Invercargill City
Road Safety Report
2005 to 2009

Performance Information
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June 2010

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Introduction and general information

The NZ Transport Agency provides information on road safety to its stakeholders and the public. It also has responsibility for promoting safety and sustainability in land transport, among a variety of other functions. This road safety report is an example of information supplied by the NZ Transport Agency.

This report helps identify road safety issues in Invercargill City area ('the city') by presenting tables or graphs of:

- numbers and trends in reported crashes and casualties
- characteristics and types of crashes and casualties
- factors contributing to crashes
- locations with bad crash records
- characteristics of crashes on council authority roads

The information is intended to assist road controlling authorities, the New Zealand Police and others in evaluating the safety performance of the road network in Invercargill City. Comparison with other cities, districts or regions elsewhere in the country is included.

Researchers, students, and organisations with an interest in road safety will also find the information useful.

Source of crash information

This report uses data from the NZ Transport Agency's crash database. This database includes all crashes involving injury and non–injury for which Police reports have been completed and forwarded to the NZ Transport Agency. Mostly five-year data (2005 to 2009) has been used, but 10-year data (2000 to 2009) has been used to analyse trends.

Council authority peer groups

Traffic crash patterns and features for an area can depend on the traffic and roading characteristics of that area. The most useful comparisons are made with other areas or authorities with similar characteristics, rather than with the whole country. The data for the city is compared with a peer group of similar council authorities (Group B) along with data for all New Zealand.

The peer group used for comparison with Invercargill City is Group B which consists of large urban areas with some rural areas on the outskirts. (Population 40000 - 98000 and/or rural crashes less than 35 percent). Council authorities included in this group are listed in Figure 1.4.

Definitions of urban and rural

Data has been separated for urban and rural (open) roads through this report because each has a distinctly different pattern of crashes. In this report urban roads are defined as all those with a speed limit of 70 km/h or less, however it should be noted that some locations which have been speed limit zoned might be more appropriately defined as rural but are included in urban zones.

Definition of statistically significant

A number of graphs include a comparison between the road controlling authority, all New Zealand and a similar peer group. These graphs can include an indication as to whether the difference is statistically significant. For the purposes of this report statistically significant means that a difference of this size is unlikely to be due to chance. Significance is noted at the 5% level ($P < 0.05$), this means that the observed result would occur by chance in only 1 in 20 similar situations.

Road user compliance data

The Ministry of Transport collects information on road user compliance with traffic law. This information includes speed surveys, occupant restraint use surveys and cycle helmet use surveys. Information about these surveys is available on Ministry of Transport web site.

The appropriate web addresses are as follows:

Speed Surveys	http://www.transport.govt.nz/research/SpeedSurveys/
Safety belts	http://www.transport.govt.nz/research/safetybeltstatistics/
Cycle helmets	http://www.transport.govt.nz/research/cyclehelmets2009/

The information is also distributed quarterly in the Ministry of Transport publication Road safety progress.

The Ministry of Transport also conducts public attitude surveys. These have been undertaken annually since 1994. They evaluate attitudes to road safety issues, primarily alcohol-impaired driving and speed. Surveys are carried out in May and June of each year by trained interviewers who conduct interviews with respondents in their homes. The sample is chosen to be representative of the New Zealand adult population, and includes men and women aged 15 and over from towns, cities and rural areas throughout New Zealand.

The results of these surveys are available from:

http://www.transport.govt.nz/research/PublicAttitudestoRoadSafety-Survey/

General explanatory notes

1. Crash and casualty information in this report generally includes data for both council roads and state highways. Some tables and charts can separate this information, however figures 8.1–8.26 provide information for council roads only.

2. Crash and casualty rates are based on 2009 populations estimates updated from the 2006 census, traffic flows from the year 2009, and the average of five year crash data (2005–2009).

3. Traffic flows are based on Road Asset Maintenance and Management (RAMM) data from December 2009. As different road controlling authorities update flow data in RAMM at different times some data will be more up to date than other data, hence caution should be exercised when comparing traffic flow based crash rates in one authority with those of other authorities particularly as the traffic flow data (VKT) used in the calculations can not be considered definitive. Comparisons should be considered as indicative only.

4. With four to five categories of road for each council authority, some categories will only have short lengths of road. This may cause significant variation in the calculated crash and casualty rates.

5. The crash numbers include all those within the road controlling authority. The crash numbers used in the crash rate section can, however, vary slightly from the remainder of the document as only 'on road' crashes can be used. These are crashes on roads that have traffic volume information recorded. Crashes that occurred in car parks, reserves, beaches etc. are excluded.

6. The severity of a crash is determined as the most severely injured casualty in the crash. Injury severity is classified as fatal, serious, or minor as follows:

   Fatal: Injuries that result in death within 30 days of a crash.

   Serious: Fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock necessitating medical treatment, and any injury involving removal to and detention in hospital.

   Minor: Injuries which are not serious but which require first aid, or cause discomfort or pain to the person injured, eg sprains and bruises.

7. Ethnicity of road users involved in crashes can now be recorded on traffic crash reports, although some reports may not include this data. Figures 3.25 and 3.26 shows the ethnicity of casualties, where known. Ethnicity is divided into five different groups. Only data for 2005 to 2009 is available. The graph includes all casualties irrespective of culpability.
   NOTE: Ethnicity data should be treated with caution as the data can be considered subjective and incomplete.

8. For the licence status grouping in Figures 3.27 and 3.28 the 'no/wrong licence' group includes drivers who have never held a licence or have an expired or wrong class licence. This graph includes all drivers irrespective of injury or culpability.

9. See appendix for detailed descriptions of:
   - crash movement types and crash movement groupings (for Figures 4.1–4.4)
   - grouping of factors contributing to crashes (for Figures 5.1–5.14)

10. Blackspot sites listed in Figures 9.1 and 9.3 are listed by the total cost of crashes at the site and are listed regardless of any remedial treatments. Site were initially selected on the basis of 3 reported crashes and then the sites listed were limited to those with a higher number of injury crashes and over a defined social cost, which is indicated on each figure.

11. Alarm crash sites in section 9 as Figures 9.4 to 9.6 are crash sites that have shown a statistically significant increase (at the 95 percent level of confidence) in reported crashes in 2009 compared with the previous five years (2004 to 2008). The sites are initially selected on the basis of 3 or more reported crashes at the sites. Sites are listed regardless of any recent remedial treatments and they may already be under investigation for treatment.

Crash Rates and Costs

Crash reporting rates

The ratio of 'reported serious injuries' can be assessed by comparing seriously injured casualty numbers from Police crash reports to hospital admissions, given that a serious injury is generally one requiring hospital attention.

Figure 1.1 below indicates the serious injury reporting rate for each region.

Figure 1.1 Reporting rate serious injuries to hospital admissions

Region	2005	2006	2007	2008	2009
Northland	30%	28%	34%	38%	27%
Auckland	17%	20%	16%	18%	18%
Waikato	40%	38%	50%	47%	40%
Bay of Plenty	32%	37%	38%	29%	27%
Gisborne	32%	26%	31%	28%	27%
Hawkes Bay	80%	75%	59%	68%	42%
Taranaki	55%	65%	79%	41%	36%
Manawatu-Wanganui	38%	34%	35%	36%	31%
Wellington	68%	61%	74%	55%	48%
Nelson-Marlborough	44%	52%	54%	50%	39%
West Coast	53%	55%	59%	53%	54%
Canterbury	47%	42%	49%	45%	43%
Otago	99%	85%	77%	69%	39%
Southland	78%	103%	73%	53%	39%
New Zealand	36%	35%	37%	35%	**33%**

This is the ratio of the number of persons with serious injuries in reported crashes divided by the number of persons admitted to hospital with serious injuries.

These variations in reporting rates need to be considered when viewing the trends in crashes and casualties shown in this report.

Note: These values should be considered indicative only.

Figure 1.2 Crashes per 100 million vehicle kilometres travelled

	Council roads		State Highways	
	Urban	Rural	Urban	Rural
Invercargill City	78	37	67	27
Group B	34	47	20	16
All NZ	37	29	27	18

Figure 1.3 Casualties per 100 million vehicle kilometres travelled

	Council roads		State Highways	
	Urban	Rural	Urban	Rural
Invercargill City	114	62	89	44
Group B	41	66	26	22
All NZ	46	42	36	26

Figure 1.4 Peer group crash and casualty rates

Group B

City or District	Crashes per 10,000 Population (5 year average)	Crashes per 100 million vehicle kilometres travelled: Council roads Urban	Council roads Rural	State Highways Urban	State Highways Rural	Casualties per 10,000 Population (5 year average)	Casualties per 100 million vehicle kilometres travelled: Council roads Urban	Council roads Rural	State Highways Urban	State Highways Rural	2009 Population	% of rural crashes
Invercargill	40	78	37	67	27	59	114	62	89	44	51900	16
Napier	26	44	31	40	23	34	53	40	52	36	57200	20
Nelson	23	37	72	16	16	28	43	89	19	21	45000	18
Palmerston North	22	45	38	45	22	27	53	58	61	32	80300	18
Papakura	25	34	27	n/a	11	34	46	35	n/a	17	48900	40
Group B	27	46	33	43	17	36	59	49	56	25	283300	21
All New Zealand	26	38	29	28	18	36	48	42	38	26	4331000	41

Group B : Major urban areas with some rural areas on the outskirts. (Population 40000-97500 and/or rural crashes less than 35 percent).
Crashes and casualties per 100 million VKT are based on five years of reported injury on-road crash data (2005-2009) and December 2009 VKT estimates.
Crashes and casualties per 10,000 population are based on five year average crash data (2005-2009) and Statistics NZ 2009 population estimates.

Figure 1.5 Crashes per 100 million vehicle-kilometres travelled - urban council roads

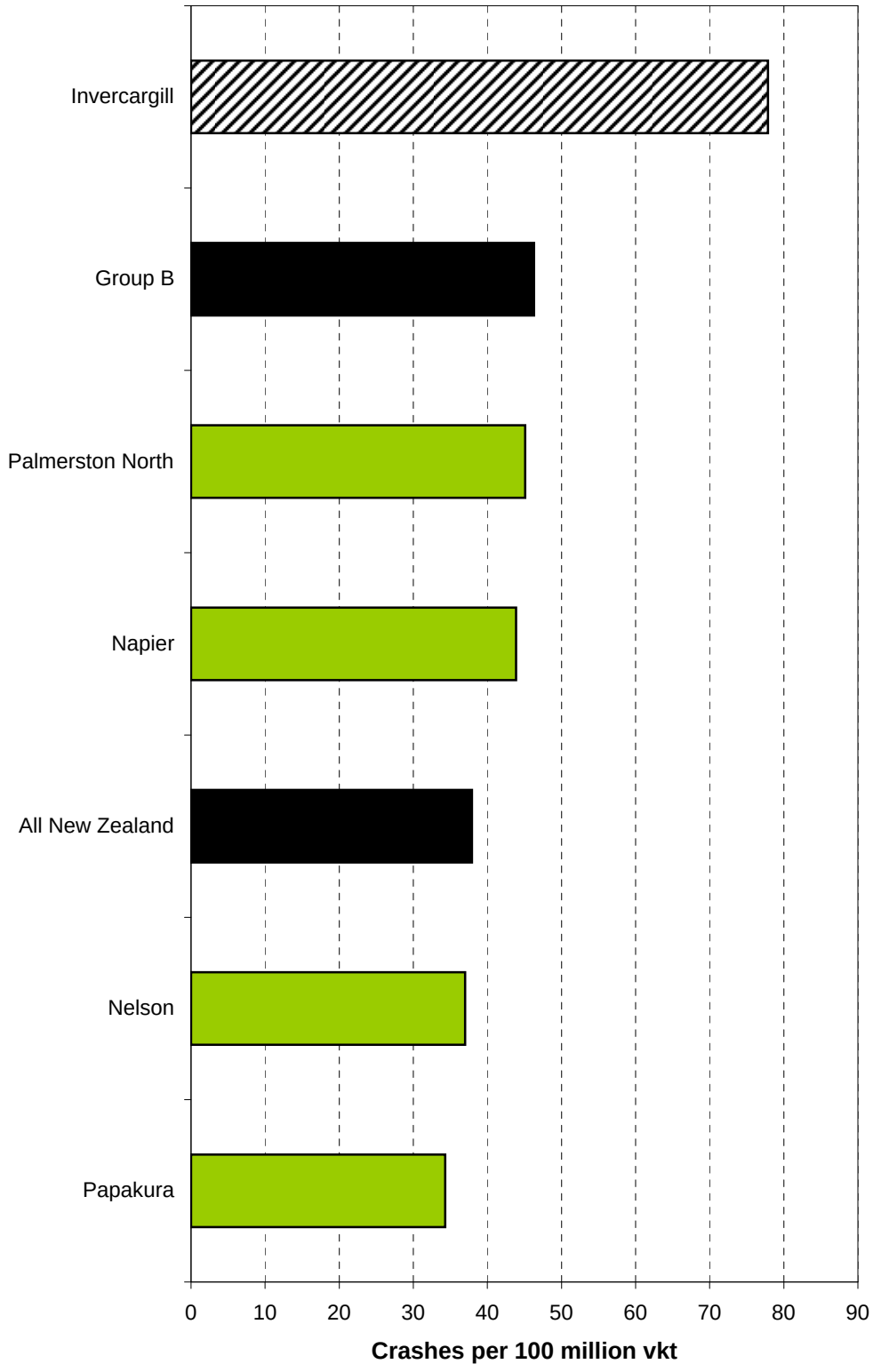


Figure 1.6 Crashes per 100 million vehicle-kilometres travelled - rural council roads

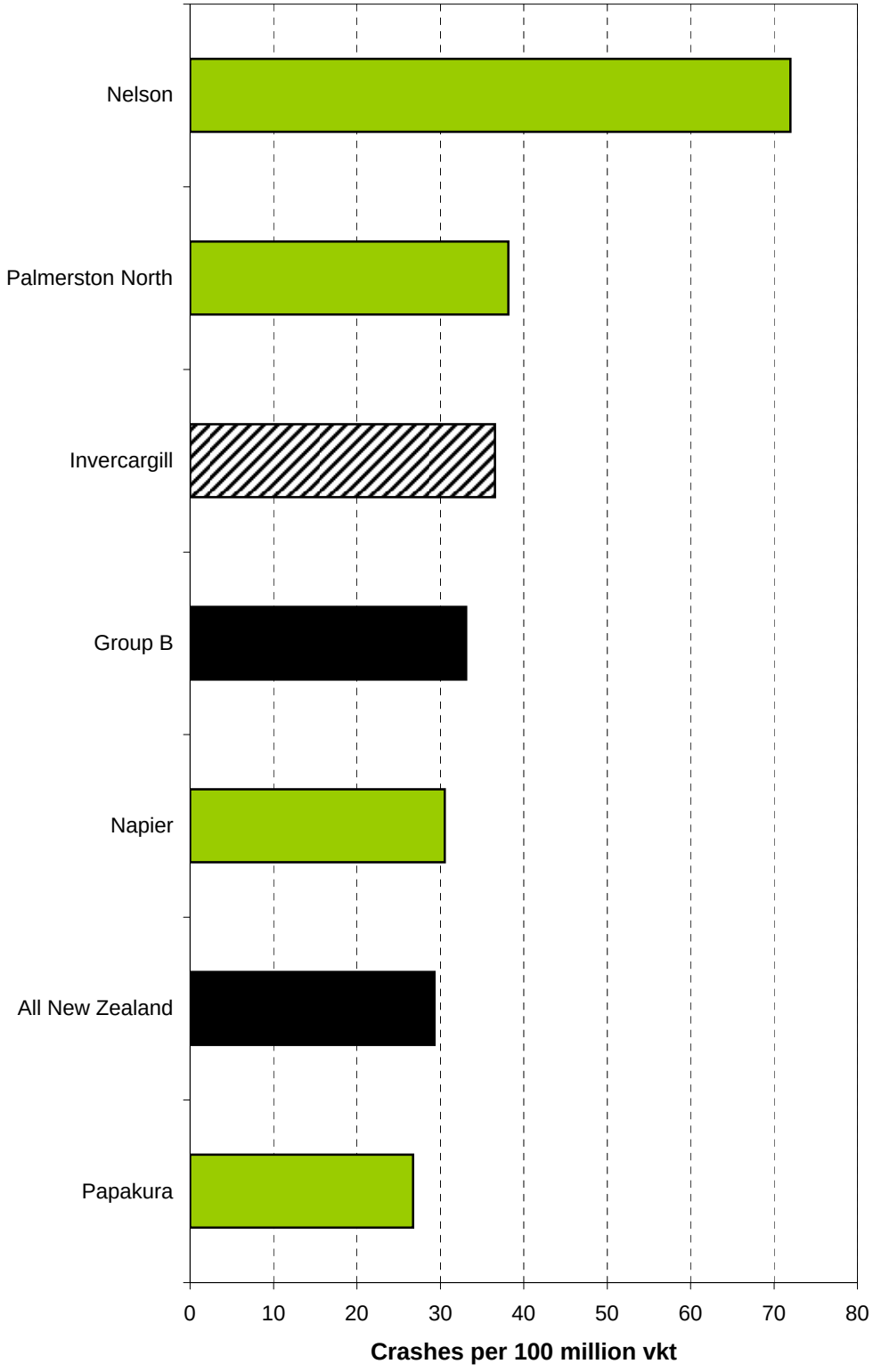


Figure 1.7 Crashes per 100 million vehicle kilometres travelled - urban state highways

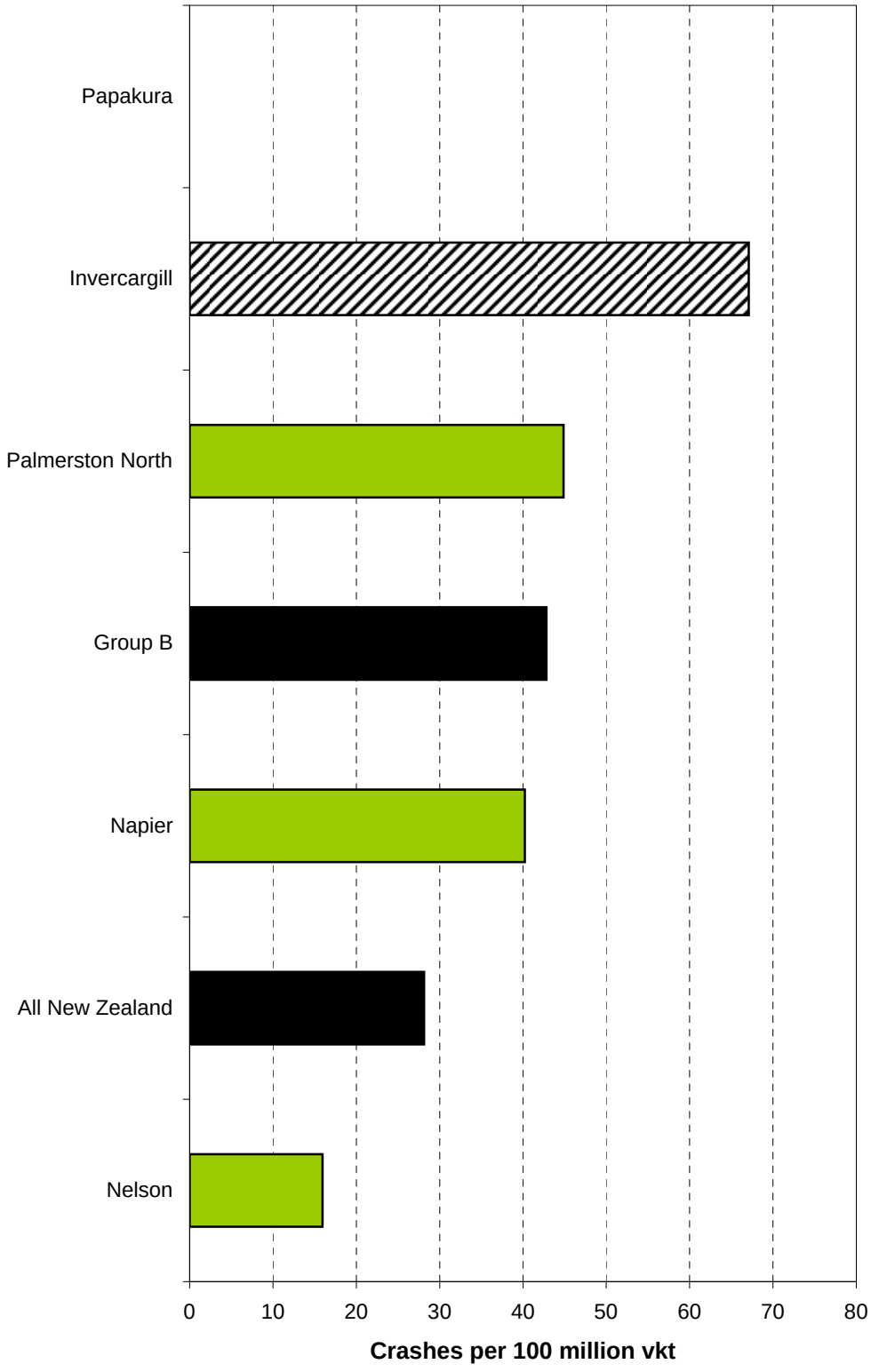


Figure 1.8 Crashes per 100 million vehicle-kilometres travelled - rural state highways

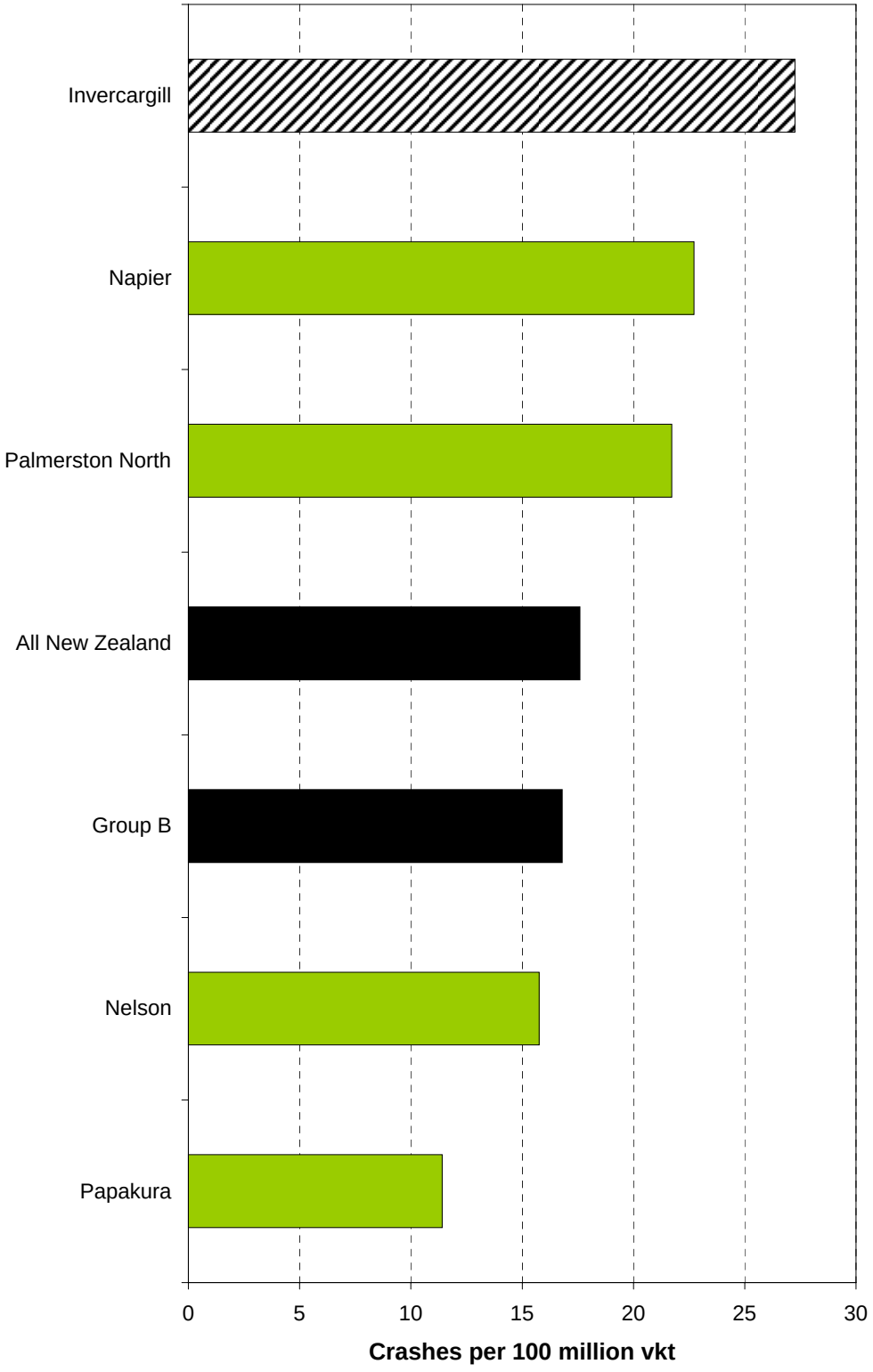


Figure 1.9 Crashes per 10,000 people
Invercargill City

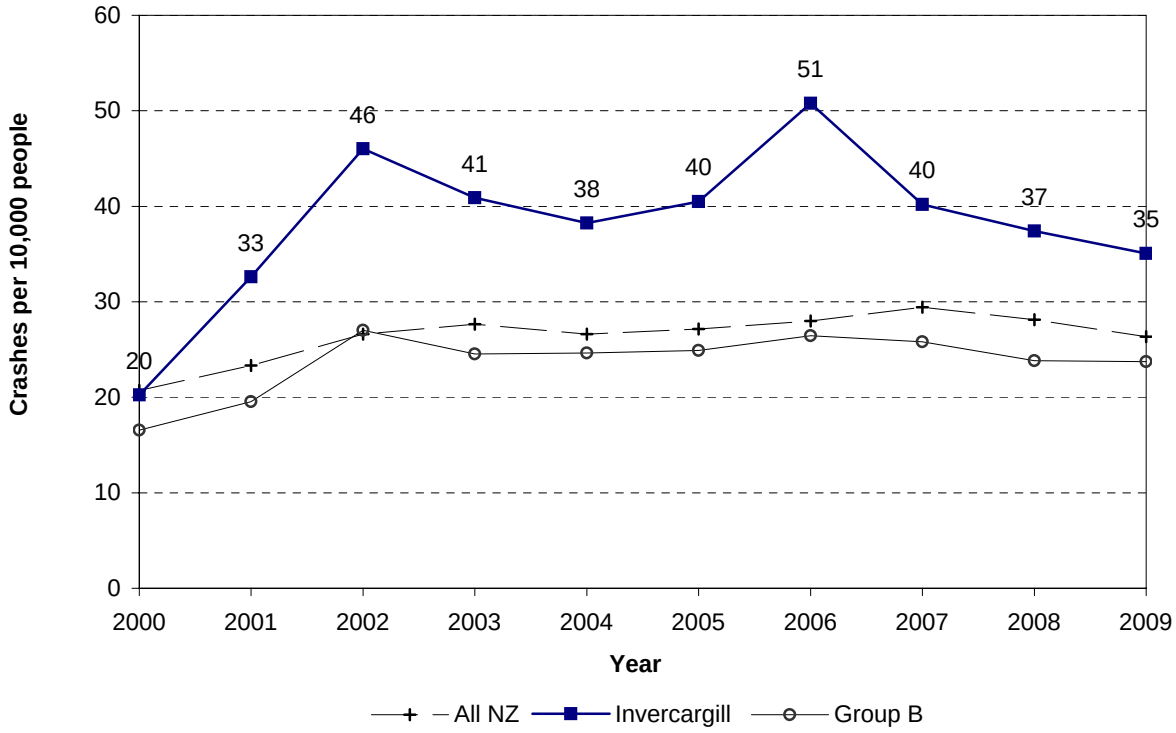


Figure 1.10 Casualties per 10,000 people
Invercargill City

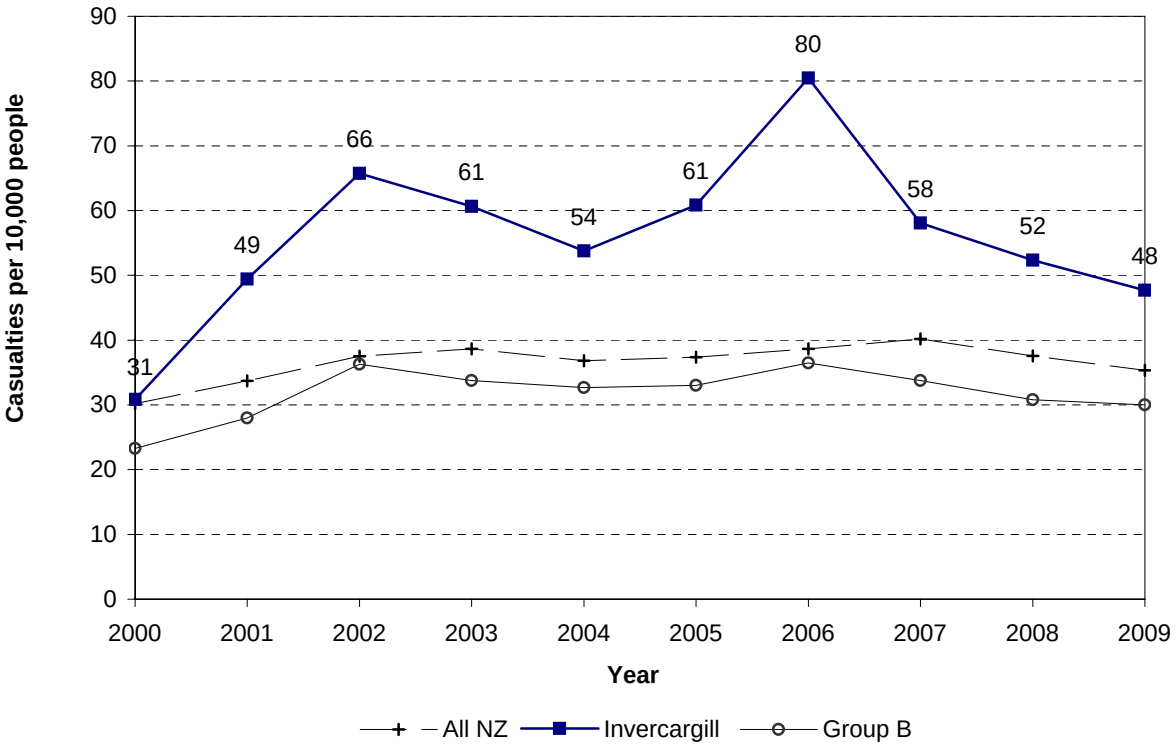


Figure 1.11 Social cost of crashes in Invercargill City in 2009

		Invercargill City	New Zealand
Council roads	urban rural	$48.75 $3.54	$1,607.40 $909.43
State Highways	urban rural	$6.35 $7.22	$299.76 $1,487.35
Total		**$65.86**	**$4,303.94**

Note: Crash costs are in $ millions

The social costs of a road crash and the associated injuries include a number of different elements:

- Loss of life and life quality
- Loss of output due to temporary incapacitation
- Medical costs
- Legal costs
- Property damage costs

The average value of a loss of life due to a road crash is estimated by the amount of money the New Zealand population would be willing to pay for a safety improvement that would result in the expected avoidance of one premature death. This is the willingness to pay based value of statistical life or VOSL. The VOSL was established at $2 million in 1991. This has been indexed to the average hourly earnings (ordinary time) to express the value in current dollars. The updated VOSL is $3.5 million (in June 2009 dollars). Based on several international and New Zealand studies on VOSL, the average loss of life quality for permanent impairments due to a serious and a minor injury were estimated to be 10% and 0.4% of the VOSL respectively.

Crash rates can vary due to reporting rates. These are adjusted on a regional basis in this report by comparing with hospitalisation rates.

The other social cost components are estimated based on a number of studies conducted during the early to mid-1990s and are updated for price changes by indexing to an appropriate price index.

For a detail discussion on this, please refer to 'The social cost of road crashes and injuries: June 2009 update', available at the Ministry of Transport's website:
http://www.transport.govt.nz/assets/NewPDFs/NewFolder/Social-Cost-June-2009-update-final.pdf

The average social cost per reported crash (in June 2009 dollars) are estimated at:

Rural fatal crash	$4,260,000
Rural serious crash	$820,000
Rural minor crash	$91,000
Urban fatal crash	$3,775,000
Urban serious crash	$699,000
Urban minor crash	$82,000

These values include an allowance for non-reported injury crashes, and the totals in Fig. 1.11 also include an allowance for non–injury crashes.

Crash Counts

Figure 2.1: Crash numbers and severity 2005 to 2009 - whole City

	2005	2006	2007	2008	2009	Total	%	Group B
Fatal crashes	0	2	4	3	7	**16**	2%	2%
Serious crashes	47	65	40	22	27	**201**	19%	19%
Minor crashes	164	198	165	168	147	**842**	80%	79%
Total injury crashes	**211**	**265**	**209**	**193**	**181**	**1059**	**100%**	**100%**
Non-injury crashes	332	280	344	371	408	1735		

Figure 2.2: Crash numbers and severity 2005 to 2009 - urban roads

	2005	2006	2007	2008	2009	Total	%	Group B
Fatal crashes	0	0	1	3	6	10	1%	1%
Serious crashes	36	52	30	18	23	159	18%	18%
Minor crashes	130	173	143	150	124	720	81%	81%
Total injury crashes	**166**	**225**	**174**	**171**	**153**	**889**	**100%**	**100%**
Non-injury crashes	295	258	319	348	362	1582		

Figure 2.3: Crash numbers and severity 2005 to 2009 - rural roads

	2005	2006	2007	2008	2009	Total	%	Group B
Fatal crashes	0	2	3	0	1	6	4%	5%
Serious crashes	11	13	10	4	4	42	25%	22%
Minor crashes	34	25	22	18	23	122	72%	72%
Total injury crashes	**45**	**40**	**35**	**22**	**28**	**170**	**100%**	**100%**
Non-injury crashes	37	22	25	23	46	153		

Figure 2.4: Casualty numbers and severity 2005 to 2009 - whole City

	2005	2006	2007	2008	2009	Total	%	Group B
Fatal casualties	0	2	5	3	9	19	1%	2%
Serious casualties	56	78	48	25	32	239	15%	17%
Minor casualties	261	340	249	242	205	1297	83%	82%
Total casualties	**317**	**420**	**302**	**270**	**246**	**1555**	**100%**	**100%**

Figure 2.5: Casualty numbers and severity 2005 to 2009 - urban roads

	2005	2006	2007	2008	2009	Total	%	Group B
Fatal casualties	0	0	1	3	8	12	1%	1%
Serious casualties	40	62	34	19	28	183	14%	16%
Minor casualties	201	278	205	221	174	1079	85%	83%
Total casualties	**241**	**340**	**240**	**243**	**210**	**1274**	**100%**	**100%**

Figure 2.6: Casualty numbers and severity 2005 to 2009 - rural roads

	2005	2006	2007	2008	2009	Total	%	Group B
Fatal casualties	0	2	4	0	1	7	2%	4%
Serious casualties	16	16	14	6	4	56	20%	21%
Minor casualties	60	62	44	21	31	218	78%	76%
Total casualties	**76**	**80**	**62**	**27**	**36**	**281**	**100%**	**100%**

Figure 2.7 Number of injury crashes
Invercargill City all roads (urban & rural)

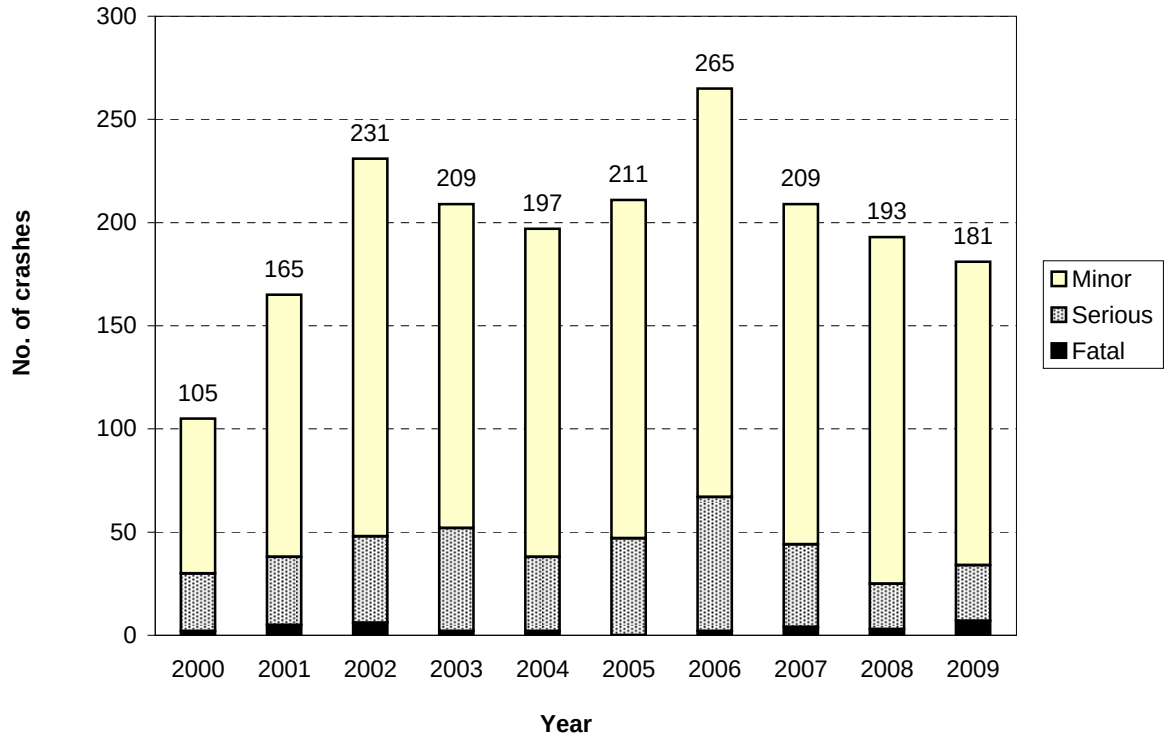


Figure 2.8 Number of casualties
Invercargill City all roads (urban & rural)

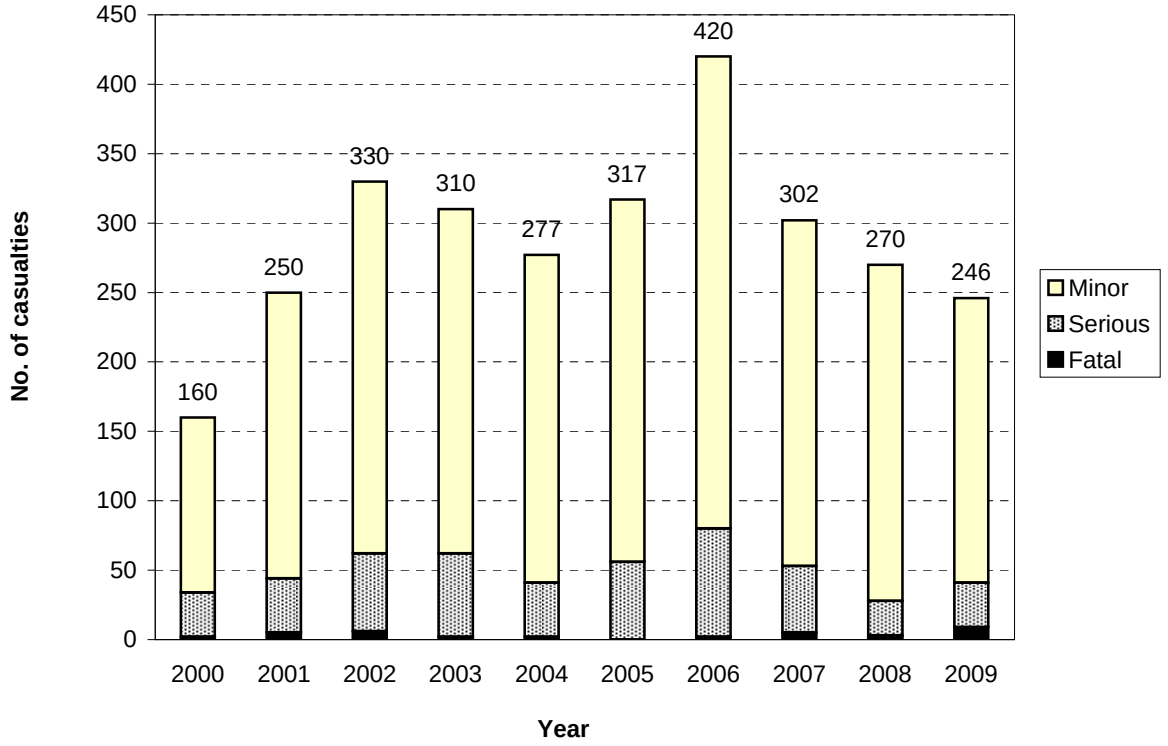


Figure 2.9 Number of injury crashes
Invercargill City - urban

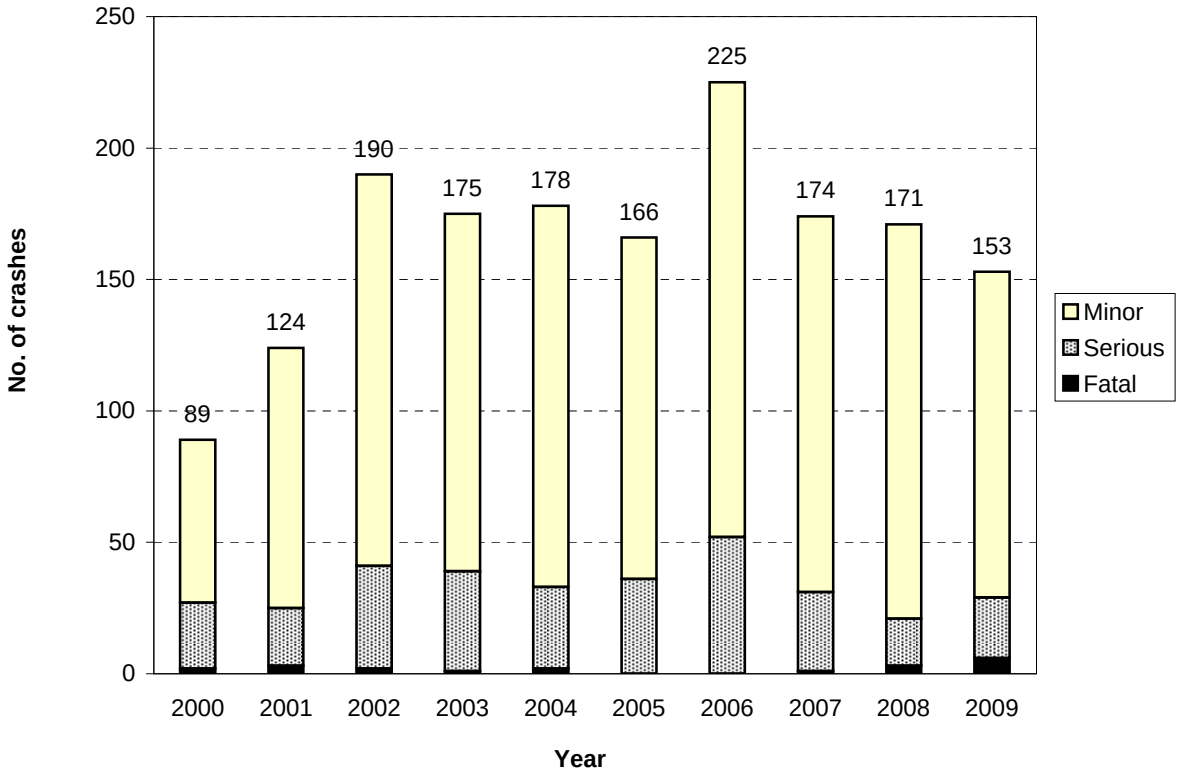


Figure 2.10 Number of casualties
Invercargill City - urban

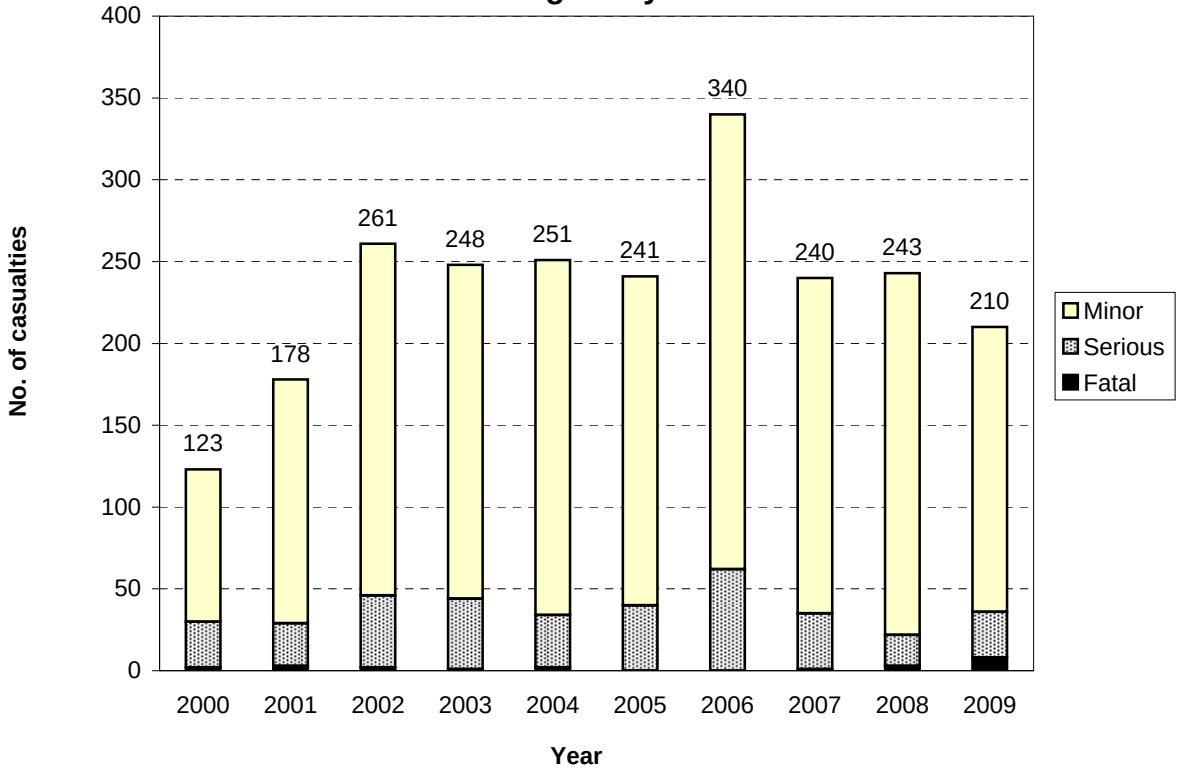


Figure 2.11 Number of injury crashes
Invercargill City - rural

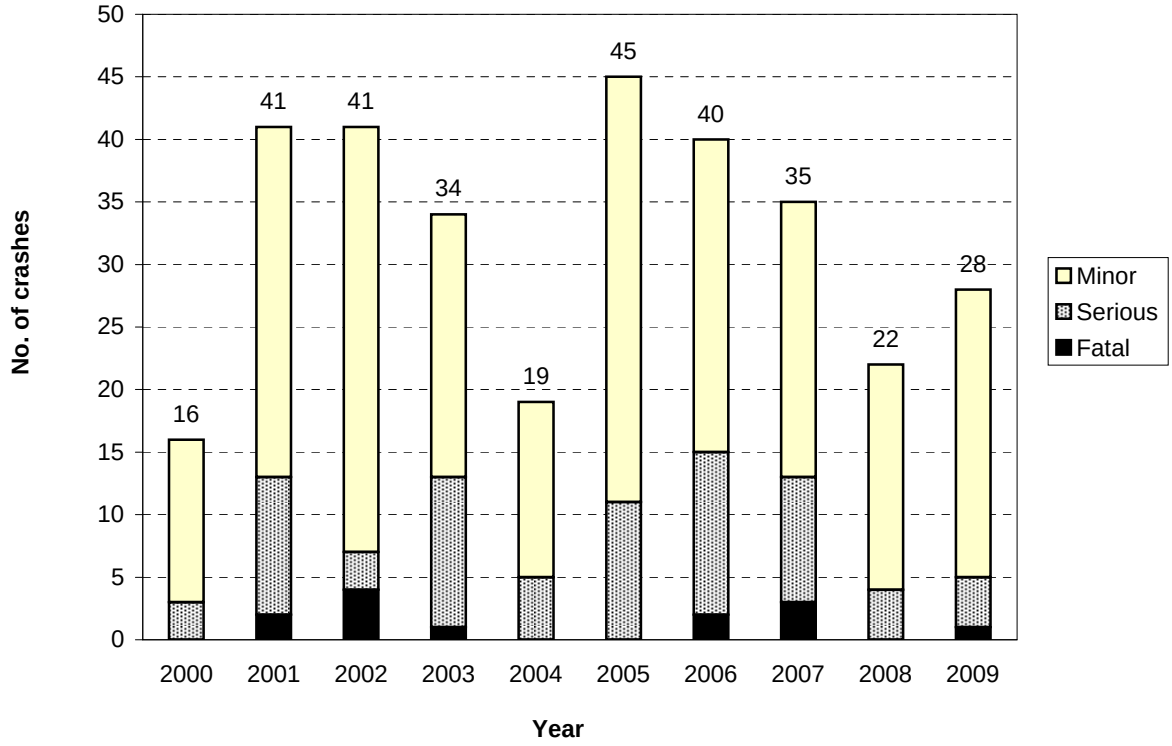


Figure 2.12 Number of casualties
Invercargill City - rural

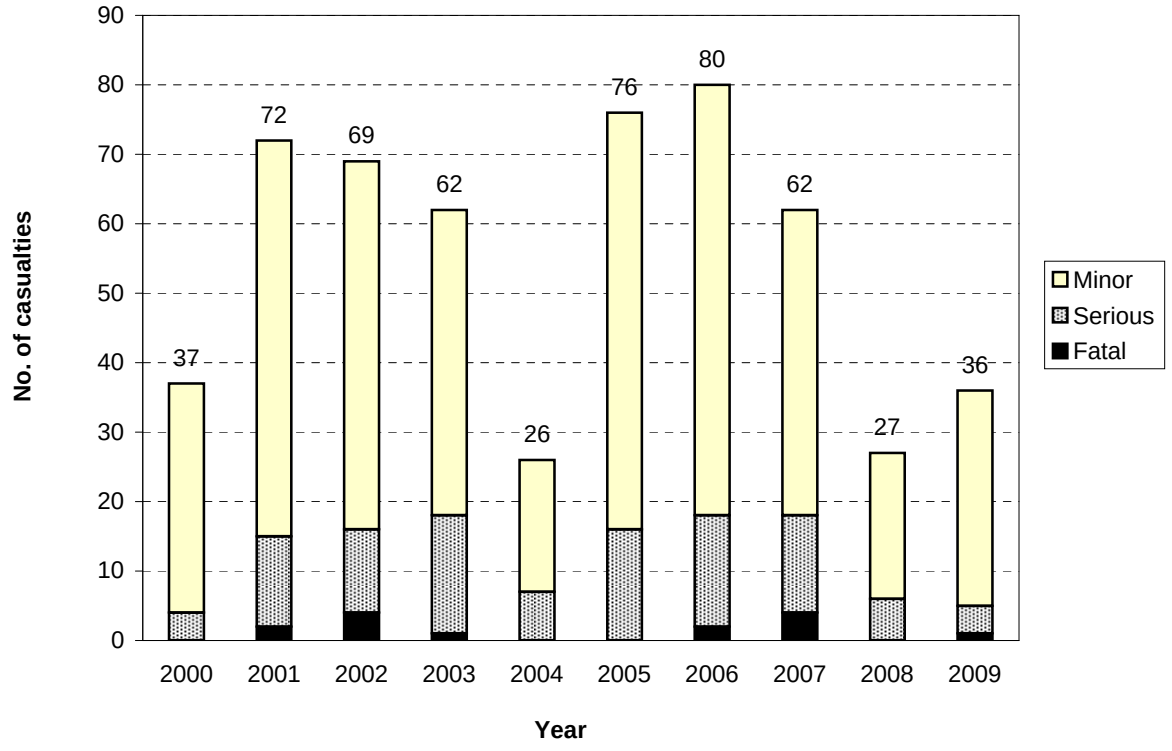
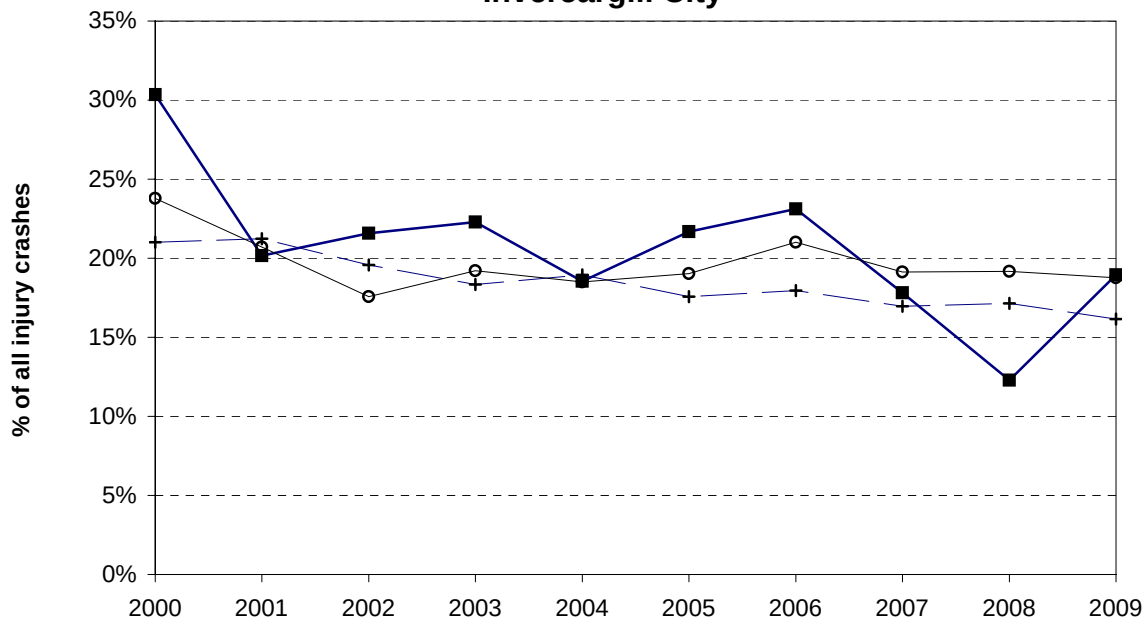
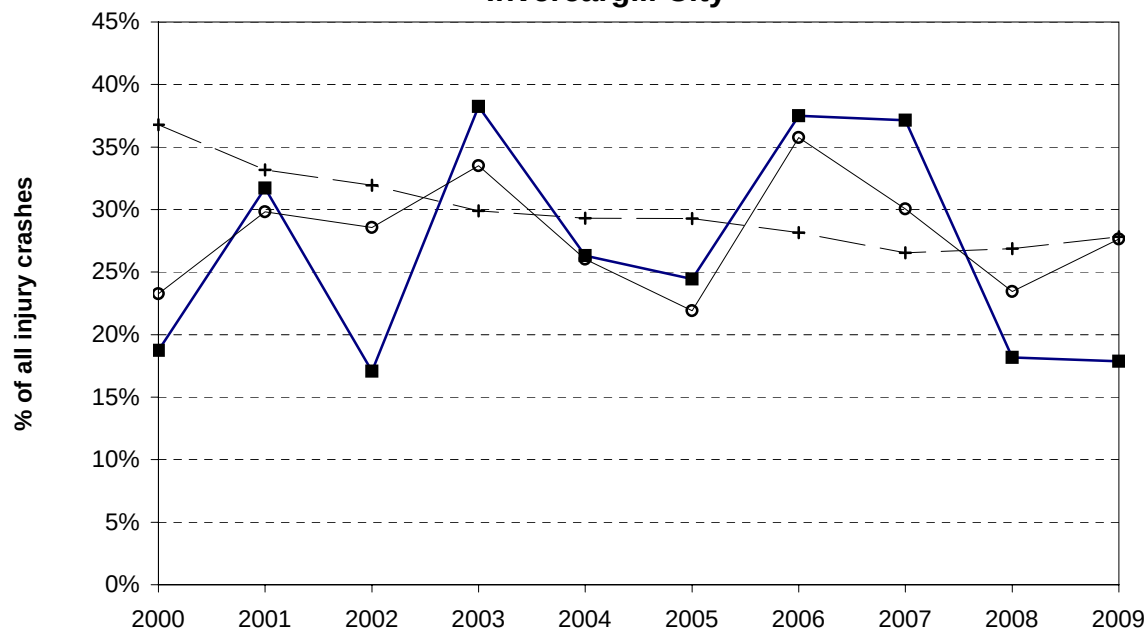


Figure 2.13 Severity ratio - urban
Invercargill City



Note: This graph depicts the percentage of serious injury crashes (including those which resulted in death) to all injury crashes.

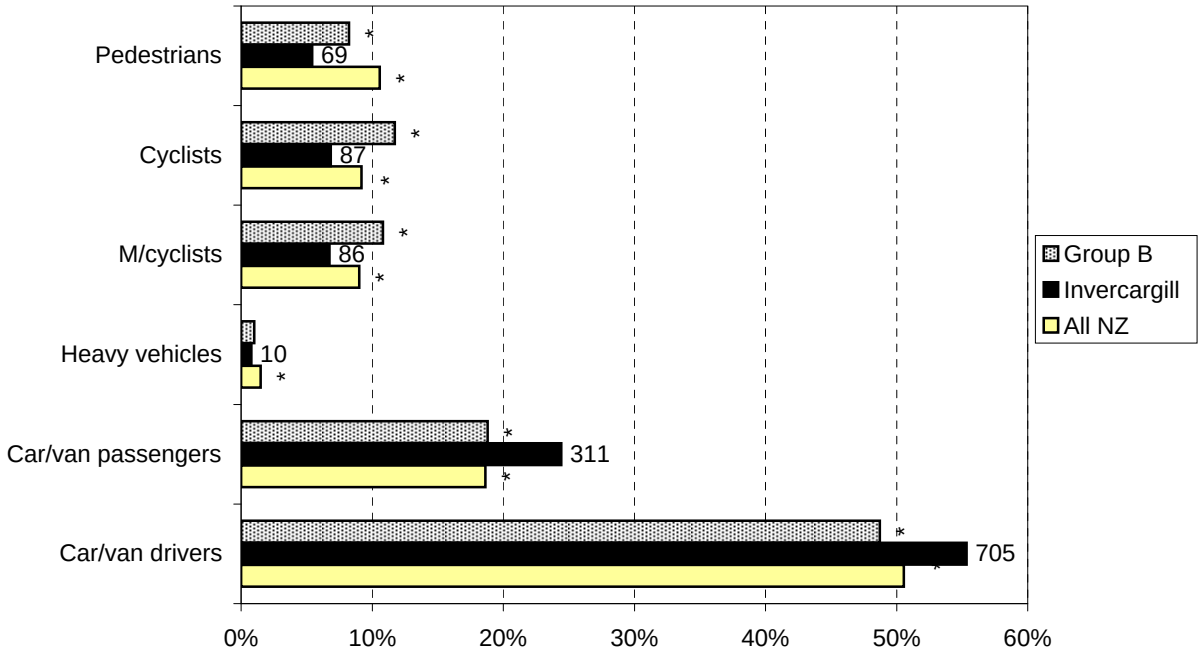
Figure 2.14 Severity ratio - rural
Invercargill City



Note: This graph depicts the percentage of serious injury crashes (including those which resulted in death) to all injury crashes.

Road User Statistics

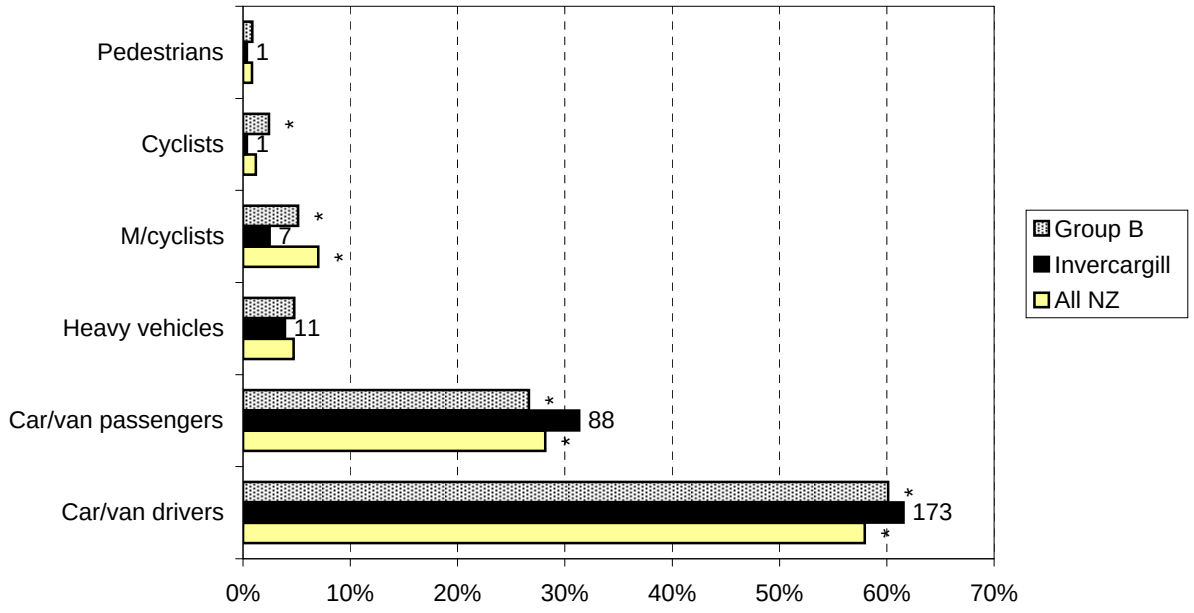
Figure 3.1 Road user casualties - urban
Invercargill City (2005-2009)



% of urban casualties

Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

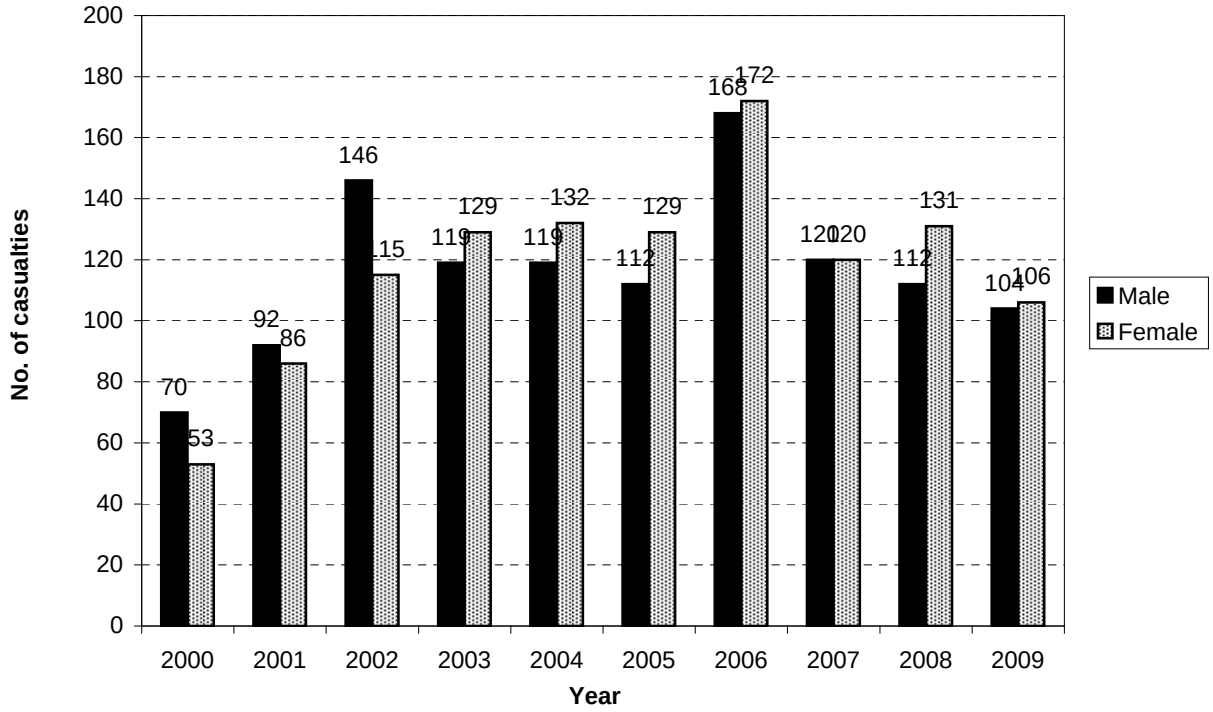
Figure 3.2 Road user casualties - rural
Invercargill City (2005-2009)



% of rural casualties

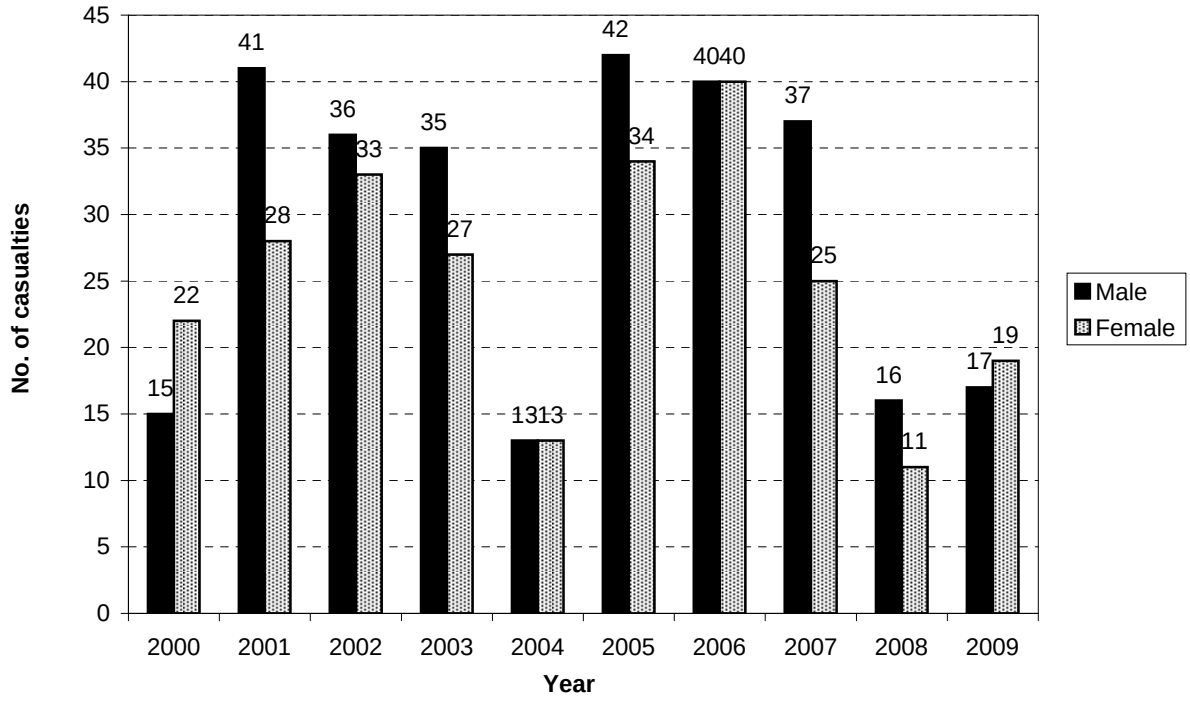
Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 3.3 Male/female casualties - urban Invercargill City



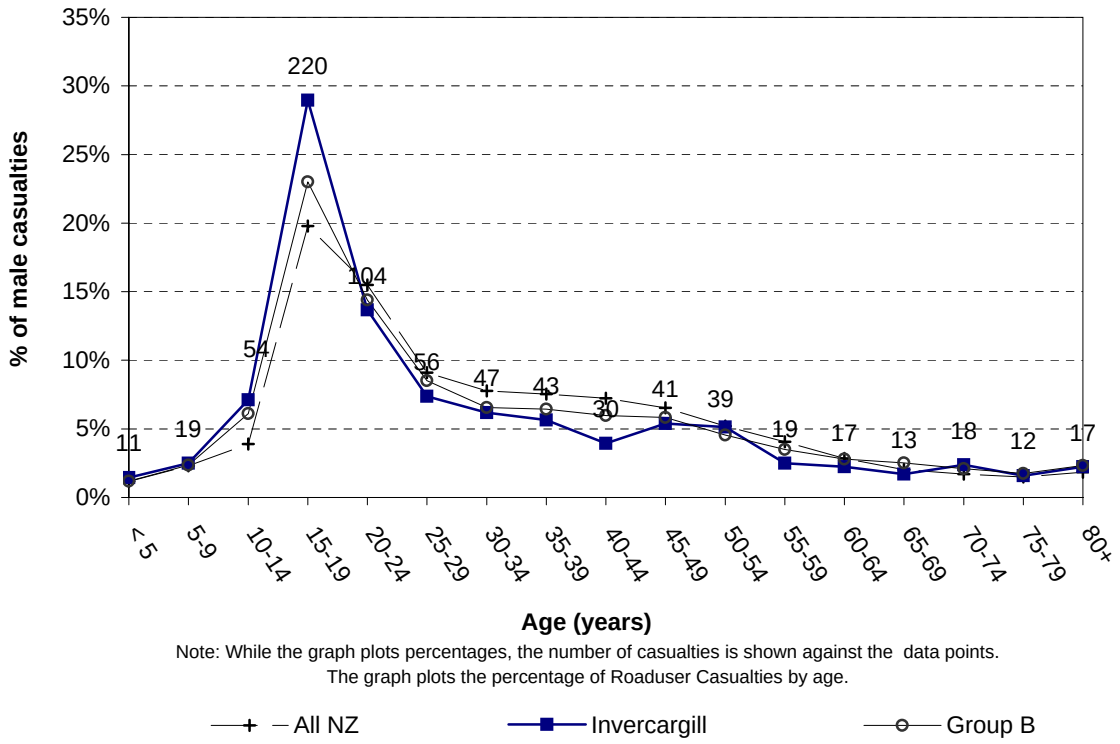
Note: This graph shows the number of male and female roadusers injured

Figure 3.4 Male/female casualties - rural Invercargill City



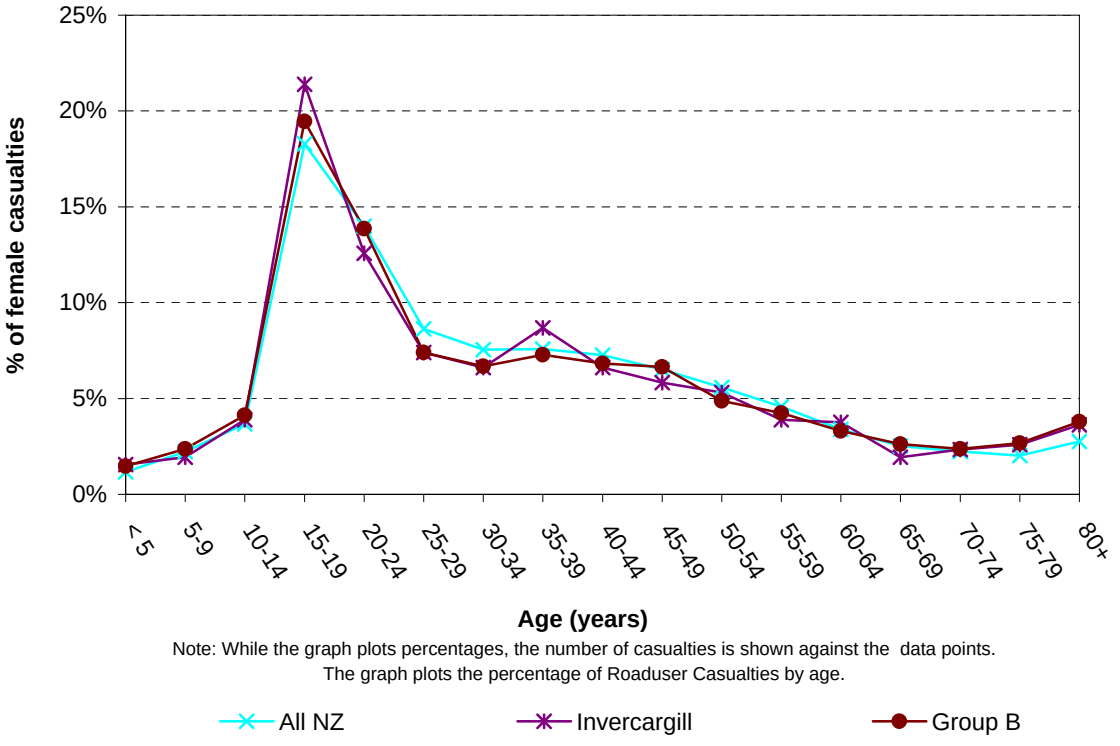
Note: This graph shows the number of male and female roadusers injured

Figure 3.5 Male casualties by age
Invercargill City (2005-2009)



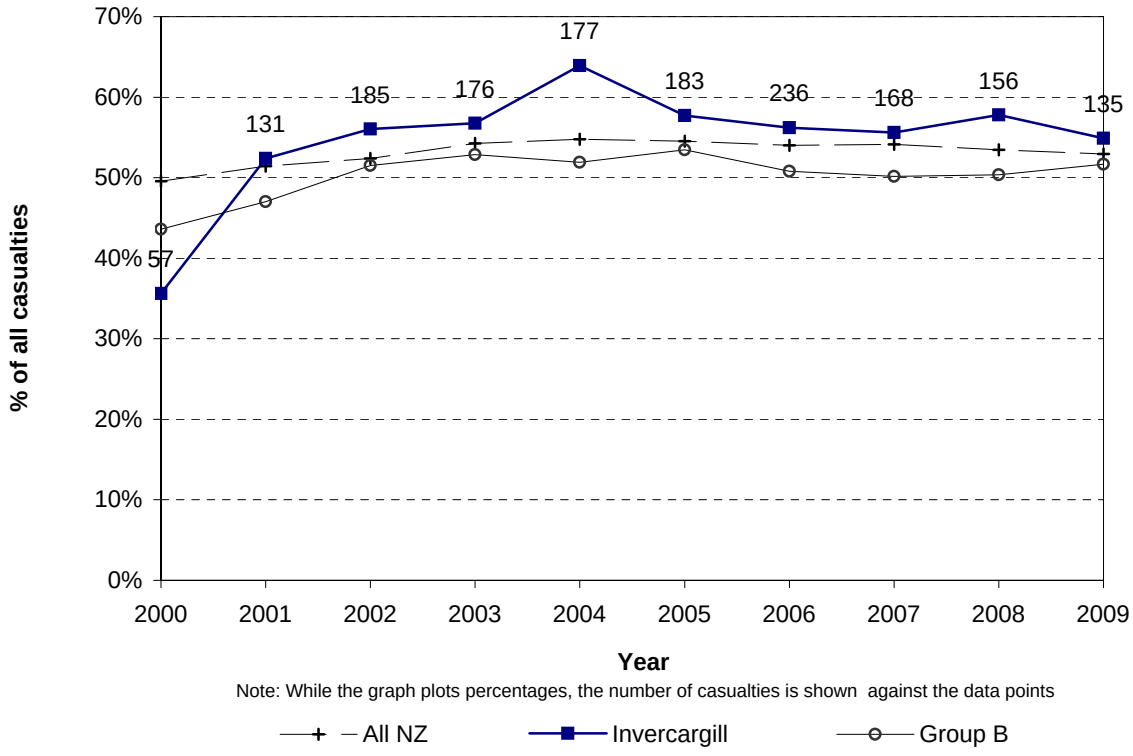
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The graph plots the percentage of Roaduser Casualties by age.

Figure 3.6 Female casualties by age
Invercargill City (2005-2009)



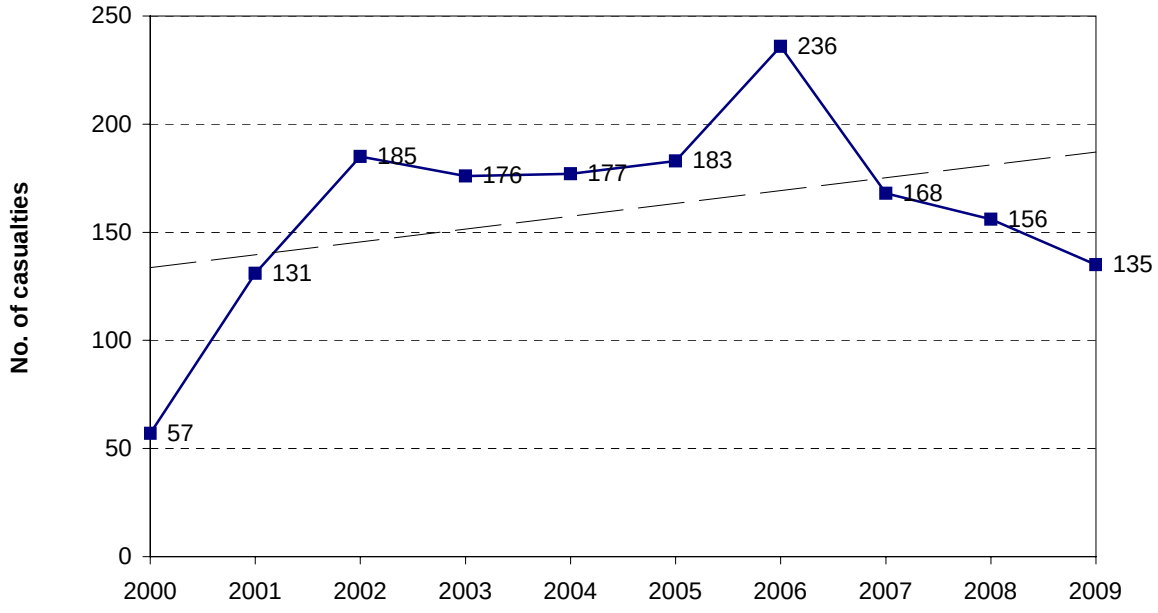
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The graph plots the percentage of Roaduser Casualties by age.

Figure 3.7 Car/van driver casualties
Invercargill City



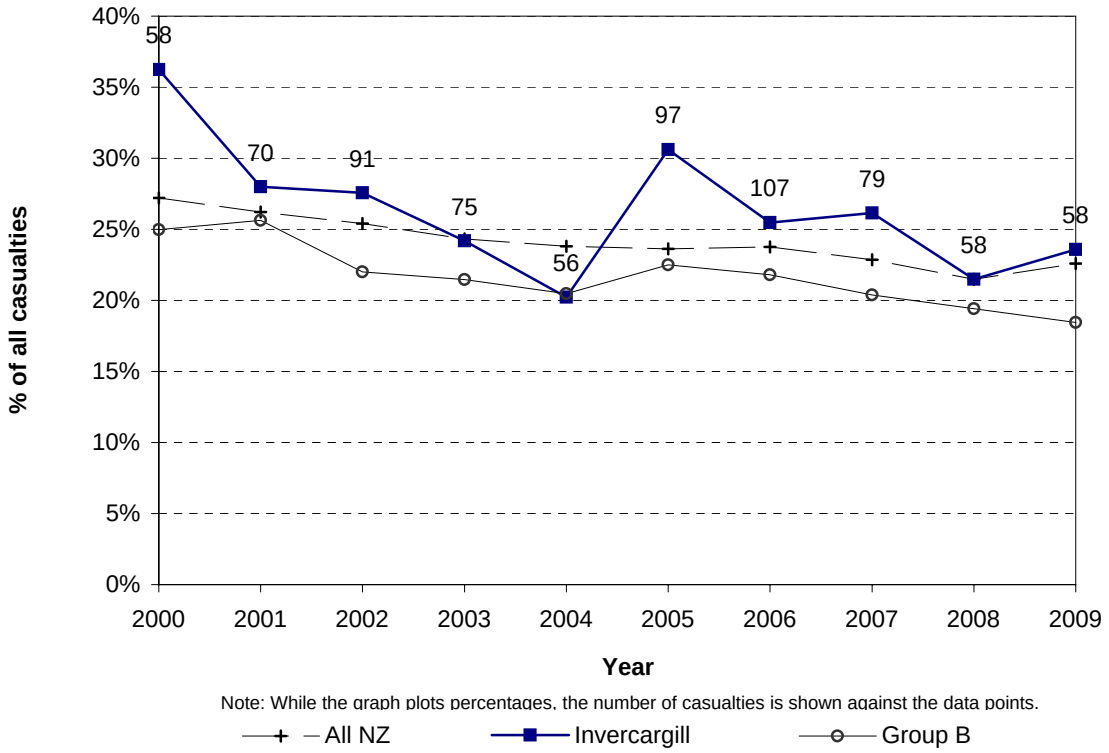
Note: While the graph plots percentages, the number of casualties is shown against the data points

Figure 3.8 Car/van driver casualties
Invercargill City



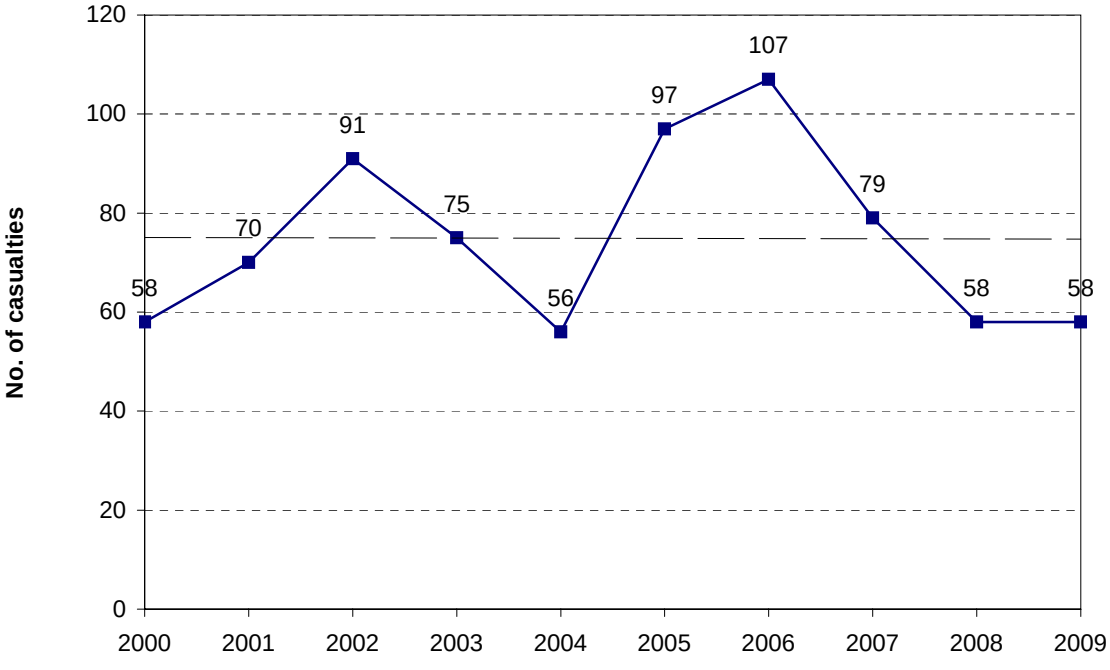
Note: Dotted line represents the ten year trend line

Figure 3.9 Car/van passenger casualties
Invercargill City



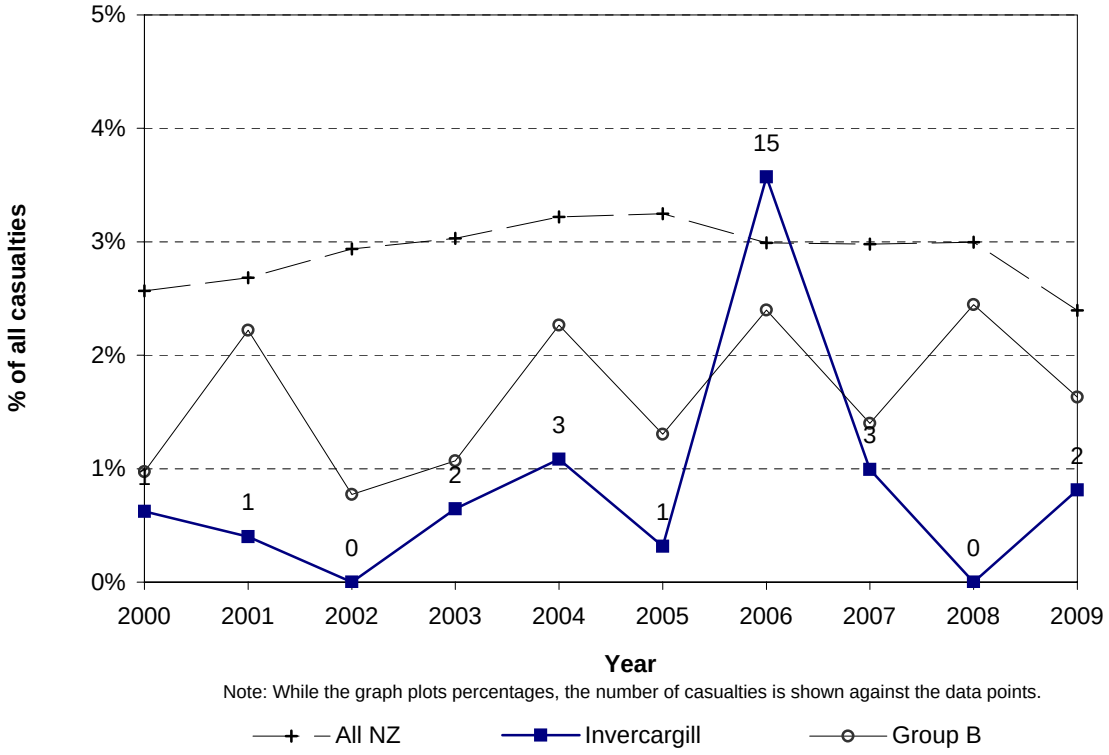
Note: While the graph plots percentages, the number of casualties is shown against the data points.

Figure 3.10 Car/van passenger casualties
Invercargill City



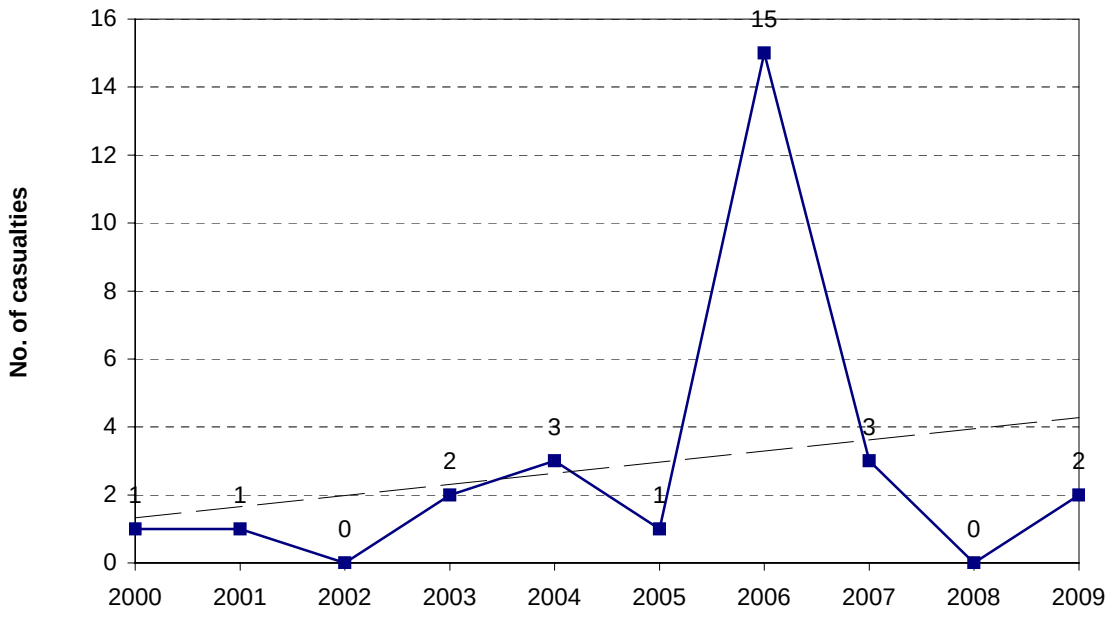
Note: Dotted line represents the ten year trend line

Figure 3.11 Heavy vehicle casualties
Invercargill City



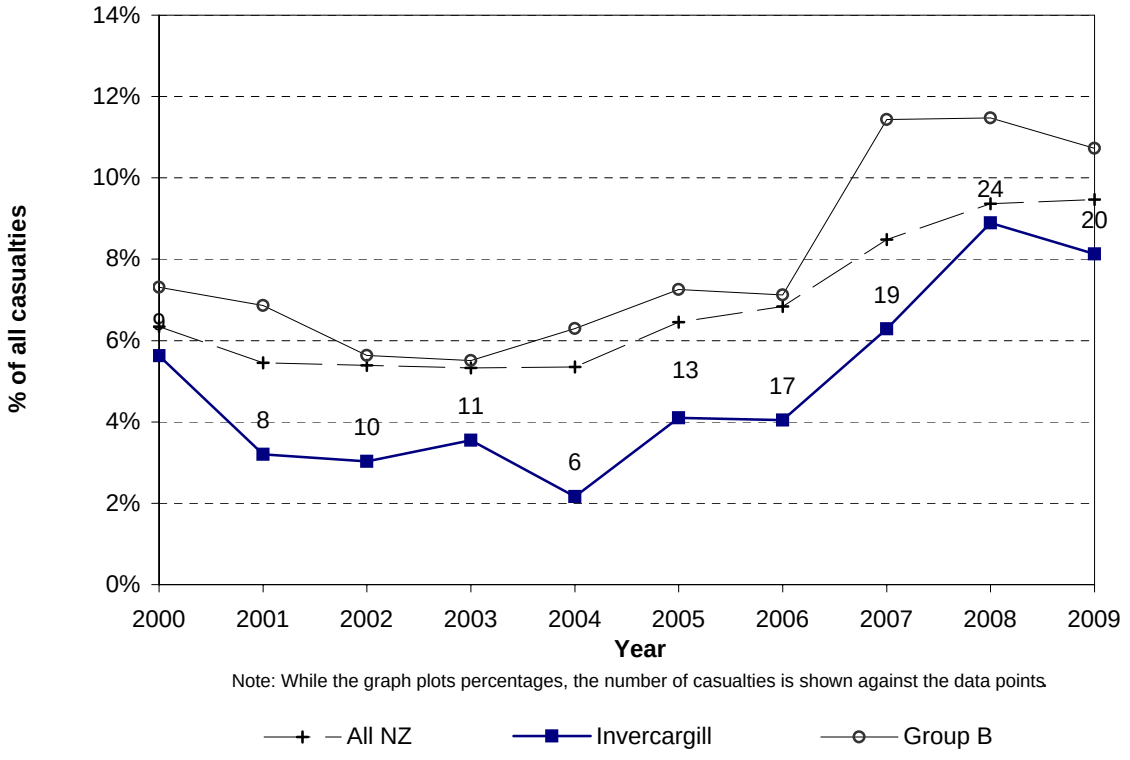
Note: While the graph plots percentages, the number of casualties is shown against the data points.

Figure 3.12 Heavy vehicle casualties
Invercargill City



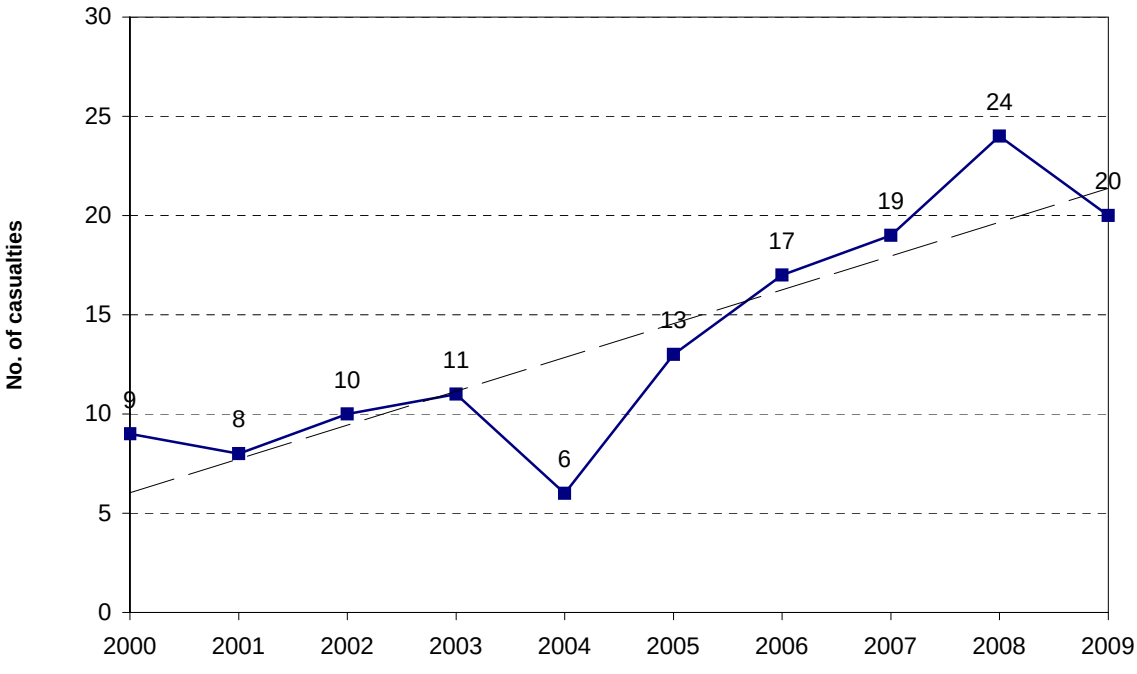
Note: Dotted line represents the ten year trend line

Figure 3.13 Motorcyclist casualties
Invercargill City



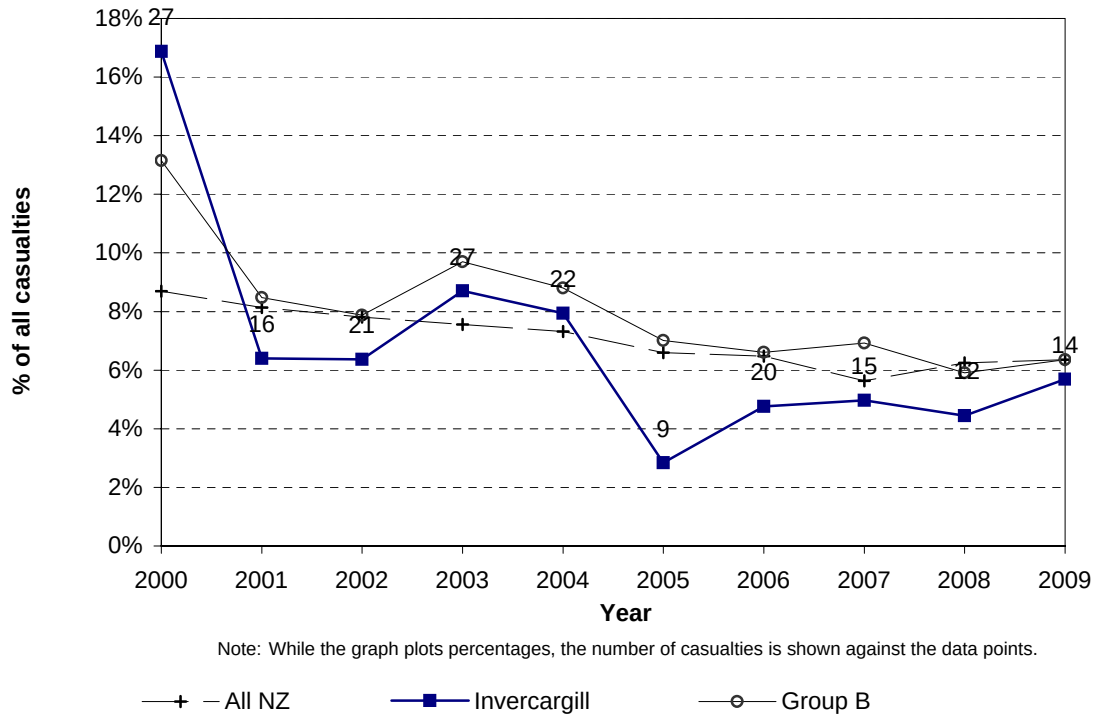
Note: While the graph plots percentages, the number of casualties is shown against the data points.

Figure 3.14 Motorcyclist casualties
Invercargill City



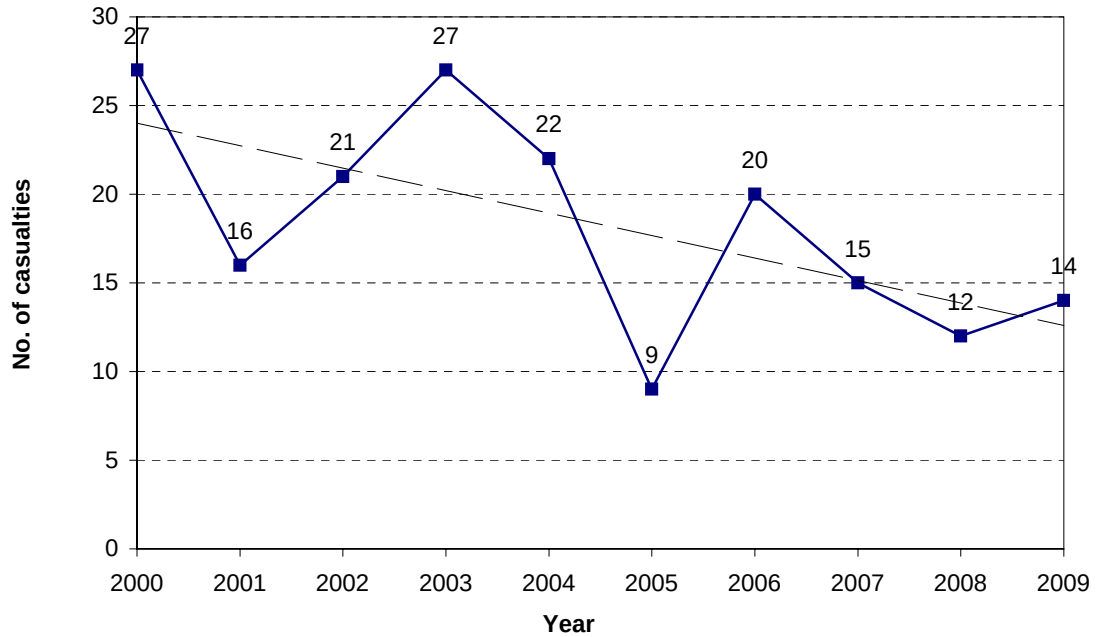
Note: Dotted line represents the ten year trend line

Figure 3.15 Pedestrian casualties Invercargill City



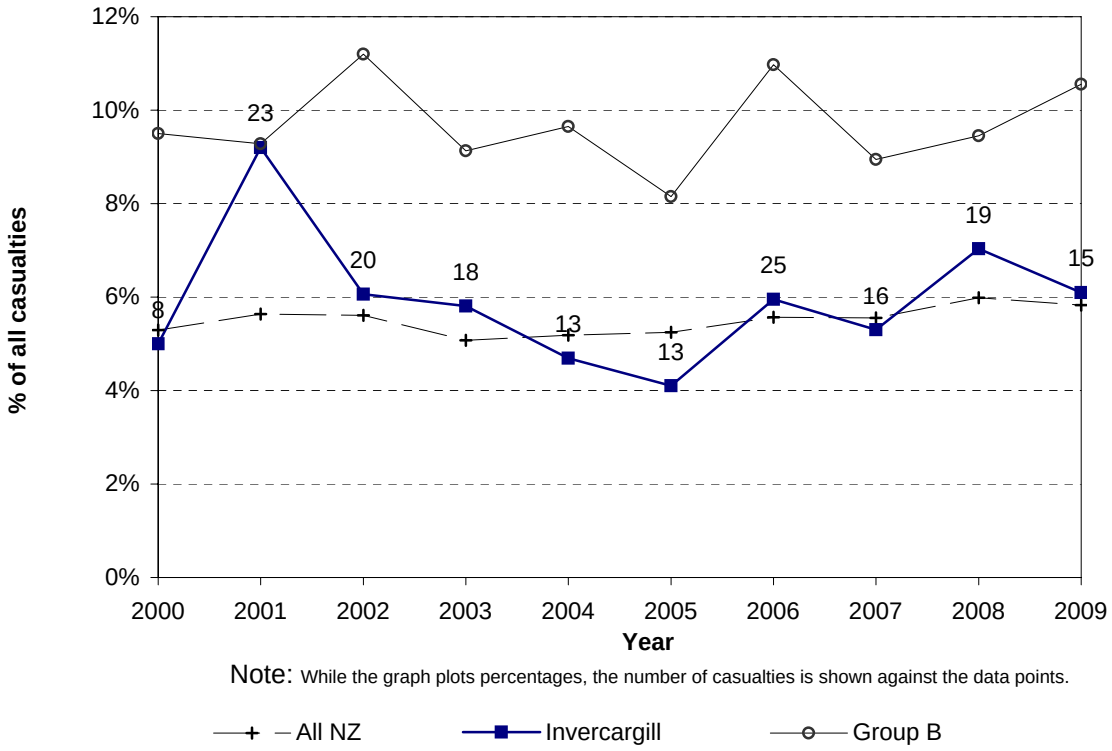
Note: While the graph plots percentages, the number of casualties is shown against the data points.

Figure 3.16 Pedestrian casualties Invercargill City



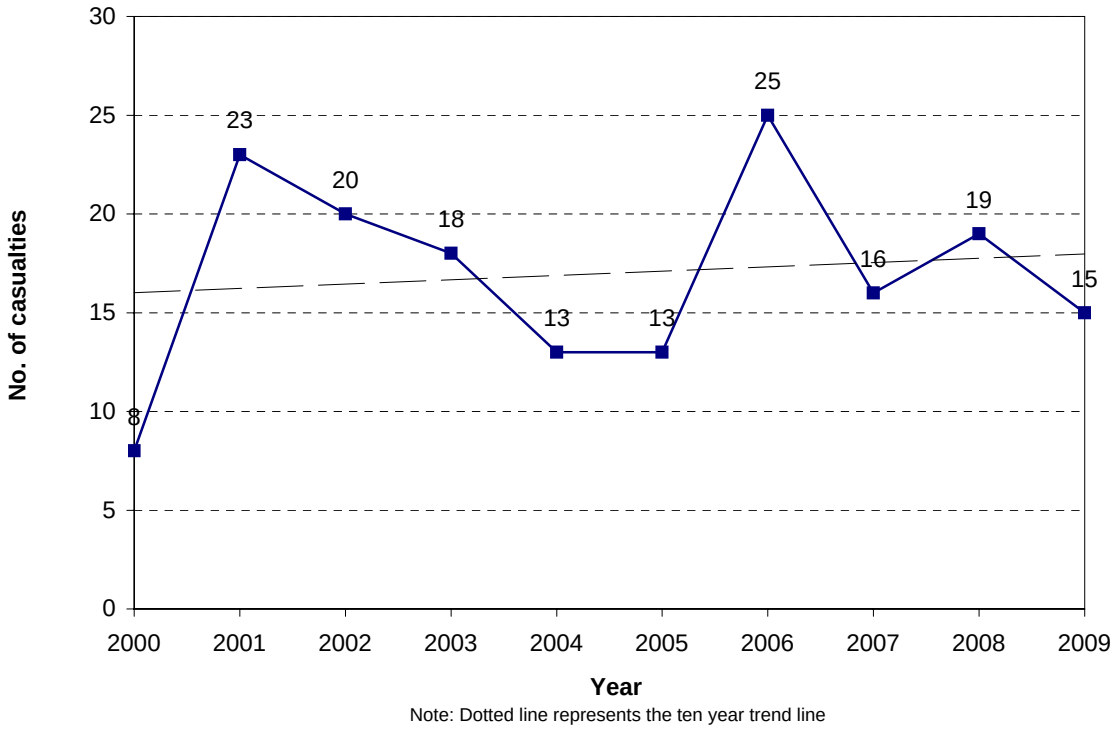
Note: Dottedline represents the ten year trend line

Figure 3.17 Cyclist casualties
Invercargill City



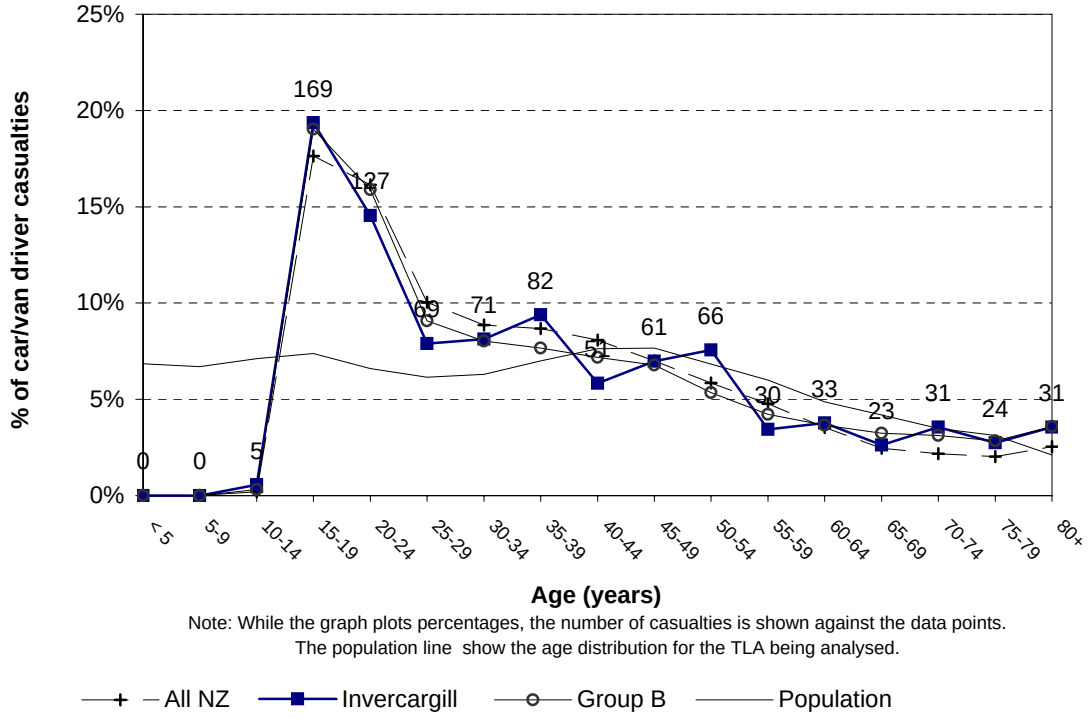
Note: While the graph plots percentages, the number of casualties is shown against the data points.

Figure 3.18 Cyclist casualties
Invercargill City



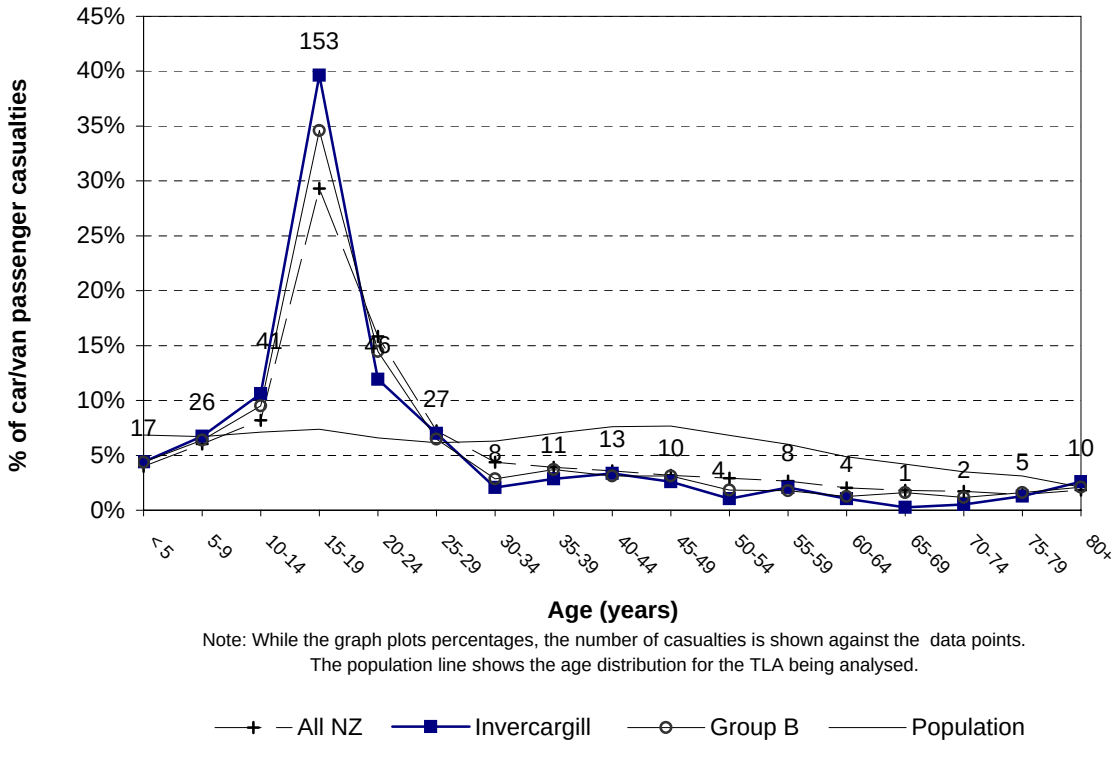
Note: Dotted line represents the ten year trend line

Figure 3.19 Car/van driver casualty age
Invercargill City (2005-2009)



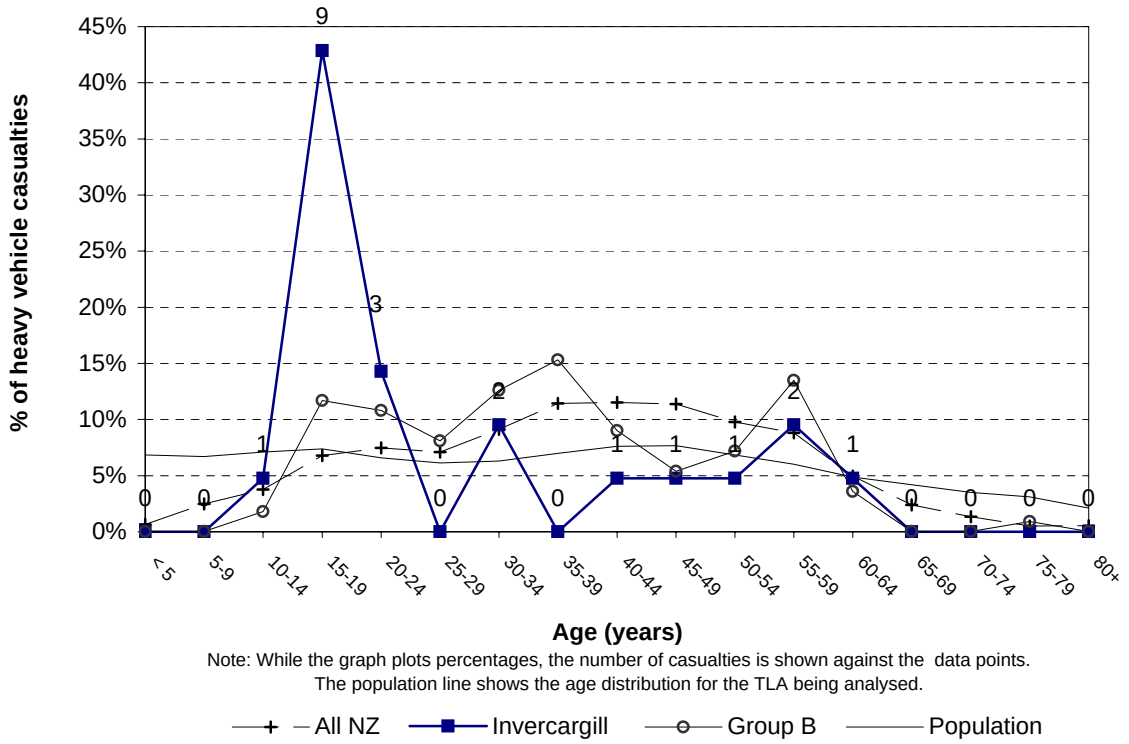
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The population line show the age distribution for the TLA being analysed.

Figure 3.20 Car/van passenger casualty age
Invercargill City (2005-2009)



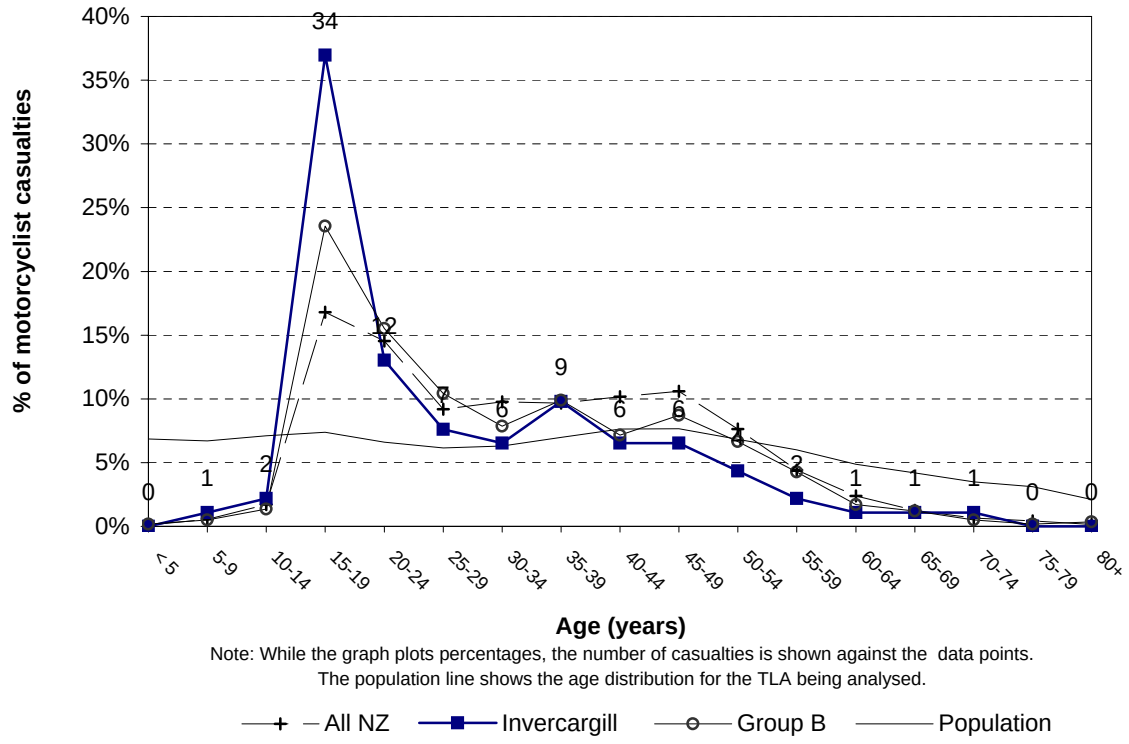
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The population line shows the age distribution for the TLA being analysed.

Figure 3.21 Heavy vehicle casualty age
Invercargill City (2005-2009)



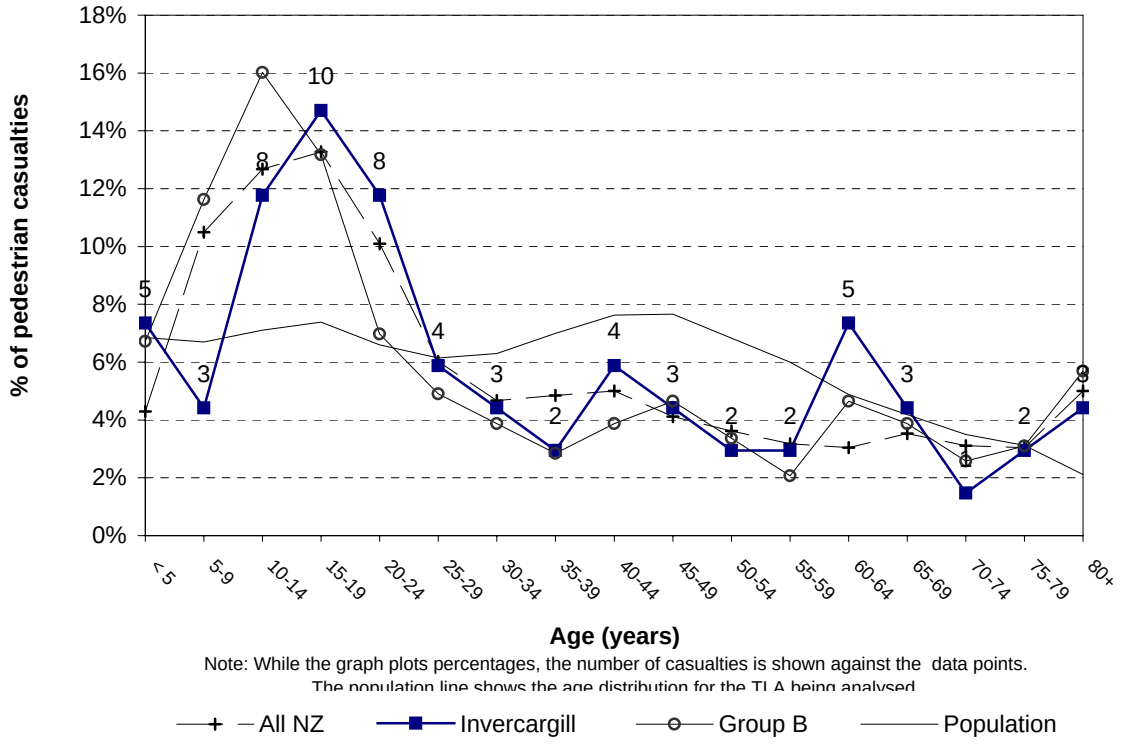
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The population line shows the age distribution for the TLA being analysed.

Figure 3.22 Motorcyclist casualty age
Invercargill City (2005-2009)



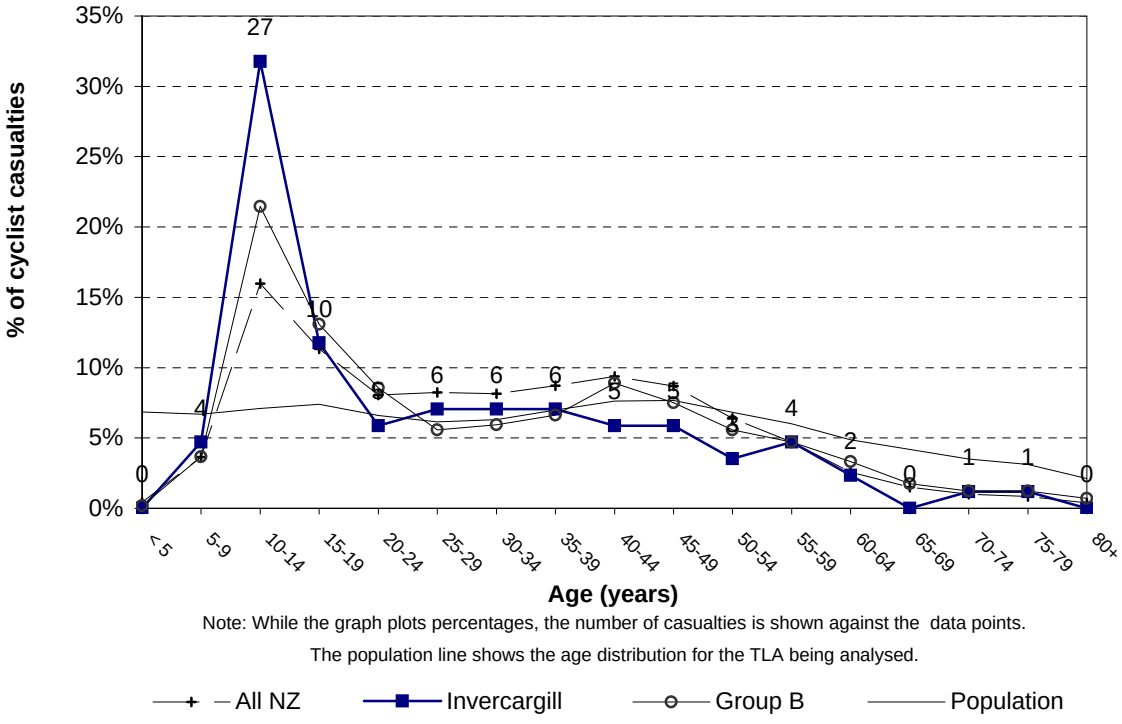
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The population line shows the age distribution for the TLA being analysed.

Figure 3.23 Pedestrian casualty age
Invercargill City (2005-2009)



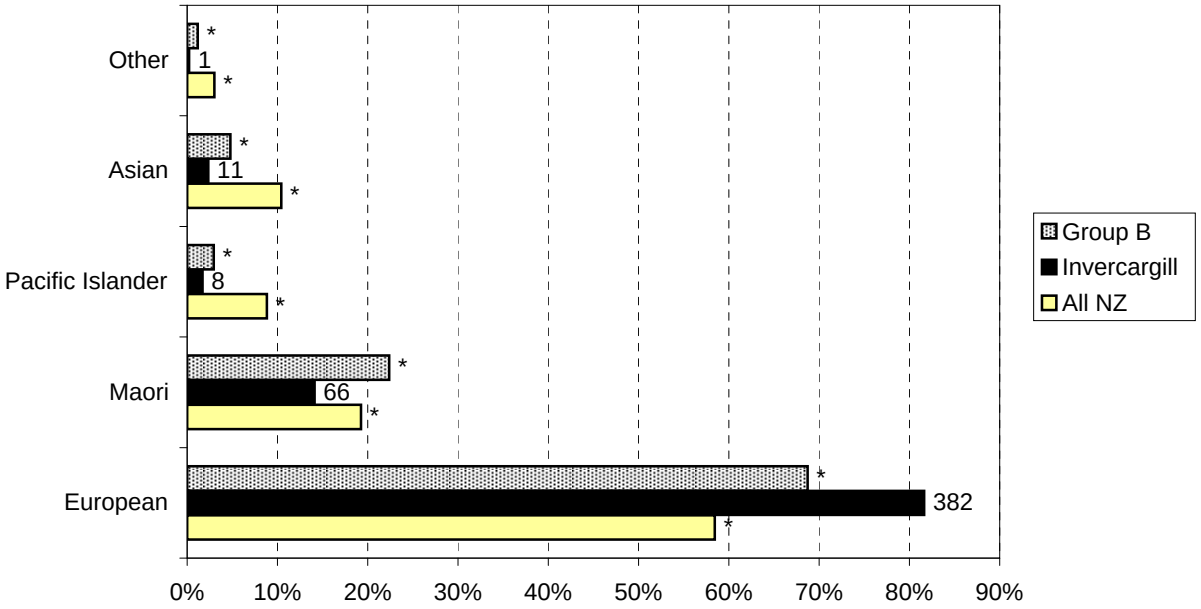
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The population line shows the age distribution for the TLA being analysed

Figure 3.24 Cyclist casualty age
Invercargill City (2005-2009)



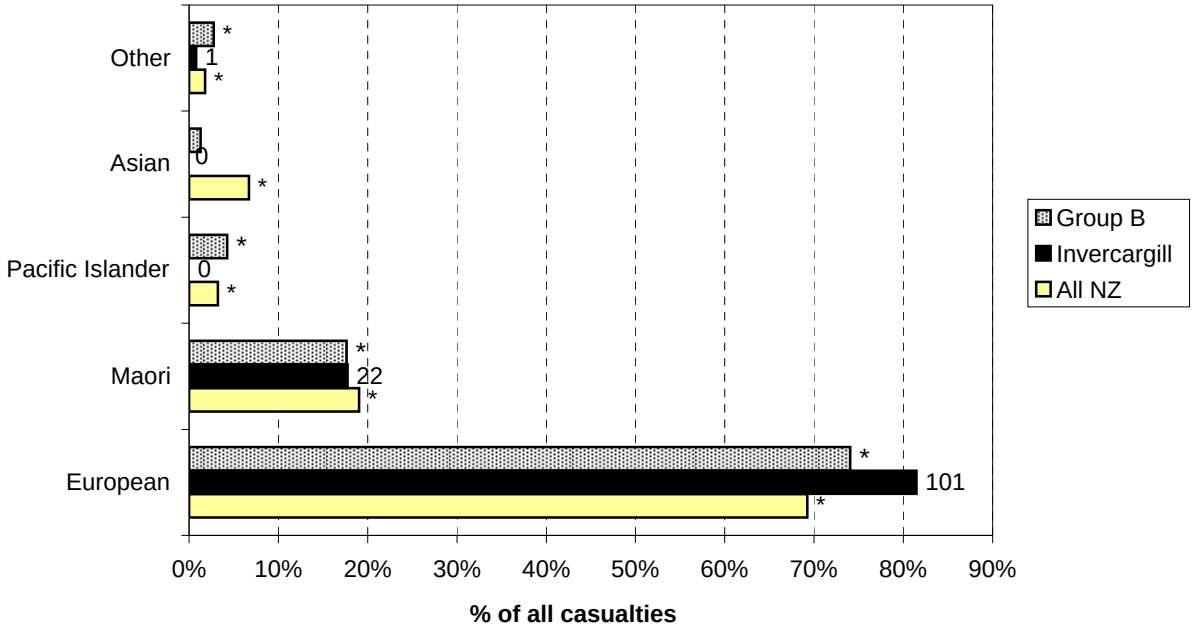
Note: While the graph plots percentages, the number of casualties is shown against the data points.
The population line shows the age distribution for the TLA being analysed.

Figure 3.25 Casualty ethnicity - urban Invercargill City (2005-2009)



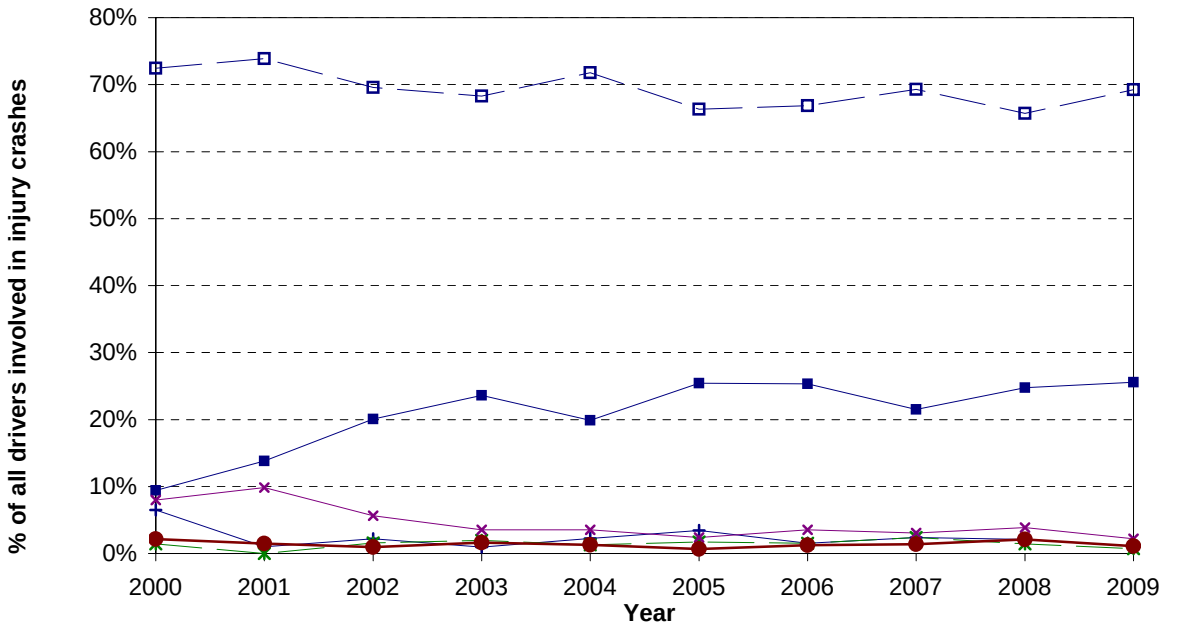
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 3.26 Casualty ethnicity - rural Invercargill City (2005-2009)



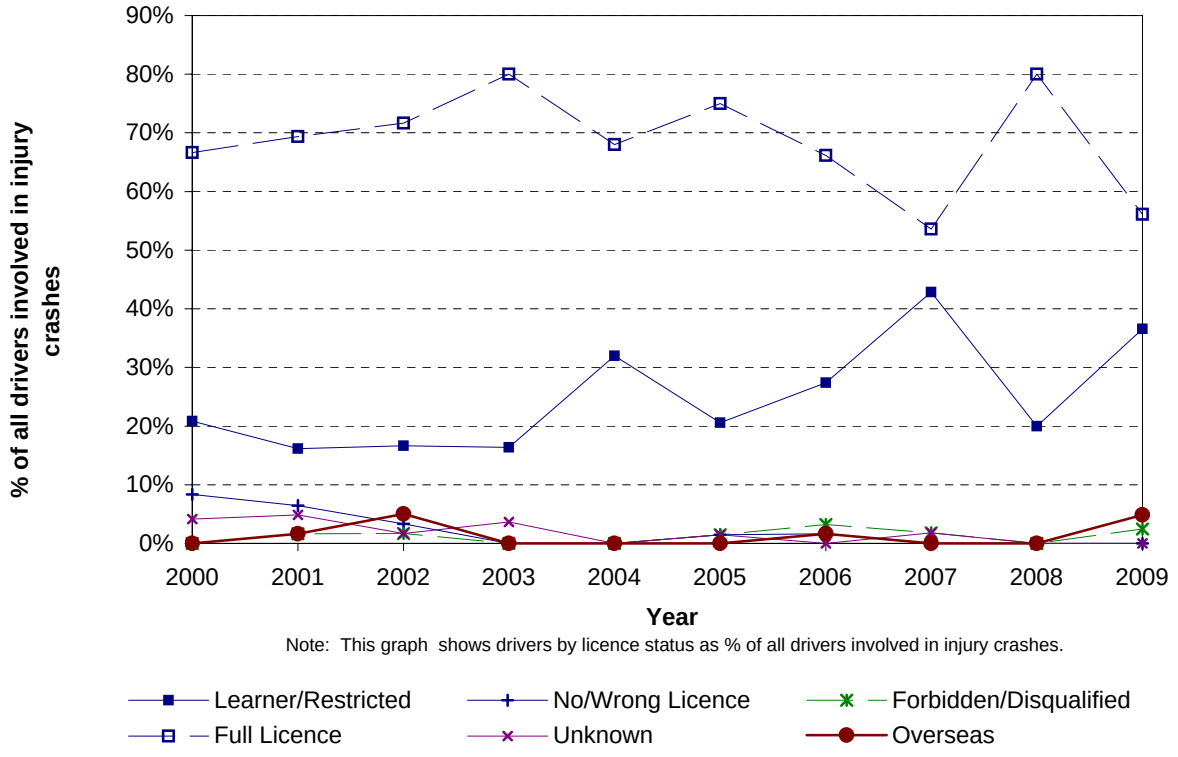
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 3.27 Licence status - urban Invercargill City



Note: This graph shows drivers by licence status as % of all drivers involved in injury crashes.

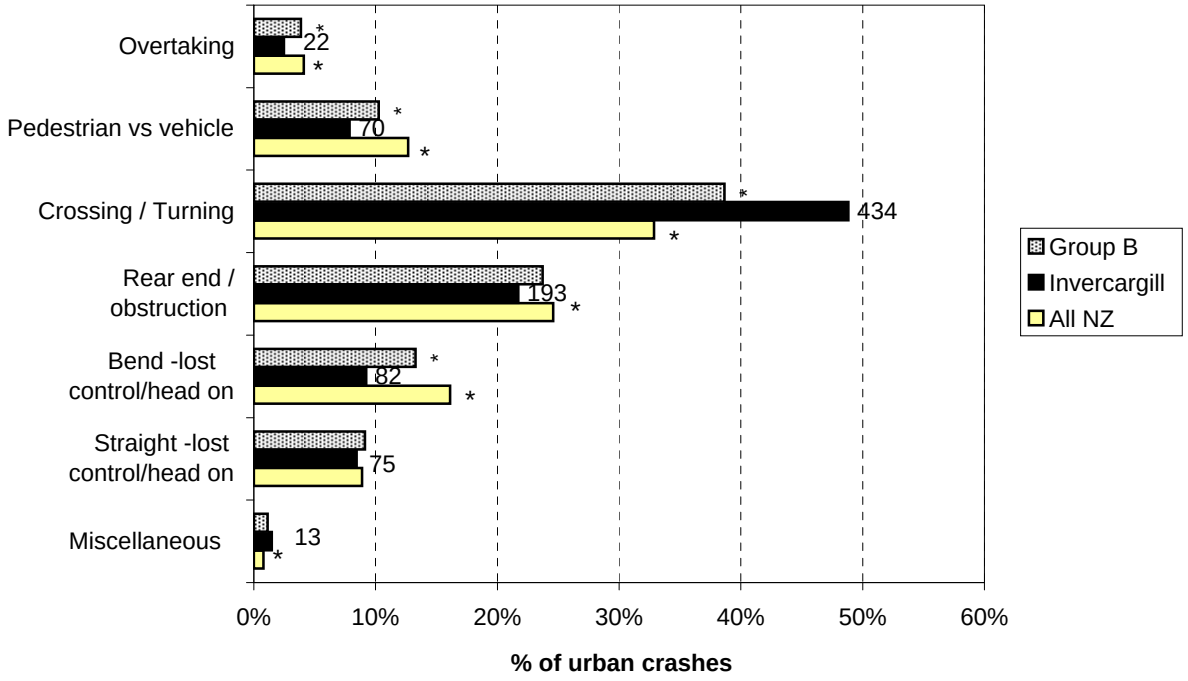
Figure 3.28 Licence status - rural Invercargill City



Note: This graph shows drivers by licence status as % of all drivers involved in injury crashes.

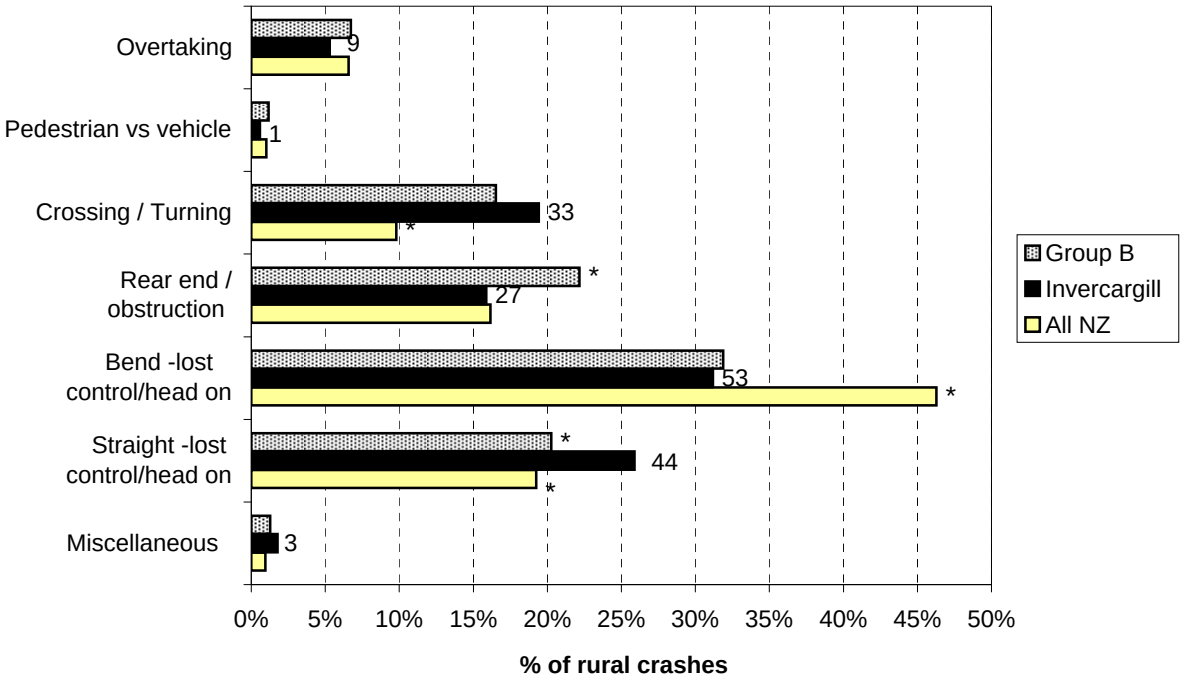
Crash Type Statistics

Figure 4.1 Crash movement type - urban Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 4.2 Crash movement type - rural Invercargill City roads (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 4.3 Crash movement type - trends
Invercargill City - urban roads

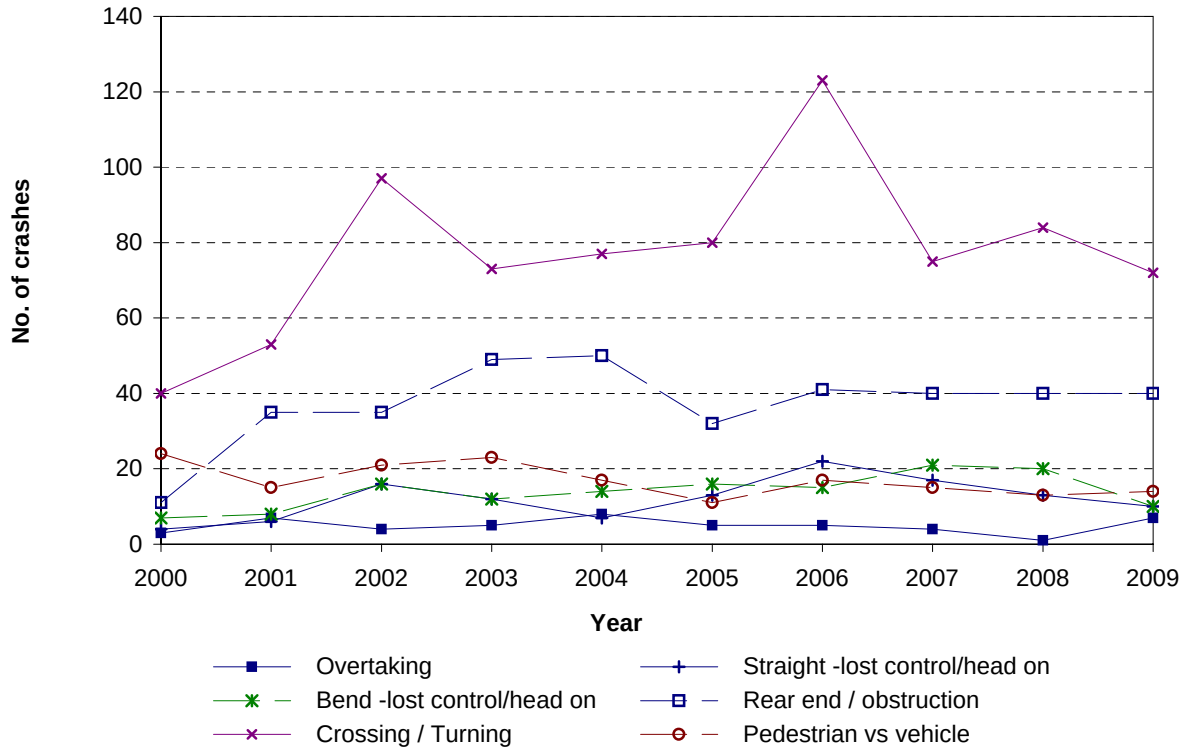


Figure 4.4 Crash movement type - trends
Invercargill City - rural roads

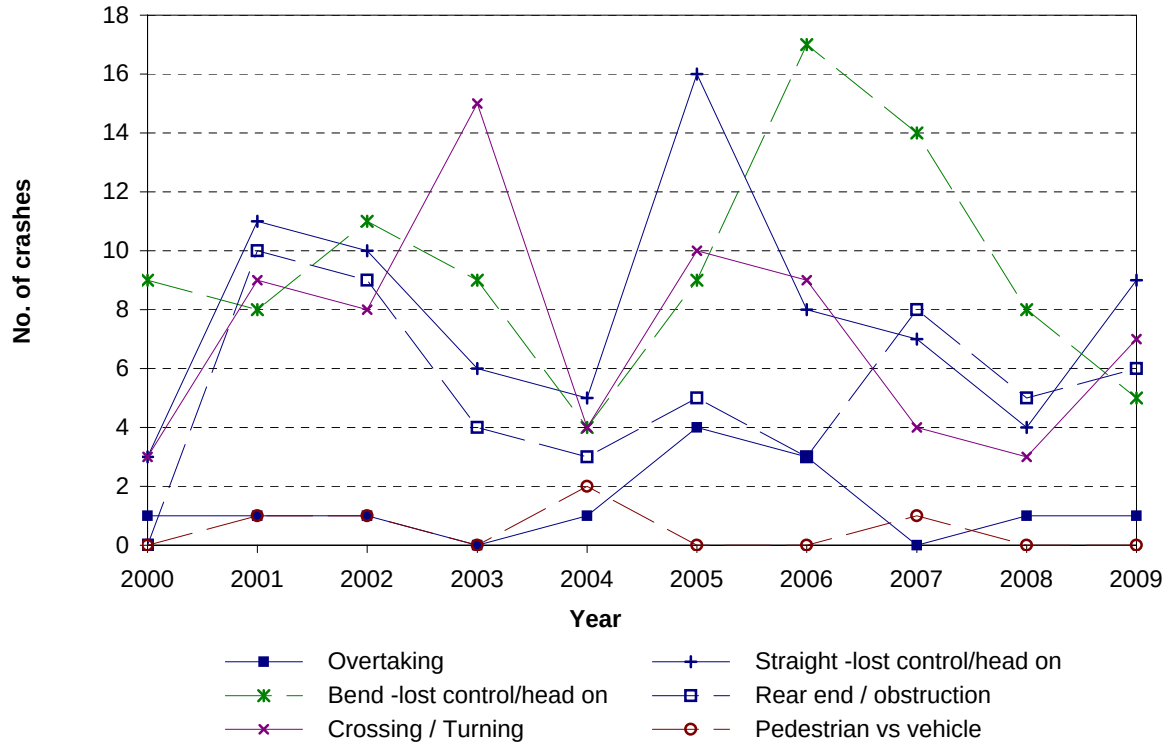
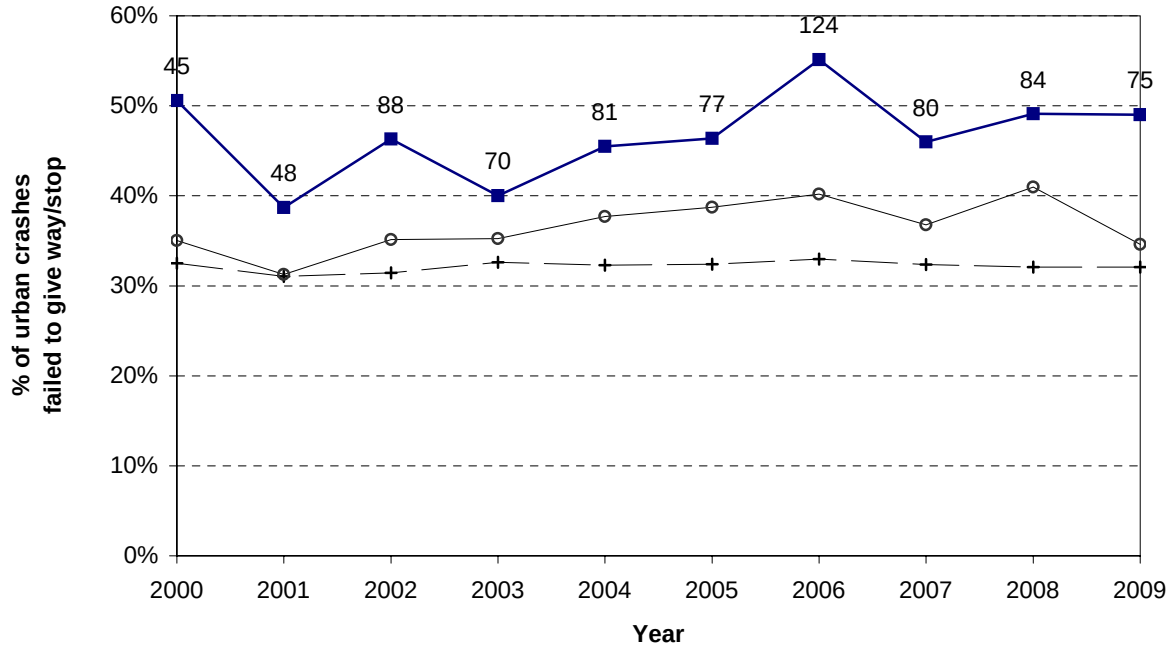
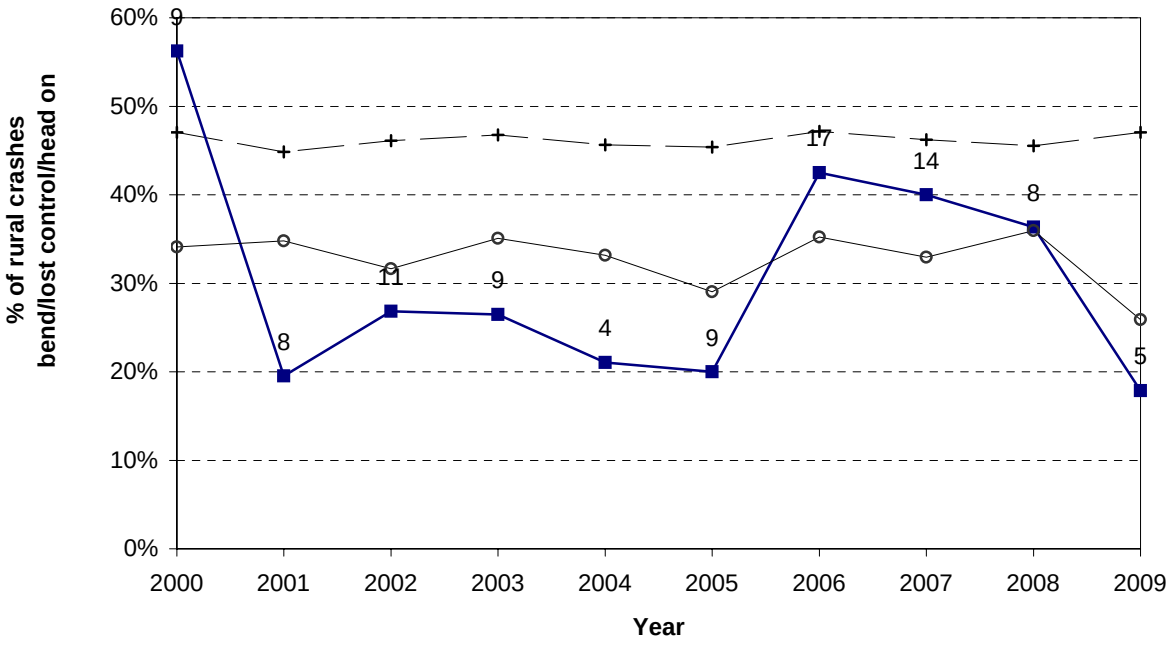


Figure 4.5 Failed to give way / stop
Invercargill City - urban roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

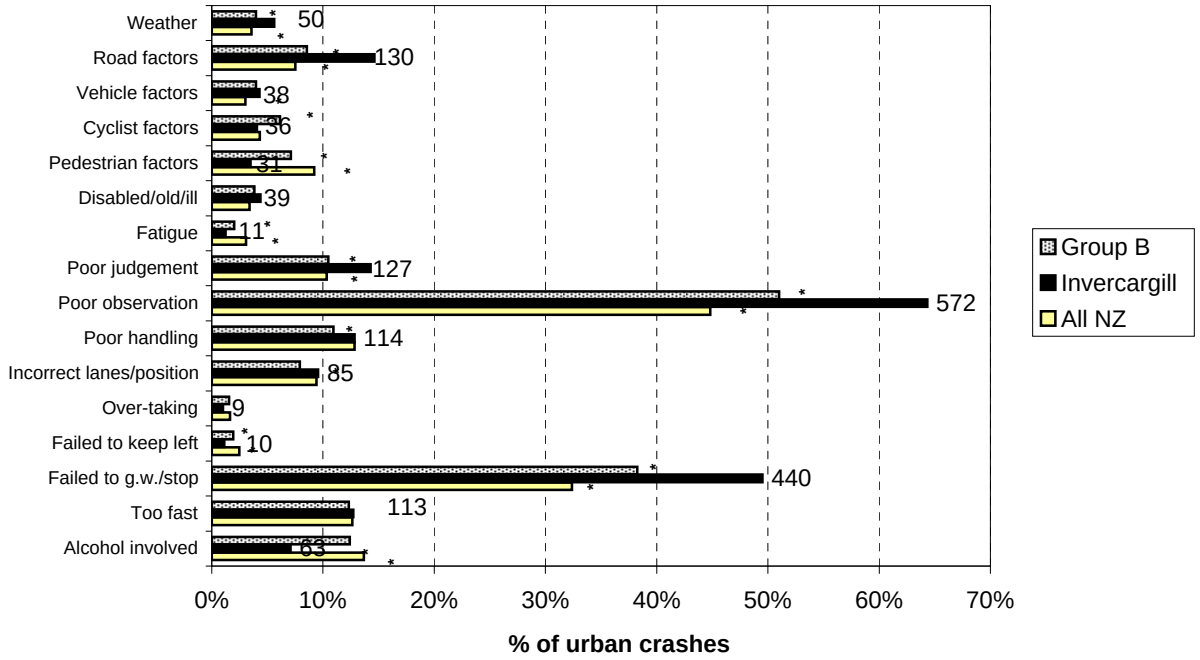
Figure 4.6 Bend - lost control / head - on
Invercargill City - rural roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

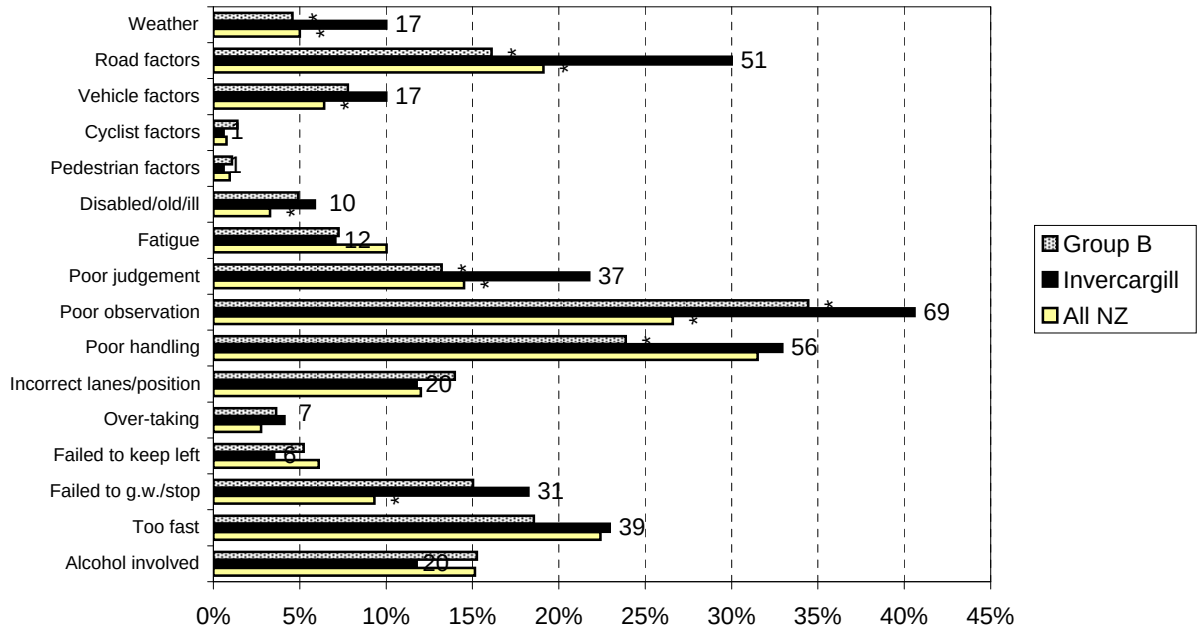
Crash Factor Statistics

Figure 5.1 Contributing factors - urban Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 5.2 Contributing factors - rural Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 5.3 Contributing factor trends
Invercargill City - urban roads

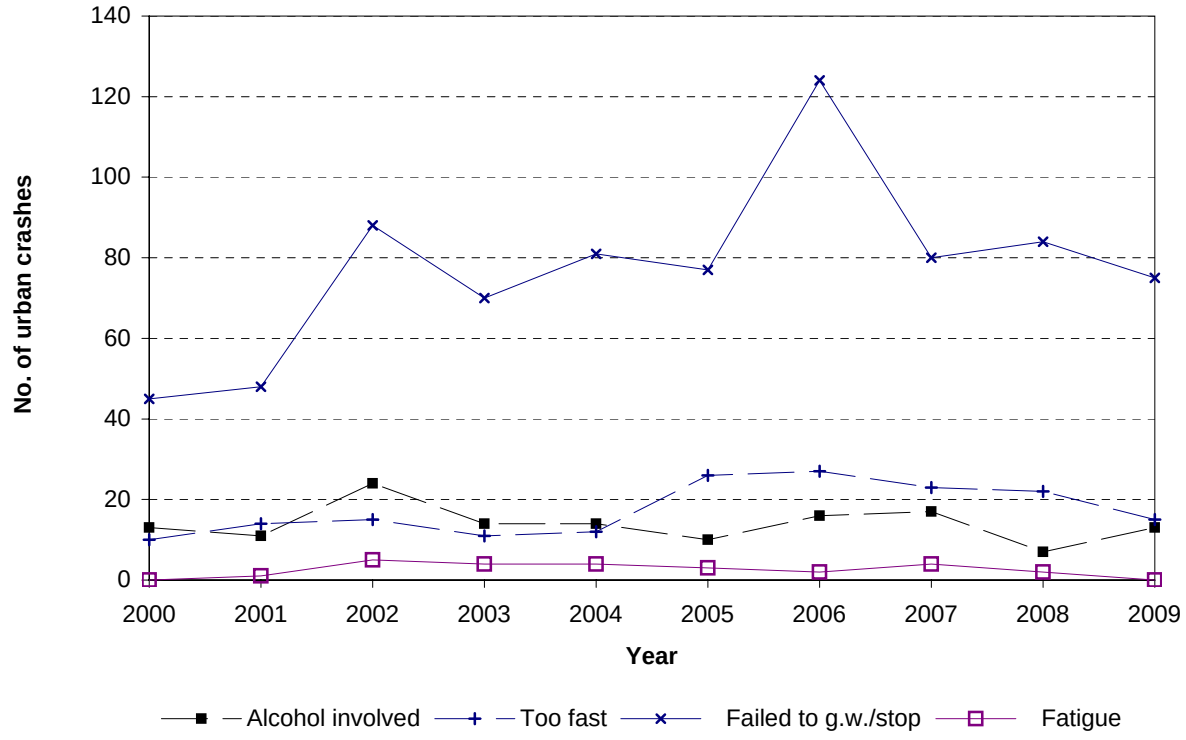


Figure 5.4 Contributing factor trends
Invercargill City - urban roads

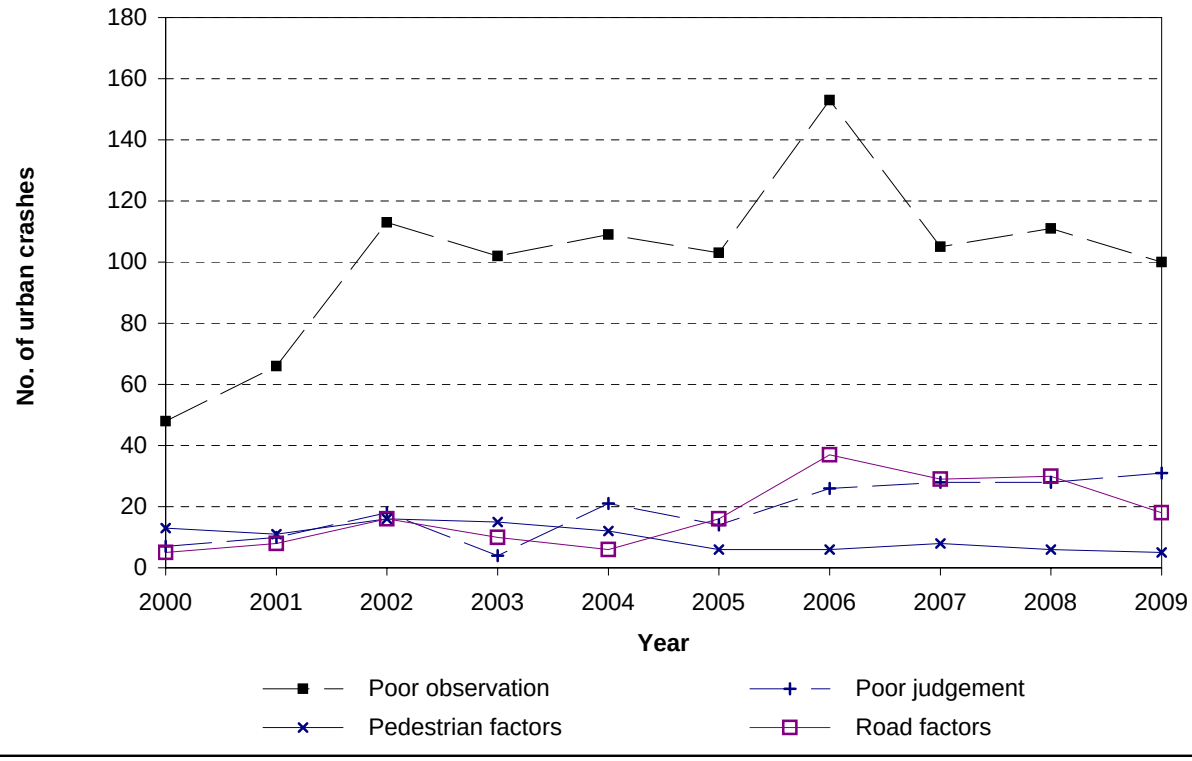


Figure 5.5 Contributing factor trends
Invercargill City - urban roads

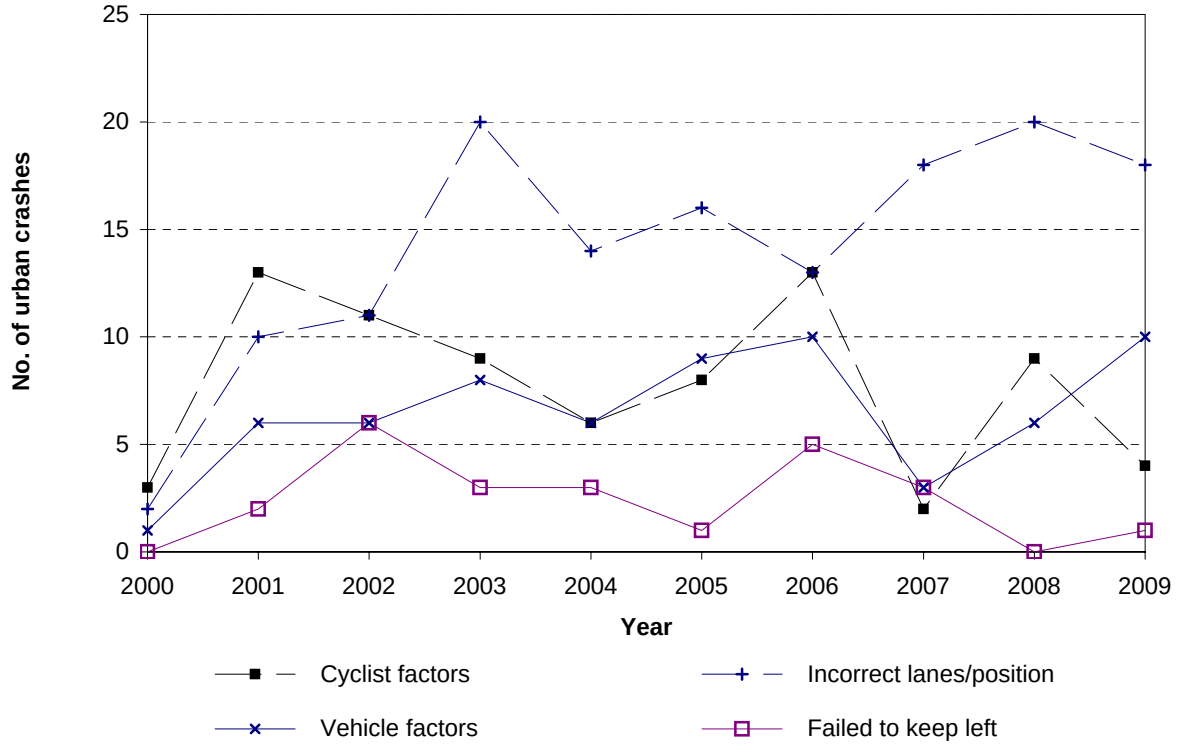


Figure 5.6 Contributing factor trends
Invercargill City - urban roads

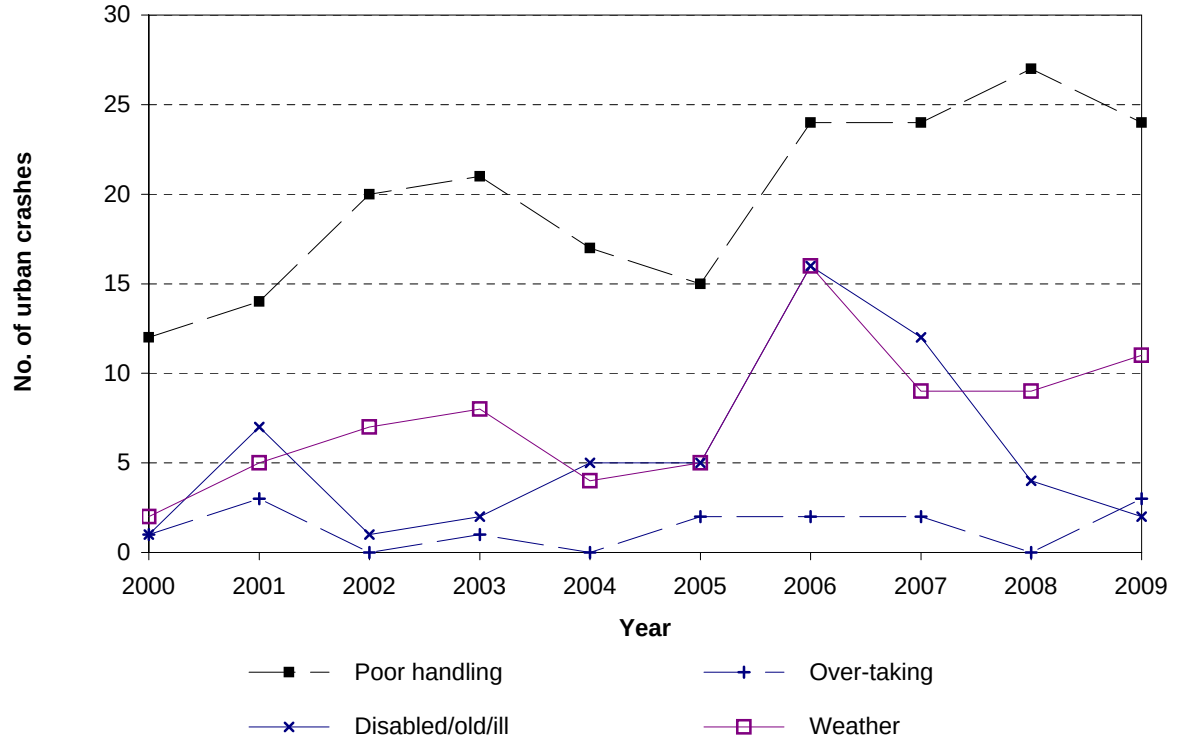
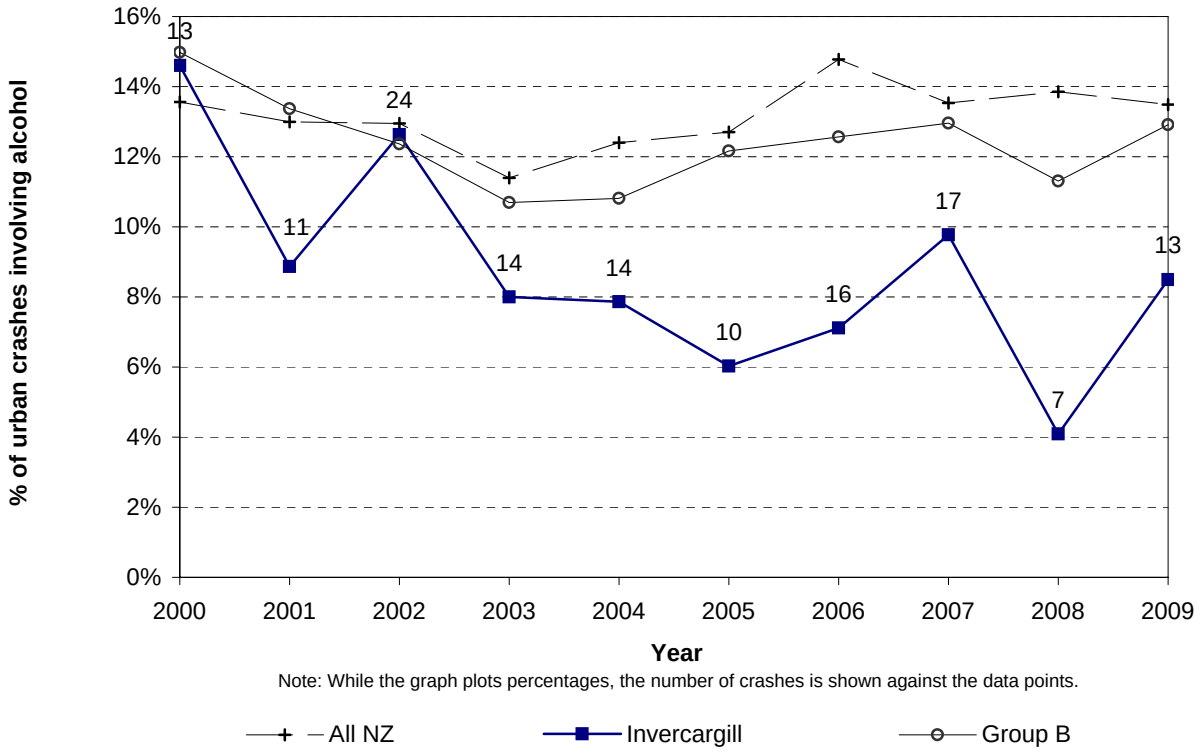
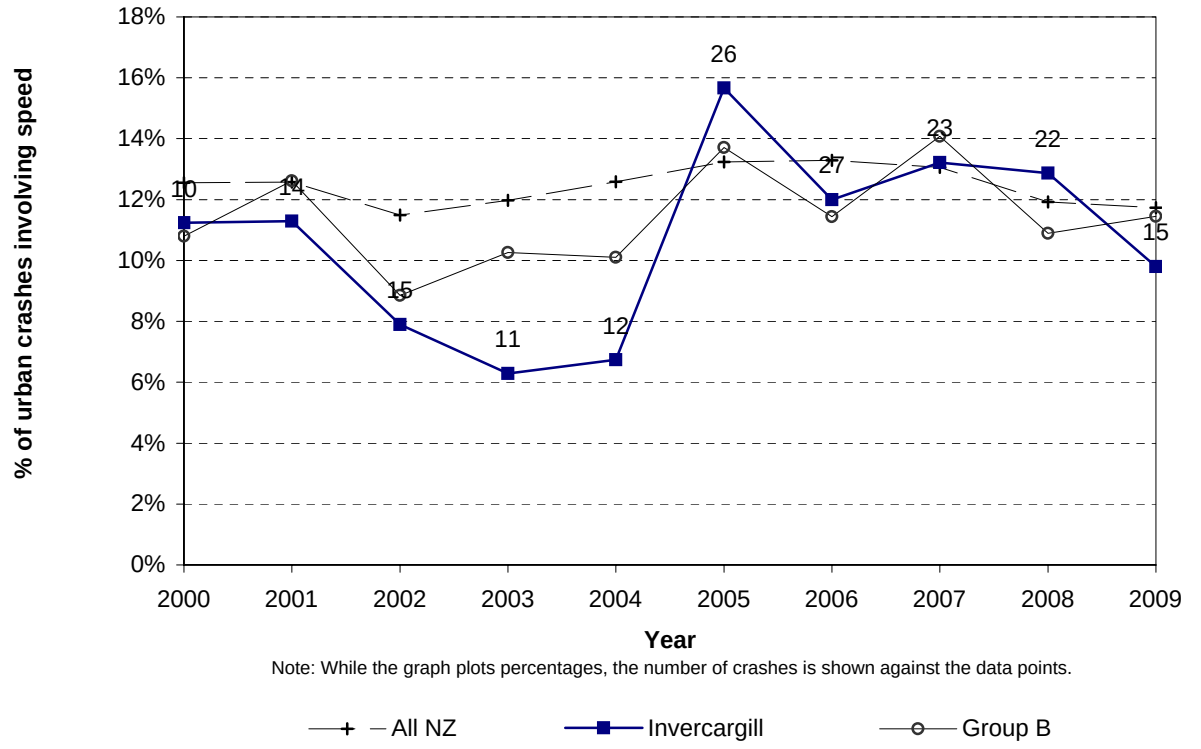


Figure 5.7 Alcohol involved trend
Invercargill City - urban roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 5.8 Speed involved trend
Invercargill City - urban roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 5.9 Contributing factor trends
Invercargill City - rural roads

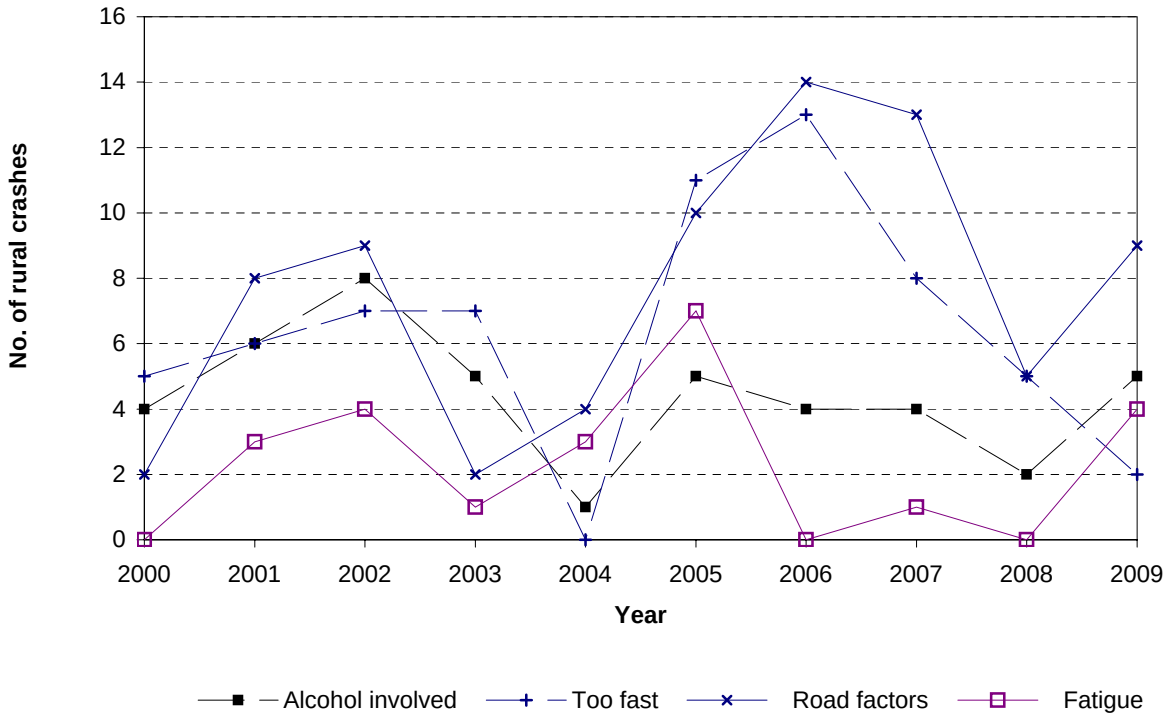


Figure 5.10 Contributing factor trends
Invercargill City - rural roads

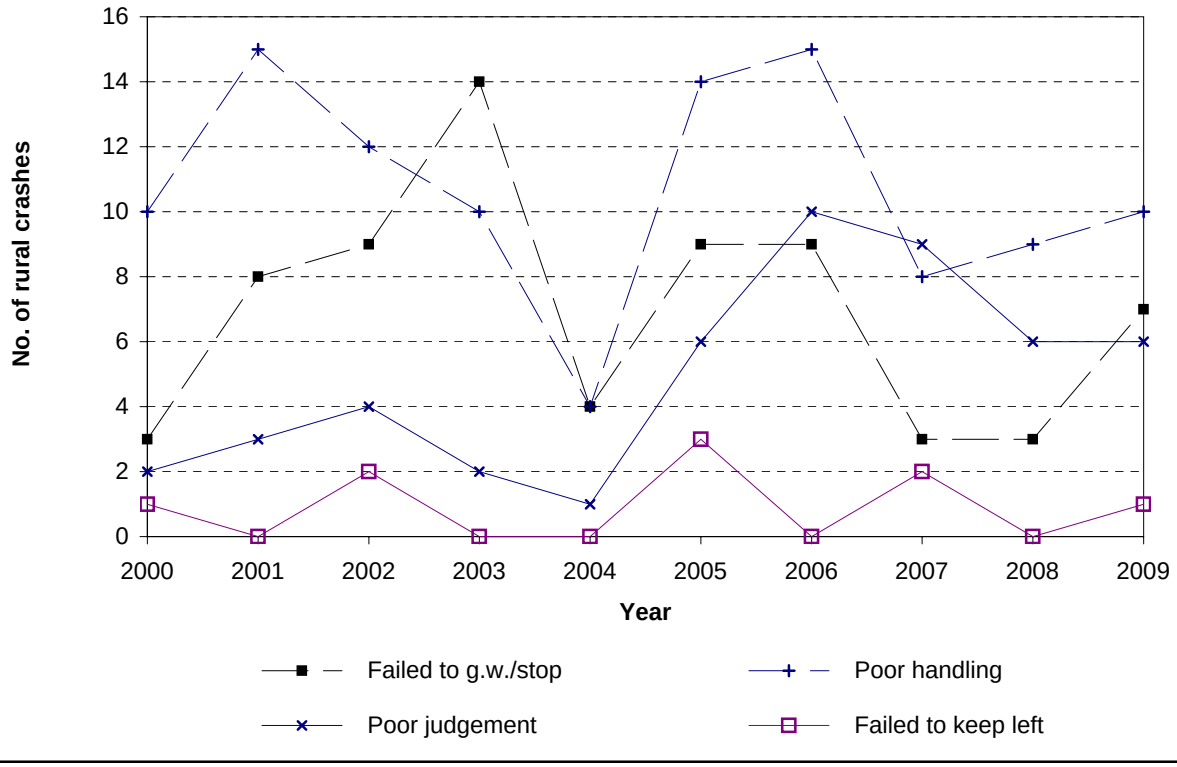


Figure 5.11 Contributing factor trends
Invercargill City - rural roads

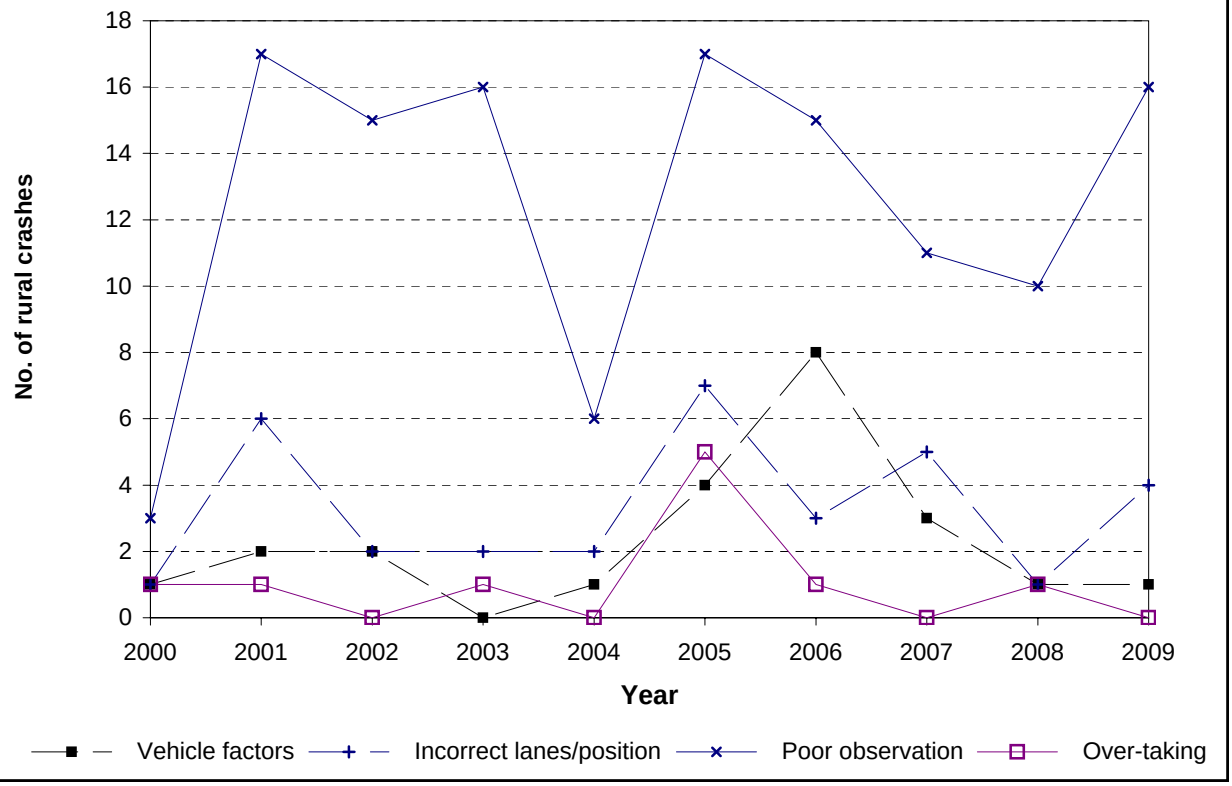


Figure 5.12 Contributing factor trends
Invercargill City - rural roads

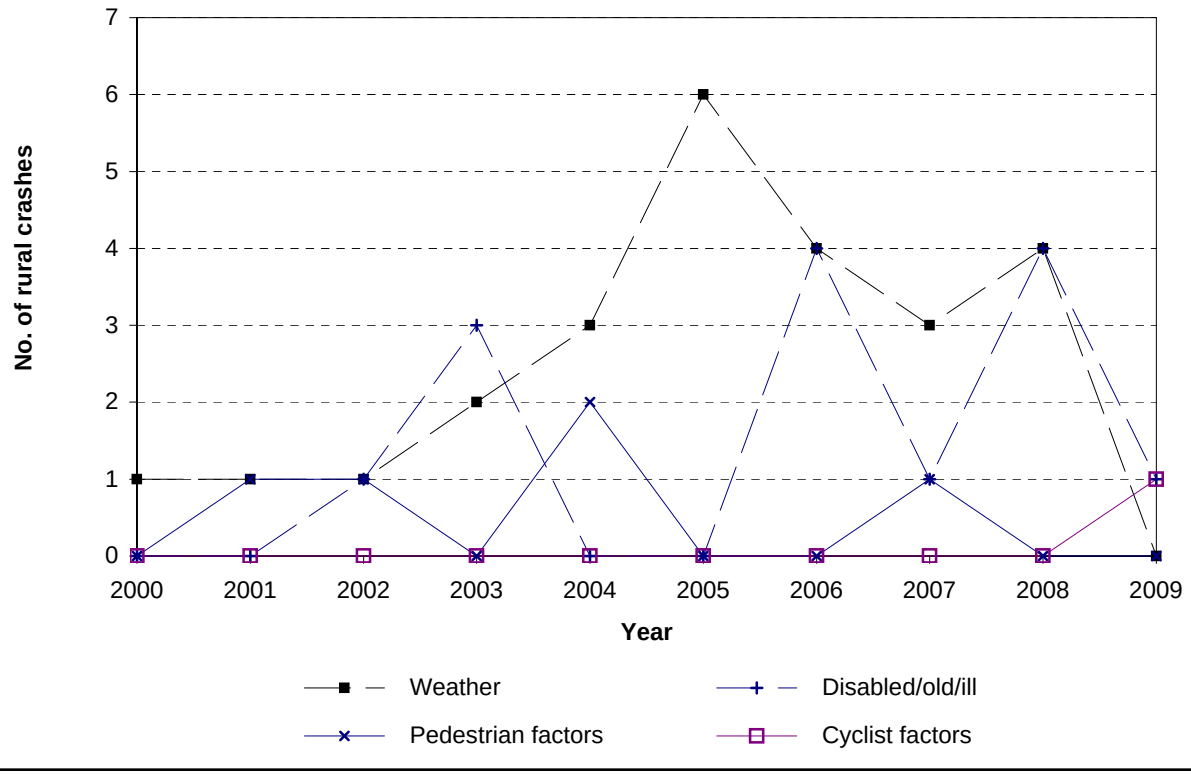
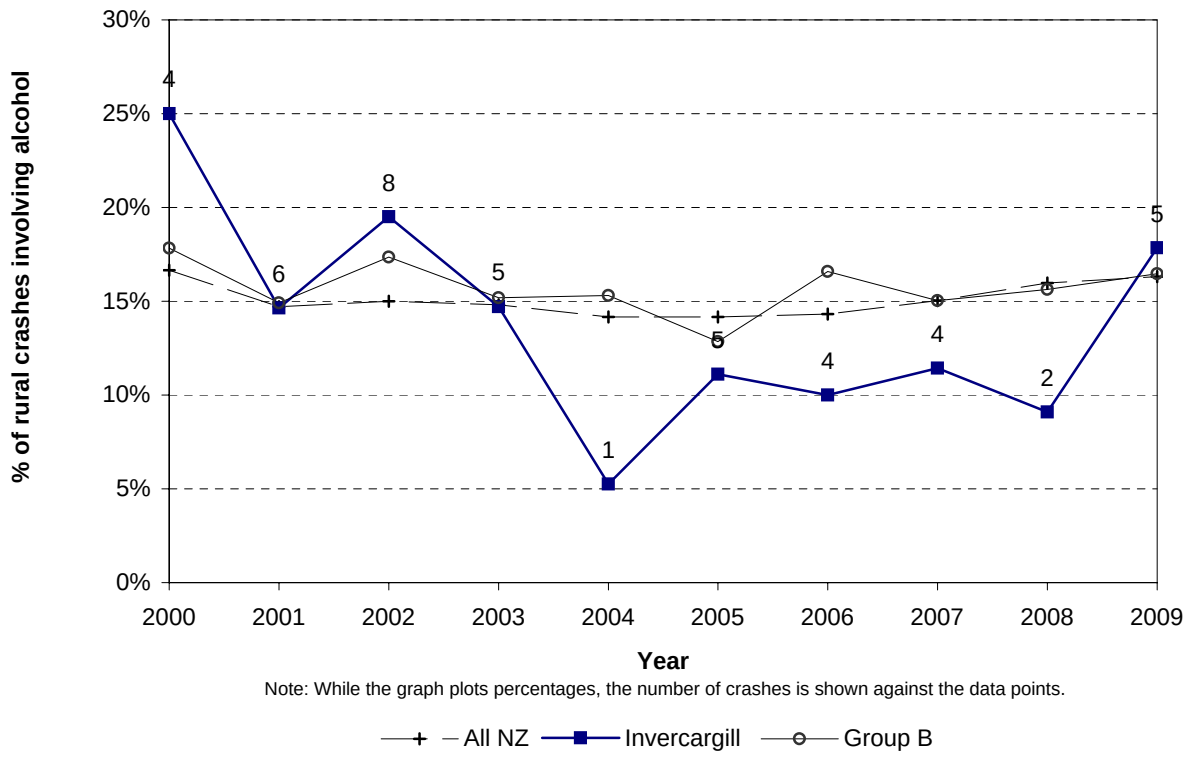
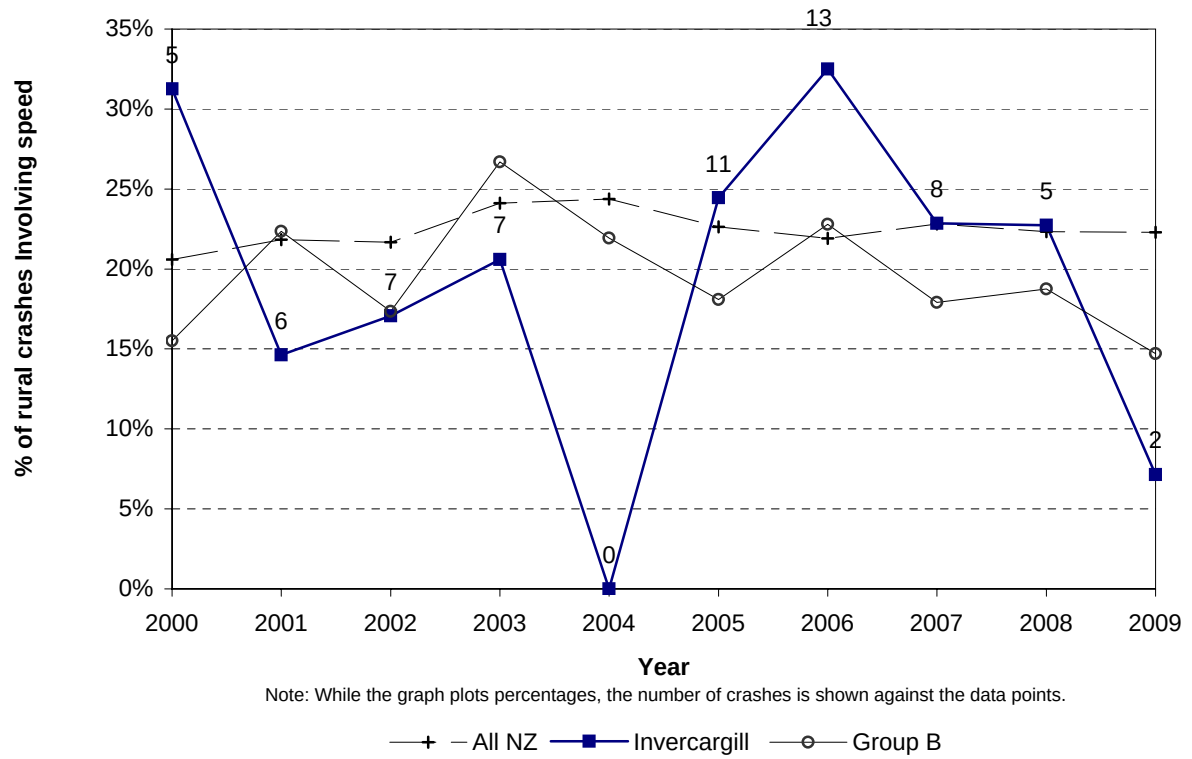


Figure 5.13 Alcohol involved trend
Invercargill City - rural roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

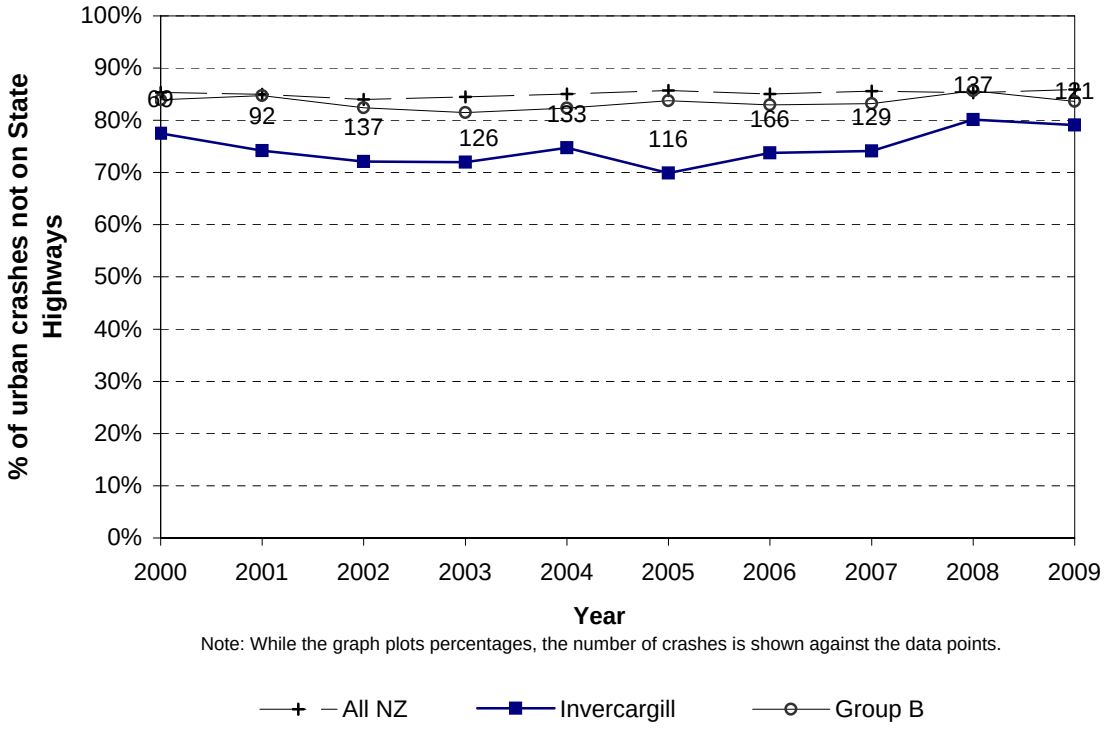
Figure 5.14 Speed involved trend
Invercargill City - rural roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

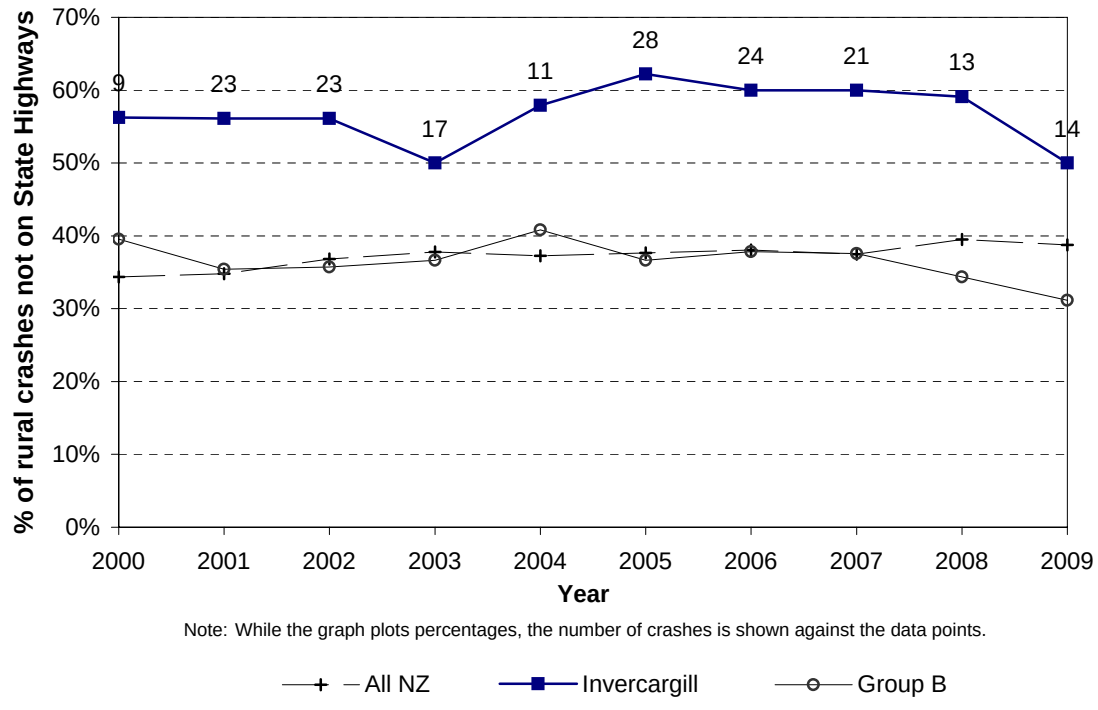
Environmental Statistics

Figure 6.1 Crashes not on state highways
Invercargill City - urban roads



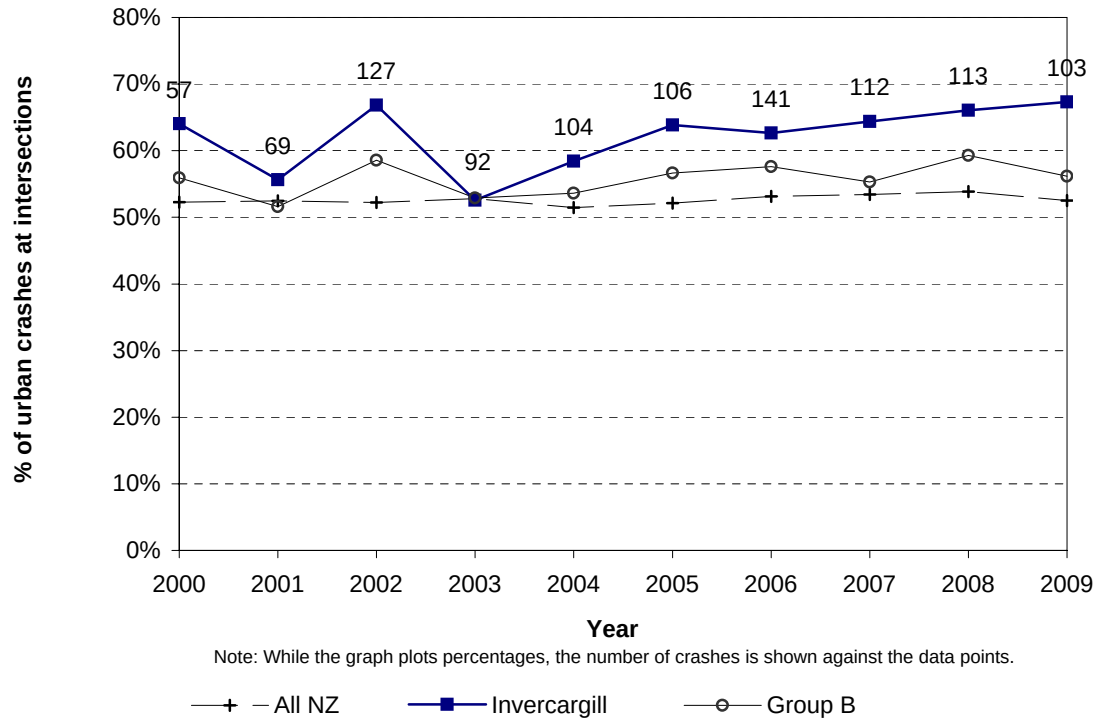
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.2 Crashes not on state highways
Invercargill City - rural roads



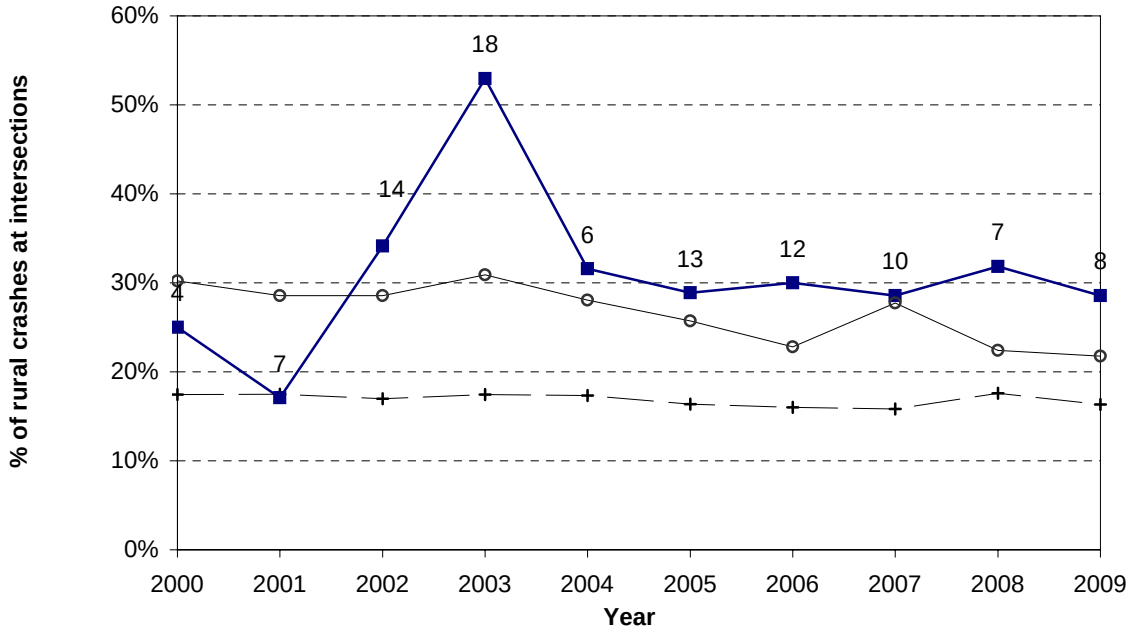
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.3 Intersection crashes
Invercargill City - urban roads



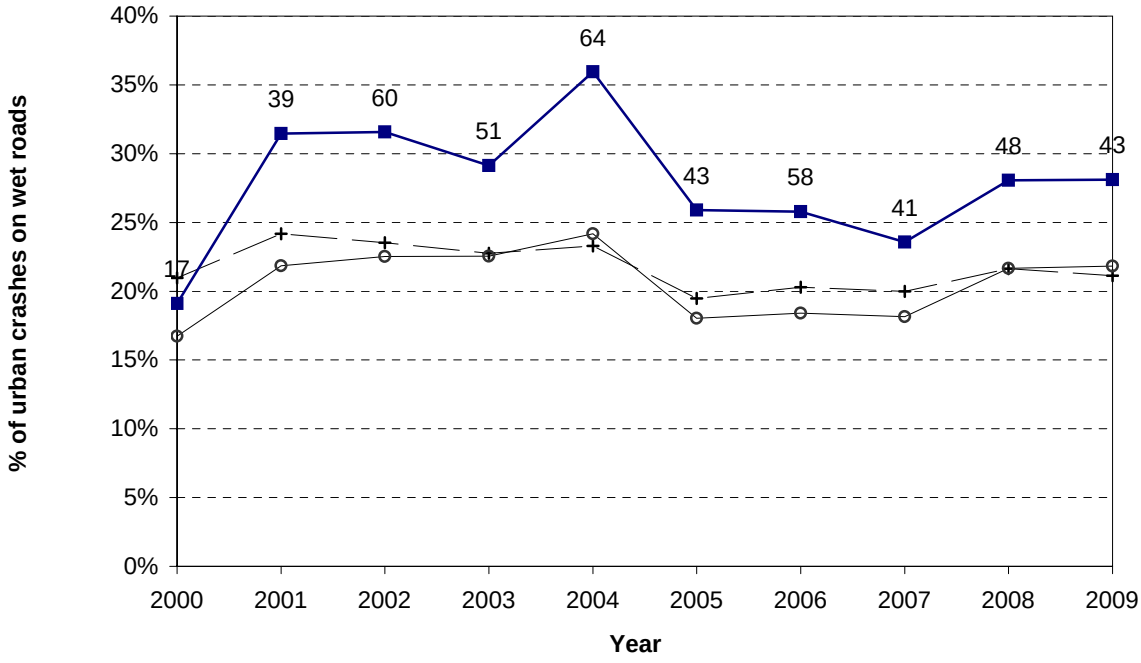
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.4 Intersection crashes
Invercargill City - rural roads



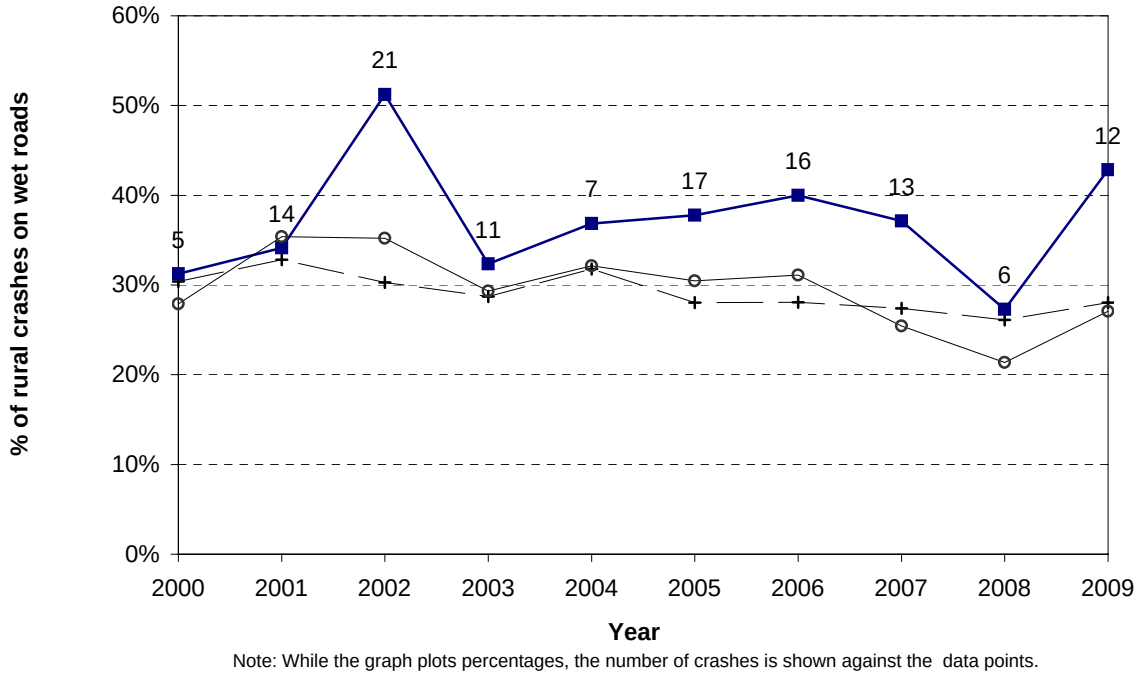
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.5 Wet road crashes
Invercargill City - urban roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.6 Wet road crashes
Invercargill City - rural roads

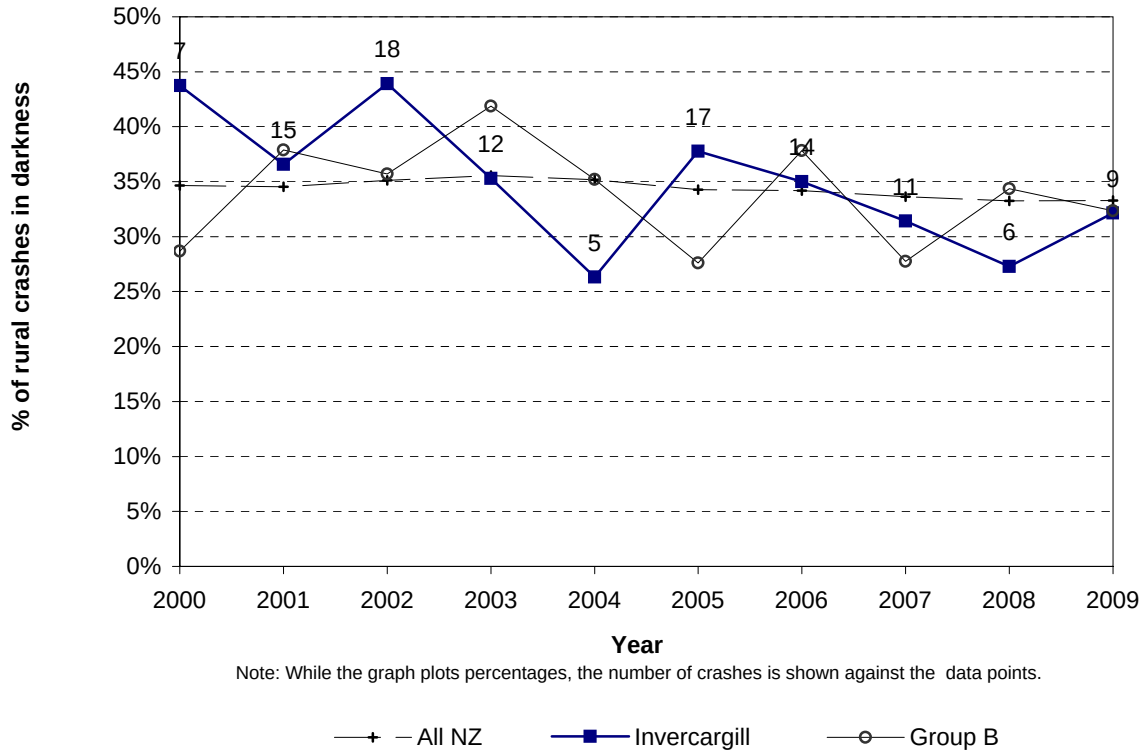


Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.7 Crashes in darkness
Invercargill City - urban roads

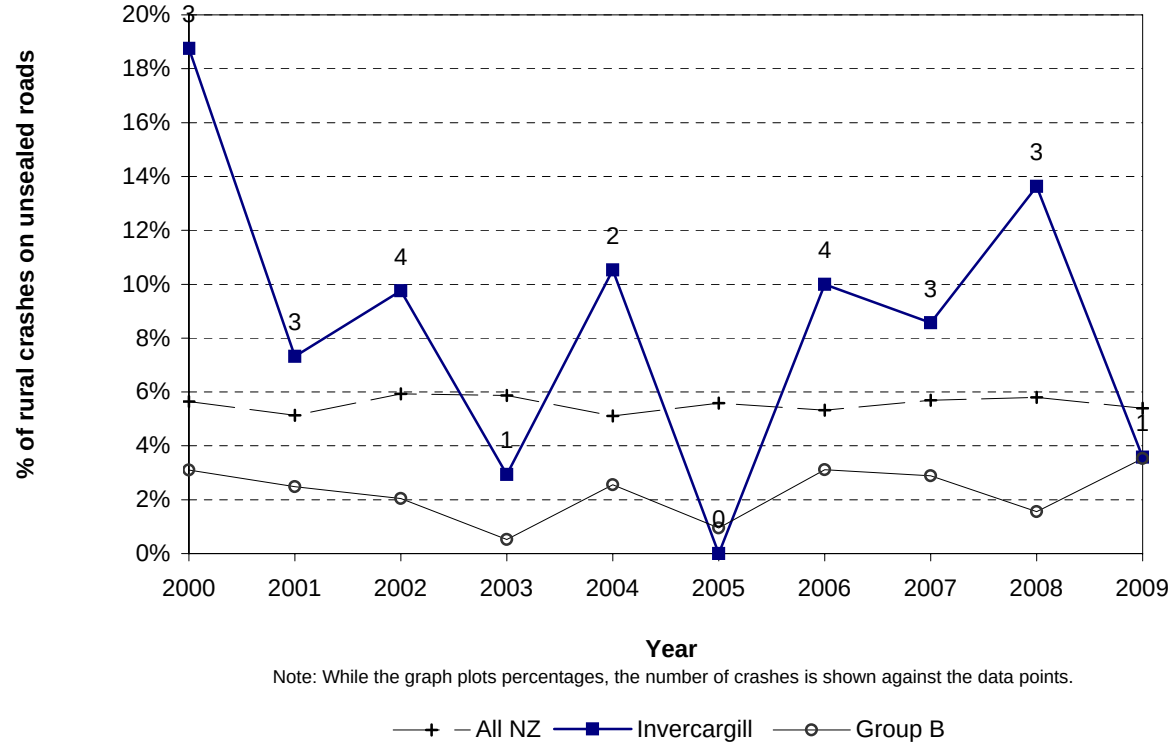
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.8 Crashes in darkness
Invercargill City - rural roads



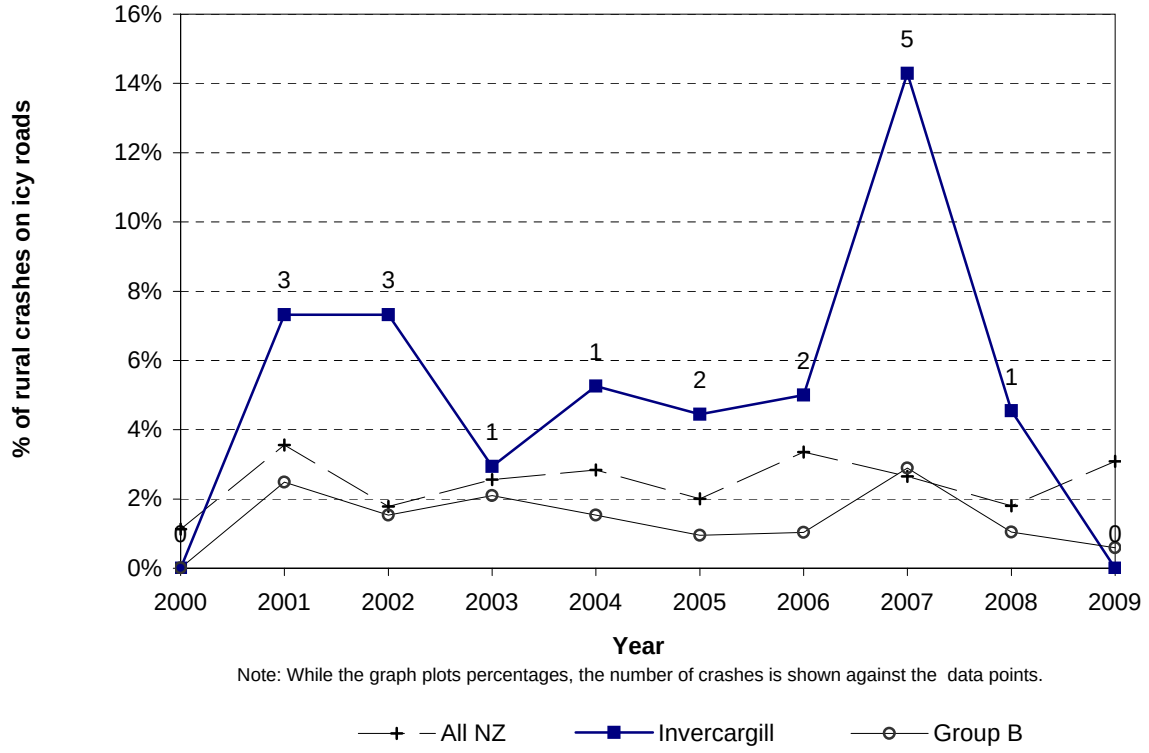
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.9 Unsealed road crashes
Invercargill City - rural roads



Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.10 Icy road crashes
Invercargill City - rural roads

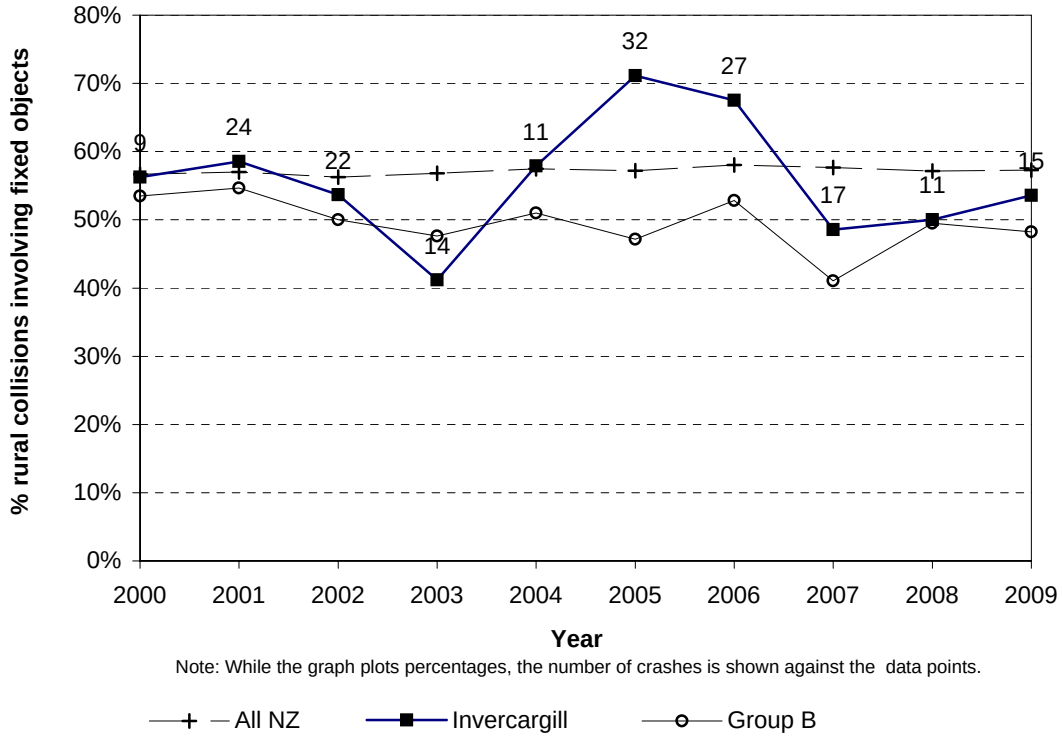


Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.11 Collisions with objects
Invercargill City - urban roads

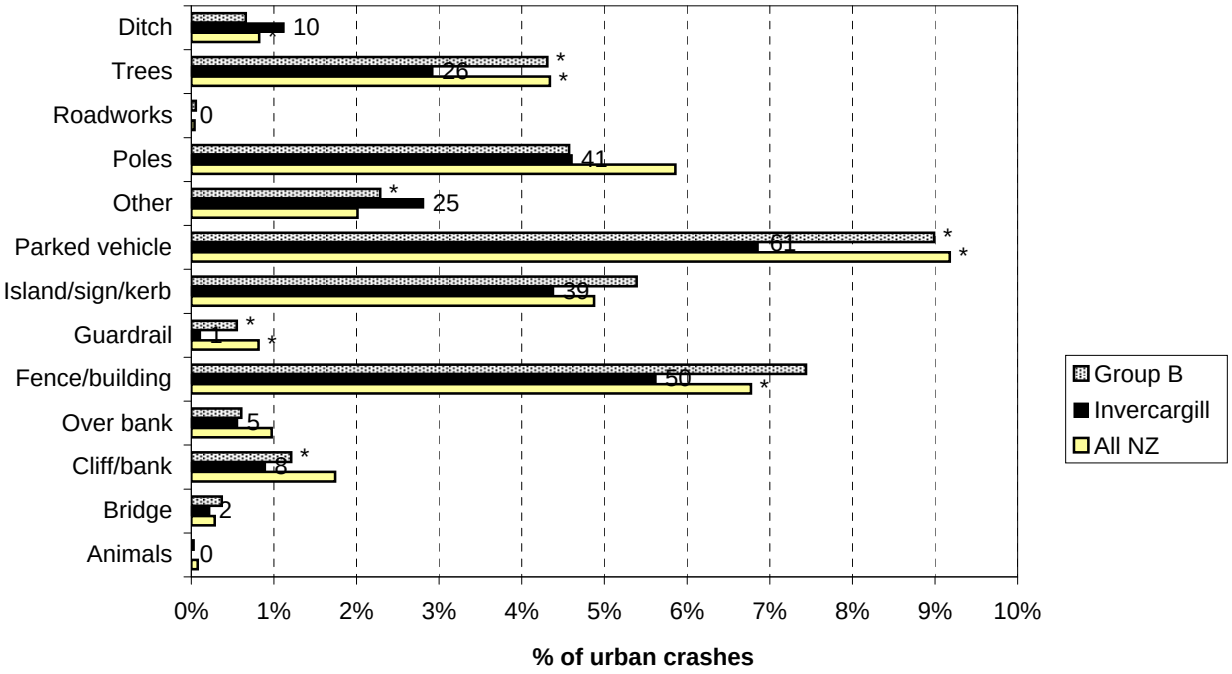
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.12 Collisions with objects
Invercargill City - rural roads



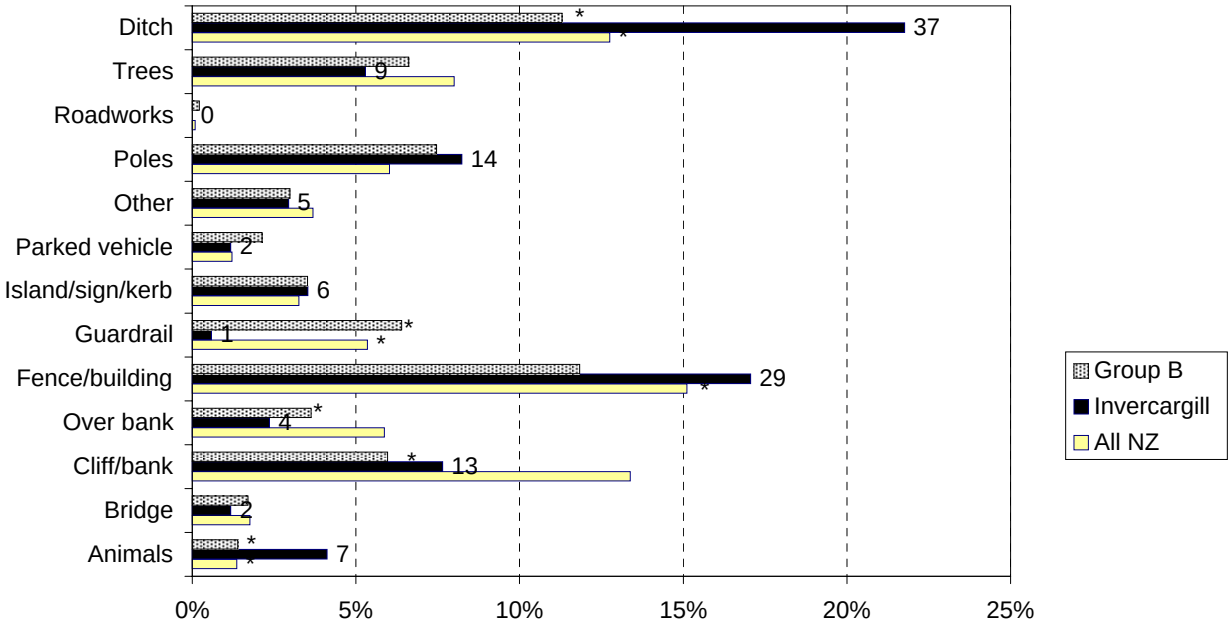
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 6.13 Objects struck - urban Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 6.14 Objects struck - rural Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Date and Time Statistics

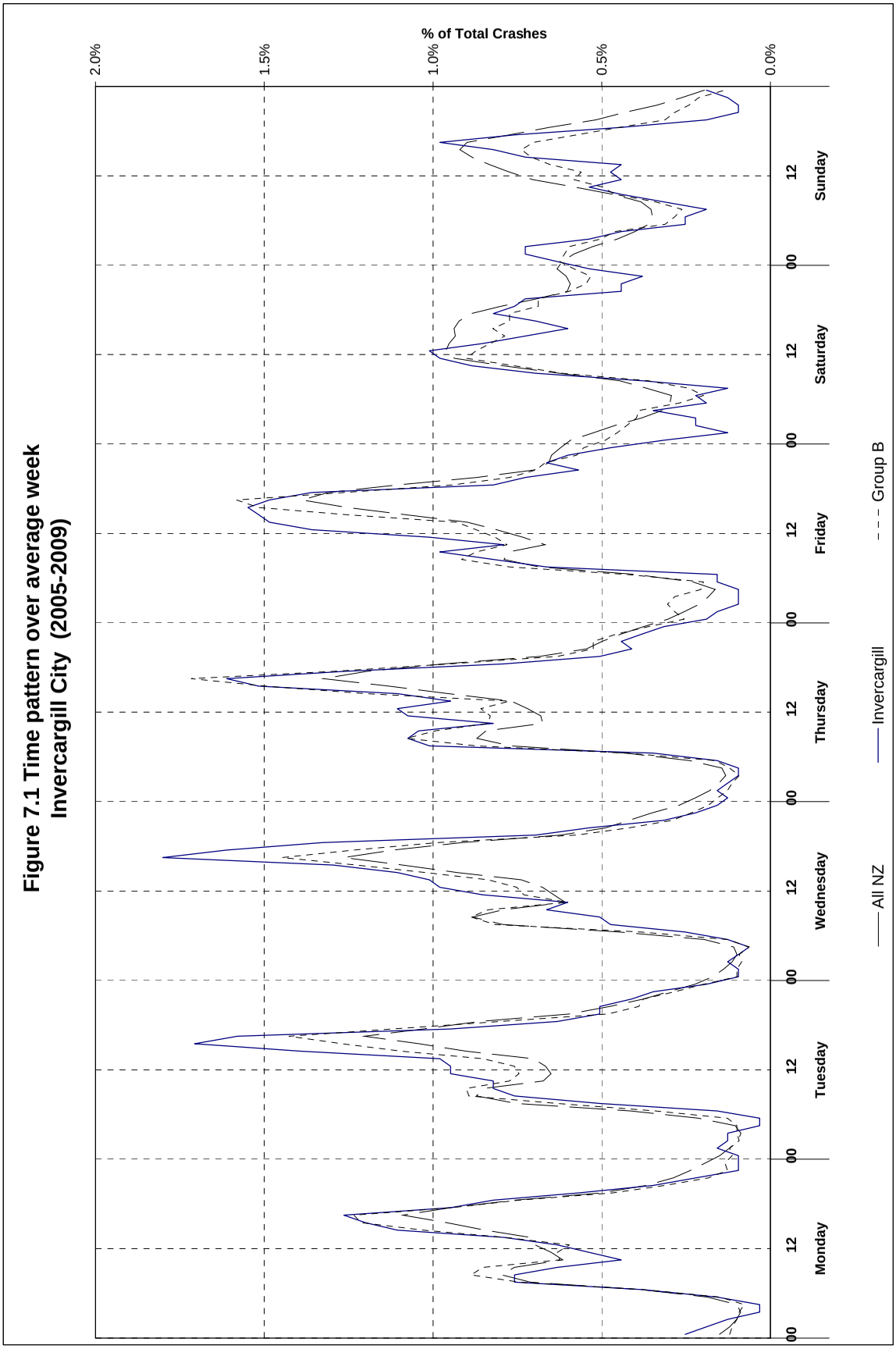
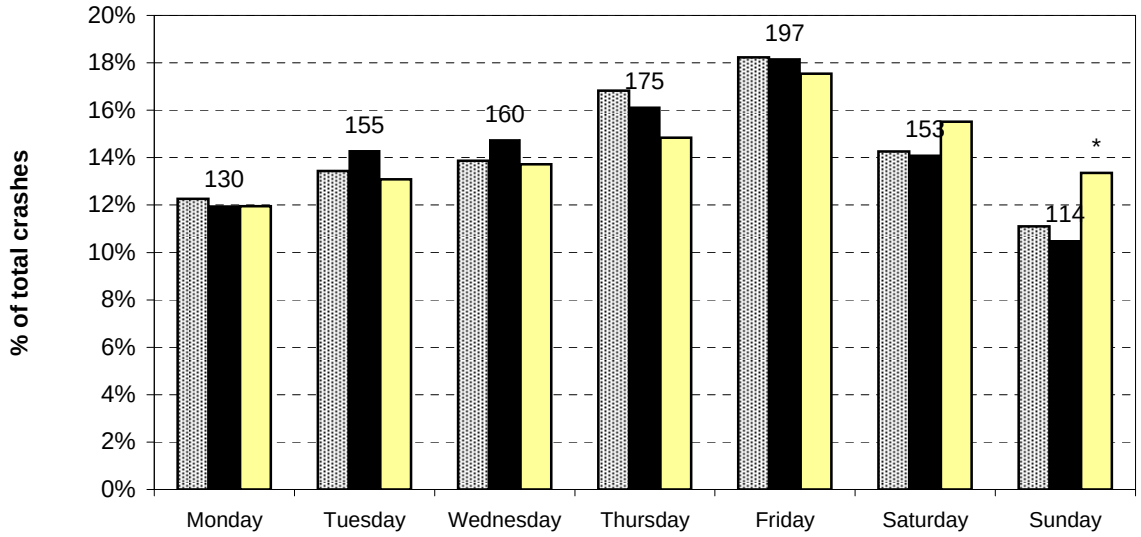


Figure 7.1 Time pattern over average week Invercargill City (2005-2009)

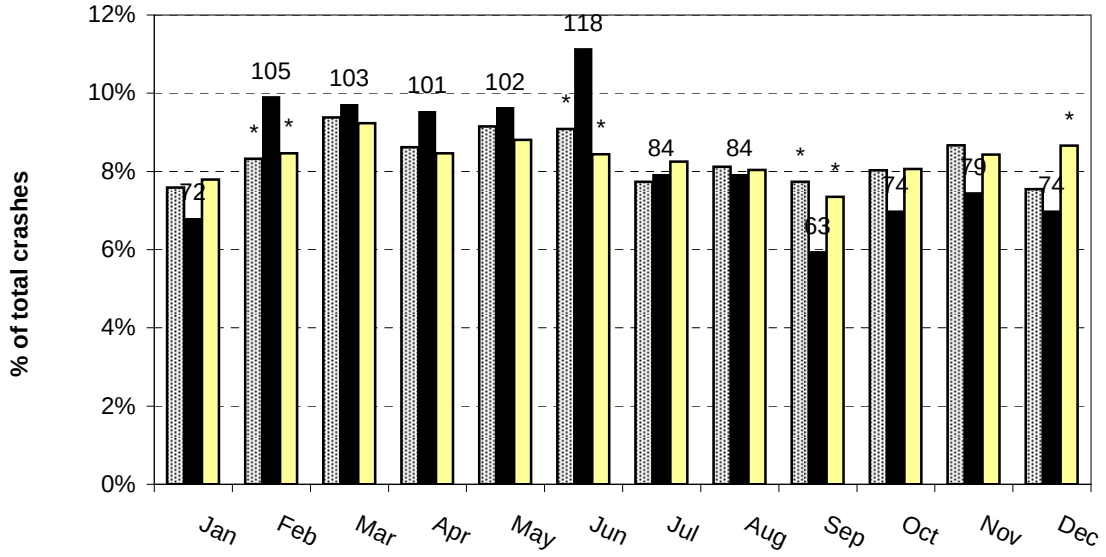
Figure 7.2 Day of week (6 a.m. to 6 a.m.)
Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Group B ■ Invercargill □ All NZ

Figure 7.3 Month of year
Invercargill City (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Group B ■ Invercargill □ All NZ

Local Road Statistics

Figure 8.1 Number of injury crashes
Invercargill City - council roads (urban & rural)

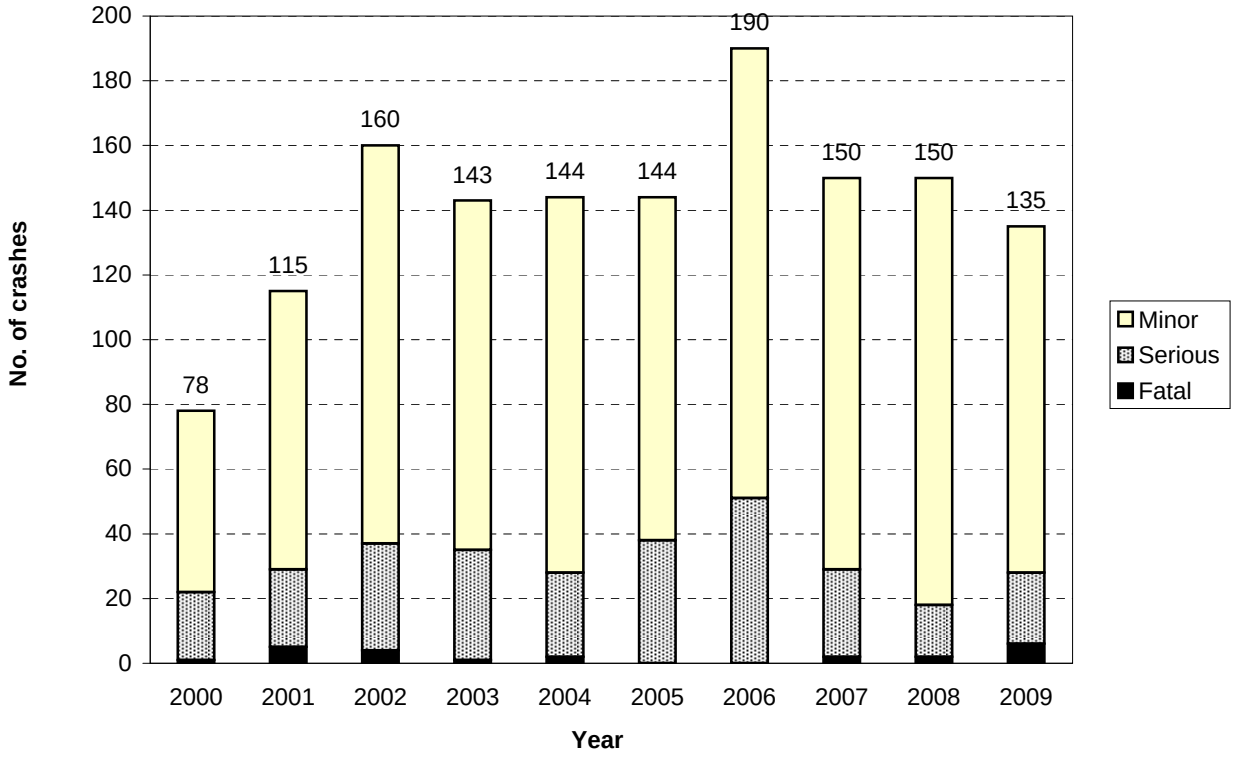


Figure 8.2 Number of casualties
Invercargill City - council roads (urban & rural)

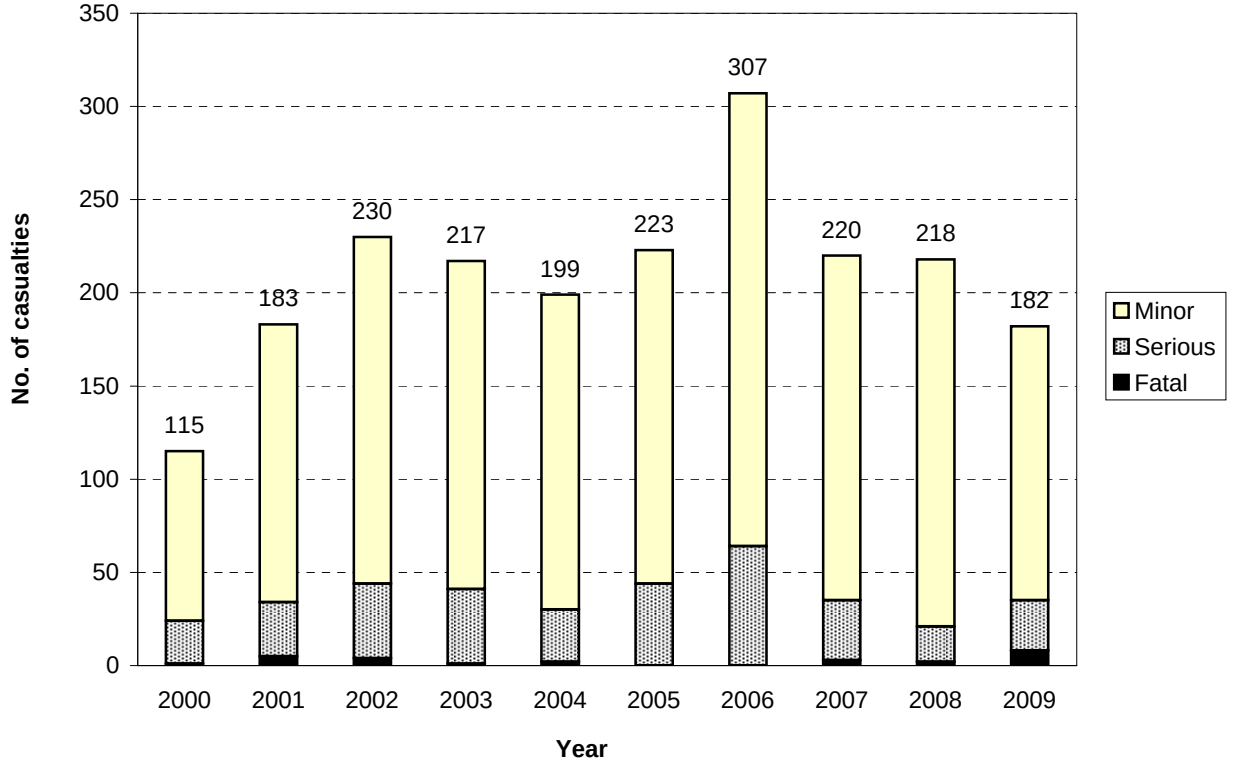


Figure 8.3 Number of injury crashes
Invercargill City - urban council roads

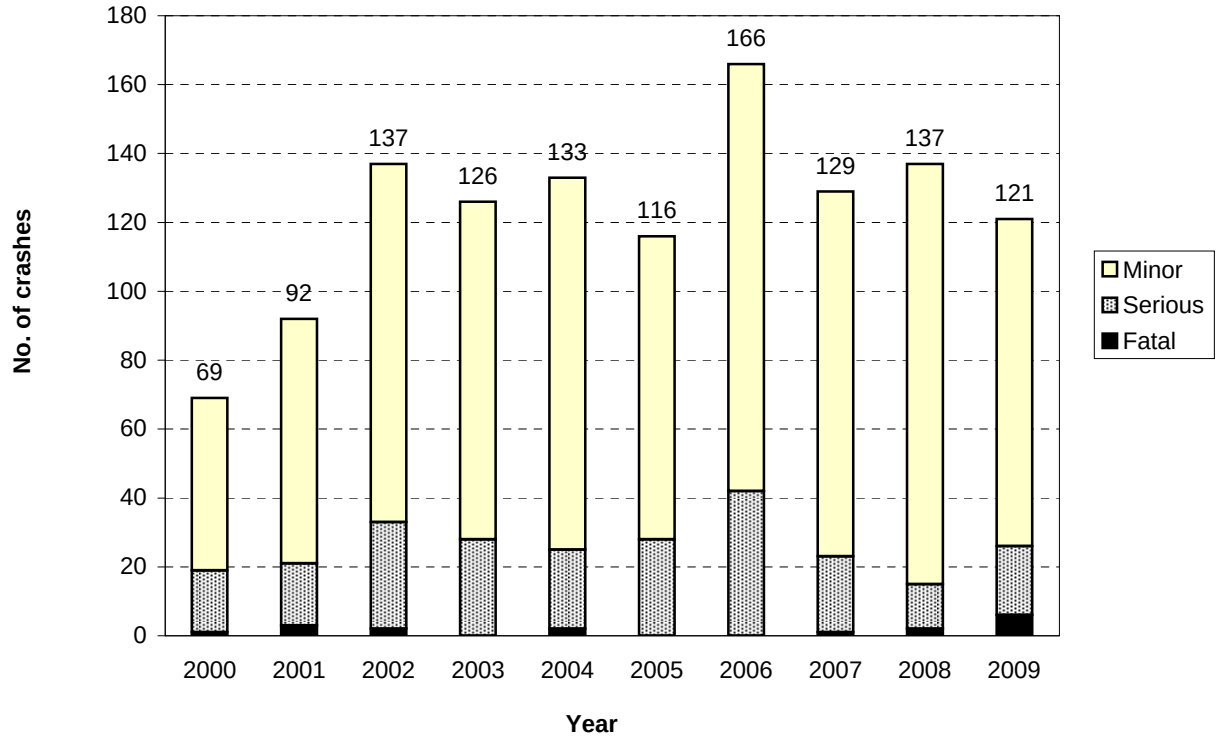


Figure 8.4 Number of casualties
Invercargill City - urban council roads

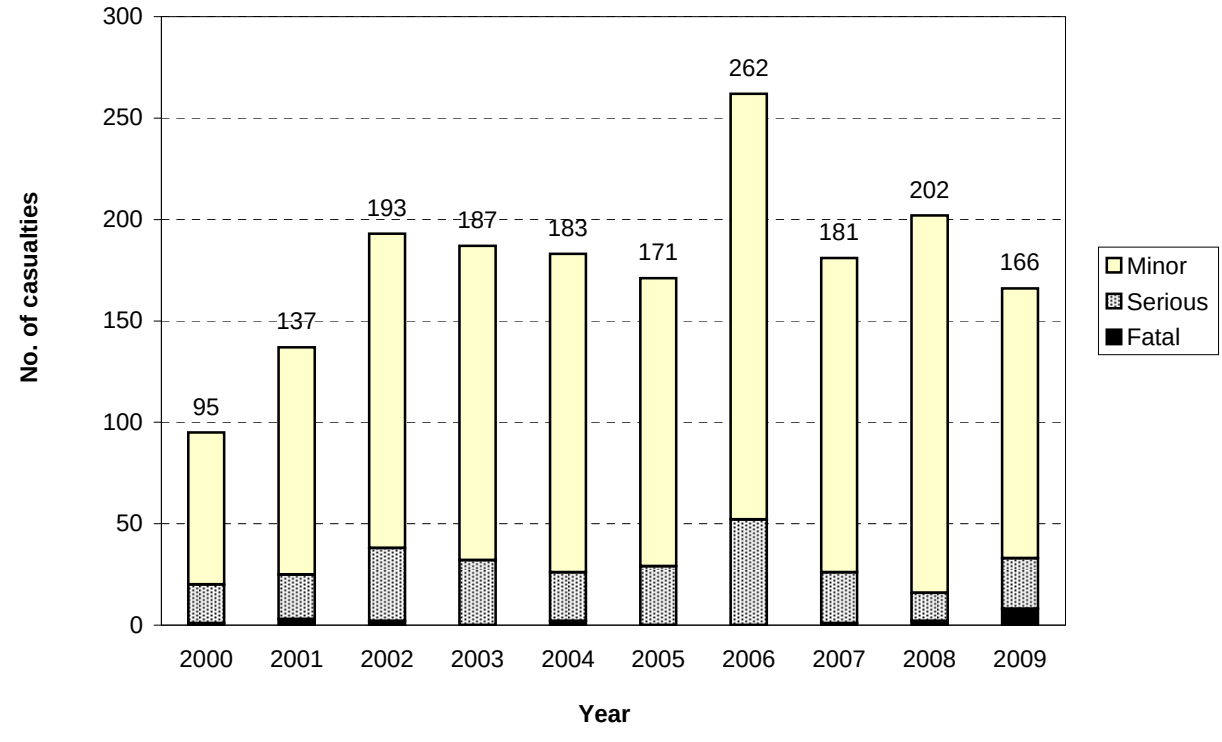


Figure 8.5 Number of injury crashes
Invercargill City - rural council roads

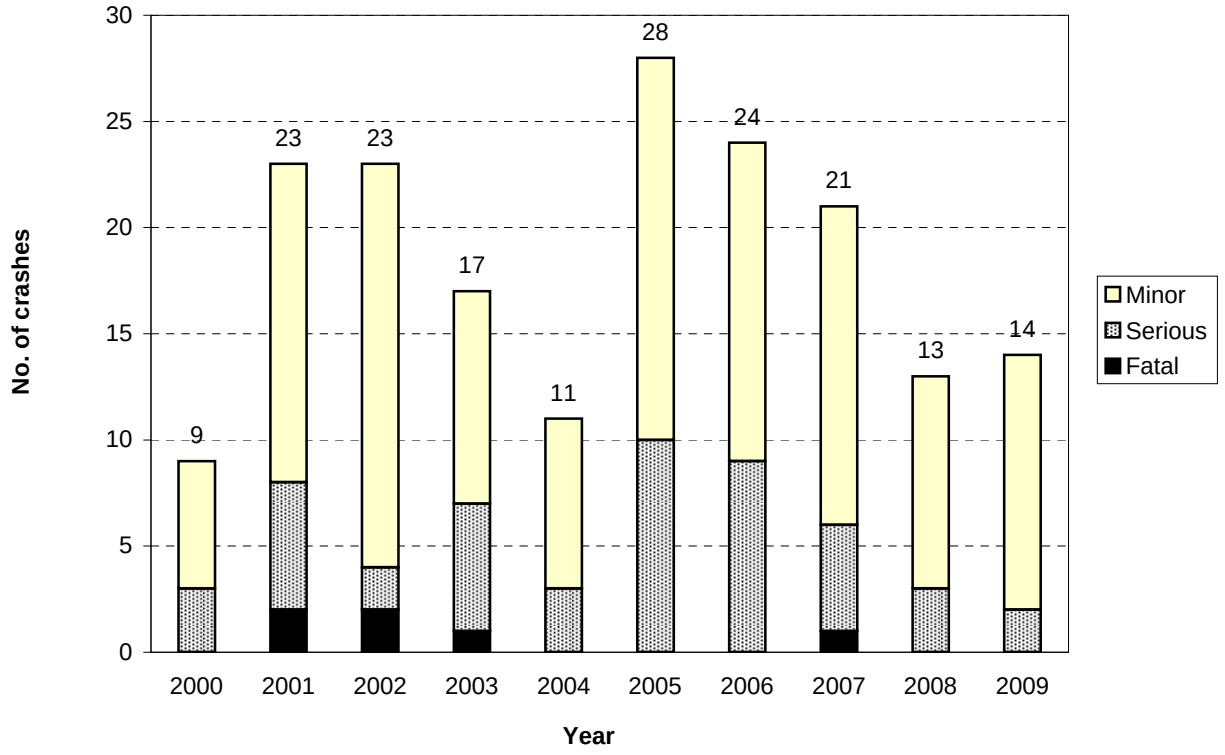


Figure 8.6 Number of casualties
Invercargill City - rural council roads

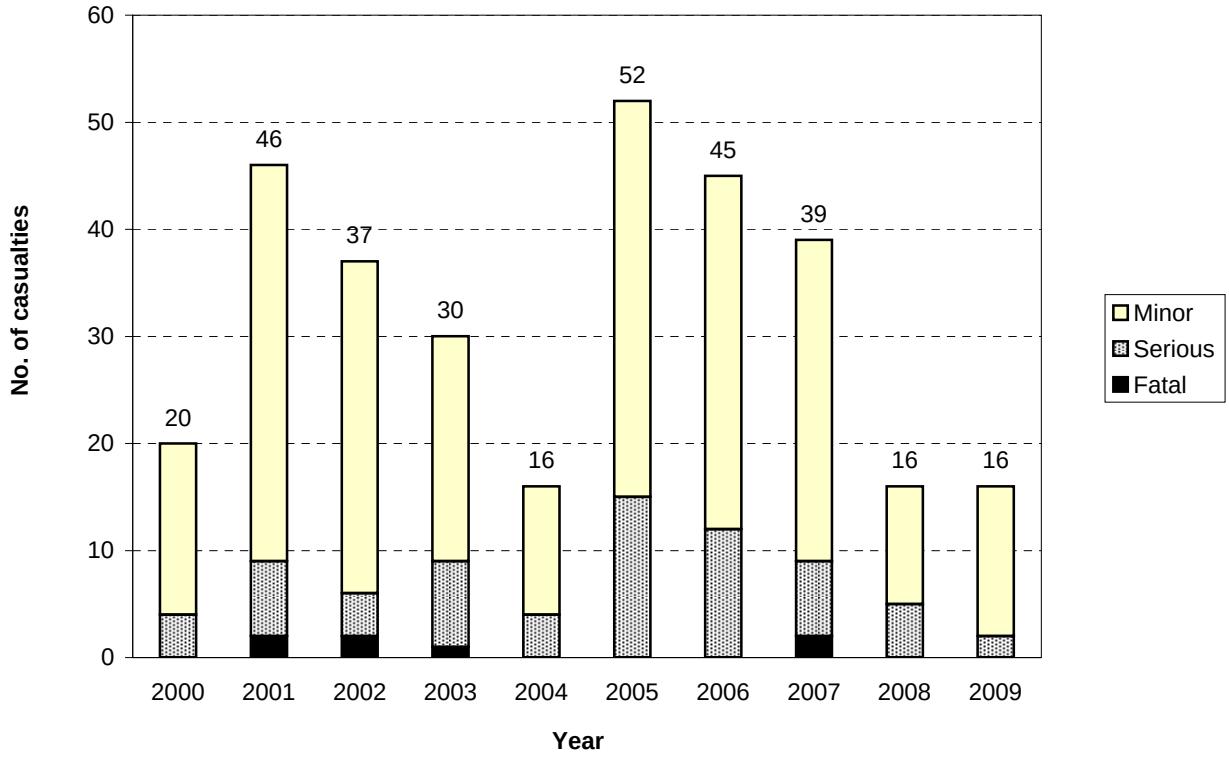
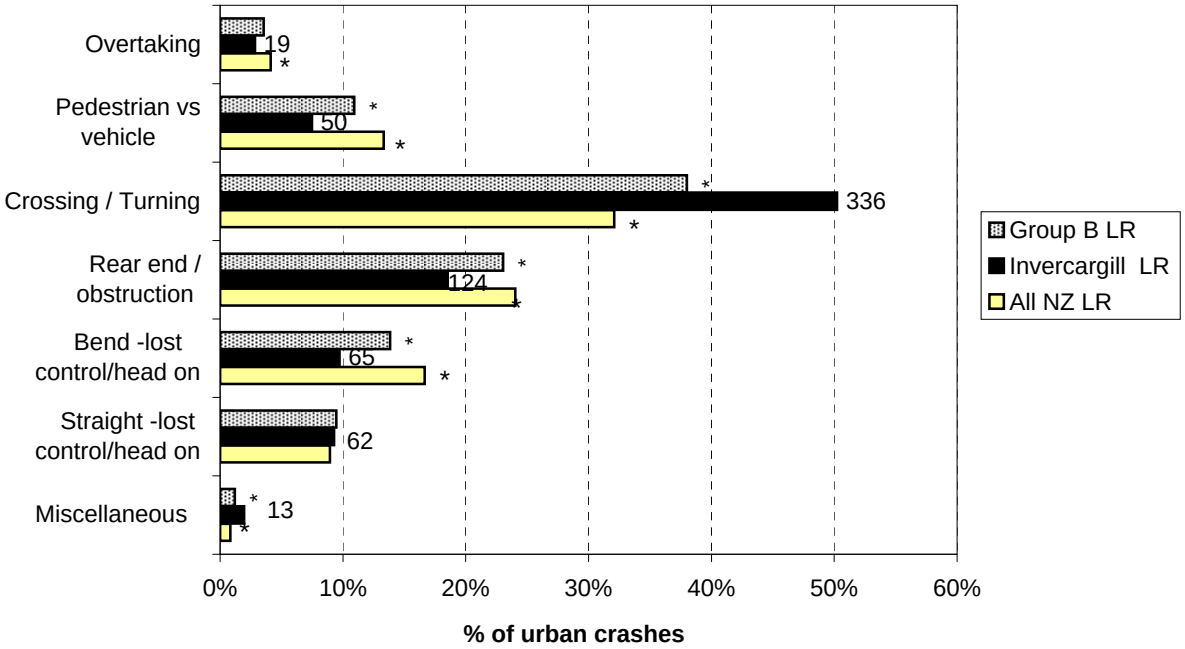
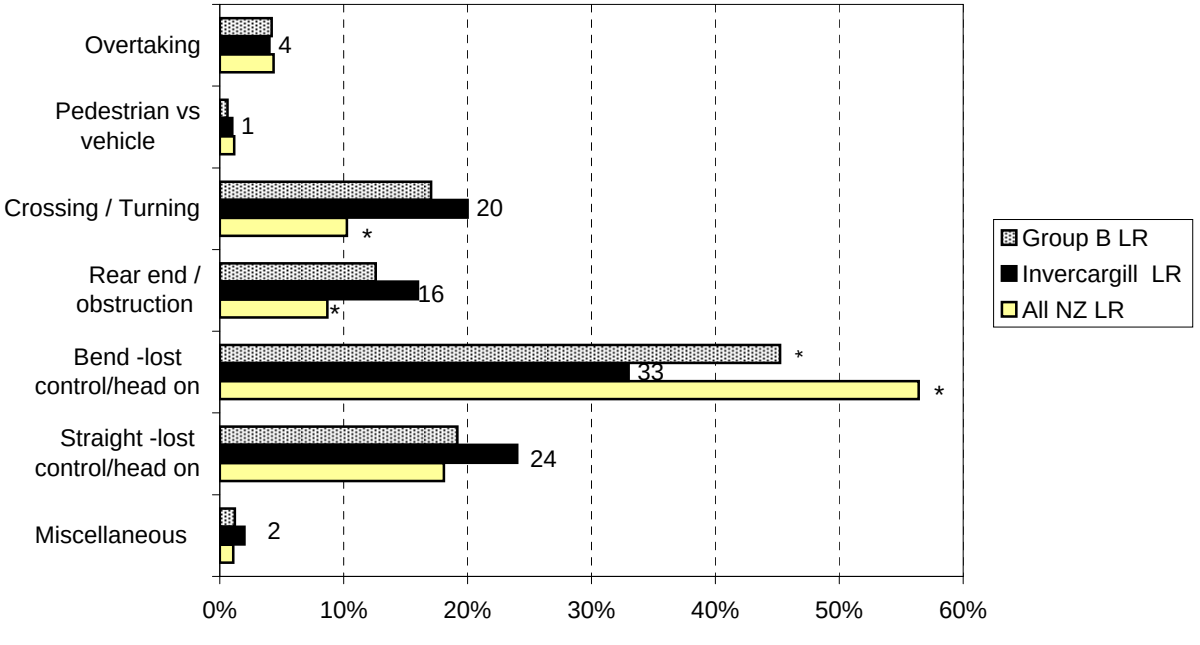


Figure 8.7 Crash movement type - urban Invercargill City council roads (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 8.8 Crash movement type - rural Invercargill City council roads (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 8.9 Crash movement type - Trends
Invercargill City - urban council roads

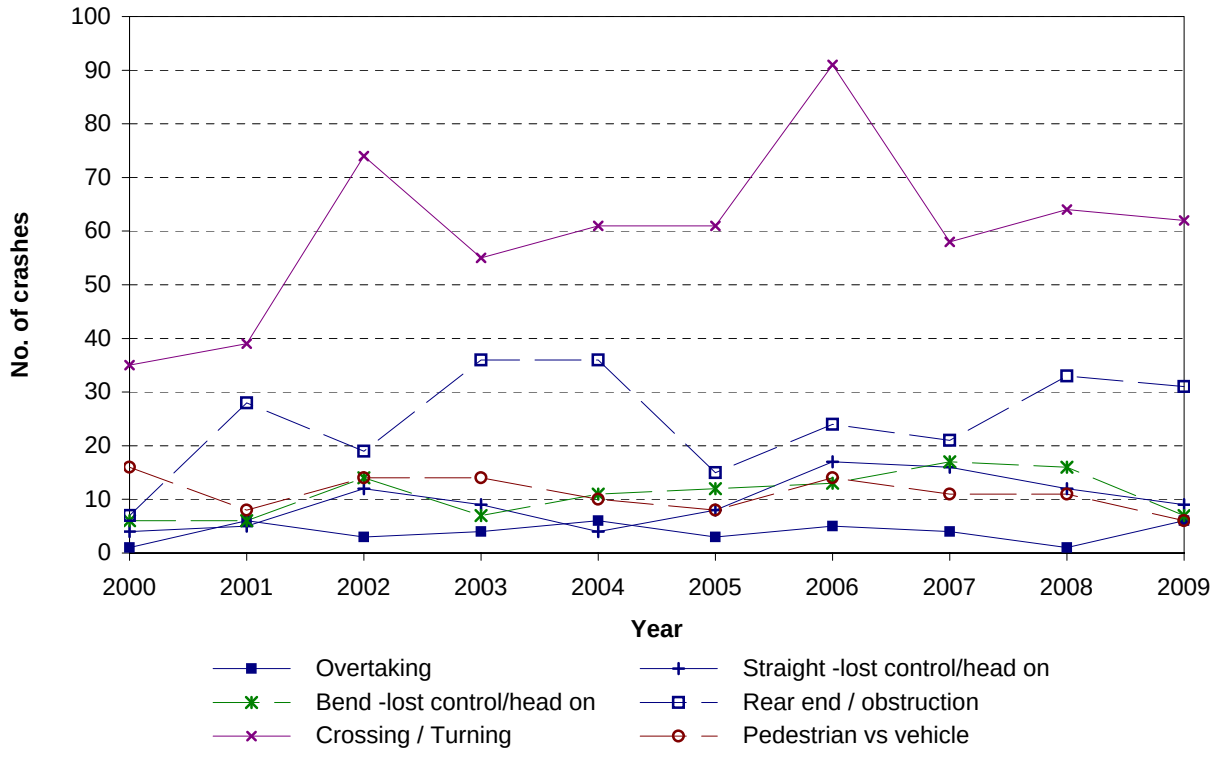


Figure 8.10 Crash movement type - Trends
Invercargill City - rural council roads

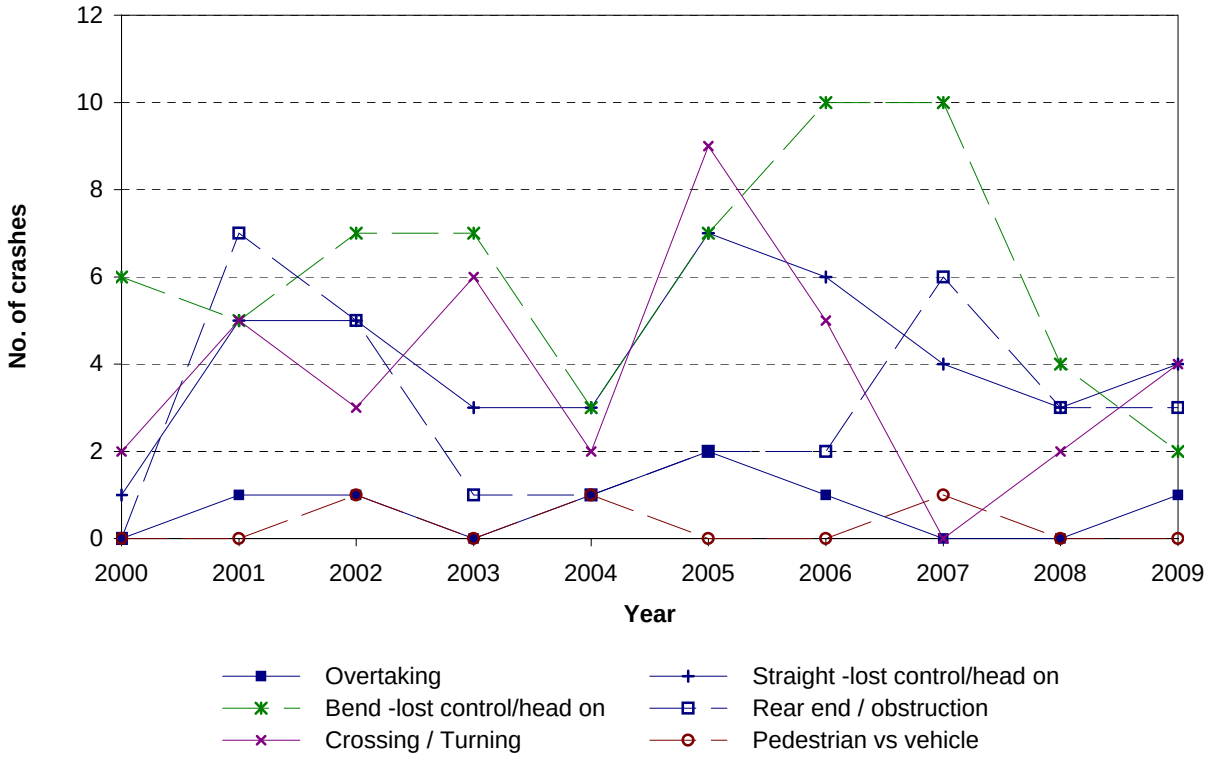
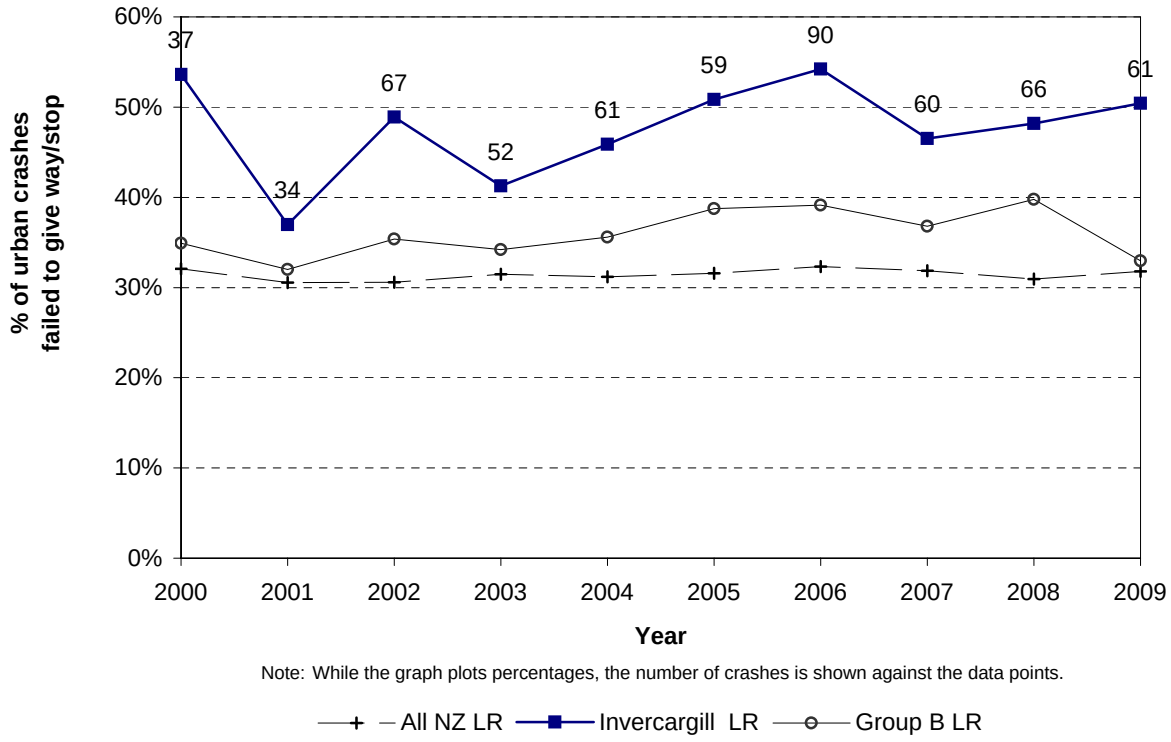
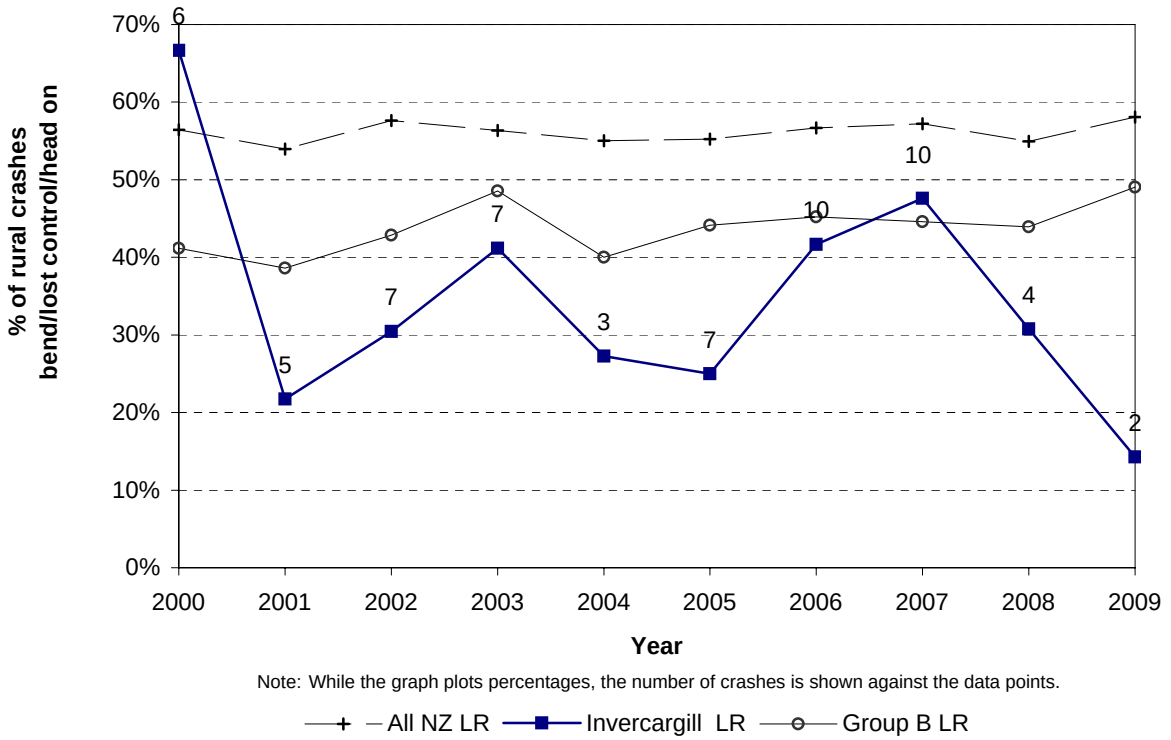


Figure 8.11 Failed to give way/stop
Invercargill City - urban council roads



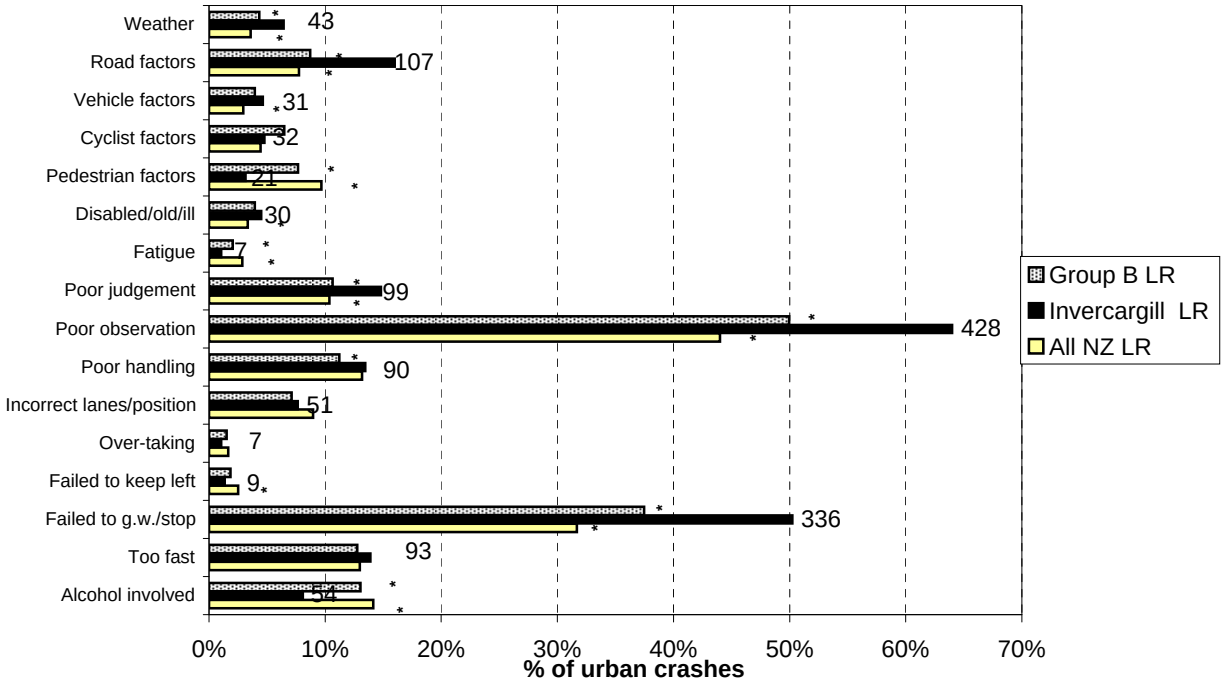
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.12 Bend - lost control / head - on
Invercargill City - rural council roads



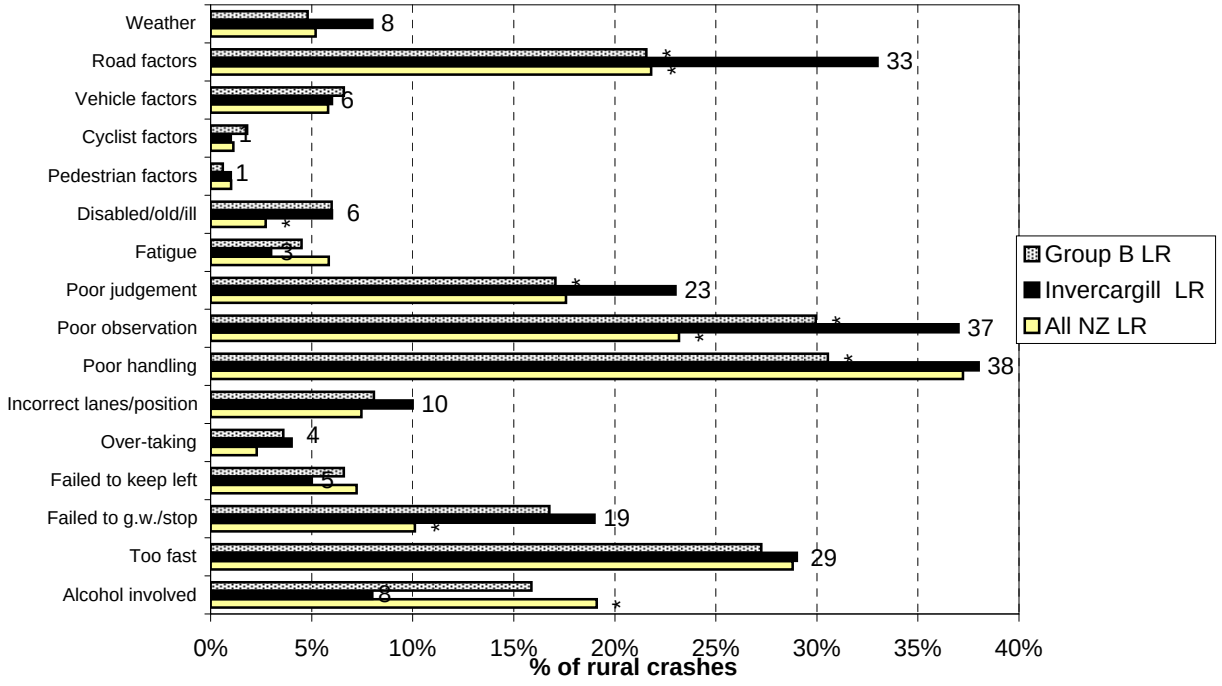
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.13 Contributing factors - urban Invercargill City council roads (2005-2009)



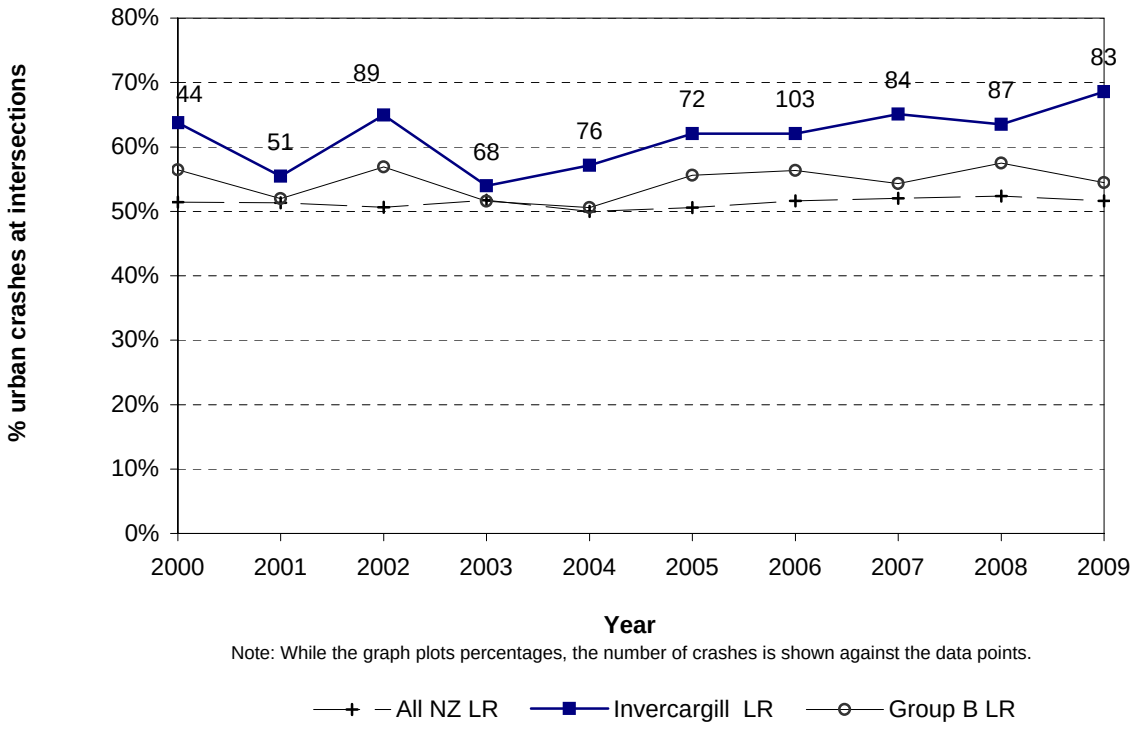
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 8.14 Contributing factors - rural Invercargill City council roads (2005-2009)



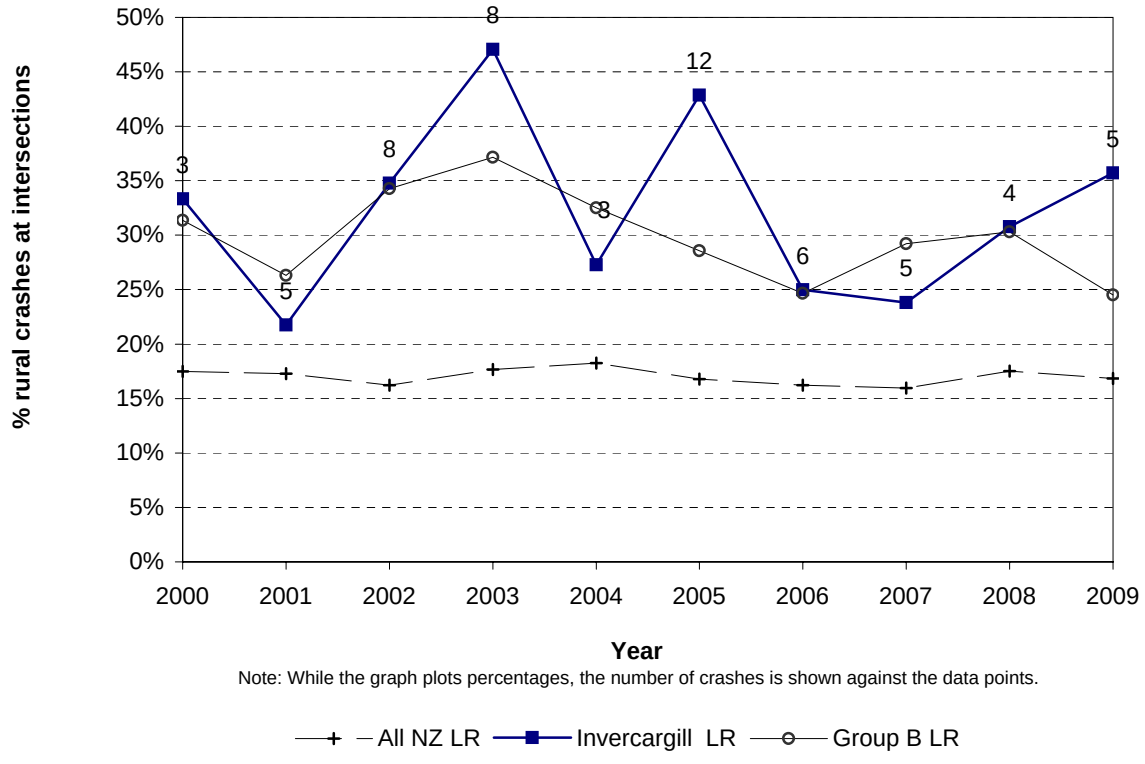
Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 8.15 Intersection crashes
Invercargill City - urban council roads



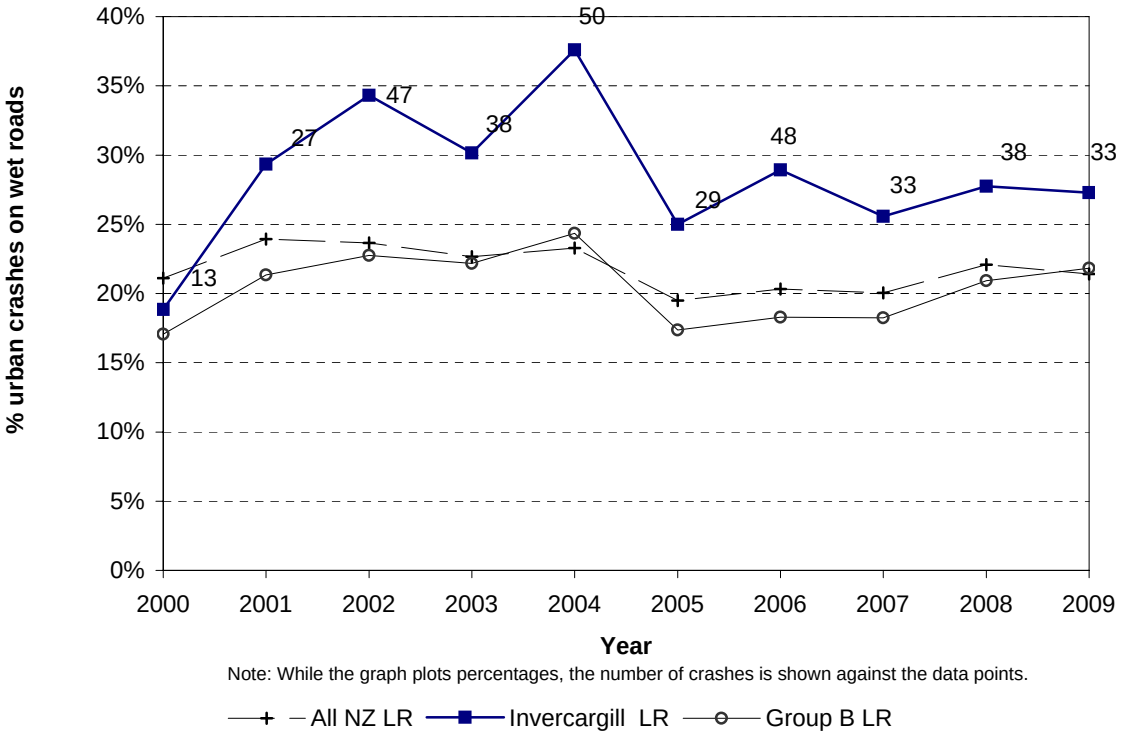
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.16 Intersection crashes
Invercargill City - rural council roads



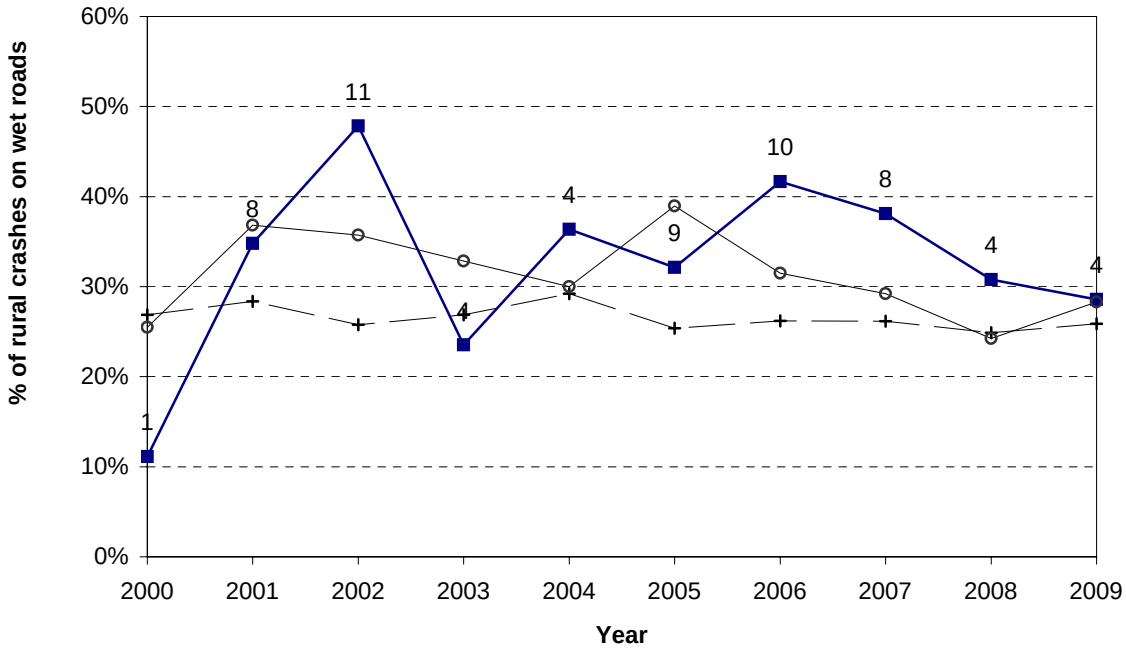
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.17 Wet road crashes
Invercargill City - urban council roads



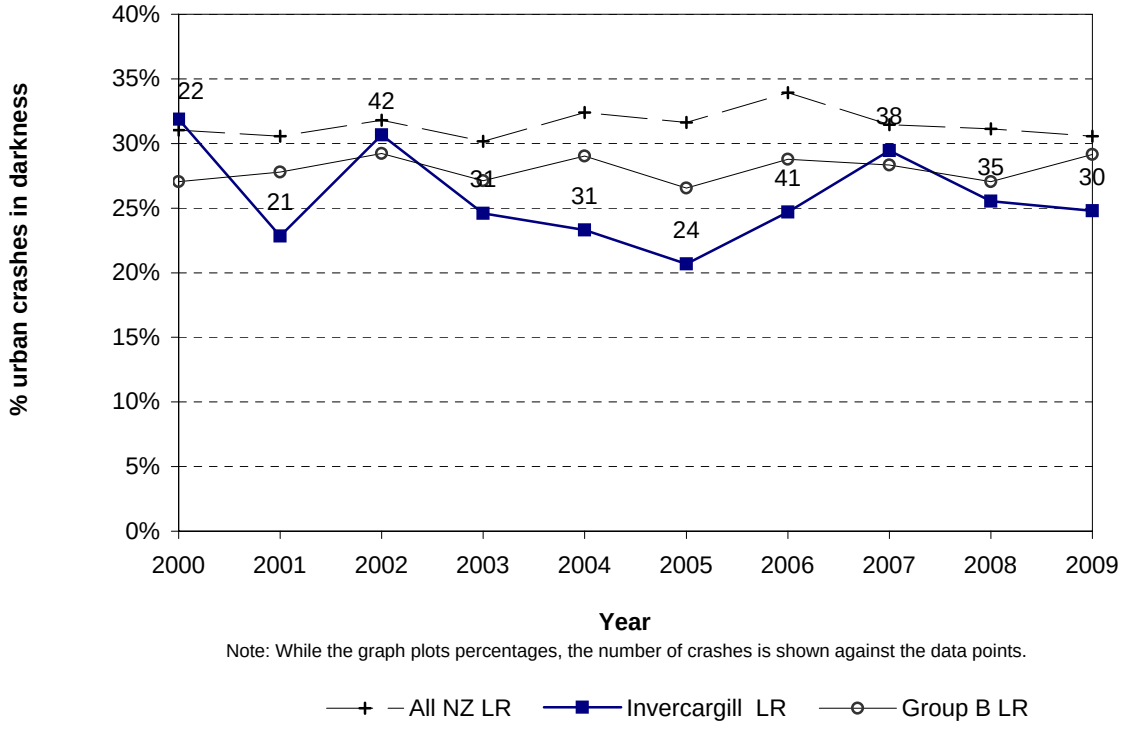
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.18 Wet road crashes
Invercargill City - rural council roads



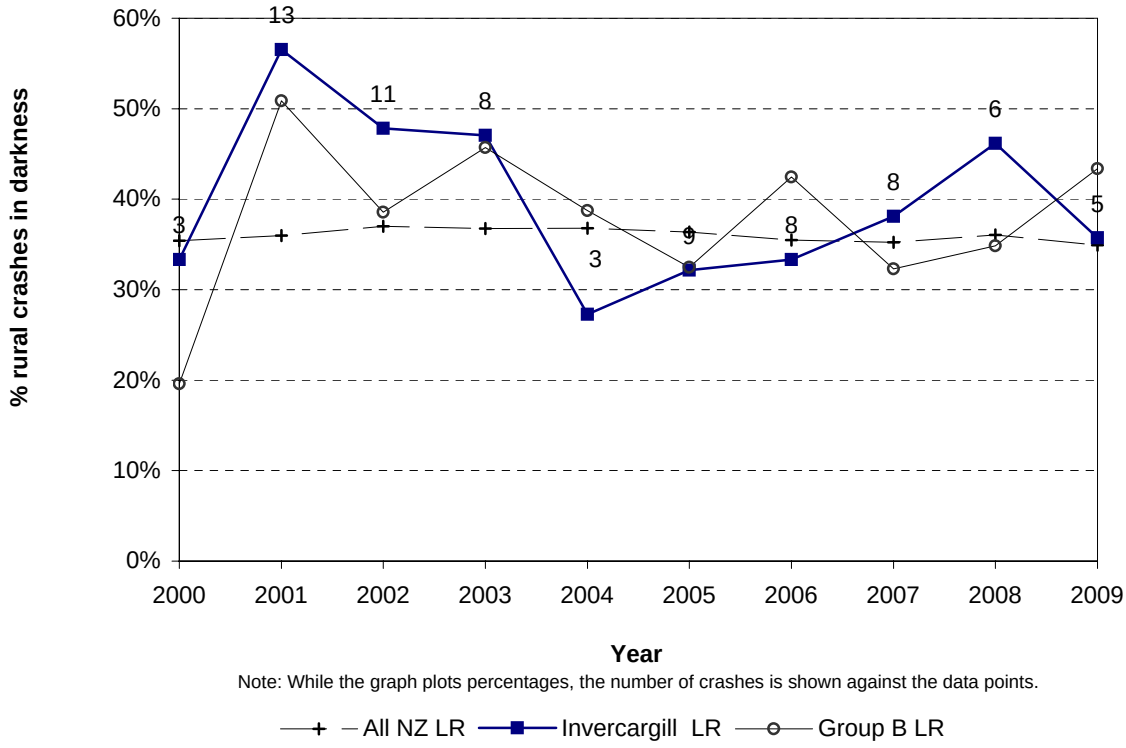
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.19 Crashes in darkness
Invercargill City - urban council roads



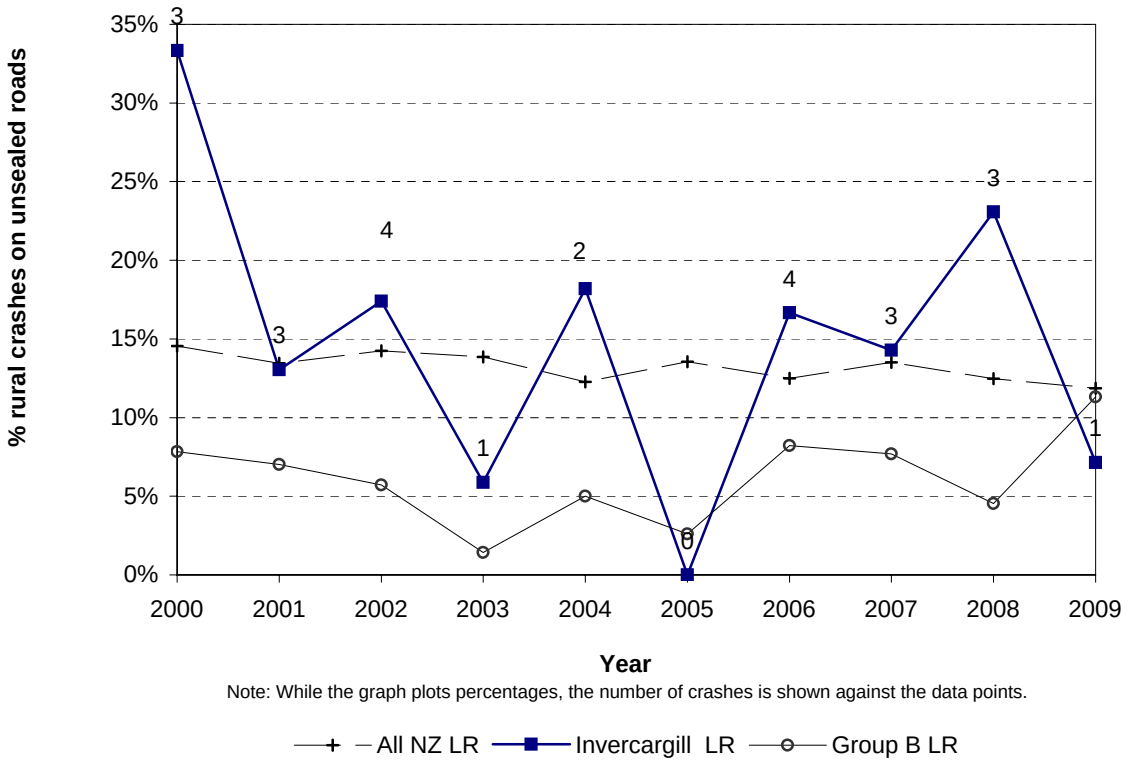
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.20 Crashes in darkness
Invercargill City - rural council roads



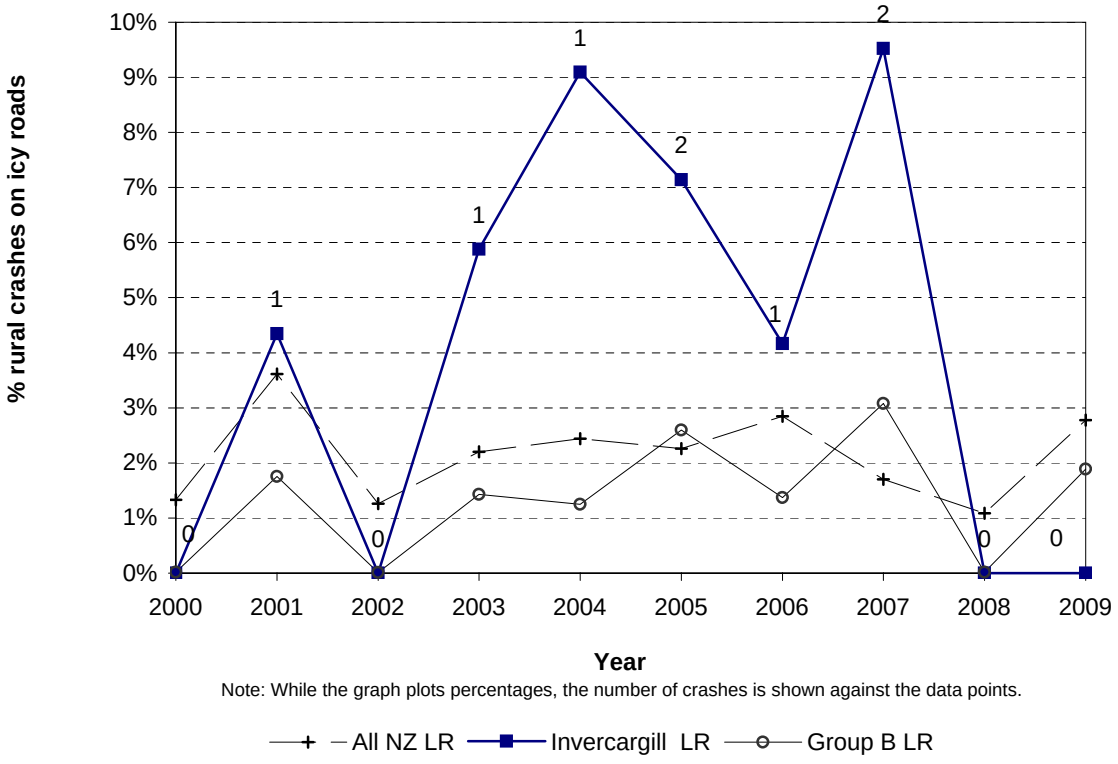
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.21 Crashes on unsealed roads
Invercargill City - rural council roads



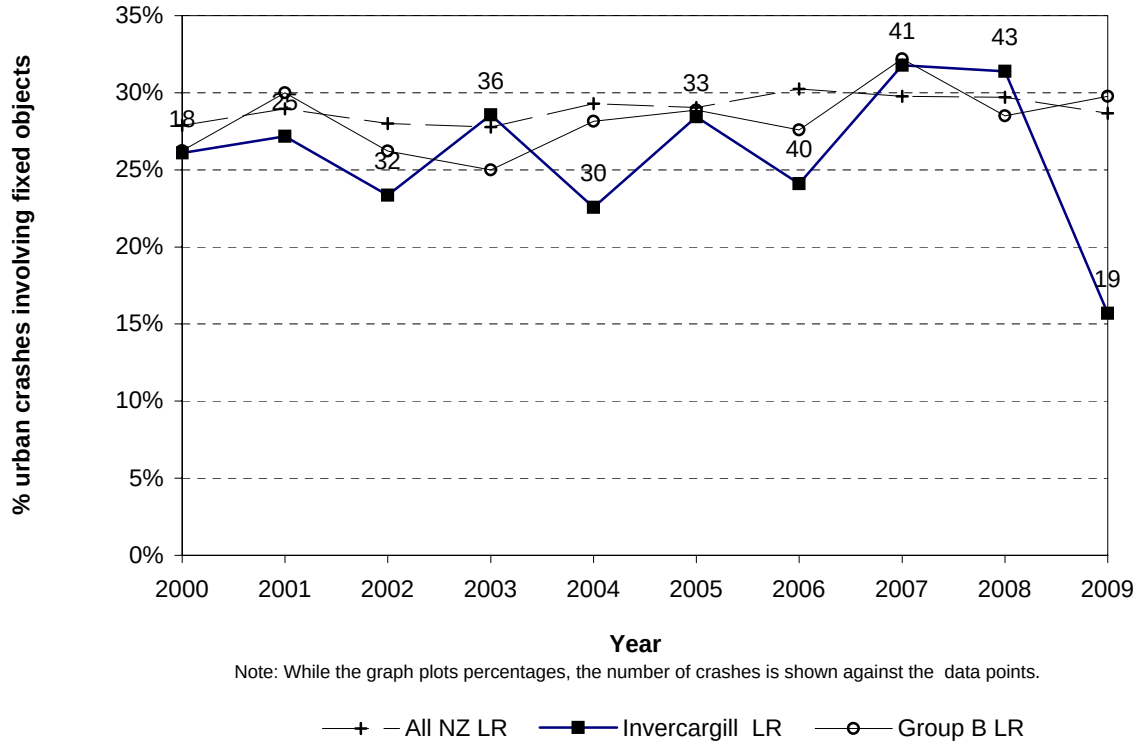
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.22 Icy road crashes
Invercargill City - rural council roads



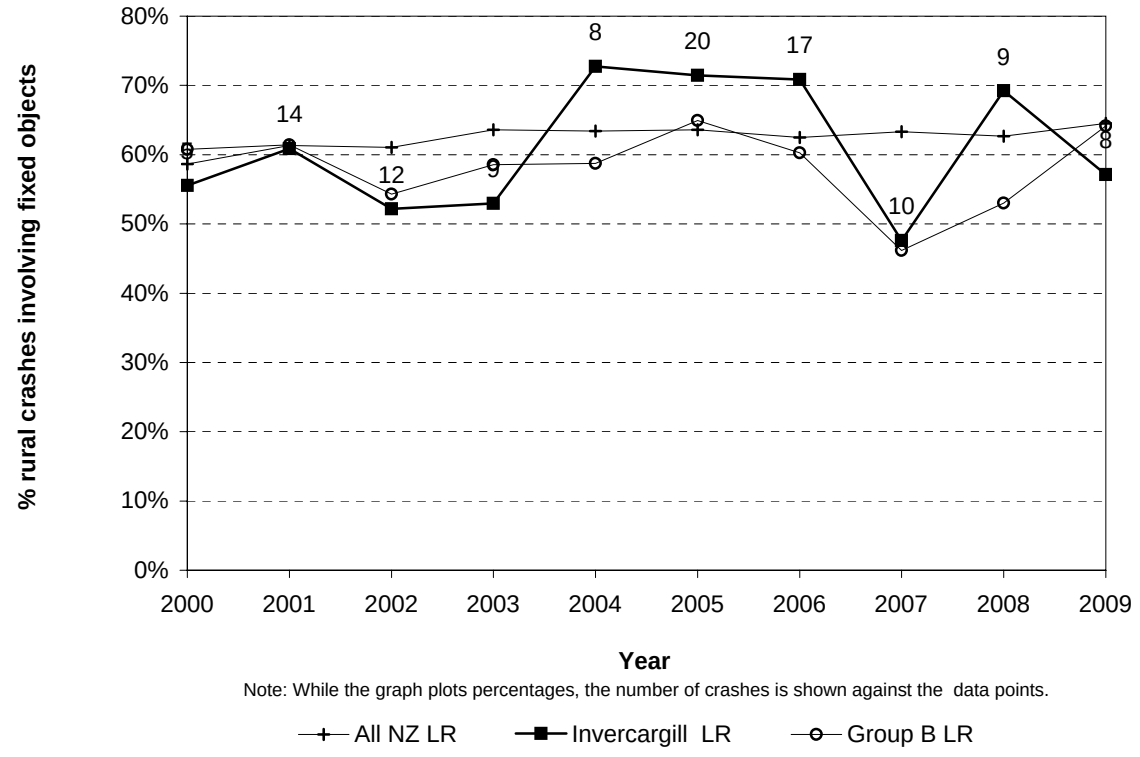
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.23 Collisions with objects
Invercargill City - urban council roads



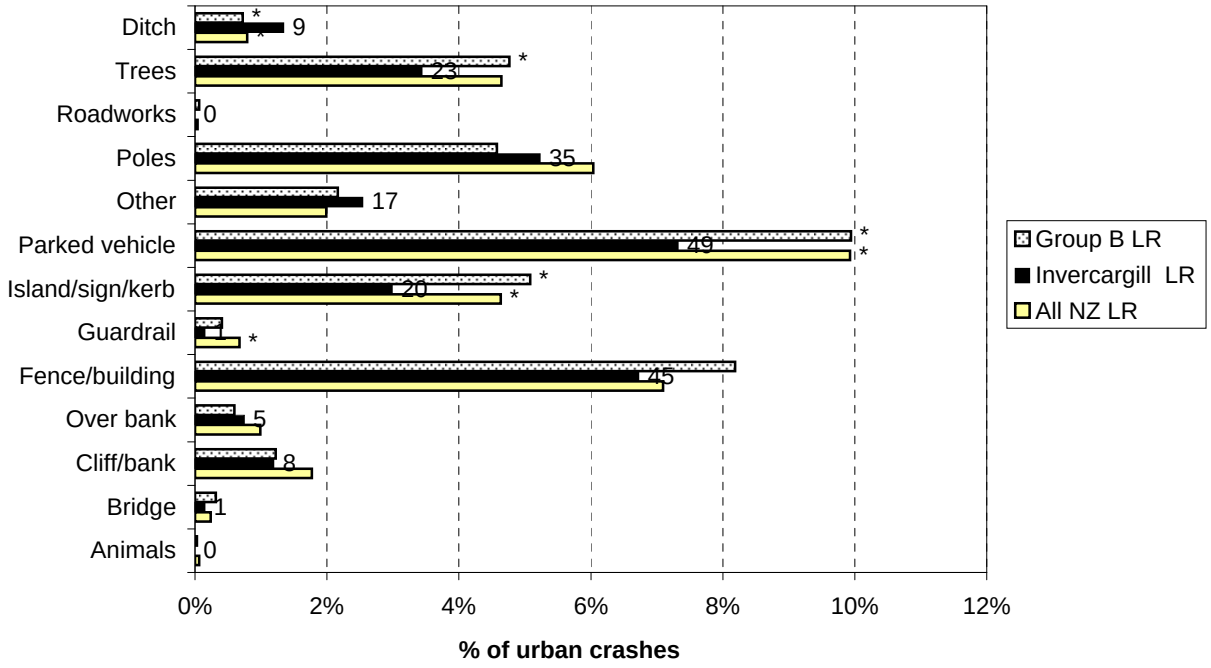
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.24 Collisions with objects
Invercargill City - rural council roads



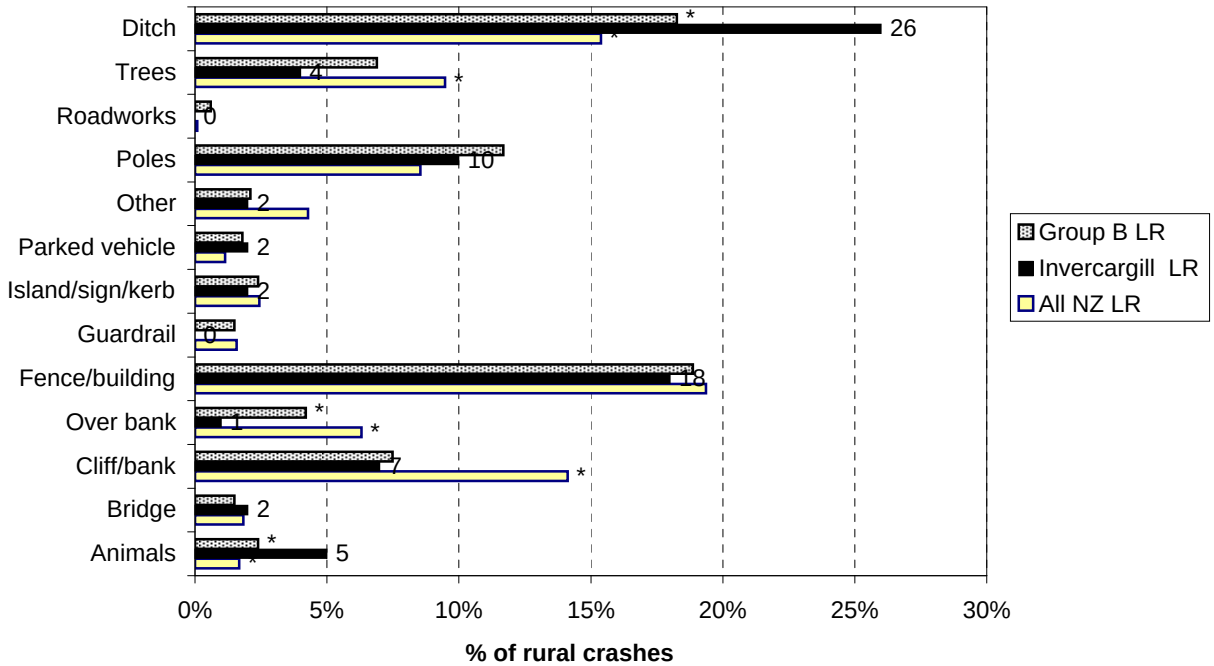
Note: While the graph plots percentages, the number of crashes is shown against the data points.

Figure 8.25 Objects struck - urban Invercargill City council roads (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Figure 8.26 Objects struck - rural Invercargill City council roads (2005-2009)



Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Crash Location Statistics

Table 9.1: Council Roads Black Spot List Urban (Injury and Non-Injury Crashes)

Site Radius = 30 metres

Sites with 3 or more injury crashes or more than $250000 in social costs

CRASH ROAD		SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
QUEENS DRIVE	I	GALA ST	6	4	8	5	10	33	21	18	12	$4,799,445
JED ST	I	DON ST	1	3	3	3	2	12	6	25	8	$4,054,376
ST ANDREWS ST	I	QUEENS DRIVE	1	3		3	1	8	4	13	38	$3,399,536
YTHAN ST	I	EYE ST	2	1	1		2	6	3		33	$3,309,046
DEVERON ST	I	LEET ST	2	4	2	2	1	11	4	27	36	$2,499,976
YARROW ST	I	MARY ST		3	1	2	4	10	2	50	10	$2,069,540
ELLES ROAD	I	JANET ST	7	4	6	5	4	26	17	35	19	$1,959,045
ELLES ROAD	I	TWEED ST	4	7	11	7	11	40	30	25	35	$1,759,595
BOND ST	I	SPEY ST	2	4				6	1	50		$1,342,712
ETTRICK ST	I	PRINCES ST		3	1	1	1	6	2	33	67	$1,317,962
SPEY ST	I	MERSEY ST	4	3	2	4		13	4	15		$1,240,942
TWEED ST	I	LINDISFARNE ST	3	4	2	8	1	18	11	28	11	$1,219,164
CONON ST	I	BOWMONT ST	1	2		1	1	5	2	40	20	$1,203,520
NITH ST	I	EYE ST	2	6	2	1	2	13	5	31		$1,191,246
ELLES ROAD	I	TRAMWAY ROAD	4	1	3	2	2	12	4	17	25	$1,162,620
BALMORAL DRIVE	I	NESS ST		3	1			4	2	25	50	$1,143,444
ROCKDALE ROAD	I	OTEPUNI AVENUE		2	1	1		4	2	25	25	$1,143,382
YTHAN ST	I	TYNE ST	1		1		1	3	1			$1,131,090
HERBERT ST	I	GREY ST	1	1			1	3	1	67	67	$1,125,924
LEVEN ST	I	VICTORIA AVENUE		2	5	4	4	15	9	40	7	$1,104,354
GALA ST	I	KELVIN ST	5	3	2	1	2	13	7	38	31	$1,051,428
TWEED ST	I	YTHAN ST	2	4	8	4	3	21	10	29	14	$1,019,460
QUEENS DRIVE	I	DON ST	4	1	1	1	3	10	5	30	10	$958,106
JED ST	I	SPEY ST		5		1	2	8	3	25		$923,412
JANET ST	I	YTHAN ST	1		1	4	3	9	5	44		$865,250
ISABELLA ST	I	YARROW ST	1	3		1	4	9	5	44	33	$860,146
SCANDRETT ST	I	YTHAN ST	1	1	2		3	7	3	14	29	$850,250
ELLES ROAD	I	OHARA ST	1		1	2	2	6	2	17		$832,860
SCANDRETT ST	I	NESS ST		1	1	2	1	5	1		20	$812,030
CENTRE ST	I	REGENT ST		3	1	1		5	1	40	60	$790,530
NESS ST	I	CRINAN ST	1	3	1	1	1	7	4	29	29	$787,778
SPEY ST	I	DEVERON ST	3		1		2	6	3	50	17	$770,252
JED ST	I	LEET ST		1		4	2	7	4	29	14	$766,160
CONON ST	I	TEVIOT ST	5		1			6	3	33		$760,798
TWEED ST	I	NESS ST	1	2		1	1	5	2	40	20	$756,382
BROWN ST	I	MCQUARRIE ST	1	3		1	1	6	3			$753,992
KELVIN ST	I	DON ST	2	1	2	1	2	8	6	38	25	$745,950
MACMASTER ST	I	YARROW ST		2	1		2	5	2		20	$731,380
HEYWOOD ST	I	PATERSON ST	1		1	1		3			33	$721,540
ELLES ROAD	I	CRINAN ST		2		2		4	1			$713,990
YARROW ST	I	DEVERON ST		1		2	3	6	4		17	$711,120
MARAMA AVENUE NORTH	I	DUNNS ROAD		2	1	2		5	3	60	20	$693,854
TWEED ST	I	CONON ST	3	2	3	3	8	19	13	37	5	$688,801
YARROW ST	I	JED ST	2		2		1	5	3			$677,384
BALMORAL DRIVE	I	ELLES ROAD	2	1			1	4	2	25	50	$660,056
BAY ROAD	I	STOBO ST				1	2	3	1	67	33	$658,950
CRINAN ST	I	CONON ST					3	3	1	33	33	$658,950
QUEENS DRIVE	I	BAINFIELD ROAD	1		1		1	3	1	67	67	$658,944
ETTRICK ST	I	NITH ST	1	1	1	1		4	2	50		$654,834
BAY ROAD	I	ROSS ST	2				1	3	1		33	$646,050

Table 9.1: Council Roads Black Spot List Urban (Injury and Non-Injury Crashes)

Site Radius = 30 metres

Sites with 3 or more injury crashes or more than $250000 in social costs

CRASH ROAD			SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
LAYARD ST	I		WARD ST	2		1			3	1	33		$642,604
TWEED ST	I		BOND ST		1	1	1		3	1			$637,450
ELLES ROAD	I		SELWYN ST		1	2	1	2	6	5	50	33	$630,470
ESK ST		50 E	SH 6		3			2	5	4	40	60	$613,204
ELLES ROAD	I		DALRYMPLE ST			1	1	1	3	2	33	33	$599,800
SALFORD ST	I		LAYARD ST			2		1	3	2	33	67	$599,800
DON ST		80 E	SH 6	1		1	1		3	2			$599,794
ELLES ROAD	I		ELIZABETH ST	1		1	1		3	2		33	$599,794
HYDE ST	I		WICKLOW ST	1			2		3	2		67	$599,794
QUEENS DRIVE	I		YARROW ST	2	4	4	3	4	17	12	12	6	$594,939
QUEENS DRIVE	I		LAYARD ST	1		1		1	3	2		33	$583,460
WINDSOR ST	I		BOURKE ST	1			1	1	3	2	67		$583,460
NELSON ST	I		MARTIN ST	2		2	6		10	4	20	30	$532,234
ELLES ROAD	I		GRACE ST	4	3	4	6	2	19	16	16	47	$507,899
TWEED ST	I		NITH ST	1	1	3	5	2	12	7	25	17	$504,424
YARROW ST	I		DOON ST	1	4	3	3	2	13	10	46	15	$403,638
TEVIOT ST	I		NITH ST	1	1	1	2	1	6	1	17	17	$403,530
RACECOURSE ROAD	I		HERBERT ST		2	2	2		6	1	50	50	$400,090
DUNNS ROAD	I		ORETI ROAD	1	1	1	1	1	5	1	40		$372,687
KELVIN ST	I		ESK ST	2	2	3	4	3	14	12	7	14	$365,319
YARROW ST	I		KELVIN ST	2	2	2	2	2	10	7	20		$354,908
TWEED ST	I		INGLEWOOD ROAD	5		1		2	8	5	50	50	$326,878
DEVERON ST	I		DON ST	1	2	5			8	5	25	25	$316,688
QUEENS DRIVE	I		HERBERT ST	2		1	3	5	11	9	18	9	$313,025
TWEED ST	I		LIDDEL ST	1	1	2	2	1	7	4	43	29	$299,236
CENTRE ST	I		MORTON ST	1		2	1	2	6	3	50	17	$285,230
ELLES ROAD	I		ETTRICK ST	4		2	3		9	7	22	22	$281,678
TWEED ST	I		POMONA ST	1	2		2		5	2	20		$267,902
ELLES ROAD	I		MCQUARRIE ST	3	2	1	1	1	8	6	25	25	$264,418
JED ST	I		ESK ST		2		2	1	5	2	20	20	$264,400
FOX ST	I		LIFFEY ST	1		1	1	1	4	1		25	$250,450
CHESNEY ST	I		MCQUARRIE ST	2	1	1			4	1		25	$250,444
ELLES ROAD	I		FORTH ST		3				3		33	33	$229,620

Table 9.2: Council Roads Black Spot List Rural (Injury and Non-Injury Crashes)

Site Radius = 250 metres

Sites with 3 or more injury crashes or more than $250000 in social costs

CRASH ROAD			SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
MILL ROAD NORTH	A		FINDLAY ROAD	3	2				5	1	20	40	$1,568,314
STEELE ROAD		150 S	MOORE ROAD			2	1		3		67	33	$1,484,700
MILL ROAD SOUTH	I		OTERAMIKA ROAD	1			1	1	3		33	33	$1,458,240
ROCKDALE ROAD	I		TRAMWAY ROAD			2	2	4	8	4	63	13	$1,131,927
SCOTT ST	I		OLD CHESNEY ST	2	3	1			6	1	17	17	$1,107,897
BOUNDARY ROAD	I		SCOTT ST	3	1			2	6	3	33	33	$980,327
STEELE ROAD	I		WEST PLAINS ROAD	2	1			3	6	3	50	50	$979,347
OTATARA ROAD	I		CURRAN ROAD		1	1		4	6	3	50	33	$965,811
OTATARA ROAD	I		FERRY ROAD	1	1	1		1	4	1	25	75	$935,417
SANDY POINT ROAD		1910 S	PIT ROAD		1	2			3			33	$892,780
MILL ROAD NORTH	I		BAINFIELD ROAD					3	3			33	$887,880
STEAD ST		500 W	AIRPORT AVENUE	2		2			4	2	100	75	$869,887
STEELE ROAD	I		CROWE ROAD	3		1			4	2	50	25	$846,550
MILL ROAD SOUTH	I		SH 1S	2		1		1	4	3	25	50	$780,407
BOUNDARY ROAD	I		BAY VIEW ROAD	1			1	1	3	2	33	100	$740,894
OTATARA ROAD		400 N	CURRAN ROAD		1	1		2	4	2	100	50	$272,454

Table 9.3: State Highway Urban and Rural Black Spot List (Injury and Non-Injury Crashes)

Urban Site Radius = 30 metres
Rural Site Radius = 250 metres

Sites with 3 or more injury crashes or more than $300000 in social costs

CRASH ROAD			SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
SH 1S		230 E	MILL ROAD NORTH N	3	0	2	0	0	5	2	60	60	$4,129,550
SH 1S	I		BAY VIEW ROAD	0	2	1	1	2	6	2	33	50	$4,100,252
SH 1S	I		MOTU RIMU ROAD	4	1	2	0	2	9	8	44	44	$4,038,882
SH 1S	I		GREEN POINT ROAD	1	0	0	0	2	3	1	33	33	$3,984,014
SH 1S		500 N	BAY VIEW ROAD	0	1	1	0	1	3	2	33	0	$3,922,872
SH 1S	I		LINDISFARNE ST	3	3	3	2	5	16	9	31	25	$3,719,602
SH 1S	I		ROCKDALE ROAD	8	6	3	4	0	21	10	33	33	$2,462,534
SH 1S		400 E	RACECOURSE ROAD	0	1	1	0	2	4	1	25	75	$2,043,797
SH 1S	I		QUEENS DRIVE	10	8	7	5	11	41	28	34	32	$1,981,009
SH 1S	I		CRINAN ST	0	2	2	3	0	7	2	29	14	$1,861,420
SH 1S	I		MILL ROAD SOUTH	2	1	2	1	1	7	3	43	43	$1,705,527
SH 1S BLUFF HIGHWAY	I		ELLES ROAD	1	2	1	2	1	7	3	43	14	$1,684,586
SH 6	I		SPEY ST	5	3	5	7	5	25	14	28	32	$1,584,313
SH 1S	I		CONON ST	0	2	4	3	3	12	5	17	0	$1,578,190
SH 6	I		HERBERT ST	4	3	4	5	2	18	11	11	22	$1,219,035
SH 1S	I		TWEED ST	7	5	5	7	4	28	25	21	29	$1,140,169
SH 6	I		YARROW ST	3	1	6	3	3	16	11	19	25	$1,065,899
SH 1S	I		YTHAN ST	1	2	2	6	5	16	11	25	38	$1,062,527
SH 6	I		FILLEUL ST	1	2	1	3	0	7	1	43	43	$968,550
SH 1S		1000 W	CLAPHAM ROAD	1	2	0	1	1	5	2	0	20	$936,812
SH 1S	I		ETTRICK ST	2	3	1	0	1	7	2	43	29	$909,394
SH 6	I		SH 99	0	1	2	0	1	4	1	25	75	$892,297
SH 1S		20 W	KENNINGTON-ROSLYN BUS	1	2	2	0	0	5	3	80	80	$876,549
SH 1S		200 N	OLD BLUFF HIGHWAY	0	0	0	0	5	5	4	80	100	$840,867
SH 1S	I		KEW ROAD	1	4	1	0	0	6	4	33	33	$810,686
SH 1S	I		SH 6	9	8	7	1	4	29	24	14	21	$807,333
SH 6	I		DON ST	2	7	2	5	4	20	13	20	25	$768,978
SH 6	I		ESK ST	2	0	2	1	4	9	8	44	67	$704,128
SH 1S	I		EYE ST	2	1	0	0	0	3	0	0	0	$703,480
SH 1S		280 S	CLAPHAM ROAD	2	1	1	1	2	7	0	29	29	$695,800
SH 6	I		DURHAM ST	0	2	0	0	3	5	3	20	0	$672,230
SH 6	I		LOWE ST	2	1	0	3	1	7	6	57	0	$669,410
SH 1S		10 E	SH 6	2	3	6	6	4	21	16	24	43	$660,991
SH 6	I		GIMBLETT ST	0	2	1	0	0	3	2	67	33	$578,362
SH 6	I		FULTON ST	0	1	1	0	1	3	2	33	0	$578,300
SH 6	I		GALA ST	4	4	3	0	5	16	11	31	44	$577,536
SH 6	I		WEST PLAINS ROAD	2	1	2	1	2	8	2	38	13	$497,454
SH 6 DEE	I		LEET ST	2	4	1	2	2	11	7	18	9	$427,940
SH 6	I		BAY ROAD	3	2	1	2	2	10	6	50	10	$413,990
SH 6	I		VICTORIA AVENUE	3	2	1	2	4	12	9	33	25	$386,236
SH 1S		1700 N	OLD BLUFF HIGHWAY	2	0	2	0	1	5	2	80	80	$373,210
SH 6	I		BAINFIELD ROAD	3	1	5	0	2	11	8	18	9	$372,230
SH 1S	I		KELVIN ST	1	2	4	1	3	11	8	9	9	$368,796
SH 1S		670 W	MCGORLICK ST	0	2	1	1	0	4	1	0	25	$334,596
SH 6	I		THAMES ST	1	1	3	1	3	9	6	44	56	$334,016
SH 6		100 N	WEST PLAINS ROAD	0	0	2	2	0	4	1	50	0	$318,017
SH 6	I		LOUISA ST	1	3	1	0	0	5	2	0	0	$267,964
SH 1S	I		WOOD ST	1	2	1	0	1	5	2	40	60	$267,840

Table 9.4 : Urban Council Road Crash Sites with a Significant Increase in Crashes in 2009 (Injury and Non-Injury Crashes)

Site Radius = 30 metres

CRASH ROAD			SIDE ROAD	2004	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
ELLES ROAD	I		TWEED ST	2	4	7	11	7	11	42	32	26	38
TWEED ST	I		CONON ST	4	3	2	3	3	8	23	17	43	13
QUEENS DRIVE	I		HERBERT ST	2	2	0	1	3	5	13	10	31	8
YARROW ST	I		ISABELLA ST	1	1	3	0	1	4	10	5	40	30
YARROW ST	I		MARY ST	0	0	3	1	2	4	10	2	50	10
TWEED ST	I		METZGER ST	0	0	1	1	0	4	6	4	33	17
BAY ROAD	I		STOBO ST	0	0	0	0	1	2	3	1	67	33
HYDE ST		50 S	STIRRAT ST	0	0	0	0	1	2	3	2	33	33
PRINCES ST	I		MARTIN ST	0	0	0	0	1	2	3	2	33	0
QUEENS DRIVE		5 N	SH 1S	0	0	0	1	0	2	3	3	67	67
MOULSON ST	I		BROWN ST	0	0	0	1	0	2	3	3	0	0
LAYARD ST	I		WAIHOPAI ST	0	0	0	0	0	3	3	3	67	33
CRINAN ST	I		CONON ST	0	0	0	0	0	3	3	1	33	33

Table 9.4a : Rural Council Road Crash Sites with a Significant Increase in Crashes in 2009 (Injury and Non-Injury Crashes)

Site Radius = 250 metres

CRASH ROAD		SIDE ROAD	2004	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
ROCKDALE ROAD	I	TRAMWAY ROAD	1	0	0	2	2	4	9	5	56	22
OTATARA ROAD	I	CURRAN ROAD	0	0	1	1	0	4	6	3	50	33
STEELE ROAD	I	WEST PLAINS ROAD	0	2	1	0	0	3	6	3	50	50
MILL ROAD NORTH	I	BAINFIELD ROAD	2	0	0	0	0	3	5	2	20	20
ROCKDALE ROAD	I	MASON ROAD	1	0	0	0	0	2	3	2	33	0

Table 9.5 : State Highway Crash Sites with a Significant Increase in Crashes in 2009 (Injury and Non-Injury Crashes)

Urban Site Radius = 30 metres
Rural Site Radius = 250 metres

CRASH ROAD			SIDE ROAD	2004	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
SH 1S	I		ELLES ROAD	1	10	8	7	5	11	42	28	33	33
SH 6	I		ESK ST	1	2	0	2	1	4	10	9	40	60
SH 1S	I		DOON ST	1	0	1	0	2	3	7	5	43	43
SH 1S		200 N	OLD BLUFF HIGHWAY	1	0	0	0	0	5	6	5	67	100
SH 6	I		DURHAM ST	1	0	2	0	0	3	6	3	17	0
SH 1S	I		GREEN POINT ROAD	0	1	0	0	0	2	3	1	33	33
SH 1S	I		CLYDE ST	0	0	0	0	1	2	3	3	0	33
SH 1S	I		BLYTH ST	1	0	0	0	0	2	3	2	33	67

appendix

- Groupings of crash types
- Grouping of contributing factors
- General factor list
- General movement types

Explanatory notes for the appendix

1. Each traffic crash report has a diagram and a description of what happened. These are used to classify the movements the vehicles were making when they crashed eg ‘collided with parked vehicle’, or ‘lost control while overtaking’. In this report, crash types are grouped into seven categories. The following page shows the types of crashes which are included in each group.

2. Traffic crash reports also include information on why the crash occurred, or on factors contributing to the crash. In this report the hundreds of contributing factor codes used by New Zealand Transport Agency have been condensed into 16 groups for practical reasons. Lists of the factor groups used in this report, and of all the contributing factors used by New Zealand Transport Agency, are shown on the following pages.

3. Note that in the year 2000 there were some minor changes to the contributing factor groups. The most significant change was that ‘inattention’ was grouped with ‘inadequate check’ to form ‘poor observation’. This allowed a more accurate assessment of ‘fatigue’ as a contributing factor, as it now has its own grouping.

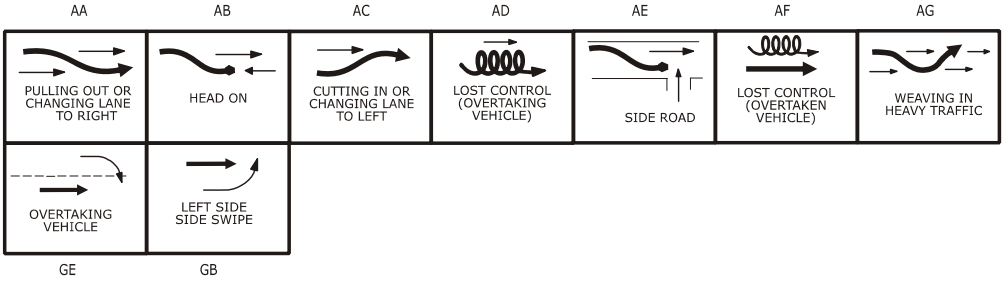
4. The factor group ‘poor handling’ includes factor codes that were only introduced in 1998. This could explain why there may have been a sudden change at this time.

5. The coding of the factors contributing to a crash is subjective. Therefore analysis using contributing factor groups needs to be interpreted with caution. Also, to effectively target safety or enforcement campaigns more analysis of the specific contributing factors involved may be needed.

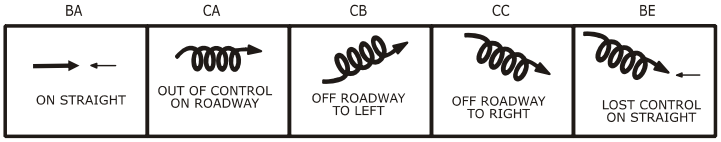
6. It should be noted that a traffic crash generally has more than one contributing factor. Therefore, adding the number of crashes on graphs showing the number of crashes with a given factor or factor group will be greater than the total number of crashes in the city or district.

Groupings of crash types

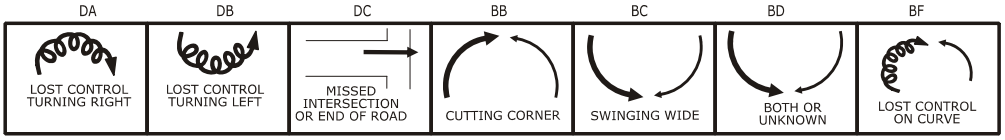
Overtaking



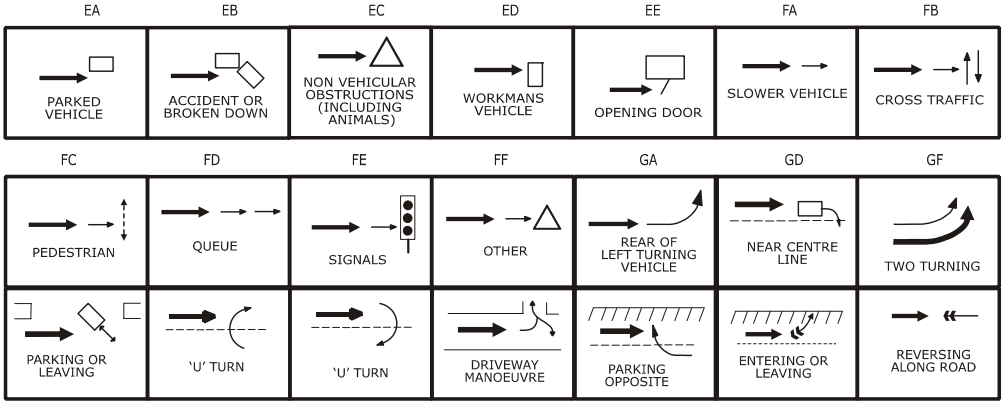
Straight - Lost control / Head on



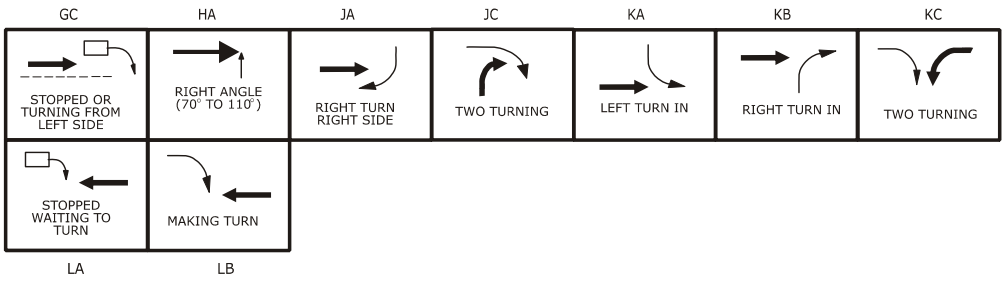
Bend - Lost control / Head on



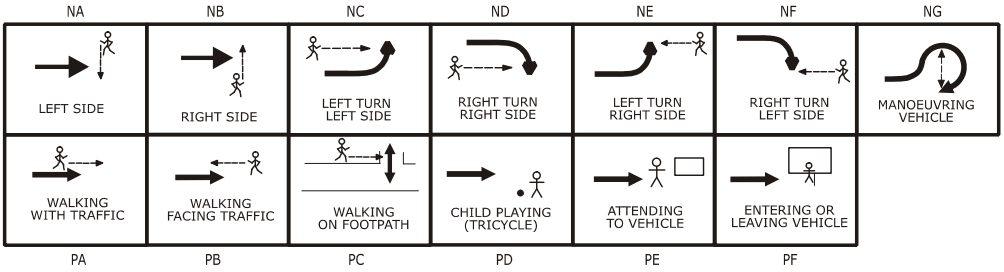
Rear end / Obstruction



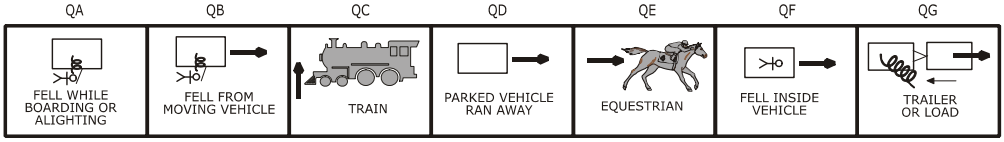
Crossing / Turning



Pedestrian vs Vehicle



Miscellaneous



Groupings of contributing factors

Factor group	Factor codes included
Alcohol involved	100 – 101 103 – 109
Too fast	110 – 119 430 – 432
Failed to give way or stop	300 – 314 320 – 328
Failed to keep left	120 – 128 205
Overtaking	150 – 161
Incorrect lanes or position	129 170 – 183 200 – 204 206 – 209 440 – 448
Poor handling	130 – 134 137 – 149 420 – 429
Poor observation	330 – 360 370 – 379
Poor judgement	380 – 387 400 – 407
Fatigue	410 – 415
Disabled, old age or illness	500 – 507
Pedestrian factors	700 – 731
Cyclist factors	Any factor coded against a cyclist
Vehicle factors	136, 600 – 699
Road factors	135, 800 – 899
Weather	900 – 909

Note:

The following factor codes are not included as they do not fit adequately into any of the above groupings: 102, 106, 190–198, 433, 434, 510–534 and 910–999.

NZ TRANSPORT AGENCY
WAKA KOTAHI

VEHICLE MOVEMENT CODING SHEET

For use with crash data from CAS (Version 2.8 May 2010)

	TYPE	A	B	C	D	E	F	G	O
A	OVERTAKING AND LANE CHANGE	PULLING OUT OR CHANGING LANE TO RIGHT	HEAD ON	CUTTING IN OR CHANGING LANE TO LEFT	LOST CONTROL (OVERTAKING VEHICLE)	SIDE ROAD	LOST CONTROL (OVERTAKEN VEHICLE)	WEAVING IN HEAVY TRAFFIC	OTHER
B	HEAD ON	ON STRAIGHT	CUTTING CORNER	SWINGING WIDE	BOTH OR UNKNOWN *	LOST CONTROL ON STRAIGHT	LOST CONTROL ON CURVE *		OTHER
C	LOST CONTROL OR OFF ROAD (STRAIGHT ROADS)	OUT OF CONTROL ON ROADWAY	OFF ROADWAY TO LEFT	OFF ROADWAY TO RIGHT					OTHER
D	CORNERING	LOST CONTROL TURNING RIGHT	LOST CONTROL TURNING LEFT	MISSED INTERSECTION OR END OF ROAD					OTHER
E	COLLISION WITH OBSTRUCTION	PARKED VEHICLE	CRASH OR BROKEN DOWN	NON VEHICULAR OBSTRUCTIONS (INCLUDING ANIMALS)	WORKMANS VEHICLE	OPENING DOOR			OTHER
F	REAR END	SLOWER VEHICLE	CROSS TRAFFIC	PEDESTRIAN	QUEUE	SIGNALS	OTHER		OTHER
G	TURNING VERSUS SAME DIRECTION	REAR OF LEFT TURNING VEHICLE	LEFT TURN SIDE SIDE SWIPE	STOPPED OR TURNING FROM LEFT SIDE	NEAR CENTRE LINE	OVERTAKING VEHICLE	TWO TURNING *		OTHER
H	CROSSING (NO TURNS)	RIGHT ANGLE (70° TO 110°)							OTHER
J	CROSSING (VEHICLE TURNING)	RIGHT TURN RIGHT SIDE	OPPOSING RIGHT TURNS	TWO TURNING					OTHER
K	MERGING	LEFT TURN IN	RIGHT TURN IN	TWO TURNING					OTHER
L	RIGHT TURN AGAINST	STOPPED WAITING TO TURN	MAKING TURN						OTHER
M	MANOEUVRING	PARKING OR LEAVING	"U" TURN	"U" TURN	DRIVEWAY MANOEUVRE	ENTERING OR LEAVING FROM OPPOSITE SIDE	ENTERING OR LEAVING FROM SAME SIDE	REVERSING ALONG ROAD	OTHER
N	PEDESTRIANS CROSSING ROAD	LEFT SIDE	RIGHT SIDE	LEFT TURN LEFT SIDE	RIGHT TURN RIGHT SIDE	LEFT TURN RIGHT SIDE	RIGHT TURN LEFT SIDE	MANOEUVRING VEHICLE	OTHER
P	PEDESTRIANS OTHER	WALKING WITH TRAFFIC	WALKING FACING TRAFFIC	WALKING ON FOOTPATH	CHILD PLAYING (INCLUDING TRICYCLE)	ATTENDING TO VEHICLE	ENTERING OR LEAVING VEHICLE		OTHER
Q	MISCELLANEOUS	FELL WHILE BOARDING OR ALIGHTING	FELL FROM MOVING VEHICLE	TRAIN	PARKED VEHICLE RAN AWAY	EQUESTRIAN	FELL INSIDE VEHICLE	TRAILER OR LOAD	OTHER

* = Movement applies for left and right hand bends, curves or turns

New Zealand Government

FACTORS PROBABLY CONTRIBUTING TO CRASHES (Version 1.8- 2 November 2009)

DRIVER CONTROL

100 Alcohol or drugs
- 101 Alcohol suspected
- 102 Alcohol test below limit
- 103 Alcohol test above limit or test refused
- 104 Alcohol test result unknown
- 105 Intoxicated non-driver (pedestrian / cyclist / passenger)
- 106 (MOT only) dead driver not suspect, tested neg
- 107
- 108 Drugs suspected
- 109 Drugs proven

110 Too fast for conditions
- 111 Cornering
- 112 On straight
- 113 To give way at intersection
- 114 Approaching railway crossing
- 115 When passing stationary school bus
- 116 At temporary speed limit
- 117 At crash or emergency

120 Failed to keep left
- 121 Swung wide on bend
- 122 Swung wide at intersection
- 123 Cutting corner on bend
- 124 Cutting corner at intersection
- 125 On straight section
- 126 Vehicle crossed raised median
- 127 Driving or riding abreast (cyclists more than 2 abreast)
- 128 Wandering or wobbling
- 129 Too far left / right

130 Lost control
- 131 When turning
- 132 Under heavy braking
- 133 Under heavy acceleration
- 134 While returning to seal from unsealed shoulder
- 135 Due to road conditions (requires road series code)
- 136 Due to vehicle fault (requires vehicle series code)
- 137 Avoiding another vehicle, pedestrian, party or obstacle on roadway
- 138 On unsealed road
- 139 End of seal

140 Failed to signal in time
- 141 When moving to left, pulling over to left
- 142 When turning left
- 143 When pulling out or moving to the right
- 144 When turning right
- 145 Incorrect Signal

150 Overtaking
- 151 Overtaking line of traffic or queue
- 152 Deliberately in the face of oncoming traffic
- 153 Failed to notice oncoming traffic
- 154 Misjudged speed or distance of oncoming traffic
- 155 At no passing line
- 156 With insufficient visibility
- 157 At an intersection without due care
- 158 On left without due care
- 159 Cut in after overtaking
- 160 Vehicle signalling right turn
- 161 Without care at a pedestrian crossing

170 Wrong lane or turned from wrong position
- 171 Turned right from incorrect lane
- 172 Turned left from incorrect lane
- 173 Travelled straight ahead from turning lane or flush median
- 174 Turned right from left side of road
- 175 Turned left from near centre line
- 176 Turned into incorrect lane
- 177 Weaving or cut in on multi-lane roads
- 178 Moved left to avoid slow vehicle
- 179 Long vehicle tracked outside lane

180 In line of traffic
- 181 Following too closely
- 182 Travelling unreasonably slowly
- 183 Motorist crowded cyclist
- 184 Incorrect merging /diverging manoeuvre

190 Sudden action
- 191 Braked
- 192 Turned left
- 193 Turned right
- 194 Swerved to avoid pedestrian
- 195 Swerved to avoid animal
- 196 Swerved to avoid crash or broken down vehicle
- 197 Swerved to avoid vehicle
- 198 Swerved to avoid object or for unknown reason
- 199 Avoiding approaching emergency vehicle

200 Forbidden movements
- 201 Wrong way in one way street, motorway or roundabout
- 202 When turning or U turning contrary to a sign
- 203 Contrary to "in" or "out" only driveway sign
- 204 Driving or riding on footpath
- 205 On incorrect side of island or median
- 206 Contrary to "no entry" sign
- 207 In Car Park
- 208 Motor vehicle in cycle lane
- 209 Bus / Transit lane
- 210 Cyclist riding on ped-xing / ped signals

VEHICLE CONFLICTS

300 Failed to give way
- 301 At Stop sign
- 302 At Give Way sign
- 303 When turning to non-turning traffic
- 304 When deemed turning by markings, not geometry
- 305 When turning left, to opposing right turning traffic
- 306 To pedestrian on a crossing
- 307 When turning at signals to pedestrians
- 308 When entering roadway from driveway
- 309 To traffic approaching or crossing from the right
- 310 Failed to give way at one lane bridge / road
- 311 Failed to give way to pedestrian on footpath or verge
- 312 Entering roadway not from driveway or intersection
- 313 To emergency vehicle
- 314 Driver waved through

320 Did not stop
- 321 At stop sign
- 322 At steady red light
- 323 At steady red arrow
- 324 At steady amber light
- 325 At steady amber arrow
- 326 At flashing red lights (Rail Xing, Fire Stn etc)
- 327 For police or flag-person
- 328 For school patrol / kea crossing

330 Inattentive: failed to notice
- 331 Vehicle slowing, stopping or stationary in front
- 332 Bend in road
- 333 Indication of vehicle in front
- 334 Traffic lights
- 335 Intersection or its Stop / Give Way control
- 336 Other regulatory sign / markings
- 337 Warning sign
- 338 Direction, information signs / markings
- 339 Road-works signs
- 340 Lane use arrows / markings?
- 341 Obstructions on Roadway

350 Attention diverted by:
- 351 Passengers
- 352 Scenery or persons outside vehicle
- 353 Other traffic
- 354 Animal or insect in vehicle
- 355 Trying to find intersection, house number, destination
- 356 Advertising or signs
- 357 Emotionally upset /road rage
- 358 Cigarette, radio, heater, AC, glove box, obj under drivers feet/pedals etc
- 359 Cell phone
- 360
- 361 Navigation device
- 362 CB radio/ non cell comms device
- 363 Driver dazzled

370 Did not see or look for another party until too late
- 371 Behind when reversing / manoeuvring
- 372 Behind when changing lanes position or direction (includes U-turns)
- 373 Behind when pulling out from parked position
- 374 Behind when opening door or leaving vehicle
- 375 When required to give way to traffic from another direction
- 376 When required to give way to pedestrians.
- 377 When visibility obstructed by other vehicles
- 378 When visibility limited by roadside features
- 379 When first in queue on receiving green light

380 Misjudged speed, distance, size or position of:
- 381 Other vehicle coming from behind or alongside
- 382 Other vehicle coming from another direction with right of way
- 383 Pedestrian movement or intention
- 384 Towed vehicle, or while towing a vehicle
- 385 Size or position of fixed object or obstacle
- 386 Of own vehicle
- 387 Misjudged intentions of another party

GENERAL DRIVER

400 Inexperience
- 401 In driving in fast, complex or heavy traffic
- 402 New driver showed inexperience
- 403 Driving unfamiliar vehicle
- 404 Overseas / migrant driver fails to adjust to NZ road rules and road conditions
- 405 Driver under instruction
- 406 At towing trailer / other vehicle
- 407 Driver over-reacted
- 408 Unsupervised cyclist

410 Fatigue (drowsy, tired, fell asleep)
- 411 Long trip
- 412 Lack of sleep
- 413 Exhaust fumes
- 414 Worked long hours before driving
- 415 Exceeded driving hours

420 Incorrect use of vehicle controls
- 421 Started in gear
- 422 Stalled engine
- 423 Wrong pedal
- 424 Footrest, stand
- 425 Ignition turned off (steering locked)
- 426 Lights not switched on
- 427 Foot slipped or caught under pedal
- 428 Parking brake not fully applied
- 429 Trailer coupling or safety chain not secured

430 Showing off
- 431 Racing
- 432 Playing chicken
- 433 Wheel spins / wheelies / doughnuts / drifting
- 434 Intimidating driving

440 Parked or stopped
- 441 Inadequately lit at night: (not lit by street lights or park lights off)
- 442 At point of limited visibility
- 443 Not as close as practicable to side of road
- 444 On incorrect side of road
- 445 Double parked
- 446 In 'No Stopping' area
- 447 Not clear of rail crossing
- 448 In cycle or Transit lane

GENERAL PERSON

500 Illness and disability
- 501 Illness with no warning e.g. heart attack, unexpected epilepsy)
- 502 Physically disabled
- 503 Defective vision
- 504 Medical illness (not sudden) flu, diabetes
- 505 Mental illness (depression, psychosis)
- 506 Suicidal (but not successful)
- 507 Impaired ability due to old age

510 Intentional or criminal
- 511 Deliberate homicide (only if succeeded)
- 512 Intentional collision
- 513 Committed suicide (only if succeeded)
- 514 Evading enforcement
- 515 Object deliberately thrown at or dropped on vehicle / shot at
- 516 Object thrown from vehicle
- 517 Stolen vehicle

520 Driver or passenger, boarding, leaving , in vehicle
- 521 Boarding moving vehicle
- 522 Intentionally leaving moving vehicle
- 523 Riding in insecure position
- 524 Interfered with driver
- 525 Opened door inadvertently
- 526 Overloaded vehicle (with passengers)
- 527 Child playing in parked vehicle

530 Miscellaneous person
- 531 Casualty drowned
- 532 Casualty thrown from vehicle
- 533 Equestrian not keeping to verge
- 534 Cyclist or M/cyclist wearing dark clothing

VEHICLES

600 **Lights and reflectors at fault or dirty**
- 601 Dazzling headlights
- 602 Headlights inadequate or no headlights
- 603 Headlights failed suddenly
- 604 Brake-lights or indicators faulty or not fitted
- 605 Tail-lights inadequate or no tail-lights
- 606 Reflectors inadequate or no reflectors
- 607 Lights or reflectors obscured

610 **Brakes**
- 611 Parking brake failed
- 612 Parking brake defective
- 613 Service brake failed
- 614 Service brake defective
- 615 Jack-knifed

620 **Steering**
- 621 Defective
- 622 Failed suddenly

630 **Tyres**
- 631 Puncture or blow-out
- 632 Worn tread on tyre
- 633 Incorrect tyre type
- 634 Mixed treads / space savers

640 **Windscreen or mirror**
- 641 Shattered windscreen
- 642 Windscreen or rear window dirty
- 643 Rear vision mirror not adjusted correctly
- 644 No rear vision mirror
- 645 Windscreen or rear window misted/frosted
- 646 Inadequate or no sun-visors
- 647 Inadequate or no windscreen wipers
- 648 Cycle / Motorcycle visor, glasses, goggles or screen

650 **Mechanical**
- 651 Engine failure
- 652 Transmission failure (including chains and gears)
- 653 Accelerator or throttle jammed

660 **Body or chassis**
- 661 Body, chassis or frame (cycle, m/c) failure
- 662 Suspension failure
- 663 Failure of door catch or door not shut
- 664 Inadequate mudguards
- 665 Inadequate tow coupling
- 666 Inadequate or no safety chain
- 667 Bonnet catch failed
- 668 Wheel off
- 669 Broken axle
- 670 Inconspicuous colour
- 671 Blind spot
- 672 Seat belt / restraint failed
- 673 Air-bag failed to inflate (fully)

680 **Load**
- 681 Load interferes with driver
- 682 Not well secured or load moved
- 683 Over-hanging
- 684 Load obscured vision
- 685 Excess dimensions not adequately indicated
- 686 Over dimension vehicle or load
- 687 Load too heavy
- 688 Towed vehicle or trailer too heavy or incompatible

690 **Miscellaneous vehicle**
- 691 Emergency Vehicle attending emergency
- 692 Vehicle caught fire
- 693 Being towed
- 694 Air-bag contributed to crash or injury
- 695 Seatbelt / restraint absent or unusable
- 696 Dangerous goods

PEDESTRIANS

700 **Walking along road**
- 701 Not keeping to footpath
- 702 Not keeping to side of road
- 703 Not facing oncoming traffic
- 704 Not on outside of blind curve
- 705 Wheeled ped inconsiderate or dangerous on footpath

710 **Crossing road**
- 711 Walking heedless of traffic
- 712 Stepping out from behind vehicles
- 713 Running heedless of traffic
- 714 Failed to use pedestrian crossing when one within 20 metres
- 715 Waiting on roadway for moving traffic
- 716 Confused by traffic or stepped back
- 717 Suddenly stepped onto pedestrian crossing
- 718 Not complying with traffic signals or school patrols
- 719 Misjudged speed and / or distance of vehicle

720 **Miscellaneous**
- 721 Pushing, working on or unloading vehicle
- 722 Playing on road or unnecessarily on road
- 723 Working on road
- 724 Wearing dark clothing
- 725 Vision obscured by umbrella or clothing
- 726 Child escaped from supervision
- 727 Unsupervised child
- 728 Sitting / lying on road
- 729 Pedestrian to /from school bus
- 730 Pedestrian behind reversing / manoeuvring vehicle
- 731 Overseas pedestrian
- 732 Pedestrian attention diverted eg cigarette, cell phone, music player

ROAD

800 **Slippery**
- 801 Rain
- 802 Frost or ice
- 803 Snow or hail
- 804 Loose material on seal
- 805 Mud
- 806 Oil / Diesel / Fuel
- 807 Painted markings
- 808 Recently graded
- 809 Surface bleeding / defective

810 **Surface**
- 811 Potholed
- 812 Uneven
- 813 Deep loose metal
- 814 High crown
- 815 Curve not well banked
- 816 Edge badly defined or gave way
- 817 Under construction or maintenance
- 818 Unusually narrow
- 819 Broken glass

820 **Obstructed**
- 821 Fallen tree or branch
- 822 Slip or subsidence
- 823 Flood waters, large puddles, ford
- 824 Road works not adequately lighted
- 825 Road works not adequately signposted
- 826 Roadside object fell on vehicle
- 827 Object flicked up by vehicle

830 **Visibility limited**
- 831 Curve
- 832 Crest
- 833 Building
- 834 Trees
- 835 Hedge or fence
- 836 Scrub or long grass
- 837 Bank
- 838 Temporary obstruction, dust or smoke
- 839 Parked vehicle

840 **Signs and signals**
- 841 Damaged, removed or malfunction
- 842 Badly located
- 843 Ineffective or inadequate
- 844 Necessary
- 845 Signals turned off

850 **Markings**
- 851 Faded
- 852 Difficult to see under weather conditions
- 853 Markings necessary
- 854 Not visible due to geometry or vehicles
- 855 Old markings not adequately removed

860 **Street lighting**
- 861 Failed
- 862 Inadequate
- 863 Glare on wet road
- 864 Pedestrian crossing not adequately lighted

870 **Raised islands and roundabouts**
- 871 Traffic island(s) difficult to see
- 872 Traffic island(s) Ineffective, badly located or designed
- 873 Cyclist squeeze point

MISCELLANEOUS

900 **Weather**
- 901 Heavy rain
- 902 Dazzling sun
- 903 Strong wind
- 904 Fog or mist
- 905 Snow, sleet or hail

910 **Animals**
- 911 Household pet rushed out or playing
- 912 Farm animal straying
- 913 Farm animal attended, but inadequate warning or unexpected
- 914 Farm animal attended, but out of control
- 915 Wild animal

920 **Entering or leaving land use**
- 921 Roadside stall
- 922 Service station
- 923 Specialised liquor outlet
- 924 Take away foods
- 925 Shopping complex
- 926 Car parking building / area
- 927 Other commercial
- 928 Industrial site
- 929 Private house / farm
- 930 Other non-commercial
- 931 Mobile shop or vendor

999 **Unknown**