2012, there were a total of 6,233 crashes in the Great Southern Region resulting in 354 people killed or seriously injured (KSI) on local roads. During this period, 58% of all crashes occurred on local roads including intersections where all legs were local roads. Midblock locations accounted for 40.5% of crashes on local roads.

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

In 2012, a total of 314 crashes occurred on the Great Southern Region local road network, which included 36 crashes resulting in 3 people killed and 33 people seriously injured. Approximately 64% of KSI outcomes in 2012 resulted from single vehicle crashes of Hit Object and Non-Collision.

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

1. Single vehicle crashes.
2. Speed, inattention, alcohol and non-wearing of seatbelts.
3. KSI outcomes in 60km/hr. and 110km/hr. speed zones.
4. Over-representation of males in KSI outcomes especially motorcyclists and bicyclists.

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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 Great Southern Region, which is comprised of the following Local Governments:

City of Albany; Shire of Broomehill-Tambellup; Shire of Cranbrook; Shire of Denmark; Shire of Gnowangerup; Shire of Jerramungup; Shire of Katanning; Shire of Kent; Shire of Kojonup; Shire of Plantagenet; Shire of Ravensthorpe; and Shire of Woodanilling.

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.

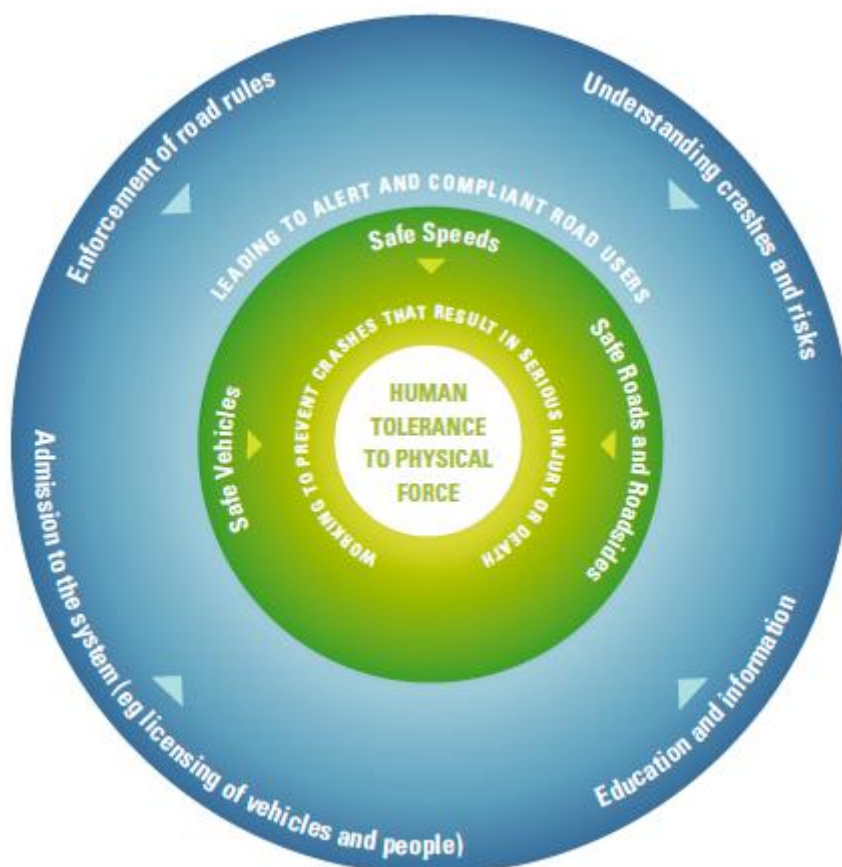


Figure 1: The Safe System (adapted from ATC, 2007)

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 summarises 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

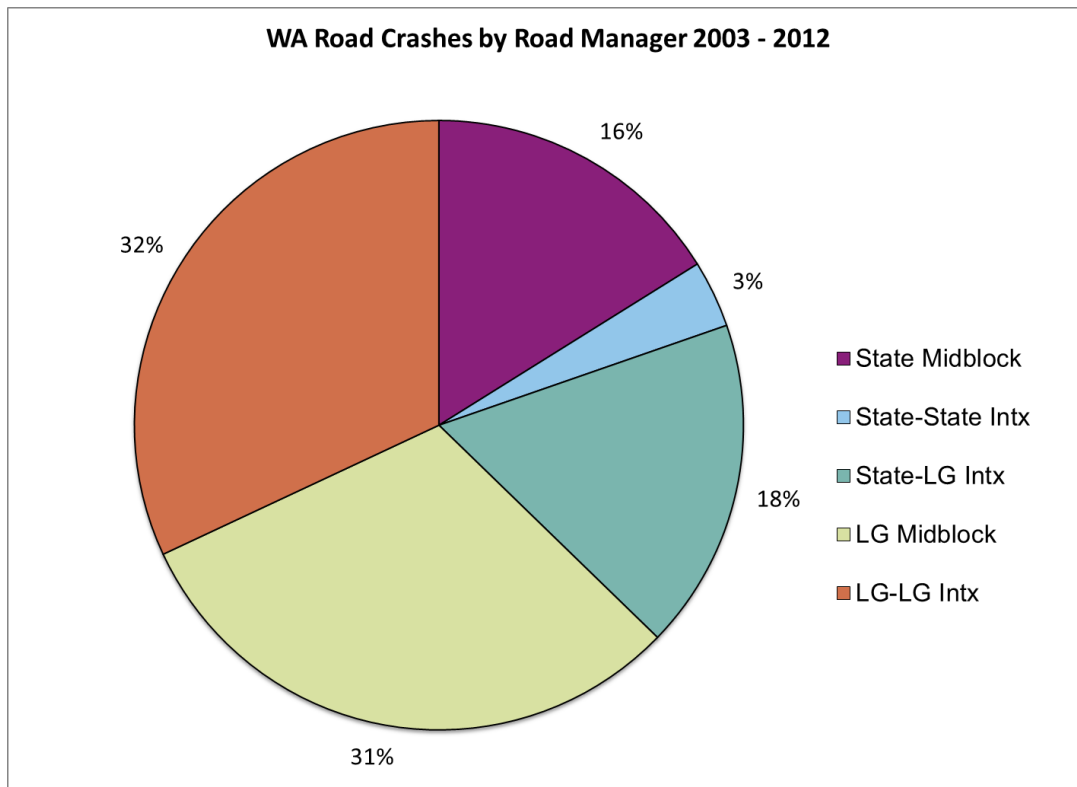


Figure 2: All crashes in WA by crash location and road manager 2003 to 2012

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 Great Southern Region

The road safety issues for the Great Southern Region local road network are:

1. Single vehicle crashes.
2. Speed, inattention, alcohol and non-wearing of seatbelts.
3. KSI outcomes in 60km/hr. and 110km/hr. speed zones.
4. Over-representation of males in KSI outcomes especially motorcyclists and bicyclists.

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.

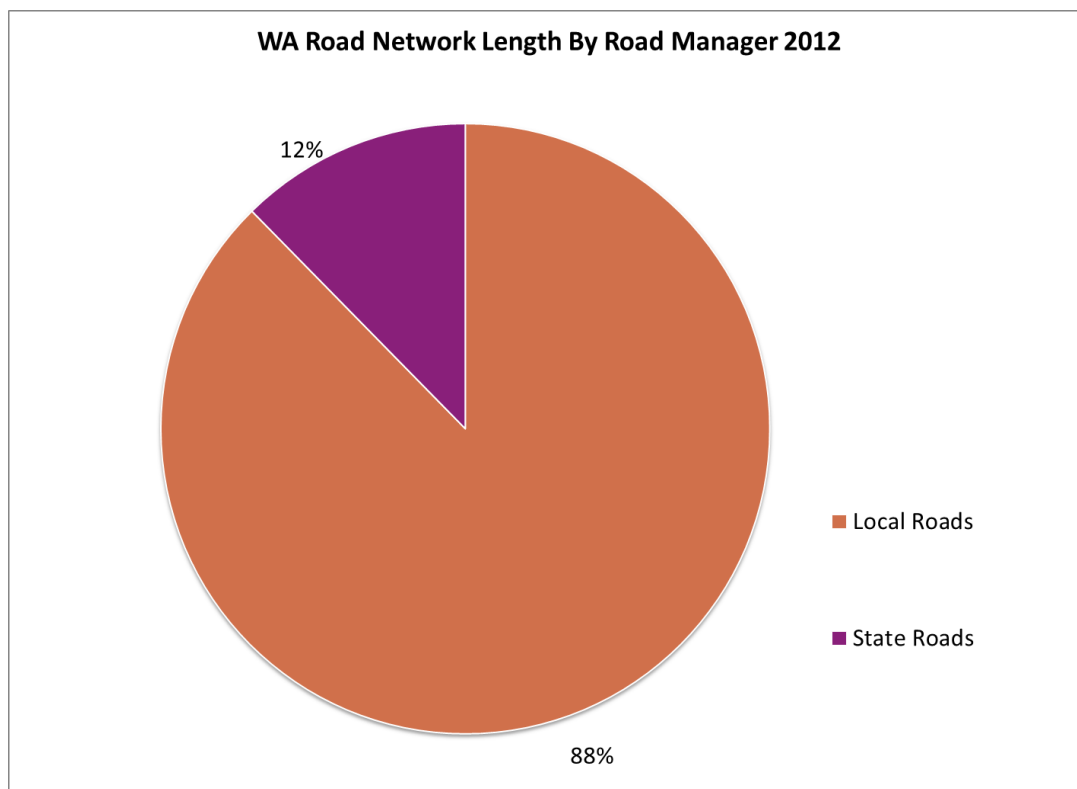


Figure 3: Length of road network in WA by road manager 2012

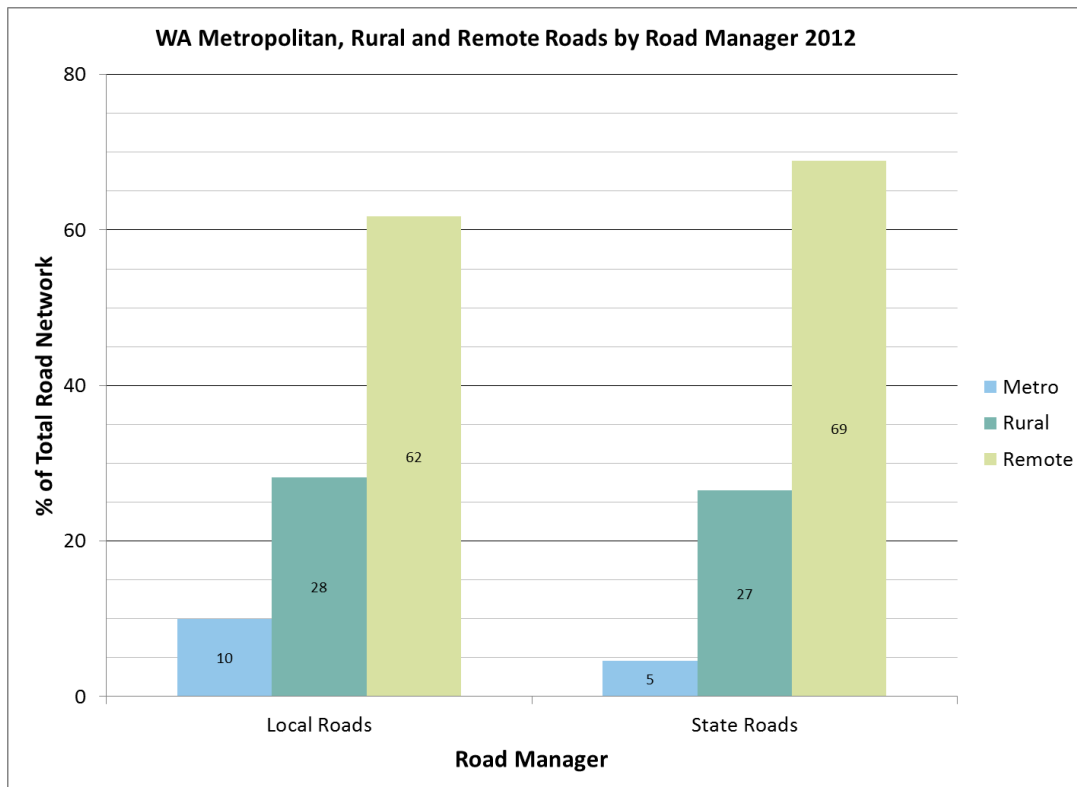


Figure 4: Percentage of road network in WA by road manager and accessibility 2012

2.2 Road Trauma on the Road Network

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

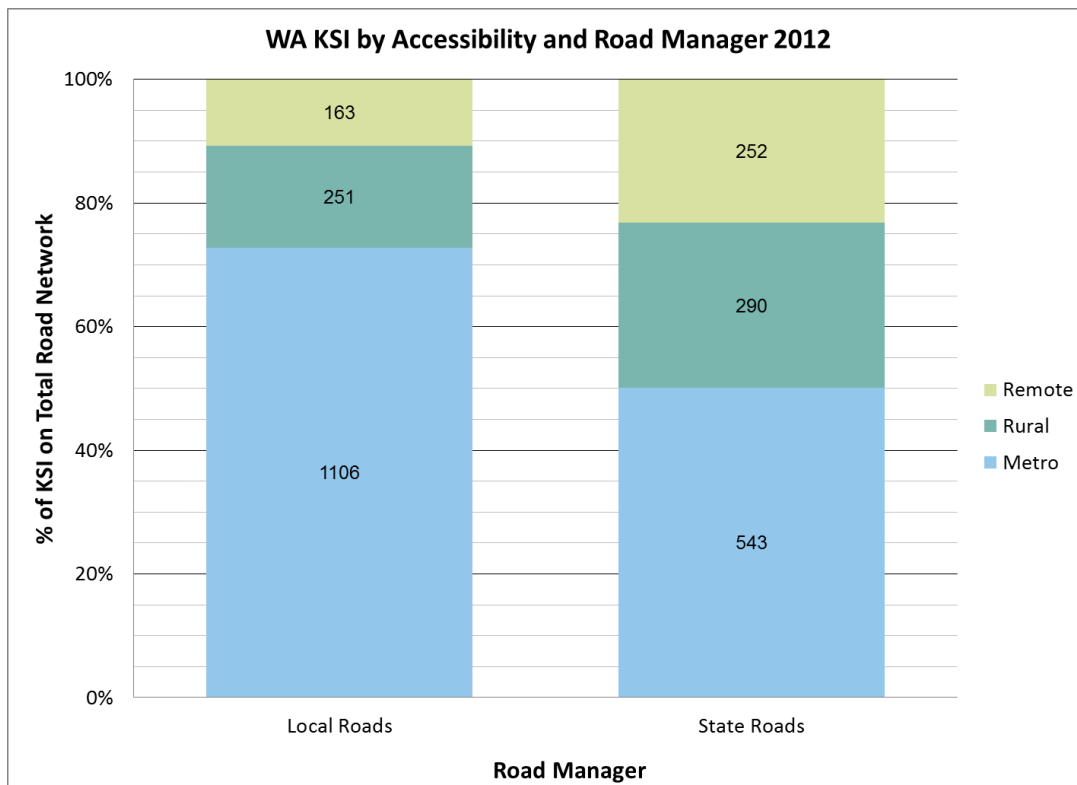


Figure 5: WA KSI by road manager and accessibility 2012

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 Manager	MVKT	Population	Serious Crashes			All Other Crashes		
			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 100,000 Population
	Killed	Seriously Injured	Total		
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.

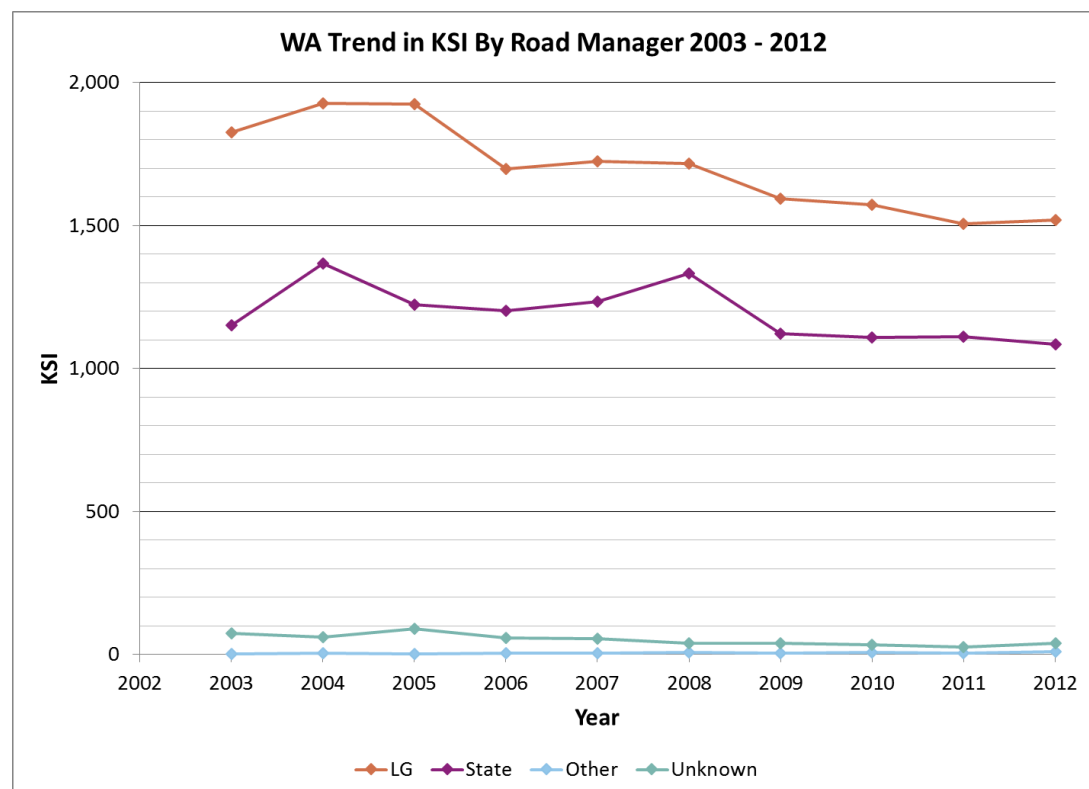


Figure 6: Trend in KSI by road manager 2003 to 2012

2.5 Crashes by Nature

Serious crashes by crash nature from 2003 to 2012 are shown in Figure 7 and 8.

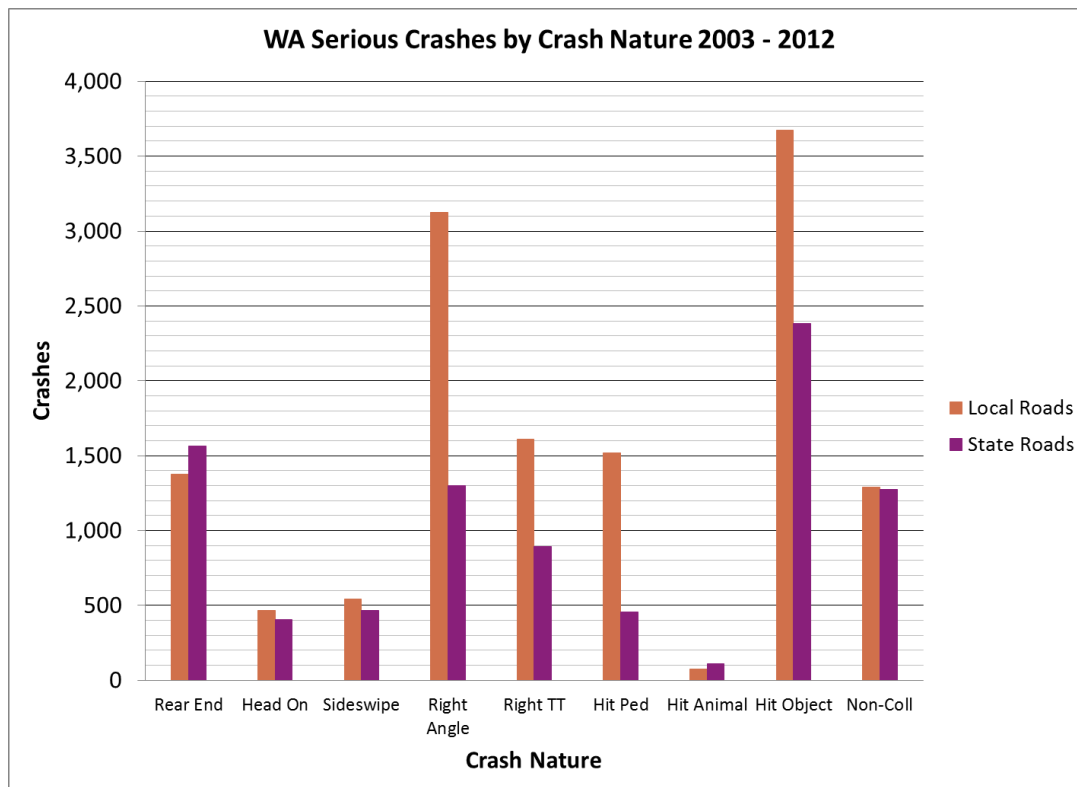


Figure 7: Ten year serious crash totals by crash nature and road manager 2003 to 2012

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.

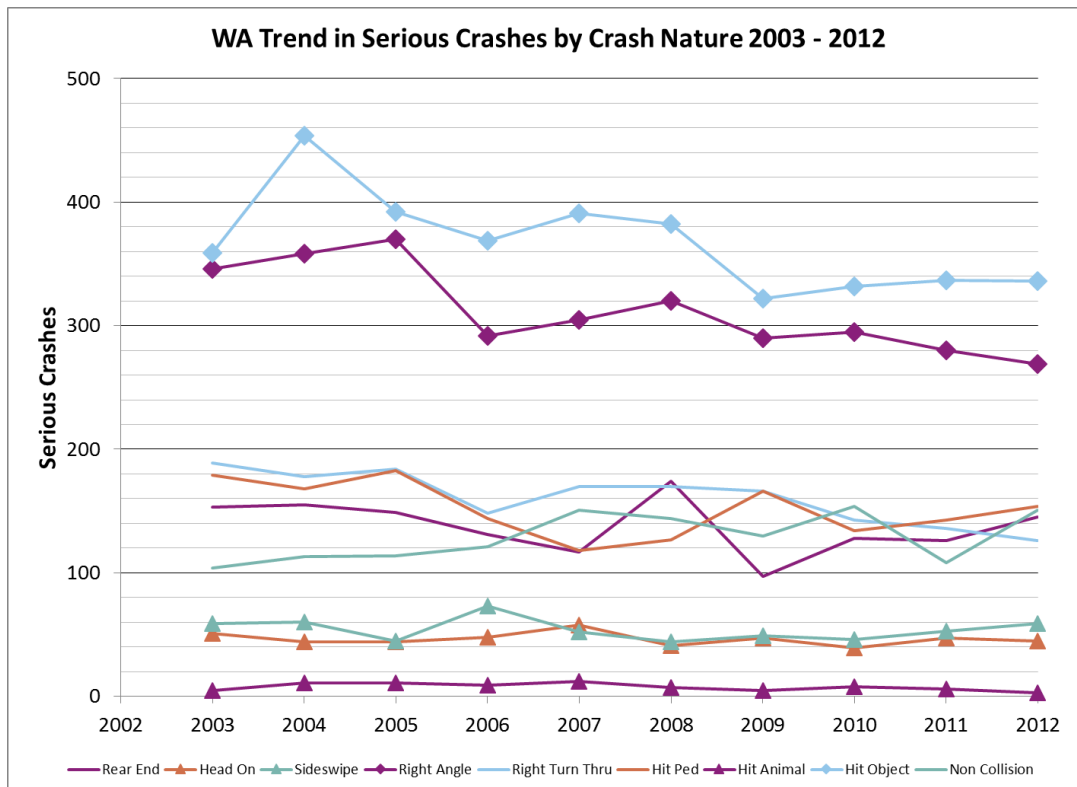


Figure 8: Trend in serious crashes on WA local roads by crash nature 2003 to 2012

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 non-metropolitan 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 network 2003 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.

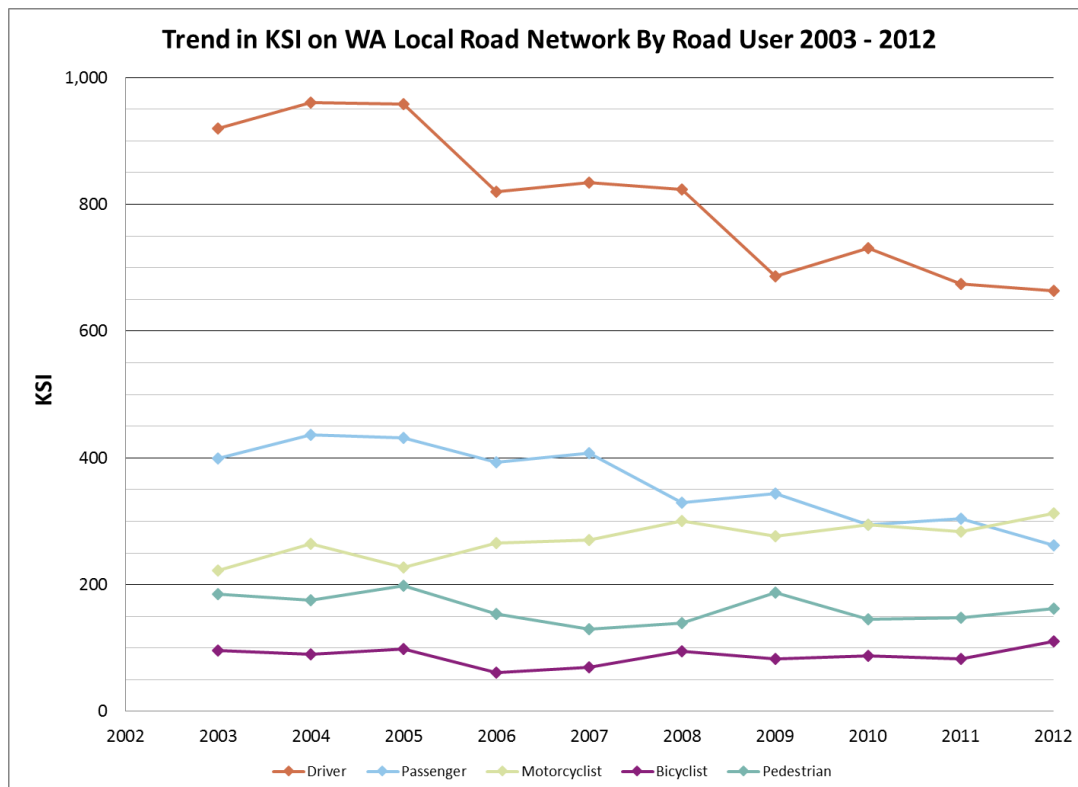


Figure 9: Trend in KSI on WA local roads by road user 2003 to 2012

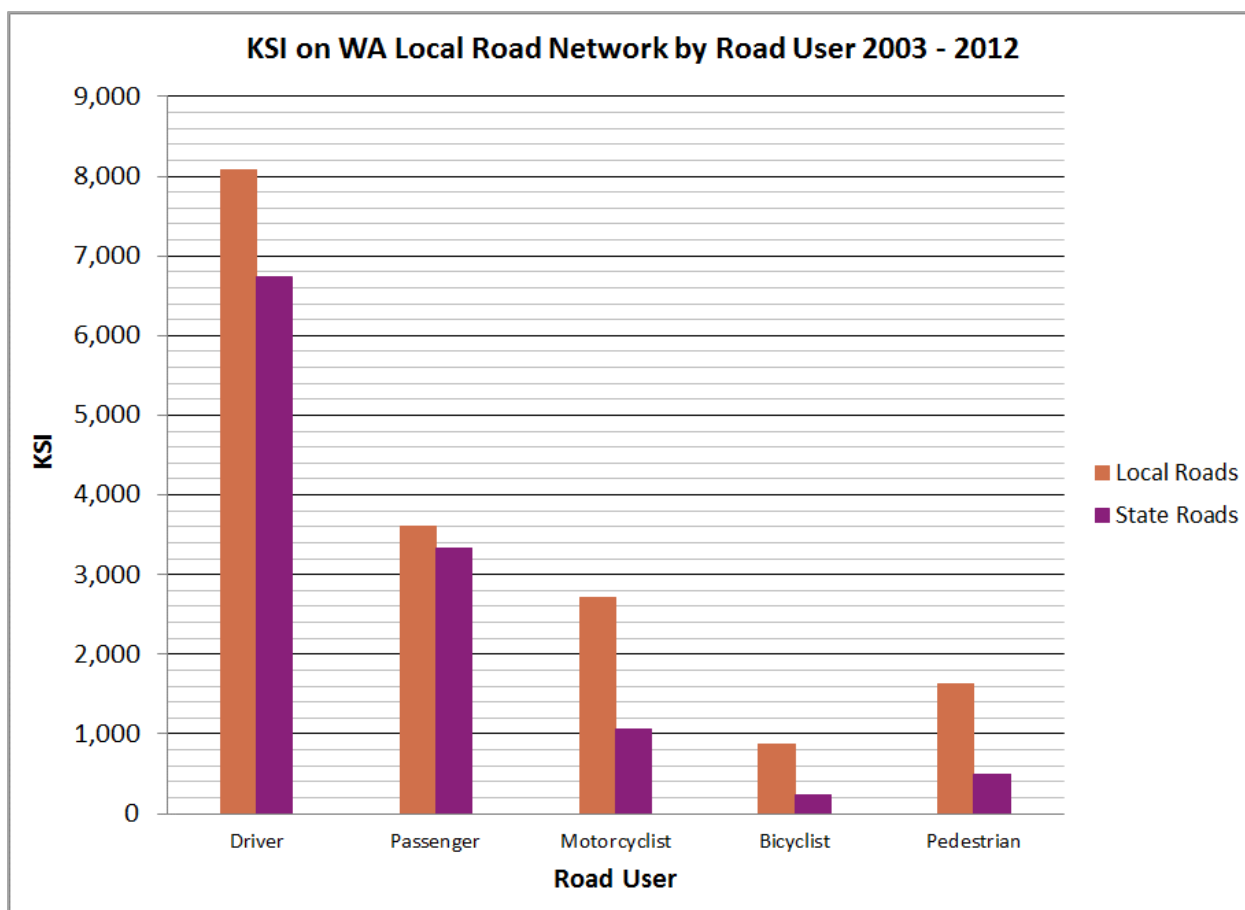


Figure 10: KSI totals by road user 2003 to 2012

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 Crash	Local Roads		State Roads		WA
		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.

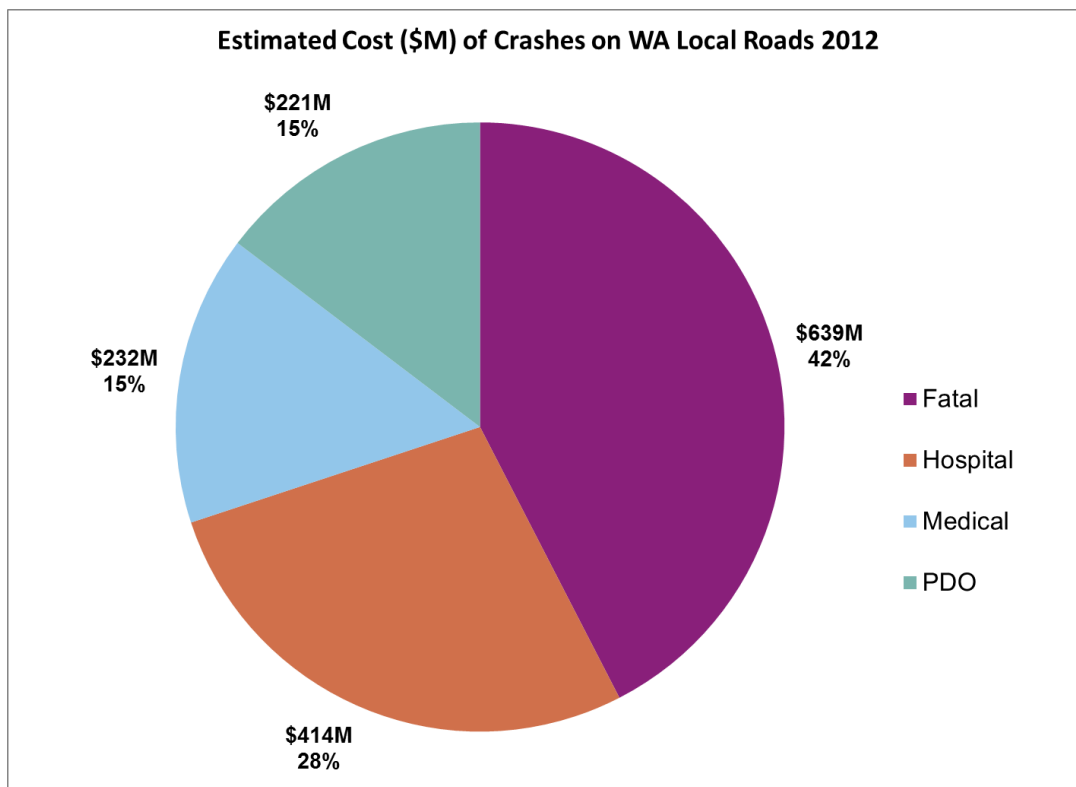


Figure 11: Estimated cost of all crashes on local roads 2012



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

Crash Severity	Cost Per Crash	Local Roads		State Roads		WA
		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

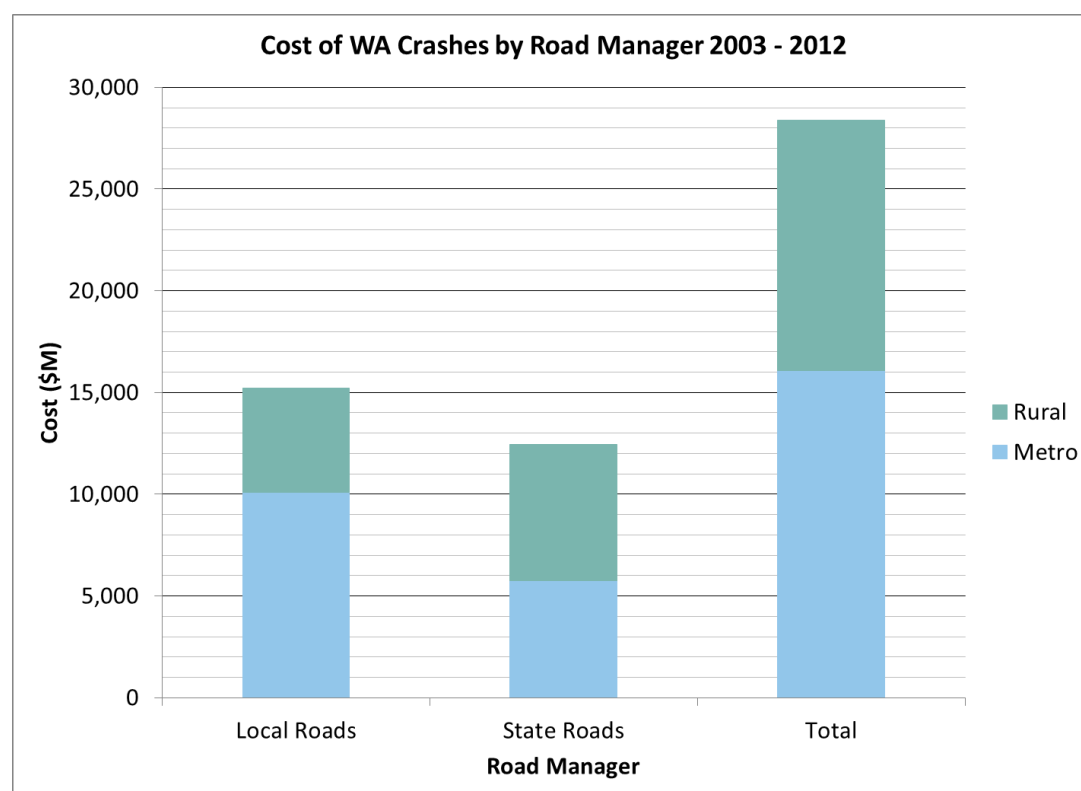


Figure 13: Cost of all crashes in WA by road manager 2003 to 2012

3. REGIONAL ROAD CRASH AND KSI SUMMARIES

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

3.1 Great Southern Region Road Network

Figures 14 and 15 illustrate the road network in the Great Southern Region 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 89% of the Great Southern Region road network. The Local road network has a 63% rural and 37% remote split in terms of accessibility compared to a 54% rural and 46% remote split for State roads.

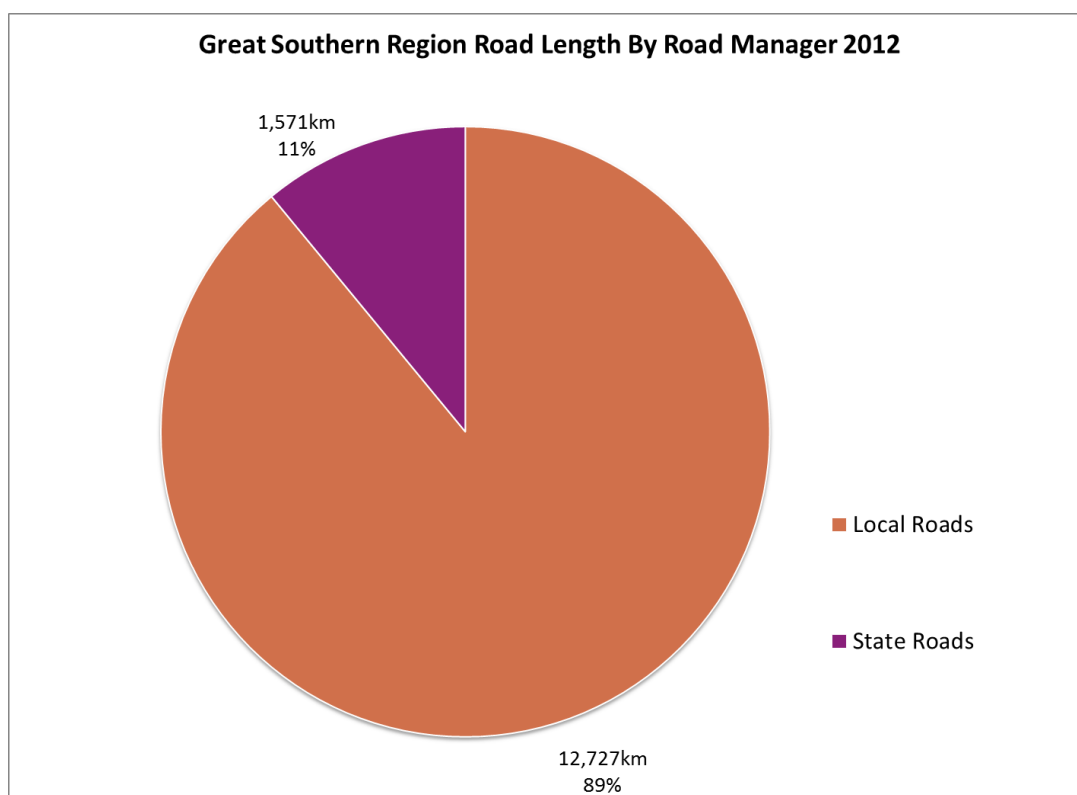


Figure 14: Length of road network in Great Southern Region by road manager 2012



Figure 15: Percentage of road network and accessibility 2012

3.2 Crashes by Location and Road Manager

Table 8 shows all crashes by crash location and road manager in the Great Southern 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	1,540	24.7
Intersection	State, State	409	6.6
Intersection	State, LG	614	9.9
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	3	0.0
Midblock	LG	2,522	40.5
Intersection	LG, LG	1,059	17.0
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	86	1.4
Total		6,233	100.0

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

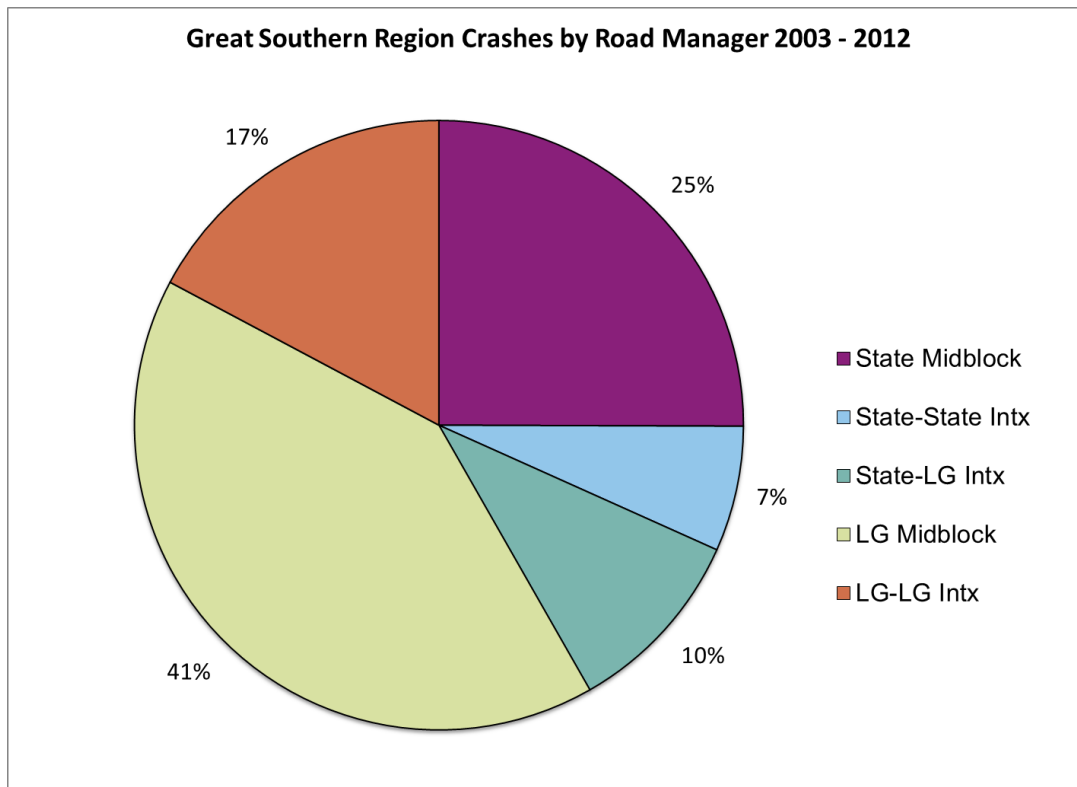


Figure 16: Crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 16 shows:

- 58% of crashes occurred at local road locations including intersections where all legs were local roads.
- 10% of crashes occurred at intersections having both Local and State road legs.
- 32% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 16 also shows that 66% of crashes in the Great Southern Region occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

3.3 KSI Trend by Local Government

Table 9 shows the KSI trend by Local Government for the Great Southern Region local road network. Figure 17 displays the total KSI trend across all Local Governments.

Local Government	Year										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Albany (C)	16	21	21	16	13	14	11	13	9	15	149
Broomehill-Tambellup	4	2	2	0	1	3	0	0	0	1	13
Cranbrook	2	0	3	6	4	2	12	1	1	2	33
Denmark	6	2	6	5	2	2	0	3	0	3	29
Gnowangerup	0	3	3	0	0	0	0	4	1	1	12
Jerramungup	1	0	5	3	0	0	0	1	0	4	14
Katanning	3	2	0	0	3	6	4	4	3	2	27
Kent	0	0	0	0	1	0	1	0	0	2	4
Kojonup	2	3	3	1	0	1	3	1	4	1	19
Plantagenet	7	1	9	2	3	5	0	2	3	2	34
Ravensthorpe	0	0	2	3	2	0	0	1	1	3	12
Woodanilling	1	1	2	1	0	0	2	1	0	0	8
TOTAL	42	35	56	37	29	33	33	31	22	36	354

Table 9: KSI trend by Local Government 2003 - 2012

The City of Albany experienced the highest frequency of KSI from 2003 to 2012.

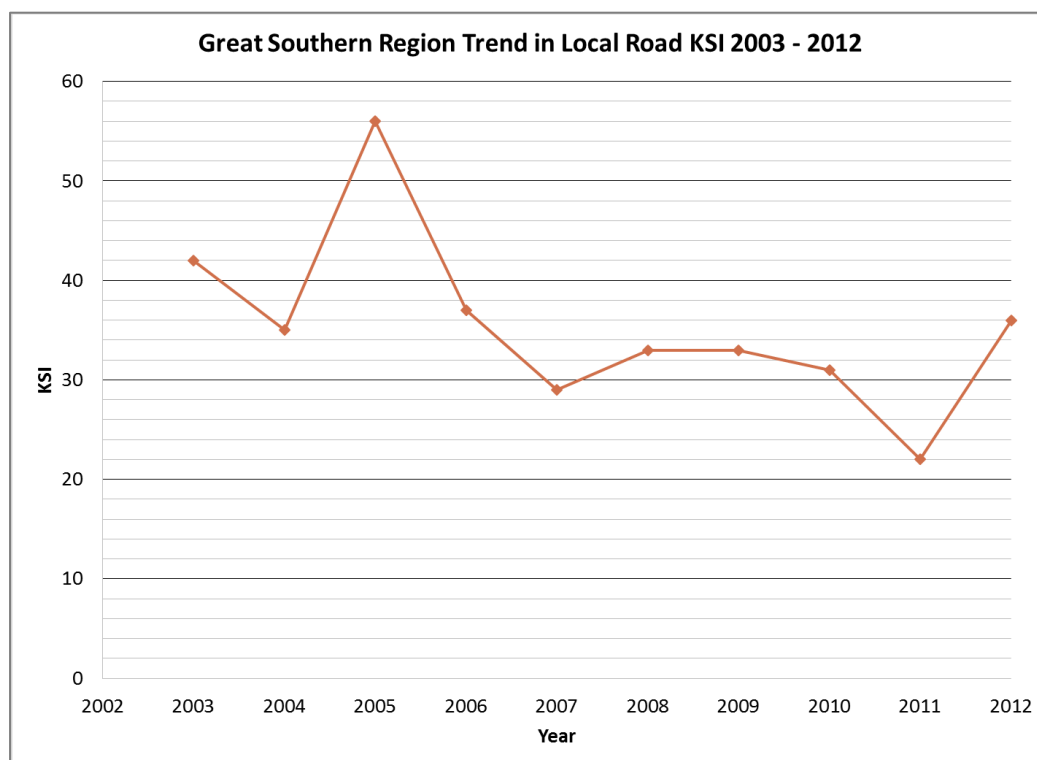


Figure 17: KSI trend for the Great Southern Region 2003 - 2012

3.4 Crash Severity

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

Crash Severity	Region		
	Great Southern (GS)	State	% for GS
	n	n	%
Fatal	3	87	3.4
Hospitalisation	29	1,235	2.3
Medical	26	2,949	0.9
PDO Major	160	12,106	1.3
PDO Minor	96	7,417	1.3
Total	314	23,794	1.3

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

3.5 Road Surface Type

Nearly 82% of crashes occurred on sealed roads and 16% of crashes occurred on unsealed roads on the Great Southern Region local road network.

Crash Severity	Surface Type						
	Sealed		Unsealed		Unknown		Total
	n	%	n	%	n	%	n
Fatal	3	100.0	0	0.0	0	0.0	3
Hospitalisation	20	69.0	9	31.0	0	0.0	29
Medical	22	84.6	4	15.4	0	0.0	26
PDO Major	127	79.4	29	18.1	4	2.5	160
PDO Minor	86	89.6	8	8.3	2	2.1	96
Total	258	82.2	50	15.9	6	1.9	314

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 Great Southern Region local road network for 2012.

Crash Nature	Region		
	Great Southern (GS)	State	% for GS
	n	n	%
Multi-Vehicle Crashes			
Rear End	2	163	1.2
Head On	6	57	10.5
Sideswipe	0	60	0.0
Right Angle	3	315	1.0
Right Turn Thru	1	149	0.7
Multi-Vehicle Other	0	19	0.0
Multi-Vehicle Total	12	763	1.6
Single Vehicle Crashes			
Hit Pedestrian	0	159	0.0
Hit Animal	1	3	33.3
Hit Object	16	394	4.1
Non-Collision	7	181	3.9
Single Vehicle Other	0	20	0.0
Single Vehicle Total	24	757	3.2
Total	36	1,520	2.4

Table 12: KSI on local roads by crash nature 2012

Approximately 64% of KSI on the Great Southern local road network occurred in single vehicle crashes of Hit Object or Non-Collision.

3.7 Vehicle Type

Table 13 and Figure 18 show KSI by vehicle type and road manager for the Great Southern Region local road network for 2012.

Vehicle Type	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Car	13	12	0	0	25
Station Wagon	4	12	0	0	16
Utility	5	11	0	0	16
Panel Van	2	0	0	0	2
Truck	2	0	0	0	2
Prime Mover	0	0	0	0	0
Bus	0	0	0	0	0
Motorcycle	3	3	0	0	6
Multi-Seated Van	0	0	0	1	1
Truck Combination	1	0	0	0	1
4WD	3	6	0	0	9
Other	1	0	0	0	1
Total	34	44	0	1	79

Table 13: KSI by vehicle type and road manager 2012

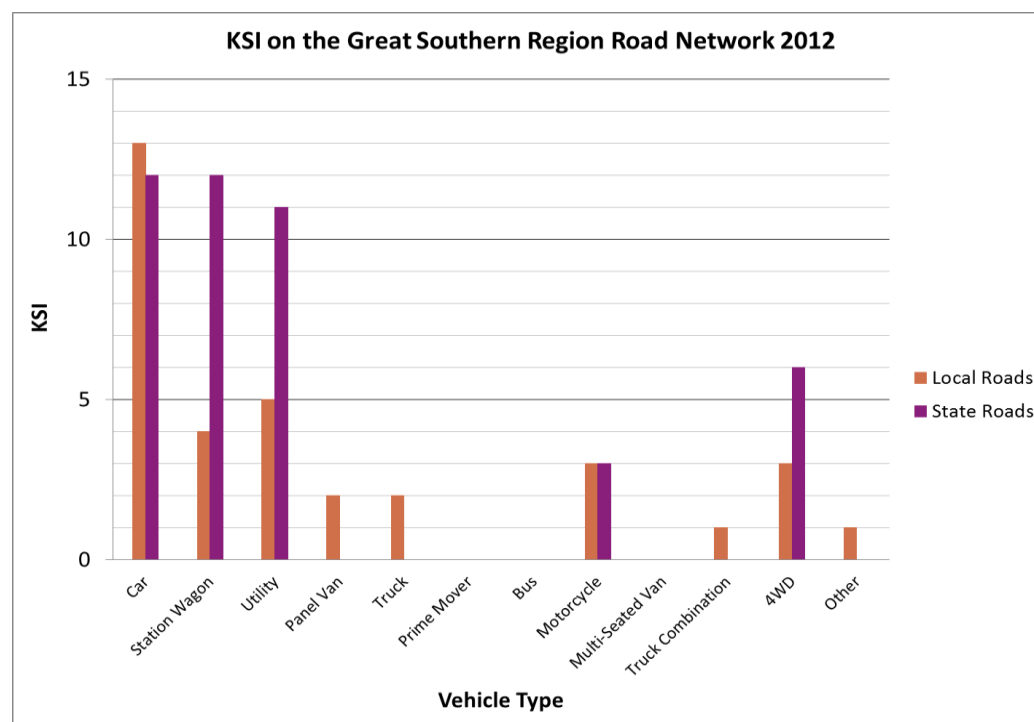


Figure 18: KSI by vehicle type and road manager 2012

3.8 Road User

Table 14 and Figure 19 show KSI by road user and road manager for the Great Southern Region local road network for 2012.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	22	21	0	1	44
Passenger	8	20	0	0	28
Motorcyclist	3	3	0	0	6
Bicyclist	1	1	0	0	2
Pedestrian	1	0	0	0	1
Other	1	0	0	0	1
Total	36	45	0	1	82

Table 14: KSI by road user and road manager 2012

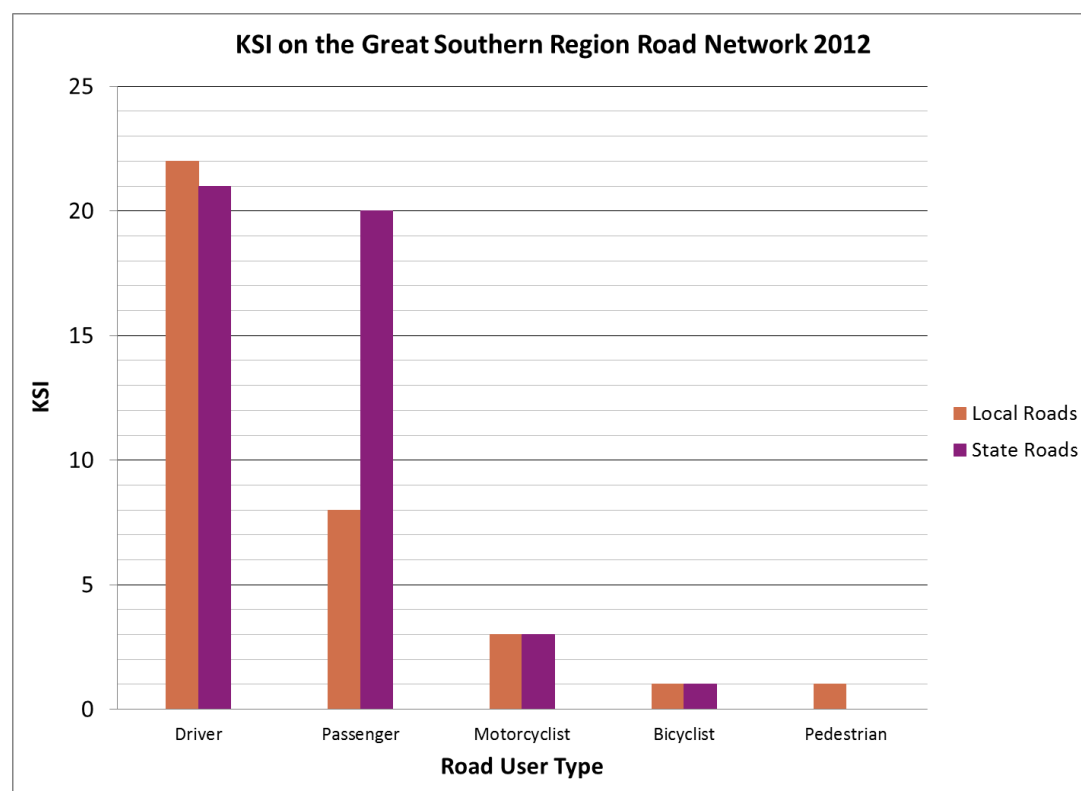


Figure 19: KSI by road user and road manager 2012

3.9 Speed

Figure 20 shows KSI where speed was considered a factor for the Great Southern Region local road network. The determination of whether speed was a factor in a crash can only be reliably determined from police attended crashes.

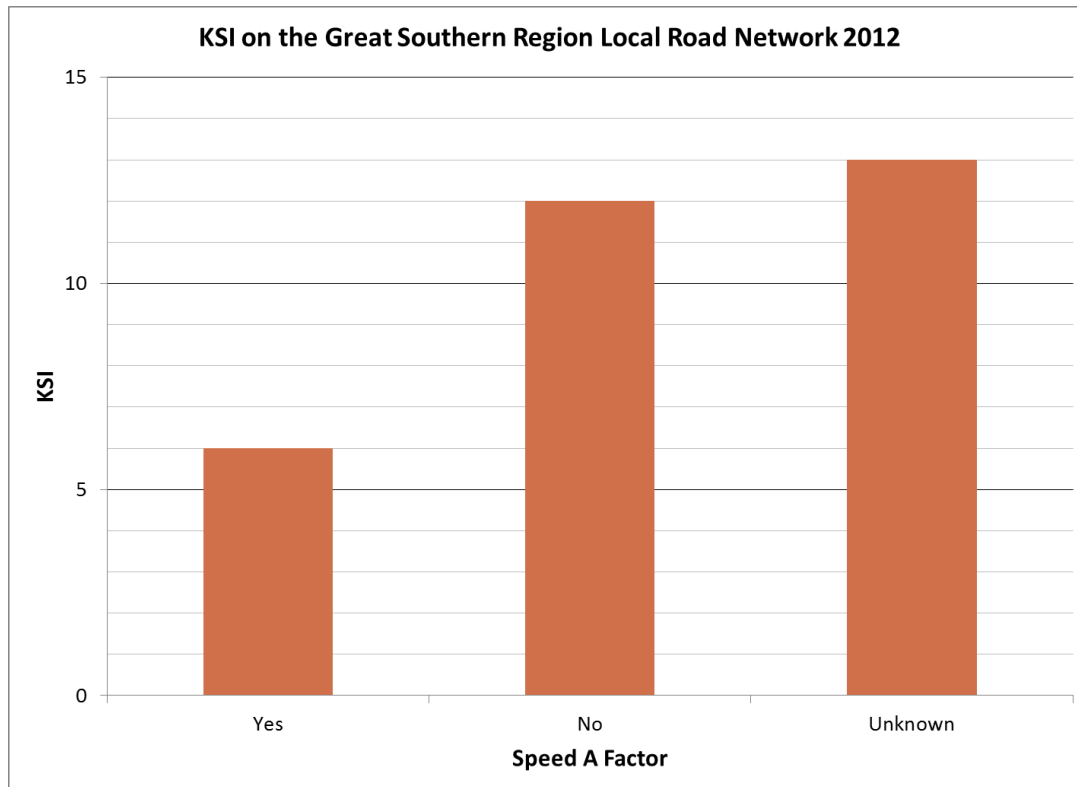


Figure 20: KSI by speed factor 2012 (police attended)

3.10 Blood Alcohol Content (BAC)

Table 15 and Figure 21 show KSI by the highest BAC reading for a driver/rider for the Great Southern Region local road network. The subset of Police attended crashes was used in the summaries below.

Highest Driver/Rider BAC in Police Attended Crash	KSI Severity					
	Killed		Seriously Injured		Total	
	n	%	n	%	n	%
Nil	3	100	17	61	20	65
$0 \leq \text{BAC} < 0.05$	0	0	0	0	0	0
$0.05 \leq \text{BAC} \leq 0.08$	0	0	1	4	1	3
$0.08 \leq \text{BAC} < 0.15$	0	0	1	4	1	3
$\text{BAC} \geq 0.15$	0	0	1	4	1	3
Subtotal BAC ≥ 0.05	0	0	3	11	3	10
Unknown	0	0	8	29	8	26
Total KSI	3	100	28	100	31	100

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

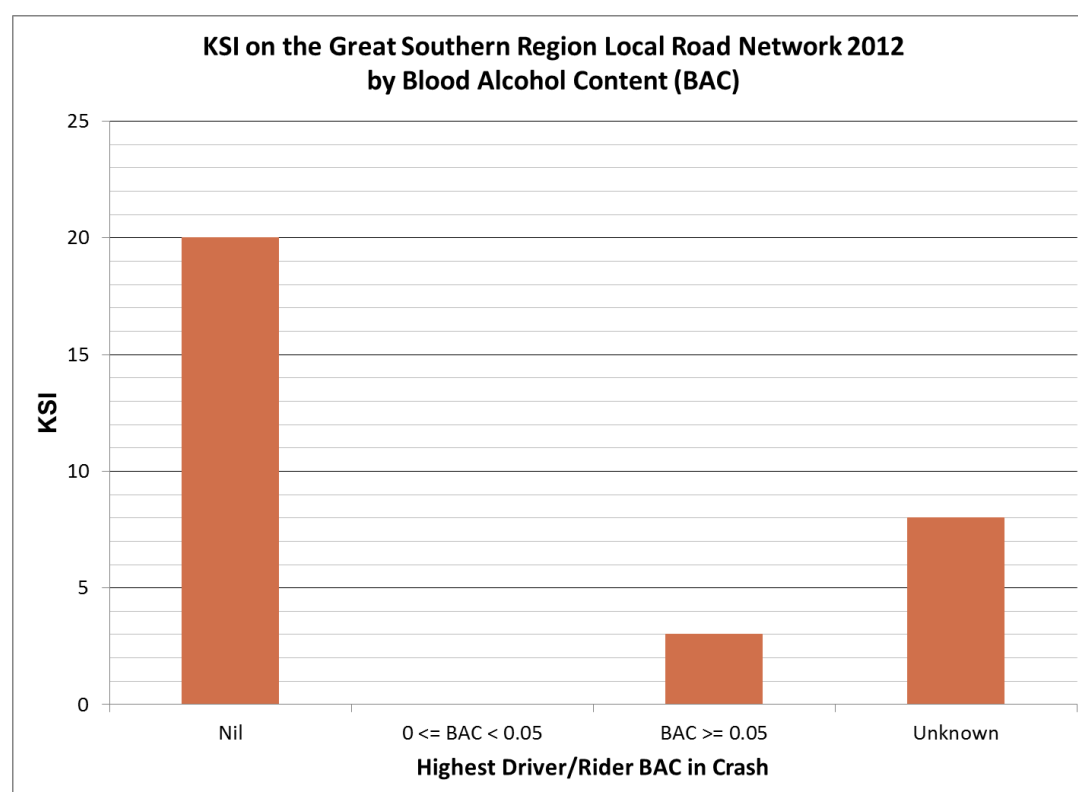


Figure 21: KSI by highest BAC reading in the crash 2012 (police attended)

3.11 Seatbelt Use

Figure 22 shows KSI by seatbelt usage for the Great Southern Region local road network. The subset of police attended crashes was used in the figure below.

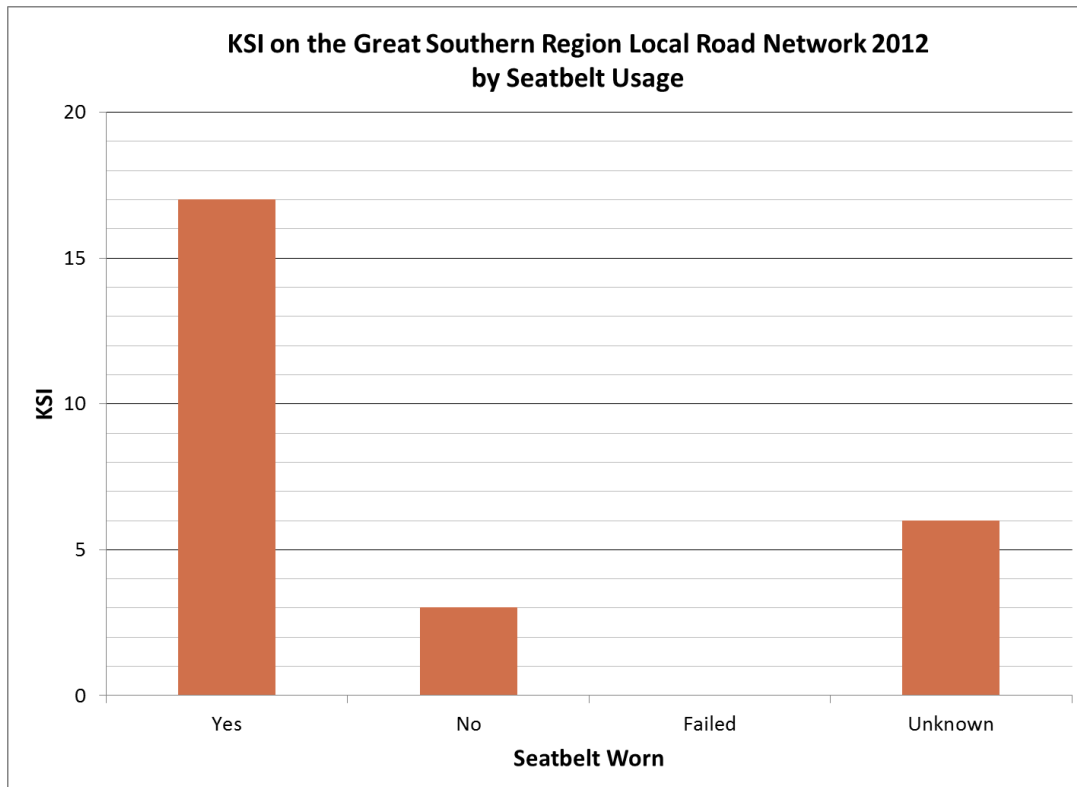


Figure 22: KSI by seatbelt usage 2012 (police attended)

4. SAFE SYSTEM

In this section, KSI summaries are provided for the Great Southern 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 single vehicle run-off crashes on the Great Southern Region road network from 2003 to 2012. Run-off road crashes are a road safety issue for both Local and State road managers.

Road Manager	KSI in Run-off Road Crashes	
	n	%
Local	219	41.1
State	310	58.2
Other	0	0
Unknown	4	0.8
Total	533	100

Table 16: KSI in run-off road crashes 2003 to 2012

4.2 Safe Speeds

Table 17 and Figure 23 show KSI by speed zone on the Great Southern 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 (km/hr.)	KSI Severity		
	Killed	Seriously Injured	KSI Total
	n	n	n
< 50	0	0	0
50	2	7	9
60	1	17	18
70	0	0	0
80	1	6	7
90	0	1	1
100	0	0	0
110	7	15	22
Unknown	0	10	10
Total	11	56	67

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

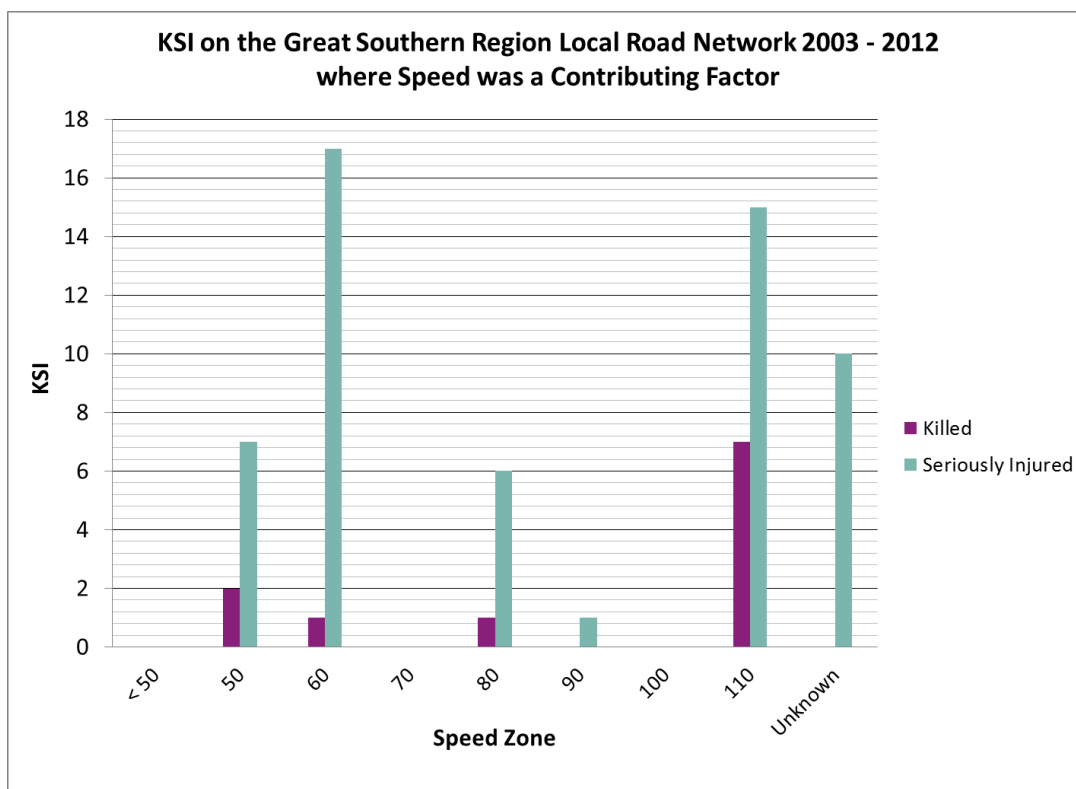


Figure 23: KSI by speed zone 2003 to 2012 (police attended)

Road segments with speed limits of 50, 60 and 110km/hr. account for a high proportion of KSI on local roads.

4.3 Safe Road Use

Table 18 identifies the contributing factors to KSI on the Great Southern 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	57	80	0	0	137
Seatbelts Not Worn	20	28	0	1	49
Alcohol	52	45	0	2	99
Speed	67	49	0	1	117

Table 18: KSI by contributing factor 2003 to 2012 (Police Attended)

All factors contributed to serious crashes on the Great Southern Region local road network.

4.4 Safe Vehicles

Table 19 shows KSI by vehicle type and road manager on the Great Southern local road network for 2003 to 2012.

Vehicle Type	Road Manager								
	Local		State		Other		Unknown		Total
	n	Row %	n	Row %	n	Row %	n	Row %	n
Car	155	41.2	220	58.5	0	0.0	1	0.3	376
Station Wagon	35	35.0	64	64.0	0	0.0	1	1.0	100
Utility	50	47.6	53	50.5	0	0.0	2	1.9	105
Panel Van	11	31.4	24	68.6	0	0.0	0	0.0	35
Truck	3	50.0	3	50.0	0	0.0	0	0.0	6
Prime Mover	0	n.a.	0	n.a.	0	n.a.	0	n.a.	0
Bus	0	0.0	1	100.0	0	0.0	0	0.0	1
Motorcycle	30	48.4	28	45.2	0	0.0	4	6.5	62
Multi-Seated Van	2	18.2	8	72.7	0	0.0	1	9.1	11
Truck Combination	8	50.0	8	50.0	0	0.0	0	0.0	16
4WD	15	28.8	36	69.2	0	0.0	1	1.9	52
Other	3	33.3	6	66.7	0	0.0	0	0.0	9
Total	312	40.4	451	58.3	0	0.0	10	1.3	773

Table 19: KSI by vehicle type 2003 to 2012

Cars, station wagons and utilities were involved in 76% of KSI outcomes on local roads.

5. DEMOGRAPHICS

In this section demographic summaries of KSI are provided for the Great Southern Region.

5.1 Gender

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

Road User	Gender	KSI Severity		
		Killed	Seriously Inj.	Total
		n	n	n
Driver	Female	8	70	78
	Male	12	117	129
	Unknown	0	0	0
	Total	20	187	207
Passenger	Female	0	18	18
	Male	3	24	27
	Unknown	0	27	27
	Total	3	69	72
Motorcyclist	Female	0	3	3
	Male	2	23	25
	Unknown	0	2	2
	Total	2	28	30
Bicyclist	Female	0	3	3
	Male	0	10	10
	Unknown	0	0	0
	Total	0	13	13
Pedestrian	Female	1	14	15
	Male	1	11	12
	Unknown	0	2	2
	Total	2	27	29
Other	Female	0	1	1
	Male	0	2	2
	Unknown	0	0	0
	Total	0	3	3
Total	Female	9	109	118
	Male	18	187	205
	Unknown	0	31	31
	Total	27	327	354

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

Table 20 shows that males represent 58% of all KSI on local roads; 83% of motorcyclists KSI and 77% of bicyclists KSI.

5.2 Age

Table 21 and Figure 24 show KSI by age and road manager for the Great Southern Region local road network from 2003 to 2012.

Age	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
0 to 11	14	26	0	1	41
12 to 16	14	15	0	1	30
17 to 20	61	55	0	2	118
21 to 24	43	53	0	0	96
25 to 29	39	44	0	2	85
30 to 39	59	59	0	2	120
40 to 49	45	61	0	0	106
50 to 59	26	41	0	0	67
60 to 69	16	43	0	0	59
70+	22	40	0	0	62
Unknown	15	24	0	2	41
Total	354	461	0	10	825

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.

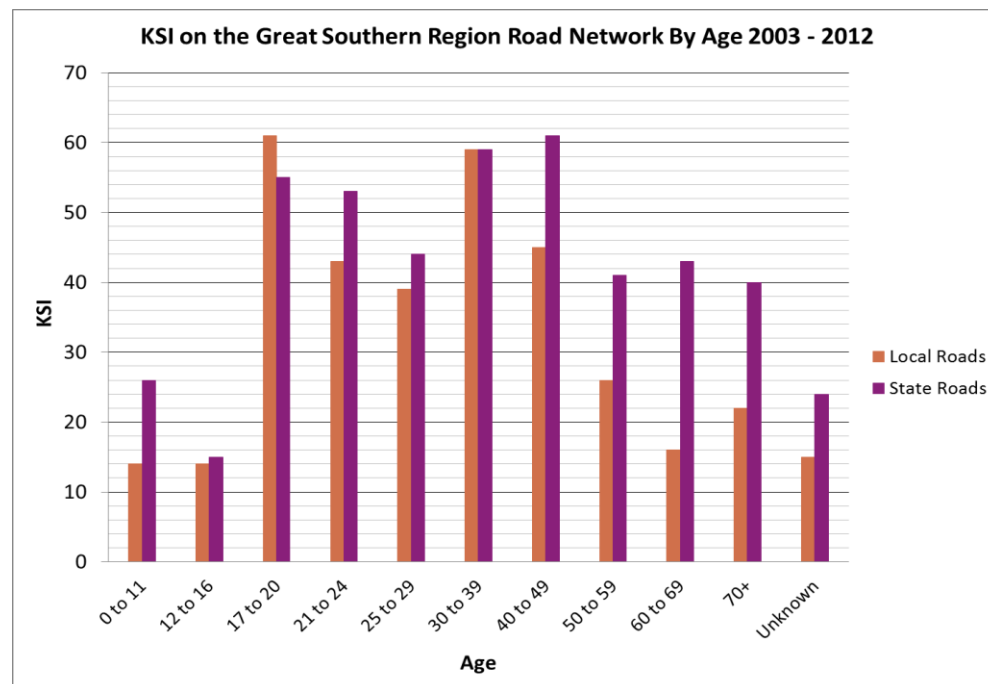


Figure 24: KSI by age 2003 to 2012

6. LOCAL GOVERNMENT ROAD CRASH AND KSI SUMMARIES

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

6.1 City of Albany

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

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

Crash Location	Road Manager	Crashes	%
Midblock	State	439	12.1
Intersection	State, State	382	10.5
Intersection	State, LG	474	13.1
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	2	0.1
Midblock	LG	1,425	39.3
Intersection	LG, LG	877	24.2
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	31	0.9
Total		3,630	100.0

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

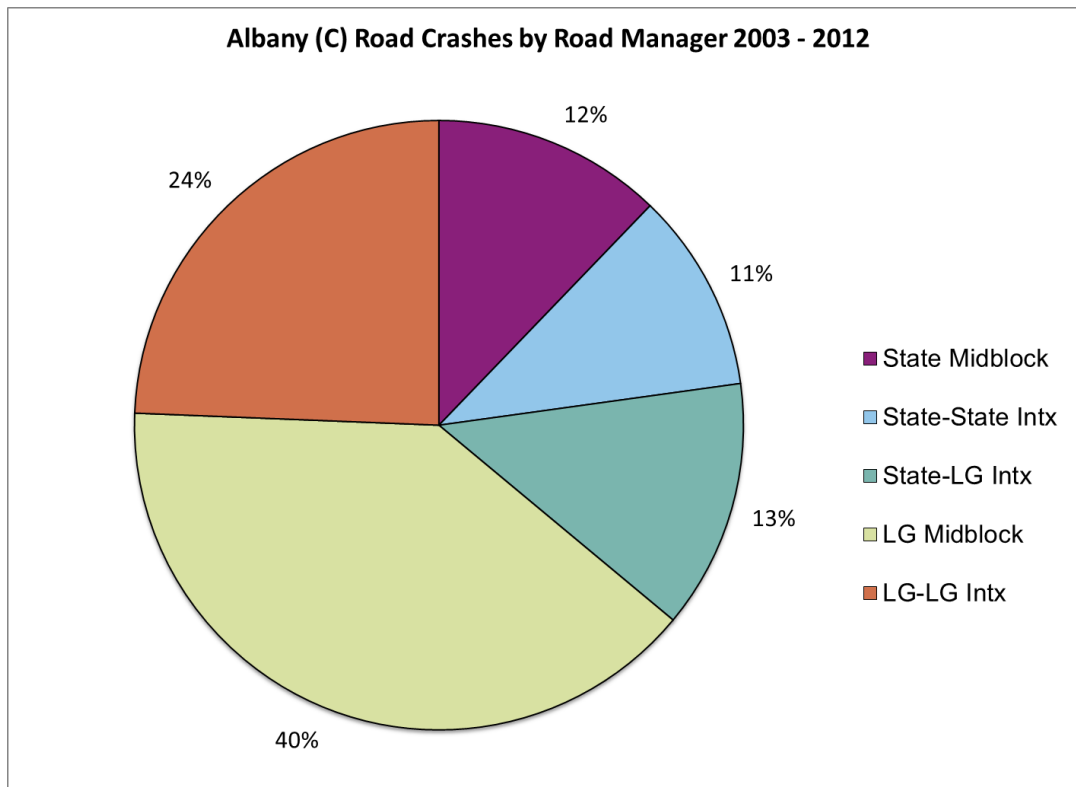


Figure 25: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 25 shows:

- 64% 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.
- 23% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 25 shows that 40% of crashes in the City of Albany occurred at local road midblock locations. This is further investigated in the analysis of the crash nature.

The KSI trend for the City of Albany 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	16	21	21	16	13	14	11	13	9	15	149

Table 23: KSI trend 2003 - 2012

6.1.1 Crash Nature

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

- 53% of KSI occurred in single vehicle crashes of Hit Object or Non-Collision;
- 15% of KSI occurred in multi-vehicle crashes of Right Angle or Right turn Thru crash; and
- 11% of KSI occurred in single vehicle crashes of Hit Pedestrian.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Albany	Great Southern	% for Albany	Albany
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	14	18	77.8	1
Head On	6	19	31.6	1
Sideswipe	1	3	33.3	0
Right Angle	15	35	42.9	2
Right Turn Thru	7	8	87.5	1
Multi-Vehicle Other	5	8	62.5	0
Multi-Vehicle Total	48	91	52.7	5
Single Vehicle Crashes				
Hit Pedestrian	17	24	70.8	0
Hit Animal	4	6	66.7	1
Hit Object	67	175	38.3	7
Non-Collision	12	56	21.4	2
Single Vehicle Other	1	2	50.0	0
Single Vehicle Total	101	263	38.4	10
Total	149	354	42.1	15

Table 24: KSI by crash nature 2003 - 2012

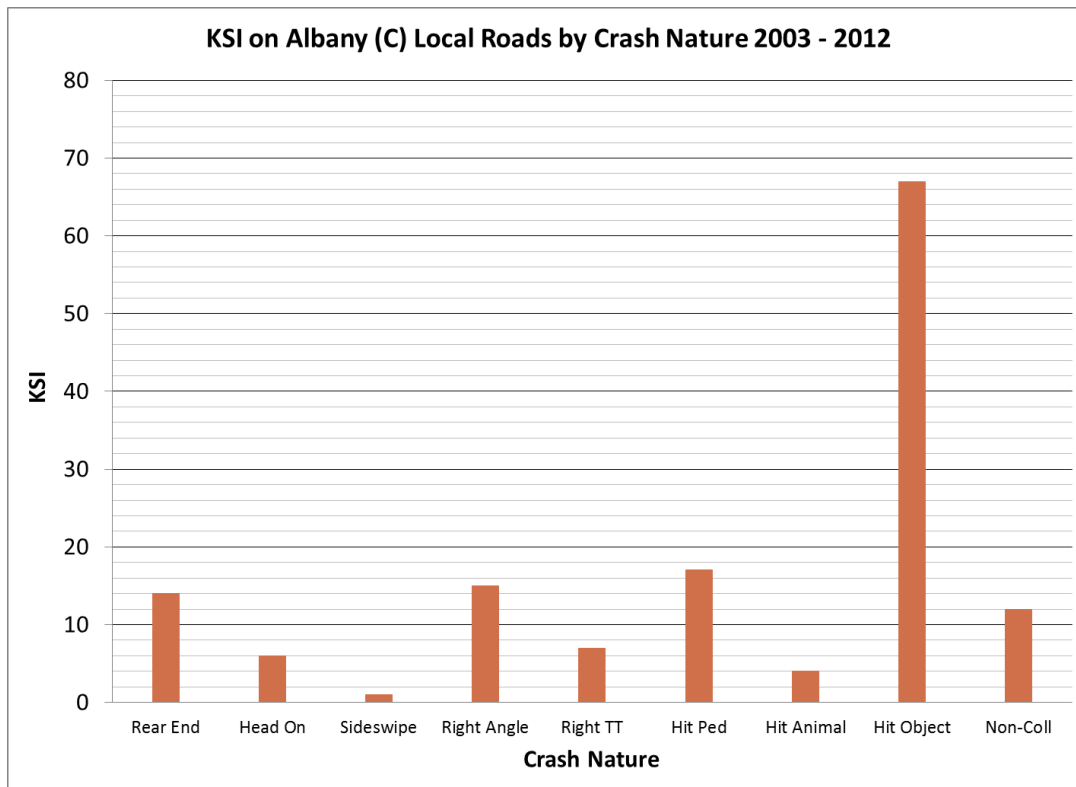


Figure 26: KSI by crash nature 2003 - 2012

6.1.2 Road User Type

KSI by road user type on the City of Albany local road network from 2003 to 2012 is shown in Table 25 and Figure 27.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	77	60	0	0	137
Passenger	22	26	0	0	48
Motorcyclist	14	14	0	1	29
Bicyclist	13	3	0	0	16
Pedestrian	21	4	0	0	25
Other	2	0	0	0	2
Total	149	107	0	1	257

Table 25: KSI by road user 2003 - 2012

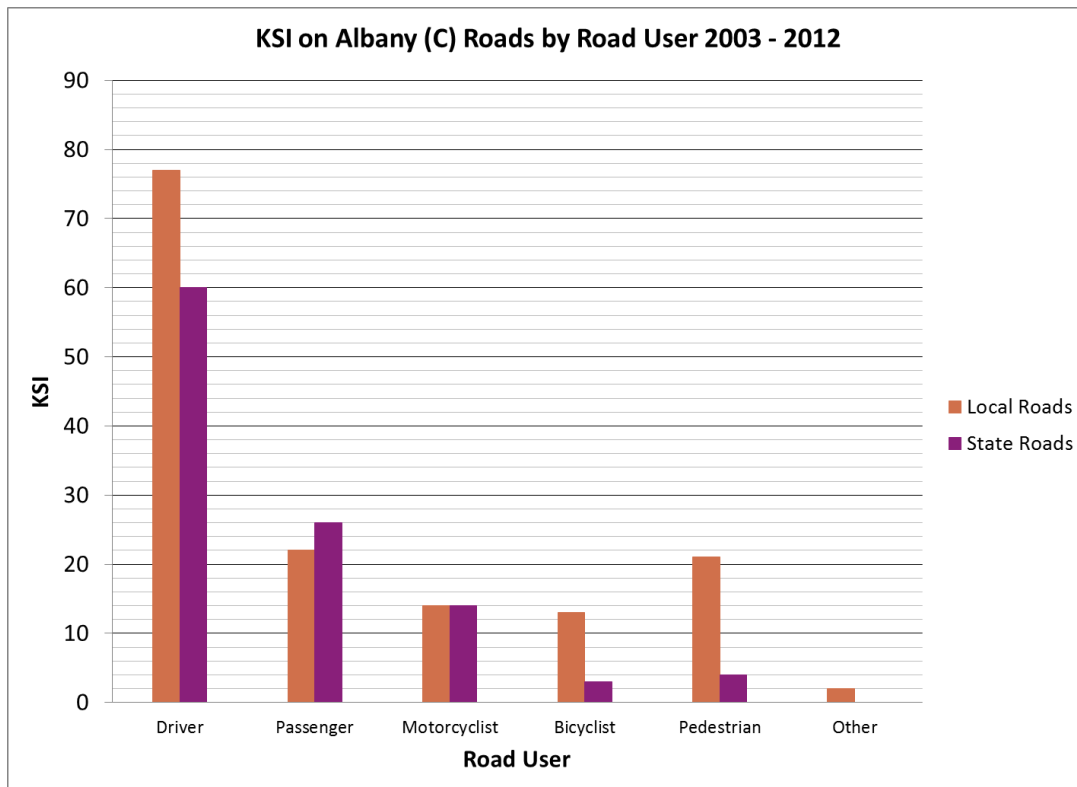


Figure 27: KSI by road user 2003 - 2012

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 26.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	7	1	0	0	8
Passenger	3	2	0	0	5
Motorcyclist	2	1	0	0	3
Bicyclist	1	1	0	0	2
Pedestrian	1	0	0	0	1
Other	1	0	0	0	1
Total	15	5	0	0	20

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 Albany 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	20	23	0	0	43
Seatbelts Not Worn	7	3	0	0	10
Alcohol	28	6	0	0	34
Speed	30	6	0	0	36

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

Speed, alcohol and inattention were significant factors contributing to KSI on local roads.

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	3	2
12 to 16	2	3	3
17 to 20	2	0	1
21 to 24	0	0	0
25 to 29	0	0	0
30 to 39	4	0	3
40 to 49	3	1	2
50 to 59	2	3	1
60 to 69	1	1	0
70+	0	2	8
Unknown	0	0	1
Total	14	13	21

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

Table 28 shows:

- 50% of motorcyclists KSI were aged 30 to 49.
- 46% of bicyclists KSI were aged 16 or younger.
- 24% of pedestrians KSI were aged 16 or younger.

6.2 Shire of Broomehill-Tambellup

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

Table 29 displays all crashes in the Shire of Broomehill-Tambellup by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	67	46.2
Intersection	State, State	3	2.1
Intersection	State, LG	4	2.8
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	64	44.1
Intersection	LG, LG	6	4.1
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	1	0.7
Total		145	100.0

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

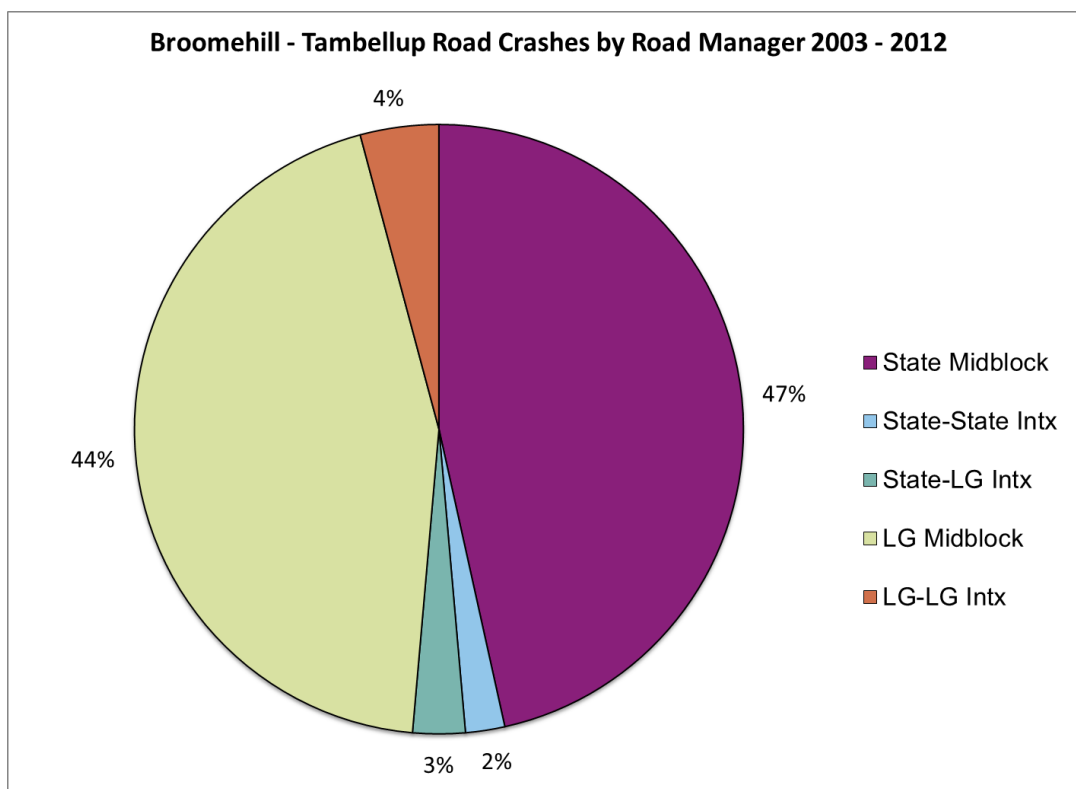


Figure 28: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 28 shows:

- 48% of crashes occurred at local road locations including intersections where all legs were local roads.
- 3% of crashes occurred at intersections having both Local and State road legs.
- 49% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 28 also shows that 91% of crashes in the Shire of Broomehill-Tambellup occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Broomehill-Tambellup 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	4	2	2	0	1	3	0	0	0	1	13

Table 30: KSI trend 2003 - 2012

6.2.1 Crash Nature

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

- All KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Broomehill-Tambellup	Great Southern	% for Broomehill-Tambellup	Broomehill-Tambellup
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	0	19	0.0	0
Sideswipe	0	3	0.0	0
Right Angle	0	35	0.0	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	0	91	0.0	0
Single Vehicle Crashes				
Hit Pedestrian	0	24	0.0	0
Hit Animal	0	6	0.0	0
Hit Object	12	175	6.9	1
Non-Collision	1	56	1.8	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	13	263	4.9	1
Total	13	354	3.7	1

Table 31: KSI by crash nature 2003 - 2012

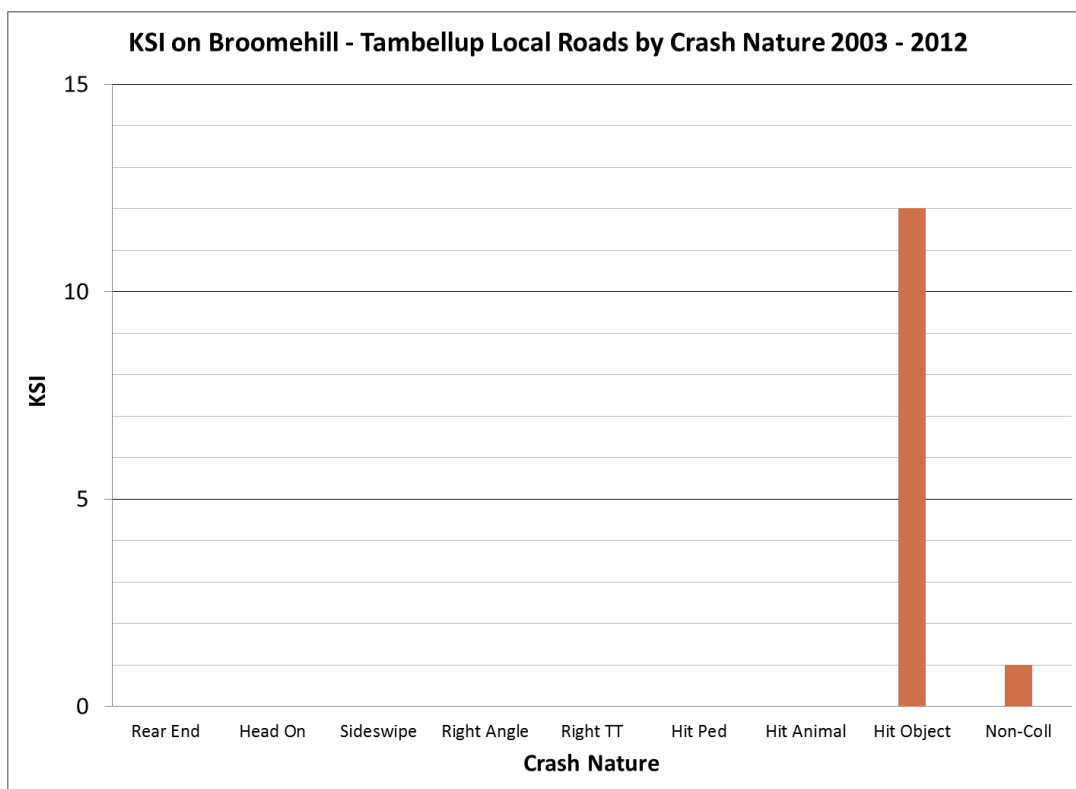


Figure 29: KSI by crash nature 2003 - 2012

6.2.2 Road User Type

KSI by road user type on the Shire of Broomehill-Tambellup local road network from 2003 to 2012 is shown in Table 32 and Figure 30.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	11	15	0	0	26
Passenger	2	5	0	0	7
Motorcyclist	0	1	0	0	1
Bicyclist	0	0	0	0	0
Pedestrian	0	1	0	0	1
Other	0	0	0	0	0
Total	13	22	0	0	35

Table 32: KSI by road user 2003 - 2012

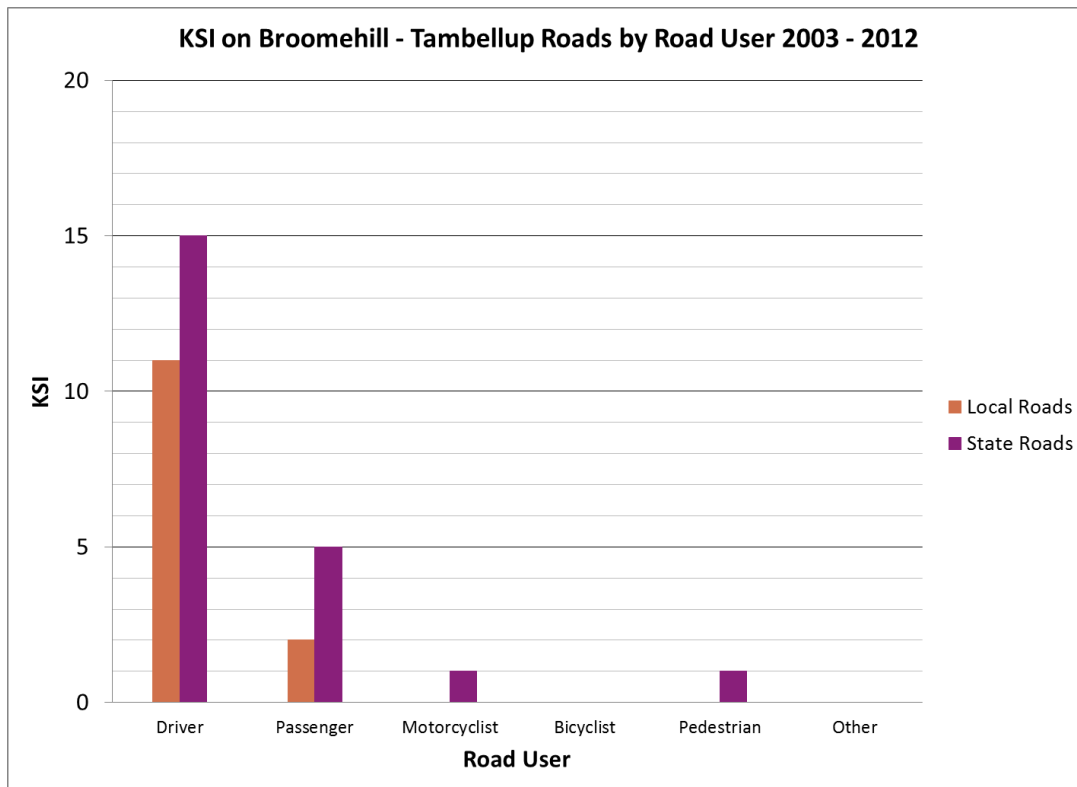


Figure 30: KSI by road user 2003 - 2012

From 2003 to 2012 all KSI on local roads were drivers or passengers. KSI for 2012 is shown in Table 33.

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

Table 33: KSI by road user 2012

6.2.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Broomehill-Tambellup 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	3	3	0	0	6
Seatbelts Not Worn	1	1	0	0	2
Alcohol	2	2	0	0	4
Speed	3	2	0	0	5

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

All factors contributed to KSI on local roads.

6.2.4 Vulnerable Road Users

There were no vulnerable road users KSI on local roads from 2003 to 2012. A vulnerable road user is defined as a motorcyclist, bicyclist or pedestrian.

6.3 Shire of Cranbrook

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

Table 35 displays all crashes in the Shire of Cranbrook by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	81	43.8
Intersection	State, State	3	1.6
Intersection	State, LG	10	5.4
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	87	47.0
Intersection	LG, LG	4	2.2
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	0	0.0
Total		185	100.0

Table 35: All crashes by crash location and road manager 2003 - 2012

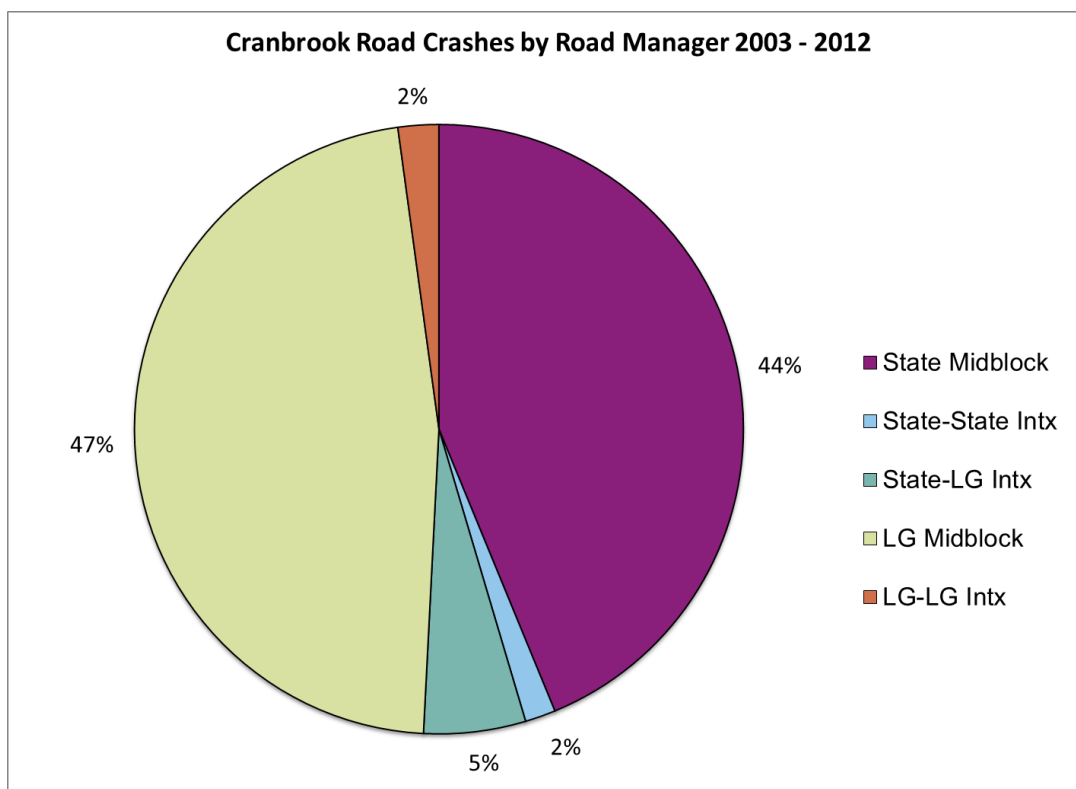


Figure 31: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 31 shows:

- 49% 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.
- 46% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 31 also shows that 91% of crashes in the Shire of Cranbrook occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Cranbrook local road network from 2003 to 2012 is shown in Table 36.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	2	0	3	6	4	2	12	1	1	2	33

Table 36: KSI trend 2003 - 2012

6.3.1 Crash Nature

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

- 73% of KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Cranbrook	Great Southern	% for Cranbrook	Cranbrook
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	3	18	16.7	0
Head On	1	19	5.3	1
Sideswipe	2	3	66.7	0
Right Angle	3	35	8.6	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	9	91	9.9	1
Single Vehicle Crashes				
Hit Pedestrian	0	24	0.0	0
Hit Animal	0	6	0.0	0
Hit Object	17	175	9.7	1
Non-Collision	7	56	12.5	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	24	263	9.1	1
Total	33	354	9.3	2

Table 37: KSI by crash nature 2003 - 2012

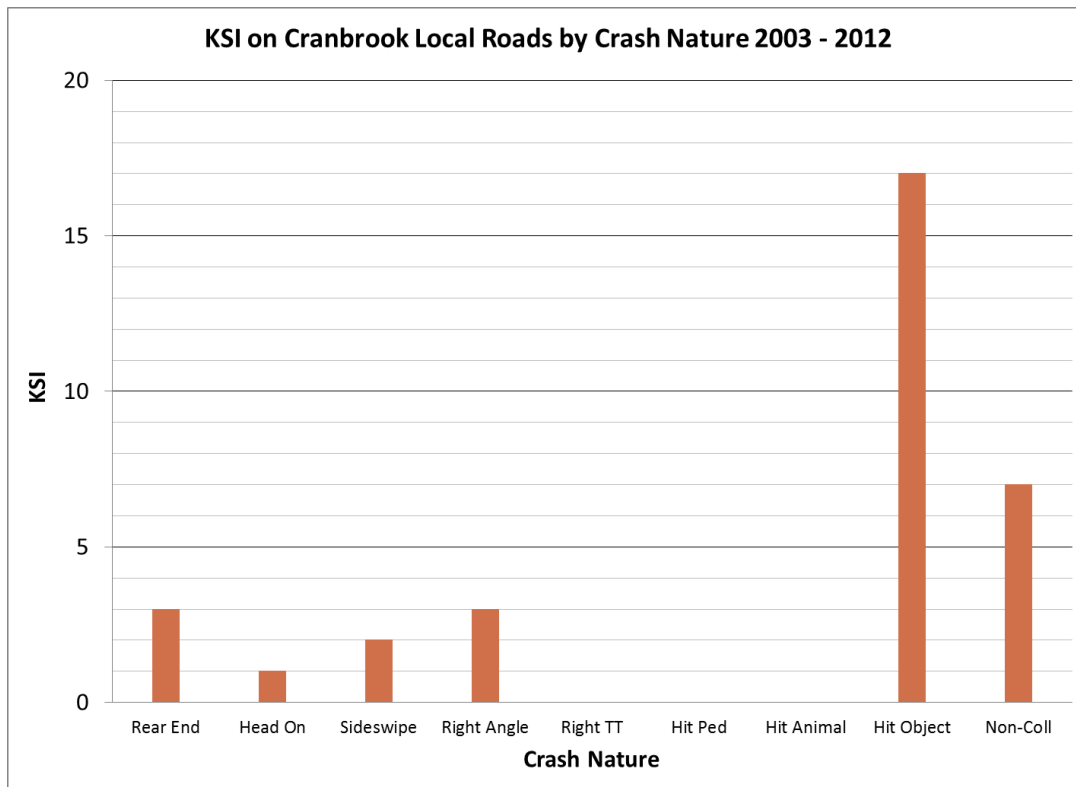


Figure 32: KSI by crash nature 2003 - 2012

6.3.2 Road User Type

KSI by road user type on the Shire of Cranbrook local road network from 2003 to 2012 is shown in Table 38 and Figure 33.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	16	17	0	0	33
Passenger	14	15	0	0	29
Motorcyclist	2	1	0	0	3
Bicyclist	0	0	0	0	0
Pedestrian	0	1	0	0	1
Other	1	0	0	0	1
Total	33	34	0	0	67

Table 38: KSI by road user 2003 - 2012

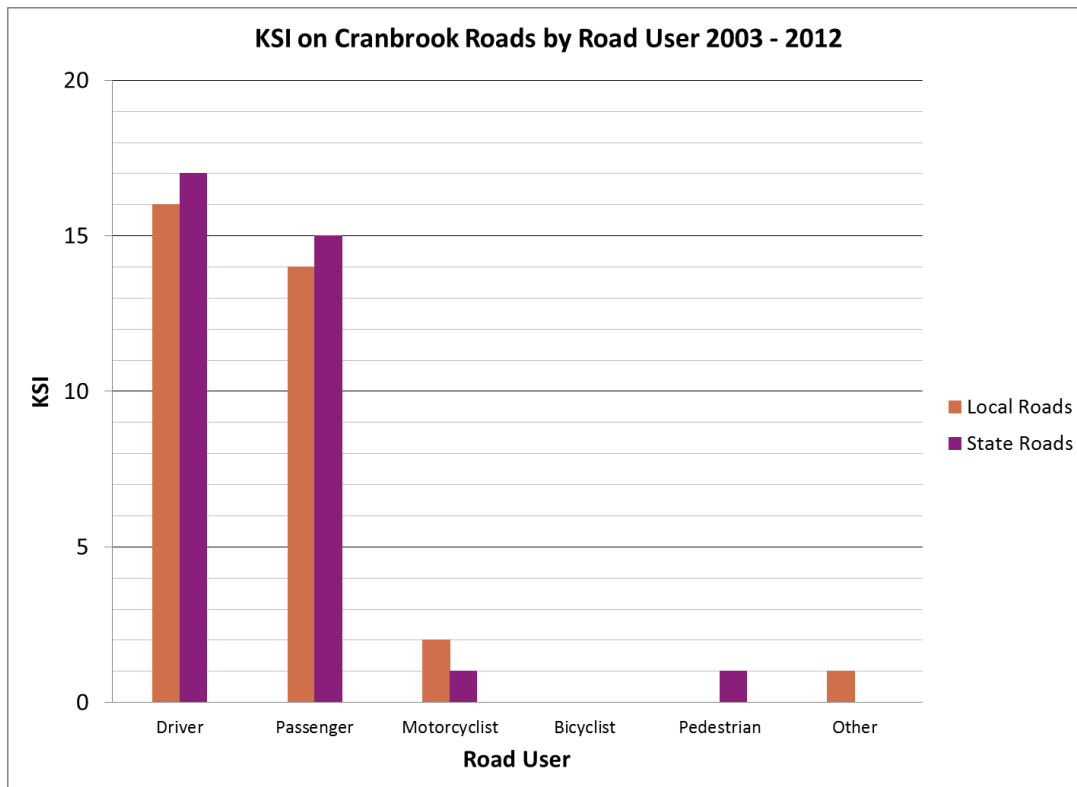


Figure 33: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 91% of KSI on local roads were drivers or passengers from 2003 to 2012. KSI for 2012 is shown in Table 39.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	1	3	0	0	4
Passenger	0	5	0	0	5
Motorcyclist	1	0	0	0	1
Bicyclist	0	0	0	0	0
Pedestrian	0	0	0	0	0
Other	0	0	0	0	0
Total	2	8	0	0	10

Table 39: KSI by road user 2012

6.3.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Cranbrook 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	12	12	0	0	24
Seatbelts Not Worn	0	3	0	0	3
Alcohol	2	3	0	0	5
Speed	4	3	0	0	7

Table 40: KSI by contributing factor 2003 - 2012 (police attended)

Inattention was a dominant contributing factor in KSI on local roads.

6.3.4 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	0
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	1	0	0
40 to 49	1	0	0
50 to 59	0	0	0
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	0
Total	2	0	0

Table 41: KSI by vulnerable road user and age 2003 – 2012

6.4 Shire of Denmark

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

Table 42 displays all crashes in the Shire of Denmark by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	161	34.0
Intersection	State, State	2	0.4
Intersection	State, LG	37	7.8
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	234	49.4
Intersection	LG, LG	31	6.5
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	9	1.9
Total		474	100.0

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

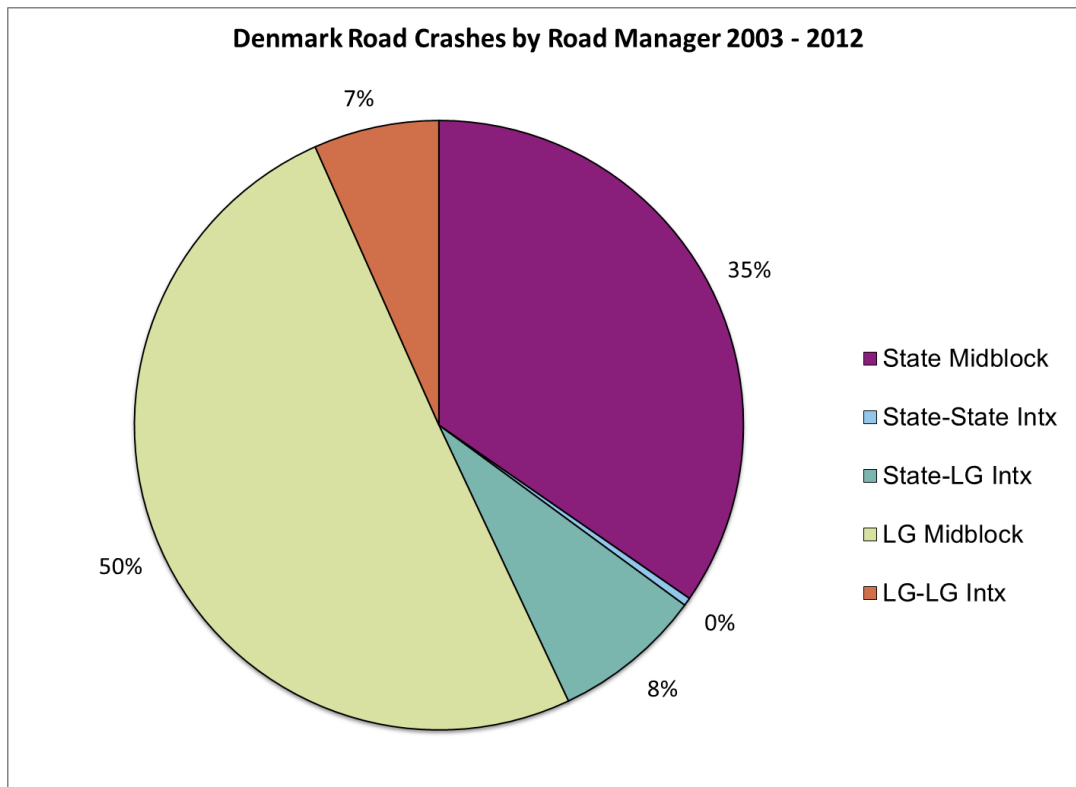


Figure 34: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 34 shows:

- 57% of crashes occurred at local road locations including intersections where all legs were local roads.
- 8% of crashes occurred at intersections having both Local and State road legs.
- 35% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 34 also shows that 85% of crashes in the Shire of Denmark occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Denmark local road network from 2003 to 2012 is shown in Table 43.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	6	2	6	5	2	2	0	3	0	3	29

Table 43: KSI trend 2003 - 2012

6.4.1 Crash Nature

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

- 62% of KSI occurred in single vehicle crashes of Hit Object; and
- 24% of KSI occurred in multi-vehicle Head On crashes.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Denmark	Great Southern	% for Denmark	Denmark
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	7	19	36.8	0
Sideswipe	0	3	0.0	0
Right Angle	2	35	5.7	1
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	9	91	9.9	1
Single Vehicle Crashes				
Hit Pedestrian	1	24	4.2	0
Hit Animal	0	6	0.0	0
Hit Object	18	175	10.3	2
Non-Collision	1	56	1.8	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	20	263	7.6	2
Total	29	354	8.2	3

Table 44: KSI by crash nature 2003 - 2012

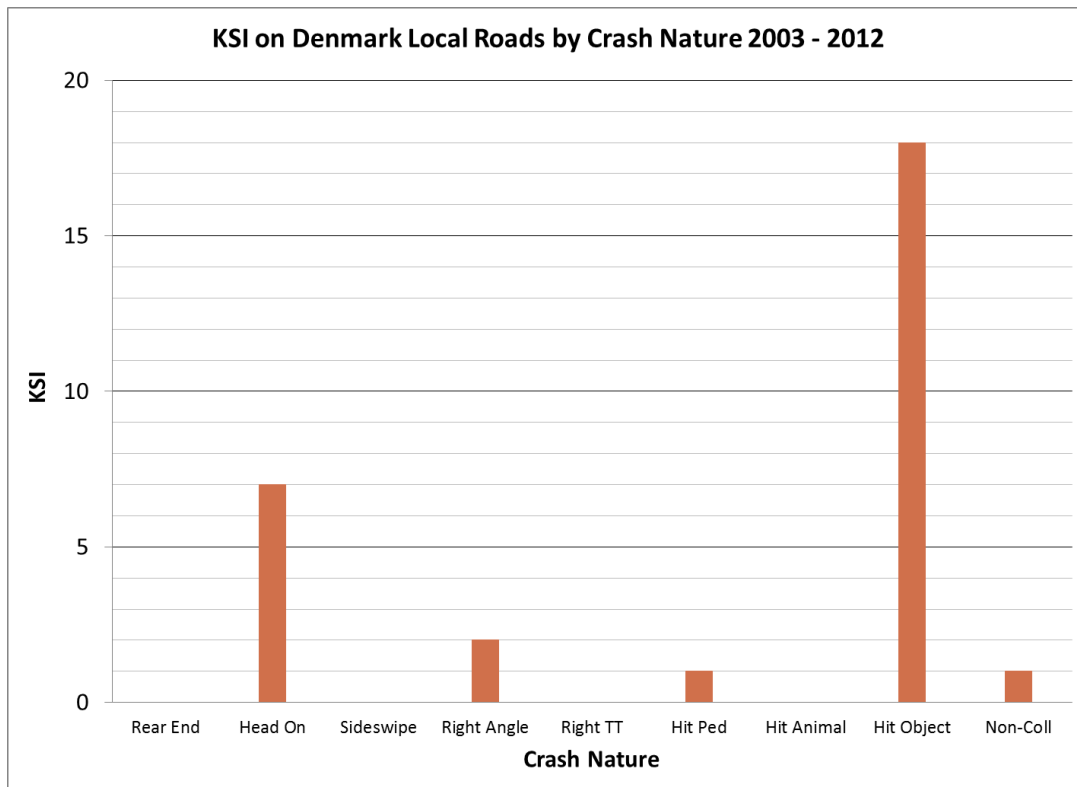


Figure 35: KSI by crash nature 2003 - 2012

6.4.2 Road User Type

KSI by road user type on the Shire of Denmark local road network from 2003 to 2012 is shown in Table 45 and Figure 36.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	19	15	0	0	34
Passenger	3	12	0	0	15
Motorcyclist	6	3	0	0	9
Bicyclist	0	0	0	0	0
Pedestrian	1	0	0	0	1
Other	0	0	0	0	0
Total	29	30	0	0	59

Table 45: KSI by road user 2003 - 2012

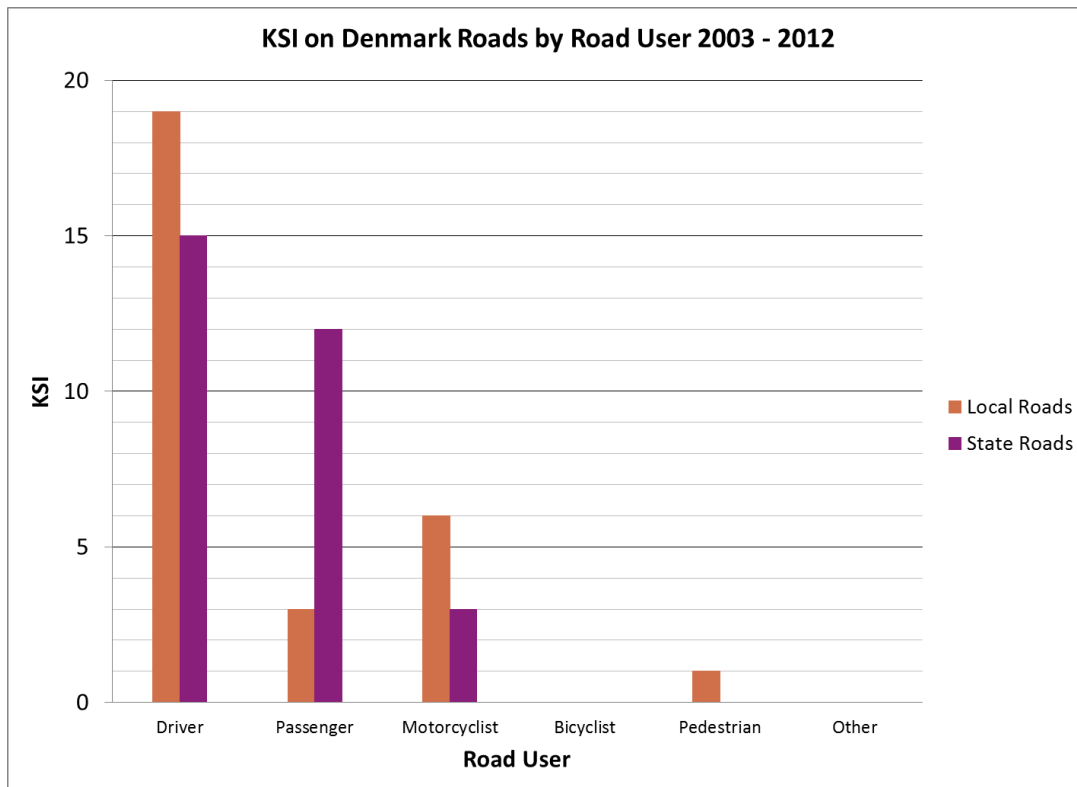


Figure 36: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 76% of KSI on local roads were drivers or passengers, and 21% were motorcyclists. KSI for 2012 is shown in Table 46.

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

Table 46: KSI by road user 2012

6.4.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Denmark 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	4	5	0	0	9
Seatbelts Not Worn	2	5	0	0	7
Alcohol	7	5	0	0	12
Speed	7	4	0	0	11

Table 47: KSI by contributing factor 2003 - 2012 (police attended)

Speed and alcohol were the dominant contributing factors in KSI on local roads.

6.4.4 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	0
12 to 16	0	0	0
17 to 20	0	0	0
21 to 24	0	0	0
25 to 29	2	0	0
30 to 39	0	0	0
40 to 49	2	0	0
50 to 59	2	0	0
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	1
Total	6	0	1

Table 48: KSI by vulnerable road user and age 2003 - 2012

Table 48 shows that four of the six motorcyclists KSI were aged 40 to 59.

6.5 Shire of Gnowangerup

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

Table 49 displays all crashes in the Shire of Gnowangerup by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	78	46.4
Intersection	State, State	3	1.8
Intersection	State, LG	8	4.8
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	62	36.9
Intersection	LG, LG	7	4.2
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	10	6.0
Total		168	100.0

Table 49: All crashes by crash location and road manager 2003 - 2012

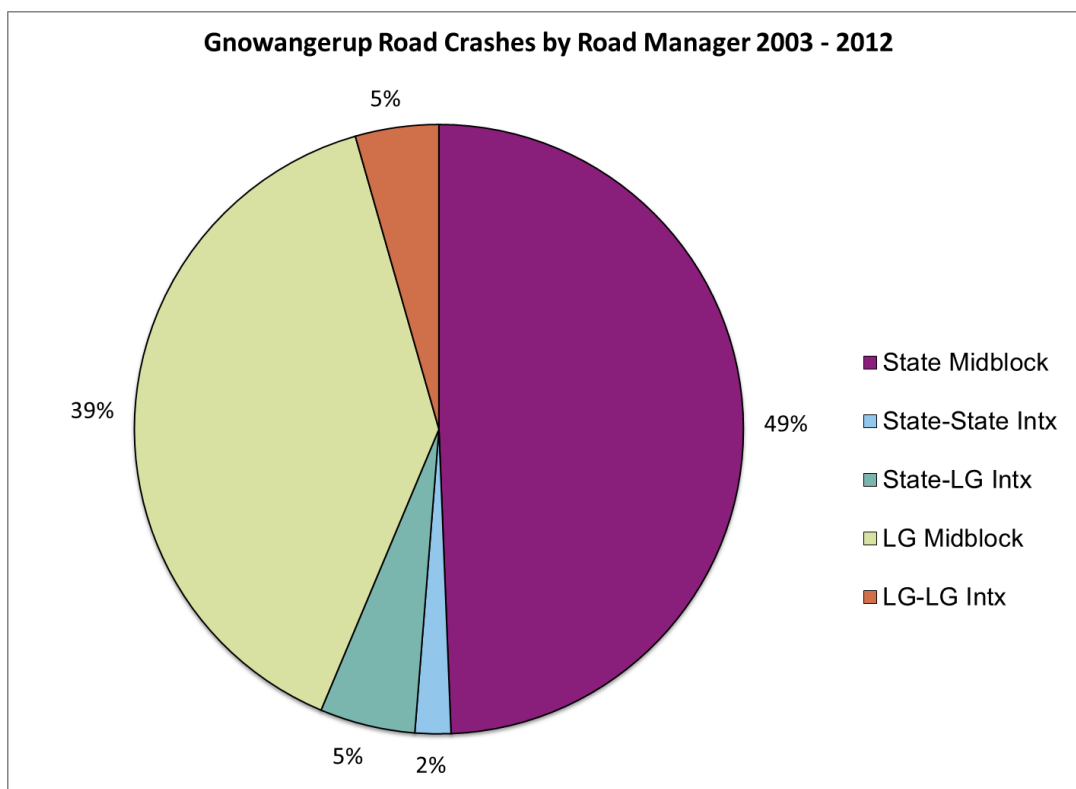


Figure 37: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 37 shows:

- 44% 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.
- 51% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 37 also shows that 88% of crashes in the Shire of Gnowangerup occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Gnowangerup local road network from 2003 to 2012 is shown in Table 50.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	0	3	3	0	0	0	0	4	1	1	12

Table 50: KSI trend 2003 - 2012

6.5.1 Crash Nature

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

- 75% of KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Gnowangerup	Great Southern	% for Gnowangerup	Gnowangerup
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	0	19	0.0	0
Sideswipe	0	3	0.0	0
Right Angle	0	35	0.0	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	2	8	25.0	0
Multi-Vehicle Total	2	91	2.2	0
Single Vehicle Crashes				
Hit Pedestrian	1	24	4.2	0
Hit Animal	0	6	0.0	0
Hit Object	7	175	4.0	1
Non-Collision	2	56	3.6	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	10	263	3.8	1
Total	12	354	3.4	1

Table 51: KSI by crash nature 2003 - 2012

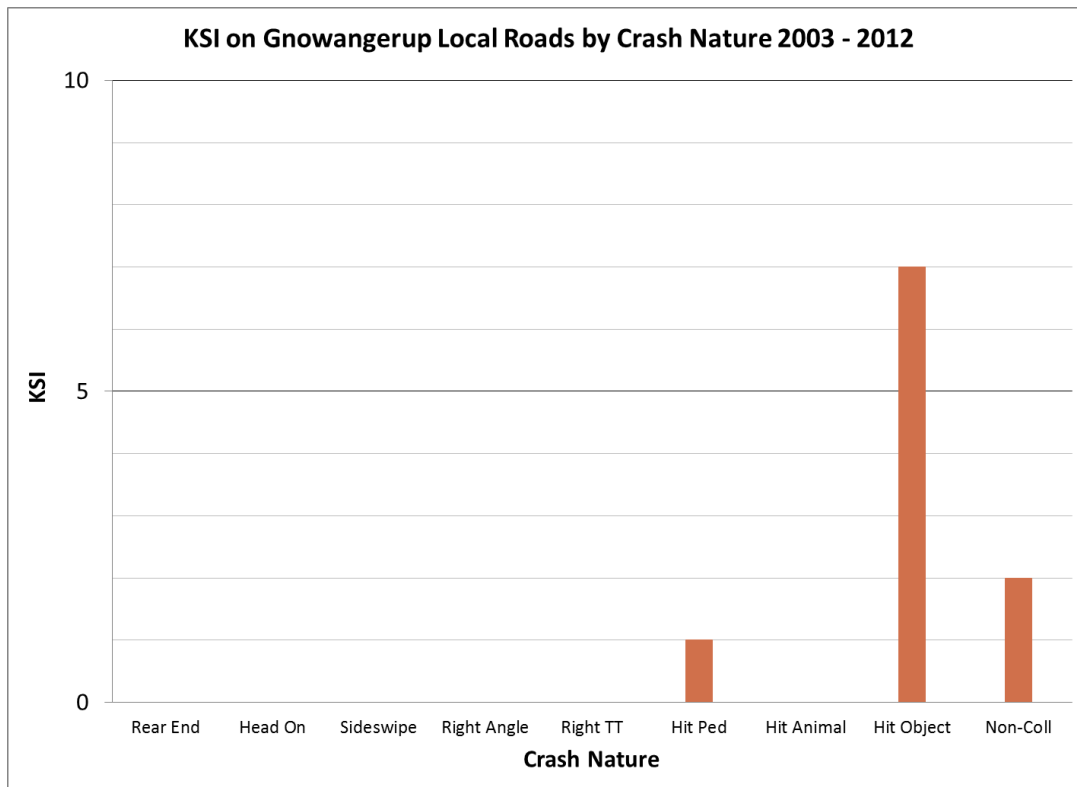


Figure 38: KSI by crash nature 2003 - 2012

6.5.2 Road User Type

KSI by road user type on the Shire of Gnowangerup local road network from 2003 to 2012 is shown in Table 52 and Figure 39.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	9	9	0	1	19
Passenger	2	8	0	0	10
Motorcyclist	0	1	0	0	1
Bicyclist	0	0	0	0	0
Pedestrian	1	0	0	0	1
Other	0	0	0	0	0
Total	12	18	0	1	31

Table 52: KSI by road user 2003 - 2012

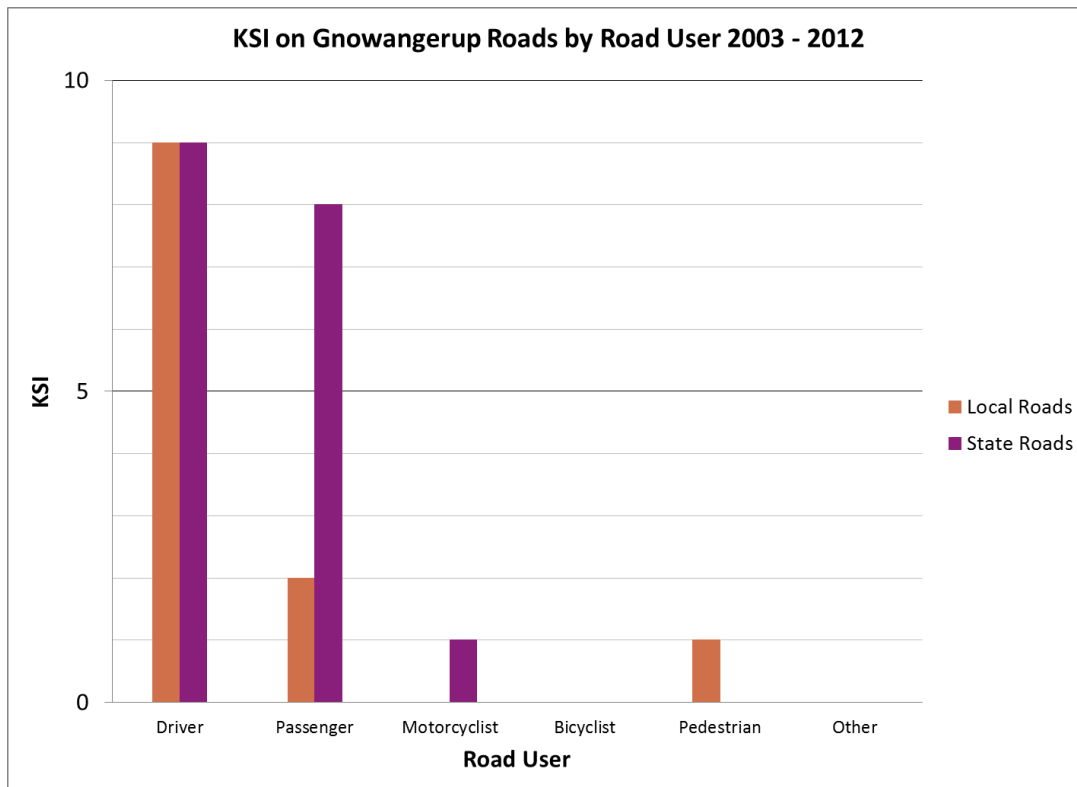


Figure 39: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 92% of KSI on local roads were drivers or passengers. KSI for 2012 is shown in Table 53.

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

Table 53: KSI by road user 2012

6.5.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Gnowangerup 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	0	6	0	0	6
Seatbelts Not Worn	0	1	0	0	1
Alcohol	1	4	0	1	6
Speed	2	6	0	1	9

Table 54: KSI by contributing factor 2003 - 2012 (police attended)

6.5.4 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	0
12 to 16	0	0	0
17 to 20	0	0	1
21 to 24	0	0	0
25 to 29	0	0	0
30 to 39	0	0	0
40 to 49	0	0	0
50 to 59	0	0	0
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	0
Total	0	0	1

Table 55: KSI by vulnerable road user and age 2003 - 2012

6.6 Shire of Jerramungup

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

Table 56 displays all crashes in the Shire of Jerramungup by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	93	53.8
Intersection	State, State	1	0.6
Intersection	State, LG	4	2.3
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	66	38.2
Intersection	LG, LG	3	1.7
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	6	3.5
Total		173	100.0

Table 56: All crashes by crash location and road manager 2003 - 2012

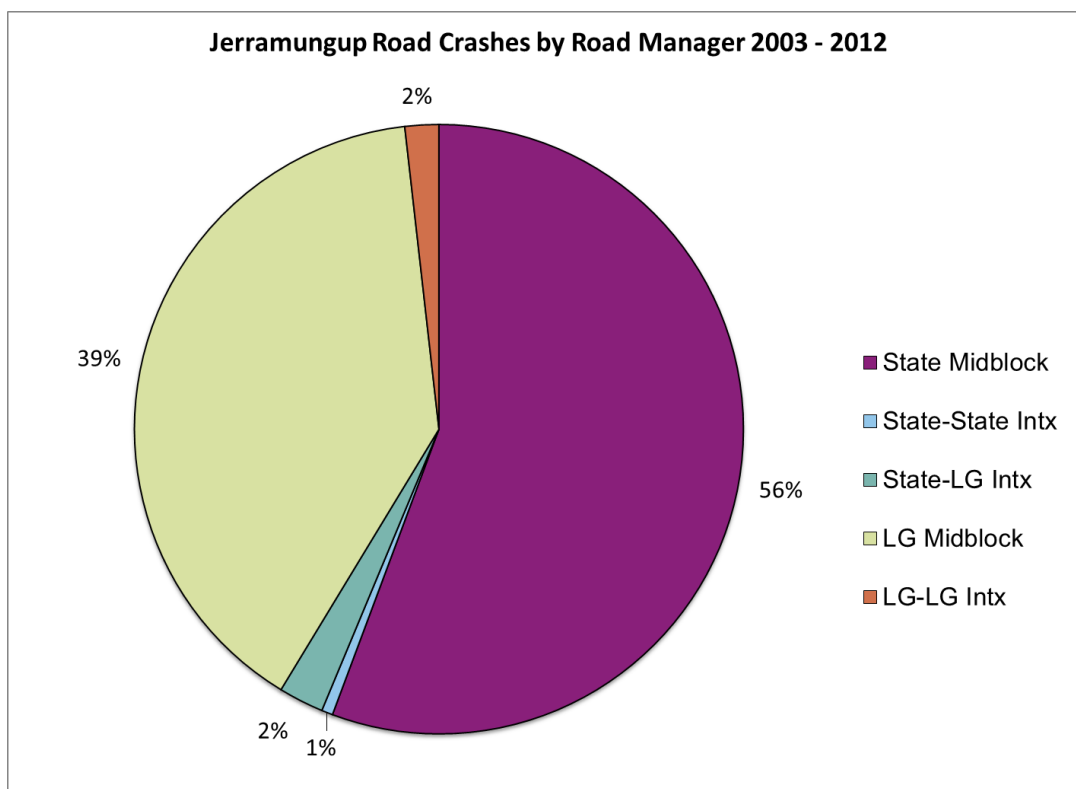


Figure 40: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 40 shows:

- 41% of crashes occurred at local road locations including intersections where all legs were local roads.
- 2% of crashes occurred at intersections having both Local and State road legs.
- 57% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 40 also shows that 95% of crashes in the Shire of Jerramungup occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Jerramungup local road network from 2003 to 2012 is shown in Table 57.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	1	0	5	3	0	0	0	1	0	4	14

Table 57: KSI trend 2003 - 2012

6.6.1 Crash Nature

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

- All KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Jerramungup	Great Southern	% for Jerramungup	Jerramungup
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	0	19	0.0	0
Sideswipe	0	3	0.0	0
Right Angle	0	35	0.0	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	0	91	0.0	0
Single Vehicle Crashes				
Hit Pedestrian	0	24	0.0	0
Hit Animal	0	6	0.0	0
Hit Object	3	175	1.7	1
Non-Collision	11	56	19.6	3
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	14	263	5.3	4
Total	14	354	4.0	4

Table 58: KSI by crash nature 2003 - 2012

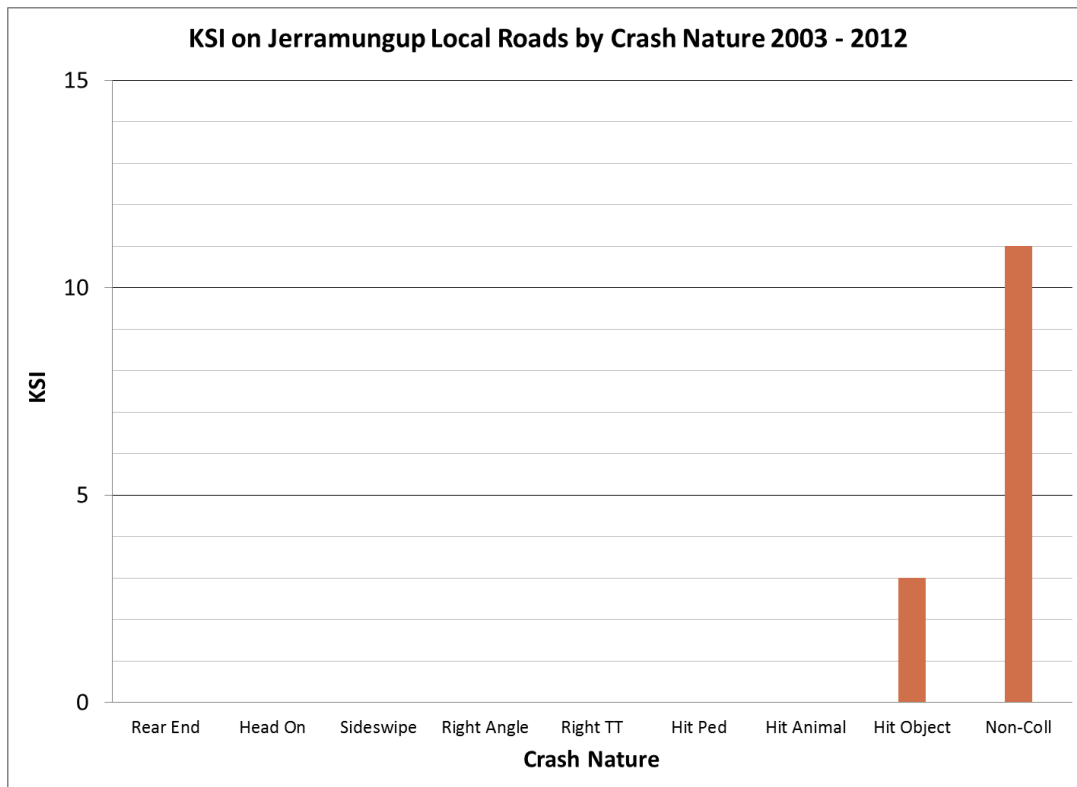


Figure 41: KSI by crash nature 2003 - 2012

6.6.2 Road User Type

KSI by road user type on the Shire of Jerramungup local road network from 2003 to 2012 is shown in Table 59 and Figure 42.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	11	9	0	0	20
Passenger	3	6	0	1	10
Motorcyclist	0	1	0	0	1
Bicyclist	0	0	0	0	0
Pedestrian	0	0	0	0	0
Other	0	0	0	0	0
Total	14	16	0	1	31

Table 59: KSI by road user 2003 - 2012

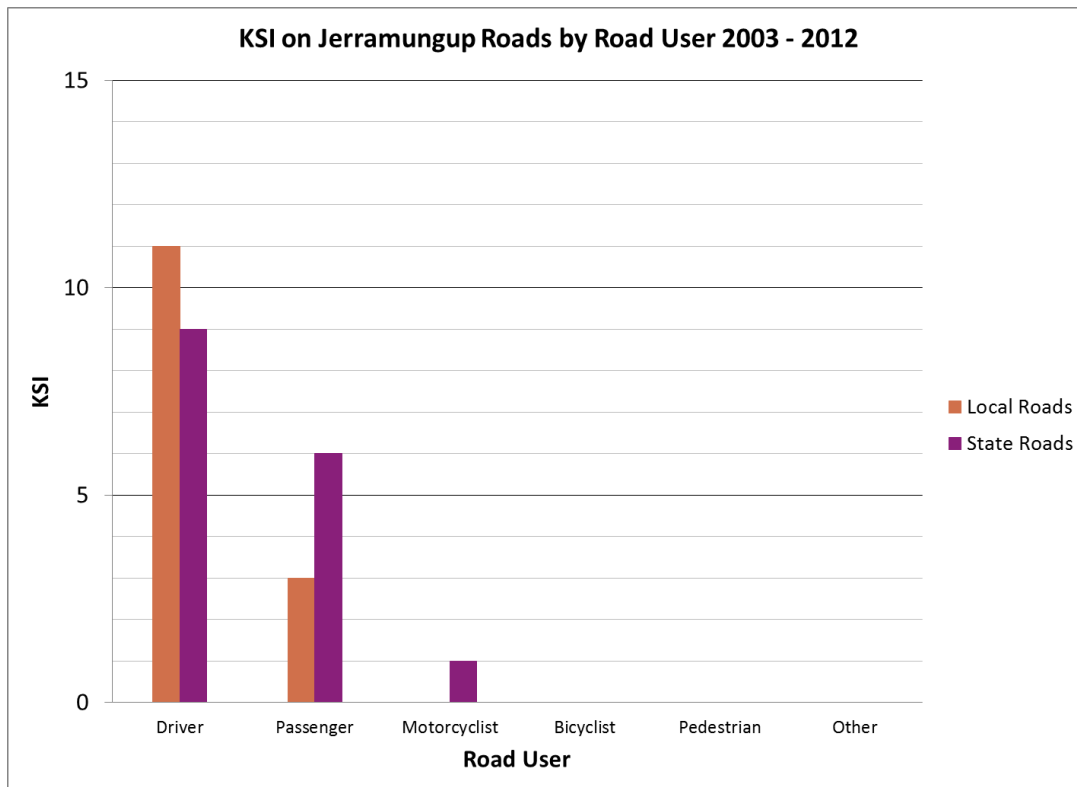


Figure 42: KSI by road user 2003 - 2012

From 2003 to 2012 all KSI on local roads were drivers or passengers. KSI for 2012 is shown in Table 60.

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

Table 60: KSI by road user 2012

6.6.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Jerramungup 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	3	1	0	0	4
Seatbelts Not Worn	3	1	0	1	5
Alcohol	0	1	0	1	2
Speed	2	5	0	0	7

Table 61: KSI by contributing factor 2003 - 2012 (police attended)

Inattention and non-wearing of seatbelts were contributing factors in KSI on local roads.

6.6.4 Vulnerable Road Users

There were no vulnerable roads users KSI on local roads from 2003 to 2012. A vulnerable road user is defined as a motorcyclist, bicyclist or pedestrian.

6.7 Shire of Katanning

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

Table 62 displays all crashes in the Shire of Katanning by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	71	24.8
Intersection	State, State	1	0.3
Intersection	State, LG	10	3.5
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	134	46.9
Intersection	LG, LG	63	22.0
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	7	2.4
Total		286	100.0

Table 62: All crashes by crash location and road manager 2003 - 2012

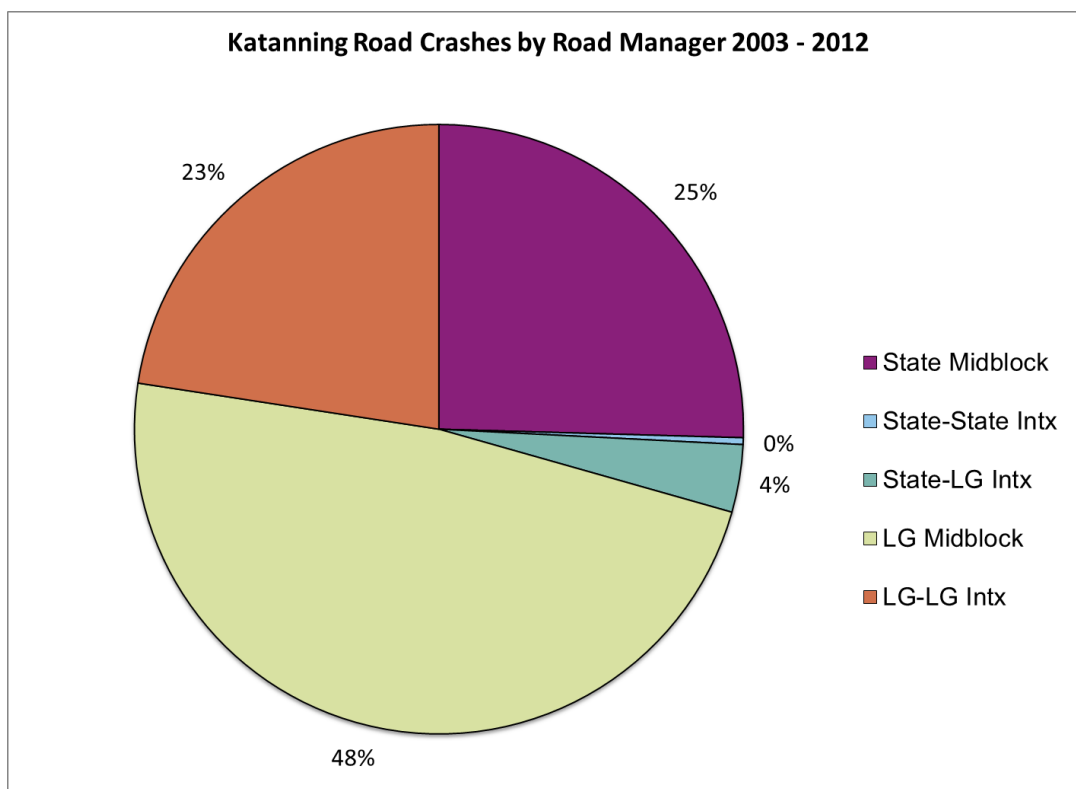


Figure 43: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 43 shows:

- 71% of crashes occurred at local road locations including intersections where all legs were local roads.
- 4% of crashes occurred at intersections having both Local and State road legs.
- 25% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 43 also shows that 73% of crashes in the Shire of Katanning occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Katanning local road network from 2003 to 2012 is shown in Table 63.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	3	2	0	0	3	6	4	4	3	2	27

Table 63: KSI trend 2003 - 2012

6.7.1 Crash Nature

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

- 52% of KSI occurred in single vehicle crashes of Hit Object or Non-Collision; and
- 30% of KSI occurred in multi-vehicle crashes of Right Angle.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Katanning	Great Southern	% for Katanning	Katanning
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	2	19	10.5	2
Sideswipe	0	3	0.0	0
Right Angle	8	35	22.9	0
Right Turn Thru	1	8	12.5	0
Multi-Vehicle Other	1	8	12.5	0
Multi-Vehicle Total	12	91	13.2	2
Single Vehicle Crashes				
Hit Pedestrian	1	24	4.2	0
Hit Animal	0	6	0.0	0
Hit Object	10	175	5.7	0
Non-Collision	4	56	7.1	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	15	263	5.7	0
Total	27	354	7.6	2

Table 64: KSI by crash nature 2003 - 2012

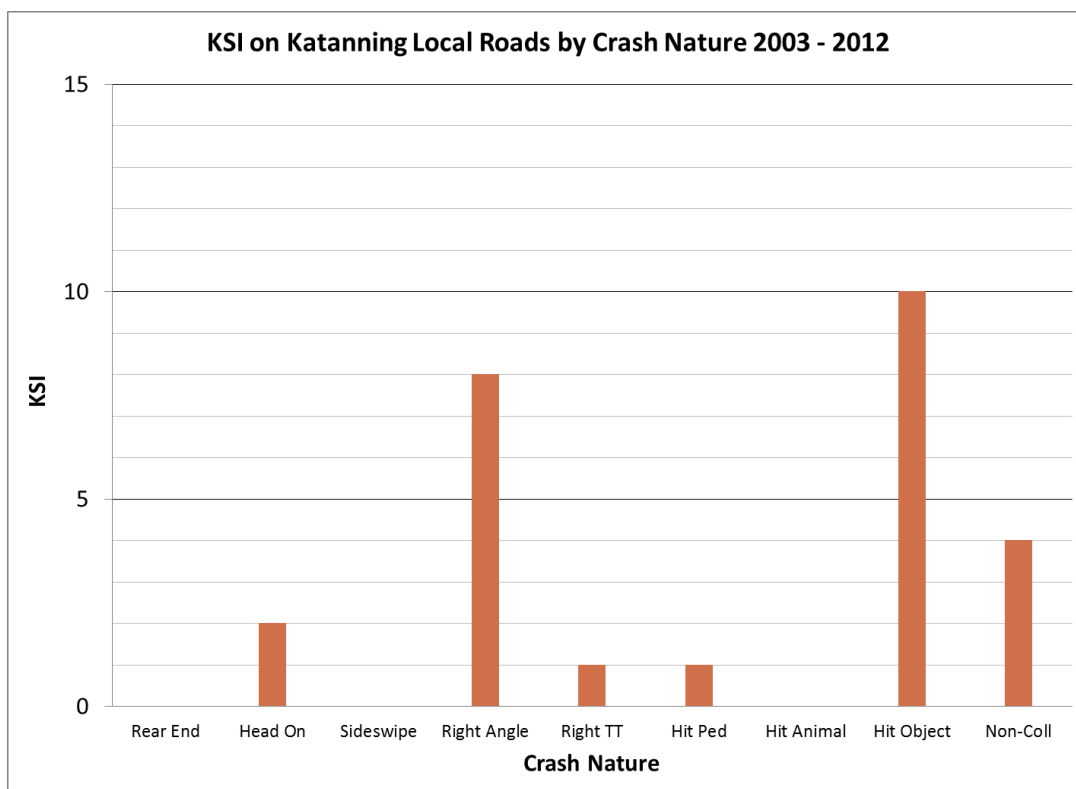


Figure 44: KSI by crash nature 2003 - 2012

6.7.2 Road User Type

KSI by road user type on the Shire of Katanning local road network from 2003 to 2012 is shown in Table 65 and Figure 45.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	15	16	0	0	31
Passenger	8	22	0	0	30
Motorcyclist	2	0	0	0	2
Bicyclist	0	0	0	0	0
Pedestrian	2	0	0	0	2
Other	0	0	0	0	0
Total	27	38	0	0	65

Table 65: KSI by road user 2003 - 2012

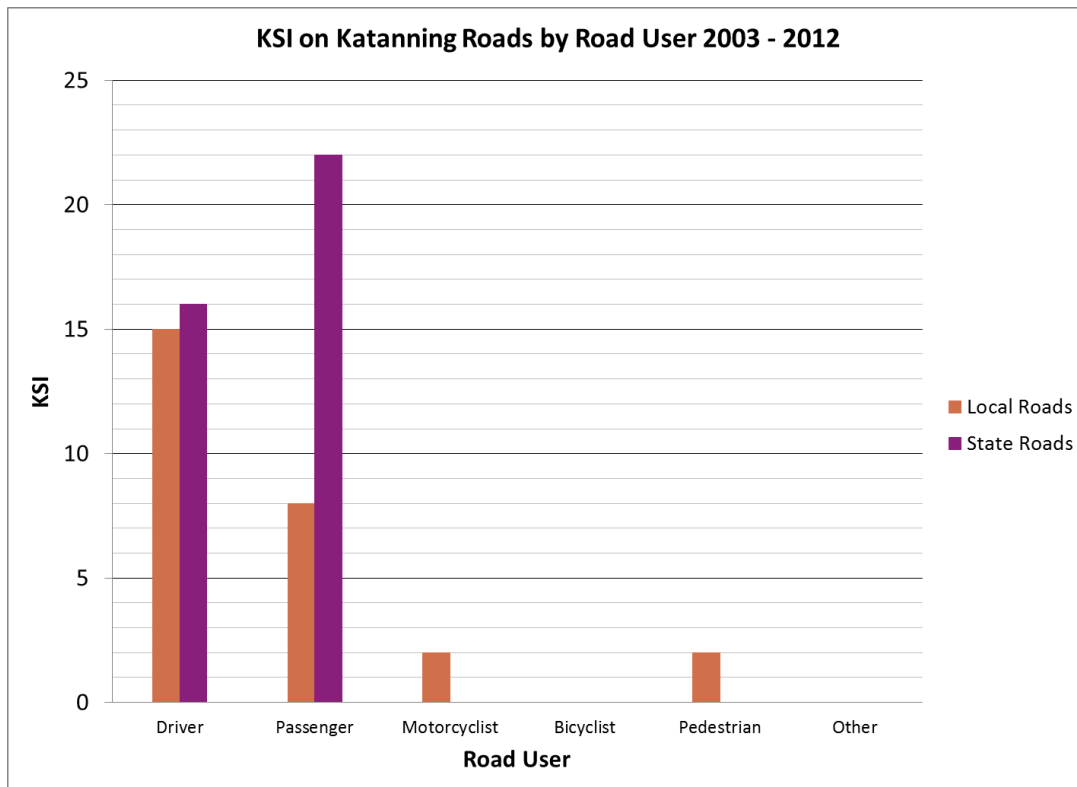


Figure 45: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 85% of KSI on local roads were drivers or passengers. KSI for 2012 is shown in Table 66.

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

Table 66: KSI by road user 2012

6.7.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Katanning 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	11	4	0	0	15
Seatbelts Not Worn	2	2	0	0	4
Alcohol	4	10	0	0	14
Speed	4	10	0	0	14

Table 67: KSI by contributing factor 2003 - 2012 (police attended)

Inattention was a significant factor contributing to KSI on local roads.

6.7.4 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	0
12 to 16	0	0	0
17 to 20	0	0	0
21 to 24	0	0	1
25 to 29	1	0	0
30 to 39	0	0	0
40 to 49	0	0	0
50 to 59	0	0	0
60 to 69	0	0	0
70+	1	0	1
Unknown	0	0	0
Total	2	0	2

Table 68: KSI by vulnerable road user and age 2003 – 2012

6.8 Shire of Kent

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

Table 69 displays all crashes in the Shire of Kent by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	22	38.6
Intersection	State, State	1	1.8
Intersection	State, LG	1	1.8
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	30	52.6
Intersection	LG, LG	3	5.3
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	0	0.0
Total		57	100.0

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

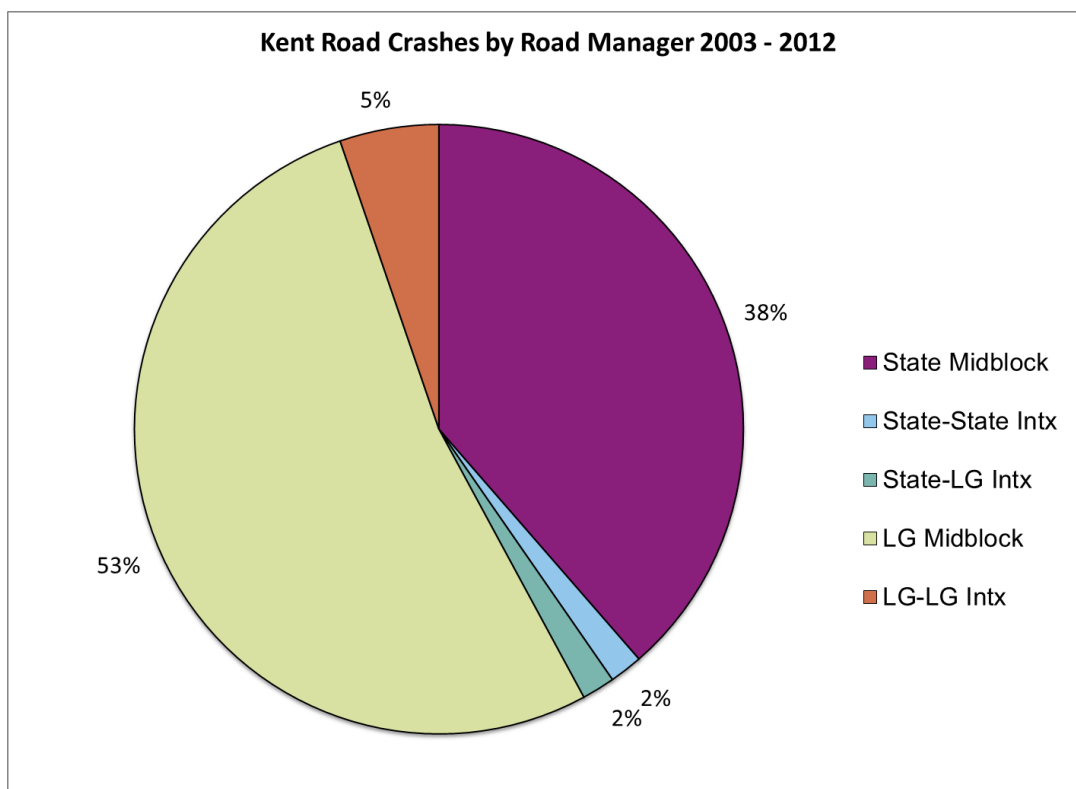


Figure 46: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 46 shows:

- 58% of crashes occurred at local road locations including intersections where all legs were local roads.
- 2% of crashes occurred at intersections having both Local and State road legs.
- 40% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 46 also shows that 91% of crashes in the Shire of Kent occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Kent local road network from 2003 to 2012 is shown in Table 70.

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

Table 70: KSI trend 2003 - 2012

6.8.1 Crash Nature

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

- All KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Kent	Great Southern	% for Kent	Kent
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	0	19	0.0	0
Sideswipe	0	3	0.0	0
Right Angle	0	35	0.0	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	0	91	0.0	0
Single Vehicle Crashes				
Hit Pedestrian	0	24	0.0	0
Hit Animal	0	6	0.0	0
Hit Object	3	175	1.7	1
Non-Collision	1	56	1.8	1
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	4	263	1.5	2
Total	4	354	1.1	2

Table 71: KSI by crash nature 2003 - 2012

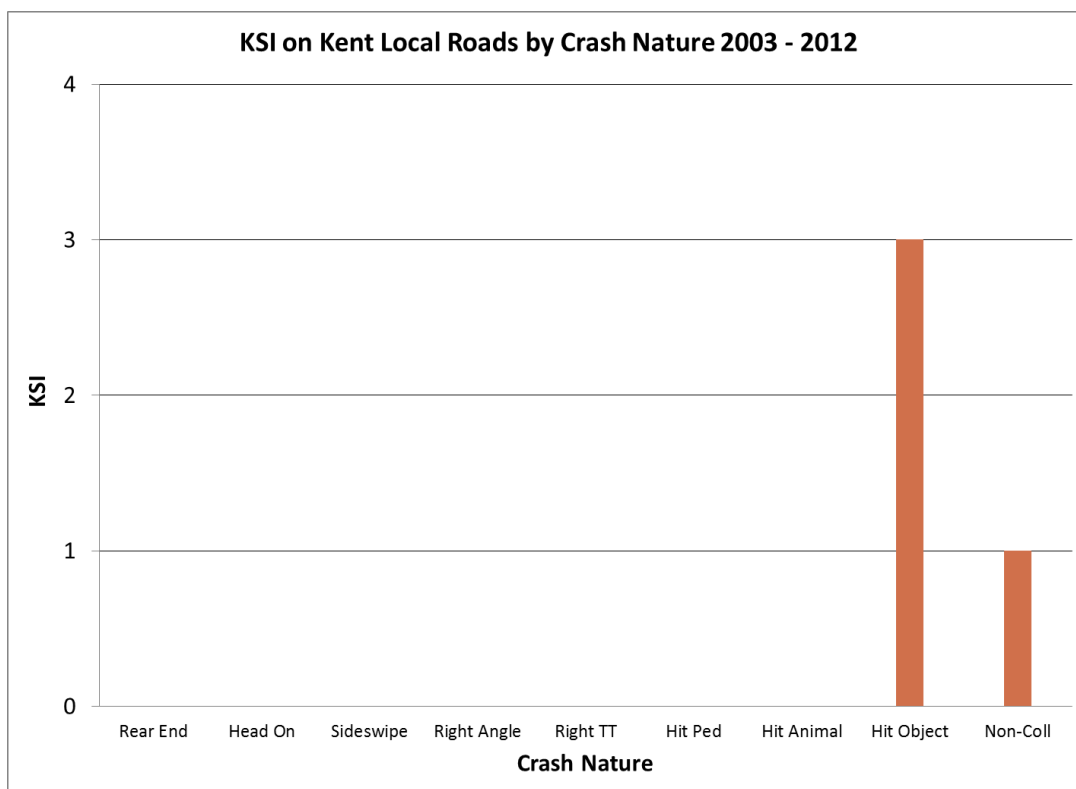


Figure 47: KSI by crash nature 2003 - 2012

6.8.2 Road User Type

KSI by road user type on the Shire of Kent local road network from 2003 to 2012 is shown in Table 72 and Figure 48.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	4	5	0	0	9
Passenger	0	1	0	0	1
Motorcyclist	0	1	0	0	1
Bicyclist	0	0	0	0	0
Pedestrian	0	0	0	0	0
Other	0	0	0	0	0
Total	4	7	0	0	11

Table 72: KSI by road user 2003 - 2012

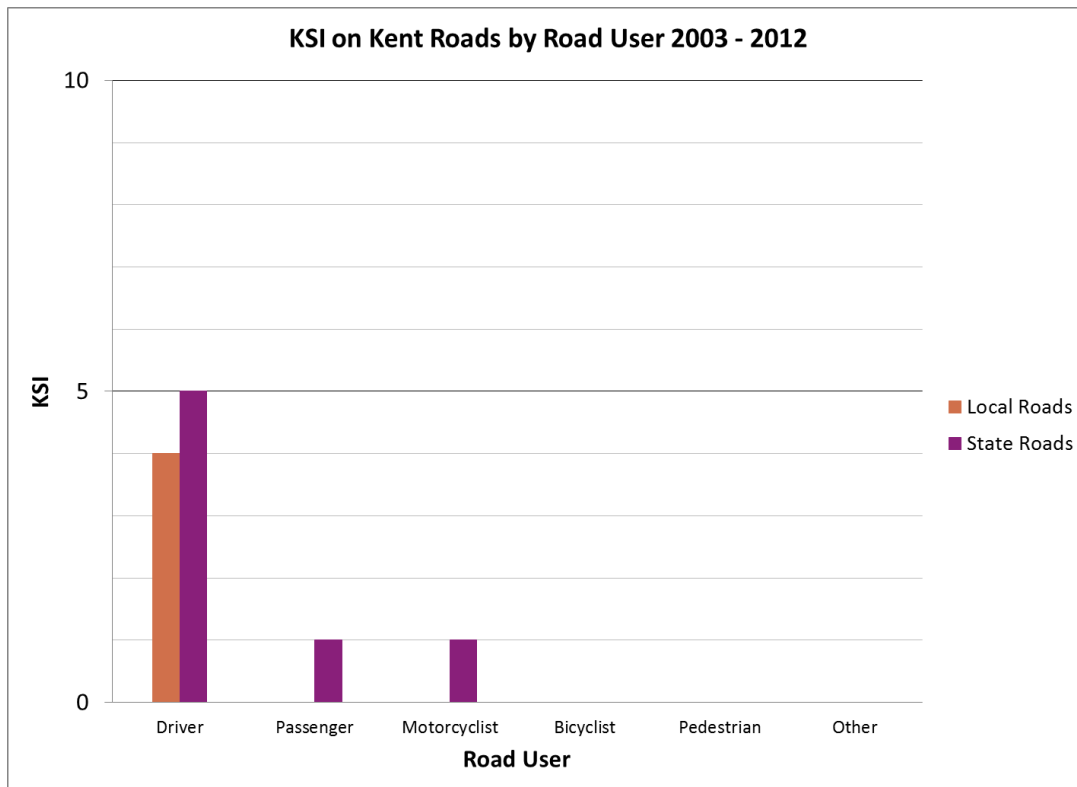


Figure 48: KSI by road user 2003 - 2012

From 2003 to 2012 all KSI on local roads were drivers. KSI for 2012 is shown in Table 73.

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

Table 73: KSI by road user 2012

6.8.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Kent 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	0	0	0	0	0
Seatbelts Not Worn	0	0	0	0	0
Alcohol	0	1	0	0	1
Speed	0	0	0	0	0

Table 74: KSI by contributing factor 2003 - 2012 (police attended)

6.8.4 Vulnerable Road Users

There were no vulnerable road users KSI on local roads from 2003 to 2012. A vulnerable road user is defined as a motorcyclist, bicyclist or pedestrian.

6.9 Shire of Kojonup

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

Table 75 displays all crashes in the Shire of Kojonup by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	151	48.7
Intersection	State, State	3	1.0
Intersection	State, LG	20	6.5
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	116	37.4
Intersection	LG, LG	16	5.2
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	4	1.3
Total		310	100.0

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

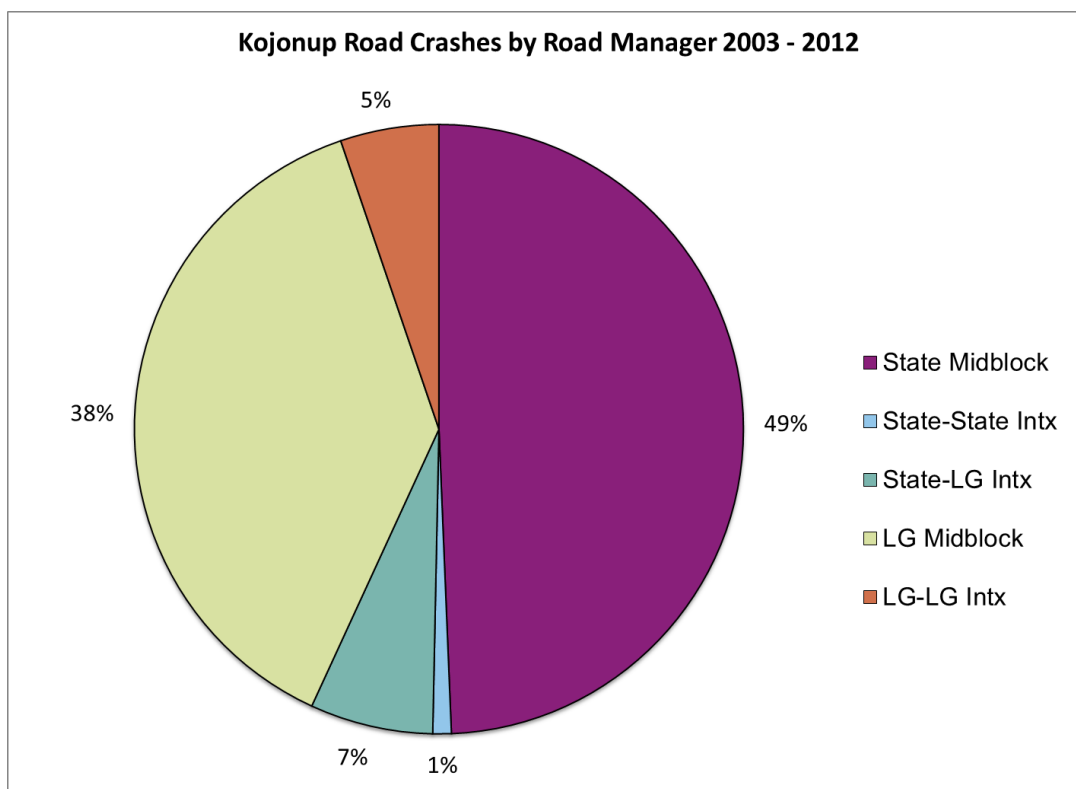


Figure 49: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 49 shows:

- 43% 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.
- 50% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 49 also shows that 87% of crashes in the Shire of Kojonup occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Kojonup local road network from 2003 to 2012 is shown in Table 76.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	2	3	3	1	0	1	3	1	4	1	19

Table 76: KSI trend 2003 - 2012

6.9.1 Crash Nature

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

- 79% of KSI occurred in single vehicle crashes of Hit Object.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Kojonup	Great Southern	% for Kojonup	Kojonup
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	0	19	0.0	0
Sideswipe	0	3	0.0	0
Right Angle	2	35	5.7	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	2	91	2.2	0
Single Vehicle Crashes				
Hit Pedestrian	1	24	4.2	0
Hit Animal	0	6	0.0	0
Hit Object	15	175	8.6	1
Non-Collision	0	56	0.0	0
Single Vehicle Other	1	2	50.0	0
Single Vehicle Total	17	263	6.5	1
Total	19	354	5.4	1

Table 77: KSI by crash nature 2003 - 2012

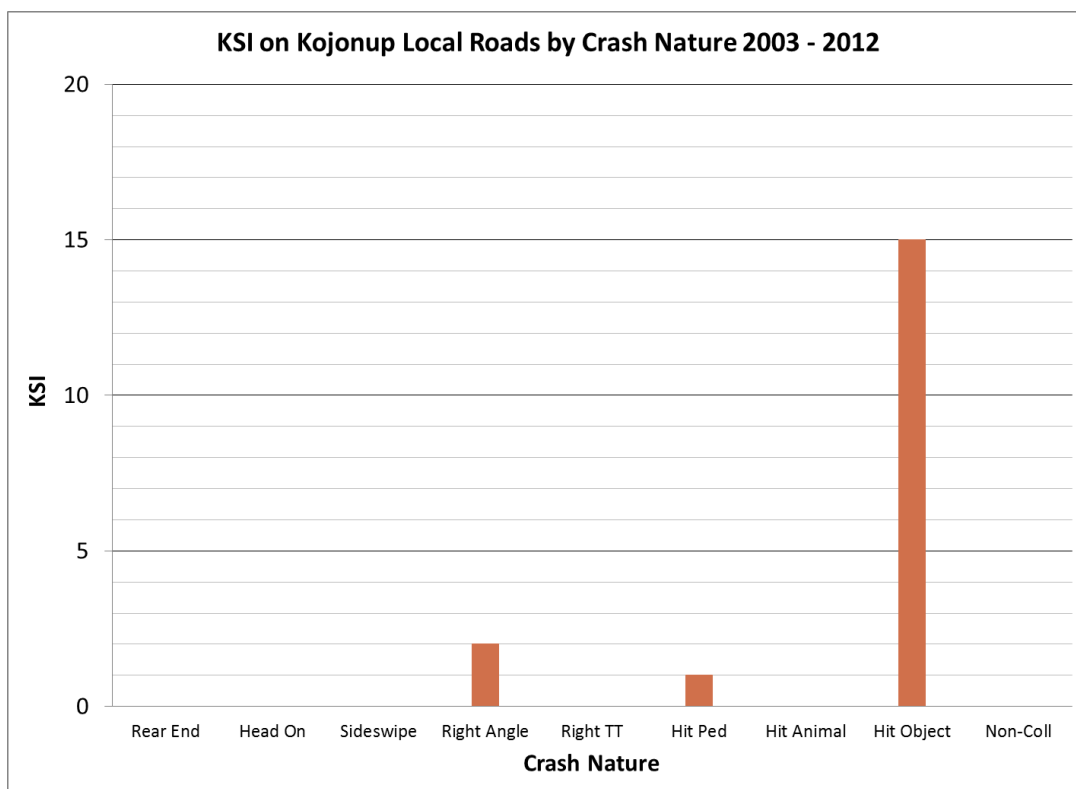


Figure 50: KSI by crash nature 2003 - 2012

6.9.2 Road User Type

KSI by road user type on the Shire of Kojonup local road network from 2003 to 2012 is shown in Table 78 and Figure 51.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	14	32	0	0	46
Passenger	4	18	0	0	22
Motorcyclist	0	1	0	2	3
Bicyclist	0	0	0	0	0
Pedestrian	1	1	0	0	2
Other	0	4	0	0	4
Total	19	56	0	2	77

Table 78: KSI by road user 2003 - 2012

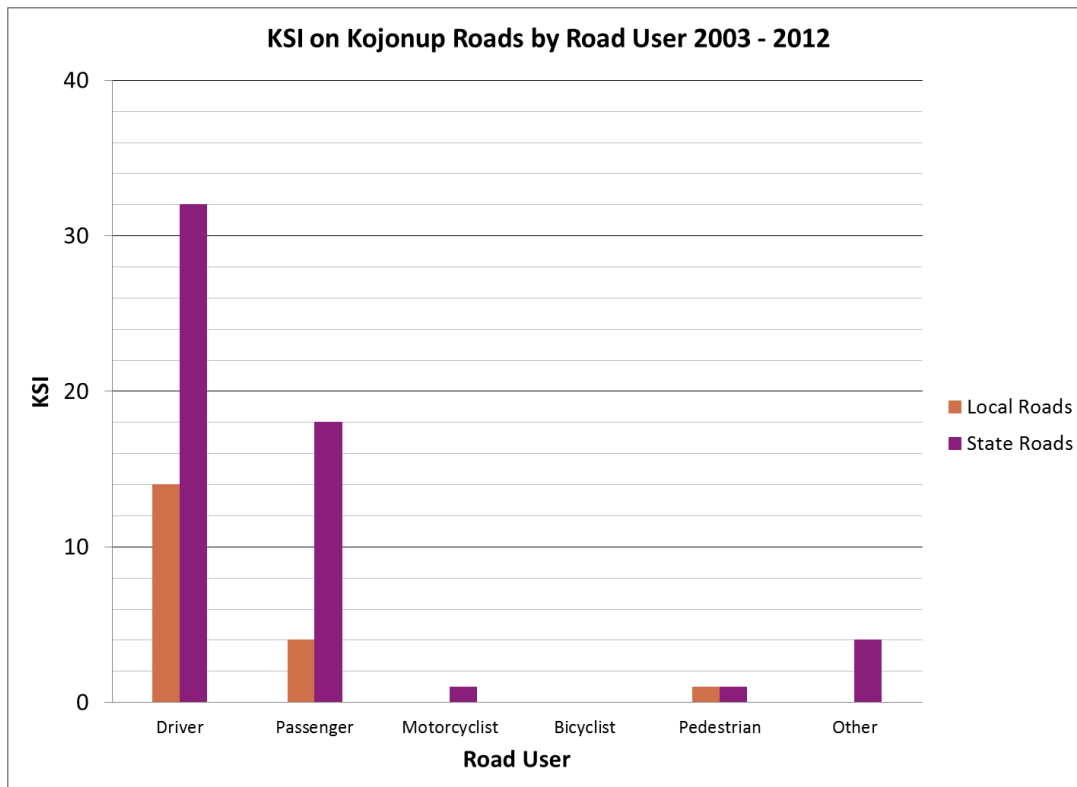


Figure 51: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 95% of KSI on local roads were drivers or passengers. KSI for 2012 is shown in Table 79.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	1	4	0	0	5
Passenger	0	4	0	0	4
Motorcyclist	0	1	0	0	1
Bicyclist	0	0	0	0	0
Pedestrian	0	0	0	0	0
Other	0	0	0	0	0
Total	1	9	0	0	10

Table 79: KSI by road user 2012

6.9.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Kojonup 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	3	5	0	0	8
Seatbelts Not Worn	3	4	0	0	7
Alcohol	2	7	0	0	9
Speed	6	1	0	0	7

Table 80: KSI by contributing factor 2003 - 2012 (police attended)

Speed was the dominant contributing factor in KSI on local roads.

6.9.4 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	0
12 to 16	0	0	0
17 to 20	0	0	0
21 to 24	0	0	1
25 to 29	0	0	0
30 to 39	0	0	0
40 to 49	0	0	0
50 to 59	0	0	0
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	0
Total	0	0	1

Table 81: KSI by vulnerable road user and age 2003 - 2012

6.10 Shire of Plantagenet

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

Table 82 displays all crashes in the Shire of Plantagenet by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	163	38.7
Intersection	State, State	7	1.7
Intersection	State, LG	31	7.4
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	1	0.2
Midblock	LG	172	40.9
Intersection	LG, LG	39	9.3
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	8	1.9
Total		421	100.0

Table 82: All crashes by crash location and road manager 2003 - 2012

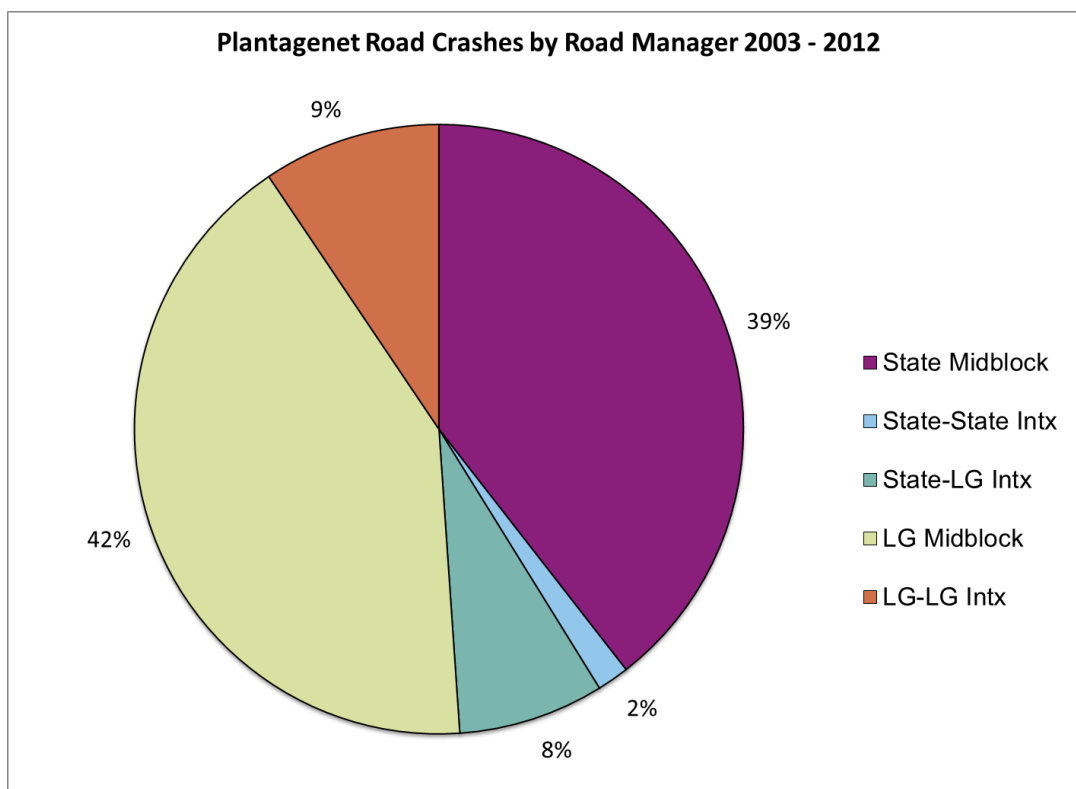


Figure 52: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 52 shows:

- 51% of crashes occurred at local road locations including intersections where all legs were local roads.
- 8% of crashes occurred at intersections having both Local and State road legs.
- 41% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 52 also shows that 81% of crashes in the Shire of Plantagenet occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Plantagenet local road network from 2003 to 2012 is shown in Table 83.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	7	1	9	2	3	5	0	2	3	2	34

Table 83: KSI trend 2003 - 2012

6.10.1 Crash Nature

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

- 68% of KSI occurred in single vehicle crashes of Hit Object or Non-Collision; and
- 15% of KSI occurred in multi-vehicle crashes of Right Angle.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Plantagenet	Great Southern	% for Plantagenet	Plantagenet
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	1	18	5.6	1
Head On	1	19	5.3	0
Sideswipe	0	3	0.0	0
Right Angle	5	35	14.3	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	7	91	7.7	1
Single Vehicle Crashes				
Hit Pedestrian	2	24	8.3	0
Hit Animal	2	6	33.3	0
Hit Object	17	175	9.7	1
Non-Collision	6	56	10.7	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	27	263	10.3	1
Total	34	354	9.6	2

Table 84: KSI by crash nature 2003 - 2012

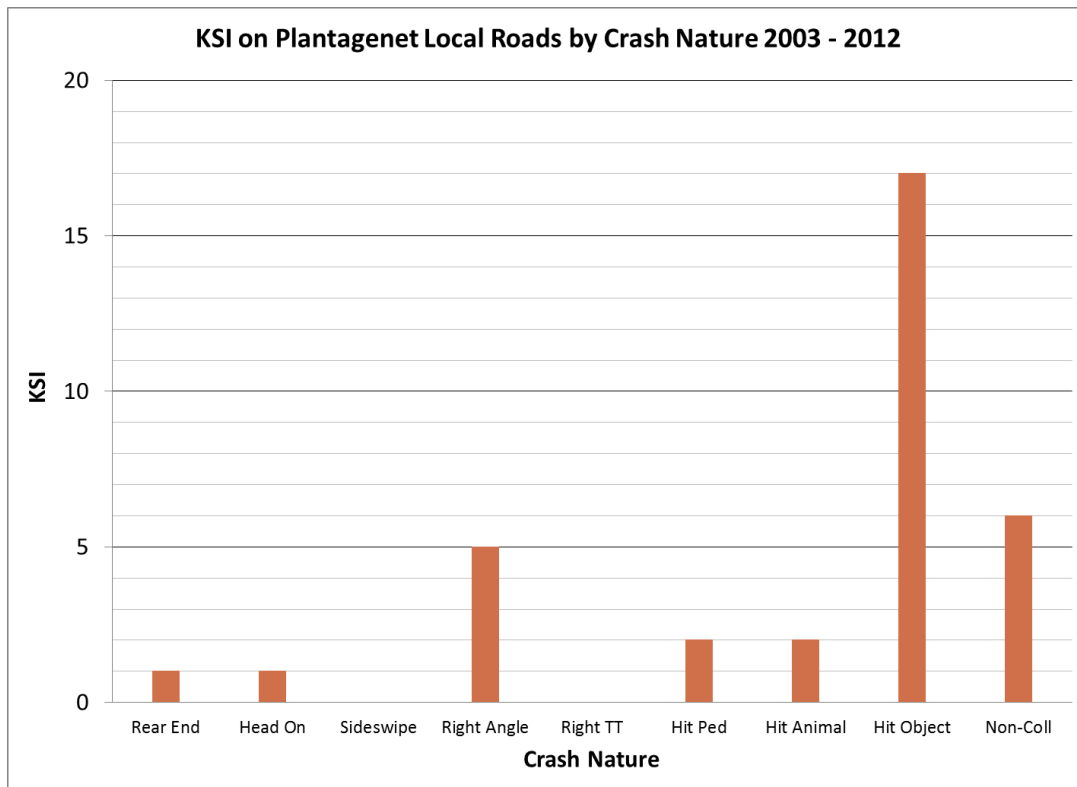


Figure 53: KSI by crash nature 2003 - 2012

6.10.2 Road User Type

KSI by road user type on the Shire of Plantagenet local road network from 2003 to 2012 is shown in Table 85 and Figure 54.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	17	30	0	1	48
Passenger	10	19	0	0	29
Motorcyclist	5	4	0	0	9
Bicyclist	0	0	0	0	0
Pedestrian	2	0	0	0	2
Other	0	2	0	0	2
Total	34	55	0	1	90

Table 85: KSI by road user 2003 - 2012

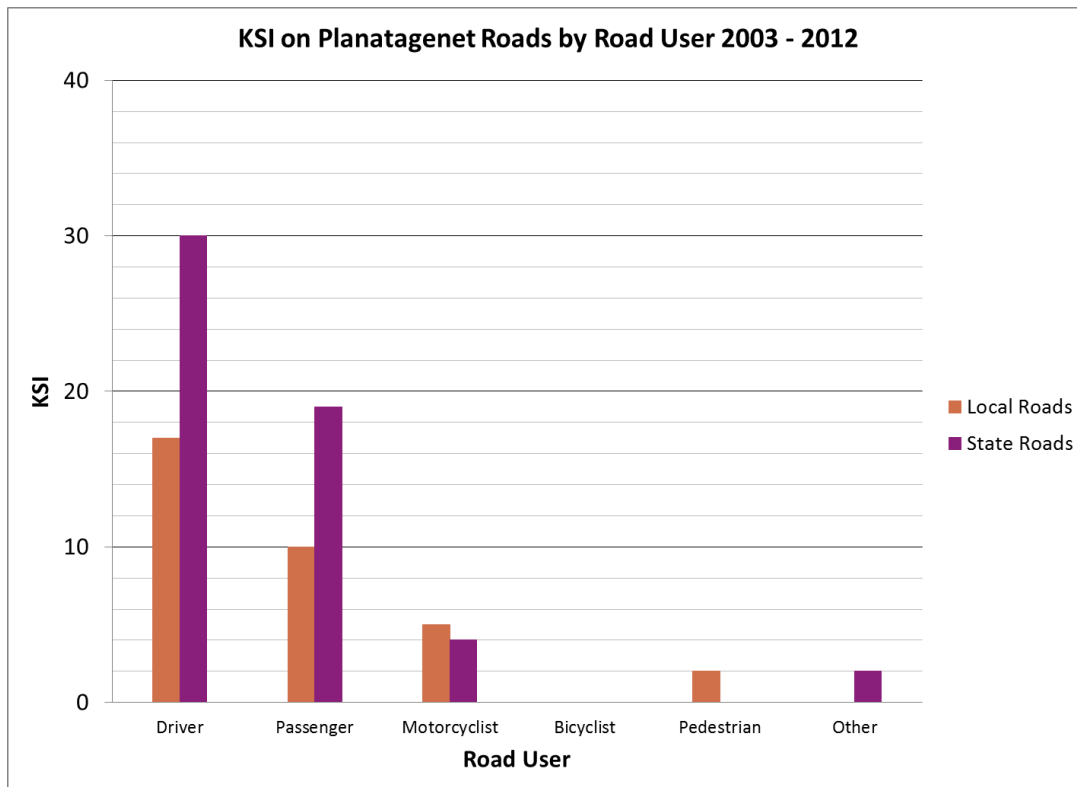


Figure 54: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 79% of KSI on local roads were drivers or passengers, and 15% were motorcyclists. KSI for 2012 is shown in Table 86.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	0	3	0	0	3
Passenger	2	4	0	0	6
Motorcyclist	0	0	0	0	0
Bicyclist	0	0	0	0	0
Pedestrian	0	0	0	0	0
Other	0	0	0	0	0
Total	2	7	0	0	9

Table 86: KSI by road user 2012

6.10.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Plantagenet 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	15	0	0	16
Seatbelts Not Worn	2	5	0	0	7
Alcohol	4	3	0	0	7
Speed	7	8	0	0	15

Table 87: KSI by contributing factor 2003 - 2012 (police attended)

Speed was a dominant factor contributing to KSI on local roads.

6.10.4 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	1
12 to 16	0	0	0
17 to 20	0	0	1
21 to 24	0	0	0
25 to 29	1	0	0
30 to 39	0	0	0
40 to 49	4	0	0
50 to 59	0	0	0
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	0
Total	5	0	2

Table 88: KSI by vulnerable road user and age 2003 - 2012

Four of the five motorcyclists KSI were aged from 40 to 49 years.

6.11 Shire of Ravensthorpe

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

Table 89 displays all crashes in the Shire of Ravensthorpe by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	166	57.4
Intersection	State, State	3	1.0
Intersection	State, LG	11	3.8
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	91	31.5
Intersection	LG, LG	8	2.8
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	10	3.5
Total		289	100.0

Table 89: All crashes by crash location and road manager 2003 - 2012

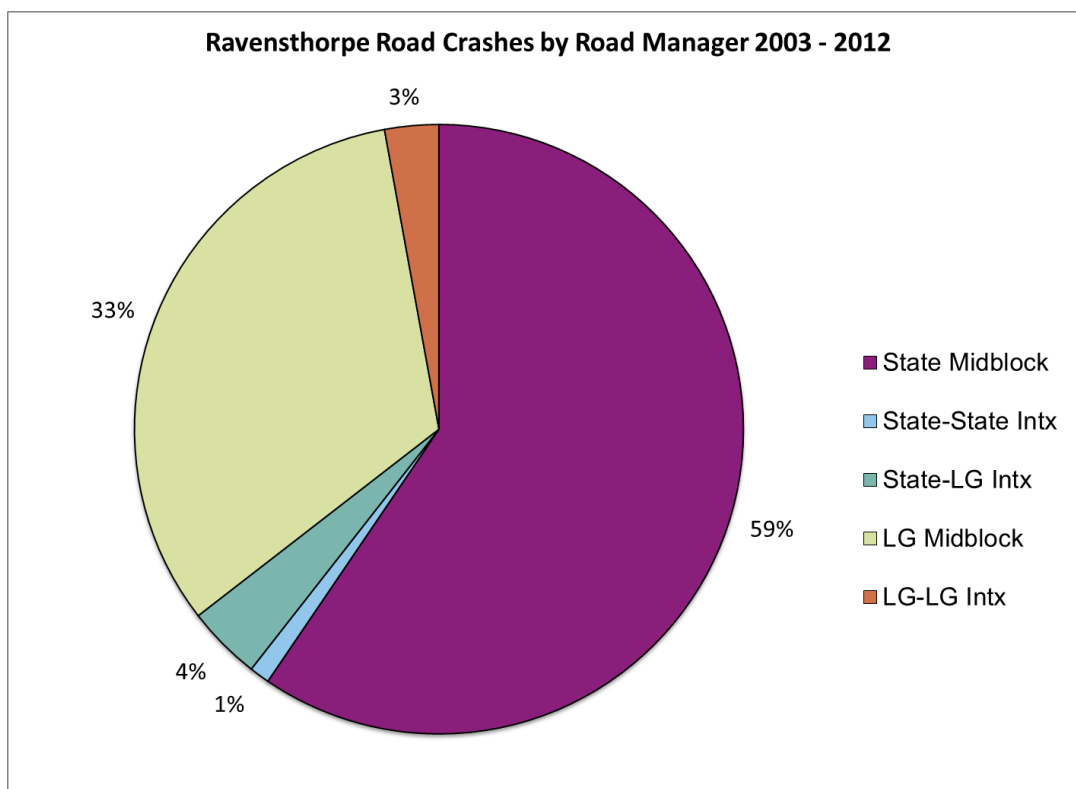


Figure 55: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at “Other” locations, Figure 55 shows:

- 36% of crashes occurred at local road locations including intersections where all legs were local roads.
- 4% of crashes occurred at intersections having both Local and State road legs.
- 60% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 55 also shows that 92% of crashes in the Shire of Ravensthorpe occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Ravensthorpe local road network from 2003 to 2012 is shown in Table 90.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	0	0	2	3	2	0	0	1	1	3	12

Table 90: KSI trend 2003 - 2012

6.11.1 Crash Nature

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

- 75% of KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Ravensthorpe	Great Southern	% for Ravensthorpe	Ravensthorpe
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	2	19	10.5	2
Sideswipe	0	3	0.0	0
Right Angle	0	35	0.0	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	2	91	2.2	2
Single Vehicle Crashes				
Hit Pedestrian	1	24	4.2	0
Hit Animal	0	6	0.0	0
Hit Object	3	175	1.7	0
Non-Collision	6	56	10.7	1
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	10	263	3.8	1
Total	12	354	3.4	3

Table 91: KSI by crash nature 2003 - 2012

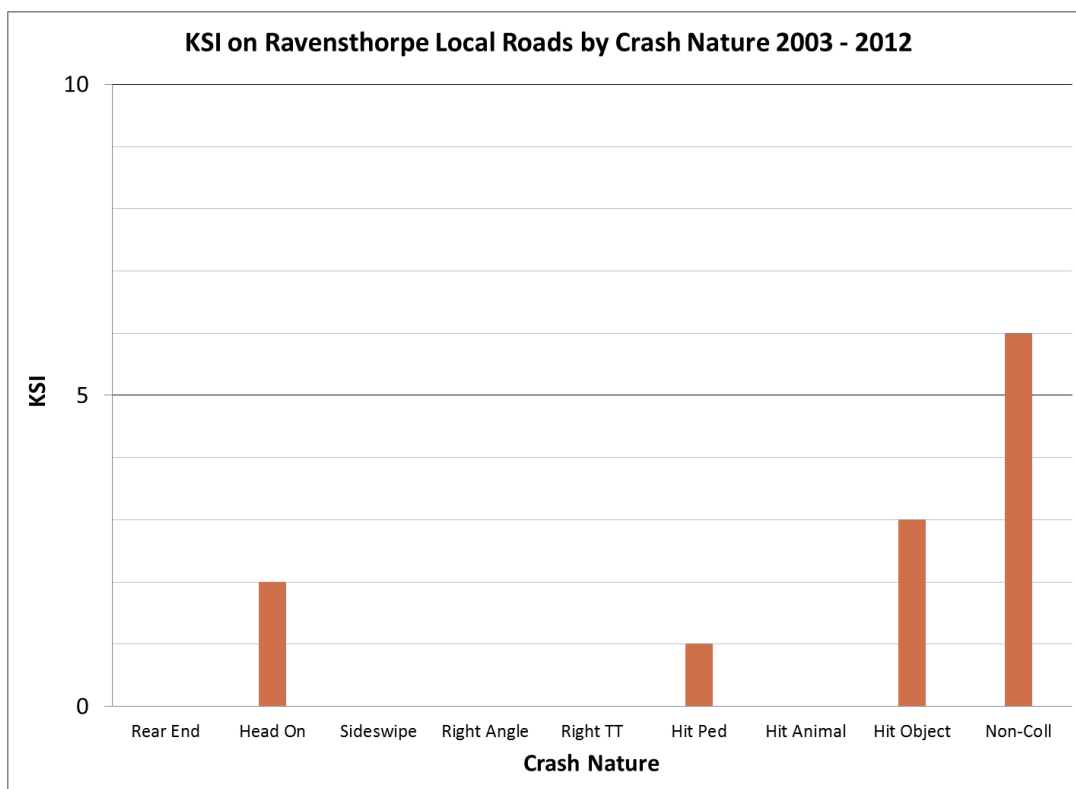


Figure 56: KSI by crash nature 2003 - 2012

6.11.2 Road User Type

KSI by road user type on the Shire of Ravensthorpe local road network from 2003 to 2012 is shown in Table 92 and Figure 57.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	8	38	0	2	48
Passenger	2	27	0	1	30
Motorcyclist	1	1	0	1	3
Bicyclist	0	0	0	0	0
Pedestrian	1	0	0	0	1
Other	0	0	0	0	0
Total	12	66	0	4	82

Table 92: KSI by road user 2003 - 2012

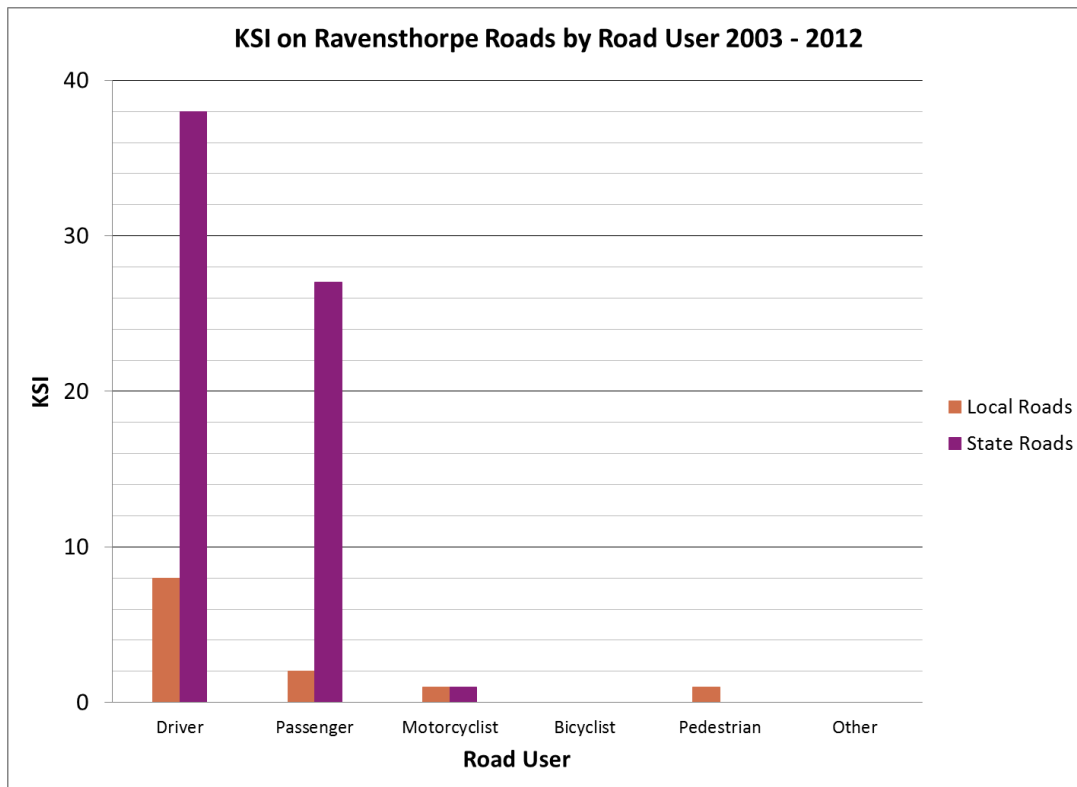


Figure 57: KSI by road user 2003 - 2012

From 2003 to 2012 approximately 83% of KSI on local roads were drivers or passengers. KSI for 2012 is shown in Table 93.

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

Table 93: KSI by road user 2012

6.11.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Ravensthorpe 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	0	5	0	0	5
Seatbelts Not Worn	0	3	0	0	3
Alcohol	1	3	0	0	4
Speed	1	3	0	0	4

Table 94: KSI by contributing factor 2003 - 2012 (police attended)

6.11.4 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	0
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	1	0	0
40 to 49	0	0	0
50 to 59	0	0	1
60 to 69	0	0	0
70+	0	0	0
Unknown	0	0	0
Total	1	0	1

Table 95: KSI by vulnerable road user and age 2003 - 2012

6.12 Shire of Woodanilling

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

Table 96 displays all crashes in the Shire of Woodanilling by crash location and road manager from 2003 to 2012.

Crash Location	Road Manager	Crashes	%
Midblock	State	48	50.5
Intersection	State, State	0	0.0
Intersection	State, LG	4	4.2
Intersection	State, LG, Other	0	0.0
Intersection	State, Other	0	0.0
Midblock	LG	41	43.2
Intersection	LG, LG	2	2.1
Intersection	LG, Other	0	0.0
Midblock	Other	0	0.0
Intersection	Other, Other	0	0.0
Other	Unknown	0	0.0
Total		95	100.0

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

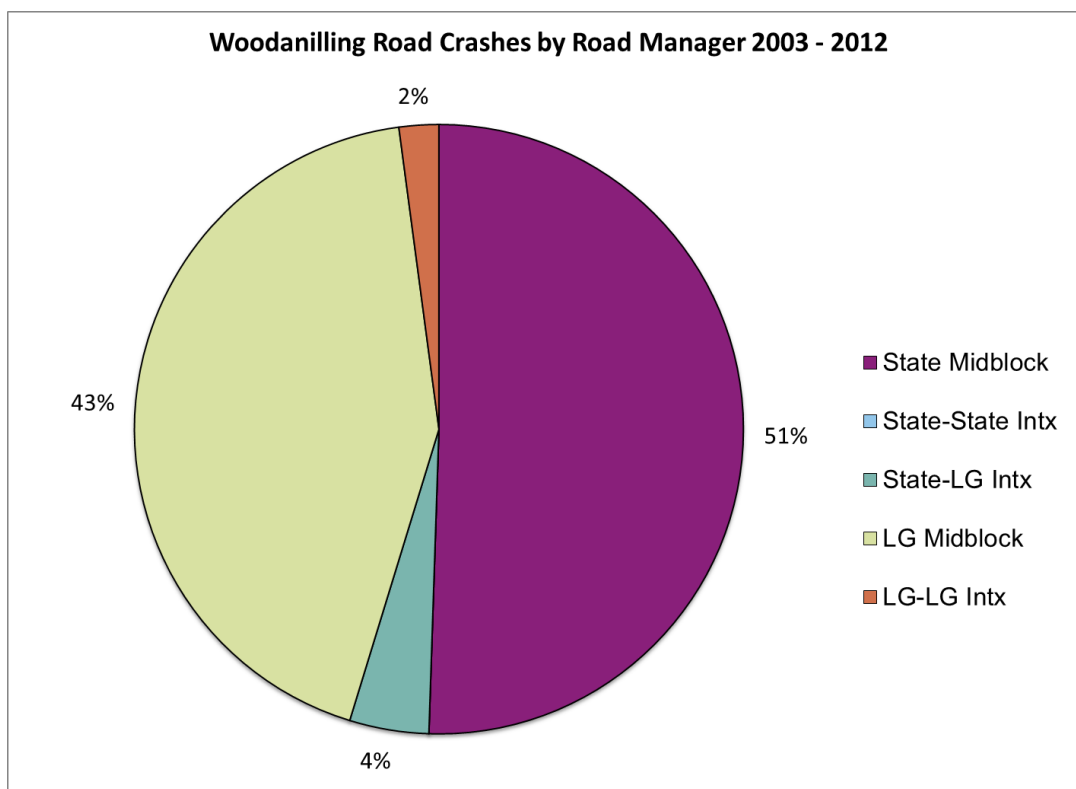


Figure 58: All crashes by crash location and road manager 2003 - 2012

Ignoring crashes at "Other" locations, Figure 58 shows:

- 45% of crashes occurred at local road locations including intersections where all legs were local roads.
- 4% of crashes occurred at intersections having both Local and State road legs.
- 51% of crashes occurred at State road locations including intersections where all legs were State roads.

Figure 58 also shows that 94% of crashes in the Shire of Woodanilling occurred at midblock locations on Local and State roads. This is further investigated in the analysis of the crash nature.

The KSI trend for the Shire of Woodanilling local road network from 2003 to 2012 is shown in Table 97.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
KSI	1	1	2	1	0	0	2	1	0	0	8

Table 97: KSI trend 2003 - 2012

6.12.1 Crash Nature

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

- All KSI occurred in single vehicle crashes of Hit Object or Non-Collision.

Crash Nature	Local Government and Region			
	2003 - 2012			2012
	Woodanilling	Great Southern	% for Woodanilling	Woodanilling
	n	n	%	n
Multi-Vehicle Crashes				
Rear End	0	18	0.0	0
Head On	0	19	0.0	0
Sideswipe	0	3	0.0	0
Right Angle	0	35	0.0	0
Right Turn Thru	0	8	0.0	0
Multi-Vehicle Other	0	8	0.0	0
Multi-Vehicle Total	0	91	0.0	0
Single Vehicle Crashes				
Hit Pedestrian	0	24	0.0	0
Hit Animal	0	6	0.0	0
Hit Object	3	175	1.7	0
Non-Collision	5	56	8.9	0
Single Vehicle Other	0	2	0.0	0
Single Vehicle Total	8	263	3.0	0
Total	8	354	2.3	0

Table 98: KSI by crash nature 2003 - 2012

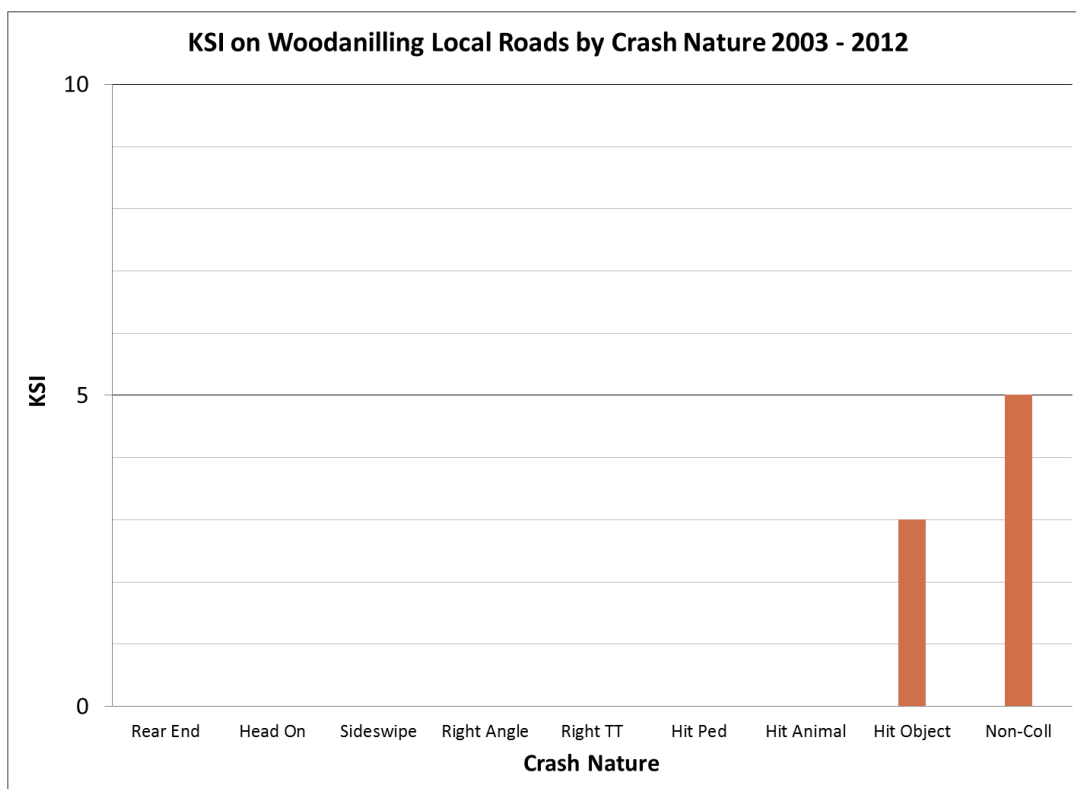


Figure 59: KSI by crash nature 2003 - 2012

6.12.2 Road User Type

KSI by road user type on the Shire of Woodanilling local road network from 2003 to 2012 is shown in Table 99 and Figure 60.

Road User	Road Manager				
	Local	State	Other	Unknown	Total
	n	n	n	n	n
Driver	6	8	0	0	48
Passenger	2	4	0	0	30
Motorcyclist	0	0	0	0	3
Bicyclist	0	0	0	0	0
Pedestrian	0	0	0	0	1
Other	0	0	0	0	0
Total	8	12	0	0	82

Table 99: KSI by road user 2003 - 2012

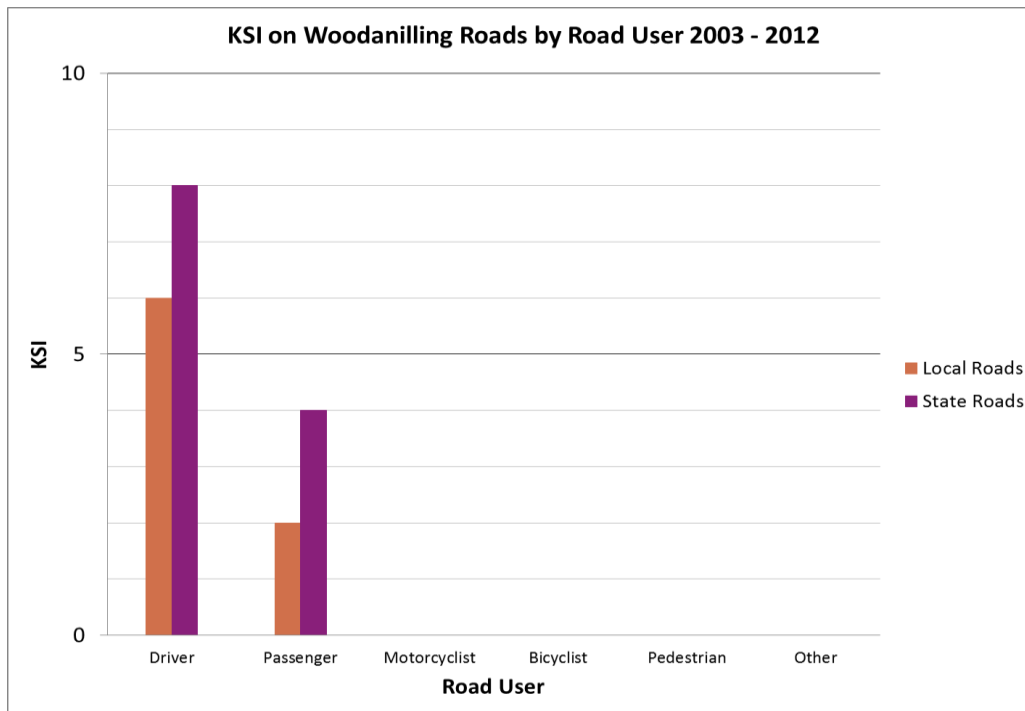


Figure 60: KSI by road user 2003 - 2012

From 2003 to 2012 all KSI on local roads were drivers or passengers.

There were no KSI on local roads for 2012.

6.12.3 Road User Behaviour

The following table shows factors contributing to KSI on the Shire of Woodanilling 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	0	1	0	0	1
Seatbelts Not Worn	0	0	0	0	0
Alcohol	1	0	0	0	1
Speed	1	1	0	0	2

Table 100: KSI by contributing factor 2003 - 2012 (police attended)

6.12.4 Vulnerable Road Users

There were no vulnerable road users KSI on local roads from 2003 to 2012. A vulnerable road user is defined as a motorcyclist, bicyclist or pedestrian.

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. 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.
2. Hospitalisation Crash - A road crash that involved at least one serious injury but no fatalities.
3. Medical Attention Crash - A road crash in which the most serious injury resulted in a person requiring medical treatment, but without being admitted to hospital.
4. Property Damage Only Major Crash – A road crash in which no person was injured, but with estimated property damage exceeding \$3,000.
5. Property Damage Only Minor Crash - 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 mini-bike. 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.