

Analysis of Road Safety Trends

Bay of Plenty Regional Land Transport Strategy Supporting Paper No.04

Prepared for the Bay of Plenty Regional Council
by Simon James, Traffic and Safety Design Engineer –
Opus International Consultants

Transportation Publication 2011/01
August 2010

Bay of Plenty Regional Council
5 Quay Street
PO Box 364
Whakatāne 3158
NEW ZEALAND

ISSN:1175-8538 (print)
1179-9552 (online)



Executive Summary

This report is intended to provide data analysis of road safety crash data in the Bay of Plenty (Bay of Plenty) region. The last five years (2005 – 2009) crash data has been used for this analysis. Where possible, this has been compared with relevant national crash data and figures.

Some of the main observations from the crash data are as follows:

- The number of crashes in the Bay of Plenty region per million vehicle kilometres travelled (VKT) is lower than the national figures.
- The Bay of Plenty region has a higher severity of fatal and serious crashes than the national average.
- While the total number of crashes in the Bay of Plenty region is decreasing, the number of fatal and serious crashes is increasing.
- Roughly two thirds of all crashes in the Bay of Plenty region occur in urban areas.
- Major contributing factors of crashes in the Bay of Plenty region include alcohol, too fast, and poor observation.
- Male drivers aged between 15 and 24 are most at risk of being involved in a crash.

Additional data analysis can be done in light of further questions that may arise. While this information can provide background and insight to the state of road safety in the Bay of Plenty region, in particular highlighting potential areas or issues that need to be addressed, crashes are rare and random multi-factor events. As such, it is impossible to predict where crashes may occur on the road network but work can be done to address the known risks that could lead to such crashes based on crash data analysis.

Contents

Part 1: Background.....	1
Part 2: Description of the region	3
Part 3: Safer Journeys – New Zealand’s Road Safety Strategy to 2020	5
Part 4: Ministry of Transport - Transport Monitoring Indicator Framework (TMIF).....	9
Part 5: Road Policing Programme - ‘Fatal Five’	11
Part 6: Comparison with national trends.....	13
Part 7: Region Wide Trends	19
Part 8: Comparison with ACC data.....	27
Part 9: Contributing factors of crashes	29
Part 10: Driver age and sex.....	33
Part 11: Driver License type	35
Part 12: Vehicle Types	37
Part 13: Vulnerable road users.....	39
Part 14: Sub-regional trends.....	41
14.1 Western Bay of Plenty/Tauranga sub-region	41
14.2 Rotorua sub-region	48
14.3 Eastern Bay of Plenty sub-region	54

Part 1: Background

Environment Bay of Plenty is currently reviewing the Bay of Plenty regional Land Transport Strategy. As part of the background studies being undertaken to provide input into the review, the road safety issues for the region and the trends in road safety are being identified and collated in one document.

This report identifies the major trends in road safety statistics in the Bay of Plenty region over the five year period between 2005 and 2009. This report also includes a comparison of ACC claim figures against police reported crashes.

Part 2: Description of the region

The Bay of Plenty region is located on the east coast of the North Island. It is New Zealand's fifth most populated area. The region is made up of Tauranga City, Western Bay of Plenty district, the north area of Rotorua district (including the urban area of Rotorua), Whakatane district, Opotiki district, Kawerau district and a small part of the Taupo district. The major population settlements lie in three areas which can be described as sub-regions. These sub-regions are the western Bay of Plenty, Rotorua and the eastern Bay of Plenty.



In 2001, the regional population was 240,000 with 80% of the people living in urban areas. Most of the population is concentrated in the Tauranga, western Bay of Plenty and Rotorua areas. The region's population is projected to increase by 30% from 2001 to 2026 to around 320,000 people. Much of this growth is predicted to be in the west of the region.

There are 4,460 km of road in the region, and the car is the most popular way to travel. Traffic volumes in the western Bay of Plenty have increased significantly with the high growth rate. The region also has the highest intensity of heavy vehicles on roads in New Zealand. Most of the region's local roads which are located in urban areas are sealed and about 64% of rural local roads are sealed.

Part 3: Safer Journeys – New Zealand’s Road Safety Strategy to 2020

Safer Journeys is the recently released New Zealand Government strategy to guide improvements in road safety over the period 2010–2020. The long term goal for road safety in New Zealand is set out in its vision:

"A safe road system increasingly free of death and serious injury"

The actions in “Safer Journeys” are aimed at addressing the priority areas through a Safe System approach. These actions are not a list of everything that could be done to improve road safety over 2010–2020. But they are the key actions that, along with continuing our most effective current initiatives, are likely to help build a safer road transport system.

The Safe System differs from traditional approaches to road safety. Rather than always blaming the road user for causing a crash, it acknowledges that even responsible people sometimes make mistakes in their use of the roads.

Given that mistakes are inevitable, we need the system to protect people from death or serious injury. To do this, the Safe System has objectives to:

- make the road transport system more accommodating of human error
- manage the forces that injure people in a crash to a level the human body can tolerate without serious injury
- minimise the level of unsafe road user behaviour

In order to achieve these objectives, the human body’s tolerance to crash forces will need to be the key design factor for the system. Crash forces would be managed so they do not exceed these limits.

The Safe System focuses on creating safe roads, safe speeds, safe vehicles and safe road use. Our goal would be to ultimately achieve:

Safe roads – that are predictable and forgiving of mistakes. They are self-explaining in that their design encourages safe travel speeds.

Safe speeds – travel speeds suit the function and level of safety of the road. People understand and comply with the speed limits and drive to the conditions.

Safe vehicles – that prevent crashes and protect road users, including pedestrians and cyclists, in the event of a crash.

Safe road use – road users that are skilled and competent, alert and unimpaired. They comply with road rules, take steps to improve safety, and demand and expect safety improvements.

The Safe System is illustrated below:



The Safe System approach requires shared responsibility between road users and system designers. It says that if road users are alert and comply with the road rules, and travel at safe speeds, they should be able to rely on the road and roadside features and the vehicle to protect them from death and serious injury.

For this to occur:

Road controlling authorities have to design, build and maintain roads and to manage speeds to protect responsible road users.

The vehicle industry has to provide safe vehicles and be socially responsible when marketing vehicles to consumers.

Central and local governments have to inform and educate New Zealanders about road safety issues. They need to provide effective road safety regulation and to adequately fund road safety. They also have a responsibility to integrate safety into decisions about land-use.

Road users have to take steps to increase their safety, such as complying with road rules and being unimpaired by alcohol, drugs, fatigue or distraction.

Employers have to ensure their corporate policy and practice supports a positive road safety culture based on a Safe System approach.

The Safer Journeys Strategy identified 13 areas where New Zealand's current road safety performance needs to be strengthened. Of these 13 areas, five were identified as high concern and six identified as medium concern. Two areas were identified as requiring continued or emerging focus. The Safer Journeys areas of concern are:

Areas of high concern:

- Reducing alcohol/drug impaired driving
- Increasing the safety of young drivers
- Safe roads and roadsides
- Safe speeds
- Increasing the safety of motorcycling

Areas of medium concern:

- Improving the safety of the light vehicle fleet
- Safe walking and Cycling
- Improving the safety of heavy vehicles
- Reducing the impact of fatigue
- Addressing distraction
- Reducing the impact of high risk drivers

Areas of continued and emerging focus:

- Increasing the level of restraint use
- Increasing the safety of older New Zealanders

Part 4: Ministry of Transport - Transport Monitoring Indicator Framework (TMIF)

The Ministry of Transport (MoT) has set some clear guidelines for monitoring safety and personal security. The following trends will be discussed for the Bay of Plenty region in this report:

SS014 Number of reported road injury accidents per 100 m vehicle kilometres travelled (VKT)

SS016 Number of deaths on roads per 100 m vehicle kilometres travelled (VKT)

SS018 Number of reported road injuries per 100 m vehicle kilometres travelled (VKT)

SS006 Number of deaths on roads with alcohol as a contributing factor

SS019 Number of deaths on roads with speed as a contributing factor

These are just a few of the indicators that the Ministry of Transport monitors, but will help to build a clear picture of road safety issues in the Bay of Plenty region. These indicators are all covered later on in this report.

Part 5: Road Policing Programme - 'Fatal Five'

In the 2009-2010 Road Policing Programme, the NZ Police talk about the 'fatal five' in the section about risk targeted road policing. The 'fatal five' is described as being speed, drink-driving, restraint wearing, dangerous and careless driving and high-risk drivers. Alcohol and speed feature frequently as contributing factors of fatal and serious crashes while not wearing restraints is often identified on casualties of fatal and serious crashes as leading to the severity of injury. The contributing factors of crashes shown in more detail in Sections 10 and 15 fit into these five areas.

The Too Fast factors are covered under speed. Drink-driving covers the alcohol factors while dangerous and careless driving covers poor observation, poor handling and failed to give way/stop factors among others. Restraint wearing and high-risk drivers do not closely align to any particular contributing factors in the crash statistics but cover areas that (New Zealand Transport Agency (NZTA) has identified in their document 'Communities at Risk Register'.

Part 6: Comparison with national trends

The Bay of Plenty region is generally below the national average of one crash per million vehicle kilometres travelled (VKT) (shown in Figure 1 below). All crash numbers have been sourced from the Crash Analysis System (CAS) and the VKT have been obtained from the Ministry of Transport (MoT). The 2009 VKT figures are not yet available from the MoT and so have been extrapolated from the previous year's figures.

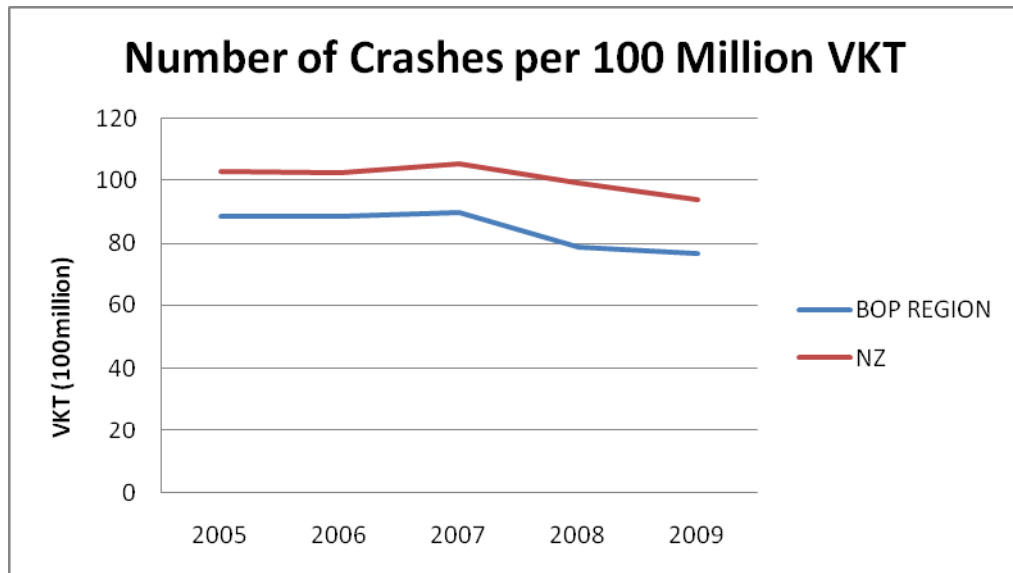


Figure 1: Number of all police reported crashes per 100 million vehicle kilometres travelled (VKT).

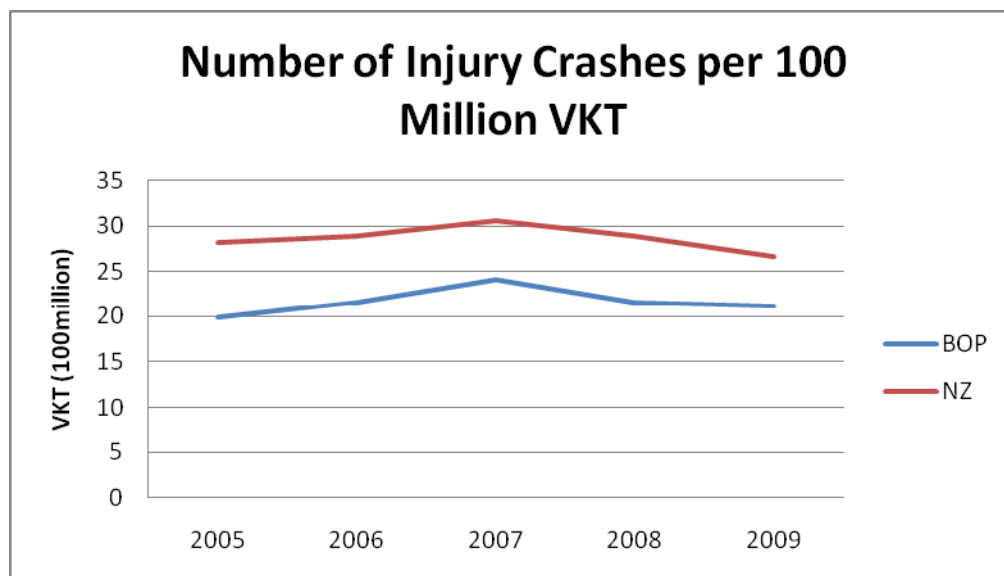


Figure 2: Number of police reported injury crashes per 100 million VKT.

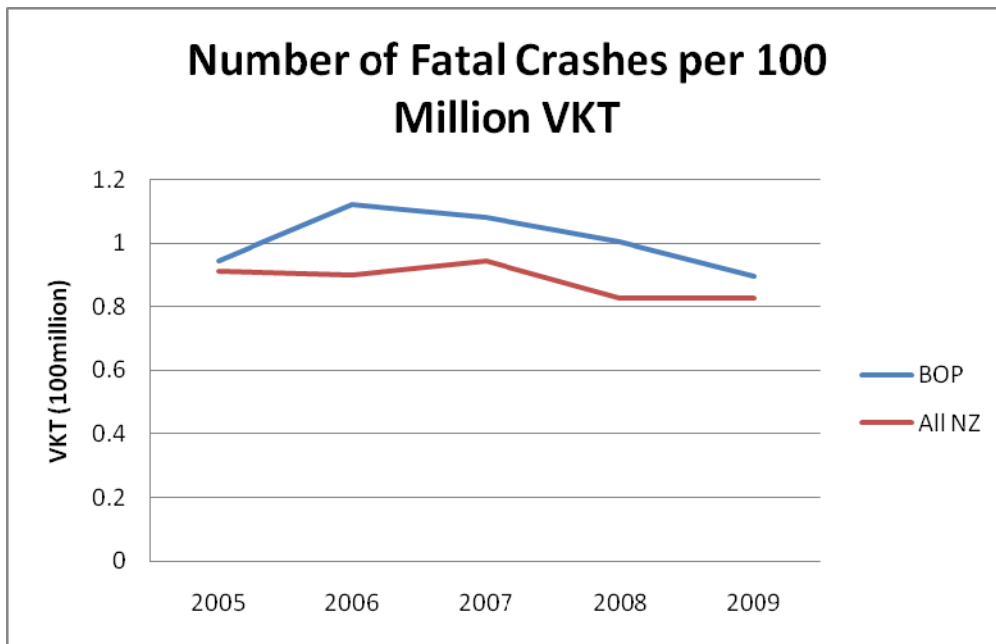


Figure 3: Number of Police reported fatal crashes per 100 million VKT.

While the overall number of crashes is below the national average when compared by VKT, the Bay of Plenty region has a history of high trauma crashes. Figure 3 below shows that the number of fatal and serious injury crashes per million VKT is roughly equal to the national average and has been higher than the national average in previous years.

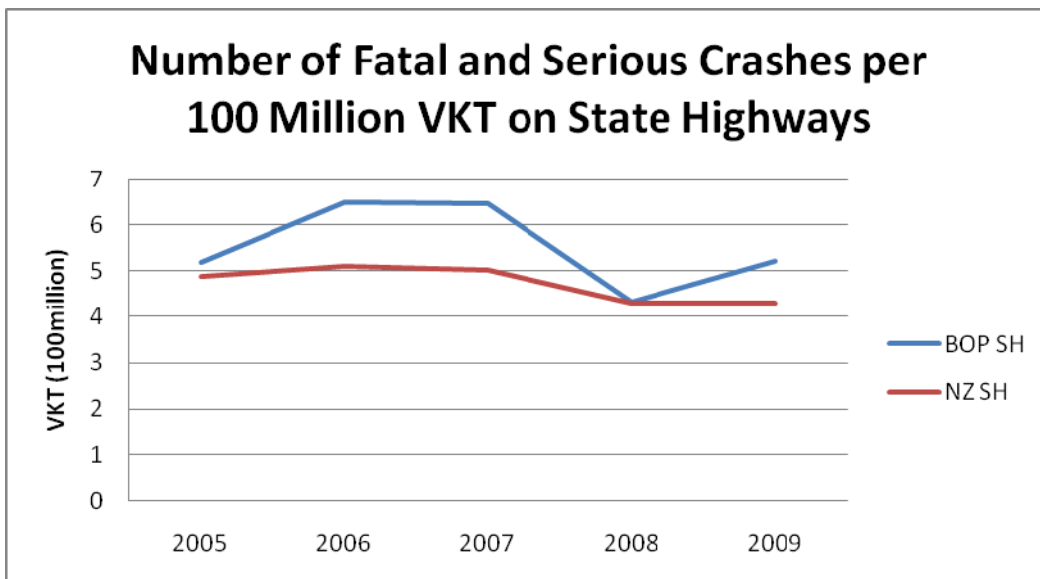


Figure 4: Number of Police reported fatal and serious injury crashes per 100 million VKT.

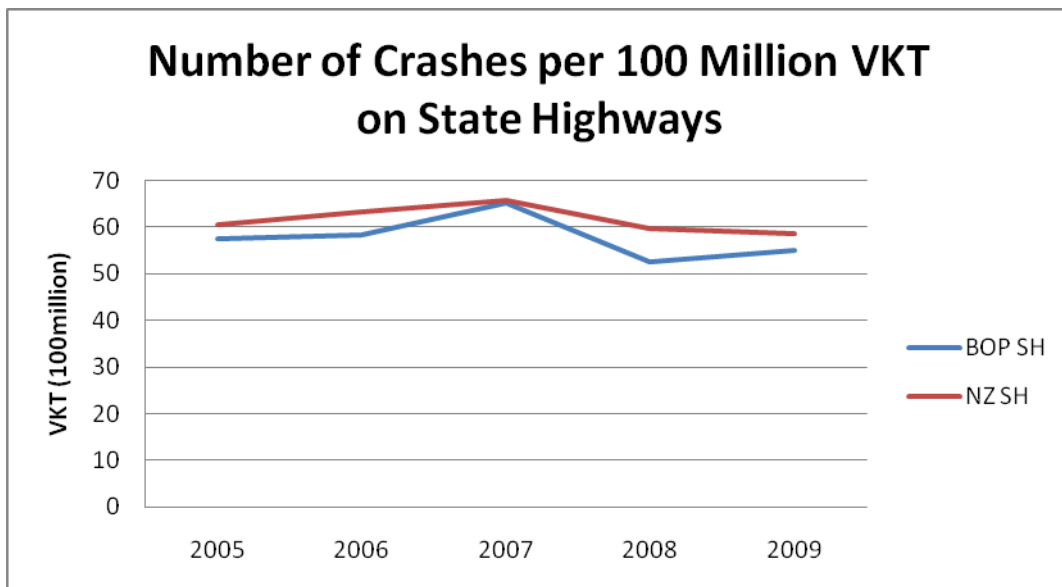


Figure 5: Number of all Police reported crashes on state highways per 100 million VKT.

State highways are a prominent area where fatal and serious injury crashes occur in the Bay of Plenty region. Figure 6 below show that the number of fatal and serious injury crashes on state highways is higher per million VKT than the national average.

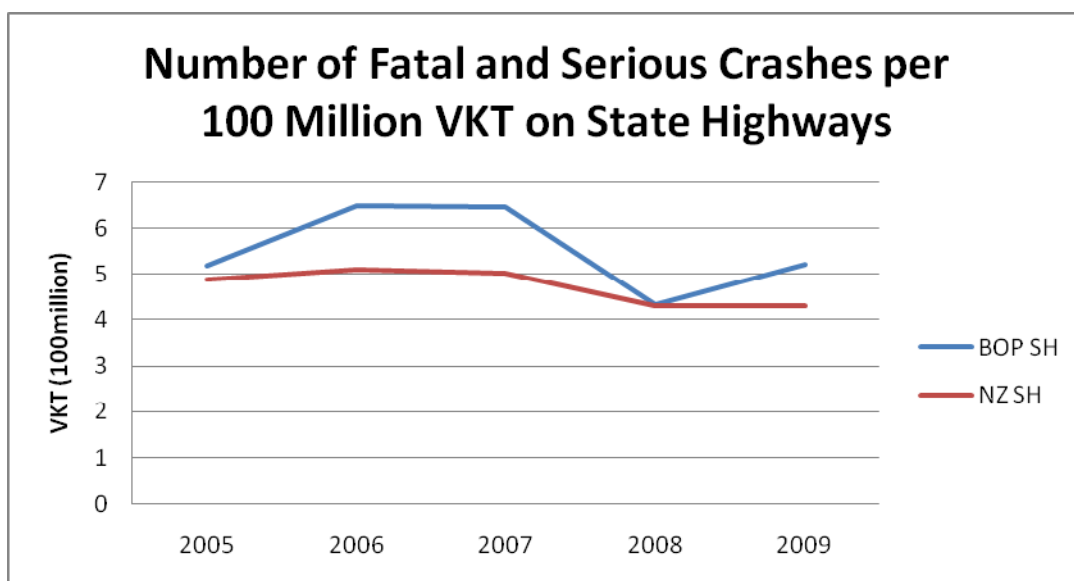


Figure 6: Number of all Police reported fatal and serious injury crashes on state highways per 100 million VKT.

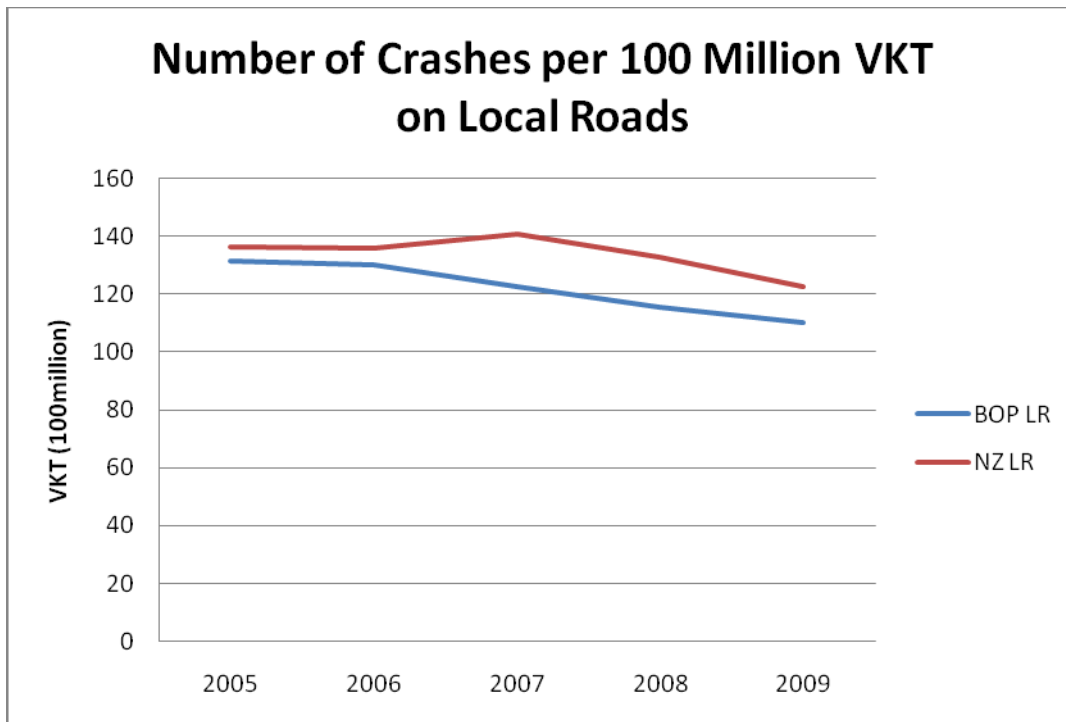


Figure 7: Number of all Police reported crashes on local roads per 100 million VKT

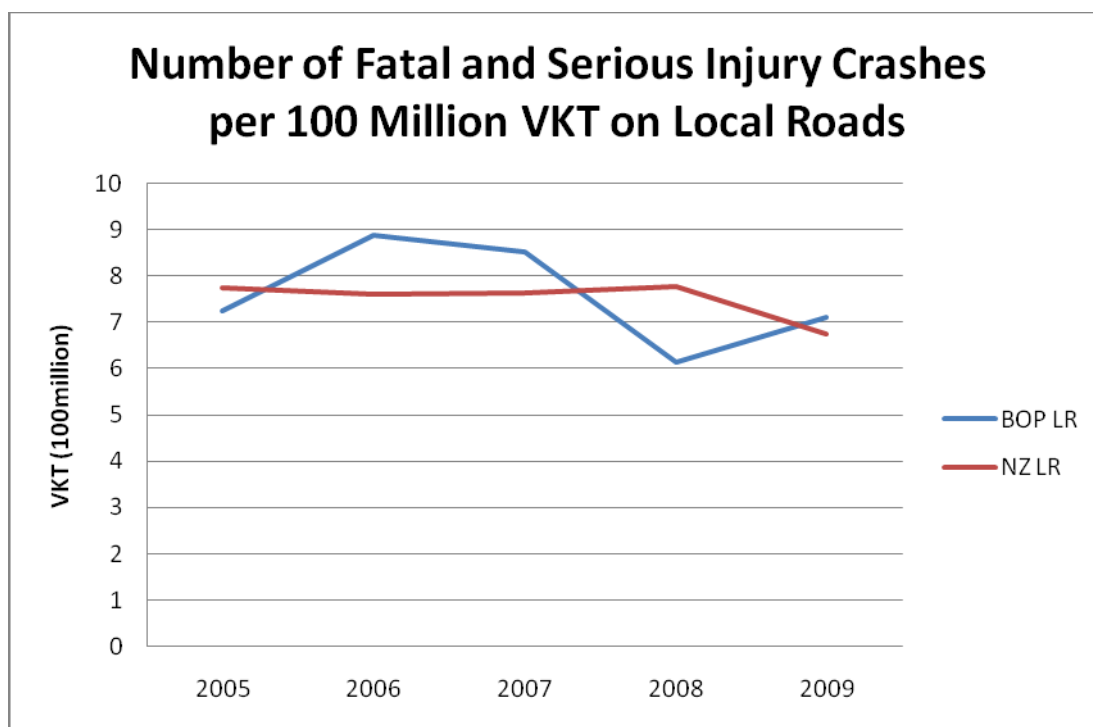


Figure 8: Number of all Police reported crashes on local roads per 100 million VKT

When looking at injury crashes over the last five years 2005 – 2009, the severity split in the Bay of Plenty is 4.5% fatal, 24.9% serious injury and the remaining 70.6% minor injury. This is compared to the national figures of 3.0% fatal, 18.4% serious injury and 78.6% minor injury. This is illustrated in Figure 9. Based on these figures it could be inferred that while there are less crashes in the Bay of Plenty region when measured by VKT, when a crash does occur there is a higher probability of the people involved receiving a fatal or serious injury.

Severity of Crashes as a Percentage of Injury Crashes in BOP Region 2005 - 2009

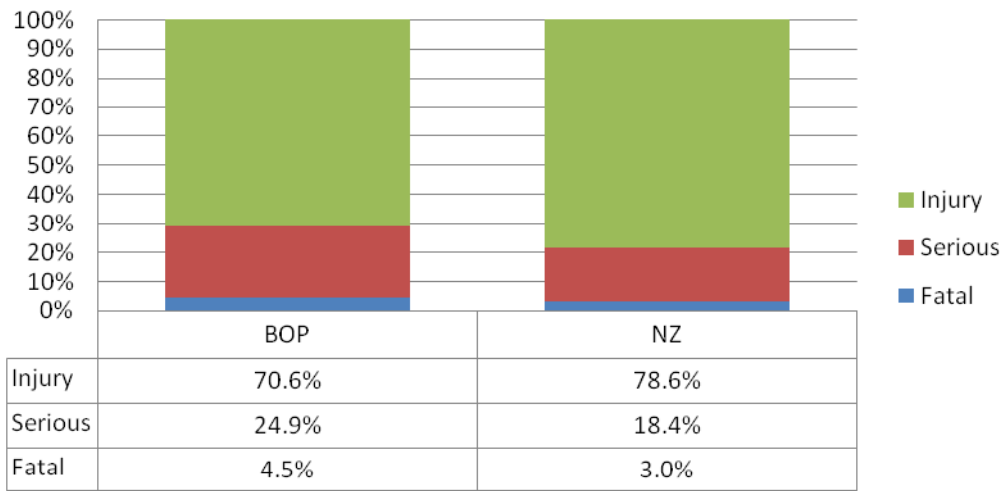


Figure 9: Severity of crashes as a percentage of Injury crashes in Bay of Plenty region for 2005-2009

Part 7: Region Wide Trends

The overall number of all crashes (injury and non-injury) in the Bay of Plenty region has had a decreasing trend over the last five years as shown in the graph below.

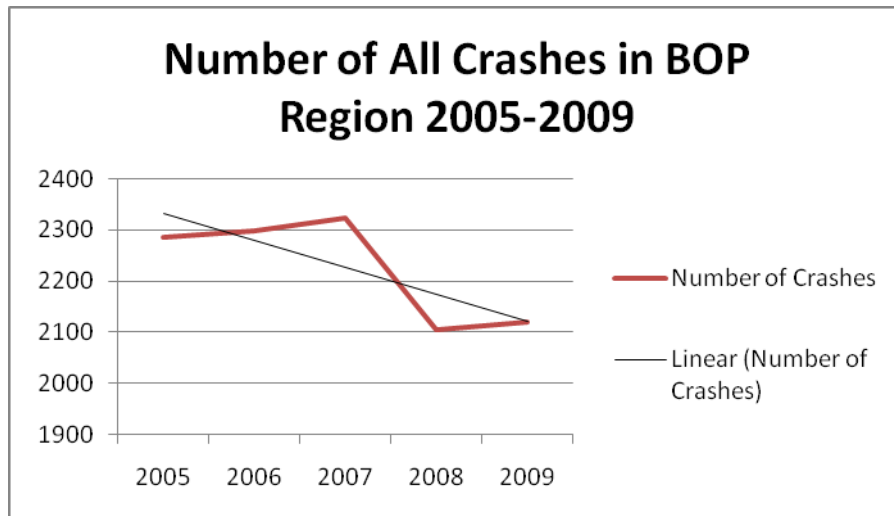


Figure 10: Number of Police reported crashes in the Bay of Plenty region 2005-2009

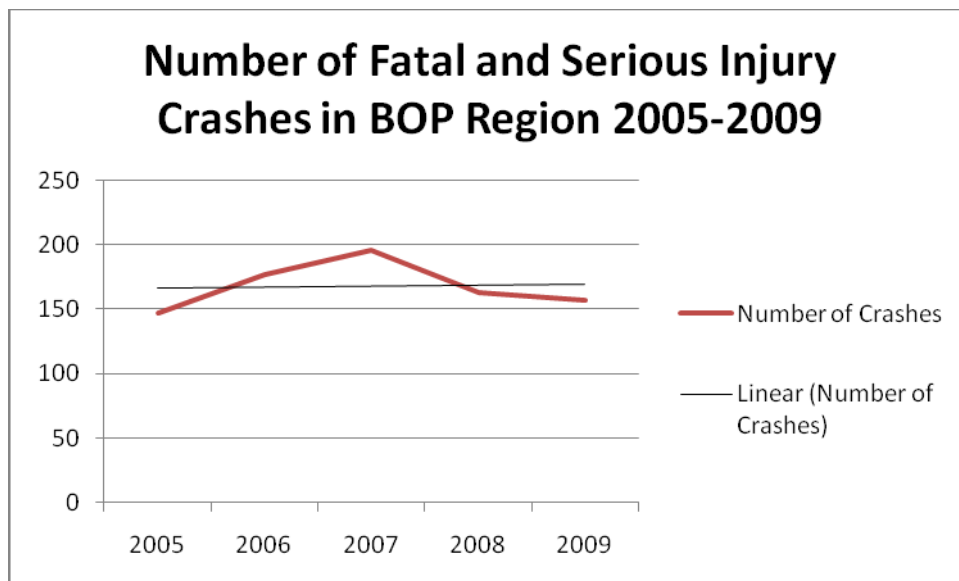


Figure 11: Number of Police reported fatal and serious injury crashes in the Bay of Plenty region 2005-2009

When looking at the fatal and serious crashes (Figure 11) this decreasing trend is not visible so the reduction has been in the number of minor and non-injury crashes while fatal and serious crashes have slightly increased over the five year period.

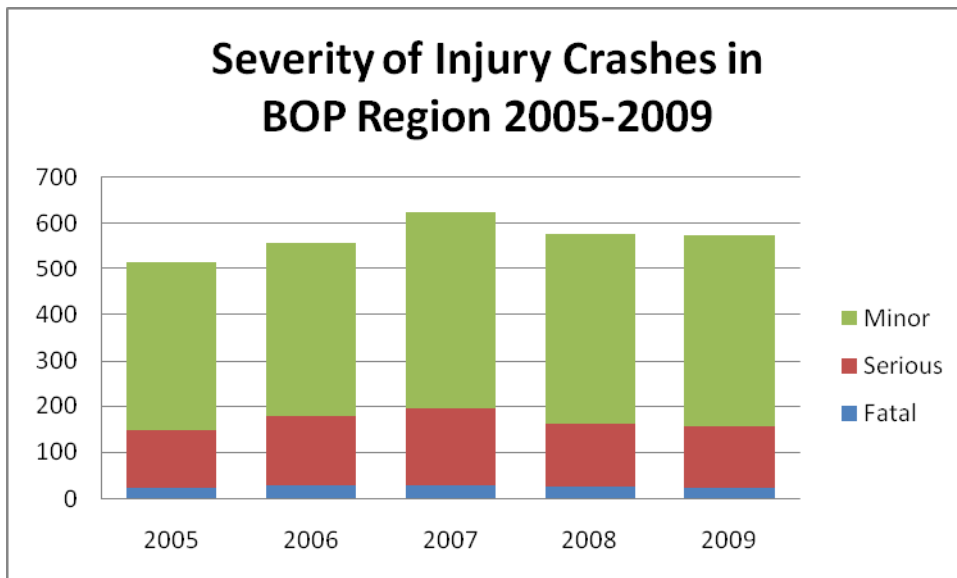


Figure 12: Severity of Injury crashes in the Bay of Plenty region 2005-2009

The decrease in the number of crashes has been due to a reduction of local road crashes while fatal and serious crashes on state highways have remained steady over the five year period as shown below in Figure 13.

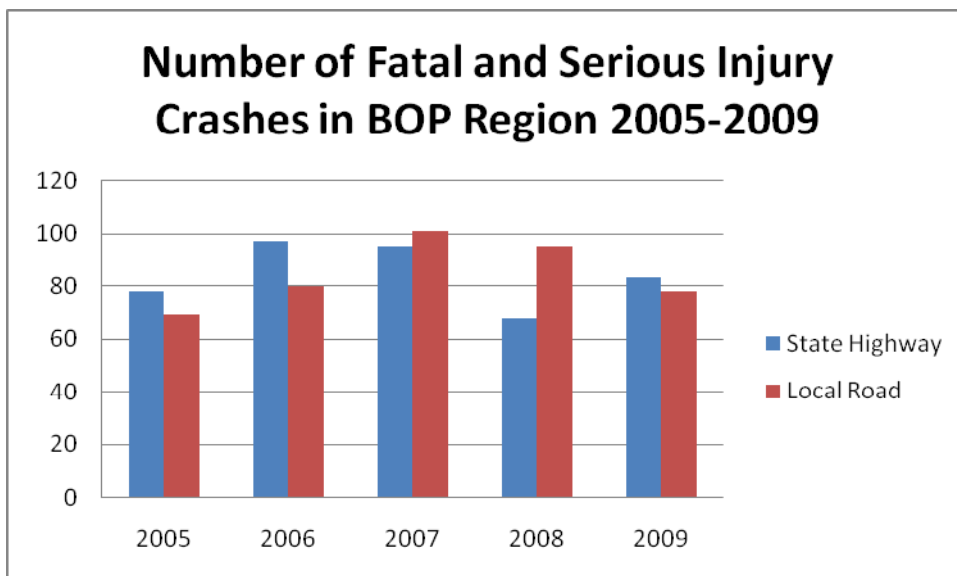


Figure 13: Number of Police reported fatal and serious injury crashes in the Bay of Plenty region 2005-2009 split by state highway and local road

The majority of fatal and serious crashes in the Bay of Plenty predictably occur in the high speed rural areas (Figure 14 next page). However, the gap between rural and urban roads has decreased in the last two years, making the urban/rural split almost 50% each. Figure 17 maps the density crashes in the region and shows as well as the urban areas, the main state highways also have a high occurrence of crashes.

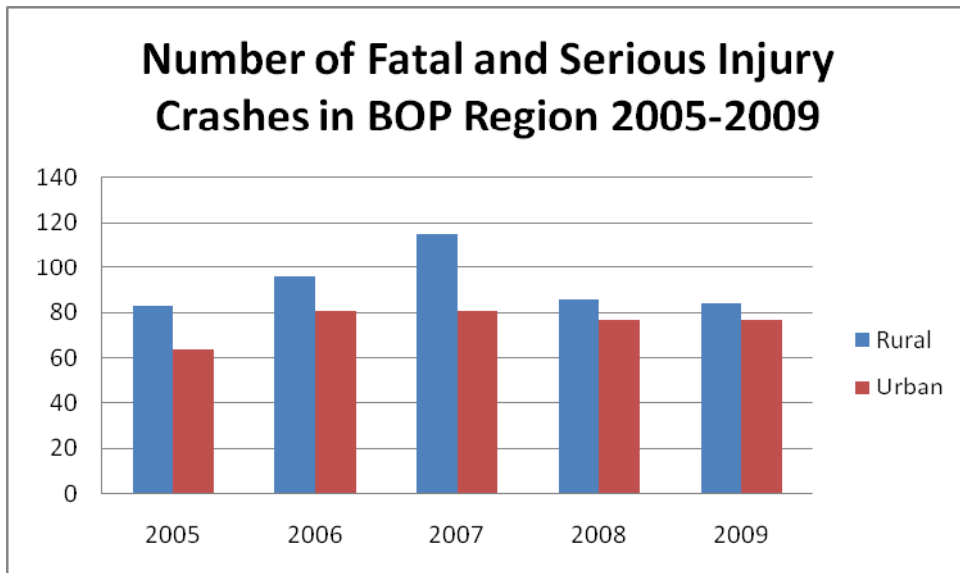


Figure 14: Number of Police reported fatal and serious injury crashes in the Bay of Plenty region 2005-2009 split by occurrence on either rural or urban roads.

As illustrated in Figure 17, the majority of all crashes in the Bay of Plenty region occur in urban areas, the majority of which occur at intersections. It follows that there should be a corresponding decline in intersection crashes over the same period. However when looking at fatal and serious injury crashes, mid block crashes are the majority with approximately twice as many fatal or serious crashes occurring at mid block locations as at intersections. This is shown in Figure 15 below.

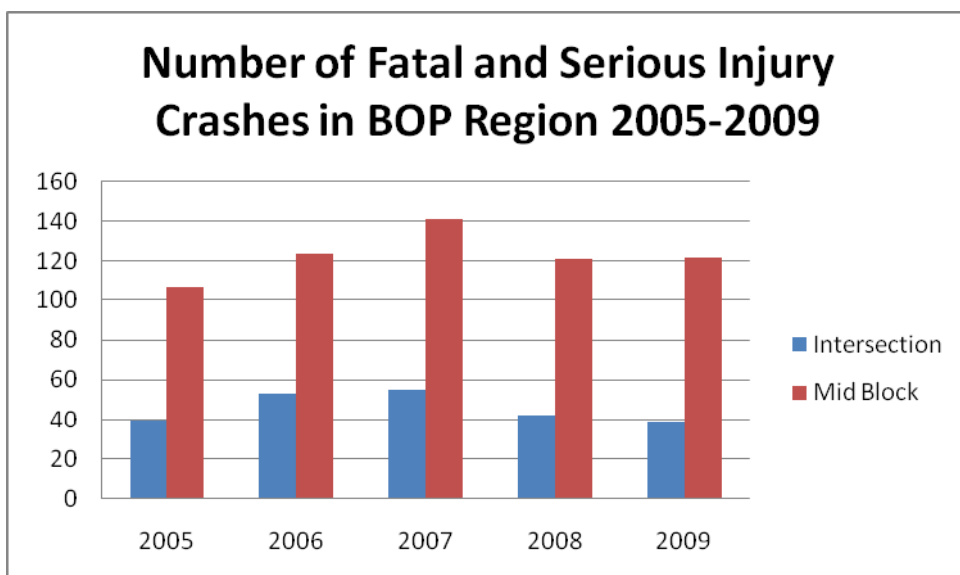


Figure 15: Number of fatal and serious injury crashes in the Bay of Plenty for 2005 – 2009 split by whether they occurred at an intersection or at midblock

One integral part of the road network is the speed limit that is posted on a road. The length of roads with various speed limits on has stayed roughly the same over the last five years. However, as Figure 16 shows, crashes occurring on roads with a speed limit of 50 km/h has a slightly increasing trend over the five year period between 2005 and 2009.

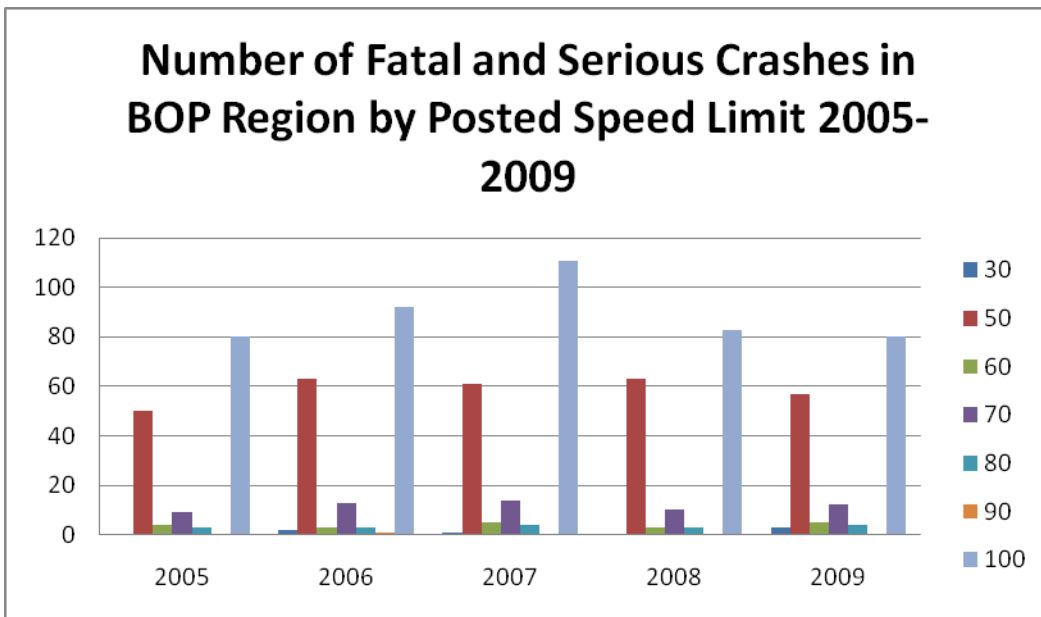


Figure 16: Number of fatal and serious crashes in Bay of Plenty for 2005 – 2009 split by posted speed limit

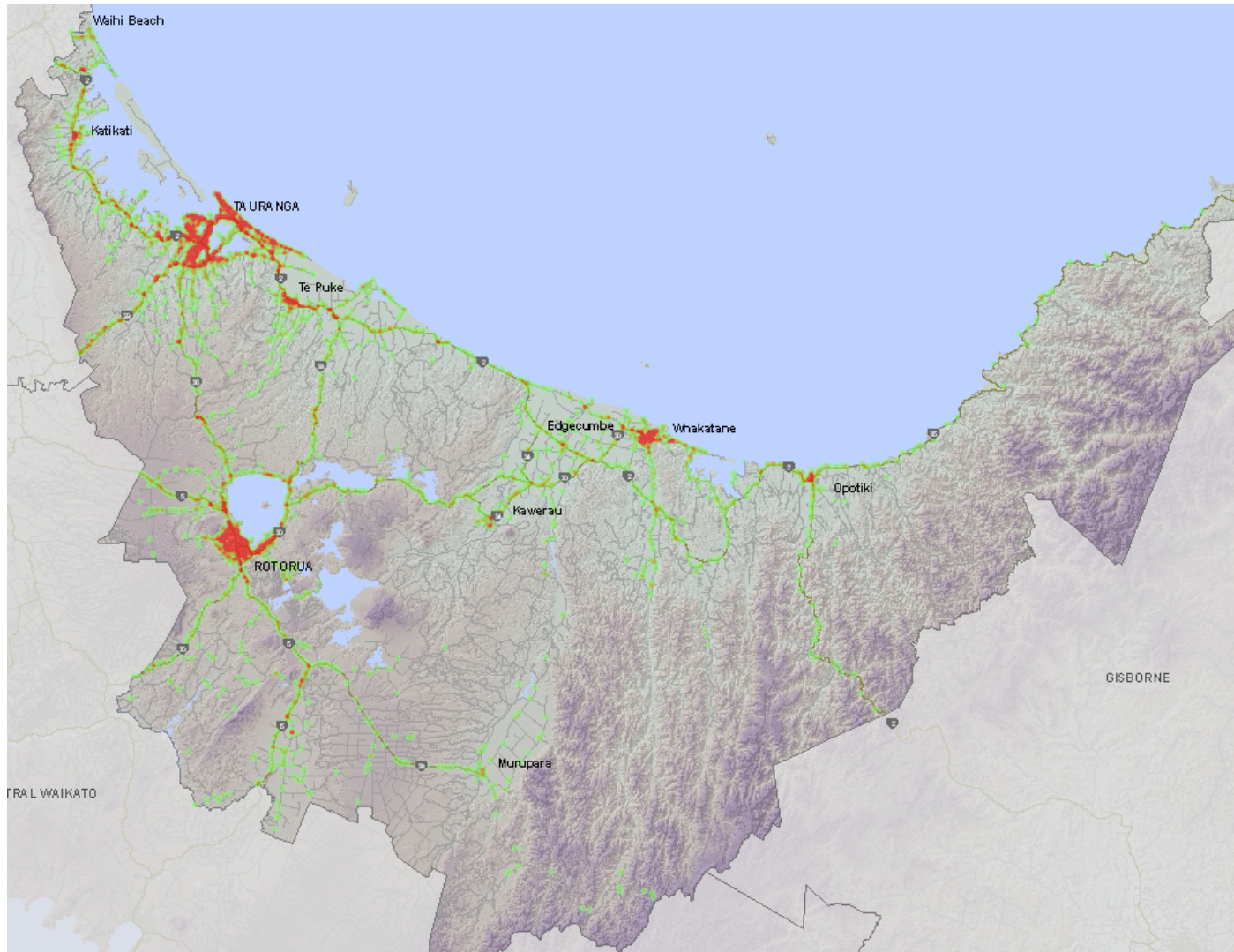


Figure 17: Crash density map of the Bay of Plenty region for the period 2005-2009. The red shows where there is a high occurrence of crashes while the green shows the areas where there is a low crash density.

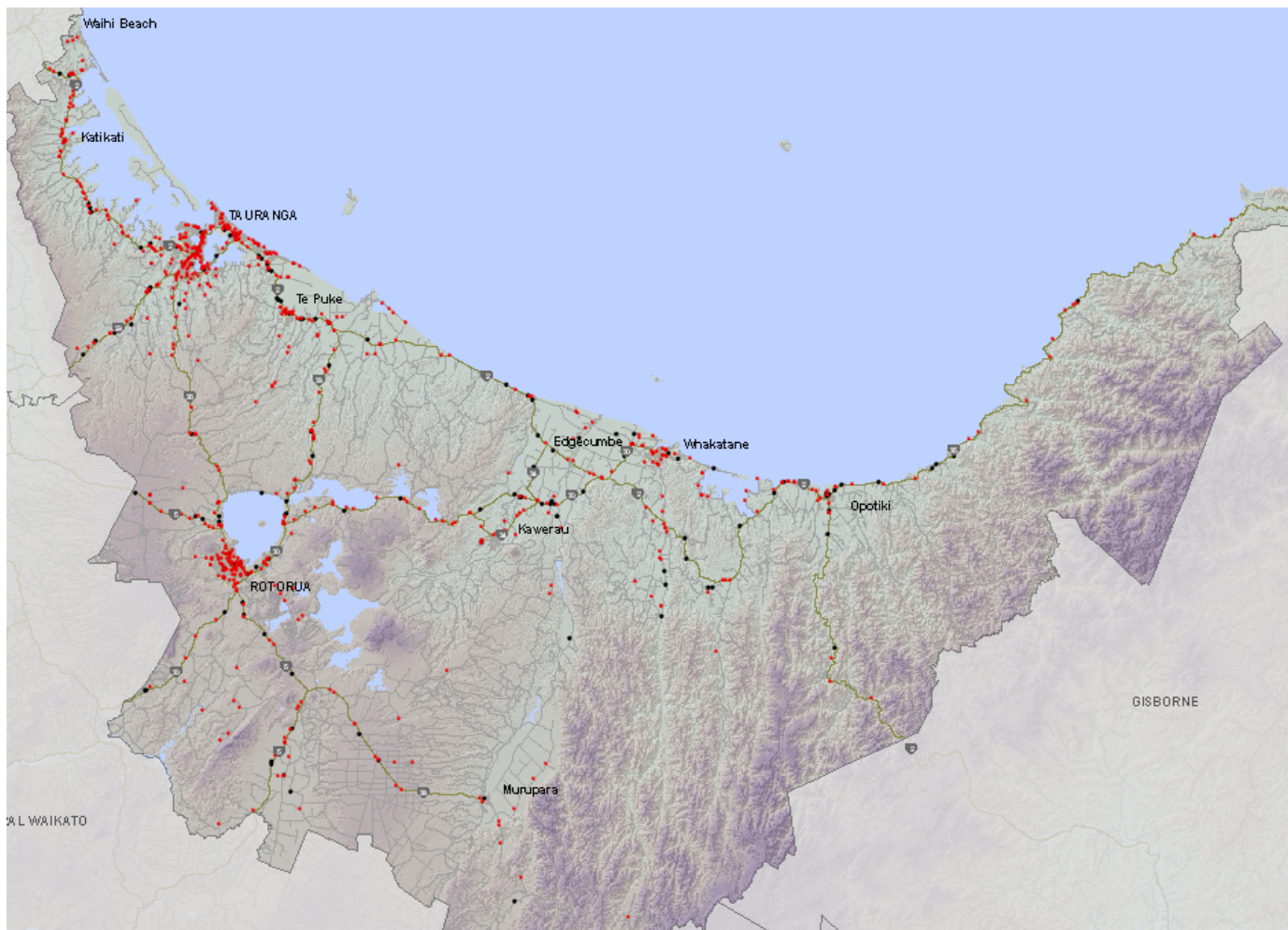


Figure 18: Location of fatal and serious crashes in the Bay of Plenty during 2005-2009. Fatal crashes are shown as the black spots while serious injury crashes are shown as red spots.

Crashes in the Bay of Plenty region are spread over most of the network. The map in Figure 18 on the previous page shows the locations of all fatal and serious crashes between 2005 and 2009.

The more travelled routes such as state highways have a higher concentration of crashes reflective of the proportion of vehicles using these routes.

Part 8: Comparison with ACC data

The Accident Compensation Corporation (ACC) has undertaken work to link the road injury claims that they receive, with the Ministry of Transport's Crash Analysis System (CAS). The CAS sources its data from police reports of crashes. It is widely known that there is an underreporting factor in road crashes being reported to the Police but the ACC data shows that this could be higher than expected.

Crash date	Number of motor vehicle claims	Percentage of motor vehicle claims with police crash records
2004/2005	192	6.6%
2005/2006	194	6.6%
2006/2007	223	7.1%
2007/2008	190	5.8%
2008/2009	184	6.1%

This data suggests that we are only receiving data on 6% of all injury crashes.

Part 9: Contributing factors of crashes

The New Zealand Transport Agency has released a document called 'Communities at Risk Register'. This document identifies high risk groups in each Territorial Authority (TA) so that initiatives targeting these groups can be put forward and funded in NZTA's National Land Transport Programme (NLTP). These high risk groups will be discussed in further detail in the separate sub-regional sections of this report.

As illustrated in Figure 19 below, the major contributing factors of fatal and serious crashes in the Bay of Plenty region include poor observation, alcohol, too fast, poor handling and failure to give way/stop. This is consistent with national trends, however, there are likely to be sub-regional differences that further analysis will identify.

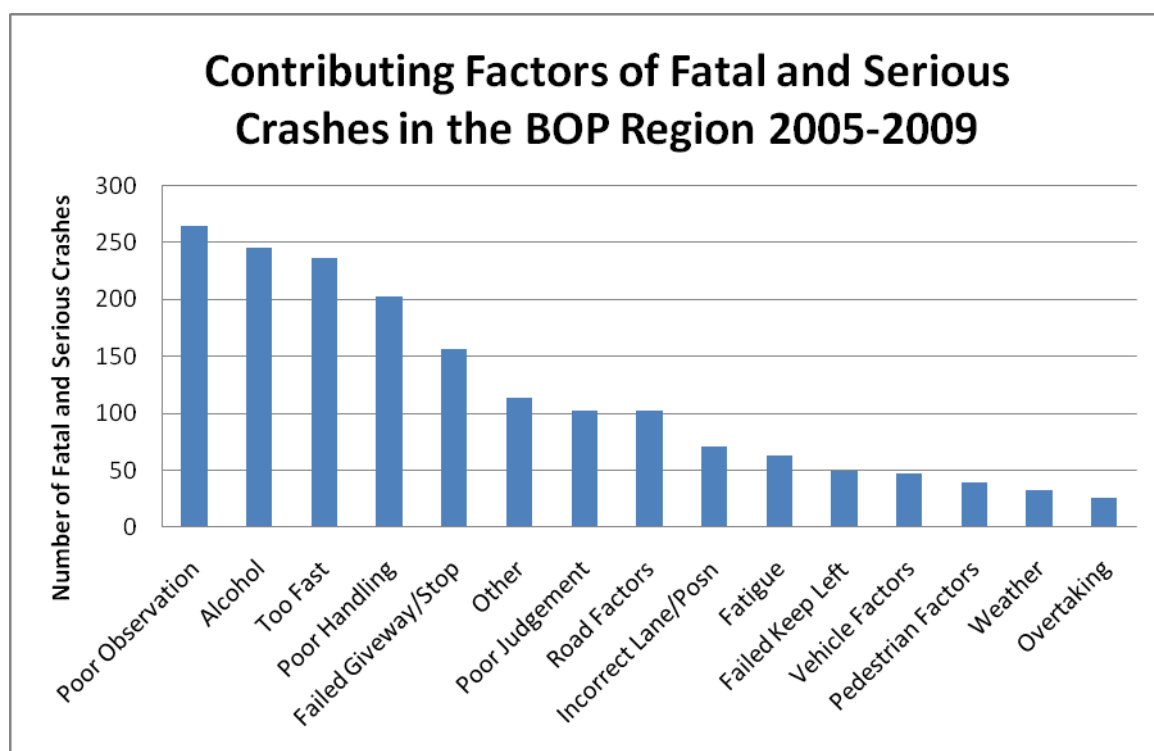


Figure 19: Major contributing factors of fatal and serious crashes in Bay of Plenty on all roads during 2005 – 2009 as reported by Police

If crashes are divided into those occurring on rural roads, which are defined as roads with a speed limit of over 70 km/h, there is a shift in the predominant contributing factor of crashes. Factors associated with 'loss of control' type crashes such as poor handling, too fast and road factors make up the top three contributing factors of crashes on rural roads. As vehicles are travelling at higher speeds on rural roads and any errors that could be recoverable at lower speeds are more likely to result in a crash. As shown in Figure 20 alcohol and poor observation are also prominent as contributing factors.

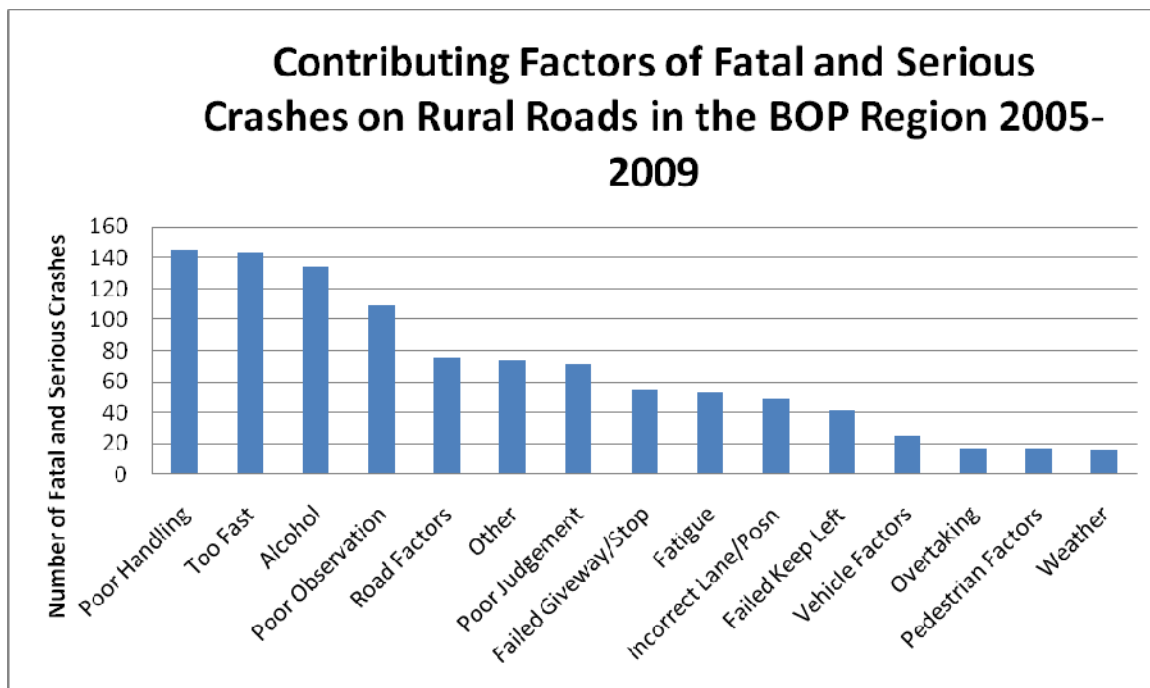


Figure 20: Contributing Factors of crashes on rural roads in the Bay of Plenty during 2005 - 2009

For urban roads, which are roads with a speed limit of 70 km/h and under, factors associated with intersection crashes are highest. These are poor observation and failure to giveaway/stop. This is illustrated in Figure 21. Alcohol is also a very strong contributing factor for urban crashes.

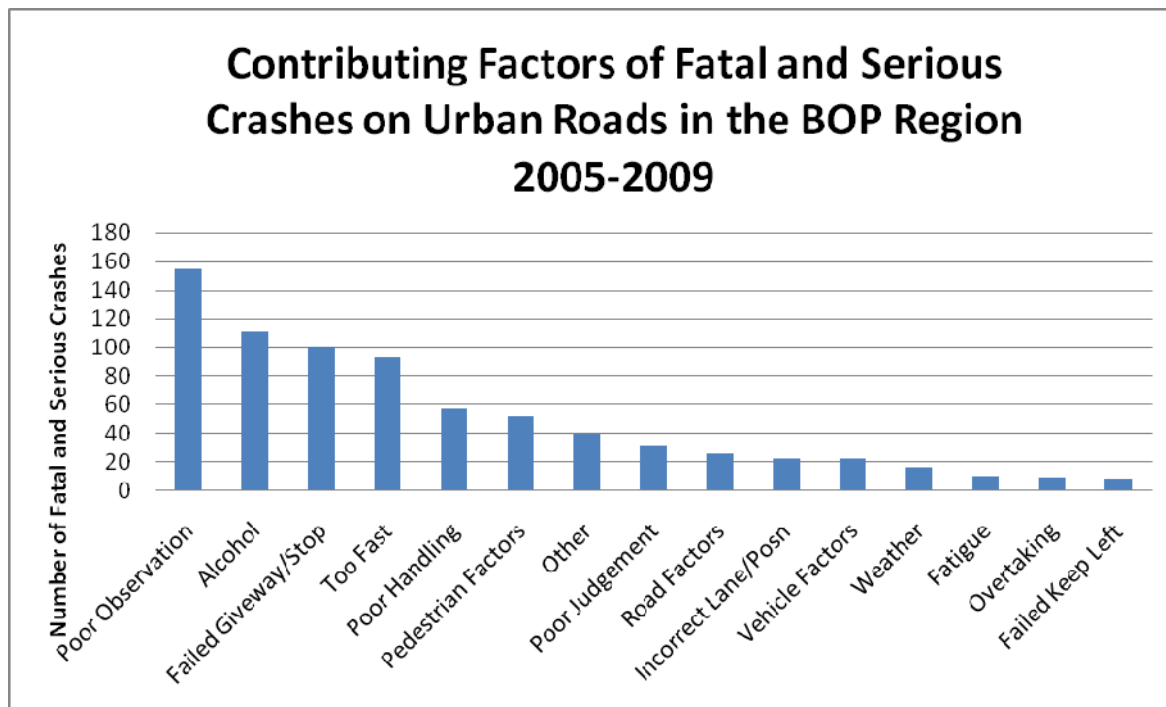


Figure 21: Contributing Factors of crashes on urban roads in the Bay of Plenty during 2005 - 2009

The leading overall contributing factor of crashes on all roads is 'poor observation'. This covers factors such as failing to see approaching vehicles and is a prominent factor of crashes at intersections.

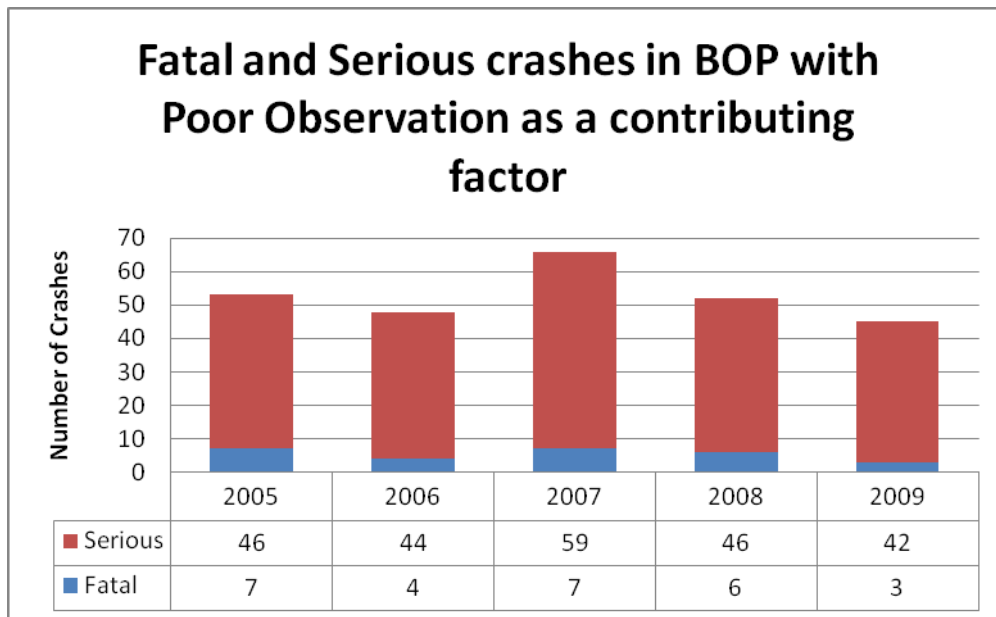


Figure 22 Fatal and serious crashes in the Bay of Plenty region that had 'poor observation' as a contributing factor as reported by Police 2005 – 2009

The second highest cause of crashes is 'alcohol'. Alcohol has steadily increased as a contributing factor in fatal and serious crashes over the last five years.

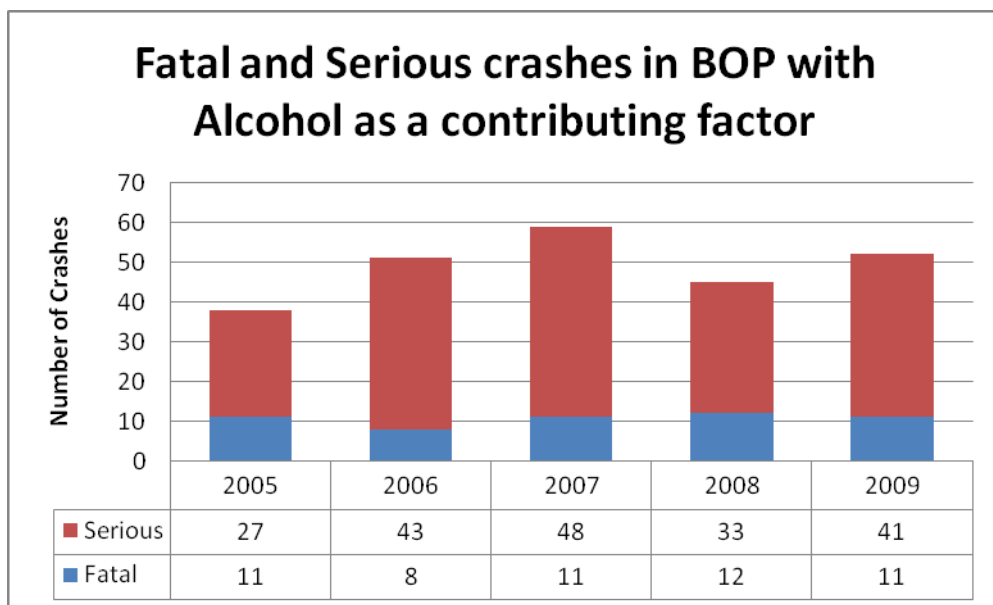


Figure 23: Fatal and serious crashes in the Bay of Plenty region that had 'alcohol' as a contributing factor as reported by Police 2005 - 2009

The third highest cause of crashes is 'too fast'. Too fast can be when a driver is travelling too fast for conditions but within the legal speed limit or when the driver is exceeding the legal speed limit. Fatal and serious crashes with too fast as a contributing factor have a slightly increasing trend over the last five years.

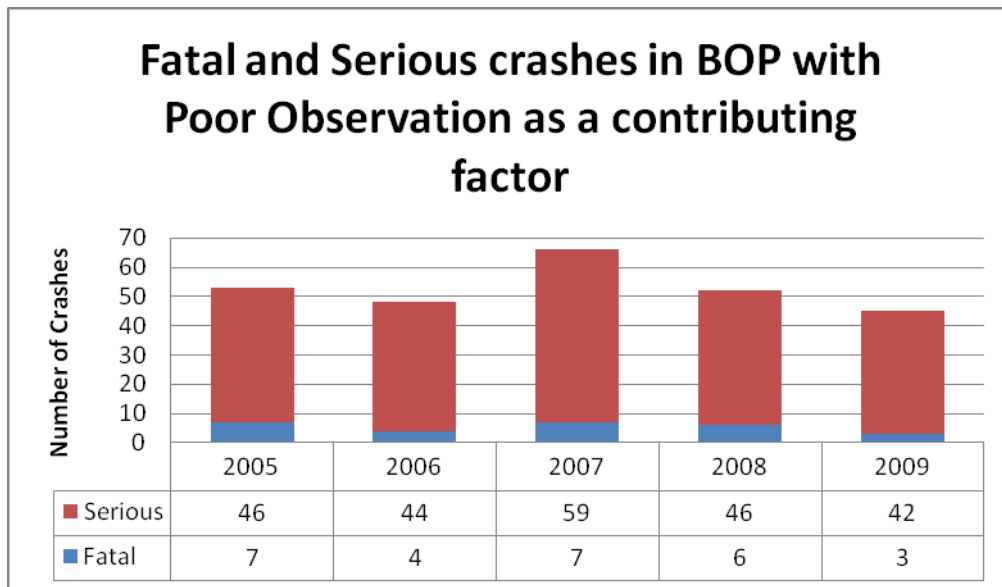


Figure 24: Fatal and serious crashes in the Bay of Plenty region that had 'too fast' as a contributing factor as reported by Police 2005 – 2009

Part 10: Driver age and sex

The age of drivers involved in crashes and the gender split conforms to the national trends for these figures. Male drivers aged between 15 and 24 are most at risk of being involved in a crash, with this group being involved in almost twice as many crashes as the next highest age or gender group. See Figures 25 to 28.

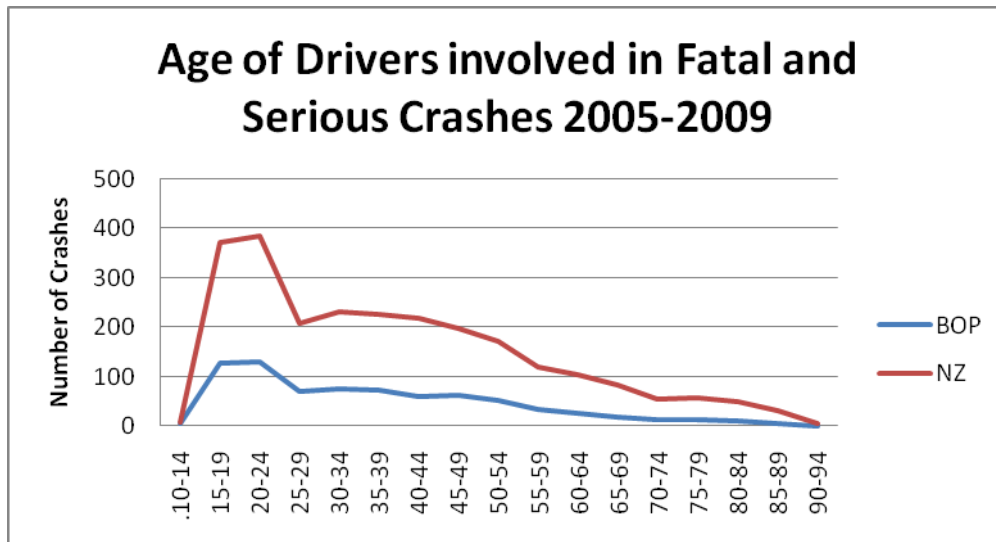


Figure 25: Age of Drivers involved in fatal and serious crashes for 2005 – 2009

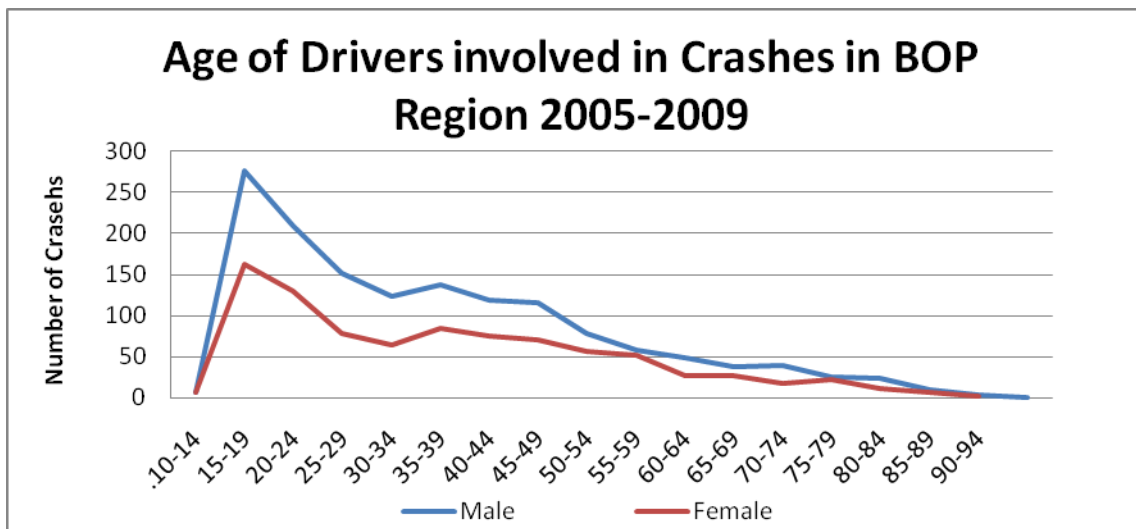


Figure 26: Age of drivers involved in all reported crashes in the Bay of Plenty for 2005 – 2009

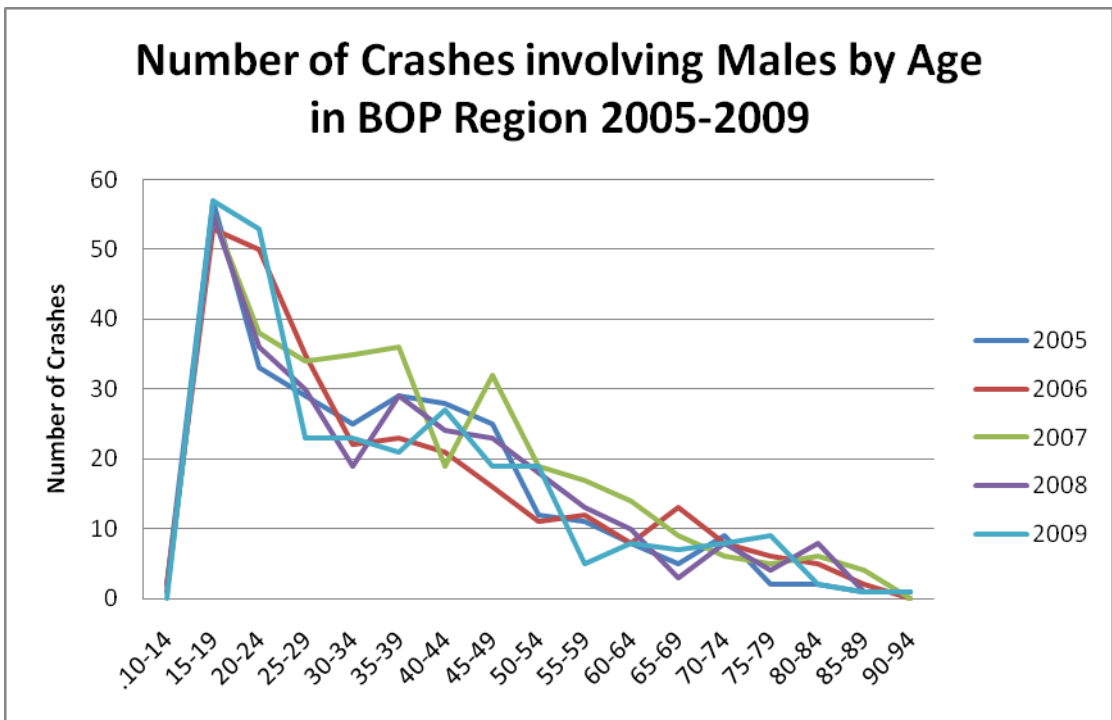


Figure 27: Age of male drivers involved in all reported crashes in the Bay of Plenty for 2005 – 2009

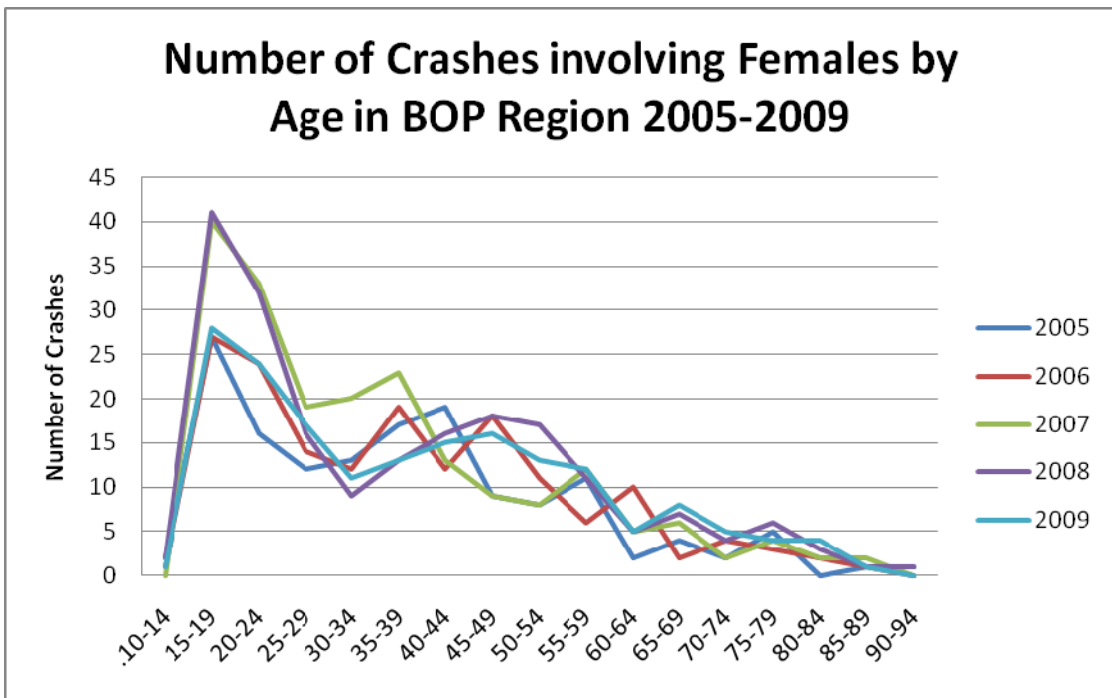


Figure 28: Age of female drivers involved in all reported crashes in the Bay of Plenty for 2005 – 2009

Part 11: Driver License type

There has been a small but significant increase in the number of crashes involving drivers that have a restricted or overseas driver's license, or have never been licensed to drive at all.

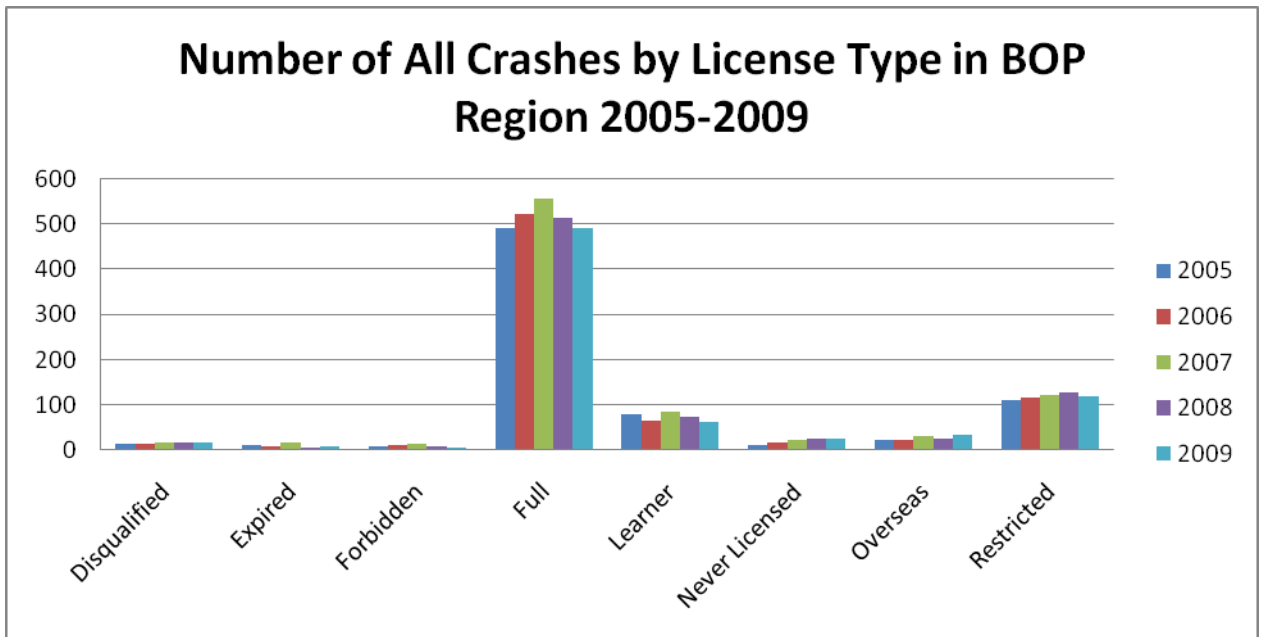


Figure 29: Number of all crashes by license type in Bay of Plenty for 2005 – 2009

Part 12: Vehicle Types

Generally, the types of vehicles involved in crashes have declined in line with overall crash numbers. This is in spite of the number of vehicles on the roads increasing significantly over the last five years. However, SUV's are rising against the downward trend with an increase in the number of SUV's involved in crashes over the last five years.

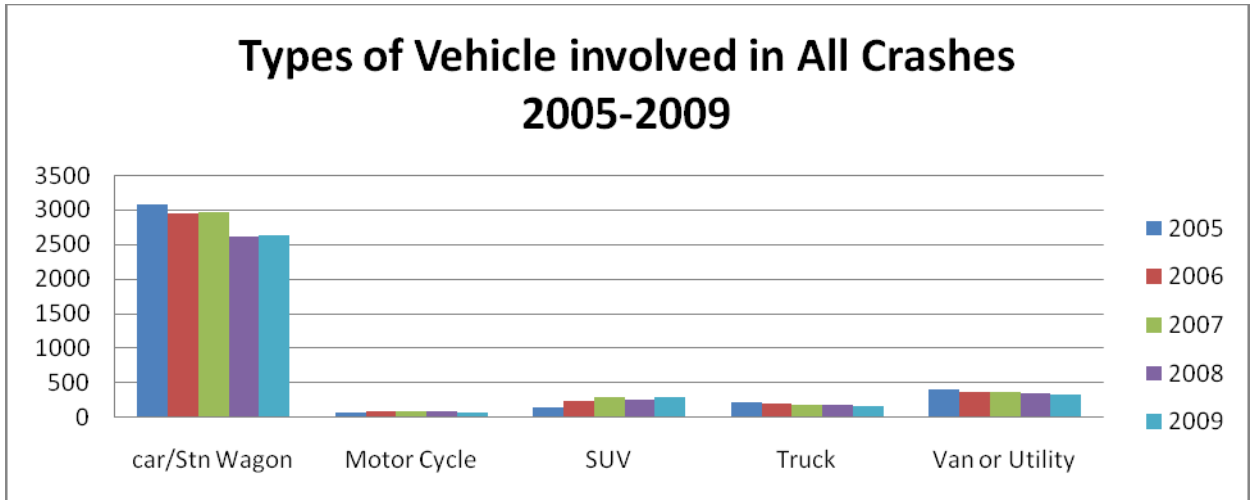


Figure 30: Number of crashes in the Bay of Plenty for 2005 – 2009 split by vehicle type.

Part 13: Vulnerable road users

Crashes involving vulnerable road users such as pedestrians and cyclists, do not have as high a number as other vehicles as shown in Figure 30. However, data regarding crashes or incidents (trips or falls of pedestrians) of these modes of transport is not very complete as crashes tend to be reported only if they involve a motor vehicle or result in a serious or fatal injury. It is of interest to note that there has been an increase in cycle crashes in the reported data.

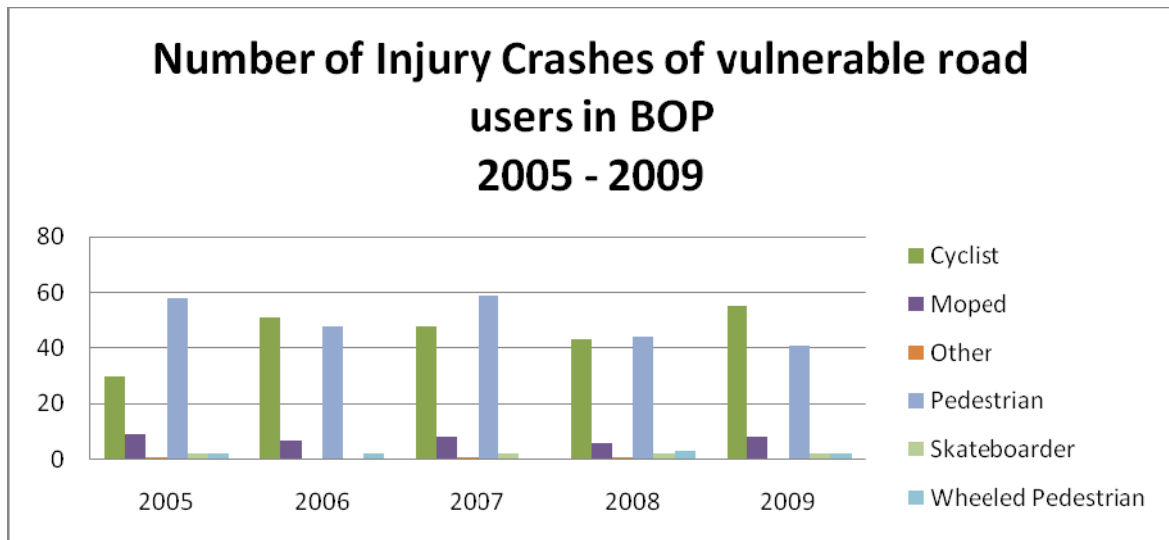


Figure 31: Number of injury crashes in the Bay of Plenty for 2005 – 2009 split by vulnerable road user type.

Part 14: Sub-regional trends

Over the entire Bay of Plenty region, most Territorial Local Authorities (TLA's) have recorded a decreasing trend in the number of crashes occurring within their boundaries. Western Bay of Plenty and Opotiki districts are the exceptions to this trend recording a steady increase over the last five years.

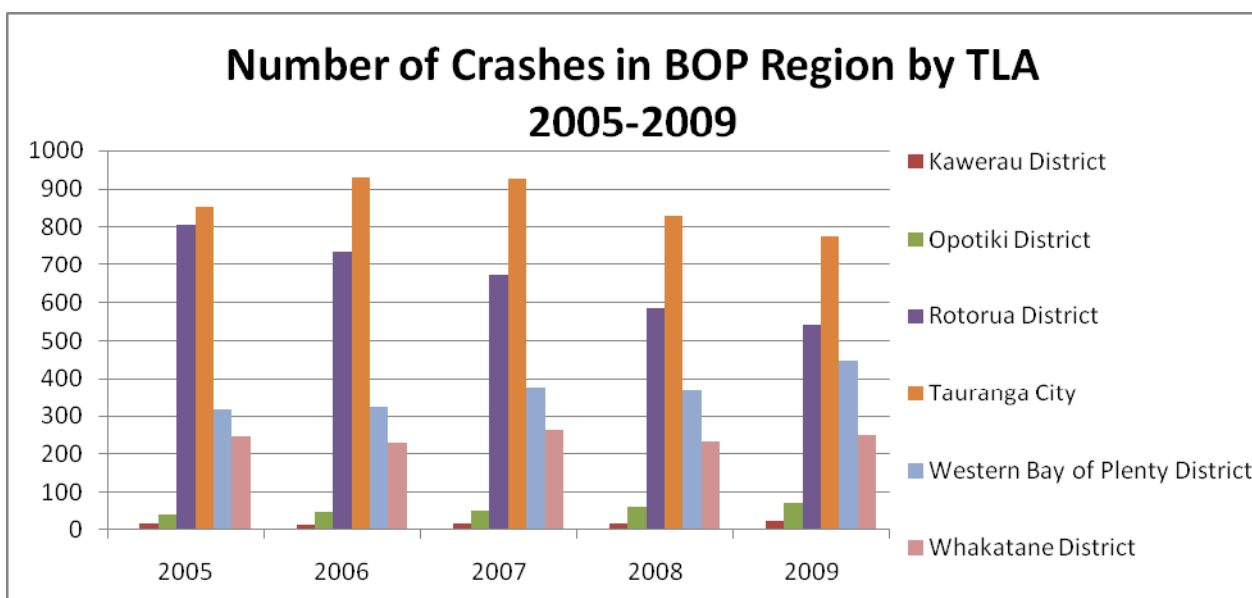


Figure 32: Number of all crashes in the Bay of Plenty for 2005 – 2009 split by TLA. Note: The crashes occurring in the Taupo district and Hauraki district that are in the Bay of Plenty region have been removed from this graph as the numbers were very low.

14.1 Western Bay of Plenty/Tauranga sub-region

The western Bay of Plenty/Tauranga sub-region is dominated by the Tauranga city urban network and the western Bay of Plenty state highway network. This is shown in Figure 33 on the next page.

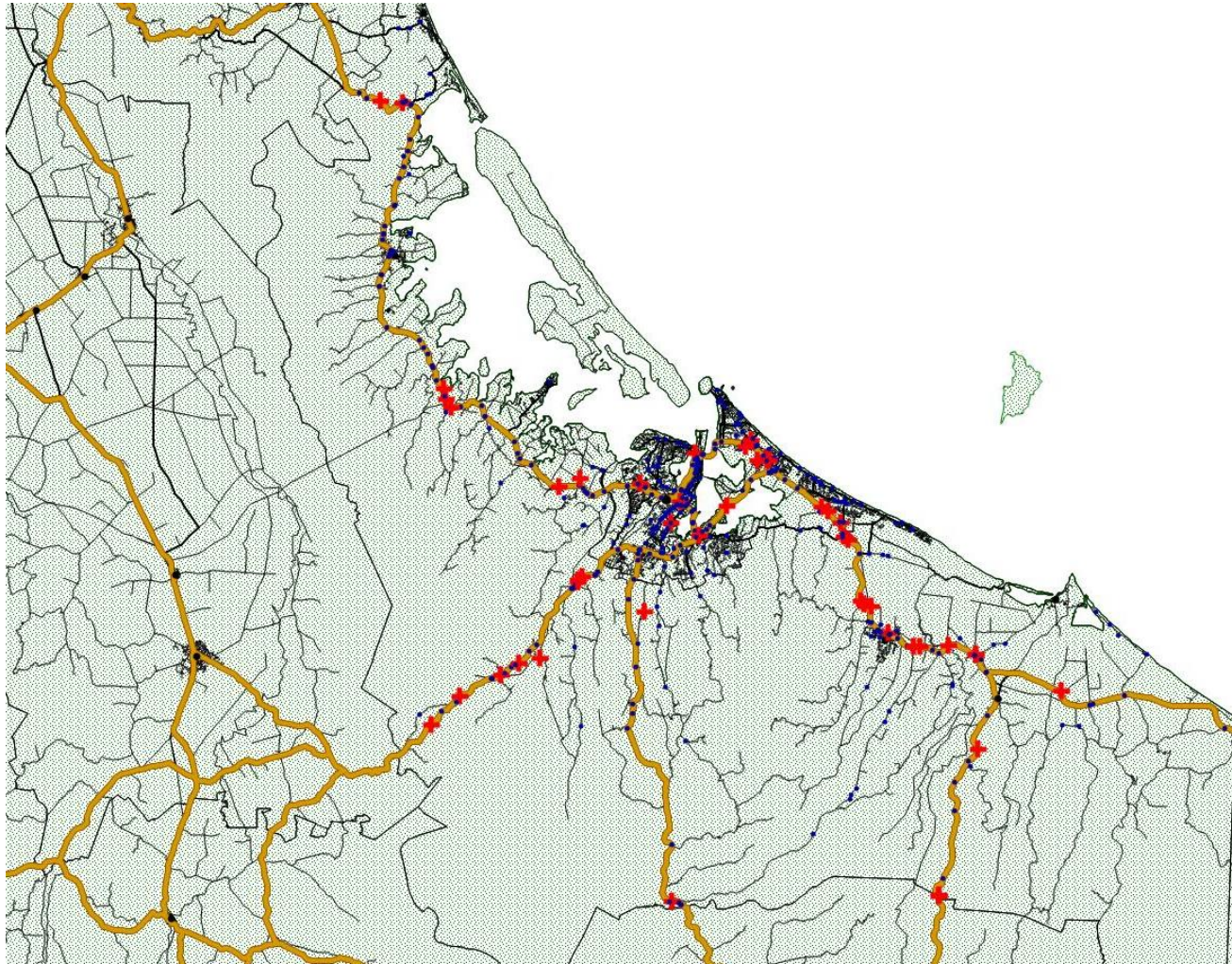


Figure 33: Location of fatal and serious crashes in the western Bay of Plenty/Tauranga sub-region 2005-2009

The number of fatal crashes in the sub-region has remained steady while the number of serious and minor injury crashes has increased over the last five years.

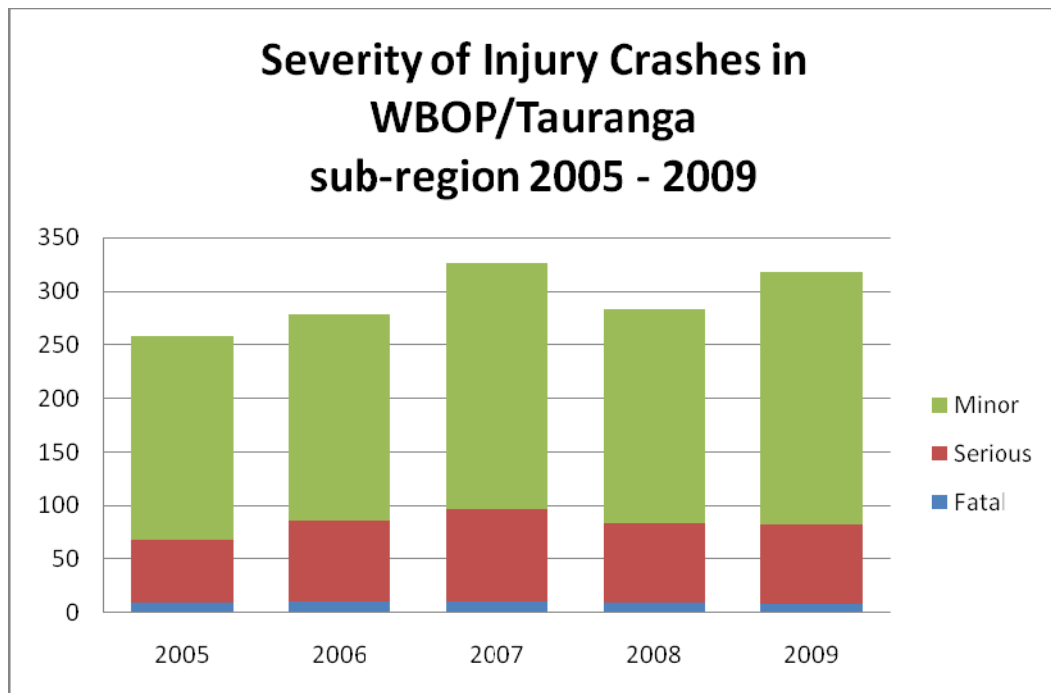


Figure 34: Severity of Injury crashes in the western Bay of Plenty/Tauranga sub-region 2005 - 2009

The number of fatal and serious crashes occurring on urban roads has remained steady during 2005 – 2009. This is offset by an increase in rural crashes over the same time.

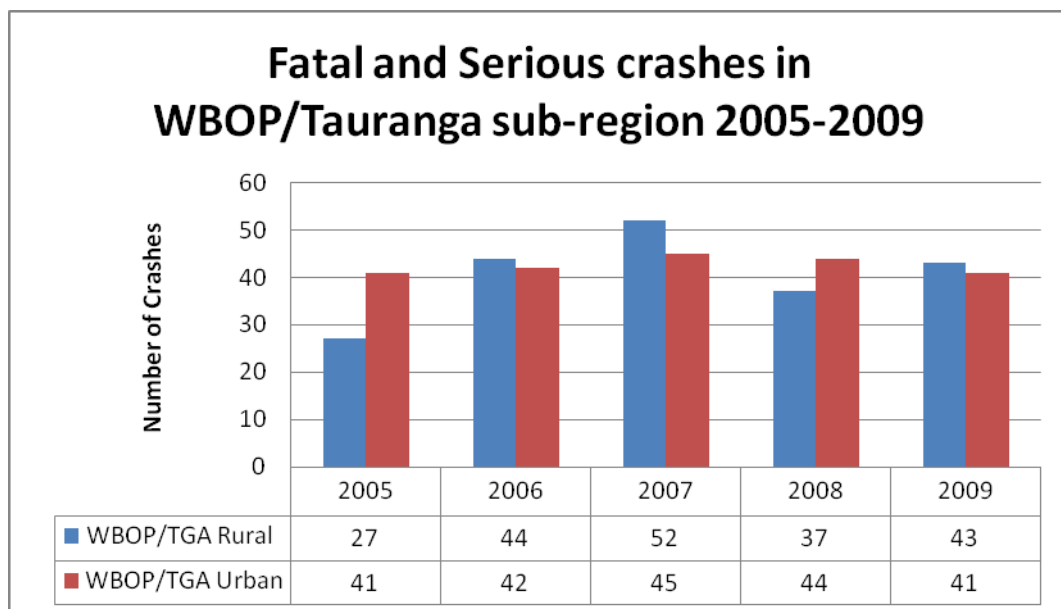


Figure 35: Fatal and Serious crashes in WBOP/Tauranga sub-region for 2005 – 2009 split by Urban/Rural road type

Crashes on local roads have slightly increasing trend with around 40 per year. State highway crashes also have an increasing trend over the last five years. There has been an increase in the vehicle kilometres travelled on state highways in the western Bay of Plenty/Tauranga sub-region during the same period.

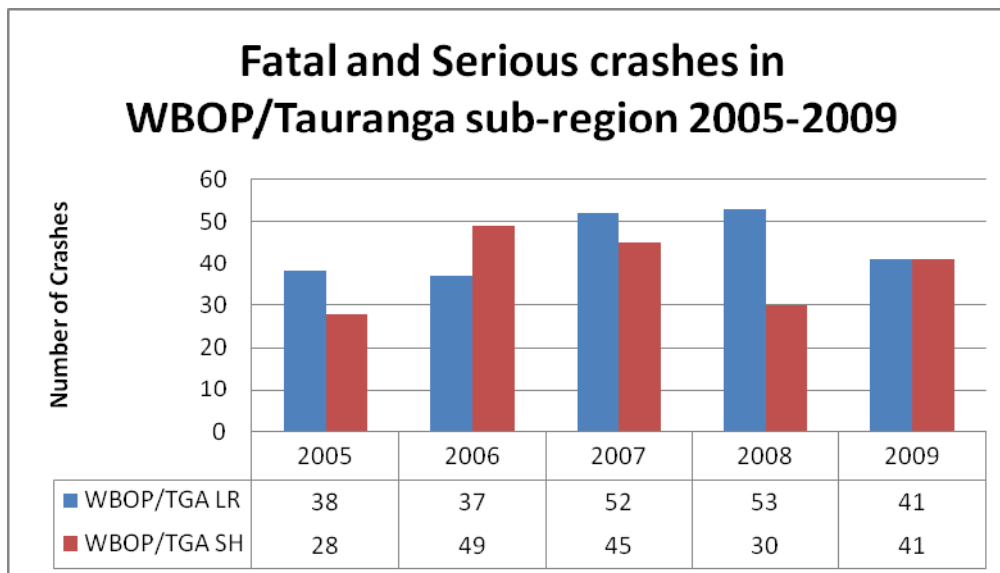


Figure 36: Fatal and serious crashes in western Bay of Plenty/Tauranga sub-region for 2005 – 2009 split by local road/state highway

While the number of crashes at intersections has slightly decreased over the last five years, the number of crashes occurring at mid block locations has increased over the same period. This correlates to the fact that most state highway crashes occur at mid block locations.

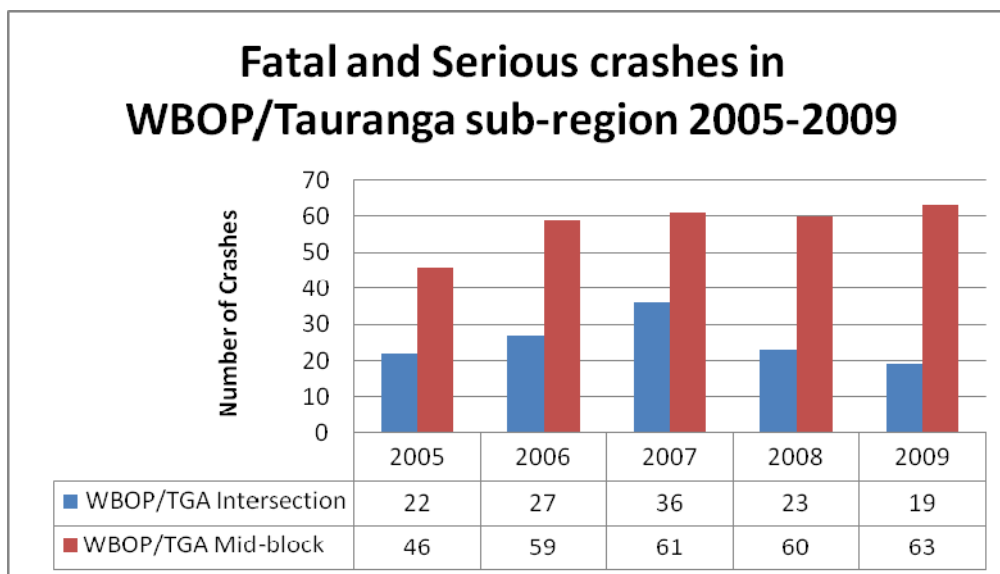


Figure 37: Fatal and serious crashes in western Bay of Plenty/Tauranga sub-region for 2005 – 2009 split by occurrence at intersection or mid block

The contributing factors of fatal and serious crashes in the western Bay of Plenty/Tauranga sub-region are reflective of the causes in the whole Bay of Plenty region. There are only minor differences in order of the top five contributing factors in Figure 38 below when compared to Figure 19 which sees poor handling slipping from fourth to fifth highest.

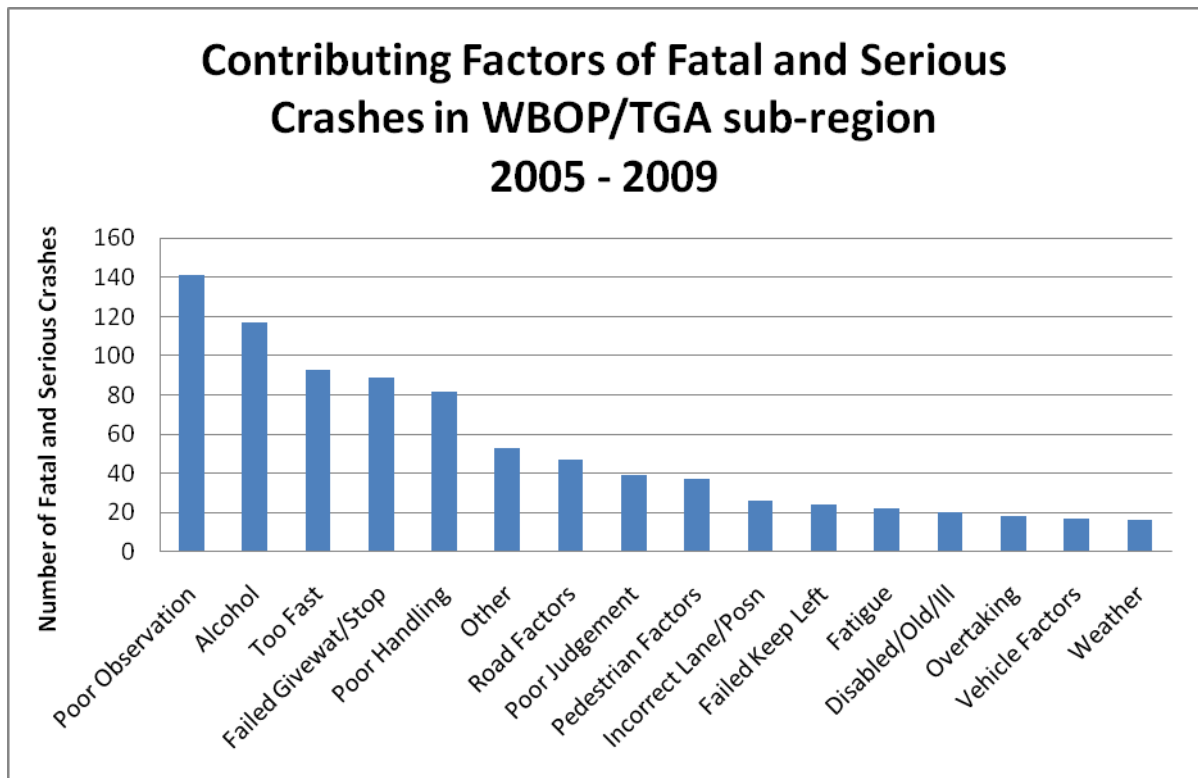


Figure 38: Contributing factors of fatal and serious crashes in western Bay of Plenty/Tauranga sub-region for 2005 – 2009

In the NZTA communities at Risk Register, Tauranga and western Bay of Plenty feature prominently in many of the 'high risk groups'. This register highlights the upper 25% of all TA's within a particular crash factor or at risk group. Between them Tauranga and western Bay of Plenty are in the upper 25% on 12 of the lists. These 12 high risk groups are shown in Figure 39 against the national average for all New Zealand.

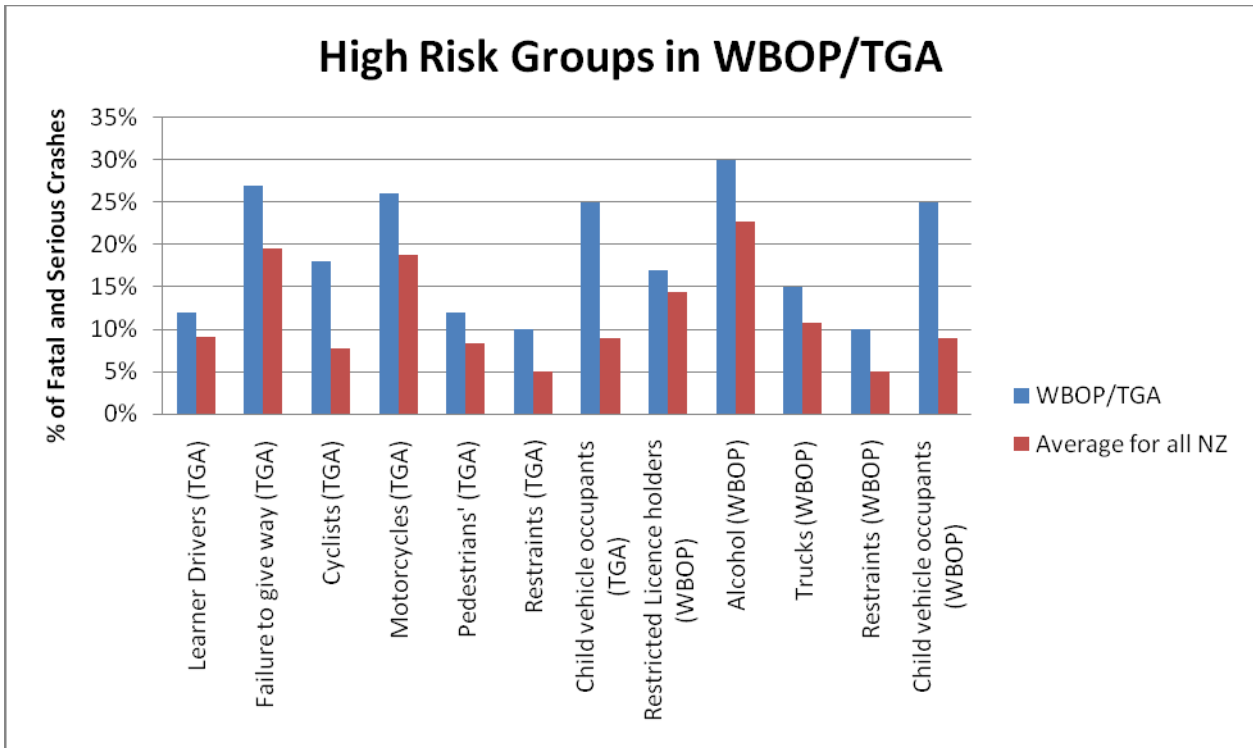


Figure 39: High Risk Groups in western Bay of Plenty/Tauranga as identified in NZTA's communities at Risk Register

14.2 Rotorua sub-region

The Rotorua sub-region has both the Rotorua urban network and the state highways surrounding the city. This is shown in Figure 40 on the next page.

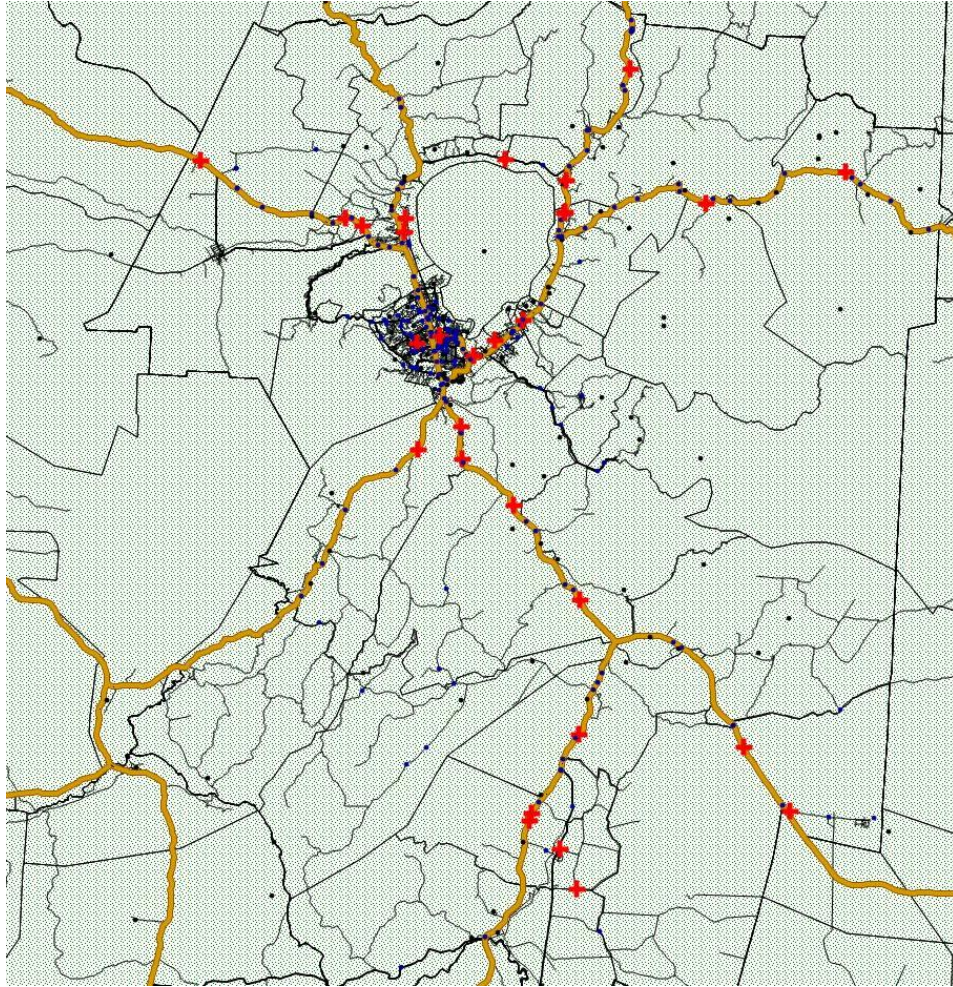


Figure 40: Location of fatal and serious crashes in the Rotorua sub-region 2005-2009

The number of fatal crashes in the sub-region has remained steady while the number of serious and minor injury crashes has decreased over the last three years.

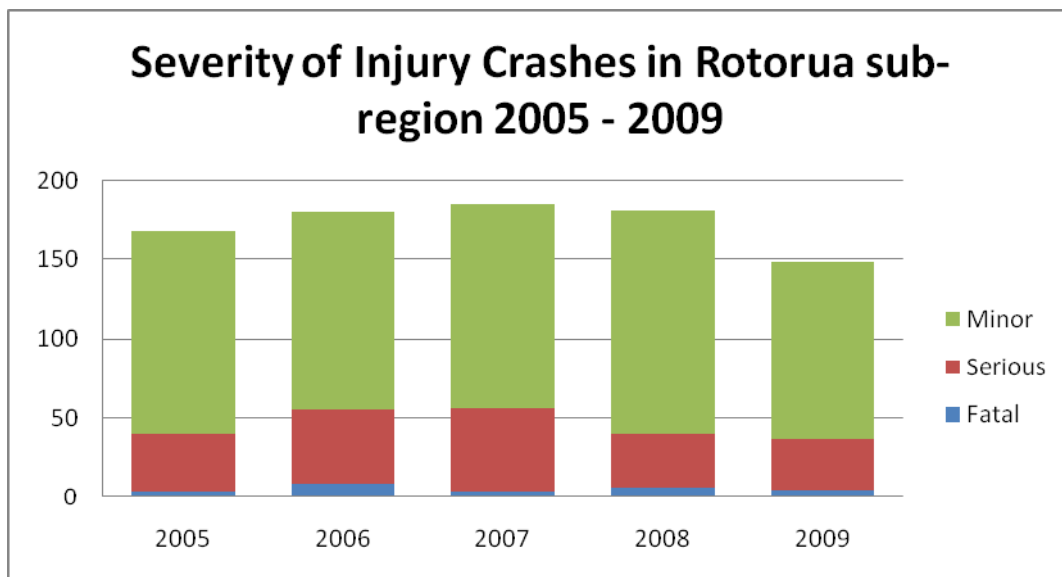


Figure 41: Severity of injury crashes in the Rotorua sub-region 2005 - 2009

The number of crashes occurring on rural roads has a downward trend during the last three years. Urban crashes have also decreased over the same time by a lesser amount.

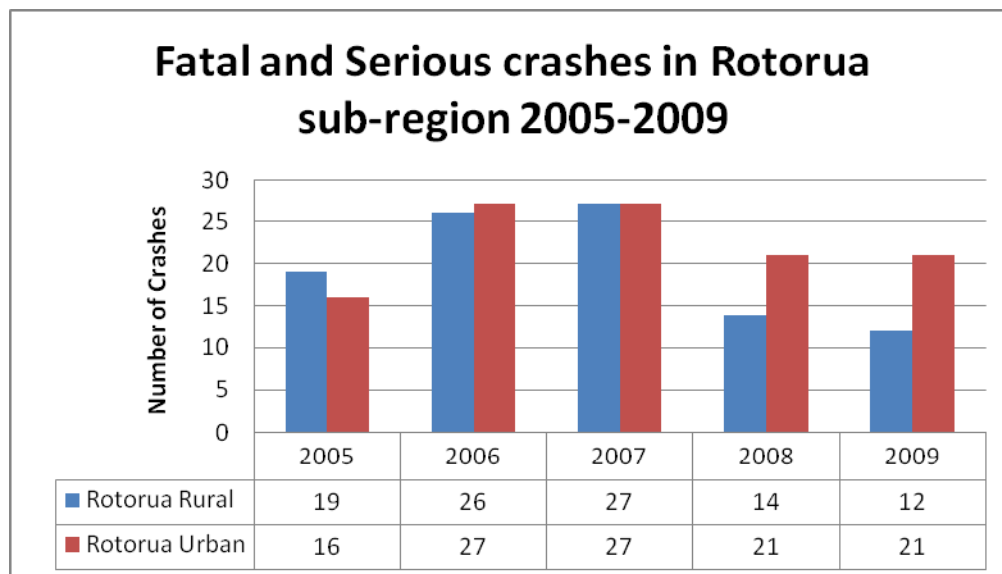


Figure 42: Fatal and serious crashes in Rotorua sub-region for 2005 – 2009 split by urban/rural road type

Crashes on local roads and state highways in the Rotorua area have decreased over the last three years.

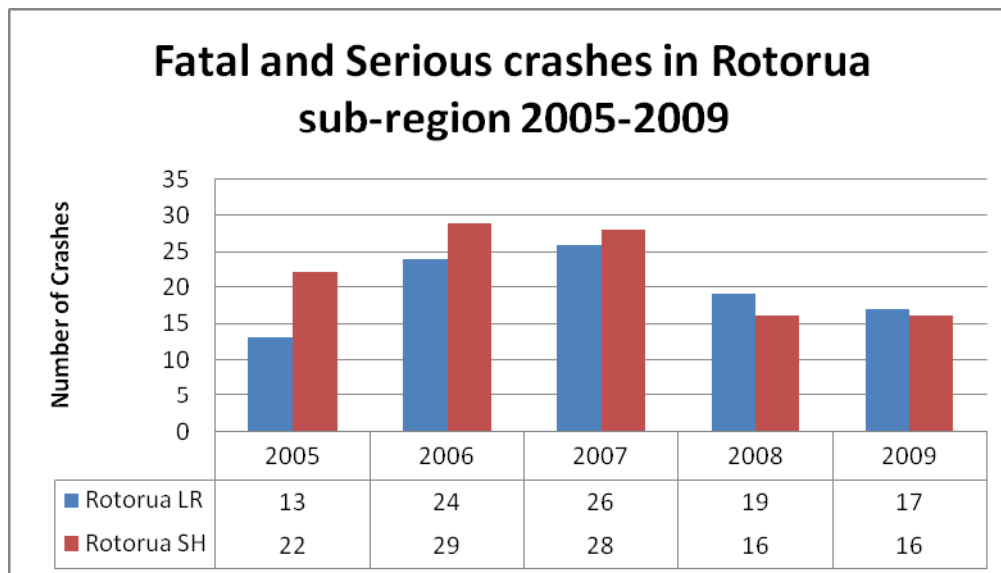


Figure 43: Fatal and serious crashes in Rotorua sub-region for 2005 – 2009 split by local road/state highway

The number of fatal and serious mid-block crashes has decreased over the last five years while the number of intersection crashes has remained steady.

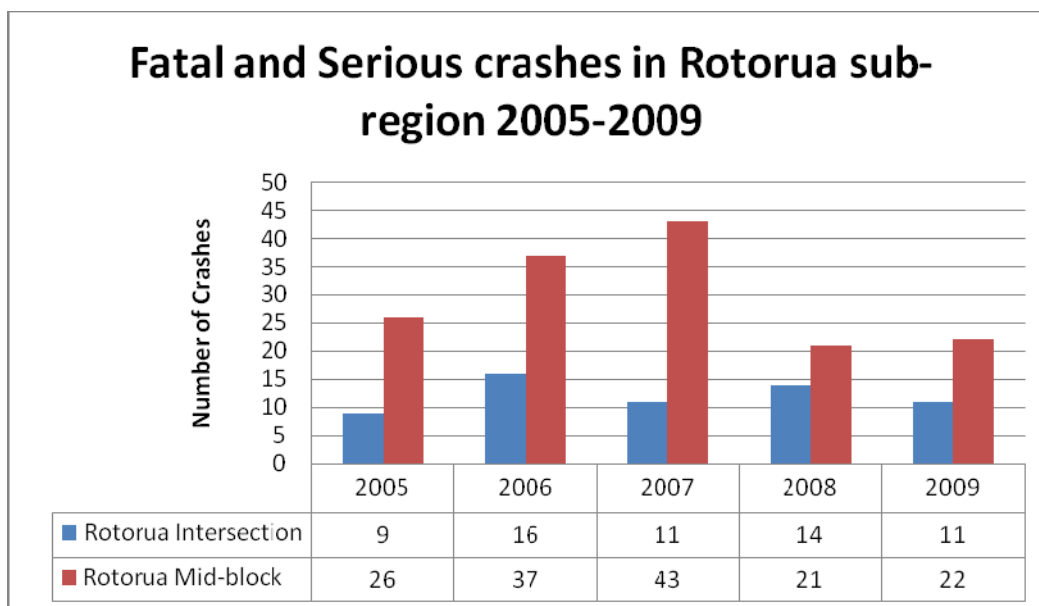


Figure 44: Fatal and serious crashes in Rotorua sub-region for 2005 – 2009 split by occurrence at intersection or mid block

The cause of crashes in the Rotorua sub-region is reflective of the causes in the whole Bay of Plenty region. The only difference in order of causes in Figure 45 below when compared to Figure 19 is that road factors is slightly higher in the Rotorua sub-region.

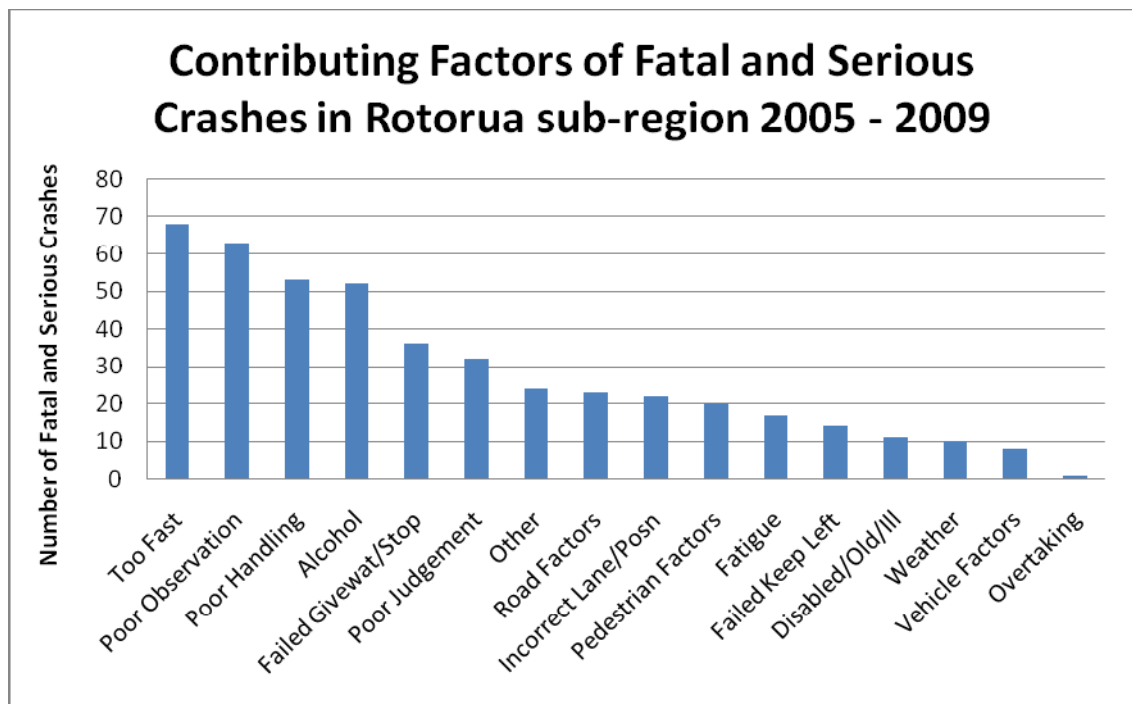


Figure 45: Contributing factors of fatal and serious crashes in Rotorua sub-region for 2005 – 2009

In the NZTA Communities at Risk Register, Rotorua features prominently in four of the 'high risk groups'. This register highlights the upper 25% of all TA's within a particular crash factor or at risk group. These four high risk groups are shown in Figure 46 against the national average for all New Zealand.

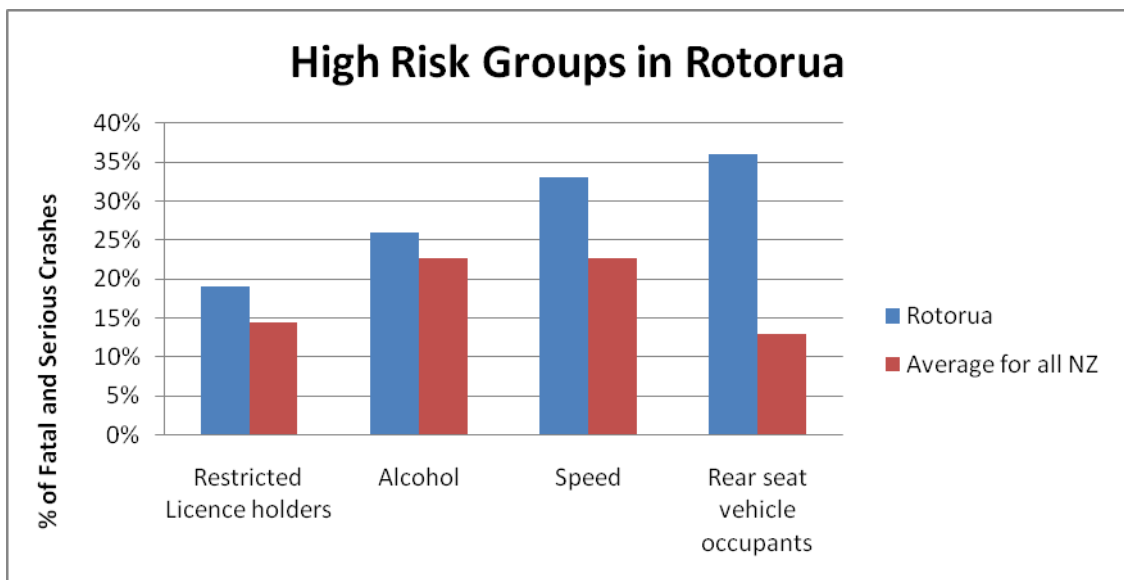


Figure 46: High Risk Groups in Rotorua as identified in NZTA's Communities at Risk Register

14.3 Eastern Bay of Plenty sub-region

The eastern Bay of Plenty sub-region is mainly made up of rural local roads with state highways linking the main destinations. There are also the smaller urban areas of Whakatane, Opotiki and Kawerau. The locations of fatal and serious crashes in the eastern Bay of Plenty are shown in Figure 47 on the next page.

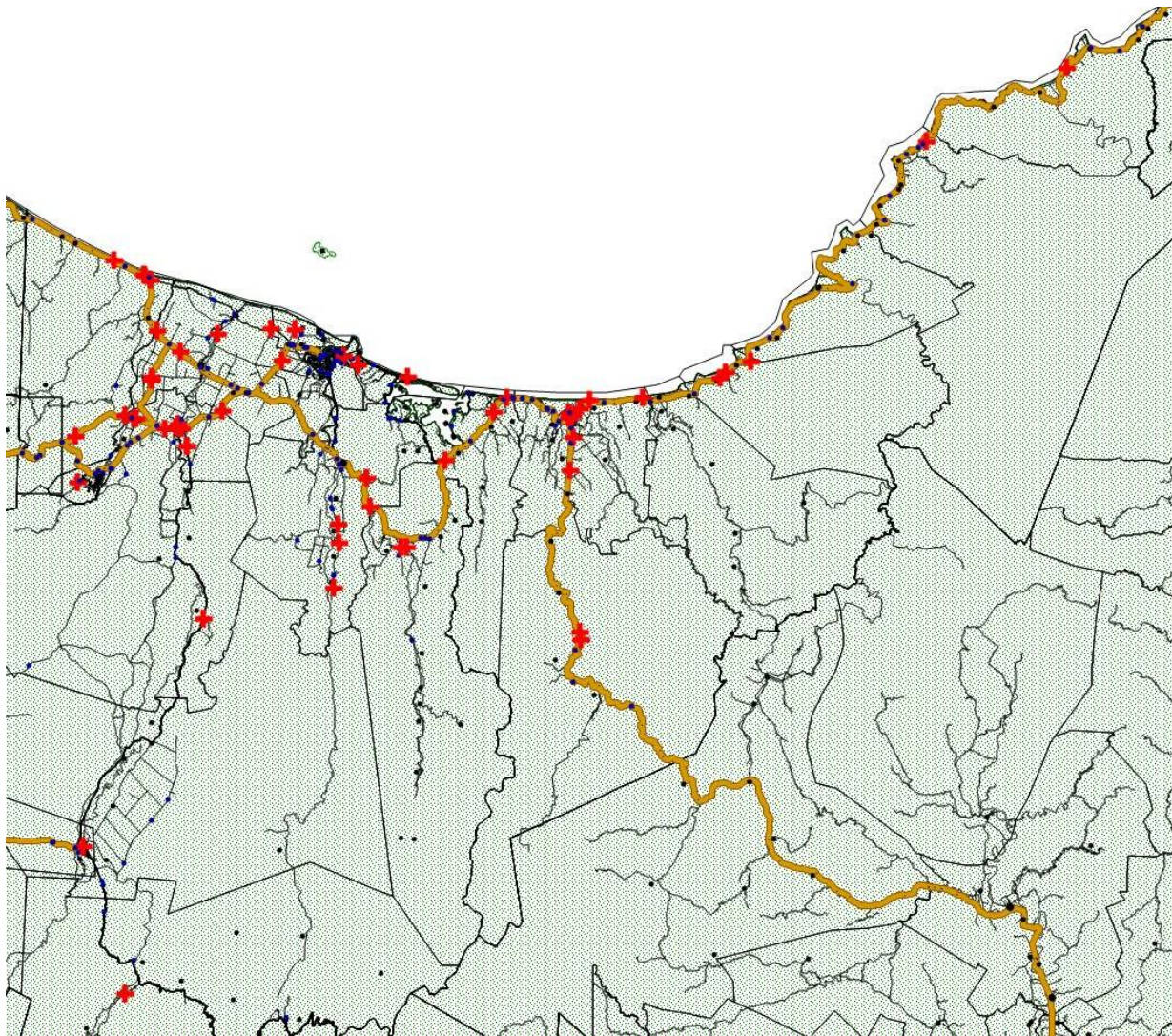


Figure 47: Location of fatal and serious crashes in the eastern Bay of Plenty sub-region 2005-2009

The number of fatal and serious crashes in the sub-region has remained steady while the number of minor injury crashes has increased over the last five years.

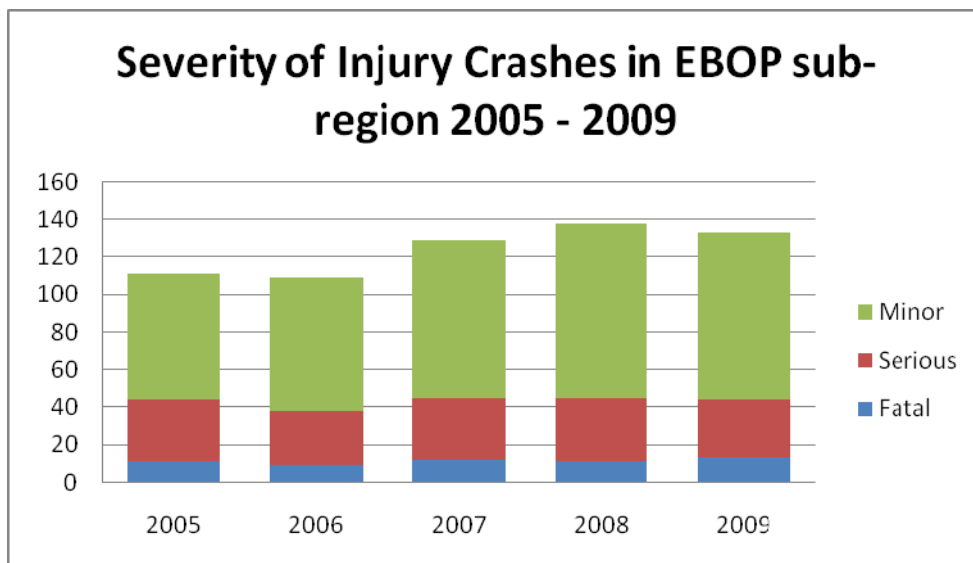


Figure 48: Severity of injury crashes in the eastern Bay of Plenty sub-region 2005 - 2009

The number of crashes occurring on urban roads had an increasing trend during 2005 – 2009. There has been a slight decrease in rural crashes over the same time. The split between the number of crashes on urban and rural roads is the closest of all the sub-regions with approximately a 40/60 split.

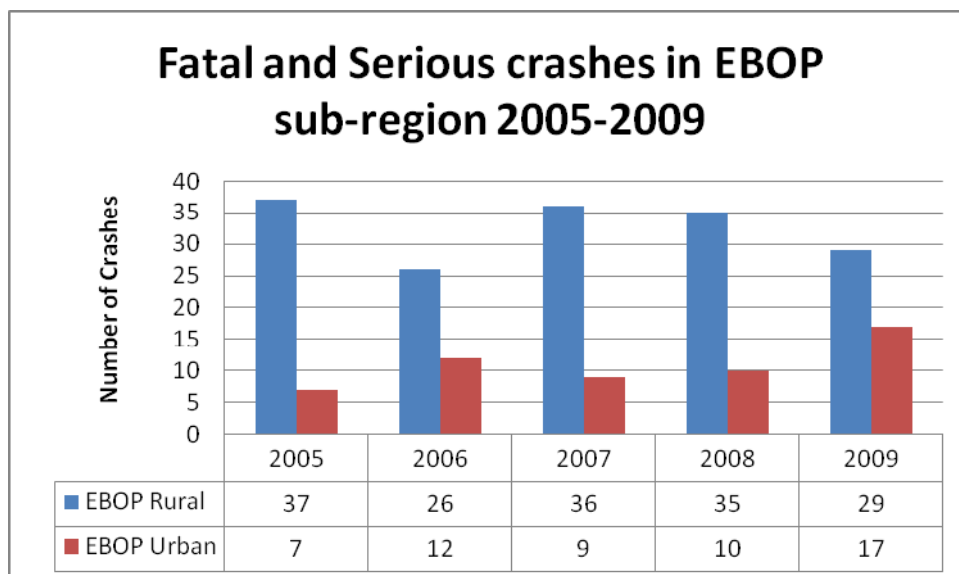


Figure 49: Fatal and serious crashes in the eastern Bay of Plenty sub-region for 2005 – 2009 split by urban/rural road type

Crashes on local roads have also increased over the last five years. The number of crashes on state highway crashes has increased as well over the last five years.

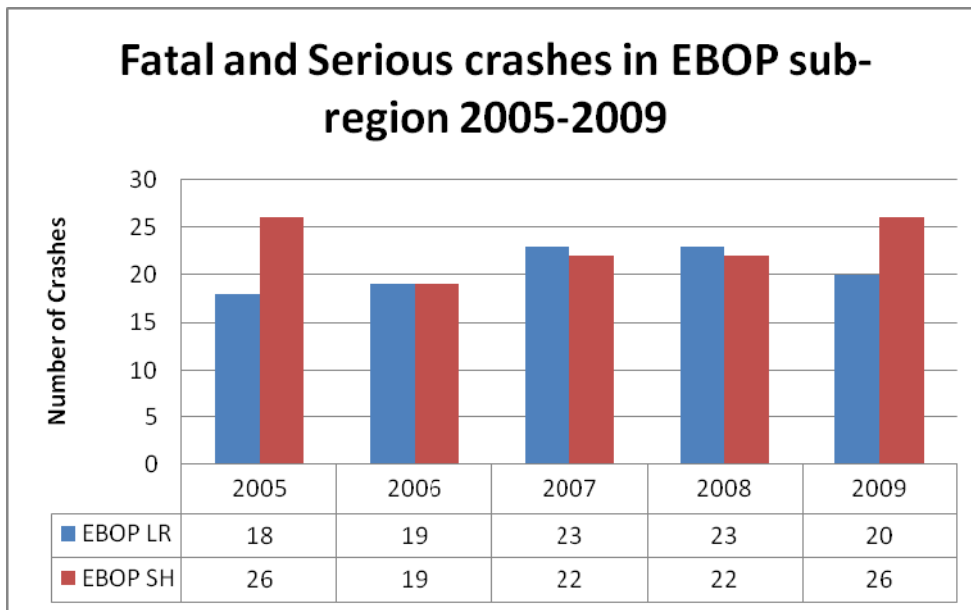


Figure 50: Fatal and serious crashes in the eastern Bay of Plenty sub-region for 2005 – 2009 split by local road/state highway

There are slight increasing trends in the number of both intersection and mid block crashes. There is a higher proportion of mid block crashes in this sub-region.

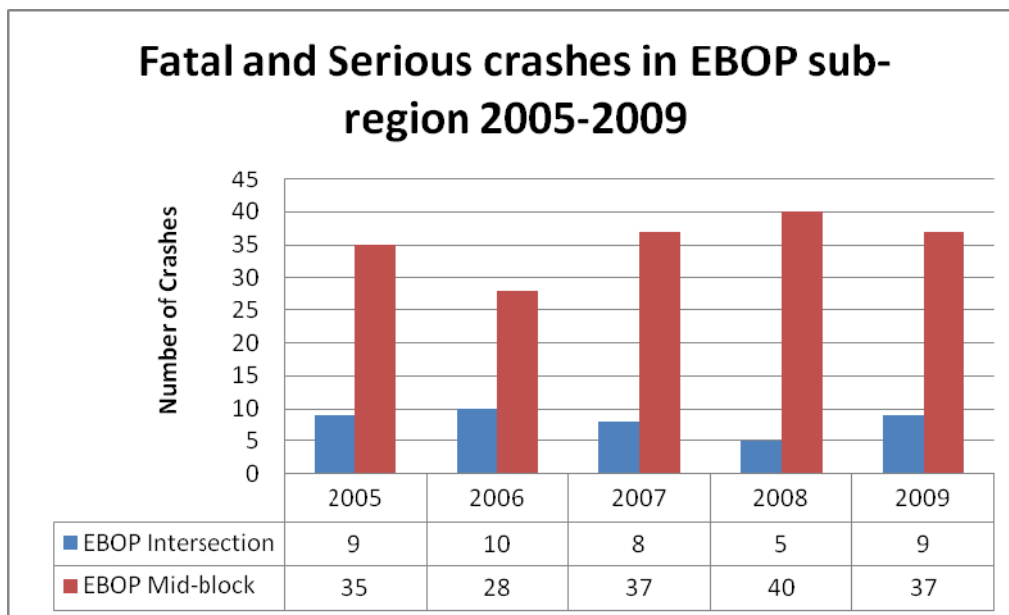


Figure 51: Fatal and serious crashes in EBOP sub-region for 2005 – 2009 split by occurrence at Intersection or Mid Block

The cause of crashes in the eastern Bay of Plenty sub-region is slightly different to the causes in the whole Bay of Plenty region. The causes of 'alcohol' and 'poor handling' are attributed to a larger proportion of crashes than in the other sub-regions. Road factors are also over represented as causes when compared to Figure 19.

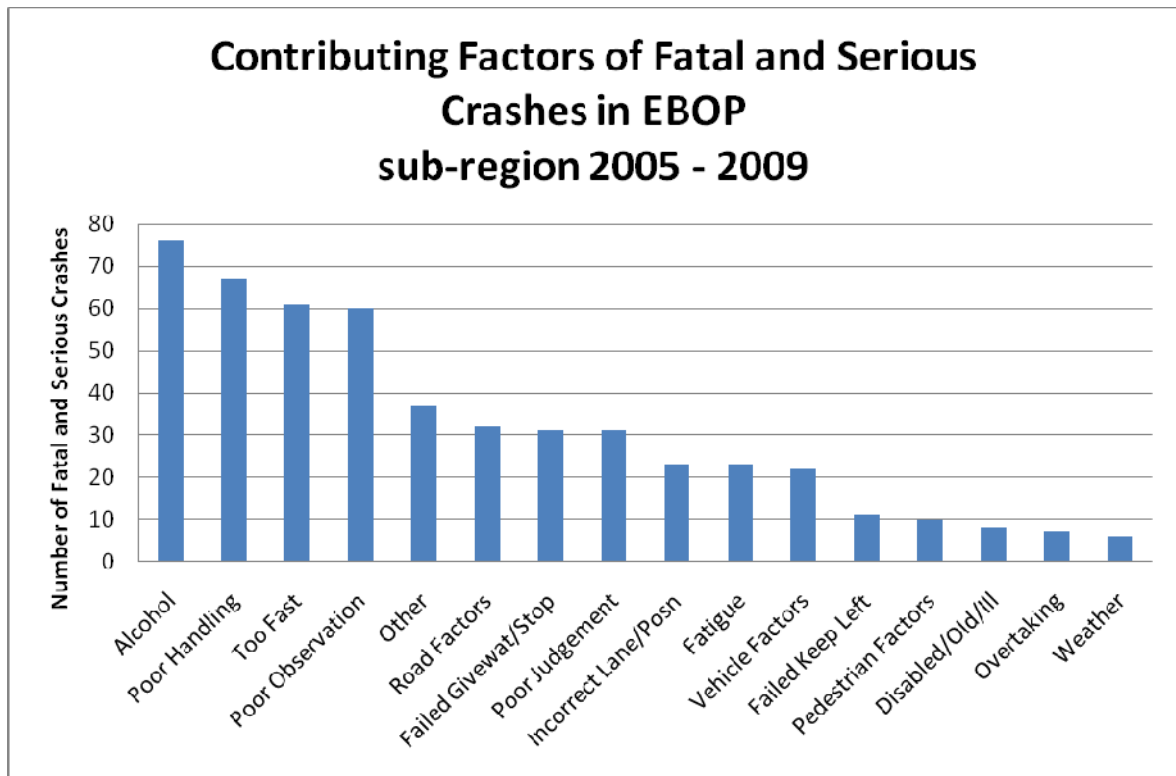


Figure 52: Contributing factors of fatal and serious crashes in the eastern Bay of Plenty sub-region for 2005 – 2009

In the NZTA Communities at Risk Register, eastern Bay of Plenty features prominently in eight of the 'high risk groups'. This register highlights the upper 25% of all TA's within a particular crash factor or at risk group. These eight high risk groups are shown on the next page in Figure 53 against the national average for all New Zealand.

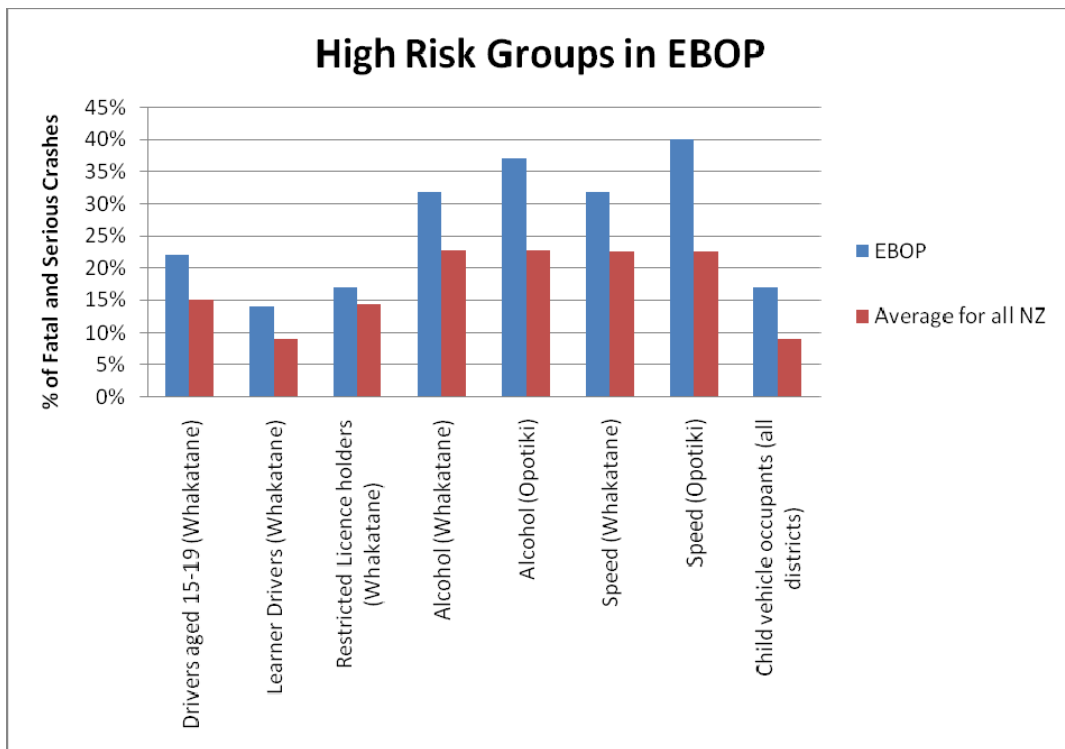


Figure 55: High risk groups in eastern Bay of Plenty as identified in NZTA's Communities at Risk Register