

***Waitakere City***  
***Road Safety Report***  
***2005 to 2009***



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## Introduction and general information

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

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

### Council authority peer groups

Traffic crash patterns and features for an area can depend on the traffic and roading characteristics of that area. The most useful comparisons are made with other areas or authorities with similar characteristics, rather than with the whole country. The data for the city is compared with a peer group of similar council authorities (Group 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 2009 populations estimates updated from the 2006 census, traffic flows from the year 2009, and the average of five year crash data (2005–2009).
3. Traffic flows are based on Road Asset Maintenance and Management (RAMM) data from December 2009. As different road controlling authorities update flow data in RAMM at different times some data will be more up to date than other data, hence caution should be exercised when comparing traffic flow based crash rates in one authority with those of other authorities particularly as the traffic flow data (VKT) used in the calculations can not be considered definitive. Comparisons should be considered as indicative only.
4. With four to five categories of road for each council authority, some categories will only have short lengths of road. This may cause significant variation in the calculated crash and casualty rates.
5. The crash numbers include all those within the road controlling authority. The crash numbers used in the crash rate section can, however, vary slightly from the remainder of the document as only 'on road' crashes can be used. These are crashes on roads that have traffic volume information recorded. Crashes that occurred in car parks, reserves, beaches etc. are excluded.



6. The severity of a crash is determined as the most severely injured casualty in the crash. Injury severity is classified as fatal, serious, or minor as follows:
  - Fatal:** Injuries that result in death within 30 days of a crash.
  - Serious:** Fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock necessitating medical treatment, and any injury involving removal to and detention in hospital.
  - Minor:** Injuries which are not serious but which require first aid, or cause discomfort or pain to the person injured, eg sprains and bruises.
  
7. Ethnicity of road users involved in crashes can now be recorded on traffic crash reports, although some reports may not include this data. Figures 3.25 and 3.26 shows the ethnicity of casualties, where known. Ethnicity is divided into five different groups. Only data for 2005 to 2009 is available. The graph includes all casualties irrespective of culpability.

NOTE: Ethnicity data should be treated with caution as the data can be considered subjective and incomplete.
  
8. For the licence status grouping in Figures 3.27 and 3.28 the 'no/wrong licence' group includes drivers who have never held a licence or have an expired or wrong class licence. This graph includes all drivers irrespective of injury or culpability.
  
9. See appendix for detailed descriptions of:
  - crash movement types and crash movement groupings (for Figures 4.1–4.4)
  - grouping of factors contributing to crashes (for Figures 5.1–5.14)
  
10. Blackspot sites listed in Figures 9.1 and 9.3 are listed by the total cost of crashes at the site and are listed regardless of any remedial treatments. Site were initially selected on the basis of 3 reported crashes and then the sites listed were limited to those with a higher number of injury crashes and over a defined social cost, which is indicated on each figure.
  
11. Alarm crash sites in section 9 as Figures 9.4 to 9.6 are crash sites that have shown a statistically significant increase (at the 95 percent level of confidence) in reported crashes in 2009 compared with the previous five years (2004 to 2008). The sites are initially selected on the basis of 3 or more reported crashes at the sites. Sites are listed regardless of any recent remedial treatments and they may already be under investigation for treatment.



# *Crash Rates and Costs*



## Crash reporting rates

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

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

**Figure 1.1 Reporting rate serious injuries to hospital admissions**

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

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 1.4 Peer group crash and casualty rates

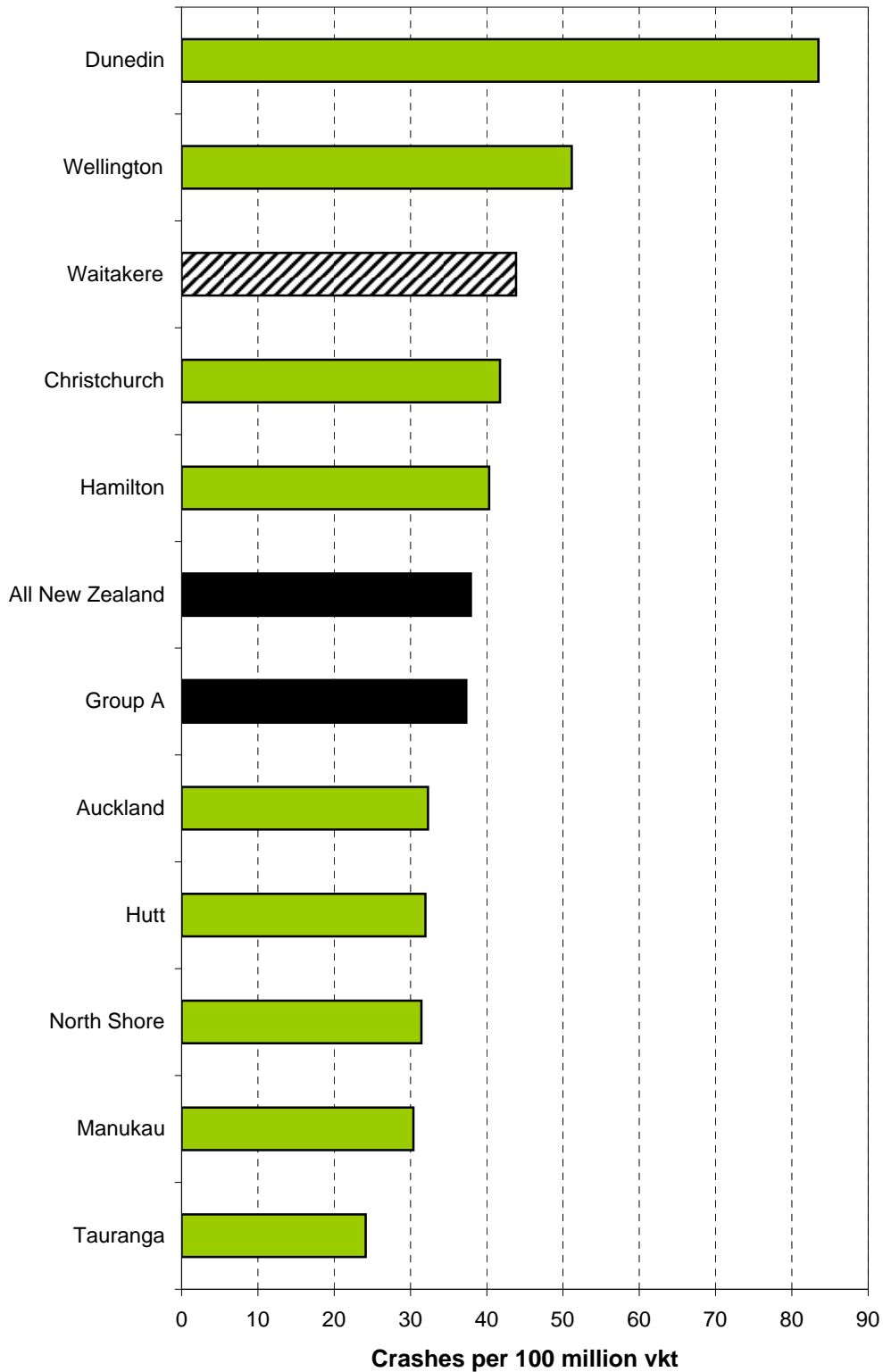
**Group A**

City or District	Crashes per					Casualties per					2009 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	74	54	15	33	40	111	71	19	444100	21
Christchurch	25	42	23	27	19	32	52	31	35	25	372600	9
Dunedin	40	83	67	63	19	57	118	95	91	32	123700	24
Hamilton	23	40	46	20	37	29	50	56	25	55	140700	10
Hutt	21	32	299	128	15	26	39	406	147	19	102100	23
Manukau	18	30	33	57	13	24	40	46	82	19	368600	22
North Shore	19	31	32	54	14	24	39	46	66	19	225800	20
Tauranga	15	24	*	11	15	19	29	*	14	24	112600	14
Waitakere	20	44	15	20	18	26	57	22	25	23	204500	16
Wellington	23	51	29	50	13	28	59	29	66	18	195500	15
<b>Group A</b>	<b>23</b>	<b>37</b>	<b>33</b>	<b>31</b>	<b>15</b>	<b>30</b>	<b>47</b>	<b>46</b>	<b>40</b>	<b>21</b>	<b>2290200</b>	<b>17</b>
<b>All New Zealand</b>	<b>131</b>	<b>38</b>	<b>29</b>	<b>28</b>	<b>18</b>	<b>36</b>	<b>48</b>	<b>42</b>	<b>38</b>	<b>26</b>	<b>4331000</b>	<b>41</b>

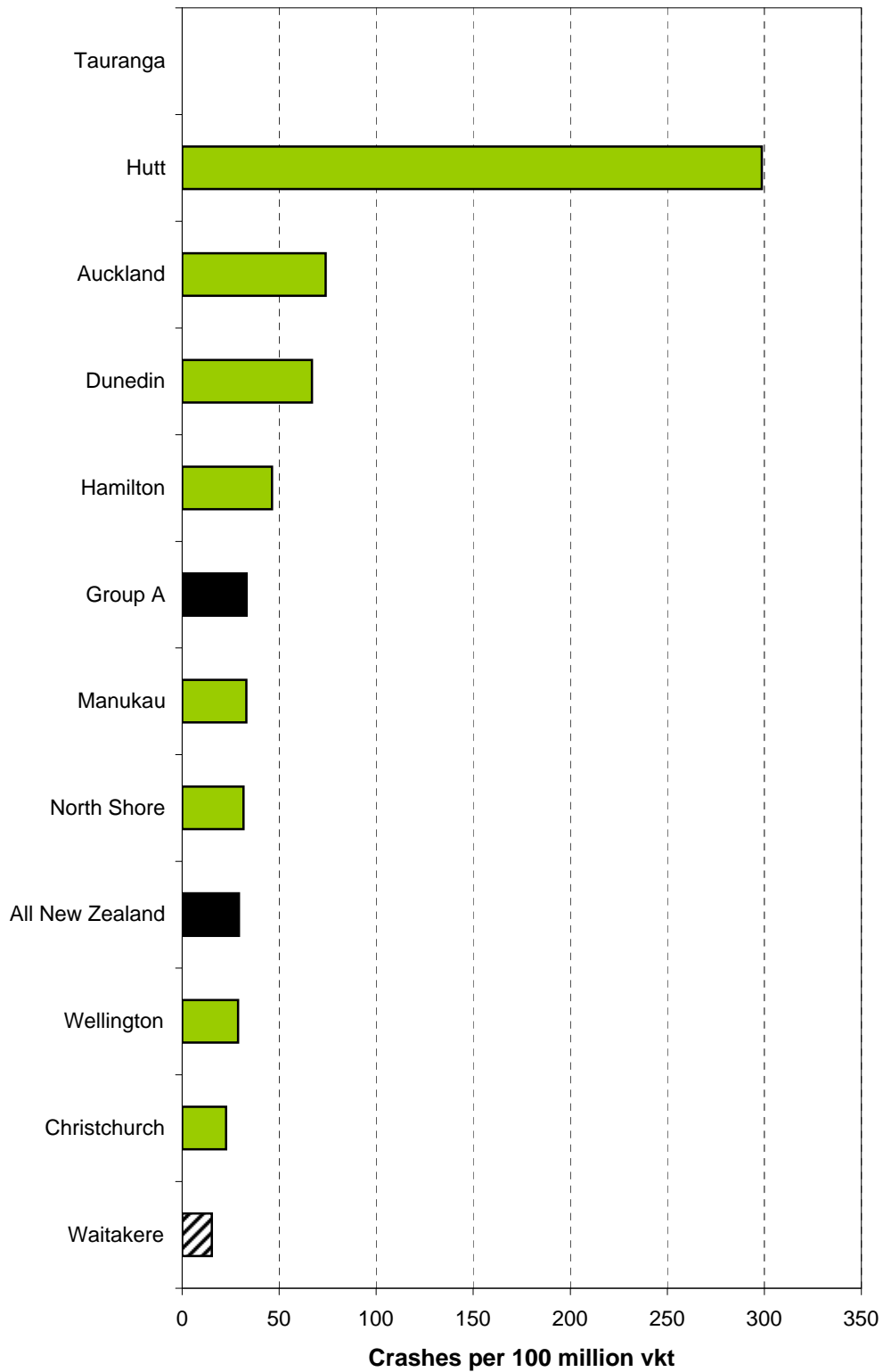
\* due to small numbers of rural crashes values are not considered meaningful

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 (2005-2009) and December 2009 VKT estimates.  
 Crashes and casualties per 10,000 population are based on five year average crash data (2005-2009) and Statistics NZ 2009 population estimates.

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

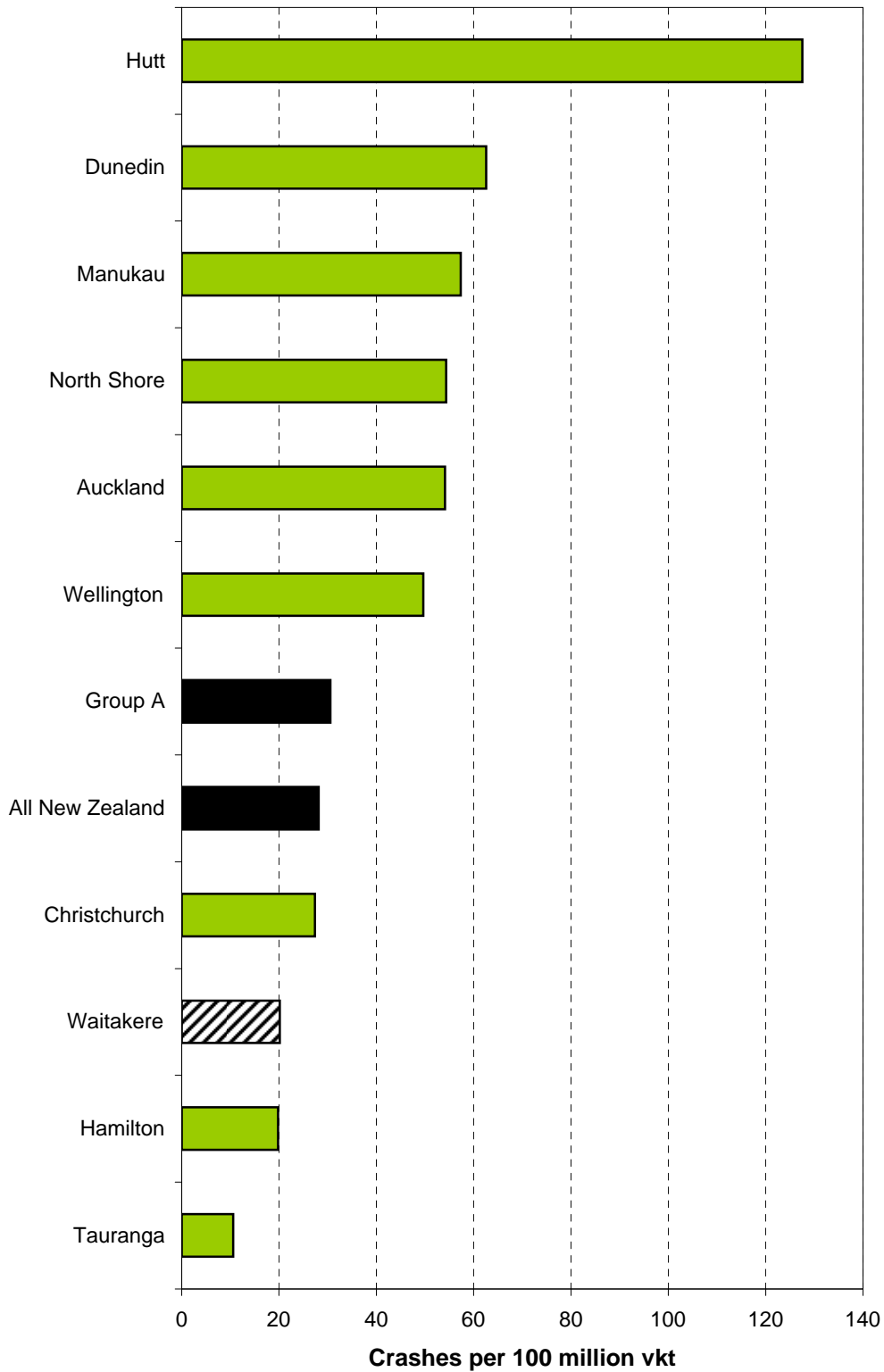


**Figure 1.6 Crashes per 100 million vehicle-kilometres travelled - rural council roads**

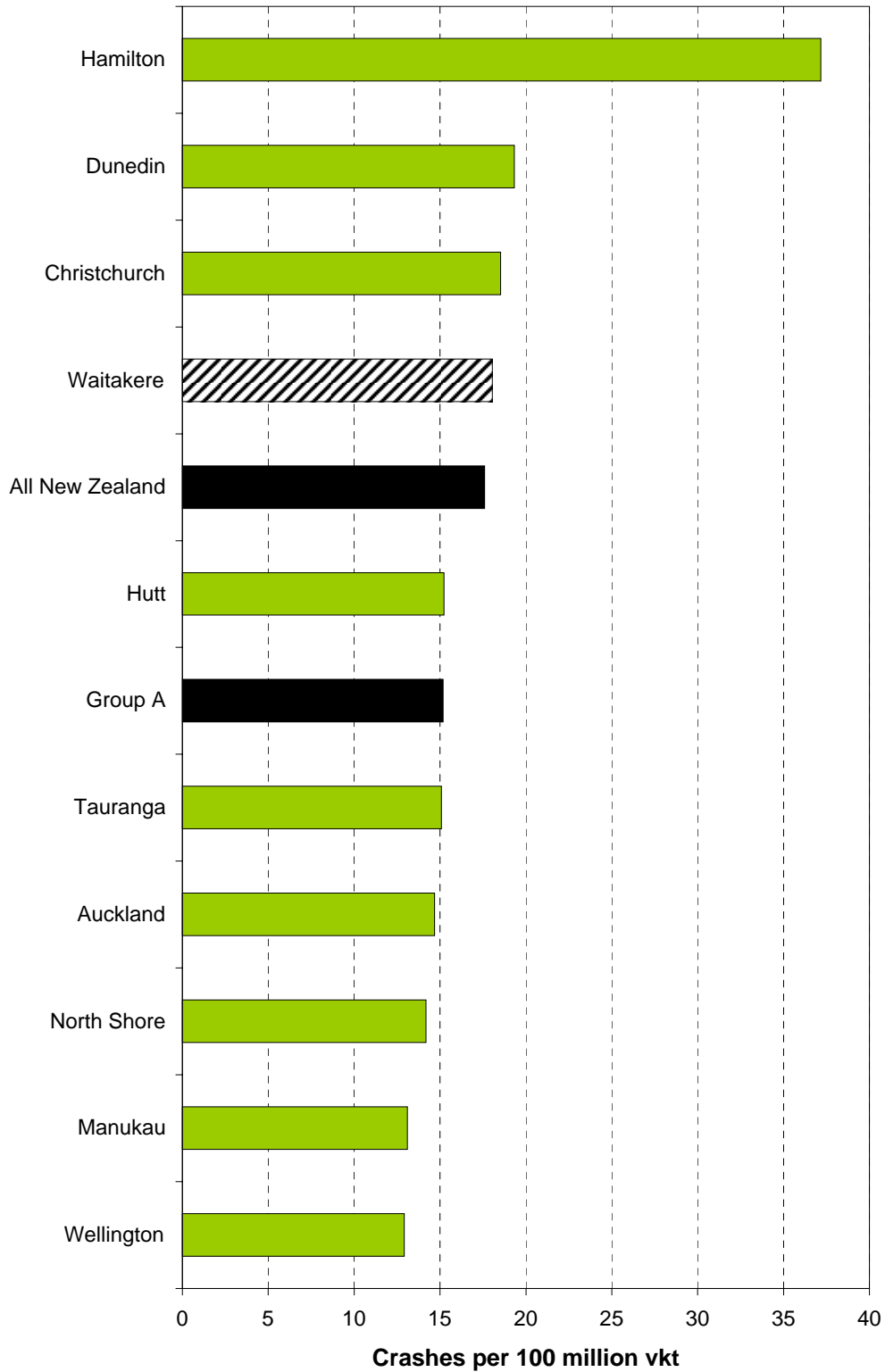




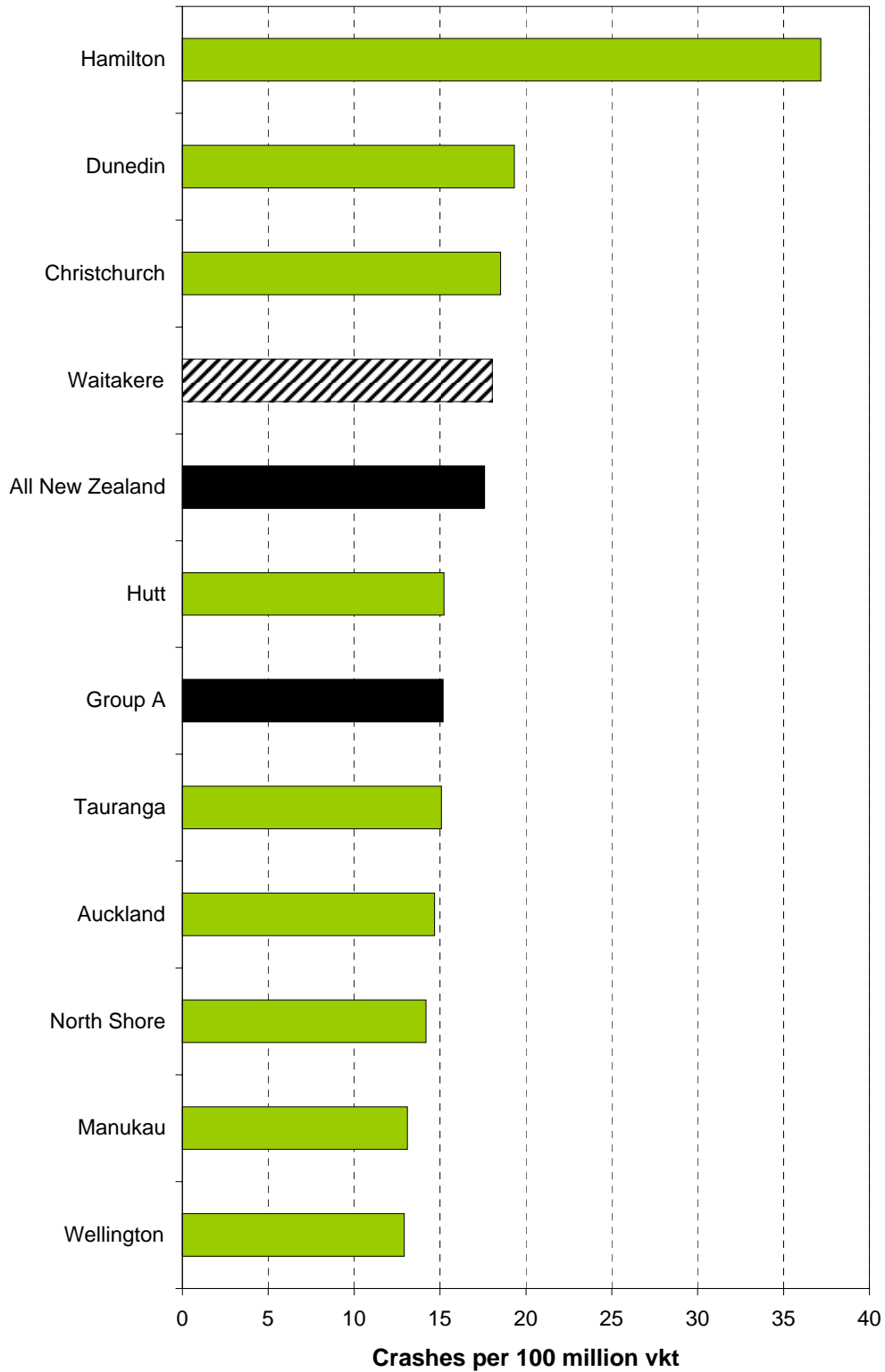
**Figure 1.7 Crashes per 100 million vehicle kilometres travelled  
- urban state highways**



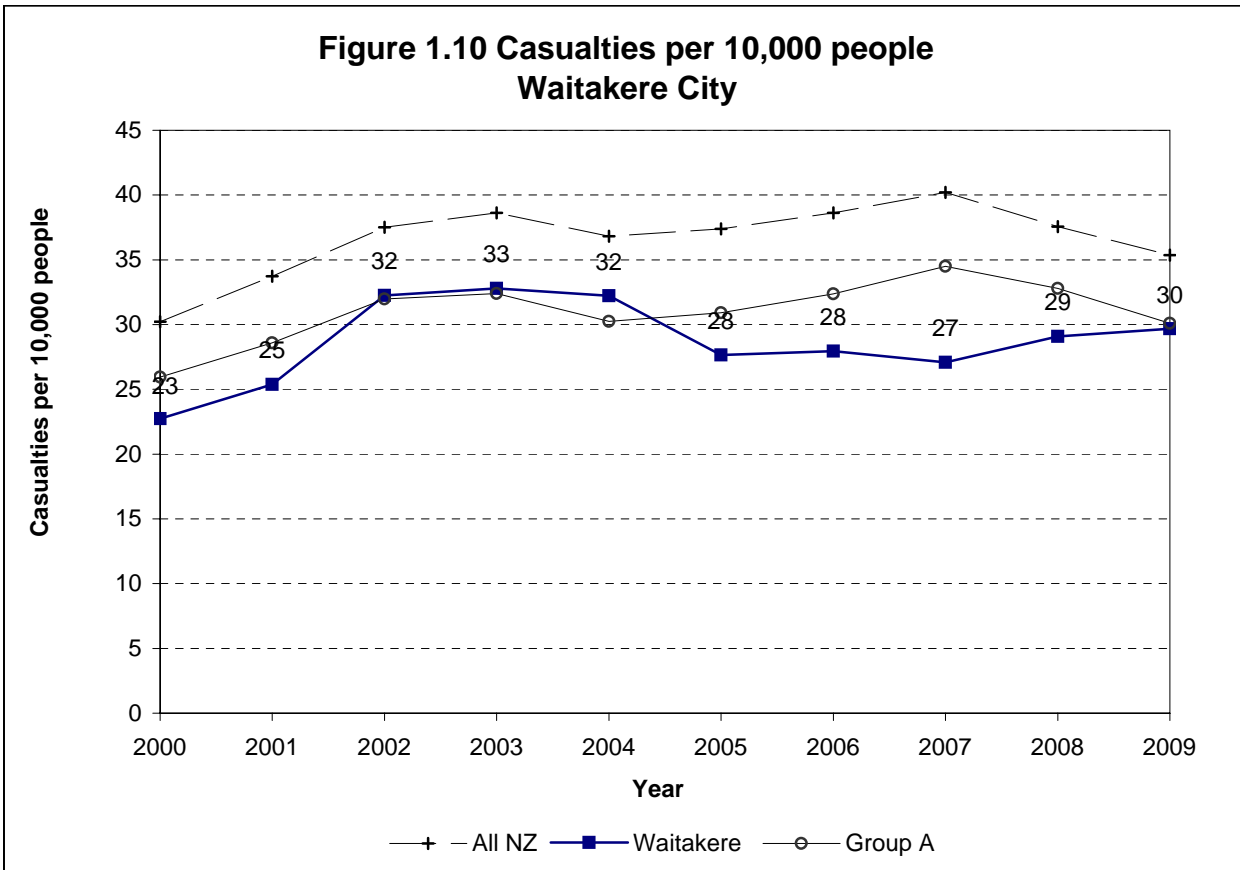
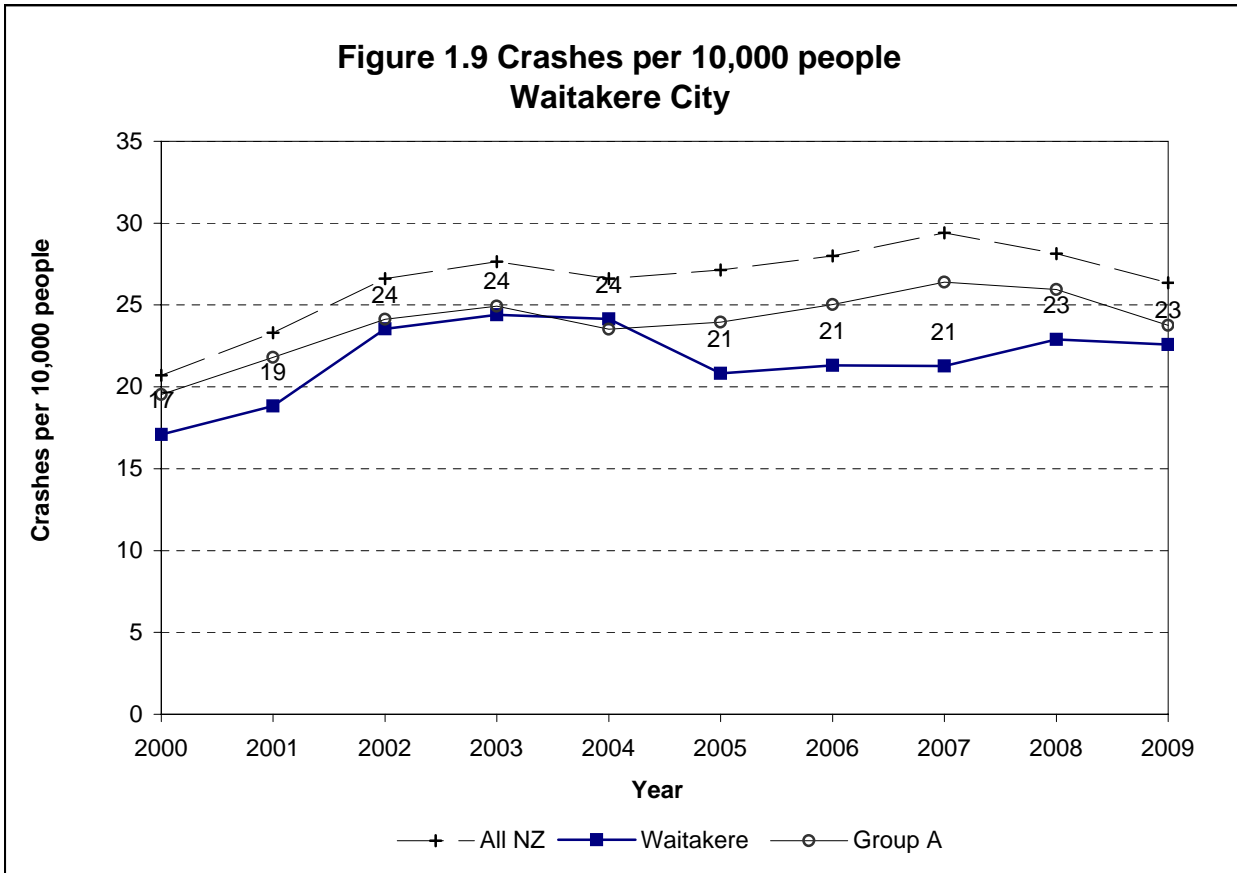
**Figure 1.8 Crashes per 100 million vehicle-kilometres travelled - rural state highways**



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







**Figure 1.11 Social cost of crashes in Waitakere City in 2009**

		Waitakere City	New Zealand
Council roads	urban	\$94.75	\$1,607.40
	rural	\$26.50	\$909.43
State Highways	urban	\$2.84	\$299.76
	rural	\$20.74	\$1,487.35
<b>Total</b>		<b>\$144.83</b>	<b>\$4,303.94</b>

Note: Crash costs are in \$ millions

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

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

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

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

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

For a detail discussion on this, please refer to 'The social cost of road crashes and injuries: June 2009 update', available at the Ministry of Transport's website:

<http://www.transport.govt.nz/assets/NewPDFs/NewFolder/Social-Cost-June-2009-update-final.pdf>

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

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

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



# *Crash Counts*





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

	2005	2006	2007	2008	2009	Total	%	Group A
Fatal crashes	6	7	5	3	15	36	2%	1%
Serious crashes	48	67	49	42	36	242	12%	15%
Minor crashes	333	330	355	402	397	1817	87%	84%
Total injury crashes	387	404	409	447	448	2095	100%	100%
Non-injury crashes	1214	1168	1275	1431	1300	6388		

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

	2005	2006	2007	2008	2009	Total	%	Group A
Fatal crashes	3	7	4	2	7	23	1%	1%
Serious crashes	42	56	42	32	33	205	12%	15%
Minor crashes	271	279	300	336	342	1528	87%	84%
Total injury crashes	316	342	346	370	382	1756	100%	100%
Non-injury crashes	1058	1037	1152	1284	1154	5685		

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

	2005	2006	2007	2008	2009	Total	%	Group A
Fatal crashes	3	0	1	1	8	13	4%	2%
Serious crashes	6	11	7	10	3	37	11%	14%
Minor crashes	62	51	55	66	55	289	85%	84%
Total injury crashes	71	62	63	77	66	339	100%	100%
Non-injury crashes	156	131	123	147	146	703		

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

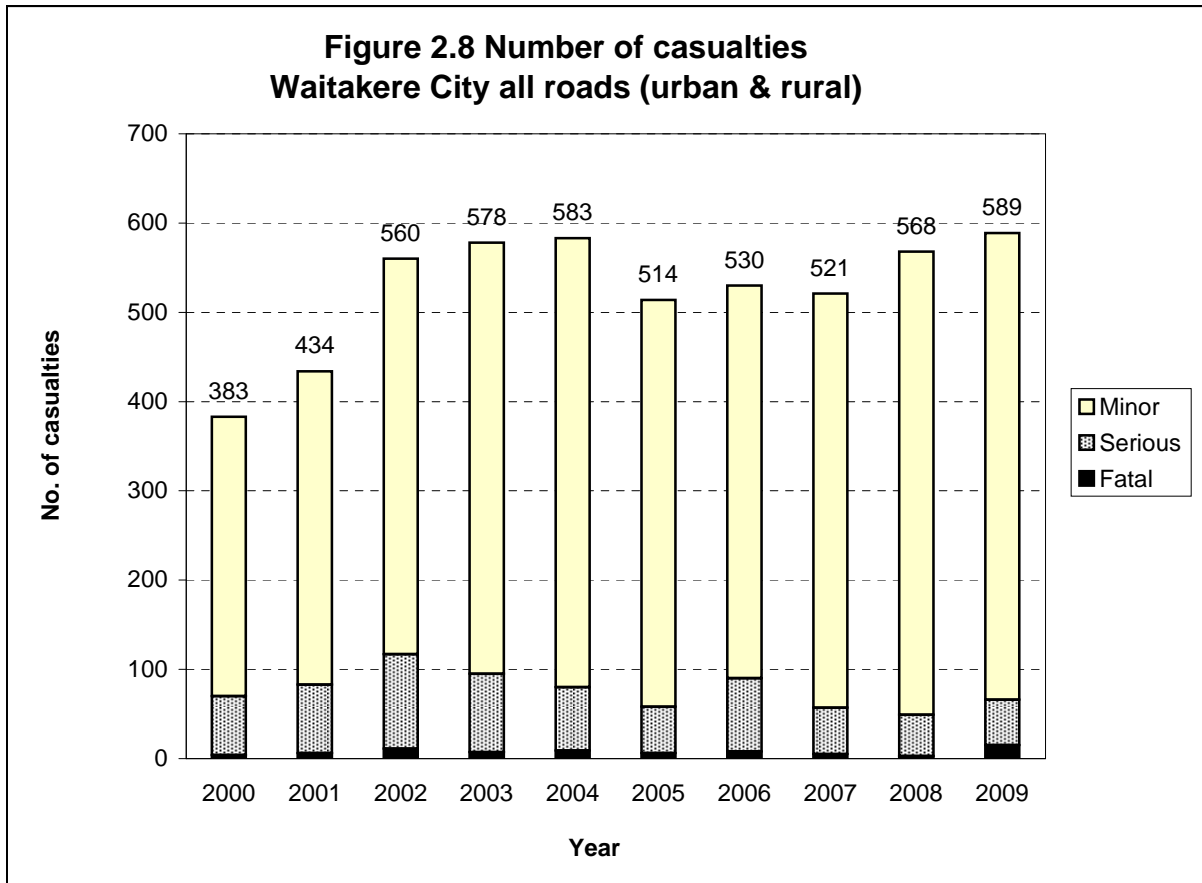
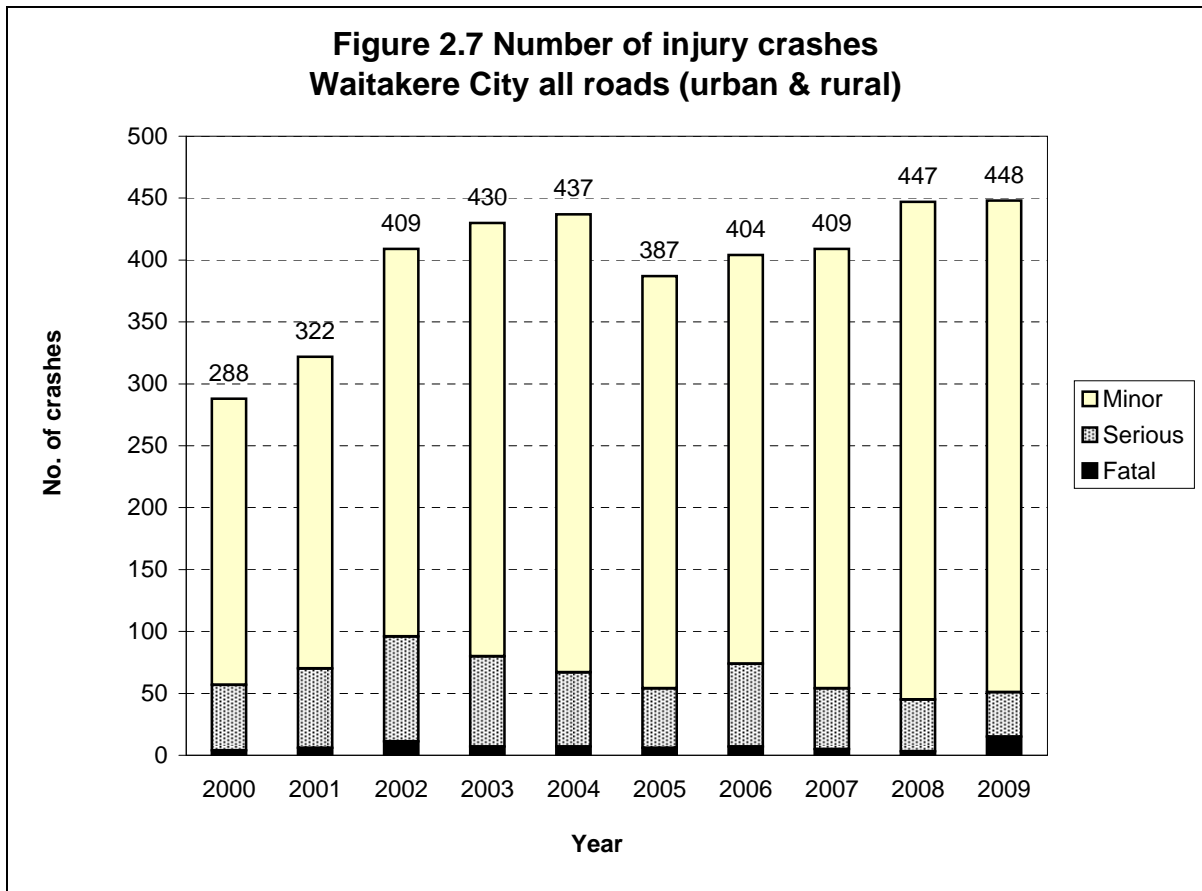
	2005	2006	2007	2008	2009	Total	%	Group A
Fatal casualties	6	8	5	3	15	37	1%	1%
Serious casualties	52	82	52	46	51	283	10%	13%
Minor casualties	456	440	464	519	523	2402	88%	86%
Total casualties	514	530	521	568	589	2722	100%	100%

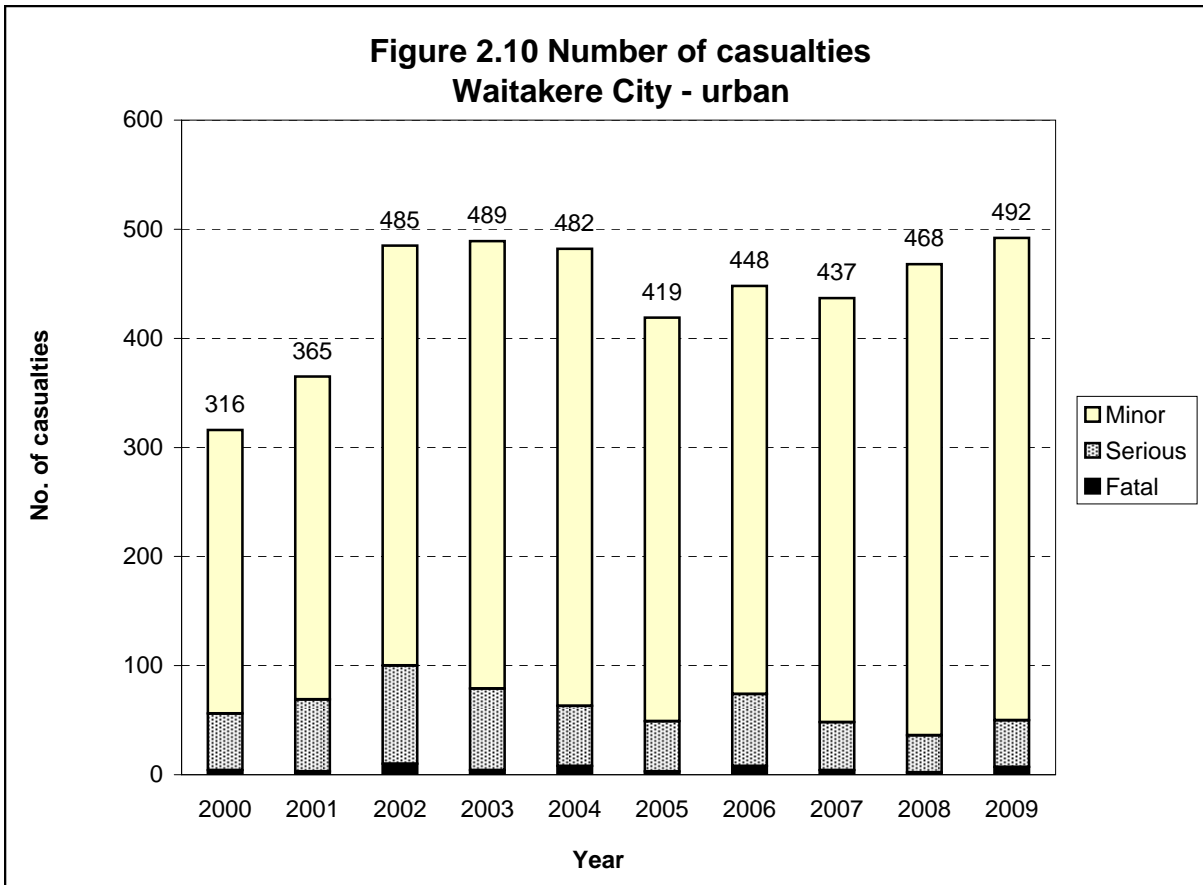
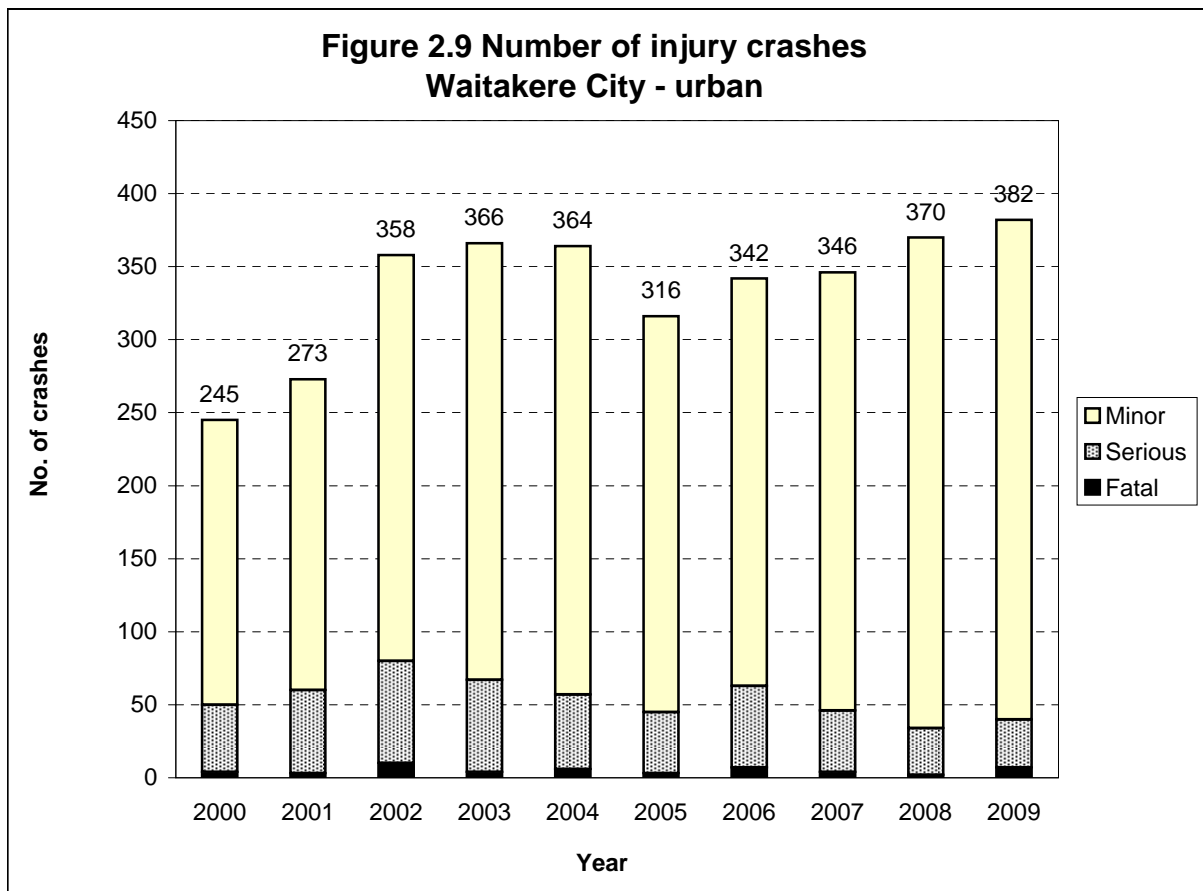
Figure 2.5: Casualty numbers and severity 2005 to 2009 - urban roads

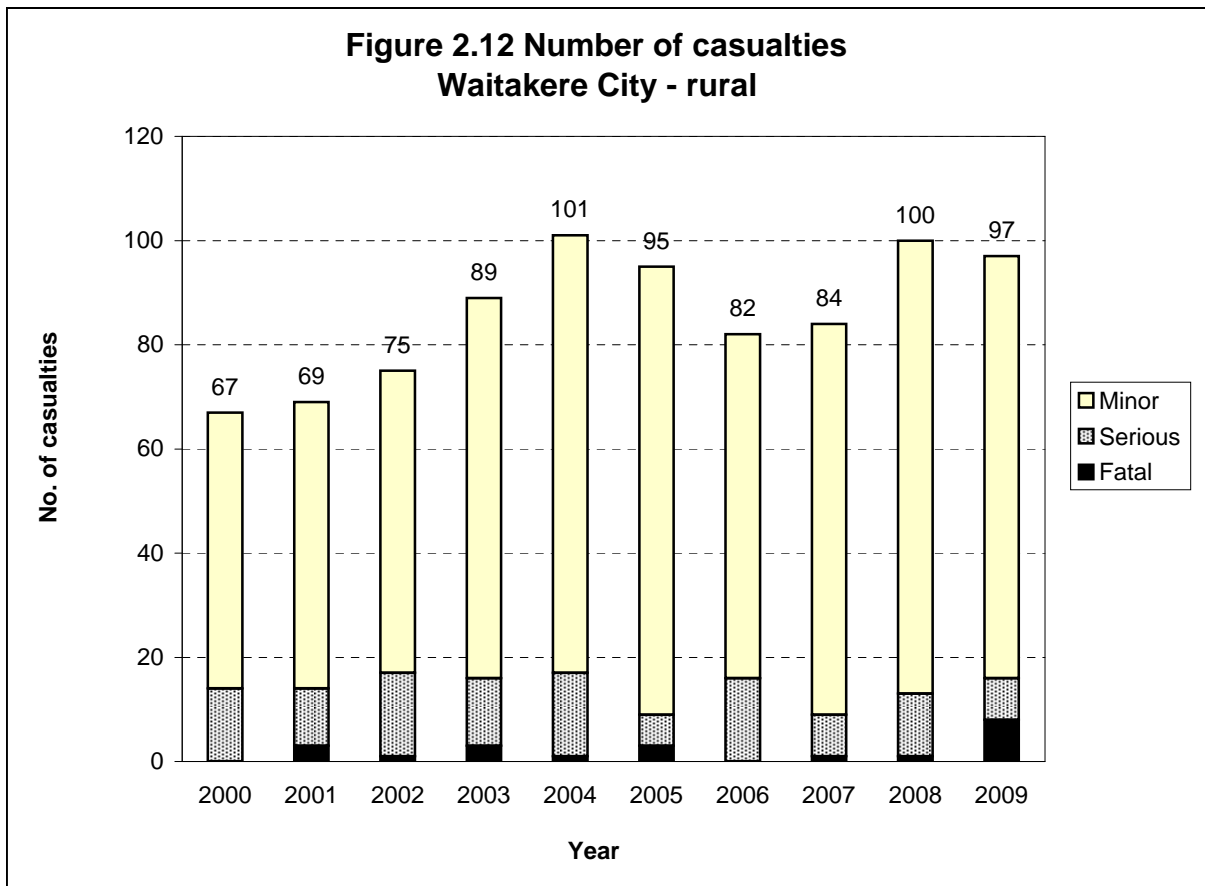
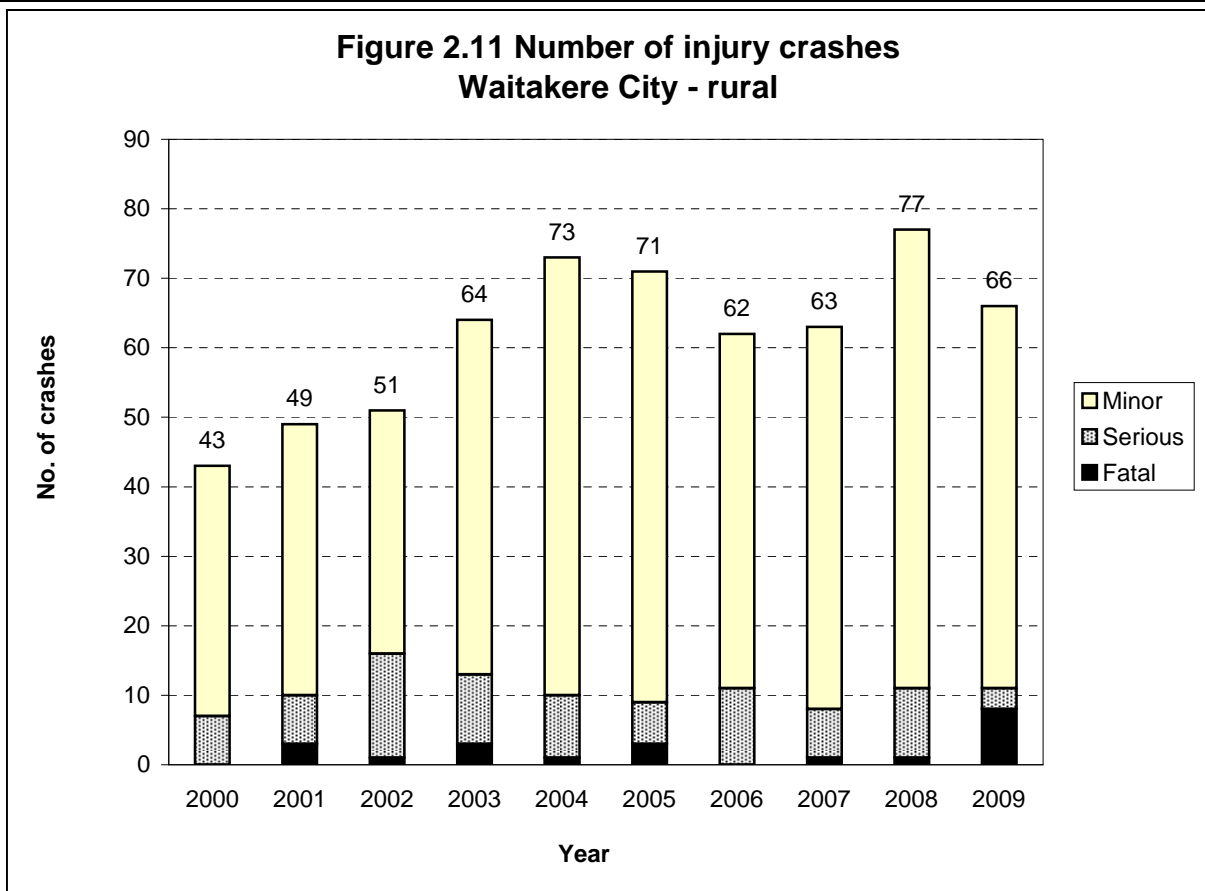
	2005	2006	2007	2008	2009	Total	%	Group A
Fatal casualties	3	8	4	2	7	24	1%	1%
Serious casualties	46	66	44	34	43	233	10%	13%
Minor casualties	370	374	389	432	442	2007	89%	86%
Total casualties	419	448	437	468	492	2264	100%	100%

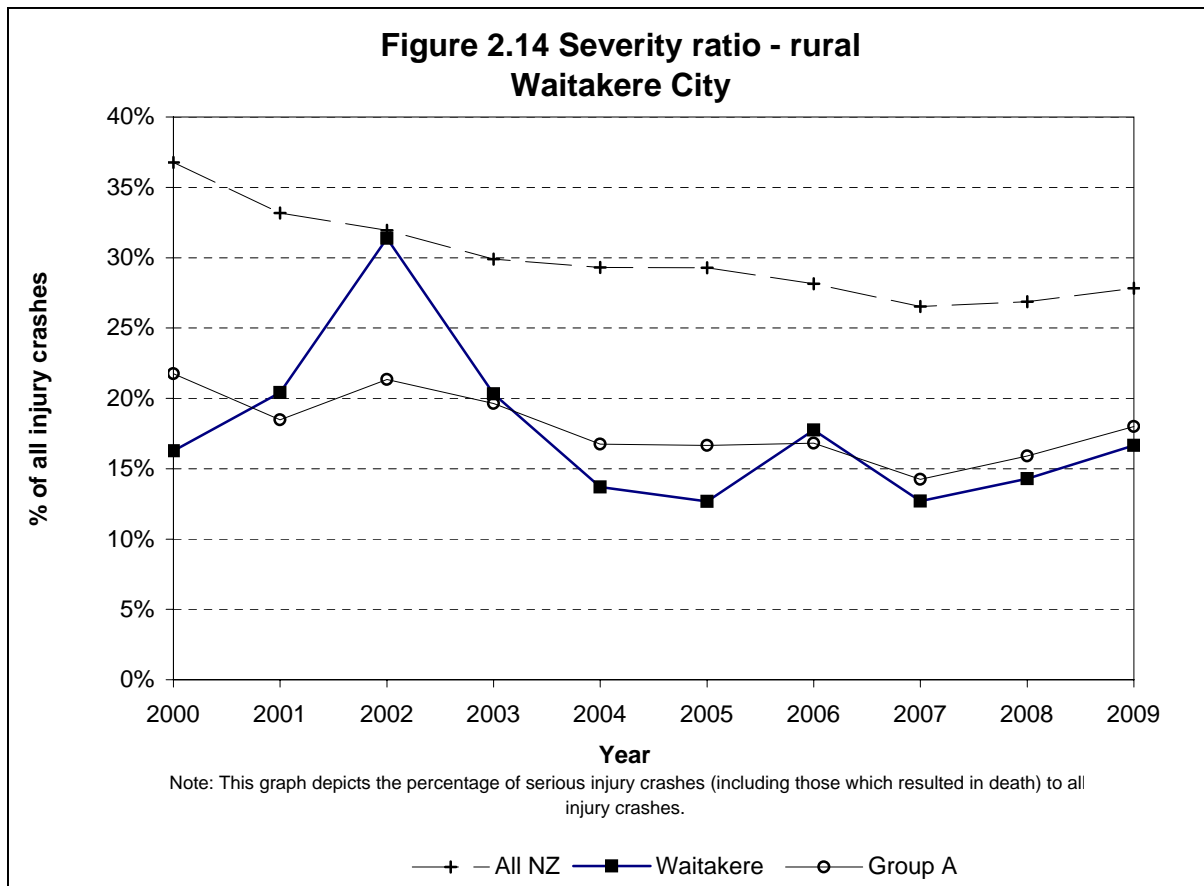
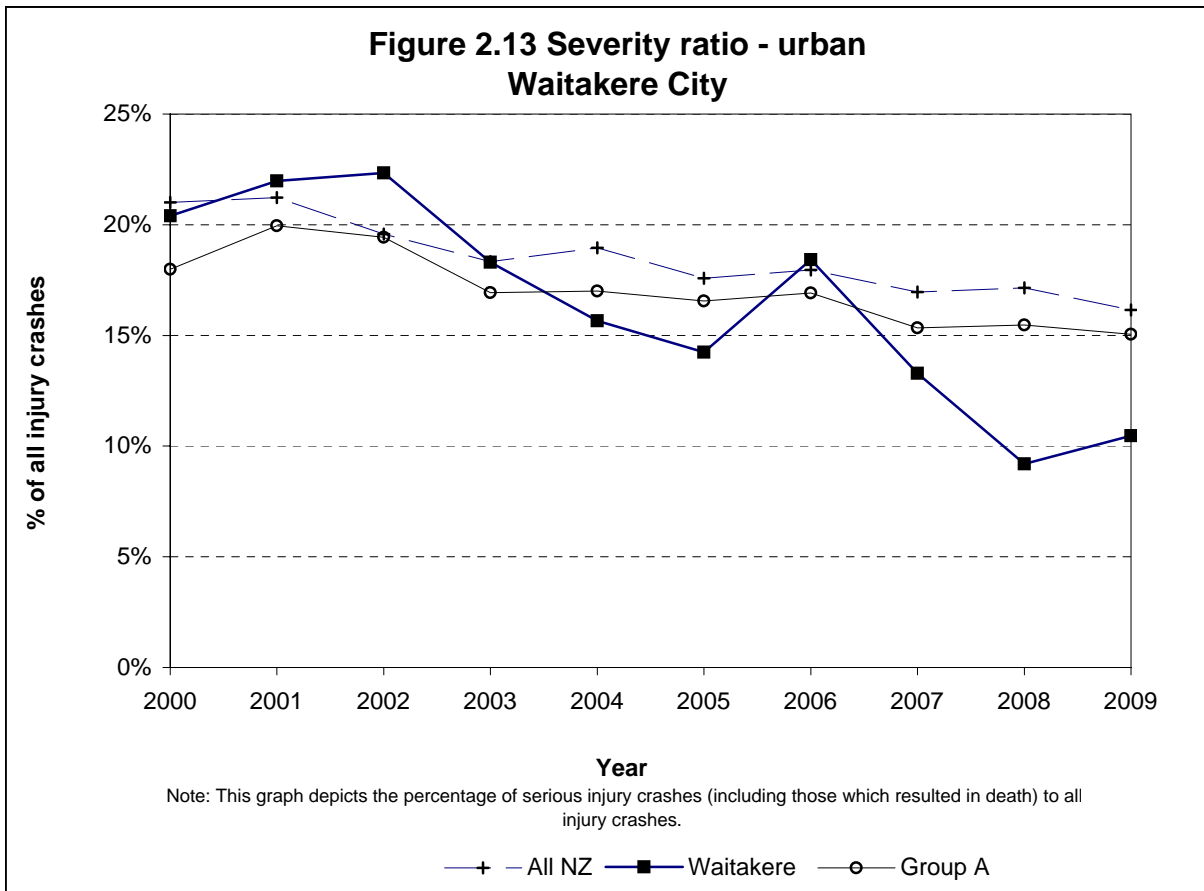
Figure 2.6: Casualty numbers and severity 2005 to 2009 - rural roads

	2005	2006	2007	2008	2009	Total	%	Group A
Fatal casualties	3	0	1	1	8	13	3%	2%
Serious casualties	6	16	8	12	8	50	11%	13%
Minor casualties	86	66	75	87	81	395	86%	85%
Total casualties	95	82	84	100	97	458	100%	100%









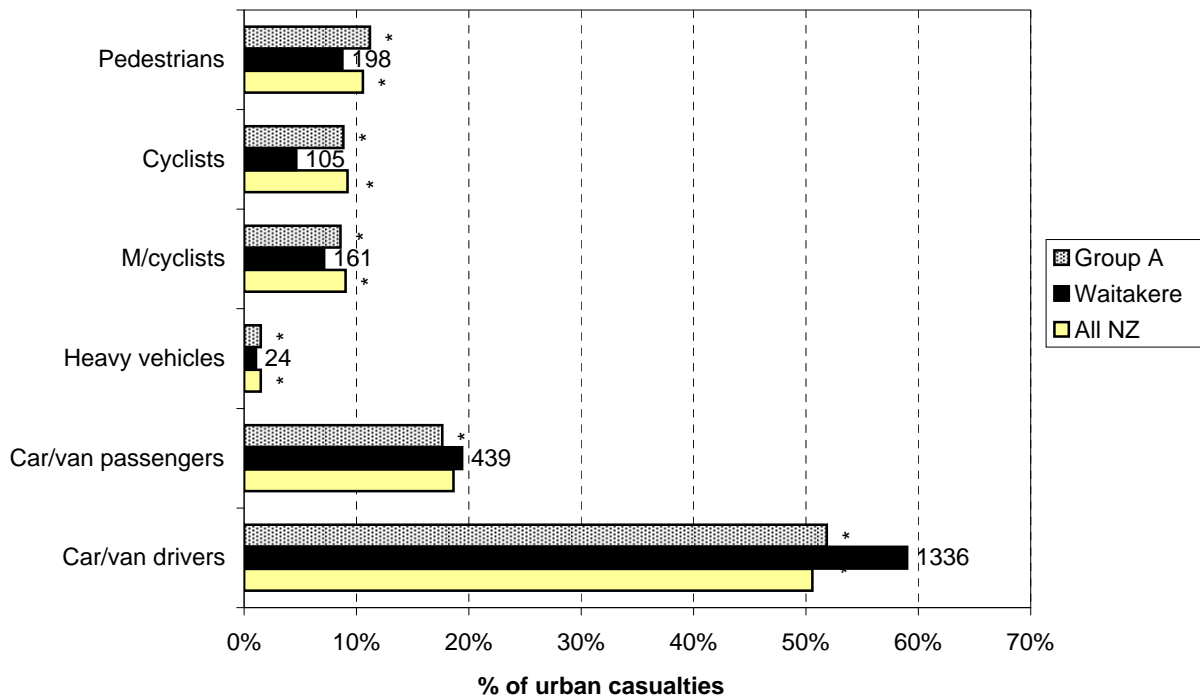


# *Road User Statistics*



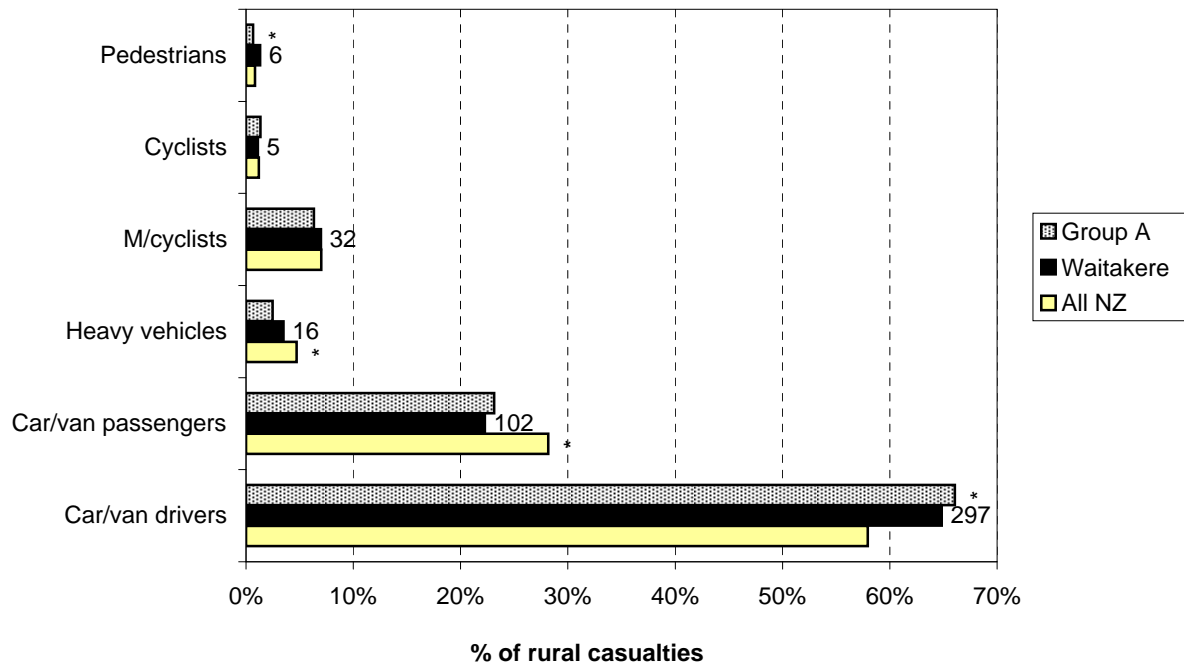


**Figure 3.1 Road user casualties - urban  
Waitakere City (2005-2009)**



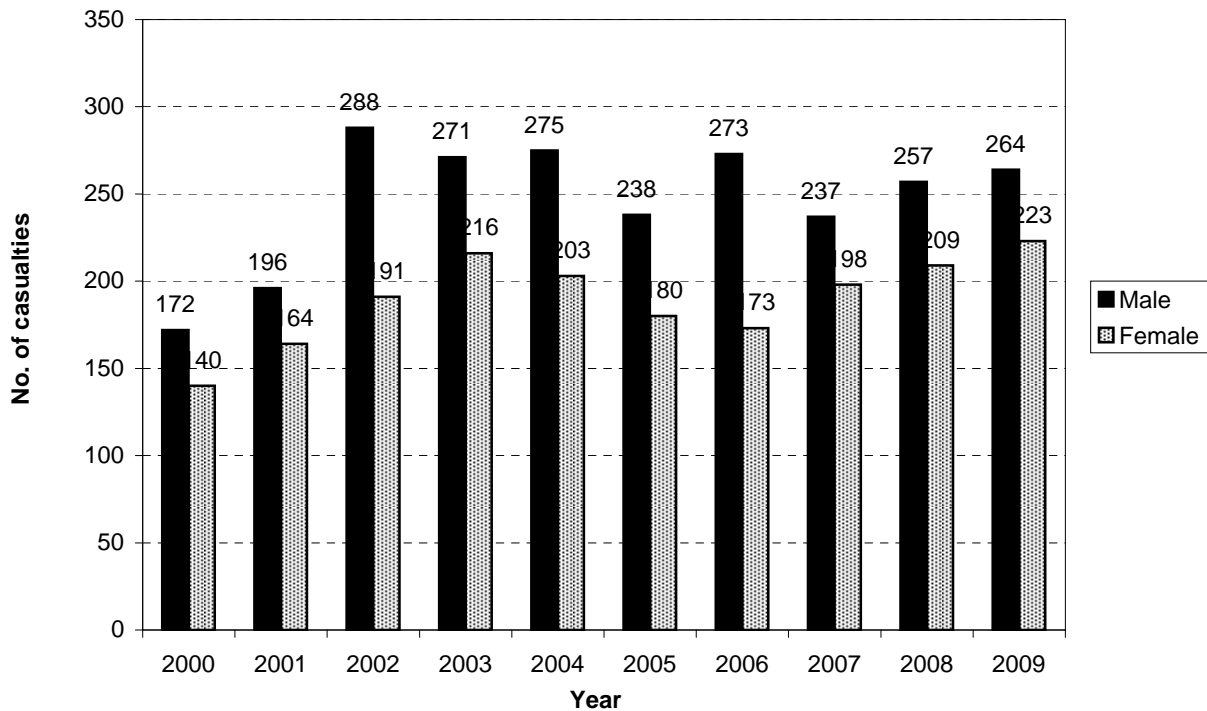
Note: While the graph plots percentages, the number of casualties is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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



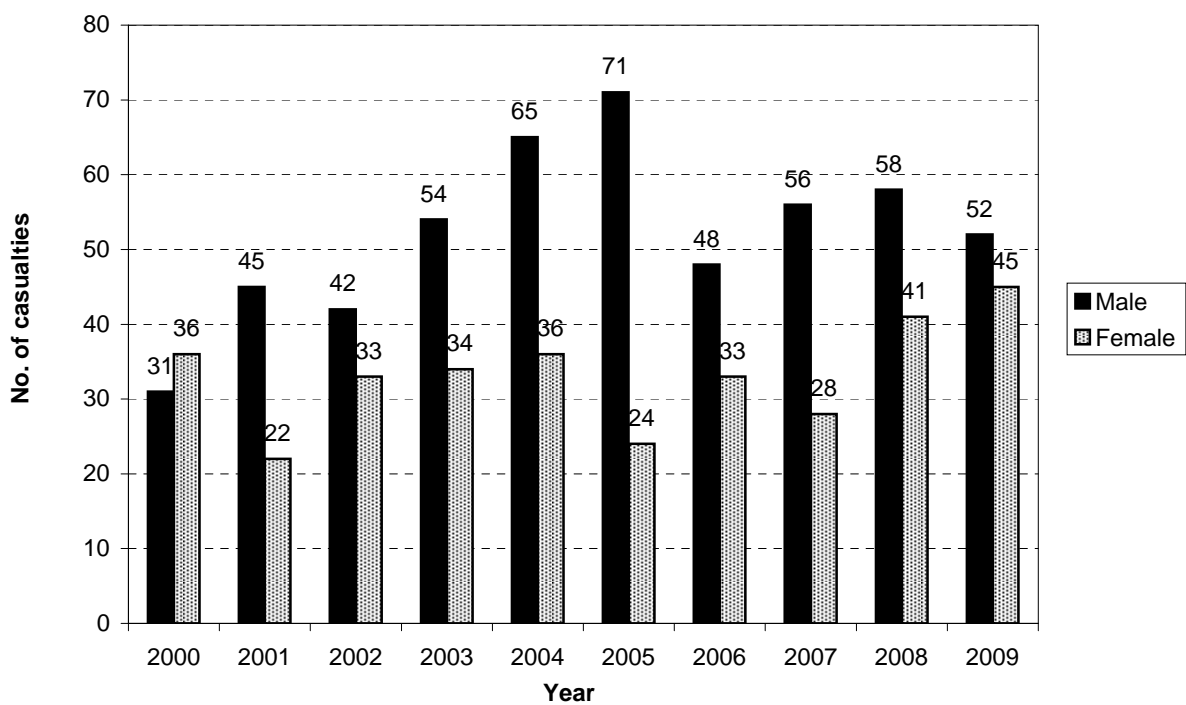
Note: While the graph plots percentages, the number of casualties is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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



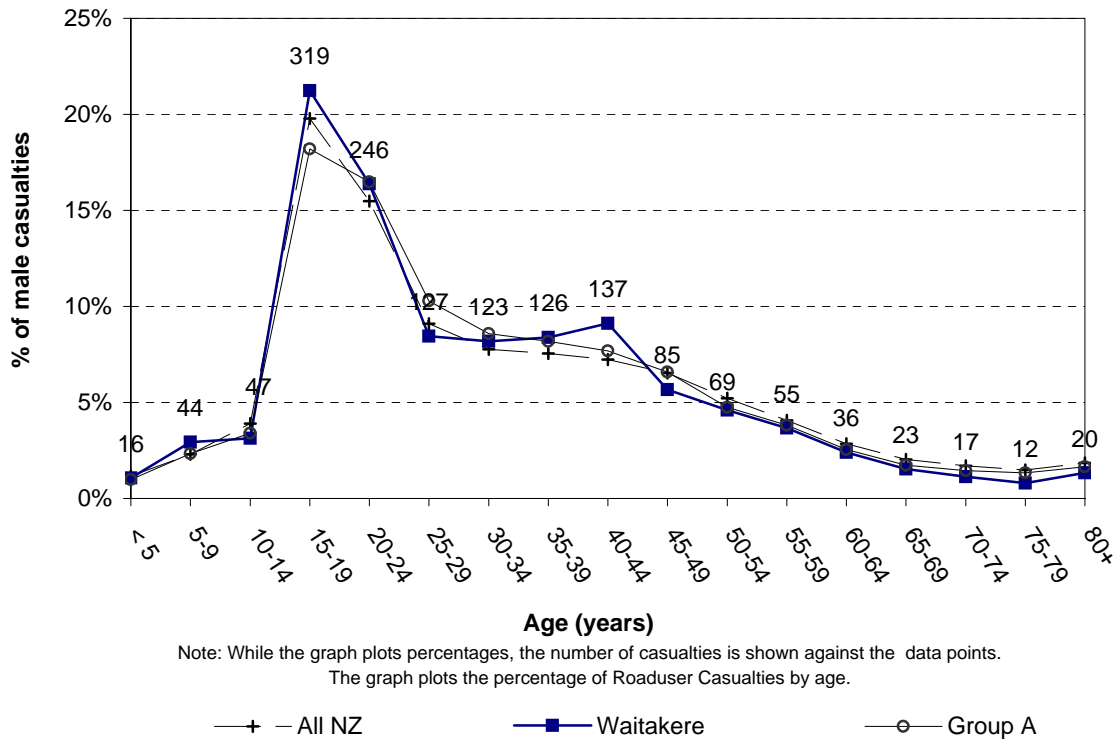
Note: This graph shows the number of male and female roadusers injured

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

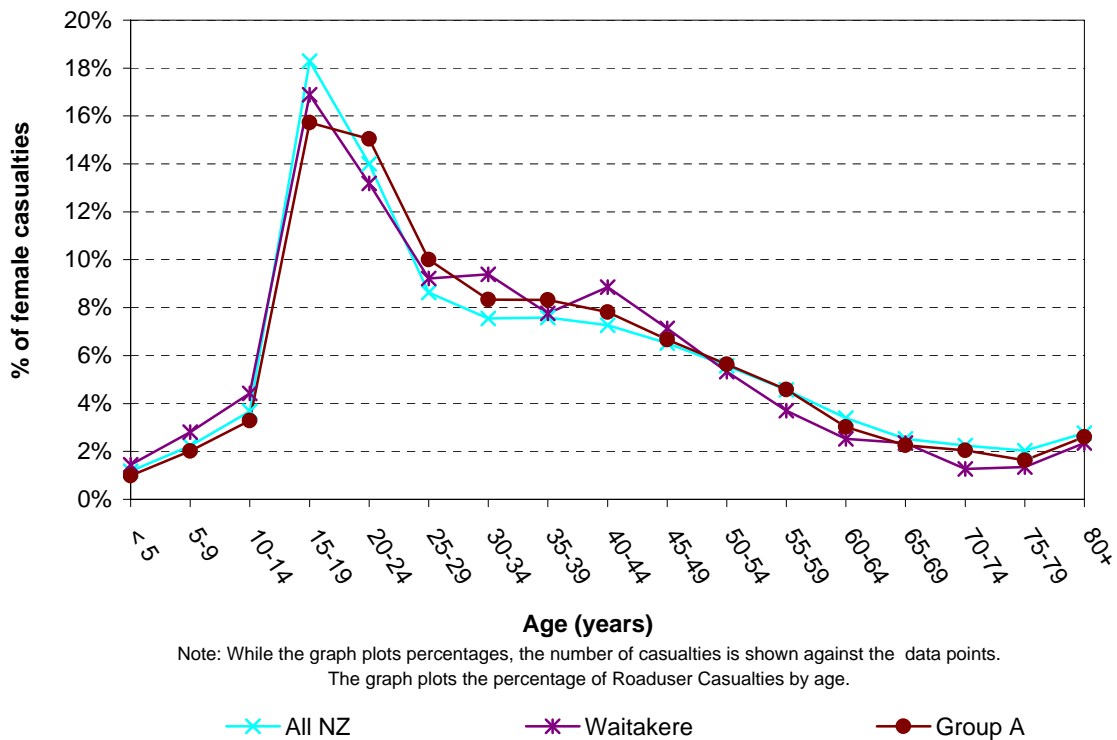


Note: This graph shows the number of male and female roadusers injured

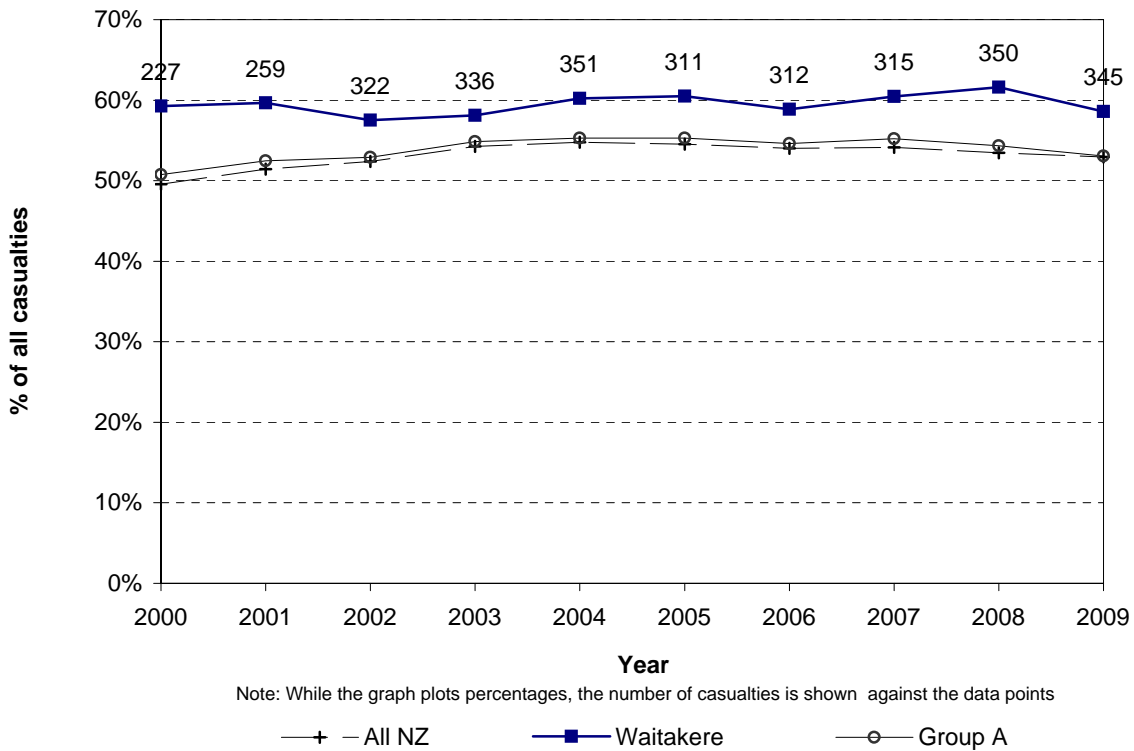
**Figure 3.5 Male casualties by age  
Waitakere City (2005-2009)**



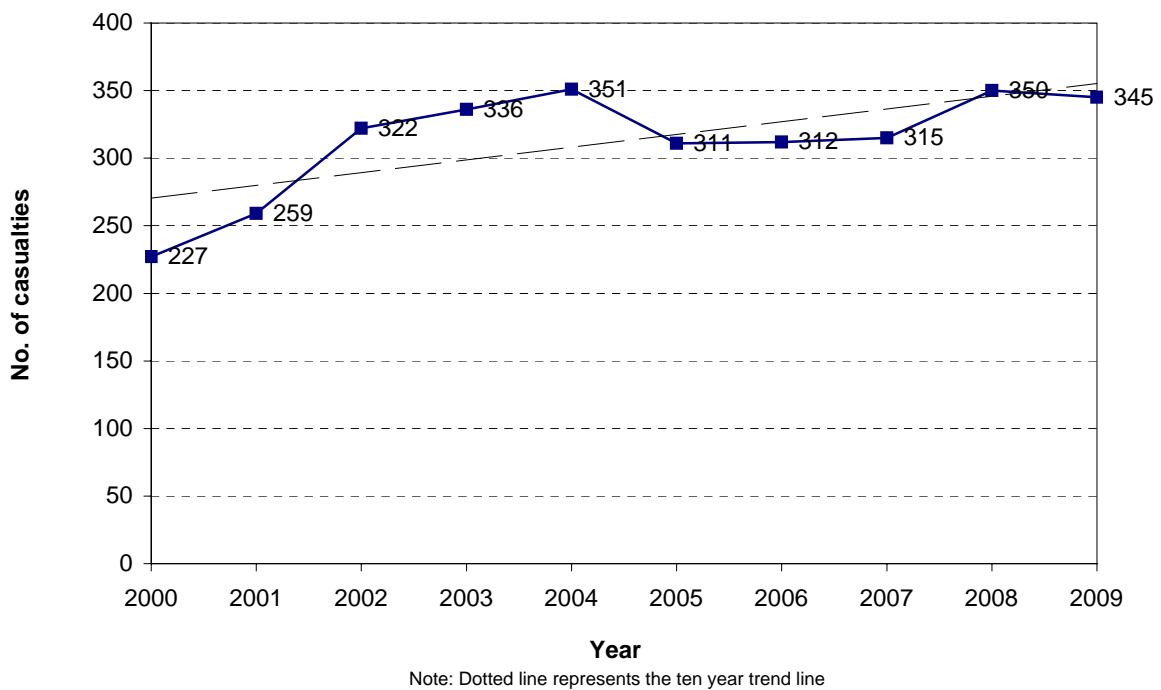
**Figure 3.6 Female casualties by age  
Waitakere City (2005-2009)**



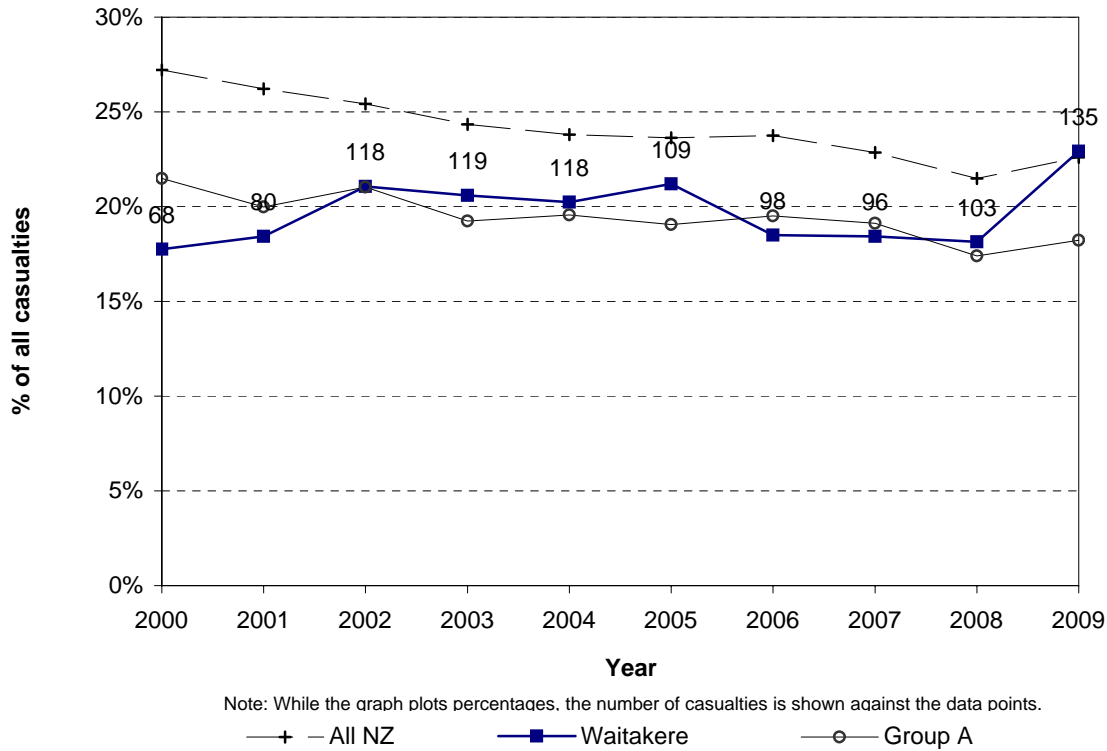
**Figure 3.7 Car/van driver casualties  
Waitakere City**



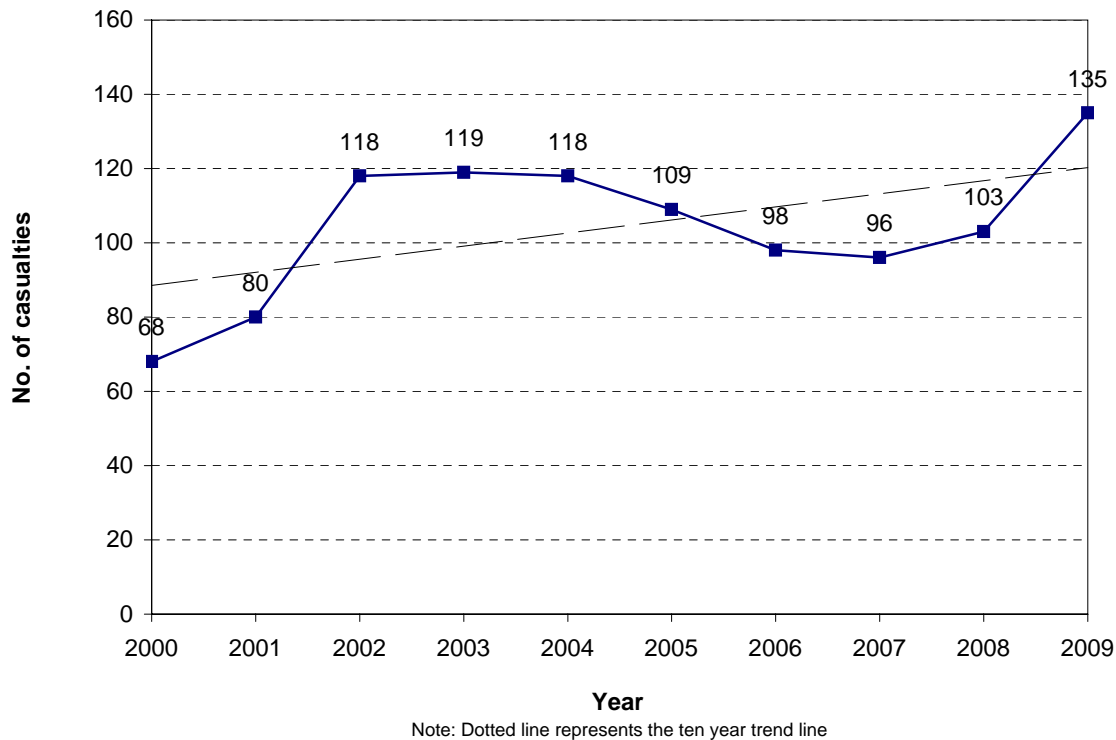
**Figure 3.8 Car/van driver casualties  
Waitakere City**



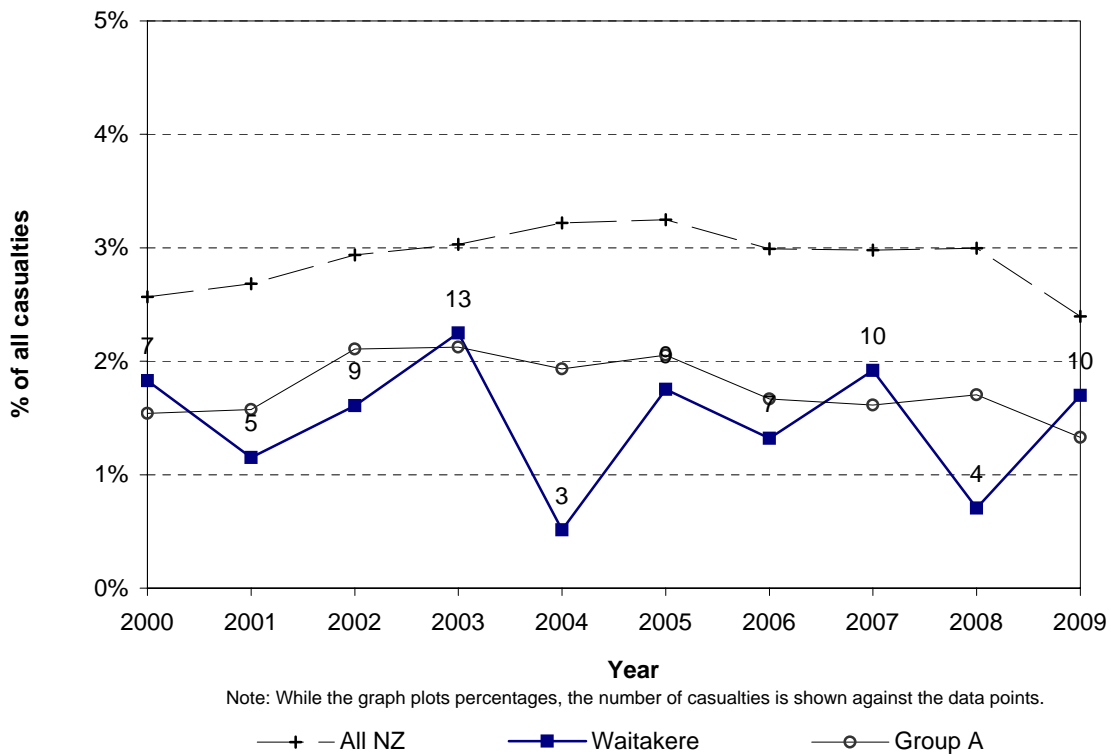
**Figure 3.9 Car/van passenger casualties  
Waitakere City**



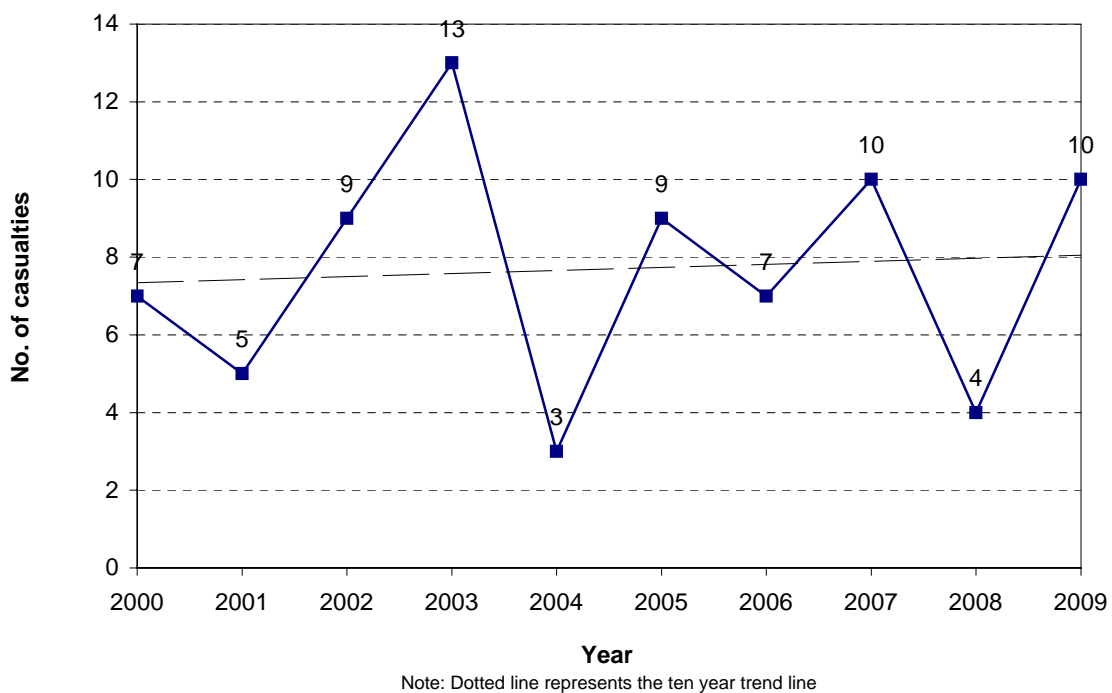
**Figure 3.10 Car/van passenger casualties  
Waitakere City**



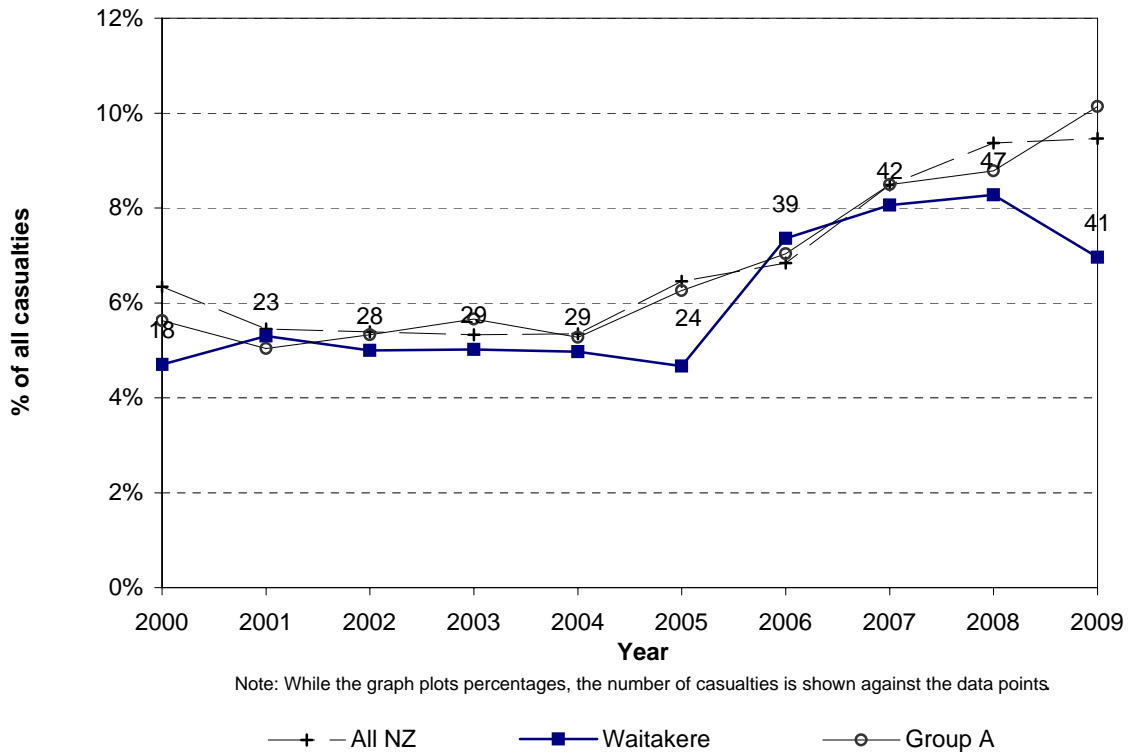
**Figure 3.11 Heavy vehicle casualties  
Waitakere City**



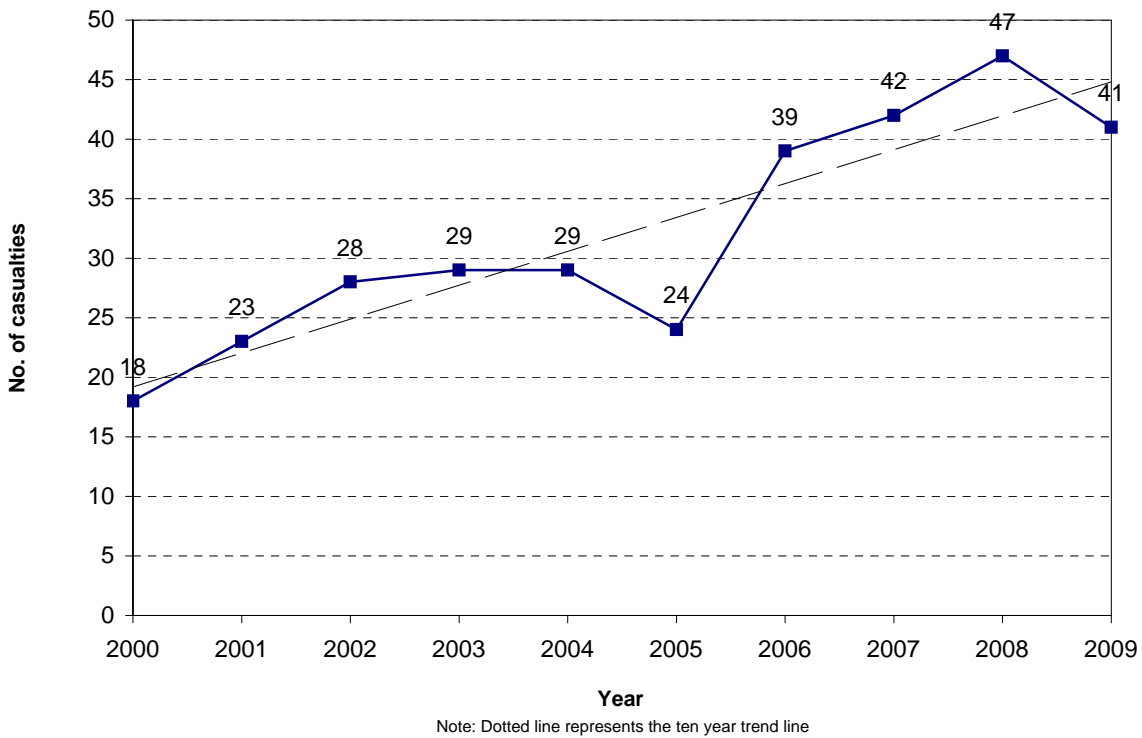
**Figure 3.12 Heavy vehicle casualties  
Waitakere City**



**Figure 3.13 Motorcyclist casualties  
Waitakere City**

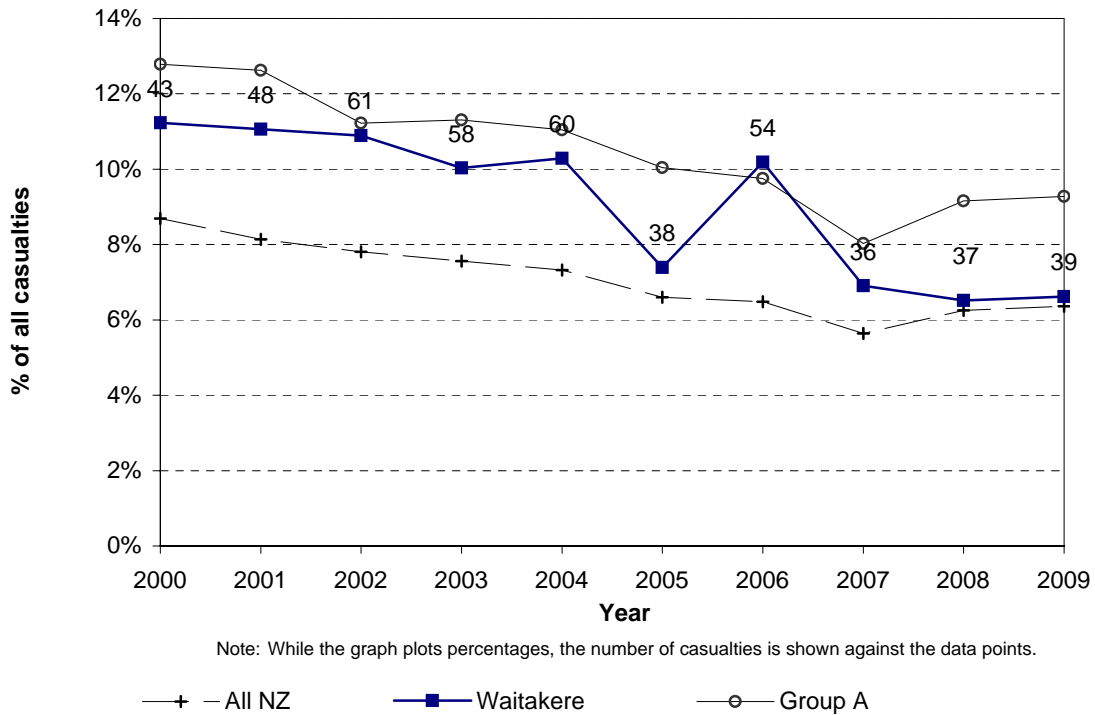


**Figure 3.14 Motorcyclist casualties  
Waitakere City**

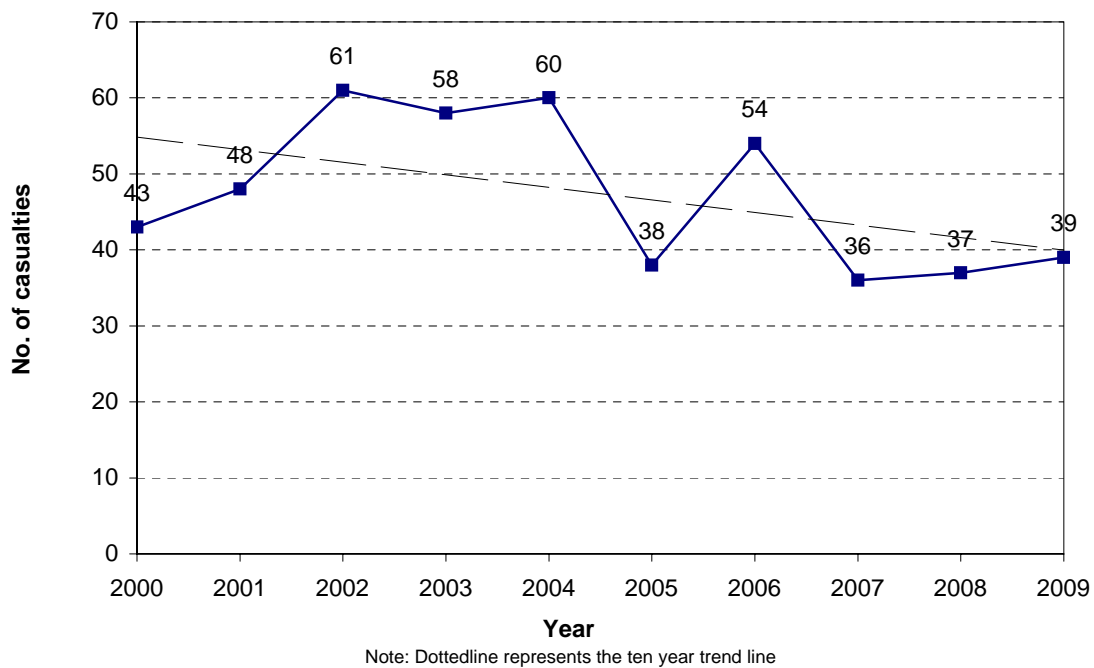




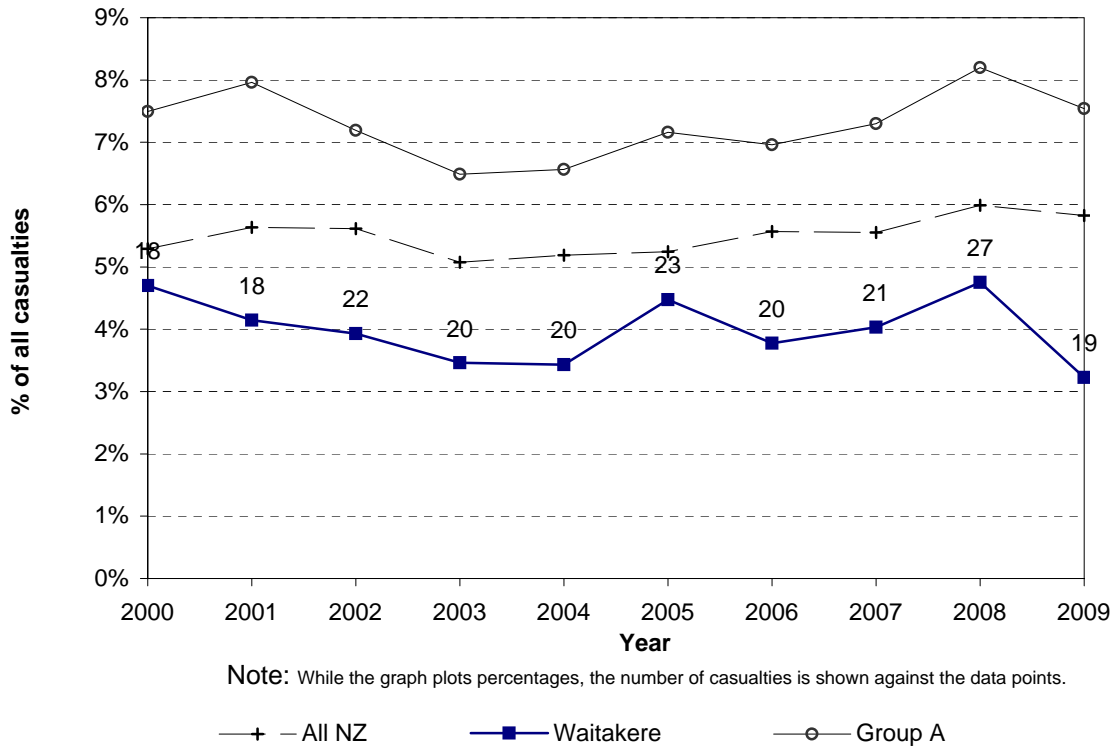
**Figure 3.15 Pedestrian casualties  
Waitakere City**



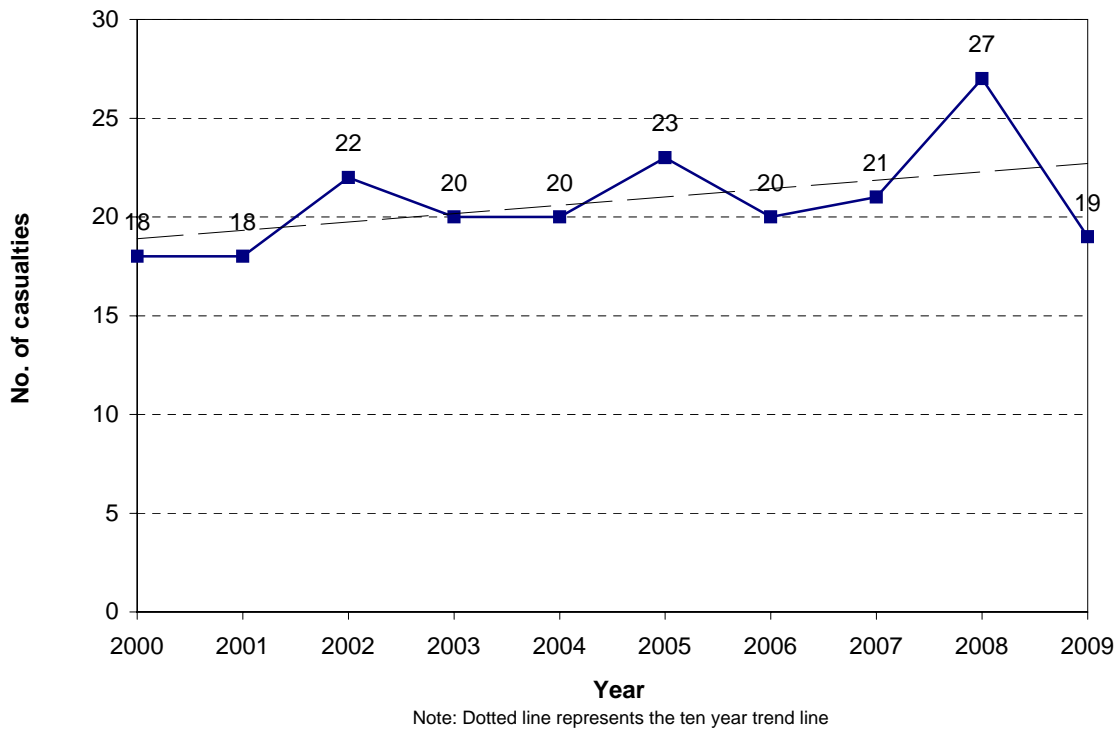
**Figure 3.16 Pedestrian casualties  
Waitakere City**



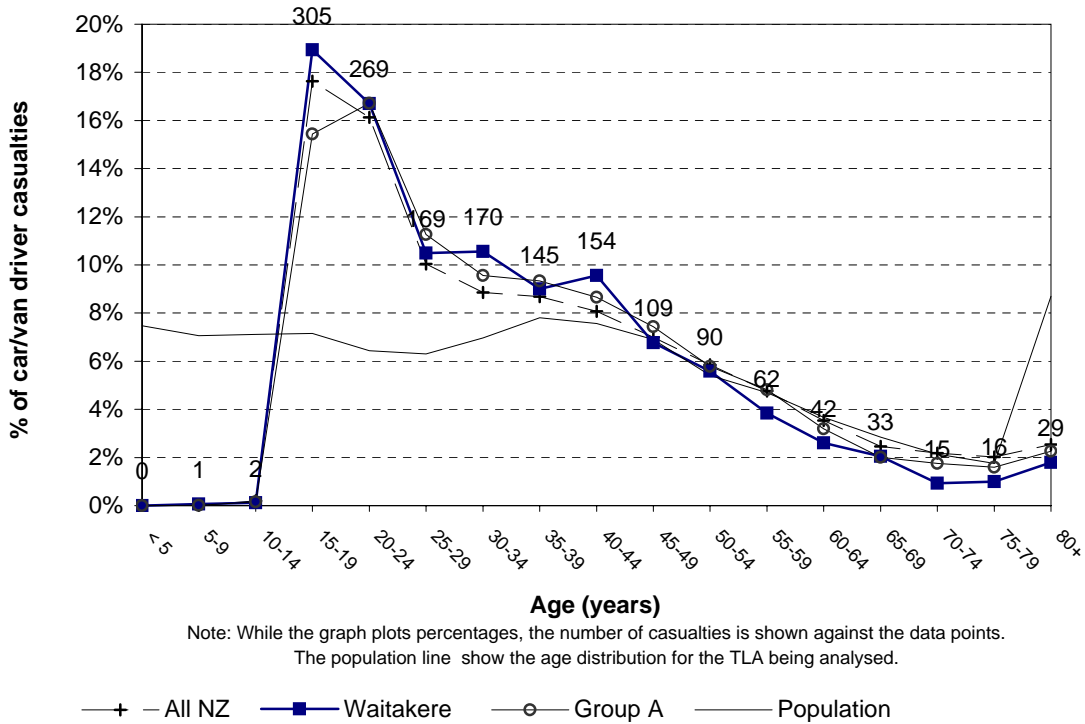
**Figure 3.17 Cyclist casualties  
Waitakere City**



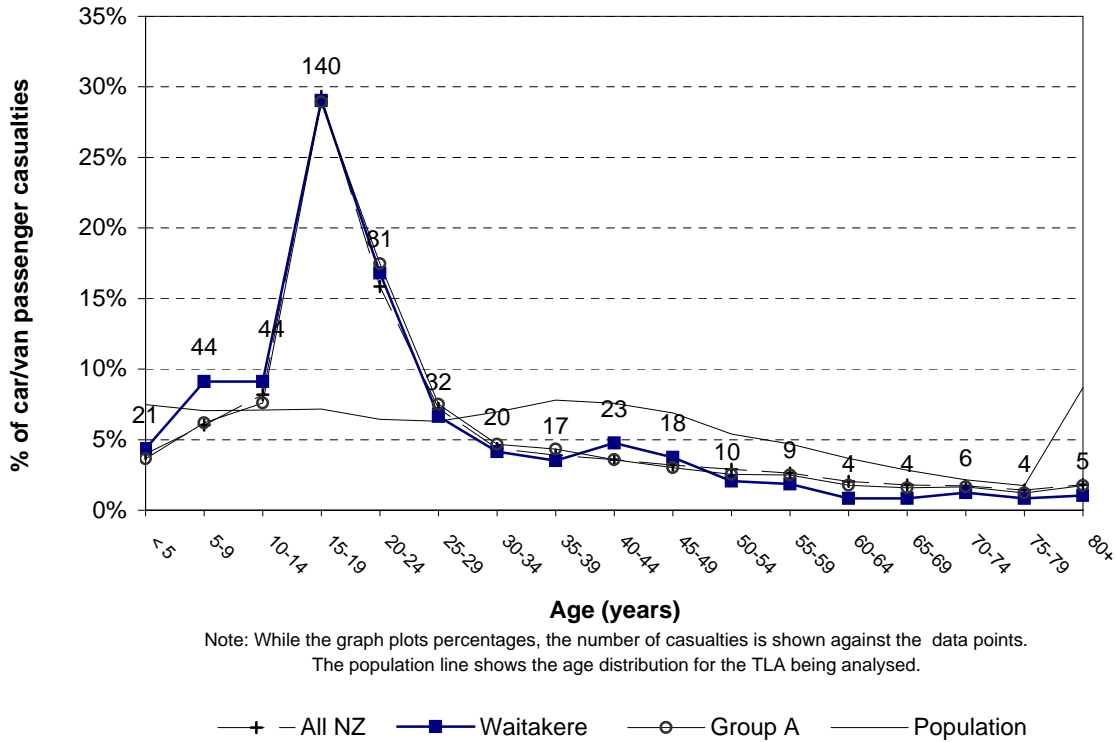
**Figure 3.18 Cyclist casualties  
Waitakere City**



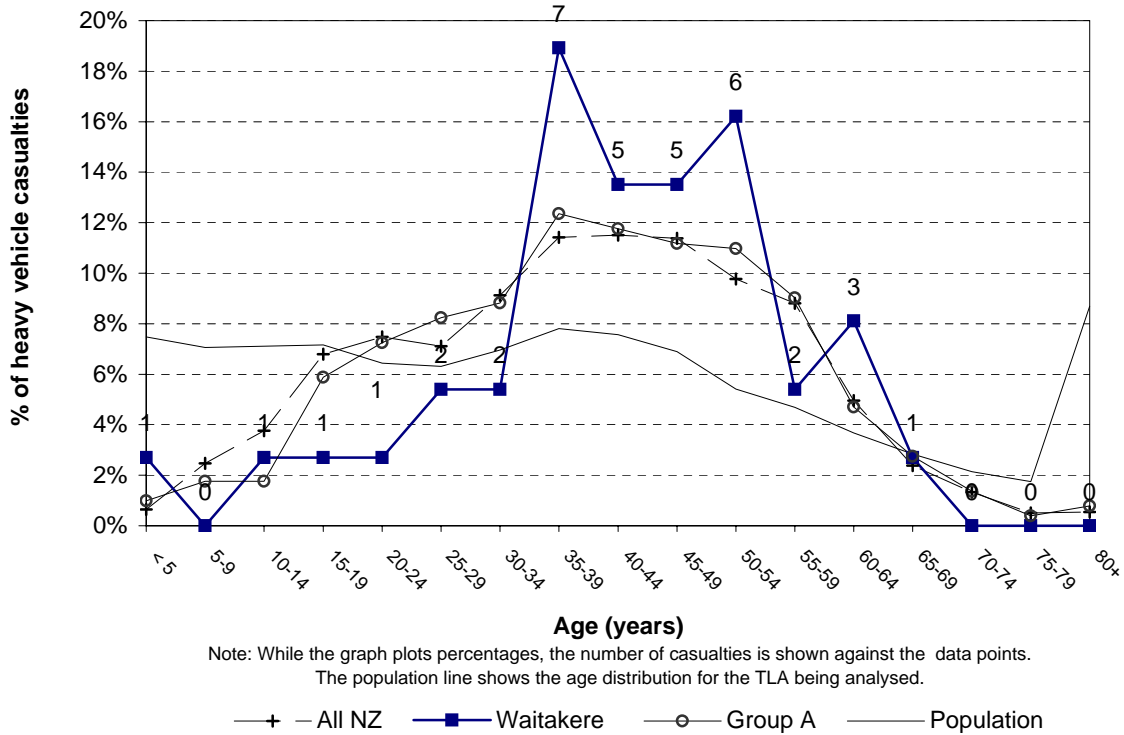
**Figure 3.19 Car/van driver casualty age  
Waitakere City (2005-2009)**



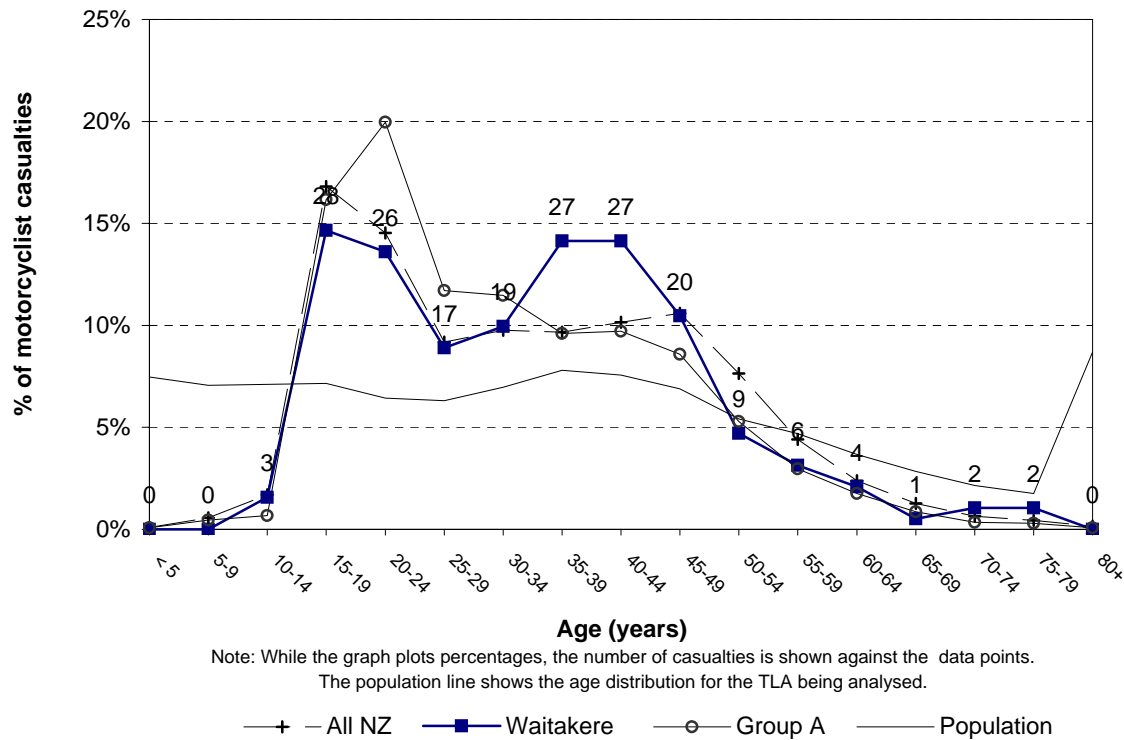
**Figure 3.20 Car/van passenger casualty age  
Waitakere City (2005-2009)**



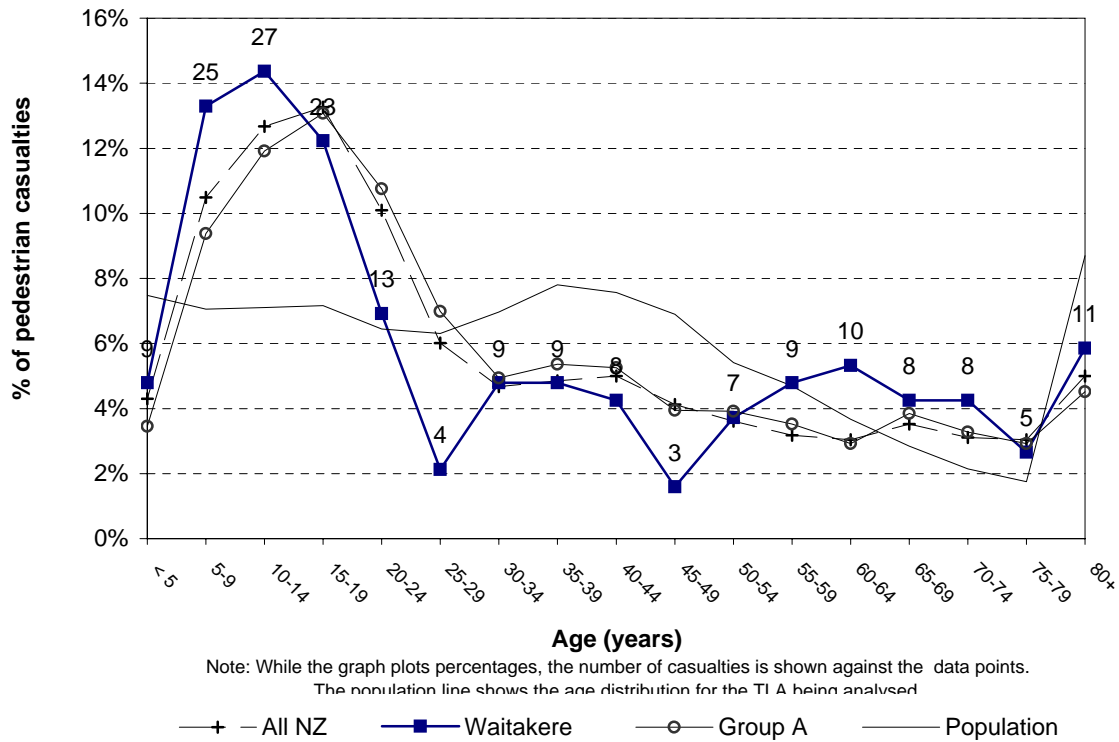
**Figure 3.21 Heavy vehicle casualty age  
Waitakere City (2005-2009)**



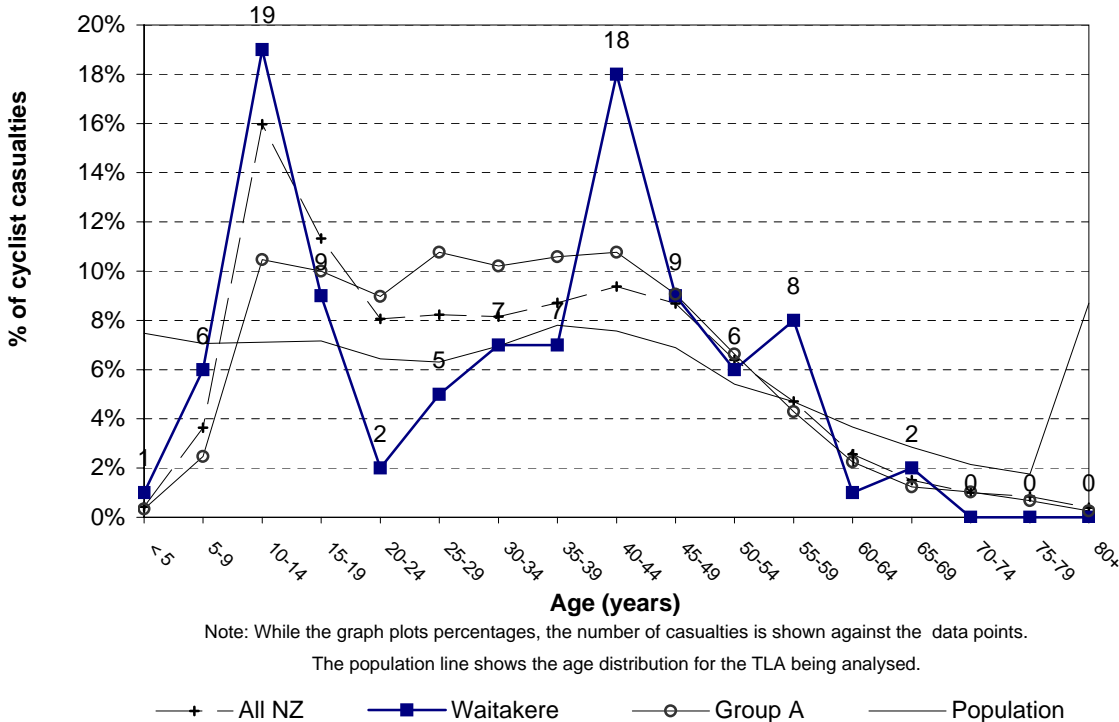
**Figure 3.22 Motorcyclist casualty age  
Waitakere City (2005-2009)**



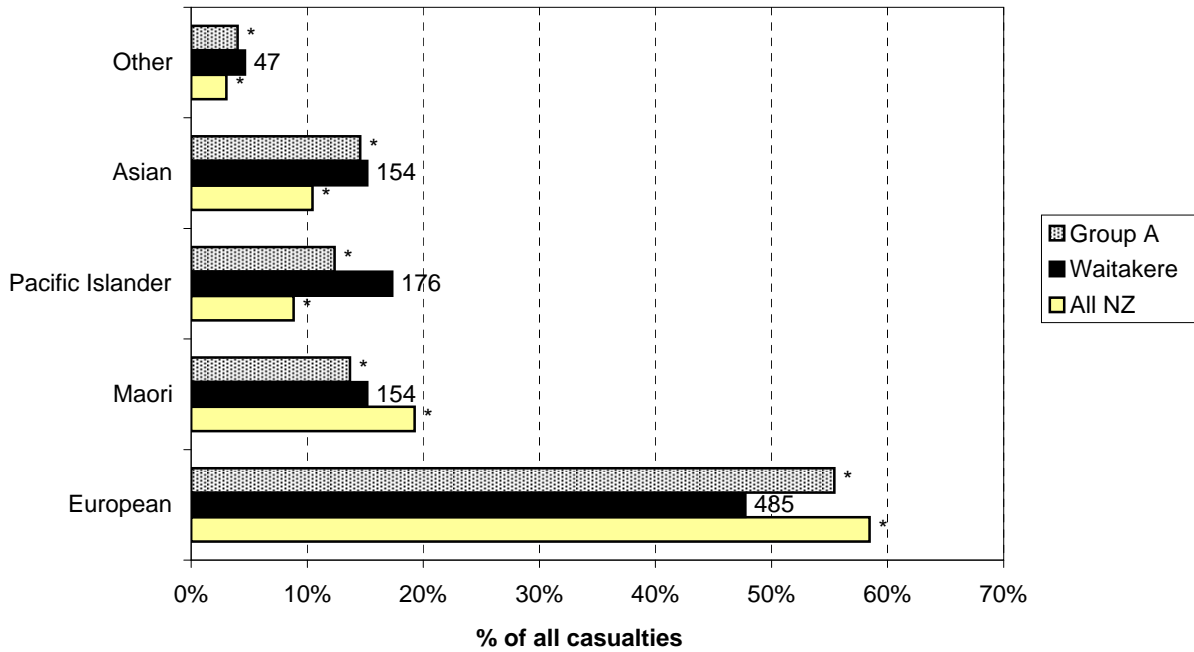
**Figure 3.23 Pedestrian casualty age  
Waitakere City (2005-2009)**



**Figure 3.24 Cyclist casualty age  
Waitakere City (2005-2009)**

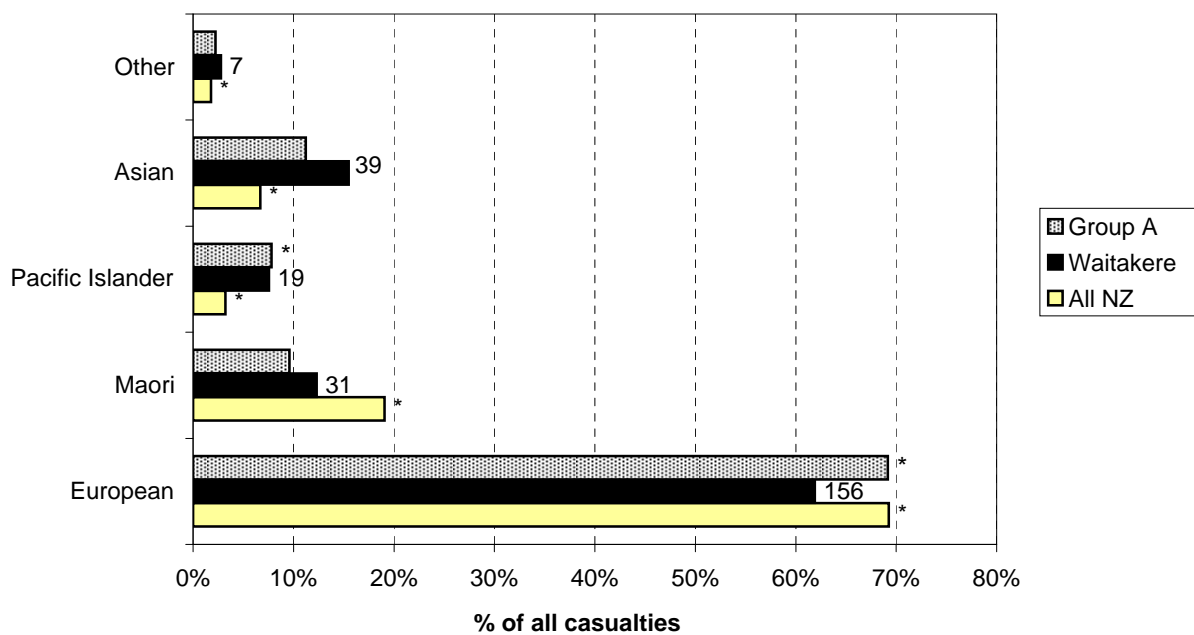


**Figure 3.25 Casualty ethnicity - urban  
Waitakere City (2005-2009)**



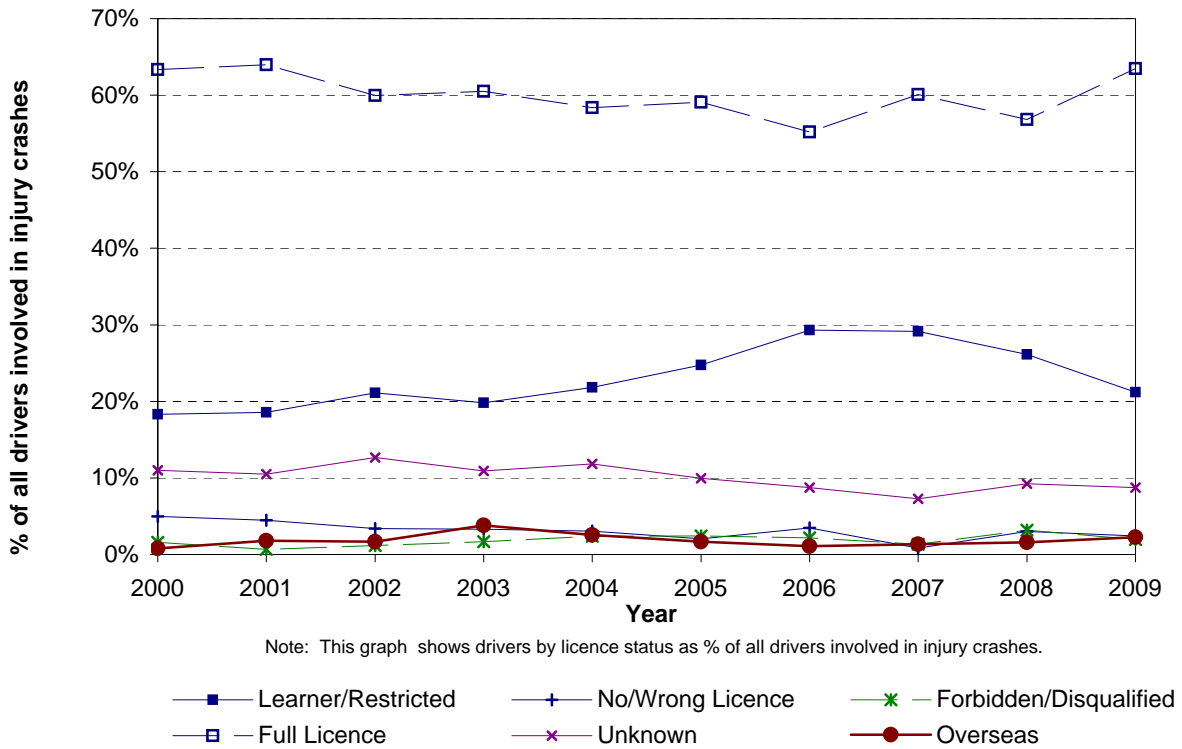
Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.26 Casualty ethnicity - rural  
Waitakere City (2005-2009)**

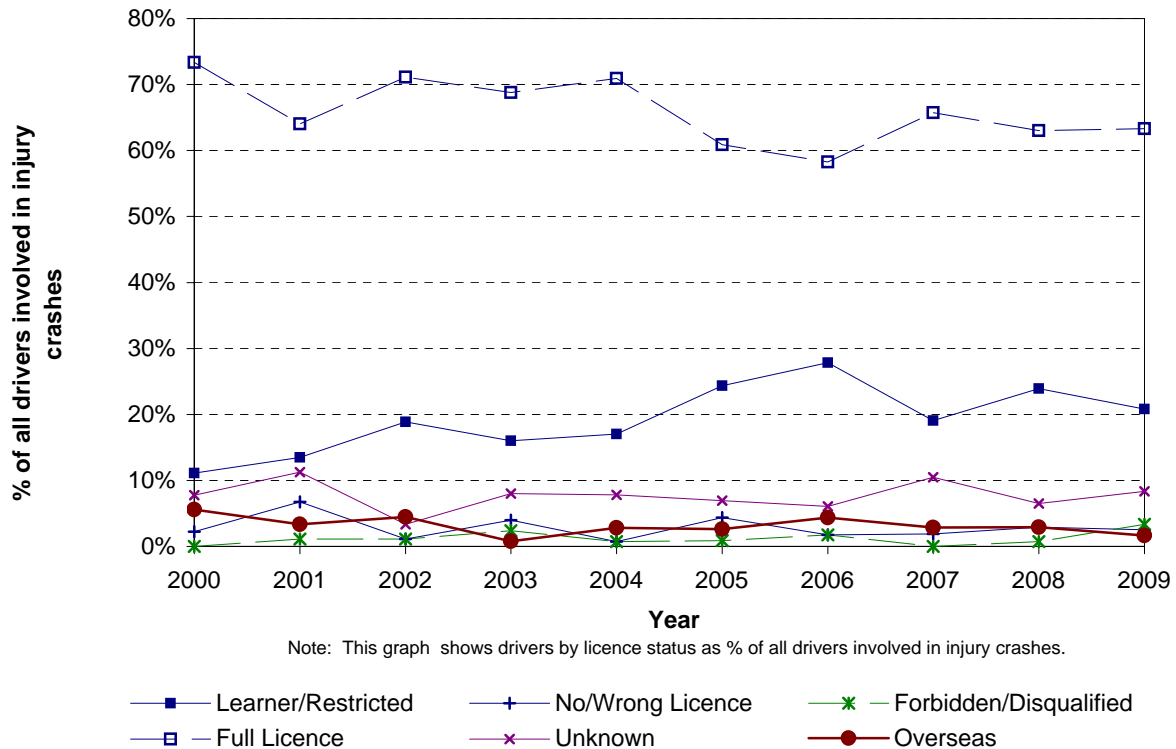


Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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



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

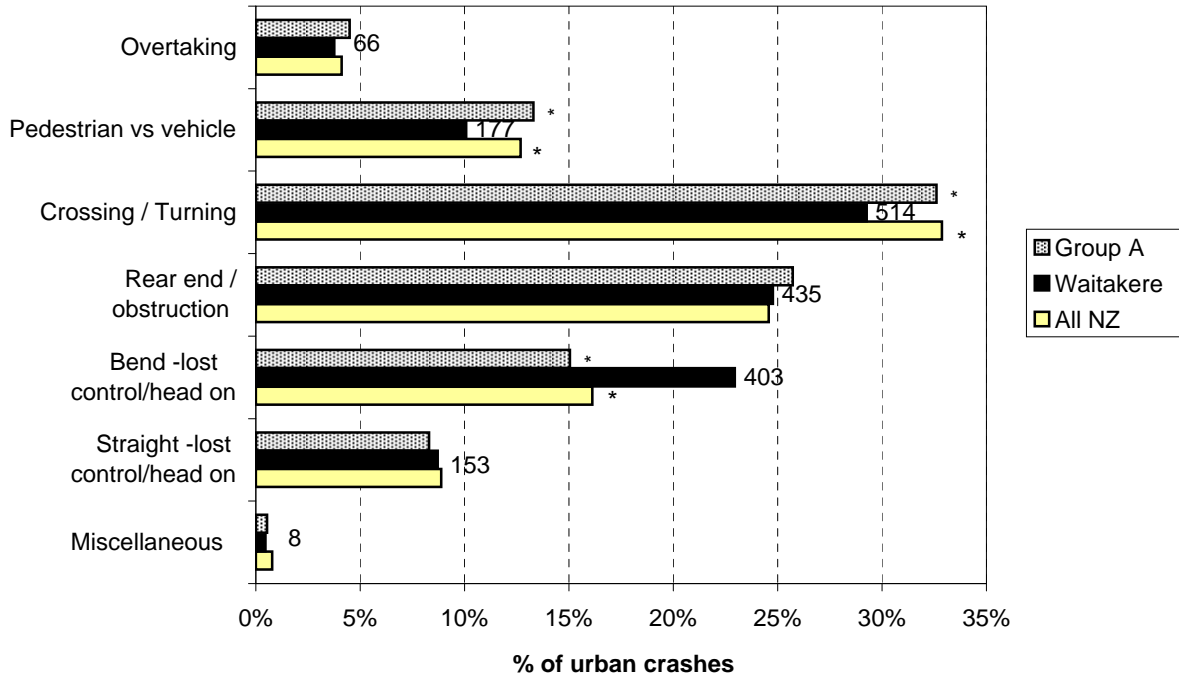


# *Crash Type Statistics*



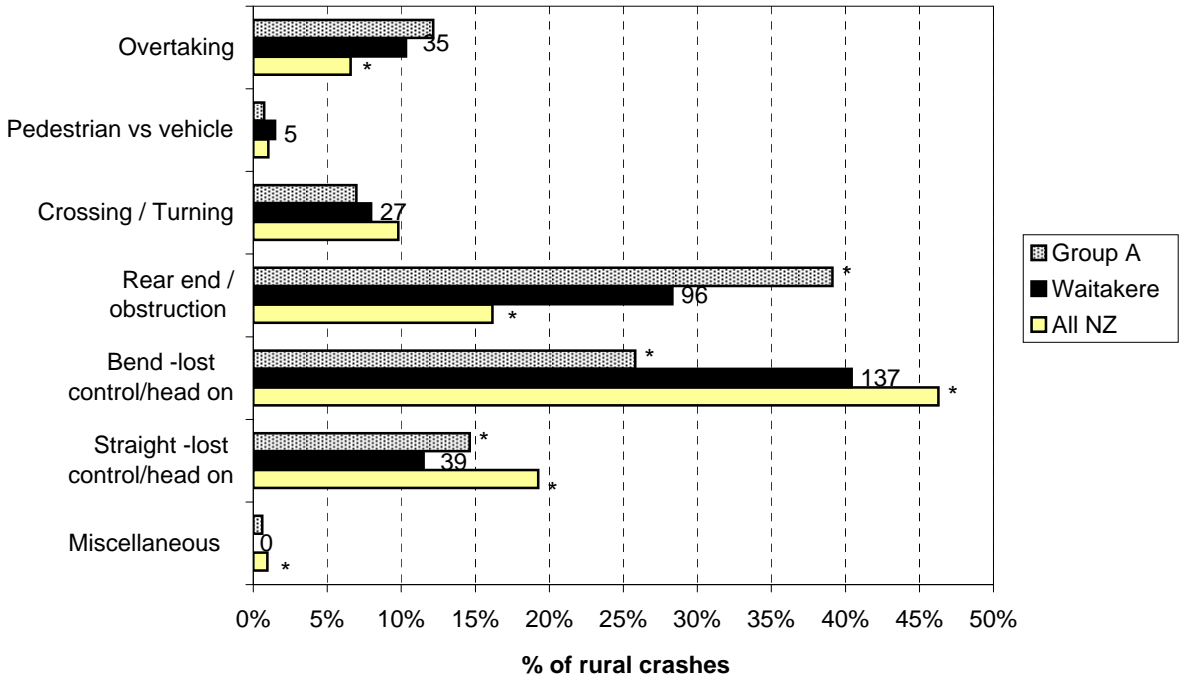


**Figure 4.1 Crash movement type - urban  
Waitakere City (2005-2009)**



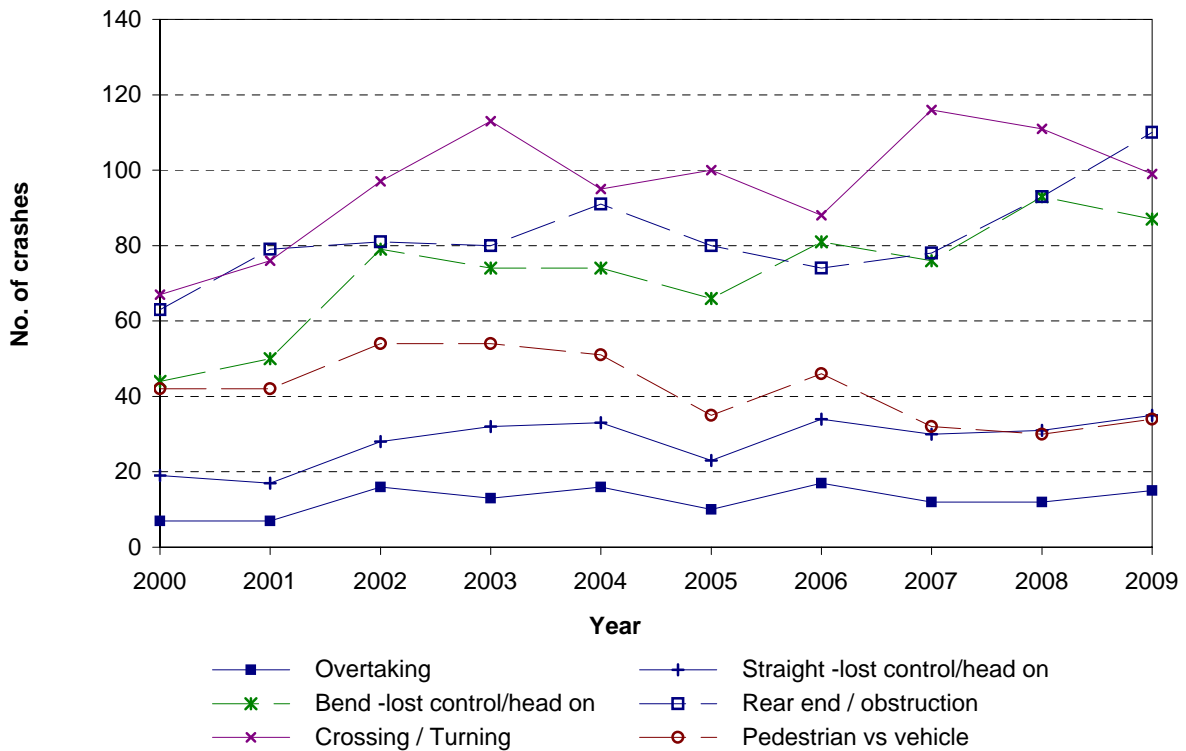
Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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

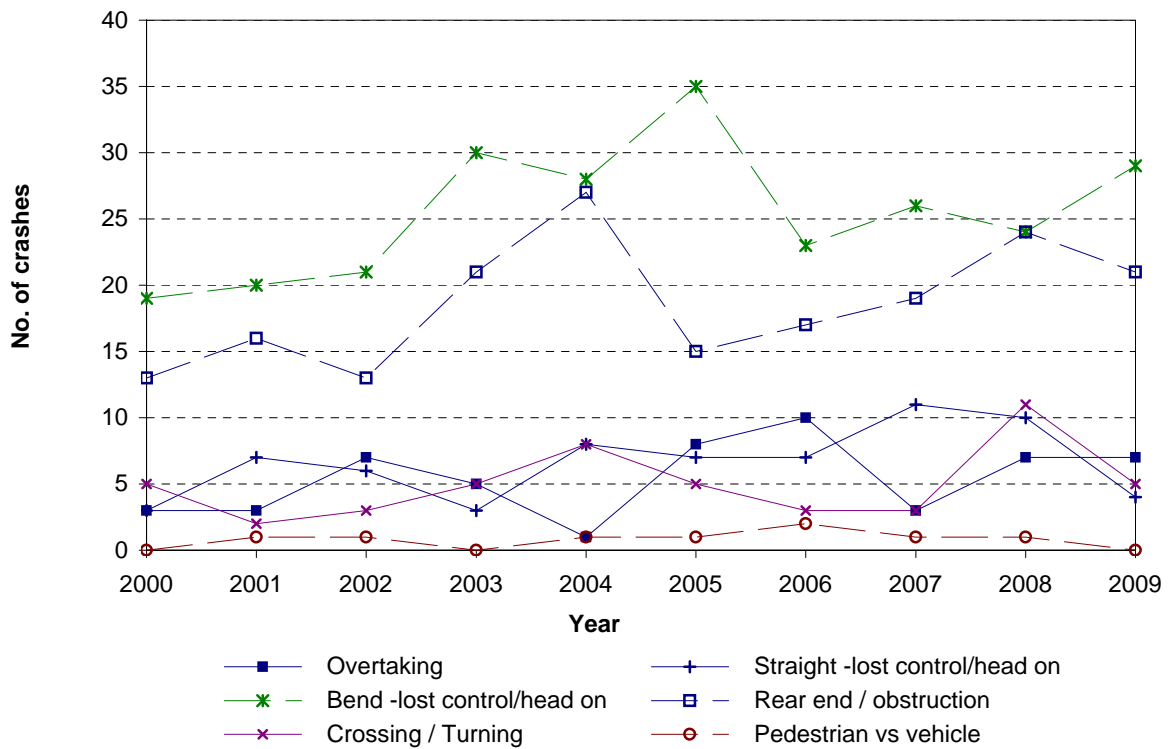


Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

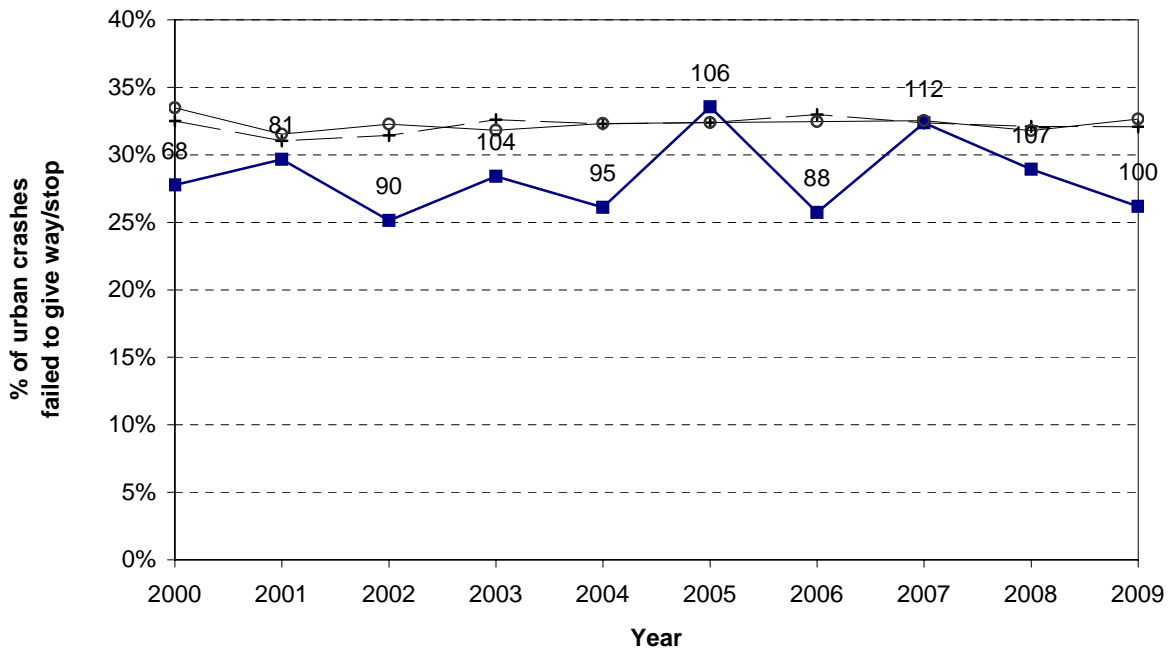
**Figure 4.3 Crash movement type - trends  
Waitakere City - urban roads**



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



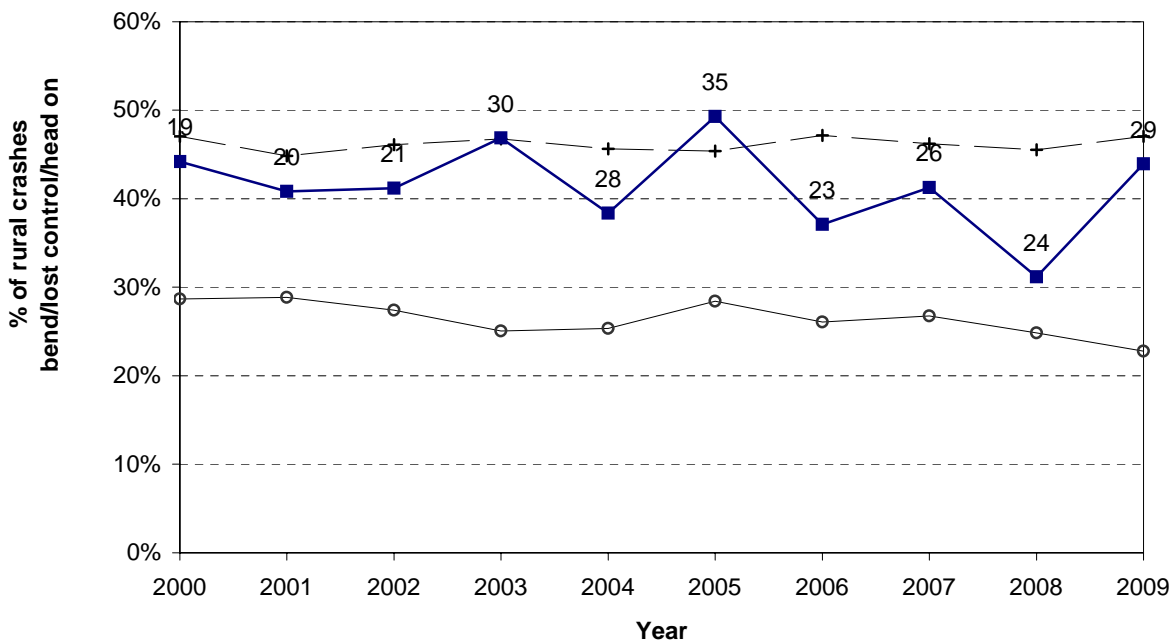
**Figure 4.5 Failed to give way / stop  
Waitakere City - urban roads**



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

—+— All NZ —■— Waitakere —○— Group A

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



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

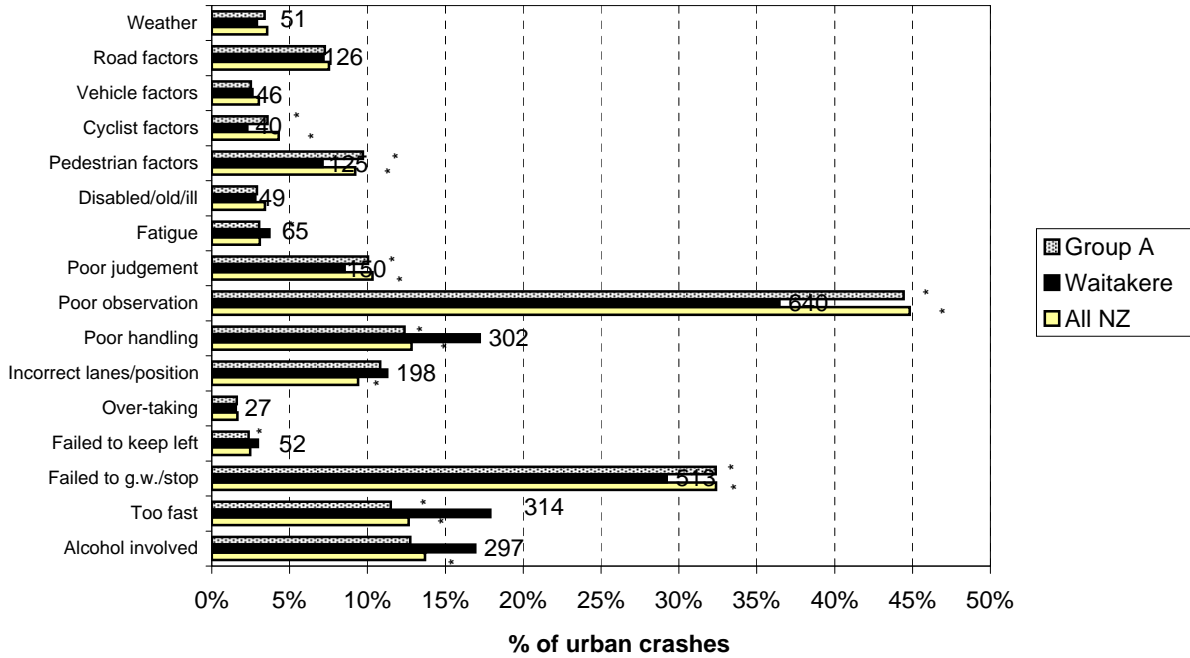
—+— All NZ —■— Waitakere —○— Group A



# *Crash Factor Statistics*

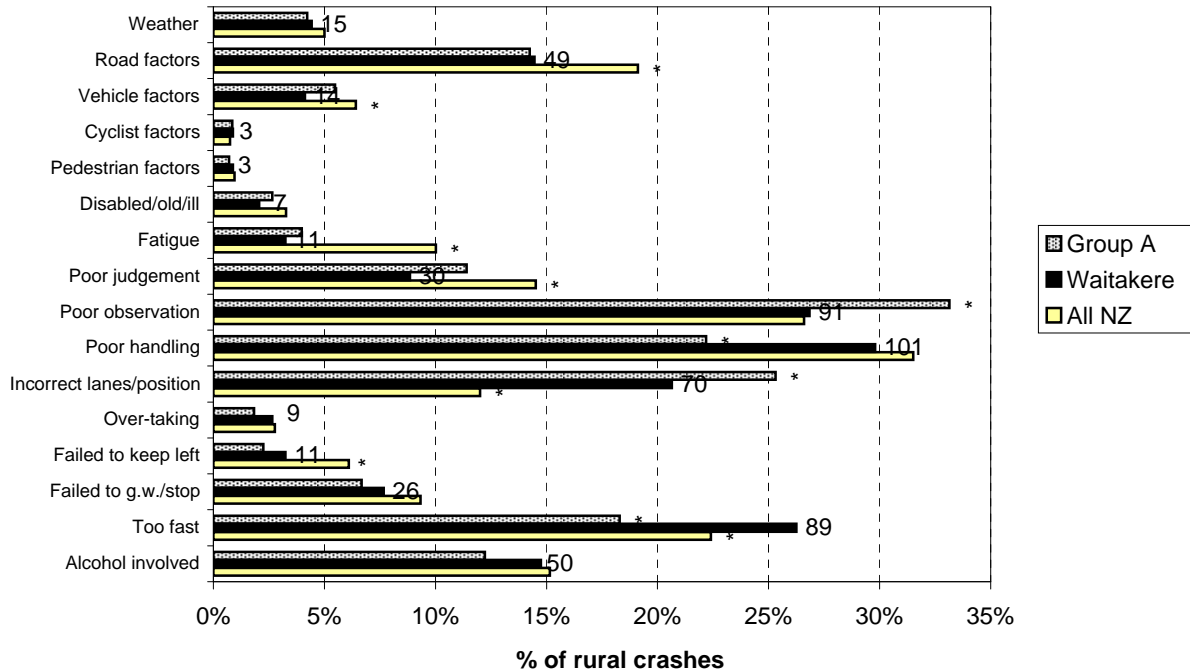


**Figure 5.1 Contributing factors - urban  
Waitakere City (2005-2009)**



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

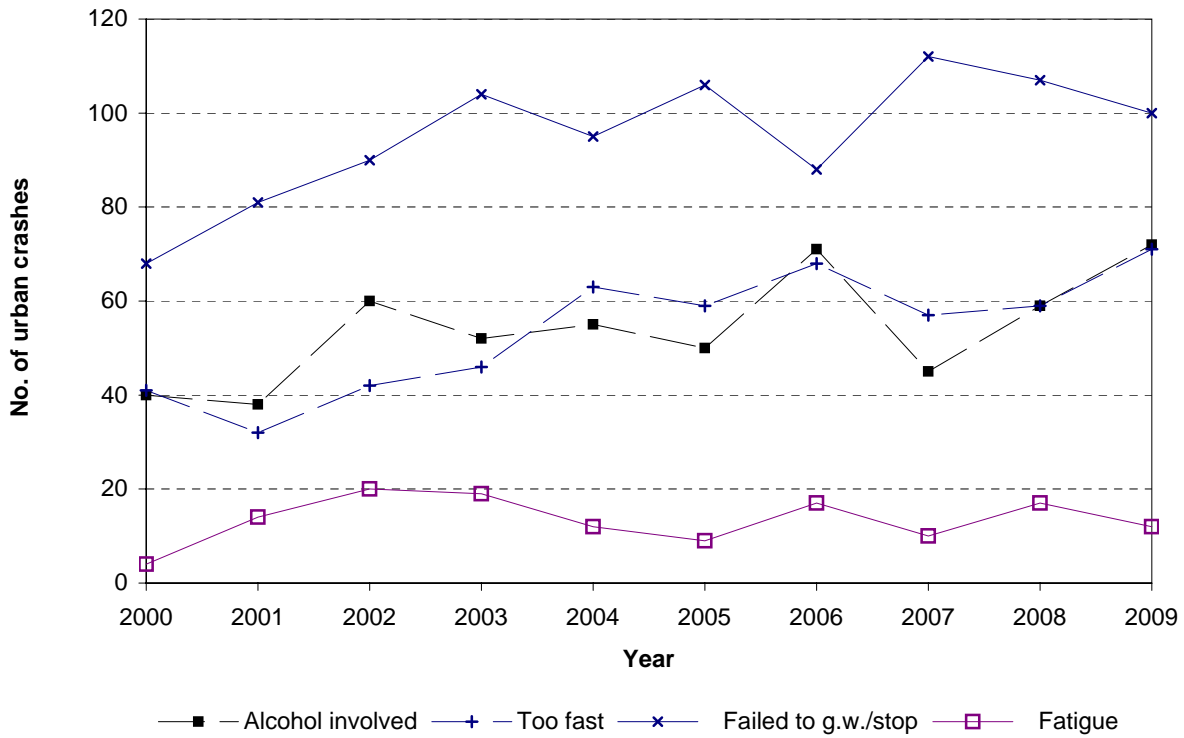
**Figure 5.2 Contributing factors - rural  
Waitakere City (2005-2009)**



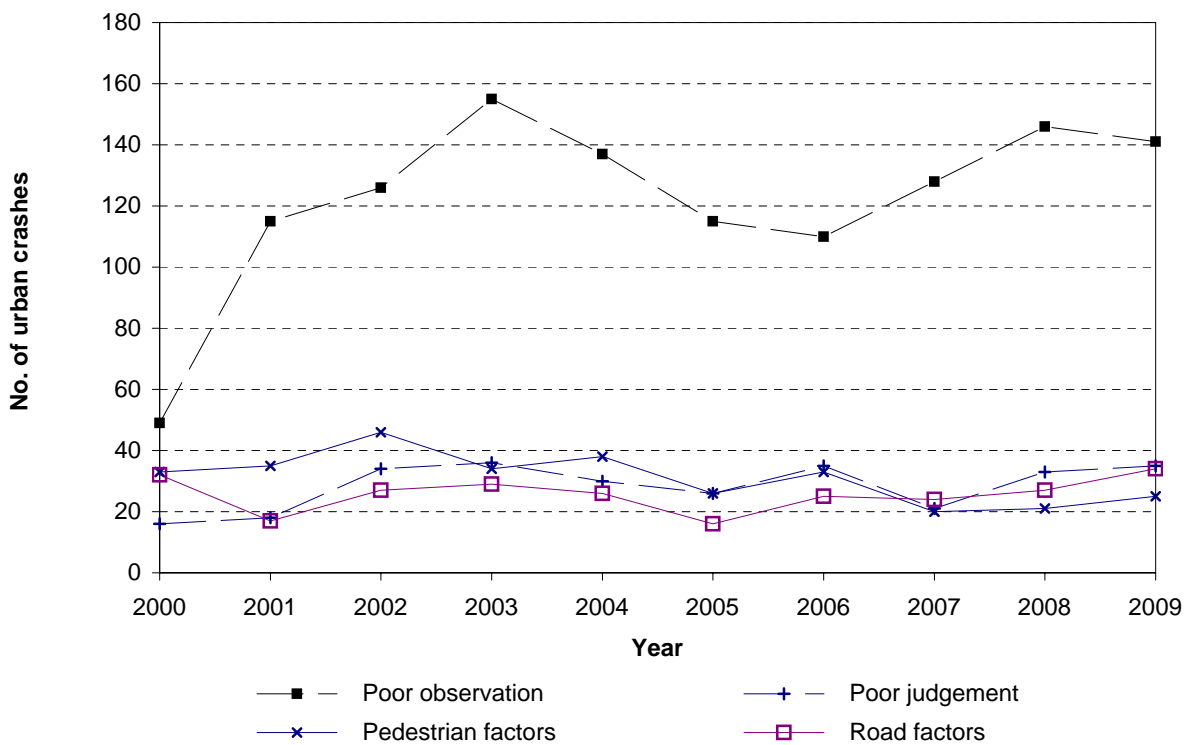
Note: While the graph plots percentages, the number of casualties is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions



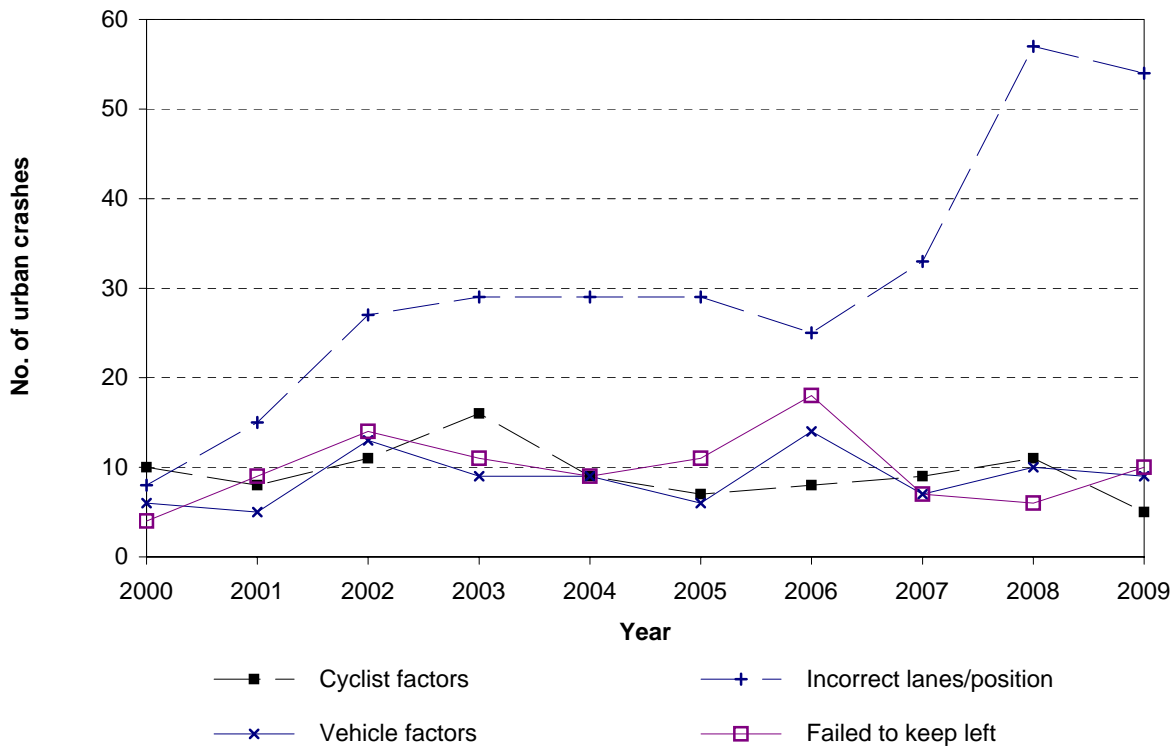
**Figure 5.3 Contributing factor trends  
Waitakere City - urban roads**



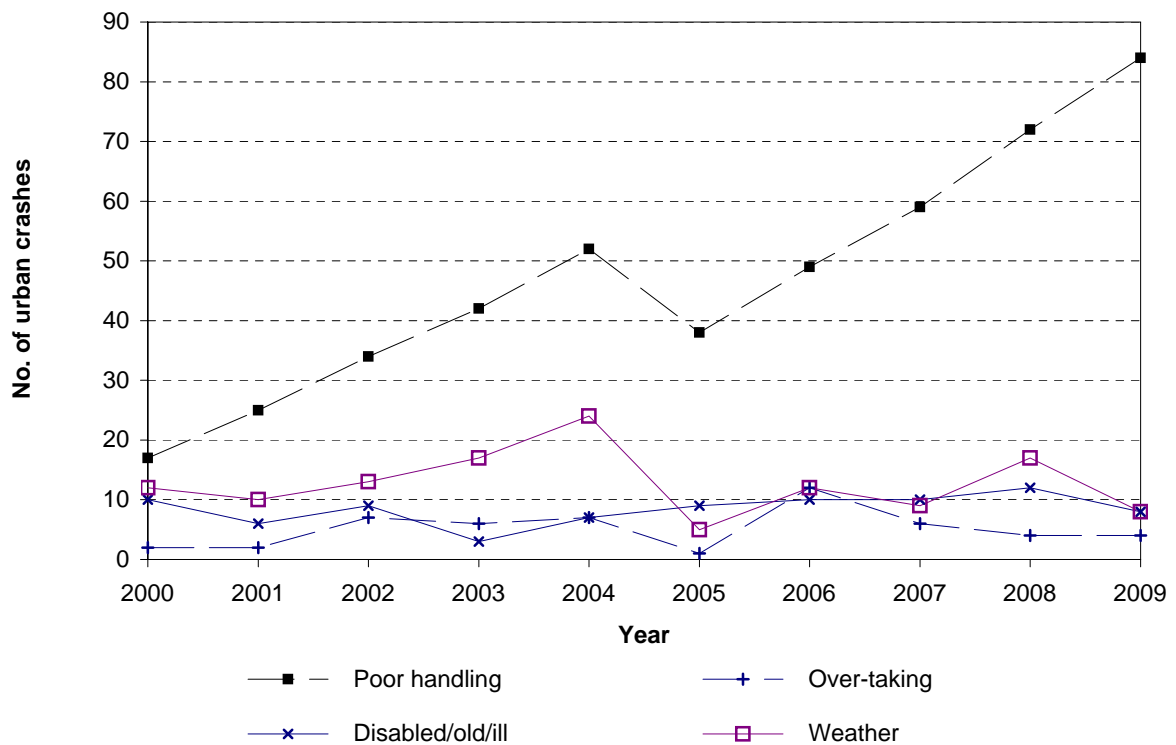
**Figure 5.4 Contributing factor trends  
Waitakere City - urban roads**



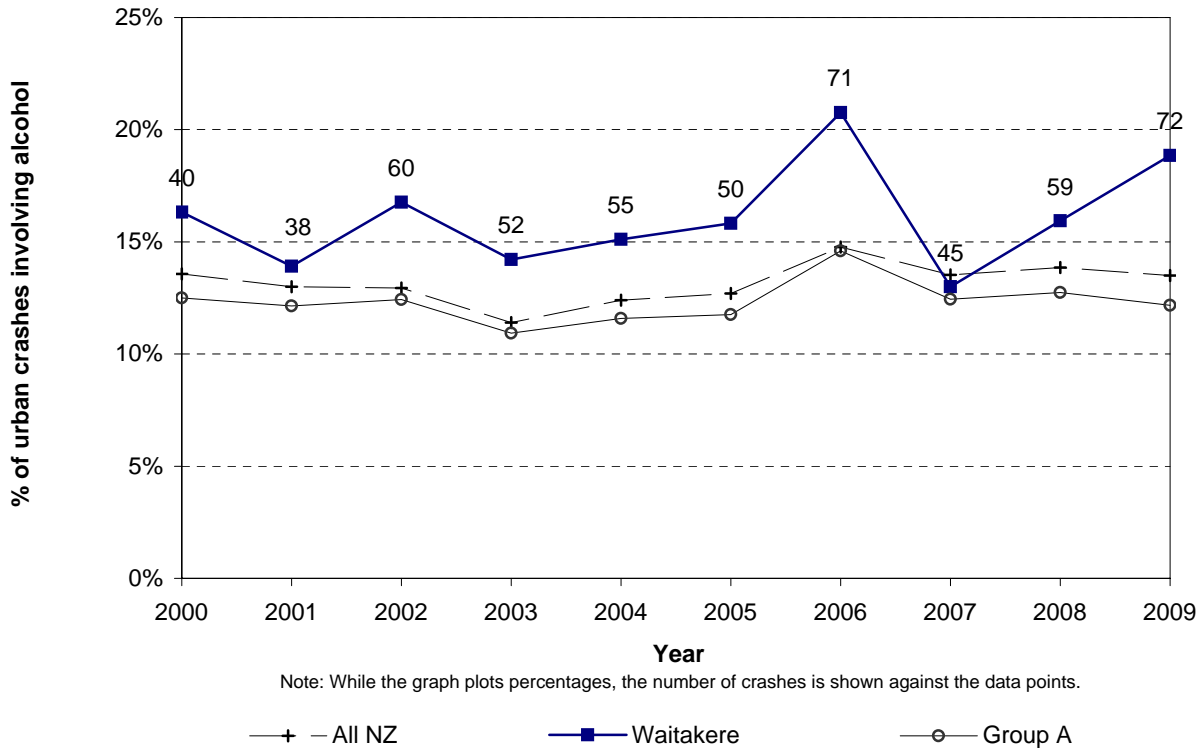
**Figure 5.5 Contributing factor trends  
Waitakere City - urban roads**



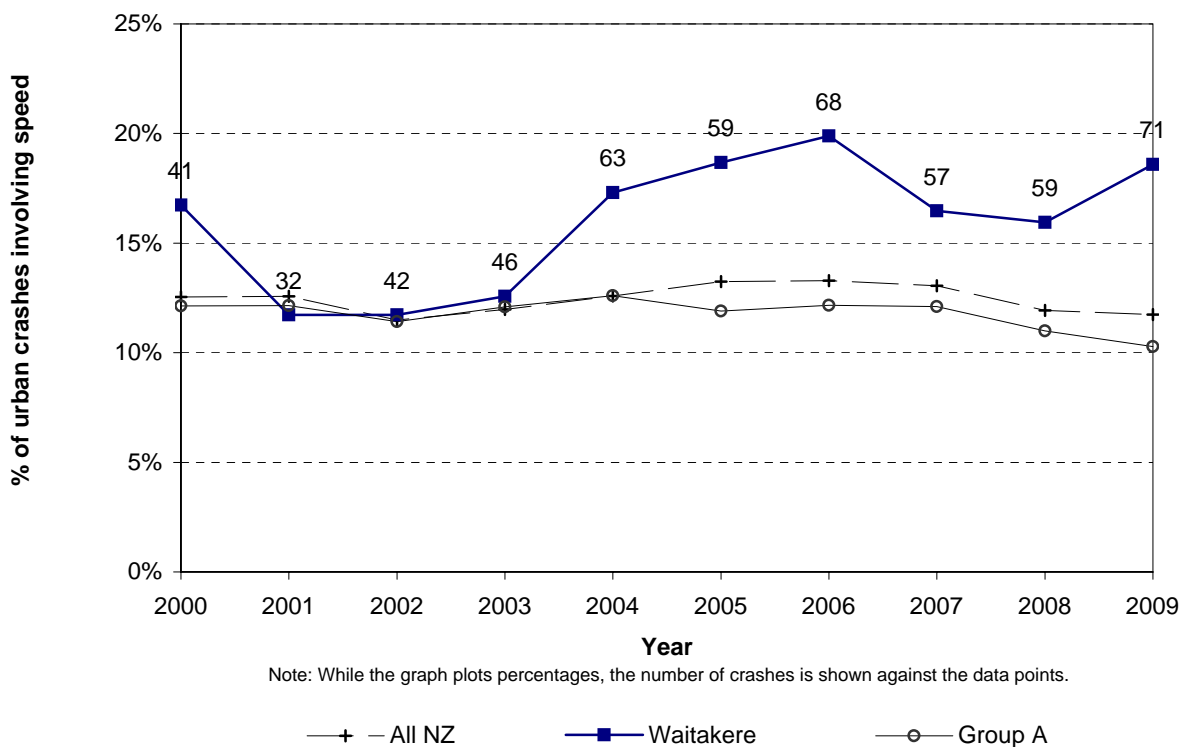
**Figure 5.6 Contributing factor trends  
Waitakere City - urban roads**



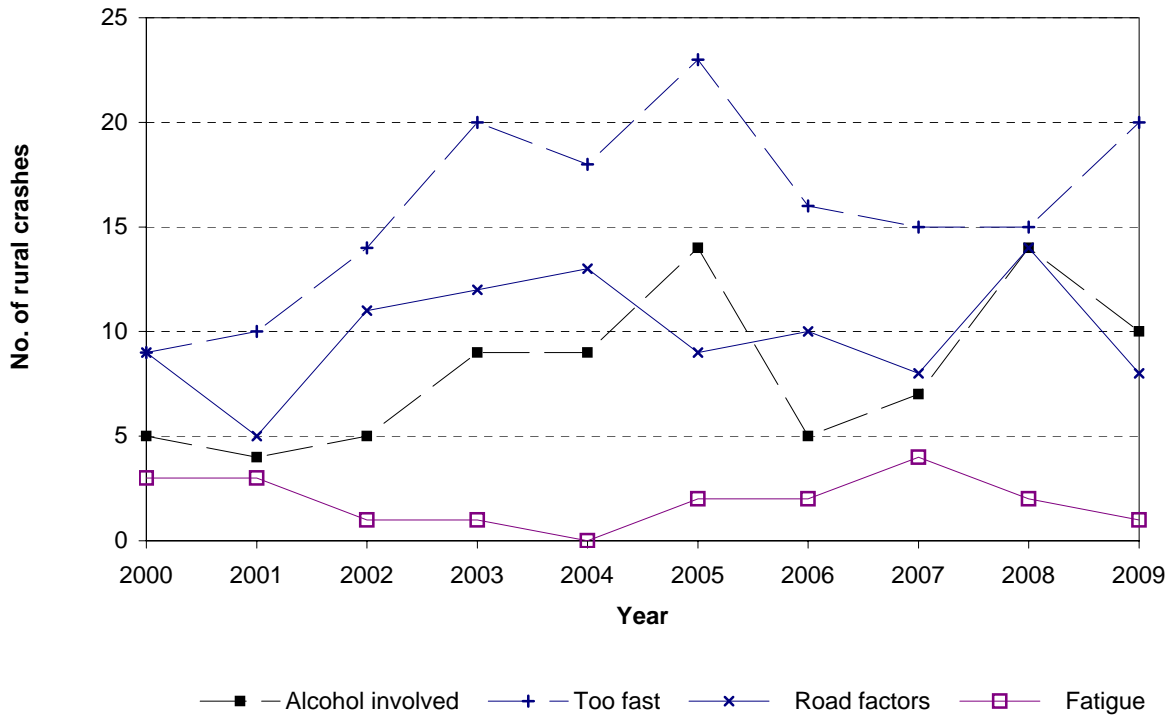
**Figure 5.7 Alcohol involved trend  
Waitakere City - urban roads**



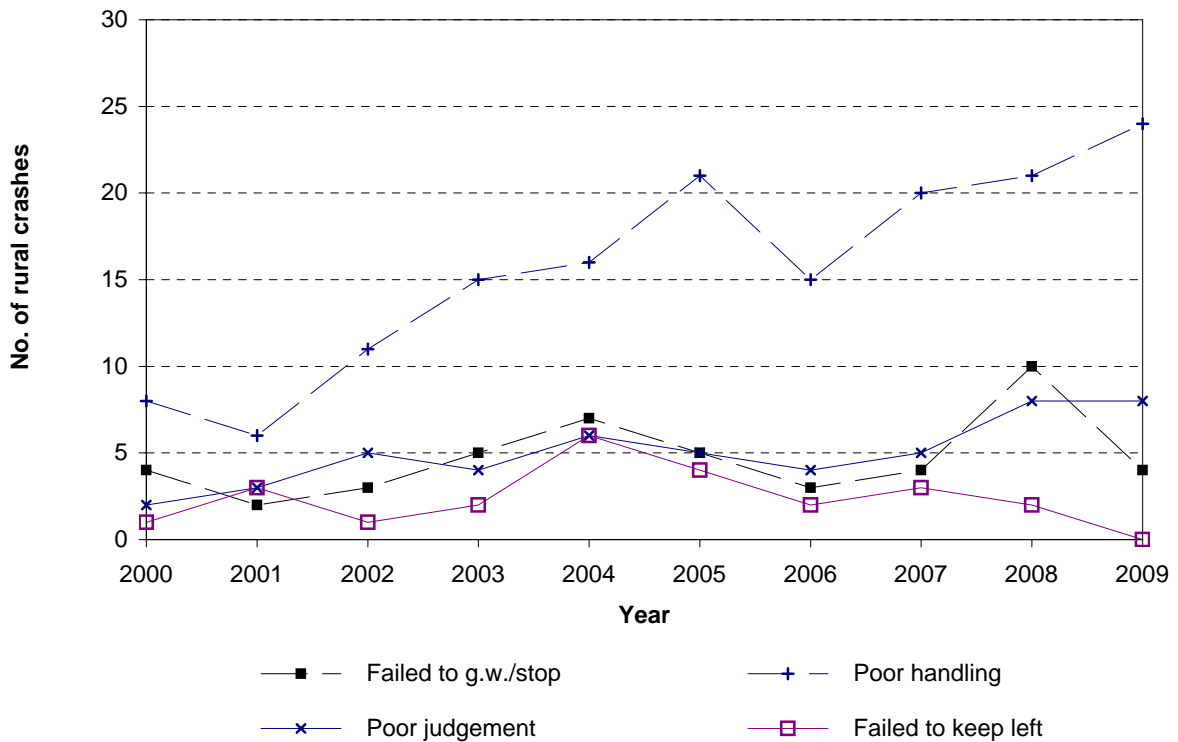
**Figure 5.8 Speed involved trend  
Waitakere City - urban roads**



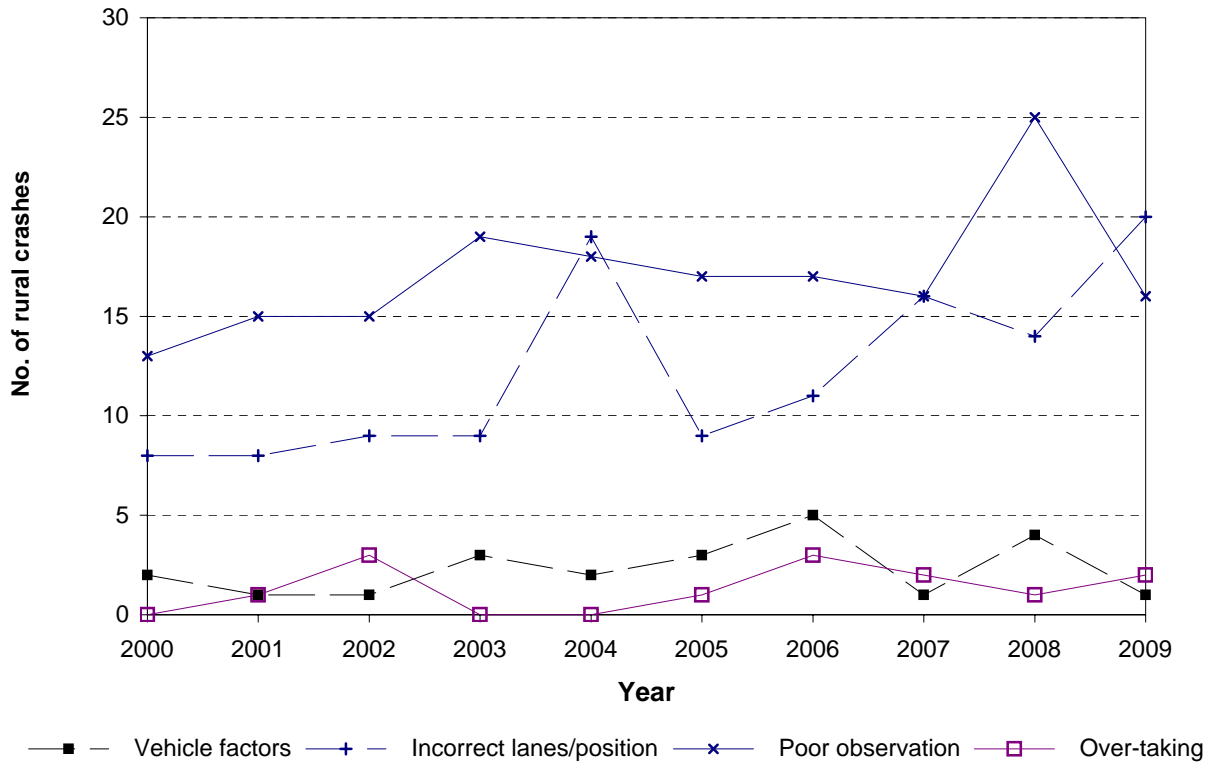
**Figure 5.9 Contributing factor trends  
Waitakere City - rural roads**



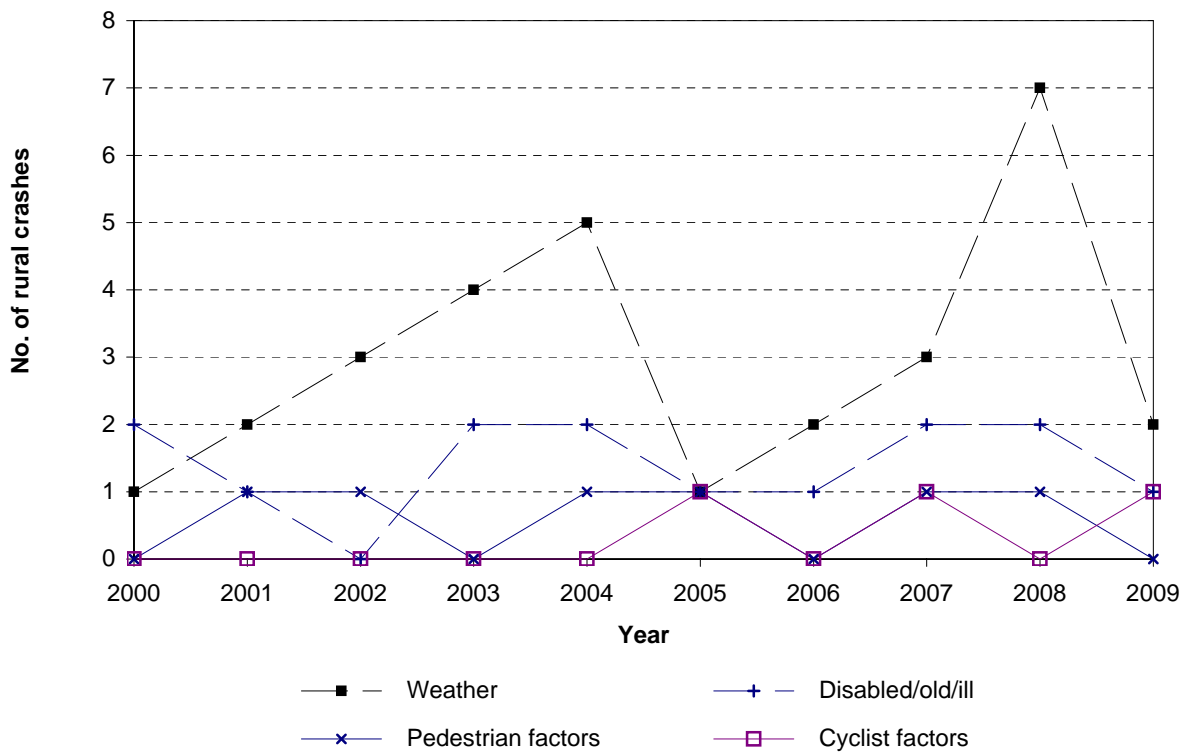
**Figure 5.10 Contributing factor trends  
Waitakere City - rural roads**



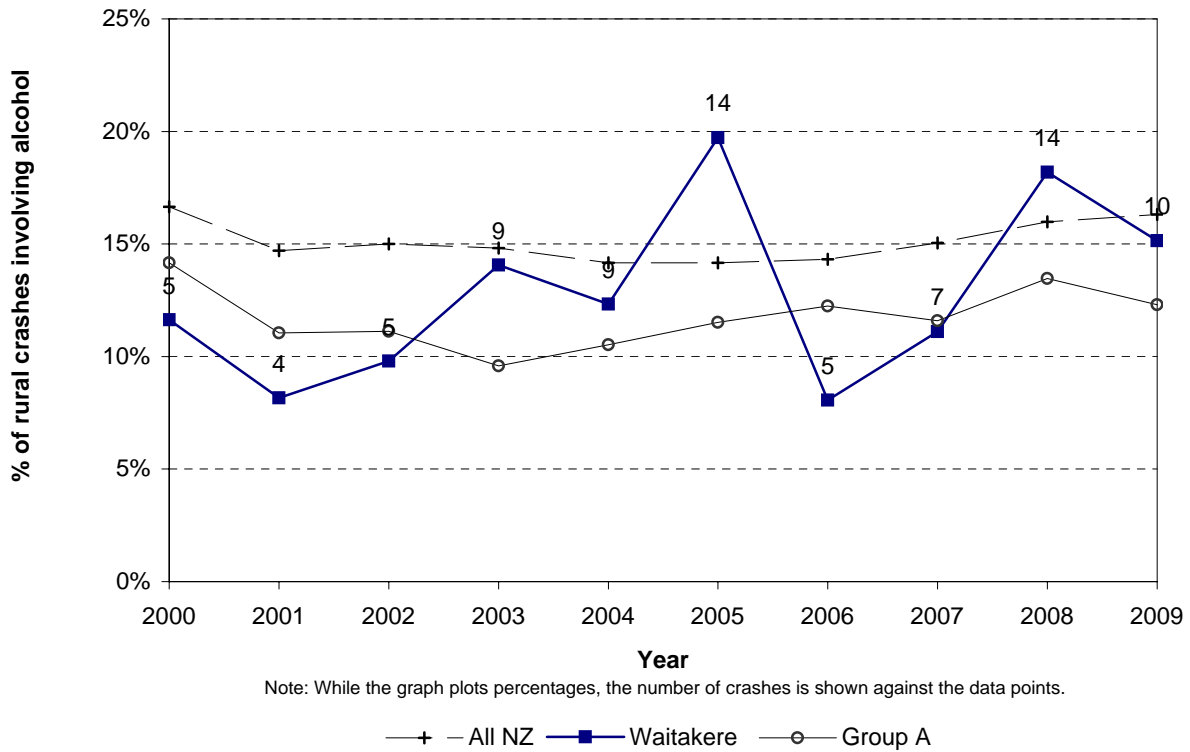
**Figure 5.11 Contributing factor trends  
Waitakere City - rural roads**



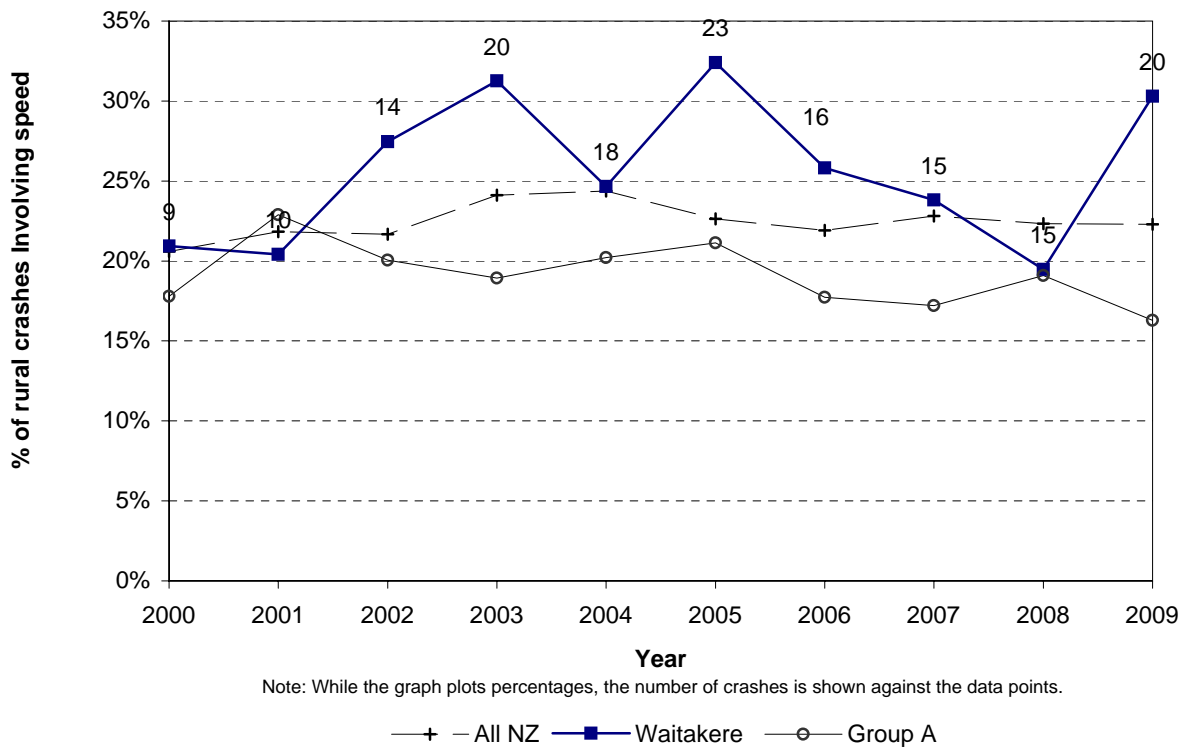
**Figure 5.12 Contributing factor trends  
Waitakere City - rural roads**



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



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



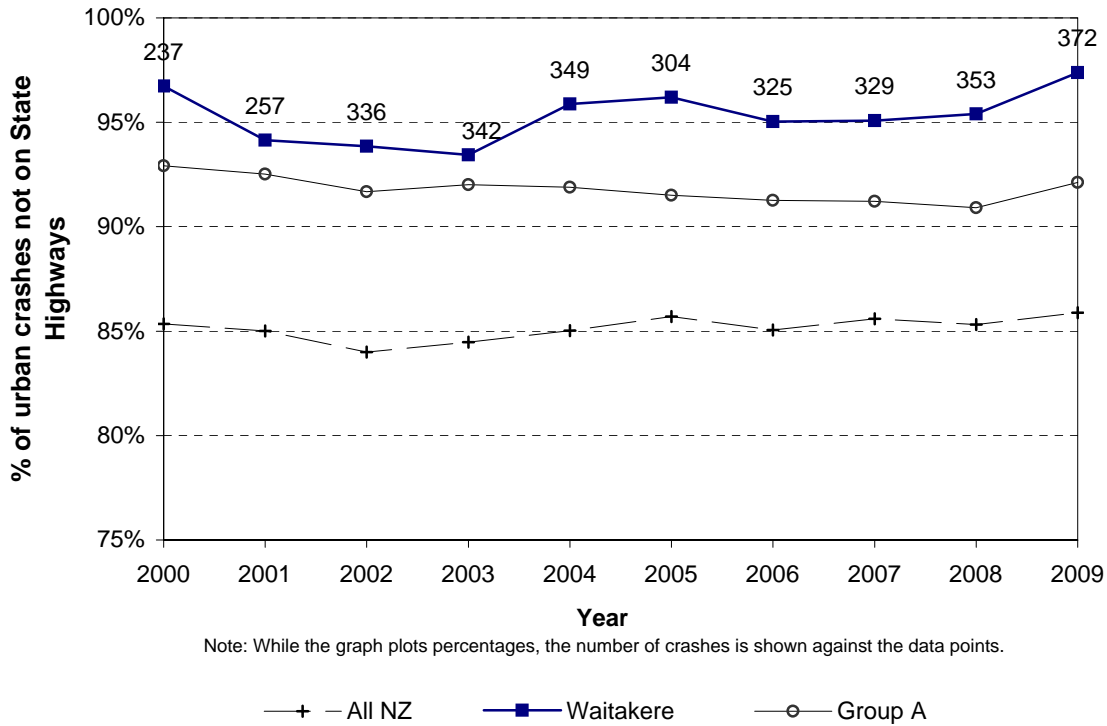


# *Environmental Statistics*

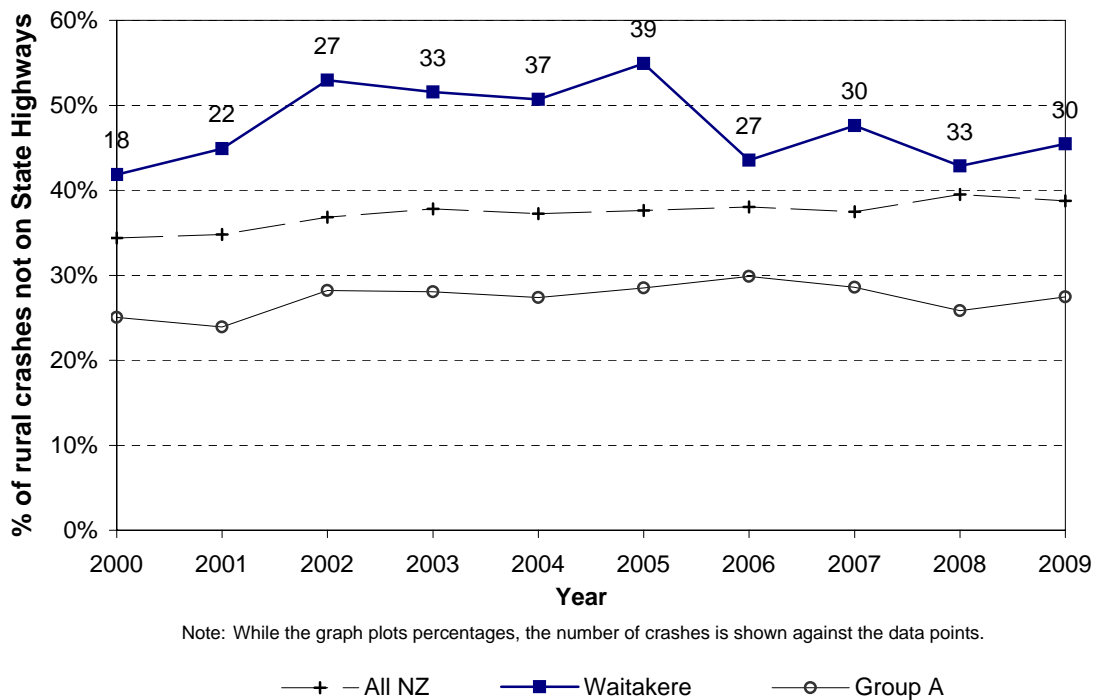




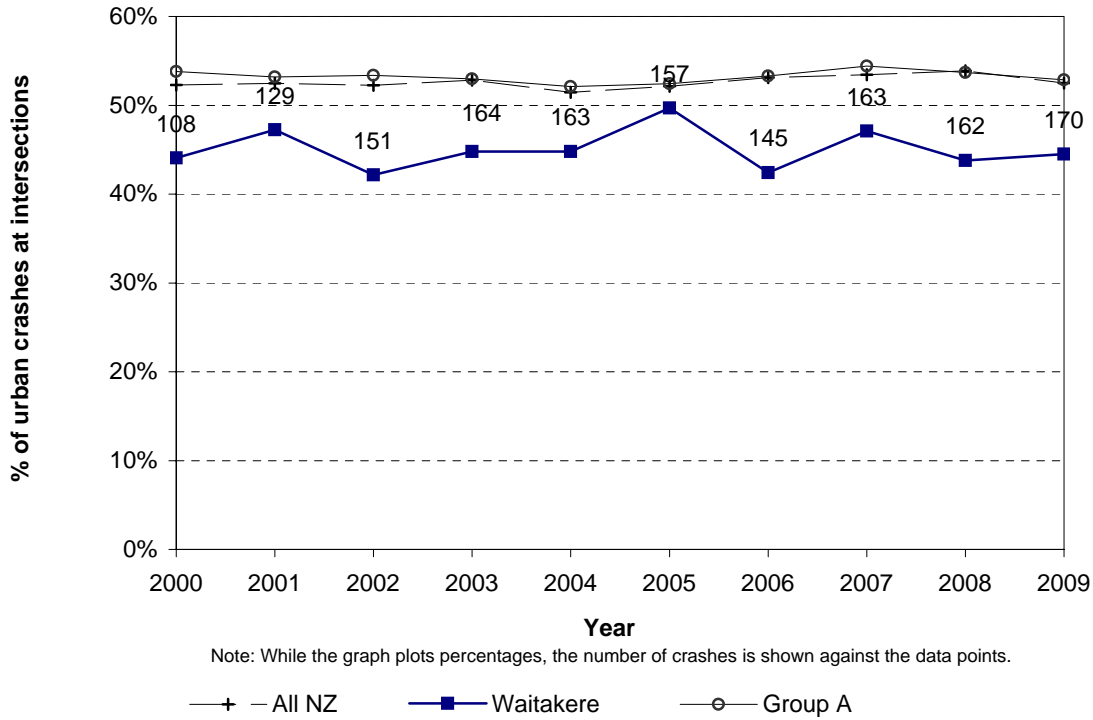
**Figure 6.1 Crashes not on state highways  
Waitakere City - urban roads**



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



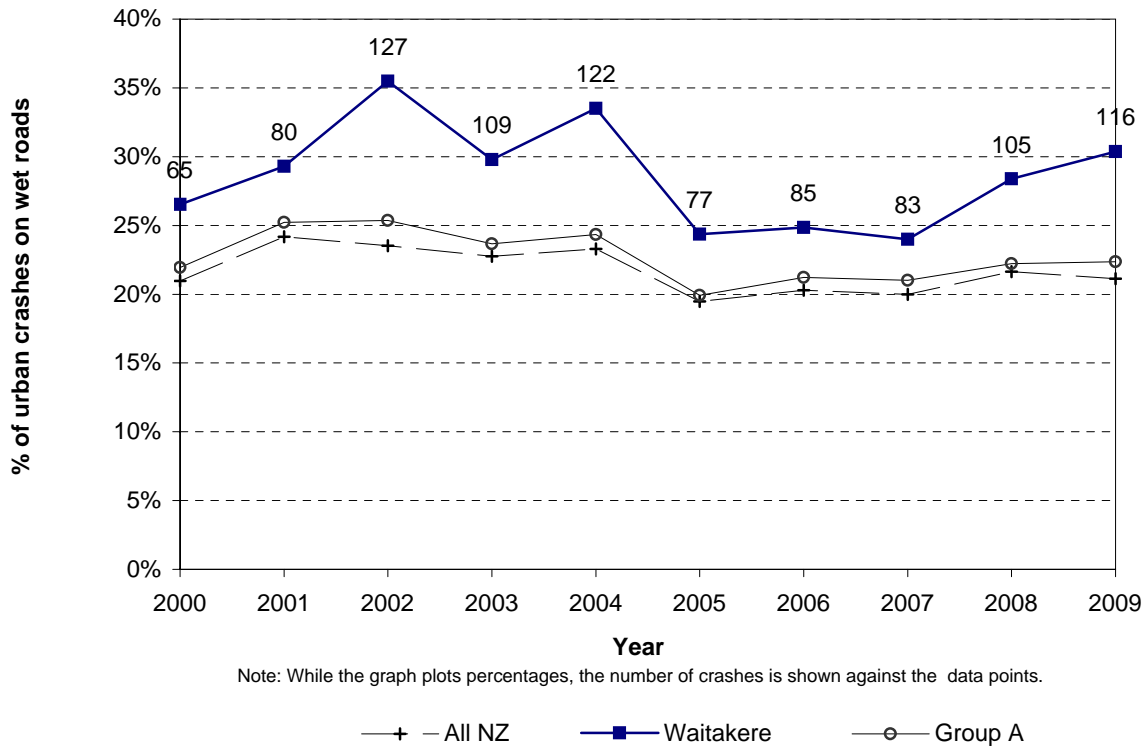
**Figure 6.3 Intersection crashes  
Waitakere City - urban roads**



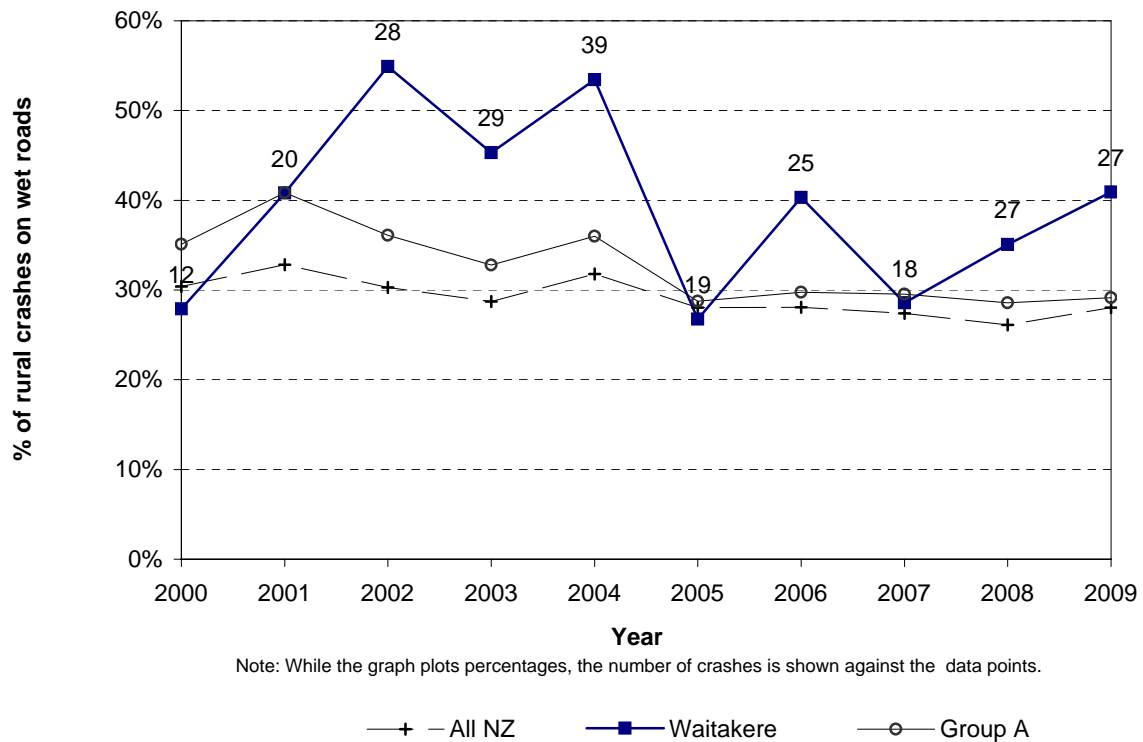
**Figure 6.4 Intersection crashes  
Waitakere City - rural roads**



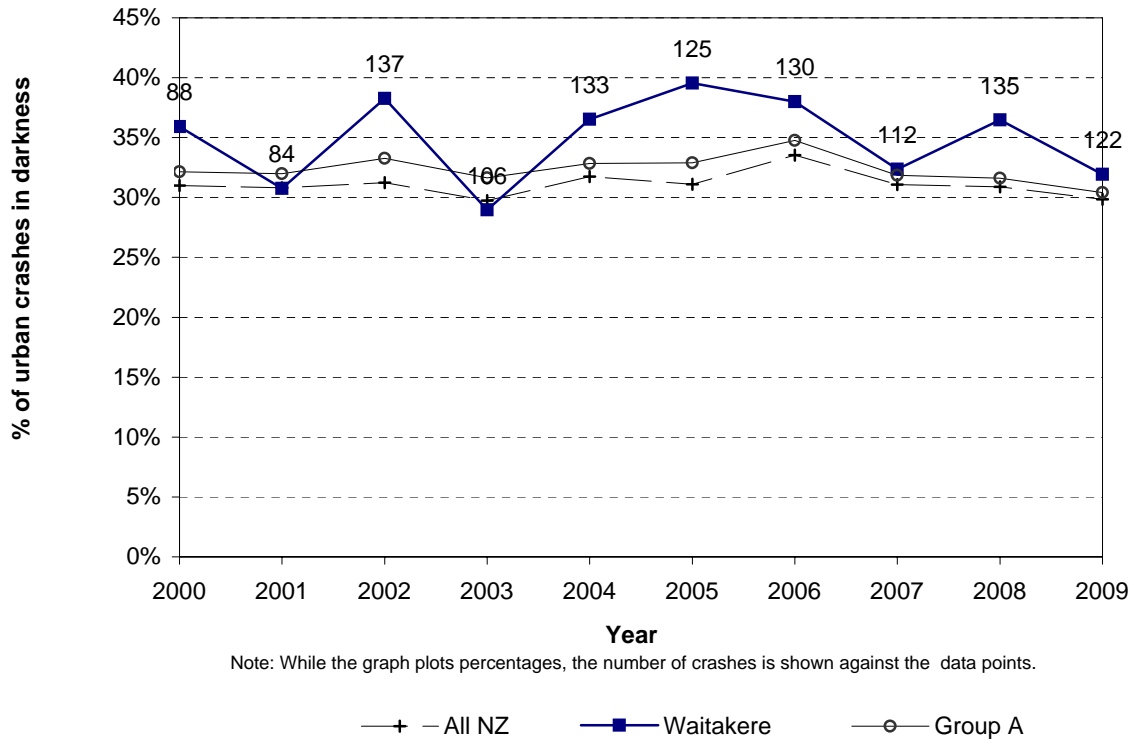
**Figure 6.5 Wet road crashes  
Waitakere City - urban roads**



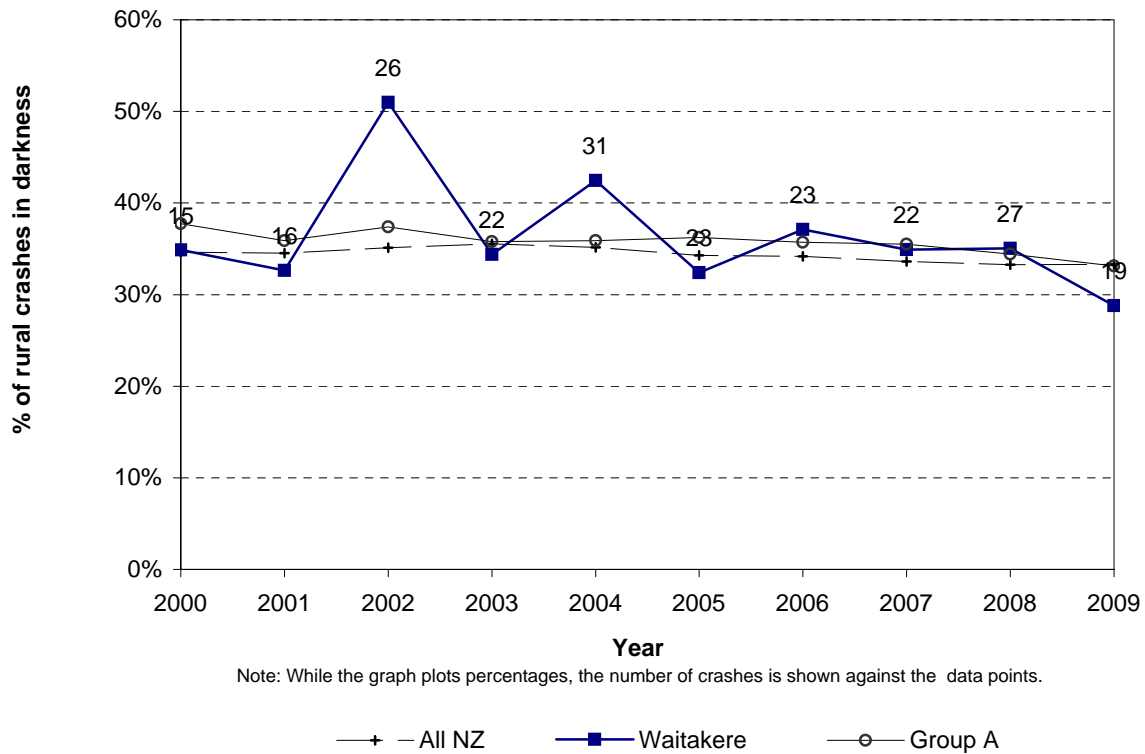
**Figure 6.6 Wet road crashes  
Waitakere City - rural roads**



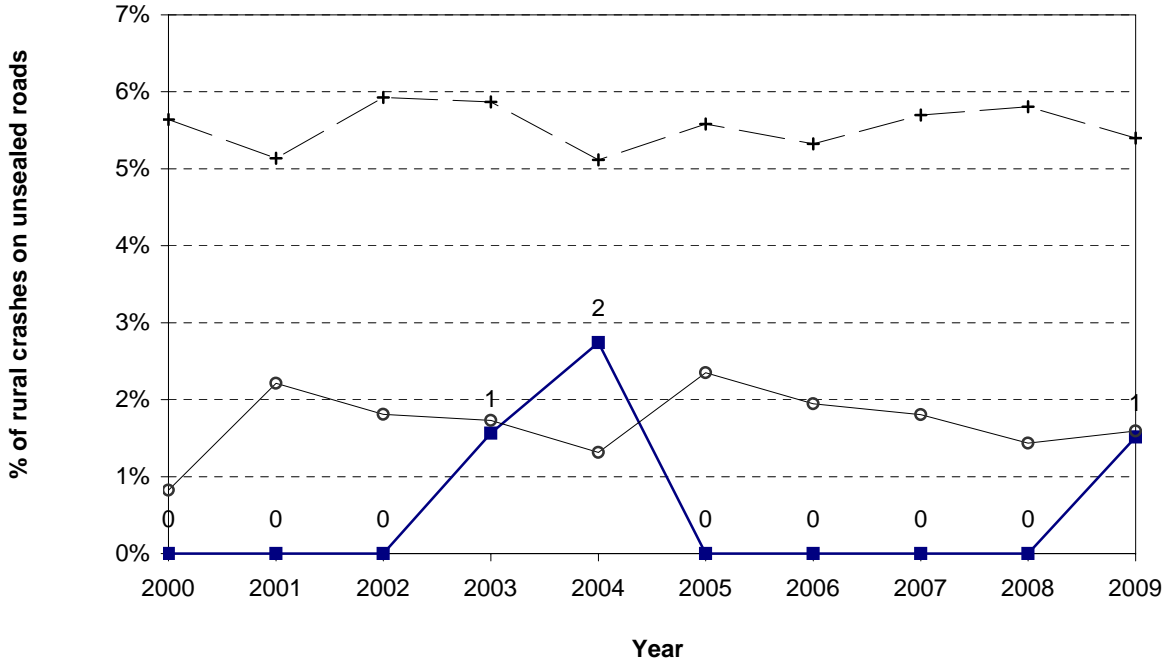
**Figure 6.7 Crashes in darkness  
Waitakere City - urban roads**



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



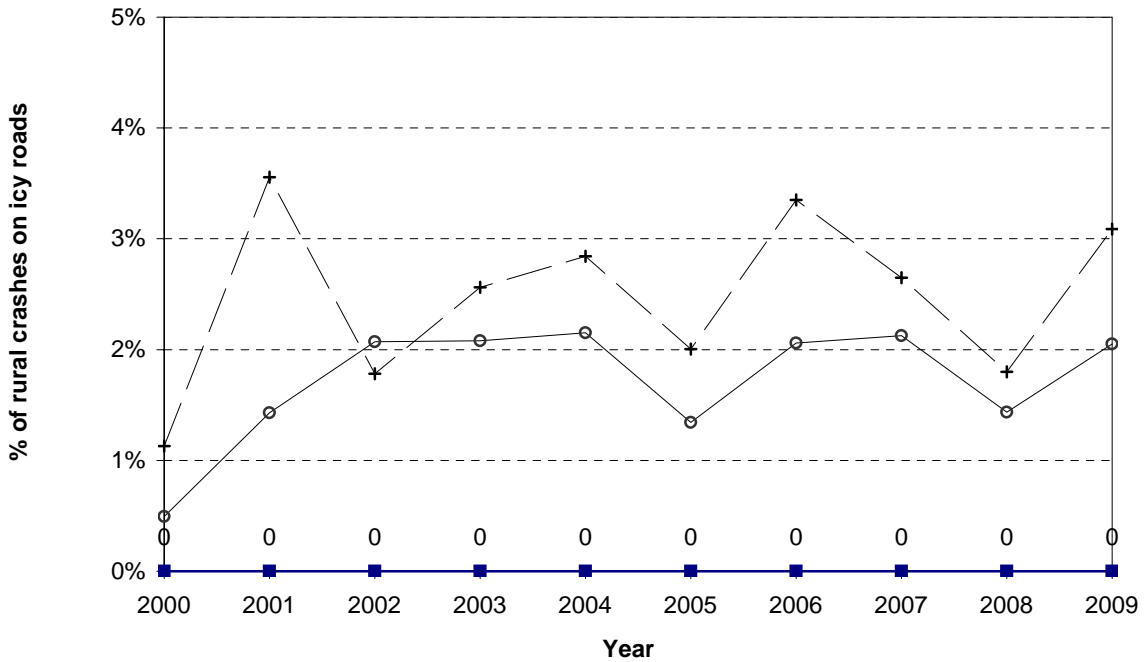
**Figure 6.9 Unsealed road crashes  
Waitakere City - rural roads**



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

+ All NZ    ■ Waitakere    ○ Group A

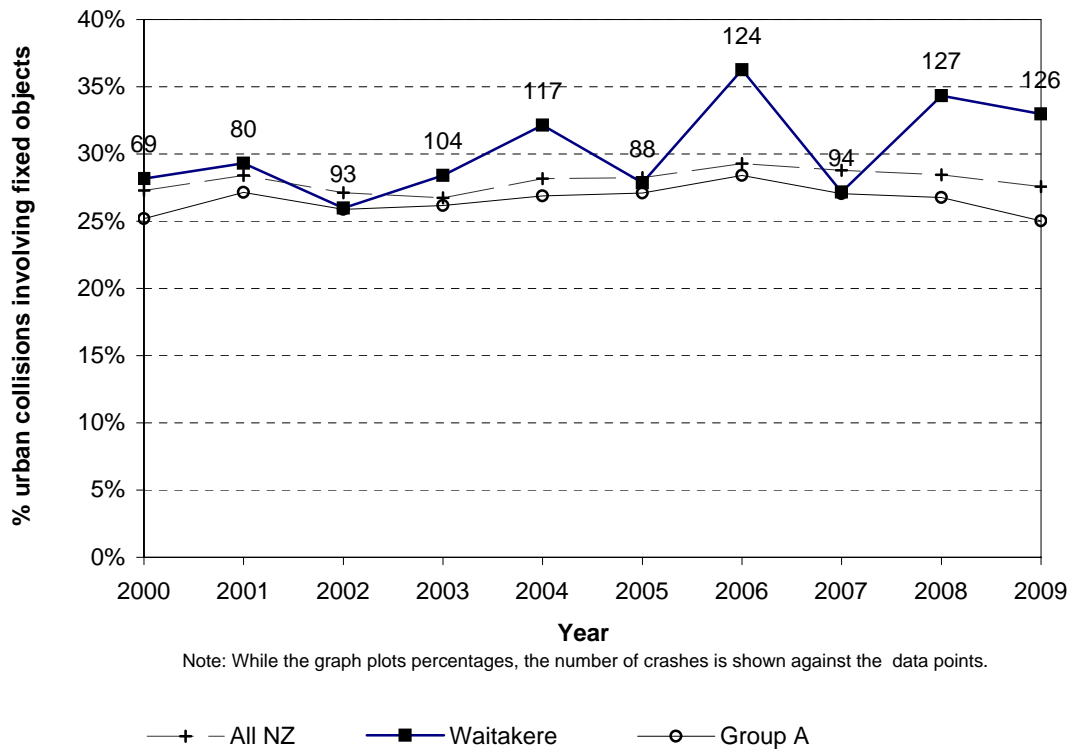
**Figure 6.10 Icy road crashes  
Waitakere City - rural roads**



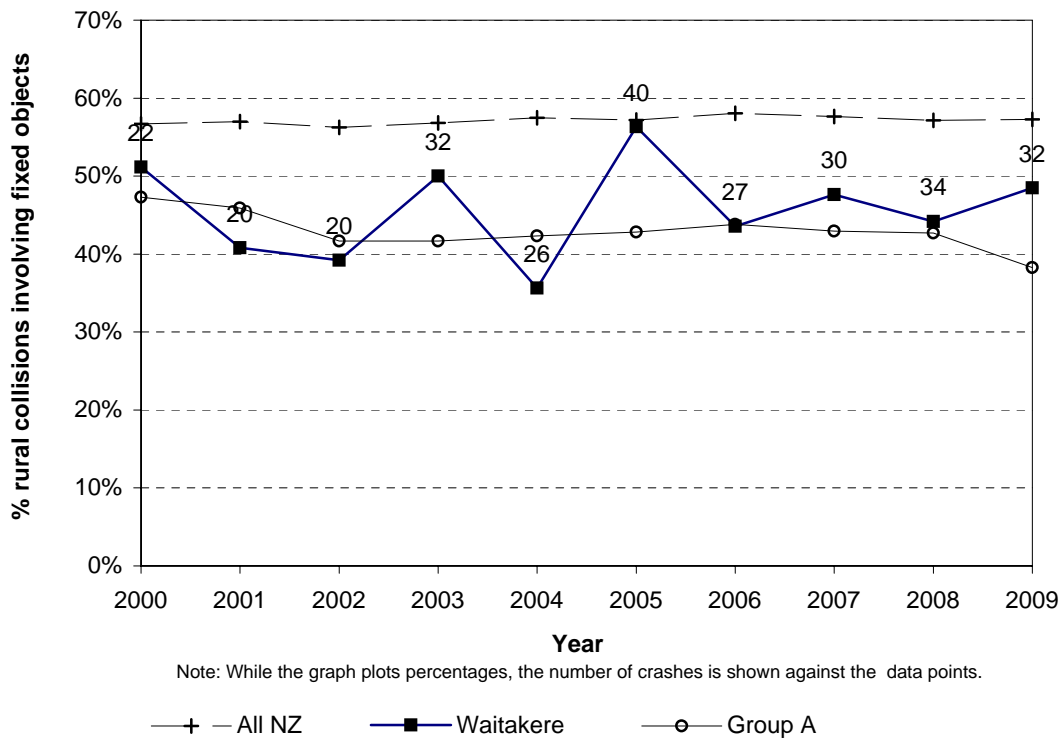
Note: While the graph plots percentages, the number of crashes is shown against the data points.

+ All NZ    ■ Waitakere    ○ Group A

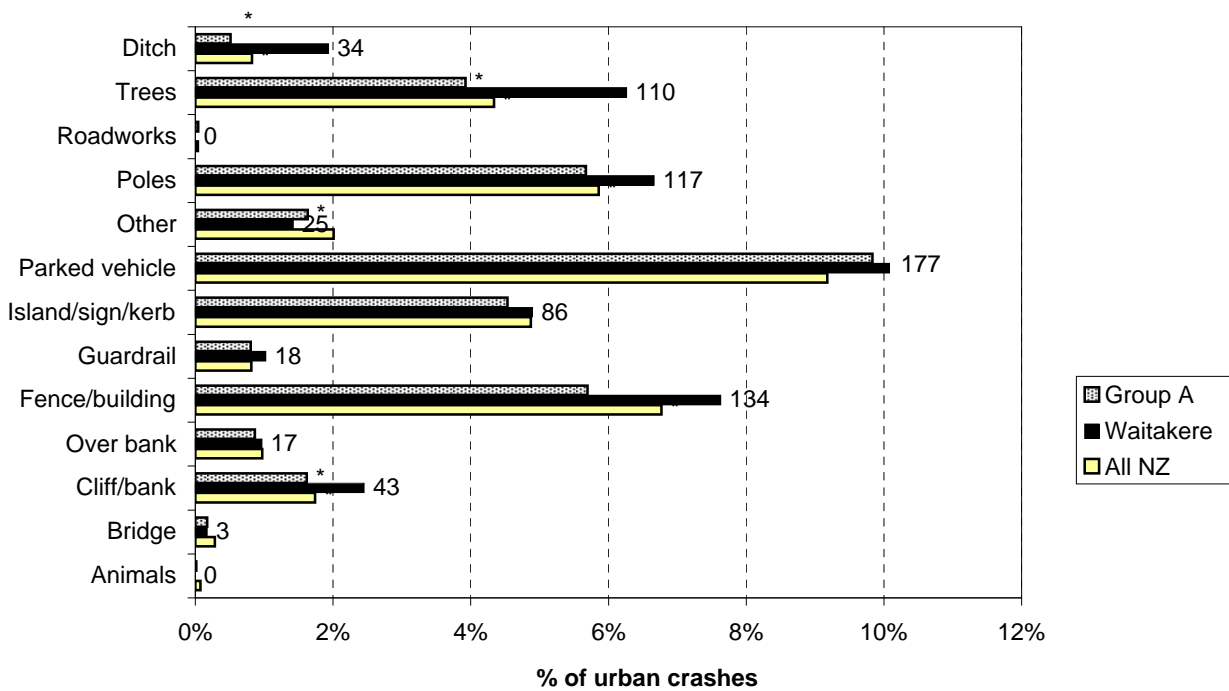
**Figure 6.11 Collisions with objects  
Waitakere City - urban roads**



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

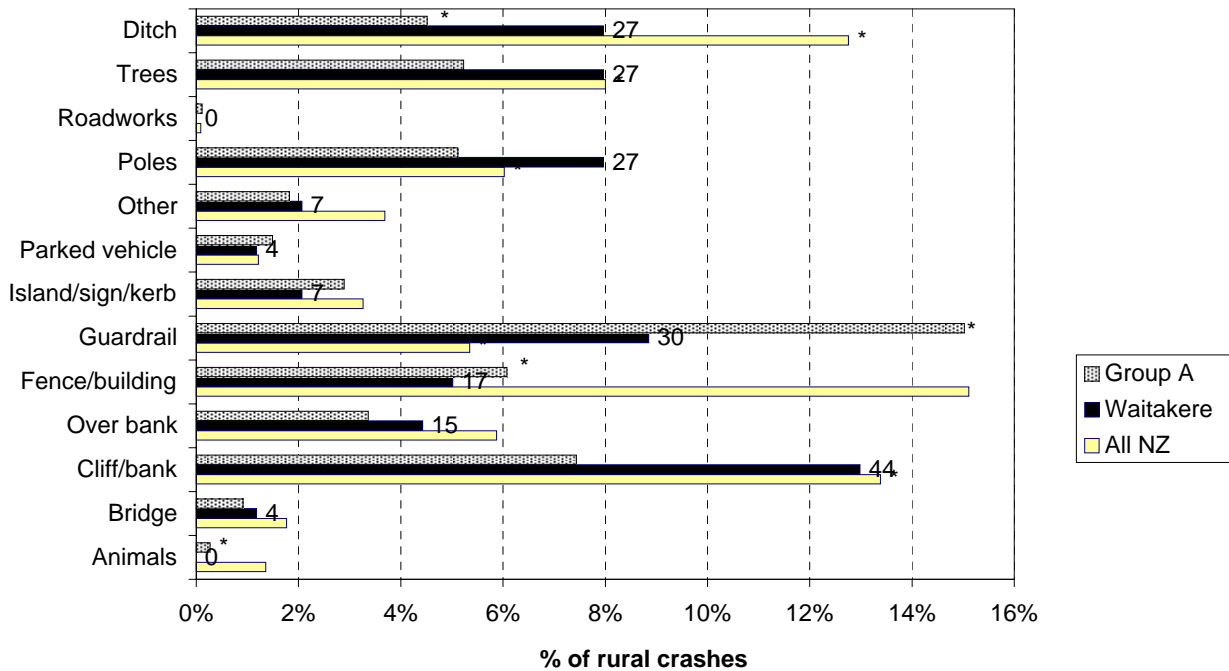


**Figure 6.13 Objects struck - urban  
Waitakere City (2005-2009)**



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

**Figure 6.14 Objects struck - rural  
Waitakere City (2005-2009)**



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

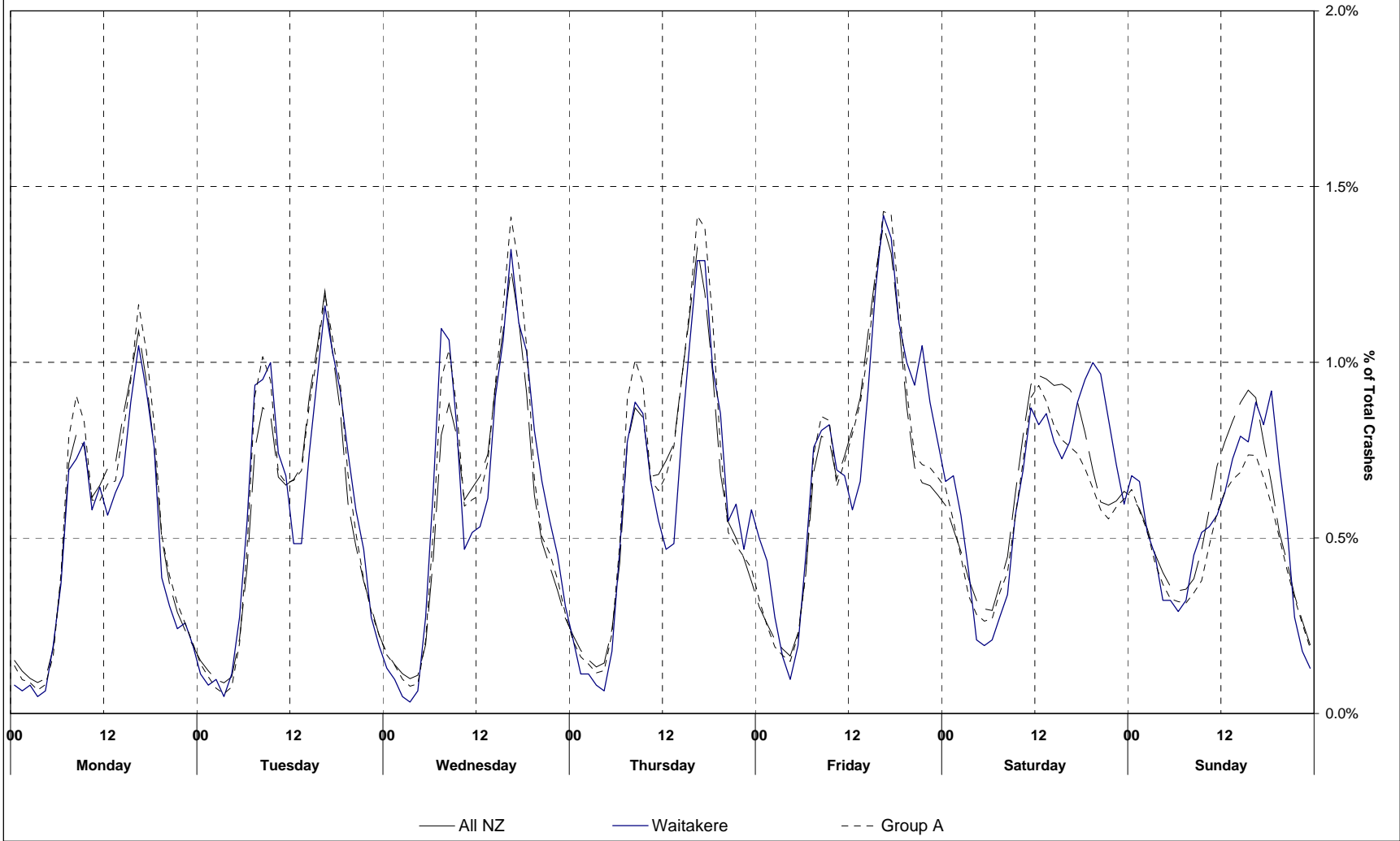




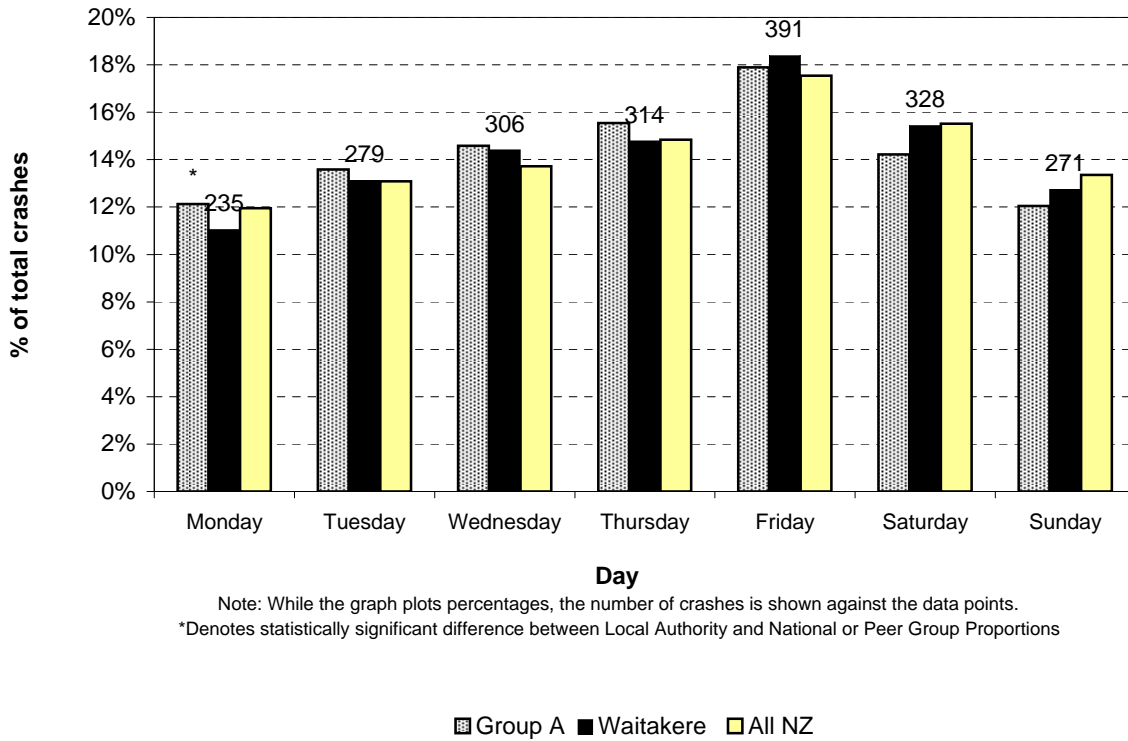
# *Date and Time Statistics*



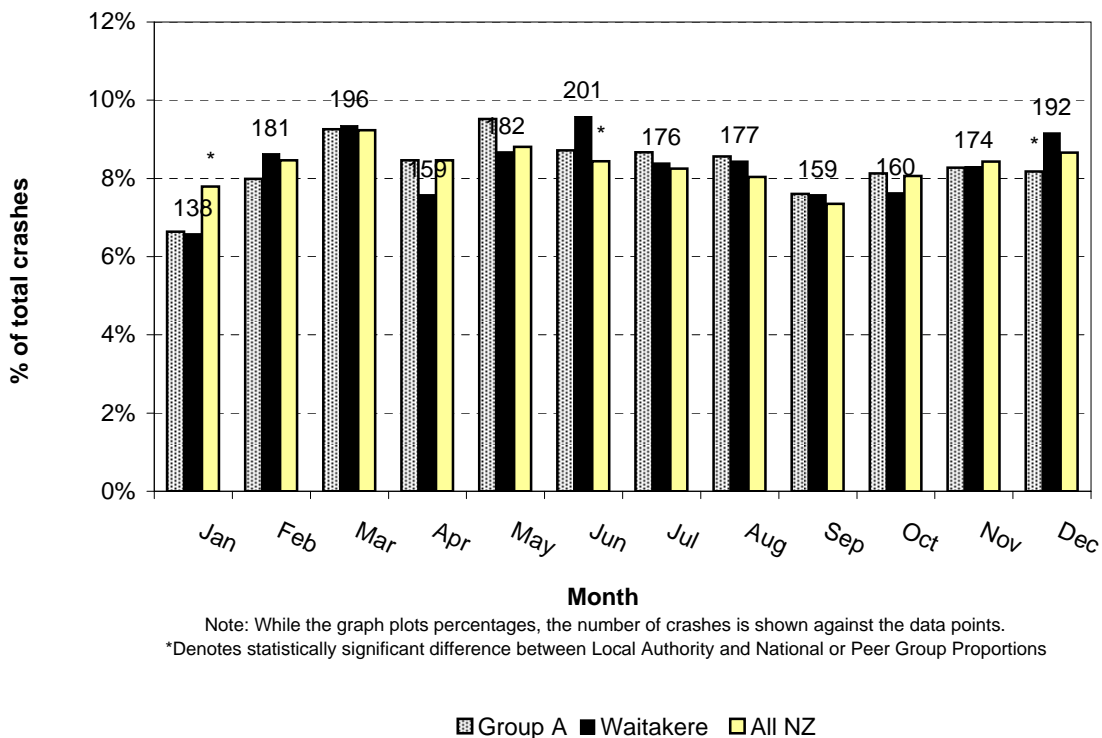
Figure 7.1 Time pattern over average week  
Waitakere City (2005-2009)



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



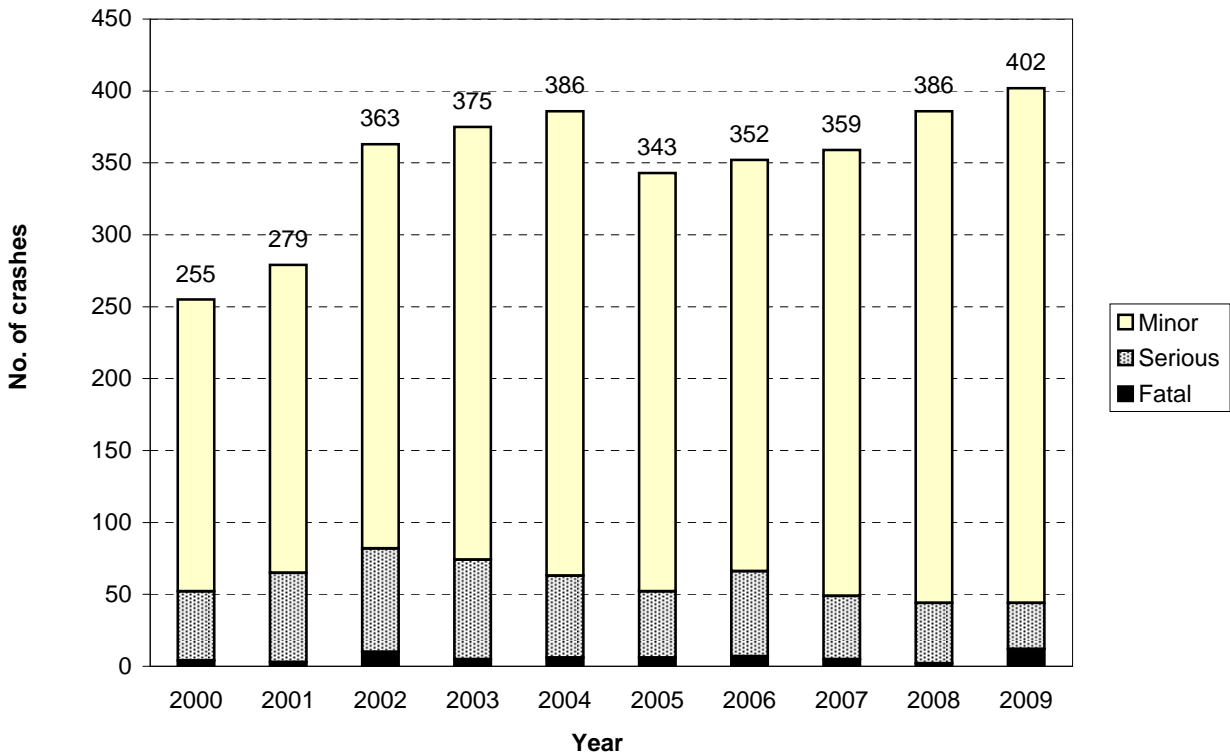
**Figure 7.3 Month of year  
Waitakere City (2005-2009)**



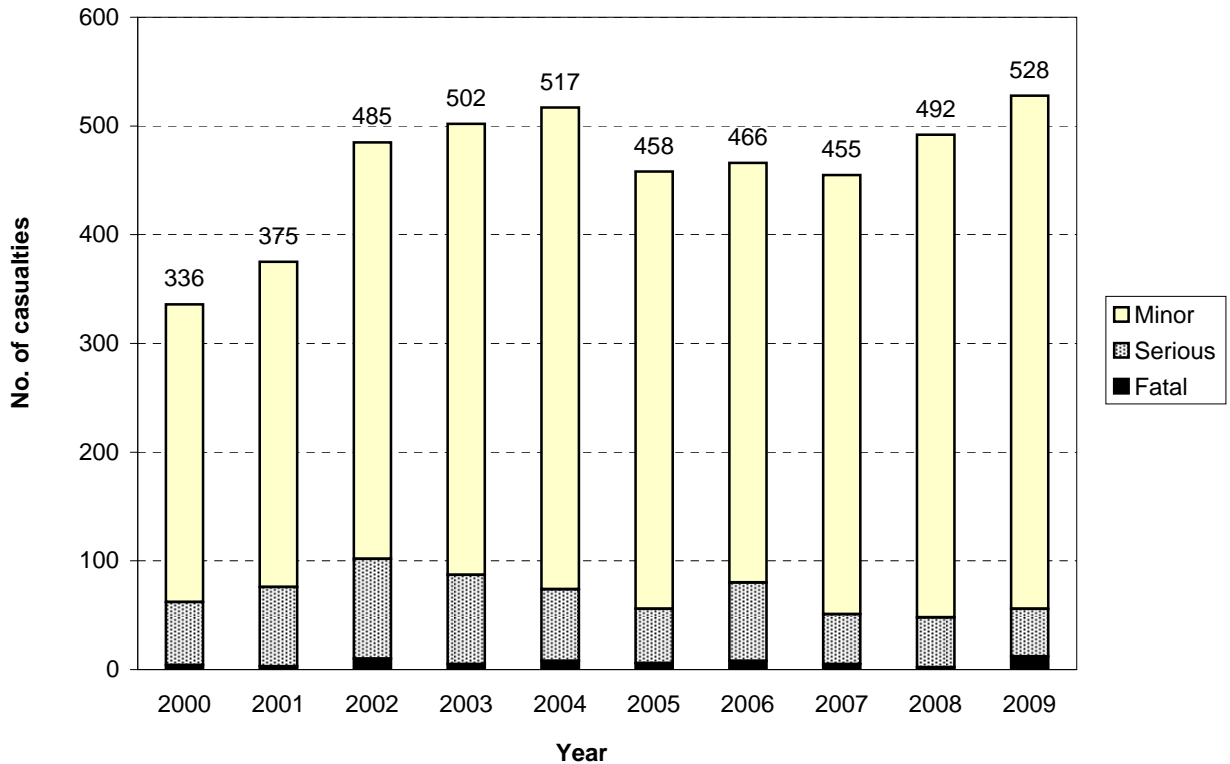
# *Local Road Statistics*



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

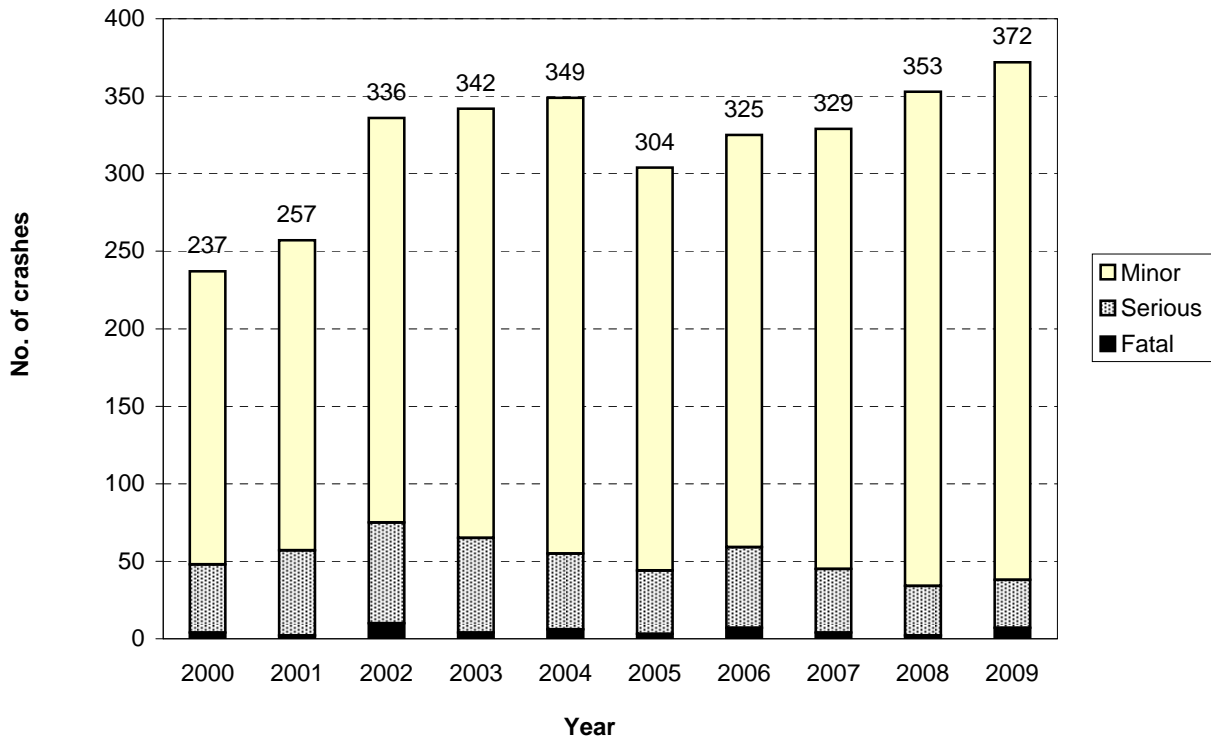


**Figure 8.2 Number of casualties**  
Waitakere City - council roads (urban & rural)

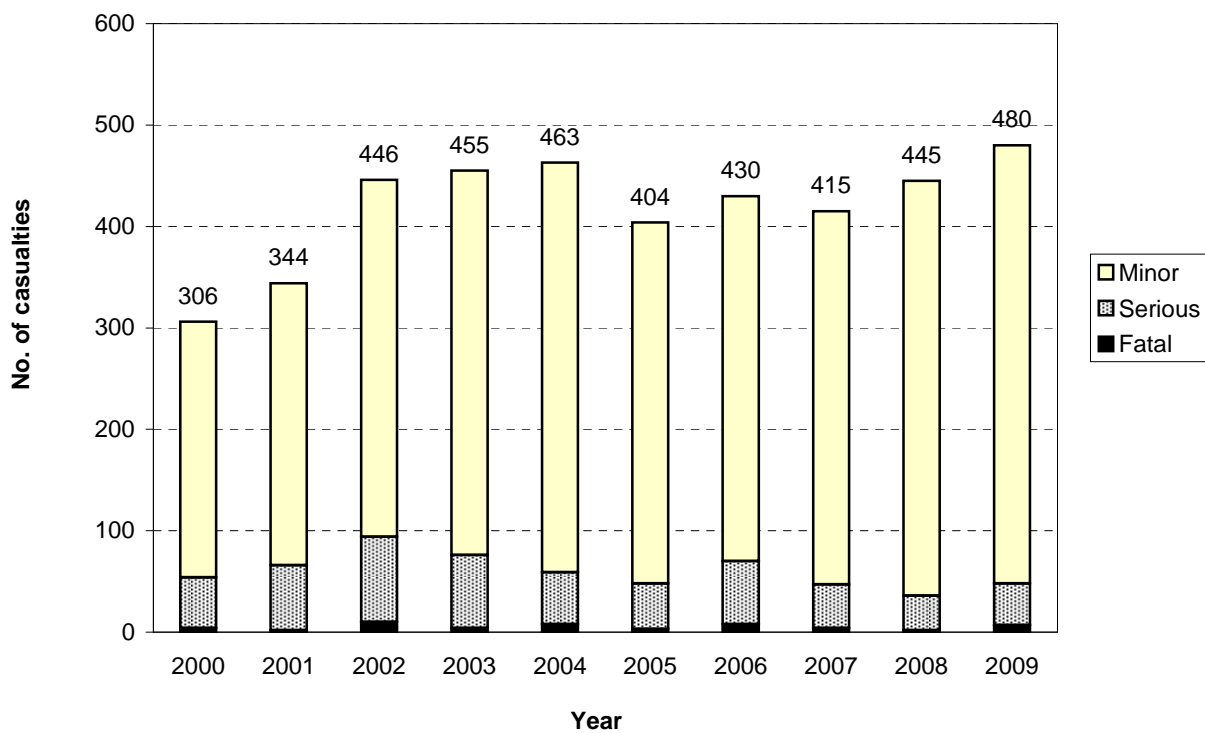




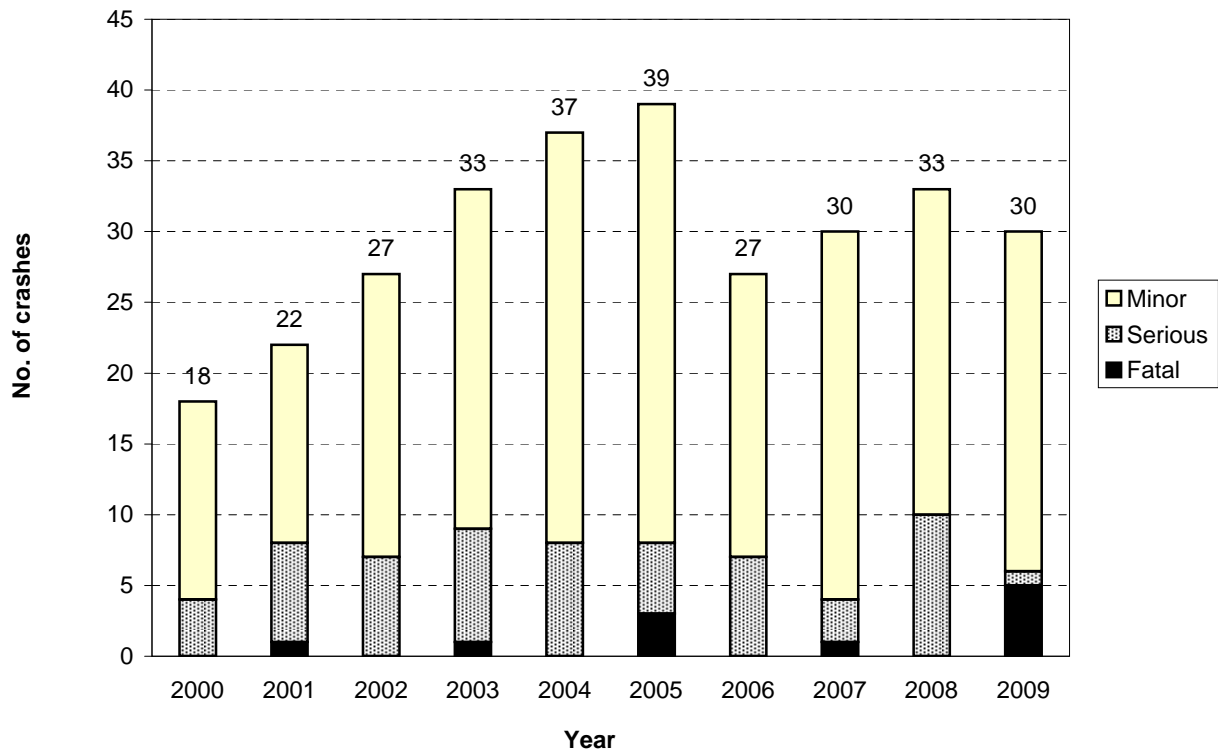
**Figure 8.3 Number of injury crashes  
Waitakere City - urban council roads**



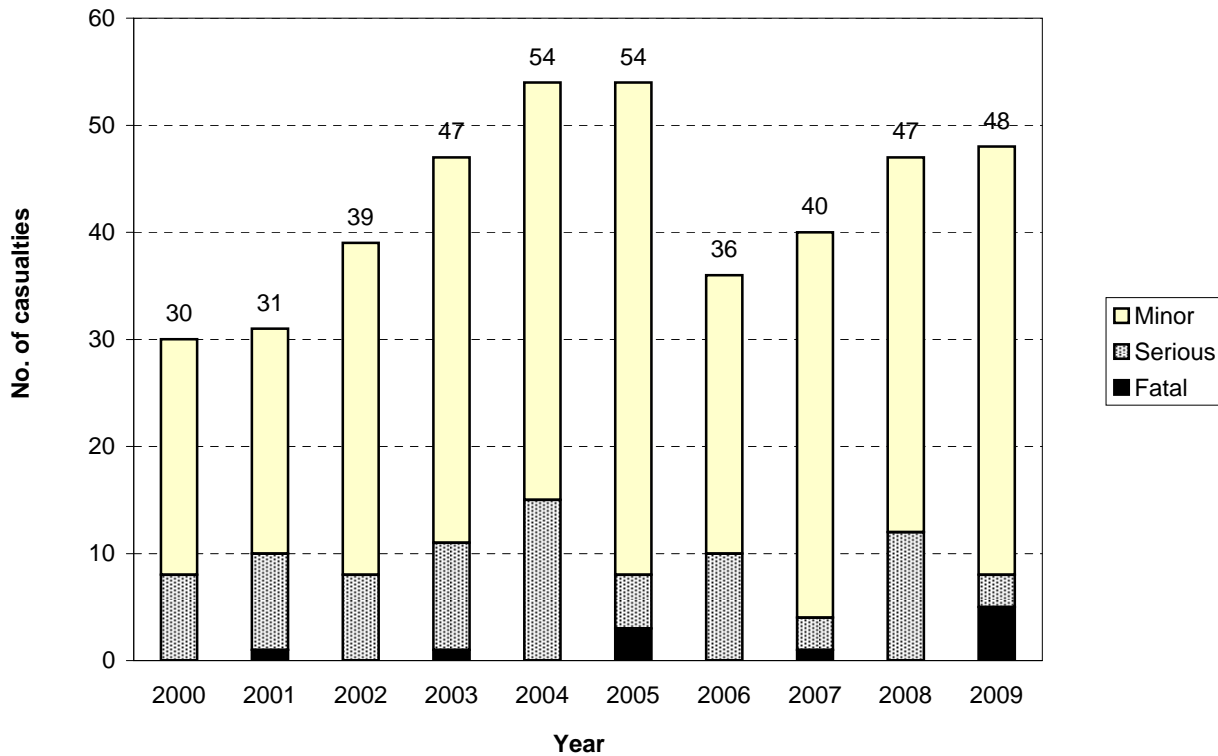
**Figure 8.4 Number of casualties  
Waitakere City - urban council roads**



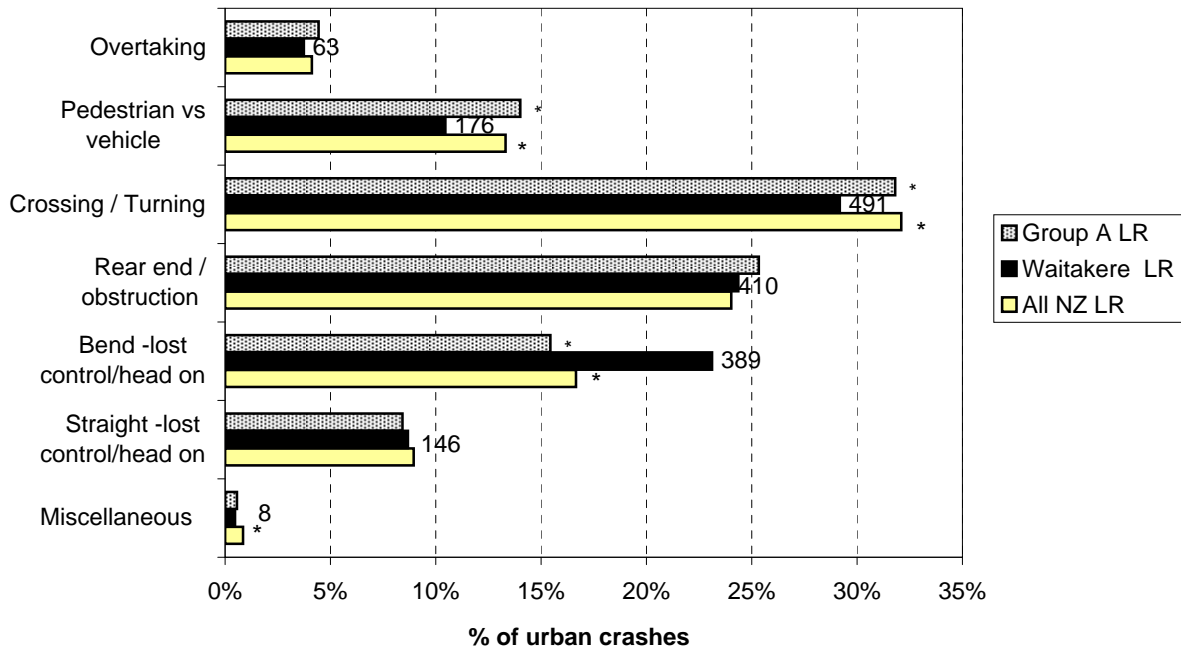
**Figure 8.5 Number of injury crashes**  
Waitakere City - rural council roads



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

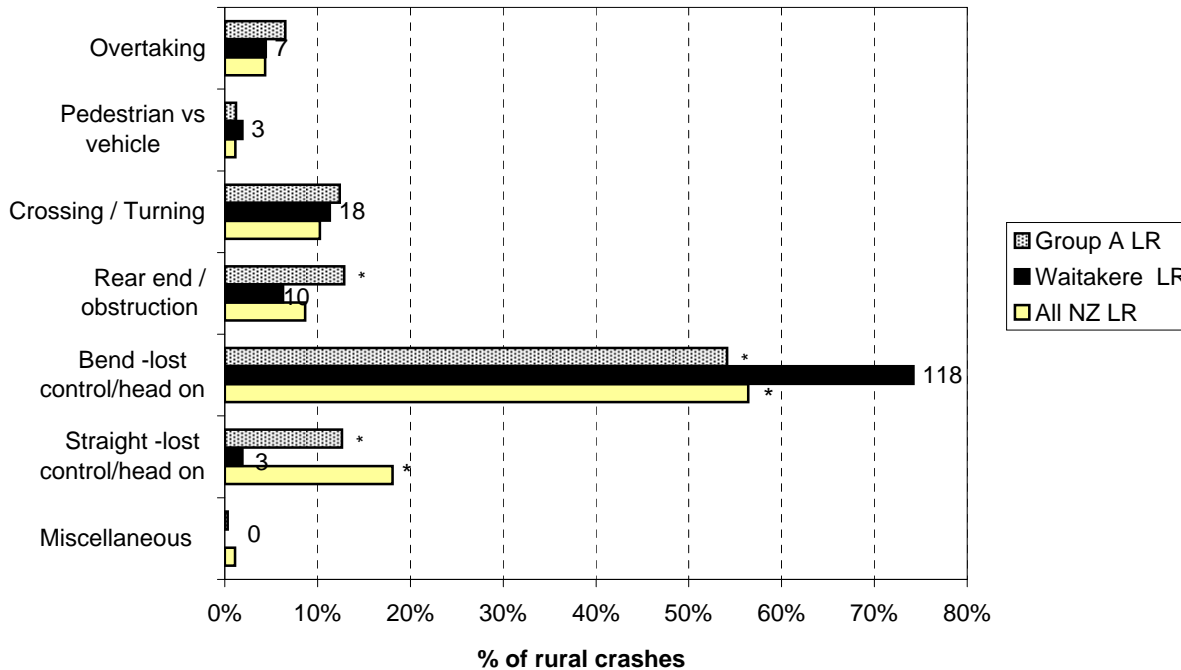


**Figure 8.7 Crash movement type - urban  
Waitakere City council roads (2005-2009)**



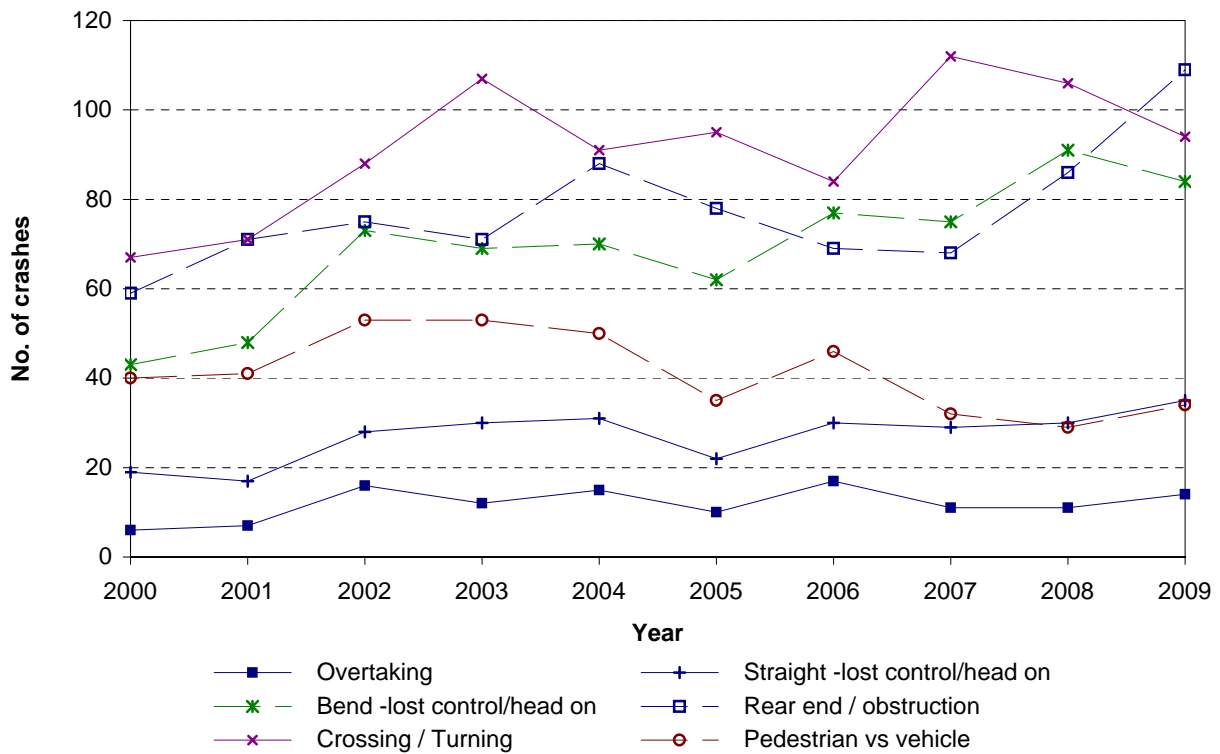
Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

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

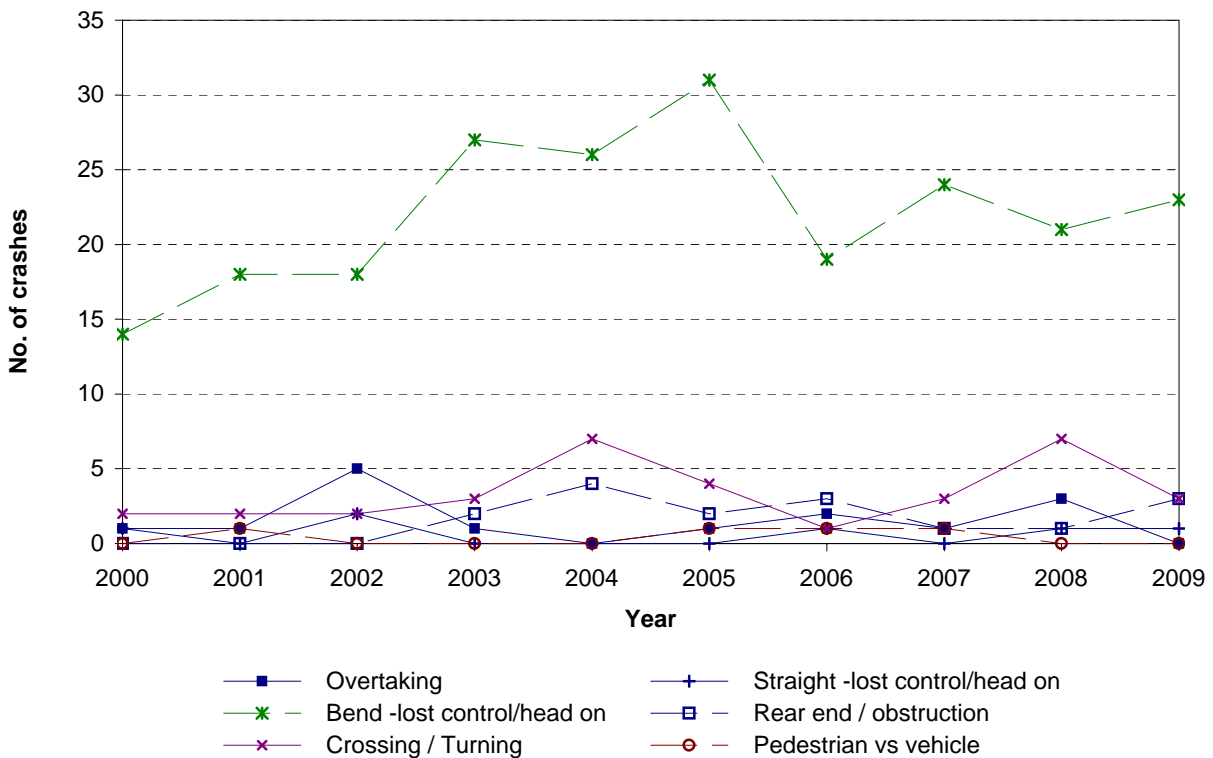


Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

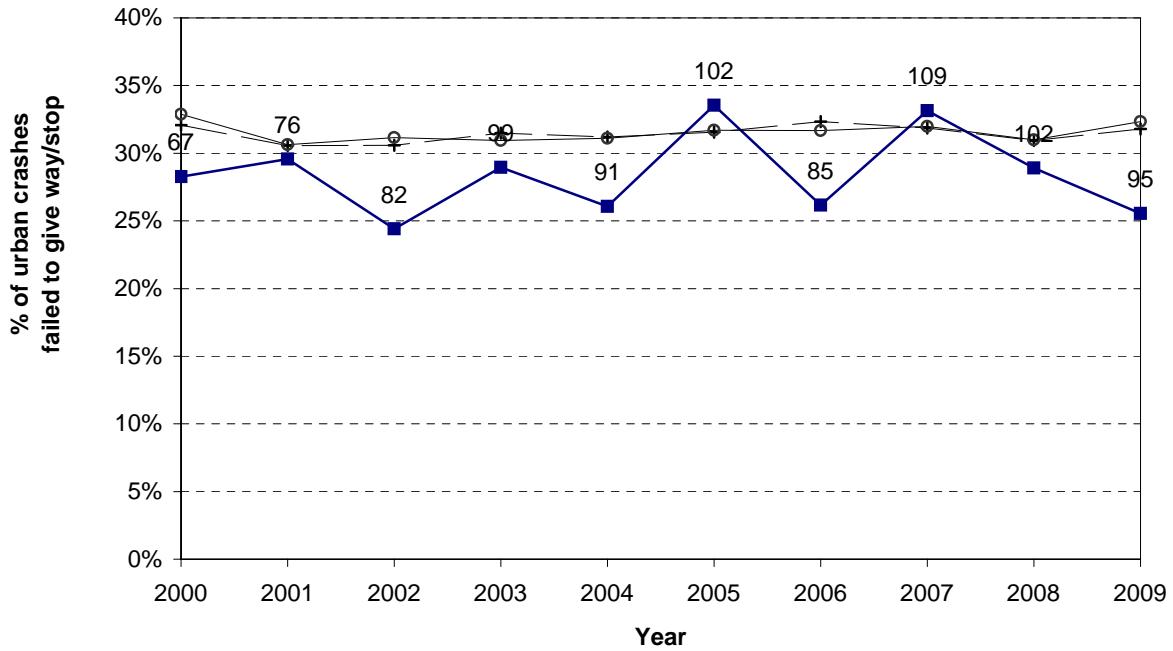
**Figure 8.9 Crash movement type - Trends  
Waitakere City - urban council roads**



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



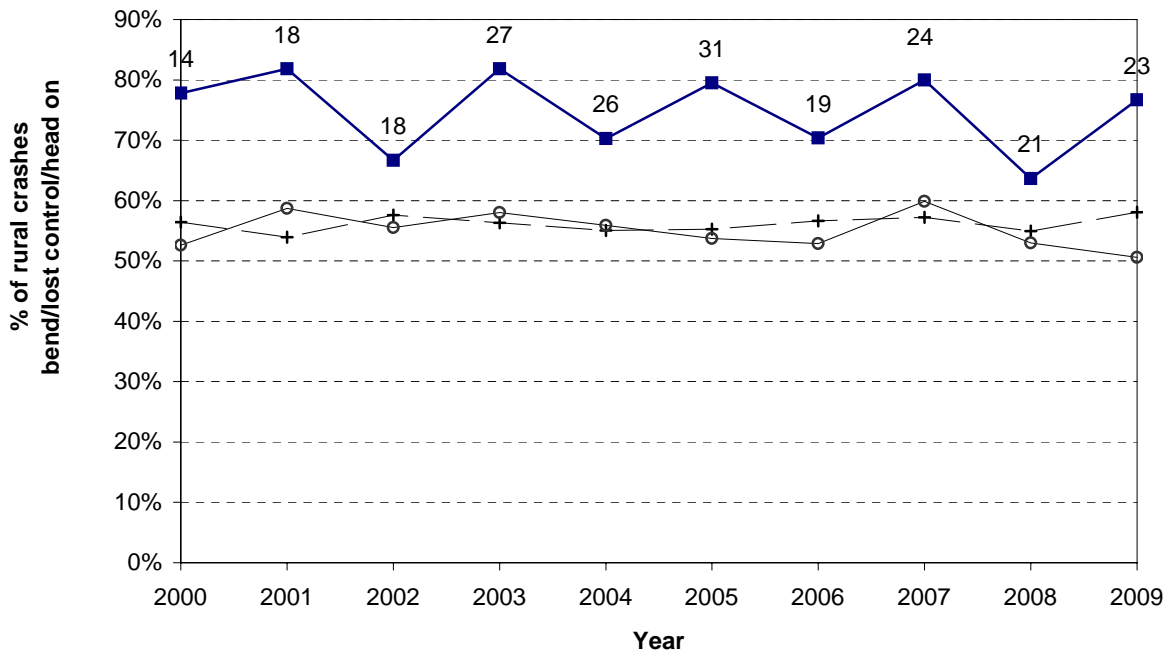
**Figure 8.11 Failed to give way/stop  
Waitakere City - urban council roads**



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

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

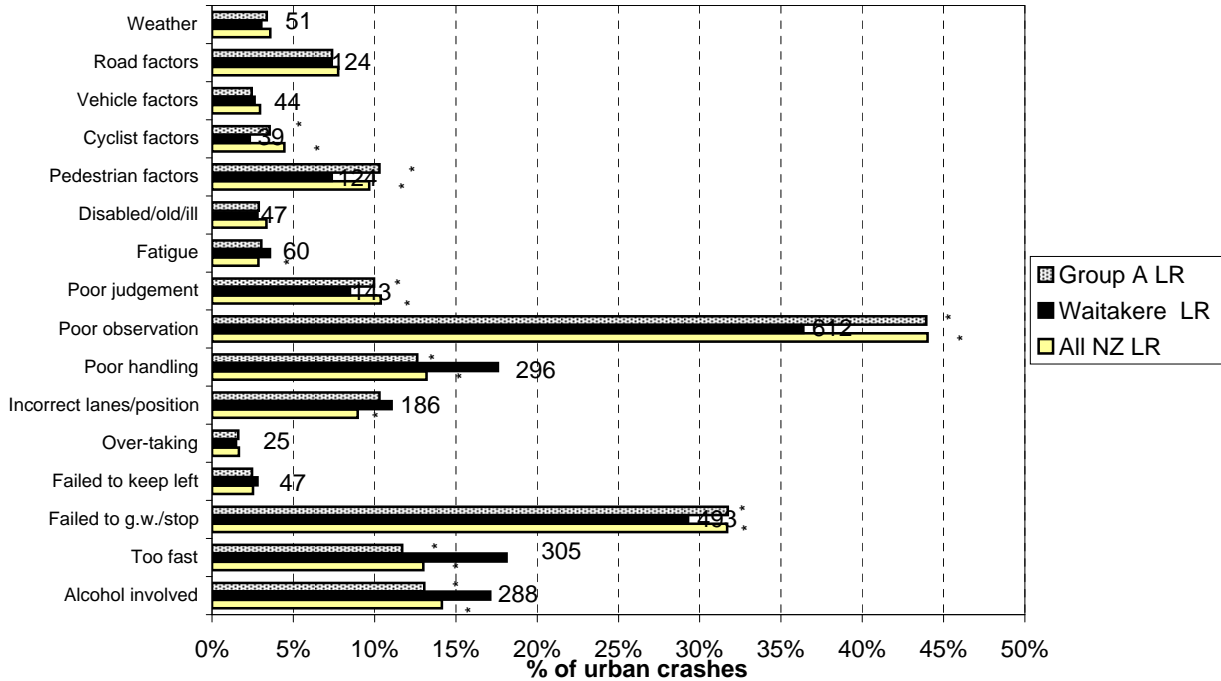
**Figure 8.12 Bend - lost control / head - on  
Waitakere City - rural council roads**



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

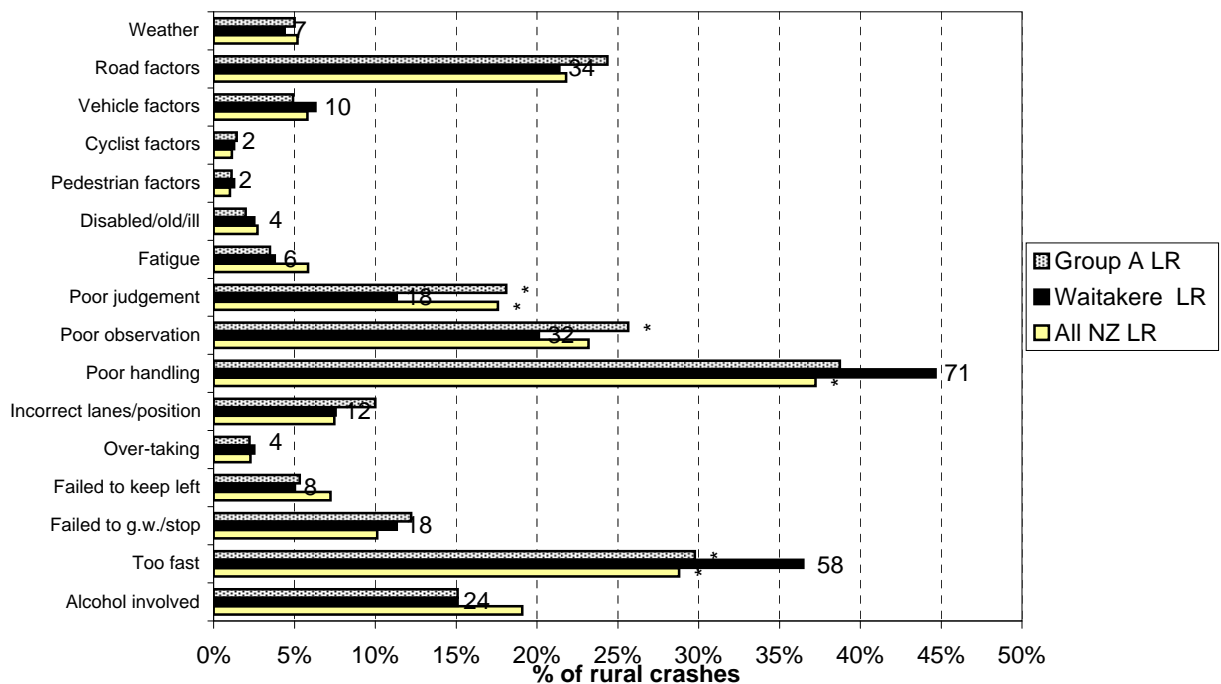
—+— All NZ LR —■— Waitakere LR —○— Group A LR

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



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

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

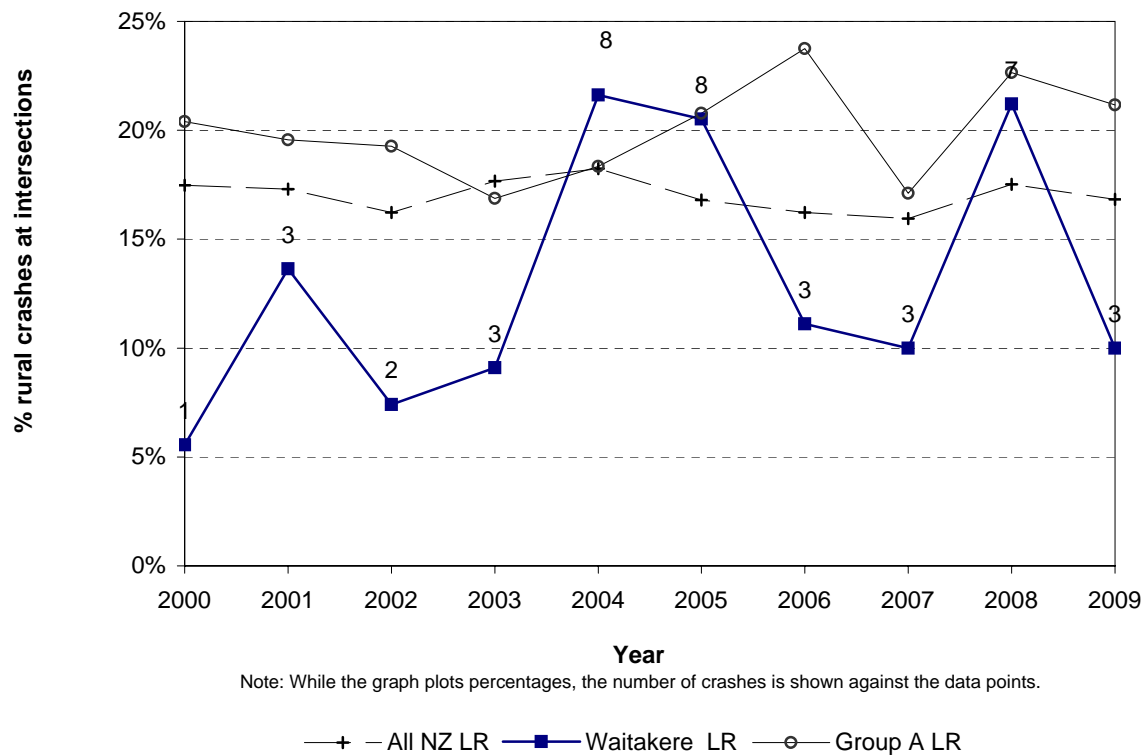


Note: While the graph plots percentages, the number of casualties is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

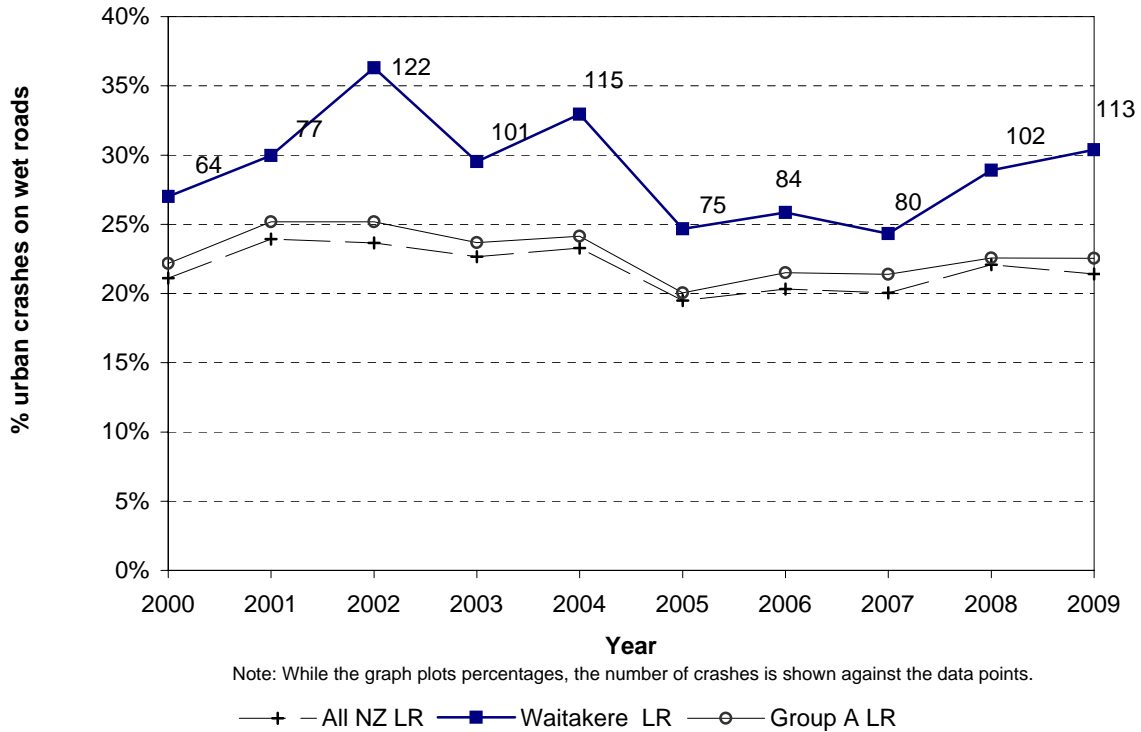
**Figure 8.15 Intersection crashes  
Waitakere City - urban council roads**



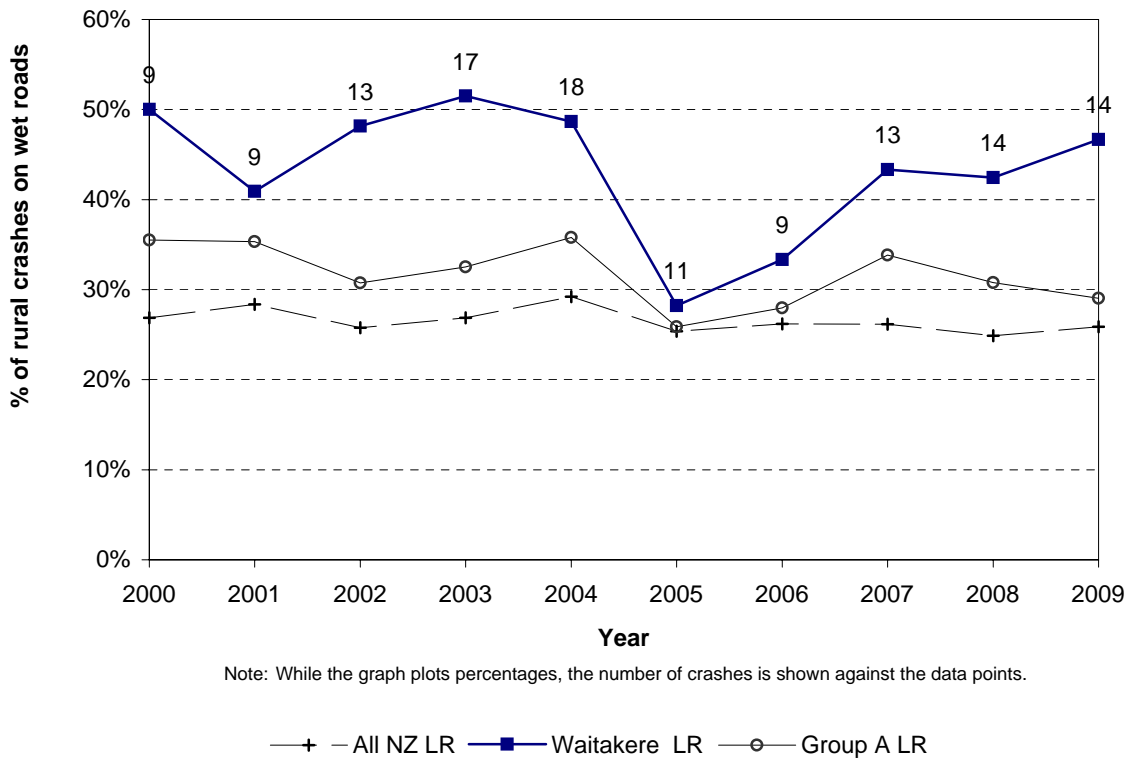
**Figure 8.16 Intersection crashes  
Waitakere City - rural council roads**



**Figure 8.17 Wet road crashes**  
Waitakere City - urban council roads

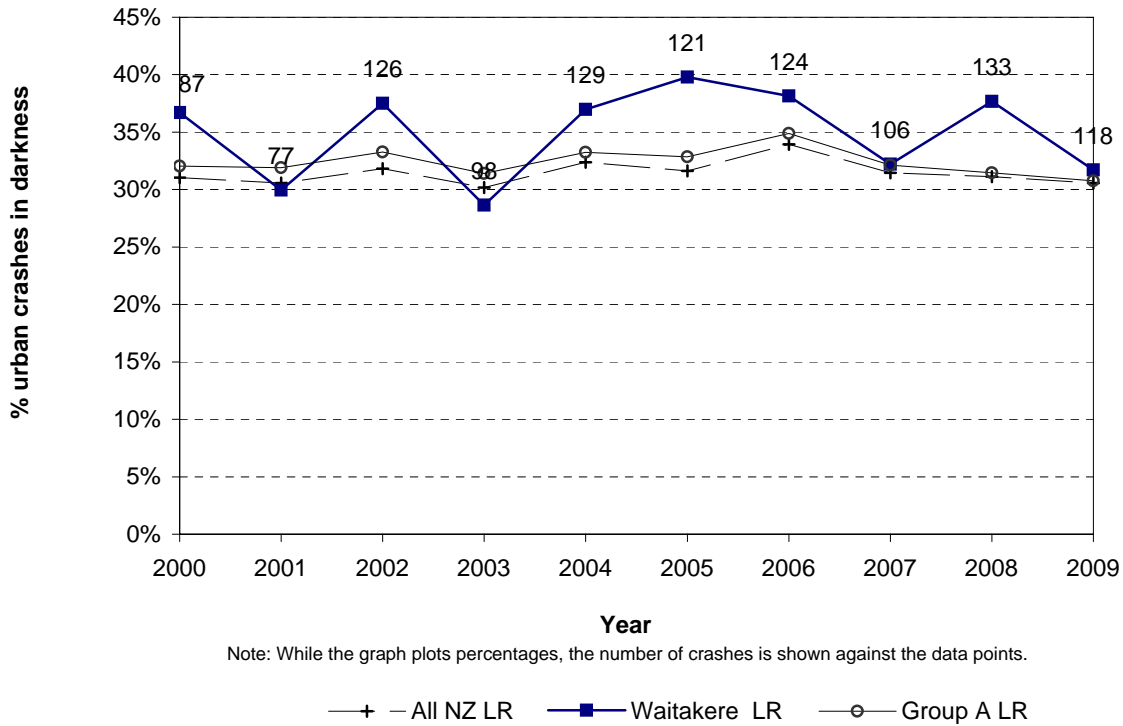


**Figure 8.18 Wet road crashes**  
Waitakere City - rural council roads

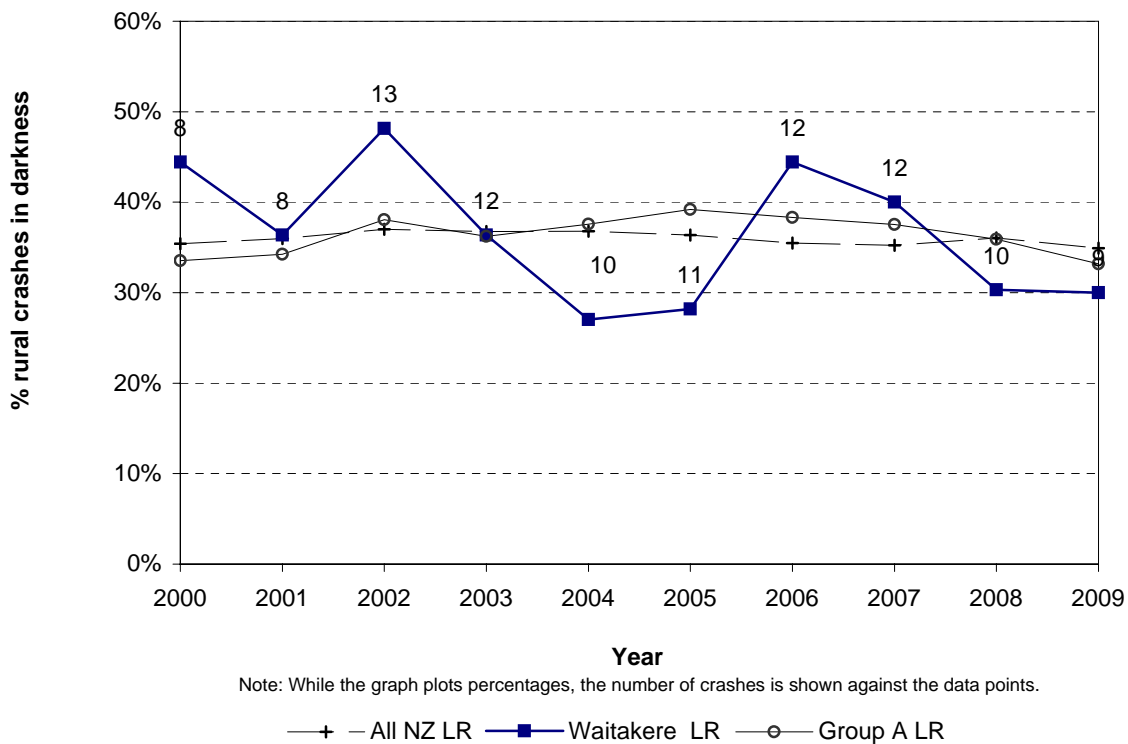




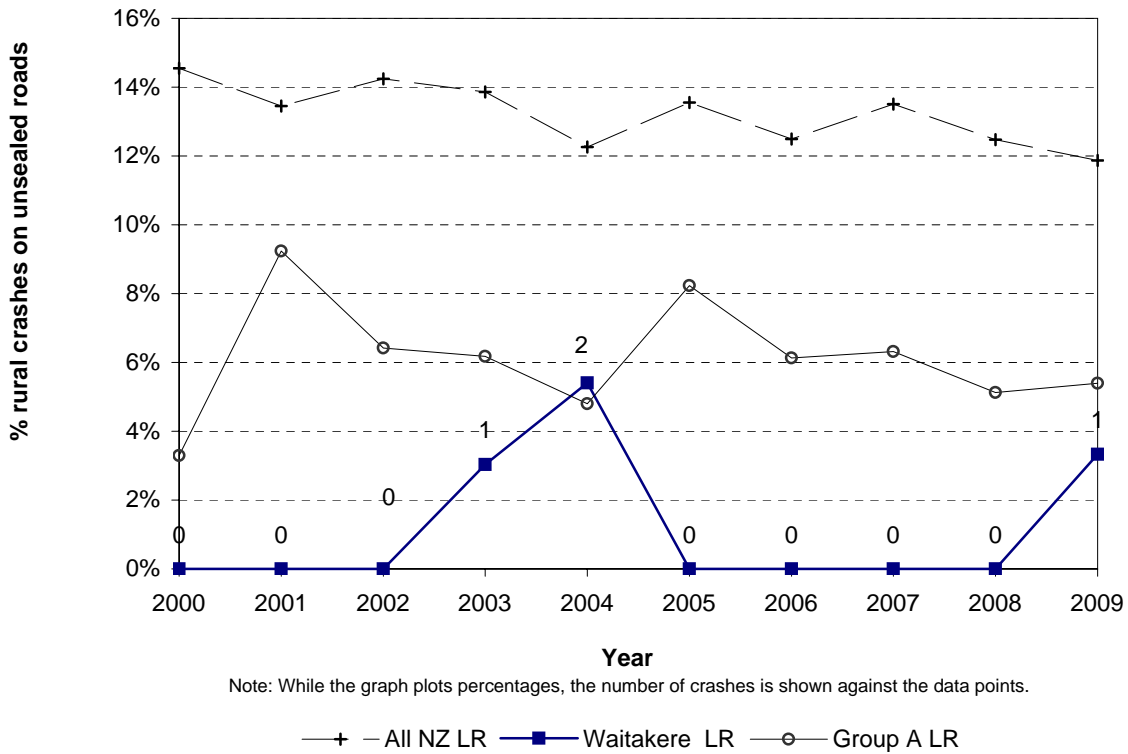
**Figure 8.19 Crashes in darkness  
Waitakere City - urban council roads**



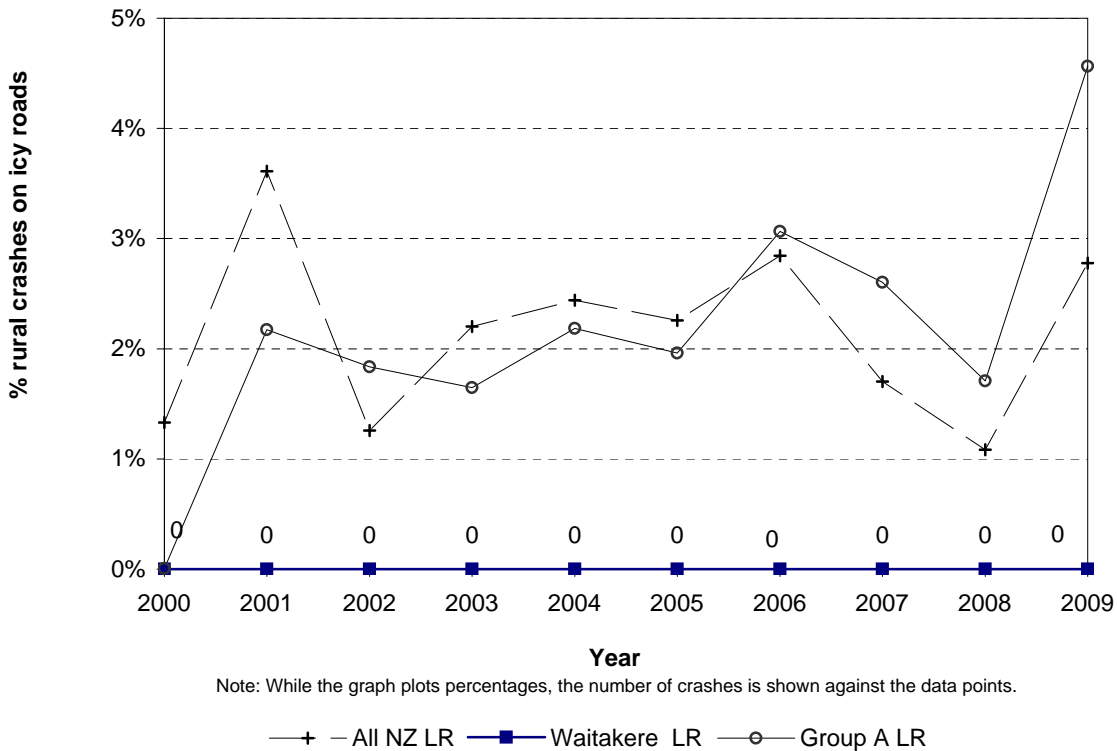
**Figure 8.20 Crashes in darkness  
Waitakere City - rural council roads**



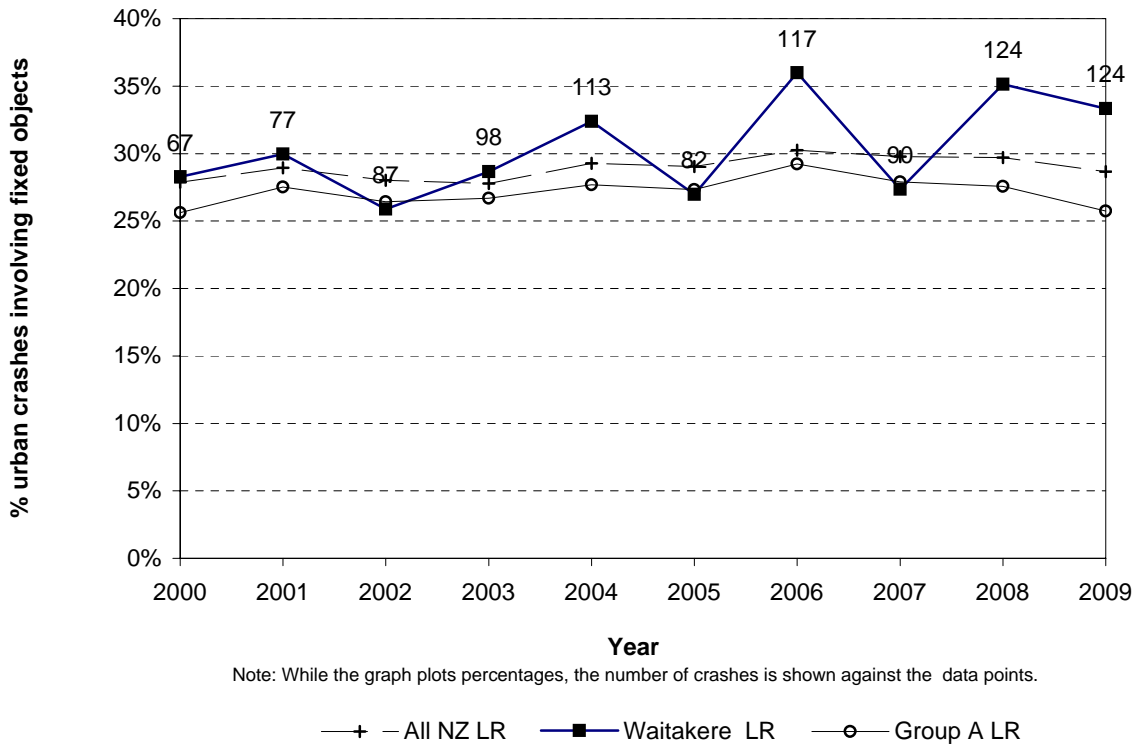
**Figure 8.21 Crashes on unsealed roads  
Waitakere City - rural council roads**



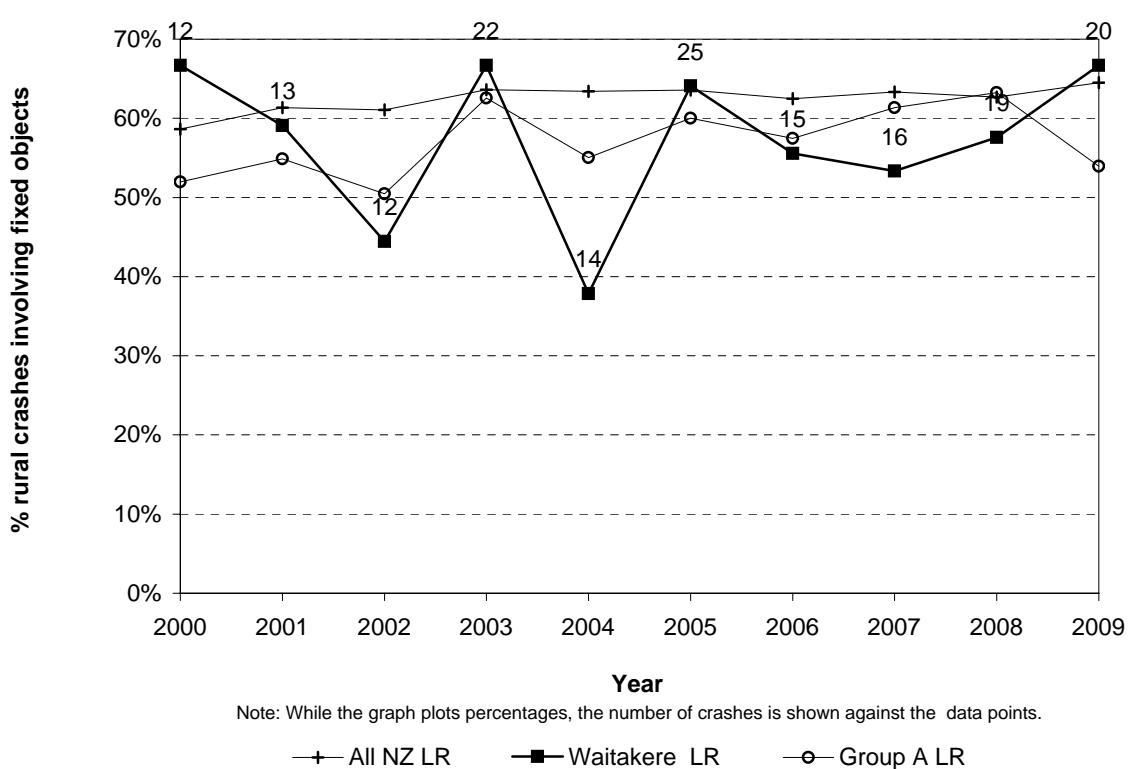
**Figure 8.22 Icy road crashes  
Waitakere City - rural council roads**



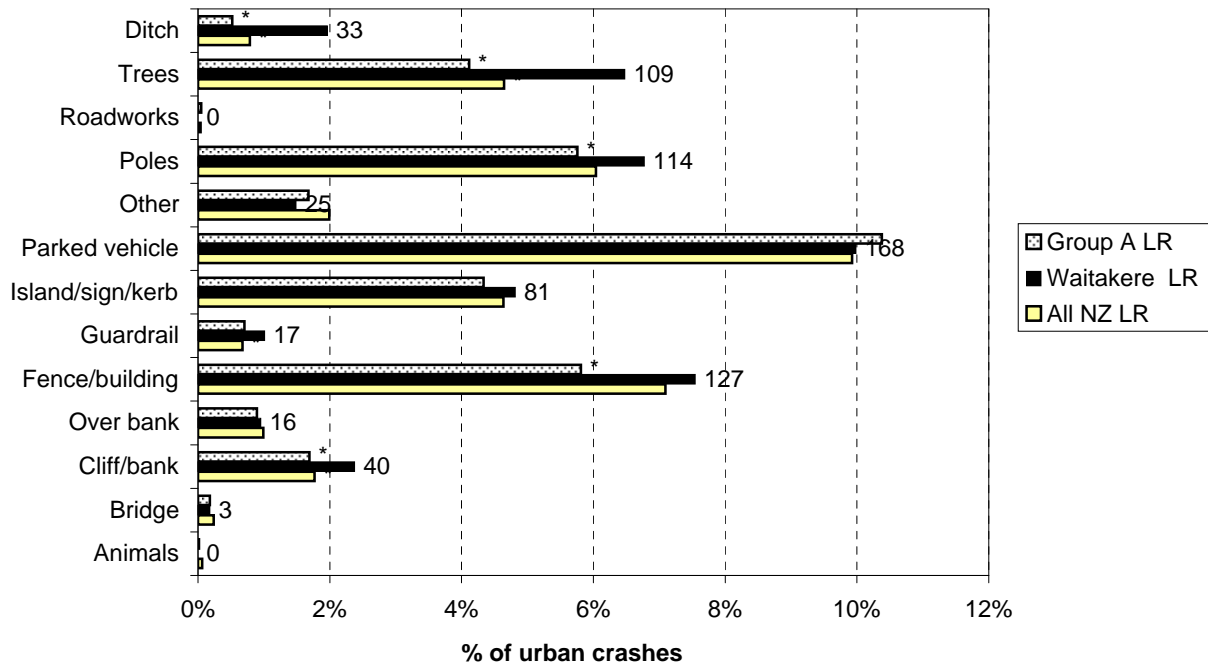
**Figure 8.23 Collisions with objects  
Waitakere City - urban council roads**



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

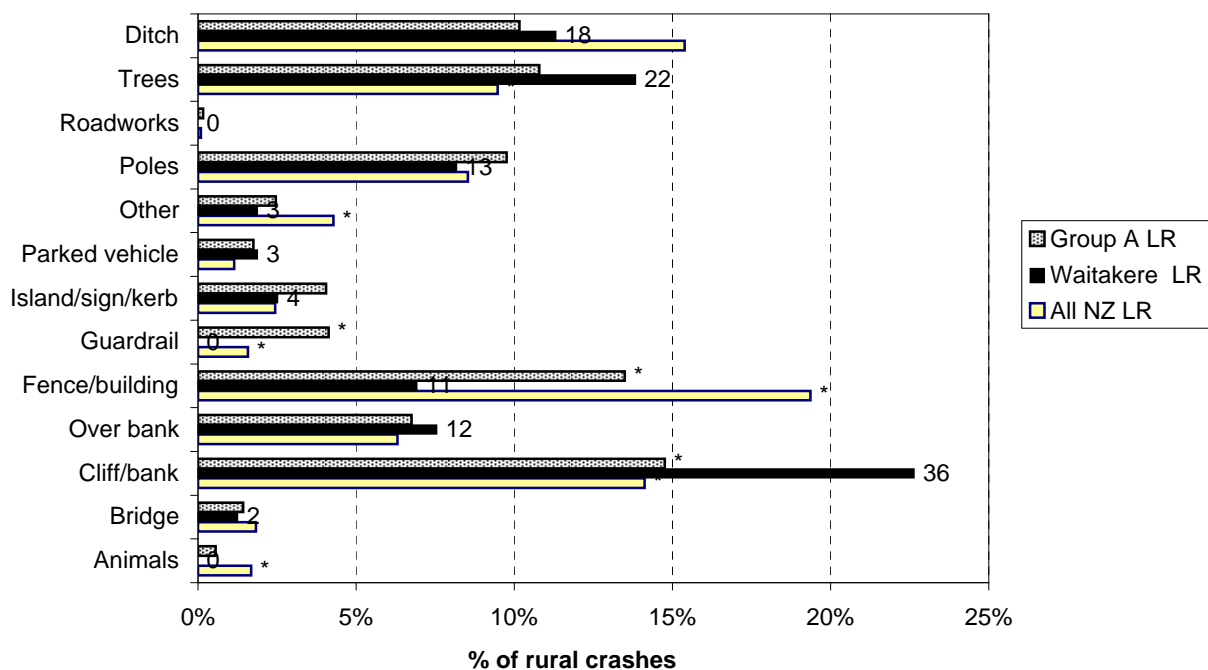


**Figure 8.25 Objects struck - urban  
Waitakere City council roads (2005-2009)**



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

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



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



# *Crash Location Statistics*



**Table 9.1: Council Roads Black Spot List Urban  
(Injury and Non-Injury Crashes)**
**Site Radius = 30 metres**
**Sites with 5 or more injury crashes or more than \$500000 in social costs**

CRASH ROAD		SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
CENTRAL PARK DRIVE	I	PARAMOUNT DRIVE	2	3	3	3	2	13	8	23	8	\$4,548,452
SWANSON ROAD	I	RATHGAR ROAD	3	3	1	7	4	18	12	22	44	\$4,279,173
TITIRANGI ROAD	I	GOLF ROAD	2	1	2	4	3	12	9	42	58	\$4,013,666
FOREST HILL ROAD	I	KELLYS ROAD	0	2	0	0	1	3	2	67	33	\$3,735,284
HENDERSON VALLEY ROAD		610 E CANDIA ROAD	0	1	2	0	0	3	2	33	67	\$3,735,213
GREAT NORTH ROAD	I	AWAROA ROAD	1	2	4	3	4	14	11	21	14	\$3,717,415
EDMONTON ROAD		150 S SCHOOL ROAD	1	2	0	0	1	4	2	0	25	\$3,377,656
WEST COAST ROAD		150 W PLEASANT ROAD	0	0	2	1	0	3	1	33	67	\$3,358,490
TRIANGLE ROAD	I	DOONE PLACE	0	1	1	0	1	3	1	33	67	\$3,330,970
LINCOLN ROAD		70 S PARAMOUNT DRIVE	0	0	0	1	2	3	2	33	33	\$3,305,360
LINCOLN ROAD		50 S NORVAL ROAD	1	0	1	0	1	3	2	0	0	\$3,305,354
TRIANGLE ROAD	I	LINCOLN ROAD	9	11	12	26	13	71	59	18	28	\$1,884,747
SWANSON ROAD	I	LINCOLN ROAD	17	10	10	14	11	62	48	18	35	\$1,844,854
TITIRANGI ROAD	I	GREAT NORTH ROAD	14	12	14	17	20	77	69	23	40	\$1,771,495
METCALFE ROAD	I	SWANSON ROAD	5	5	8	8	4	30	25	27	23	\$1,682,835
DON BUCK ROAD	I	WOODSIDE ROAD	7	5	2	3	4	21	14	38	33	\$1,641,190
LINCOLN ROAD	I	TE PAI PLACE	10	2	6	5	14	37	28	22	43	\$1,574,829
SWANSON ROAD		5 W DON BUCK ROAD	8	6	4	7	18	43	36	7	26	\$1,573,980
LINCOLN ROAD	I	UNIVERSAL DRIVE	14	12	10	15	12	63	55	24	35	\$1,528,034
GREAT NORTH ROAD	I	WEST COAST ROAD	7	10	7	4	10	38	31	37	29	\$1,487,215
GREAT NORTH ROAD	I	VERONICA ST	5	10	5	5	10	35	27	17	23	\$1,479,705
EDMONTON ROAD	I	GREAT NORTH ROAD	6	8	9	9	8	40	34	15	23	\$1,456,881
HENDERSON VALLEY ROAD	I	GREAT NORTH ROAD	17	8	14	7	11	57	49	19	28	\$1,430,320
GREAT NORTH ROAD	I	PORTAGE ROAD	3	9	8	8	6	34	27	41	26	\$1,407,409
SWANSON ROAD	I	LARNOCH ROAD	7	5	4	7	4	27	19	41	52	\$1,347,217
HENDERSON VALLEY ROAD	I	CORBAN AVENUE	2	3	3	2	2	12	8	25	8	\$1,305,454
EDMONTON ROAD	I	ALDERMAN DRIVE	3	7	7	6	7	30	24	30	17	\$1,289,699
GREAT NORTH ROAD	I	GLENVIEW ROAD	9	7	9	14	9	48	40	17	25	\$1,266,904
KELLYS ROAD		80 N WEST COAST ROAD	0	1	2	0	0	3	0	33	0	\$1,257,340
TE ATATU ROAD		5 S LYNDHURST ROAD	9	6	7	14	11	47	39	15	26	\$1,249,582
ROYAL ROAD	I	MOIRE ROAD	3	3	2	10	9	27	21	26	41	\$1,235,623
GREAT NORTH ROAD	I	STOCK ST	1	6	4	5	3	19	11	21	21	\$1,212,167
RUA ROAD	I	EASTGLEN ROAD	0	1	2	2	2	7	4	14	29	\$1,172,940
UNIVERSAL DRIVE	I	RATHGAR ROAD	5	3	4	4	7	23	17	30	26	\$1,167,839
LINCOLN ROAD	I	SEL PEACOCK DRIVE	9	6	8	8	6	37	28	24	14	\$1,132,127
ARMADA DRIVE	I	ARMADA ROAD	2	4	5	5	2	18	11	11	17	\$1,130,652
PORTAGE ROAD	I	LINKS ROAD	3	1	0	1	2	7	5	29	43	\$1,121,518
GREAT NORTH ROAD	I	PINE ST	5	4	6	2	1	18	12	50	17	\$1,088,628
GREAT NORTH ROAD	I	HEPBURN ROAD	3	6	5	2	2	18	12	11	11	\$1,079,236
GREAT NORTH ROAD	I	MEMORIAL SQUARE	7	4	3	6	3	23	19	13	9	\$1,065,861
TOTARA AVENUE	I	GREAT NORTH ROAD	10	4	7	7	8	36	28	14	28	\$1,056,373
TITIRANGI ROAD	I	MARGAN AVENUE	7	10	8	5	2	32	23	22	50	\$1,050,411
HENDERSON VALLEY ROAD		400 N PINE AVENUE	0	1	0	0	2	3	1	0	67	\$1,050,250
TE ATATU ROAD	I	GLORIA AVENUE	2	4	5	3	4	18	13	33	44	\$1,035,517
GREAT NORTH ROAD	I	ARCHIBALD ROAD	14	5	5	4	6	34	26	32	26	\$1,031,969
GREAT NORTH ROAD	I	BRANDON ROAD	2	0	6	5	5	18	13	44	22	\$1,022,425
TE ATATU ROAD	I	JAEMONT AVENUE S	3	2	6	6	4	21	17	19	24	\$1,019,857
SCHOOL ROAD	I	VODANOVICH ROAD	2	3	5	4	2	16	11	13	38	\$989,421
ALDERMAN DRIVE		5 W SEL PEACOCK DRIVE	2	3	5	7	5	22	19	36	18	\$985,911
WEST COAST ROAD	I	ROSIER ROAD	11	4	5	7	7	34	27	38	56	\$973,691



**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 \$500000 in social costs**

CRASH ROAD	SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
SWANSON ROAD	5 E UNIVERSAL DRIVE	7	9	8	7	9	40	35	10	38	\$965,213
TRIANGLE ROAD	MAKORA ROAD	3	5	0	3	2	13	8	23	62	\$946,834
EDMONTON ROAD	CENTRAL PARK DRIVE	5	4	4	4	5	22	20	32	36	\$931,099
CLARK ST	OLYMPIC PLACE	0	4	3	2	3	12	7	0	8	\$925,954
DON BUCK ROAD	WAIMUMU ROAD	2	1	3	2	3	11	6	9	27	\$902,414
PALOMINO DRIVE	STURGES ROAD	2	2	4	5	4	17	14	59	59	\$898,831
MOIRE ROAD	WIDMORE DRIVE	2	3	2	2	1	10	5	30	0	\$896,334
WEST COAST ROAD	GLENVIEW ROAD	6	5	7	7	7	32	26	19	25	\$882,427
WEST COAST ROAD	GLENDALE ROAD	8	4	7	4	9	32	26	13	25	\$882,353
SEABROOK AVENUE	PARKER AVENUE	3	0	4	2	1	10	5	40	30	\$881,572
TITIRANGI ROAD	CROYDON ROAD	2	1	5	2	6	16	13	25	44	\$879,721
RATA ST	BINSTED ROAD	2	6	2	5	3	18	16	22	33	\$865,065
RATA ST	KAPONGA CRESCENT	1	2	2	1	2	8	3	13	50	\$854,606
PORTAGE ROAD	CLARK ST	9	10	8	11	7	45	44	22	13	\$836,248
SWANSON ROAD	STURGES ROAD	6	5	7	6	7	31	26	10	32	\$811,907
SEABROOK AVENUE	WILLERTON AVENUE	1	3	3	0	1	8	4	25	13	\$804,984
RATHGAR ROAD	POMARIA ROAD	2	1	3	4	1	11	8	27	18	\$794,428
FOREST HILL ROAD	HENDERSON VALLEY ROAD	2	4	7	3	14	30	25	13	27	\$790,903
HENDERSON VALLEY ROAD	HICKORY AVENUE	0	0	3	3	3	9	6	11	11	\$757,940
GREAT NORTH ROAD	WESTECH PLACE	0	2	3	5	2	12	10	8	17	\$757,104
GREAT NORTH ROAD	VIEW ROAD	5	4	7	7	5	28	23	21	29	\$752,789
FOREST HILL ROAD	PINE AVENUE	0	3	0	2	3	8	5	13	38	\$748,414
CLARK ST	WARD ST	3	1	3	1	3	11	9	9	0	\$747,312
RATHGAR ROAD	LARNOCH ROAD	3	1	0	1	2	7	4	57	29	\$728,376
PARRS CROSS ROAD	BRUCE MCLAREN ROAD	1	0	3	2	1	7	4	29	14	\$726,600
MOIRE ROAD	WEST HARBOUR DRIVE	1	4	1	1	3	10	8	30	60	\$725,826
CLARK ST	RANKIN AVENUE	7	6	6	9	4	32	29	19	22	\$724,751
TITIRANGI ROAD	40 E SKILGATE AVENUE	1	3	2	0	0	6	3	33	50	\$717,074
HEPBURN ROAD	PHELPS PLACE	4	1	0	1	0	6	3	17	33	\$712,638
ARCHIBALD ROAD	ST LEONARDS ROAD	1	1	2	3	2	9	7	22	33	\$712,544
HEPBURN ROAD	HARMEL ROAD	1	2	1	2	0	6	3	0	50	\$710,992
TE ATATU ROAD	100 N ROBERTS ROAD	1	2	0	0	3	6	3	50	67	\$709,272
WEST COAST ROAD	GLEN CLOSE	1	1	1	1	2	6	3	67	83	\$705,826
GREAT NORTH ROAD	LYNWOOD ROAD	6	4	5	6	4	25	20	32	32	\$702,271
TITIRANGI ROAD	PLEASANT ROAD	6	4	6	2	6	24	19	25	25	\$693,561
TE ATATU ROAD	YEOVIL ROAD	2	0	2	0	1	5	2	40	20	\$693,540
TE ATATU ROAD	MCLEOD ROAD	4	3	5	4	5	21	15	10	29	\$691,025
CANDIA ROAD	70 N COULTER ROAD N	0	1	0	0	2	3	1	0	33	\$686,217
HENDERSON VALLEY ROAD	330 W PINE AVENUE	0	0	0	1	2	3	1	67	67	\$684,257
GREAT NORTH ROAD	TRADING PLACE	0	4	2	1	0	7	5	14	0	\$679,614
GREAT NORTH ROAD	NORCROSS AVENUE	6	2	3	3	6	20	14	20	20	\$675,219
SWANSON ROAD	FRANK EVANS PLACE	1	0	1	2	0	4	1	25	75	\$674,430
FLANSHAW ROAD	SYLVAN CRESCENT S	0	1	2	1	0	4	1	0	50	\$672,710
WEST COAST ROAD	200 E WOODGLEN ROAD	0	1	1	1	1	4	1	50	0	\$672,710
SWANSON ROAD	WAITEMATA DRIVE	0	2	1	3	1	7	5	43	29	\$670,154
DON BUCK ROAD	CHERRY TREE PLACE	1	2	1	0	3	7	5	0	29	\$670,148
PINE AVENUE	PARRS CROSS ROAD S	1	0	2	2	2	7	5	29	29	\$670,024
LINCOLN ROAD	NORVAL ROAD	3	4	3	6	3	19	13	11	16	\$661,417
TAIKATA ROAD	60 E YEOVIL ROAD	1	0	2	0	0	3	0	33	33	\$657,040
WEST HARBOUR DRIVE	210 E BROUGHAM PLACE	0	1	1	0	1	3	0	0	67	\$655,320

**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 \$500000 in social costs**

CRASH ROAD		SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
DON BUCK ROAD	I	RED HILLS ROAD	3	0	1	0	2	6	4	17	33	\$654,348
GREAT NORTH ROAD	I	TE ATATU ROAD	7	3	6	9	9	34	33	38	29	\$644,536
GREAT NORTH ROAD		150 E RATA ST	0	2	1	1	1	5	3	40	0	\$643,052
VODANOVICH ROAD		80 E MACKENZIE ST	2	1	1	1	0	5	3	60	40	\$636,958
UNIVERSAL DRIVE		100 W LINCOLN ROAD	0	1	2	0	2	5	3	20	60	\$635,312
TE ATATU ROAD	I	ROYAL VIEW ROAD	4	1	10	6	6	27	24	26	11	\$632,405
SOUTH LYNN ROAD	I	PARKER AVENUE	0	2	0	1	1	4	2	100	50	\$625,662
ROSIER ROAD	I	KARINA PLACE	0	1	0	3	0	4	2	25	0	\$625,600
BARBARY AVENUE	I	ST LEONARDS ROAD	2	1	0	1	0	4	2	25	50	\$621,294
BIRDWOOD ROAD	I	GLEN ROAD	2	0	0	1	1	4	2	50	50	\$621,294
DON BUCK ROAD		160 N GLEN ROAD	4	2	5	3	0	14	7	79	36	\$620,574
WATTLE ST	I	GREAT NORTH ROAD	1	0	0	2	1	4	2	50	50	\$619,580
CENTRAL PARK DRIVE		120 E LINCOLN ROAD	0	1	2	1	0	4	2	0	25	\$617,922
MCLEOD ROAD	I	DUNCAN AVENUE	0	0	0	2	2	4	2	50	50	\$617,860
HUIA ROAD	I	SCENIC DRIVE	1	1	1	1	3	7	6	14	14	\$616,956
TAIKATA ROAD	I	EDGERTON ROAD	0	3	0	0	0	3	1	67	0	\$609,992
TE ATATU ROAD	I	TIROROA AVENUE	0	2	0	0	1	3	1	0	33	\$609,930
GREAT NORTH ROAD		40 S JAMES LAURIE ST	0	1	0	0	2	3	1	33	33	\$608,210
GREAT NORTH ROAD		50 W MEMORIAL DRIVE W	0	3	0	0	3	6	5	50	50	\$607,374
TRIANGLE ROAD		100 W LINCOLN ROAD	1	0	1	1	0	3	1	33	33	\$603,910
EDSEL ST		50 W CATHERINE ST	1	0	0	1	1	3	1	0	0	\$602,190
VIEW ROAD		100 N WATTLE ROAD	0	1	0	1	1	3	1	0	0	\$602,190
RANKIN AVENUE		60 S TOTARA AVENUE	1	1	1	0	0	3	1	33	33	\$602,184
LINCOLN ROAD	I	WOODFORD AVENUE	2	0	3	0	1	6	5	17	50	\$601,224
GLENGARRY ROAD		150 W AMBLER AVENUE	1	0	1	1	0	3	1	33	33	\$600,464
LINCOLN ROAD	I	PARAMOUNT DRIVE	2	3	4	7	6	22	18	23	18	\$596,933
GREAT NORTH ROAD	I	RAILSIDE AVENUE	4	6	3	4	8	25	22	24	20	\$596,147
HUIA ROAD		200 E LAINGHOLM DRIVE	1	1	1	2	0	5	4	80	0	\$589,854
GOLF ROAD	I	SOUTH LYNN ROAD	1	0	1	3	0	5	4	20	40	\$583,840
WEST COAST ROAD	I	PARRS CROSS ROAD	3	4	3	9	2	21	17	19	29	\$583,045
HENDERSON VALLEY ROAD	I	SPODE PLACE	0	1	1	2	1	5	4	40	20	\$582,182
DON BUCK ROAD	I	ZITA MARIA DRIVE	4	0	0	1	0	5	4	20	40	\$582,096
KAMARA ROAD	I	WEST COAST ROAD	0	1	0	3	0	4	3	75	75	\$572,470
BAHARI DRIVE	I	SWANSON ROAD	1	1	0	1	1	4	3	50	50	\$572,464
ROYAL ROAD	I	ROYAL ON EBD W	1	0	0	0	3	4	3	50	50	\$566,450
SCENIC DRIVE		210 N KOHU ROAD	3	0	0	1	0	4	3	50	50	\$566,438
SEYMOUR ROAD		170 W SUNNYSIDE ROAD	1	1	1	0	1	4	3	50	50	\$564,786
TE ATATU ROAD	I	COVIL AVENUE	2	3	3	8	4	20	16	30	15	\$560,495
CANDIA ROAD		40 N VINEYARD ROAD	0	1	1	1	0	3	2	67	33	\$555,080
HUIA ROAD		390 S SYLVAN VALLEY AVENUE	0	1	1	0	1	3	2	100	33	\$555,080
TE ATATU ROAD		20 N ELCOAT AVENUE	2	1	0	0	0	3	2	0	100	\$549,116
HENDERSON VALLEY ROAD		80 S HICKORY AVENUE	1	0	0	1	1	3	2	0	0	\$549,060
GODLEY ROAD		360 E TITIRANGI ROAD	0	1	0	0	2	3	2	33	33	\$547,402
TRIANGLE ROAD		50 E ELDER PLACE	0	0	0	2	1	3	2	33	100	\$547,340
WEST COAST ROAD		50 E BOWERS ROAD	0	0	3	0	0	3	2	0	33	\$547,340
SEYMOUR ROAD	I	MANUI PLACE	1	0	0	2	0	3	2	67	33	\$547,334
SWANSON ROAD	I	ONEILLS ROAD	1	0	1	1	0	3	2	67	67	\$547,334
TE ATATU ROAD		200 N STRID ROAD	1	0	1	1	0	3	2	33	67	\$547,334
MARGAN AVENUE	I	HUTCHINSON AVENUE	1	1	4	3	7	16	11	38	31	\$545,605
LINCOLN ROAD	I	MOSELLE AVENUE	3	1	5	4	2	15	10	40	7	\$528,203

**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 \$500000 in social costs**

CRASH ROAD		SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
LINCOLN ROAD	I	DAYTONA ROAD	1	1	3	6	3	14	9	29	14	\$509,166
WEST COAST ROAD	I	SUNVUE ROAD	3	2	2	3	2	12	7	50	33	\$479,540
NORTH CANDIA ROAD	I	POOKS ROAD	0	3	3	0	1	7	2	71	43	\$390,882

**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 \$500000 in social costs**

CRASH ROAD		SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %	Crash Costs
CANDIA ROAD		150 S VINEYARD ROAD	0	0	0	4	1	5	1	100	20	\$5,698,217
SCENIC DRIVE	I	WAITAKERE ROAD	1	3	0	3	1	8	5	50	25	\$5,232,480
BRIGHAM CREEK ROAD	I	TOTARA ROAD	1	0	0	2	0	3	0	33	100	\$4,919,600
PIHA ROAD		2100 W ANAWHATA ROAD	0	3	3	1	5	12	9	83	25	\$4,795,448
TE HENGA ROAD		500 E SCENIC DRIVE	1	0	0	0	2	3	1	0	0	\$4,413,254
CANDIA ROAD		290 N VINEYARD ROAD	0	2	0	1	2	5	0	40	20	\$2,147,180
TOTARA ROAD		340 S MCKEAN ROAD	1	1	0	1	0	3	0	0	0	\$1,399,440
BRIGHAM CREEK ROAD	I	KAURI ROAD	5	1	2	3	0	11	6	45	36	\$1,225,207
PIHA ROAD		1200 W ANAWHATA ROAD	0	2	2	1	2	7	3	43	29	\$1,034,329
CANDIA ROAD	I	STURGES ROAD	3	0	1	2	1	7	3	57	43	\$1,026,387
CANDIA ROAD	I	SIMPSON ROAD	3	0	0	1	0	4	1	75	25	\$883,294
SWANSON ROAD		100 W CHRISTIAN ROAD	0	1	1	2	2	6	5	50	50	\$829,523
BETHHELLS ROAD	I	STEAM HAULER TRACK E	1	2	0	1	0	4	2	25	50	\$828,931
HUIA ROAD		750 W CORNWALLIS ROAD	0	1	0	1	1	3	1	33	67	\$788,417
CHRISTIAN ROAD		340 S ONEILLS ROAD	1	0	2	0	0	3	1	0	67	\$768,634
BIRDWOOD ROAD	I	MUDGEWAYS ROAD	2	0	1	0	0	3	2	0	33	\$742,670
PIHA ROAD		800 E LONE KAURI ROAD	3	1	1	4	5	14	11	86	36	\$676,399
BRIGHAM CREEK ROAD	I	TRIG ROAD	3	2	3	1	3	12	8	58	42	\$653,267
PIHA ROAD		410 W ANAWHATA ROAD	1	1	4	1	1	8	3	38	75	\$541,206
PIHA ROAD	I	ANAWHATA ROAD	3	0	0	0	5	8	5	63	50	\$447,835
PIHA ROAD	I	TE AHUAHU ROAD	1	0	3	1	1	6	2	0	67	\$417,310
WEST COAST ROAD	I	SCENIC DRIVE	0	2	0	2	1	5	1	80	0	\$385,637
TRIG ROAD		440 S BRIGHAM CREEK ROAD	1	3	2	0	0	6	3	83	33	\$380,588
RED HILLS ROAD	I	SUNNYVALE ROAD	1	1	1	2	1	6	3	50	17	\$374,789
MCENTEE ROAD		15 W KAY ROAD	2	0	0	2	1	5	2	60	20	\$343,014
KAREKARE ROAD		1000 S PIHA ROAD	1	0	2	0	0	3	0	33	0	\$262,640

**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 \$500000 in social costs**

CRASH ROAD		SIDE ROAD	2005	2006	2007	2008	2009	TOTAL	Non- Injury	Wet Crash %	Dark Crash %	Crash Costs
SH 16	I	TE ATATU ON WBD	9	12	7	15	8	51	38	27	35	\$7,858,051
SH 16	I	ROYAL ON EBD	12	9	10	10	5	46	35	33	35	\$7,026,703
SH 16	I	TE ATATU ON EBD EAST	19	20	24	34	23	120	96	28	29	\$6,201,476
SH 16	I	LINCOLN OFF WBD	20	20	19	15	22	96	66	23	18	\$5,650,864
SH 16	I	KENNEDYS ROAD	3	3	1	0	2	9	5	44	56	\$4,752,198
SH 18		300 N BUCKLEY AVENUE	0	0	1	1	2	4	1	50	25	\$4,490,857
SH 16	I	LINCOLN OFF EBD	15	18	11	12	16	72	61	26	33	\$3,741,616
SH 16		500 N LINCOLN OBR	3	9	8	11	4	35	20	29	34	\$2,608,063
SH 16	I	BRIGHAM CREEK ROAD	4	6	2	7	5	24	13	33	17	\$2,456,438
SH 16	I	SH 18	5	9	3	9	10	36	29	25	36	\$1,796,069
TE ATATU ROAD	I	TE ATATU OFF EBD S	5	3	2	2	0	12	7	8	75	\$1,374,862
SH 16	I	DUNLOP ROAD	3	2	3	3	2	13	7	23	23	\$1,319,782
SH 16		800 W WAIMUMU OBR	3	2	0	1	1	7	5	43	57	\$949,696
SH 16		900 W TE ATATU OBR	5	6	4	0	3	18	14	61	33	\$890,919
SH 16	I	TE ATATU OFF WBD	2	1	6	3	6	18	13	33	33	\$881,754
SH 16		500 E LINCOLN OFF WBD	5	0	6	1	5	17	13	41	29	\$844,973
SH 16	I	FERNHILL DRIVE	3	4	3	4	2	16	9	25	19	\$844,791
TE ATATU OFF EBD	I	SH 16	4	4	7	1	2	18	16	39	56	\$777,538
TE ATATU OFF WBD	I	TE ATATU ROAD	4	6	7	11	2	30	28	7	10	\$772,307
SH 16		500 W TE ATATU OBR	2	4	4	2	3	15	11	27	13	\$762,497
SH 18		1200 N BUCKLEY AVENUE	1	0	1	1	0	3	2	33	67	\$739,914
SH 18	I	OREIL AVENUE	2	1	3	2	2	10	8	40	10	\$723,908
SH 18		90 N HENDRIKA COURT	0	2	0	4	0	6	3	0	17	\$713,572
SH 16		200 N ROYAL OBR	2	0	6	3	3	14	11	21	43	\$665,619
ROYAL ROAD	I	ROYAL ON EBD	1	1	4	0	2	8	7	25	38	\$656,890
SH 16		600 E SH 18	2	3	3	1	3	12	8	42	8	\$654,430
SH 16		1000 W LINCOLN OBR	2	2	5	1	1	11	7	9	45	\$609,650
SH 18	I	BUCKLEY AVENUE	0	3	0	0	0	3	2	33	33	\$571,657
SH 16		100 E DON BUCK ROAD	1	2	2	4	2	11	8	18	36	\$532,701
SH 16		1000 S BRIGHAM CREEK ROAD	3	1	0	1	2	7	4	43	14	\$419,101
SH 16		500 N DUNLOP ROAD	1	1	1	3	0	6	3	17	17	\$372,727
SH 18	A	BRIGHAM CREEK ROAD	0	1	3	4	1	9	6	11	22	\$315,962

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

Site Radius =  
30 metres

CRASH ROAD	SIDE ROAD	2004	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
SWANSON ROAD	5 W DON BUCK ROAD	5	8	6	4	7	18	48	38	6	23
LINCOLN ROAD	I TE PAI PLACE	9	10	2	6	5	14	46	35	20	41
HENDERSON VALLEY ROAD	I FOREST HILL ROAD	3	2	4	7	3	14	33	28	15	27
GREAT NORTH ROAD	I RAILSIDE AVENUE	3	4	6	3	4	8	28	25	29	25
TITIRANGI ROAD	I CROYDON ROAD	2	2	1	5	2	6	18	14	22	39
MARGAN AVENUE	I HUTCHINSON AVENUE	1	1	1	4	3	7	17	12	35	29
ROYAL ROAD	I MAKORA ROAD	2	3	4	2		6	17	14	47	24
RIMU ST	I LYNWOOD ROAD	3	2	2	1	1	7	16	13	25	38
EDSEL ST	I VITASOVICH AVENUE	2		3	3	2	5	15	12	20	13
TE ATATU ROAD	I TIRIMOANA ROAD	1	2	1	1	2	4	11	9	36	27
SUMMERLAND DRIVE	I HARVEST DRIVE				1	3	7	11	10	18	36
GREAT NORTH ROAD	100 E GLENVIEW ROAD	1	1	2	2		4	10	8	50	30
LINCOLN ROAD	I LINCOLN ON WBD	1			3	1	5	10	9	30	30
LINKS ROAD	I ASTLEY AVENUE	1	1		1	1	4	8	8	38	13
DON BUCK ROAD	I CHERRY TREE PLACE		1	2	1		3	7	5		29
TE ATATU ROAD	100 N GUNNER DRIVE	1	1			1	4	7	6		14
TE ATATU ROAD	80 N ROBERTS ROAD	1	1	2			3	7	3	43	57
WEST COAST ROAD	I SELAK PLACE		1	1	2		3	7	3		29
GREAT NORTH ROAD	300 E GLENVIEW ROAD		1	1	1		3	6	4	17	
STURGES ROAD	I HARVEST DRIVE	1		1		1	3	6	4	50	17
ALDERMAN DRIVE	50 E GREAT NORTH ROAD		1	1	1		3	6	6		
GREAT NORTH ROAD	50 W MEMORIAL SQUARE	1		1			3	5	4	40	40
SWANSON ROAD	80 E STURGES ROAD				1	1	3	5	2	40	20
HUIA ROAD	I SYLVAN VALLEY AVENUE			1		1	3	5	4	100	20
ROYAL ROAD	I ROYAL ON EBD W		1				3	4	3	50	50
CENTRAL PARK DRIVE	I UNIVERSAL DRIVE						4	4	4	25	25
MAKORA ROAD	I ROYAL OFF WBD N		1				3	4	1	75	75
GREAT NORTH ROAD	50 S DELLWOOD AVENUE					1	3	4	1	25	100
EDMONTON ROAD	20 E BOSNYAK DRIVE	1					3	4	2	25	25
GREAT NORTH ROAD	110 N WADIER PLACE		1				2	3	2		33
GODLEY ROAD	350 E TITIRANGI ROAD	1					2	3	1	67	
SWANSON ROAD	I AIRDRIE ROAD				1		2	3	1	33	33
UNIVERSAL DRIVE	100 E TUDOR ROAD						3	3	2		
CLARK ST	I HETANA ST	1					2	3	2		
GLENDALE ROAD	100 S ROUTLEY DRIVE		1				2	3	3	33	100
KELWYN ROAD	60 S BEAUBANK ROAD				1		2	3		33	67
PIPITEA PLACE	230 E ALLINGTON ROAD		1				2	3	3	67	67
CANDIA ROAD	250 N VINEYARD ROAD				1		2	3	2	67	67
HENDERSON VALLEY ROAD	400 N PINE AVENUE			1			2	3	1		67
POMARIA ROAD	I LONGBURN ROAD		1				2	3	2	33	67
FOREST HILL ROAD	80 S HENDERSON VALLEY ROAD		1				2	3	2	33	67
SIMPSON ROAD	I LAKE PANORAMA DRIVE				1		2	3	2	33	33
WAIMUMU ROAD	I LINCOLN PARK AVENUE			1			2	3	2	33	33
TITIRANGI ROAD	I HIGHLAND AVENUE			1			2	3	2	33	33
HENDERSON VALLEY ROAD	330 W PINE AVENUE					1	2	3	1	67	67
CANDIA ROAD	70 N COULTER ROAD N			1			2	3	1		33

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

**Site Radius =  
250 metres**

CRASH ROAD	SIDE ROAD	2004	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
PIHA ROAD	800 E LONE KAURI ROAD	1	3	1	1	4	5	15	12	87	40
PIHA ROAD	I ANAWHATA ROAD	1	3				5	9	5	56	44
PIHA ROAD	830 N TE AHUAHU ROAD		1		1		4	6	5	33	83
TE HENGA ROAD	500 E SCENIC DRIVE		1				2	3	1		
HENDERSON VALLEY ROAD	150 E MOUNTAIN ROAD					1	2	3	2	67	67
PIHA ROAD	500 E TE AHUAHU ROAD		1				2	3	3	33	

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

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

CRASH ROAD		SIDE ROAD	2004	2005	2006	2007	2008	2009	TOTAL	Non-Injury	Wet Crash %	Dark Crash %
SH 18	I	LUCKENS ROAD	3	3	1	3	2	7	19	15	16	16
SH 16	I	DON BUCK ROAD	1	2	1	1	0	4	9	8	33	56
SH 18	I	MARINA VIEW DRIVE	0	0	3	0	1	4	8	6	25	63
TE ATATU ROAD	I	TE ATATU OFF EBD	0	0	0	1	0	3	4	2	0	25

# appendix

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


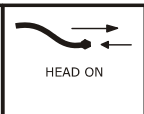


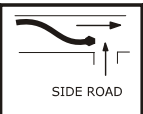


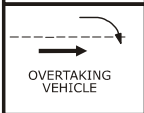
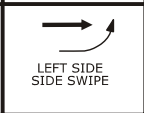







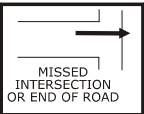
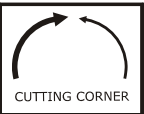
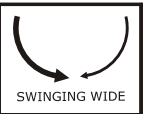
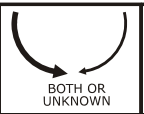
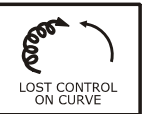





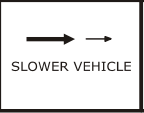

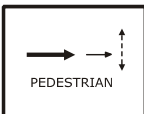
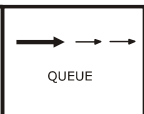
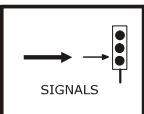
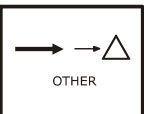
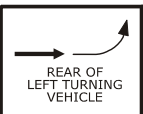
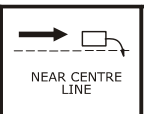

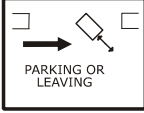
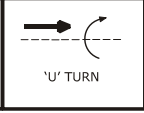
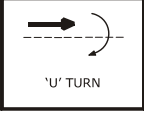

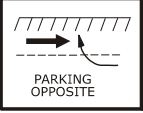


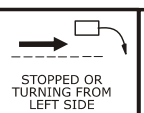
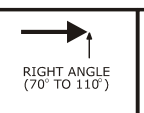
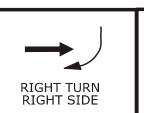
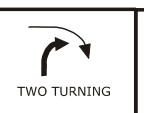
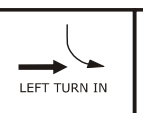
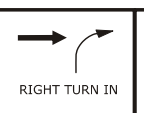
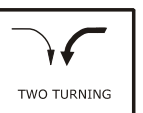

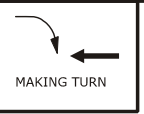
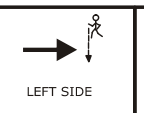
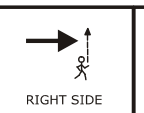
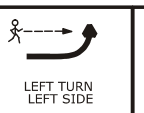
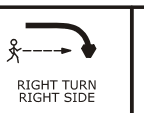
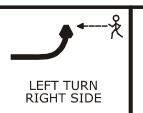
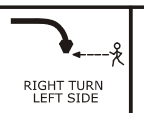




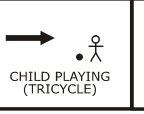
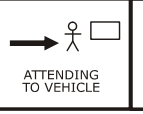



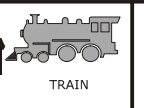
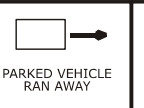

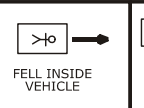
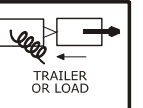




## Explanatory notes for the appendix

1. Each traffic crash report has a diagram and a description of what happened. These are used to classify the movements the vehicles were making when they crashed eg 'collided with parked vehicle', or 'lost control while overtaking'. In this report, crash types are grouped into seven categories. The following page shows the types of crashes which are included in each group.
2. Traffic crash reports also include information on why the crash occurred, or on factors contributing to the crash. In this report the hundreds of contributing factor codes used by New Zealand Transport Agency have been condensed into 16 groups for practical reasons. Lists of the factor groups used in this report, and of all the contributing factors used by New Zealand Transport Agency, are shown on the following pages.
3. Note that in the year 2000 there were some minor changes to the contributing factor groups. The most significant change was that 'inattention' was grouped with 'inadequate check' to form 'poor observation'. This allowed a more accurate assessment of 'fatigue' as a contributing factor, as it now has its own grouping.
4. The factor group 'poor handling' includes factor codes that were only introduced in 1998. This could explain why there may have been a sudden change at this time.
5. The coding of the factors contributing to a crash is subjective. Therefore analysis using contributing factor groups needs to be interpreted with caution. Also, to effectively target safety or enforcement campaigns more analysis of the specific contributing factors involved may be needed.
6. It should be noted that a traffic crash generally has more than one contributing factor. Therefore, adding the number of crashes on graphs showing the number of crashes with a given factor or factor group will be greater than the total number of crashes in the city or district.

# Groupings of crash types

Overtaking	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








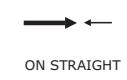
















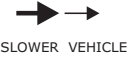











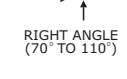









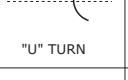
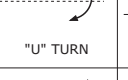

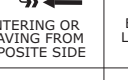
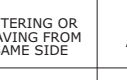






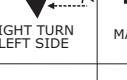





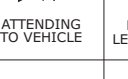
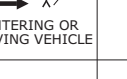

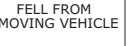





Factor group	Factor codes included
<b>Alcohol involved</b>	100 – 101 103 – 109
<b>Too fast</b>	110 – 119 430 – 432
<b>Failed to give way or stop</b>	300 – 314 320 – 328
<b>Failed to keep left</b>	120 – 128 205
<b>Overtaking</b>	150 – 161
<b>Incorrect lanes or position</b>	129 170 – 183 200 – 204 206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

# VEHICLE MOVEMENT CODING SHEET

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

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

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

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

### DRIVER CONTROL

#### 100 Alcohol or drugs

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

#### 110 Too fast for conditions

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

#### 120 Failed to keep left

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

#### 130 Lost control

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

#### 140 Failed to signal in time

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

#### 150 Overtaking

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

#### 170 Wrong lane or turned from wrong position

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

#### 180 In line of traffic

- 181 Following too closely
- 182 Travelling unreasonably slowly
- 183 Motorist crowded cyclist
- 184 Incorrect merging /diverging manoeuvre

#### 190 Sudden action

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

#### 200 Forbidden movements

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

### VEHICLE CONFLICTS

#### 300 Failed to give way

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

#### 320 Did not stop

- 321 At stop sign
- 322 At steady red light
- 323 At steady red arrow
- 324 At steady amber light
- 325 At steady amber arrow
- 326 At flashing red lights (Rail Xing, Fire Stn etc)
- 327 For police or flag-person
- 328 For school patrol / kea crossing

#### 330 Inattentive: failed to notice

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

#### 350 Attention diverted by:

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

#### 370 Did not see or look for another party until too late

- 371 Behind when reversing / manoeuvring
- 372 Behind when changing lanes position or direction (includes U-turns)
- 373 Behind when pulling out from parked position
- 374 Behind when opening door or leaving vehicle
- 375 When required to give way to traffic from another direction
- 376 When required to give way to pedestrians.
- 377 When visibility obstructed by other vehicles
- 378 When visibility limited by roadside features
- 379 When first in queue on receiving green light

#### 380 Misjudged speed, distance, size or position of:

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

### GENERAL DRIVER

#### 400 Inexperience

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

#### 410 Fatigue (drowsy, tired, fell asleep)

- 411 Long trip
- 412 Lack of sleep
- 413 Exhaust fumes
- 414 Worked long hours before driving
- 415 Exceeded driving hours

#### 420 Incorrect use of vehicle controls

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

#### 430 Showing off

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

#### 440 Parked or stopped

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

### GENERAL PERSON

#### 500 Illness and disability

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

#### 510 Intentional or criminal

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

#### 520 Driver or passenger, boarding, leaving , in vehicle

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

#### 530 Miscellaneous person

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

## VEHICLES

### **600 Lights and reflectors at fault or dirty**

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

### **610 Brakes**

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

### **620 Steering**

- 621 Defective
- 622 Failed suddenly

### **630 Tyres**

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

### **640 Windscreen or mirror**

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

### **650 Mechanical**

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

### **660 Body or chassis**

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

### **680 Load**

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

### **690 Miscellaneous vehicle**

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

## PEDESTRIANS

### **700 Walking along road**

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

### **710 Crossing road**

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

### **720 Miscellaneous**

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

## ROAD

### **800 Slippery**

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

### **810 Surface**

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

### **820 Obstructed**

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

### **830 Visibility limited**

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

### **840 Signs and signals**

- 841 Damaged, removed or malfunction
- 842 Badly located
- 843 Ineffective or inadequate
- 844 Necessary
- 845 Signals turned off

### **850 Markings**

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

### **860 Street lighting**

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

### **870 Raised islands and roundabouts**

- 871 Traffic island(s) difficult to see
- 872 Traffic island(s) ineffective, badly located or designed
- 873 Cyclist squeeze point

## MISCELLANEOUS

### **900 Weather**

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

### **910 Animals**

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

### **920 Entering or leaving land use**

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

### **999 Unknown**