Land Transport NZ
Ikiiki Whenua Aotearoa

briefing notes - road safety issues

Auckland Motorways

Land Transport New Zealand has prepared this road safety issues report. It is based on reported crash data and trends for the 2002–2006 period.

The intent of the report is to highlight the key road safety issues and be a resource to identify possible ways to reduce the number of road deaths and injuries on Auckland Motorways.

This report is the eighth road safety issues report for the Auckland Motorways and all the material unless otherwise stated in this report applies only to Transit New Zealand (Transit NZ) road forming the Auckland motorway system.

In each new report one year's data is added to a five year block and the oldest dropped so it is unlikely that the core issues would change radically from report to report.

The issues chosen for this report are drawn from either the most common crash types, those that appear over-represented or those with high social cost (high numbers of fatal and serious crashes mainly).

We have included a brief overview of crashes on the Motorway for 2006.

We encourage Transit NZ and the New Zealand Police to use their free access to the Ministry of Transport's Crash Analysis System to delve deeper into the highlighted issues.

Major road safety issues

Auckland Motorways
Rear end crashes
Crashes at bends
Alcohol

Nationally
Speed
Alcohol
Failure to give way
Restraints

2006 road trauma

Casualties	Auckland Motorways
Deaths	11
Serious casualties	56
Minor casualties	610

Crashes	Auckland Motorways
Fatal crashes	9
Serious injury crashes	38
Minor injury crashes	446
Non-injury crashes	1983

Overview of 2006

Throughout 2006 on the Auckland Motorways there were 9 fatal crashes, 38 serious crashes and 446 minor crashes, as reported by the New Zealand Police.
An important point needs to be made here, because the Motorway is not defined as a separate local body and as it changes slightly when additional segments are added it isn't easy for Land Transport NZ to exactly match crash statistics the Motorway Police gather themselves for their precise area of patrol.
Indications are that this report slightly under-reports compared to Motorway Police figures.

The differences are taken account of in other issues reports, for example the Transit NZ Region 2 report.

Further information about 2006 injury crashes on the Auckland Motorway:

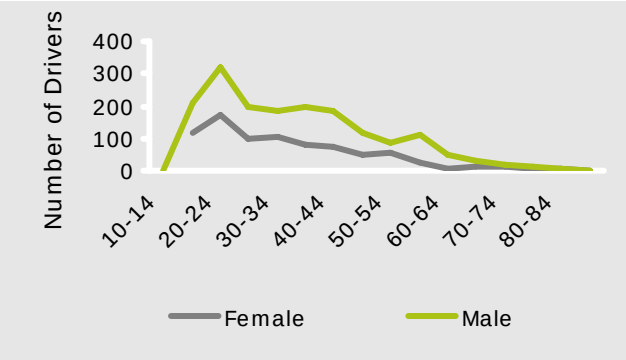
- Worst day of the week Friday (116), best Sunday (40)
- Wet road crashes, 28 percent
- Night time crashes, 37 percent
- Mid-block crashes, 79 percent
- Single party crashes, 22 percent
- Social cost of crashes in 2006 $90m
- 64 percent of at fault drivers hold a full NZ licence

Injury Trends

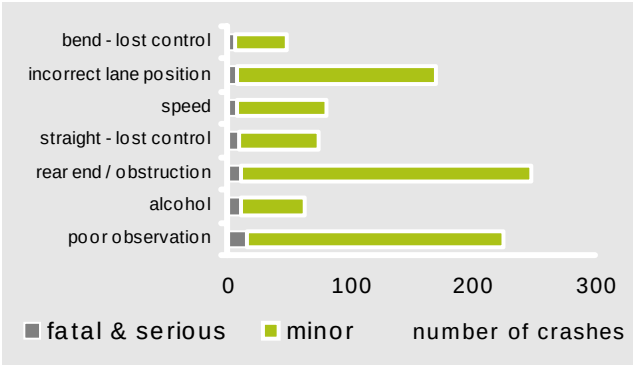
The above graph shows the fatal and serious injury trends over the last five years.
The trend in fatal and serious injuries in the region has been variable over the last five years.
Although fatalities have been variable over the last five years serious injuries fell steadily until 2006 when there was a sharp rise in reported numbers.

The spread of the age and gender of the at fault drivers involved in injury crashes is illustrated in the chart below.

Ages and sex at fault drivers 2002 – 2006 injury crashes



Main crash characteristics



In 2006 on the Auckland Motorway network, rear end crashes account for most minor injuries as indicated by the long green bar on the graph above.
Loss of control crashes at bends account for the most fatalities, six from a total of eleven fatalities in 2006.
Loss of control on straight crashes and vulnerable road user crashes make up the most fatal and serious injuries with a count of sixteen each, closely followed by rear end crashes at fifteen.
The vulnerable road user crashes comprise mainly motorcycle injuries, with 11 serious and 24 minor casualties.

Poor observation (37 percent of crashes) and incorrect lane or position (31 percent) were the leading factors in 2006 injury crashes.
Poor observation is a combination of failed to look/ failed to notice/did not see factors, while incorrect lane or position is almost exclusively following too close in these motorway crashes.
The issues explored in this report will be rear end crashes due to their prevalence, loss of control crashes at bends due to the severe injuries these cause, and drink driving crashes (32 percent of fatal and serious crashes).

Overview of 2006 continued

The poor observation and incorrect position factors mentioned previously will, in the main, be covered within these.

Alcohol is also touched upon in the national issues section.

It has been observed nationally that there is a growing group of drivers who have not been exiting the graduated licence system and who are choosing to stay on restricted licences.

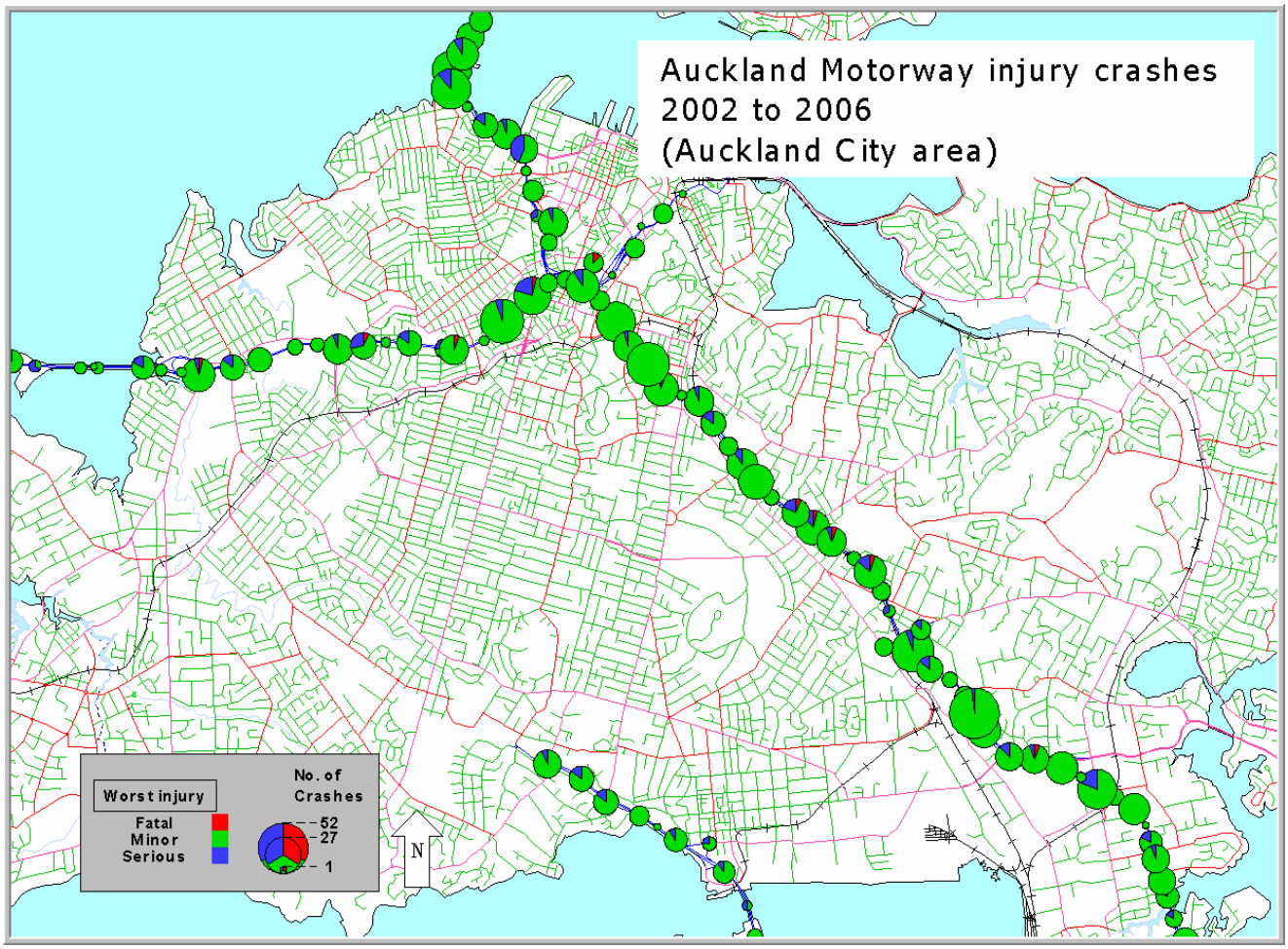
This is making it increasingly difficult to distinguish drivers who are truly inexperienced from those that should have moved to a full licence.

As a consequence it is more difficult to target educational material.

This does not however appear to be the case on the Auckland motorways with figures better than the national average.
It may be that less experienced drivers avoid the motorways system.

At fault driver licence status 2006

Driver Licence status, injury crashes, at fault drivers Auckland Motorway 2006	Percentage of total at fault drivers (NZ 2006 value in brackets)
Full	63.9 (58.4) %
Learner	7.6 (9.5) %
Restricted	17.5 (17.6) %
Never Licenced	1.6 (2.2) %
Disqualified	1.2 (1.7) %
Overseas	3.1 (4.2) %
Expired	0 (0.5) %
Other / unknown	5.1 (5.6) %



Rear end crashes

As is typical of motorway traffic, between 2002 and 2006 rear end crashes occurring on the Auckland motorways have been predominant, making up approximately half of all injury crashes. In general the injury severity level is lower for this crash type. In spite of this, with the high numbers of these crashes they resulted in four deaths, 70 serious injuries and 1710 minor injuries.

The Police identified incorrect lane or position as the leading factor in rear end injury crashes. This was evident in around 52 percent of injury crashes from 2002 to 2006.
The next most common factor was poor observation which accounted for 40 percent of crashes. Incorrect lane or position is basically following too close in this context.
Poor observation is a combination of failed to notice / attention diverted/did not look or see factors, but in this case it is mainly failed to notice a slowing car.

The combination of following too close and not paying attention so as not to notice a braking vehicle ahead are the behaviours that need to be modified to address this issue. These behaviours tend to occur in a high speed, multilane environment which has the effect of decreasing the time and area available for avoidance actions.

The driving licence status of drivers involved in these crashes is shown in the following table.

It shows a slightly lower proportion of Learner and Restricted licence holders are considered at fault compare to national values for rear end crashes.

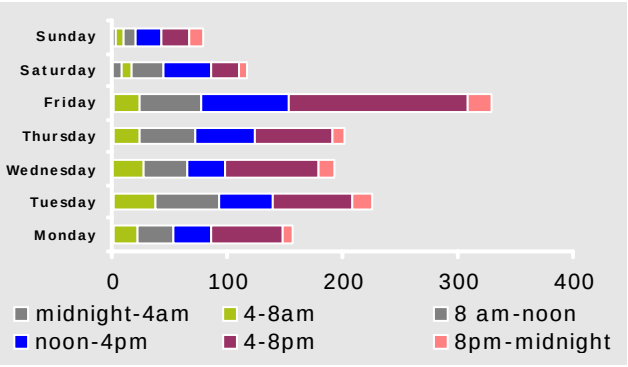
At fault driver licence status

Driver Licence status rear end related injury crashes, at fault drivers on Auckland Motorways 2002 to 2006	Percentage of total at fault drivers in rear end related crashes (New Zealand 2002 to 2006 value in brackets)
Full	71.3 (65.7) %
Learner	6.0 (7.6) %
Restricted	12.0 (14.2) %
Never Licenced	0.8 (1.4) %
Disqualified	0.3 (0.9) %
Overseas	4.0 (2.8) %
Expired	0.7 (0.7) %
Other / unknown	4.8 (6.5) %

In the five year period from 2002 to 2006, rear end crashes represented 52 percent of all wet road crashes and 54 percent of crashes on dry roads on the Auckland motorways. That weather is reported as a crash factor in three percent of these crashes reinforces that the weather does not seem to be having a major effect as to if these crashes occur.

The time of day and day of week that these rear end crashes are occurring is depicted in the following graph. Although the detail may be difficult to discern due to the size of the chart, the three main points to note are the predominance of the 4-8pm time bracket, the high number of crashes on a Friday, and that this crash type is chiefly a weekday issue.

Weekday and time of rear end crashes

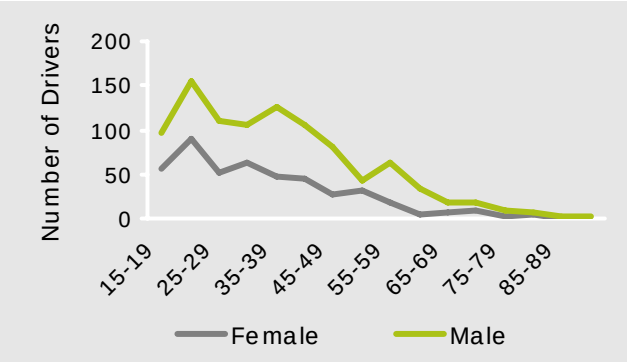


The age and gender of at fault drivers is explored in the following graph.

Whilst there is a peak in the younger age bracket, and a generally decreasing trend as age rises, numbers are still high well into middle age.

There is also a second peak for males in the 35-39 year old age bracket.

Age and sex of drivers



Rear end crashes continued

Vans or utes are involved in 24 percent of rear end crashes. On average in all of New Zealand they are involved in 16 percent of injury crashes.

Possible influences may include:

- possibly heavily laden vehicles with increased momentum and therefore increased stopping distance
- perhaps unladen vehicles offer low braking effectiveness especially on the rear wheels and therefore increased stopping distance
- perhaps tyres on these vehicle types are of more general use tread pattern, rather than a highway specific tread pattern
- the higher driving position may prompt a more aggressive driving style

Further information about 2002 to 2006 injury rear end crashes:

- worst day of the week Friday (330), best Sunday (80)
- worst month June (137), best January (82)
- 73 percent occur in daylight
- 14 percent happen at intersections

Crashes at bends

Between 2002 and 2006 just nine percent of all injury crashes in the Auckland motorways area were classified as lost control at bends.

However this small percentage of crashes resulted in 32 percent of the fatalities on these roads.

There were 12 fatalities, 40 serious injuries and 240 minor injuries from these loss of control at bends crashes.

Fatal and serious casualty numbers have shown a decreasing trend in the past but were up in 2006. The minor injuries have shown increases over the last three years.

Most crashes at bends involved a driver losing control of their vehicle and either running off the road or colliding with another vehicle.

Bend crashes by injury type

After drivers lose control, their vehicles can crash into roadside hazards such as ditches, banks, poles or trees.
Hitting these objects can result in a relatively minor off-road event turning into something far more serious.

The most common roadside hazards struck in bend loss of control injury crashes in the Auckland motorways area are guard rails.
These are hit in 50 percent of crashes.

Other hazards collided with are posts or poles (11 percent) and trees (10 percent) from a total of 245 objects struck. This shows that there is still some work that can be done to relocate or protect trees and poles adjacent to this high speed environment.

Main characteristics of injury crashes at bends

Crash characteristic	Percentage of crashes
Single vehicle	82 %
Roadside object struck	109 %
Alcohol	28 %
Excessive speed for the conditions	40 %
Male driver at fault	65 %
Poor handling	37 %
Wet road	45 %
Night time	60 %

The table above lists the main characteristics of these crashes. Note that the figure for roadside object struck is above 100 as more than one object may be struck in any one crash.

Bends continued

The licence status of the at fault drivers involved in loss of control at bends crashes is shown in the following table. Of note is the higher than the national average for learner, restricted, and never licensed drivers in the Auckland motorways area.

At fault driver licence status

Driver Licence status, bend related injury crashes, at fault drivers on Auckland Motorways 2002 - 2006	Percentage of total at fault drivers in bend related crashes (New Zealand 2006 value in brackets)
Full	42.3 (51.1) %
Learner	14.9 (10.7) %
Restricted	20.2 (17.9) %
Never Licenced	7.7 (4.1) %
Disqualified	2.9 (2.8) %
Overseas	1.9 (5.6) %
Expired	0 (0.9) %
Other / unknown	10.1 (6.8) %

In the table below it can be seen that a high number of these crashes are occurring between the hours of 10pm and 5am.

This is significant because at this time of day Restricted licence holders should have a supervisor as the front seat passenger who has held a full New Zealand car licence for at least two years. Learner licence holders should always have this supervisor.

Also of note in the table is that the Disqualified, Forbidden and Never Licensed categories have a high proportion of their crashes in these hours.

Licence status and time of the day

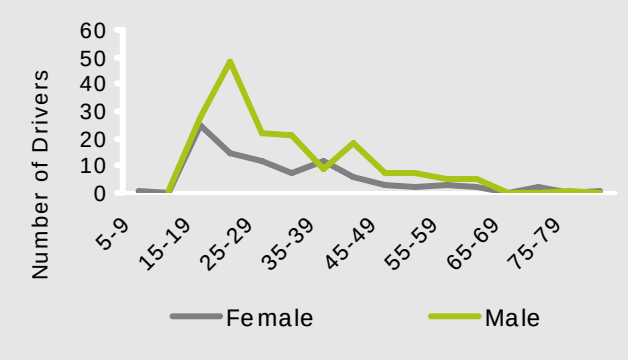
Licence status	Crash time	
	10pm-5am	5am-10pm
Disqualified	5	1
Forbidden	3	1
Full	39	87
Learner	13	19
Never Licenced	9	8
Overseas	4	2
Restricted	20	26
Unknown	12	9

The age and gender of the drivers involved in bend loss of control crashes is shown in the following graph.

There is a spike at the younger age brackets and a subsequent general downward trend as age increases.

Males aged 20-25 form quite a large peak and the prevalence of male drivers shows on this chart.

Age and sex of drivers 2002 to 2006

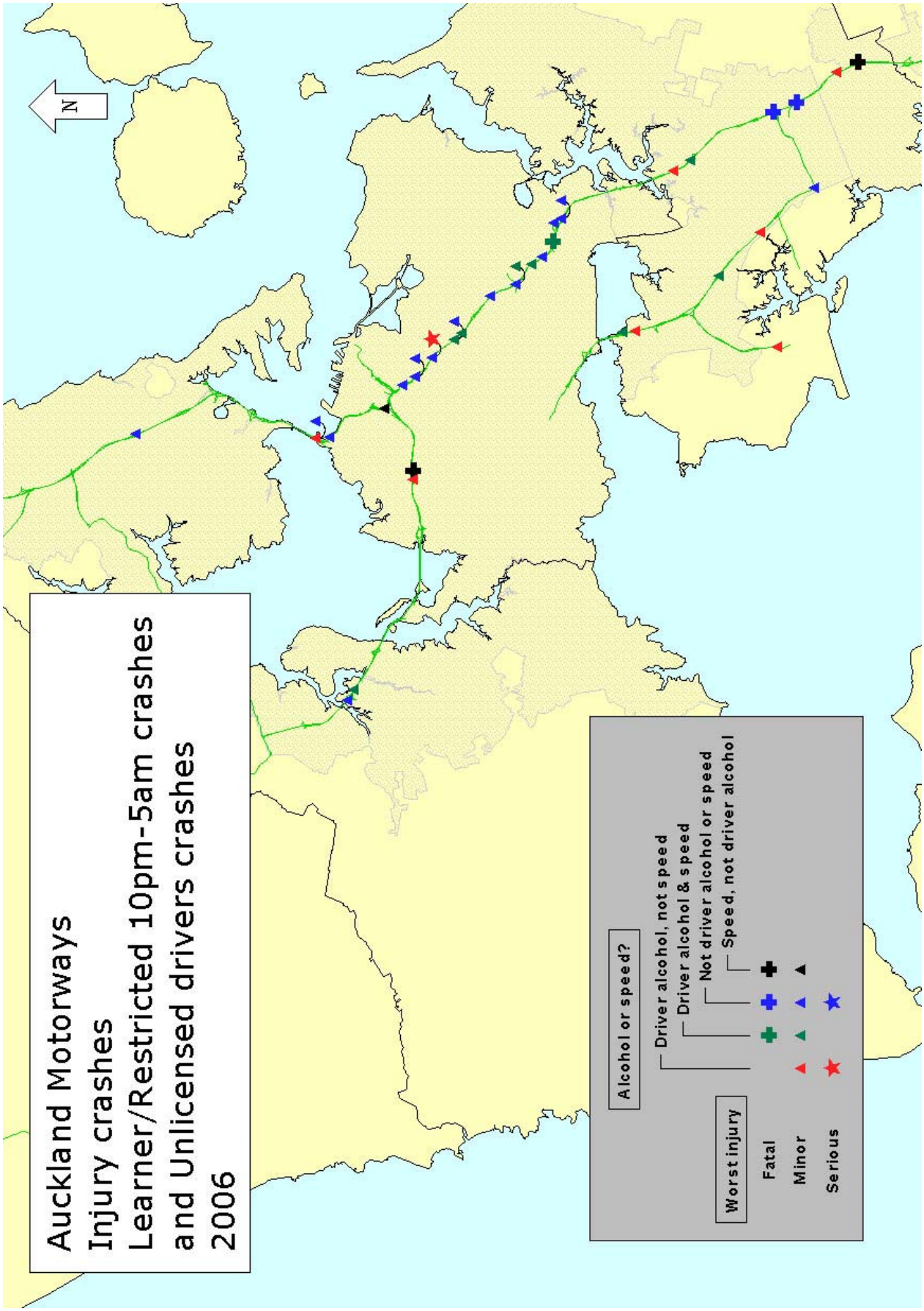


There are three crash locations that stand out.

These sites have four or more bend loss of control crashes within a 50 metre radius in the last five years.

They are:

- SH 1N at the intersection of Curran on ramp (northbound) where there was one fatal crash
  Three have been in the wet and four at night
- SH1N at the intersection of Te Coma off ramp (southbound) where three have been in the wet and four at night
  Four of these crashes were in 2002
- Massey road at the intersection of Massey road off ramp (northbound), where alcohol and/or speed are factors in all crashes


Auckland Motorways
Injury crashes
Learner/Restricted 10pm-5am crashes
and Unlicensed drivers crashes
2006
N
Alcohol or speed?
Driver alcohol, not speed
Driver alcohol & speed
Not driver alcohol or speed
Speed, not driver alcohol
Worst injury
Fatal
Minor
Serious

Alcohol

Alcohol affects the way people drive.
Studies show that the risk of being involved in a crash increases rapidly as a driver's blood alcohol level rises. A driver over the legal limit (80mg of alcohol per 100ml of blood) is three times more likely to be involved in a crash than a sober driver.

Contrary to popular opinion, people with high blood alcohol levels are more likely to be injured or killed in a crash than sober drivers in the same crash and if injured, they are also more likely to encounter complications in their recovery.

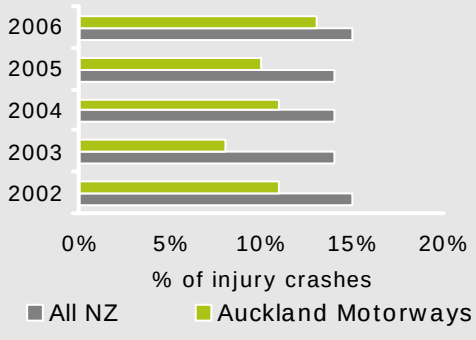
In New Zealand for the 12 months to December 2006, alcohol-affected drivers contributed to 31 percent of all fatal crashes and 15 percent of all injury crashes. This highlights the general high injury severity of alcohol related crashes.

In the Auckland Motorways area, alcohol was a factor in 13 percent of injury crashes in 2006, a large increase from 2005 (10 percent).

The trends over time are shown on the following graph, whilst nationally alcohol related injury crashes are stable at around 14-15 percent of all injury crashes, on the Auckland Motorways this factor is generally a lower proportion of crashes.

There were 261 alcohol-related injury crashes reported in the last five years.

Percentage of crashes that are alcohol related



There were three main crash types:

- loss of control on a straight (32 percent)
- loss of control at a bend (24 percent)
- rear end (19 percent)

A total of 56 percent of alcohol crashes involve the driver simply losing control of the vehicle, this is supported by the fact that 47 percent of these crashes are single vehicle crashes.

Speed (30 percent), poor handling (17 percent) and poor observation (17 percent) were the other factors most often associated with alcohol crashes.

The following list provides a breakdown of the key locations on the Auckland Motorways at which three or more drink-driving crashes occurred during the 2002 to 2006 period:

- Massey Road at the northbound off ramp, where there were seven crashes, four of them serious
- SH20 and Kirkbride Road intersection where there were five crashes, two of them serious
- SH20 at Puhinui Road where there were three crashes, one of them serious
- The intersection of SH16 and Waterview off ramp westbound, where there were three minor crashes
- The intersection of SH20 and Wiri Station Road, where there were three crashes all in the last two years
- The intersection of SH20 and Ihumatao Road, where there were three minor crashes

At fault driver licence status

Driver Licence status, alcohol related injury crashes, at fault drivers Auckland Motorway 2006	Percentage of total at fault drivers in alcohol related injury crashes (New Zealand 2006 value in brackets)
Full	44.9 (41.6) %
Learner	18.8 (15.8) %
Restricted	15.6 (20.8) %
Never Licenced	5.0 (4.6) %
Disqualified	3.3 (6.2) %
Overseas	2.5 (1.0) %
Expired	0.7 (1.4) %
Other / unknown	9.1 (8.2) %

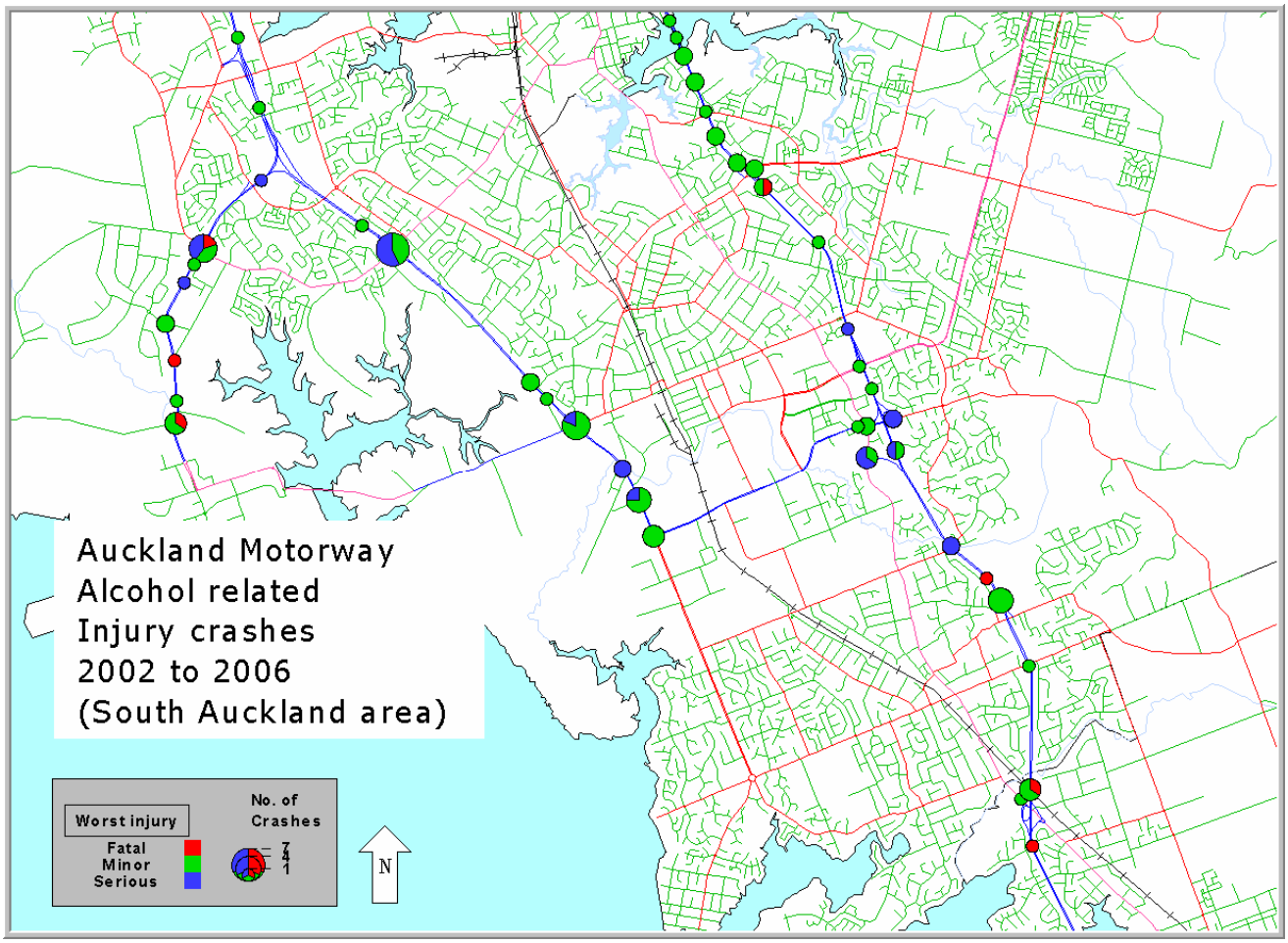
Alcohol continued

The day of week and time of day when alcohol crashes are occurring is depicted in the table below.
Worst days of week are Saturday and Sunday, with the worst time period midnight to 4 am Saturday.

Time of day						
Day of week	Mid night-4am	4am - 8am	8am - noon	Noon - 4pm	4pm - 8pm	8pm-mid night
Mon	4	3	0	2	5	5
Tues	7	1	0	3	5	11
Wed	0	3	1	0	4	6
Thur	9	3	2	3	4	10
Fri	8	9	1	1	7	**16**
Sat	**31**	**14**	3	1	5	9
Sun	**25**	**18**	5	0	9	5

Further information about alcohol related crashes on the Auckland motorways area 2002 to 2006:

- 17 deaths, 85 serious injuries and 318 minor injuries
- 78 percent of the drivers are male
- 32 percent are at intersections
- 35 percent are wet road crashes
- 22 percent occur at night
- Worst months are June and December, best is January



National issues

This section contains some brief information on the key national road safety issues as measured on the Auckland Motorways. They may have been covered elsewhere in this document or not be a specific issue.

Speed

"Too fast" was recorded in 14 percent of injury crashes on the motorways in the last five years resulting in 12 deaths and 489 injures.

Speed as a factor in crashes is fluctuating from year to year in the region.

Forty-eight percent of speed related crashes were rear end crashes.

Male drivers accounted for 74 percent of the at fault drivers.

Alcohol

Alcohol was involved in 10 percent of injury crashes on the Motorway in the last five years resulting in 17 deaths and 403 other injuries.

The number of injury crashes involving alcohol has generally increased over the last five years.

Failure to give way

Failure to give way or stop was reported in 10 percent of all reported injury crashes for the last five years resulting in 3 deaths and 344 other injuries.

Restraints

The Ministry of Transport conducts surveys of restraint use.
The results of these surveys are at a regional level, and may not be fully appropriate to a Local Authority.

The results are obtainable from the Ministry of Transport website.

http://www.transport.govt.nz/belts-index/

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