

Waitakere 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 Waitakere 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 Waitakere 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 Waitakere 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
Waitakere City	36	22	29	18
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
Waitakere City	47	30	37	23
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).

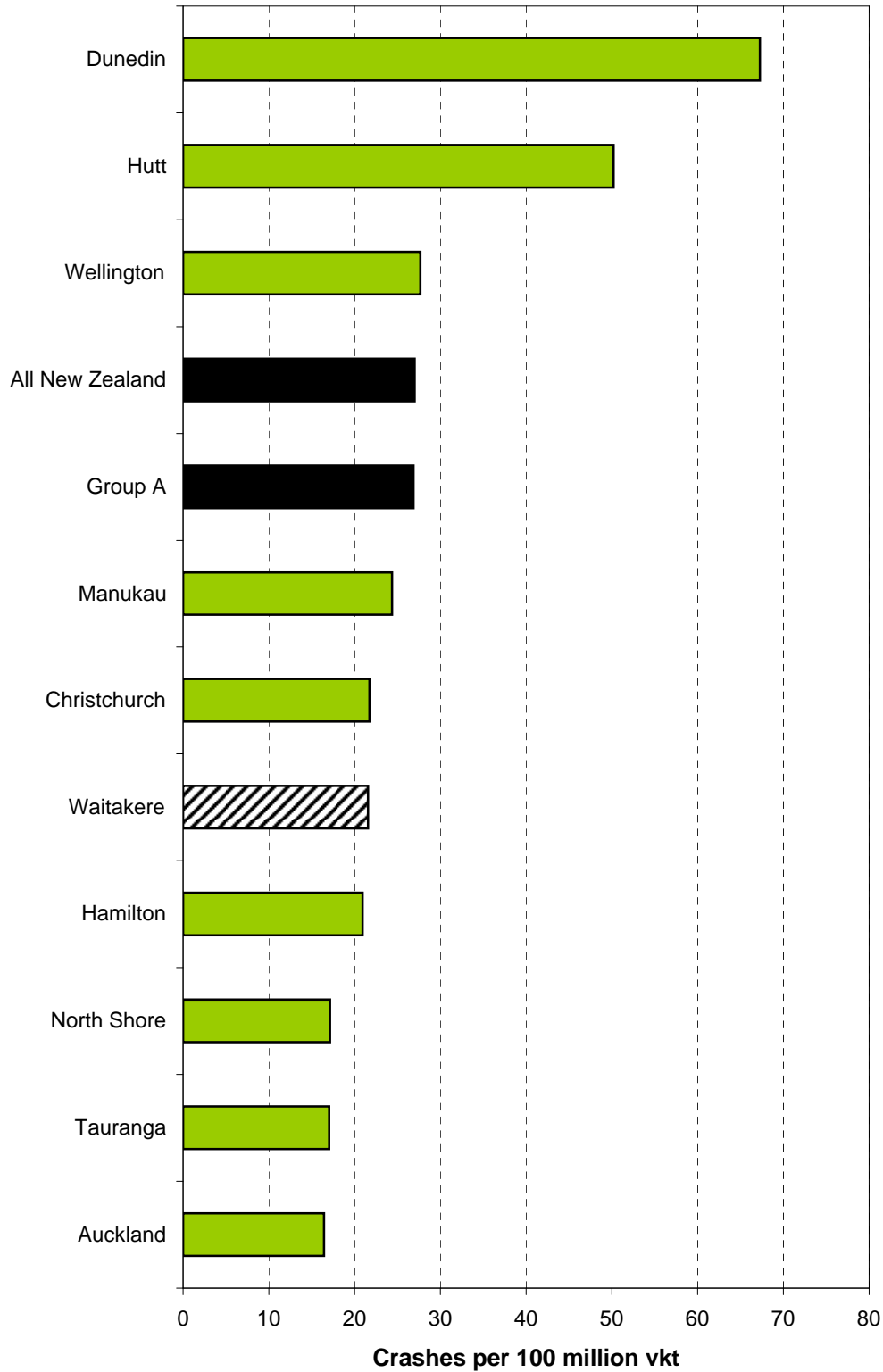
Crashes and casualties per 100 million VKT are based on five years of reported injury on-road crash data (2004-2008) and December (2005) VKT.

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**

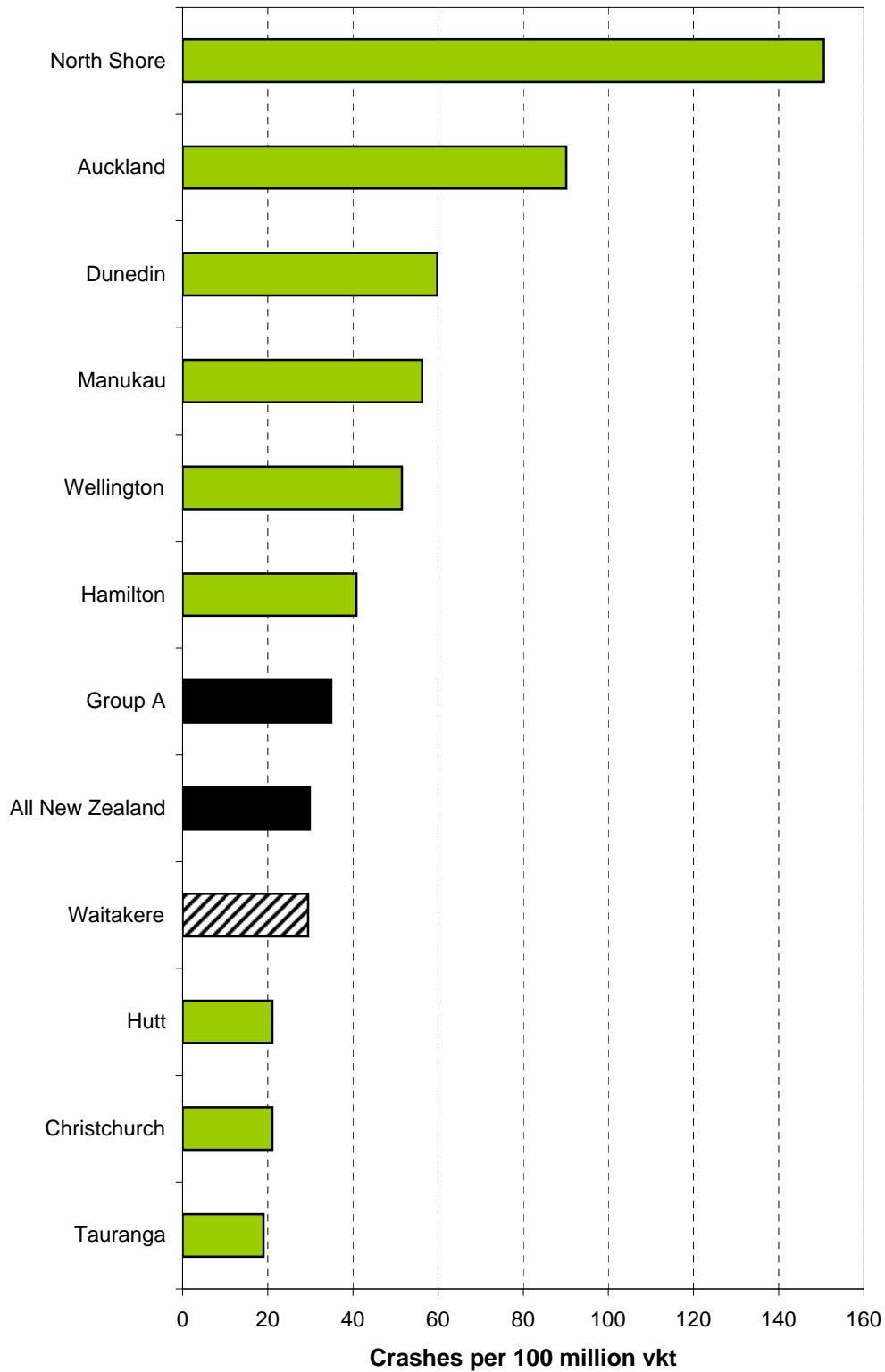
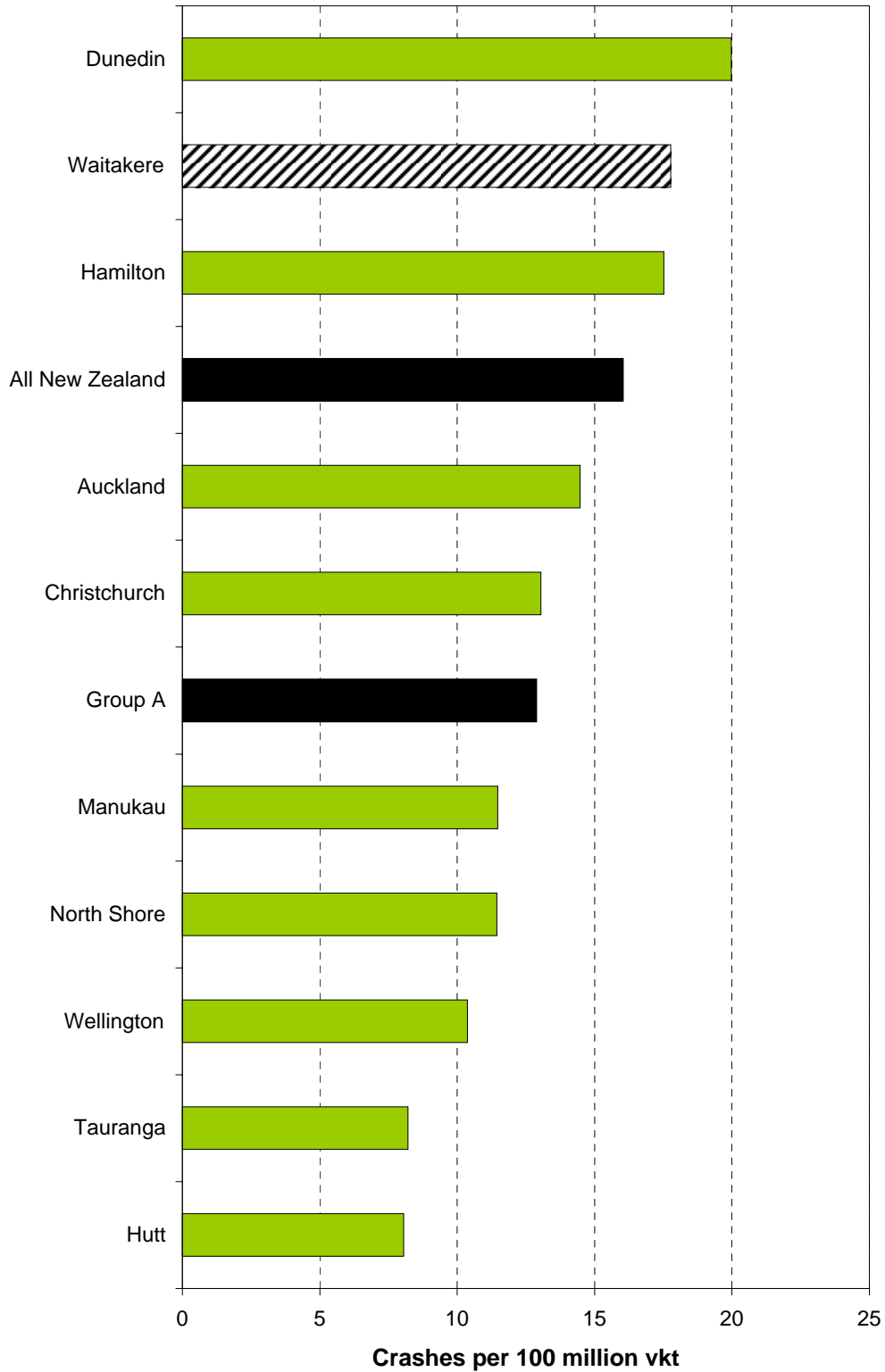


Figure 1.8 Crashes per 100 million vehicle-kilometres travelled - rural state highways



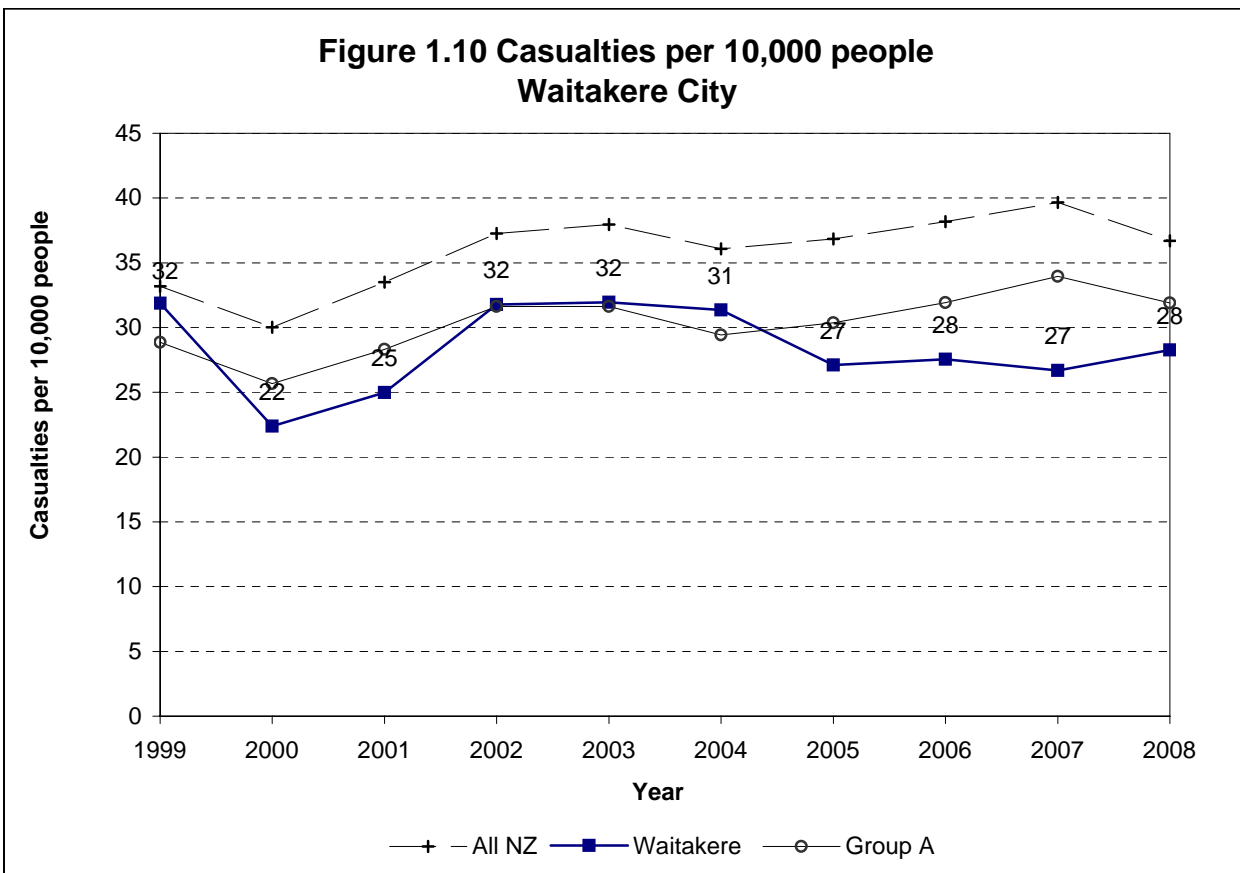
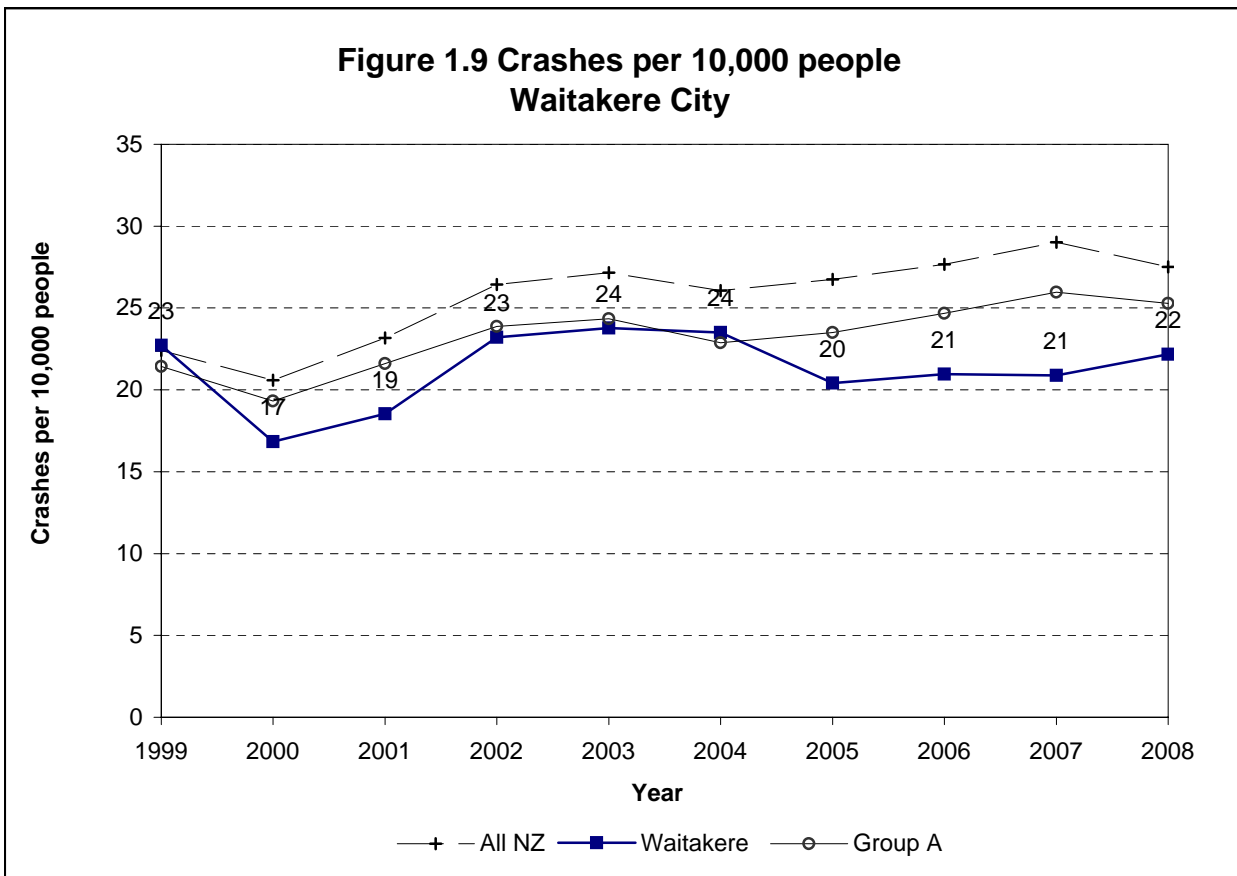


Figure 1.11 Social cost of crashes in Waitakere City in 2008

		Waitakere City	New Zealand
Council roads	urban	\$76.60	\$1,636.63
	rural	\$5.22	\$962.97
State Highways	urban	\$2.48	\$303.03
	rural	\$11.70	\$1,390.98
Total		\$96.00	\$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	7	6	7	5	3	28	1%	1%
Serious crashes	60	48	66	48	39	261	13%	15%
Minor crashes	370	333	330	355	398	1786	86%	84%
Total injury crashes	437	387	403	408	440	2075	100%	100%
Non-injury crashes	1325	1214	1168	1274	1416	6397		

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

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal crashes	6	4	7	4	2	23	1%	1%
Serious crashes	54	45	58	41	35	233	13%	15%
Minor crashes	314	278	283	311	342	1528	86%	84%
Total injury crashes	374	327	348	356	379	1784	100%	100%
Non-injury crashes	1171	1059	1038	1150	1278	5696		

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

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal crashes	1	2	0	1	1	5	2%	2%
Serious crashes	6	3	8	7	4	28	10%	14%
Minor crashes	56	55	47	44	56	258	89%	84%
Total injury crashes	63	60	55	52	61	291	100%	100%
Non-injury crashes	154	155	130	124	138	701		

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

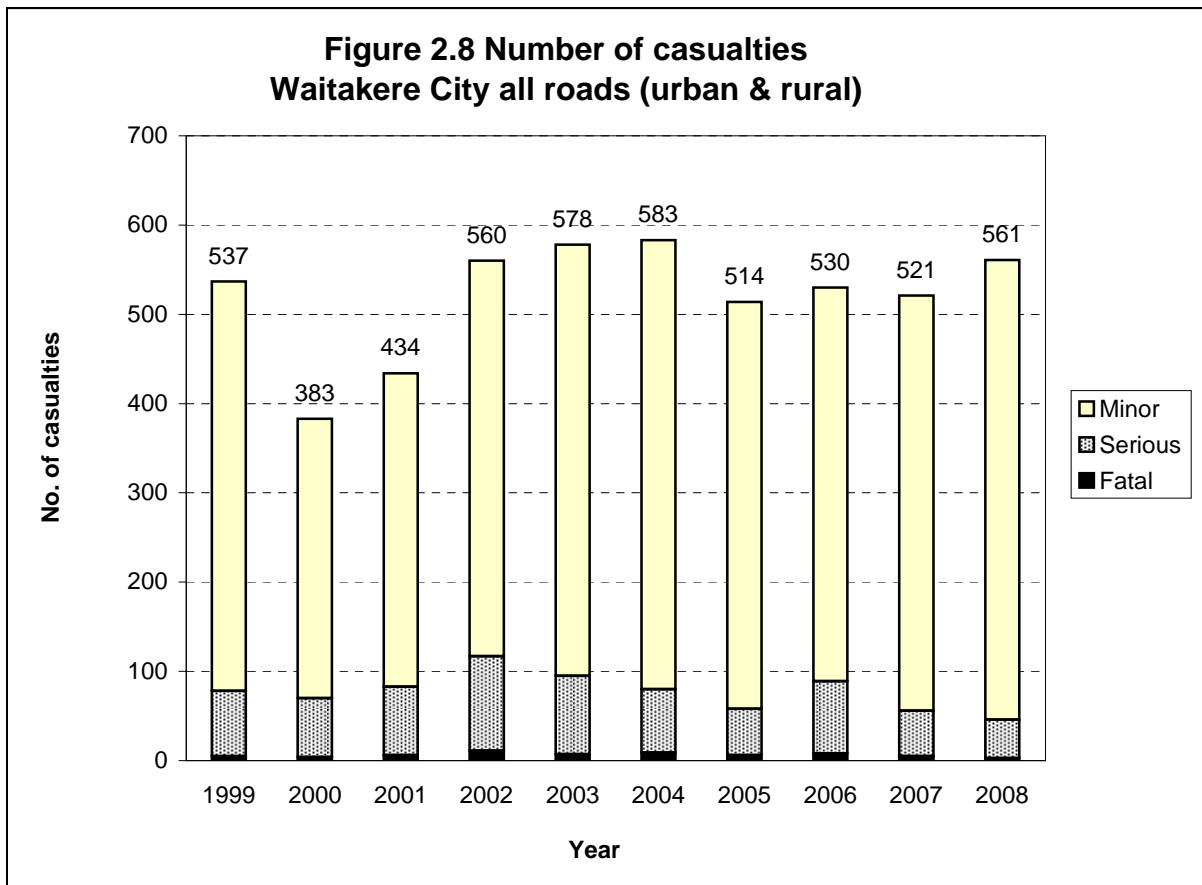
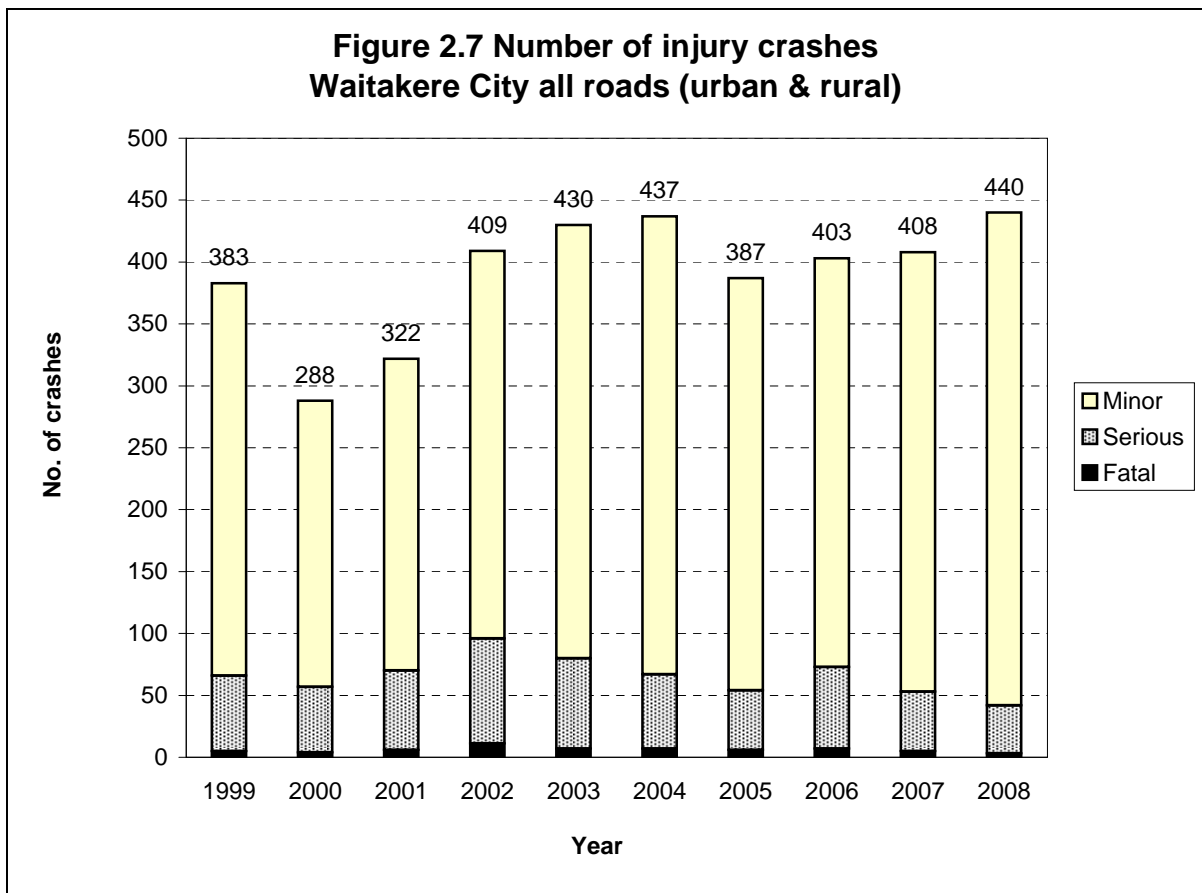
	2004	2005	2006	2007	2008	Total	%	Group A
Fatal casualties	9	6	8	5	3	31	1%	1%
Serious casualties	71	52	81	51	43	298	11%	13%
Minor casualties	503	456	441	465	515	2380	88%	86%
Total casualties	583	514	530	521	561	2709	100%	100%

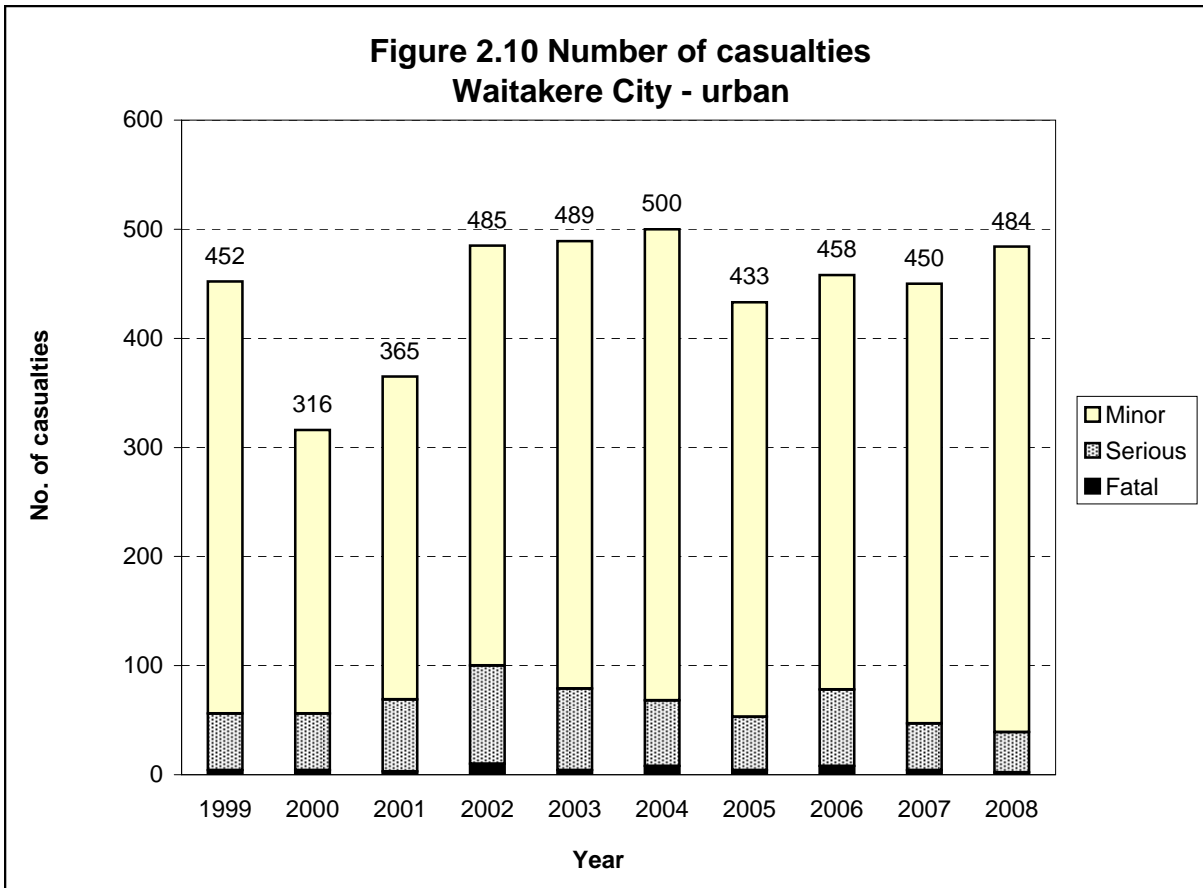
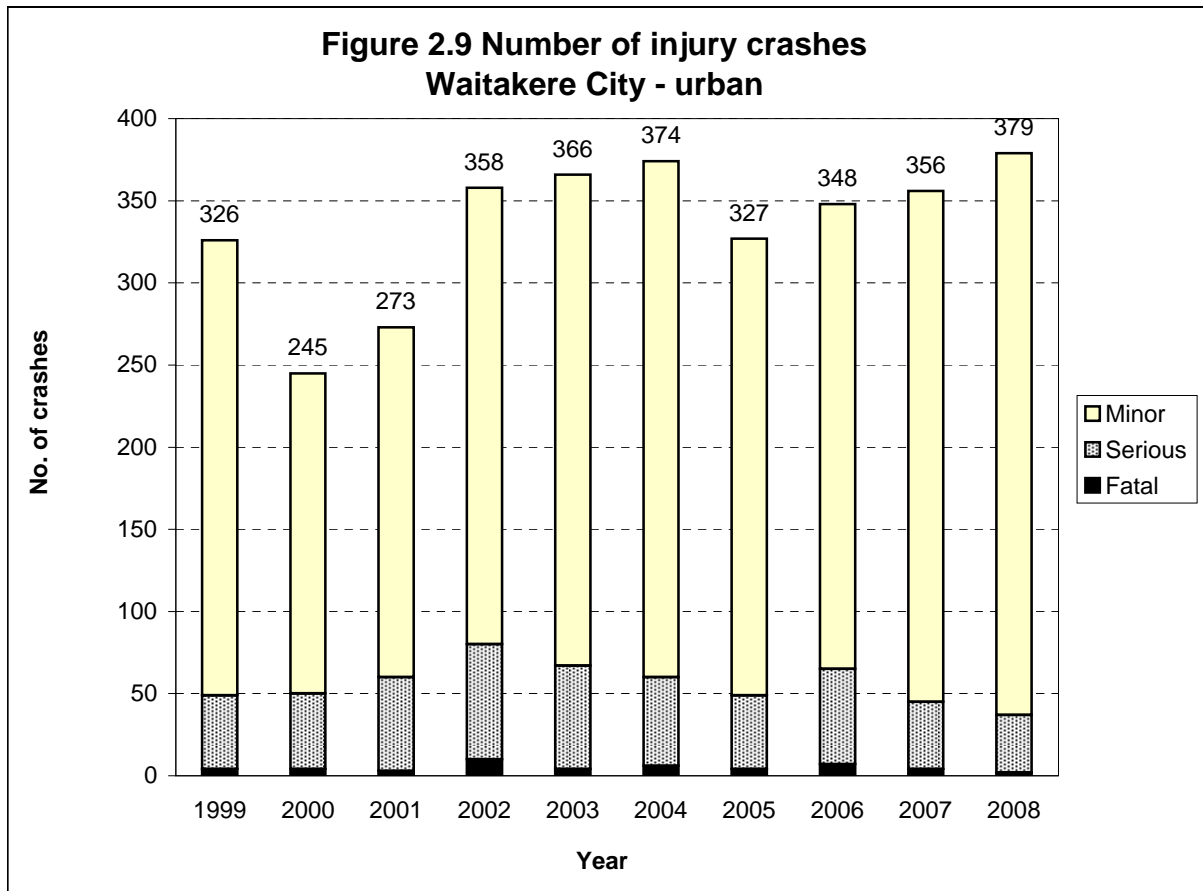
Figure 2.5: Casualty numbers and severity 2004 to 2008 - urban roads

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal casualties	8	4	8	4	2	26	1%	1%
Serious casualties	60	49	70	43	37	259	11%	13%
Minor casualties	432	380	380	403	445	2040	88%	86%
Total casualties	500	433	458	450	484	2325	100%	100%

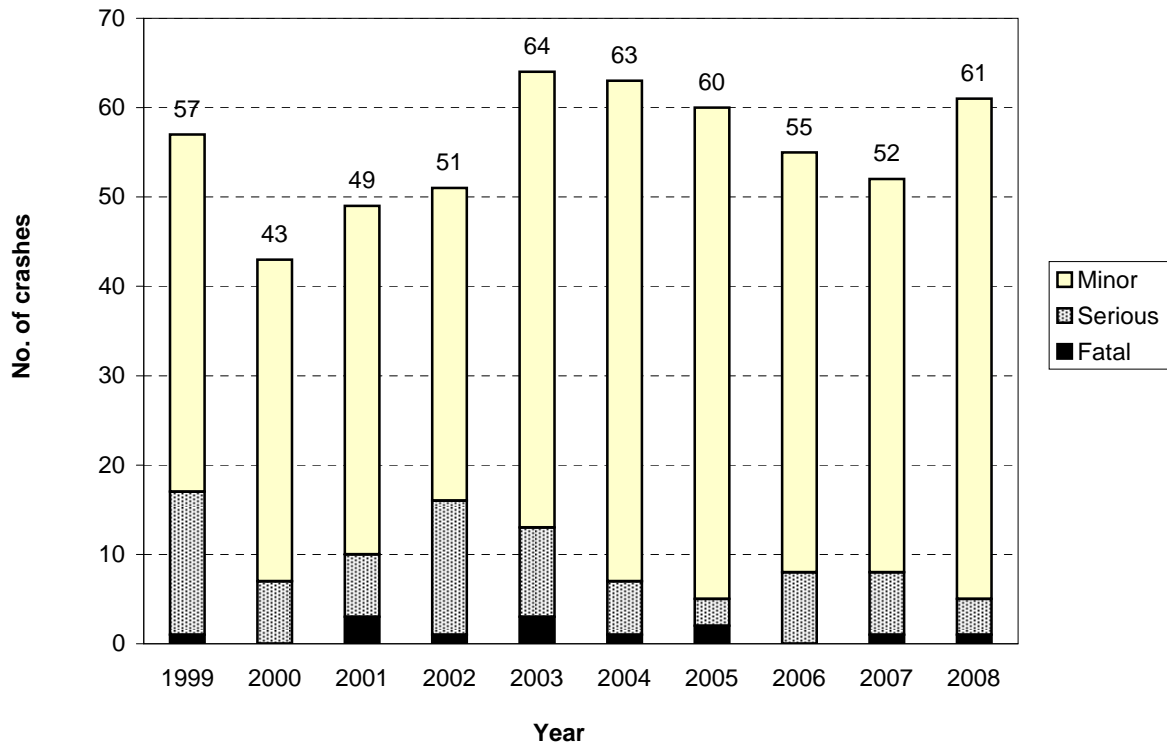
Figure 2.6: Casualty numbers and severity 2004 to 2008 - rural roads

	2004	2005	2006	2007	2008	Total	%	Group A
Fatal casualties	1	2	0	1	1	5	1%	2%
Serious casualties	11	3	11	8	6	39	10%	13%
Minor casualties	71	76	61	62	70	340	89%	85%
Total casualties	83	81	72	71	77	384	100%	100%

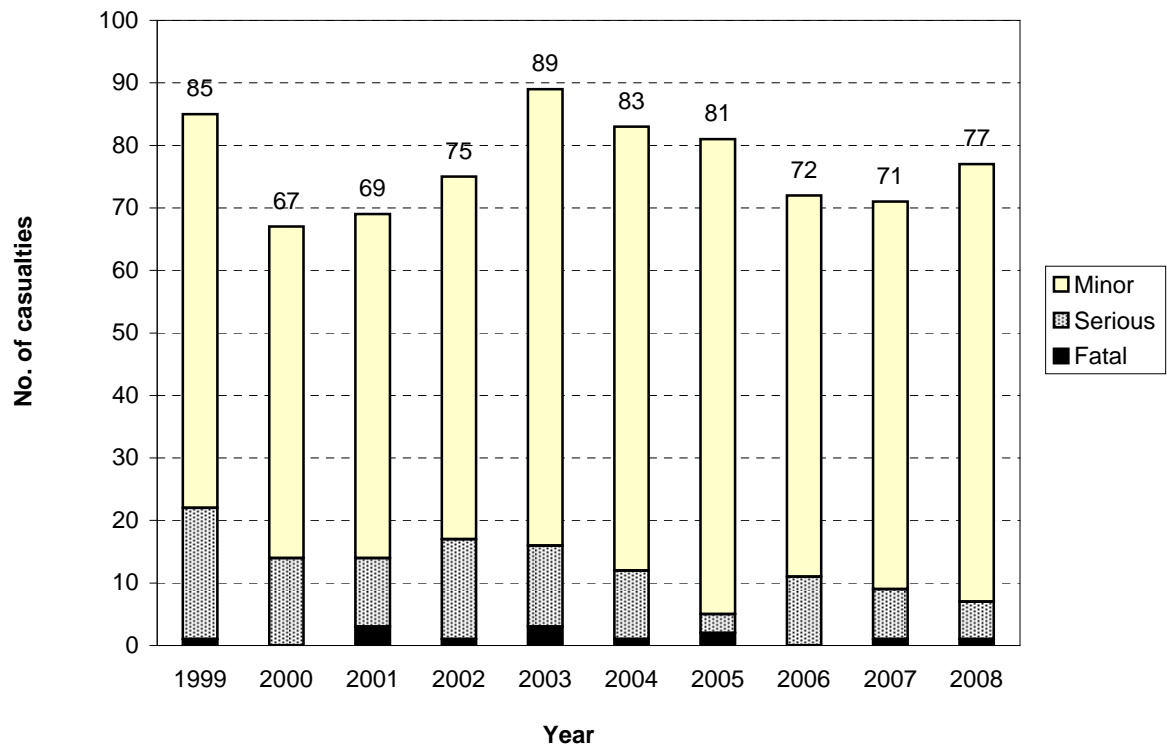


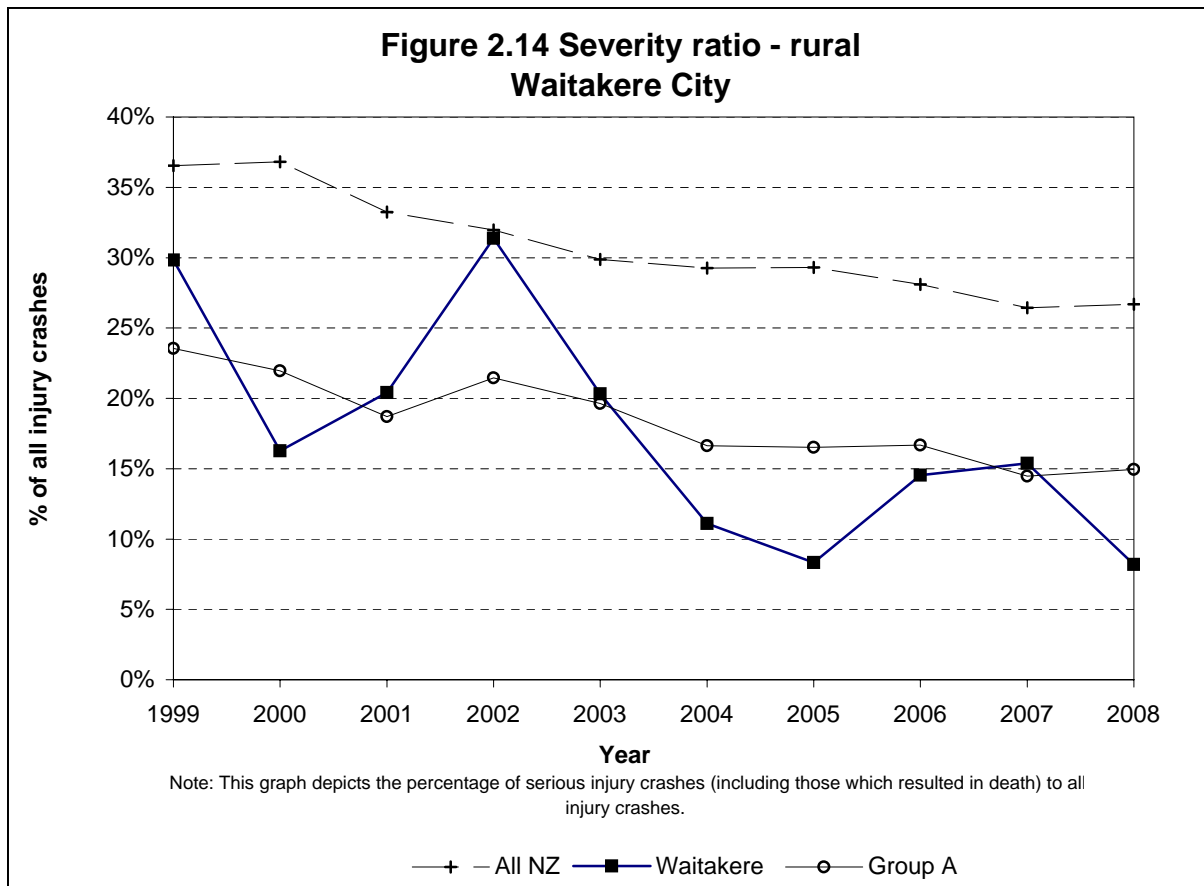
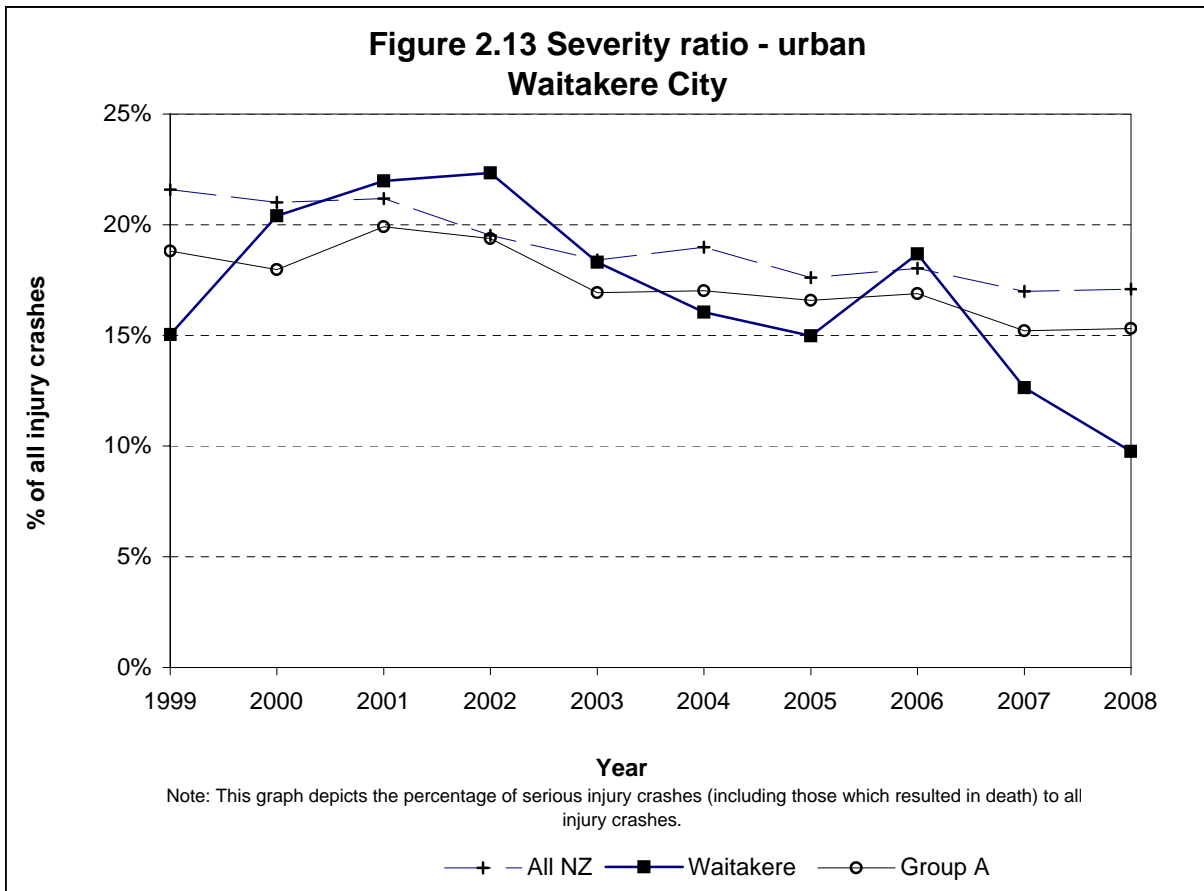


**Figure 2.11 Number of injury crashes
Waitakere City - rural**



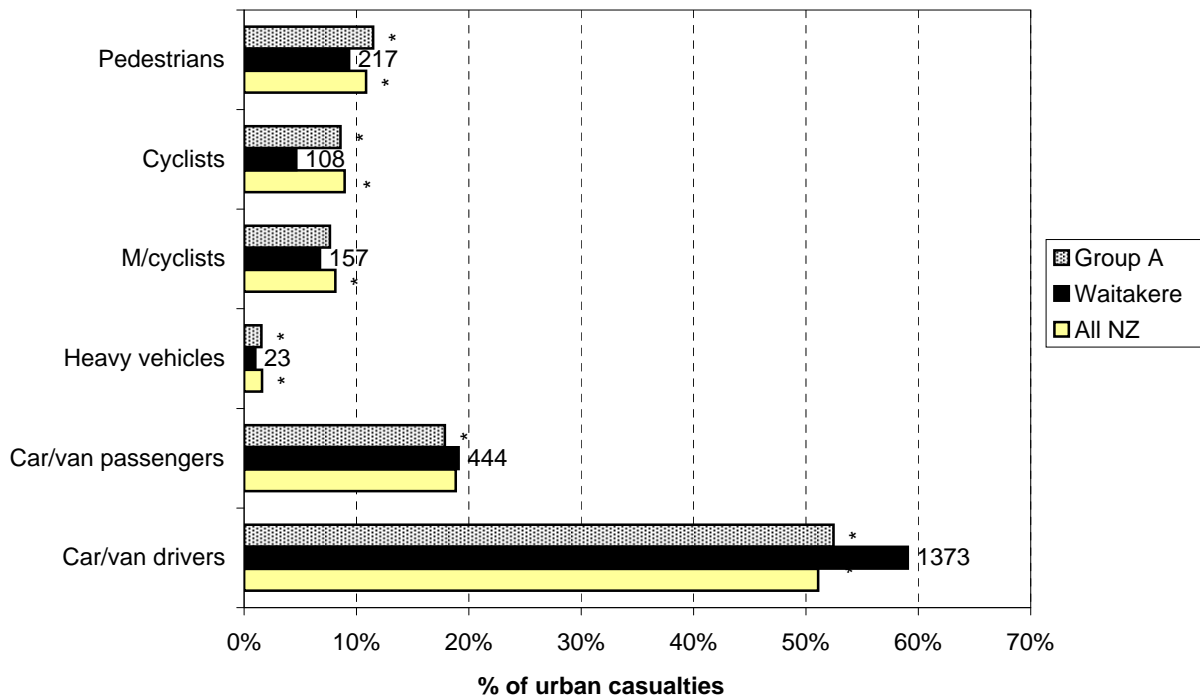
**Figure 2.12 Number of casualties
Waitakere City - rural**





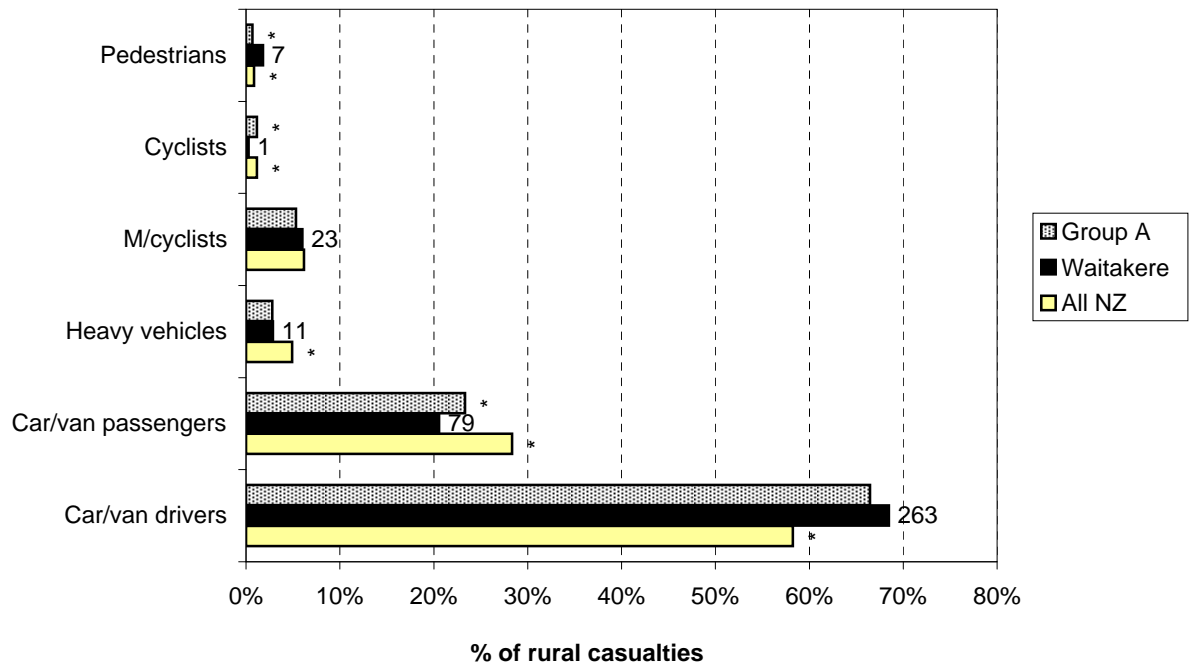
Road User Statistics

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



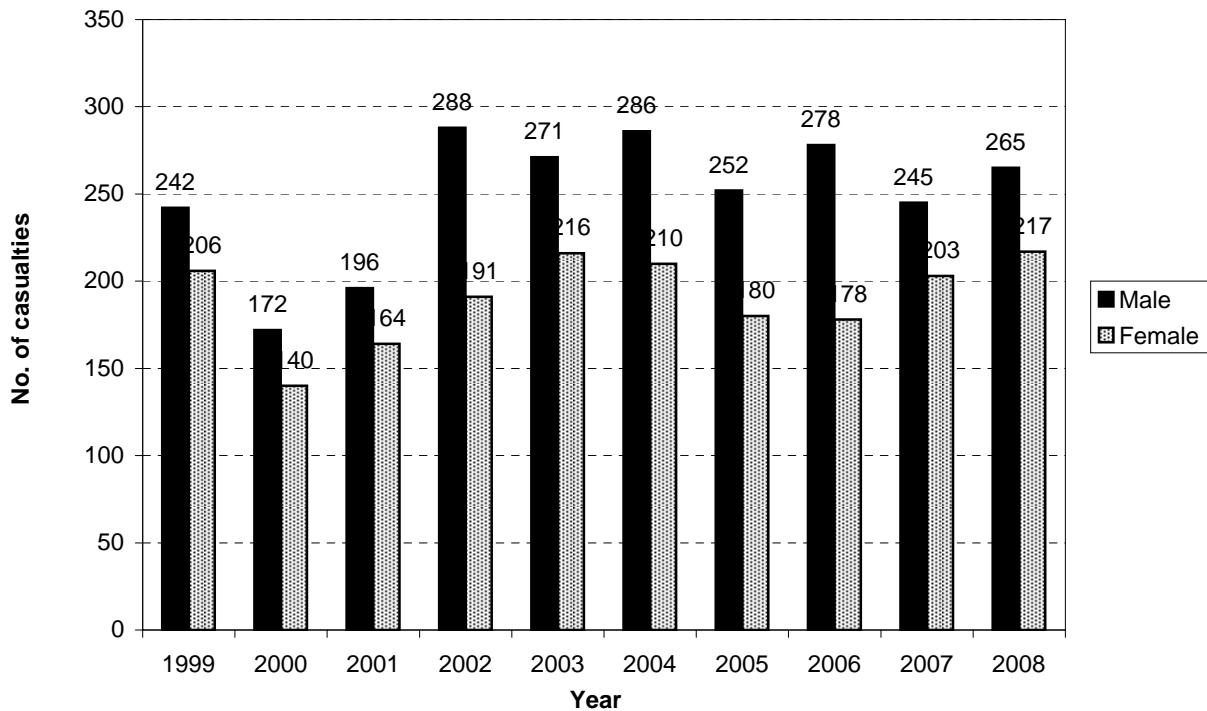
Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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



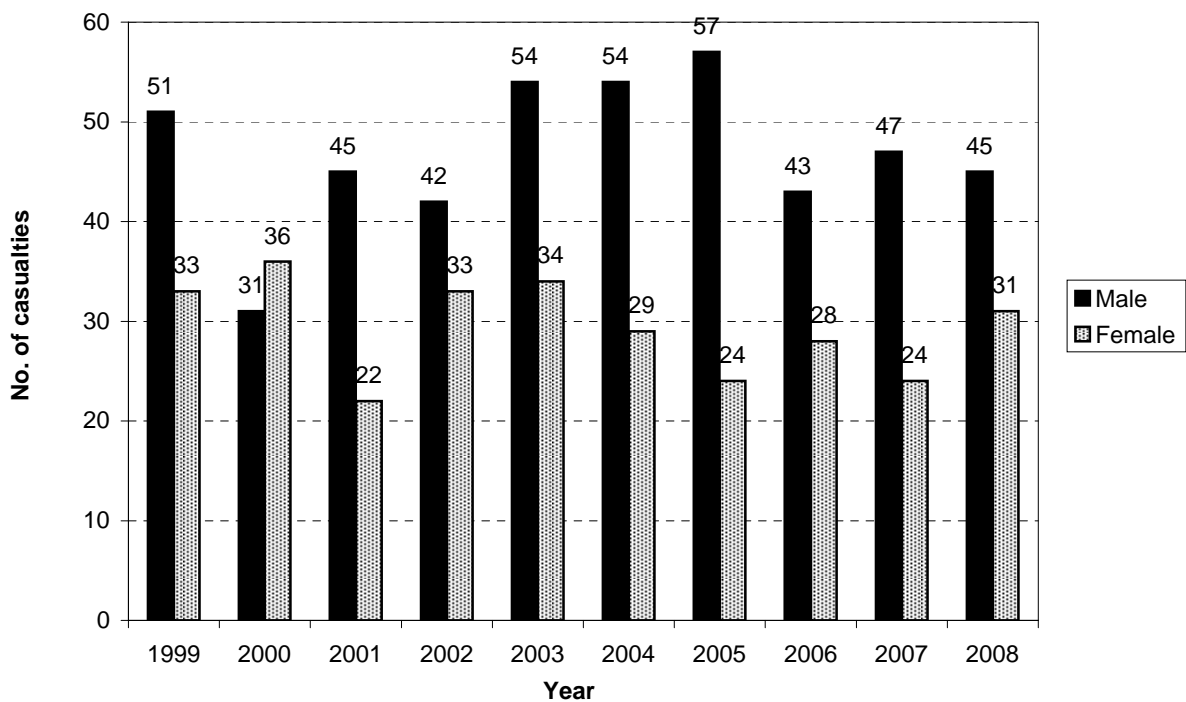
Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.3 Male/female casualties - urban
Waitakere City**



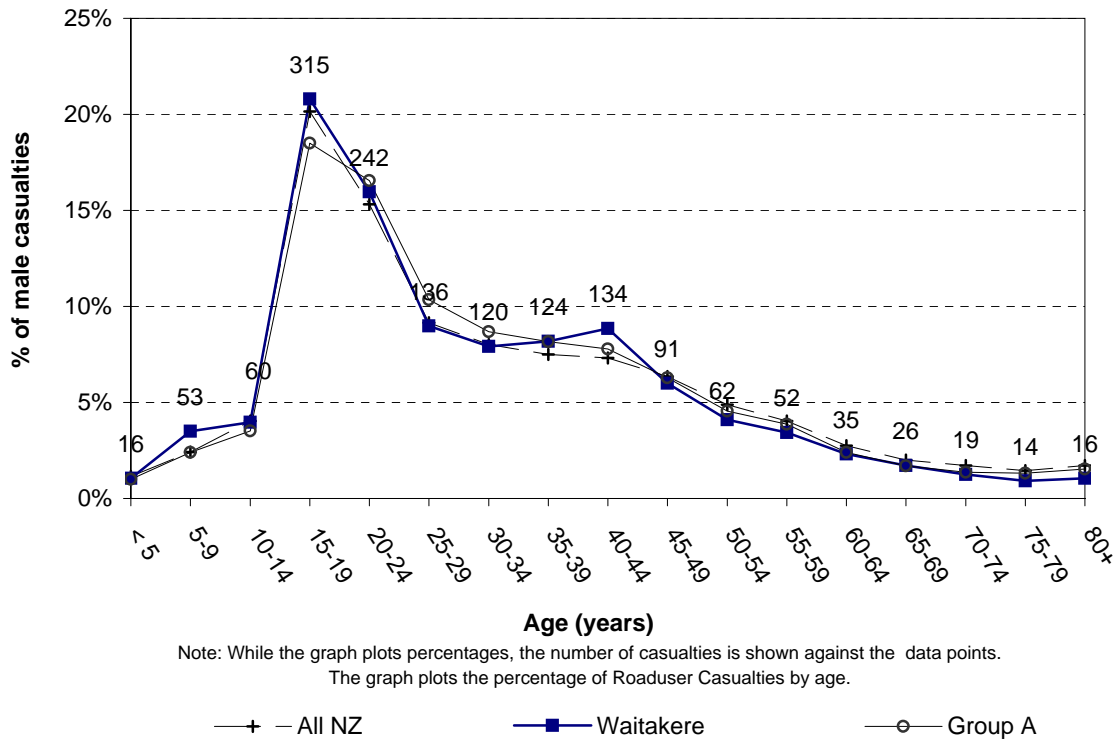
Note: This graph shows the number of male and female roadusers injured

**Figure 3.4 Male/female casualties - rural
Waitakere City**

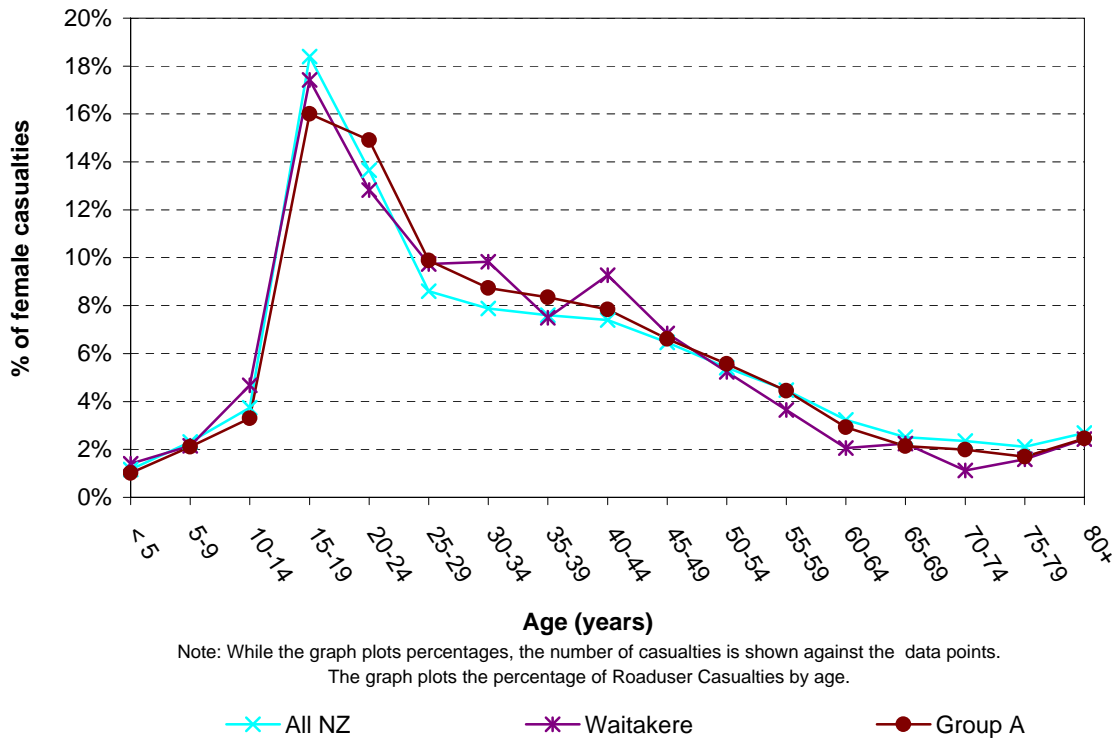


Note: This graph shows the number of male and female roadusers injured

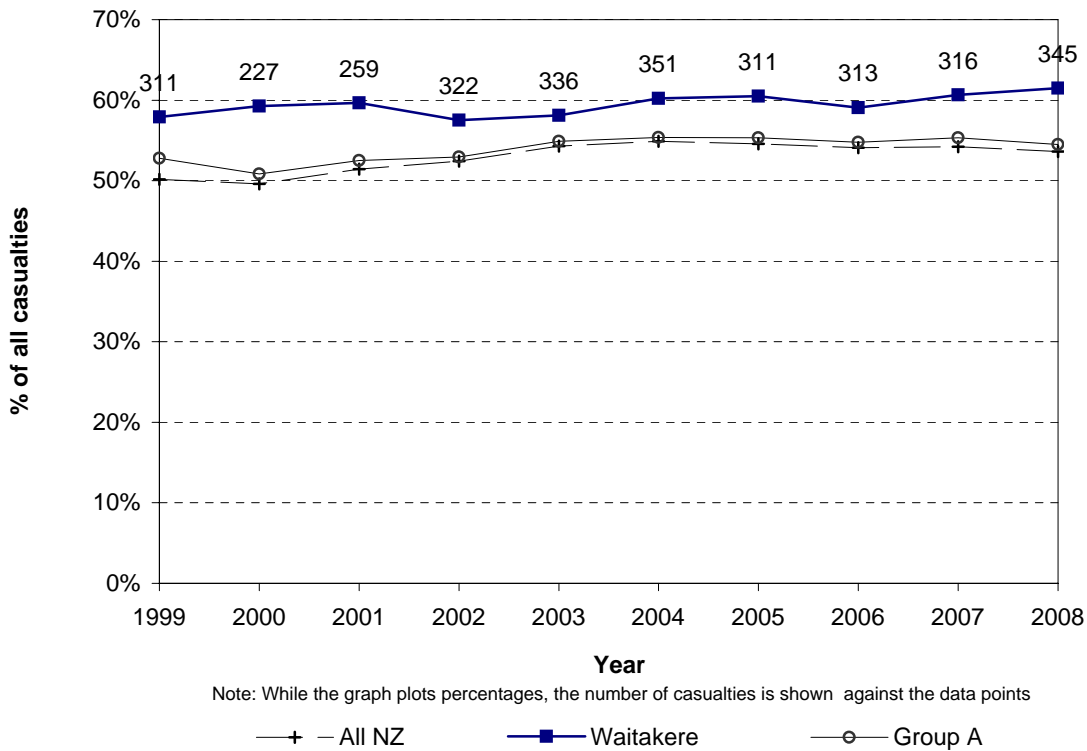
**Figure 3.5 Male casualties by age
Waitakere City (2004-2008)**



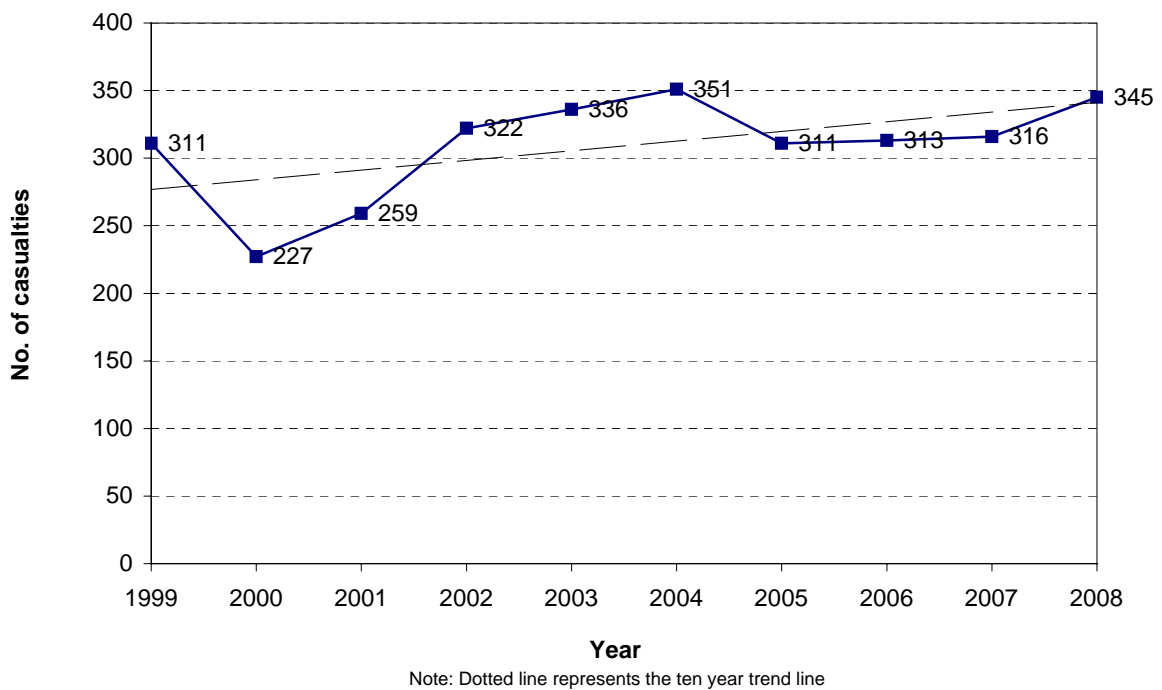
**Figure 3.6 Female casualties by age
Waitakere City (2004-2008)**



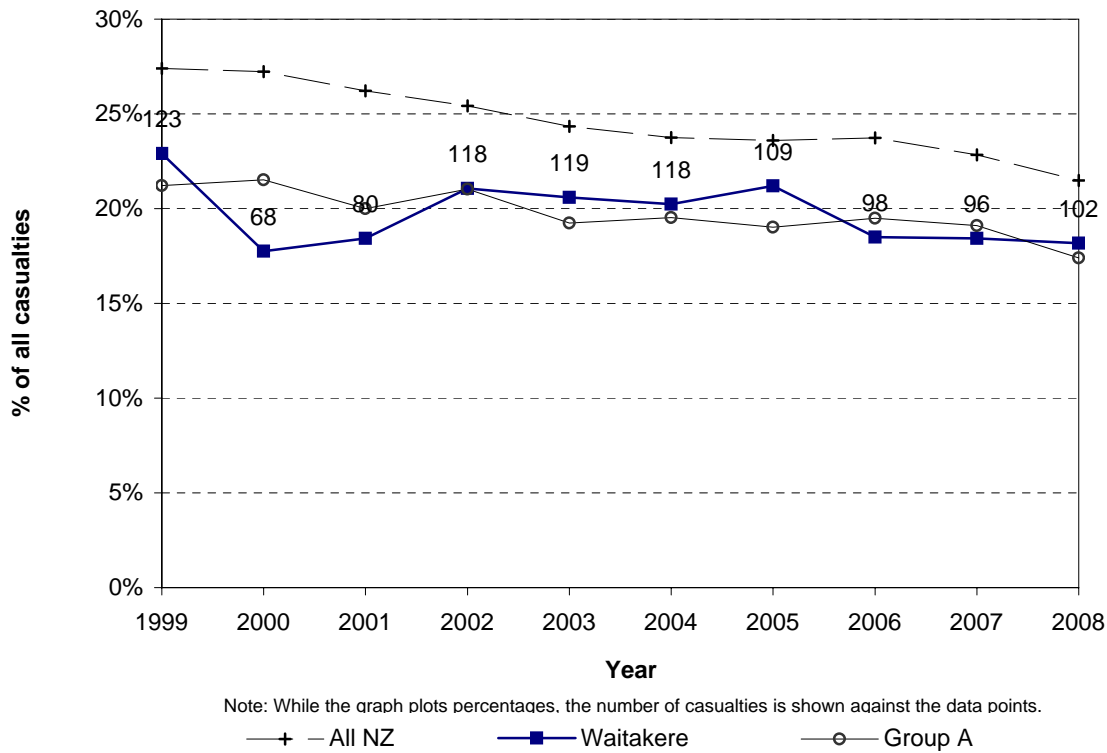
**Figure 3.7 Car/van driver casualties
Waitakere City**



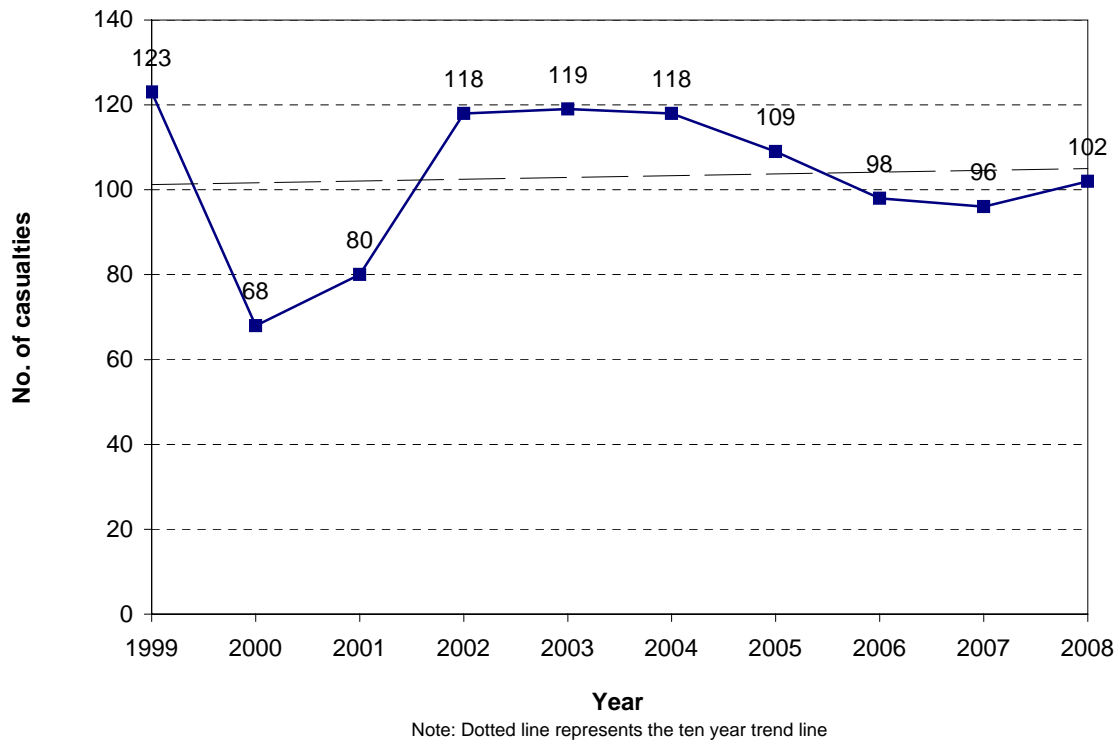
**Figure 3.8 Car/van driver casualties
Waitakere City**



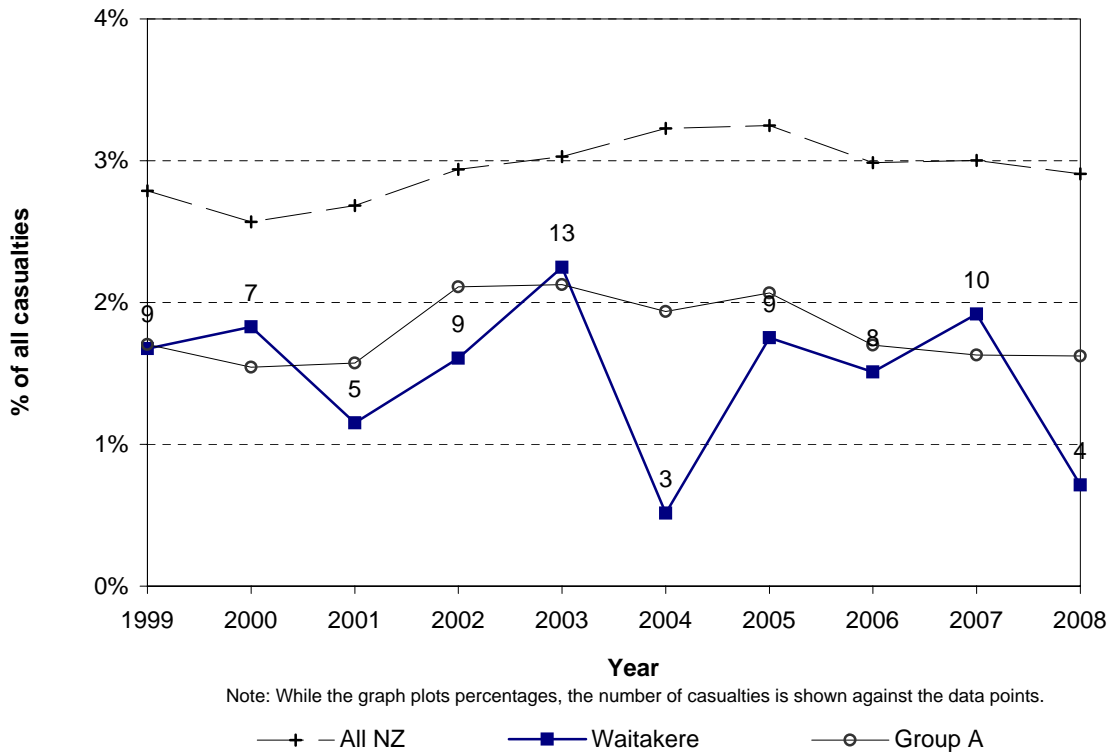
**Figure 3.9 Car/van passenger casualties
Waitakere City**



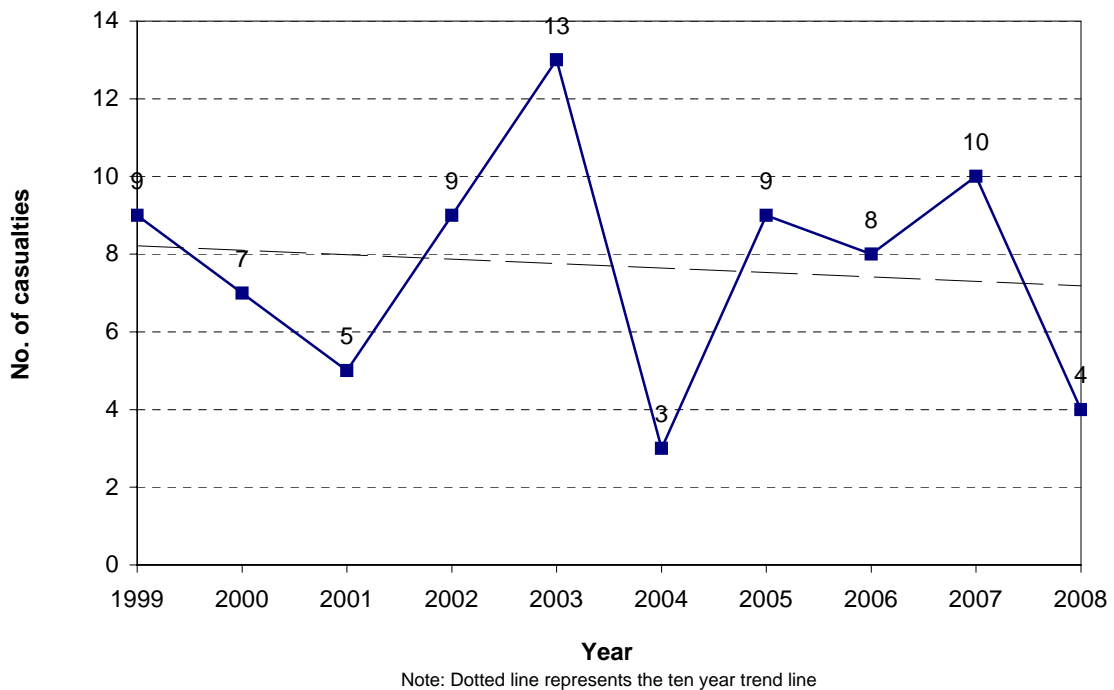
**Figure 3.10 Car/van passenger casualties
Waitakere City**



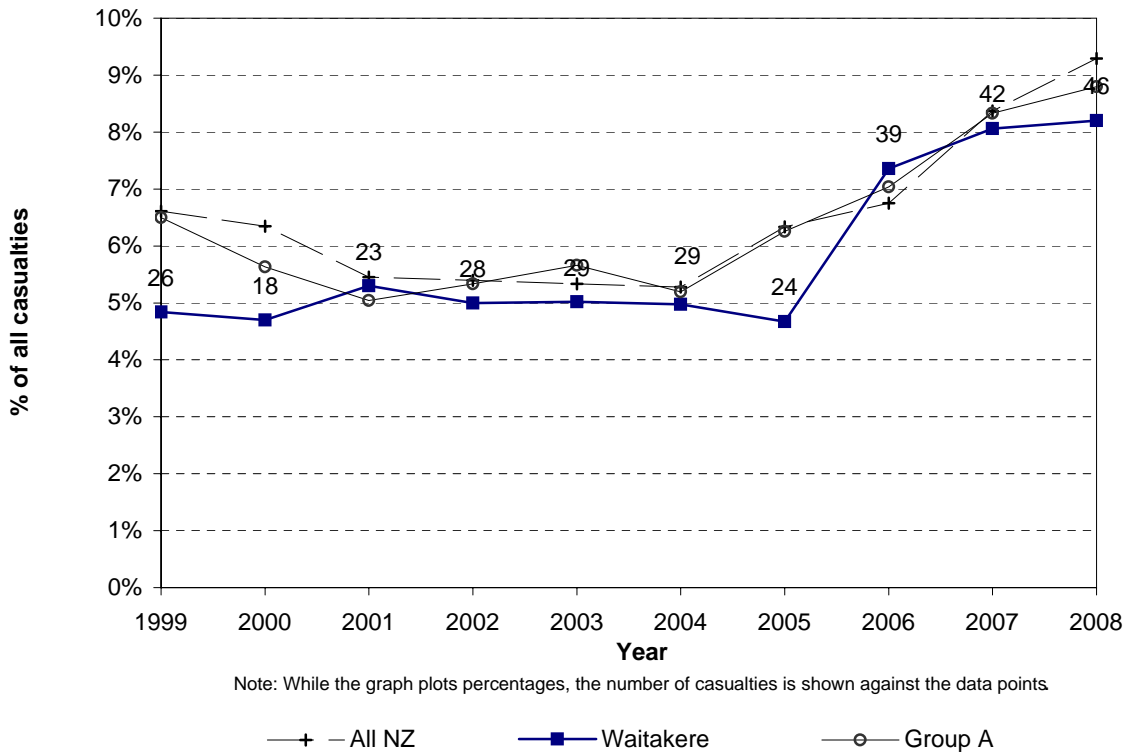
**Figure 3.11 Heavy vehicle casualties
Waitakere City**



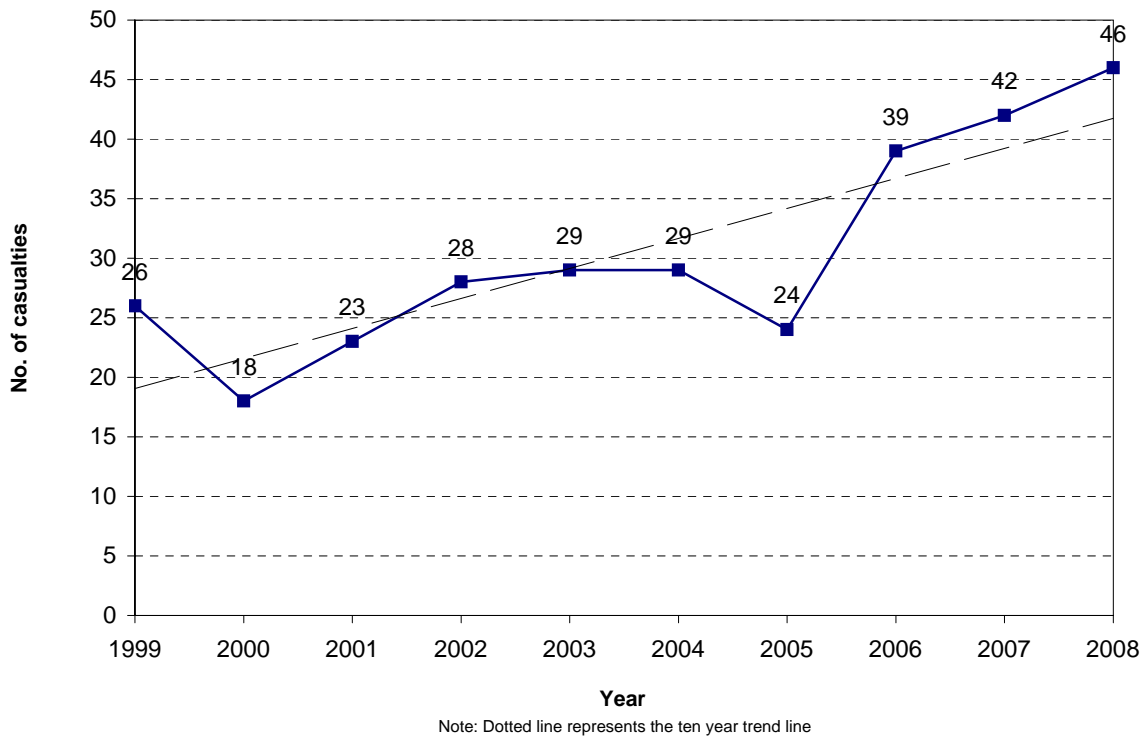
**Figure 3.12 Heavy vehicle casualties
Waitakere City**



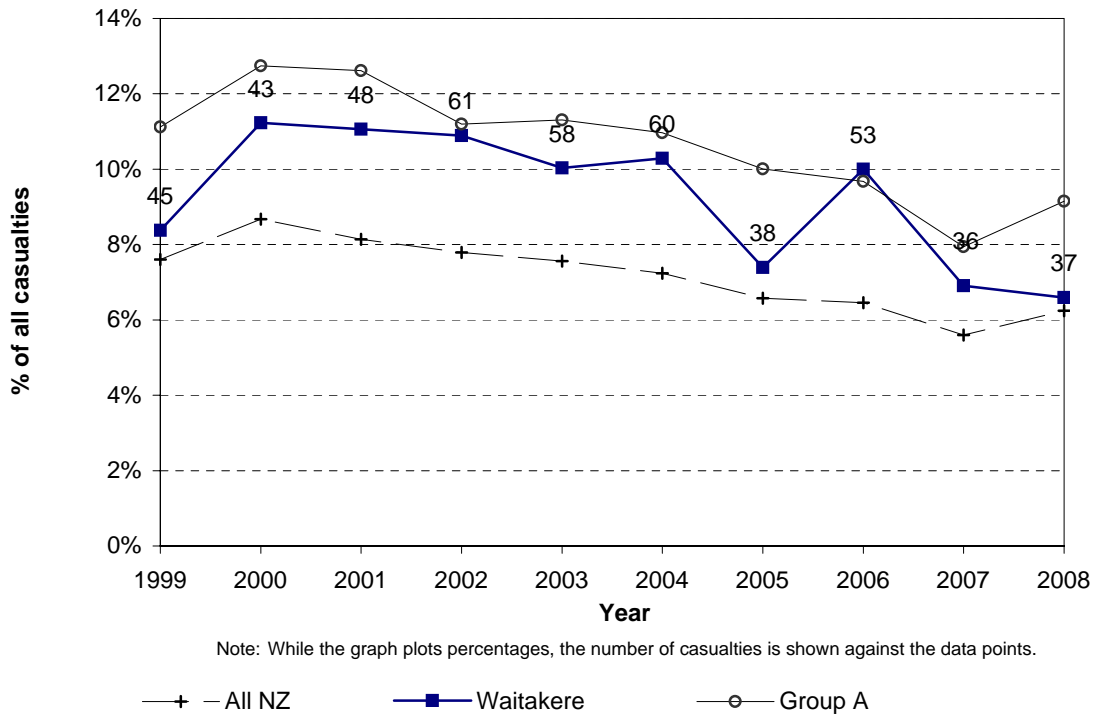
**Figure 3.13 Motorcyclist casualties
Waitakere City**



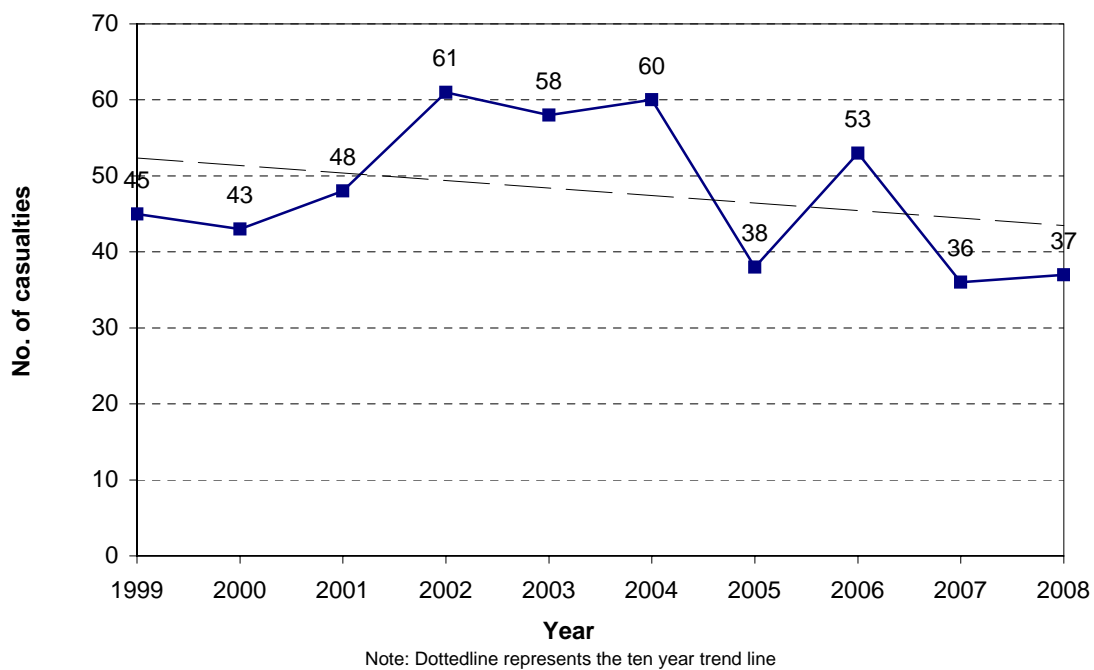
**Figure 3.14 Motorcyclist casualties
Waitakere City**



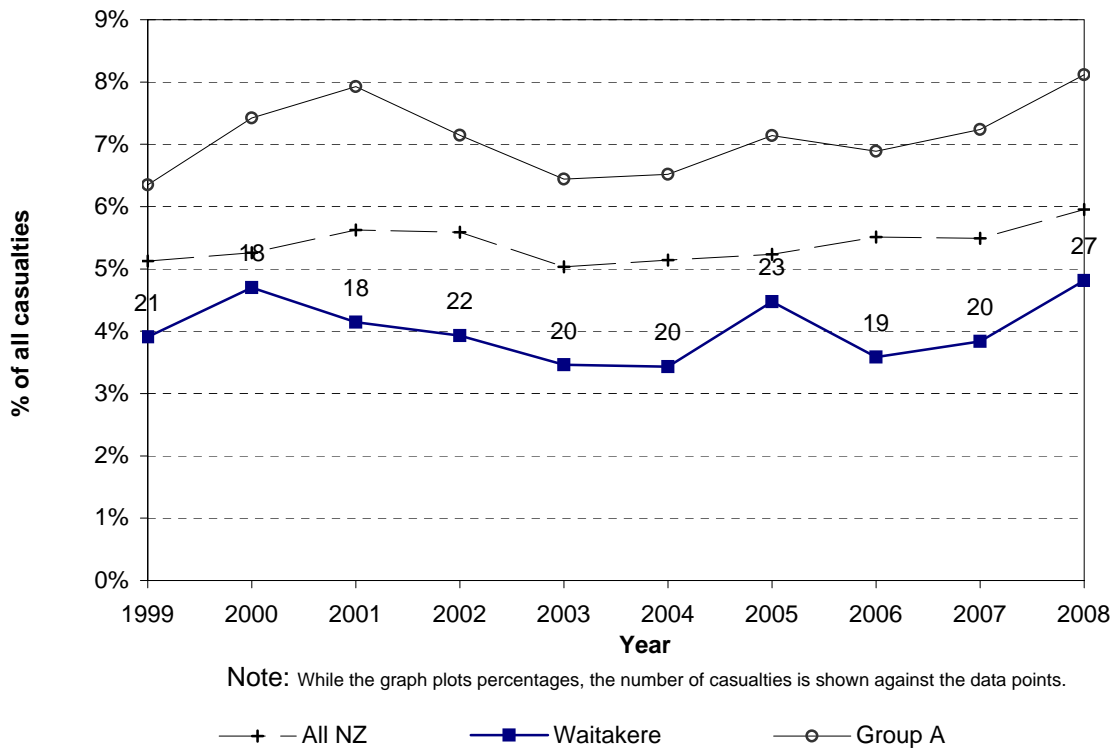
**Figure 3.15 Pedestrian casualties
Waitakere City**



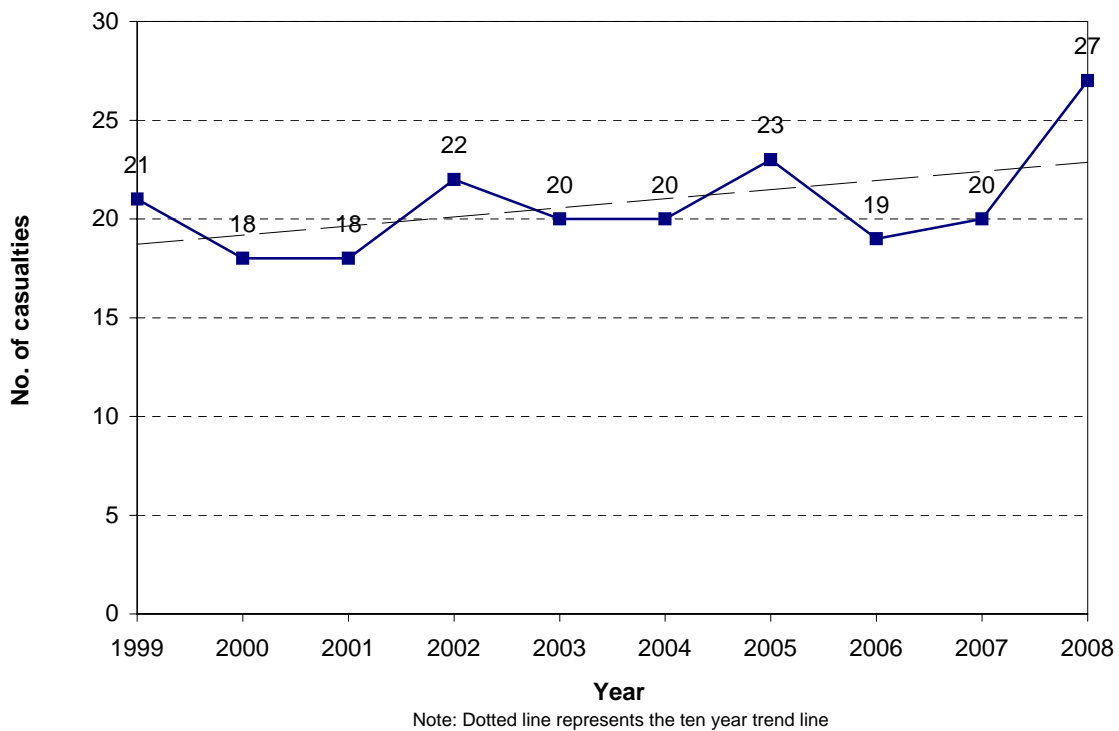
**Figure 3.16 Pedestrian casualties
Waitakere City**



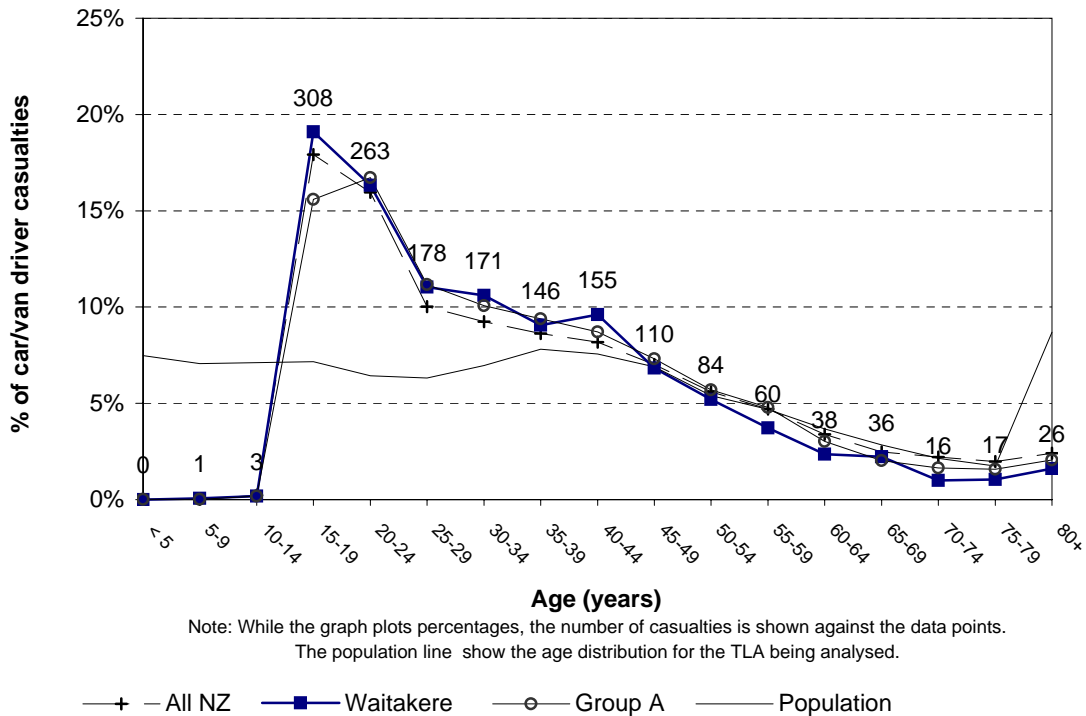
**Figure 3.17 Cyclist casualties
Waitakere City**



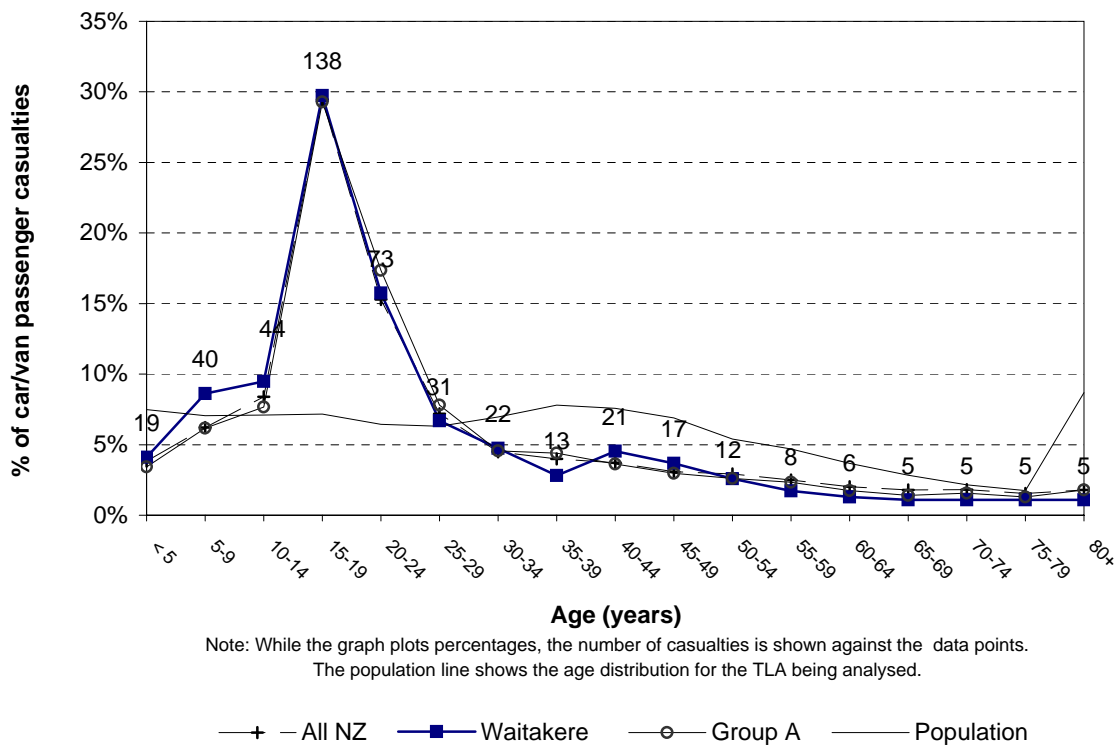
**Figure 3.18 Cyclist casualties
Waitakere City**



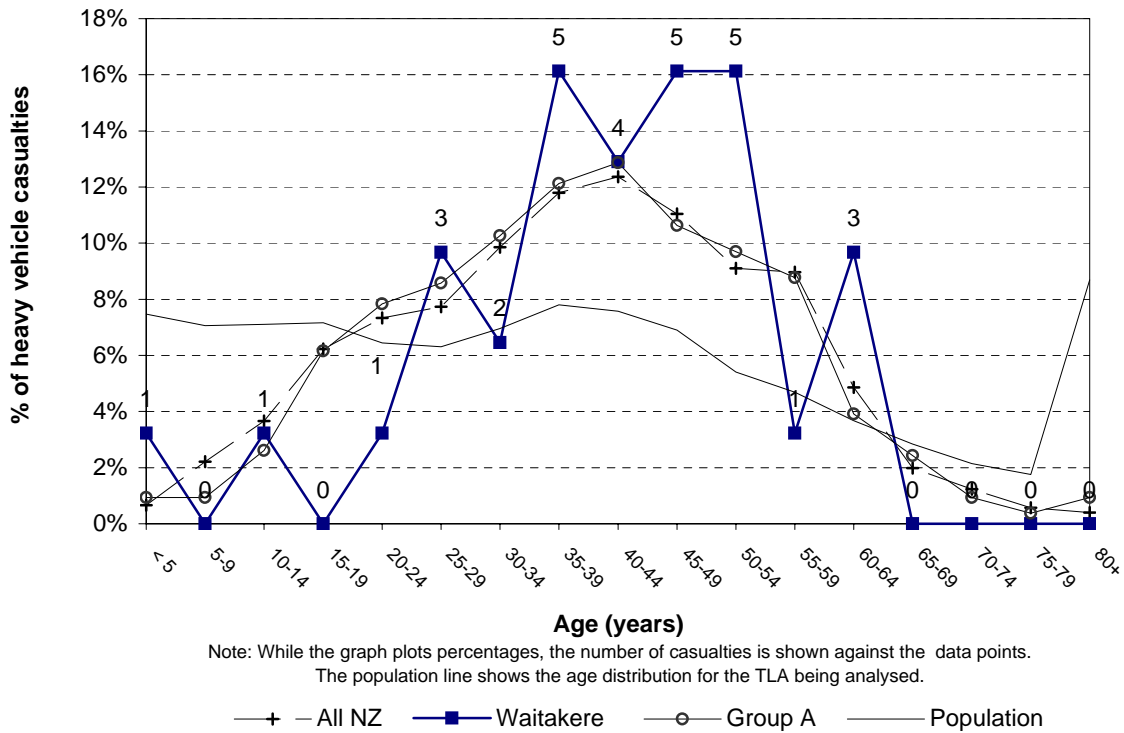
**Figure 3.19 Car/van driver casualty age
Waitakere City (2004-2008)**



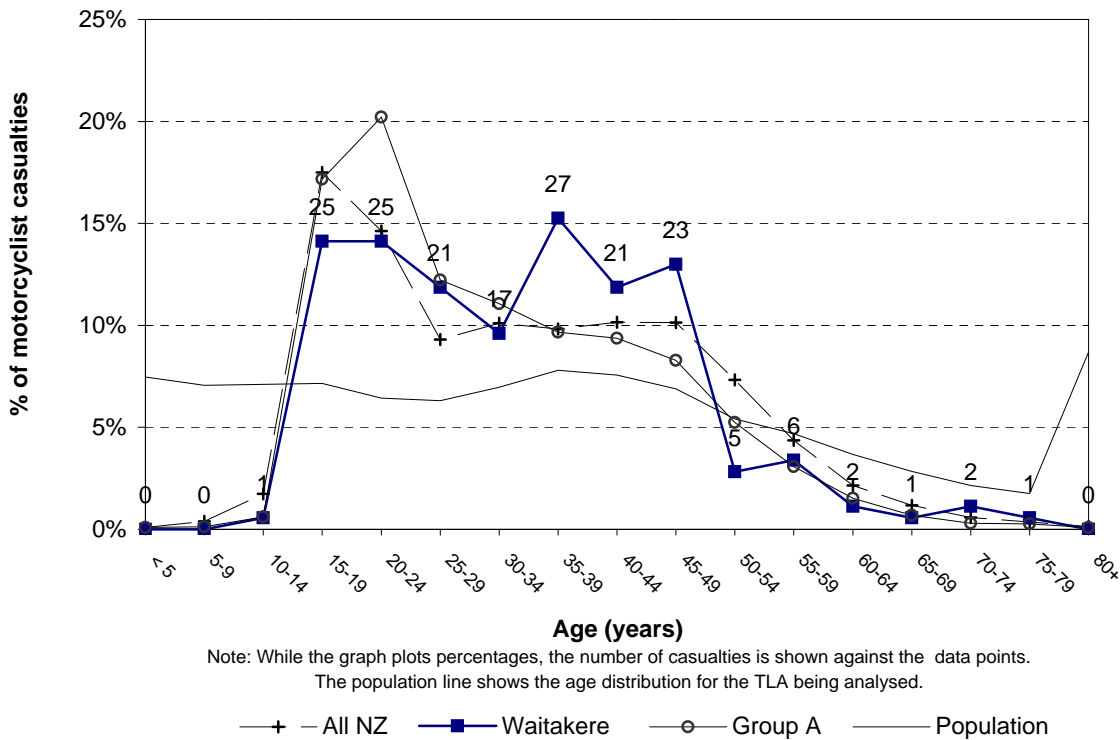
**Figure 3.20 Car/van passenger casualty age
Waitakere City (2004-2008)**



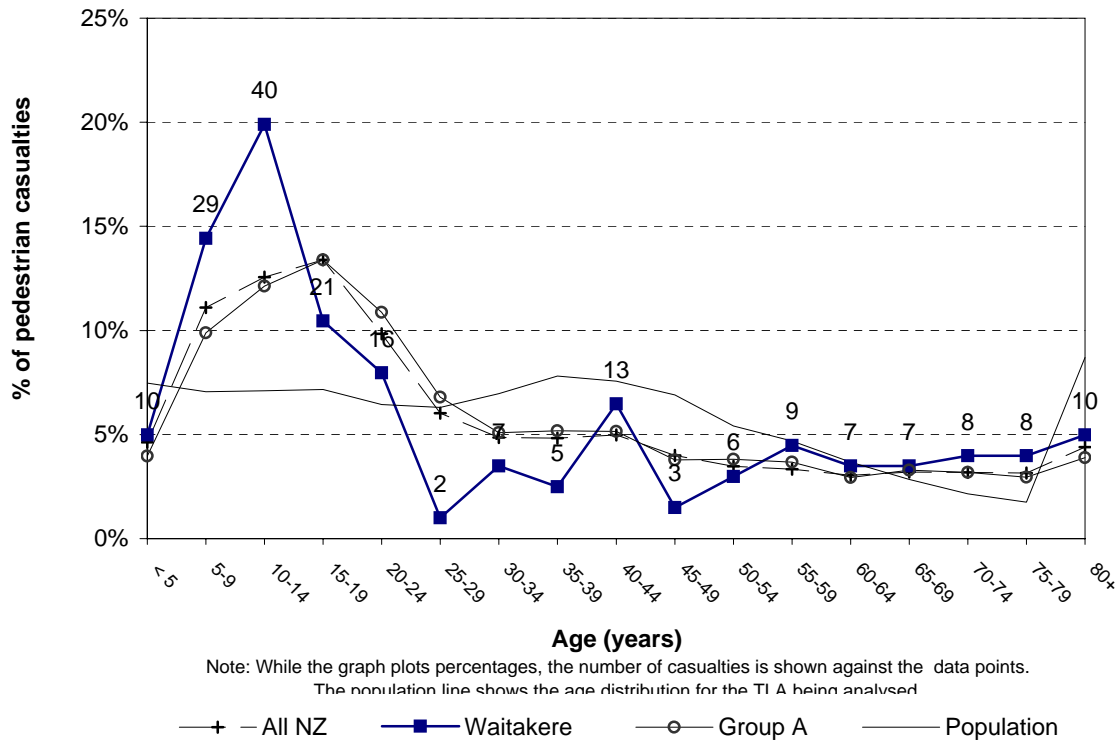
**Figure 3.21 Heavy vehicle casualty age
Waitakere City (2004-2008)**



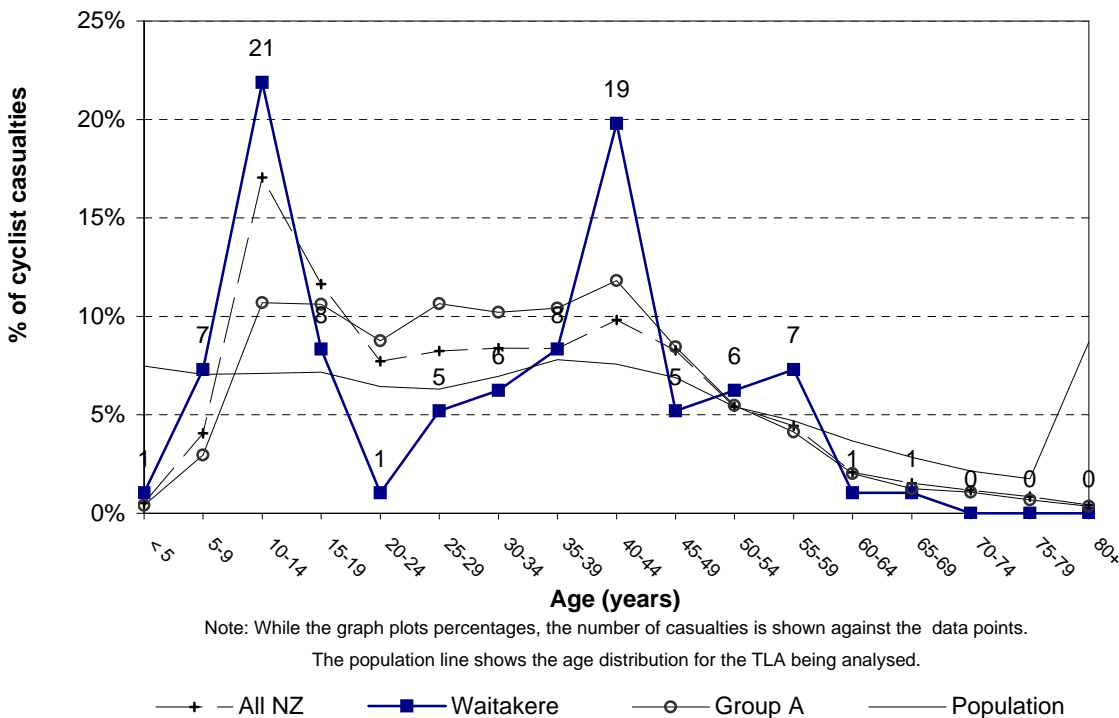
**Figure 3.22 Motorcyclist casualty age
Waitakere City (2004-2008)**



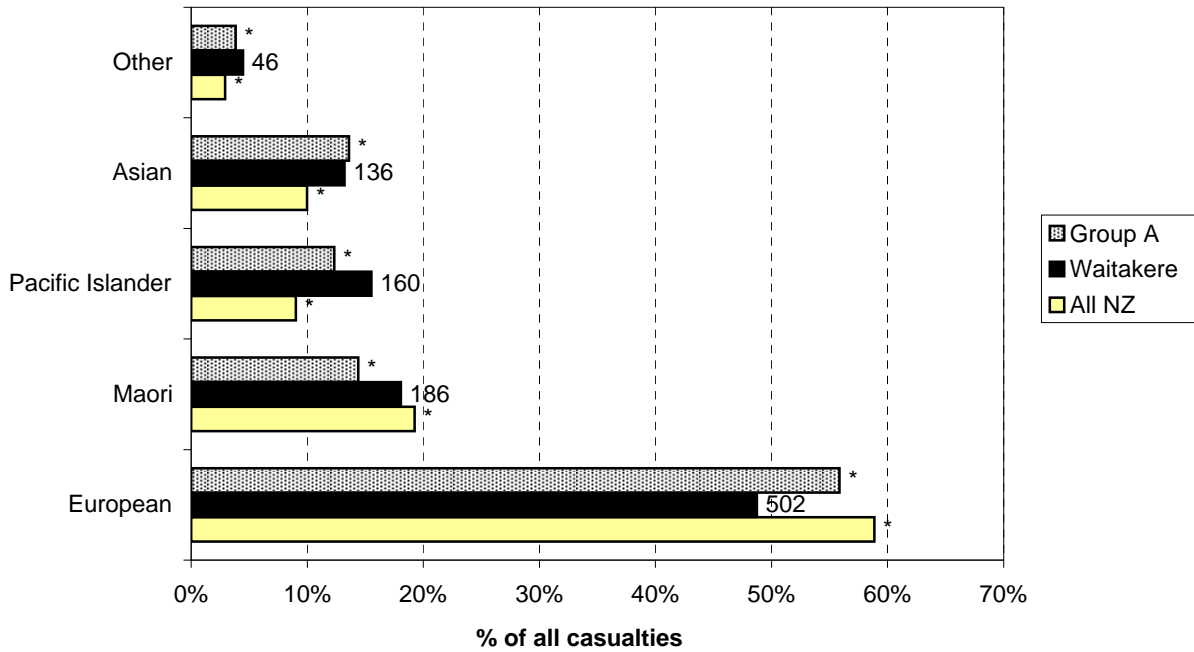
**Figure 3.23 Pedestrian casualty age
Waitakere City (2004-2008)**



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

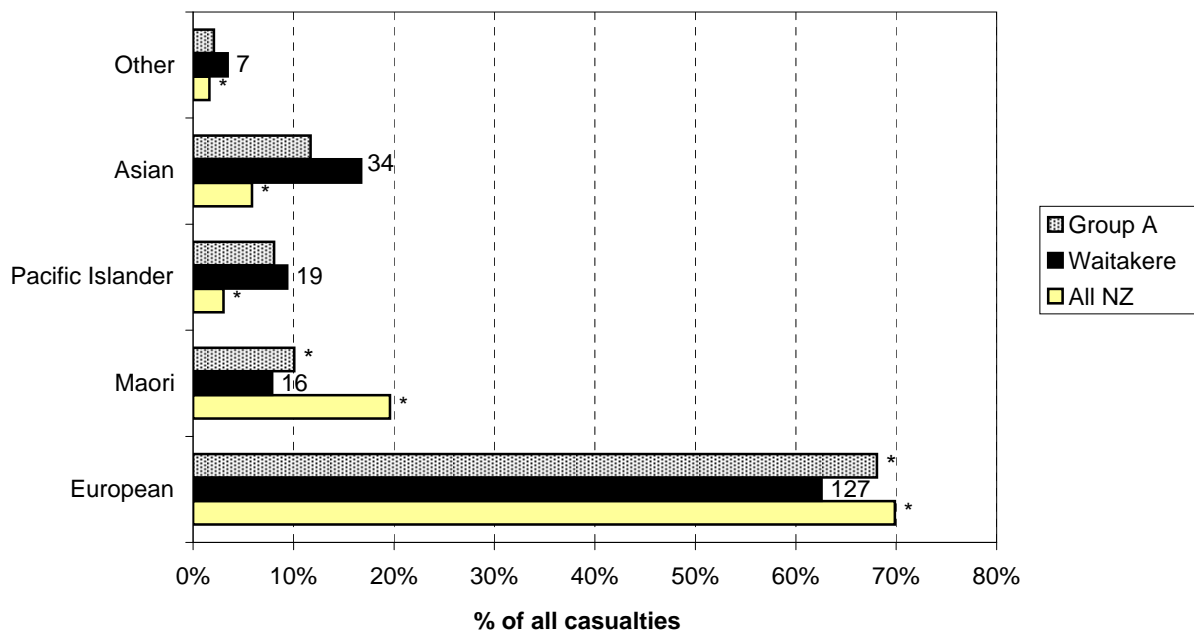


**Figure 3.25 Casualty ethnicity - urban
Waitakere City (2004-2008)**



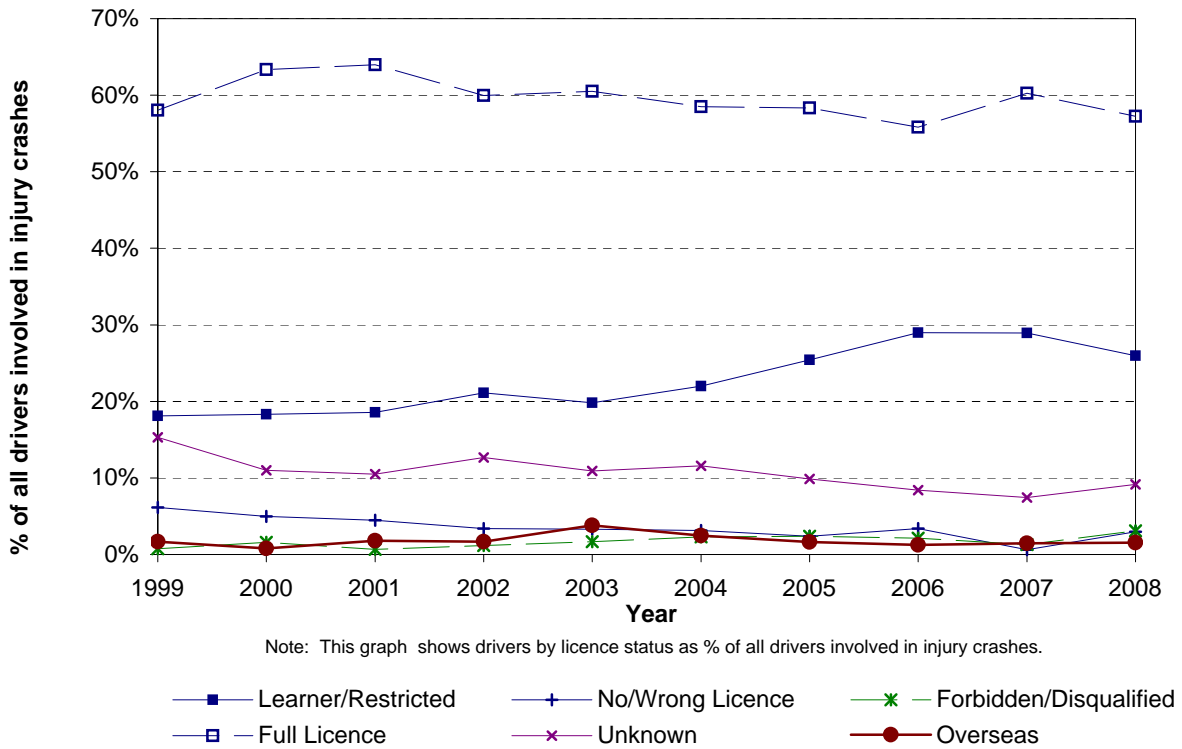
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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

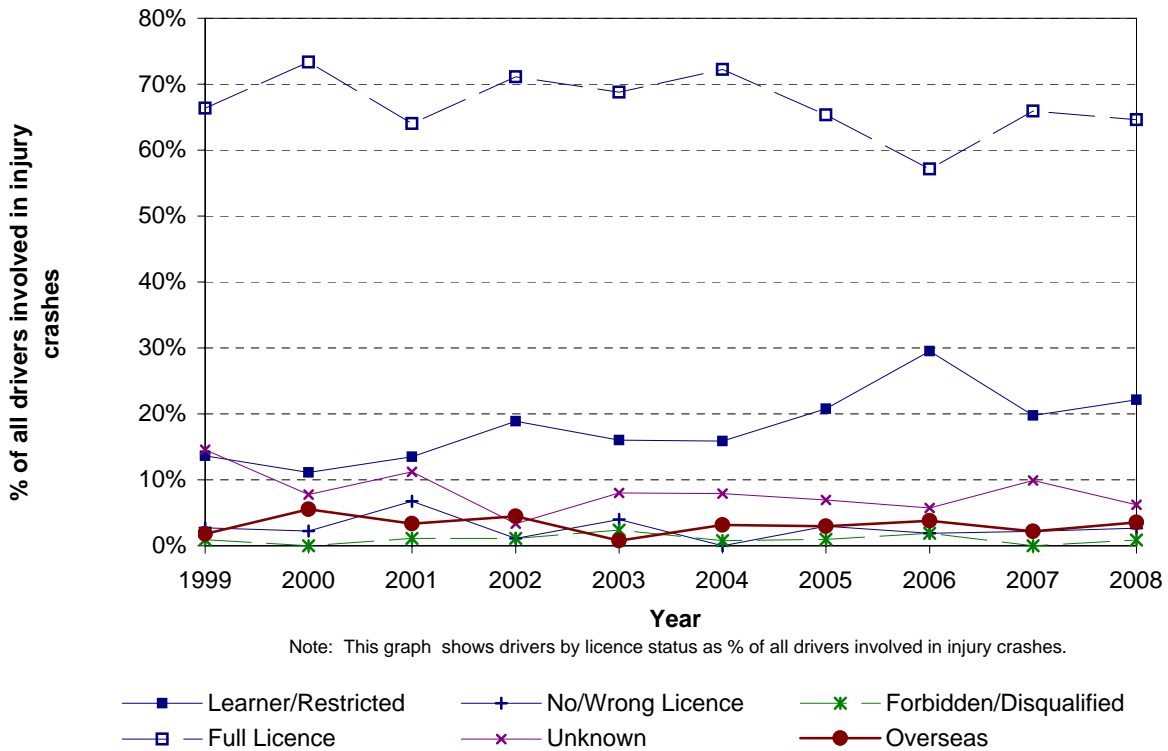


Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.27 Licence status - urban
Waitakere City**

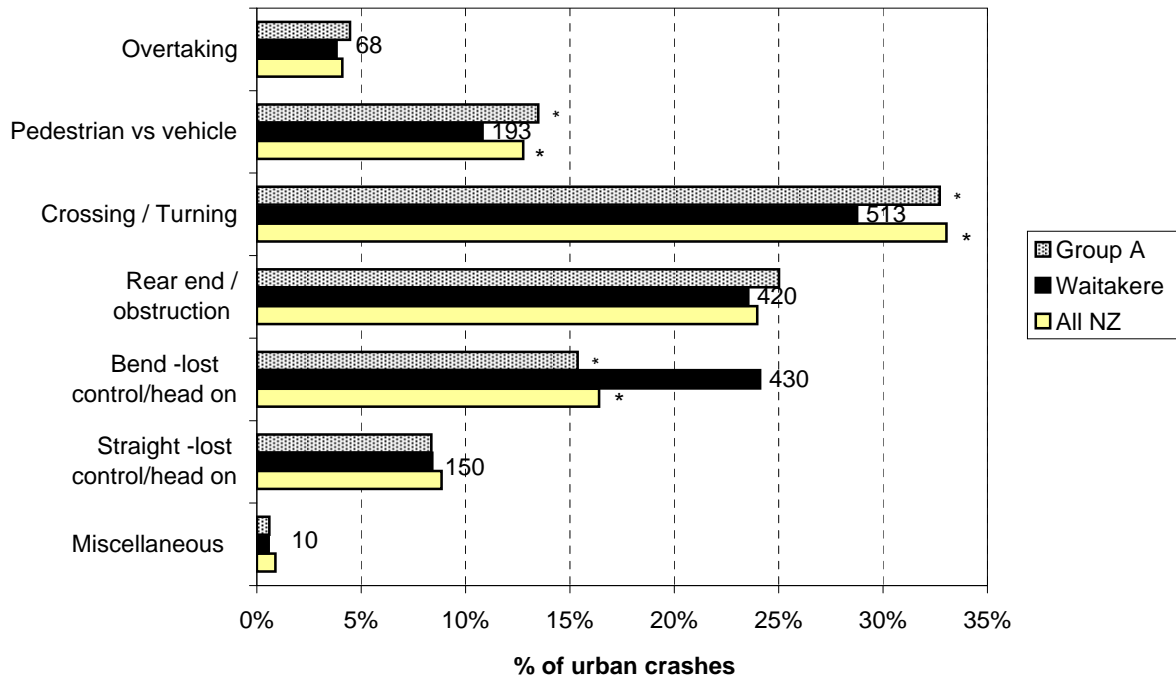


**Figure 3.28 Licence status - rural
Waitakere City**



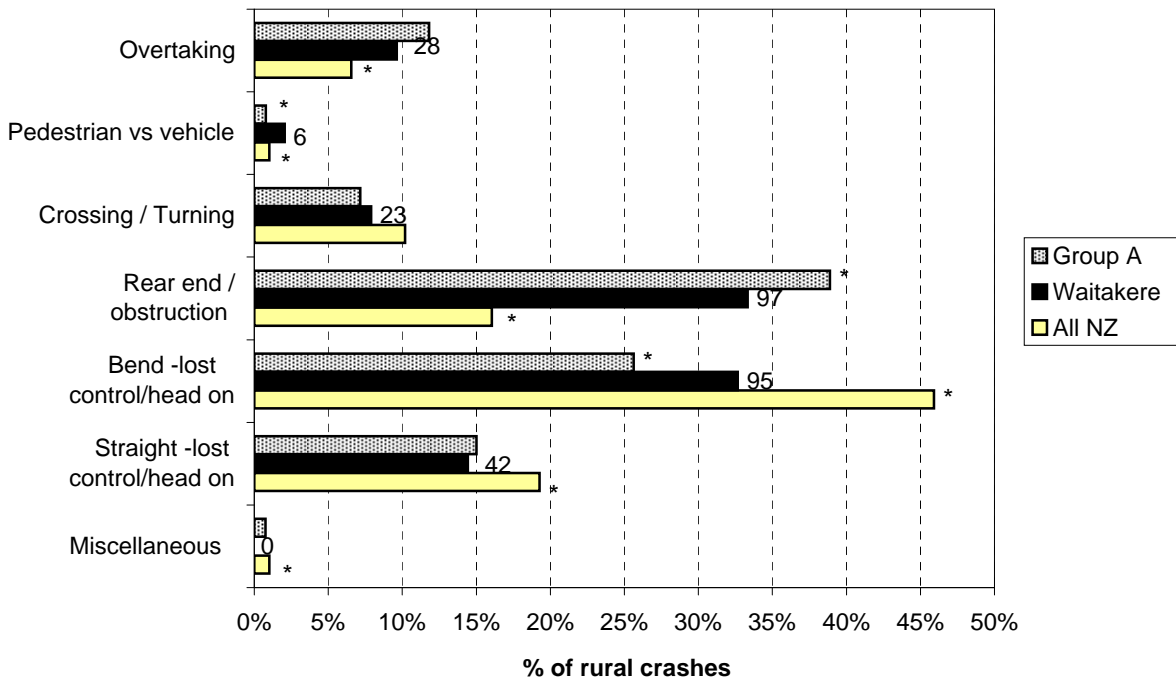
Crash Type Statistics

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



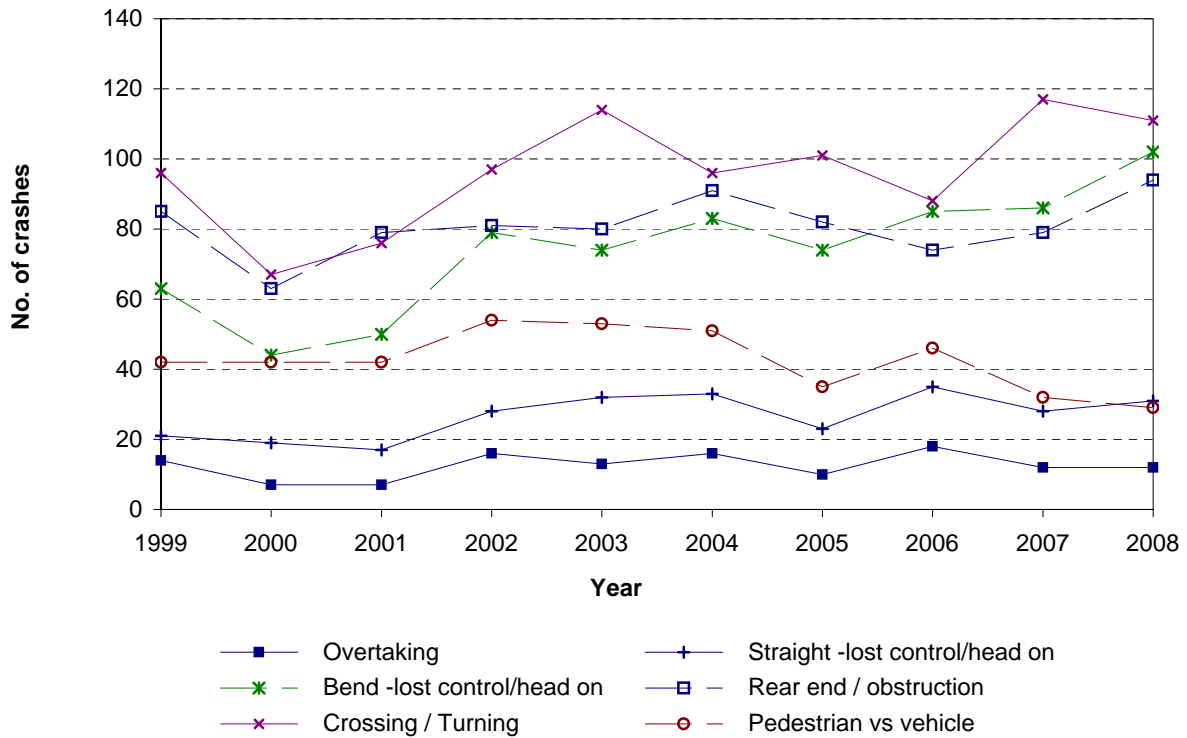
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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

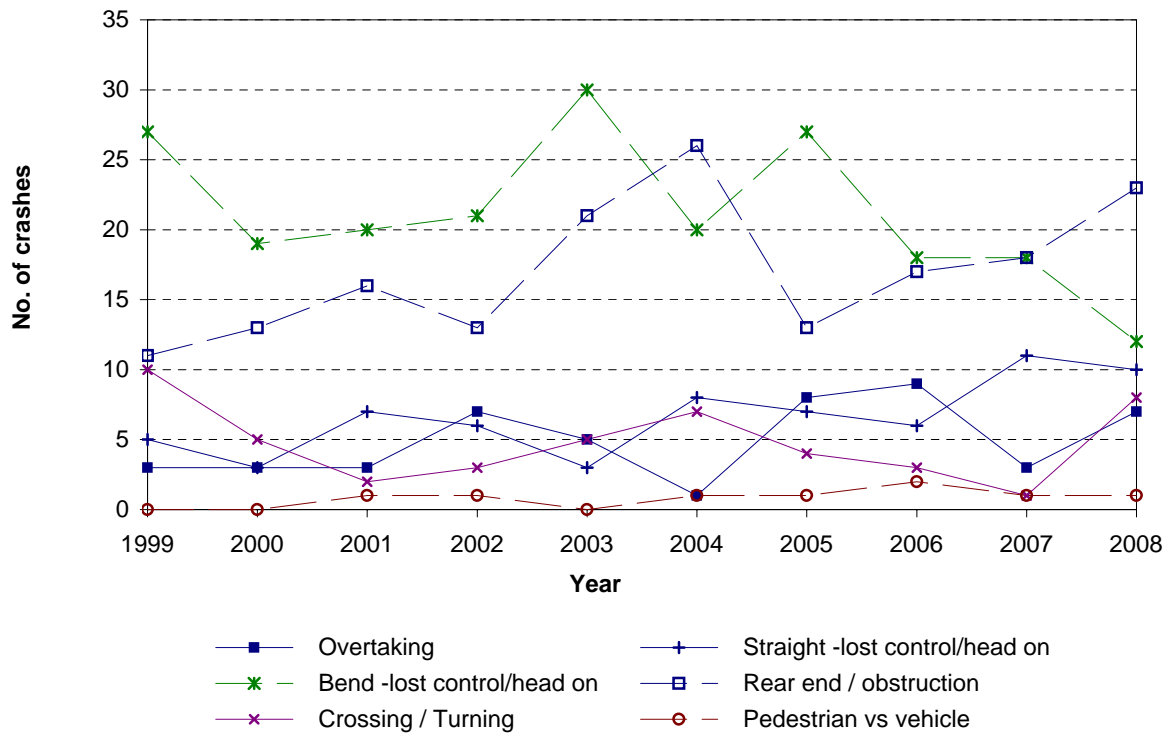


Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

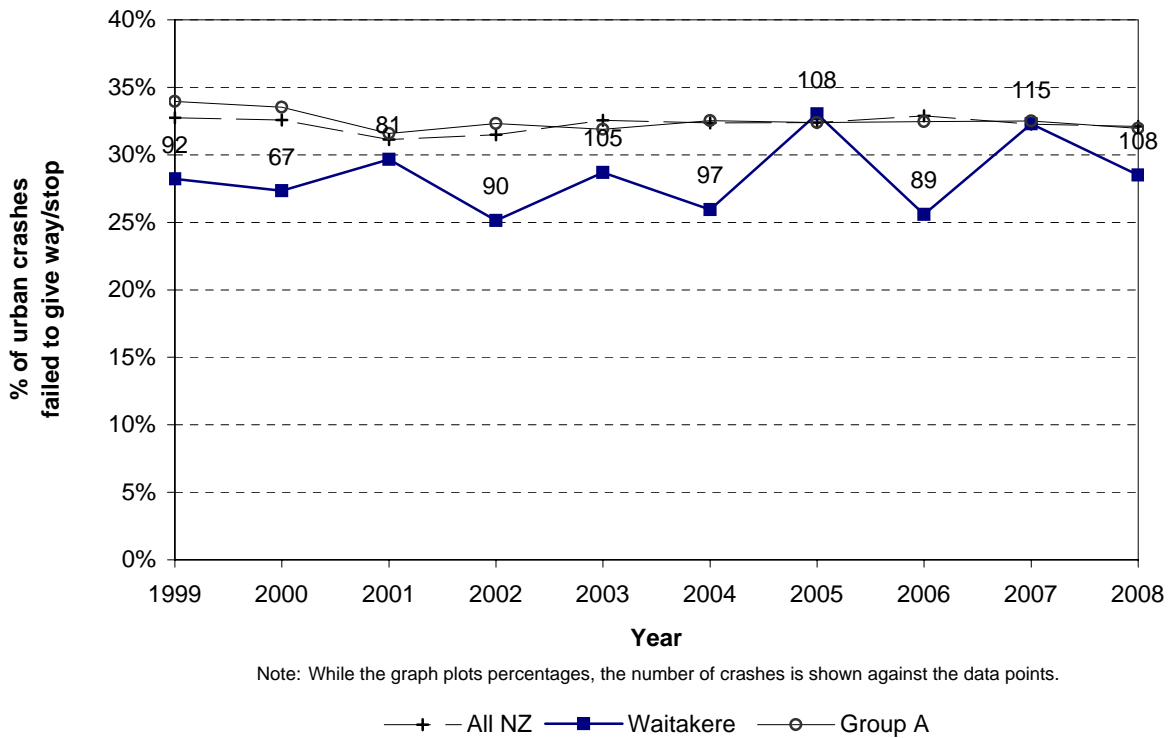
**Figure 4.3 Crash movement type - trends
Waitakere City - urban roads**



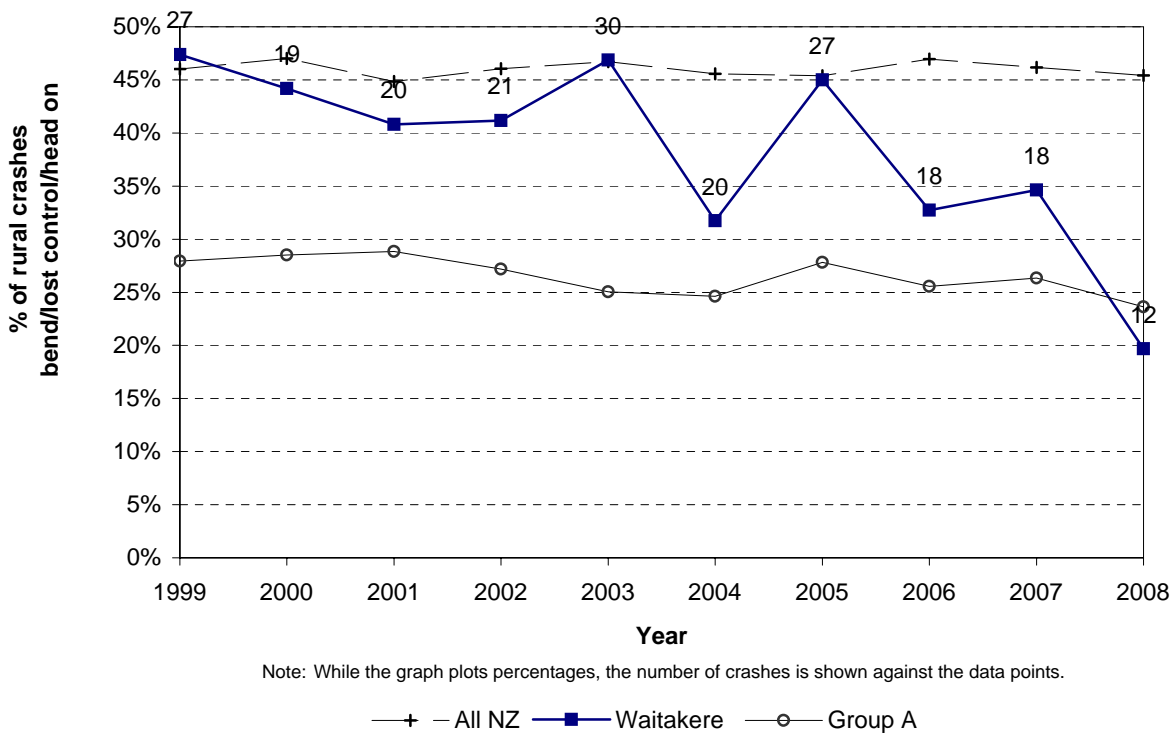
**Figure 4.4 Crash movement type - trends
Waitakere City - rural roads**



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

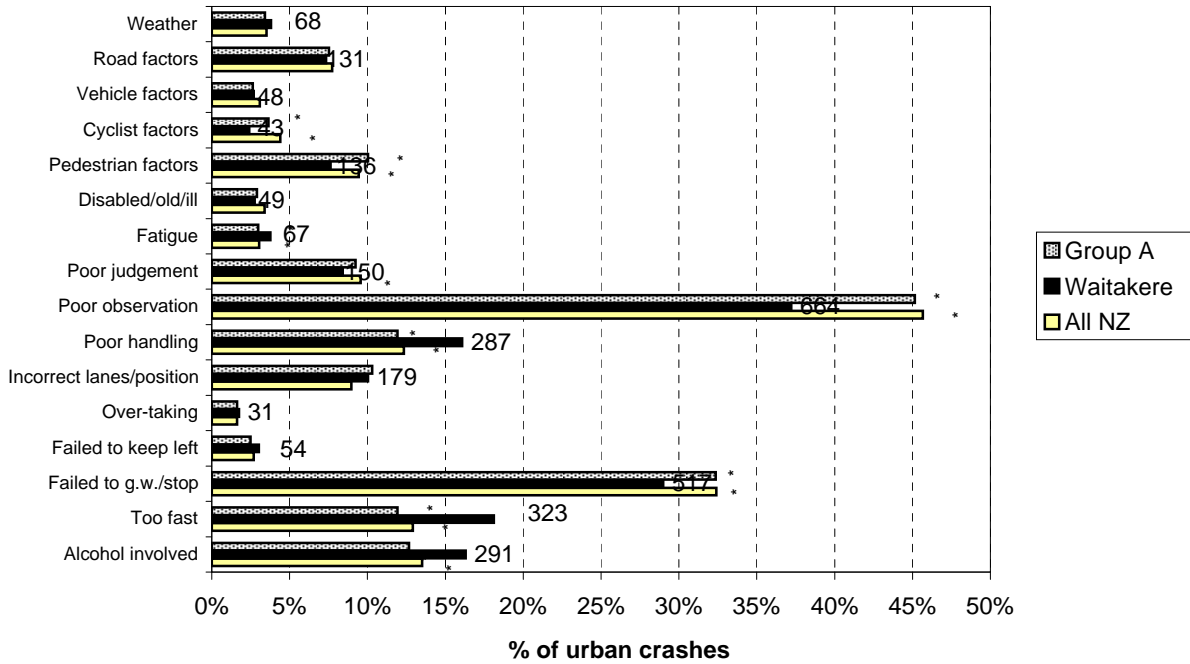


**Figure 4.6 Bend - lost control / head - on
Waitakere City - rural roads**



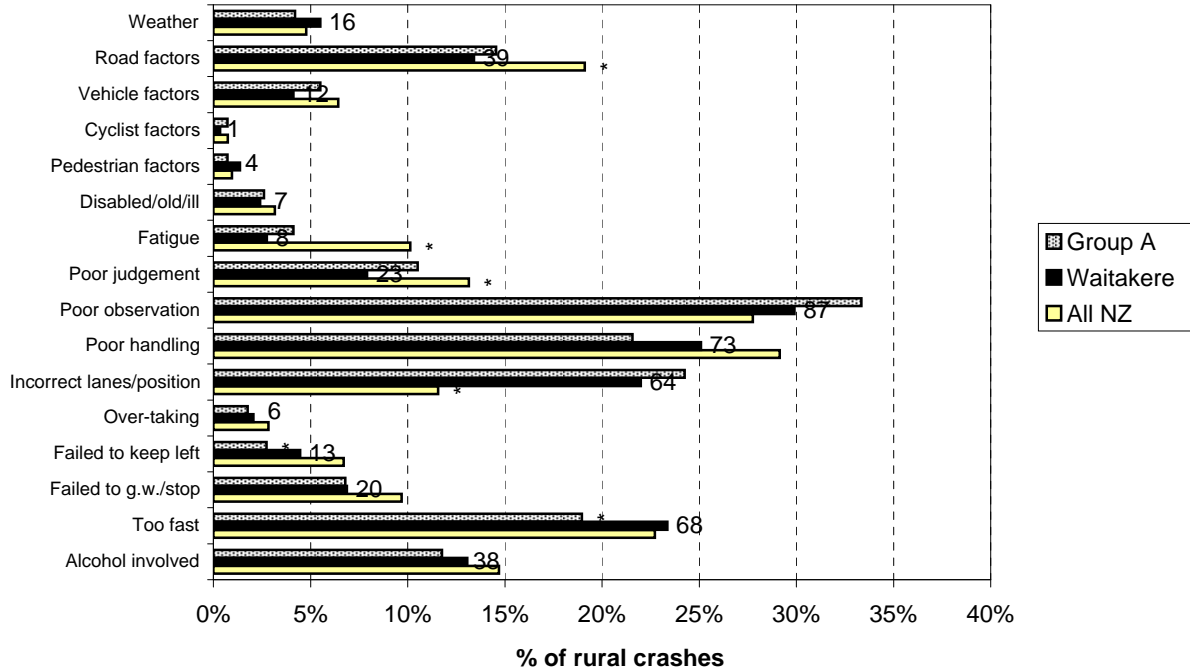
Crash Factor Statistics

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



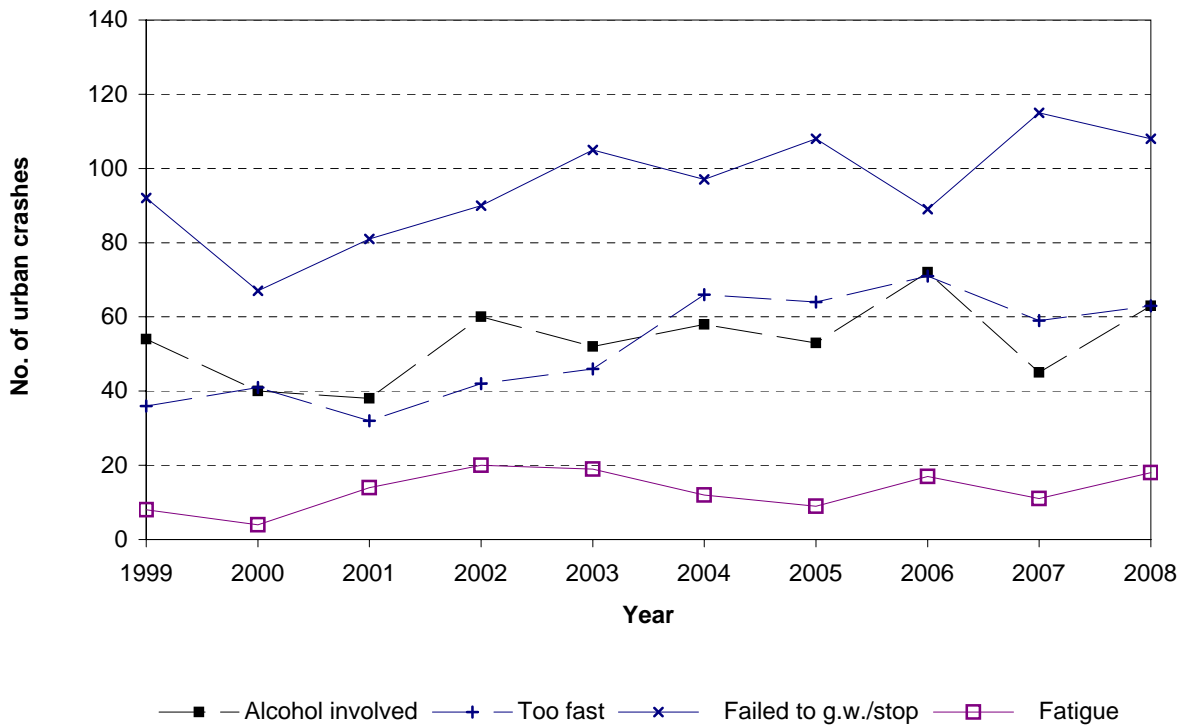
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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

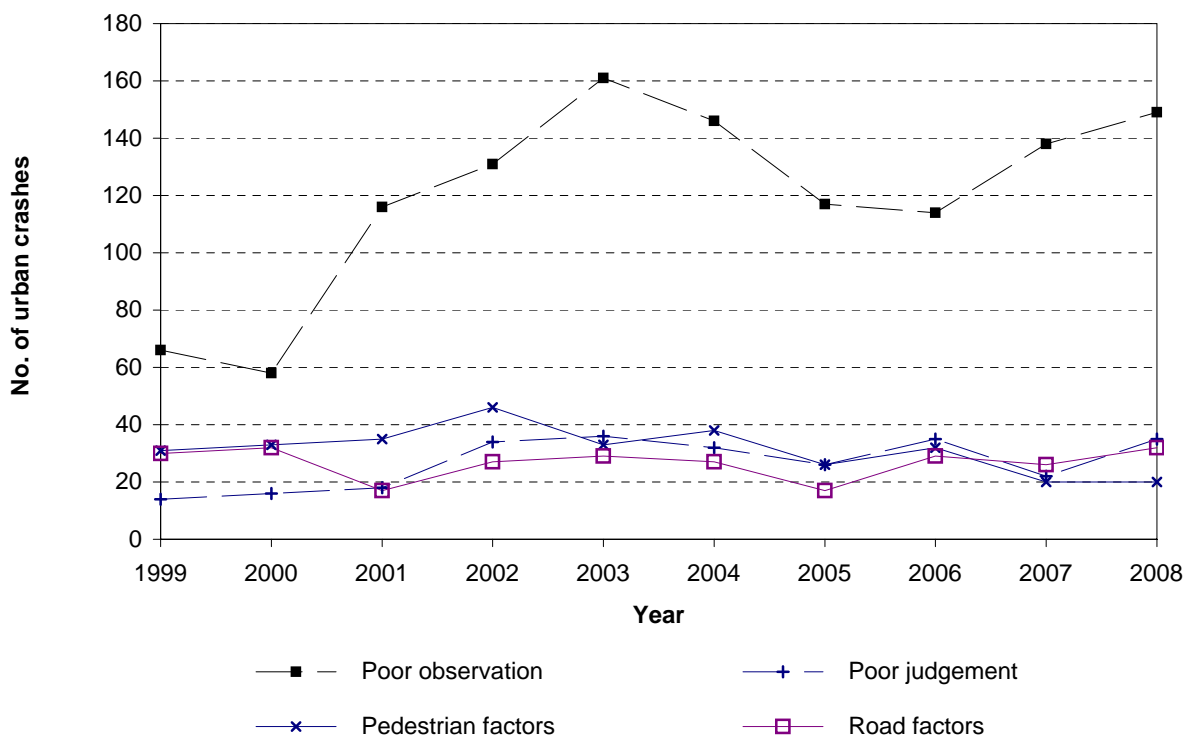


Note: While the graph plots percentages, the number of casualties is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

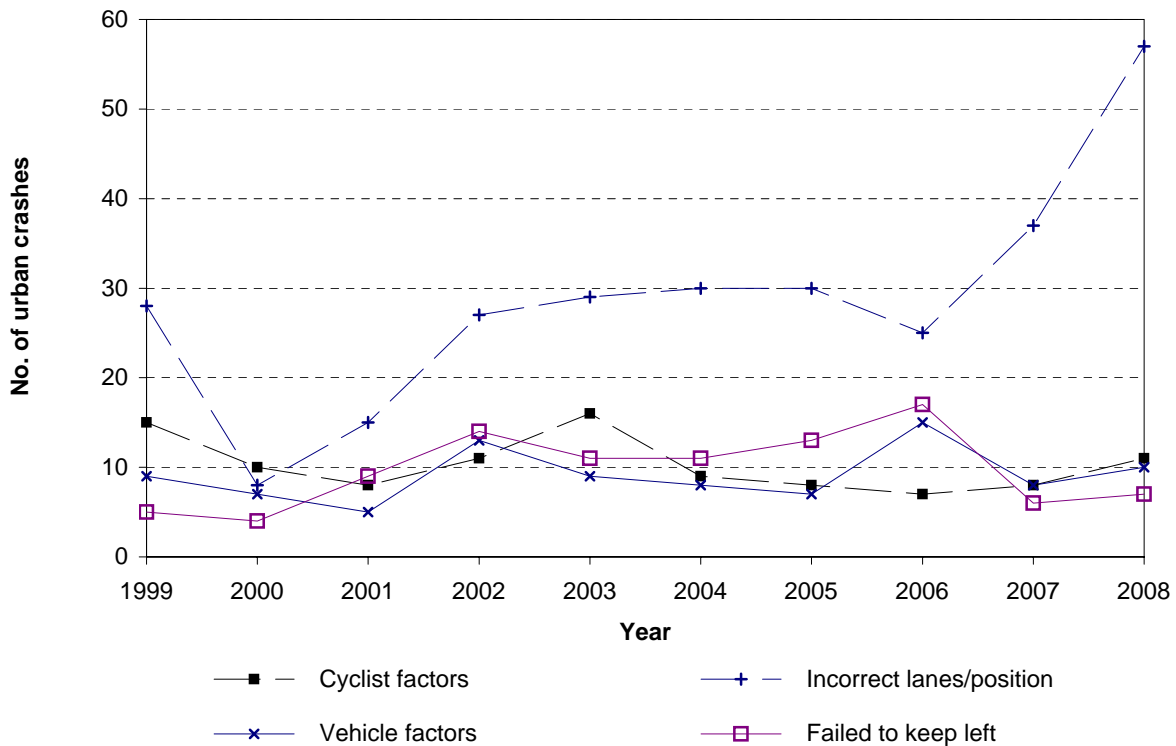
**Figure 5.3 Contributing factor trends
Waitakere City - urban roads**



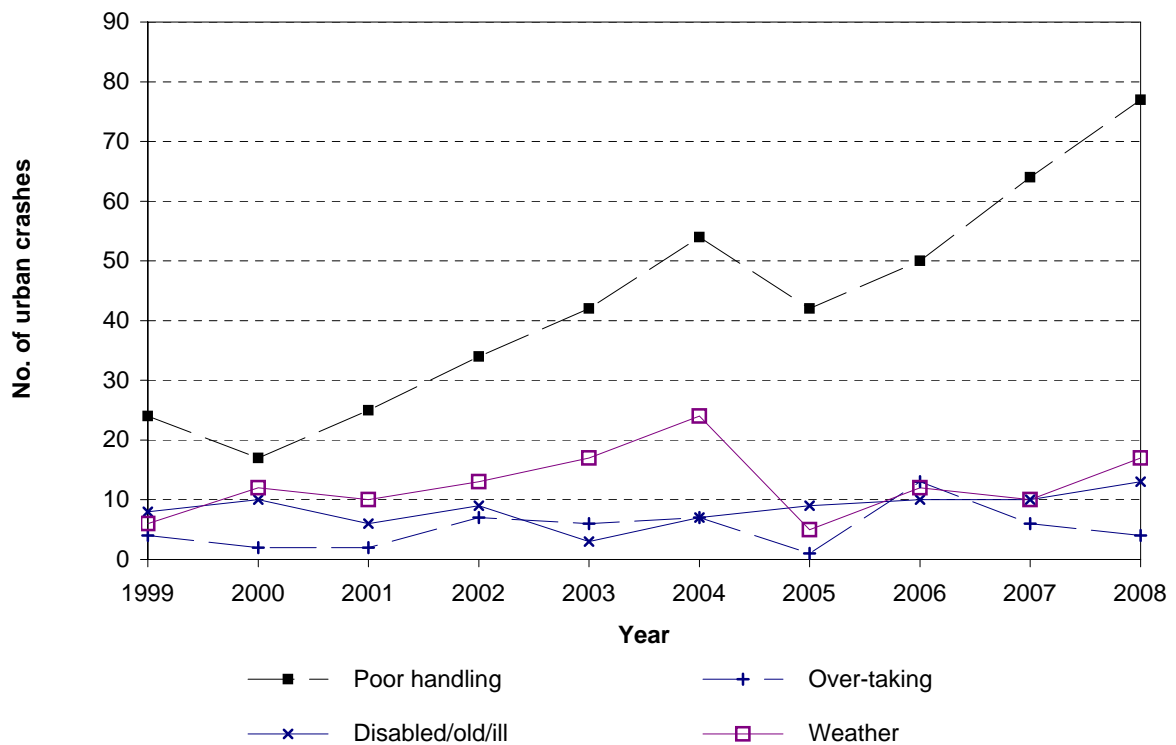
**Figure 5.4 Contributing factor trends
Waitakere City - urban roads**



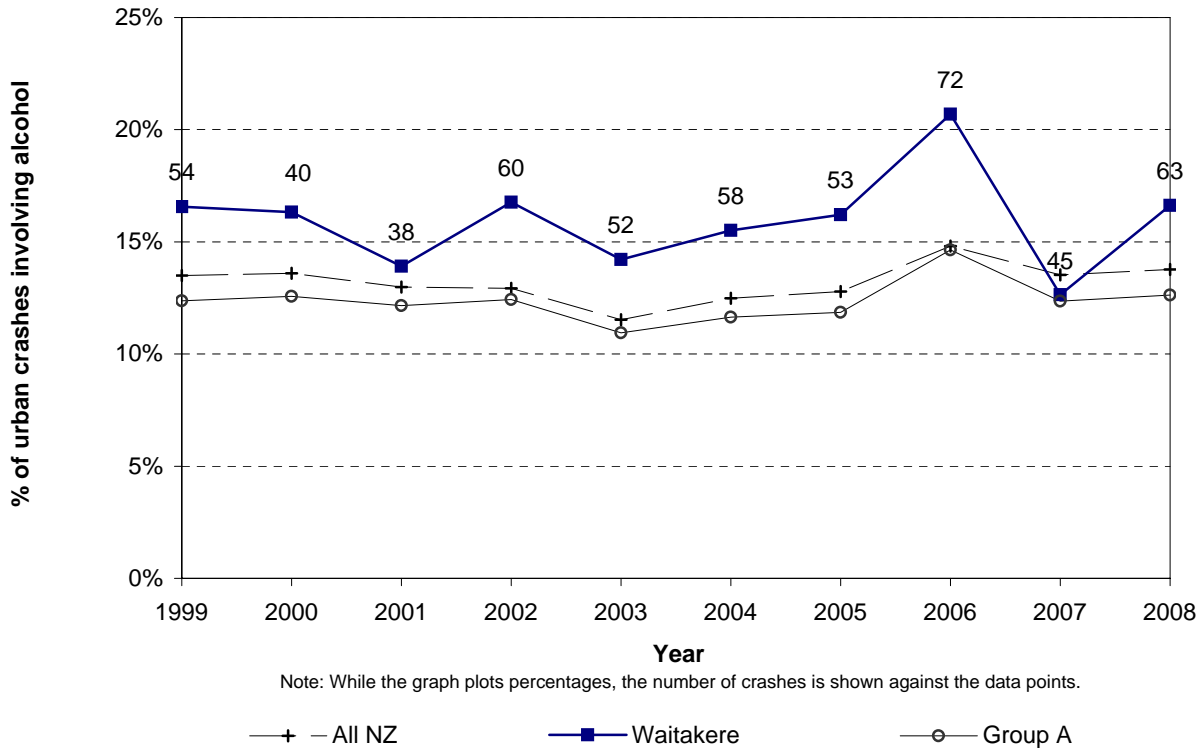
**Figure 5.5 Contributing factor trends
Waitakere City - urban roads**



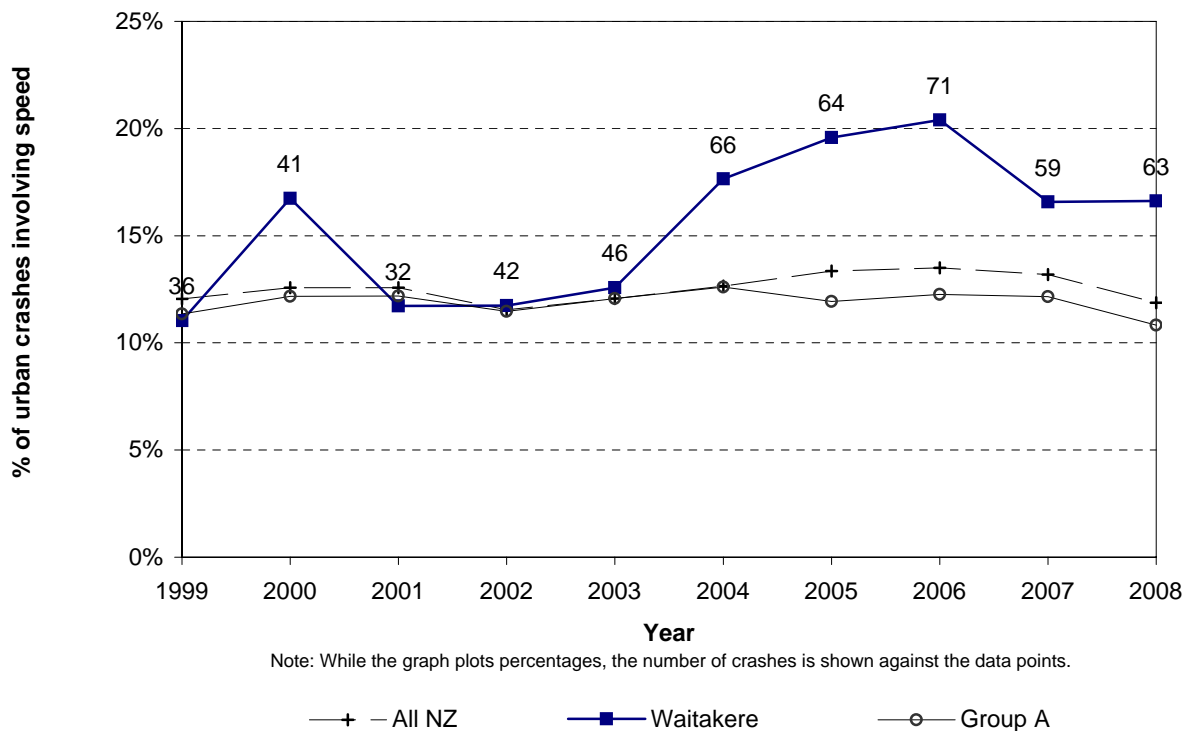
**Figure 5.6 Contributing factor trends
Waitakere City - urban roads**



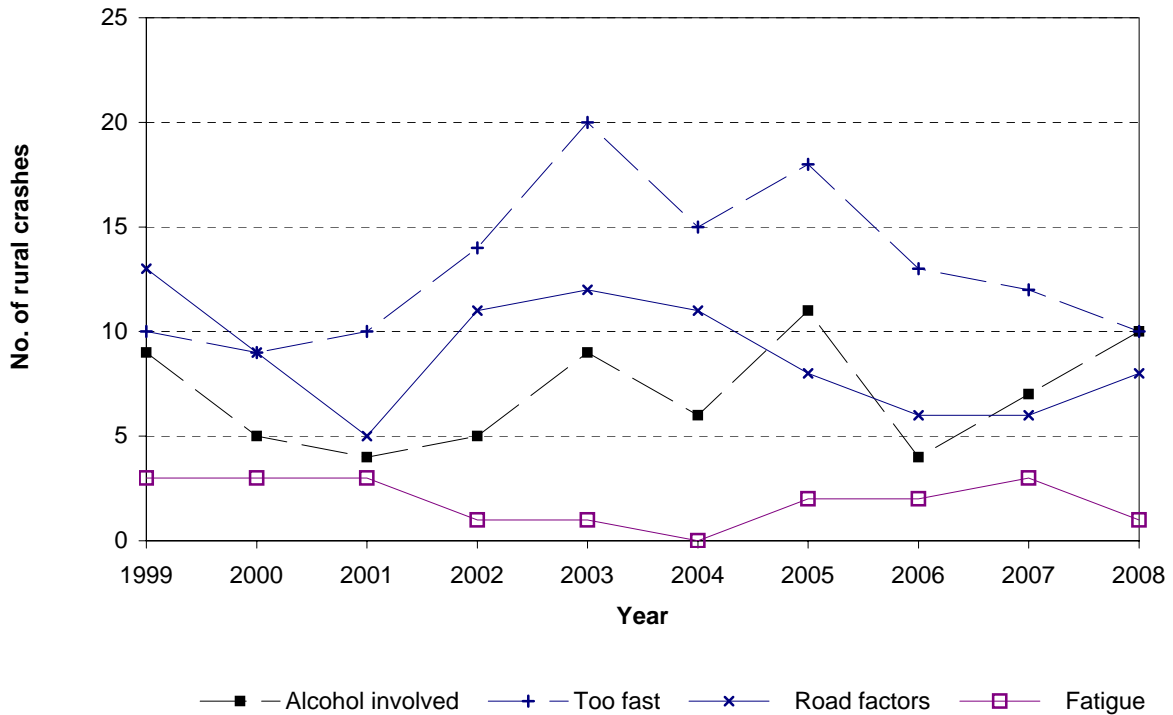
**Figure 5.7 Alcohol involved trend
Waitakere City - urban roads**



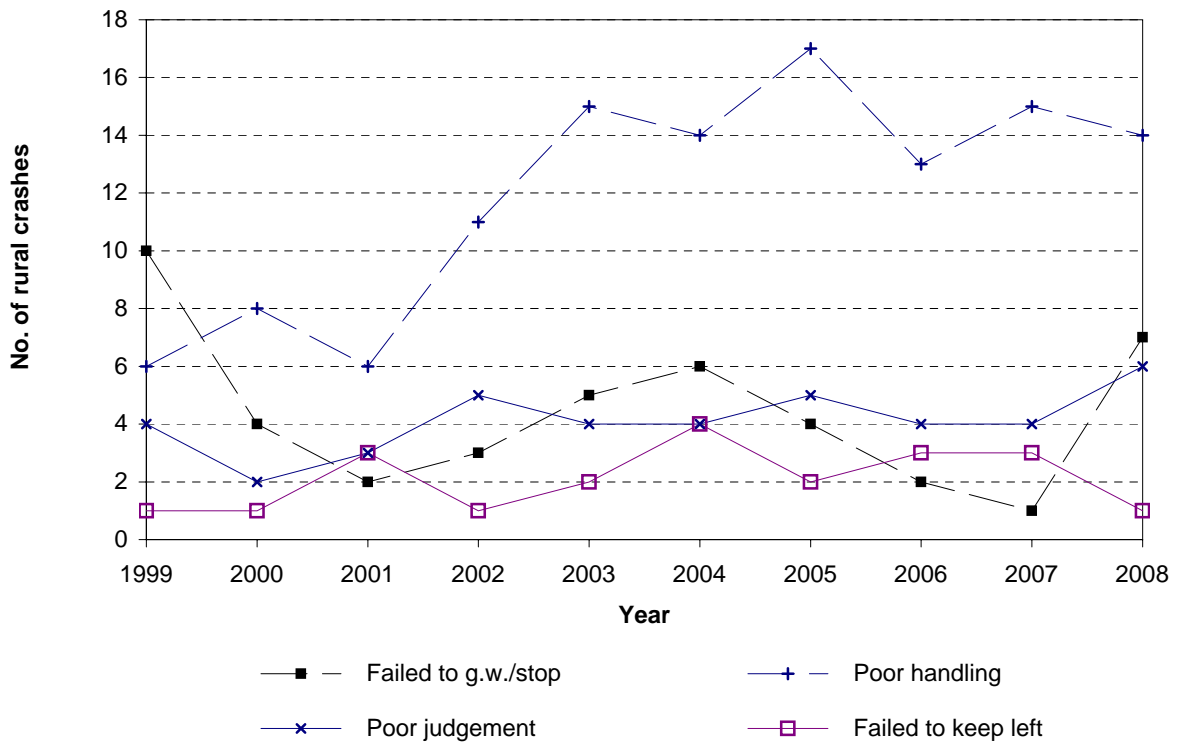
**Figure 5.8 Speed involved trend
Waitakere City - urban roads**



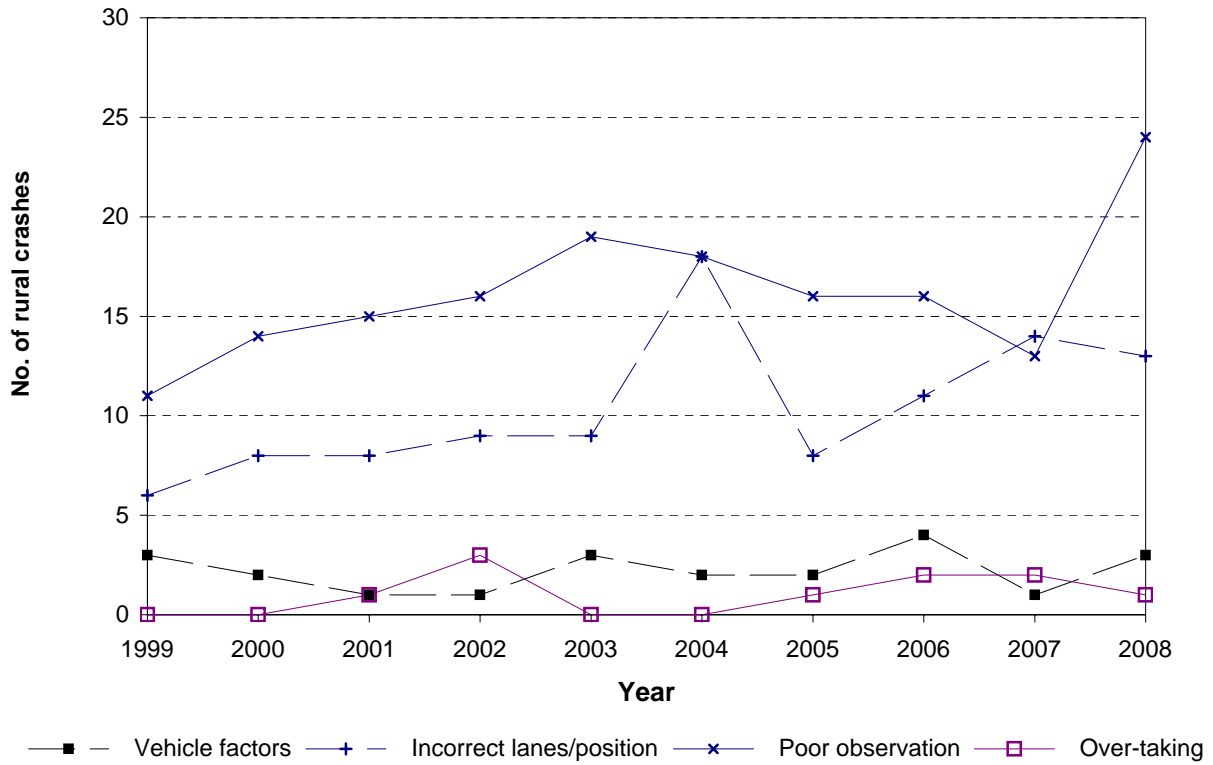
**Figure 5.9 Contributing factor trends
Waitakere City - rural roads**



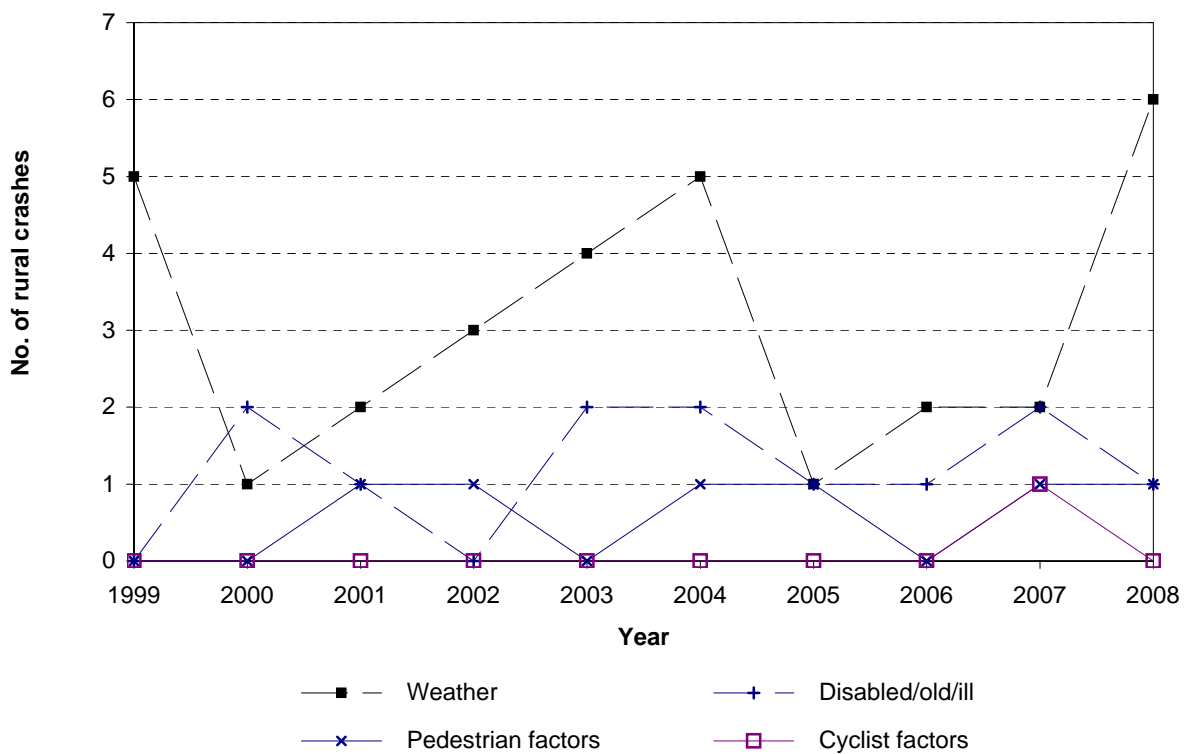
**Figure 5.10 Contributing factor trends
Waitakere City - rural roads**



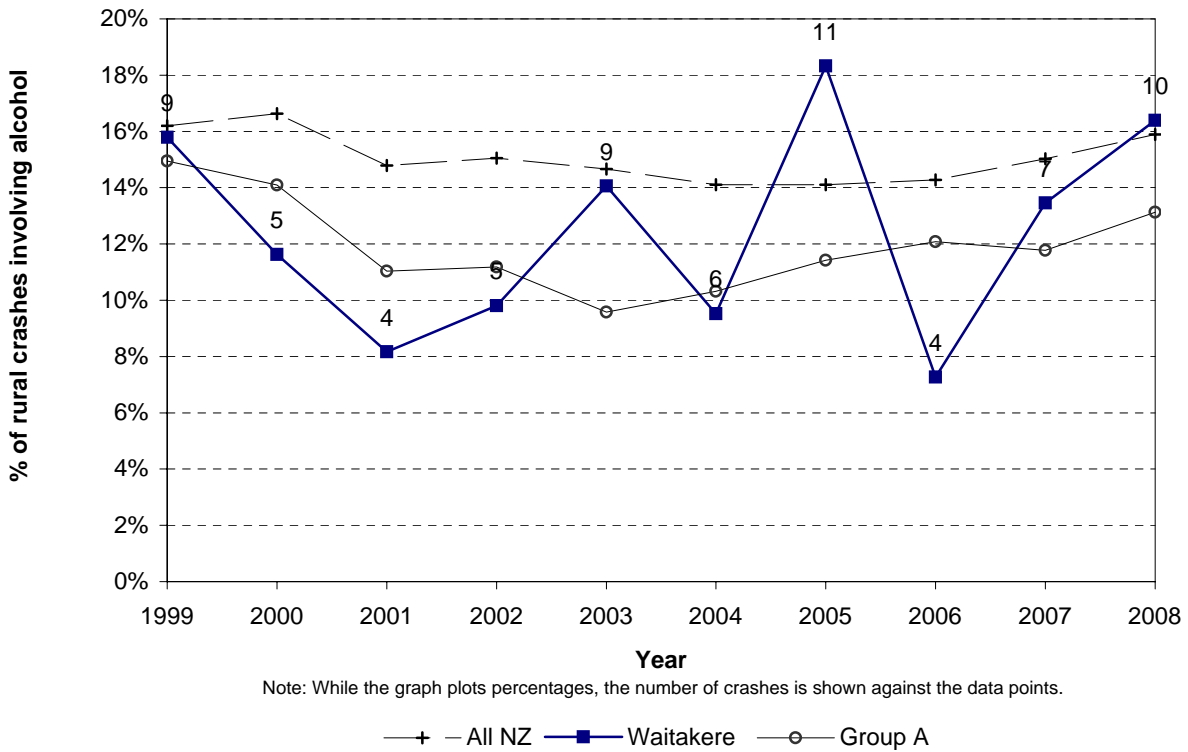
**Figure 5.11 Contributing factor trends
Waitakere City - rural roads**



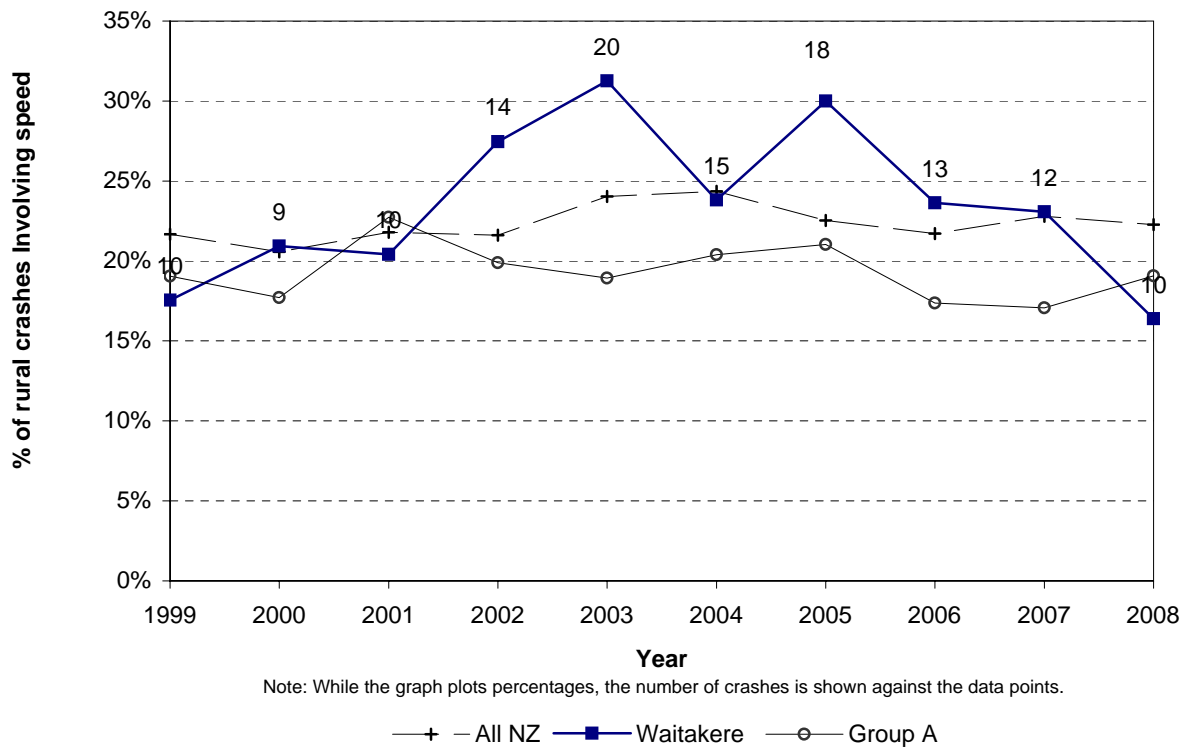
**Figure 5.12 Contributing factor trends
Waitakere City - rural roads**



**Figure 5.13 Alcohol involved trend
Waitakere City - rural roads**

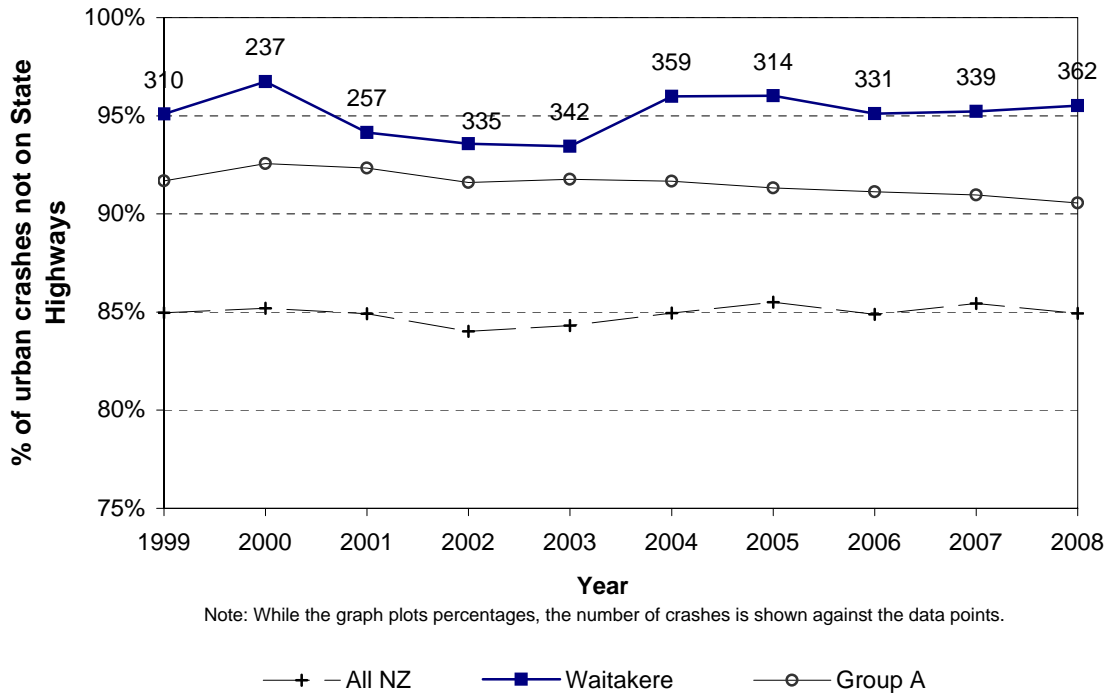


**Figure 5.14 Speed involved trend
Waitakere City - rural roads**

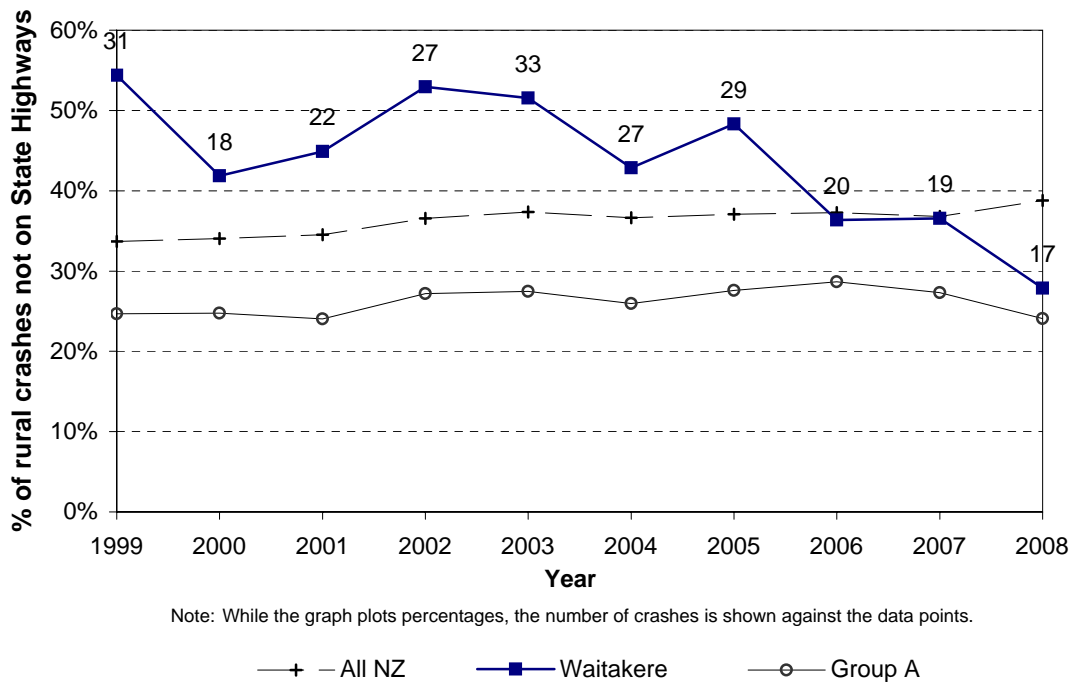


Environmental Statistics

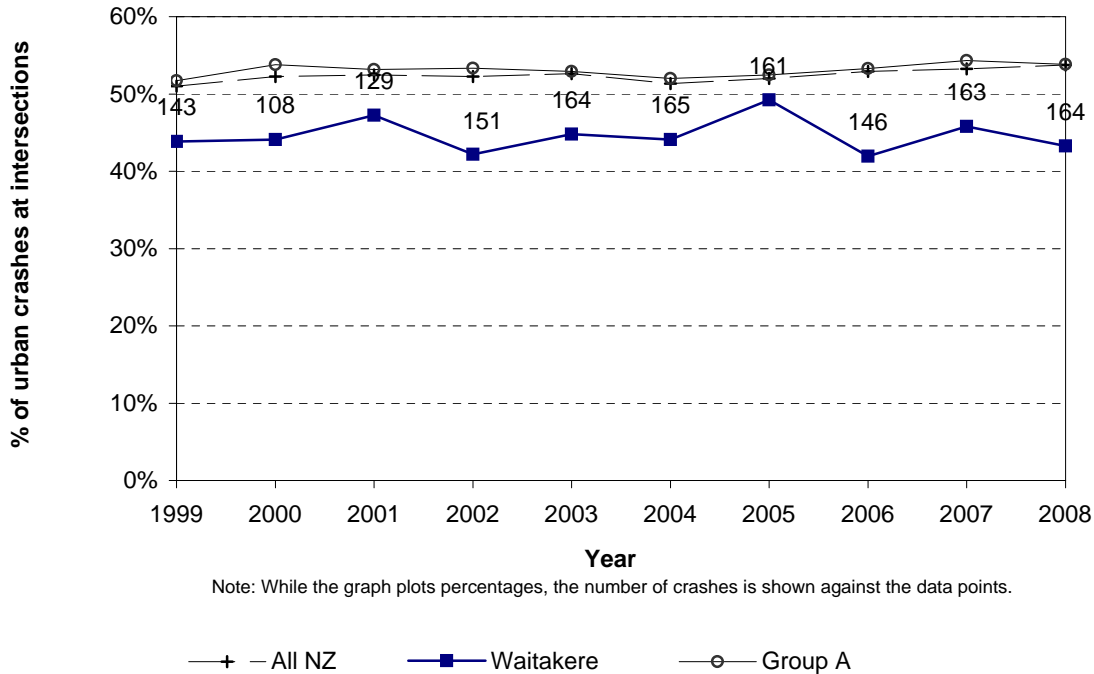
**Figure 6.1 Crashes not on state highways
Waitakere City - urban roads**



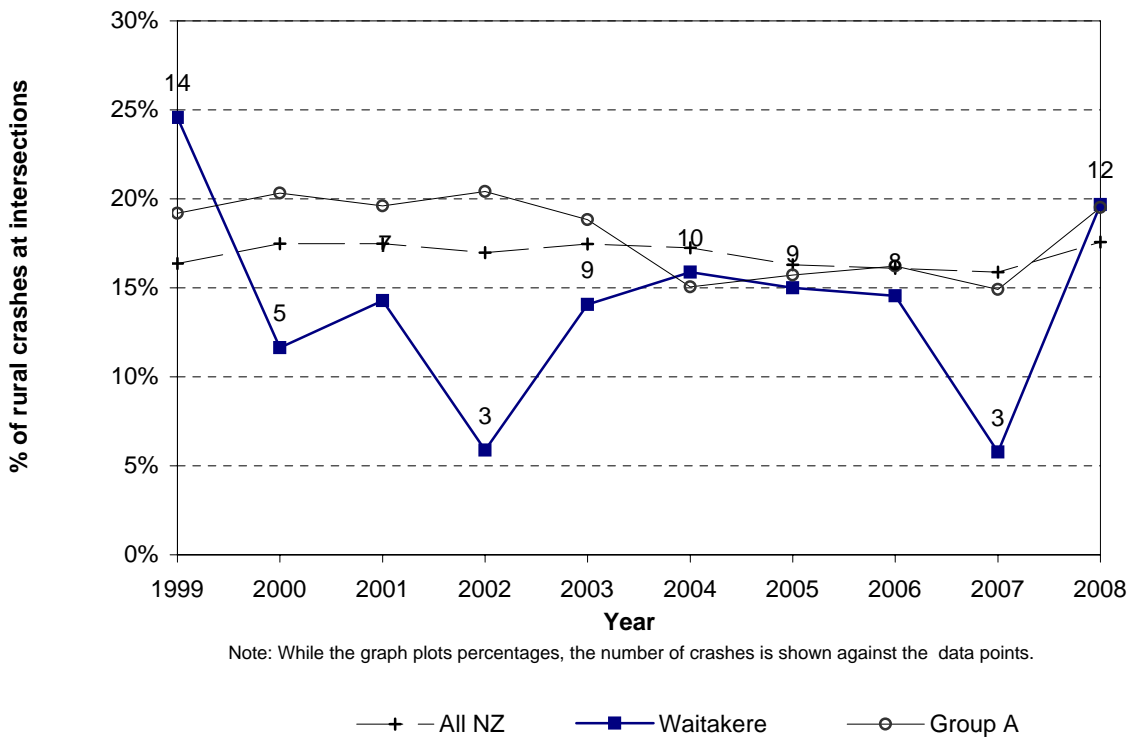
**Figure 6.2 Crashes not on state highways
Waitakere City - rural roads**



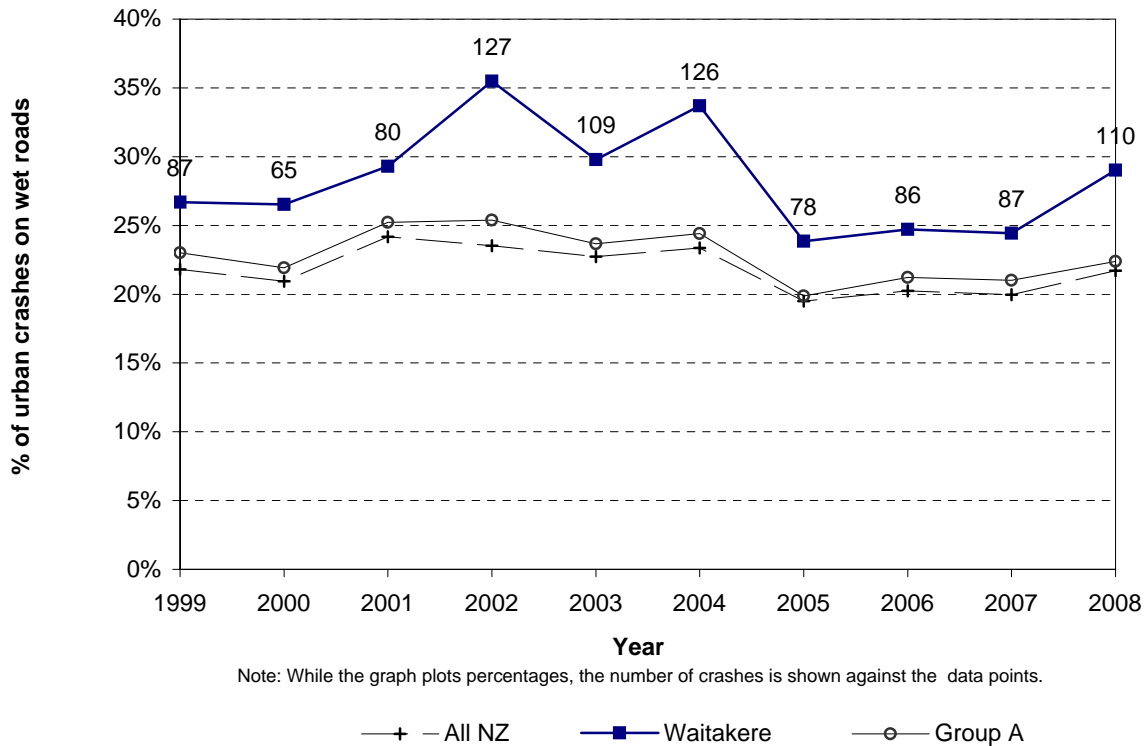
**Figure 6.3 Intersection crashes
Waitakere City - urban roads**



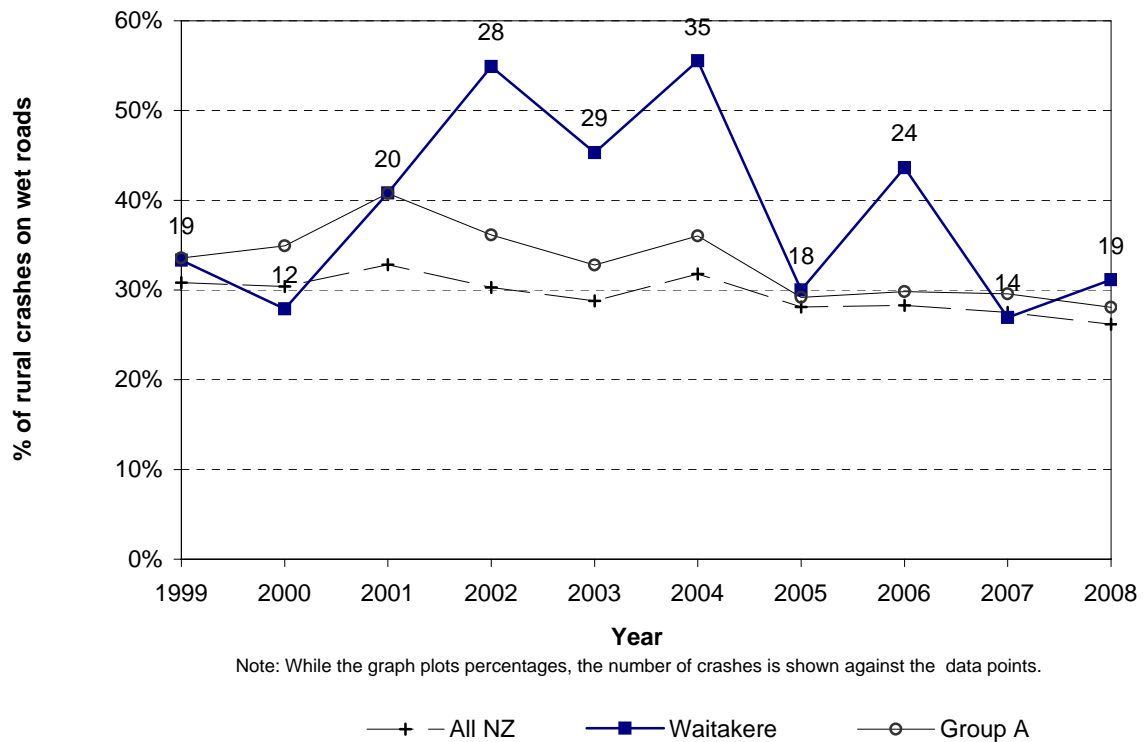
**Figure 6.4 Intersection crashes
Waitakere City - rural roads**



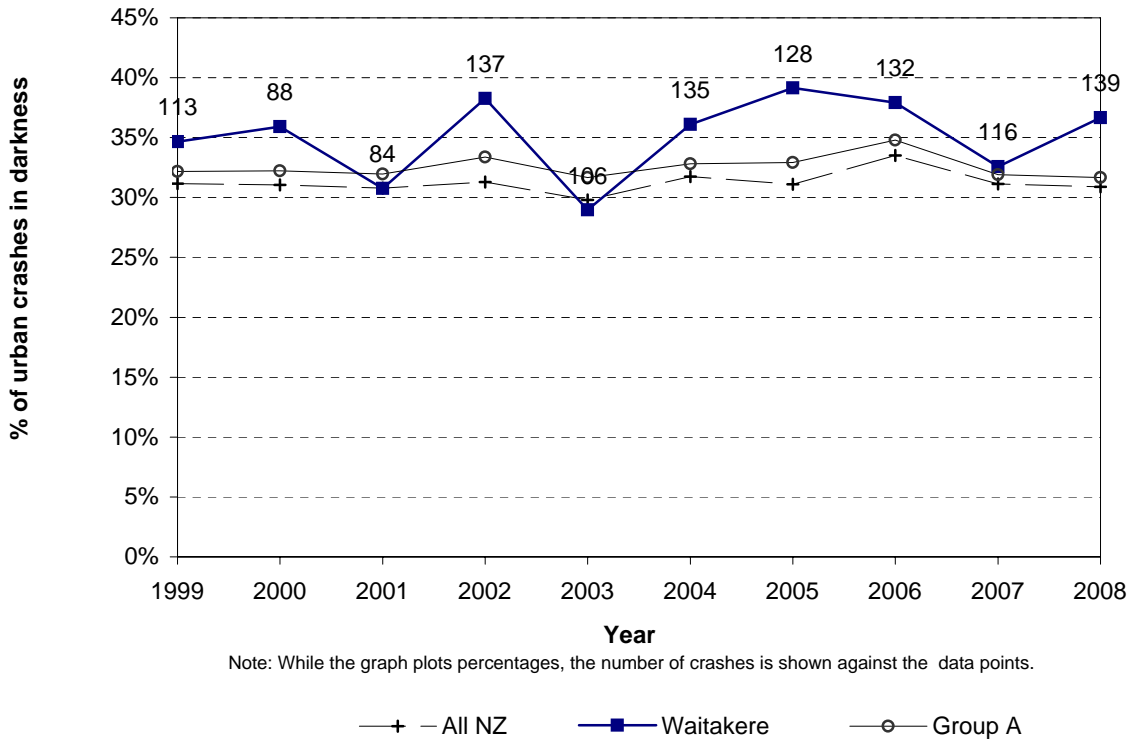
**Figure 6.5 Wet road crashes
Waitakere City - urban roads**



**Figure 6.6 Wet road crashes
Waitakere City - rural roads**



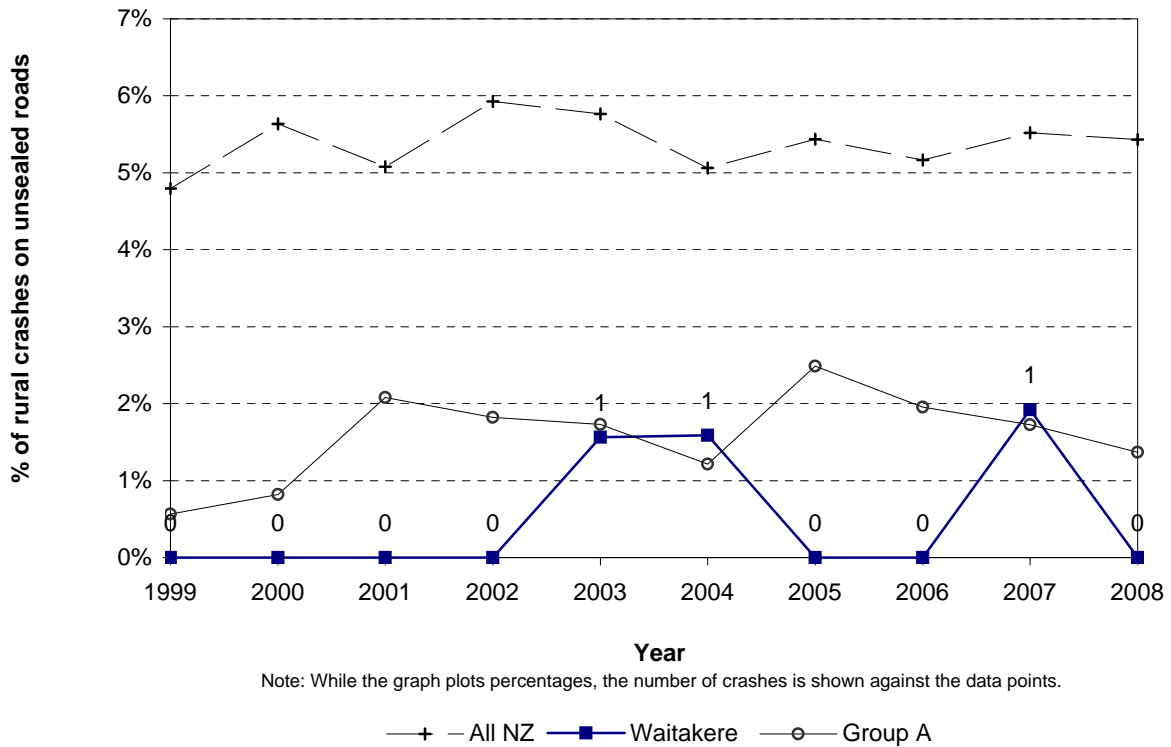
**Figure 6.7 Crashes in darkness
Waitakere City - urban roads**



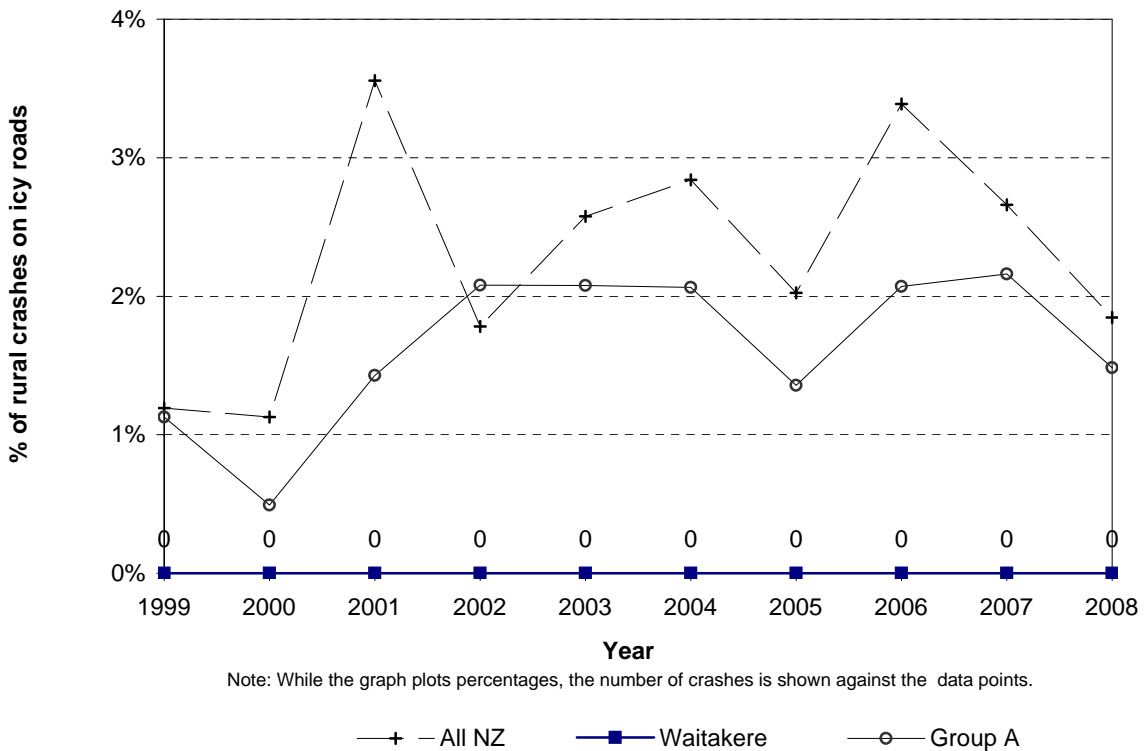
**Figure 6.8 Crashes in darkness
Waitakere City - rural roads**



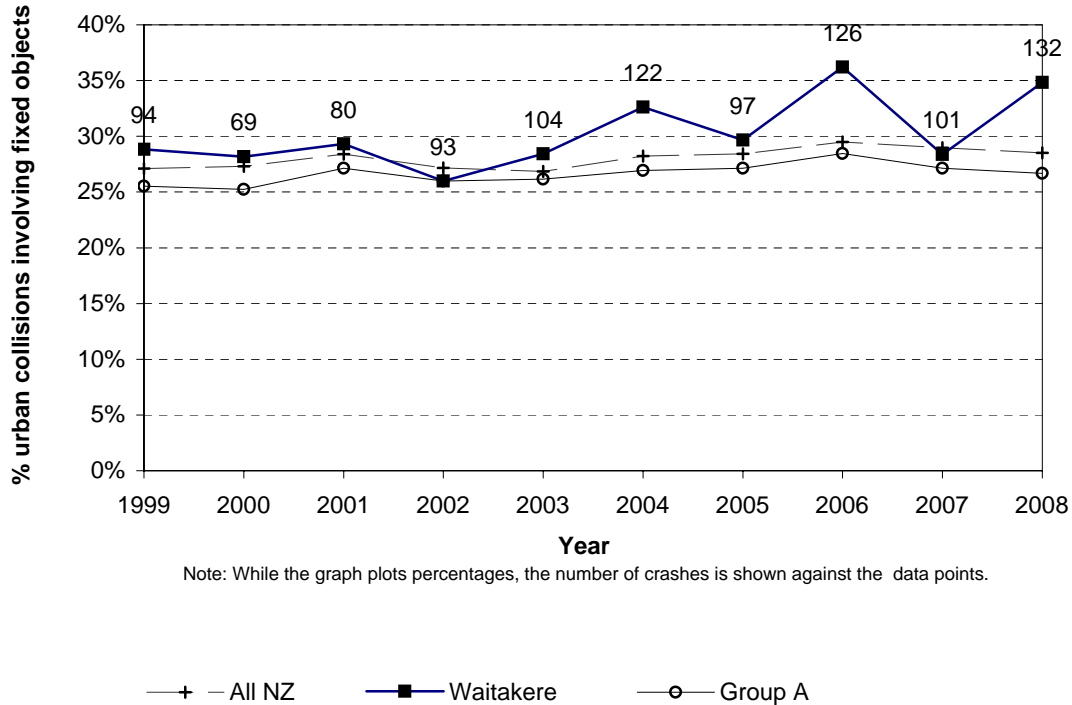
**Figure 6.9 Unsealed road crashes
Waitakere City - rural roads**



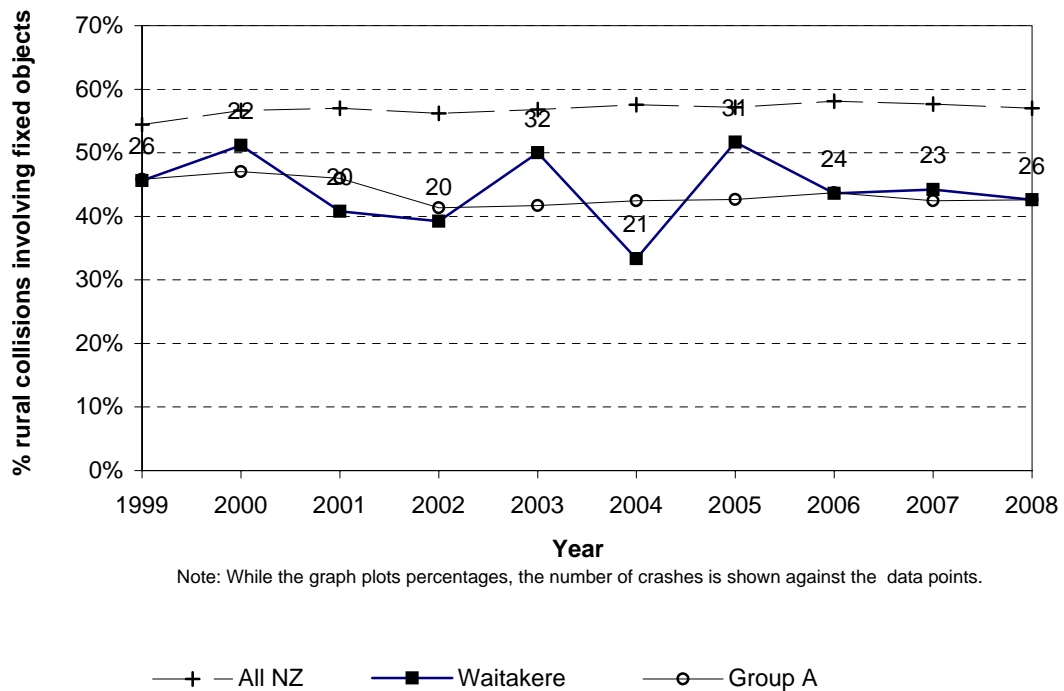
**Figure 6.10 Icy road crashes
Waitakere City - rural roads**



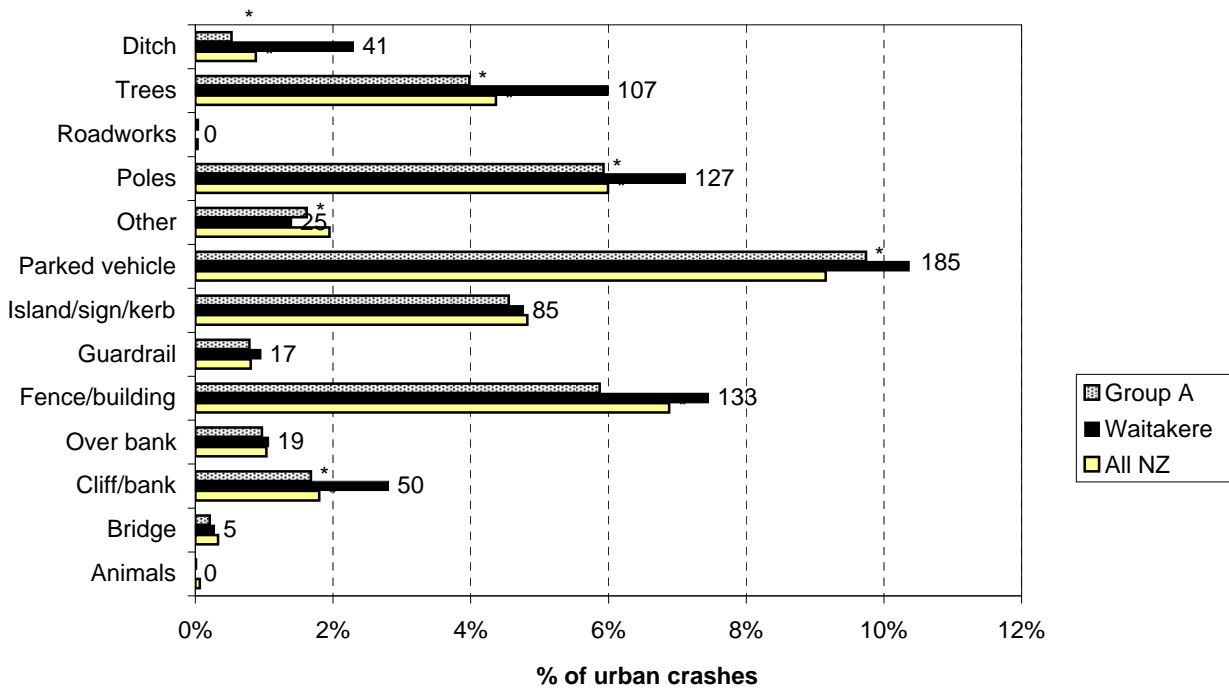
**Figure 6.11 Collisions with objects
Waitakere City - urban roads**



**Figure 6.12 Collisions with objects
Waitakere City - rural roads**

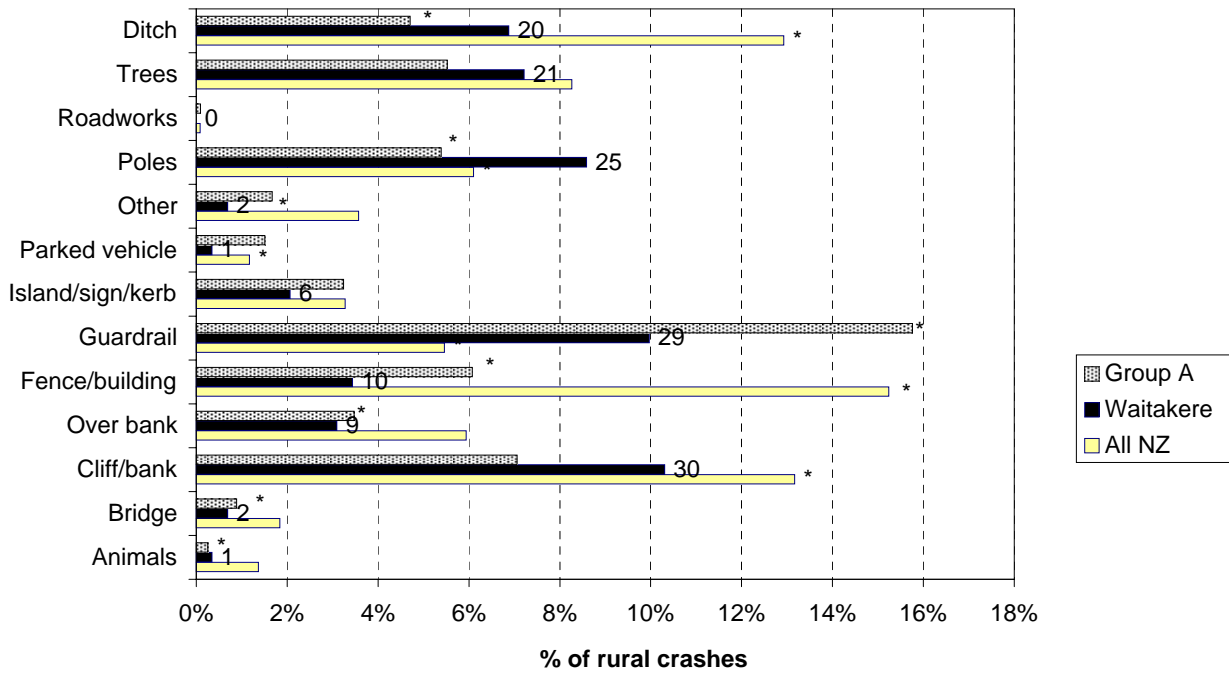


**Figure 6.13 Objects struck - urban
Waitakere City (2004-2008)**



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

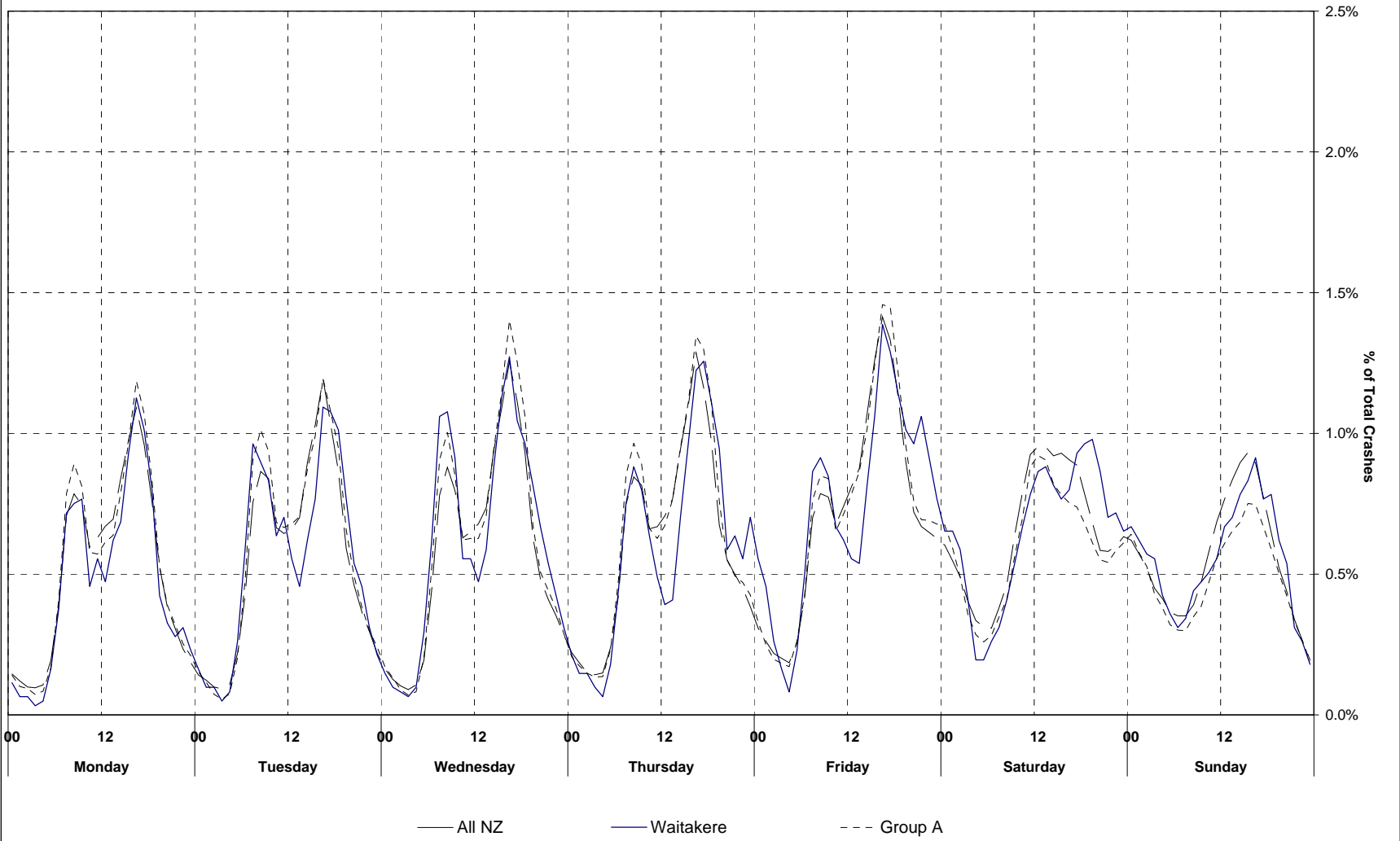
**Figure 6.14 Objects struck - rural
Waitakere City (2004-2008)**



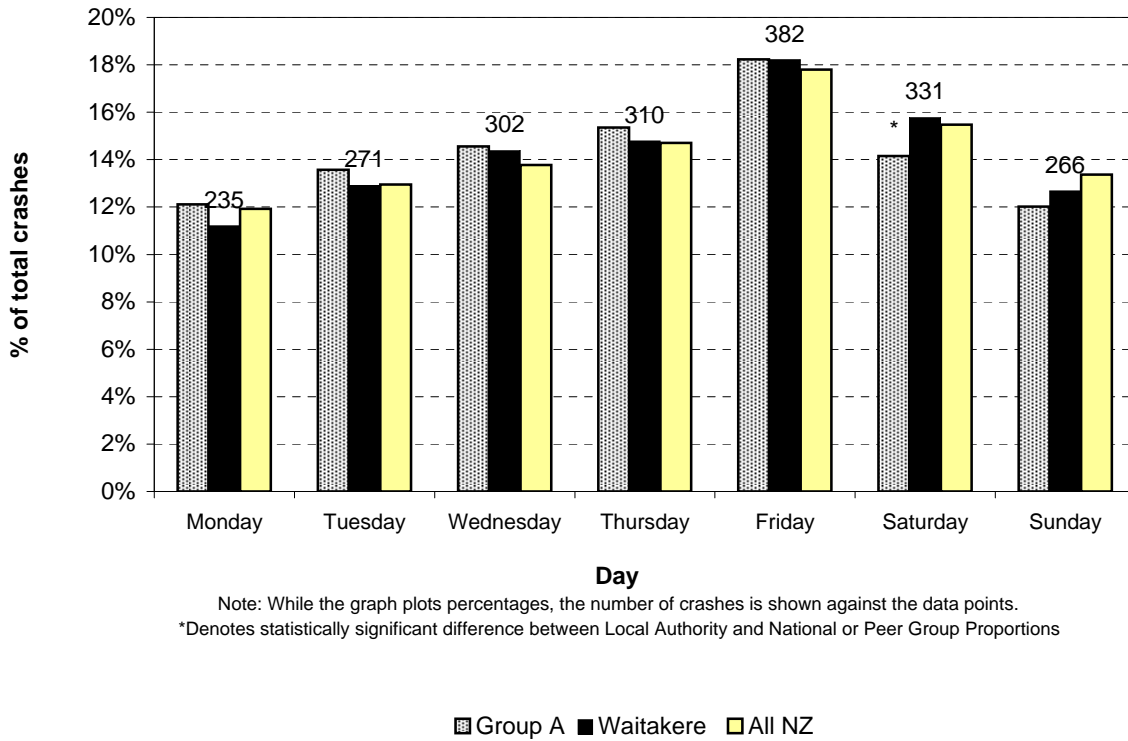
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

Date and Time Statistics

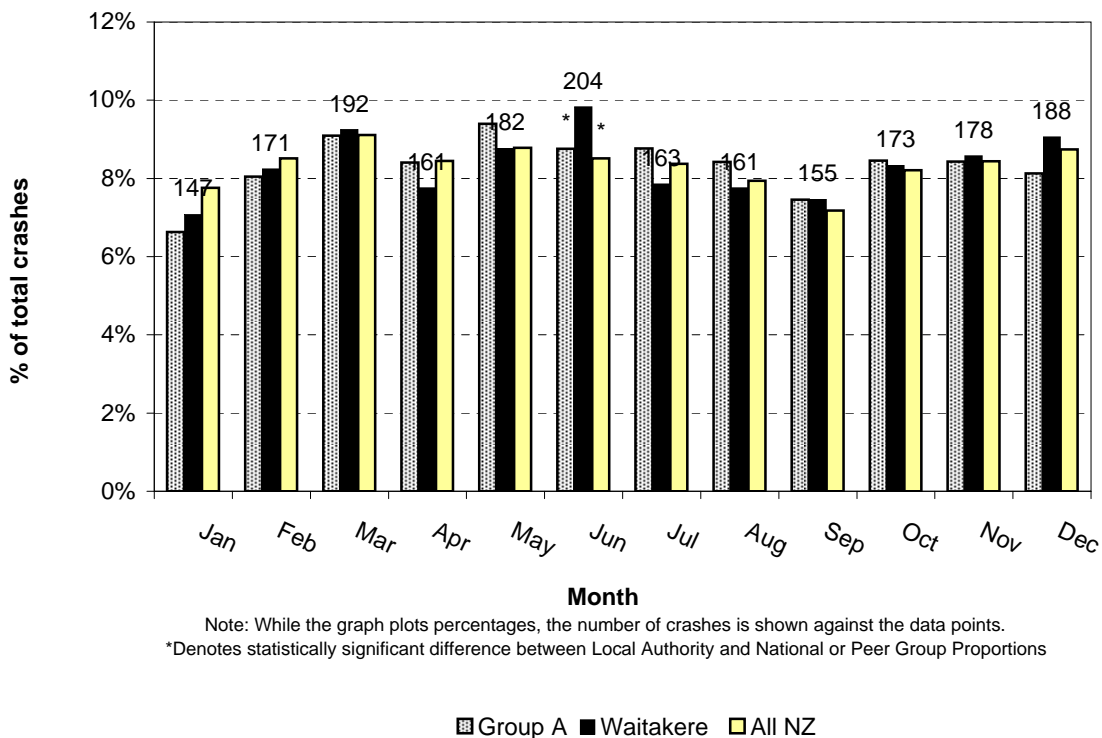
Figure 7.1 Time pattern over average week
Waitakere City (2004-2008)



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



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



Local Road Statistics

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

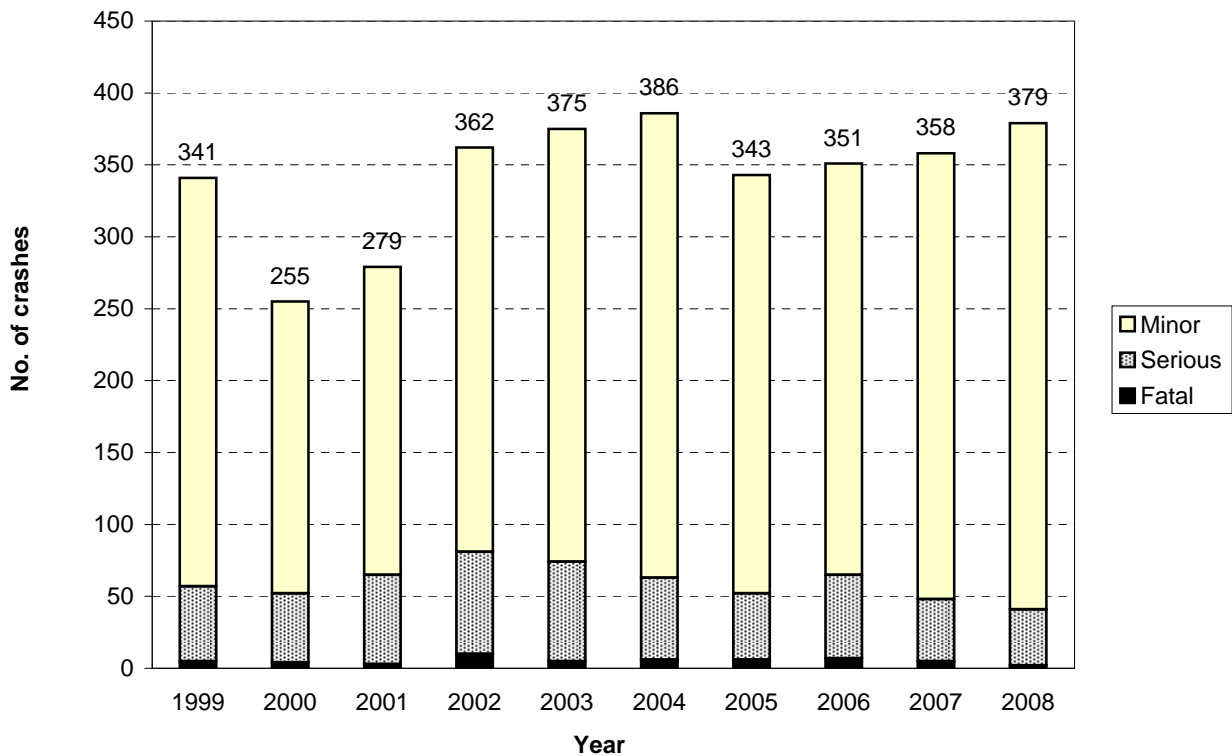
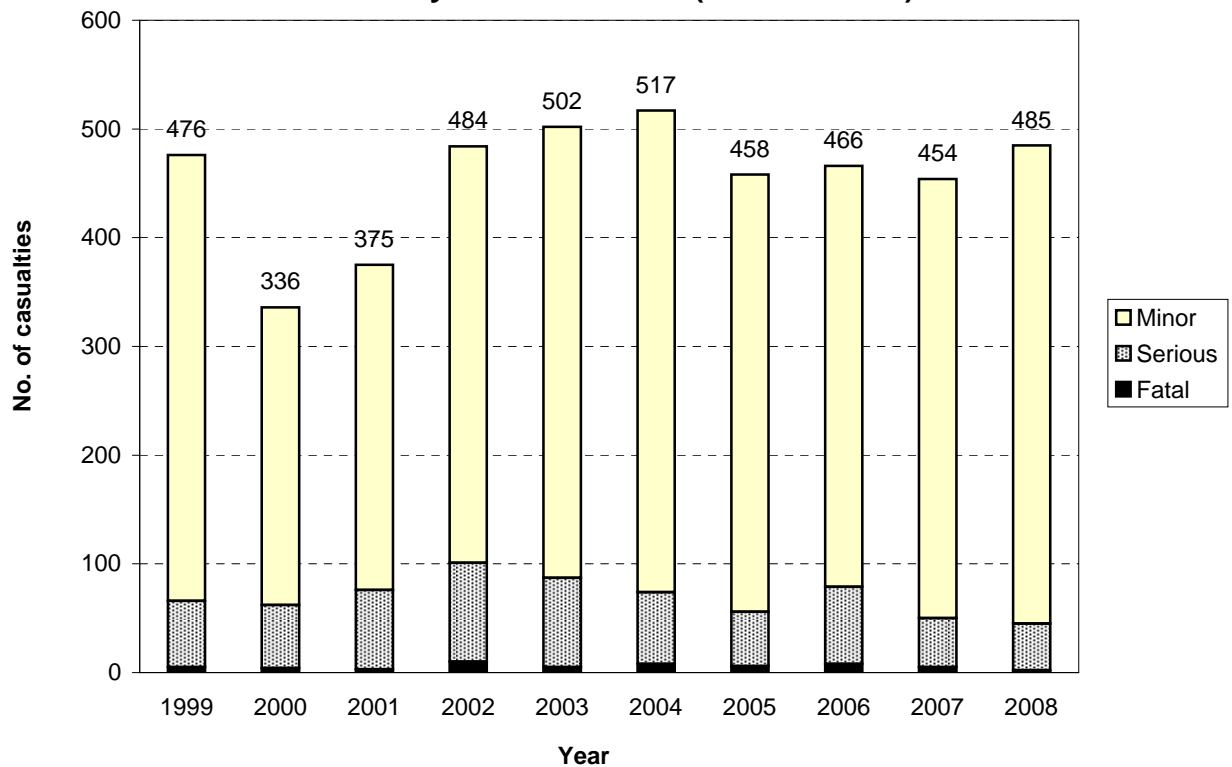
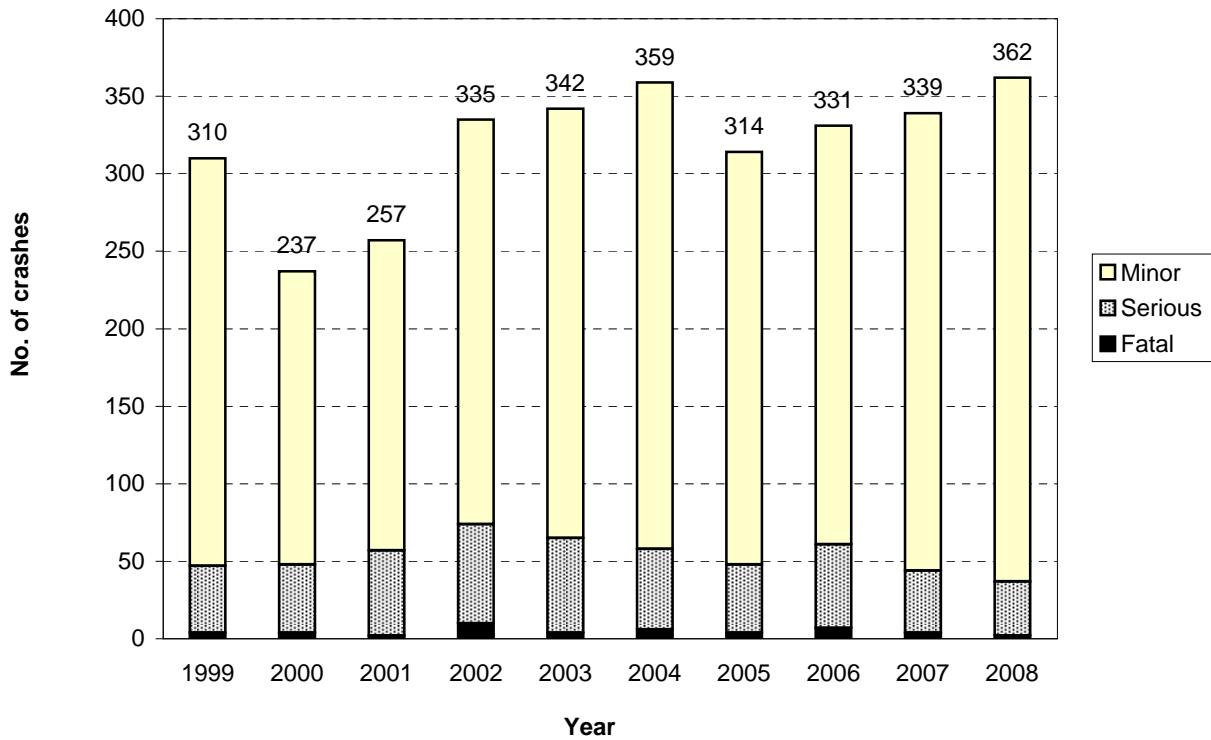


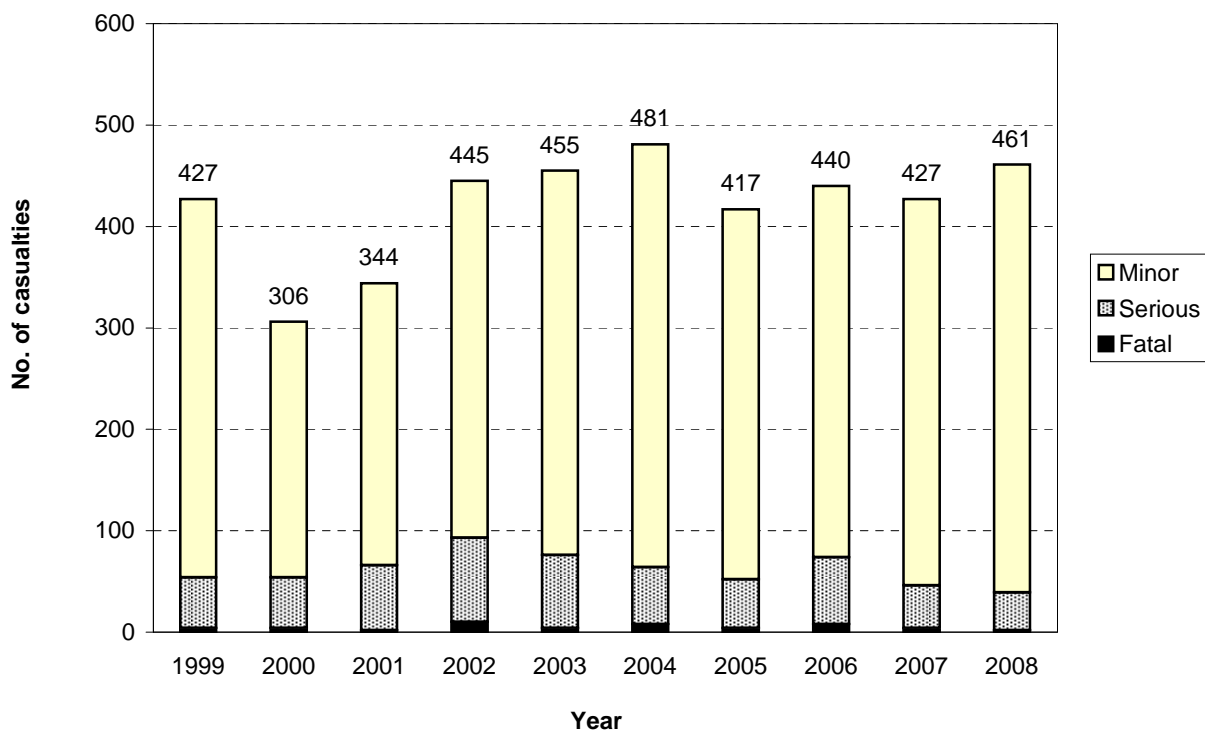
Figure 8.2 Number of casualties
Waitakere City - council roads (urban & rural)



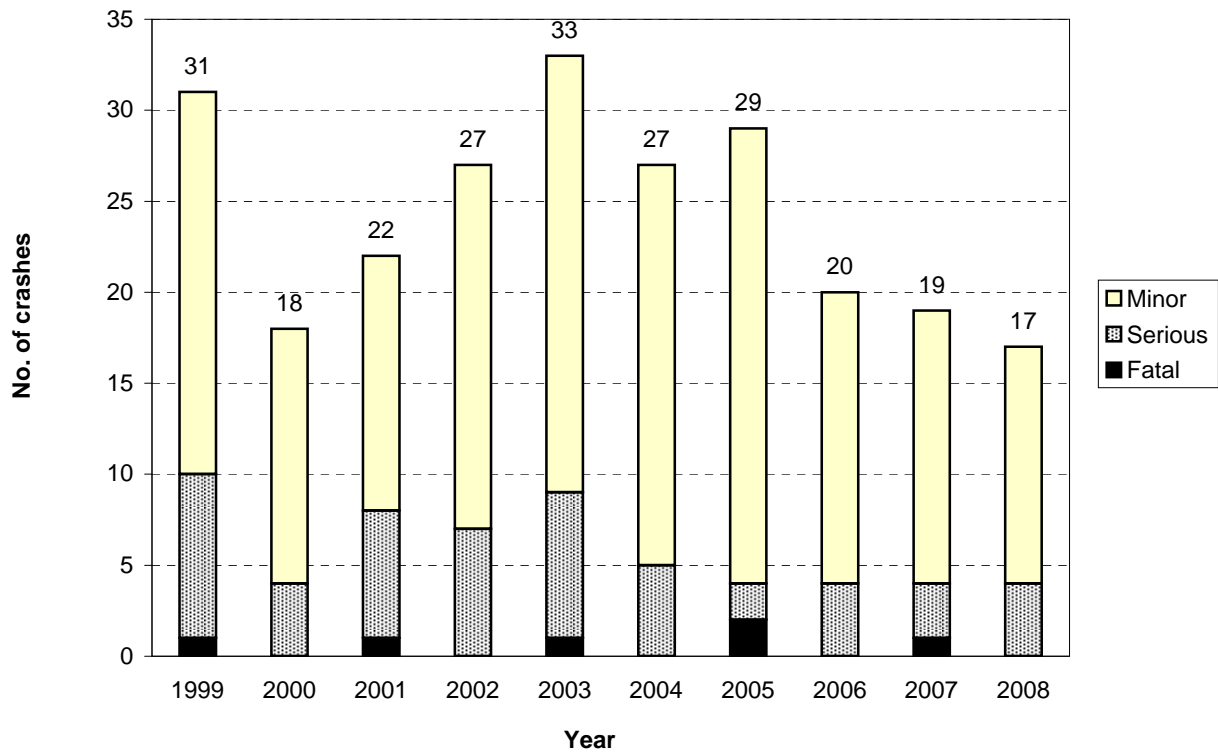
**Figure 8.3 Number of injury crashes
Waitakere City - urban council roads**



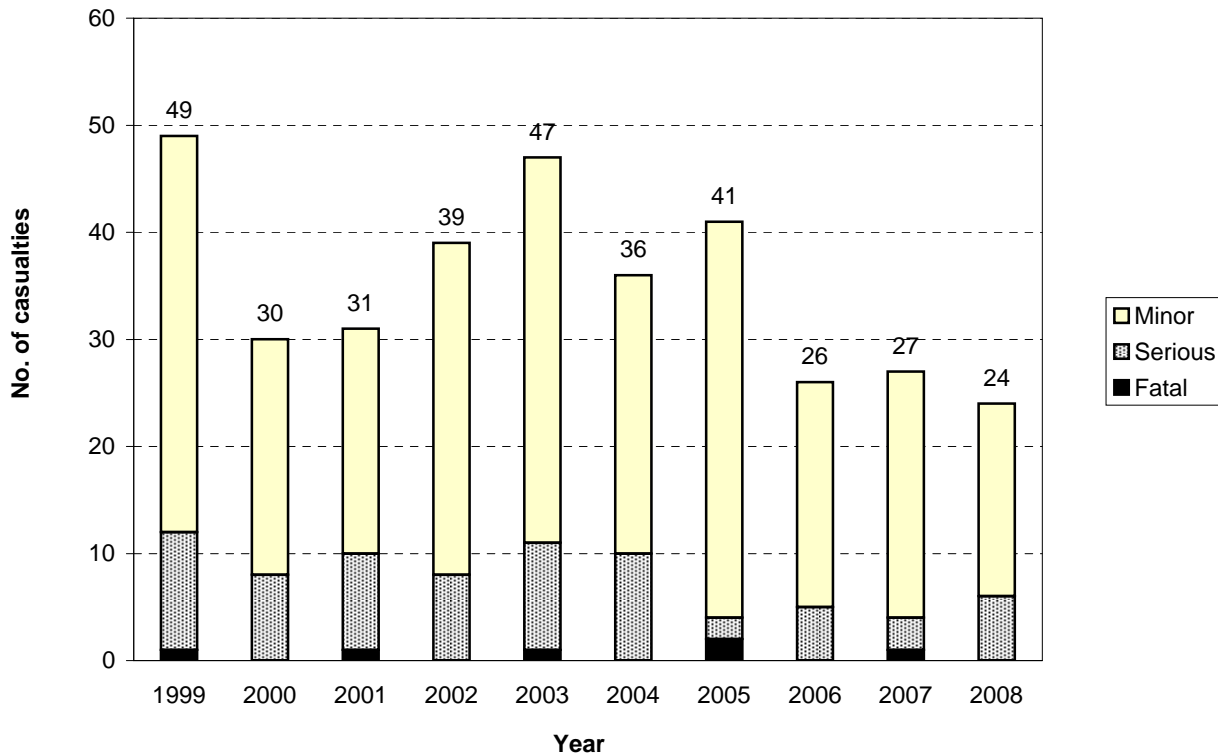
**Figure 8.4 Number of casualties
Waitakere City - urban council roads**



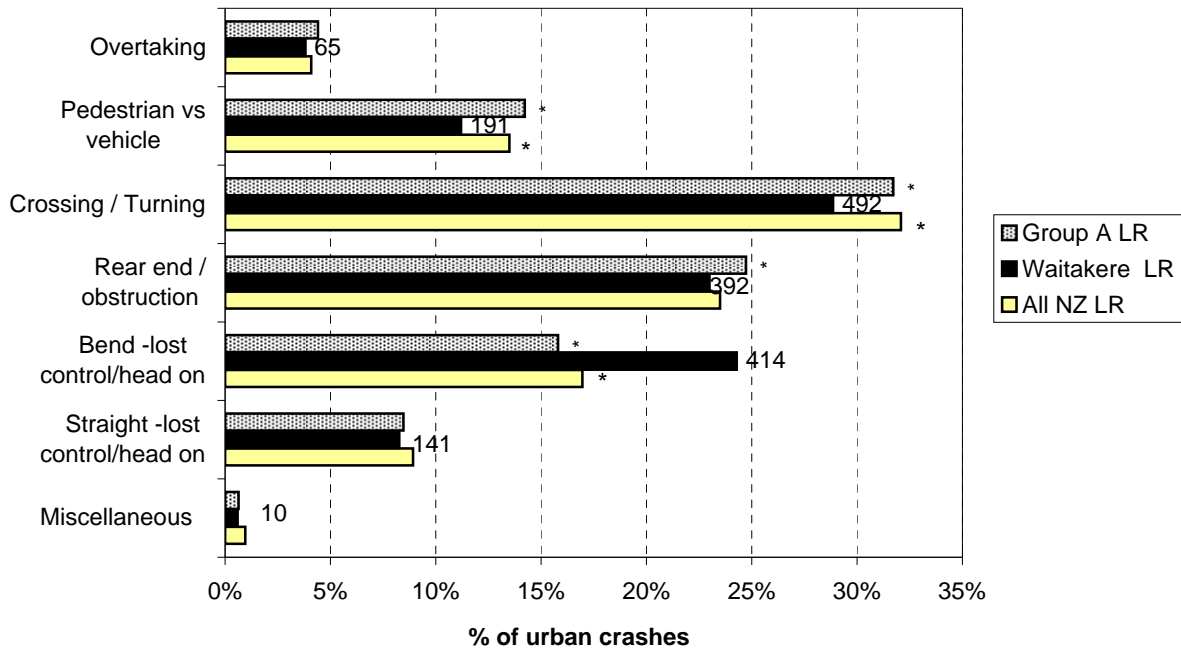
**Figure 8.5 Number of injury crashes
Waitakere City - rural council roads**



**Figure 8.6 Number of casualties
Waitakere City - rural council roads**

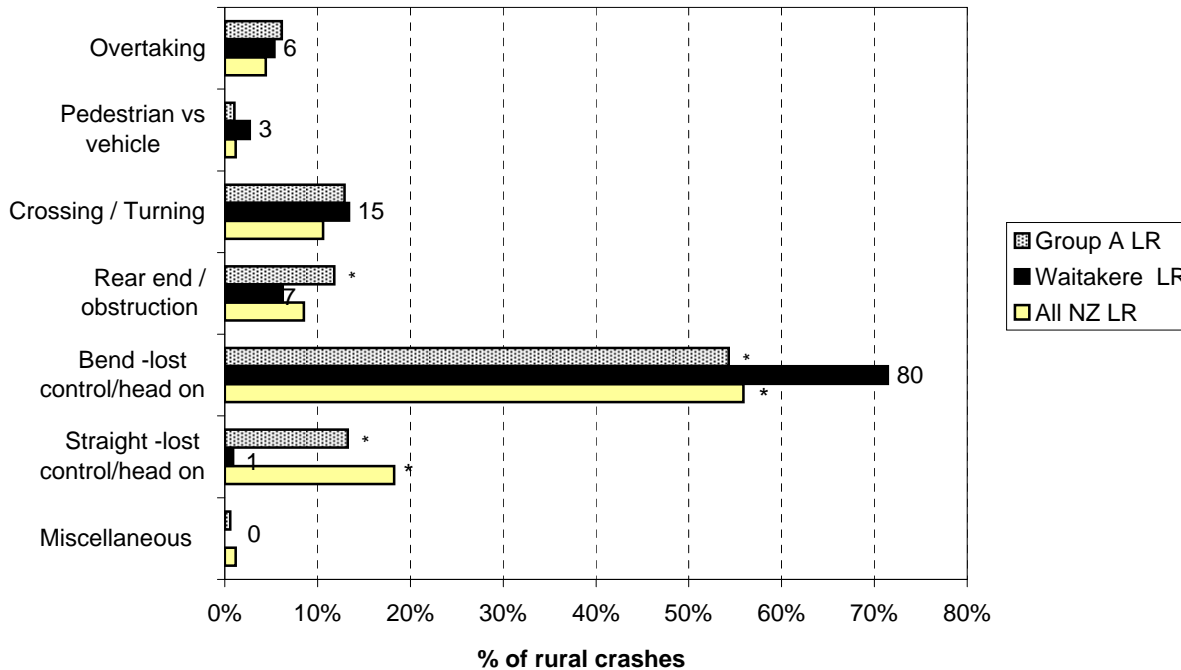


**Figure 8.7 Crash movement type - urban
Waitakere City council roads (2004-2008)**



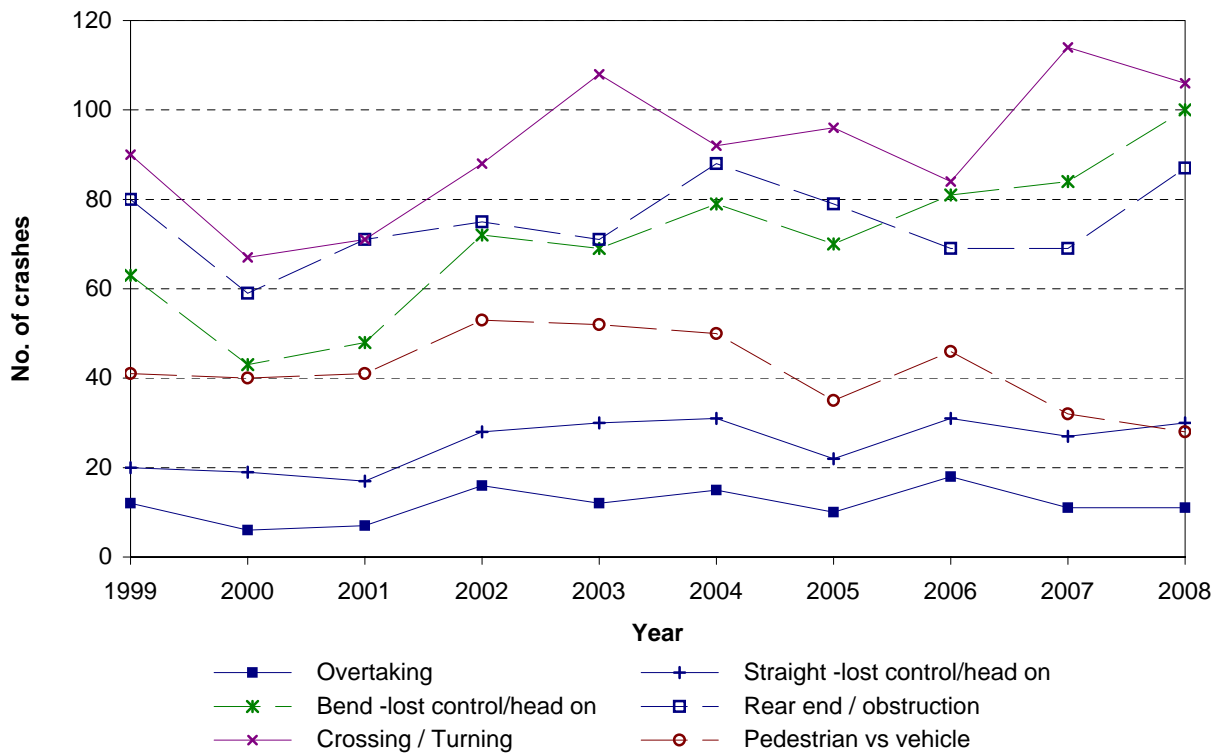
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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

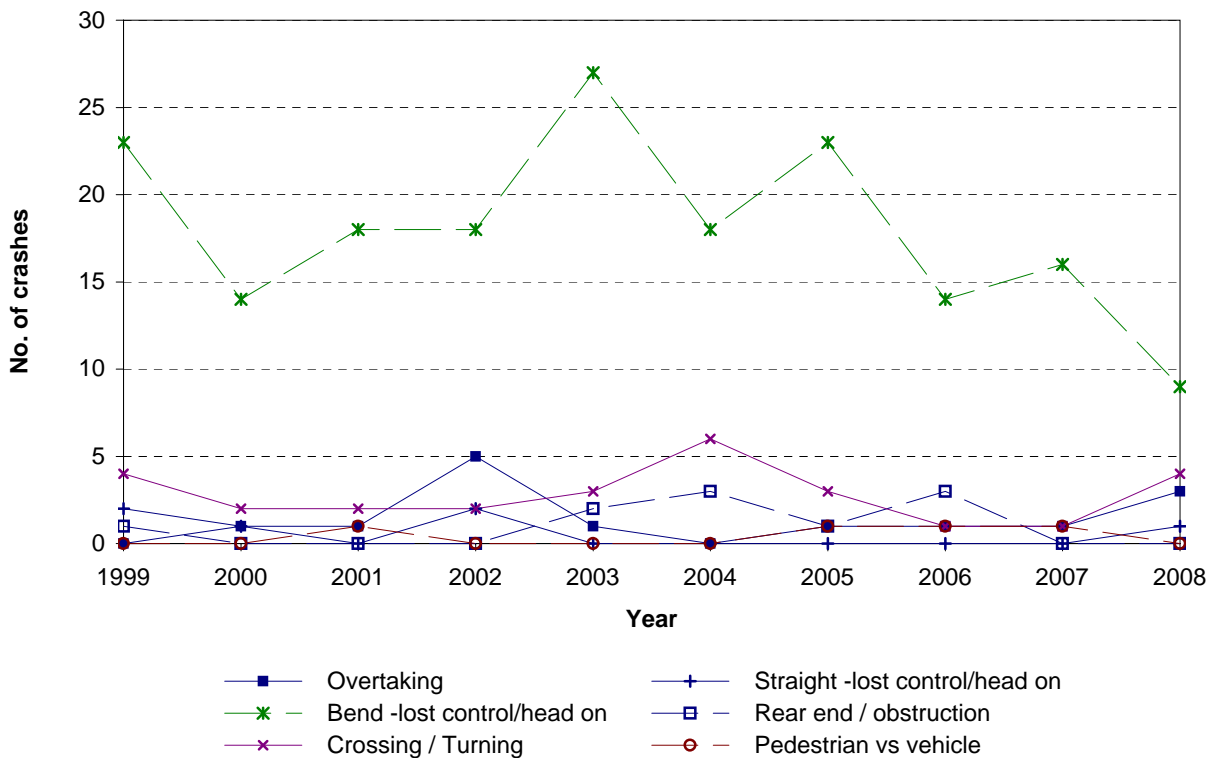


Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

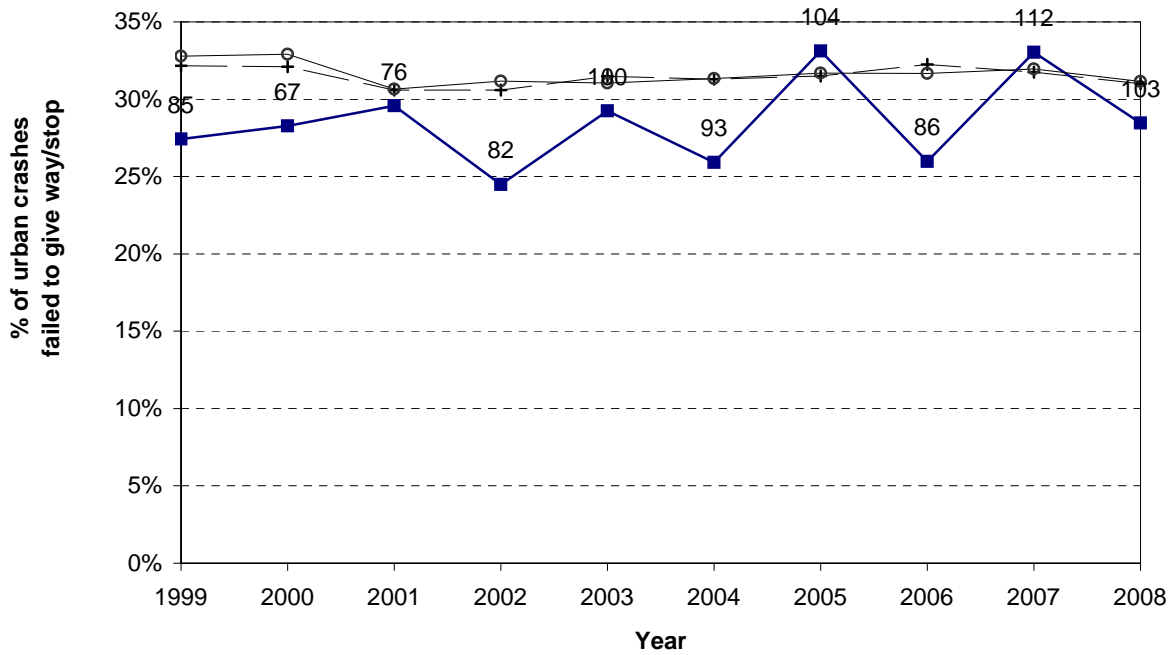
**Figure 8.9 Crash movement type - Trends
Waitakere City - urban council roads**



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



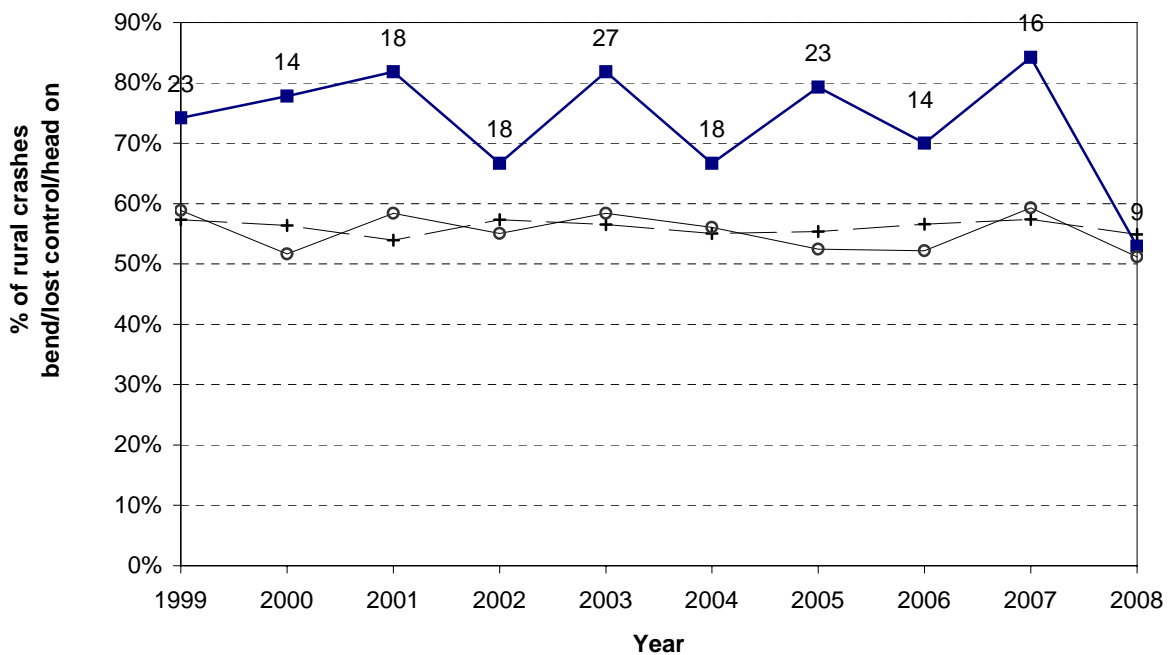
**Figure 8.11 Failed to give way/stop
Waitakere City - urban council roads**



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

—+— All NZ LR —■— Waitakere LR —○— Group A LR

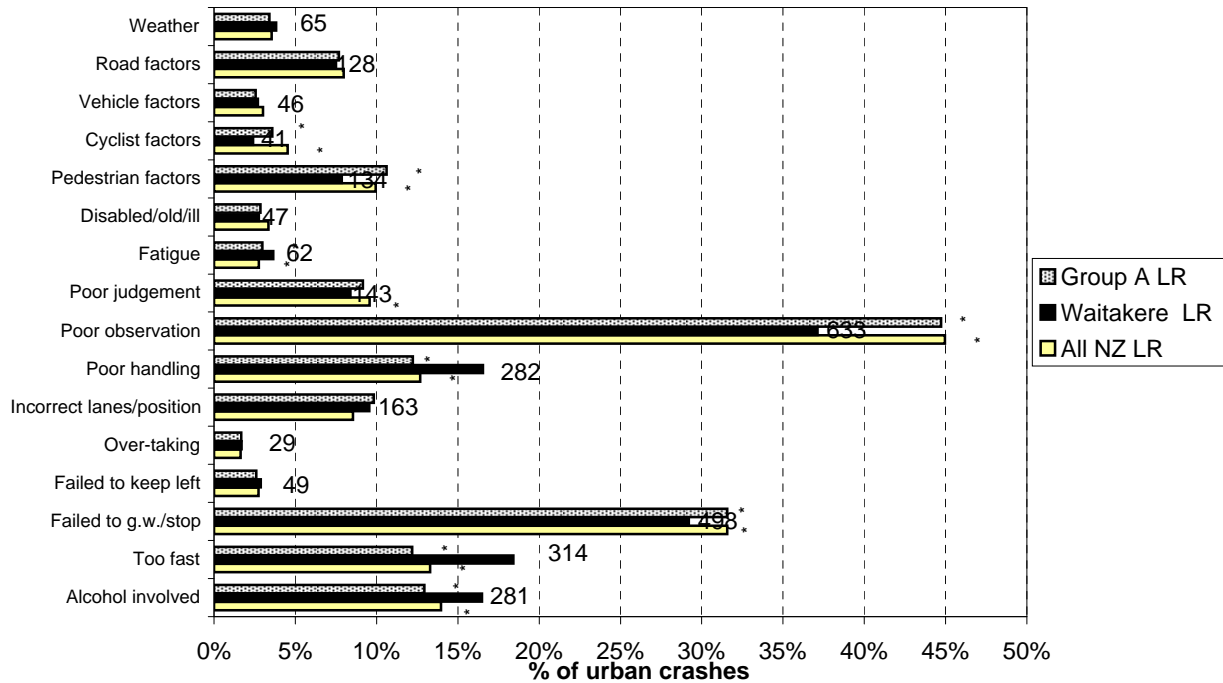
**Figure 8.12 Bend - lost control / head - on
Waitakere City - rural council roads**



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

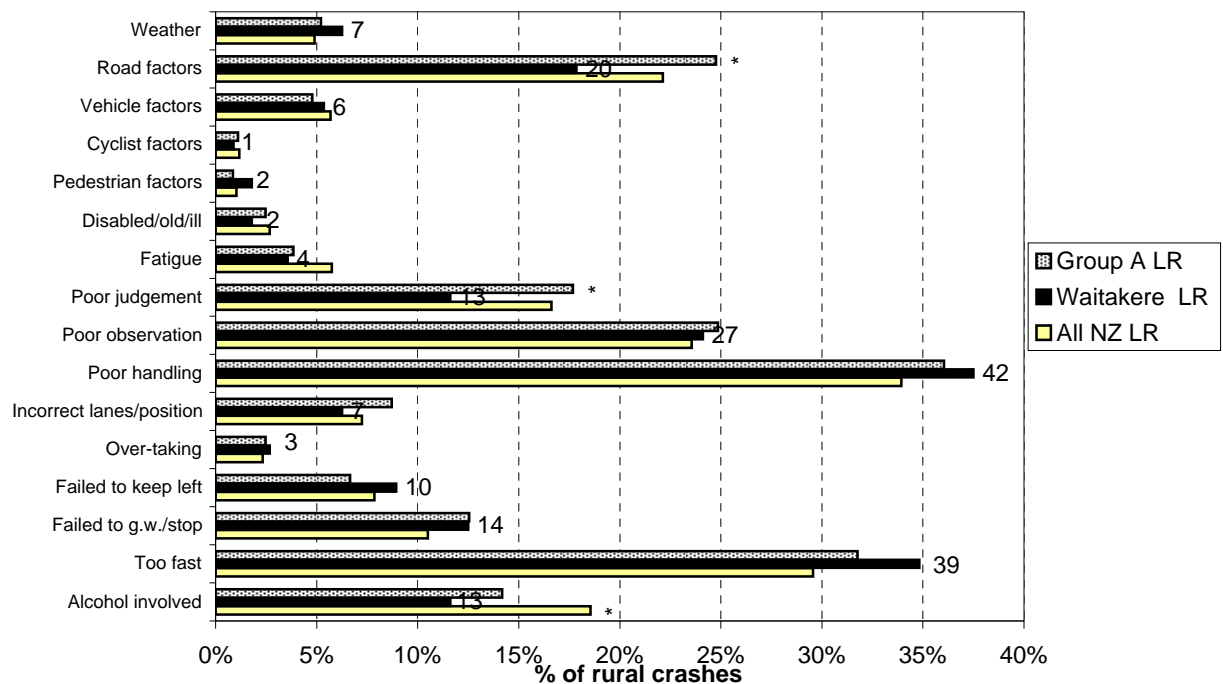
—+— All NZ LR —■— Waitakere LR —○— Group A LR

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



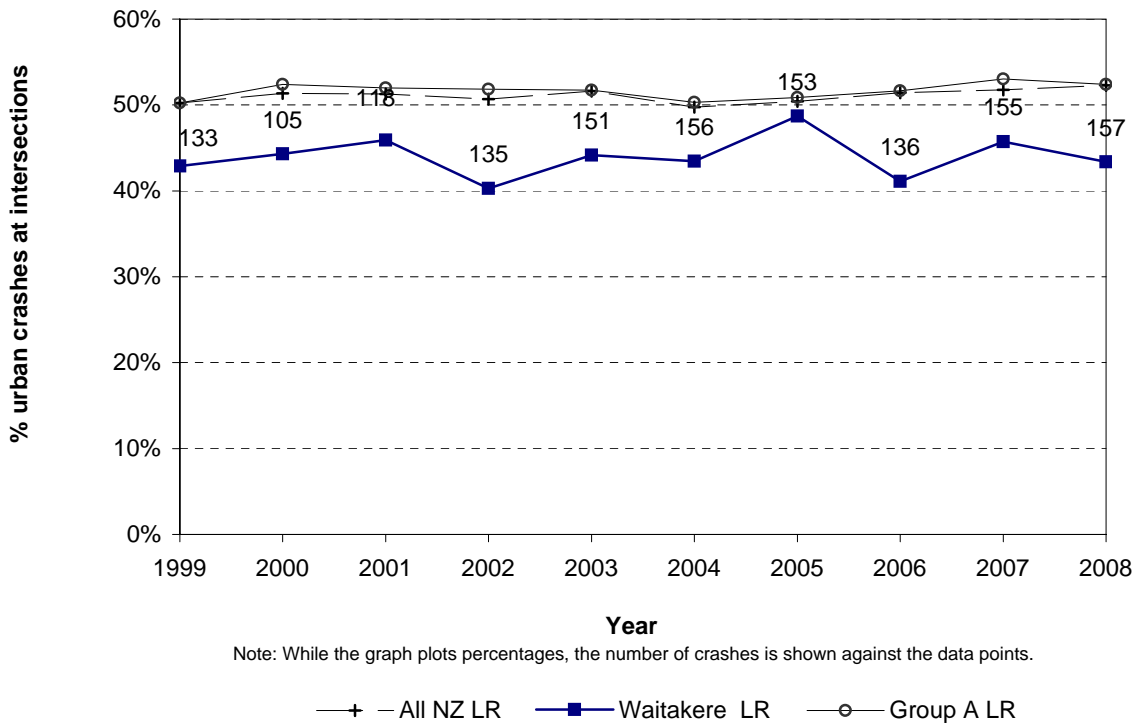
Note: While the graph plots percentages, the number of crashes is shown against the data points.
*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 8.14 Contributing factors - rural
Waitakere 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
Waitakere City - urban council roads**



**Figure 8.16 Intersection crashes
Waitakere City - rural council roads**

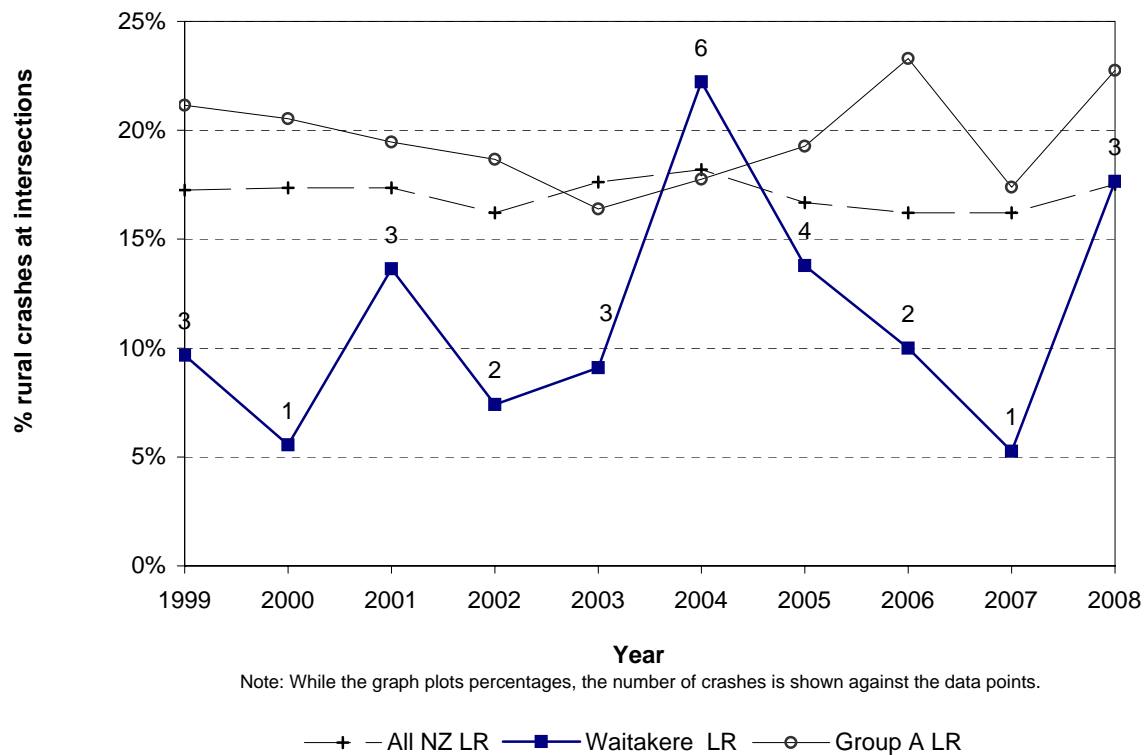


Figure 8.17 Wet road crashes
Waitakere City - urban council roads

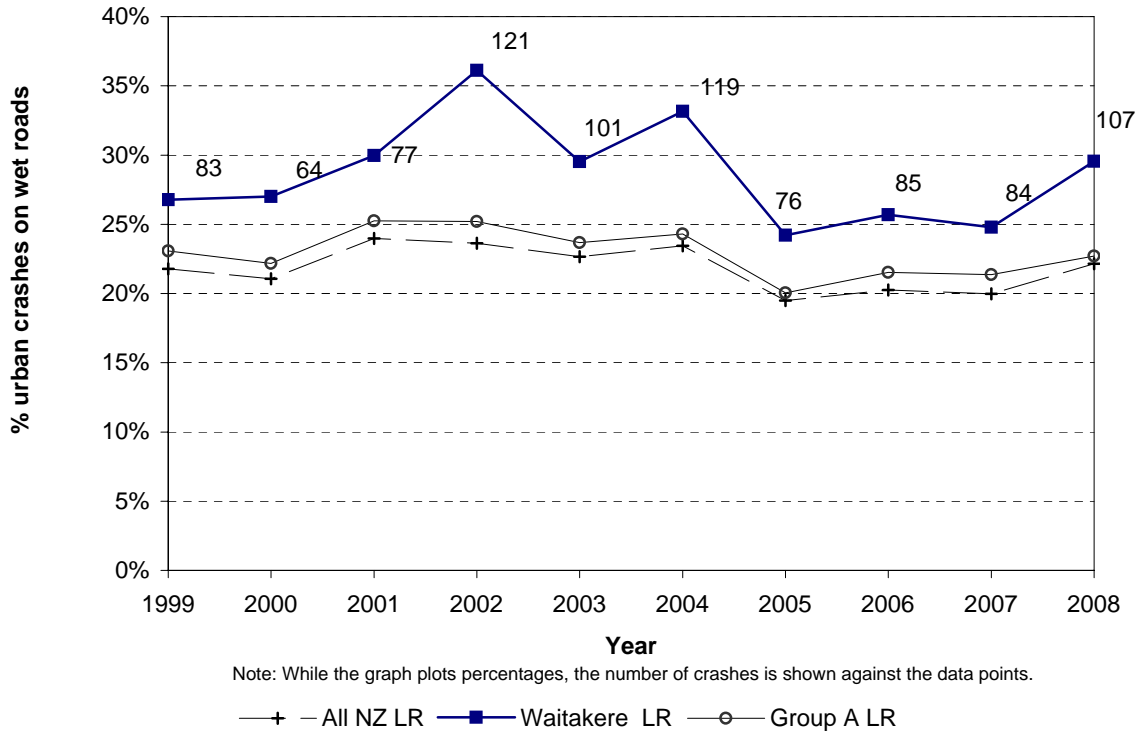
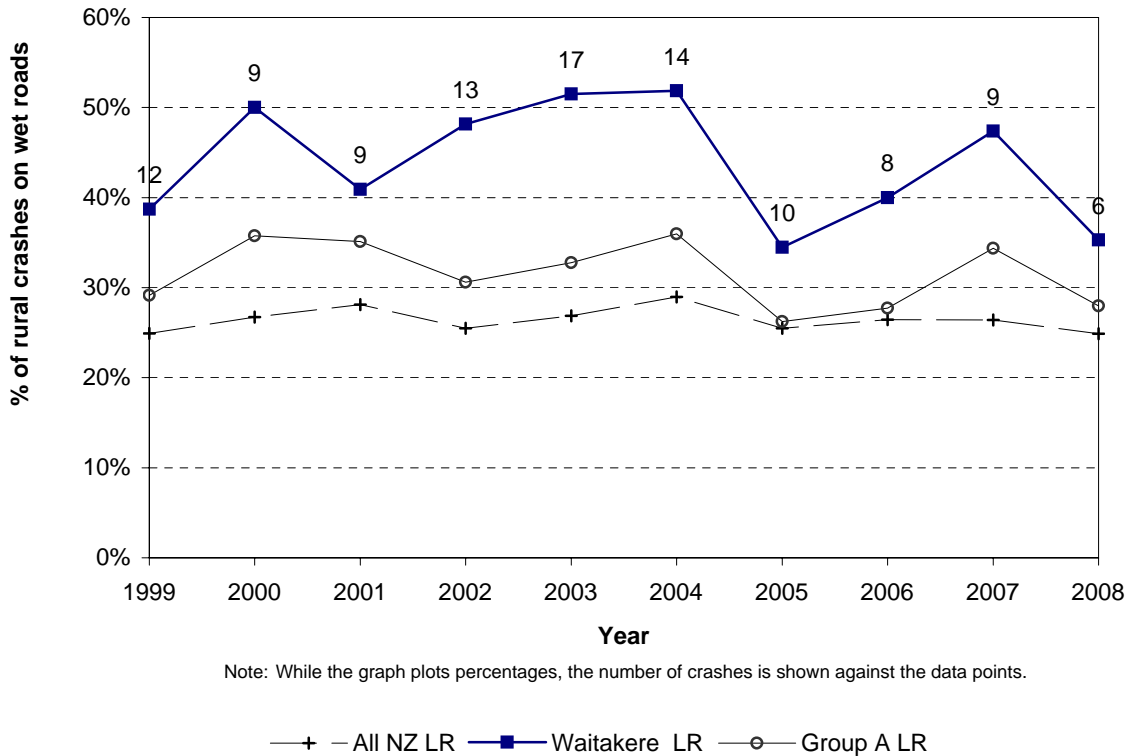
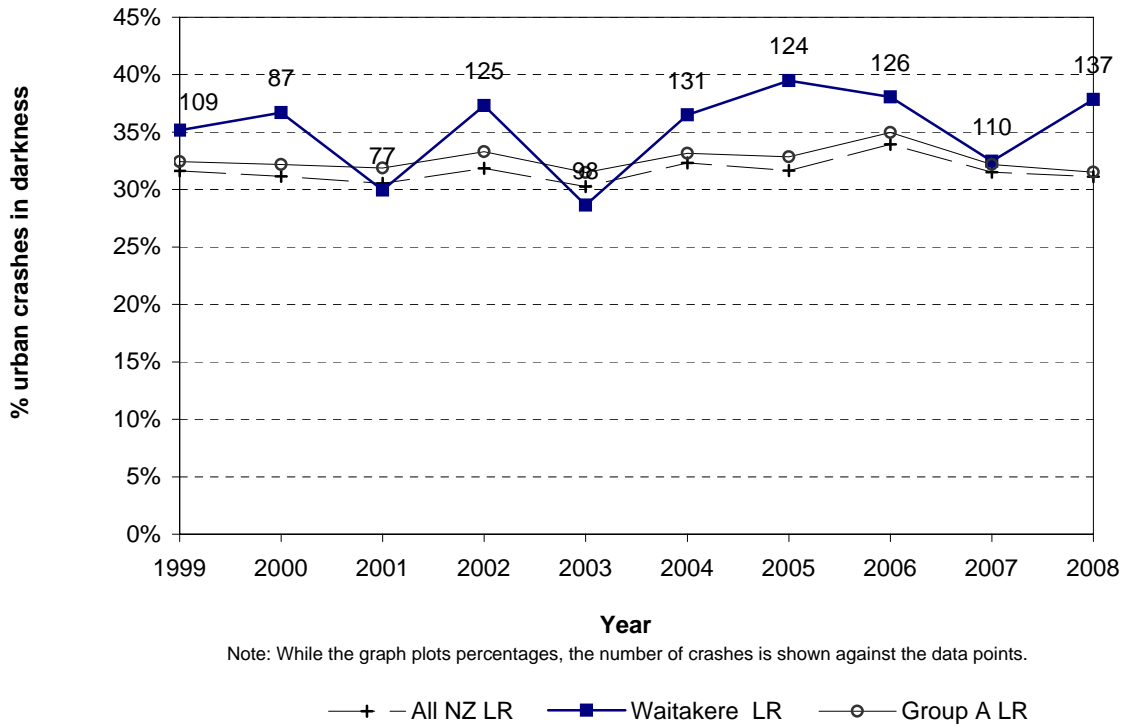


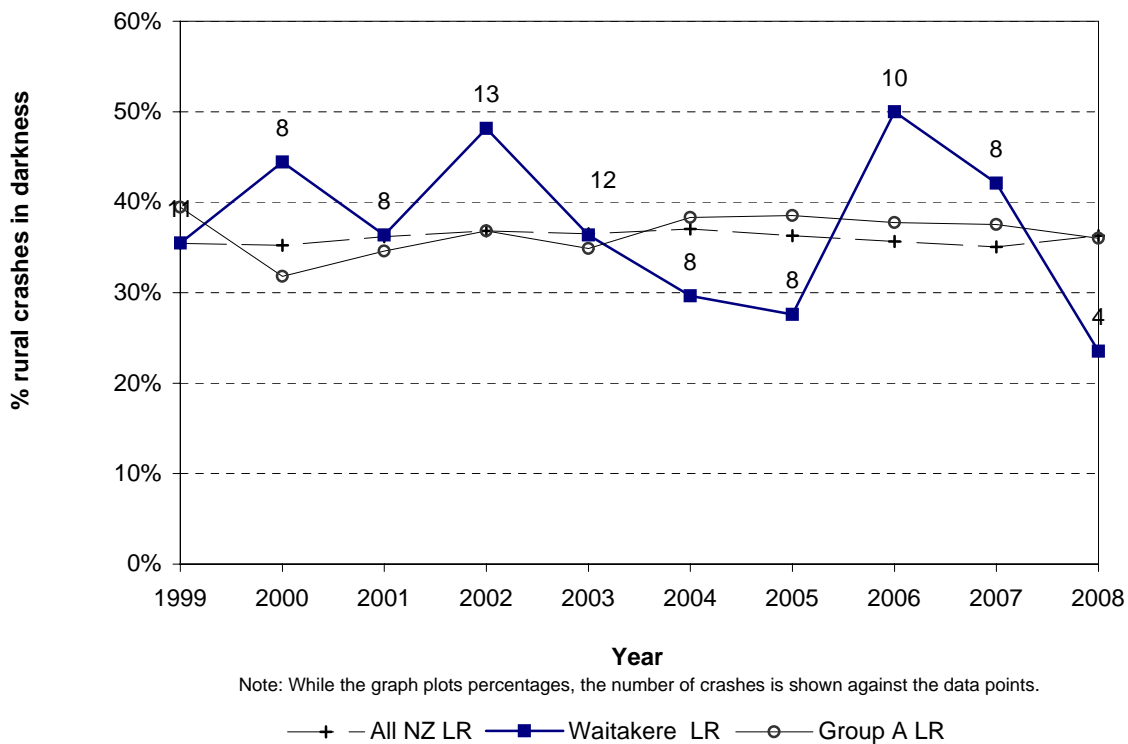
Figure 8.18 Wet road crashes
Waitakere City - rural council roads



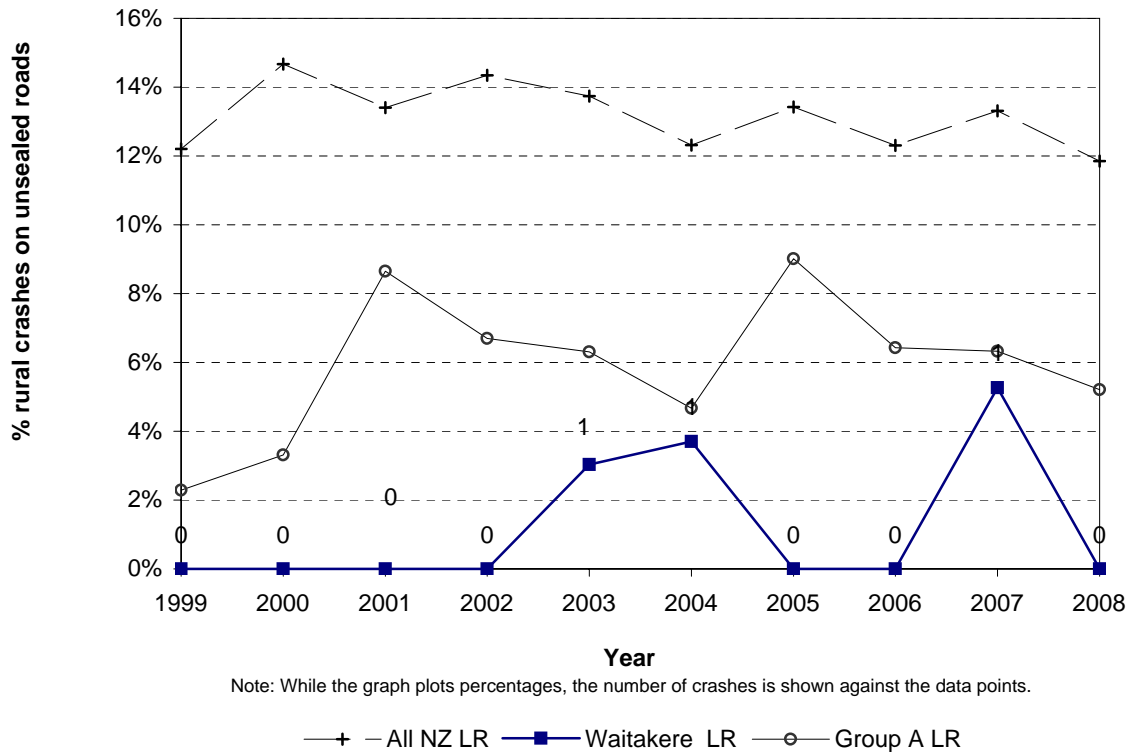
**Figure 8.19 Crashes in darkness
Waitakere City - urban council roads**



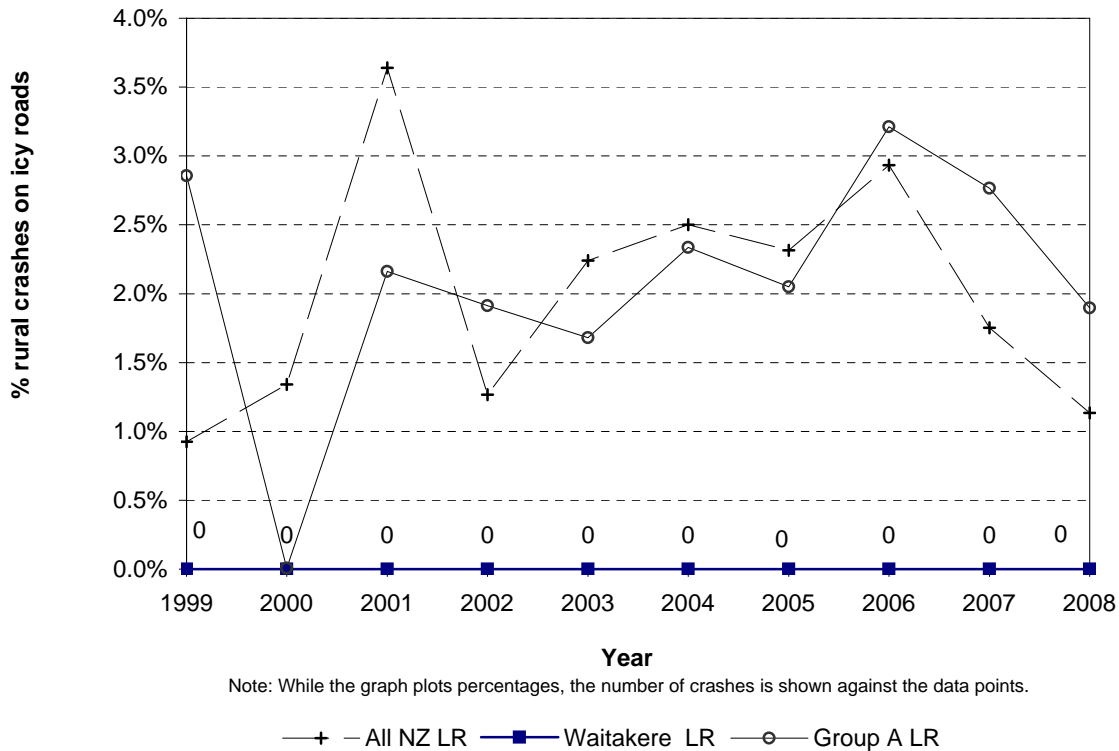
**Figure 8.20 Crashes in darkness
Waitakere City - rural council roads**



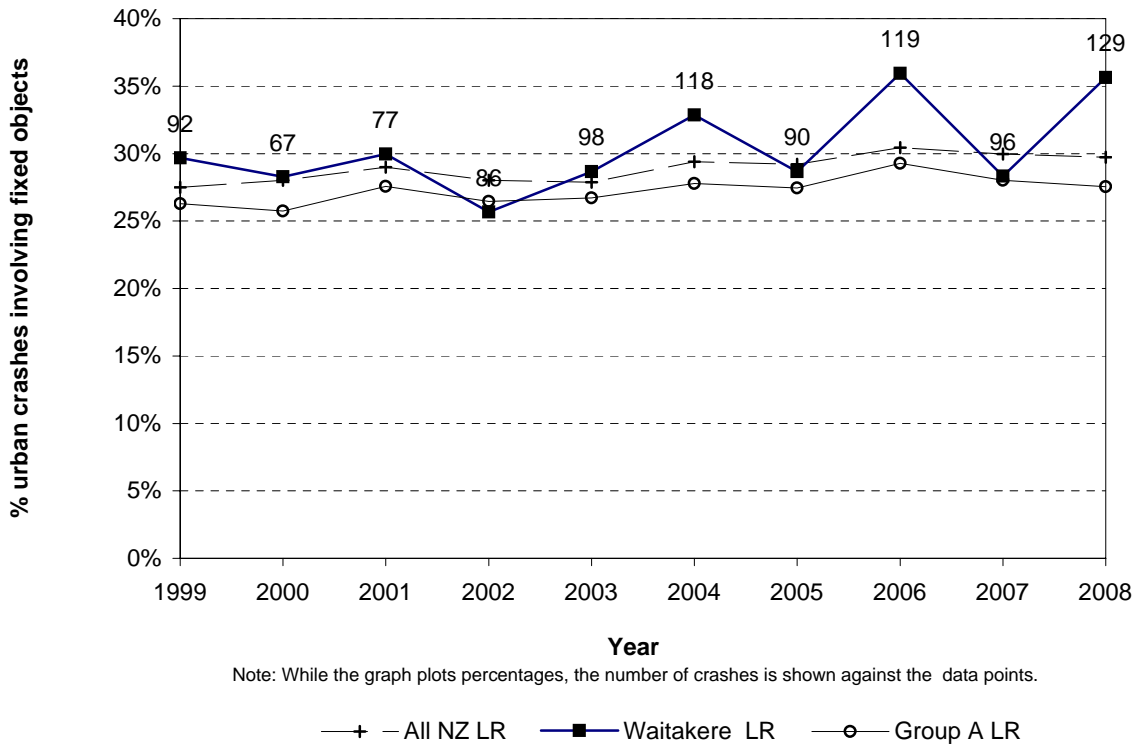
**Figure 8.21 Crashes on unsealed roads
Waitakere City - rural council roads**



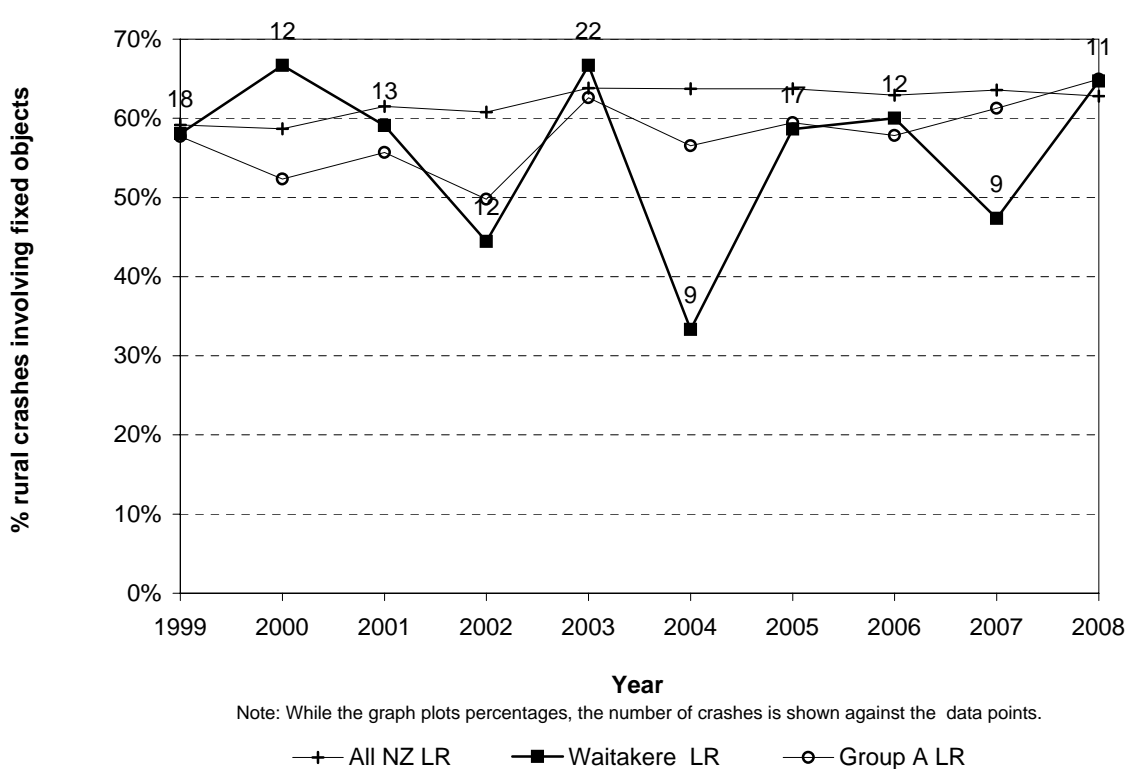
**Figure 8.22 Icy road crashes
Waitakere City - rural council roads**



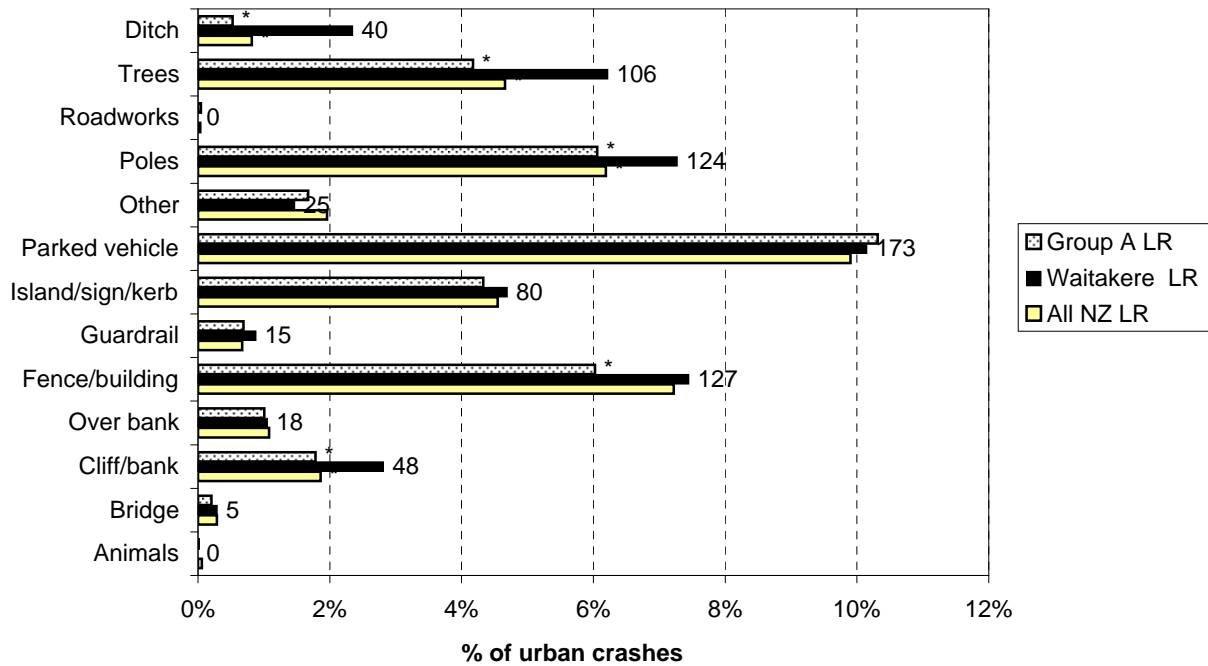
**Figure 8.23 Collisions with objects
Waitakere City - urban council roads**



**Figure 8.24 Collisions with objects
Waitakere City - rural council roads**

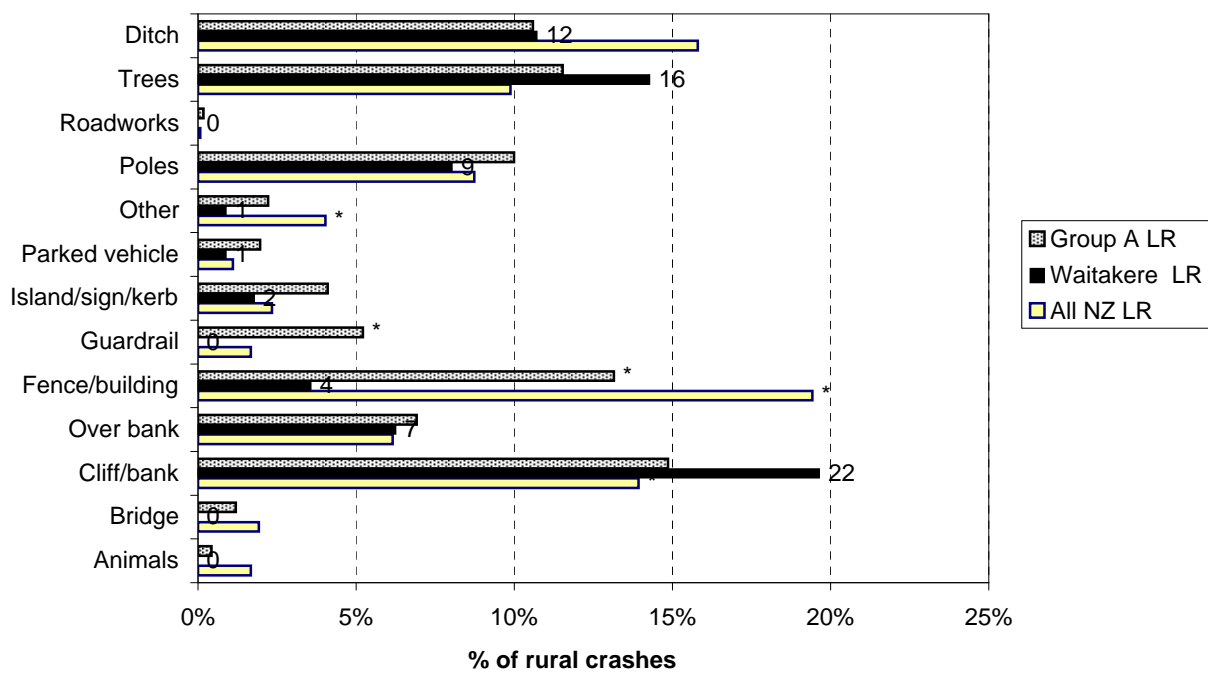


**Figure 8.25 Objects struck - urban
Waitakere City council roads (2004-2008)**



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
Waitakere 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 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
GREAT NORTH ROAD	I WEST COAST ROAD	8	7	10	7	4	36	26	36	31	\$4,732,749
SWANSON ROAD	I RATHGAR ROAD	6	3	3	1	7	20	13	20	40	\$4,153,781
CENTRAL PARK DRIVE	I PARAMOUNT DRIVE	1	2	3	3	3	12	8	25	8	\$3,867,211
TE ATATU ROAD	100 N ROBERTS ROAD	1	1	2			4	1	25	25	\$3,840,504
CAPTAIN SCOTT ROAD	I WEST COAST ROAD	6	2	3	3	2	16	9	19	6	\$3,821,579
AWAROA ROAD	I GREAT NORTH ROAD	2	1	2	3	3	11	8	9	18	\$3,504,577
GOLF ROAD	300 W PORTAGE ROAD	2			1		3	1		67	\$3,347,724
BRIGHAM CREEK ROAD	I TOTARA ROAD	1	1			2	4	2	50	100	\$3,339,071
GLENMALL PLACE	110 E GLENDALE ROAD	1	1	1	2	1	6	3	50	17	\$3,288,690
HENDERSON VALLEY ROAD	660 E CANDIA ROAD			1	2		3	2	33	67	\$3,134,187
GREAT NORTH ROAD	I SWANSON ROAD	27	17	10	10	13	77	59	25	42	\$2,606,342
GREAT NORTH ROAD	I HEPBURN ROAD	6	3	6	5	2	22	15	9	14	\$1,982,629
LINCOLN ROAD	I CENTRAL PARK DRIVE	14	9	11	12	26	72	58	25	26	\$1,899,525
METCALFE ROAD	5 W SWANSON ROAD	6	5	5	8	8	32	25	25	22	\$1,742,623
RATA ST	I GREAT NORTH ROAD	17	14	12	13	17	73	63	21	37	\$1,698,635
GREAT NORTH ROAD	I HENDERSON VALLEY ROAD	22	17	8	16	7	70	60	20	31	\$1,648,782
DON BUCK ROAD	I WOODSIDE ROAD	6	7	5	2	3	23	15	35	30	\$1,647,391
PORTAGE ROAD	I LINKS ROAD	3	3	1		1	8	4	25	50	\$1,609,016
GREAT NORTH ROAD	I ARCHIBALD ROAD	14	14	5	5	4	42	34	19	29	\$1,515,723
SWANSON ROAD	I LARNOCH ROAD	11	7	5	4	7	34	24	35	53	\$1,505,679
LINCOLN ROAD	I UNIVERSAL DRIVE	9	14	12	10	15	60	51	28	35	\$1,441,016
EDMONTON ROAD	I GREAT NORTH ROAD	12	6	8	9	9	44	39	23	25	\$1,395,519
WEST COAST ROAD	I ROSIER ROAD	7	11	4	5	7	34	26	41	47	\$1,390,462
LINCOLN ROAD	I TE PAI PLACE	9	10	2	6	5	32	24	22	44	\$1,365,745
GREAT NORTH ROAD	I TOTARA AVENUE	7	10	4	7	7	35	28	14	31	\$1,351,616
SWANSON ROAD	I DON BUCK ROAD	5	8	6	4	7	30	22	7	17	\$1,331,003
GREAT NORTH ROAD	I VERONICA ST	5	5	10	5	5	30	22	23	27	\$1,329,324
TRIANGLE ROAD	I MAKORA ROAD	1	3	5		3	12	7	17	58	\$1,307,043
ROYAL ROAD	I MOIRE ROAD	14	3	3	2	10	32	25	22	38	\$1,298,856
GREAT NORTH ROAD	I PORTAGE ROAD	6	3	9	8	8	34	29	38	29	\$1,238,539
GREAT NORTH ROAD	I TRADING PLACE	3		4	2	1	10	6	20	10	\$1,219,006
TITIRANGI ROAD	I MARGAN AVENUE	9	7	10	8	5	39	28	28	59	\$1,211,805
SWANSON ROAD	I AFTON PLACE	4	1	1		1	7	3	71	57	\$1,169,854
RANUI STATION ROAD	I SWANSON ROAD	3	2	4	5	5	19	11	11	16	\$1,161,127
WEST COAST ROAD	I GLENDALE ROAD	6	8	4	7	4	29	24	14	28	\$1,149,397
GREAT NORTH ROAD	I STOCK ST		1	6	4	5	16	8	25	19	\$1,114,188
LINCOLN ROAD	I SEL PEACOCK DRIVE	10	9	6	8	8	41	33	20	15	\$1,082,708
SABULITE ROAD	I GREAT NORTH ROAD	5	9	7	9	14	44	37	20	23	\$1,079,967
WEST COAST ROAD	I GLENVIEW ROAD	16	6	5	7	7	41	33	24	27	\$1,078,691
GREAT NORTH ROAD	I PINE ST	3	5	4	6	2	20	14	55	10	\$1,070,836
MEMORIAL DRIVE	I GREAT NORTH ROAD W	6	7	4	3	6	26	22	15	4	\$1,057,437
RATA ST	I RIMU ST	1	3	4	4	6	18	12	28	22	\$1,039,366
RATA ST	I BINSTED ROAD	5	2	6	2	5	20	15	35	40	\$1,007,882
TE ATATU ROAD	I GLORIA AVENUE	1	2	4	5	3	15	9	40	47	\$991,853
UNIVERSAL DRIVE	I RATHGAR ROAD	5	5	3	4	4	21	17	24	24	\$978,455
SCHOOL ROAD	I VODANOVICH ROAD	1	2	3	5	4	15	10	13	33	\$936,678
GREAT NORTH ROAD	I BRANDON ROAD	2	2		6	5	15	10	33	20	\$929,840
TE ATATU ROAD	5 S LYNDHURST ROAD	5	9	6	7	14	41	36	7	24	\$925,260
RATHGAR ROAD	I POMARIA ROAD	4	2	1	3	4	14	10	21	36	\$864,846
SEABROOK AVENUE	I PARKER AVENUE		3		4	2	9	4	33	22	\$840,791

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

Site Radius = 30 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
HENDERSON VALLEY ROAD	HICKORY AVENUE	3			3	3	9	4	11	22	\$838,539
GREAT NORTH ROAD	LYNWOOD ROAD	8	6	4	5	6	29	22	34	28	\$835,557
SWANSON ROAD	STURGES ROAD	8	6	5	7	6	32	26	16	34	\$832,238
CLARK ST	RANKIN AVENUE	10	7	6	6	9	38	34	24	21	\$820,234
MOIRE ROAD	WIDMORE DRIVE	2	2	3	2	2	11	7	27		\$819,914
KIRBY ST	GREAT NORTH ROAD	2		1	4	4	11	7	55	18	\$807,466
MOIRE ROAD	WEST HARBOUR DRIVE	3	1	4	1	1	10	6	20	70	\$795,026
WILLERTON AVENUE	SEABROOK AVENUE	2	1	3	3		9	5	22	11	\$786,886
TE ATATU ROAD	ROYAL VIEW ROAD	8	4	1	10	6	29	23	28	14	\$782,761
SWANSON ROAD	5 E UNIVERSAL DRIVE	3	7	9	8	7	34	30	12	38	\$759,795
TITIRANGI ROAD	40 E SKILGATE AVENUE	1	1	3	2		7	3	29	43	\$755,171
GREAT NORTH ROAD	VIEW ROAD	5	5	4	7	7	28	23	18	29	\$714,534
EDMONTON ROAD	ALDERMAN DRIVE	6	3	7	7	6	29	25	38	21	\$677,573
DON BUCK ROAD	160 N GLEN ROAD	1	4	2	5	3	15	7	80	33	\$669,742
WEST COAST ROAD	PARRS CROSS ROAD	2	3	4	3	9	21	15	24	33	\$658,273
TE ATATU ROAD	MCLEOD ROAD	4	4	3	5	4	20	14	10	25	\$642,145
GREAT NORTH ROAD	NORCROSS AVENUE	5	6	2	3	3	19	13	21	26	\$624,915
LINCOLN ROAD	NORVAL ROAD	2	3	4	3	6	18	12	11	17	\$612,232
TITIRANGI ROAD	PLEASANT ROAD	6	6	4	6	2	24	20	29	29	\$598,630
LINCOLN ROAD	MOSELLE AVENUE	4	3	1	5	4	17	12	41		\$538,556
GREAT NORTH ROAD	FRUITVALE ROAD	5	7	1	2	3	18	14	33	22	\$500,736
BINSTED ROAD	DELTA AVENUE		3	6	2	3	14	10	29	21	\$439,353
TE ATATU ROAD	20 N EDMONTON ROAD	1	2	1	3	6	13	9	23	31	\$424,253
LINCOLN ROAD	DAYTONA ROAD	1	1	1	3	6	12	8	17	17	\$406,612
GREAT NORTH ROAD	50 N GLENVIEW ROAD	1	2	2	3	2	10	6	30	30	\$375,305
NORTH CANDIA ROAD	POOKS ROAD			3	3		6	1	83	50	\$364,384
MARGAN AVENUE	HUTCHINSON AVENUE	1	1	1	4	2	9	5	33	33	\$358,361
CLARK ST	OLYMPIC PLACE			3	3	2	8	4		13	\$342,975
GLENGARRY ROAD	80 E AUTUMN AVENUE	1	2	1	1		5	1	100	60	\$294,682

**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
PIHA ROAD	2000 S ANAWHATA ROAD	6		3	3		12	8	67	25	\$5,208,512
BETHELLS ROAD	1900 N TASMAN VIEW ROAD	1	1		1		3		67	33	\$4,180,680
BIRDWOOD ROAD	I CROWS ROAD	1	1			1	3	1	33	33	\$4,132,740
TOTARA ROAD	550 S MCKEAN ROAD		1	1		1	3				\$1,360,240
BRIGHAM CREEK ROAD	I KAURI ROAD	2	5	1	2	3	13	7	54	38	\$1,334,062
SWANSON ROAD	I WAITAKERE ROAD	5	1	3		3	12	7	58	17	\$1,247,118
PIHA ROAD	1000 W ANAWHATA ROAD	1		2	2	1	6	3	50	33	\$922,421
BRIGHAM CREEK ROAD	I TRIG ROAD	3	3	2	2	1	11	5	55	36	\$708,783
PIHA ROAD	410 W ANAWHATA ROAD	1	1	1	4	1	8	3	50	75	\$539,199
PIHA ROAD	800 E LONE KAURI ROAD		3	1	1	4	9	6	78	33	\$484,443
RED HILLS ROAD	I SUNNYVALE ROAD	2	1	1	1	2	7	4	43	14	\$408,076
TRIG ROAD	670 S BRIGHAM CREEK ROAD	1	1	2	2		6	3	83	33	\$370,718

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

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

Sites with 3 or more injury crashes or more than \$1500000 in social costs

CRASH ROAD		SIDE ROAD	2004	2005	2006	2007	2008	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
SH 16	I	TE ATATU ON WBD	11	9	11	8	15	54	42	30	30	\$7,675,517
SH 16	I	TE ATATU ON EBD EAST	17	19	20	24	34	114	91	37	26	\$5,901,266
SH 16	I	LINCOLN OFF WBD	25	20	20	19	15	99	71	30	22	\$5,055,886
SH 16		600 S SH 18	3	2	3	3	1	12	8	50	17	\$4,433,178
SH 16	I	ROYAL OFF WBD	16	12	9	10	10	57	42	37	40	\$3,406,154
SH 16	I	LINCOLN OFF EBD	12	15	17	10	11	65	55	32	42	\$3,401,928
SH 16		500 N LINCOLN OBR	9	3	9	8	11	40	25	33	40	\$2,773,668
SH 16		1000 E LINCOLN OBR	8	10	4	9	1	32	23	38	28	\$1,648,938
TE ATATU ROAD	I	TE ATATU OFF EBD S	1	5	3	2	2	13	8	8	69	\$1,328,491
SH 16	I	DUNLOP ROAD	2	3	2	3	3	13	8	23	23	\$1,240,642
SH 16	I	SH 18	11	5	9	3	9	37	32	24	24	\$1,155,764
SH 16		500 S ROYAL OFF WBD	4	3	2	0	1	10	7	50	60	\$1,076,555
SH 16		300 W TE ATATU OFF EBD	5	2	6	5	2	20	14	45	30	\$1,041,917
SH 18		1000 W TAUHINU ROAD	4	2	1	0	1	8	4	13	50	\$1,030,004
SH 16	I	BRIGHAM CREEK ROAD	1	4	6	2	7	20	13	25	15	\$1,016,246
SH 16	I	FERNHILL DRIVE	4	3	4	3	4	18	11	22	28	\$916,971
SH 16		1000 N LINCOLN OBR	4	2	2	5	1	14	10	7	36	\$718,117
SH 18		90 N HENDRIKA COURT	0	0	2	0	4	6	3	0	17	\$685,511
SH 16		200 N ROYAL OBR	3	2	0	6	3	14	11	14	36	\$670,140
SH 16	I	TE ATATU OFF WBD	2	2	1	6	3	14	11	29	21	\$651,227
SH 16		500 N DUNLOP ROAD	1	1	1	1	3	7	3	29	14	\$455,862
SH 16	I	KENNEDYS ROAD	0	3	3	1	0	7	4	29	43	\$411,842
SH 18	I	BRIGHAM CREEK ROAD	2	0	1	3	4	10	6	20	20	\$373,626
SH 16		1000 S BRIGHAM CREEK ROAD	1	3	1	0	1	6	3	50	17	\$372,520
SH 18	I	LUCKENS ROAD	3	3	1	3	2	12	9	8	17	\$352,135

**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 %
LINCOLN ROAD	I TRIANGLE ROAD	18	14	9	11	12	26	90	72	23	27
GREAT NORTH ROAD	I SABULITE ROAD	7	5	9	7	9	14	51	43	24	25
TE ATATU ROAD	I EDMONTON ROAD	4	2	7	3	4	10	30	25	23	30
ALDERMAN DRIVE	5 W SEL PEACOCK DRIVE	3	5	2	3	5	7	25	22	28	16
TE ATATU ROAD	I COVIL AVENUE	6	3	2	3	3	8	25	22	24	16
WEST COAST ROAD	I PARRS CROSS ROAD	3	2	3	4	3	9	24	18	21	29
SWANSON ROAD	I RATHGAR ROAD	3	6	3	3	1	7	23	15	17	35
ALDERMAN DRIVE	I RATANUI ST	2	5	2	3	3	6	21	19	19	10
LINCOLN ROAD	230 N UNIVERSAL DRIVE	2	1	2	3	4	7	19	15	21	16
WEST COAST ROAD	I BOWERS ROAD	1	2	3	6	1	6	19	16	21	32
GREAT NORTH ROAD	I WESTECH PLACE	4	2		2	3	5	16	13	19	19
HENDERSON VALLEY ROAD	I KEELING ROAD		2		3	5	5	15	12	13	13
PLEASANT ROAD	I ATKINSON ROAD		4	1	1	2	7	15	13	40	33
LINCOLN ROAD	I DAYTONA ROAD	2	1	1	1	3	6	14	10	21	14
LINCOLN ROAD	110 S UNIVERSAL DRIVE	1		1	1	3	5	11	8	27	36
LINCOLN ROAD	25 S SELWOOD ROAD			3	1	3	4	11	10	18	18
ATKINSON ROAD	I KAURILANDS ROAD	2		2	1	2	4	11	10	55	36
LUCKENS ROAD	I MOIRE ROAD	2	1	1	1	1	4	10	9	20	40
UNIVERSAL DRIVE	50 W LINCOLN ROAD		1	1	2		4	8	6	25	25
GOLF ROAD	I SOUTH LYNN ROAD	1	1	1		1	3	7	6	14	43
GREAT NORTH ROAD	50 E SABULITE ROAD	1	1		1	1	3	7	4	29	29
CORBAN AVENUE	I BRUCE MCLAREN ROAD	1		1		1	4	7	5	14	29
LINCOLN ROAD	60 S UNIVERSAL DRIVE				2	2	3	7	7	43	29
SELWOOD ROAD	50 S LINCOLN ON EBD S			1	1		5	7	7		
GREAT NORTH ROAD	50 W VERONICA ST	1			1		5	7	7	14	
RATA ST	I REID ROAD	2			1		4	7	7	43	29
KAMARA ROAD	I WEST COAST ROAD	1	1		1		3	6	5	50	50
SUNNYSIDE ROAD	I AWAROA ROAD		1	1			4	6	5	33	50
TE ATATU ROAD	10 S TE ATATU ON EBD W	1			1		4	6	5	33	17
GLENDALE ROAD	110 S OATES ROAD				1	1	3	5	3	20	40
LINCOLN ROAD	I TE KANAWA CRESCENT					2	3	5	5	20	40
NIKAU ST	I MIRO ST				1		3	4	2	50	25
DON BUCK ROAD	360 N GALLONY AVENUE					1	3	4	3	25	25
TE ATATU ROAD	20 N OLD TE ATATU ROAD					1	3	4	3		25
GREAT NORTH ROAD	50 S DELLWOOD AVENUE		1				3	4	3		50
GREENOCK ROAD	I SWANSON ROAD	1					3	4	3	25	25
SUMMERLAND DRIVE	I HARVEST DRIVE					1	3	4	4	25	50
VIEW ROAD	I WATTLE ROAD						4	4	4	75	25
SCENIC DRIVE	600 E WOODLANDS PARK ROAD	1					2	3	1		100
MCLEOD ROAD	I DUNCAN AVENUE	1					2	3		33	67
SEYMOUR ROAD	I MANUI PLACE			1			2	3	2	67	33
OTITORI BAY ROAD	I OPOU ROAD		1				2	3	1	33	33
RIMU ST	I KELWYN AVENUE		1				2	3	1	100	
RATA ST	200 E KAPONGA CRESCENT	1					2	3	1	33	
PINEDALE PLACE	I FAIRDENE AVENUE	1					2	3	1		33
GREAT NORTH ROAD	I AOTEA ROAD			1			2	3	2	67	67
SEYMOUR ROAD	20 N BENITA PLACE			1			2	3	2	33	33
BAHARI DRIVE	160 E STARLING PLACE		1				2	3	2	67	67
UNIVERSAL DRIVE	100 E DON BUCK ROAD		1				2	3	2	33	33
VIEW ROAD	I LAVELLE ROAD		1				2	3	2	33	33
GUNNER DRIVE	I PRINGLE ROAD	1					2	3	2		
WOODGLEN ROAD	170 N GLENGARRY ROAD	1					2	3	2		100

**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 %
FARQUHAR ROAD	40 N PAKIRA AVENUE					1	2	3	3	67	
HUIA ROAD	200 W MINNEHAHA AVENUE					1	2	3	3	33	33
RATANUI ST	50 S ALDERMAN DRIVE					1	2	3	3		
WESTGATE DRIVE	50 W FERNHILL DRIVE					1	2	3	3		33
HENDERSON VALLEY ROAD	100 W GREAT NORTH ROAD			1			2	3	3	33	33
METCALFE ROAD	50 E RISERRA DRIVE			1			2	3	3		
STURGES ROAD	190 W VINTAGE DRIVE			1			2	3	3		
GREAT NORTH ROAD	600 S FELGROVE ST	1					2	3	3		
TRIANGLE ROAD	50 E ELDER PLACE	1					2	3	3	33	100

**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 %
PIHA ROAD	800 E LONE KAURI ROAD	1		3	1	1	4	10	7	80	40

**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 16	I	TE ATATU ON EBD EAST	17	17	19	20	24	34	131	104	40	26
SH 16	I	TE ATATU ON WBD	9	11	9	11	8	15	63	48	30	30
SH 16		500 N LINCOLN OBR	4	9	3	9	8	11	44	28	32	39
SH 16	I	BRIGHAM CREEK ROAD	4	1	4	6	2	7	24	15	21	17
TE ATATU OFF EBD	I	TE ATATU ROAD	3	0	0	3	4	8	18	16	28	28
SH 18		90 N HENDRIKA COURT	0	0	0	2	0	4	6	3	0	17

appendix


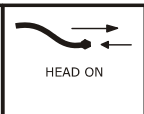


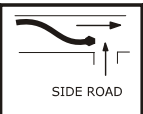


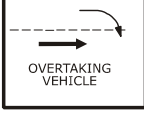
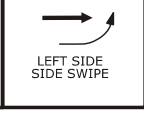







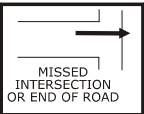
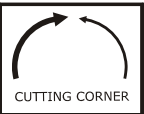
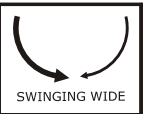
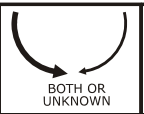
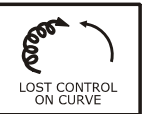





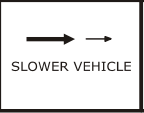

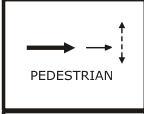
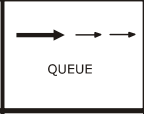
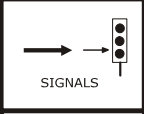
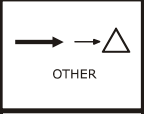

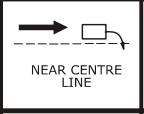

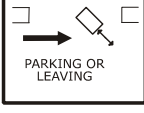
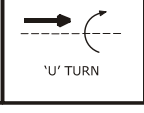
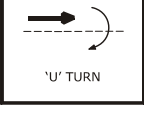

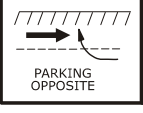


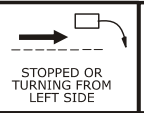
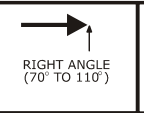
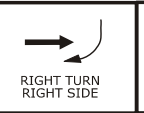
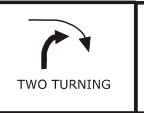
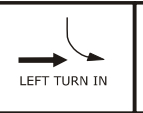
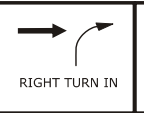
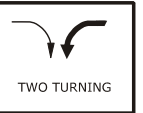
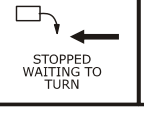
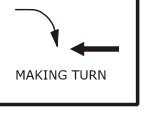
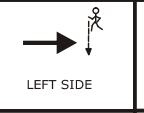
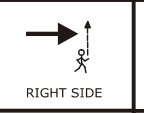
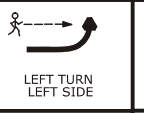
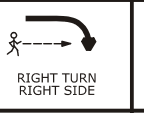





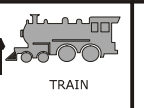
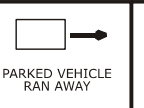

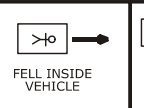
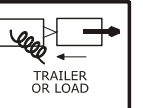


- Groupings of crash types
- Grouping of contributing factors

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						
Straight - Lost control / Head on	GE	GB	BA	CA	CB	CC	BE						
	 OVERTAKING VEHICLE	 LEFT SIDE SIDE SWIPE	 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						
Crossing / Turning	FC	FD	FE	FF	GA	GD	GF						
	 PEDESTRIAN	 QUEUE	 SIGNALS	 OTHER	 REAR OF LEFT TURNING VEHICLE	 NEAR CENTRE LINE	 TWO TURNING						
Pedestrian vs Vehicle	MA	MB	MC	MD	ME	MF	MG						
	 PARKING OR LEAVING	 'U' TURN	 'U' TURN	 DRIVEWAY MANOEUVRE	 PARKING OPPOSITE	 ENTERING OR LEAVING	 REVERSING ALONG ROAD						
Miscellaneous	GC	HA	JA	JC	KA	KB	KC						
	 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						
Pedestrian vs Vehicle	LA	LB	NA	NB	NC	ND	NE	NF	NG				
	 STOPPED WAITING TO TURN	 MAKING TURN	 LEFT SIDE	 RIGHT SIDE	 LEFT TURN LEFT SIDE	 RIGHT TURN RIGHT SIDE	 LEFT TURN RIGHT SIDE	 RIGHT TURN LEFT SIDE	 MANOEUVRING VEHICLE				
Miscellaneous	PA	PB	PC	PD	PE	PF	QA	QB	QC	QD	QE	QF	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**