

North Shore City

Road Safety Report

2004 to 2008



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Introduction and general information

The New Zealand 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 New Zealand Transport Agency.

This report helps identify road safety issues in North Shore 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 North Shore 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 New Zealand 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 New Zealand Transport Agency. Mostly five-year data (2004 to 2008) has been used, but 10-year data (1999 to 2008) 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 A) along with data for all New Zealand.

The peer group used for comparison with North Shore City is Group A which consists of major urban areas with some rural areas on the outskirts. (Population over 100000 and/or rural crashes less than 30 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 2008 populations estimates updated from the 2006 census, traffic flows from the year 2008, and the average of five year crash data (2004–2008).
3. Traffic flows are based on Road Asset Maintenance and Management (RAMM) data from December 2008. 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 2004 to 2008 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 2008 compared with the previous five years (2003 to 2007). 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	2004	2005	2006	2007	2008
Northland	34%	30%	28%	34%	31%
Auckland	22%	17%	19%	16%	16%
Waikato	51%	40%	38%	49%	46%
Bay of Plenty	28%	32%	37%	38%	27%
Gisborne	28%	31%	26%	29%	26%
Hawkes Bay	73%	80%	75%	59%	60%
Taranaki	66%	55%	65%	77%	41%
Manawatu-Wanganui	50%	38%	34%	35%	34%
Wellington	61%	68%	61%	73%	64%
Nelson-Marlborough	63%	44%	52%	54%	49%
West Coast	43%	53%	55%	59%	53%
Canterbury	37%	47%	42%	50%	45%
Otago	107%	99%	85%	77%	53%
Southland	74%	78%	103%	73%	53%
New Zealand	39%	36%	35%	37%	34%

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
North Shore City	36	17	151	11
Group A	37	26	37	14
All NZ	35	27	30	16

Figure 1.3 Casualties per 100 million vehicle kilometres travelled

	Council roads		State Highways	
	Urban	Rural	Urban	Rural
North Shore City	45	23	193	15
Group A	46	37	50	19
All NZ	45	39	42	25

Figure 1.4 Peer group crash and casualty rates

Group A

City or District	Crashes per					Casualties per					2008 Population	% of rural crashes
	10,000 Population (5 year average)	100 million vehicle kilometres travelled				10,000 Population (5 year average)	100 million vehicle kilometres travelled					
		Council roads		State Highways			Council roads		State Highways			
		Urban	Rural	Urban	Rural		Urban	Rural	Urban	Rural		
Auckland	26	32	16	90	14	33	39	26	123	19	438100	21
Christchurch	25	36	22	21	13	31	44	31	27	17	368900	10
Dunedin	40	84	67	60	20	58	119	96	87	32	122900	24
Hamilton	23	43	21	41	18	29	54	25	52	24	138500	10
Hutt	20	30	50	21	8	25	37	71	24	11	101600	23
Manukau	17	30	24	56	11	24	39	36	80	17	362000	22
North Shore	20	36	17	151	11	25	45	23	193	15	223000	19
Tauranga	15	21	17	19	8	20	26	27	27	13	110500	15
Waitakere	20	36	22	29	18	27	47	30	37	23	201400	14
Wellington	23	48	28	52	10	27	55	28	71	14	192800	15
Group A	23	36	27	35	13	29	45	38	47	18	2259700	17
All New Zealand	132	35	27	30	16	36	44	39	41	24	4267970	41

Group A : Major urban areas with some rural areas on the outskirts. (Population > 97500 and/or rural crashes less than 30 percent).

Crashes and casualties per 100 million VKT are based on five years of reported injury on-road crash data (2004-2008) and December (2005) VKT.

Crashes and casualties per 10,000 population are based on five year average crash data (2004-2008) and Statistics NZ 2008 population estimates.

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

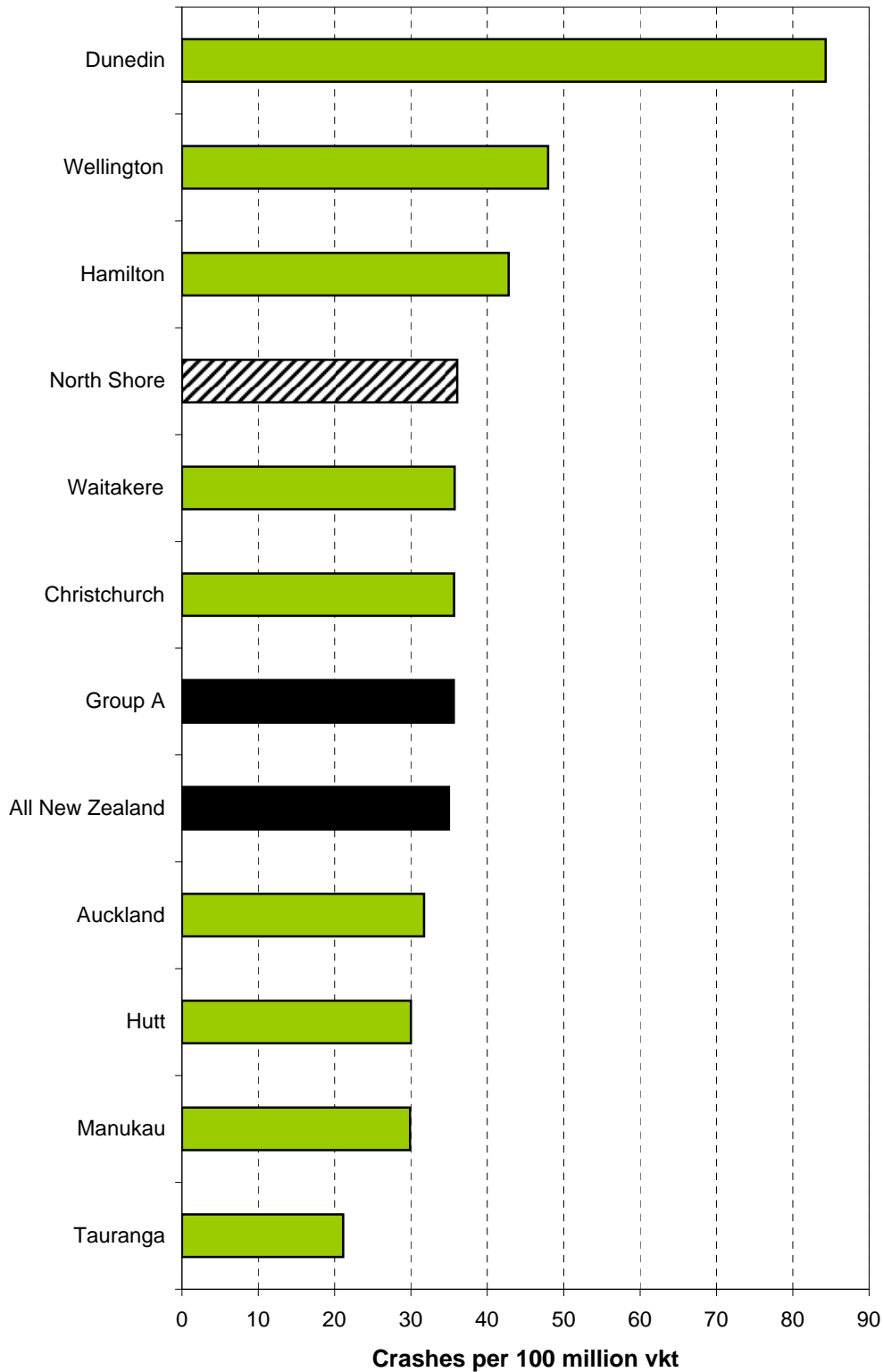
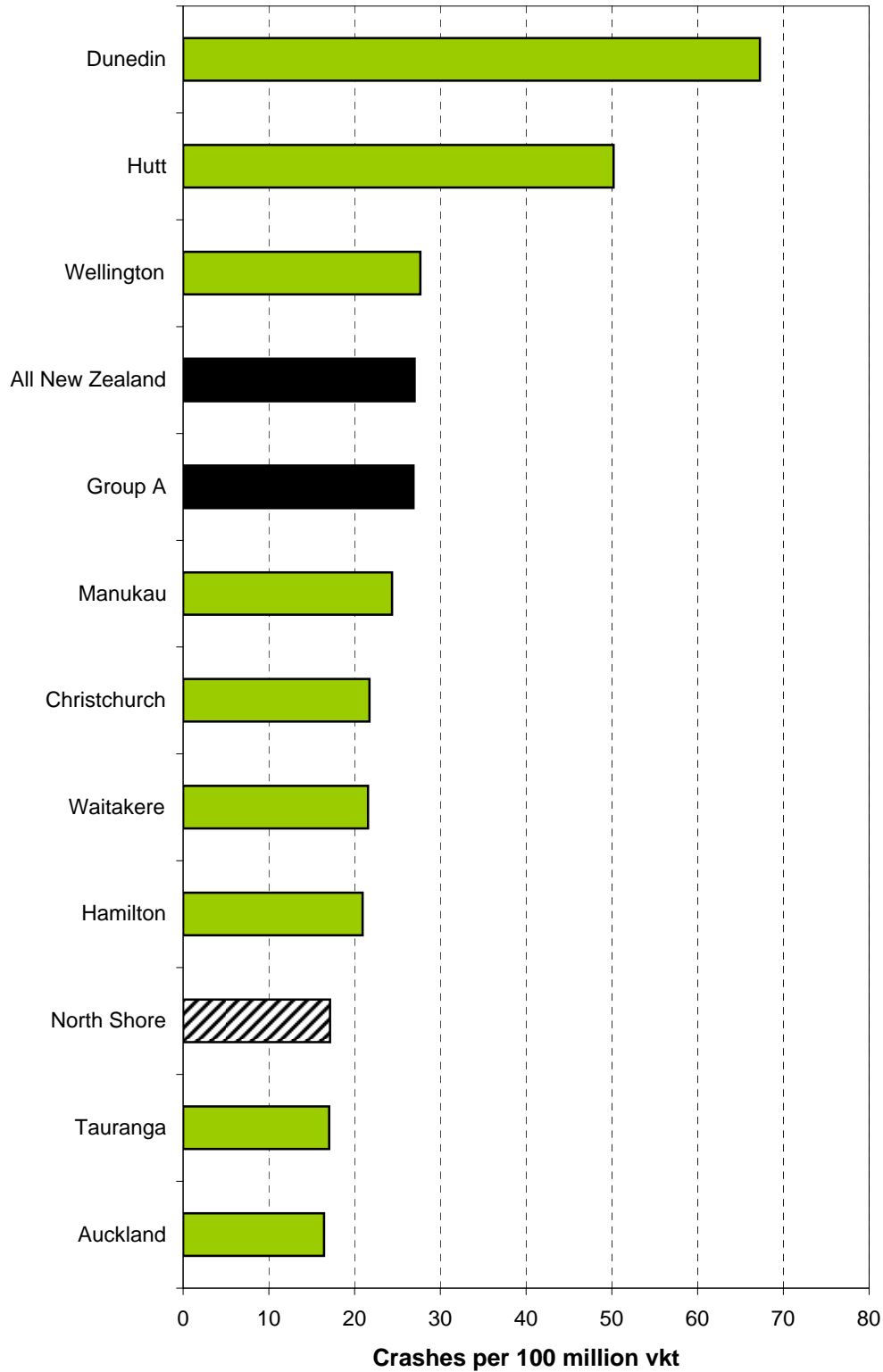


Figure 1.6 Crashes per 100 million vehicle-kilometres travelled - rural council roads



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

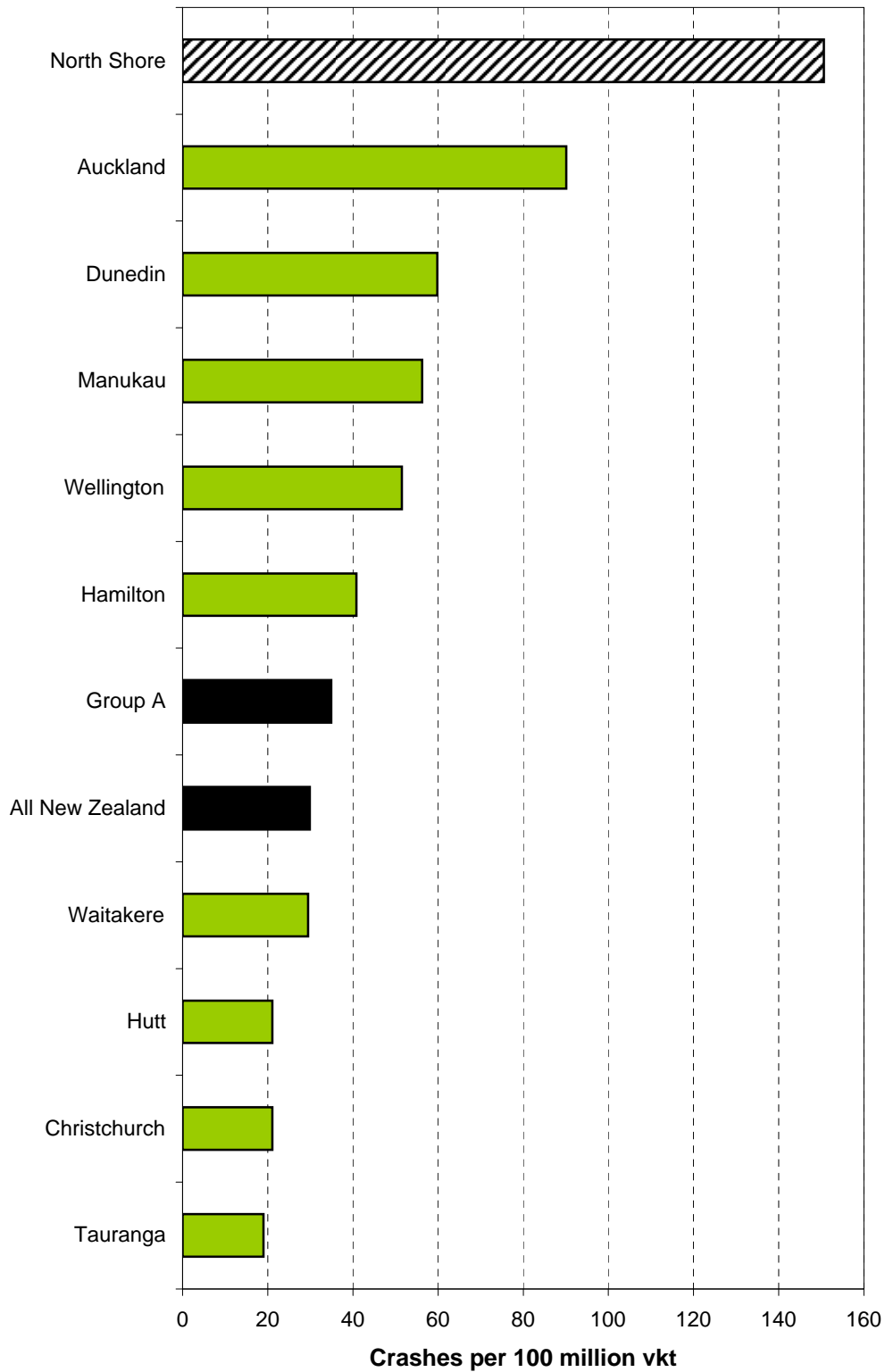
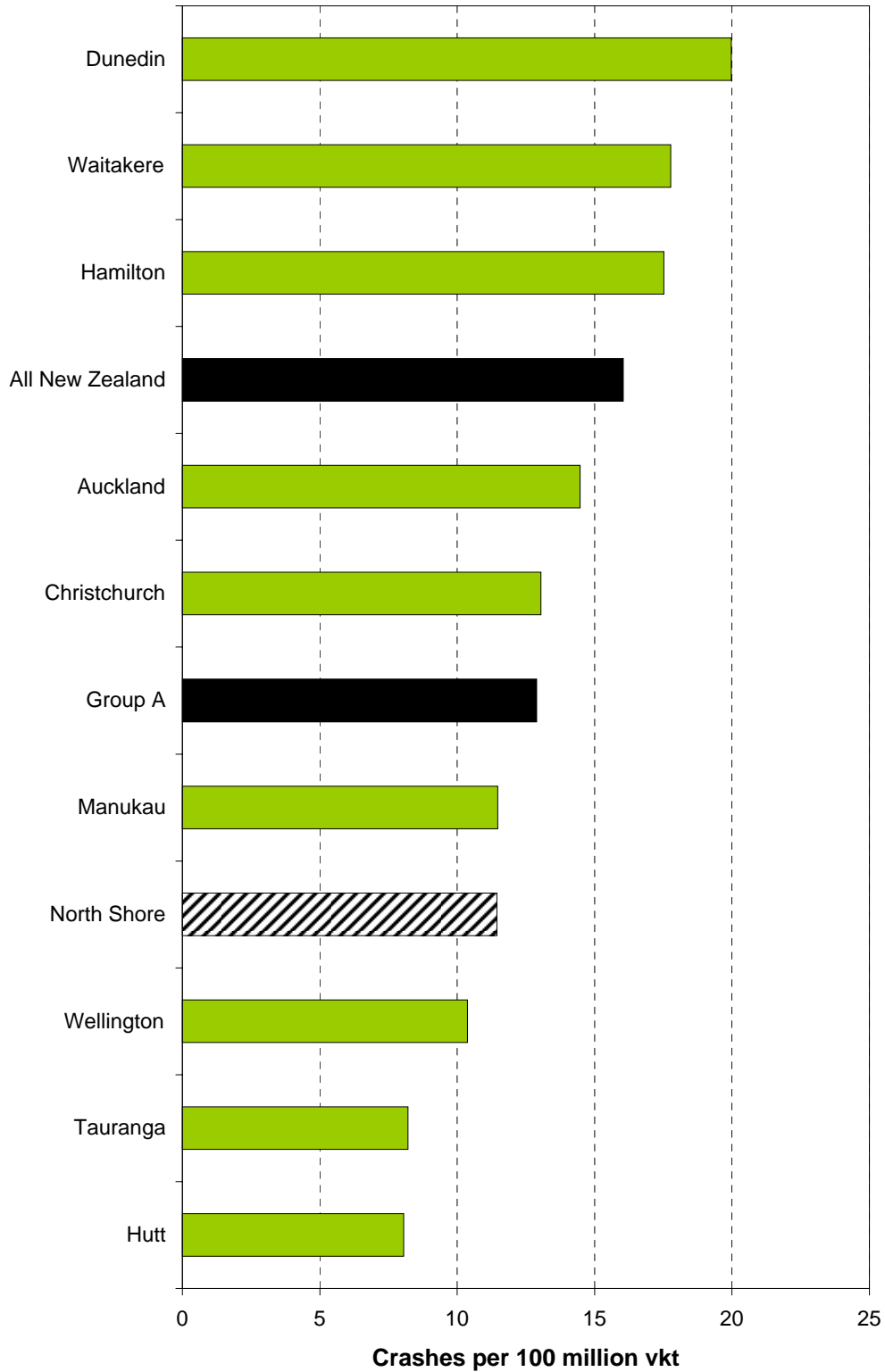


Figure 1.8 Crashes per 100 million vehicle-kilometres travelled - rural state highways



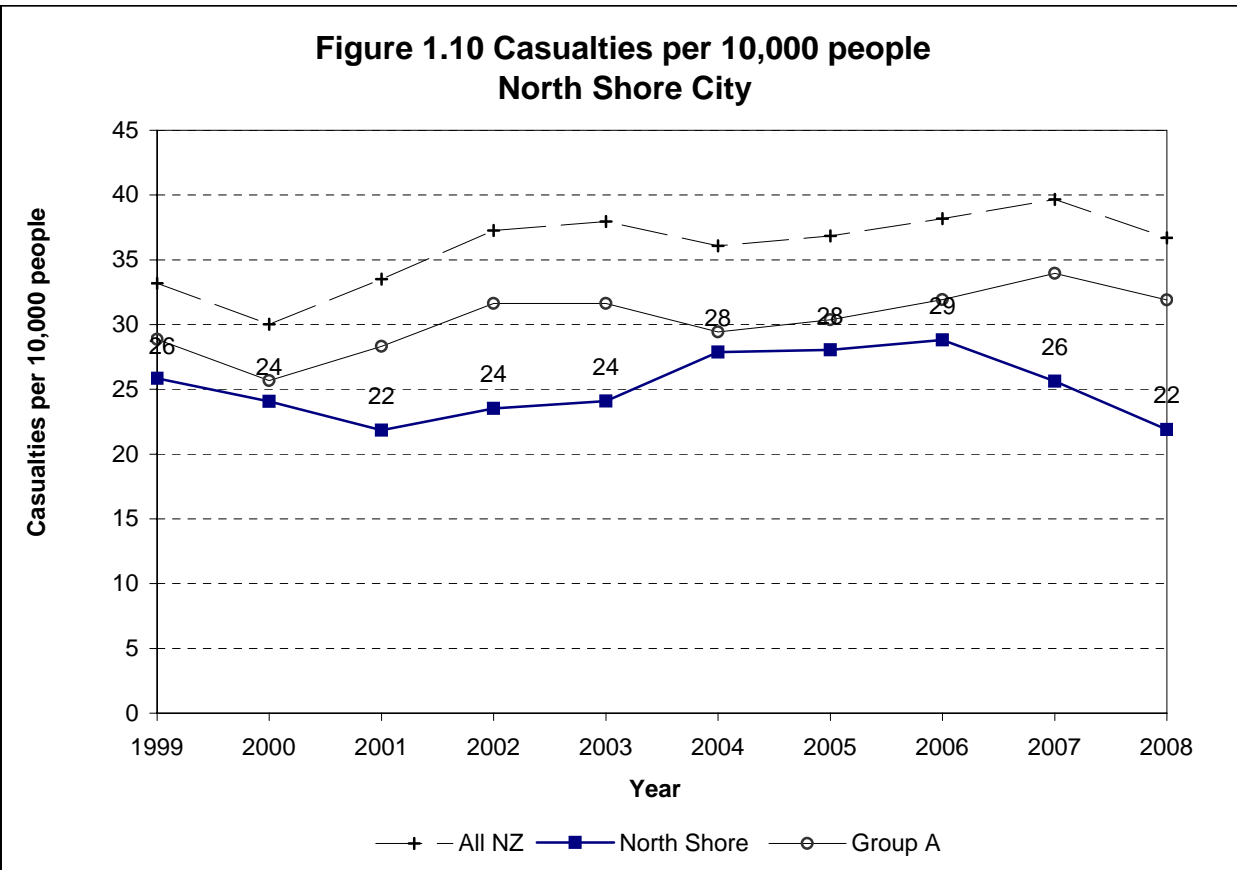
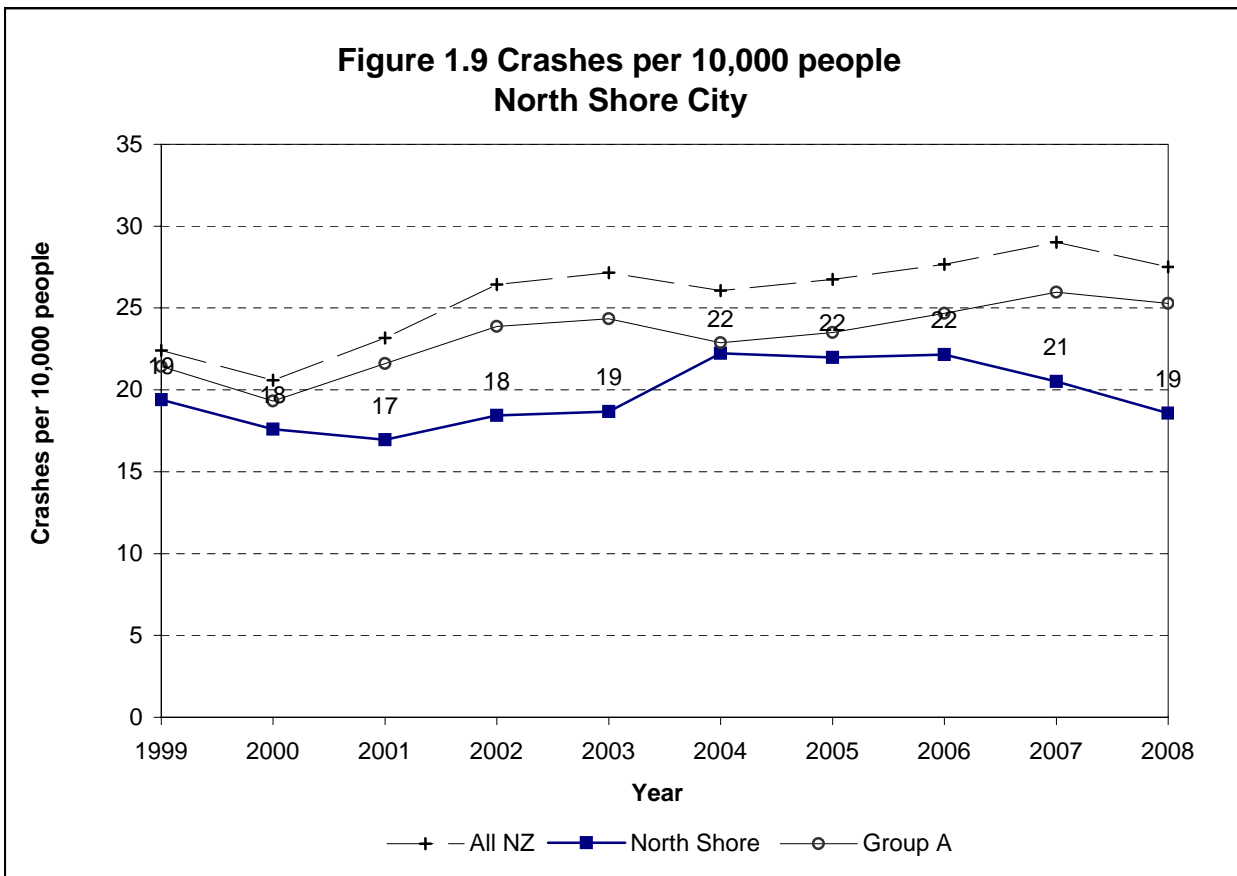


Figure 1.11 Social cost of crashes in North Shore City in 2008

		North Shore City	New Zealand
Council roads	urban	\$68.77	\$1,636.63
	rural	\$1.25	\$962.97
State Highways	urban	\$3.91	\$303.03
	rural	\$17.38	\$1,390.98
Total		\$91.31	\$4,293.62

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 \$3.35 million (in June 2008 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 2008 update', available at the Ministry of Transport's website:

<http://www.transport.govt.nz/assets/NewPDFs/NewFolder/Social-Cost-June-2008-update-final.pdf>

The average social cost per reported crash (in June 2008 dollars) are estimated at:

Rural fatal crash	\$4,199,000
Rural serious crash	\$776,000
Rural minor crash	\$90,000
Urban fatal crash	\$3,635,000
Urban serious crash	\$659,000
Urban minor crash	\$81,000

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 2004 to 2008 - whole City

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal crashes	1	3	6	4	3	17	1%	1%
Serious crashes	65	64	55	43	30	257	11%	15%
Minor crashes	391	395	412	398	376	1972	88%	84%
Total injury crashes	457	462	473	445	409	2246	100%	100%
Non-injury crashes	1444	1578	1557	1598	1425	7602		

Figure 2.2: Crash numbers and severity 2004 to 2008 - urban roads

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal crashes	1	3	6	4	3	17	1%	1%
Serious crashes	58	60	49	33	28	228	12%	15%
Minor crashes	320	318	332	319	299	1588	87%	84%
Total injury crashes	379	381	387	356	330	1833	100%	100%
Non-injury crashes	1149	1241	1234	1235	1146	6005		

Figure 2.3: Crash numbers and severity 2004 to 2008 - rural roads

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal crashes	0	0	0	0	0	0	0%	2%
Serious crashes	7	4	6	10	2	29	7%	14%
Minor crashes	71	77	80	79	77	384	93%	84%
Total injury crashes	78	81	86	89	79	413	100%	100%
Non-injury crashes	295	337	323	363	279	1597		

Figure 2.4: Casualty numbers and severity 2004 to 2008 - whole City

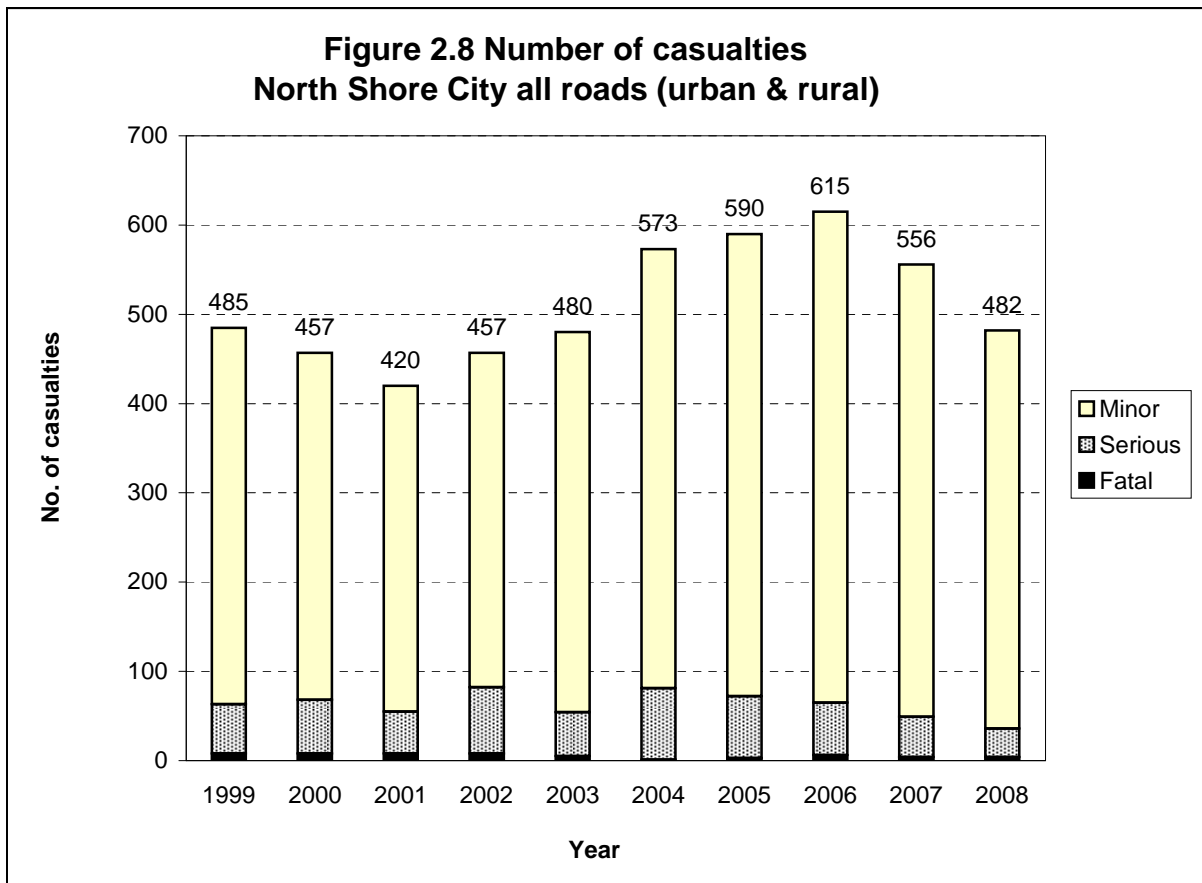
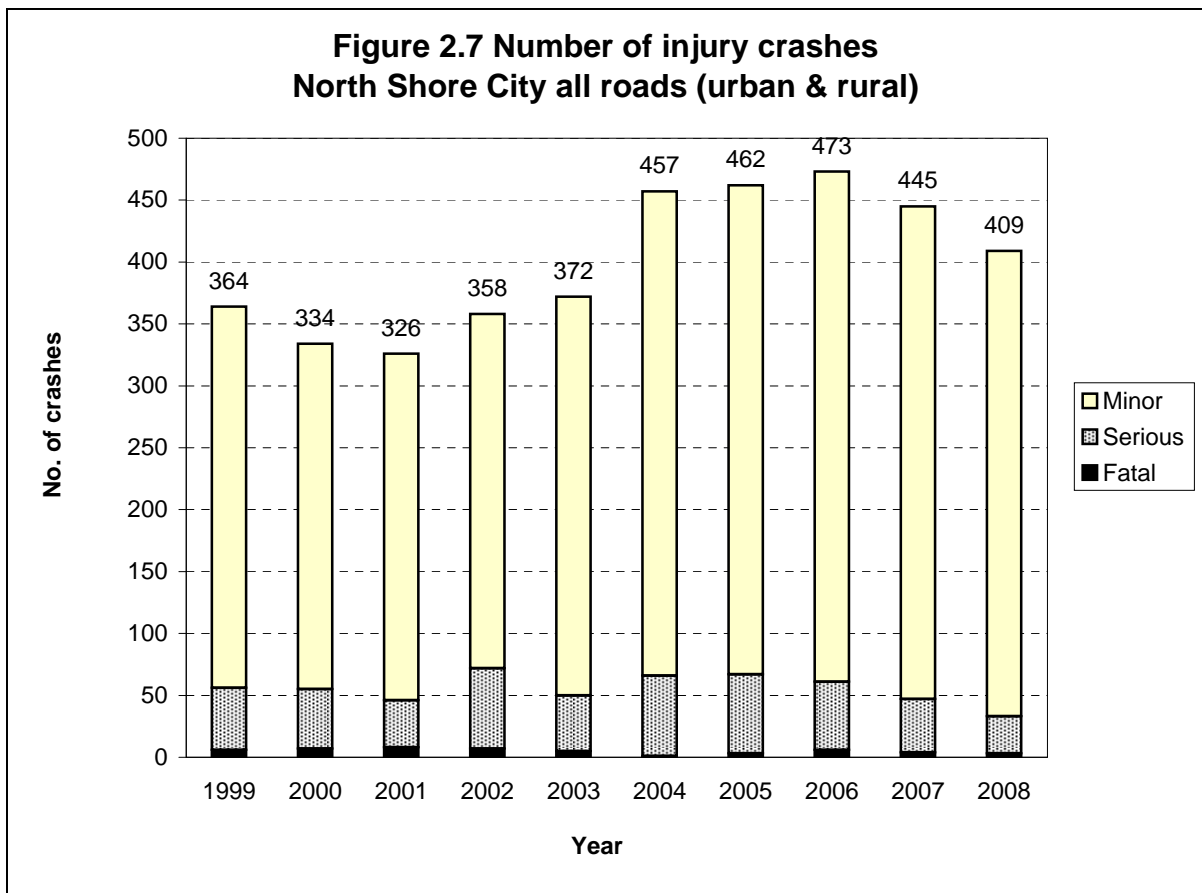
	2004	2005	2006	2007	2008	Total	%	Group A
Fatal casualties	1	3	6	4	4	18	1%	1%
Serious casualties	80	69	59	45	32	285	10%	13%
Minor casualties	492	518	550	507	446	2513	89%	86%
Total casualties	573	590	615	556	482	2816	100%	100%

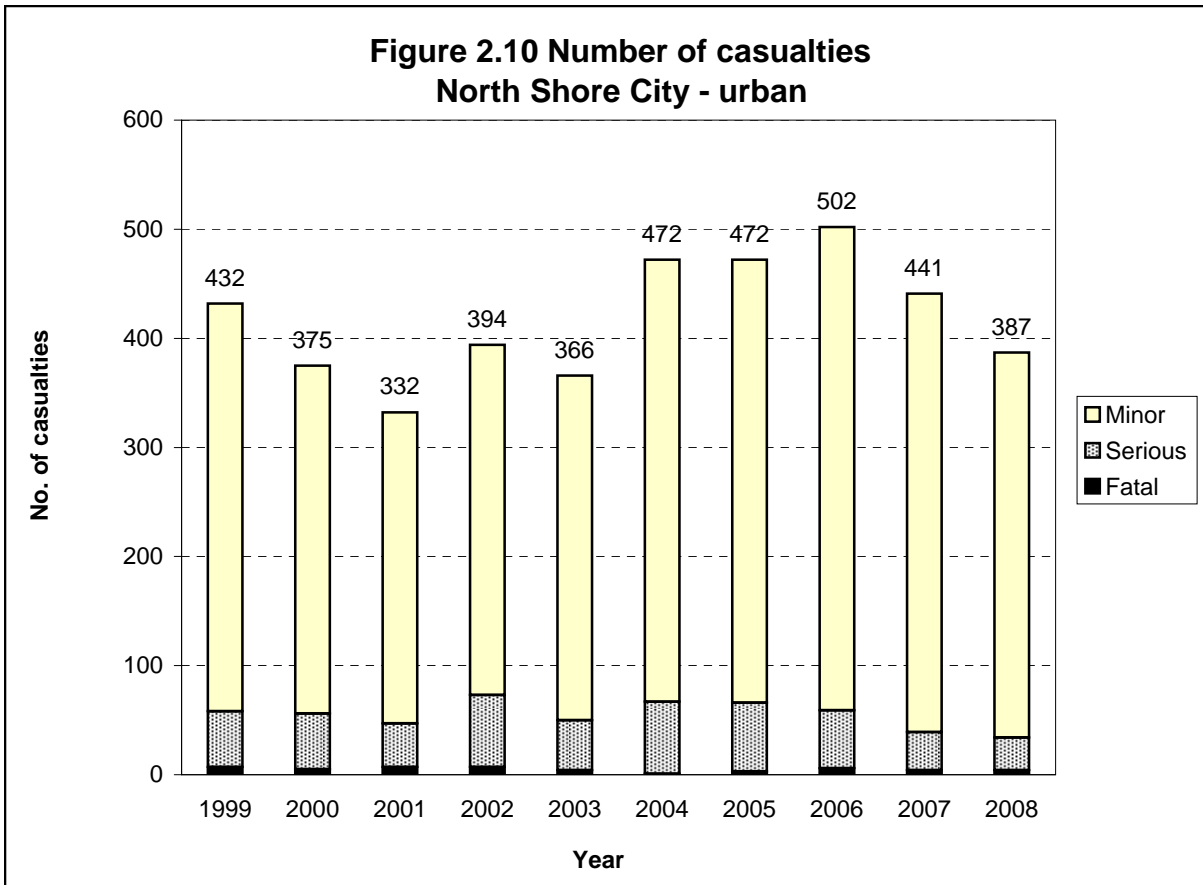
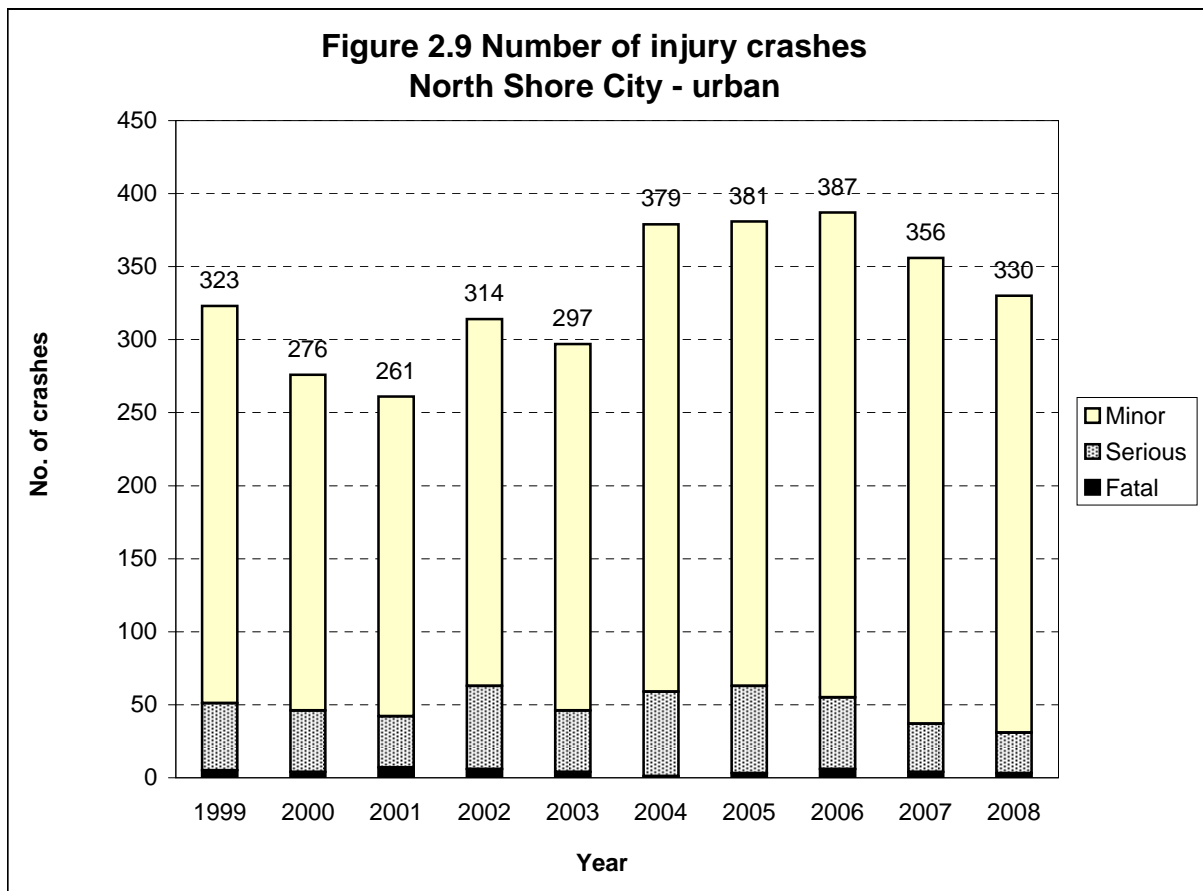
Figure 2.5: Casualty numbers and severity 2004 to 2008 - urban roads

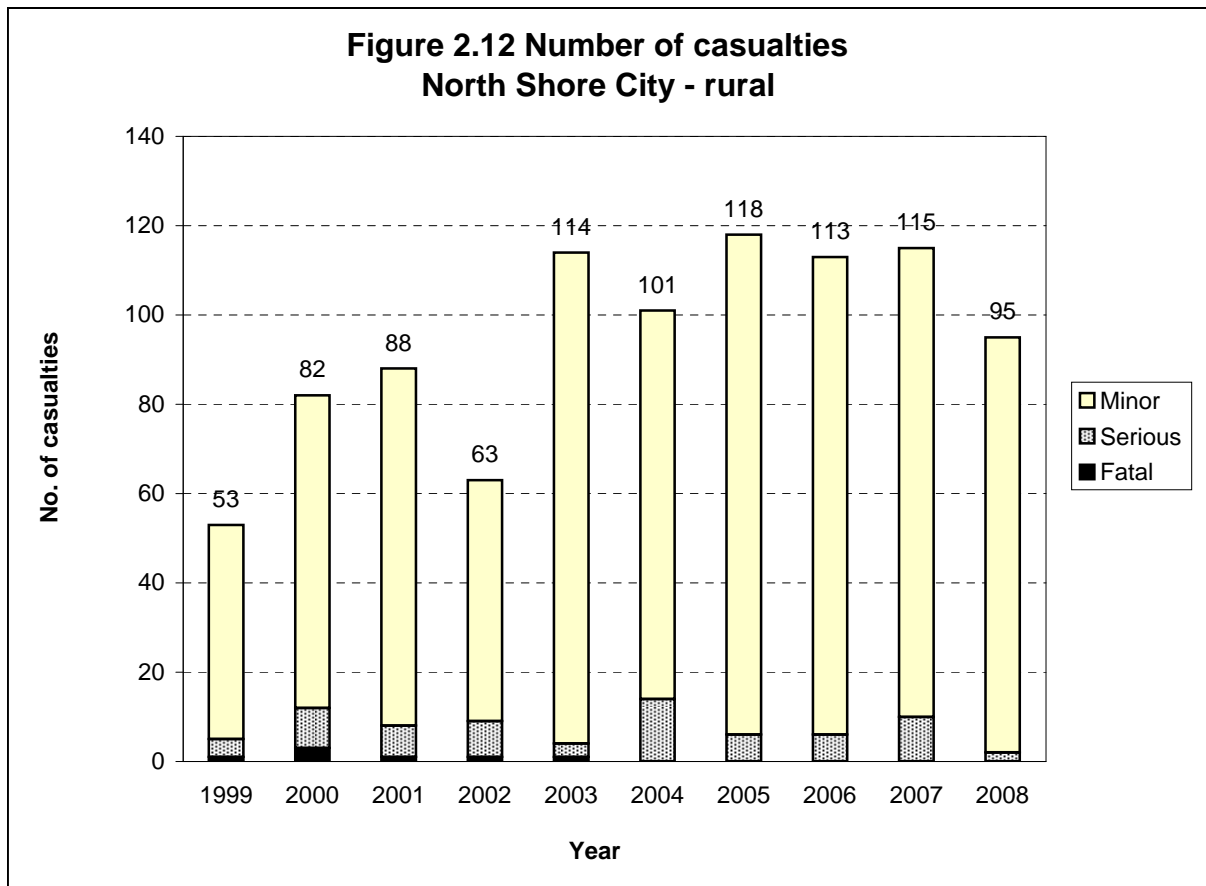
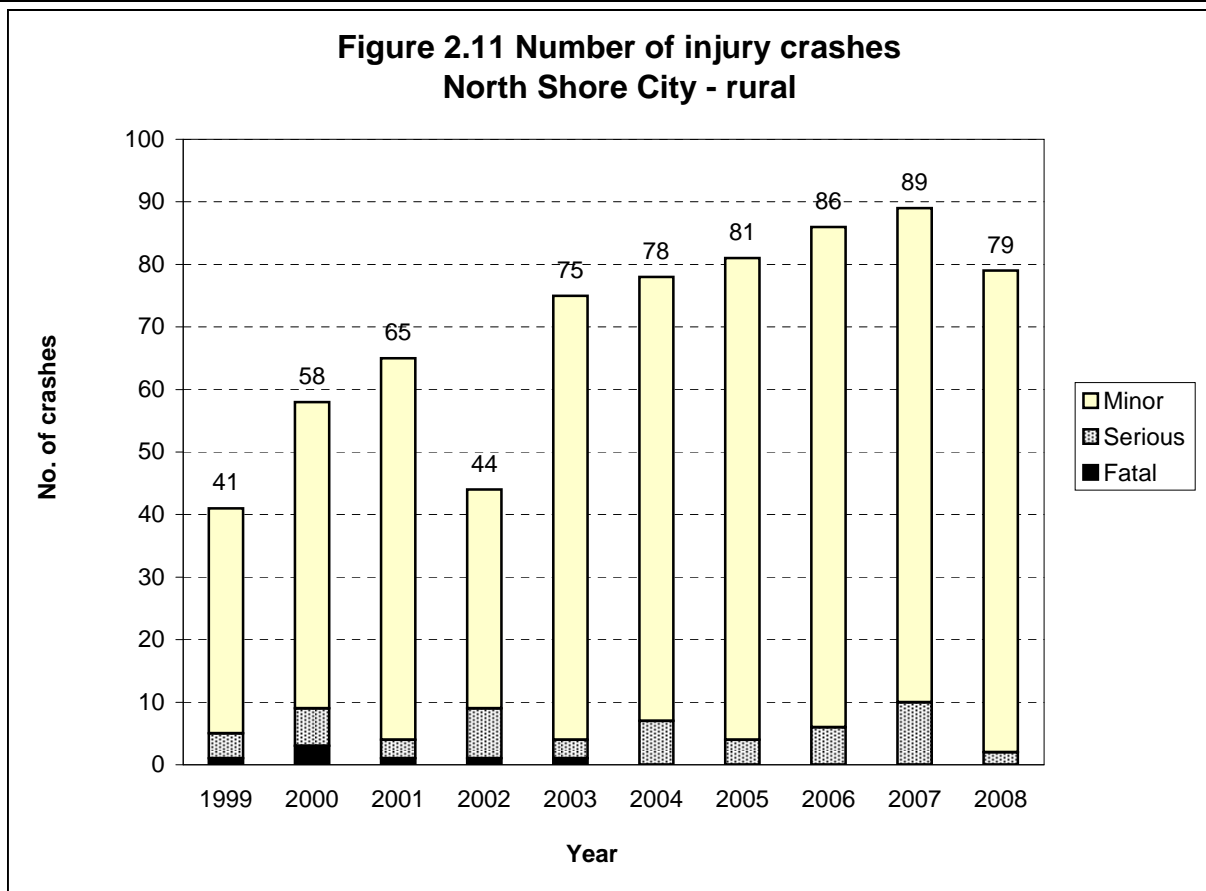
	2004	2005	2006	2007	2008	Total	%	Group A
Fatal casualties	1	3	6	4	4	18	1%	1%
Serious casualties	66	63	53	35	30	247	11%	13%
Minor casualties	405	406	443	402	353	2009	88%	86%
Total casualties	472	472	502	441	387	2274	100%	100%

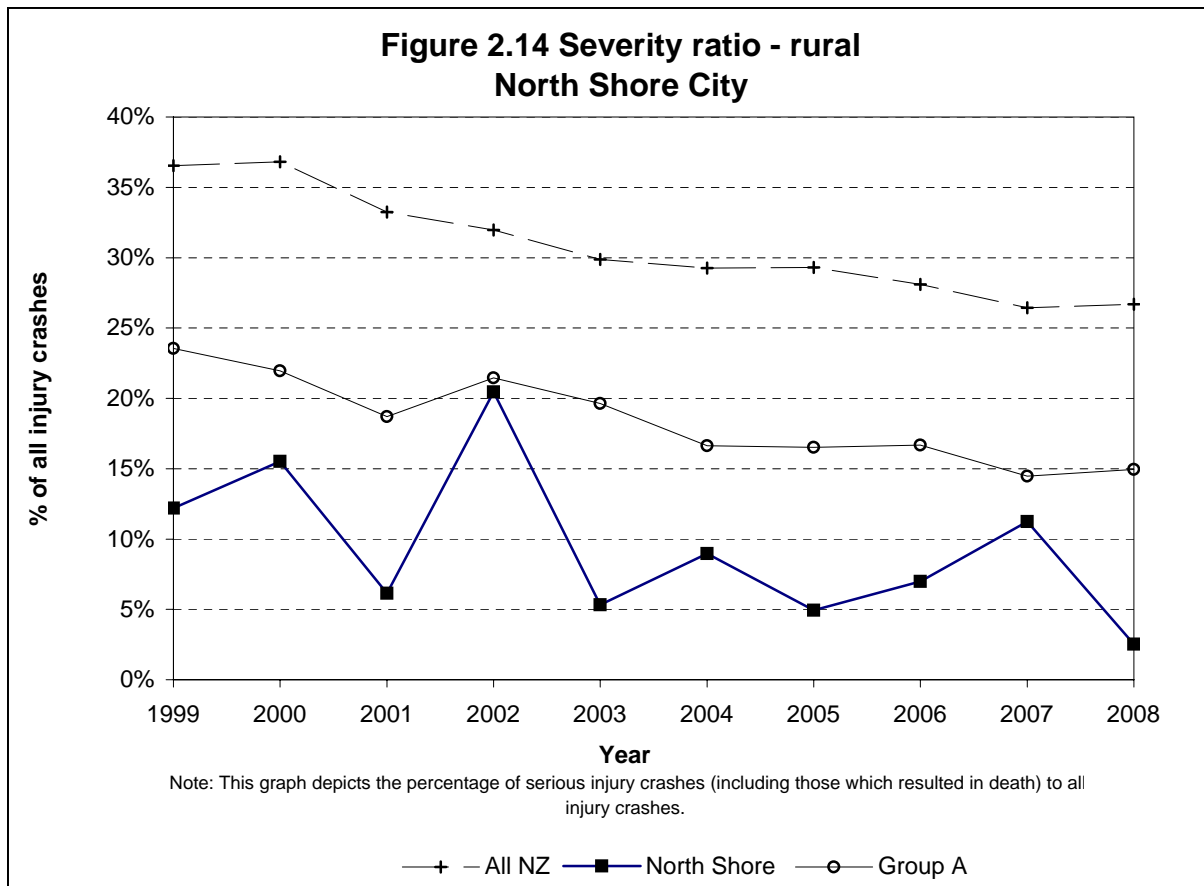
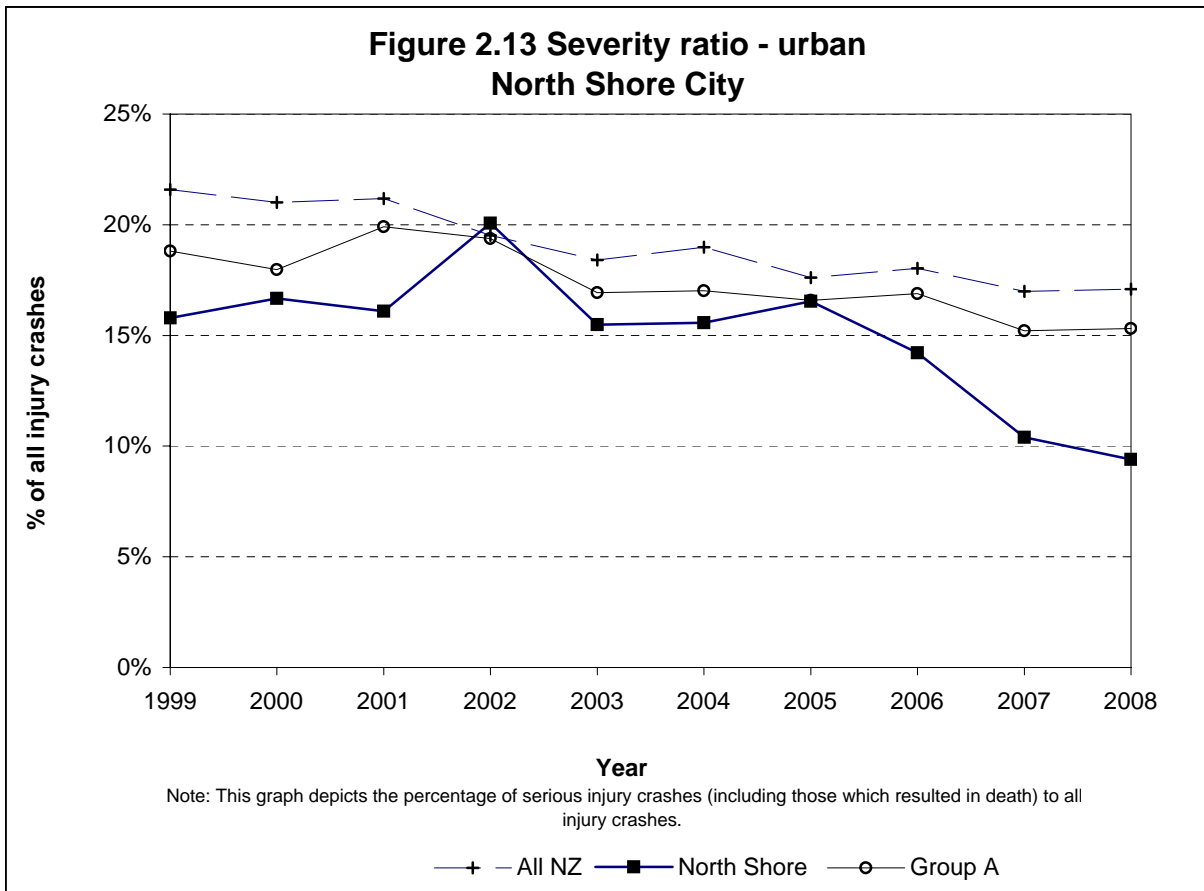
Figure 2.6: Casualty numbers and severity 2004 to 2008 - rural roads

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal casualties	0	0	0	0	0	0	0%	2%
Serious casualties	14	6	6	10	2	38	7%	13%
Minor casualties	87	112	107	105	93	504	93%	85%
Total casualties	101	118	113	115	95	542	100%	100%



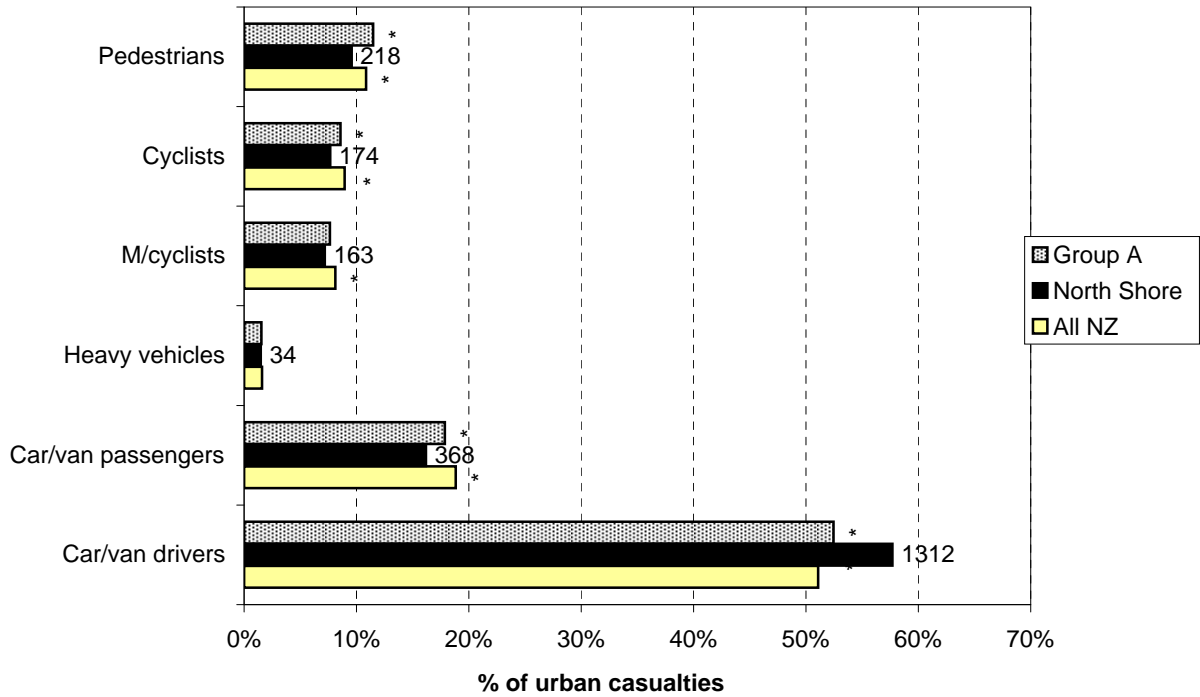






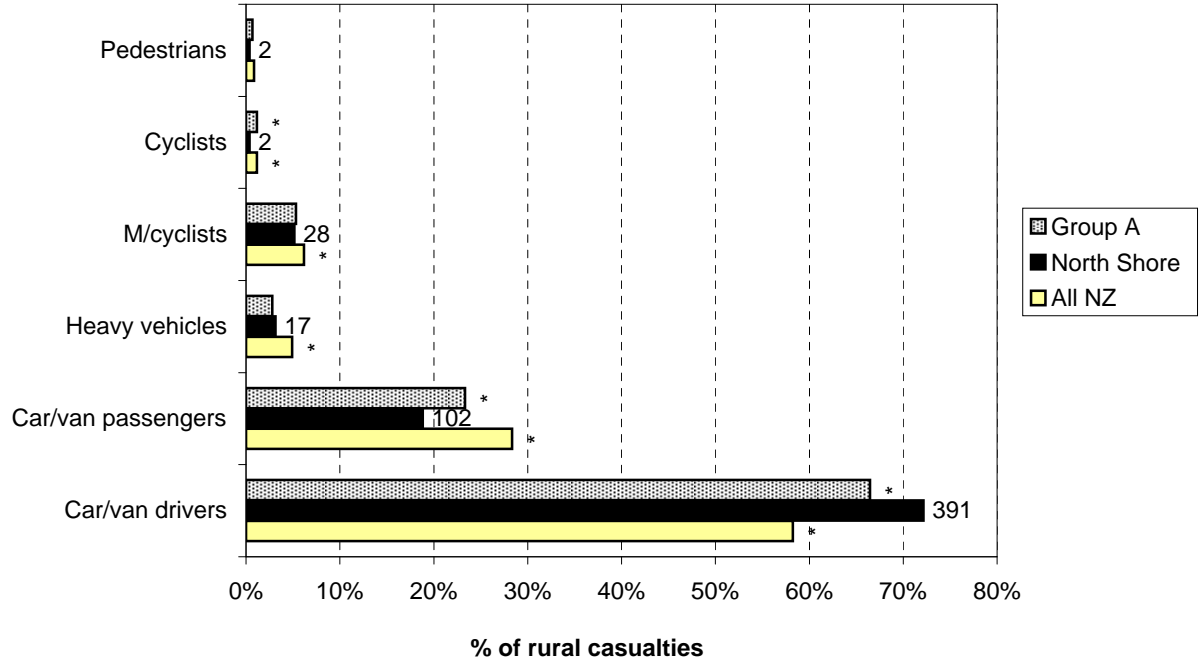
Road User Statistics

**Figure 3.1 Road user casualties - urban
North Shore City (2004-2008)**



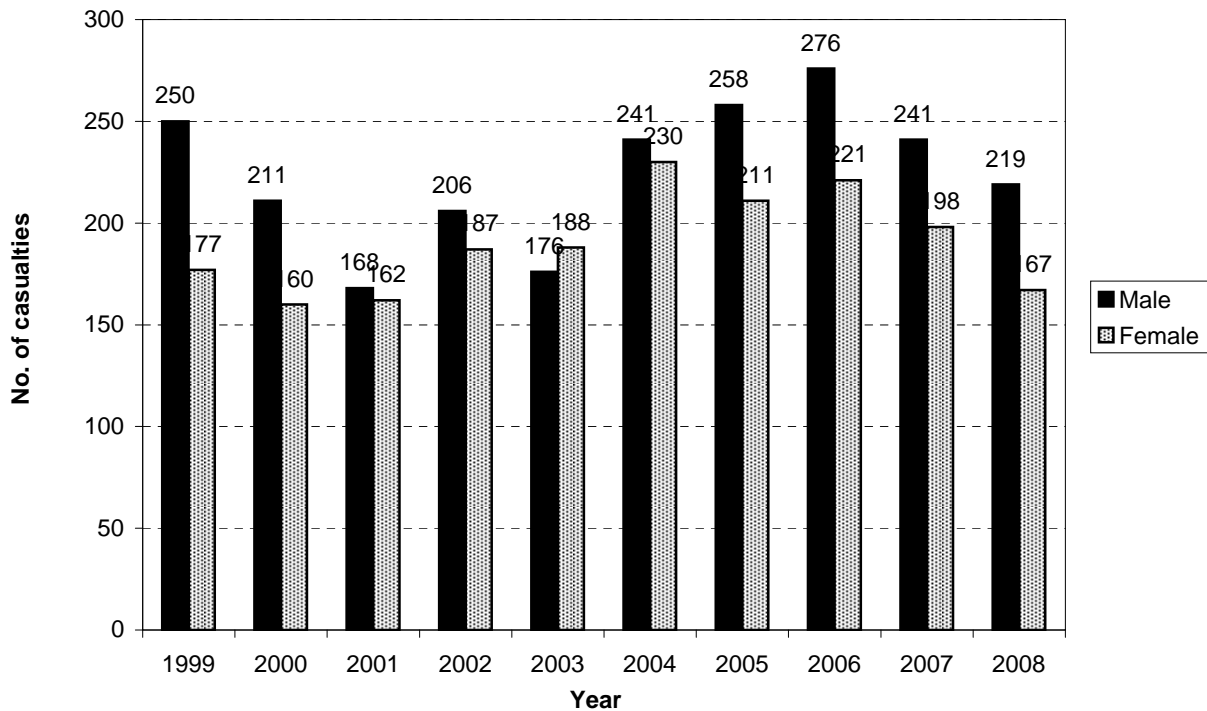
Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.2 Road user casualties - rural
North Shore City (2004-2008)**



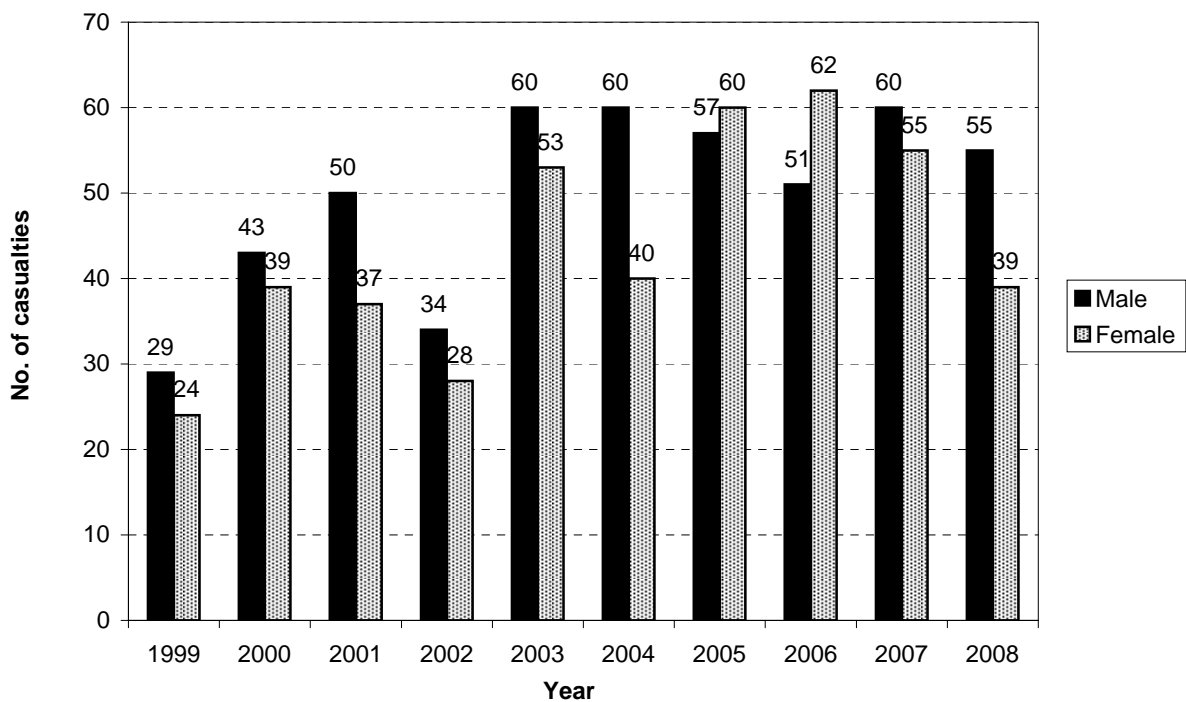
Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.3 Male/female casualties - urban
North Shore City**



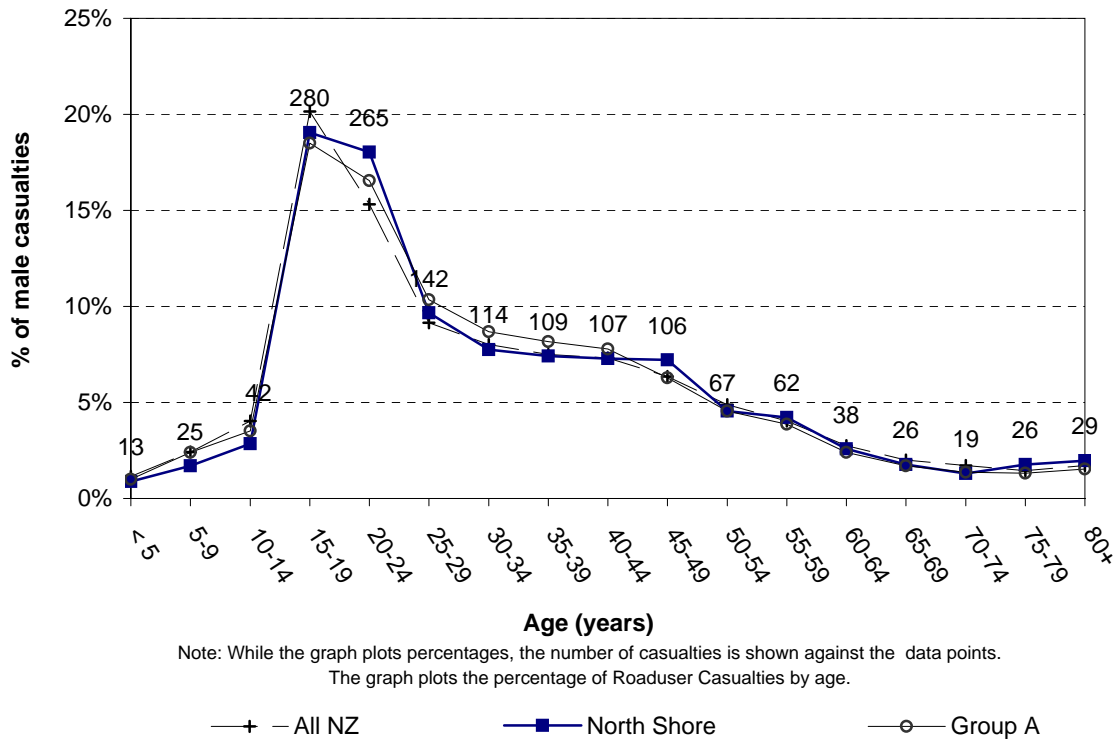
Note: This graph shows the number of male and female roadusers injured

**Figure 3.4 Male/female casualties - rural
North Shore City**

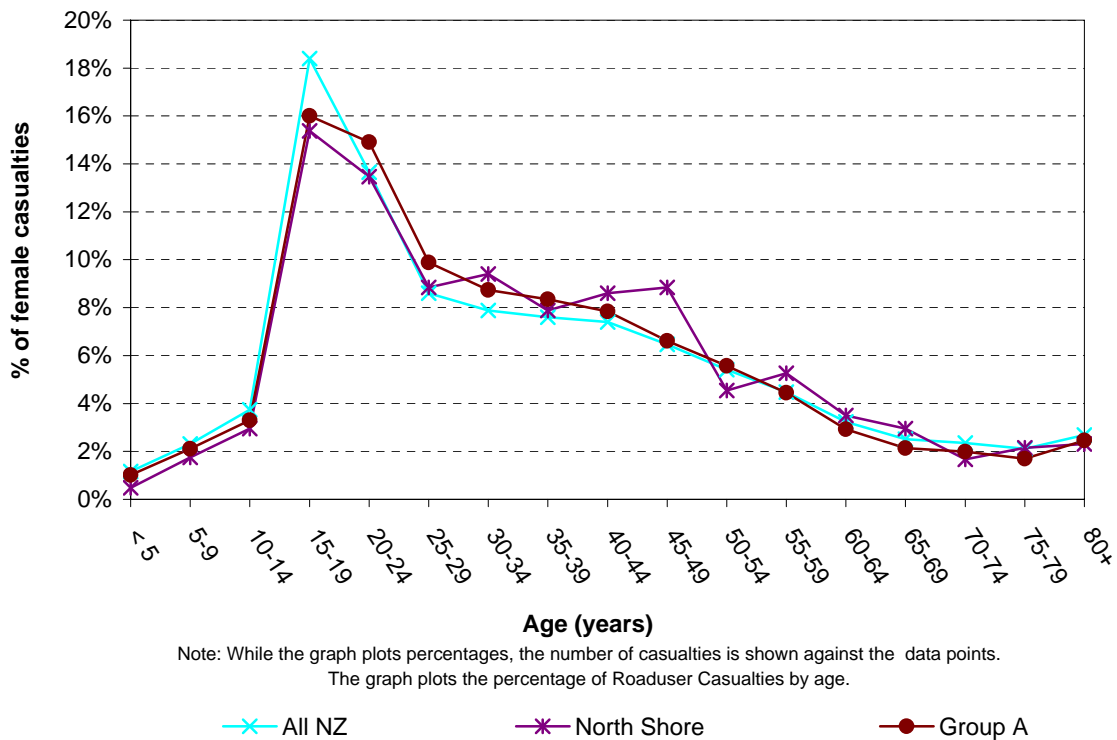


Note: This graph shows the number of male and female roadusers injured

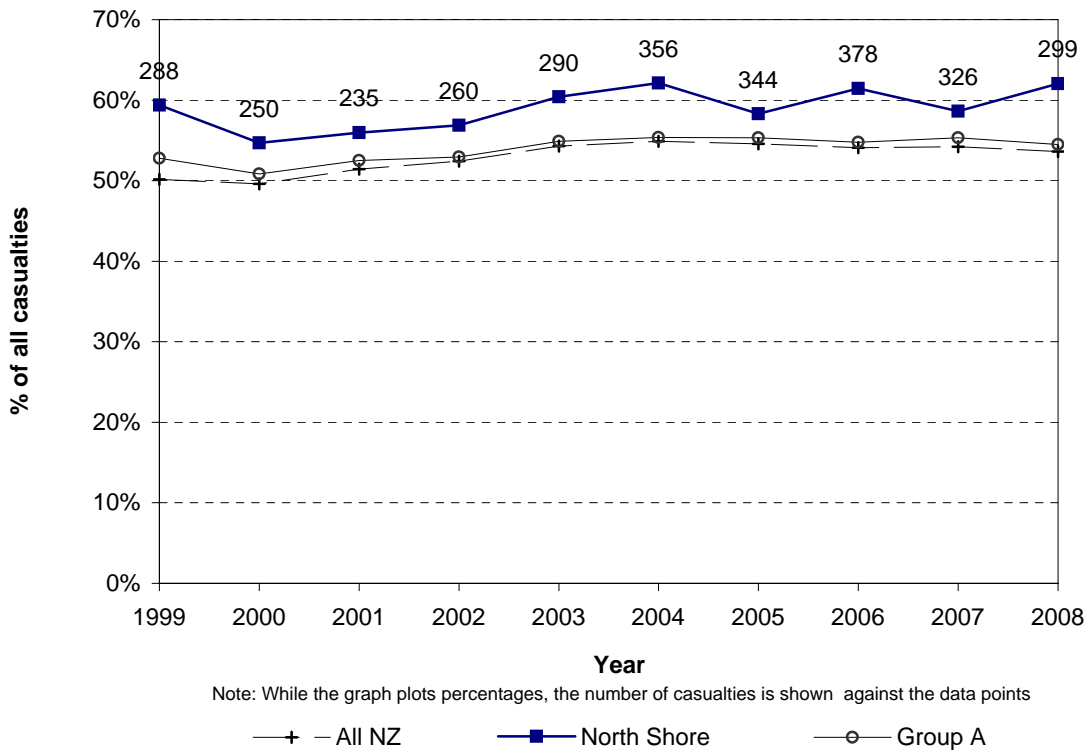
**Figure 3.5 Male casualties by age
North Shore City (2004-2008)**



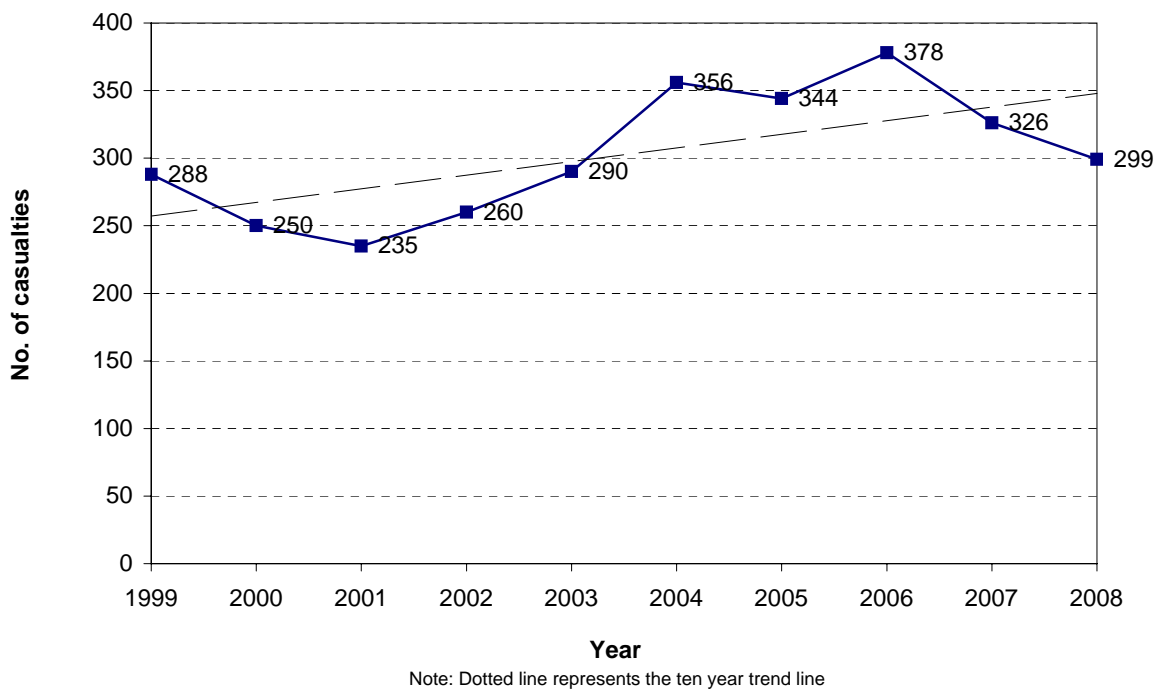
**Figure 3.6 Female casualties by age
North Shore City (2004-2008)**



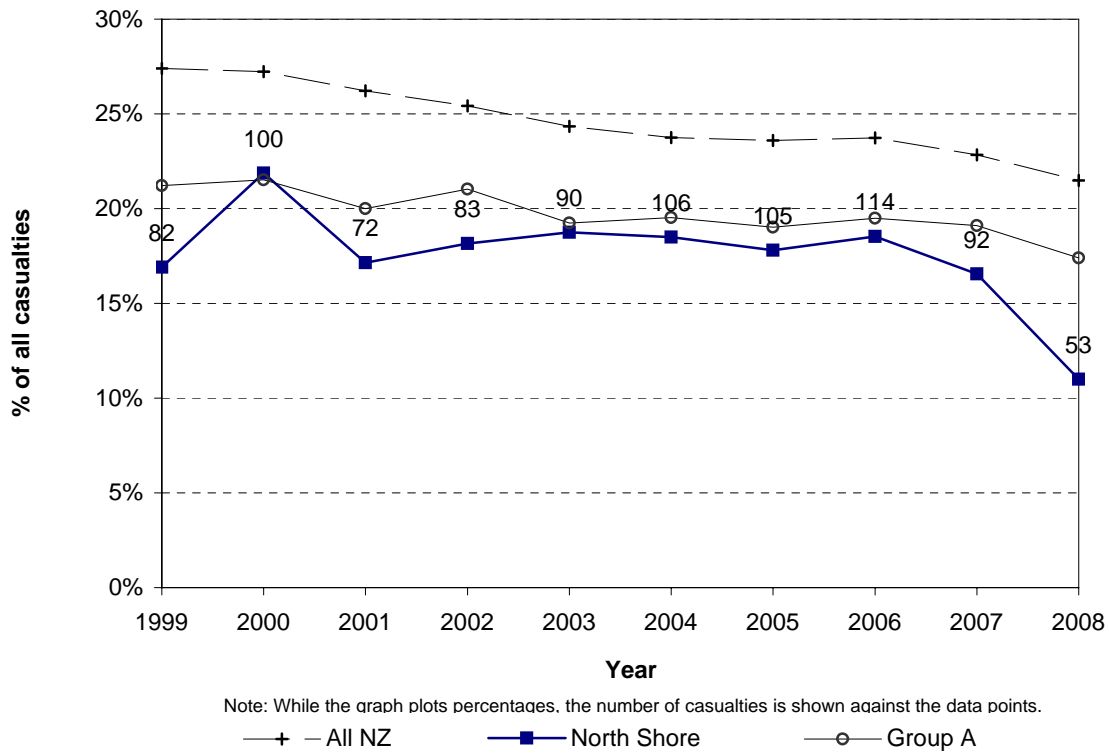
**Figure 3.7 Car/van driver casualties
North Shore City**



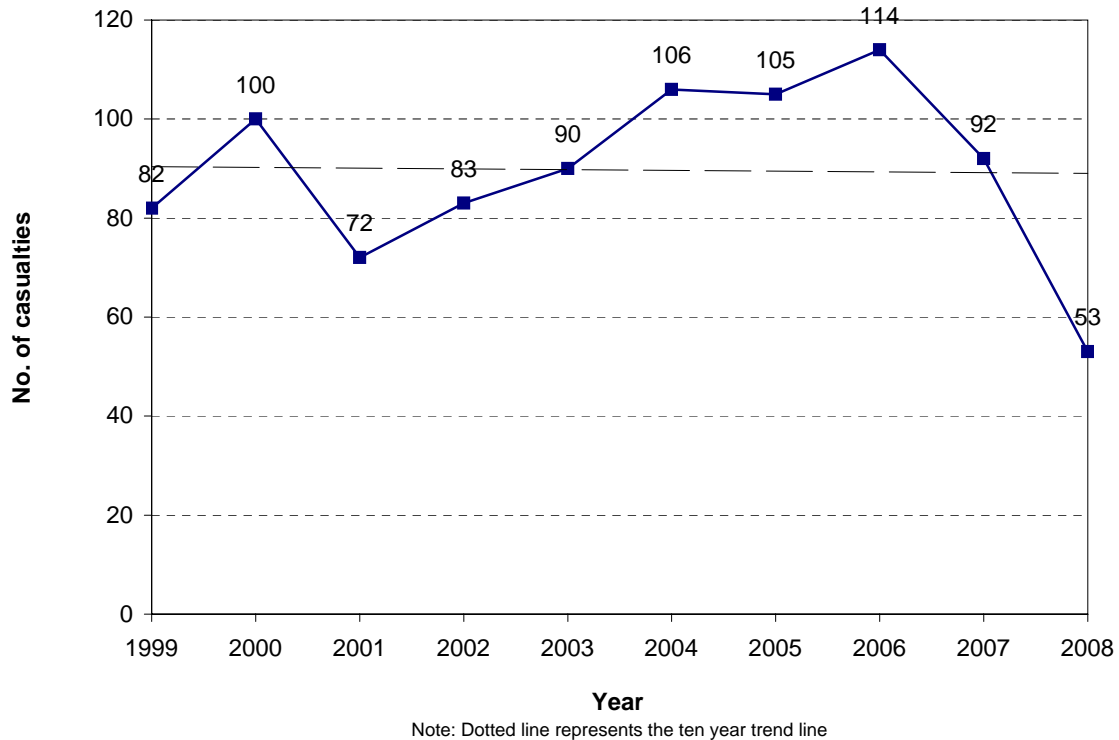
**Figure 3.8 Car/van driver casualties
North Shore City**



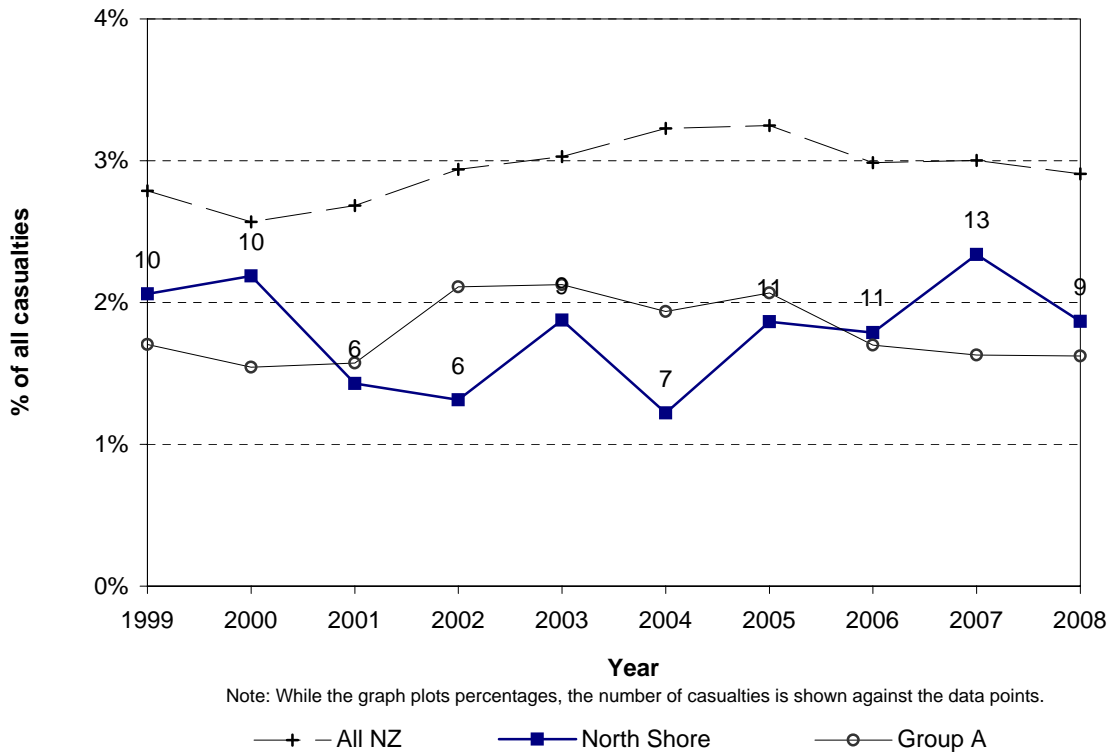
**Figure 3.9 Car/van passenger casualties
North Shore City**



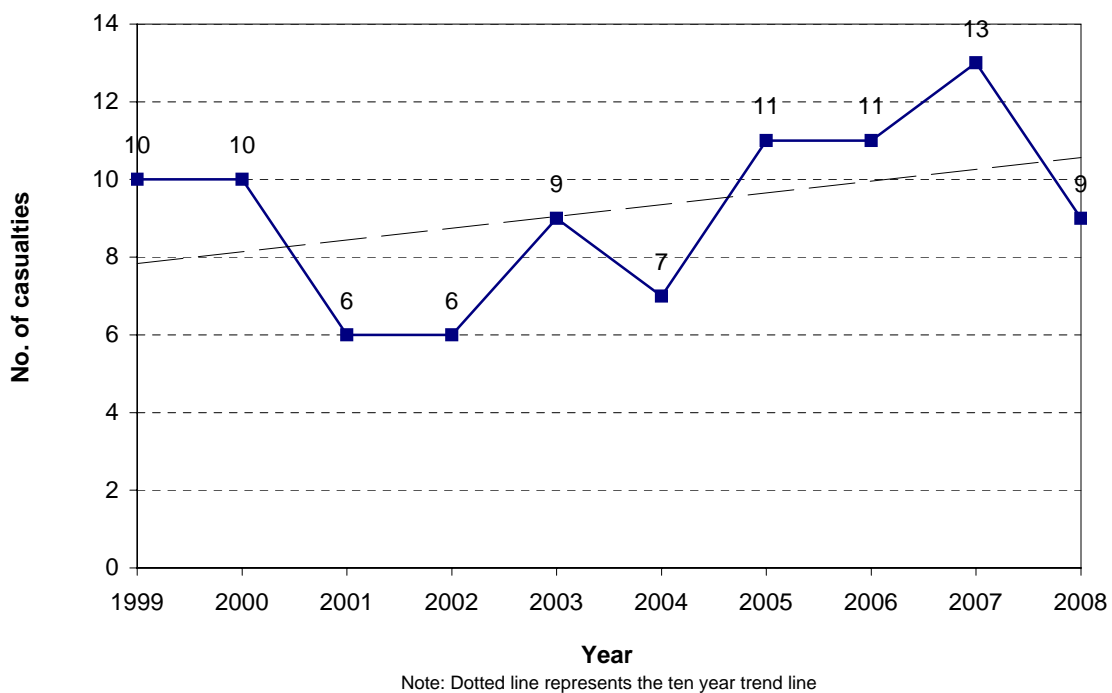
**Figure 3.10 Car/van passenger casualties
North Shore City**



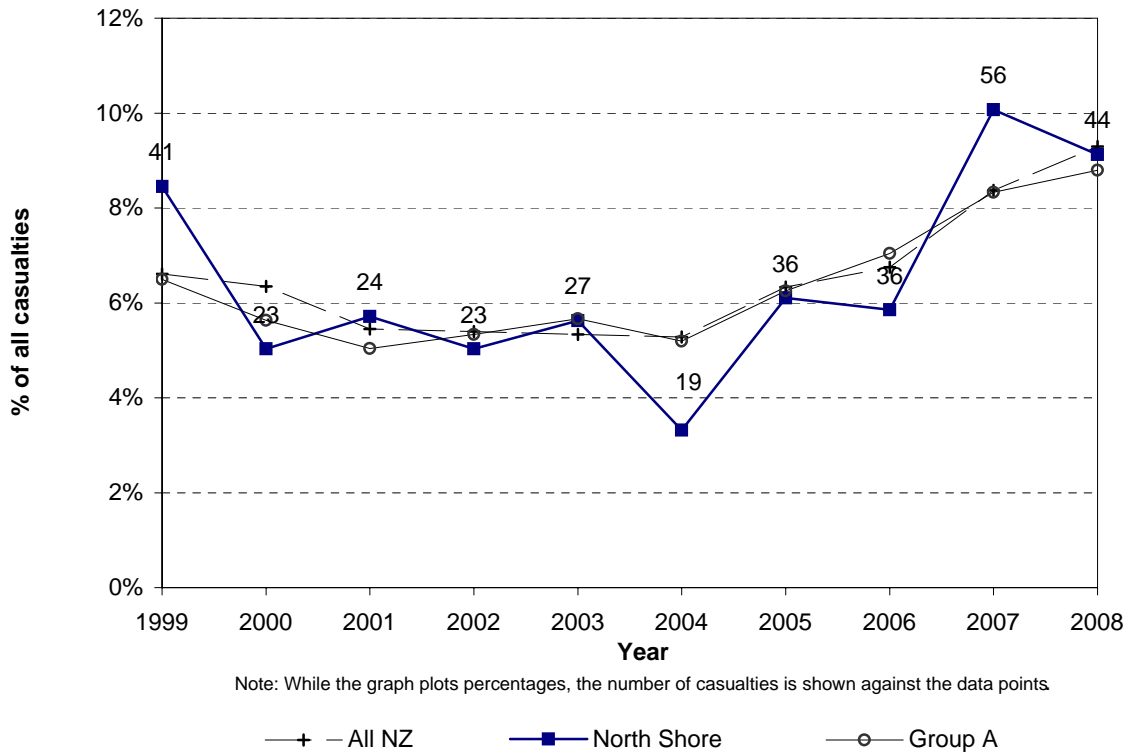
**Figure 3.11 Heavy vehicle casualties
North Shore City**



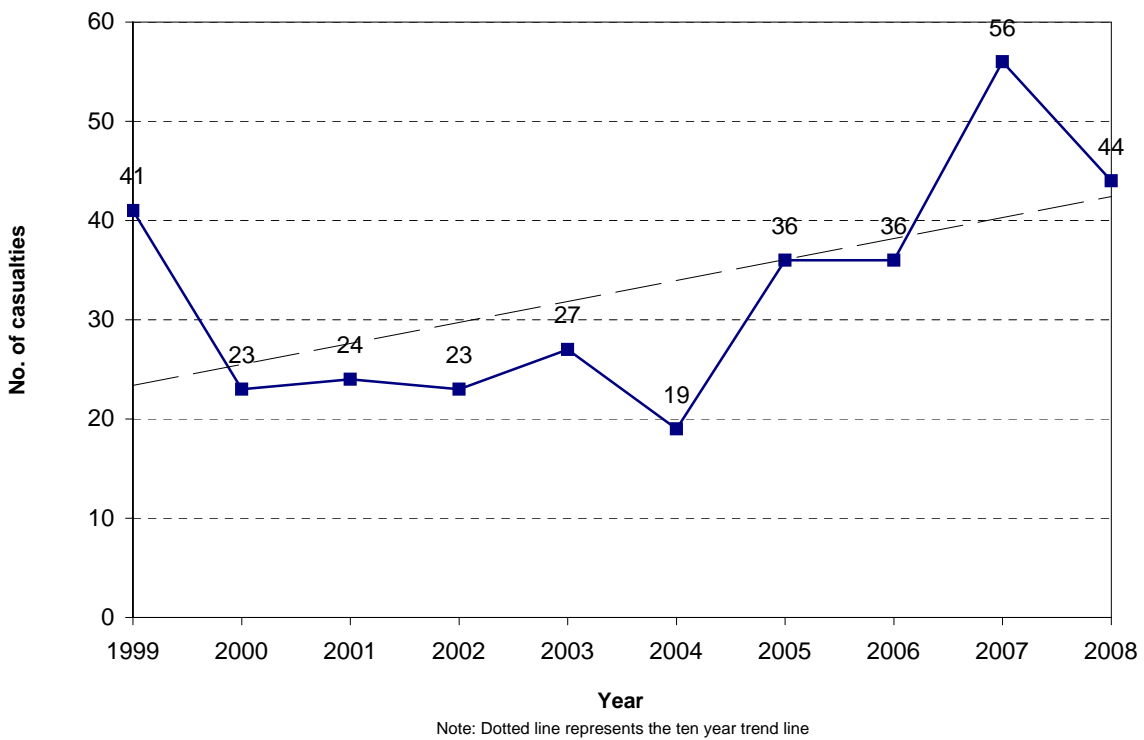
**Figure 3.12 Heavy vehicle casualties
North Shore City**



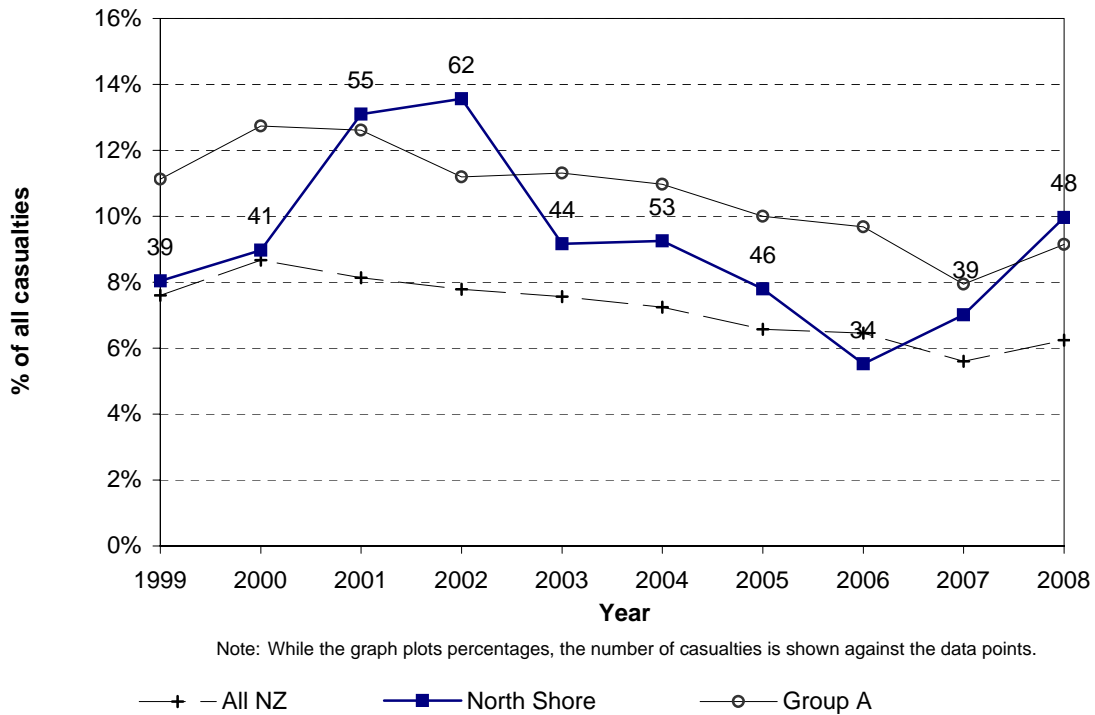
**Figure 3.13 Motorcyclist casualties
North Shore City**



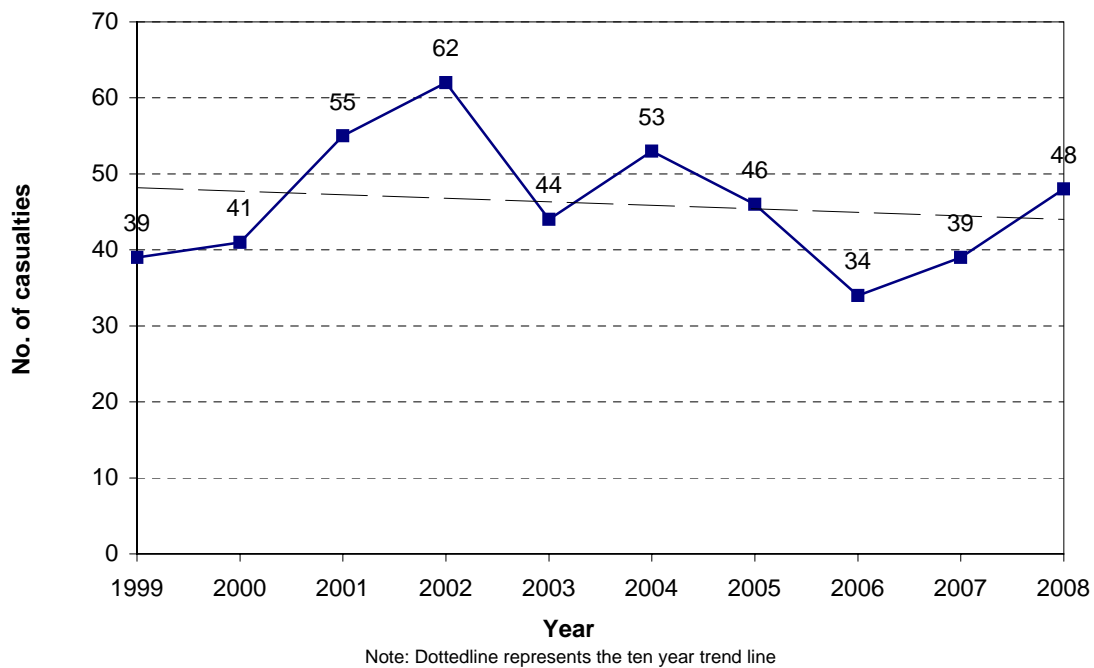
**Figure 3.14 Motorcyclist casualties
North Shore City**



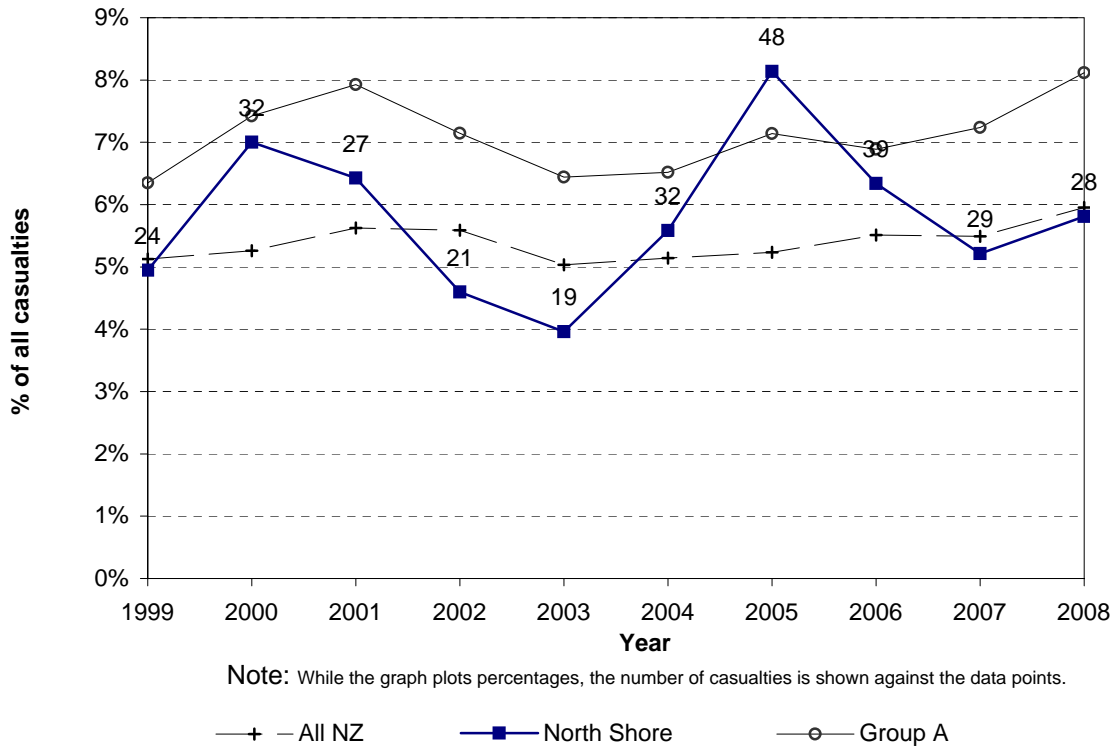
**Figure 3.15 Pedestrian casualties
North Shore City**



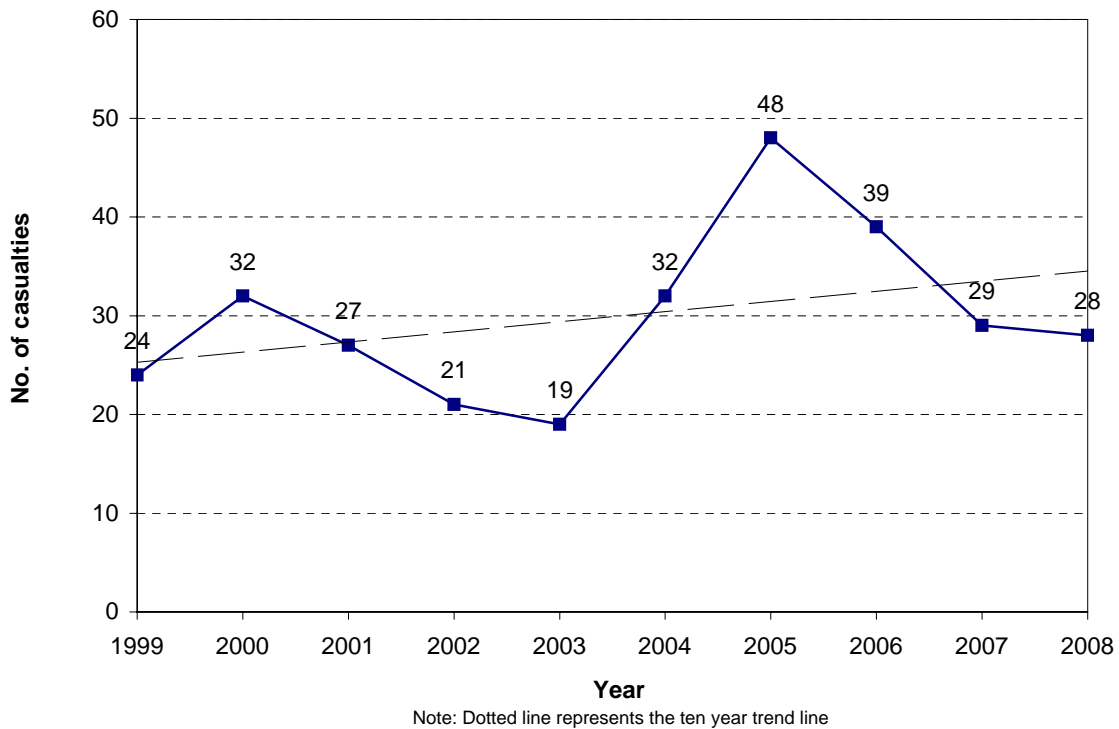
**Figure 3.16 Pedestrian casualties
North Shore City**



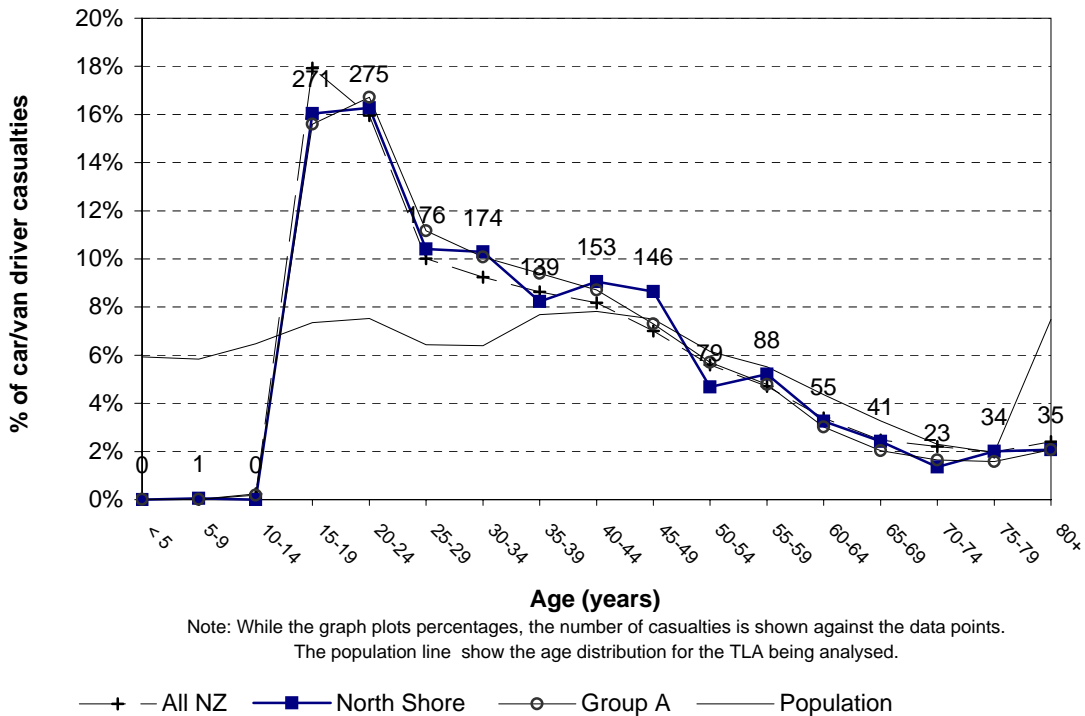
**Figure 3.17 Cyclist casualties
North Shore City**



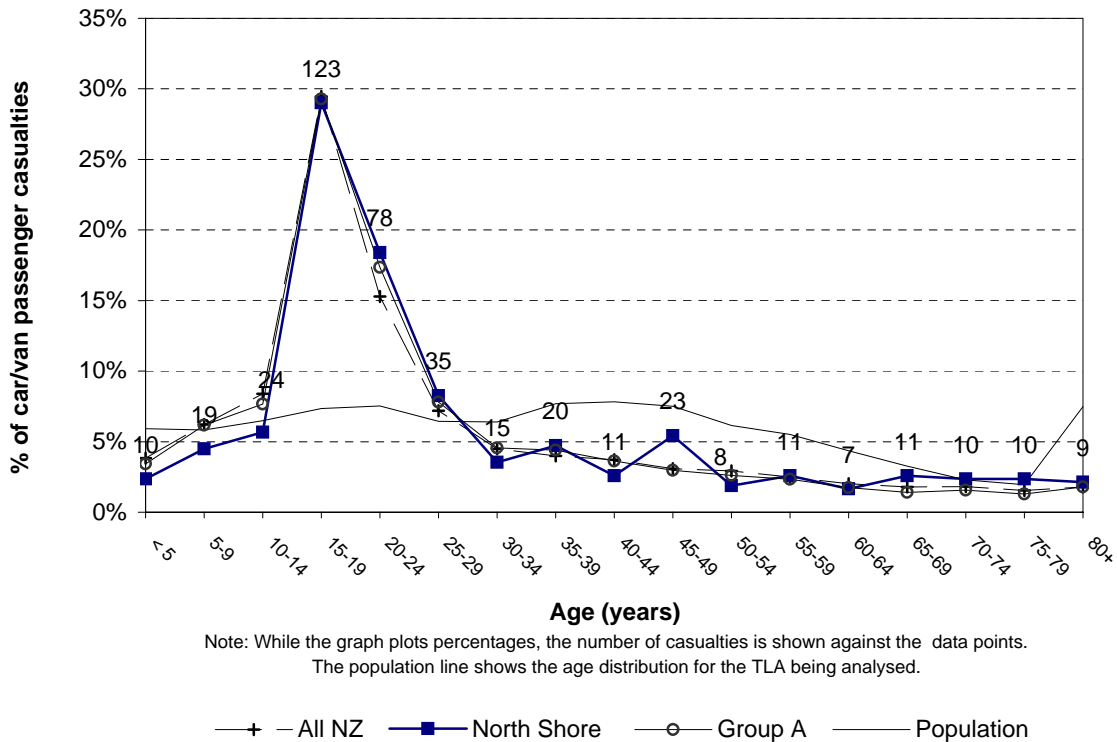
**Figure 3.18 Cyclist casualties
North Shore City**



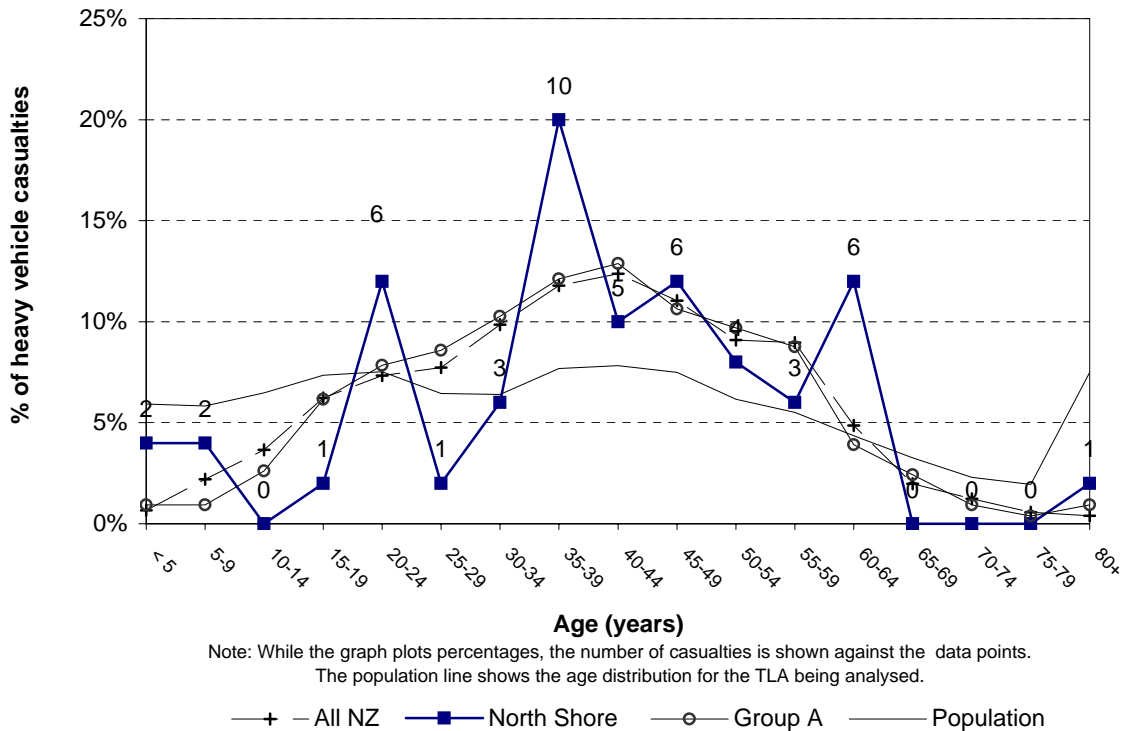
**Figure 3.19 Car/van driver casualty age
North Shore City (2004-2008)**



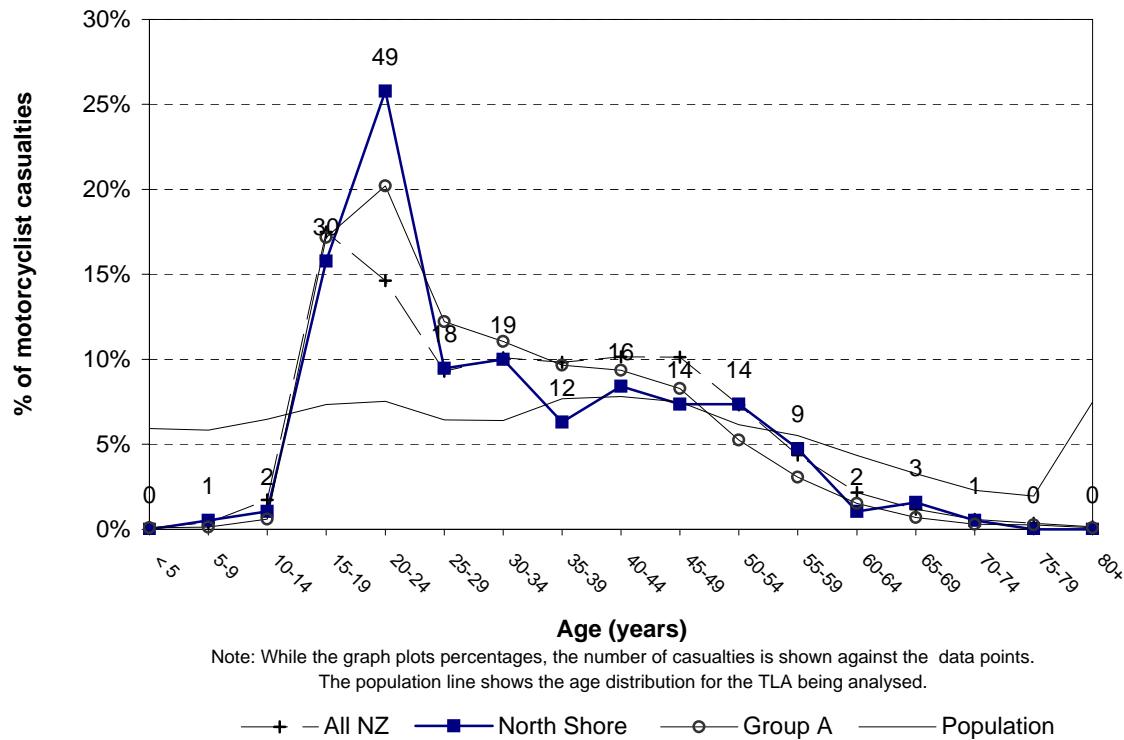
**Figure 3.20 Car/van passenger casualty age
North Shore City (2004-2008)**



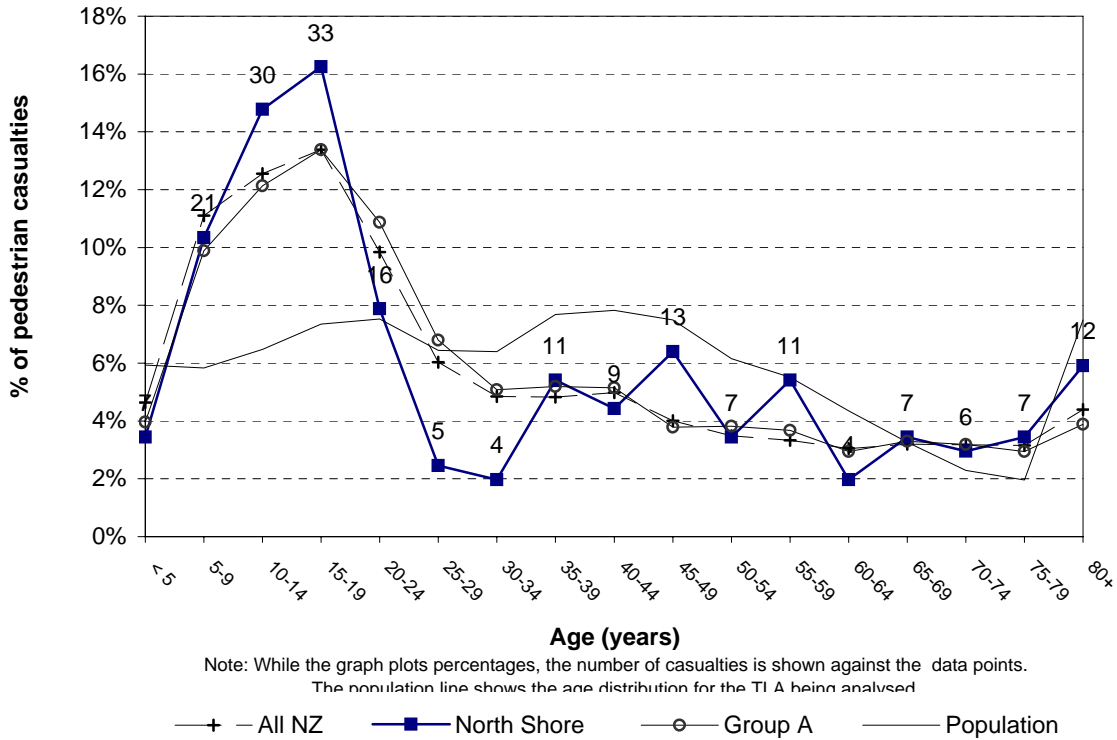
**Figure 3.21 Heavy vehicle casualty age
North Shore City (2004-2008)**



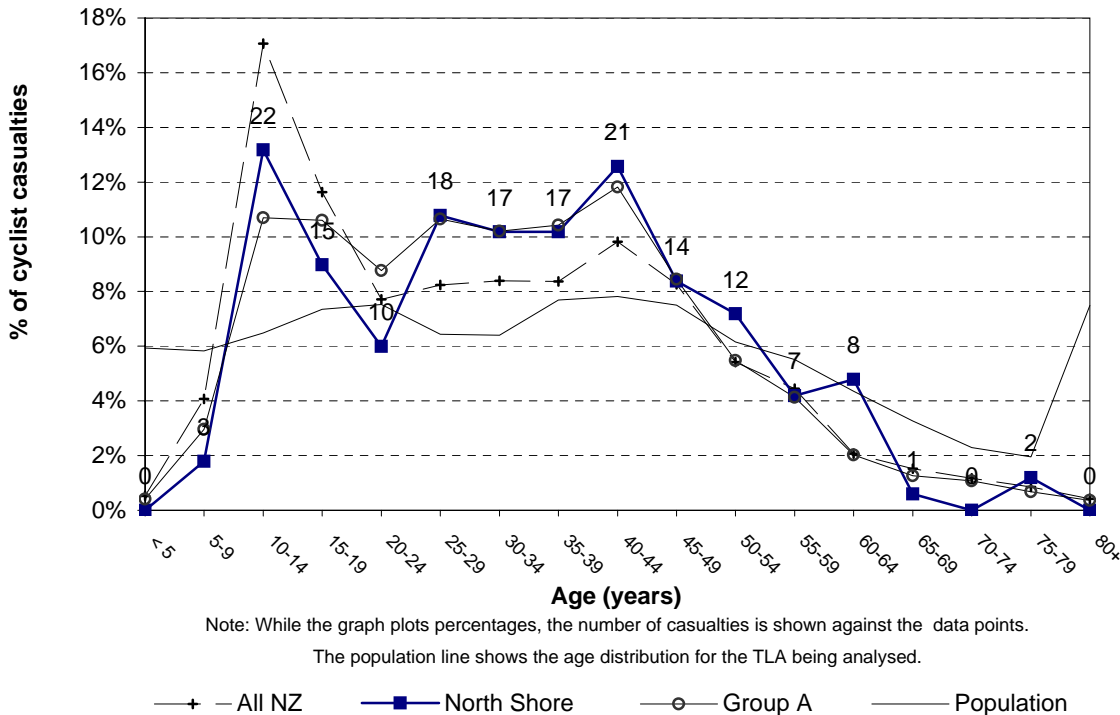
**Figure 3.22 Motorcyclist casualty age
North Shore City (2004-2008)**



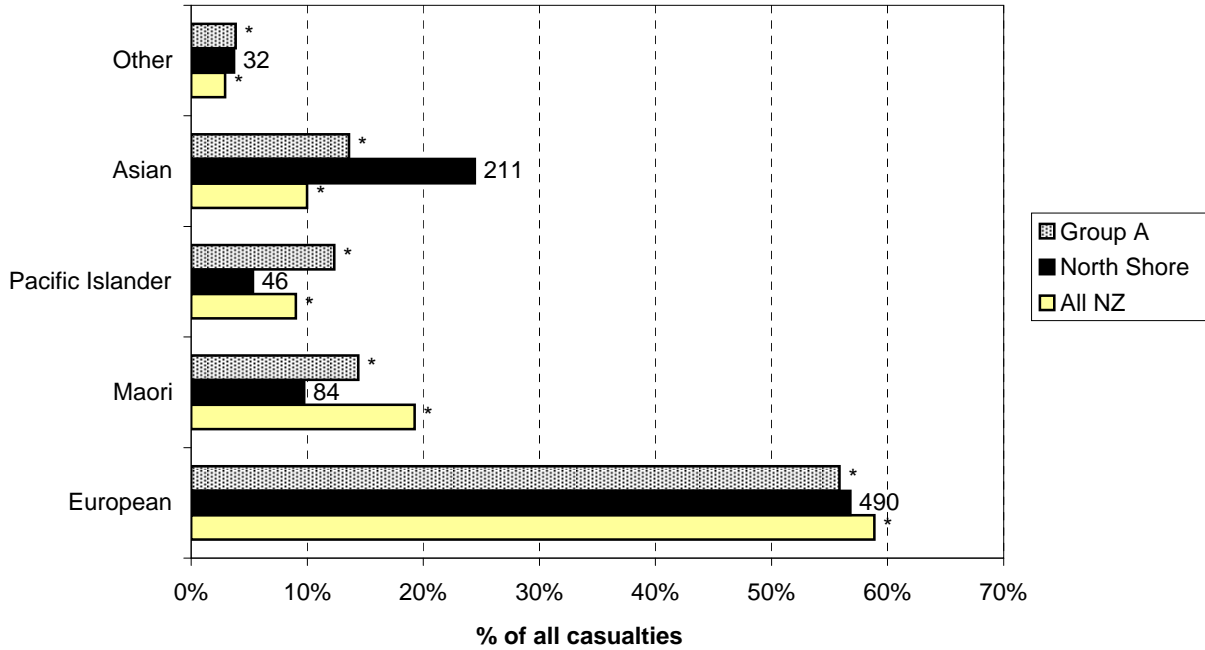
**Figure 3.23 Pedestrian casualty age
North Shore City (2004-2008)**



**Figure 3.24 Cyclist casualty age
North Shore City (2004-2008)**

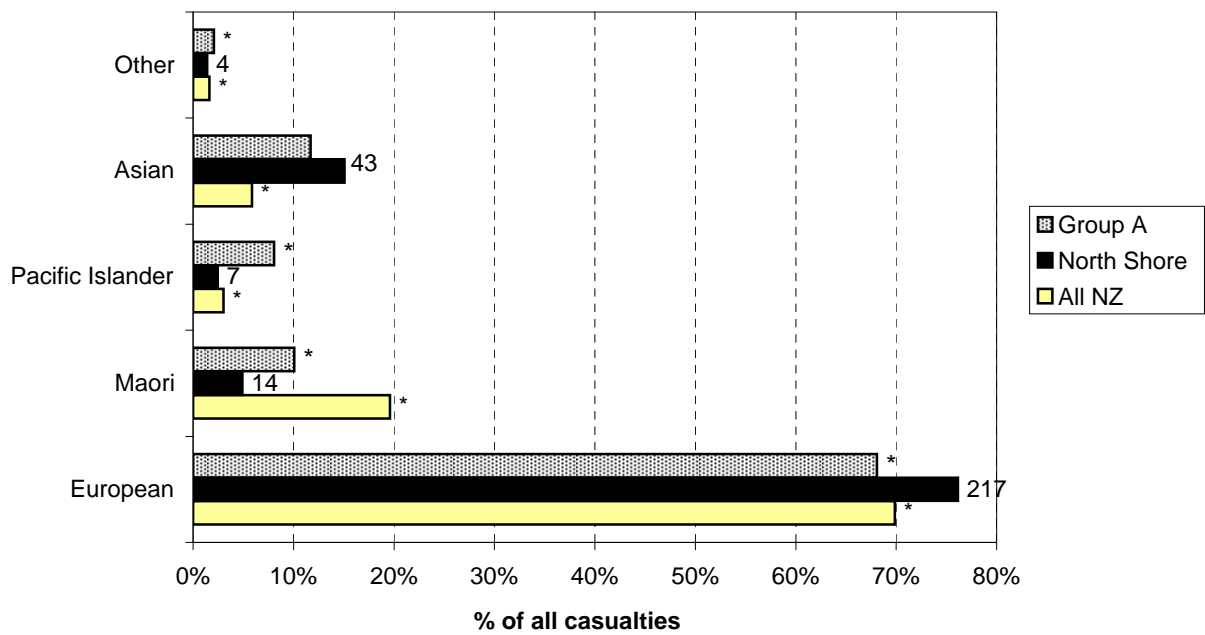


**Figure 3.25 Casualty ethnicity - urban
North Shore City (2004-2008)**



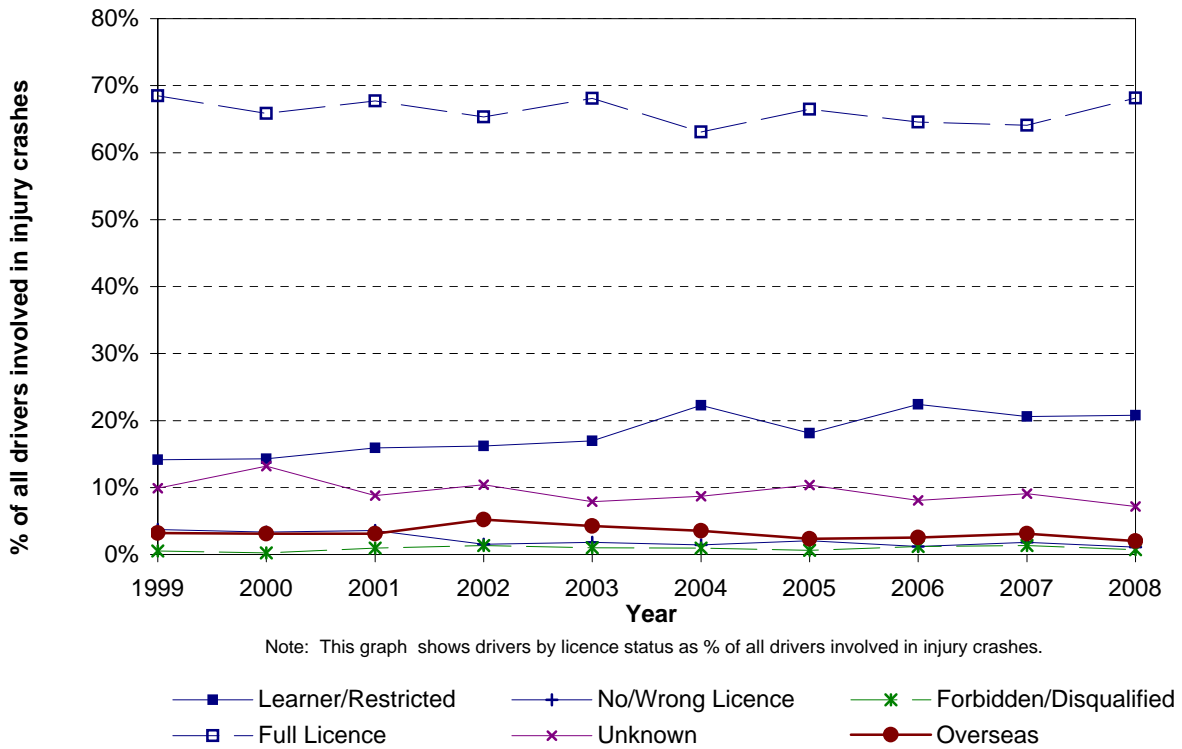
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.26 Casualty ethnicity - rural
North Shore City (2004-2008)**

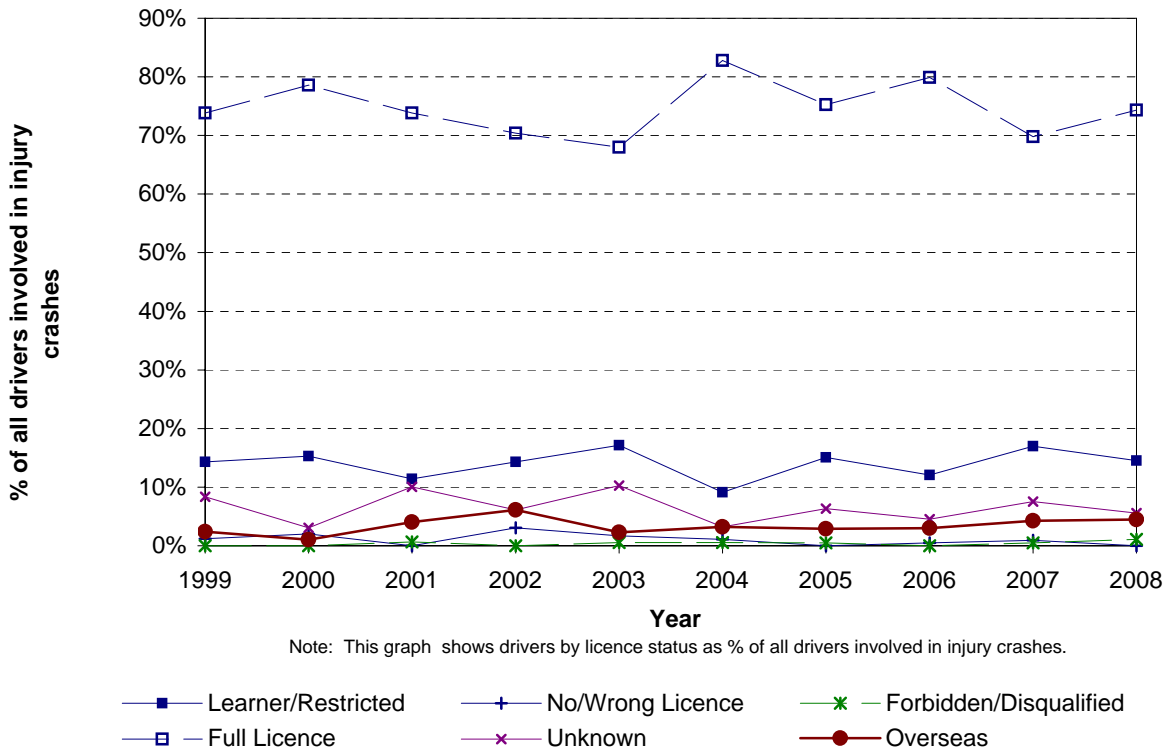


Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.27 Licence status - urban
North Shore City**

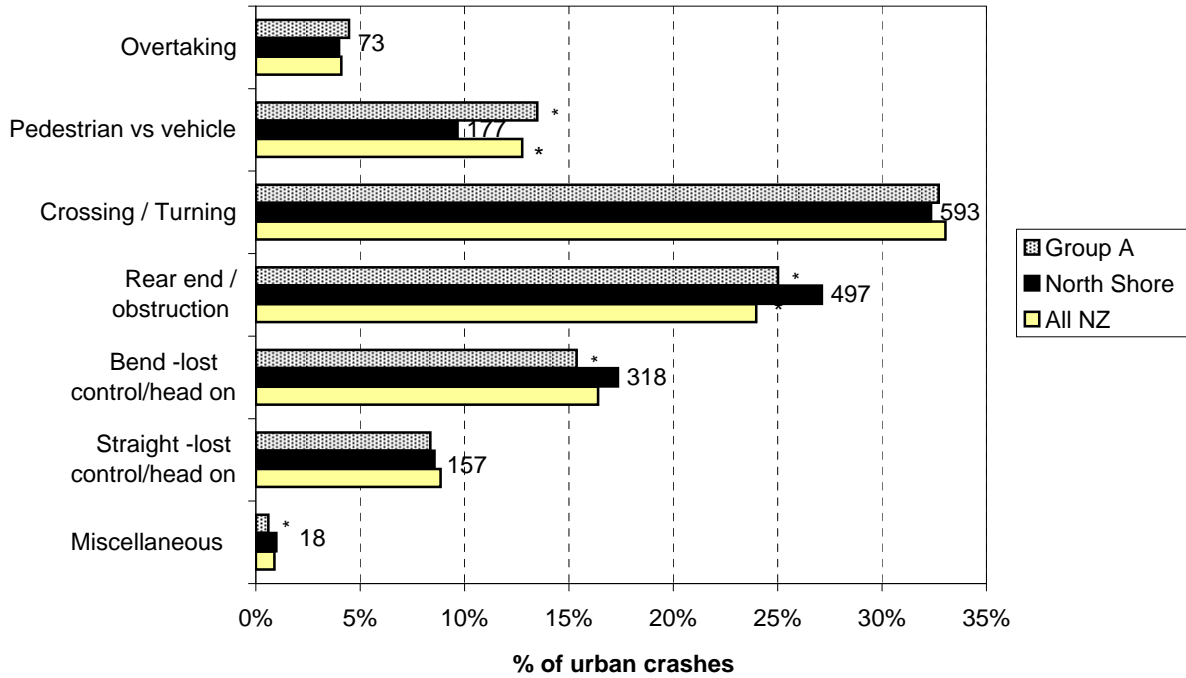


**Figure 3.28 Licence status - rural
North Shore City**



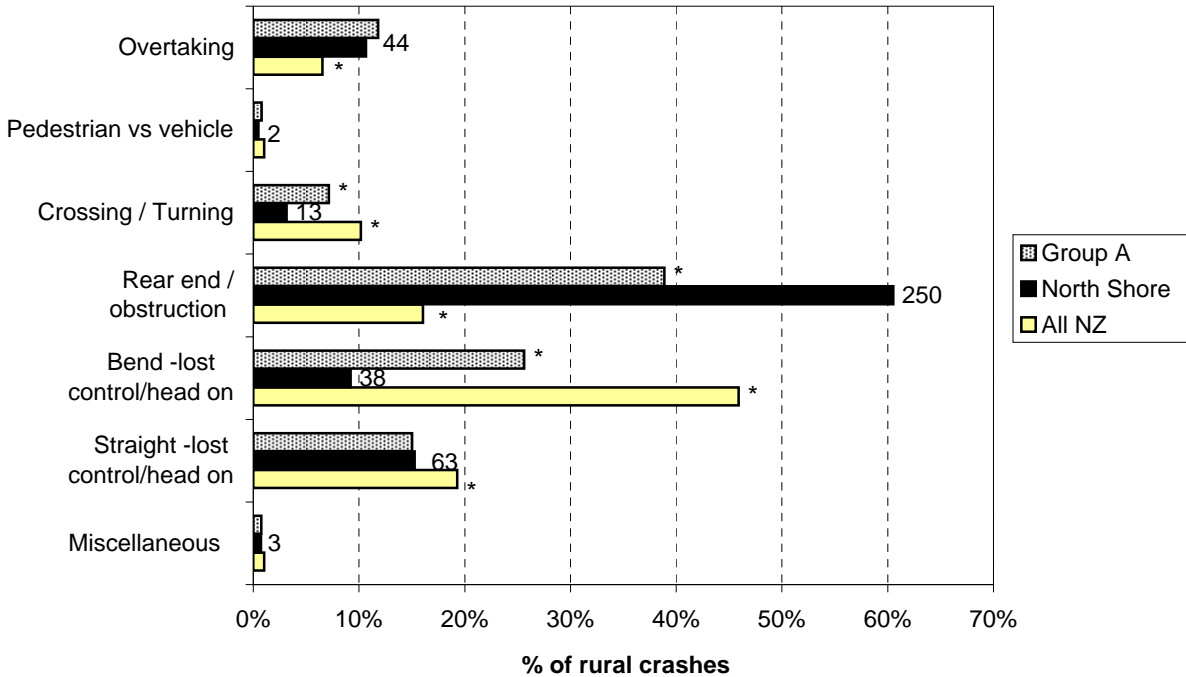
Crash Type Statistics

**Figure 4.1 Crash movement type - urban
North Shore City (2004-2008)**



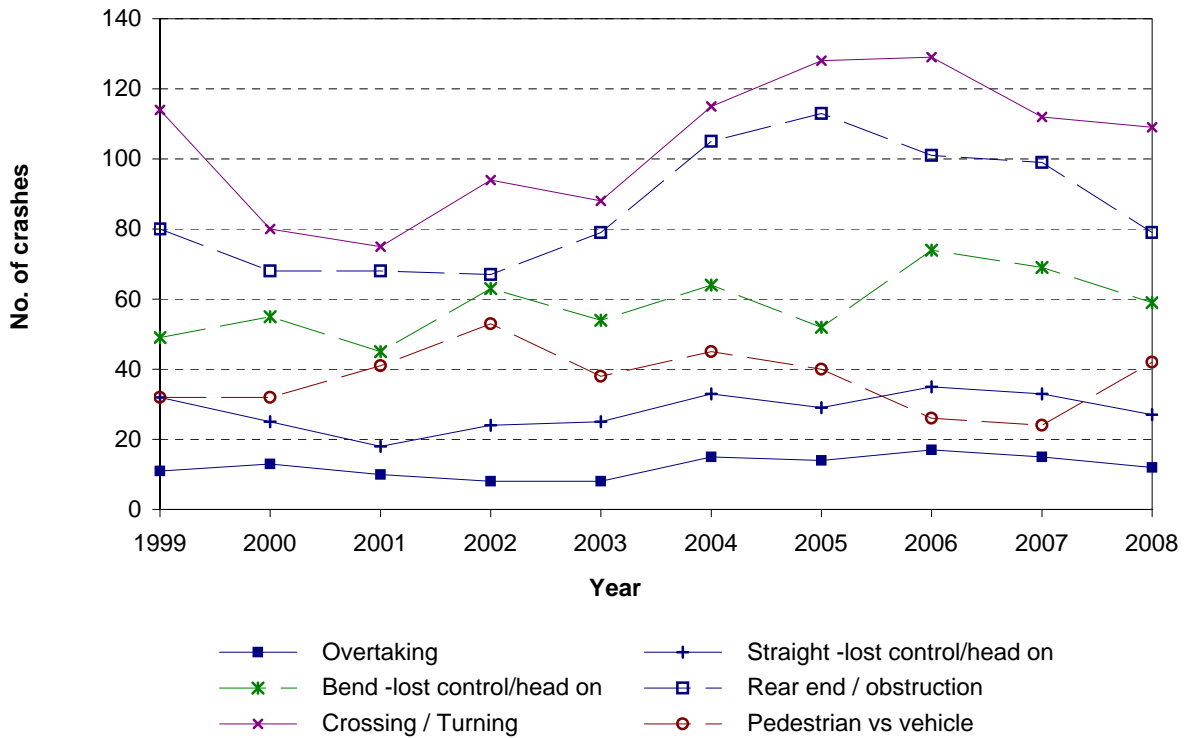
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 4.2 Crash movement type - rural
North Shore City roads (2004-2008)**

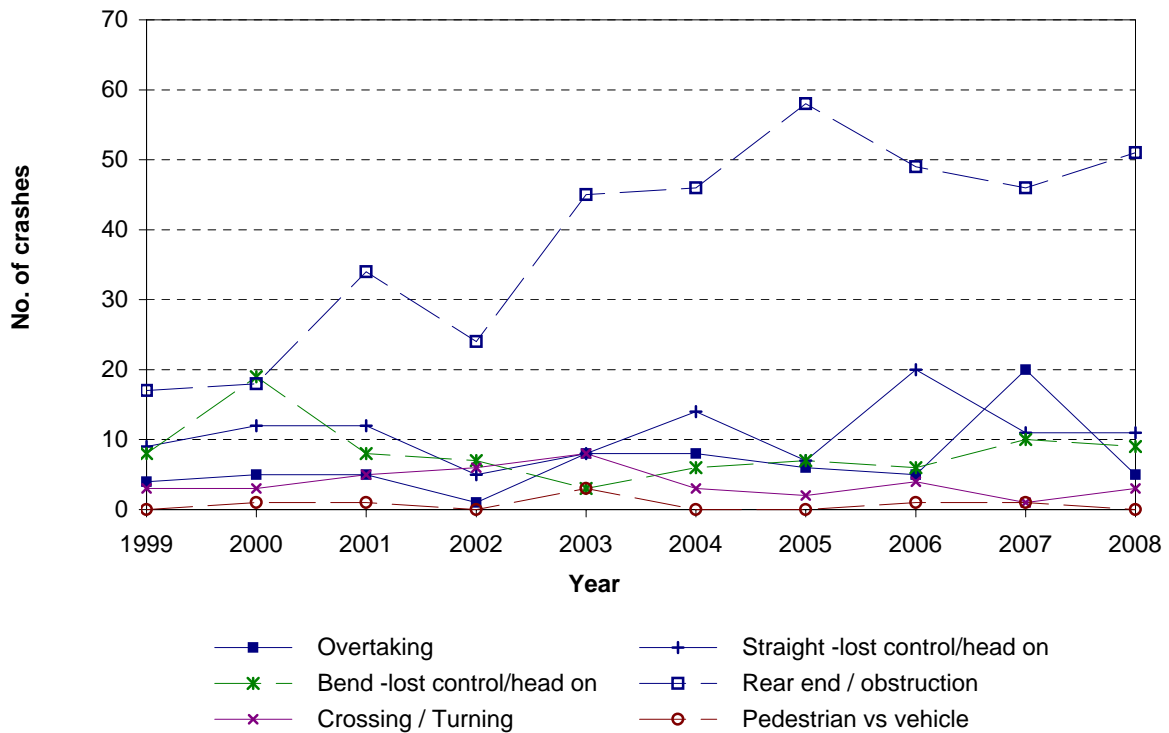


Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

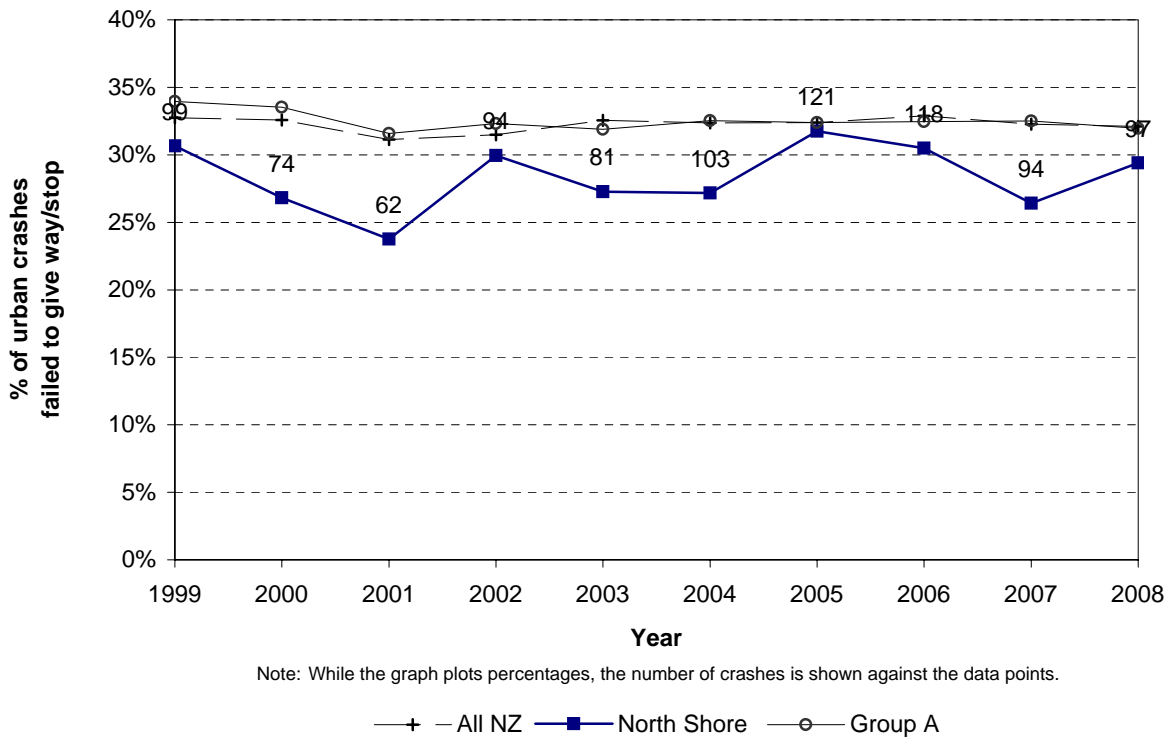
**Figure 4.3 Crash movement type - trends
North Shore City - urban roads**



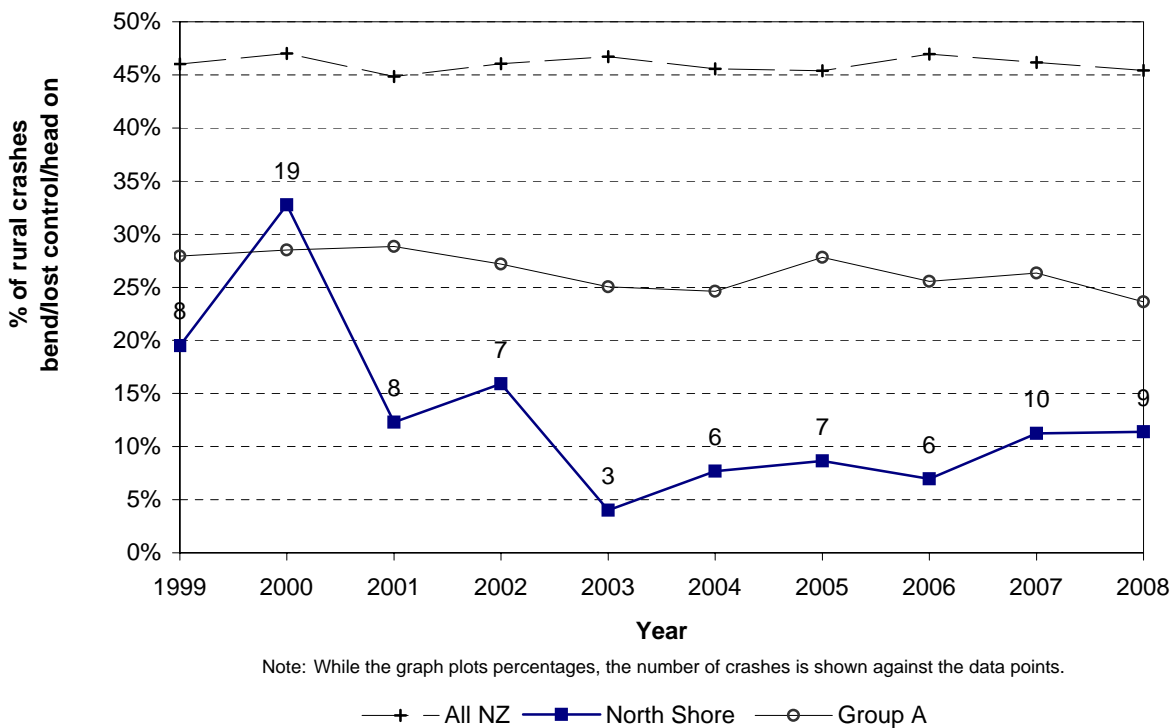
**Figure 4.4 Crash movement type - trends
North Shore City - rural roads**



**Figure 4.5 Failed to give way / stop
North Shore City - urban roads**

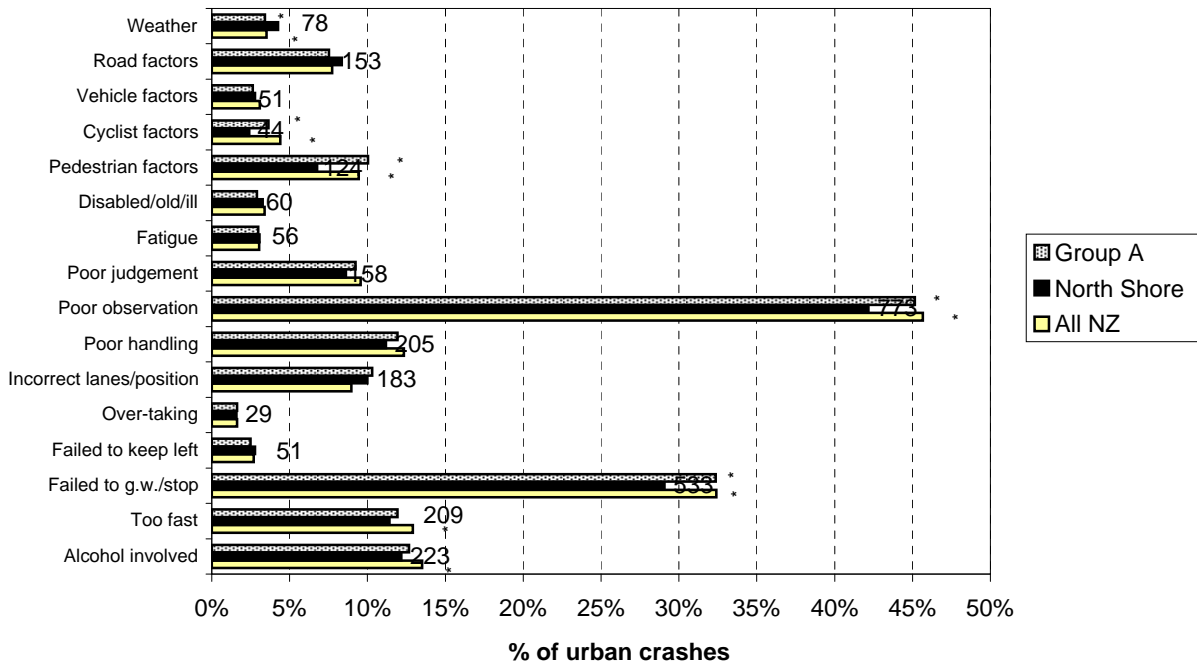


**Figure 4.6 Bend - lost control / head - on
North Shore City - rural roads**



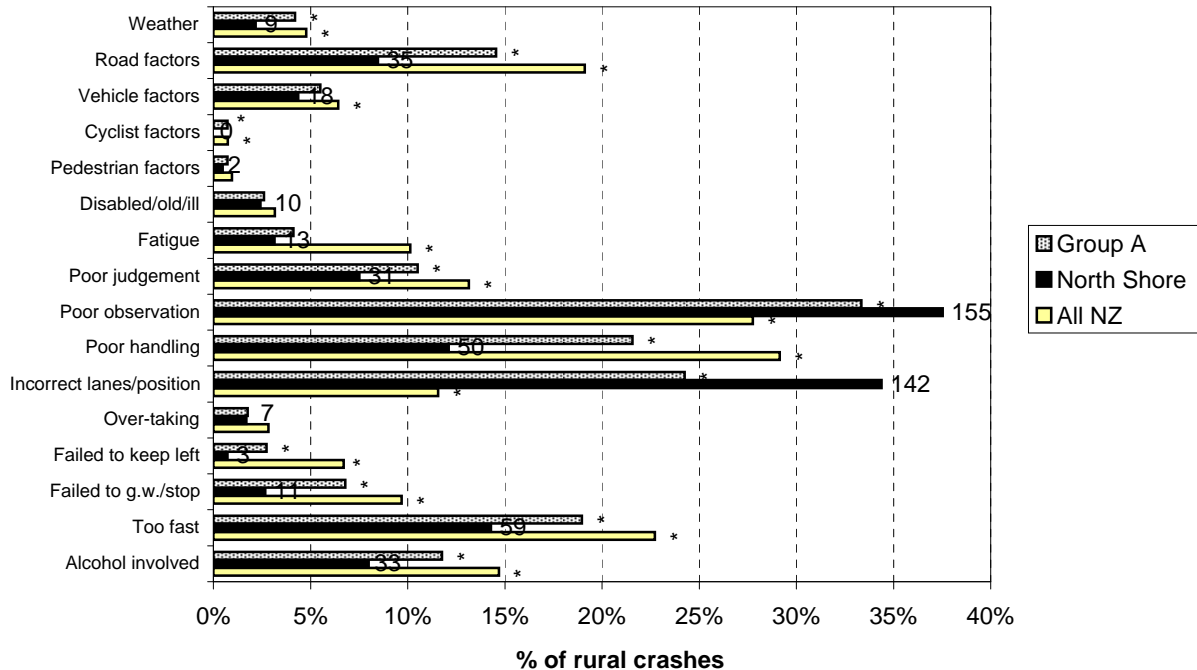
Crash Factor Statistics

**Figure 5.1 Contributing factors - urban
North Shore City (2004-2008)**



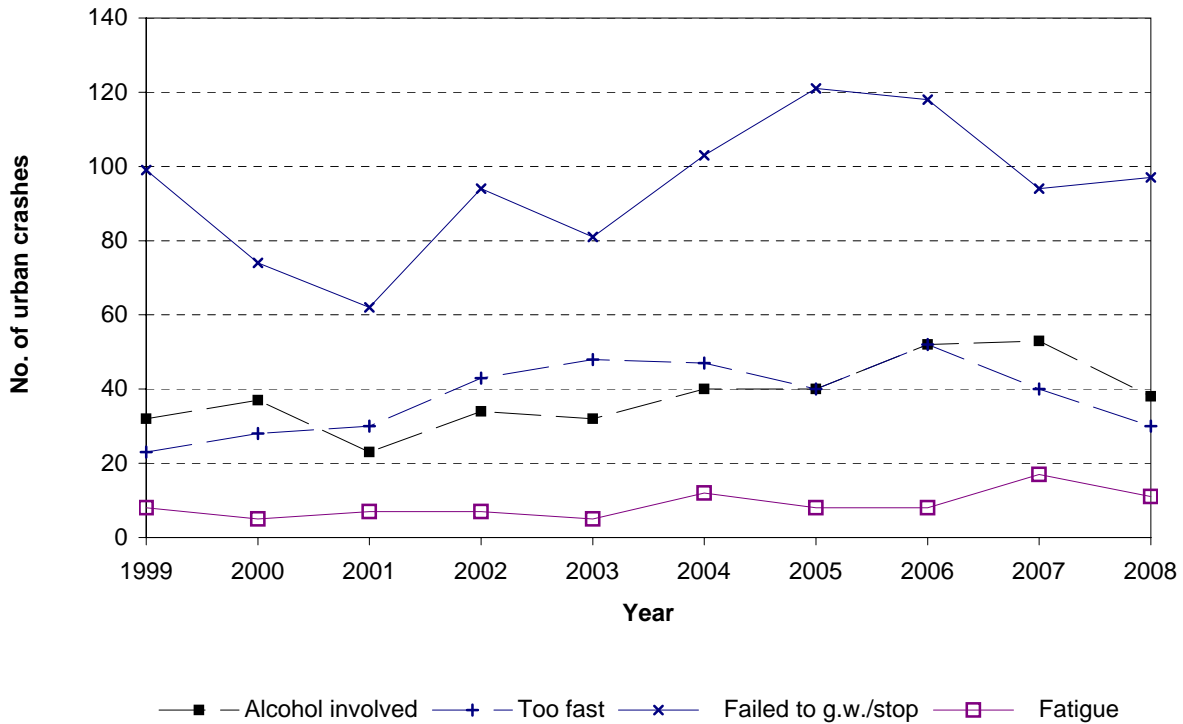
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 5.2 Contributing factors - rural
North Shore City (2004-2008)**

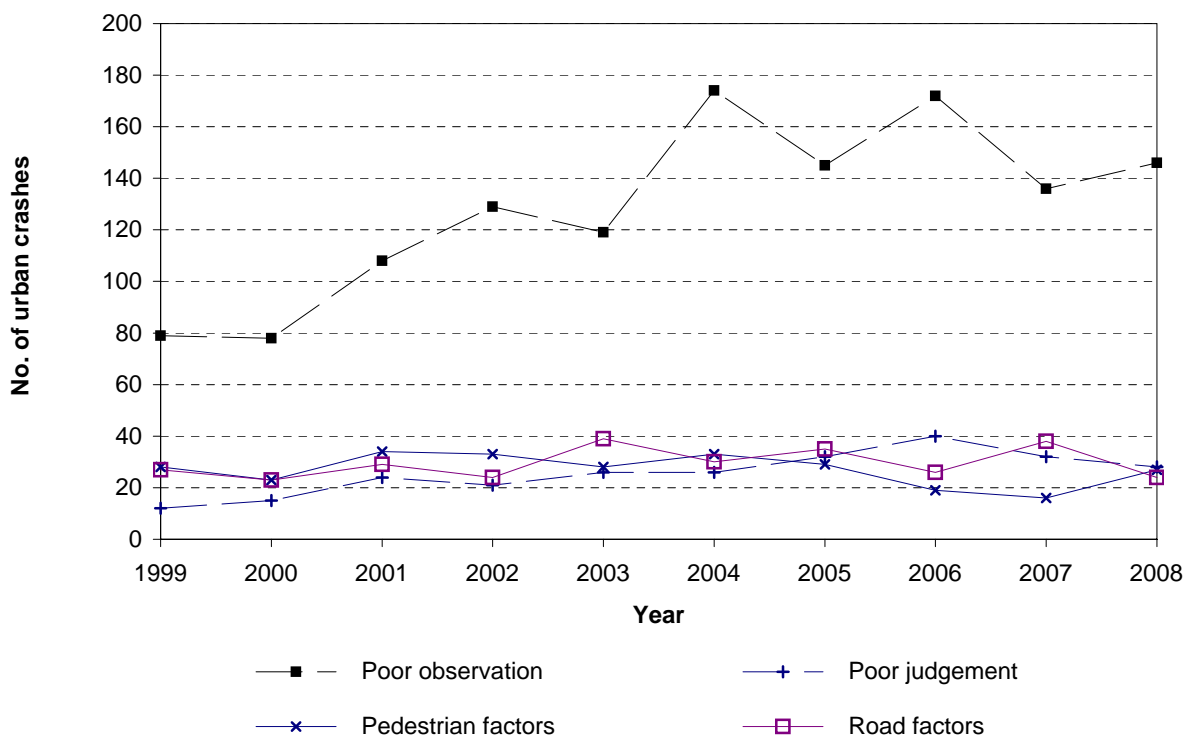


Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

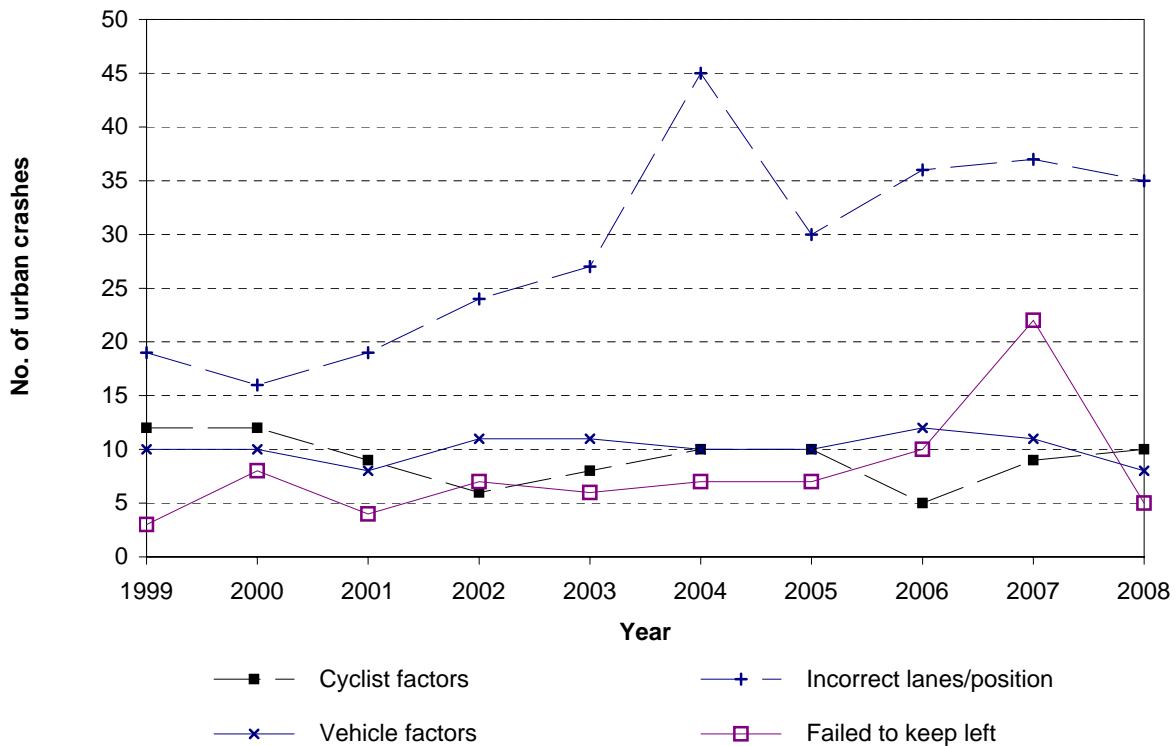
**Figure 5.3 Contributing factor trends
North Shore City - urban roads**



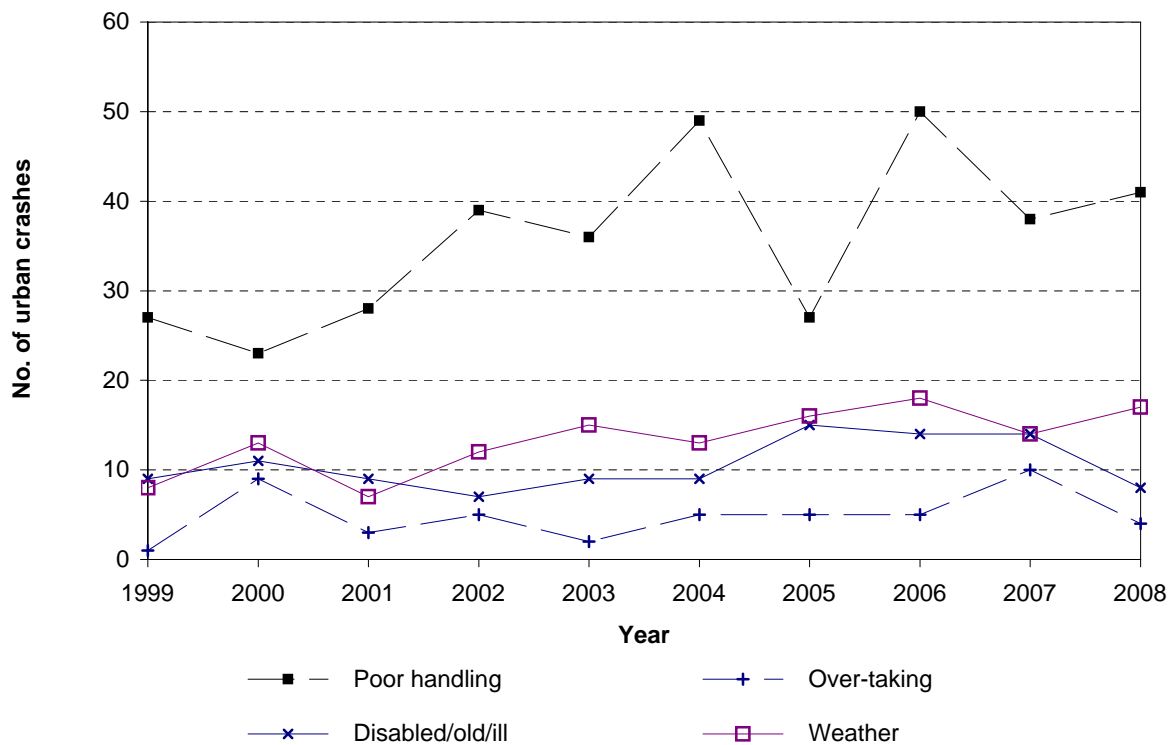
**Figure 5.4 Contributing factor trends
North Shore City - urban roads**



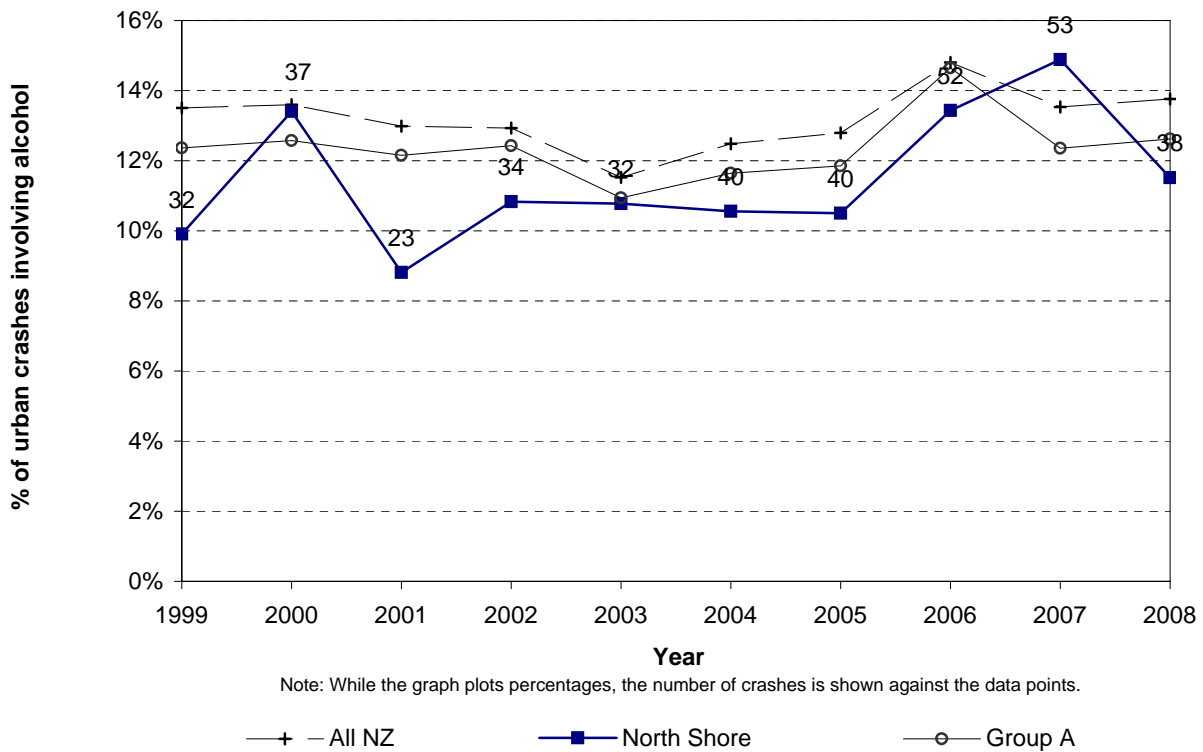
**Figure 5.5 Contributing factor trends
North Shore City - urban roads**



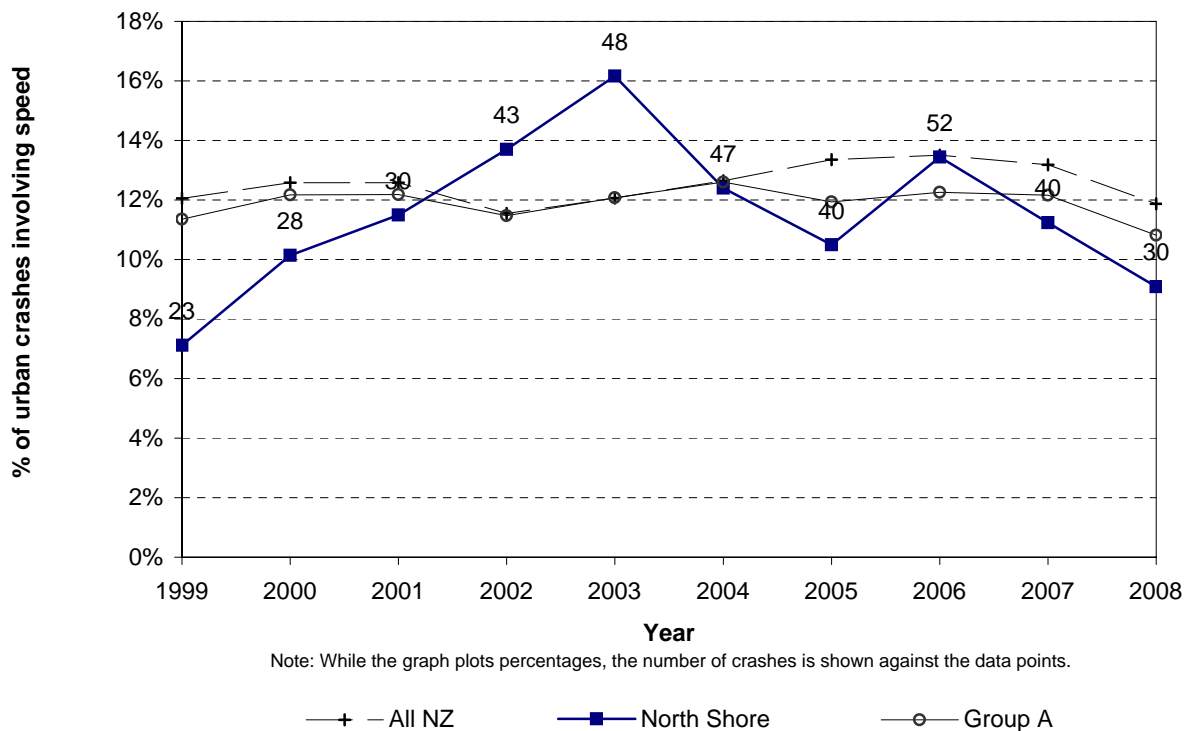
**Figure 5.6 Contributing factor trends
North Shore City - urban roads**



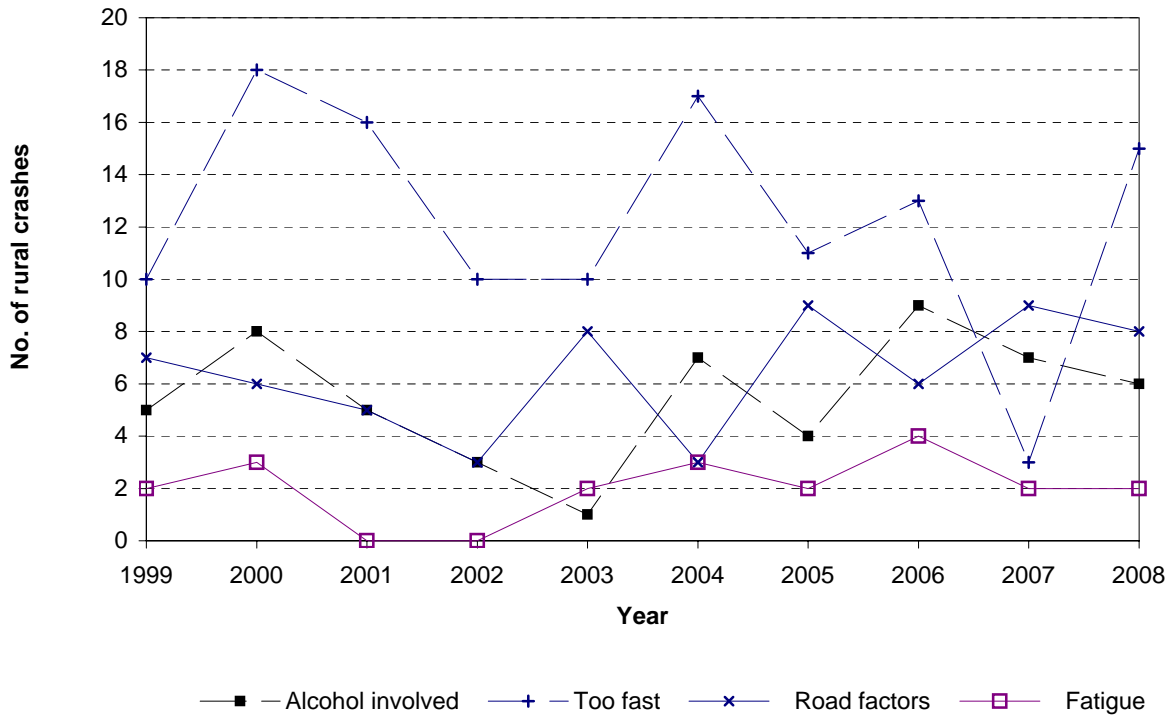
**Figure 5.7 Alcohol involved trend
North Shore City - urban roads**



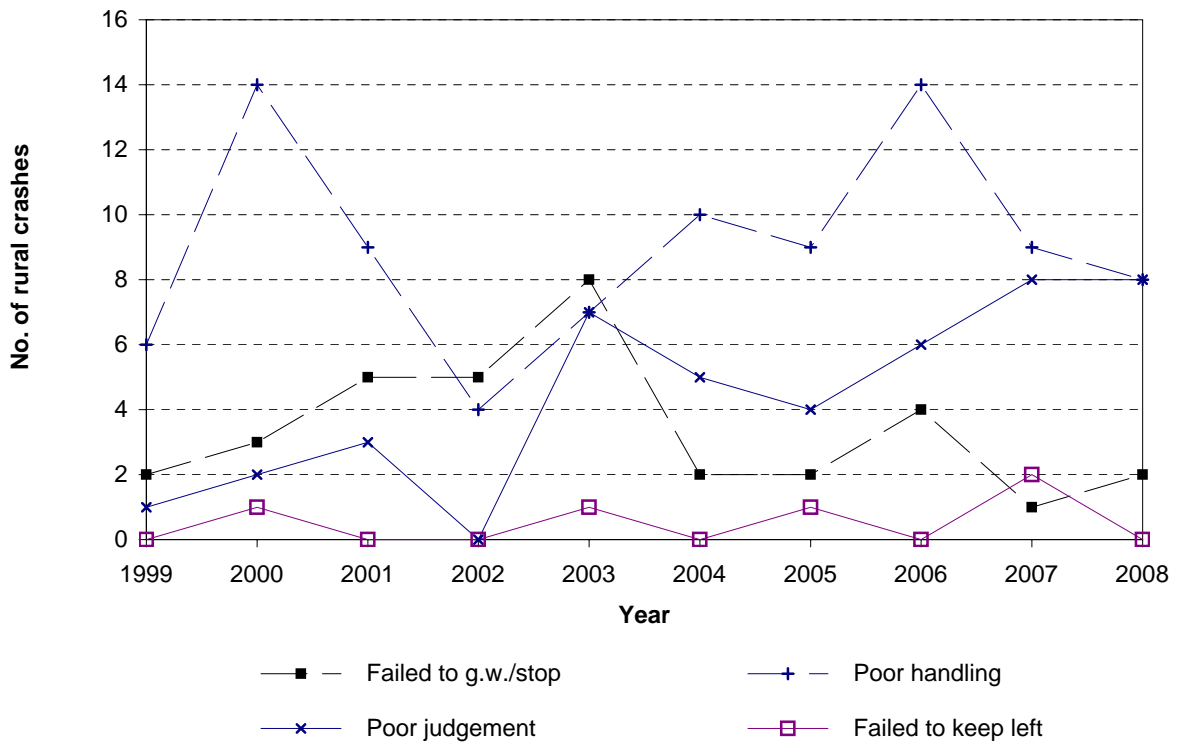
**Figure 5.8 Speed involved trend
North Shore City - urban roads**



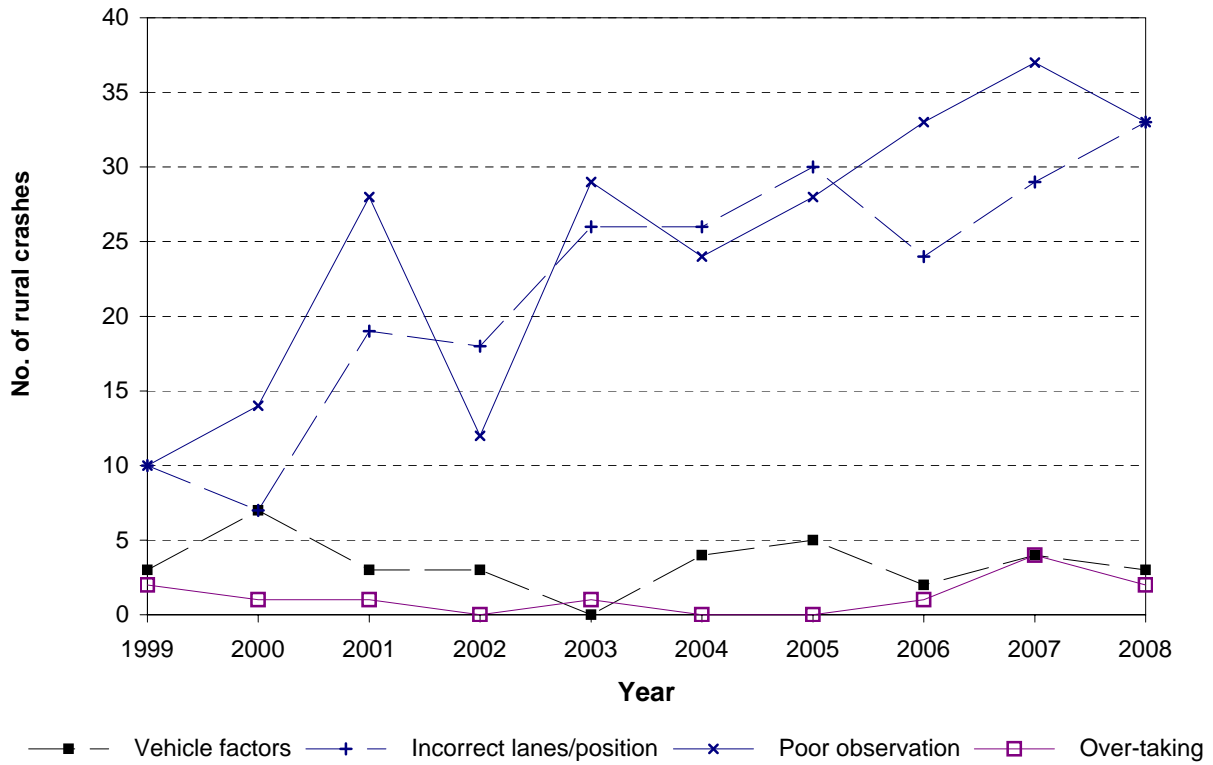
**Figure 5.9 Contributing factor trends
North Shore City - rural roads**



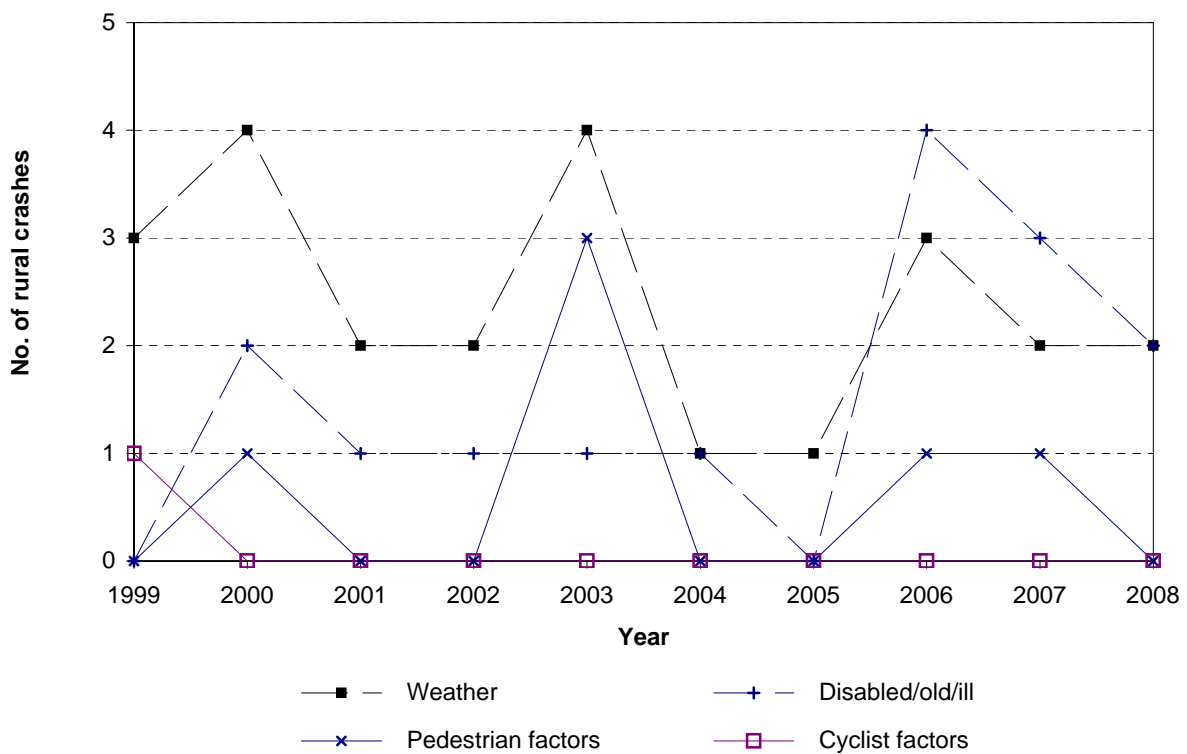
**Figure 5.10 Contributing factor trends
North Shore City - rural roads**



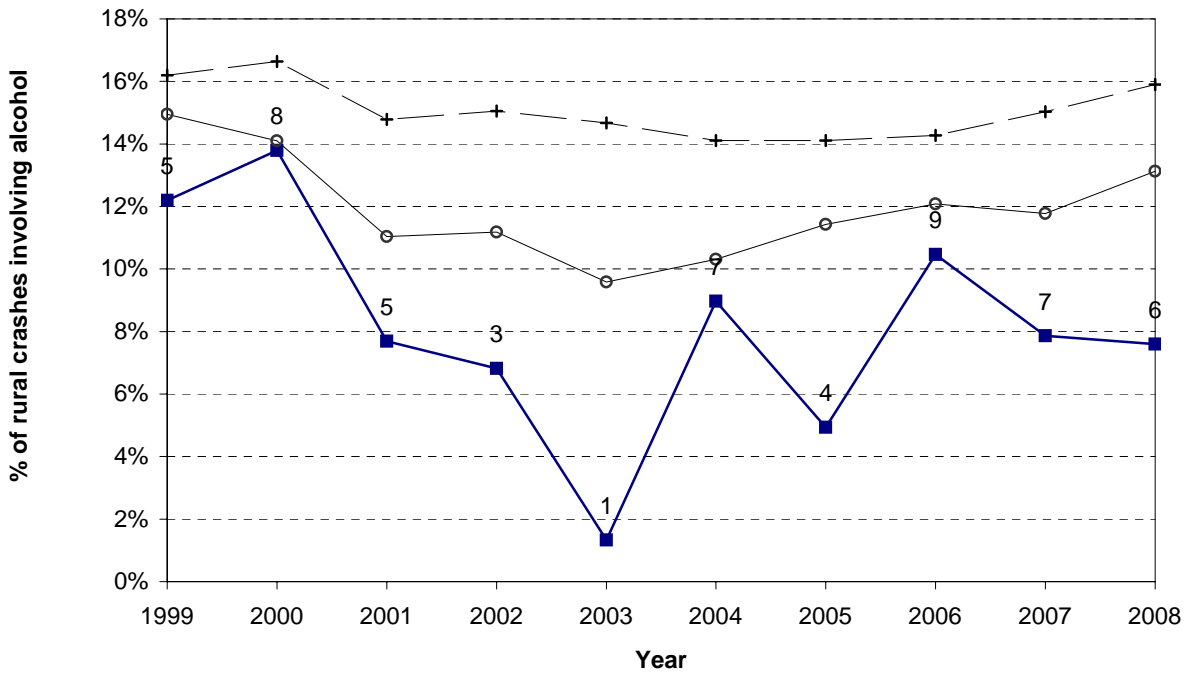
**Figure 5.11 Contributing factor trends
North Shore City - rural roads**



**Figure 5.12 Contributing factor trends
North Shore City - rural roads**



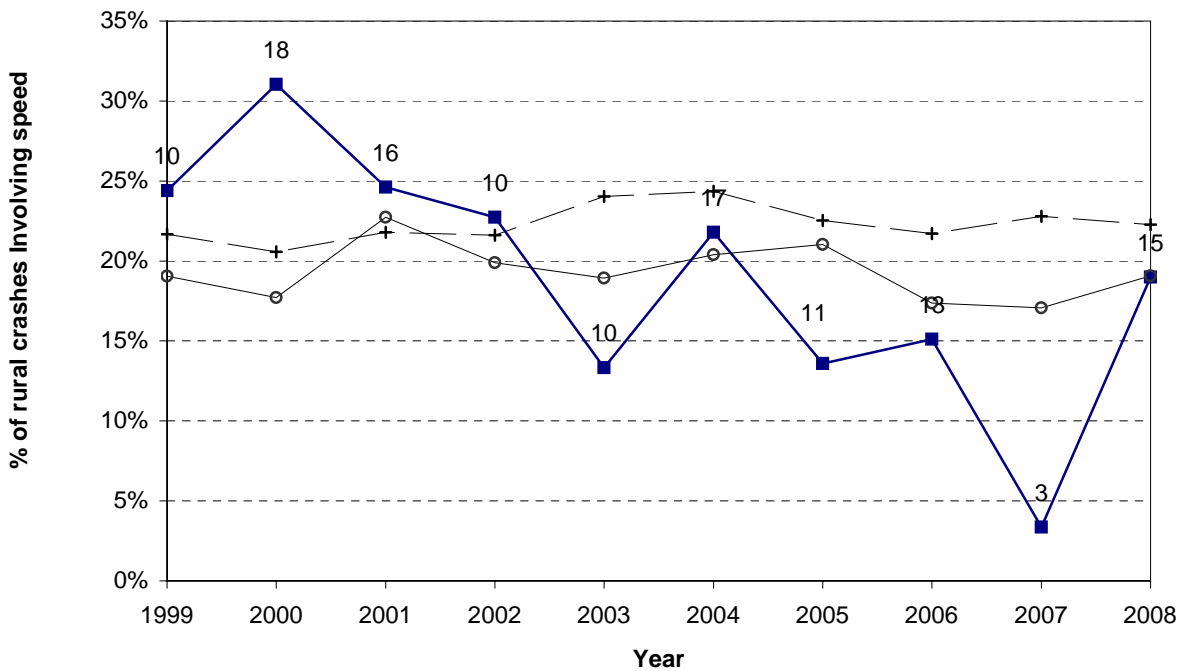
**Figure 5.13 Alcohol involved trend
North Shore City - rural roads**



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

—+— All NZ —■— North Shore —○— Group A

**Figure 5.14 Speed involved trend
North Shore City - rural roads**

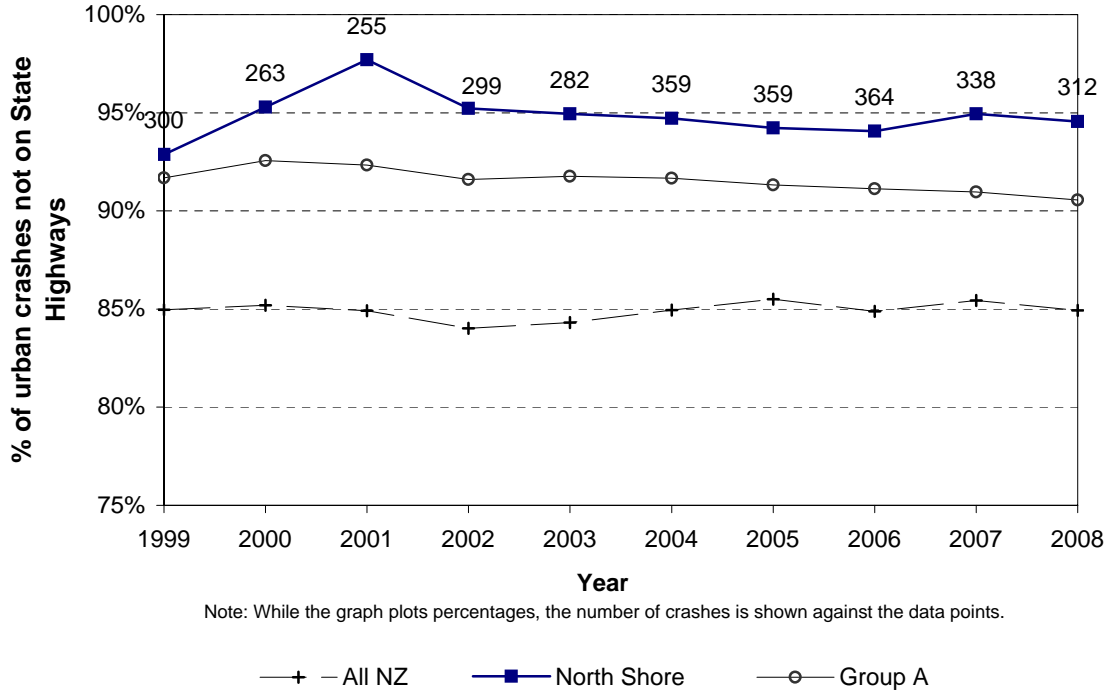


Note: While the graph plots percentages, the number of crashes is shown against the data points.

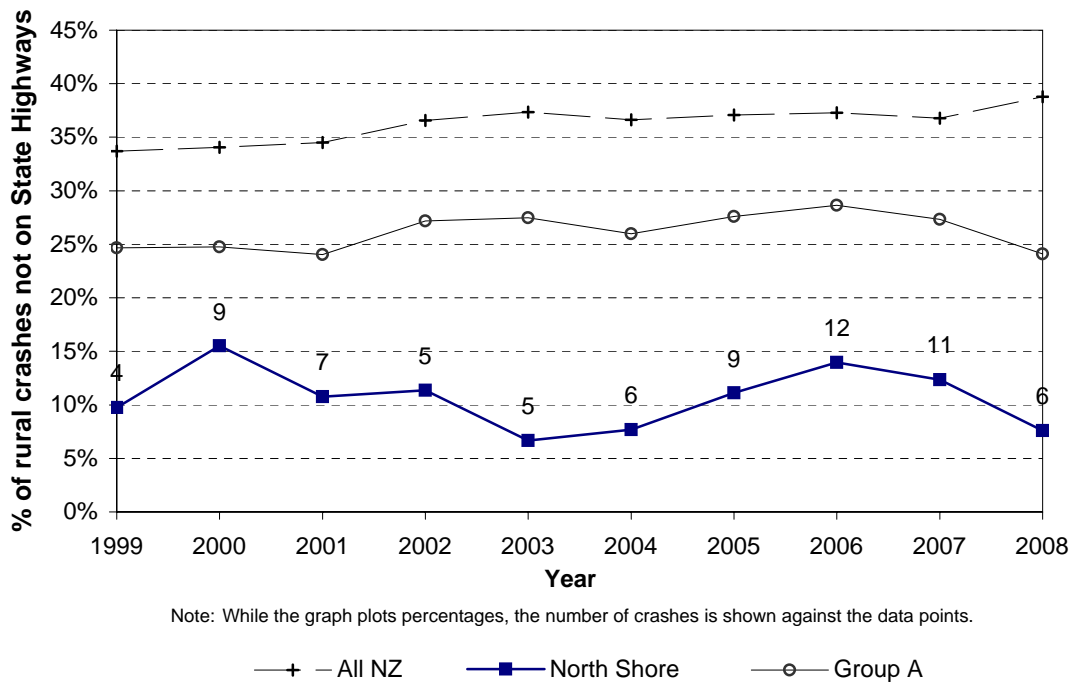
—+— All NZ —■— North Shore —○— Group A

Environmental Statistics

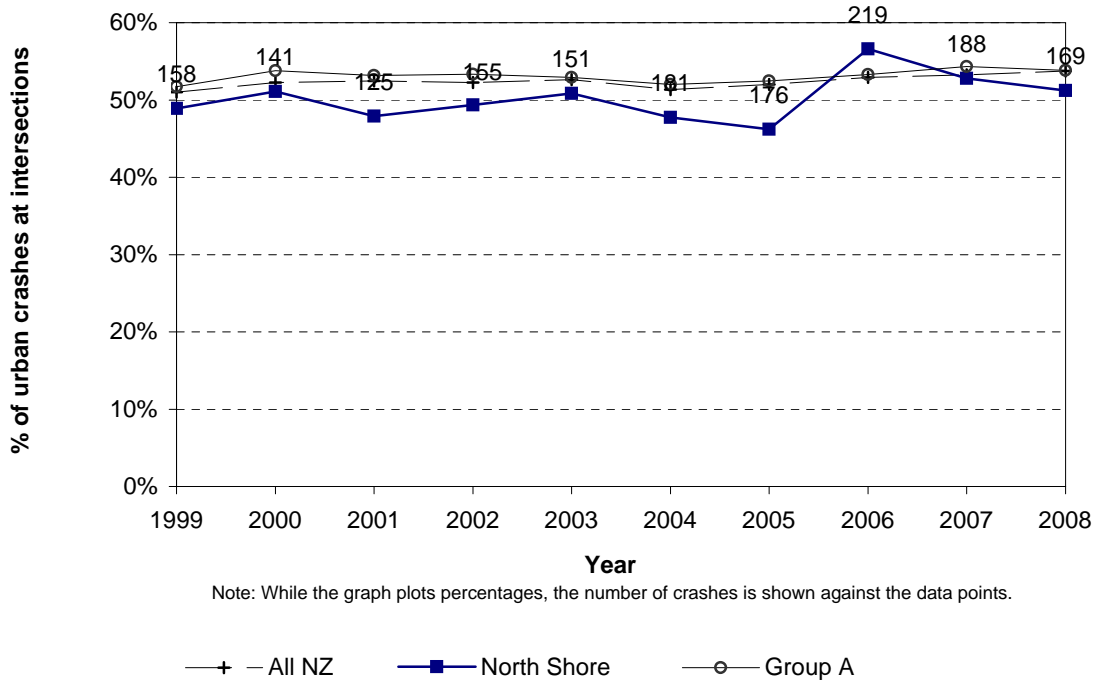
**Figure 6.1 Crashes not on state highways
North Shore City - urban roads**



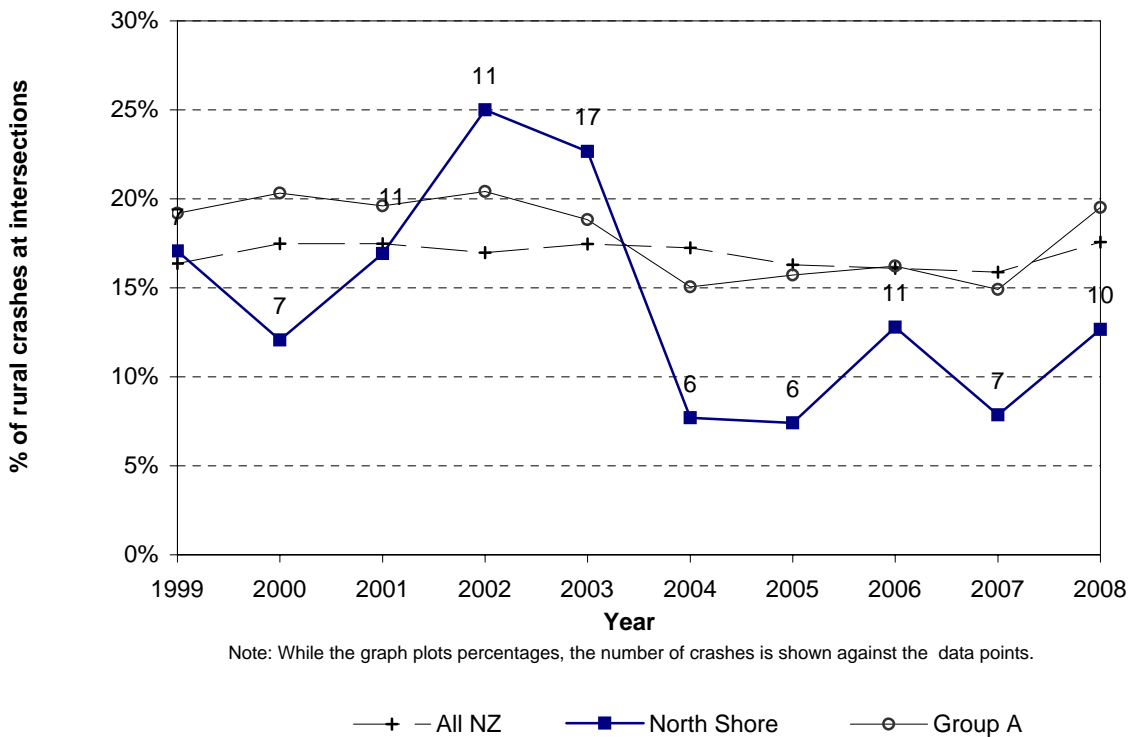
**Figure 6.2 Crashes not on state highways
North Shore City - rural roads**



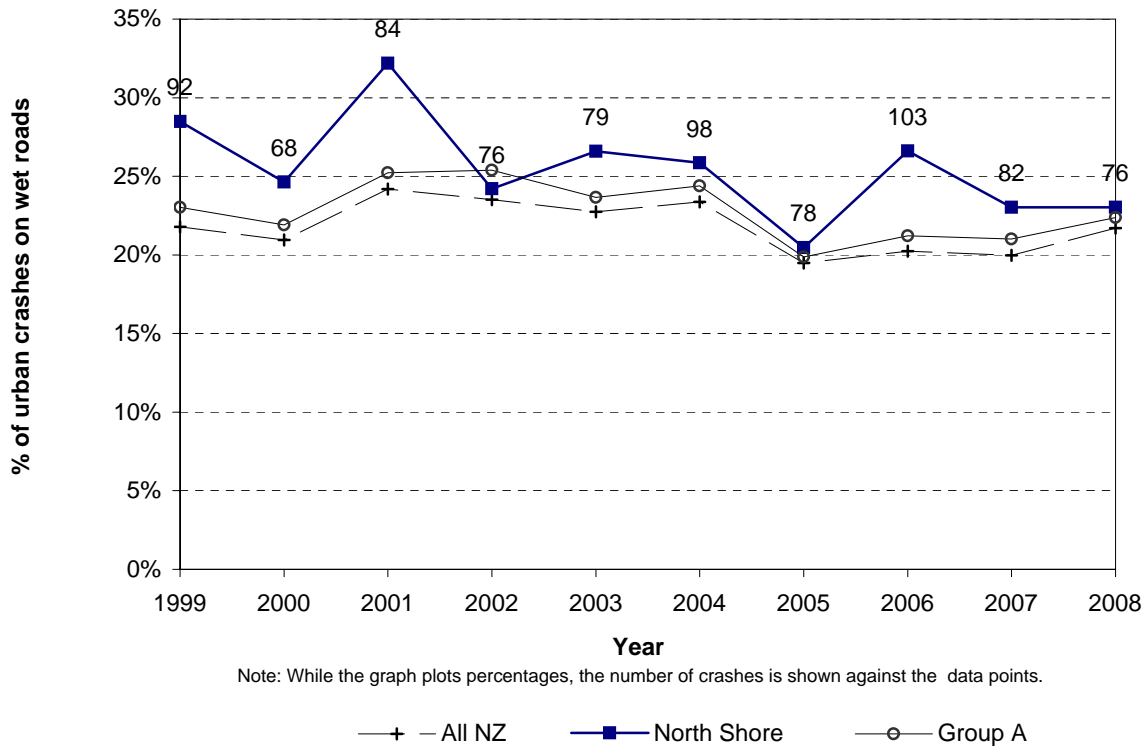
**Figure 6.3 Intersection crashes
North Shore City - urban roads**



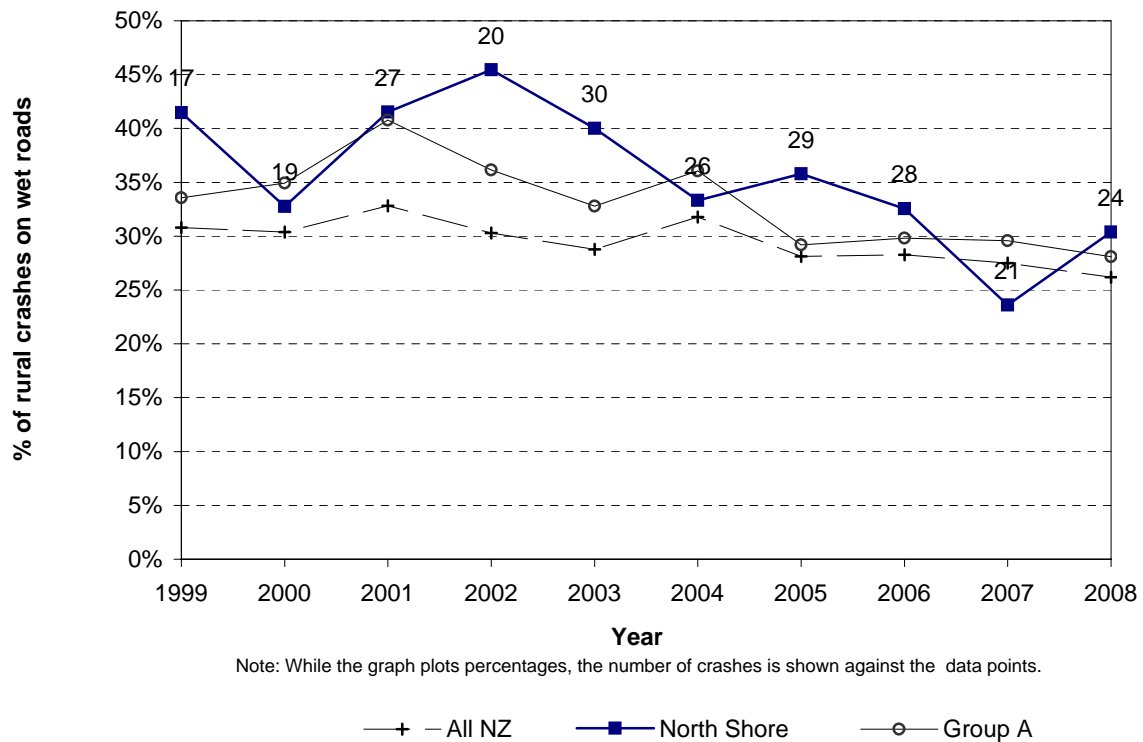
**Figure 6.4 Intersection crashes
North Shore City - rural roads**



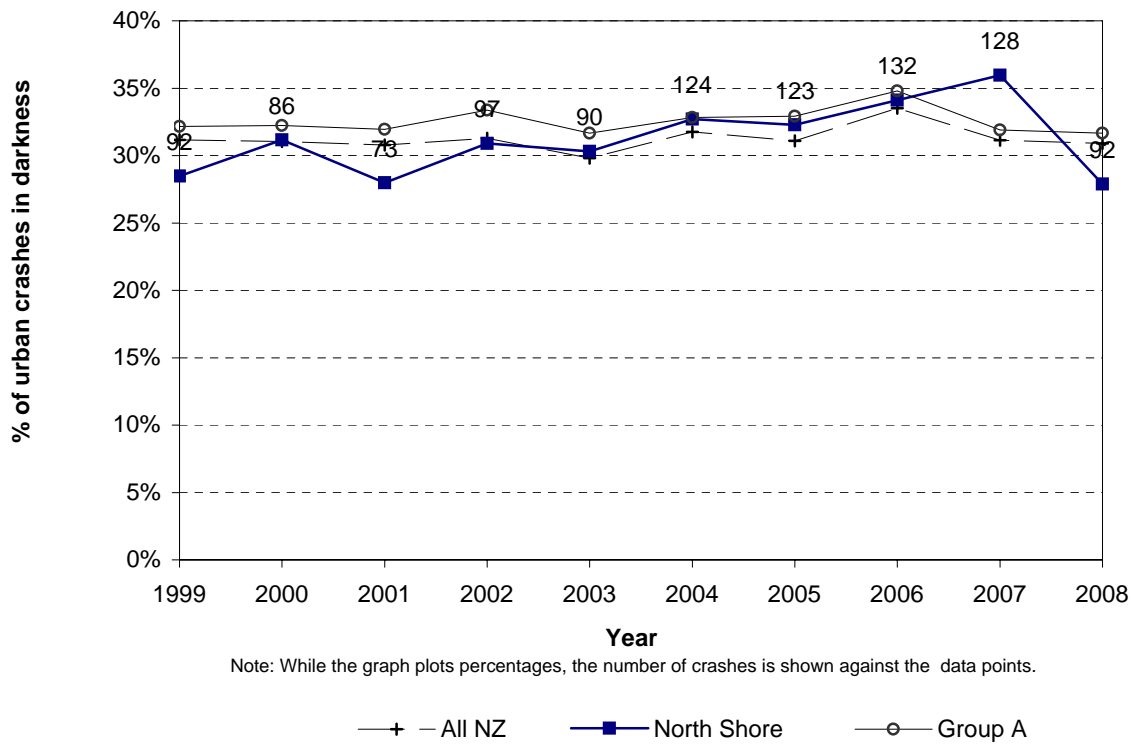
**Figure 6.5 Wet road crashes
North Shore City - urban roads**



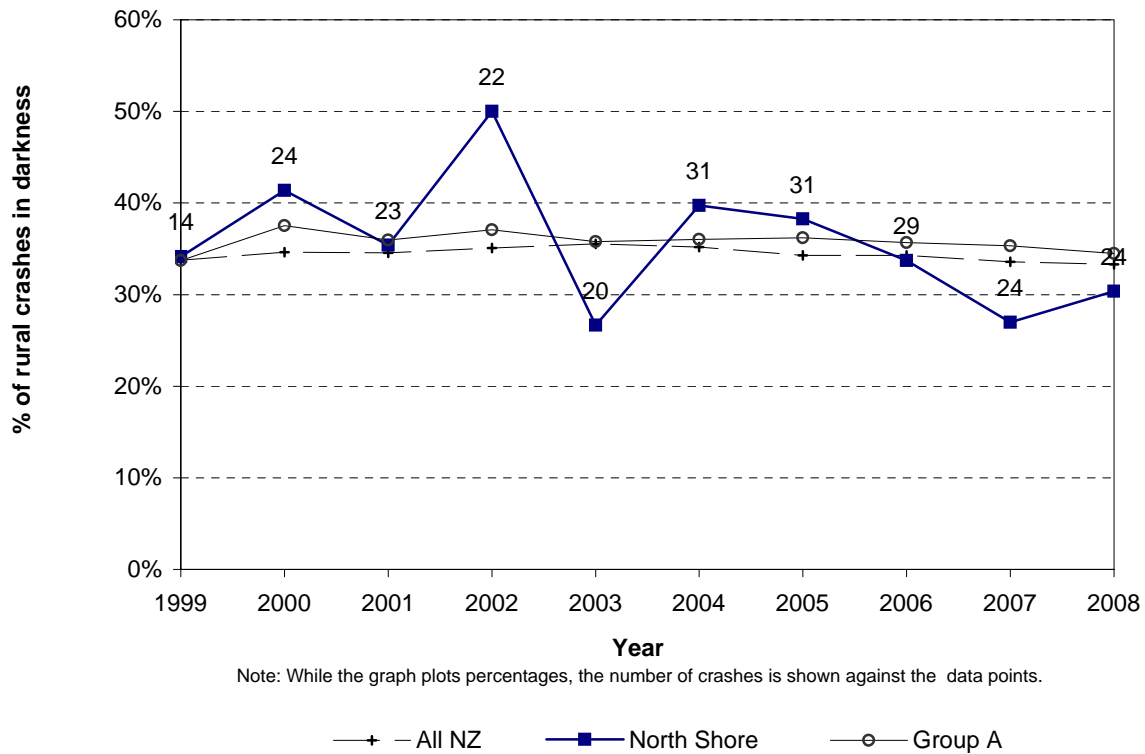
**Figure 6.6 Wet road crashes
North Shore City - rural roads**



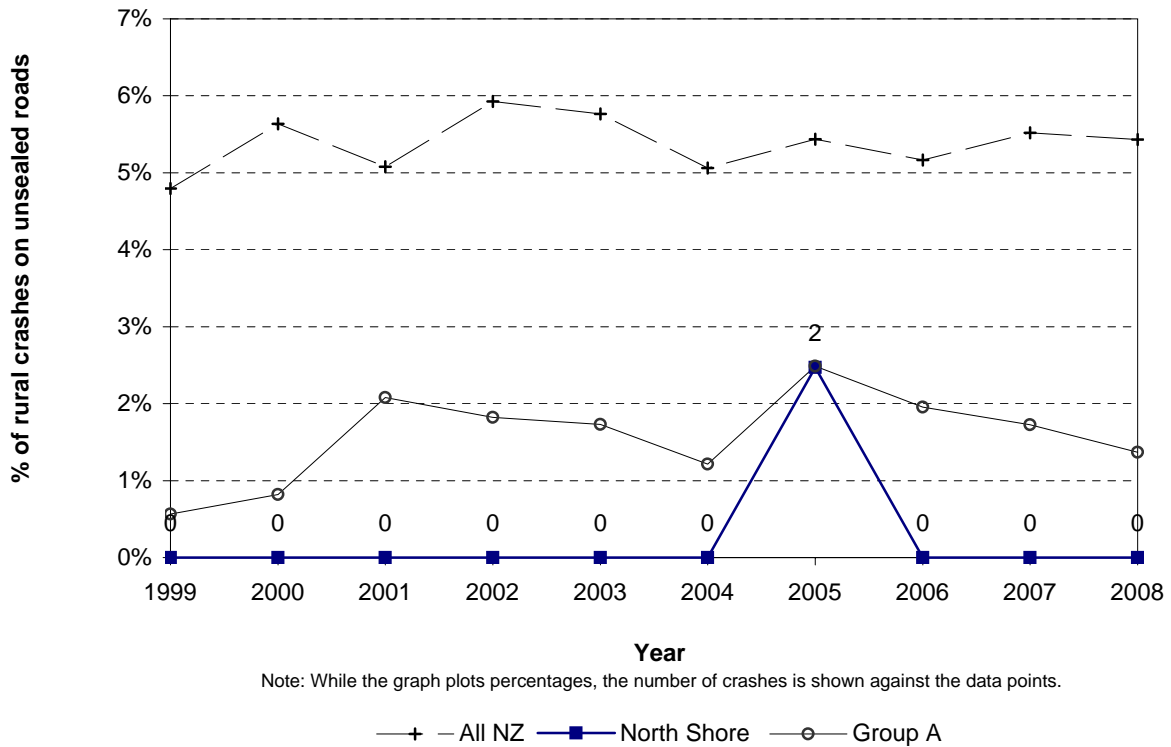
**Figure 6.7 Crashes in darkness
North Shore City - urban roads**



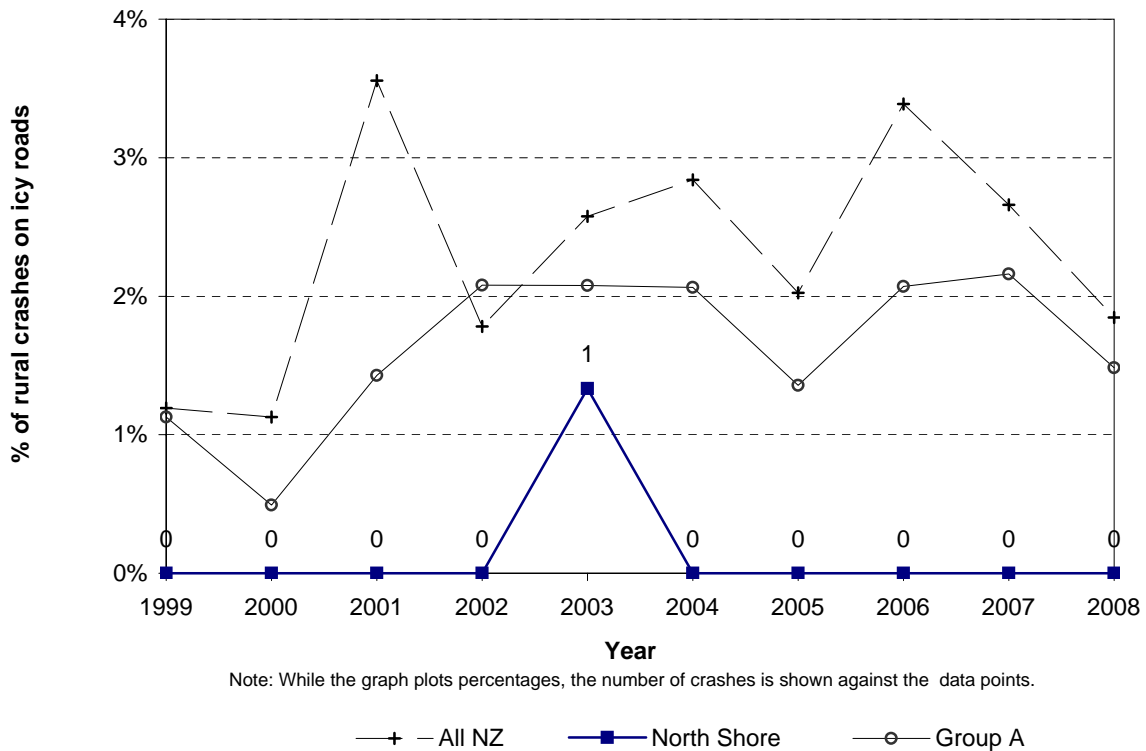
**Figure 6.8 Crashes in darkness
North Shore City - rural roads**



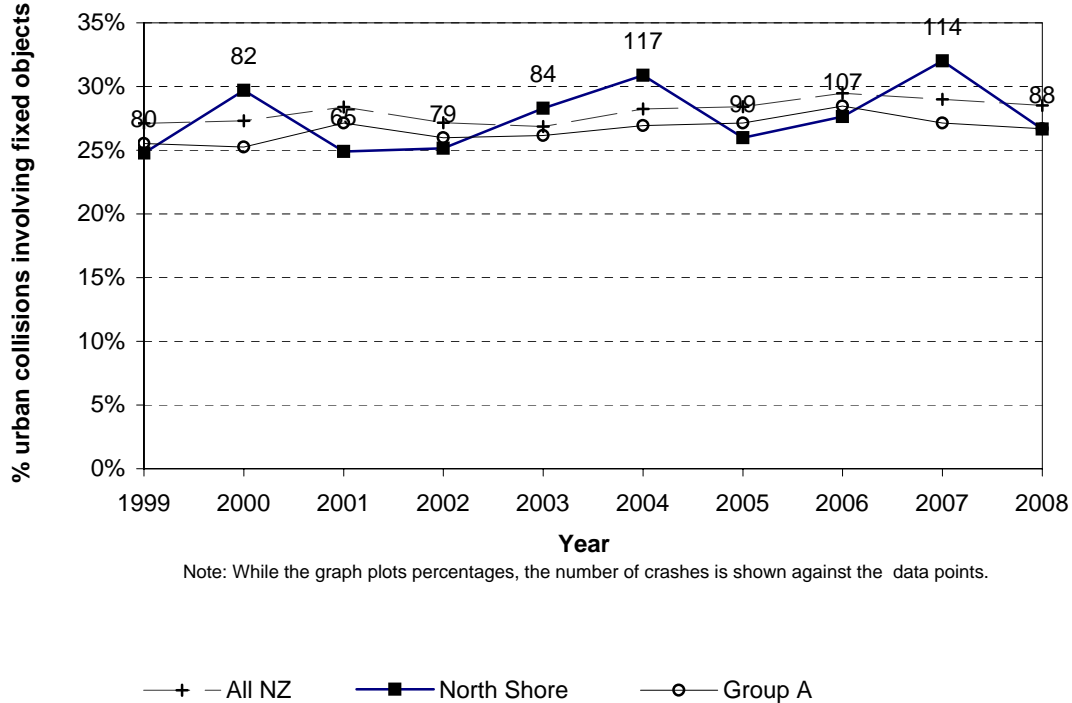
**Figure 6.9 Unsealed road crashes
North Shore City - rural roads**



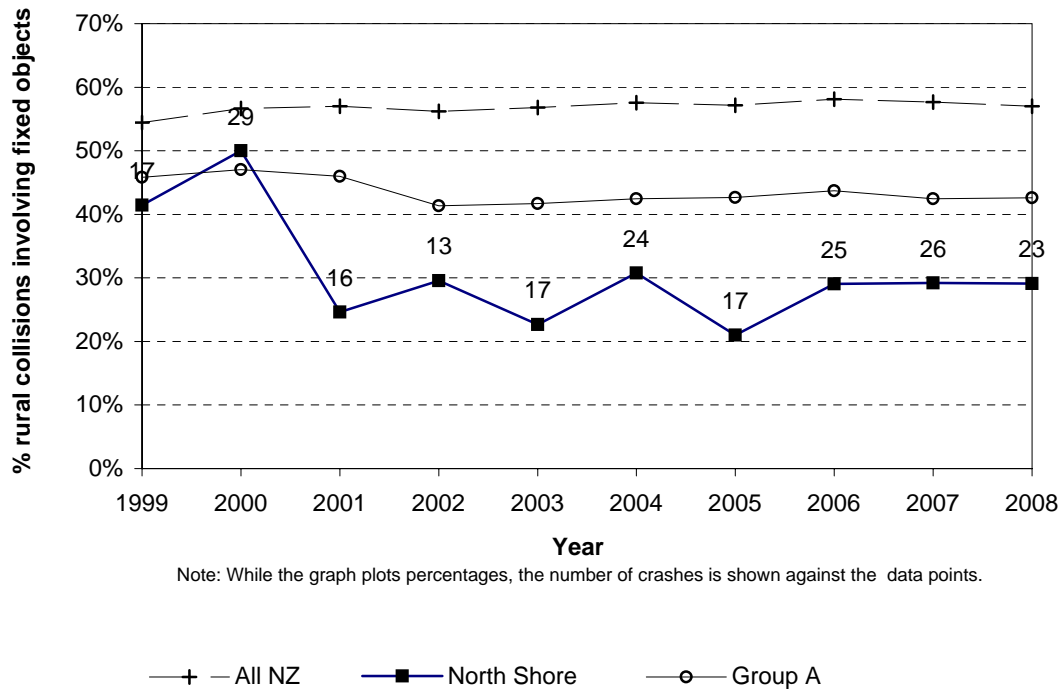
**Figure 6.10 Icy road crashes
North Shore City - rural roads**



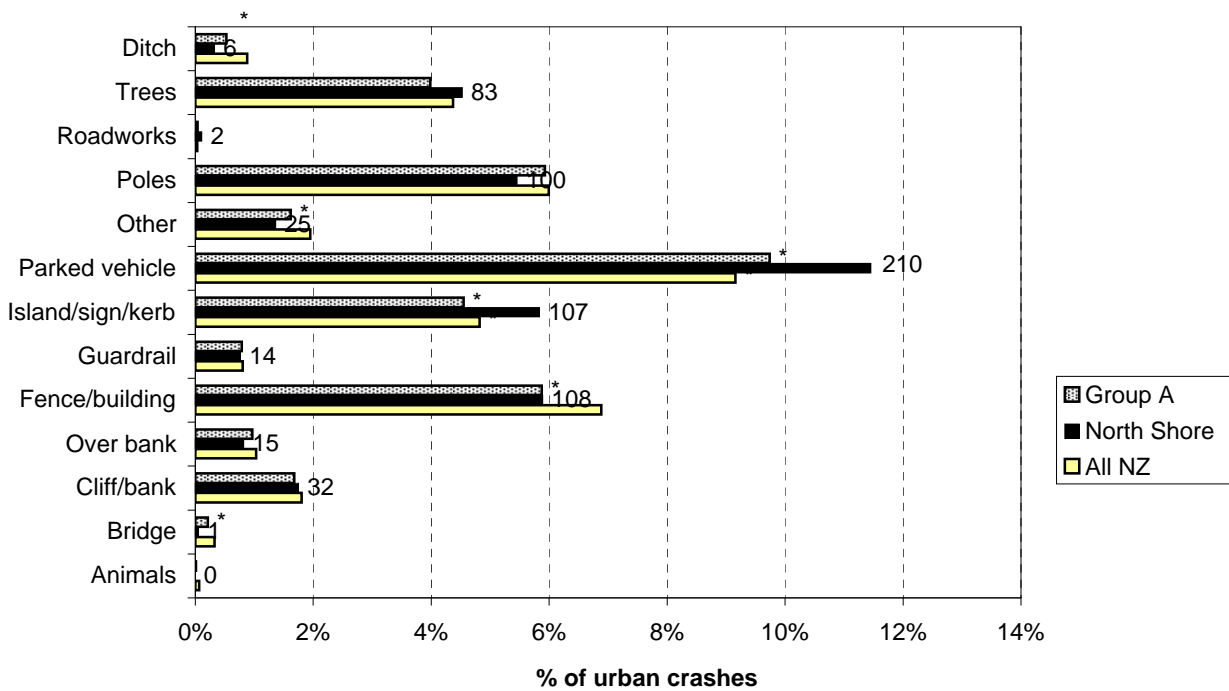
**Figure 6.11 Collisions with objects
North Shore City - urban roads**



**Figure 6.12 Collisions with objects
North Shore City - rural roads**

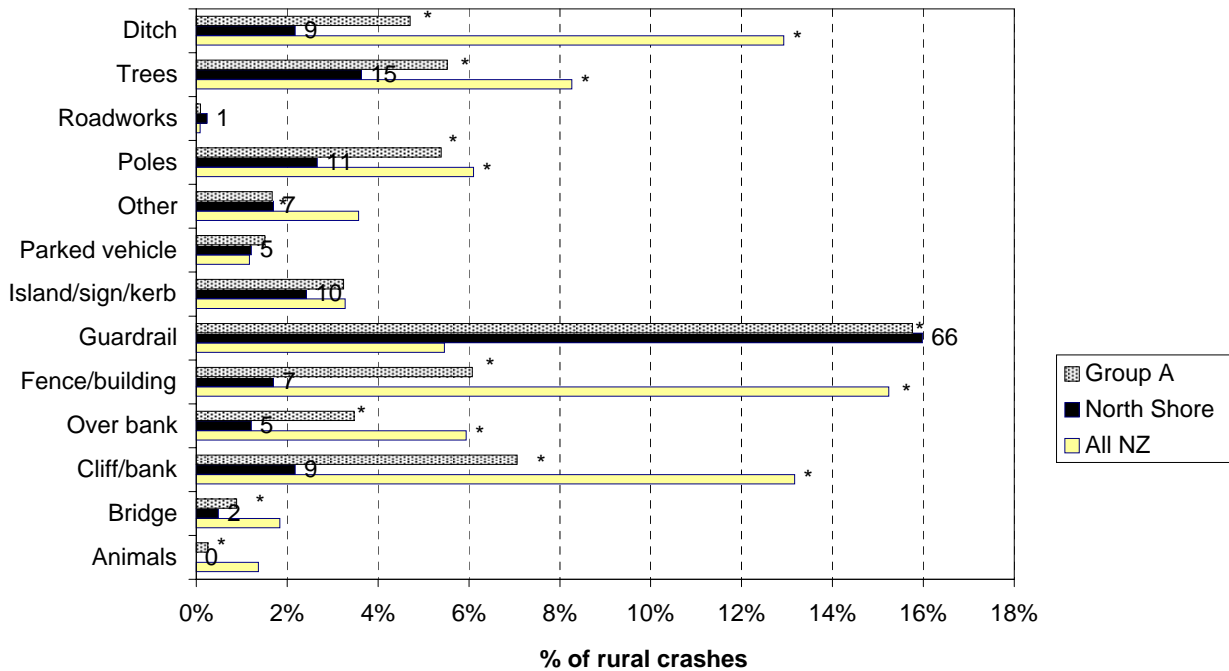


**Figure 6.13 Objects struck - urban
North Shore City (2004-2008)**



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

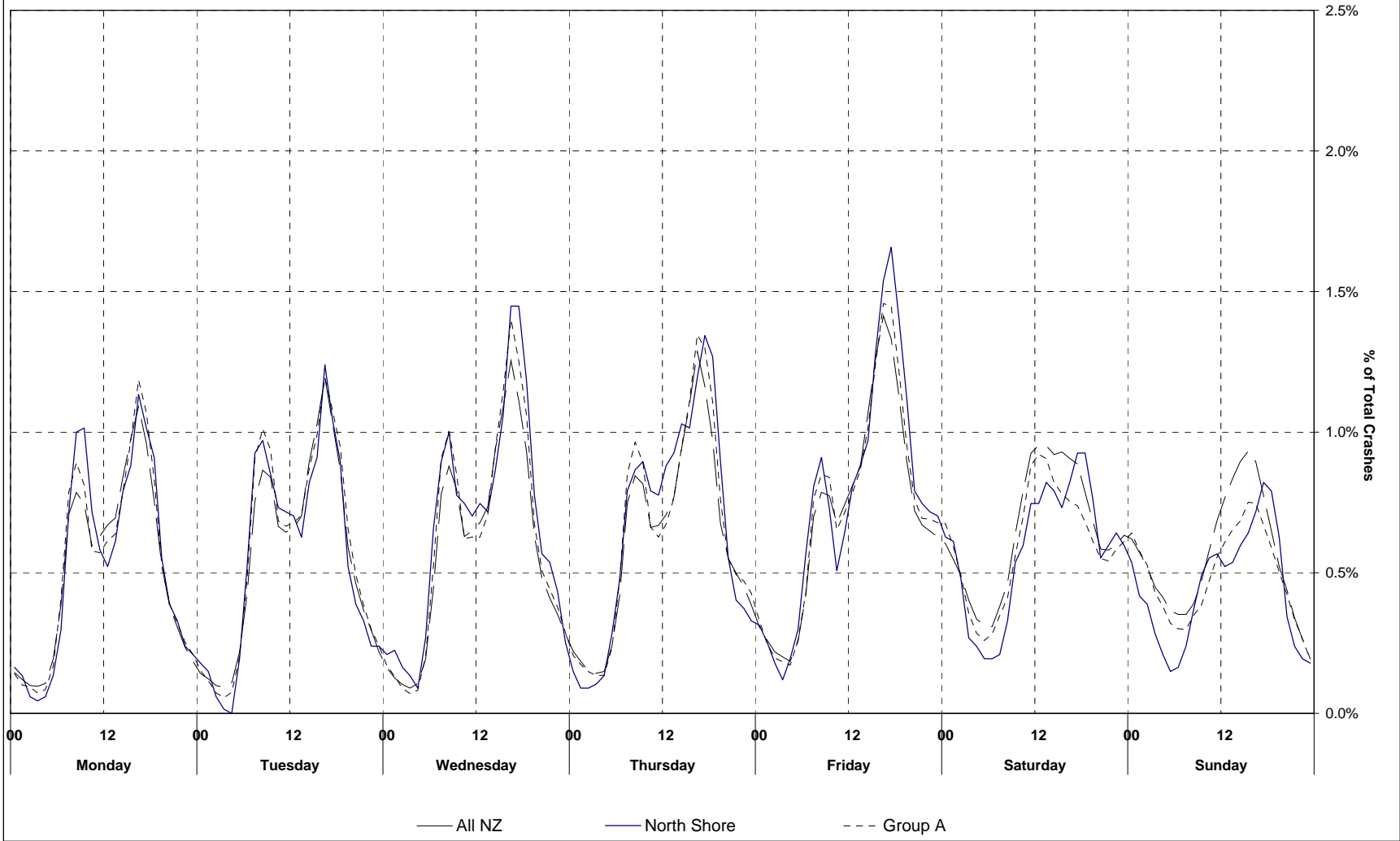
**Figure 6.14 Objects struck - rural
North Shore City (2004-2008)**



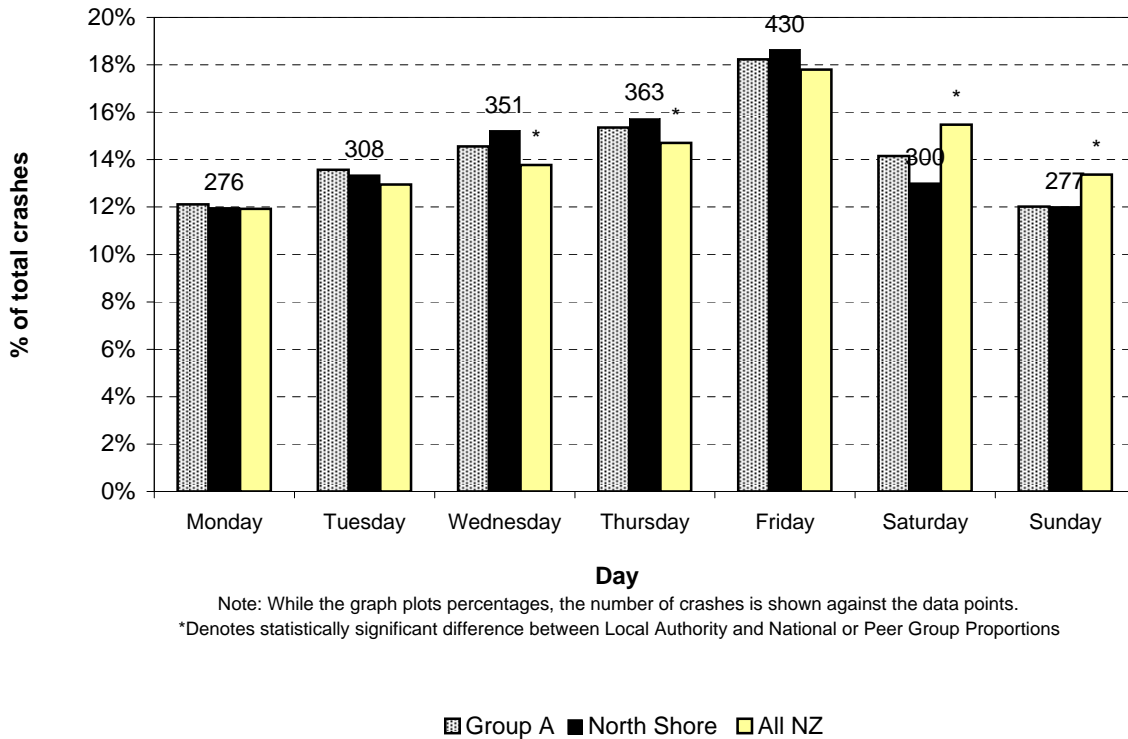
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Date and Time Statistics

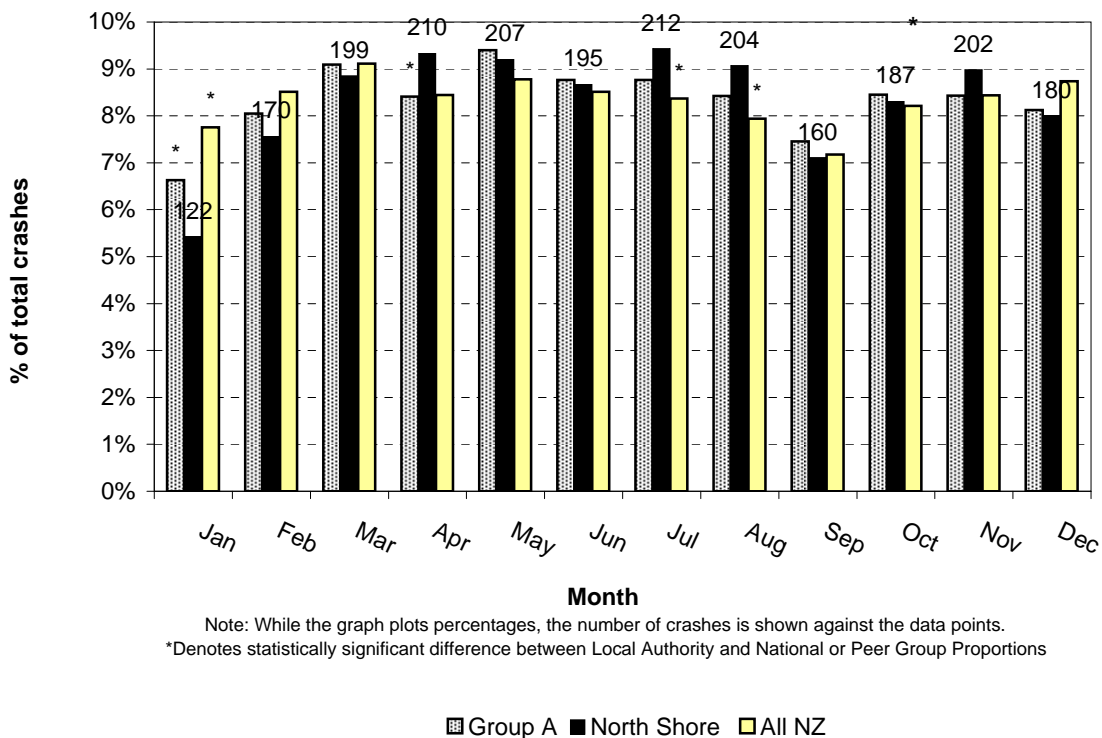
Figure 7.1 Time pattern over average week
North Shore City (2004-2008)



**Figure 7.2 Day of week (6 a.m. to 6 a.m.)
North Shore City (2004-2008)**



**Figure 7.3 Month of year
North Shore City (2004-2008)**



Local Road Statistics

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

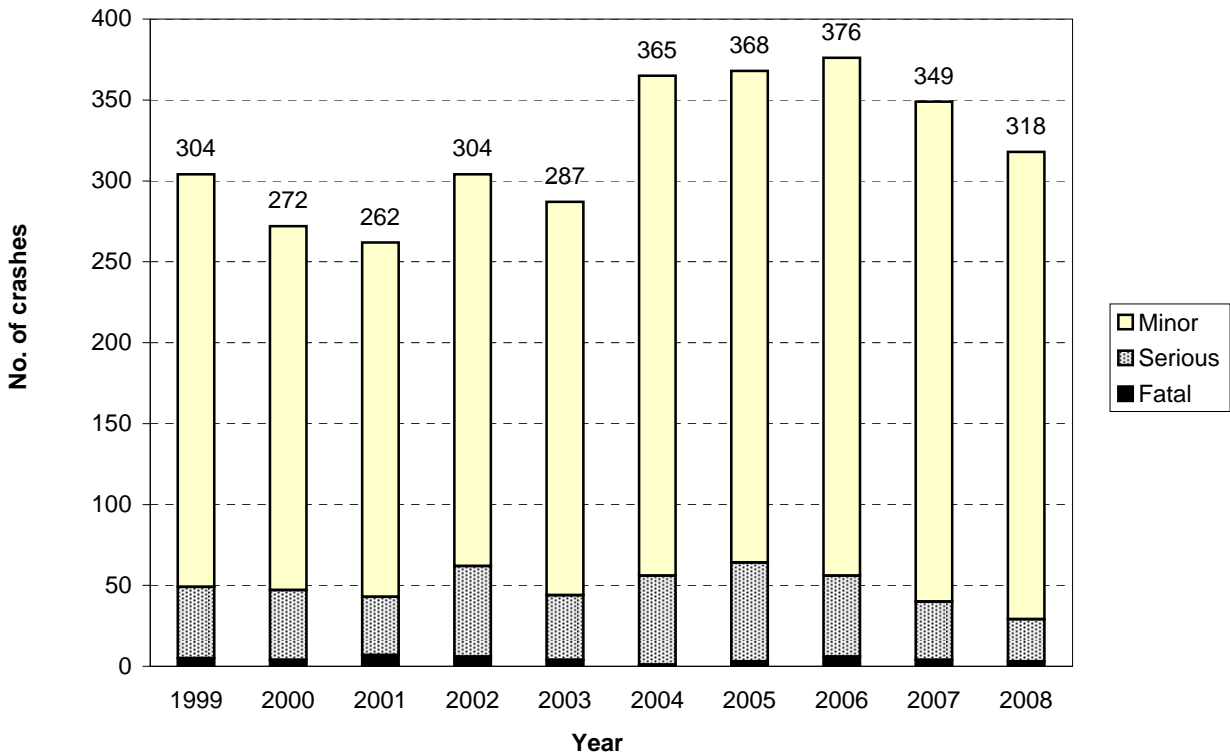
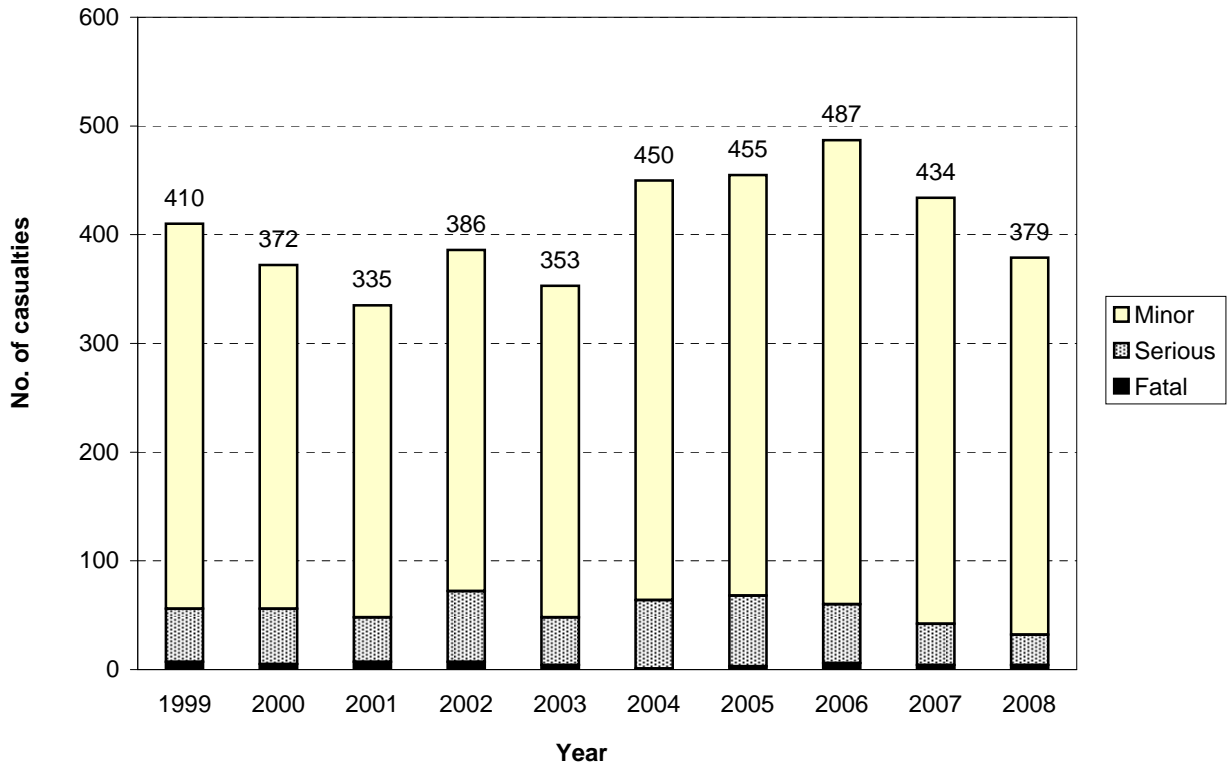
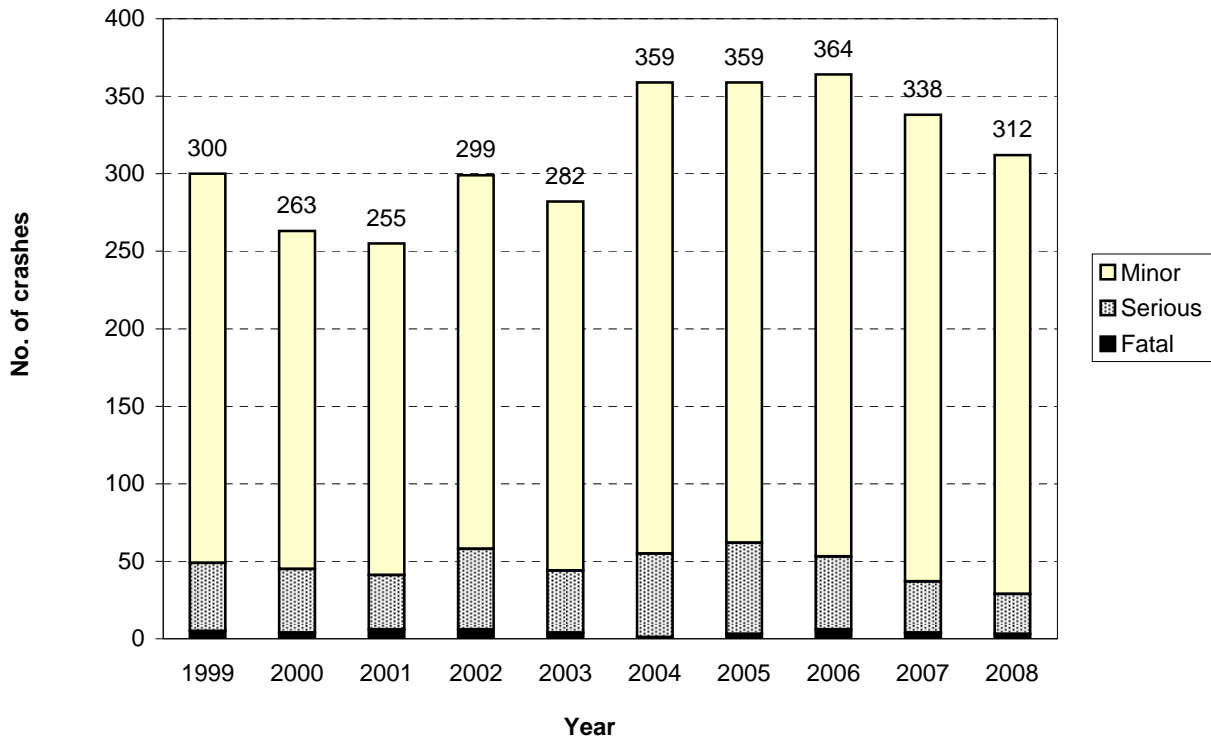


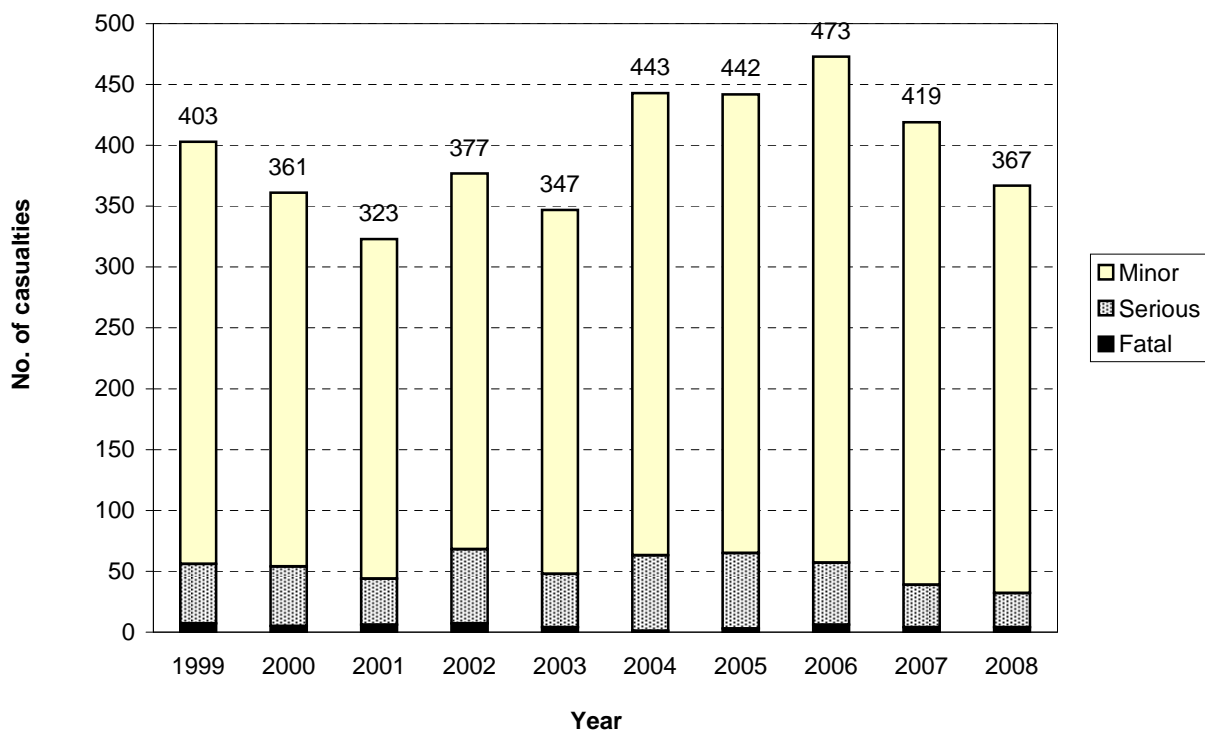
Figure 8.2 Number of casualties
North Shore City - council roads (urban & rural)



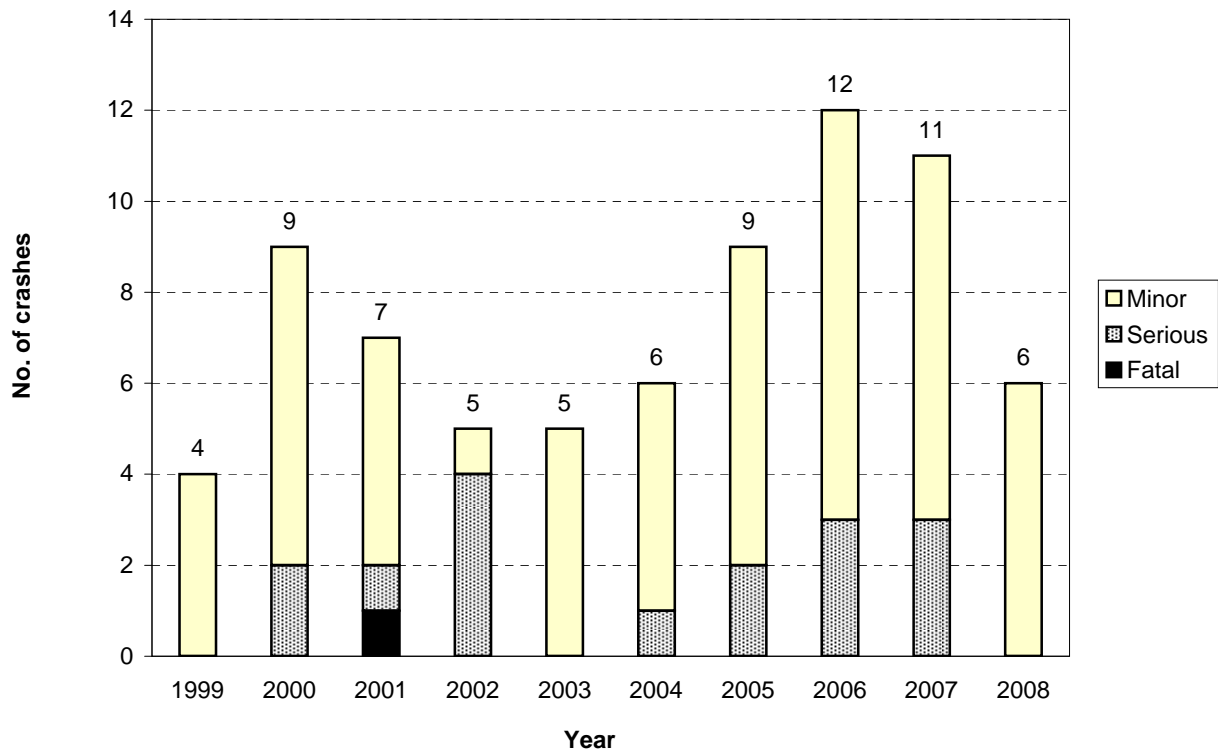
**Figure 8.3 Number of injury crashes
North Shore City - urban council roads**



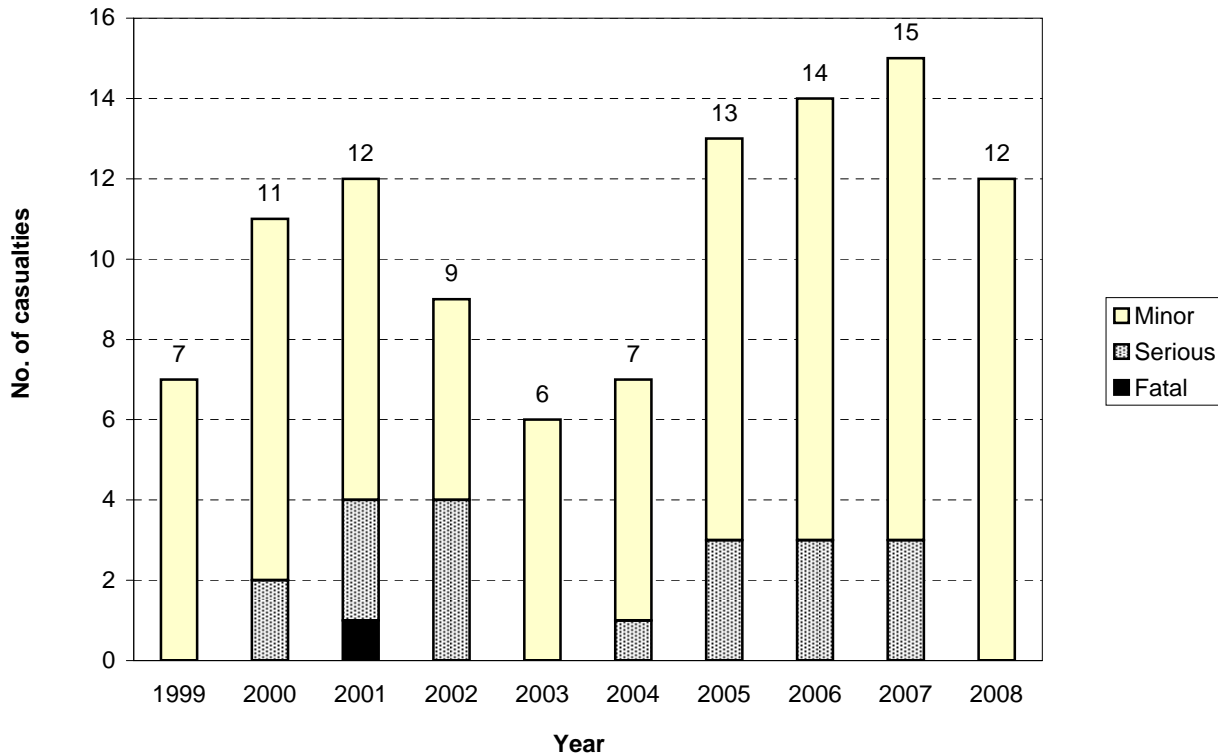
**Figure 8.4 Number of casualties
North Shore City - urban council roads**



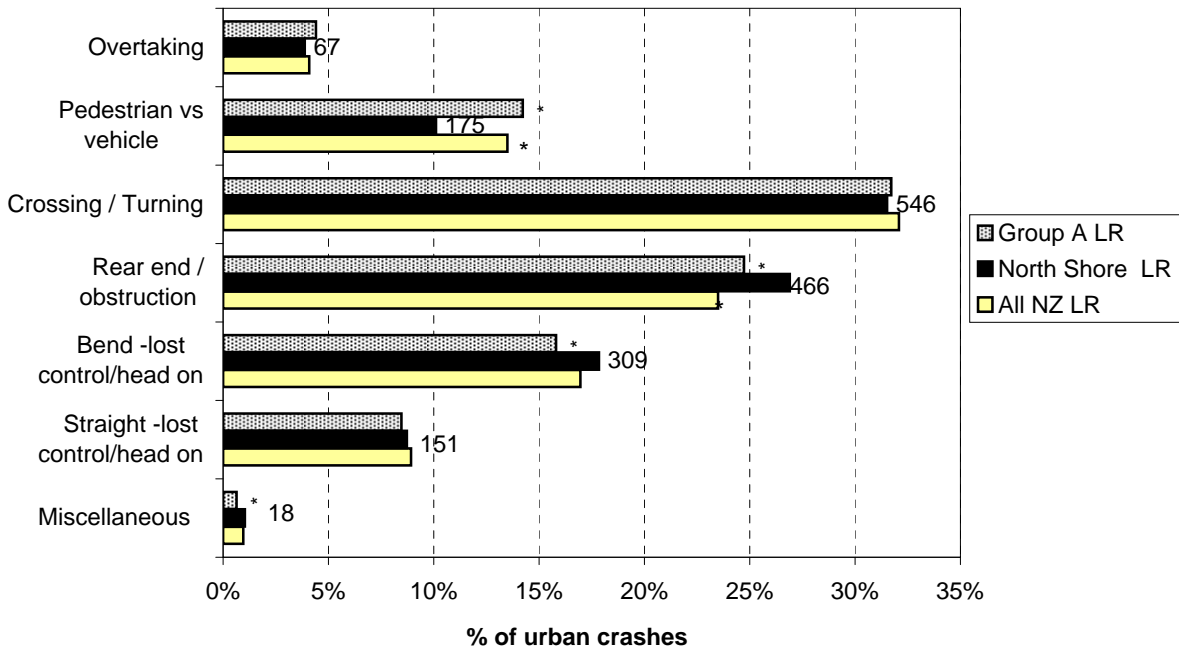
**Figure 8.5 Number of injury crashes
North Shore City - rural council roads**



**Figure 8.6 Number of casualties
North Shore City - rural council roads**

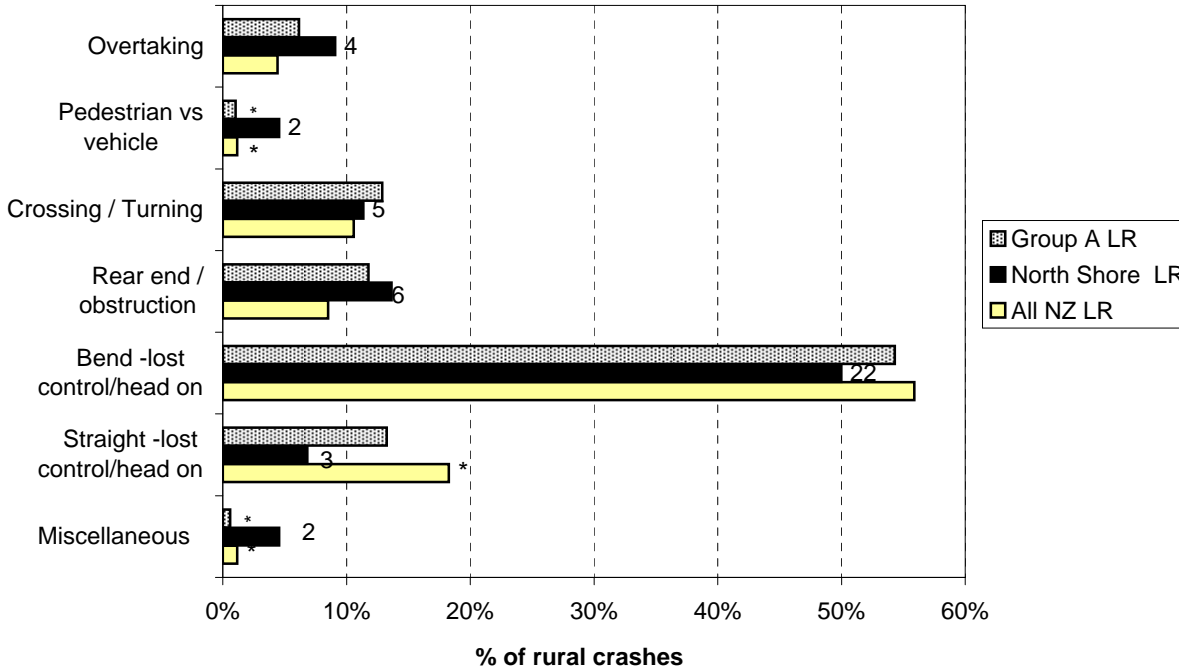


**Figure 8.7 Crash movement type - urban
North Shore City council roads (2004-2008)**



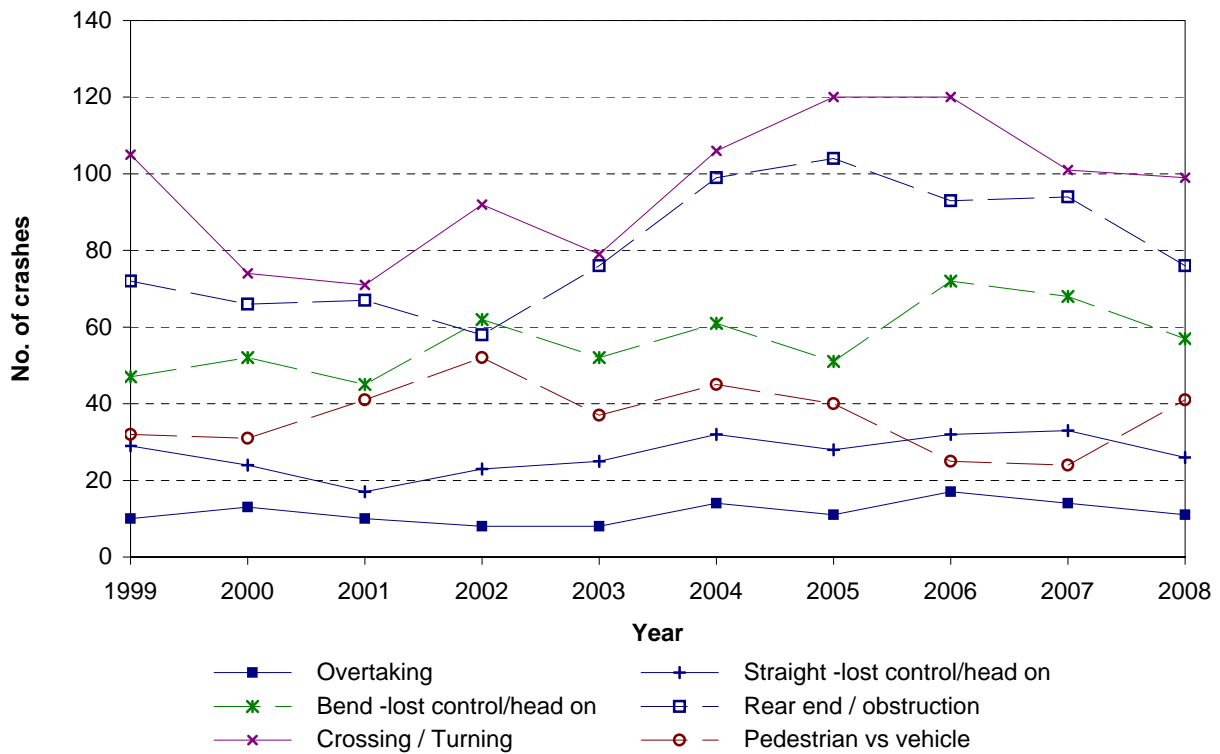
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 8.8 Crash movement type - rural
North Shore City council roads (2004-2008)**

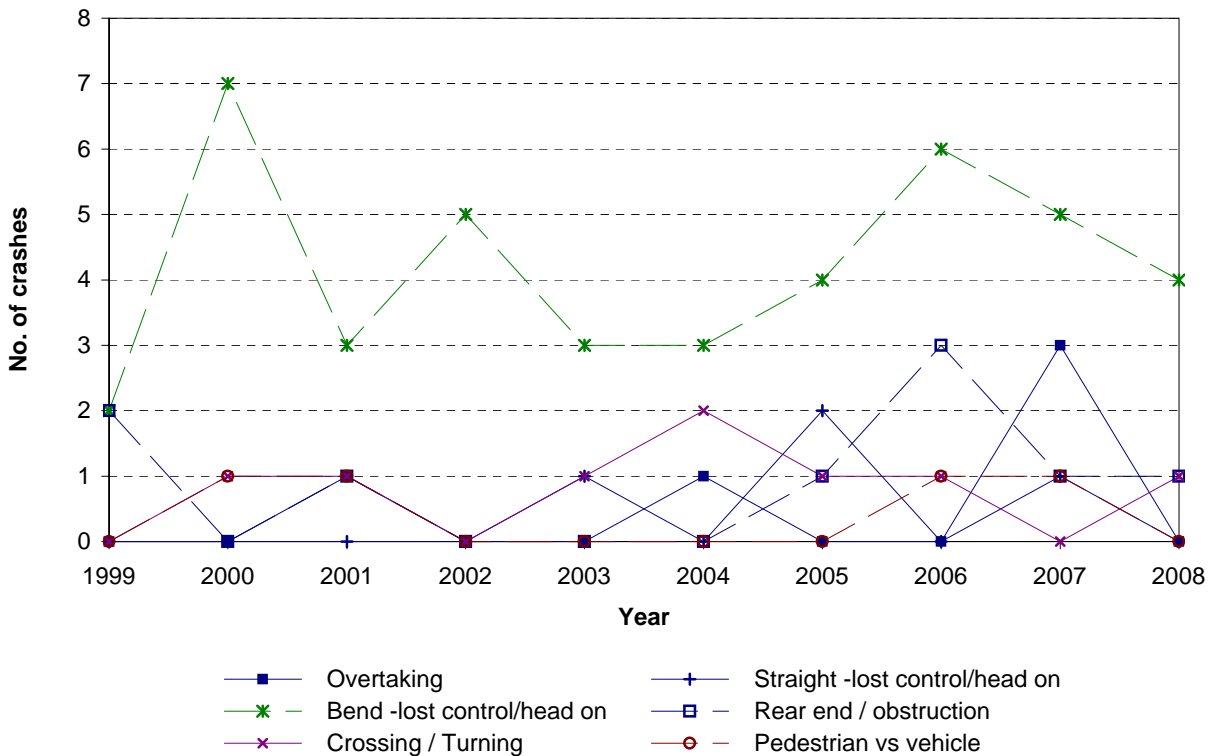


Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

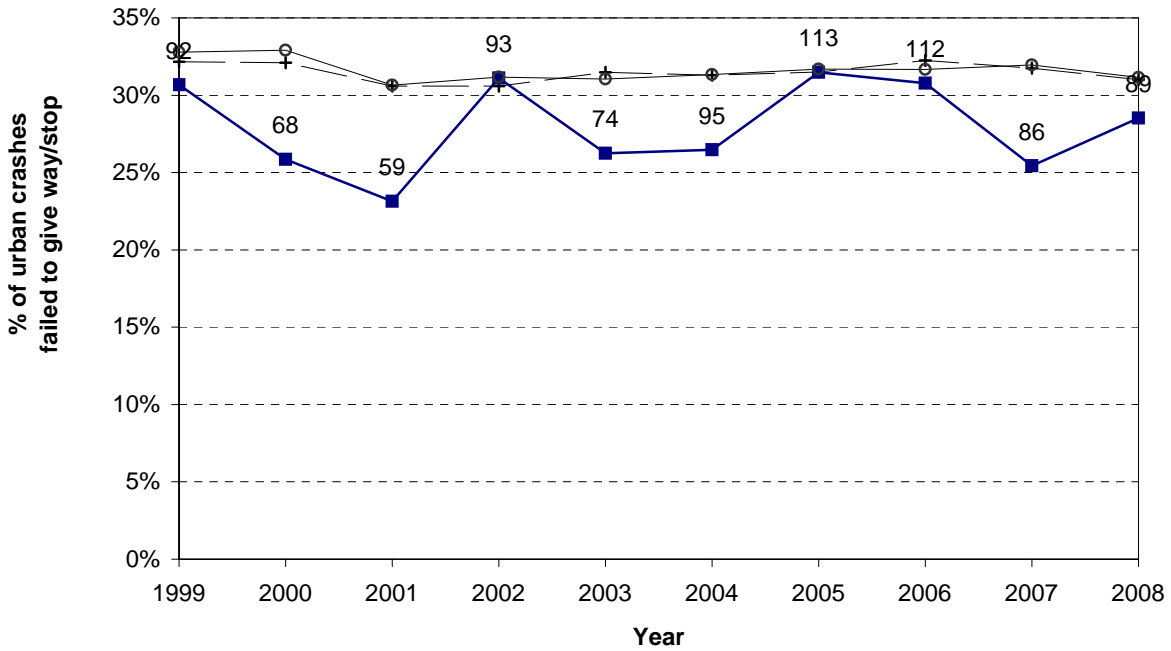
**Figure 8.9 Crash movement type - Trends
North Shore City - urban council roads**



**Figure 8.10 Crash movement type - Trends
North Shore City - rural council roads**



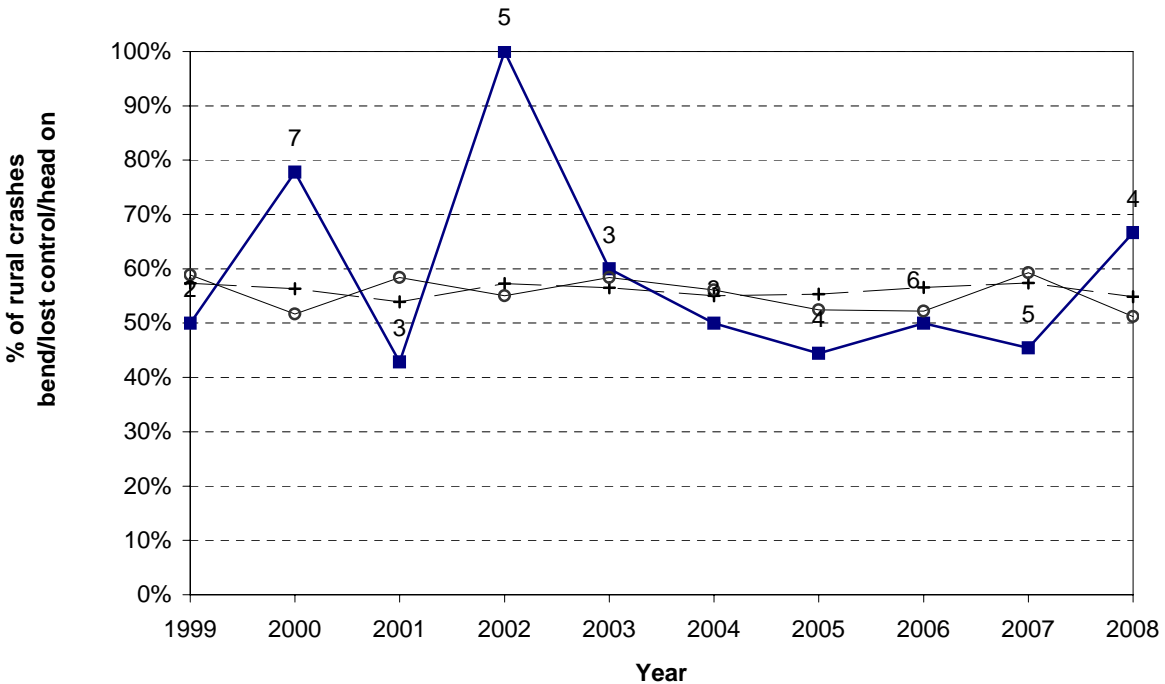
**Figure 8.11 Failed to give way/stop
North Shore City - urban council roads**



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

—+— All NZ LR —■— North Shore LR —○— Group A LR

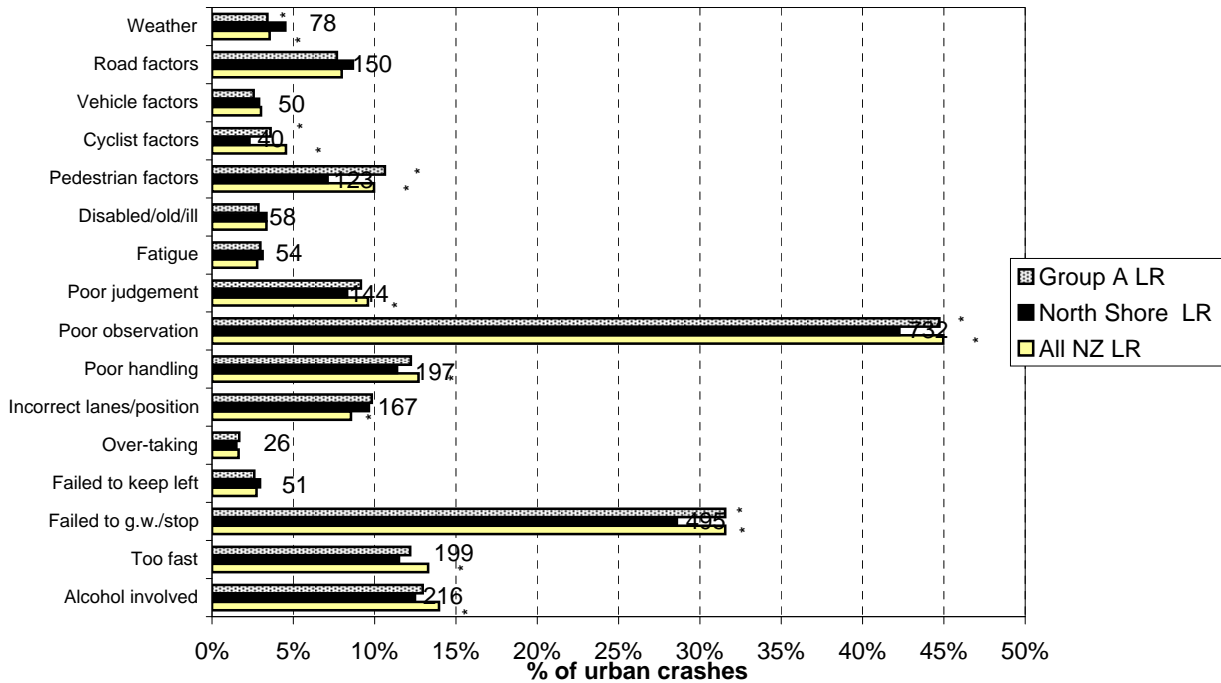
**Figure 8.12 Bend - lost control / head - on
North Shore City - rural council roads**



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

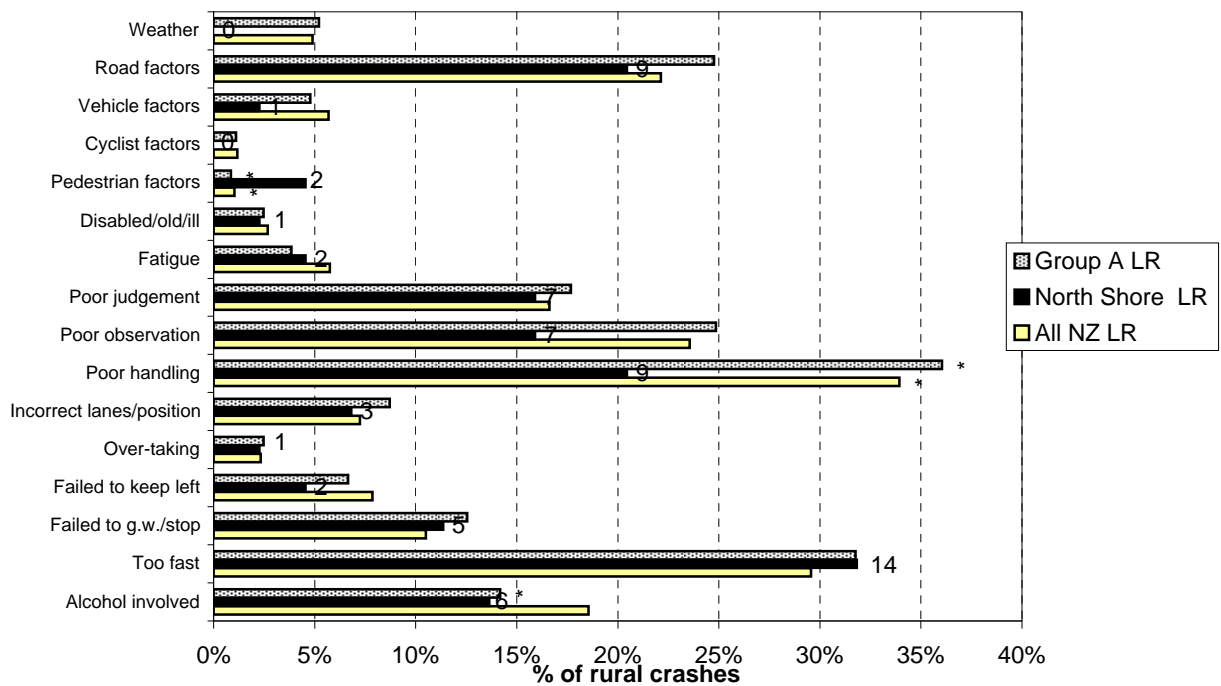
—+— All NZ LR —■— North Shore LR —○— Group A LR

**Figure 8.13 Contributing factors - urban
North Shore City council roads (2004-2008)**



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
North Shore City council roads (2004-2008)**



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
North Shore City - urban council roads**



**Figure 8.16 Intersection crashes
North Shore City - rural council roads**

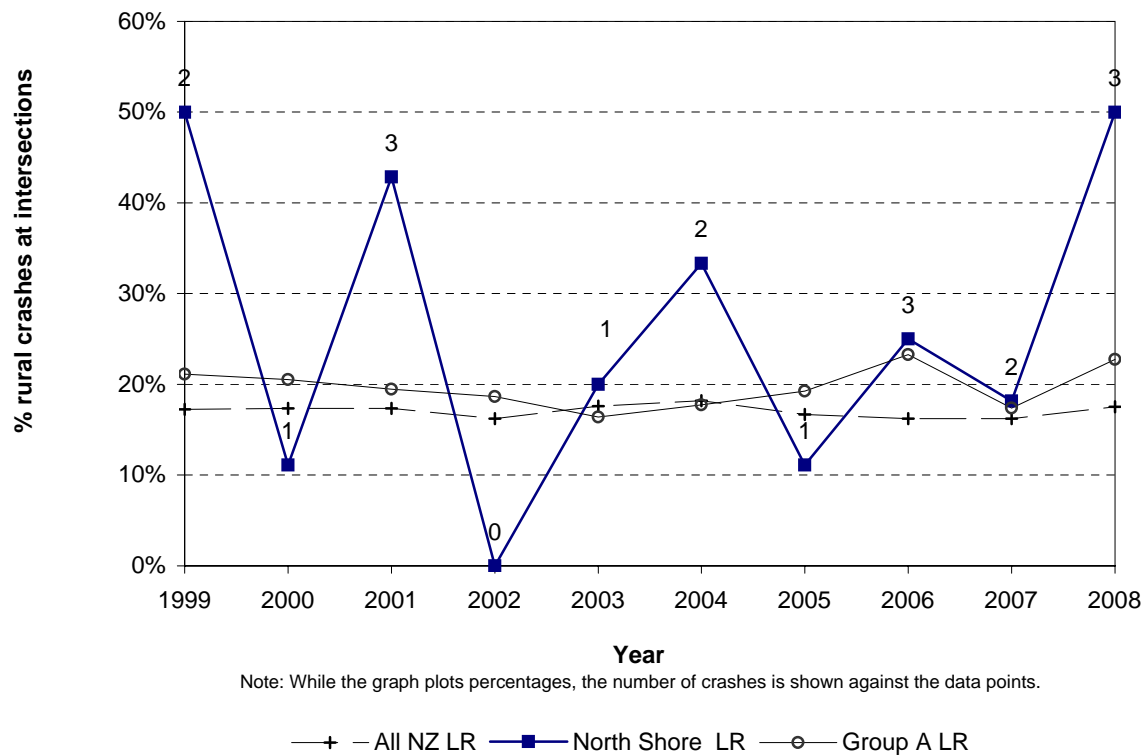


Figure 8.17 Wet road crashes
North Shore City - urban council roads

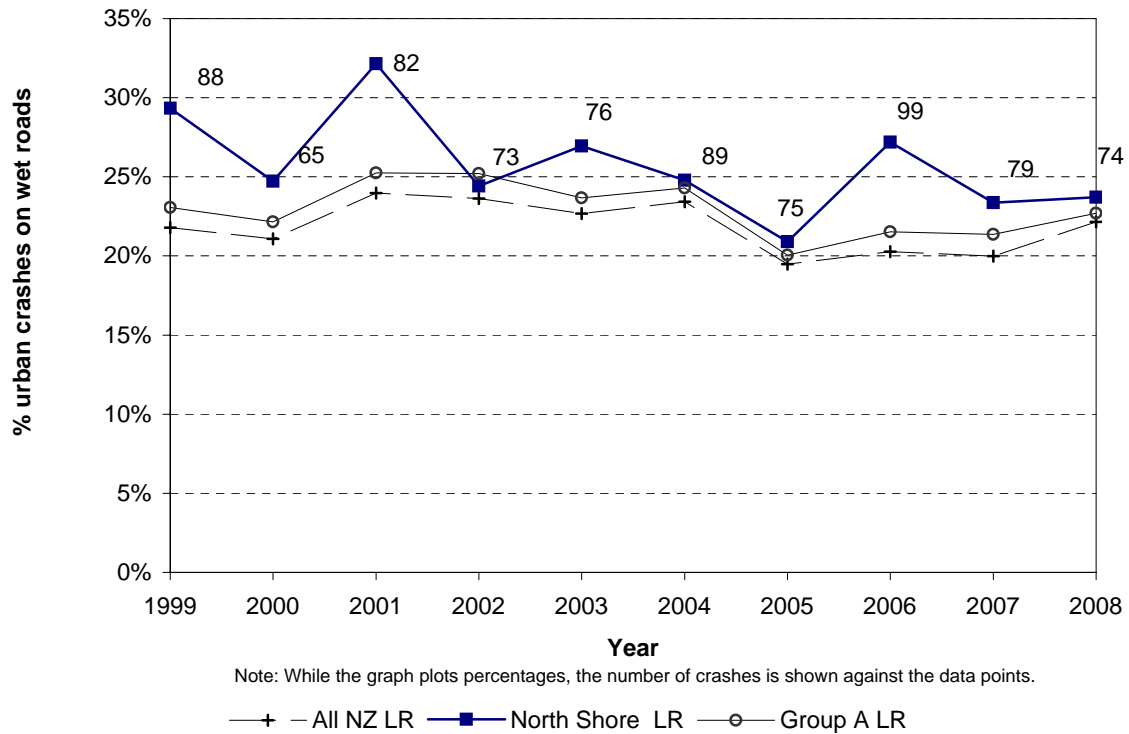
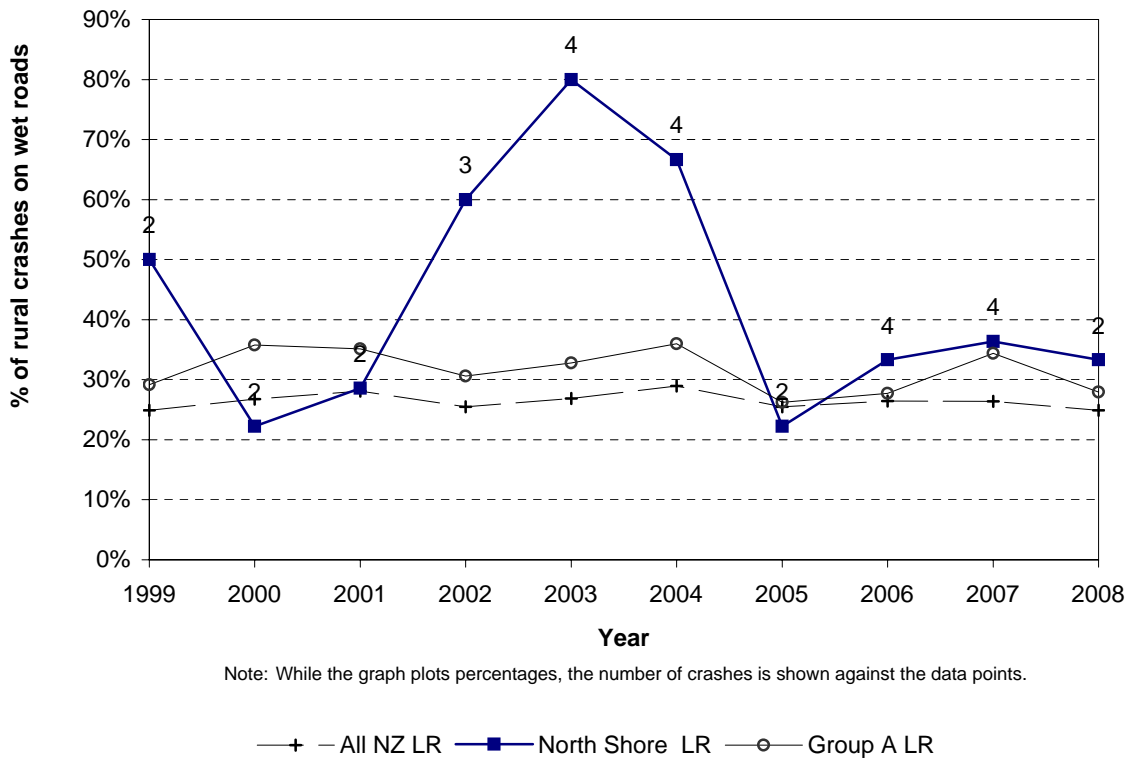
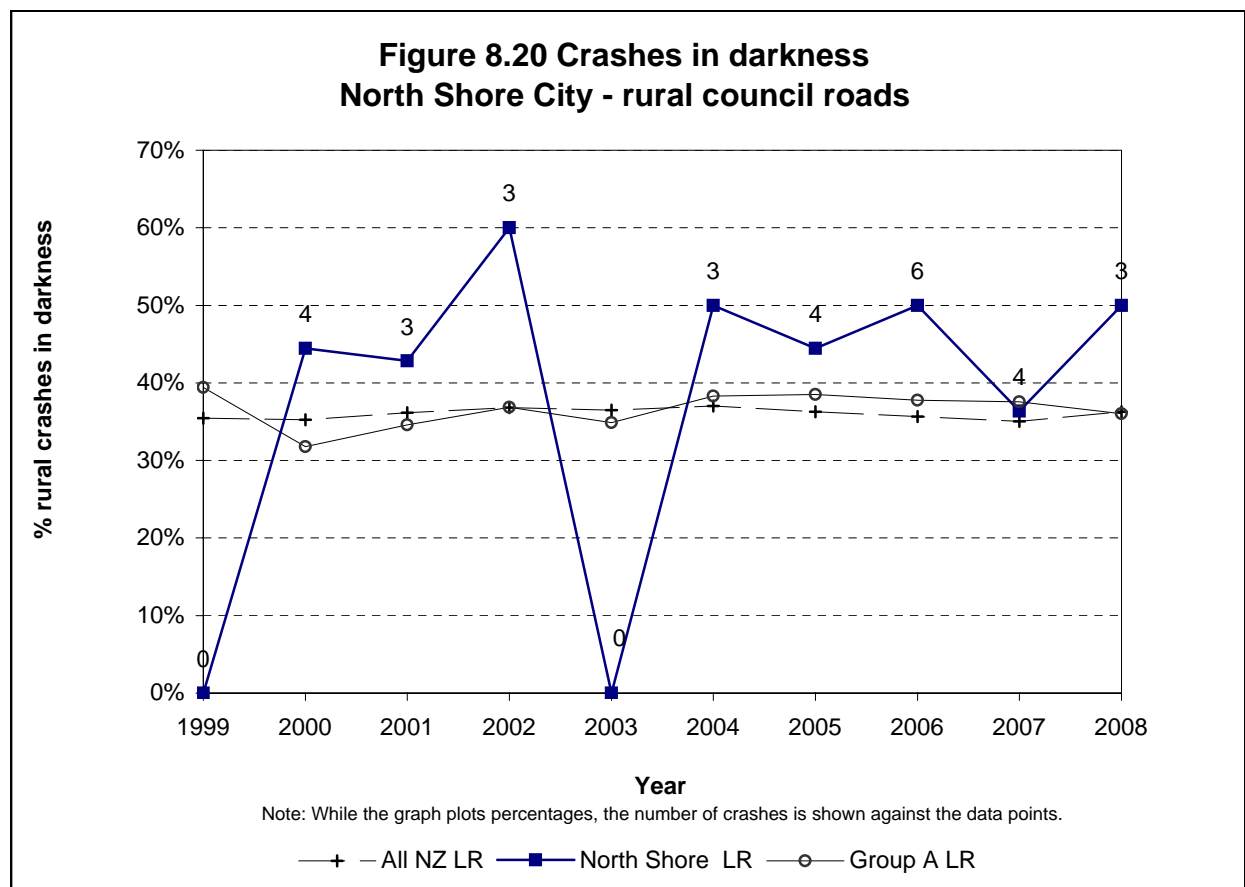
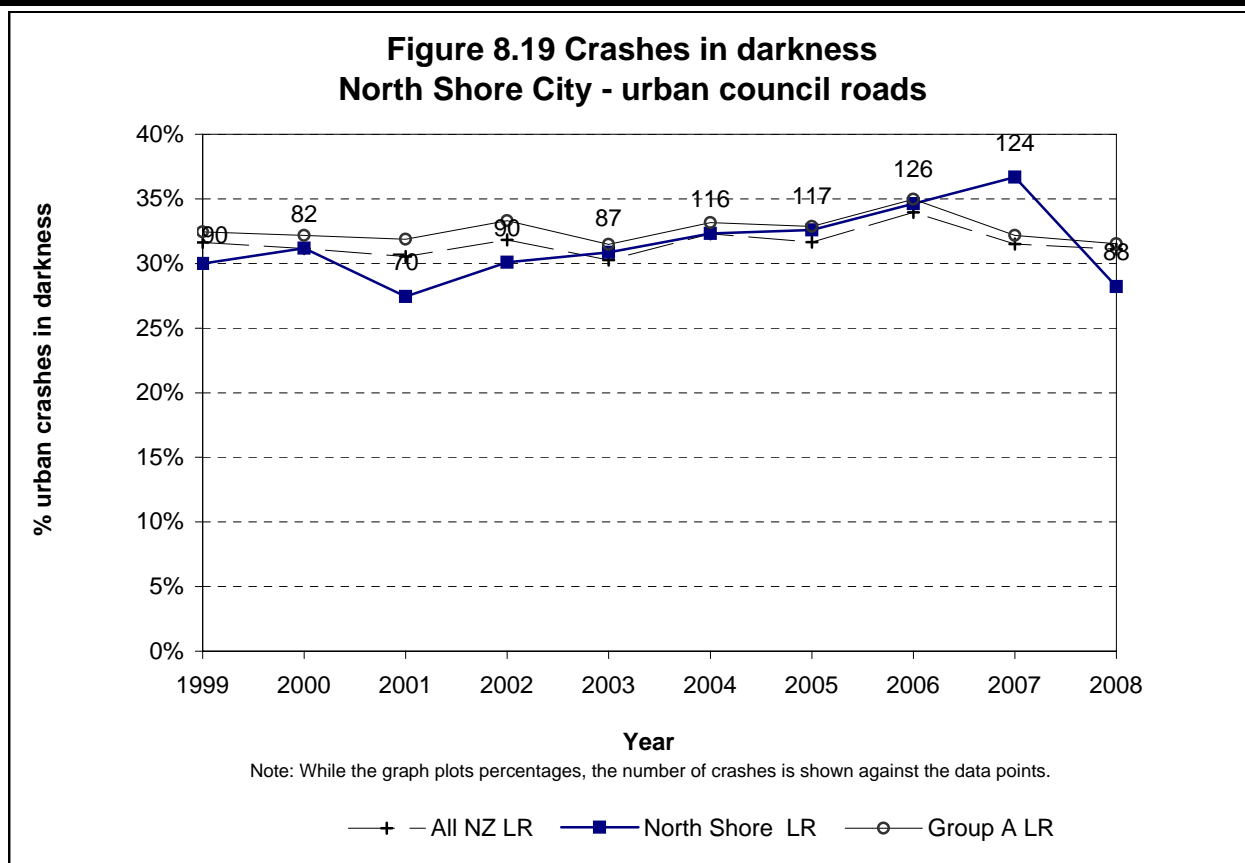
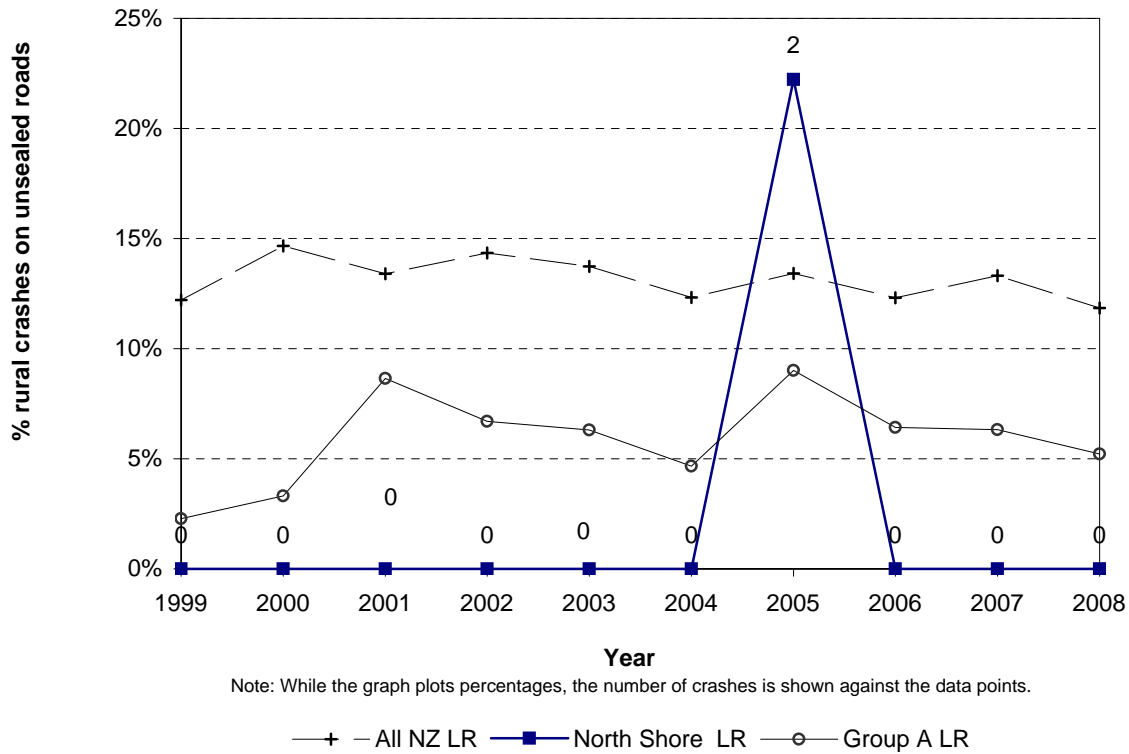


Figure 8.18 Wet road crashes
North Shore City - rural council roads

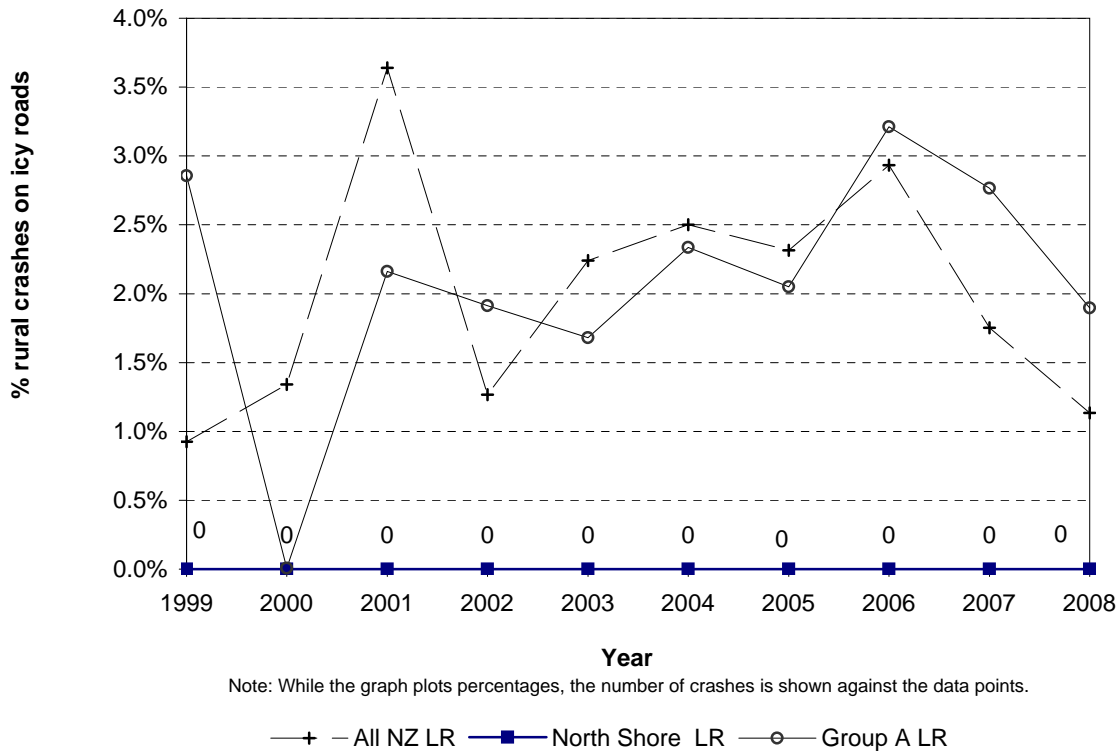




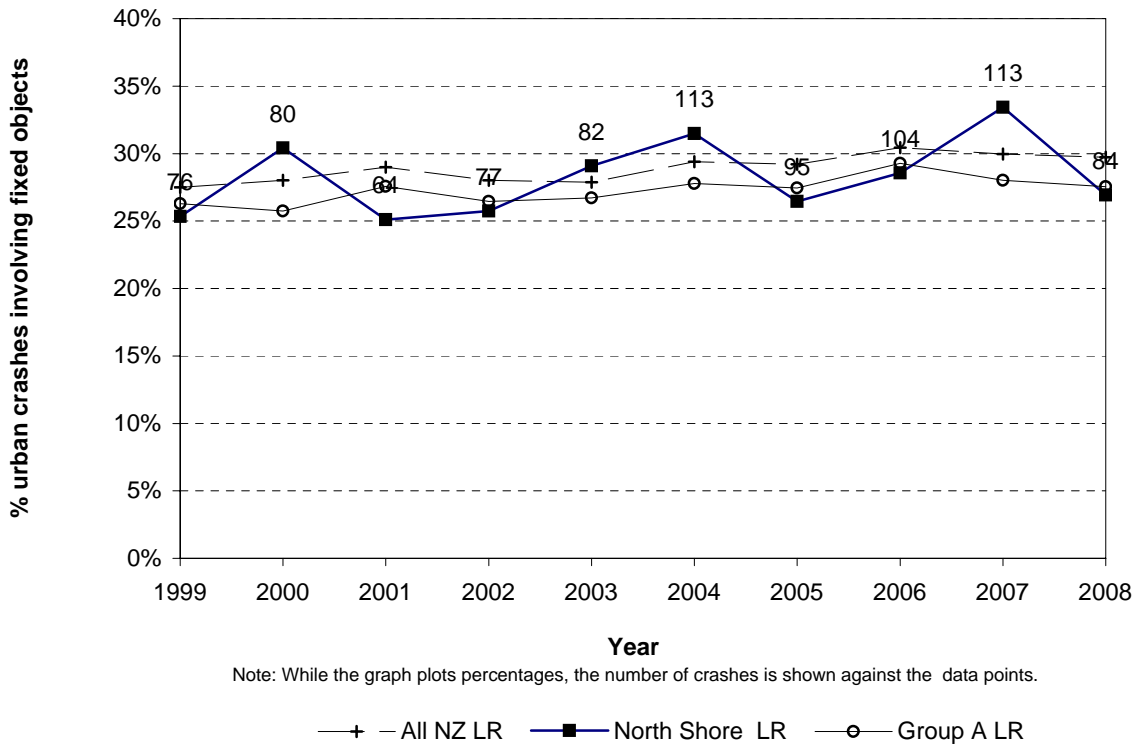
**Figure 8.21 Crashes on unsealed roads
North Shore City - rural council roads**



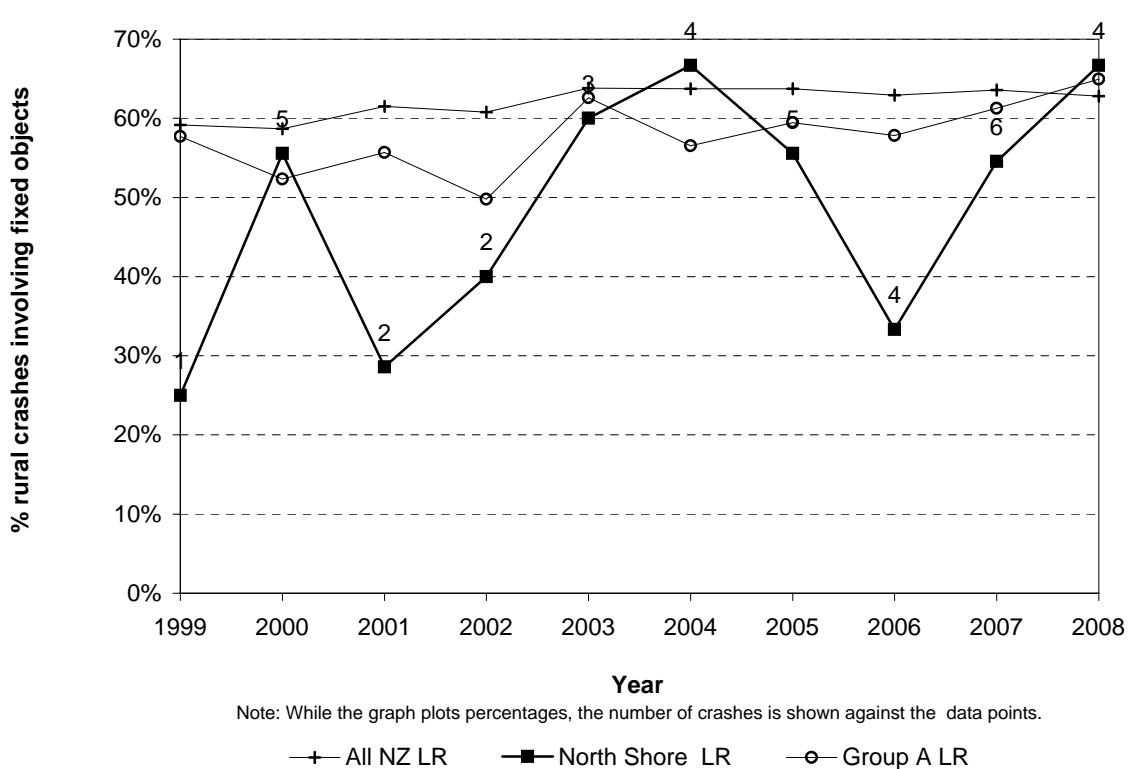
**Figure 8.22 Icy road crashes
North Shore City - rural council roads**



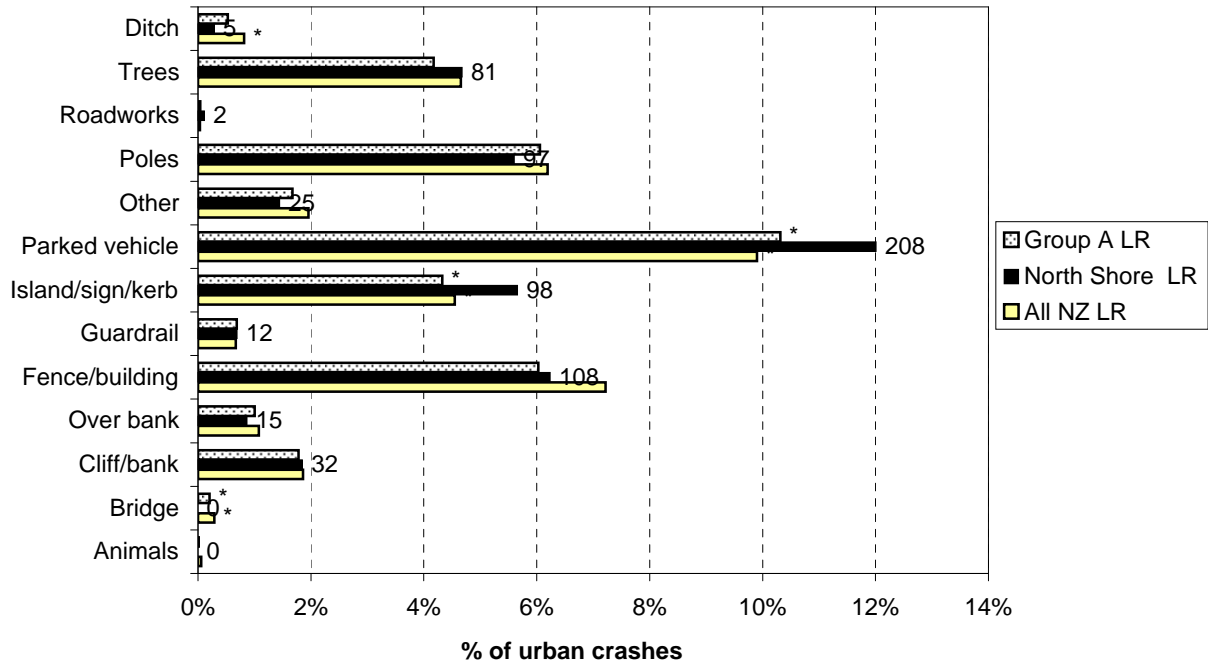
**Figure 8.23 Collisions with objects
North Shore City - urban council roads**



**Figure 8.24 Collisions with objects
North Shore City - rural council roads**

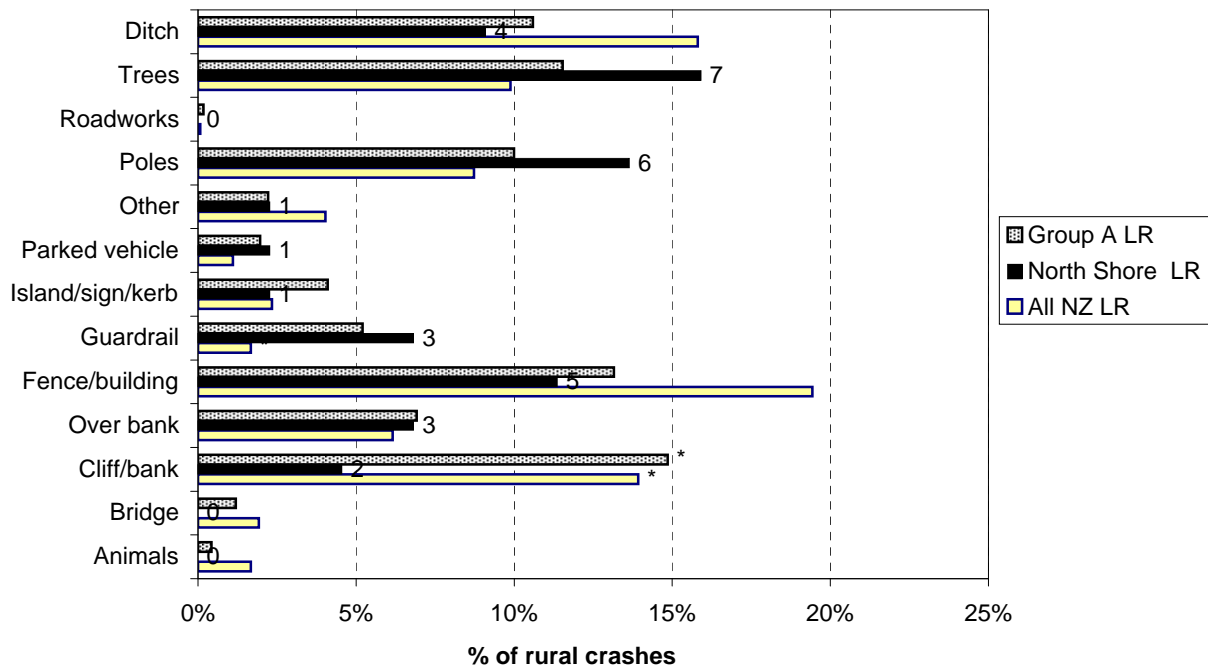


**Figure 8.25 Objects struck - urban
North Shore City council roads (2004-2008)**



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
North Shore City council roads (2004-2008)**



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 5 or more injury crashes or more than \$1500000 in social costs

CRASH ROAD		SIDE ROAD	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
VERRAN ROAD	I	WAIPA ST	4	2	10	4	4	24	17	42	33	\$4,208,452
EAST COAST ROAD	I	ABERDEEN ROAD	3	1	3	2	1	10	4	40	30	\$3,513,139
GLENFIELD ROAD	I	PUPUKE ROAD	4	4	2	4	4	18	16	50	33	\$3,427,131
WAIRAU ROAD		70 W VIEW ROAD		1	1		1	3	2	33	33	\$3,270,067
BUTE ROAD		290 E BEACH ROAD		1		2		3	1		33	\$3,187,722
WAIRAU ROAD		100 N SHAKESPEARE ROAD		1	1		1	3	2			\$3,134,146
TAHAROTO ROAD	I	NORTHCOTE ROAD	15	14	16	14	10	69	56	14	26	\$2,653,599
WAIRAU ROAD	I	ARCHERS ROAD	11	17	13	12	9	62	47	27	32	\$2,221,979
WAIRAU ROAD	I	VIEW ROAD E	9	17	5	10	3	44	34	11	20	\$2,085,948
EAST COAST ROAD	I	SUNRISE AVENUE S	4	5	7	2	3	21	14	33	48	\$1,984,442
GLENFIELD ROAD	I	JAMES ST N	9	9	3	4	9	34	24	29	24	\$1,930,111
ANZAC ST	A	BARRYS POINT ROAD	13	12	13	6	2	46	33	24	41	\$1,850,809
ONEWA ROAD	I	LAKE ROAD	5	10	3	4	7	29	21	21	31	\$1,738,651
OTEHA VALLEY ROAD	I	EAST COAST ROAD	5	7	10		6	28	20	25	43	\$1,733,543
BENTLEY AVENUE	I	GLENFIELD ROAD	4	9	7	4	5	29	23	17	31	\$1,642,351
SHAKESPEARE ROAD	I	TAHAROTO ROAD	13	13	9	2	2	39	28	28	44	\$1,628,695
MEDALLION DRIVE	I	OTEHA VALLEY ROAD	2	2	7	4	7	22	16	27	36	\$1,531,162
LAKE ROAD	I	JUTLAND ROAD	5	6	3	1	4	19	14	26	21	\$1,410,698
TRISTRAM AVENUE	I	WAIRAU ROAD	14	15	10	9	8	56	47	14	23	\$1,378,477
SUNSET ROAD	I	CARIBBEAN DRIVE	5	4	3	2	2	16	11	38	19	\$1,373,257
DIANA DRIVE	I	WAIRAU ROAD	4	5	8	10	9	36	29	19	25	\$1,368,769
WAIRAU ROAD	I	ELLICE ROAD	4	10	6	9	2	31	25	13	45	\$1,247,098
BUSH ROAD	I	ROSEDALE ROAD	3	3	2	6	5	19	10	16	26	\$1,209,789
GLENFIELD ROAD	I	DOWNING ST	4	9	4	2	1	20	13	25	5	\$1,118,513
LAKE ROAD	I	THE TERRACE	5	6	2	4	2	19	12	37	21	\$1,095,346
SUNNYBRAE ROAD	I	NORTHCOTE ROAD	12	6	11	9	7	45	39	27	18	\$1,037,801
FORREST HILL ROAD	I	TRISTRAM AVENUE		6	1	7	2	16	10	19	19	\$1,007,731
ANZAC ST	I	TAHAROTO ROAD	12	6	5	1	8	32	23	38	69	\$990,139
MOKOIA ROAD	I	HIGHBURY BYPASS	1	2	5	3	4	15	10	40	47	\$937,580
GLENFIELD ROAD	I	ROBERTS ROAD	5	4	3	1	2	15	10	40	47	\$928,486
MANUKA ROAD	I	HOGANS ROAD	5	13	5	7	9	39	34	31	33	\$892,724
LAKE ROAD	I	ESMONDE ROAD	6	5	6	7	5	29	21	45	52	\$891,388
WAIRAU ROAD	I	GLENFIELD ROAD	5	3	6	8	7	29	22	21	34	\$837,853
WAIRAU ROAD	I	TARGET ROAD	7	7	6	7	7	34	29	29	35	\$810,747
KAIPATIKI ROAD	I	GLENFIELD ROAD	7	5	4	6	6	28	22	18	21	\$767,903
ONEWA ROAD	I	WOODSIDE AVENUE	4	4	7	7	1	23	16	52	22	\$742,170
TARGET ROAD	I	LINK DRIVE	5	4	6	6	6	27	22	33	19	\$698,288
WAIRAU ROAD	I	FORREST HILL ROAD	2	4	5	5	6	22	17	41	41	\$620,246
TAHAROTO ROAD	I	DOMINION ST	2	1	7	2	2	14	7	21		\$598,445
GLENVAR ROAD	I	EAST COAST ROAD	1	7	2	4	5	19	14	21	21	\$576,132
TRISTRAM AVENUE	I	CROFTFIELD LANE	1	4	2	1	2	10	3	30	60	\$537,550
ONEWA ROAD	I	GLADSTONE ROAD	7	4	1	4	1	17	12	6	6	\$536,139
TARGET ROAD	I	ELLICE ROAD	1	6	1	1	2	11	5		18	\$498,172
LINK DRIVE	I	CROFTFIELD LANE	2	2	4	3	3	14	9	64	50	\$492,356
EXMOUTH ROAD	I	COLLEGE ROAD	1	2	1	5	1	10	5	40	50	\$427,776
FORREST HILL ROAD	I	NILE ROAD N	1	1	7			9	4	44	33	\$412,635

**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 \$1500000 in social costs

CRASH ROAD		SIDE ROAD	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
PAREMOREMO ROAD		300 N PRIMROSE LANE		1	3	3	3	10	6	80	20	\$1,671,303
GREVILLE ROAD	I	HUGH GREEN DRIVE	2	1			3	6	2	17	33	\$967,341
ONEWA ROAD		70 N ONEWA OFF SBD	3	5	5	1		14	9	50	57	\$770,760
PAREMOREMO ROAD	I	HOBSON ROAD	1		1		5	7	4	43	43	\$405,099
PAREMOREMO ROAD	I	ELMORE ROAD		1	2	2		5	2	60	60	\$333,361

**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 4 or more injury crashes or more than \$1500000 in social costs

CRASH ROAD		SIDE ROAD	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
SH 1N	I	ONEWA ON SBD	40	47	36	58	40	221	180	19	33	\$11,362,069
SH 1N	I	TRISTRAM ON SBD	24	21	22	20	13	100	82	31	22	\$5,737,968
SH 1N	I	STAFFORD OFF NBD	28	26	27	23	16	120	103	18	28	\$5,312,576
SH 1N	I	NORTHCOTE ON SBD	12	28	37	20	9	106	85	27	19	\$4,952,965
SH 1N	I	ONEWA OFF SBD	21	16	32	18	11	98	85	16	27	\$4,858,375
SH 1N	I	UPPER HWY ON SBD	17	17	12	19	22	87	68	40	29	\$4,744,276
SH 1N	I	NORTHCOTE ON NBD	15	16	16	25	8	80	58	36	26	\$4,623,955
SH 1N		50 S TOP OF HARBOUR BRIDGE	16	28	12	19	15	90	77	27	22	\$4,574,507
SH 1N		400 S ONEWA ON SBD	10	21	5	15	12	63	53	11	30	\$3,412,548
SH 1N	I	TRISTRAM ON NBD	9	15	16	8	15	63	52	32	32	\$2,879,372
SH 1N	I	ESMONDE ON SBD	9	11	9	17	12	58	53	21	38	\$2,872,791
SH 1N		700 S STAFFORD OFF NBD	6	10	7	12	12	47	41	17	40	\$2,605,726
SH 1N		100 S ESMONDE OBR	7	12	5	17	6	47	33	19	23	\$2,371,612
SH 1N		1000 S STAFFORD OFF NBD	10	10	6	10	11	47	37	13	30	\$2,248,833
TRISTRAM ON SBD E	I	TRISTRAM AVENUE	9	7	9	12	7	44	33	39	32	\$2,106,103
SH 1N	I	GREVILLE ON SBD	12	4	8	5	11	40	29	38	10	\$2,032,124
SH 1N	I	UPPER HWY OFF SBD	8	5	10	11	8	42	34	38	17	\$1,957,696
SH 1N	I	CONSTELLATION OBR	5	7	10	8	12	42	35	29	26	\$1,854,613
GREVILLE ON NBD	I	SH 1N	3	11	11	4	5	34	23	59	24	\$1,806,564
SH 1N		50 S SUNSET OBR	7	5	8	14	1	35	25	20	37	\$1,794,335
SH 1N		500 N NORTHCOTE OFF SBD	7	7	2	5	3	24	19	25	13	\$1,698,517
SH 18	I	CARIBBEAN DRIVE	3	1	11	0	5	20	14	20	20	\$1,507,145
SH 1N	I	OTEHA VALLEY OFF NBD	4	2	5	2	5	18	13	44	22	\$1,468,063
SH 1N		50 S NORTHCOTE OBR	1	9	4	6	8	28	21	39	25	\$1,373,777
SH 1N		400 S STAFFORD OFF NBD	4	2	10	6	7	29	24	31	31	\$1,323,939
SH 1N		500 S NORTHCOTE OFF NBD	8	7	6	3	2	26	20	38	46	\$1,274,300
UPPER HWY OFF NBD	I	SH 18	5	7	10	11	6	39	31	13	15	\$1,258,713
SH 1N		1000 S UPPER HWY OFF NBD	7	2	9	7	2	27	22	44	41	\$1,253,255
SH 17	I	THE AVENUE	4	3	5	3	3	18	10	39	11	\$1,145,247
SH 1N		200 N NORTHCOTE OFF SBD	5	5	3	5	5	23	18	22	30	\$1,104,679
TRISTRAM AVENUE	I	TRISTRAM AVENUE W	6	6	5	9	6	32	25	25	16	\$1,087,750
ONEWA ROAD	I	ONEWA OFF NBD	4	3	7	2	2	18	14	22	28	\$1,085,012
TRISTRAM AVENUE	I	TRISTRAM OFF NBD E	2	3	5	3	6	19	14	21	32	\$1,003,635
SH 1N		200 N SUNNYSOOK OBR	3	2	5	3	8	21	17	29	19	\$979,322
SH 17		100 N THE AVENUE	0	5	1	0	2	8	3	25	50	\$973,942
SH 17	I	GREVILLE OFF NBD	9	6	9	5	7	36	32	11	11	\$821,682
SH 1N		300 S GREVILLE OFF NBD	3	4	1	3	3	14	9	50	14	\$769,976
NORTHCOTE ROAD	I	NORTHCOTE OFF NBD W	2	3	8	7	0	20	15	20	45	\$643,280
SH 18	I	UPPER HWY ON SBD W	6	7	3	3	2	21	17	5	24	\$548,738
SH 17	I	ALBANY HIGHWAY	6	0	0	2	6	14	10	29	29	\$533,601
OTEHA VALLEY ROAD	I	OTEHA VALLEY ON SBD	4	1	3	3	7	18	14	17	11	\$502,047
OTEHA VALLEY ROAD	I	OTEHA VALLEY OFF NBD	3	3	2	0	2	10	6	20	30	\$374,649

**Table 9.4 : Urban Council Road Crash Sites
with a Significant Increase in Crashes in 2008
(Injury and Non-Injury Crashes)**

Site Radius =
30 metres

CRASH ROAD	SIDE ROAD	2003	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
GLENFIELD ROAD	I JAMES ST N	1	9	9	3	4	9	35	25	29	23
DON MCKINNON DRIVE	I MERCARI WAY	3	5	8	2	6	9	33	30	9	21
LAKE ROAD	I EXMOUTH ROAD	2	3	2	7	4	7	25	21	36	32
LAKE ROAD	I BAYSWATER AVENUE	4	1	4	5	2	9	25	21	20	48
MEDALLION DRIVE	I OTEHA VALLEY ROAD		2	2	7	4	7	22	16	27	36
KITCHENER ROAD	I MILFORD ROAD	3		3	1	4	6	17	13	24	29
EAST COAST ROAD	I ARRAN ROAD	5	2	1	2		5	15	11	20	40
SUNNYNOOK ROAD	I LINK DRIVE	1	1		3	2	8	15	13	40	47
RAMP ROAD	I SUNSET ROAD	1	1		2	3	5	12	8	17	8
ROSEDALE ROAD	I HUGH GREEN DRIVE	2	1		1	3	5	12	12	42	42
ROSEDALE ROAD	I TRITON DRIVE			3	3	1	4	11	8	9	9
MOKOIA ROAD	I CHELSEA VIEW DRIVE	1		2	2	2	4	11	11	45	55
GREVILLE ROAD	I HUGH GREEN DRIVE		1	2		2	5	10	6	40	40
GREVILLE ROAD	I GREVILL ON SBD		2	2	1	1	4	10	10	50	20
LAKE ROAD	I TONAR ST	1				4	4	9	6		11
ESMONDE ROAD	I FRED THOMAS DRIVE						9	9	8	11	33
DIANA DRIVE	I HILLSIDE ROAD	1	1	1	2		4	9	8	11	
SHAKESPEARE ROAD	I BROOK ST	1	2	1			4	8	5	38	25
WAIRAU ROAD	50 N HILLSIDE ROAD	1	2			1	4	8	7		13
ZION ROAD	I BIRKENHEAD AVENUE		1	1		2	4	8	8		38
TRITON DRIVE	I ARRENWAY DRIVE			1	2	1	3	7	5	14	14
OTEHA VALLEY ROAD	I FAIRVIEW AVENUE		2		1	1	3	7	6		29
CONSTELLATION DRIVE	I ASCENSION PLACE	1				3	3	7	6	29	14
SUNNYBRAE ROAD	I MARYWIL CRESCENT	2		1		1	3	7	6	14	14
FORREST HILL ROAD	I RICHARDS AVENUE	1		1		1	3	6	2	17	50
LAKE ROAD	80 S EVERSLEIGH ROAD			1	1	1	3	6	5	17	33
BEACH HAVEN ROAD	I BIRKDALE ROAD	1			2		3	6	5		17
CLYDE ROAD	50 N ANZAC ROAD	2				1	3	6	5		17
LAKE ROAD	I ROBERTS AVENUE	2			1		3	6	5	50	17
POLAND ROAD	I HILLSIDE ROAD	2	1				3	6	6	33	
OTEHA VALLEY ROAD	I MUNROE LANE				1	1	3	5	4	40	40
ANZAC ST	100 E LAKE ROAD			1	1		3	5	5	20	40
BEACH ROAD	I HASTINGS ROAD		1	1			3	5	5	20	40
ALBANY HIGHWAY	I EASTBOURNE ROAD	2					3	5	5	60	60
JUNIPER ROAD	I SYCAMORE DRIVE	1					3	4	1		25
ANZAC ST	100 W BARRYS POINT ROAD			1			3	4	2		
ARCHERS ROAD	I VELMA ROAD		1				3	4	4	50	50
BIRKDALE ROAD	200 N BEACH HAVEN ROAD				1		2	3	2		33
ANZAC ST	50 W LAKE ROAD		1				2	3	2		33
EAST COAST ROAD	I DEWSBURY TERRACE			1			2	3	1		
APOLLO DRIVE	30 S ROSEDALE ROAD					1	2	3	2		
COMPTON ST	I MOORE ST					1	2	3	2	33	33
ROSEDALE ROAD	I JACK HINTON DRIVE					1	2	3	2		
SYLVIA ROAD	I LYNDEN AVENUE				1		2	3	2	33	
WAIPA ST	50 S VERRAN ROAD						3	3	2	67	67
CARIBBEAN DRIVE	I CALYPSO WAY			1			2	3	2	33	33
CONSTELLATION DRIVE	I ATLAS PLACE			1			2	3	2		
COLLEGE ROAD	100 E CADNESS ST		1				2	3	2		67
VALLEY ROAD	60 E OBAN ROAD		1				2	3	2	67	33
BUSH ROAD	I CEBEL PLACE	1					2	3	2		
BENTLEY AVENUE	100 E GLENFIELD ROAD	1					2	3	2	33	
BUSH ROAD	60 N PAUL MATTHEWS ROAD				1		2	3	3		

**Table 9.4 : Urban Council Road Crash Sites
with a Significant Increase in Crashes in 2008
(Injury and Non-Injury Crashes)**

Site Radius =
30 metres

CRASH ROAD	SIDE ROAD	2003	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
CARLISLE ROAD	110 W FINCHLEY ROAD					1	2	3	3		
CONSTELLATION DRIVE	50 E CENTORIAN DRIVE					1	2	3	3	33	67
EBAN AVENUE	I SYLVIA ROAD					1	2	3	3	67	67
NILE ROAD	I BELMONT TERRACE				1		2	3	3	33	
OLD LAKE ROAD	40 N SEABREEZE ROAD					1	2	3	3	67	67
PORANA ROAD	210 E SUNNYBRAE ROAD				1		2	3	3	67	
ARRAN ROAD	10 S HELVETIA DRIVE			1			2	3	3		
SHEA TERRACE	I MARY POYNTON CRESCENT			1			2	3	3		33
AKORANGA DRIVE	200 E NORTHCOTE ROAD		1				2	3	3	67	33
BAYVIEW ROAD	50 W SPINELLA DRIVE	1					2	3	3		33
TRAMWAY ROAD	I LANCASTER ROAD	1					2	3	3	33	67

**Table 9.4a : Rural Council Road Crash Sites
with a Significant Increase in Crashes in 2008
(Injury and Non-Injury Crashes)**

**Site Radius =
250 metres**

CRASH ROAD		SIDE ROAD	2003	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
PAREMOREMO ROAD	I	HOBSON ROAD	1	1		1		5	8	4	50	38
GREVILLE ROAD	I	HUGH GREEN DRIVE		2	1			3	6	2	17	33
PAREMOREMO ROAD		90 N GODLEY LANE		1				2	3	2	33	33

**Table 9.5 : State Highway Crash Sites
with a Significant Increase in Crashes in 2008
(Injury and Non-Injury Crashes)**

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

CRASH ROAD		SIDE ROAD	2003	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
SH 1N	I	UPPER HWY ON SBD	15	17	17	12	19	22	102	81	40	26
SH 1N	I	CONSTELLATION OBR	8	5	7	10	8	12	50	43	32	26
SH 1N		700 S STAFFORD OFF NBD	2	6	10	7	12	12	49	43	18	39
NORTHCOTE ROAD	I	NORTHCOTE ON SBD	4	2	1	8	3	7	25	21	12	36
SH 1N		200 N SUNNYSOOK OBR	1	3	2	5	3	8	22	18	27	18
OTEHA VALLEY ROAD	I	OTEHA VALLEY ON SBD	3	4	1	3	3	7	21	15	19	19
SH 17	I	GREVILLE ROAD	0	3	2	0	6	10	21	18	5	19
SH 17	I	ALBANY HIGHWAY	1	6	0	0	2	6	15	10	27	27
SH 1N		300 N TRISTRAM OFF SBD	1	4	3	1	0	5	14	11	50	43
SH 17	I	BUSH ROAD	3	0	0	3	1	6	13	11	46	38
SH 17	I	KELL DRIVE	0	2	2	0	0	3	7	5	14	14
GREENHITHE ROAD	I	GREENHITHE OFF WBD	0	0	0	0	0	3	3	2	0	0
SH 1N		1000 N OTEHA VALLEY OBR	0	0	0	1	0	2	3	3	33	0
SH 17		100 N OTEHA VALLEY ROAD	0	0	1	0	0	2	3	3	33	33

appendix


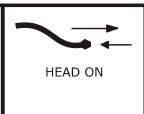


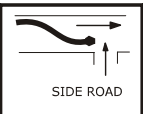


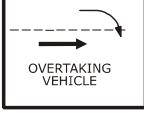
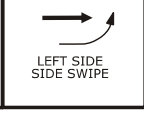







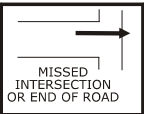
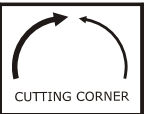
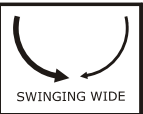
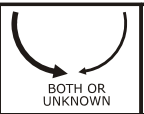
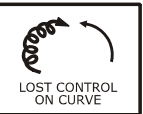





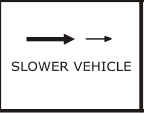

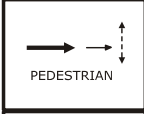
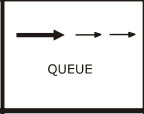
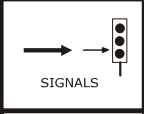
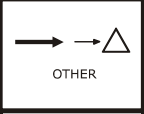

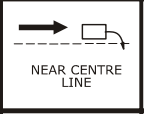

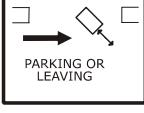
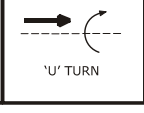
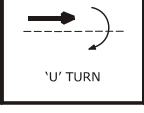

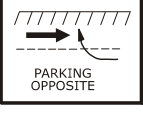


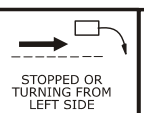
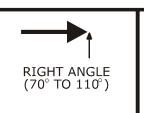
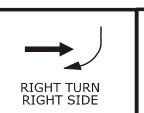
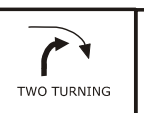
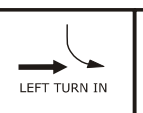
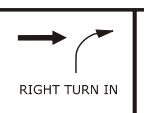
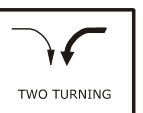

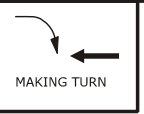
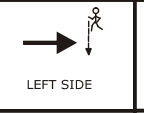
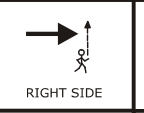
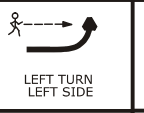
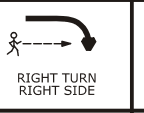






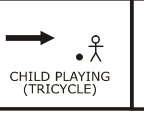
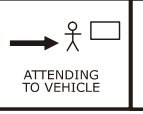

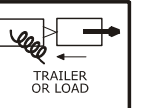

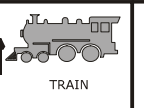
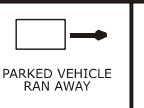

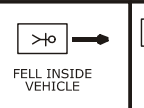
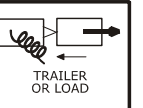


- Groupings of crash types
- Grouping of contributing factors

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	AA	AB	AC	AD	AE	AF	AG
	 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
	GE	GB					
	 OVERTAKING VEHICLE	 LEFT SIDE SIDE SWIPE					
Straight - Lost control / Head on	BA	CA	CB	CC	BE		
	 ON STRAIGHT	 OUT OF CONTROL ON ROADWAY	 OFF ROADWAY TO LEFT	 OFF ROADWAY TO RIGHT	 LOST CONTROL ON STRAIGHT		
Bend - Lost control / Head on	DA	DB	DC	BB	BC	BD	BF
	 LOST CONTROL TURNING RIGHT	 LOST CONTROL TURNING LEFT	 MISSED INTERSECTION OR END OF ROAD	 CUTTING CORNER	 SWINGING WIDE	 BOTH OR UNKNOWN	 LOST CONTROL ON CURVE
Rear end / Obstruction	EA	EB	EC	ED	EE	FA	FB
	 PARKED VEHICLE	 ACCIDENT OR BROKEN DOWN	 NON VEHICULAR OBSTRUCTIONS (INCLUDING ANIMALS)	 WORKMANS VEHICLE	 OPENING DOOR	 SLOWER VEHICLE	 CROSS TRAFFIC
	FC	FD	FE	FF	GA	GD	GF
	 PEDESTRIAN	 QUEUE	 SIGNALS	 OTHER	 REAR OF LEFT TURNING VEHICLE	 NEAR CENTRE LINE	 TWO TURNING
	 PARKING OR LEAVING	 'U' TURN	 'U' TURN	 DRIVEWAY MANOEUVRE	 PARKING OPPOSITE	 ENTERING OR LEAVING	 REVERSING ALONG ROAD
Crossing / Turning	MA	MB	MC	MD	ME	MF	MG
	 STOPPED OR TURNING FROM LEFT SIDE	 RIGHT ANGLE (70° TO 110°)	 RIGHT TURN RIGHT SIDE	 TWO TURNING	 LEFT TURN IN	 RIGHT TURN IN	 TWO TURNING
	GC	HA	JA	JC	KA	KB	KC
	 STOPPED WAITING TO TURN	 MAKING TURN					
Pedestrian vs Vehicle	NA	NB	NC	ND	NE	NF	NG
	 LEFT SIDE	 RIGHT SIDE	 LEFT TURN LEFT SIDE	 RIGHT TURN RIGHT SIDE	 LEFT TURN RIGHT SIDE	 RIGHT TURN LEFT SIDE	 MANOEUVRING VEHICLE
	 WALKING WITH TRAFFIC	 WALKING FACING TRAFFIC	 WALKING ON FOOTPATH	 CHILD PLAYING (TRICYCLE)	 ATTENDING TO VEHICLE	 ENTERING OR LEAVING VEHICLE	
Miscellaneous	PA	PB	PC	PD	PE	PF	QG
	 FELL WHILE BOARDING OR ALIGHTING	 FELL FROM MOVING VEHICLE	 TRAIN	 PARKED VEHICLE RAN AWAY	 EQUESTRIAN	 FELL INSIDE VEHICLE	 TRAILER OR LOAD

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.

FACTORS PROBABLY CONTRIBUTING TO CRASHES

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 Visibly intoxicated non-driver (pedestrian / cyclist / passenger)
 - 106 Dead driver not suspected, tested negative (MOT only)
 - 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

- 180 **In line of traffic**
 - 181 Following too closely
 - 182 Travelling unreasonably slowly
 - 183 Motorist crowded cyclist

- 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
- 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

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 Car slowing, stopping or stopped 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
 - 358 Cigarette, radio, glove box etc, obj under drivers feet/pedals etc
 - 359 Cell phone / navigation device or any communications device
 - 360 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 strange vehicle
 - 404 Overseas driver fails to adjust to local 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
 - 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 etc
 - 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 blowout
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 from school bus
730 Pedestrian behind reversing / manoeuvring vehicle
731 Overseas pedestrian

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**