

road safety issues

Auckland state highways

Land Transport New Zealand has prepared this road safety issues report. It is based on reported crash data and trends for the 2001–2005 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 state highways.

Apart from this front page which has data for all of Auckland state highways, the body of the report contains only those parts of the region not covered by the Auckland Motorways report.

The crash data has been split in this way as it is impractical to compare the motorway system with the rest of the state highway network in the region.

This is the seventh road safety issues report for Auckland state highways. In each new report one year's data is added and the oldest dropped. It is therefore unlikely that the main issues change radically from report to report. Issues chosen for this report are drawn from either the most common crash types or contributory factors or those that appear over-represented when Auckland state highways are compared with similar regions.

Major road safety issues

Auckland state highways

Loss of control on bend crashes

Intersection crashes

Fatigue crashes

Wet road crashes

Nationally

Speed

Alcohol

Failure to give way

Restraints



2005 road trauma for Auckland state highways



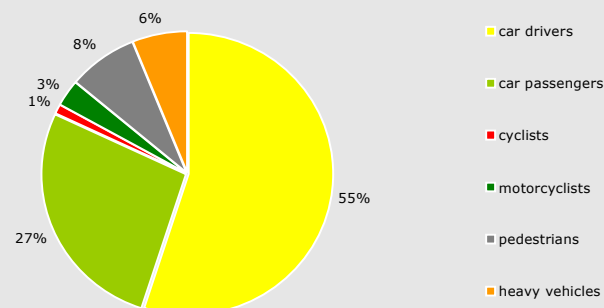
Deaths	18
Serious casualties	38
Minor casualties	149



Fatal crashes	12
Serious injury crashes	26
Minor injury crashes	101
Non – injury crashes	436

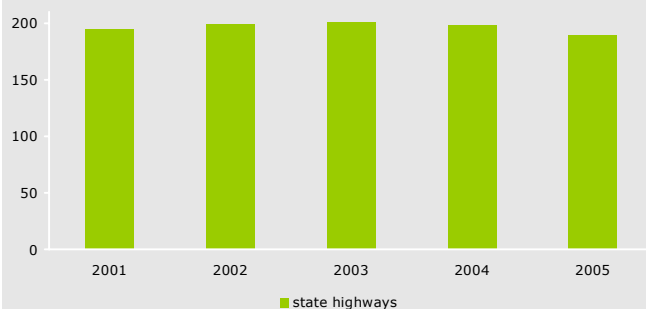
Fatal and serious casualties

User type 2001–2005



Estimated social cost of crashes*

Social cost (\$ million)



* The estimated social cost includes loss of life or life quality (estimated by the amount New Zealanders are prepared to pay to reduce their risk of fatal or non – fatal injury), loss of output due to injuries, medical and rehabilitation costs, legal and court costs, and property damage. These costs are expressed at June 2005 prices.

Overview

Auckland state highways (exclusive of the motorway system, which is covered in a separate issues report) contains six state highways (SH) of significantly different character both in geography and usage.

The following two tables contain summaries of Police reported crash data for each highway for the years 2001–2005. One way to compare them is to consider the injury crashes per kilometre of length. However, it should be noted that this overlooks the volume of vehicles travelling along these roads.

Crashes reported 2001–2005						
SH	Total	Injury	Non-injury	Fatal	Serious	Minor
16	495	175	320	12	50	206
17	160	62	98	6	18	78
18	366	125	241	7	37	158
22	157	66	91	6	18	69
1A	30	3	27	0	0	5
1N	1,067	301	766	31	118	328

Crashes reported 2001–2005			
SH	Injury	Approximate length	Injury crashes/km
16	175	87	2.01
17	62	17.6	3.52
18	125	13.6	9.19
22	66	12.9	5.12
1A	3	5.2	0.58
1N	301	72.5	4.15

This table shows the crash and casualty counts for the 2005 year.

Crashes reported 2001–2005						
SH	Crashes			Casualties		
	Total	Injury	Non-injury	Fatal	Serious	Minor
16	100	30	70	3	6	29
17	41	18	23	3	4	20
18	50	15	35	0	3	23
22	23	14	9	4	7	13
1A	5	1	4	0	0	1
1N	214	61	153	8	18	63

Injury crash trend by state highway.

Crashes reported 2001–2005					
SH	2001	2002	2003	2004	2005
16	34	38	37	36	30
17	4	8	16	16	18
18	20	32	36	22	15
22	15	7	16	14	14
1A	1	0	0	1	1
1N	66	66	51	57	61

The following three tables show percentages of selected crash characteristics by state highway number for all crashes in 2005.

Crashes reported 2001–2005				
SH	Percentage of crash characteristic			
	Wet	Dark	Rural*	Intersection
16	15%	30%	70%	33%
17	27%	37%	63%	59%
18	20%	32%	6%	34%
22	39%	39%	74%	26%
1A	0%	20%	60%	20%
1N	31%	29%	73%	27%

* Rural is classified as a road with a speed limit of 80km/h or more.

Crashes reported 2005				
SH	Percentage of crash characteristic			
	Driveway	Easy/Mod curve	Severe curve	Straight
16	16%	41%	2%	57%
17	7%	34%	2%	63%
18	2%	42%	0%	58%
22	0%	52%	0%	48%
1A	0%	20%	0%	80%
1N	4%	49%	2%	49%

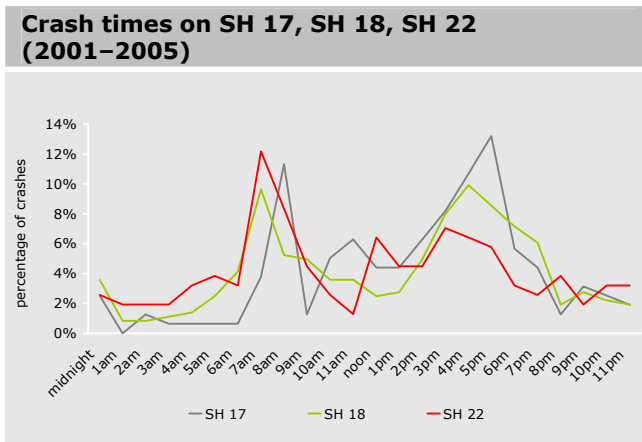
Crashes reported 2005				
SH	Percentage of crash characteristic			
	Heavy vehicles	Van/SUV	Car	Motor cycle
16	9%	19%	70%	2%
17	10%	18%	66%	6%
18	3%	19%	77%	1%
22	3%	9%	88%	0%
1A	0%	14%	86%	0%
1N	9%	16%	73%	2%

In the preceding tables, items that stand out are:

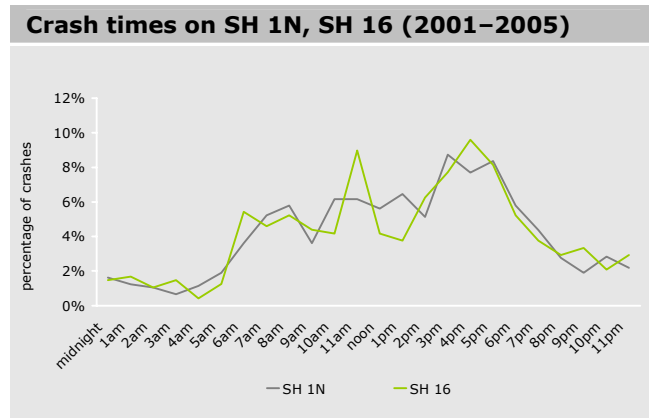
- SH 18 has a high number of injury crashes per kilometre
- the superior performance of SH 1A
- the high percentage of wet (39 percent) and dark (39 percent) crashes on SH 22. The average figure for each for all state highways in New Zealand over the past five years is 32 percent
- the intersection crashes on SH 17
- SH 16 has a high percentage of crashes at driveways
- heavy vehicle crashes on SH 16, SH 17, and SH 1N
- motorcycle crashes on SH 17.

The differing character of the highways can be illustrated in a number of ways. However, using the time of day of crashes, it does seem that the highways fall into two main groups. Shorter length 'commuter' sections (SH 17, SH 18, SH 22, and SH 1A) and lengths that have a 'trunk' function on the network (SH 1N and SH 16).

The crash distribution by time is similar for SHs 17, 18 and 22 while 16 and 1N are similar, (SH 1A has too few crashes to make this comparison).



SHs 17, 18 and 22 have a crash pattern which reflects their usage as commuter routes, notably the morning and evening peaks. While SHs 1N and 16 have a far more spread distribution with a bias toward the afternoon and early evening.



Between 2001 and 2005, a total of 1,083 roadside objects were struck in crashes. This included 101 poles and 98 trees as well as 139 ditches and 165 cliffs or banks. A further 47 vehicles went over a bank. Guardrails were struck in 126 instances, presumably preventing further strikes on the roadside hazards listed above.

Across all six highways the most common injury crash type was losing control at a bend (30 percent), rear-end crashes follow at 27 percent, and crossing and turning crashes (often at intersections) were 21 percent.

The leading contributory factor as reported by the Police was poor observation at 35 percent. This is a grouping of 'failed to notice/attention diverted/did not look or see' errors of judgement. Failure to give way was next at 19 percent, then travelling too fast 17 percent, followed by poor handling at 16 percent (when vehicles lost control not due to the road or vehicle fault), and alcohol at 14 percent.

The distribution of these factors differs from highway to highway and these are discussed in the rest of this document. Although unmeasurable the reporting rate should be taken into account when considering these figures as it varies greatly. For example, if alcohol is suspected an alcohol test leads directly to whether alcohol is a factor in that crash. However, with a factor like poor observation it is less clear cut and is recorded if there is a direct remark from the driver, a witness, or the police officer on the crash report.

In 2005/2006, task forces were established across New Zealand to examine sections of state highways with high crash densities. SH 18, SH 22 and SH 1N (around Dome Valley) were included in this Network Safety Coordination Project.

Loss of control on bend crashes

Issues for SH 17, SH 18, SH 22 and SH 1N (at Orewa)

As described in the overview section it does appear that SH 1N and SH 16 have similar travel patterns while SH 22, SH 17 and SH 18 have like characteristics. For continuity from last year's report there is also a short section of SH 1N (at Orewa) that is grouped with the latter trio. For the purposes of this issues report we will refer to SH 1N (except at Orewa) and SH 16 as trunk highways and SH 1N (at Orewa), SH 22, SH 17 and SH 18 as commuter highways.

Between 2001 and 2005 there were 180 loss of control on bend crashes on these highways – 80 injury crashes and 100 non-injury crashes.

SH 22 loss of control on bends injury crashes were mainly concentrated in three areas:

- A short section around Jesmond Road intersection.
- A short section around Bycroft and Blackbridge roads.
- Near the Glenbrook Road intersection.

SH 18, loss of control on bends injury crashes were mainly concentrated in five areas:

- Near Fitzherbert Avenue intersection.
- A short section around Westpark Drive.
- Near Sinton Road.
- About a one kilometre section west of Shelter Drive.
- A short section near Greenhithe Road.

There were large roading projects on this state highway in 2004/2005, that will influence the traffic and its flow both during the construction and once the projects are complete.

SH 17 loss of control on bends injury crashes were more dispersed, with small concentrations in two areas:

- Between Wilks and Pine Valley Roads.
- Near the intersection with The Avenue.

The following table shows the main contributing factors in these crashes.

Crashes reported 2001–2005				
	Loss of control on bends injury crashes			
Crash factor	SH 17	SH 18	SH 1N	SH 22
Alcohol	0	10	2	11
Too fast	4	8	2	9
Poor handling	2	10	2	6
Fatigue	2	9	0	2
Road factors	0	8	0	13

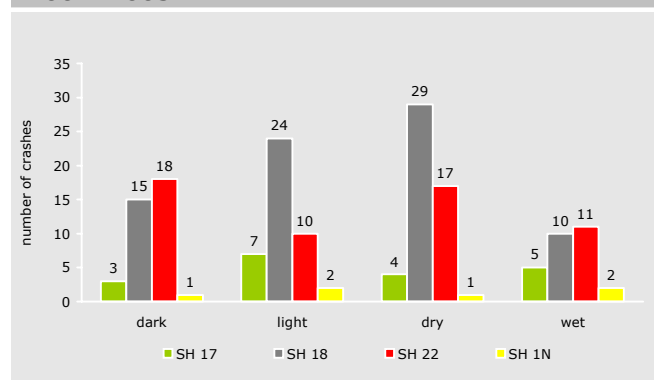
There was a high number of positive alcohol test results on SH 22 and SH 18. Overall, alcohol was considered a factor in 13 percent of injury crashes on commuter highways.

There were a high number of fatigue-related crashes on SH 18. Fatigue was a contributing factor in nine crashes. There were also a further four crashes resulting from sudden illness (eg heart attack) and an additional two related to ongoing illnesses (eg flu). Why this is so highly represented on this particular highway is unknown, but may be related to its commuter function.

Obviously the high number of crashes on bends is the result of excessive speed, but what is difficult to explain is the reason why crashes are frequently occurring at moderate and easy curves.

SH 22 had 13 road factors reported for injury crashes. These were mainly slippery road due to rain. As one crash may have multiple factors, this represented seven crashes, however four occurred in 2001.

Loss of control on bends injury crashes 2001–2005



This graph shows crashes on the various highways by the prevailing conditions. It shows quite different patterns, with SH 18 having the most crashes in the dry and daylight, whereas SH 22 was more prone to crashes in the dry and dark, and SH 17 in the wet and daylight.

Issues for SH 1N (not at Orewa) and SH 16

Crashes on bends can be found along the entire length of these two state highways, except the length of SH 1N south of Orewa. Those on SH 16 are not as densely clustered as those on SH 1N, most likely related to volume of traffic on that highway rather than the quality of the road. SH 16 is being promoted as an alternate route north on holiday weekends, increasing the traffic flows on this road.

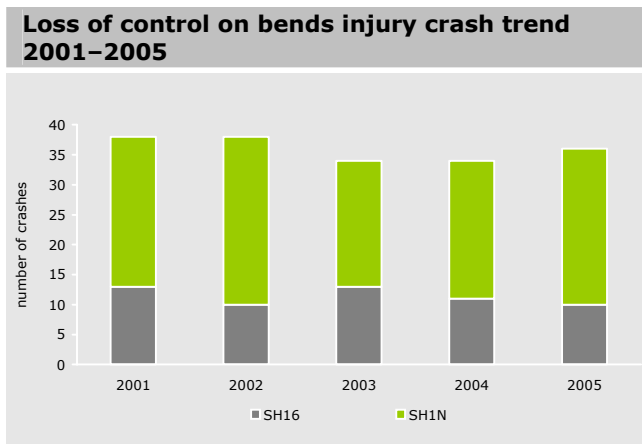
On SH 1N, the highest number of crashes can be found at these areas:

- Just north of Hatfields beach.
- Schedewys Hill (near Pohuehue).
- Dome Valley (near Waiwhiu).

In the past five years 53 percent of fatal and serious injury crashes on these two highways were loss of control on bends crashes.

Crashes reported 2001–2005				
	SH 16 bend crashes	SH 1N bend crashes	All fatal and serious crashes	% of all crashes
2001	3	12	30	50%
2002	6	14	36	56%
2003	5	5	19	53%
2004	5	12	32	53%
2005	3	8	21	52%

Both roads showed a drop in fatal and serious crashes in 2005, however, when considering only fatal and serious crashes, the low counts mean that the usual year-to-year variation seems exaggerated. The trend for all injury crashes has been quite flat over the last five years as depicted in the graph below.



Crashes reported 2001–2005				
SH	Dry	Wet	Dark	Light
SH 16	75%	25%	44%	56%
SH 1N	43%	57%	34%	66%

Fifty-seven percent of loss of control injury crashes on bends on SH 1 occurred in the wet, while on SH 16 25 percent of bend crashes occurred in the wet. The average for injury crashes occurring in the wet over all state highways is 30 percent. The very high proportion of wet road loss of control crashes on bends on SH 1N suggests that perhaps:

- maintenance of surface frictional values on this highway is not keeping up with wear rates
- the visibility of signage and road markings in the wet is not ideal, meaning some corners are catching drivers unawares.

Unlike the bend crashes on the commuter highways, 93 percent of these bend injury crashes were not associated with an intersection, and 61 percent of those were single vehicle crashes. There were 102 crashes where a vehicle simply could not take the corner.

As might be expected, a wide variety of contributory causes were reported by Police in relation to these crashes. The distribution of these factors is not common across both highways as the table below for injury crashes illustrates.

Crashes reported 2001–2005		
Crash factor	SH 16	SH 1N
Too fast entering corner	13%	14%
Loss of control when turning	10%	9%
Loss of control due to road conditions	2%	9%
Road slippery (rain)*	2%	9%
Fatigue (drowsy, tired, fell asleep)	3%	8%
Alcohol test above limit or test refused	12%	2%
Alcohol suspected	4%	4%

* Note the MOT data base does not assume a wet road is slippery and this factor is only added when the reporting police officer makes special mention in their reports.

This table does shows that the high number of wet road crashes on SH 1N where a slippery road was noted as an issue, was considerably higher than on other highways.

The high number attributed to excessive speed was an expected result for bend crashes.

On SH 1N, the high number of people crashing at bends driving when they are fatigued is investigated on page seven.

Intersection crashes

Between 2001 and 2005 there were 475 crashes at intersections on this network including 147 injury crashes and 328 non-injury crashes.

The most common crash types were either a vehicle turning right into a side road being hit by an approaching straight-through vehicle or a vehicle turning right from the side road being struck by a vehicle approaching from the right. These two crash movements accounted for 52 percent of the injury crashes at intersections.

Fourteen intersections on this network with 10 or more crashes reported between 2001 and 2005 are shown below.

Crashes reported 2001–2005		
Intersection	Crashes	Trend
SH 17/Tawa Drive	39	Falling
SH 1N/Wainui Road	26	Rising
SH 1N/Red Beach Road	23	Rising
SH 1N/Tavern Road	22	Falling
SH 17/Coatesville Road highway	20	Rising
SH 18/Unsworth Drive	17	Falling
SH 1N/Westhoe Road	17	Flat
SH 18/Luckens Road	16	Rising
SH 18/Caribbean Drive	16	Falling
SH 18/Brigham Creek Road	14	Falling
SH 1N/Whangaparaoa Road	11	Rising
SH 18/Albany Highway	11	Falling
SH 22/Great South Road	10	Flat
SH 17/Oteha Valley Road	10	Flat

The type of control at the crash intersection is shown below for each state highway.

Crashes reported 2001–2005					
SH	Give Way sign	Nil	School patrol	Stop sign	Traffic signal
17	67	25	0	26	18
18	66	39	1	19	25
22	24	9	0	5	1
1N	33	31	0	20	60

Stop and Give Way controlled intersections were the subject of Road Safety Survey 24, conducted by Land Transport New Zealand in 2004/2005.

The summary table of this report on page 25 shows that few intersections are totally complying with the *Traffic Control Devices Rule* and the *MOTSAM Manual of Traffic Signs*.

This table shows the percentage of intersection crashes that were in wet conditions, at night, and the number of crashes involving pedestrians and cyclists at these main intersections.

Crashes reported 2001–2005				
Intersection	Wet	Dark	Pedestrian	Cyclist
SH 17/Tawa Drive	15%	10%	0	0
SH 1N/Wainui Road	19%	15%	1	0
SH 1N/Red Beach Road	4%	35%	0	0
SH 1N/Tavern Road	32%	9%	1	0
SH 17/Coatesville–Riv HW	15%	30%	0	0
SH 18/Unsworth Drive	41%	12%	0	0
SH 1N/Westhoe Road	12%	24%	1	0
SH 18/Luckens Road	25%	31%	0	0
SH 18/Caribbean Drive	13%	19%	0	0
SH 18/Brigham Creek Road	29%	43%	0	2
SH 1N/Whangaparaoa Road	36%	27%	0	0
SH 18/Albany Highway	27%	9%	0	0
SH 22/Great South Road	40%	30%	0	0
SH 17/Oteha Valley Road	20%	20%	0	0

The age and gender of the drivers at least partially at fault in these crashes is shown below. Generally, females drive about 37 percent of the vehicle kilometres in New Zealand, (according to the *Household Travel Survey 2003–2004**). They are culpable in 37 percent of intersection injury crashes on these commuter state highways. It should be noted that there can be more than one driver deemed to be at fault in any one crash, hence partial fault can be attributed.

* Available from the Ministry of Transport website.

Culpable drivers in intersection crashes 2001–2005



Fatigue crashes

When considering only the fatal and serious crashes that have occurred on these two roads over the past five years, 14 percent have fatigue attributed as a factor by the attending officer.

Fatigue was a factor in 10 percent of all injury crashes on SH 1N and SH 16. This factor is routinely investigated by the Police if the crash was fatal. However, for the less severe injury crashes it will only be noted on the crash report if admitted to by the driver or by an observation from a witness or the police officer. Therefore, this factor is likely to be under reported.

One possible contributing issue is that after the effects of some drugs (either illegal or legal) wear off, the body can shut down rapidly as it attempts to make up the sleep deficit. So the problem is then not driving under the influence of drugs, but fatigue.

Fatigue crashes were more prevalent along SH 1N than SH 16; perhaps reflecting that SH 1N is the more direct route between two large urban areas, Whangarei and Auckland.

The most common times for crashes were:

- Saturday and Sunday between 4 am and 8 am
- Friday between 4 pm and 8 pm, and Sunday between 4 pm and 8 pm.

Wet road crashes

Between 2001 and 2005 there were 38 reported wet road injury crashes on SH 16 and 108 on SH 1N. These represented 22 percent and 50 percent of all injury crashes respectively on these roads.

The average rate of wet road crashes nationally on state highways is 32 percent, making the average occurring on SH 1N of 50 percent of some considerable concern.

The Network Safety Coordination Programme taskforce teams which are looking at high crash rate sections of highways are aware that this is a significant problem for SH 1N.

Wet road crashes on SH 16 are largely clustered on the southern section from the end of the northwestern motorway to about seven kilometres south of Helensville.

On SH 1N, wet road crashes are an issue along the whole length but in particular:

- between Kaipara Flats Road and Ross Road – a length of about 26 kilometres
- between Mahurangi West Road and 2 km north at Schedewys Hill – a recognised and documented blackspot for the past 25 years
- either side of Wairewa – another known blackspot for almost 25 years.

Crashes on SH 16 occurred throughout the day with perhaps a small increase in the morning, while those on SH 1 were more prevalent between about 6 am and 6 pm. This is characteristic of the general time distribution of crashes on SH 1N but not SH 16.

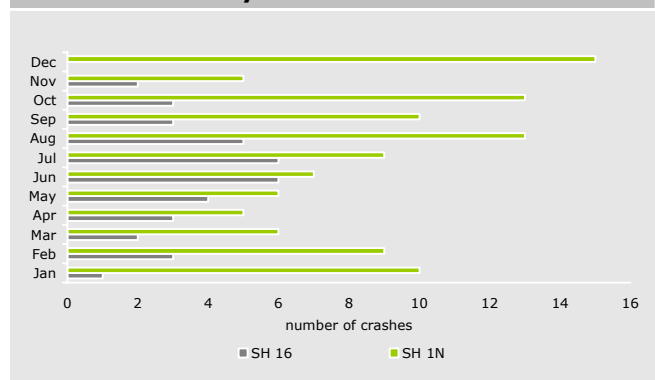
These crashes occurred largely outside of prime drink-driving times, so the five SH 16 drivers and two on SH 1 who returned positive alcohol tests (injury crashes) were not out of the ordinary.

Over half of the injury crashes involved loss of control at bends; the next main crash type involved a rear-end collision (14 percent).

Interestingly, 28 percent of wet road injury crashes on SH 16 involve speed too fast for the conditions while this figure was 65 percent on SH 1N.

The seasonal pattern of crashes on these highways were quite different, with SH 1N crashes reaching a peak in the summer months and SH 16 peaking in winter. Reasons for this are unknown, but should be kept in mind when selecting times to reseal each highway.

Wet road monthly trend 2001–2005



Reproducing this information

Please feel free to disseminate the information in this report, as their wide use is encouraged. Acknowledgement of Land Transport NZ as the source would be appreciated

Where to get more information

For more specific information relating to road crashes on Auckland state highways, please refer to the 2001 to 2005 Road Safety Data Report, the Ministry of Transport's Crash Analysis System or contact the office listed below.

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