# 2008/2009 Annual Monitoring Report on the Regional Land Transport Strategy

October 2009

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# 2008/2009 Annual Monitoring Report on the Regional Land Transport Strategy

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# Executive summary

This report has been prepared in accordance with Section 83 of the Land Transport Management Act 2003 and reports progress in implementing the Wellington Regional Land Transport Strategy (RLTS) 2007 – 2016.

A wide range of performance indicators are used to measure progress against the outcomes and associated targets identified in the Wellington RLTS. Additional indicators provide comprehensive supporting information relevant to the region's transport network in sections titled 'environmental quality' and 'affordability', and in the appendices reflecting regional demographics and travel demand.

Further monitoring, investigation and development of new performance indicators is required to be able to measure progress against all RLTS outcomes to 2016. These are identified throughout this report.

## Key findings

Key findings across the various indicators include:

### Road safety

☹ **Continued high crash and casualty levels**

The number of killed and seriously injured in the Wellington Region rose to 376 casualties after the indicative Police reporting rate was taken into account. The total number of injury crashes remained steady (dropping slightly from 1,212 to 1,193) in 2008, but remains at a high level. This follows the trend since 2000 where total injury crashes have climbed strongly, indicating that current efforts to improve regional road safety require renewed focus. See Figures 60 and 61.

### Cyclist casualties

☹ **Continued high cyclist casualty level**

Cyclist casualties remained at the same level from the previous year (150 in 2007, 149 in 2008). As the 2008 data is updated retrospectively next year, it is likely that the 2008 casualty number may increase. On the basis of distance travelled, cycling in the region has a much higher risk than other modes of transport (Figure 66).

Cyclist casualty numbers are required to halve if the RLTS target to 2016 of 'fewer than 75 cyclists injured in the region per annum' is to be reached. Only in 2000 and 2003 were cyclist casualties at a similar level to this target (Figure 42).

### Fuel use and carbon dioxide emissions

😐 **High fuel use**

Diesel and petrol consumption and consequent $CO_2$ emissions for the region decreased in 2008/09 but exceeded RLTS targets. Fuel sales reached 451 million litres in 2008/09 (463 in 2007/08), 9 million litres over the target maximum of 442 million litres per annum. This decrease is due to a drop in petrol consumption and occurred despite the price of petrol index falling 2% over the same time period (Figure 48).

The RLTS target of keeping annual transport generated $CO_2$ emissions to below 1,065 kilotonnes was exceeded by 19 kilotonnes in 2008/09 (down from 48 kilotonnes in 2007/08). Carbon dioxide emissions from land transport fuel combustion were 1,084 kilotonnes, a decrease of 29 kilotonnes from 2007/08 (Figure 45).

Fuel use in the region is likely to grow with diesel sales forecast to increase dramatically. However, the long-term trend over the past few years has demonstrated that fuel sales and the consequent $CO_2$ emissions have remained relatively steady despite a growing population.





### Public transport patronage

😐 **Static peak period public transport patronage**

The number of passenger trips made by public transport during the peak periods decreased slightly by 68,000 in 2008/09 to a total of 17.5 million, significantly below the RLTS target. This follows 2007/08 patronage at 17.6 million and 2006/07 patronage of 17.5 million.

Trips by bus in 2008/09 decreased by over 260,000 while train trips increased by over 196,000. The harbour ferry also carried more passengers during 2008/09.

Off-peak public transport trips increased by over 800,000 to a total of 18 million trips during 2008/09, almost in line with the RLTS target of 18.2 million. This increase was mainly due to passenger bus travel on off-peak services with both rail and harbour ferry passenger numbers rising also.

See Figures 2 and 7.

### Road congestion

😐 **Slight improvement to congestion**

All day average congestion on the region's strategic roads was 21.0 seconds delay per kilometre travelled in March 2009, a decrease of 15% from March 2008 but still above the RLTS target. Congestion decreased during all periods of the day with the highest recorded delay in the AM and PM peak periods. Delay experienced per kilometre travelled in the AM peak is the greatest of the three periods at 25 seconds. See Figures 52 and 54.

## Summary of progress

The report also includes an overall summary of progress in implementing projects, activities and actions identified within the various RLTS implementation documents. A number of milestones were recorded for the 2008/09 year including:

### Strategy

- adoption of the Ngauranga to Wellington Airport Corridor Plan (October 2008)
- adoption of the Regional Walking Plan (October 2008)
- adoption of the Regional Cycling Plan (December 2008)
- endorsement of the Wellington Regional Rail Plan (February 2009)
- completed the first Regional Land Transport Programme 2009-12 (June 2009)

### Passenger transport

- delivery of short term additional capacity rolling stock
- completed alteration of rail station at Naenae (April 2009)
- introduction of new Metlink bus and train fare structure and new fares (September 2008)

### Travel demand management, walking and cycling

- launch of the Let's Carpool website (May 2009)
- 12 workplaces and 24 schools participating in travel plan programme

The report also sets out major programmes and projects which are scheduled to be commenced or completed in the 2009/10 financial year and identifies known and potential obstacles to implementing the RLTS.

# Executive summary

## 2008 Regional land transport report card

This report card sets out the Wellington RLTS key outcomes, associated 2016 targets, and the 2008/09 result for those indicators which measure progress in achieving them.

An assessment of the trend in progressing towards the 2016 targets from the last available result is also provided where possible.

Measurement against the 2016 target for improved road safety *(There are no road crash fatalities attributable to roading network deficiencies)* is not available. Therefore the region's total killed and serious casualty numbers, corrected for Police reporting rates, are reported.

### 2008/09 Progress against Wellington RLTS key outcomes and 2016 targets

| Key outcome | 2016 Stretch target | 2008/09 Result | Previous result | Trend |
|---|---|---|---|---|
| **1.1** Increased peak period passenger transport mode share | Passenger transport accounts for at least 25 million peak period trips per annum | 17.5 million in 2008/09 financial year | 17.6 million in 2007/08 financial year | – |
| | Passenger transport accounts for at least 21% of all region wide journey to work trips | 17% in 2006 census | 16% in 2001 census | – |
| **2.1** Increased mode share for pedestrians and cyclists | Active modes account for at least 15% of region wide journey to work trips | 13% in 2006 census | 12.6% in 2001 census | – |
| **3.1** Reduced greenhouse gas emissions | Transport generated $CO_2$ emissions will remain below 1,065 kilotonnes per annum | 1,084 kilotonnes in 2008/09 financial year | 1,113 kilotonnes in 2007/08 financial year | ✔ |
| **4.1** Reduced severe road congestion | Average congestion on selected roads will remain below 20 seconds delay per km travelled despite traffic growth | 21.0 seconds in March 2009 | 24.6 seconds in March 2008 | ✔ |
| **5.1** Improved regional road safety | *There are no road crash fatalities attributable to roading network deficiencies.* | 376 KSI[1] casualties in 2008 calendar year | 360 KSI casualties in 2007 calendar year | ✘✘ |
| **6.1** Improved land use and transport integration | All large subdivisions and developments include appropriate provision for walking, cycling and public transport. | Some provision made | Some provision made | ✔ |
| **7.1** Improved regional freight efficiency | Improved road journey times for freight traffic between key destinations. | Very little change | Very little change | – |

✔✔ strongly positive ✔ positive – neutral ✘ negative ✘✘ strongly negative ? insufficient information

Table 1: Progress towards RLTS key outcome targets to 2016

[1] Killed and Seriously Injured, corrected for NZ Police reporting rates.



# Introduction

## Statutory context

### Land Transport Management Act 2003

The Land Transport Management Act 2003[2] requires every regional council to establish a Regional Transport Committee (RTC). The primary responsibility of this committee is to prepare a Regional Land Transport Strategy (RLTS) to set the strategic direction for a region's land transport network. Every RLTS must contribute to the overall aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system.

Section 83 of the amended Land Transport Management Act 2003 requires the preparation of a monitoring report which documents progress in implementing the RLTS. The report must be published at least every three years. It is intended to retain the annual process to ensure up to date information is available for related policy development work.

**Government Policy Statement**

The Minister of Transport is now required to issue a Government Policy Statement on Land Transport Funding (GPS) every three years which details national level short to medium-term priorities as well as funding ranges. The RLTS is required to take the GPS into account. The current GPS came into effect 1 July 2009, and is thus not considered in this report.

**New Transport Agency**

The amended Act also created the New Zealand Transport Agency (NZTA) by combining the functions of Land Transport New Zealand and Transit New Zealand. This new Crown entity was inaugurated on 1 August 2008. NZTA now replaces all the references to the former agencies.

### Wellington Regional Land Transport Strategy

The Wellington RLTS 2007 – 2016 was adopted in July 2007 following an extensive review and consultation process. It includes a new strategic framework for planning the region's transport network over the next ten years and longer.

The Wellington RLTS includes a long term vision, six objectives, and a comprehensive list of policies, desired outcomes and associated targets. The strategy outcomes have been given a hierarchical structure of 'key outcomes' and 'related outcomes' to clearly signal priorities for the strategy over the next ten years. The key outcomes in the Wellington RLTS are:

- Increased peak period passenger transport mode share
- Increased mode share for pedestrians and cyclists
- Reduced greenhouse gas emissions
- Reduced severe road congestion
- Improved regional road safety
- Improved land use and transport integration
- Improved regional freight efficiency

The strategy targets were developed to signal the magnitude of the changes sought in relation to each strategy outcome. These targets provide a benchmark against which to measure progress. More ambitious 'stretch' targets have been set in relation to the strategy's 'key outcomes' to signal the need for greater emphasis and progress in relation to these areas.

## Content and structure

This report monitors trends in a range of indicators both within the region and across its boundaries. Extensive reporting on road and public transport network performance, and on environmental measures, provides a detailed picture of regional performance and sustainability from a transport perspective.

Where possible we are benchmarking ourselves against New Zealand's other two largest regions with significant transport issues: Auckland and Canterbury. This gives some indication of overall New Zealand transport issues, allowing us to see how well we are doing at a national level.

[2] As amended by the Land Transport Management Amendment Act 2008.

Regional perception surveys, first carried out in 2003, add further value to the largely objective data presented by offering an understanding of public perceptions of transport-related issues. The 1,000-person telephone survey was repeated by National Research Bureau Ltd in June 2004, 2006 and 2008. Auckland Regional Council (ARC) carries out a very similar two-yearly survey allowing further comparisons to be made between the two regions.

Regional level data from the New Zealand Household Travel Survey has been released by the Ministry of Transport for the first time in 2008. The survey is conducted annually and data for the period July 2004 to June 2008 is reported in the Road safety outcomes section under Relative risk by transport mode per million hours travelled (updated national data) and per million kilometres travelled (regional and national). Some sample sizes are too small at the regional level to enable reporting beyond the national level.

### Structure of the 2008/09 AMR

The 2008/09 AMR is structured around the key and related outcomes identified in the Wellington RLTS 2007 – 2016. This enables the indicators measuring progress against each outcome area and associated targets to be clearly identified.

A number of new indicators are included in this AMR. In some cases, indicators for some of the RLTS targets have not yet been fully developed and these are identified throughout the report for further work.

There are a number of indicators relating to environmental quality and affordability which do not directly measure a particular RLTS outcome but contribute to our understanding of the complete range of issues affecting our region's transport network. These indicators are included under sections titled *Environmental quality* and *Affordability*.

An overall summary of progress in implementing the actions and projects which sit alongside the RLTS in various corridor plans, implementation plans and the Regional Land Transport Programme 2009 – 2012 are described in the RLTS implementation section. Obstacles to implementing the strategy are also identified here. Detailed reporting of progress for each action and project is no longer reported through the AMR, but instead is reported through the quarterly Agency Progress Reports to the RTC.

The appendices of the report include a number of indicators reflecting regional demographics and travel demand to provide some additional context for the AMR.

### Targets

The targets identified in the Wellington RLTS, associated with the various strategy outcomes, have been included on the various indicator graphs in this AMR to demonstrate where we are at now compared to the RLTS 2016 target.

Targets with the following focus which are identified in the GWRC 2006 – 2016 Long-term Community Council Plan (LTCCP) in relation to transport sustainability are also included:

- Reduced road congestion (aligned with RLTS target)
- Increased active mode use for short trips
- Fuel consumption (aligned with RLTS target)
- Air quality

### Information availability

Agencies continue to supply information for the monitoring programme and GWRC gratefully acknowledges this. Sometimes, however, information proved to be difficult to obtain. Only data that is made available can be reported.

**Each AMR stands alone as information availability improves or data is replaced retrospectively. Therefore previous reports are not entirely comparable to this report.**

**All reported data relates to the financial year ending at 30 June unless otherwise stated.**





## The Regional Transport Network

The Wellington RLTS provides a plan for development of the region's transport network and the AMR monitors a number of indicators of the performance of the network. Wellington's regional transport network is shown in Figure 1 below.

State Highway 1 and the North Island Main Trunk (NIMT) rail line enter the region near Otaki and extend southwards through Kapiti Coast, Pukerua Bay, Porirua and Northern Wellington and through to the Wellington City Central Business District (CBD). State Highway 1 continues through to Wellington International Airport. State Highway 2 and the Wairarapa Line railway enter the region north of Masterton and extend south-west through Wairarapa, the Hutt Valley and on to merge with State Highway 1 and the NIMT line at Ngauranga. State Highway 58 provides a vital east-west link between State Highways 1 and 2. State Highway 53 links Martinborough to State Highway 2.

The regional transport network provides vital access to key regional destinations including the Wellington City CBD and other, regional centres, CentrePort (Wellington's sea port) and Wellington International Airport for freight and passengers, and Wellington's regional hospital in Newtown. It also provides important access for local trips within communities.

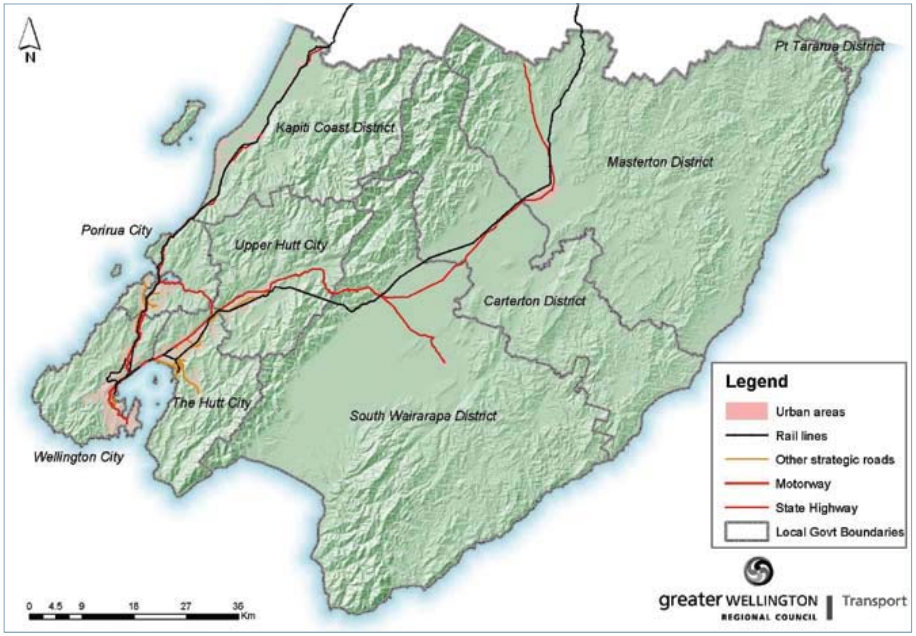



Figure 1: Wellington's regional transport network.

# Passenger transport outcomes

## Introduction

This section discusses items relating to the RLTS passenger transport outcomes.

The following key outcome for passenger transport is sought for the region's land transport network:

- **Increased peak period passenger transport mode share**

The performance indicators associated with this key outcome are:

  - Peak trips by public transport
  - Peak passenger kilometres by public transport
  - Peak average trip length by public transport
  - Mode of journey to work: public transport
  - Wellington CBD cordon mode share

The following related outcomes and associated performance indicators for passenger transport are:

- **Increased off-peak passenger transport use and community connectedness**
  - Off-peak trips by public transport
  - Off-peak passenger kilometres by public transport
  - Off-peak average trip length by public transport
- **Improved passenger transport accessibility for all, including disabled people or from low income groups**
  - Wheelchair accessible public transport services
  - Perceptions of the level of access for mobility restricted public transport users
  - Population proximity to public transport
  - Affordability of passenger transport services
  - Public transport user costs
  - Perceptions of public transport user costs
  - Perceptions of public transport safety
  - Total Mobility Scheme patronage
- **Reduced passenger transport journey times compared to travel by private car**
  - Journey time comparison
  - Journey time by public transport
- **Increased passenger transport reliability**
  - Reliability of public transport services

The terms 'passenger transport' and 'public transport' are often used interchangeably, however, when defined they do have slightly different meanings. Passenger transport has a wider meaning and covers both scheduled public transport services and other passenger services (e.g. taxis and the Total Mobility Scheme). The term 'passenger transport' is consistently used throughout the RLTS and Passenger Transport Plan. However, as some indicators within the AMR rely on data obtained in relation to scheduled public transport services only, the term 'public transport' is used where appropriate.

## Key outcome

### 1.1 Increased peak period passenger transport mode share

**Target: Passenger transport accounts for at least 25 million peak period trips per annum**

### Peak trips by public transport

Definition: The graph presents the number of passenger trips taken by train, bus and ferry during the AM and PM peak periods. The RLTS target of 25 million trips per annum by 2016 is also shown.

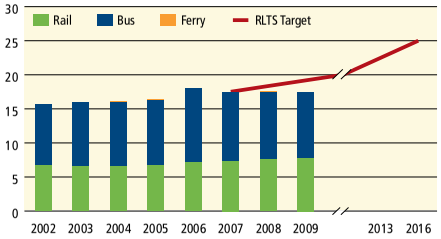



Figure 2: Public transport patronage: number of passenger trips (M), by mode, combined peak periods. Source: GWRC

Interpretation: 17.5 million peak passenger trips were made by public transport in 2009, a decreased of 0.4% or just under 70,000 trips. This follows an increase of approximately 35,000 trips in 2008.

Passenger trips by bus decreased by over 260,000 (2.6%) while train trips increased by 196,000 (2.6%). Ferry passenger trips decreased by 4.4% during the peaks, numbering more than 4,000.





Comments: Peak period trips on public transport have been relatively flat for the past three years. At 17.5 million peak period passenger trips in 2009, a considerable increase is required to meet the target of 25 million passenger trips per annum by 2016. It is expected that the arrival of the new Matangi trains in 2010 will lead to an increase in patronage.

As fuel prices decreased during 2009 some commuters may have chosen to switch back to private vehicles rather than travel by public transport during peak periods. (See Figure 50 in the section: *Environmental outcomes*).

Buses consistently account for most journeys by public transport during the combined peak at almost 60% of total passenger trips since 2002. However, rail trips are typically three to four times longer so account for most passenger kilometres (over 70% in peak periods) - see the following indicators in this section: *Peak/off-peak passenger kilometres by public transport* and *Peak/off-peak average trip length by public transport.*

### Peak passenger kilometres by public transport

Definition: The graph shows the total distance passengers travelled by train, bus and ferry during the AM and PM peak periods.

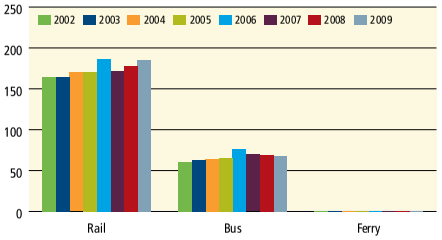



Figure 3: Passenger km (M) by public transport mode, combined peak periods. Source: GWRC

Interpretation: Combined peak period passenger kilometres travelled increased to over 254 million in 2009, 2.5% more than 2008. Rail passenger kilometres increased the most, 3.8% or by almost 7 million to a total of 185.1 million. Ferry passenger kilometres have remained flat since 2005 at around one million (900,000 kilometres in 2009). Bus passenger kilometres decreased slightly 68.1 million in 2009 (68.7 million in 2008).

Rail consistently accounts for over 70% of the total passenger kilometres taken by public transport.

Comments: The trend is an overall increase in passenger travel distance at peak times since 2002. Most of that increase is on the rail network, which is consistent with the transport role trains have in the Wellington Region.

### Peak average trip length by public transport

Definition: The graph shows the average length of trip taken by passengers travelling by train, bus and ferry during the AM and PM peak periods.

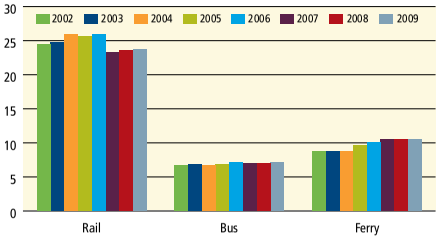



Figure 4: Average trip length (km) by public transport mode, combined peak periods. Source: GWRC

Interpretation: An overall increase of 2.9% in the average public transport trip length occurred in 2009. Bus trips increased by 1.8% in length and average trip length by rail rose by 1.2%. There was no change in length of trip by ferry.

Comments: No major change in average trip length by public transport is evident in 2009, although trip length has been steadily increasing (13.8 km in 2007, 14.1 km in 2008, and 14.5 km in 2009). Of the two major public transport modes, the average length of passenger trip by rail during the combined peak is over three times the length of trips by bus. A slight increase in average trip length by both bus and train was noted in 2009.

**Target: Passenger transport accounts for at least 21% of all region wide journey to work trips**

### Mode of journey to work: public transport

Definition: The graph uses New Zealand Census data to show the mode share of public transport for the region's 'main means of travel to work'. The RLTS target of 21% of all region wide trips by 2016 is also shown.

Public transport was defined as travel by public bus or train. Ferry travel was not included as it featured under the 'other' category in the census (along with taxi and plane). As the census is conducted five-yearly this indicator will next be updated in 2012.

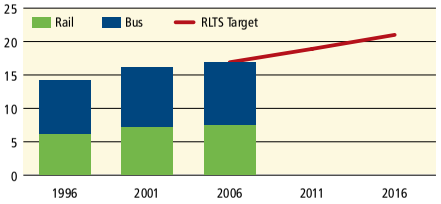



Figure 5: Public transport mode share of journey to work (%). Source: Statistics New Zealand

Interpretation: The public transport mode share of journey to work was 17% in 2006. Rail accounted for 7.4% of journey to work trips in 2006 and bus mode share was 9.5% in 2006. An increase in mode share of approximately 16% was shown for public transport in both 2001 and 2006. This equated to just over 4,000 more trips by either public bus or train on census days.

Comments: A moderate increase in the journey to work commute by public transport has taken place over the past two census periods. Public transport as mode of choice will be required to increase by 4% to reach the 2016 RLTS target of 21% of all region wide journey to work trips.

### Wellington CBD cordon mode share

Definition: The graph shows selected results from surveys of the number of people travelling by public transport into the Wellington City CBD and by motor vehicle across Wellington City traffic screenlines during the two-hour AM peak period. GWRC and Wellington City Council undertake the surveys annually in March. Public transport data is not available for 2005.

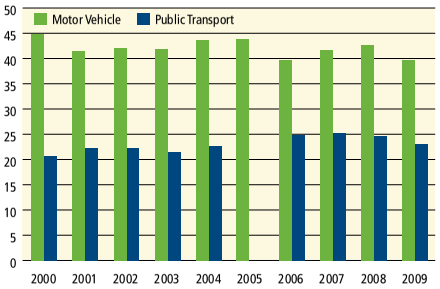



Figure 6: Number of people travelling into Wellington CBD (000) by motor vehicle and public transport, AM peak. Sources: Wellington City Council; GWRC

Interpretation: In 2009, passenger transport accounted for 30% of total mode share (all modes) for those people travelling into the Wellington CBD during the AM peak. The number of people travelling by public transport fell by 6.6% in 2009 and motor vehicle occupants also dropped by 6.8% over the year.

Since 2000 the public transport mode share has averaged 29%. Motor vehicle mode share was over 50% (averaging 53% from 2000-2008).

Comment: The results show a variation in motor vehicle and public transport mode share over time. The public transport network continues its significant role in transporting the region's commuters into the Wellington CBD during the morning peak period. The overall decrease reflects the economic downturn that occurred over the financial year.

## Related outcomes

### 1.2 Increased off-peak passenger transport use and community connectedness

**Target: Passenger transport accounts for at least 25 million off-peak period trips per annum**

### Off-peak trips by public transport

Definition: The graph presents the number of passenger trips taken by train, bus and ferry during the off-peak period. The RLTS target of 25 million trips per annum by 2016 is also shown.





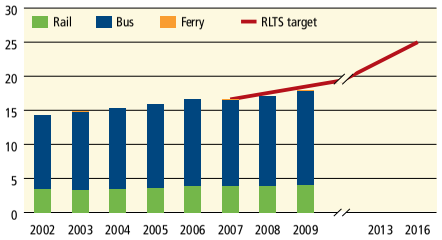



Figure 7: Public transport patronage: number of passenger trips (M), by mode, off-peak period. Source: GWRC

Note: Ferry patronage data prior to 2007 excludes the weekend Harbour Explorer Excursion service.

Interpretation: In 2009 there were 18 million off-peak passenger trips, an increase of 811,000 (4.7%) over 2008 led mainly by a 5.2% (over 677,000) increase in bus trips. The number of rail passenger trips increased by 127,000 (3.2%). Off-peak passenger trips by harbour ferry increased by almost 7,000 in 2009, which represents an 8% rise from 2008.

Comments: An increase in off-peak passenger trips by public transport is evident in 2009 continuing the overall rising trend. At 18 million passenger trips in total, the RLTS target of 25 million off-peak trips per annum is yet to be achieved. However, unlike peak period trips (see above) off-peak public transport trips are increasing just shy of the target. The introduction of the SuperGold card scheme on 1 October 2008 which allows seniors free travel during off-peak hours is contributing to this increase.

### Off-peak passenger kilometres by public transport

Definition: The graph shows the total distance passengers travelled by train, bus and ferry during the off-peak period.

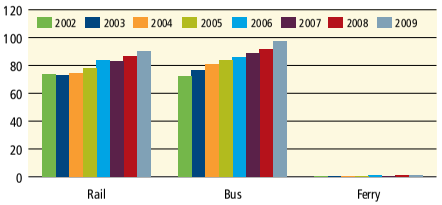



Figure 8: Passenger km (M) by public transport mode, off-peak period. Source: GWRC

Note: Ferry patronage data prior to 2007 excludes the weekend Harbour Explorer Excursion service.

Interpretation: Off-peak passenger kilometres travelled by bus increased by 5.5 million (5.9%) in 2009 and rail kilometres rose by over 3.5 million (4.1%). Ferry travel also increased during the off-peak by 6.3%, or almost 64,000 kilometres. The overall result was an increase of 9.1 million kilometres (5%) travelled by off-peak passengers.

Comments: A significant rise in total off-peak passenger kilometres by public transport continues the upward trend shown since 2002.

### Off-peak average trip length by public transport

Definition: The graph shows the average length of trip taken by passengers travelling by train, bus and ferry during the off-peak period.

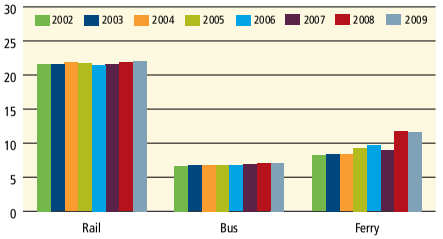



Figure 9: Average trip length (km) by public transport mode, off-peak period. Source: GWRC

Note: Ferry patronage data prior to 2007 excludes the weekend Harbour Explorer Excursion service.

Interpretation: Overall average trip length across all modes increased by 0.3% (0.03 kilometres) in 2009. Ferry trips decreased by 0.2 kilometres on average (1.6%). Bus trip length rose by an average of 0.7% and rail trip lengths rose by almost 1% on average.

Comments: With the exception of the harbour ferry, off-peak average trip length has been relatively static over recent years. As with the peak period, the average length of passenger trip by train during the off-peak is approximately three times the length of trips by bus.

## 1.3 Improved passenger transport accessibility for all, including disabled people or from low income groups

**Target: 80% of passenger transport services are guaranteed to be wheelchair accessible**

### Wheelchair accessible public transport services

Definition: The graph shows the total percentage of public transport vehicles across the region that are accessible by wheelchair. The 2016 target of 80% of passenger transport vehicles being accessible by wheelchair is also shown.

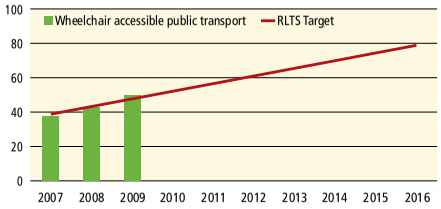



Figure 10: Accessibility of public transport vehicles by wheelchair (%). Source: GWRC

Interpretation: Overall, 49% of the region's public transport vehicles in 2009 are wheelchair accessible (43% in 2007).

There is considerable variation in wheelchair accessibility between public transport modes. The Wellington Cable Car is 100% wheelchair accessible (both cable cars). 48% of buses currently operating within the region can accommodate wheelchairs (40% in 2008) while neither of the two Harbour ferries are fully wheelchair accessible.

On the regional commuter rail network, all of the Ganz Mavag units are wheelchair accessible. All three Wairarapa trains are accessible by wheelchair while none of the older Electric Multiple Units (EMU) are, resulting in 56% wheelchair accessibility of the region's trains.

Comments: Much work is currently underway to address the accessibility of the Metlink public transport network. The new Matangi trains, scheduled to be operational from 2010, will be fully wheelchair accessible. Replacement of the regional bus fleet with fully accessible vehicles is ongoing.

### Perceptions of the level of access for mobility restricted public transport users

Definition: The graph shows how respondents rate the level of access for mobility restricted public transport users in the Wellington Region.

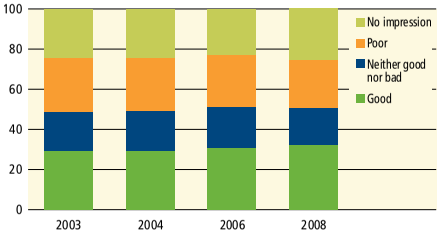



Figure 11: Perceptions of level of access for mobility restricted public transport users (%), Wellington Region. Source: GWRC perception surveys

Interpretation: In 2008, 32% of respondents rated the level of access provided in the region for mobility restricted public transport users as 'good' while 24% felt access was 'poor'. 19% were ambivalent and 25% had no impression.

Comments: Nearly one-third of surveyed Wellington Region residents felt there was a good level of access for mobility restricted public transport users, which represents a slight increase over the period of the surveys. Almost one-quarter of those surveyed rated access as poor, representing a decrease of 3% from 2003.

It appears that some perceptions of progress in the level of service for mobility restricted public transport users are improving, in line with public transport accessibility improvements in the region. (See *Wheelchair accessible public transport services* above).

**Target: Most of the region's residents live within 400 metres (5 minutes walk) of a bus stop or train station with a service frequency of at least 30 minutes**





### Population proximity to public transport

Definition: The graph shows the change in the proportion of the population over time that live within 400 metres of a public transport stop. Population is the average usually resident population on census night 2006. Distance is measured along the roading network. All public transport stops with a regular service are shown as well as those with an average service frequency of 30 minutes or better.

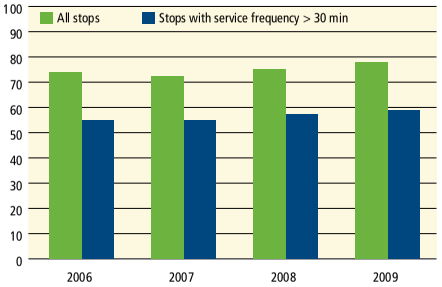



Figure 12: Percentage of the population living within 400m of a public transport stop, all stops; and stops with an average service frequency of 30 minutes or better. Sources: GWRC; Statistics New Zealand.

Interpretation: In 2009, 78% of the region's population lived within 400 metres of a public transport stop with a regular service (a 3% increase from 2008) and 59% from a stop with an average service frequency of 30 minutes or better (which represents a 2% increase from 2008).

Comments: An increase in resident population within 400 metres (five minutes walk) of public transport has occurred between 2007 and 2009. It is questionable that this meets the RLTS target of: *most of the region's residents live within 400 metres (5 minutes walk) of a bus stop or train station with a service frequency of at least 30 minutes.*

**Target: Passenger transport services in the highest deprivation areas are more affordable**

### Affordability of passenger transport services

Definition: The graph shows the average public transport fare from regional areas to the Wellington City CBD. Regional areas with no public transport connection are excluded. Travel within the regional centres (including Wellington CBD) is excluded.

'Deprived areas' are defined as those with a deprivation index (based on the Social Deprivation Index) decile value of 8, 9 or 10. The remaining areas are classified as 'other'.

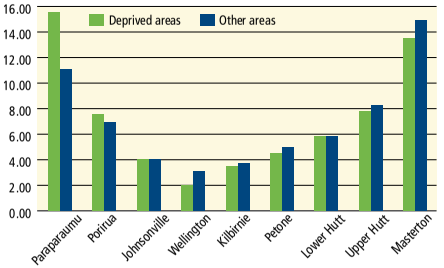



Figure 13: Average total adult cash fares (September 2008, $) for travel by public transport from regional areas ('deprived', 'other') to the Welllington CBD. Sources: GWRC; Statistics New Zealand

Interpretation: The cost of travel from deprived areas to the Wellington CBD is less than the cost of travel from other areas in five out of the nine regional areas. The cost is the same in only one of the regional areas, and more in three of the regional areas. The regional areas of Paraparaumu and Masterton cover a large geographical area. The deprived areas of Paraparaumu are located further away from the Wellington CBD (resulting in higher public transport fares) than the other areas. The reverse is true for the Masterton regional area where the deprived areas are located closer to Wellington CBD. In Lower Hutt, the cost is very slightly higher for deprived areas but is essentially the same.

Comments: Travel to the Wellington CBD is more affordable from deprived (rather than other) areas in the majority of regional areas. It is questionable that this meets the RLTS target of: *passenger transport services in the highest deprivation areas are more affordable.*

Definition: The graph below shows the average public transport fare from regional areas to the nearest regional centre. Regional areas with no public transport connection are excluded. Travel within the regional centres (including Wellington CBD) is excluded.

'Deprived areas' are defined as those areas with a deprivation index (based on the Social Deprivation Index) decile value of 8, 9 and 10. The remaining areas are classified as 'other'.

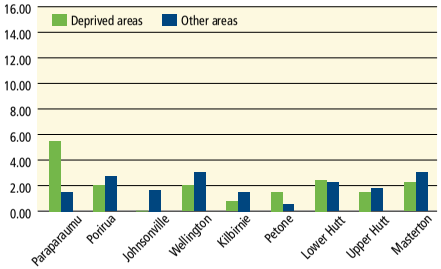



Figure 14: Average total adult cash fares (September 2008, $) for travel by public transport from regional areas ('deprived', 'other') to the nearest regional centre. Sources: GWRC; Statistics New Zealand

Interpretation: The cost of travel from deprived areas to the nearest regional centre is less than the cost of travel from other areas in five out of the nine regional areas. The cost is more in three of the regional areas. There are no deprived areas with a public transport service in Johnsonville. The cost of travel from deprived areas to the town centres of Paraparaumu and Masterton is greater due to the large geographical area that these regional areas cover.

Comments: For most regional areas, the cost of travel by public transport from deprived areas to the nearest regional centre is much the same or less than the cost of travel from other areas. The change to the fare structure in September 2008 resulted in more regional centres with relatively lower costs for those in deprived areas, although the total cost increased or stayed the same. It is questionable that this meets the RLTS target of: *passenger transport services in the highest deprivation areas are more affordable.*

Definition: The graph below shows the ratio (deprived areas to other areas) of total average public transport fares for travel from regional areas to the nearest regional centre, and to the Wellington CBD. The red line represents the level at which the fares from deprived areas equal the fares from other areas. Above the line, the fares from deprived areas are higher than the fares from other areas, and below the line, the fares from deprived areas are lower the fares from other areas (consistent with the RLTS target: *passenger transport services in the highest deprivation areas are more affordable*).

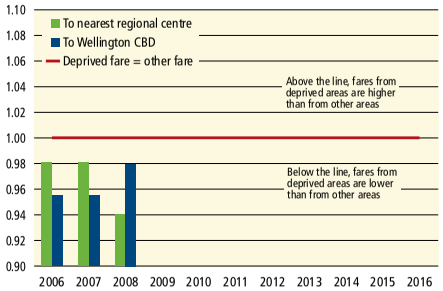



Figure 15: Ratio of the total average adult cash fares (September 2008, $) from regional areas to nearest regional centre, and to Wellington CBD; deprived areas and other areas. Sources: GWRC; Statistics New Zealand

Interpretation: The ratio shows the difference between travel to the regional centres and to the Wellington CBD as approximately 0.94 and 0.98 respectively. For both destinations, the total average fare from the deprived areas is slightly lower than from other areas. The changes in the fare structure that occurred in September 2008 reduced the affordability ratio for travel to the nearest regional centre by 4%, while increasing the ratio for travel to the Wellington CBD by 2%.

The fares didn't change from 2006 to 2007, so 2006 data was used to represent the 2007 affordability ratio.

Comments: Travel by public transport from deprived areas in the region to both the nearest regional centre and to the Wellington CBD is very slightly cheaper than from other areas. It is questionable that this meets the RLTS target of: *passenger transport services in the highest deprivation areas are more affordable.*





## Public transport user costs

Definition: The graph shows single adult fares (as at March) in the morning commuter peak period, by the modes shown and on the following key routes:

- Wellington – Paraparaumu (rail)
- Wellington – Upper Hutt (rail)
- Wellington – Johnsonville (rail)
- Courtenay Place – Johnsonville (bus)
- Wellington Railway Station – Wellington Airport (bus)
- Wellington Railway Station – Victoria University, Kelburn (bus)
- Wellington Railway Station – Island Bay (bus)

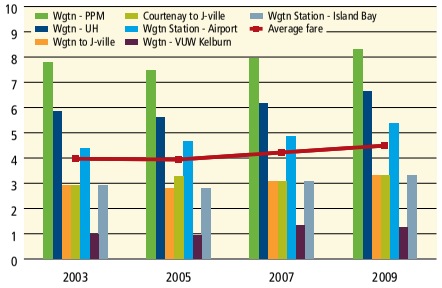



Figure 16: Public transport user costs ($, real value), March. Sources: Metlink; bus/rail operators

Interpretation: New Metlink fares and zones took effect in September 2008 accounting for an average 10% rise in fares in 2009.

Comments: Public transport must be a competitively priced mode choice to attract travellers away from private car use, especially for peak-period journeys to work. Fares are one element in this comparison, along with perceived service quality, reliability and convenience.

## Perceptions of public transport user costs

Definition: The graph shows the percentage of people in both the Auckland and Wellington Regions who stated that cost affected their use of public transport.

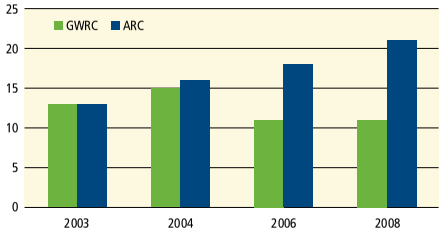



Figure 17: Have public transport costs hindered usage? (%) Wellington and Auckland Regions. Source: GWRC and ARC transport perceptions surveys

Interpretation: 11% of those Wellington Region residents surveyed in 2006 and 2008 considered the cost of public transport services to be a hindrance to their use of it (a decrease of 4% from 2004). By comparison, 21% of respondents in the Auckland Region had the same perception in 2008 (18% in 2006, and 16% in 2004).

Comments: The perception that cost is a barrier to the use of public transport has decreased over time in the Wellington Region but risen in Auckland. However, cost is not a major barrier to public transport as the travel mode of choice. Other factors such as convenience and irregularity of service which are not reported here are more dominant reasons that people avoid using public transport more often.[3]

## Perceptions of public transport safety

Definition: The graph shows respondents' perceived safety when using public transport in the Wellington and Auckland Regions.

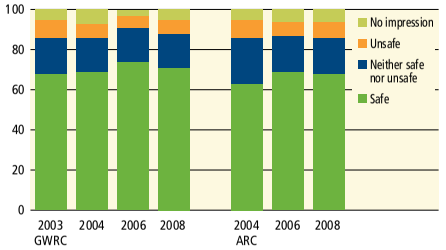



Figure 18: How safe do you feel when using public transport? (%) Sources: GWRC and ARC perception surveys

[3] National Research Bureau (2008). *Greater Wellington Regional Council Transport Perceptions Survey: June 2008.*

Interpretation: In the Wellington Region 71% of respondents said they felt 'safe' when using public transport in 2008 (72% in 2006) and 7% felt 'unsafe' (6% in 2006). Compared with Auckland, 3% more people felt 'safe' in Wellington in 2008.

Comments: GWRC and the regional community must continue to focus on providing a safe environment for public transport users.

### Total Mobility Scheme patronage

Definition: The graph shows annual Total Mobility Scheme passenger numbers. This scheme assists people who have difficulty using public passenger transport services and is administered by GWRC. A voucher system provides a 50% discount on taxi fares to people who meet certain eligibility criteria (endorsed by the Ministry of Transport).

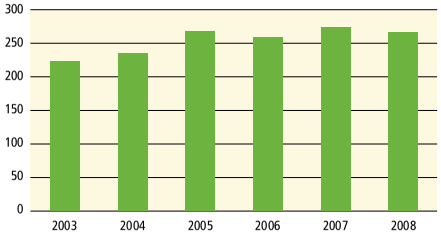



Figure 19: Total Mobility Scheme patronage (000). Source: GWRC

Interpretation: Patronage data for Total Mobility was not available for 2009. Based on expenditure for the programme, which increased 10.4% (see Figure 97 in the Affordability chapter), it is reasonable to assume that Total Mobility patronage increased from 2008 levels in 2009.

Total Mobility passengers decreased by 2.6% in 2008 following an increase of 5.4% the previous year. Between 2003 and 2008 the overall increase in passenger numbers was 20%.

Comments: Total mobility patronage is expected to continue to grow with increased demand as knowledge of the scheme increases and the population ages.

## 1.4 Reduced passenger transport journey times compared to travel by private car

**Target: Peak period passenger transport journey times are equal to or better than a similar journey undertaken by a private car for key selected corridors**

### Journey time comparison

Definition: This indicator is a comparison of the car travel times from the New Zealand Transport Agency travel time surveys (March) and public transport journey times from timetables or surveys (August). The two key regional routes that are compared are described below:

Route 1 SB: Paraparaumu – Wellington Airport

Route 1 NB: Wellington Airport - Paraparaumu

Route 2 SB: Upper Hutt – Wellington Airport

Route 2 NB: Wellington Airport - Upper Hutt

The values given are the difference in minutes between using public transport and travelling by private car; **the larger the value, the longer it takes to travel by public transport in comparison with the private car,** and vice versa. Both AM and PM peak period comparisons are shown along with the inter-peak period. The graphs show the average travel time across both routes and individual route times are given in the tables.

The RLTS target is shown on the AM and PM peak comparison graphs: *peak period passenger transport journey times are equal to or better than a similar journey undertaken by a private car for key selected corridors.*

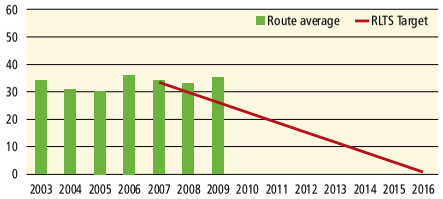



Figure 20: Comparison of average AM peak travel times (minutes) by public transport and by car on key routes. Sources: New Zealand Transport Agency; GWRC





| | Route 1 SB | Route 1 NB | Route 2 SB | Route 2 NB | Average |
|---|---|---|---|---|---|
| 2003 | 19 | 42 | 29 | 47 | 34 |
| 2004 | 16 | 48 | 15 | 44 | 31 |
| 2005 | 12 | 45 | 15 | 49 | 30 |
| 2006 | 23 | 48 | 26 | 47 | 36 |
| 2007 | 21 | 46 | 22 | 48 | 34 |
| 2008 | 21 | 46 | 18 | 47 | 33 |
| 2009 | 26 | 44 | 26 | 47 | 36 |

Table 2: Comparison of AM peak travel times (minutes) by public transport and by car on individual key routes. Sources: New Zealand Transport Agency; GWRC

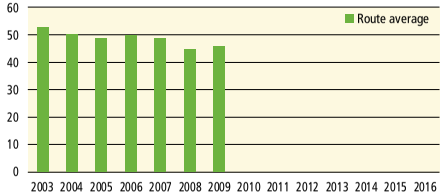



Figure 21: Comparison of average inter-peak travel times (minutes) by public transport and by car on key routes. Sources: New Zealand Transport Agency; GWRC

| | Route 1 SB | Route 1 NB | Route 2 SB | Route 2 NB | Average |
|---|---|---|---|---|---|
| 2003 | 55 | 44 | 60 | 50 | 52 |
| 2004 | 48 | 50 | 57 | 45 | 50 |
| 2005 | 48 | 42 | 59 | 46 | 49 |
| 2006 | 50 | 44 | 58 | 46 | 50 |
| 2007 | 47 | 42 | 60 | 47 | 49 |
| 2008 | 49 | 41 | 41 | 46 | 44 |
| 2009 | 48 | 47 | 44 | 43 | 46 |

Table 3: Comparison of inter-peak travel times (minutes) by public transport and by car on individual key routes. Sources: New Zealand Transport Agency; GWRC

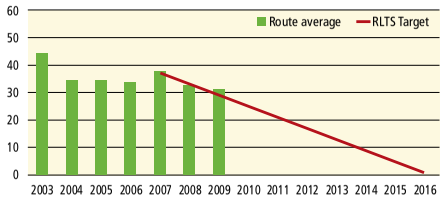



Figure 22: Comparison of average PM peak travel times (minutes) by public transport and by car on key routes. Sources: New Zealand Transport Agency; GWRC

| | Route 1 SB | Route 1 NB | Route 2 SB | Route 2 NB | Average |
|---|---|---|---|---|---|
| 2003 | 57 | 34 | 51 | 36 | 44 |
| 2004 | 45 | 25 | 41 | 27 | 34 |
| 2005 | 38 | 19 | 49 | 31 | 34 |
| 2006 | 35 | 22 | 47 | 31 | 34 |
| 2007 | 34 | 30 | 51 | 36 | 38 |
| 2008 | 41 | 20 | 41 | 27 | 33 |
| 2009 | 43 | 16 | 41 | 24 | 31 |

Table 4: Comparison of PM peak travel times (minutes) by public transport and by car on individual key routes. Sources: New Zealand Transport Agency; GWRC

Interpretation: The comparative travel time in 2009 has increased during the AM peak (3 minutes) and the inter-peak (2 minutes), while the PM peak continued to see a decline in the travel time variance between public transport and private vehicles.

In the AM peak the comparative travel time in the northbound direction on both routes is greater than the southbound direction due to the direction of travel of AM peak commuters (towards Wellington City). This indicates a more favourable relative travel time by public transport than by private car on a southbound journey. However, the southbound travel time difference on Route 2 increased significantly (8 minutes) in 2009.

During the PM peak the dominant direction of commuter travel is northbound. The comparative travel time in the southbound direction is greater than northbound; therefore relative journey time by public transport is more favourable than by car in the northbound direction. In 2009, the northbound travel time variance markedly decreased.

No strong directional trend is evident from the comparative travel time by public transport and by car on individual routes during the inter-peak period. Public transport became less competitive in 2009 during the inter-peak period.

Comments: The competitiveness of public transport decreased in 2009 as indicated in the higher variance of travel times between public transport and private vehicles. Overall, journey time by public transport remains relatively uncompetitive compared to the private car.

The overall increase between 2008 and 2009 is due to greater reductions in travel times by private car than in average travel times by public transport (see below). Localised problems in the road network are averaged in the car travel time surveys and so whilst the car travel times are in most cases significantly faster than public transport, the reliability of travel times is not shown.

With an average of about 34 minutes difference between journey times by public transport and the private car in both the AM and PM peaks, major investment in public transport infrastructure and services is required to approach the RLTS target.

### Journey time by public transport

Definition: The graphs show the time taken to travel by public transport (bus and train) on the same key routes which feature in the Journey time comparison indicator above, with the addition of the 'Golden Mile'. Travel times derive from timetables for routes 1 and 2. Traffic congestion on route 3, the Golden Mile (between Lambton Interchange and Courtenay Place) renders timetables to be unreliable. Information on this route is collected by a GWRC survey with times averaged over the two-hour periods. The routes covered and public transport modes for each are:

Route 1 SB: Paraparaumu – Wellington Airport (rail/bus)

Route 1 NB: Wellington Airport – Paraparaumu (bus/rail)

Route 2 SB: Upper Hutt – Wellington Airport (rail/bus)

Route 2 NB: Wellington Airport - Upper Hutt (bus/rail)

Route 3 SB: Lambton Interchange – Courtenay Place (bus)

Route 3 NB: Courtenay Place – Lambton Interchange (bus)

Travel times during the AM peak, inter-peak, PM peak and on Saturday are given.

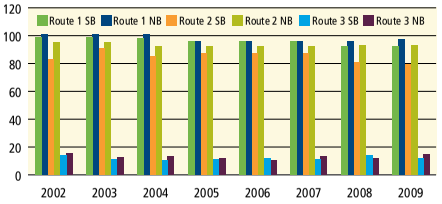



Figure 23: Public transport travel time (mins), AM peak. Sources: Metlink bus/rail timetables; GWRC survey

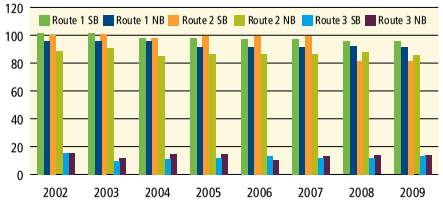



Figure 24: Public transport travel time (mins), inter-peak. Sources: Metlink bus/rail timetables; GWRC survey

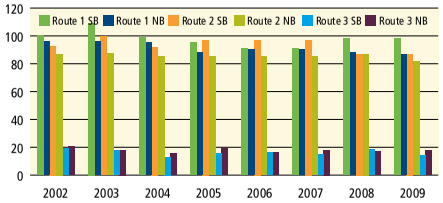



Figure 25: Public transport travel time (mins), PM peak. Sources: Metlink bus/rail timetables; GWRC survey

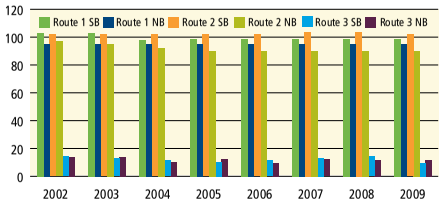



Figure 26: Public transport travel time (mins), Saturday. Sources: Metlink bus/rail timetables; GWRC survey

Interpretation: In 2009 changes in journey times on the following routes were noted:

Route 2 NB: during the PM peak, a decrease of 5.6 minutes

Route 3 SB: during the PM peak, a decrease of 4.5 minutes; on Saturday, a decrease of 4.6 minutes

Route 3 NB: during the AM peak, an increase of 3 minutes.

Average journey times on the Golden Mile in both directions in 2009 varied from a minimum of 9.7 minutes to a maximum of 14.5 minutes (a less wide variation than in 2008).

Comments: The installation of bus lanes along the Golden Mile led to a decrease in travel times in the PM peak between 2003 and 2004. A speed restriction of 30km/h for all traffic was introduced along the northern section of the Golden Mile including





Lambton Quay and Willis Street in mid 2006. In 2008, a scheduling adjustment of the Airport Flyer Service achieved improved coordination with train arrivals thereby reducing overall journey times.

## 1.5 Increased passenger transport reliability

**Target: Nearly all bus and train services run on time**

### Reliability of public transport services

Definition: The graph shows the percentage of bus and passenger rail services in the region which run to time.

**A bus service is defined as being 'on time' when it runs within 10 minutes of scheduled time at departure, and at its destination.**

**A train which departs from or arrives at Wellington Railway Station within five minutes of scheduled time is defined as 'on time'.**

Both definitions are agreed in public transport operator contracts with Greater Wellington Regional Council. This data is currently self-reported by public transport operators which will continue until the introduction of a real time information system.

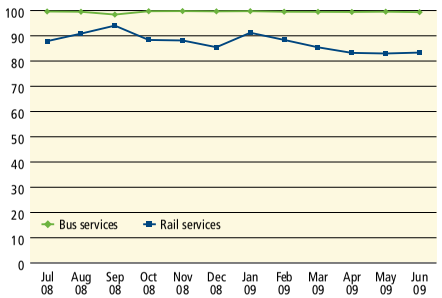



Figure 27: Bus and passenger rail services running to time (%). Sources: Public transport operators; GWRC

Interpretation: In 2009 nearly all bus services have operated within 10 minutes of scheduled time, and 83-94% of rail services arrived or departed Wellington Railway Station within five minutes of scheduled time.

Comments: The region provides over two million bus trips per annum. The data shows that the vast majority of those services run to time. However, only 58% of surveyed Wellington Region residents perceive the bus network as reliable (see Figure 59 in *Road network efficiency outcomes section*).

The region provides over one hundred and ten thousand rail trips per annum. The data indicates some variation in reliability with on average 11.5% of rail trips running late in 2009 (some reliability issues are outside the control of the public transport operator). Again, of surveyed Wellington Region residents, reliability of the rail network is perceived to be only around 60% (see Figure 59 in *Road network efficiency outcomes section*).

Relatively low, 60%, satisfaction of public transport service reliability is also reported in the Annual Public Transport Satisfaction Monitor 2009 (up from 53% in 2008).[4]

## Conclusion

Initiatives encouraging the use of public transport especially for peak-period commuter trips remain important, but travel by car will continue to be the predominant form of regional transport. This is partly due to dispersed development in the Wellington Region.

A superior level of service on the public transport network is required to encourage travellers to switch from private car travel, especially for the peak period commute to work. This requires measures to reduce bus and train travel time variations (such as dedicated bus lanes) and further integration between bus and rail services to minimise the 'cost' of transfer to passengers.

The introduction and regional implementation of 'txtBUS', 'txtTRAIN', SuperGold and real time information along with integrated ticketing will significantly improve public transport level of service.

[4] Premium Research (2009). *Greater Wellington Annual Public Transport Satisfaction Monitor.* http://www.metlink.org.nz/story_images/6516_REDUCEDPTMonito_s12670.pdf

## Introduction

This section discusses items relating to the RLTS active mode outcomes.

The following key outcome for active modes is sought for the region's land transport network:

- **Increased mode share for pedestrians and cyclists**

The performance indicators associated with this key outcome are:

  - Mode of journey to work: active modes
  - Overall active mode share
  - Wellington CBD cordon cycle and pedestrian counts
  - Active modes for short trips

The following related outcomes and associated performance indicators for active modes are:

- **Improved level of service for pedestrians and cyclists**
  - Perceptions of the level of service for cyclists
  - Perceptions about the ease of cycling
  - Urban road frontages served by footpaths
  - Perceptions of the level of service for pedestrians
  - Perceptions about the ease of walking
  - Perceptions of the level of access for mobility restricted footpath users
- **Increased safety for pedestrians and cyclists**
  - Pedestrian casualties
  - Perceptions of pedestrian safety
  - Perceptions of child pedestrian safety
  - Cyclist casualties
  - Perceptions of cyclist safety
  - Perceptions of child cyclist safety

## Key outcome

### 2.1 Increased mode share for pedestrians and cyclists

**Target: Active modes account for at least 15% of region wide journey to work trips**

## Mode of journey to work: active modes

Definition: The graphs use New Zealand Census data to show active mode share as the 'main means of travel to work' throughout the region and individual Territorial Authorities as well as the Wellington CBD. The RLTS target of 15% of all region wide trips by 2016 is also shown.

Active mode was defined as: 'walked or jogged, bicycle'. As the census is conducted five-yearly this indicator will next be updated in 2012.

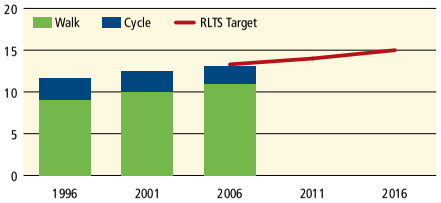



Figure 28: Walking and cycling mode share of journey to work (%). Source: Statistics New Zealand

Interpretation: Walking mode share of journey to work was 11.3% and cycling mode share journey to work was 2.1%, resulting in a total active mode share of 13.4% in 2006. This represents an increase of almost 17% (3,500 more active mode trips) from the 2001 census.

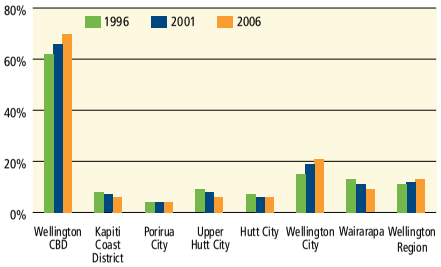



Figure 29: Active mode share journey to work by TA and the Wellington CBD (%). Source: Statistics New Zealand

Interpretation: The overall increase in active mode journey to work trips throughout the region in 2006 was the result of a 3.8% increase in the Wellington CBD and a 2.3% increase in Wellington City from the 2001 census. There is a decreasing trend throughout the rest of the region.

Comments: The active mode journey to work indicator is 2% short of the 2016 RLTS target of 15% of all region wide journey to work trips. Reversing the declining trend in many Territorial Authorities would be the most effective means of achieving the RLTS target.





## Overall active mode share

Definition: The graph shows the percentage of active mode share of all trip legs within main urban areas. A 'trip leg' is a surveying unit of non-stop travel by a single mode for a single purpose. A main urban area is a population centre of at least 30,000 people as defined by Statistics New Zealand. The information is presented as five year averages in the Ministry of Transport's Ongoing Household Travel Survey in order to build statistically significant sample sizes for comparison.

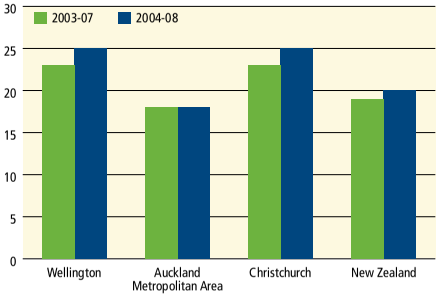



Figure 30: Active mode share of total trip legs (%) by residents of selected main urban areas and for all New Zealand main urban areas. Source: Ministry of Transport TMIF version 2 TP005

Interpretation: The active mode share of all trips within urban areas in the Wellington Region rose by 2% (to 25%) between the two survey periods. This puts Wellington ahead of Auckland and the New Zealand average, as well as equivalent with Christchurch.

Comments: There currently is not enough regional data to determine a consistent trend for total active mode trip share. This growth in total trips is encouraging and should be maintained. Greater Wellington and the RCAs can maintain this active mode share growth by implementing the Regional Walking, Cycling, Road Safety and Travel Demand Management Plans.

## Wellington CBD cordon cycle and pedestrian counts

Definition: The graph shows results from the cordon and screenline location surveys that Wellington City Council undertakes in March of each year. No information is available for the other local authority areas. Data is averaged over the weekday, two-hour periods described as follows:

- pedestrians in to and out from the central city during the morning peak period (AM cordon)
- cyclists in to and out from the central city during the morning peak period (AM cordon)
- cyclists at suburban locations during the morning peak period: Newtown, Kilbirnie, Kelburn, Thorndon, Ngauranga (AM commuter)

The midday counts have not been included in the 2008/2009 AMR in order to focus on the AM journey to work trips.

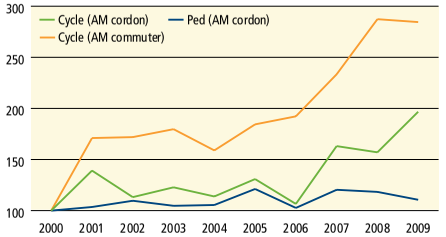



Figure 31: Wellington CBD cordon pedestrian and cycle counts, average weekday AM peak two-hour period, March. Index: 2000 = 100. Source: Wellington City Council

Interpretation: 364 cyclists crossed the CBD cordon in the 2009 morning peak, an increase of 25% over the previous year. 920 pedestrians crossed the same cordon, a drop of 7%. 284 commuter cyclists travelled across the Wellington suburban screenlines in 2009, a slight drop of 12 (1%).

Cycle and pedestrian counts vary widely according to weather conditions at the time of the survey. The 2009 surveys were conducted in mainly fine conditions with two days of scattered rain.

A significant gain in the volume of cyclists crossing the cordon into/out of the Wellington CBD can be seen since 2006. Commuter cyclists (both inbound and outbound) levelled off after marked gains over the prior two years. Commuter routes tend to follow main arterial roads, while cyclists crossing the cordon do so at many points. The decrease in commuter cyclists is statistically insignificant and could be weather related, but suggests a pause in the rapid growth seen from 2006.

Comments: Cycling continues to become a more popular means of travelling to work while walking remains roughly static, but still slightly above the 2000 level. Demands for active transport need to be accommodated and encouraged by the provision of safe and convenient networks for pedestrians and cyclists.

## Active modes for short trips

These indicators measure progress against the GWRC LTCCP 2006-2016 target for active modes:

*At least 80% of all trips up to 1 km and 60% of all trips between 1 and 2 km will be walked or cycled*

Definition: The graphs show the percentage of short trips by the active modes of cycling and walking compared with the GWRC LTCCP targets. The targets are based on 2001 active mode use levels for trips of less than 1 km and between 1 and 2 km in length. The 'Short Trip Active Modes' survey on which this indicator is based, was undertaken in 2004, 2006 and 2009. The survey is now conducted on a three-yearly schedule, so the next update will be in 2012.

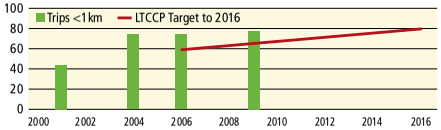



Figure 32: Trips of less than 1 km made by pedestrian or cycling modes (%), Wellington Region. Source: GWRC Household Travel Survey 2001; GWRC Short Trip Active Mode surveys 2004, 2006, 2009

Interpretation: 78% of trips less than 1 km were reported as cycled or walked in 2006, slightly above the 2006 result of 74% and approaching the 2016 target level of 80%.

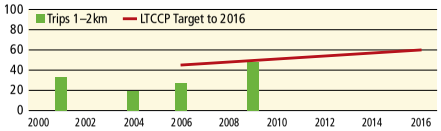



Figure 33: Trips between 1 and 2 km made by pedestrian or cycling modes (%), Wellington Region. Source: GWRC Household Travel Survey 2001; GWRC Short Trip Active Mode surveys 2004, 2006, 2009

Interpretation: In 2009, 47% of respondents made trips of 1 – 2 km in length by active modes. This is a significant increase of 20% since 2006.

The methodology of the 2001 active mode survey was not identical to that of the subsequent surveys. There is an increasing active mode share in the comparable 2004 – 2009 results and this is currently on track towards the LTCCP target of 80% by 2016. The dramatic increase in active mode trips between 1 and 2 km was primarily driven by increased walking (up to 43% total from 24%), perhaps during the evening. This is actually higher than the 40% of reported trips between 1 and 2 km by car or private vehicle for the first time.[5]

Comment: A focused effort on increasing walking and cycling as the modes of choice, especially for trips of 1 - 2 km in length, has shown some success. Ongoing TDM, pedestrian and cycling plan implementation aims to maintain increased uptake of theses modes.

## Related outcomes

### 2.2 Improved level of service for pedestrians and cyclists

**Target: All of the strategic cycle network provides an acceptable level of service**

## Perceptions of the level of service for cyclists

Definition: The graph shows how respondents rate the level of service for cyclists in the Wellington Region.

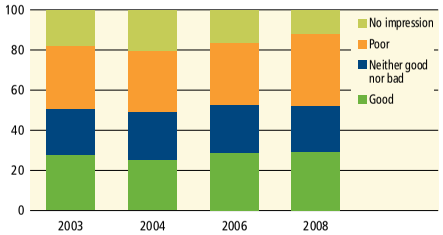



Figure 34: Perceptions of level of service for cyclists (%), Wellington Region. Source: GWRC transport perception surveys

Interpretation: In 2008, 29% of respondents rated the level of service for cyclists as good, the same result reported in 2006. A perception of a poor level of service was indicated by 36% of the Wellington Region residents surveyed in 2008 (31% in 2006) and 12% had no impression.

Comment: While the perception of a good level of service for cyclists remained the same from 2006 to 2008 at almost one-third, the perception of a poor level of service increased by 5% to over one-third of those surveyed. This result identifies a significant need for increased effort in the level of service provision for cyclists throughout the Wellington Region.

## Perceptions about the ease of cycling

Definition: The graph shows how easy people found cycling around the Wellington Region to be. Results for the Auckland Region are also given.

[5] GWRC (2009). *GWRC Short Trip Active Mode survey. p. 12.*





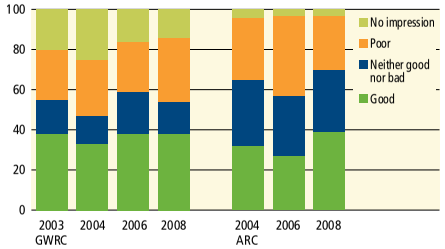



Figure 35: How 'hassle free' is it to get around the region by cycling? (%). Sources: GWRC and ARC transport perceptions surveys

Interpretation: 38% of Wellingtonians in both 2006 and 2008 believed that getting around the region by cycle was 'good', which was 1% less than 2008 Auckland respondents. In 2006, 11% separated these two results with Auckland residents at 27% in 2006.

In 2008, 32% of respondents (representing a 7% increase from 2006) believed that cycling in the Wellington Region was poor. This result was 5% above that of Aucklanders with the perception that getting around their region by cycle was difficult, where a decrease of 13% from 2006 was evident.

14% of respondents in the Wellington Region had no impression while 17% were ambivalent (31% in Auckland).

Comment: More Auckland Region residents than those in Wellington felt that getting around the region by cycle was good in 2008. The Wellington result was unchanged from 2006.

A perception that cycling is difficult can lead to less use of this mode. Almost one-third of Wellingtonians believed that getting around their region by cycling was relatively difficult. The need for improved cycling facilities throughout the region is indicated. Providing greater ease of cycle use will maintain current levels and increase uptake of cycling in the region.

**Target: Nearly all urban road frontages are served by a footpath**

## Urban road frontages served by footpaths

An enquiry with the Wellington Region's Territorial Authorities in 2008 has revealed that no suitable data is collected to enable the development of an indicator to address the target: *Nearly all urban road frontages are served by a footpath*. A specific survey to acquire data would be required.

## Perceptions of the level of service for pedestrians

Definition: The graph shows how respondents rate the level of service for pedestrians in the Wellington Region.

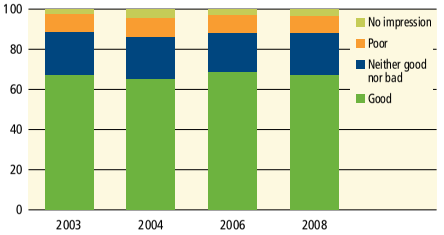



Figure 36: Perceptions of level of service for pedestrians (%), Wellington Region. Source: GWRC transport perception surveys

Interpretation: 67% of respondents rated the level of service for pedestrians in the Wellington Region as good in 2008, which is a slight decrease on the 2006 result of 69%. The perception that pedestrian's level of service was poor remained at 9% from 2006 to 2008.

Comment: Little change in the perception of the level of service for pedestrians has been indicated since 2003. Although reasonably high at over two-thirds of those surveyed, the perception of a good level of service in the region could be further improved by pedestrian oriented investment in the transport network.

## Perceptions about the ease of walking

Definition: The graph shows how easily people found it to get around the Wellington Region by walking. Results for the Auckland Region are also given.

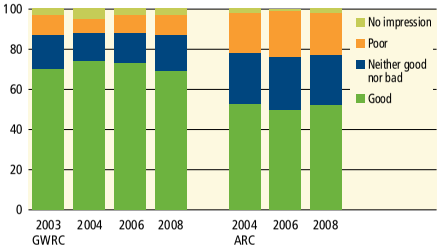



Figure 37: How 'hassle free' is getting around the region by walking? (%). Sources: GWRC and ARC transport perceptions surveys

Interpretation: In 2008, 69% of respondents rated getting around the Wellington Region by walking as 'good' (73% in 2006) while just over half of surveyed

Aucklanders had the same perception. 21% of Aucklanders believed that getting around their region by walking in 2008 was difficult, 11% more than Wellington Region respondents. Little change in this perception from 2006 was shown in either region.

19% of the Wellington residents surveyed were ambivalent compared with 25% in Auckland.

Comment: Most Wellingtonians believed that walking around their region was relatively easy, with only half of Auckland respondents thinking the same. This result is to be expected as Wellington's regional cities and towns are relatively compact and geographically small in scale, whereas the Auckland Region has sprawled as it has grown.

A perception that walking is a difficult mode of travel can lead to less use of public transport, which has an associated walking trip component. Through measures included in the pedestrian and TDM plans, GWRC encourages increased use of walking as a travel mode of choice.

### Perceptions of the level of access for mobility restricted footpath users

Definition: The graph shows how respondents rate the level of access for mobility restricted footpath users in the Wellington Region.

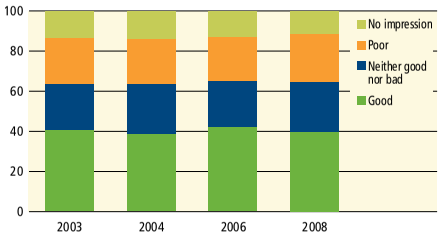



Figure 38: Perceptions of level of access for mobility restricted footpath users (%), Wellington Region. Source: GWRC transport perceptions surveys

Interpretation: In 2008, 40% of the Wellington Region residents who were surveyed felt that the level of access for mobility restricted footpath users was good, compared to 42% with the same perception in 2006. The perception of a poor level of service was relatively static over the five-year period the surveys were conducted at between 22% (recorded in 2006) and 24% in 2008. 11% percent of 2008 respondents had no impression.

Comments: The perception of the level of access for mobility restricted footpath users has changed little since 2003. As only around 40% of respondents rated it as good, and almost a quarter had the perception that the level of access was poor, there is much room for improvement. Planning and investment for better access to footpaths for the region's mobility restricted population is indicated. Footpath accessibility for mobility restricted users should be considered in the development of local walking strategies.

## 2.3 Increased safety for pedestrians and cyclists

**Target: Fewer than 100 pedestrians injured in the region per annum**

### Pedestrian casualties

Definition: The graph shows pedestrian casualties for the region. The RLTS target to 2016, of fewer than 100 pedestrians injured per annum, is also shown.

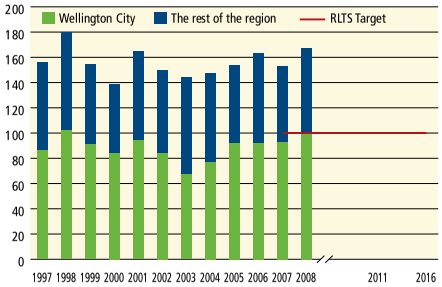



Figure 39: Pedestrian casualties, Wellington Region. Calendar year. Source: New Zealand Transport Agency

Interpretation: In 2008 the region's total pedestrian casualty figure rose to 167 casualties (an increase of 9.2%), the highest amount in a decade. The region is still well above the RLTS target of fewer than 100 pedestrians injured per annum and making no progress towards that target. Wellington City casualties constituted the targeted number for the whole region (100 casualties), accounting for 60% of total regional pedestrian casualties.

Comments: The occurrences of pedestrian versus vehicle crashes on urban roads in the Wellington Region remain high when compared with the rest of New Zealand during the period 2004-2008.[6] It is important to note that the relative risk of pedestrians





remains low nationally and throughout the region, see *Road safety* chapter 5, Figures 65 and 66. The implementation of the Regional Walking and Road Safety Plans aim to address pedestrian safety issues.

### Perceptions of pedestrian safety

Definition: The graph shows how safe respondents think people are when walking in the Wellington and Auckland Regions.

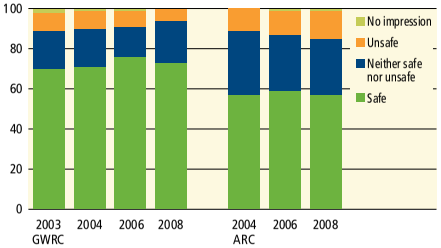



Figure 40: How safe do you think people are when walking? (%) Sources: GWRC and ARC perception surveys

Interpretation: In the Wellington Region, 73% of respondents said they felt people were 'safe' while walking (76% in 2006) while only 6% said they thought it was 'unsafe' (8% in 2006). This compared favourably with ARC's survey, with 14% more people feeling 'safe' in Wellington than in Auckland.

Comments: With such a high number of people walking in the Wellington Region, it is not surprising that almost three-quarters feel safe doing so. This result correlates well with the relatively low risk of a pedestrian being involved in a crash with a motor vehicle.

### Perceptions of child pedestrian safety

Definition: The graph shows the percentage of people in the Wellington Region who would or do allow a child (under 12 years) to walk unsupervised in the vicinity of their home and to or from school.

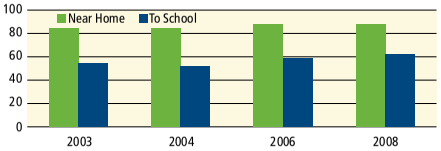



Figure 41: Allowing a child to walk unsupervised (%), Wellington Region. Source: GWRC perception surveys

Interpretation: 88% of respondents would allow children to walk unsupervised near their homes (unchanged from 2006), while only 62% would allow them to walk to school (59% in 2006). The main reason given for not allowing children to walk to school unsupervised has related to 'stranger danger' issues (around 40%). Other reasons given included the volume of traffic and main roads the children would need to contend with (12%), that the distance was too great (21%) and that children were not mature enough and required supervision (22%).

Comments: A similar number of respondents allowing children to walk unsupervised was shown in 2008. There is a small but pleasing increase in walk to school. While the actual recorded occurrence of 'stranger danger' incidents is very low, the media play a large role in over-reporting such incidents, leading to a climate of fear.

Many parents and caregivers drive their children to and from school as they feel their communities are unsafe. This leads to less physically active children and congestion both at the school gate and on the roads generally. A continued focus on providing and promoting a safe environment for transport users of all ages will benefit the community as a whole.

**Target: Fewer than 75 cyclists injured in the region per annum**

### Cyclist casualties

Definition: The graph shows cycle casualties for the region. The RLTS target to 2016, of fewer than 75 cyclists injured per annum is also shown.

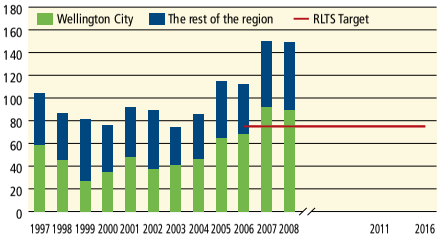



Figure 42: Cycle casualties, Wellington Region. Calendar year. Source: New Zealand Transport Agency

[6] New Zealand Transport Agency (2009). *Greater Wellington Region Road Safety Report 2004 to 2008. p. 45.*

Interpretation: Cycle casualties in the Wellington Region significantly increased in 2007 (34%) to a total of 150. In 2008 that record high was maintained with 149 cyclist casualties, remaining twice the RLTS target of fewer than 75 cyclists injured per annum. Wellington City alone accounted for 89 cyclist casualties, or 59.7% of the regional total.

Comments: Cyclist casualties are disproportionately high given the low number of trips made by cycle and have reached the level of double the RLTS target, see relative risk Figure 66 in chapter 5 *Road safety*. Despite cyclists being vulnerable road users, cycling is a transport mode that needs to be encouraged. GWRC supports and promotes a culture of safe cycling in the region through the implementation of the Regional Cycling and Road Safety Plans.

### Perceptions of cyclist safety

Definition: The graph shows how safe respondents think people are when using bicycles in both the Wellington and Auckland Regions.

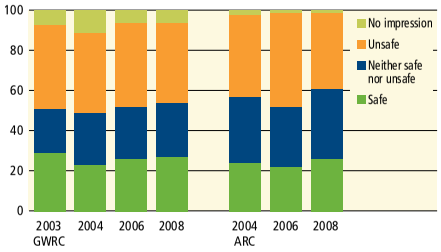



Figure 43: How safe do you think people are when cycling? (%). Sources: GWRC and ARC perception surveys

Interpretation: 27% of Wellington Region respondents said they think people generally are 'safe' while 40% reported they think people feel 'unsafe' when cycling. Auckland Region respondents choosing the 'unsafe' category were 38% (9% less than 2006) and 26% thought cycling to be 'safe'. Over one-quarter of respondents in the Wellington Region did not feel cyclists were safe or unsafe and 5% had no impression.

Comments: Wellington Region results in 2008 are very similar to those of 2006. Only one-quarter of Wellingtonians rated cycling in the region to be safe, a perception which has not changed much since 2003. GWRC and the regional community must focus on providing a safe environment for all transport users.

### Perceptions of child cyclist safety

Definition: The graph shows the percentage of people in the Wellington Region who would or do allow a child (under 12 years) to cycle unsupervised in the vicinity of their home and to or from school.

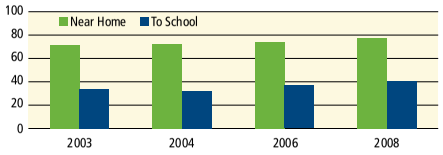



Figure 44: Allowing a child to ride their bicycle unsupervised (%), Wellington Region. Source: GWRC perception surveys

Interpretation: While 78% of respondents would allow children to cycle unsupervised near their home in 2008 (74% in 2006) only 41% would let them cycle to school (37% in 2006). The main reason given for not allowing children to cycle to school was the volume of traffic (27%). Other reasons included the condition of the roads, steepness of hills and speeding traffic (all at 14%), and poor driver behaviour (12%).

Comments: It is clear that there must be more focus on providing a safe environment for transport users of all ages. Many parents and caregivers drive their children to school as they feel it is too dangerous on the roads for young cyclists. This leads to increased congestion and traffic danger at the school gate, and children who lack physical activity and road sense.

## Conclusion

The number of active mode casualties and perceptions of safety, especially for cycling, remain key challenges for the region's RCAs to address.

While already a relatively high number of people make short trips by active modes, GWRC aims to encourage significantly more trips by walking and cycling. The numbers of cyclists commuting through Wellington City suburbs in the morning continue to show considerable increases in 2009 as cycling is becoming a more popular means of travelling. Active mode share will remain variable day to day, but this mode use is expected to increase with a growing awareness of the potential health benefits and improvements in cycle and pedestrian networks.





## Introduction

This section discusses items relating to the RLTS outcomes with an environmental focus.

The following key outcome is sought for the region's land transport network:

- **Reduced greenhouse gas emissions**

The performance indicator associated with this key outcome is:

  - Carbon dioxide emissions

The related outcomes and associated performance indicators are:

- **Reduced private car mode share**
  - Mode of journey to work: motor vehicle
  - Wellington CBD cordon vehicle counts
- **Reduced fuel consumption**
  - Fuel consumption
  - Fuel consumption by region
  - Fuel price index
- **Increased private vehicle occupancy**
  - Vehicle occupancy

## Key outcome

## 3.1 Reduced greenhouse gas emissions

**Target: Transport generated $CO_2$ emissions will remain below 1,065 kilotonnes per annum**

### Carbon dioxide emissions

Definition: Carbon dioxide is the most common and significant greenhouse gas formed from the combustion of fossil fuels.[7] The graph shows transport-generated $CO_2$ levels for the region. The RLTS target of less than 1,065 kilotonnes of $CO_2$ emissions per annum attributable to land transport also features on the graph.

Total fuel consumed (and consequently combusted) is directly correlated to the amount of $CO_2$ produced. Carbon dioxide emission levels for the region have been calculated from fuel consumption using production rates from the 2005 Ministry of Transport Vehicle Fleet Emissions Model (VFEM). The factors are: 2.3 kg of $CO_2$ per litre of petrol and 2.6 kg/litre for diesel.

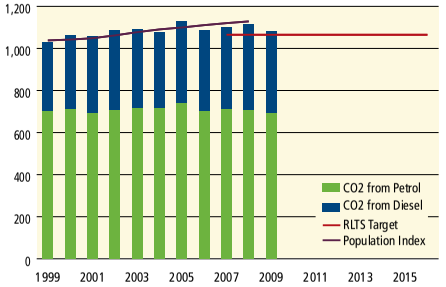



Figure 45: Transport-generated $CO_2$ (kilotonnes), Wellington Region. Sources: local authorities; Ministry of Transport VFEM 2005.

Interpretation: In 2009 land transport fuel combustion produced 1,084 kilotonnes of $CO_2$ in the Wellington Region. This represents a decrease of 29 kilotonnes (2.6%) from 2008. The target of no more than 1,065 kilotonnes of $CO_2$ per annum generated from transport has been exceeded by 19 kilotonnes in 2009 (down from exceedances of 48 kilotonnes in 2008 and 34 kilotonnes in 2007).

This overall decrease is brought about by regional reductions in both petrol and diesel consumption in 2009. As the factors above show, diesel produces more $CO_2$ per litre than petrol, therefore, a 3.3% decrease in $CO_2$ emissions attributable to diesel combustion from transport in 2009, is welcome progress towards the regional target. Carbon dioxide emissions from petrol consumption decreased by 2.2% in 2009, due to a drop in the volume of petrol used in the region.

Comments: Despite a growing population, $CO_2$ emission levels have remained relatively 'flat' over the last few years. Whilst this is positive, diesel usage in the region is forecast to dramatically increase.[8] If the proportion of diesel sales continues to rise, $CO_2$ emissions will increase even if total fuel sales remain constant.

[7] Ministry of Transport (2008). *The New Zealand Transport Strategy 2008.* Ministry of Transport, Wellington, p. 95.
[8] Greater Wellington Regional Council (2005). *Regional Travel Demand Management Strategy*, p. 30.

## Related outcomes

## 3.2 Reduced private car mode share

**Target: Private vehicles account for no more than 62% of region wide journey to work trips**

### Mode of journey to work: motor vehicle

Definition: The graph uses New Zealand Census data to show motor vehicle mode share for the region's 'main means of travel to work'. The RLTS target of less than 62% of all region wide trips by private vehicle by 2016 is also shown.

Motor vehicle was defined as: 'drove private car, truck or van; drove company car, truck or van; passenger in car, truck or van or company bus; motorcycle or powercycle'. As the census is conducted five-yearly this indicator will next be updated in 2012.

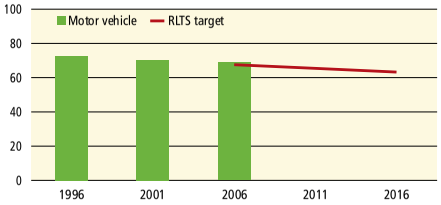



Figure 46: Motor vehicle mode share of journey to work (%). Source: Statistics New Zealand

Interpretation: Motor vehicle mode share of journey to work was 69% in 2006. Although the motor vehicle share of all trips has decreased slightly, 10,300 more motor vehicle trips were made than in 2001.

Comments: Across the three census periods shown, mode share of journey to work by motor vehicle has declined. To continue this trend and achieve the RLTS target by 2016, provision of alternative modes of transport and encouragement of their uptake must occur.

### Wellington CBD cordon vehicle counts

Definition: Wellington City Council commissions classified vehicle counts in March of each year. The resulting numbers of vehicles entering the Wellington CBD cordon during the two-hour morning commuter peak are shown in the graph. Buses are not counted.

The 'cordon' comprises: Oriental Parade, Majoribanks Street, Elizabeth Street, Pirie Street, Cambridge Terrace, Buckle Street, Tasman Street, Taranaki Street, Cuba Street, Victoria Street, Willis Street, Aro Street, Abel Smith Street, Vivian Street, Ghuznee Street, Dixon Street, The Terrace, Boulcott Street, Aurora Terrace, Bolton Street, Bowen Street, Hill Street, Hawkestone Street, Murphy Street, Hobson Street, Thorndon Quay and Aotea Quay.

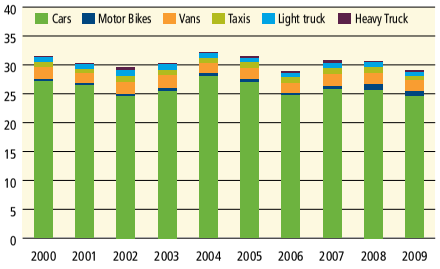



Figure 47: Wellington CBD cordon inbound traffic volumes (000), weekday AM two-hour peak, March. Source: Wellington City Council

Interpretation: After increasing by 6.5% in 2007, total inbound road traffic volumes remained the same in 2008, and then decreased in 2009 (by 5.3%). The number of motorbikes entering the CBD increased again in 2009 (by 3.7%), and the number of heavy trucks also increased (by 6.9%). All other categories of vehicle decreased in number this year.

The car remains the most common vehicle travelling into the Wellington CBD, with numbers decreasing from 25,637 in 2008 to 24,505 in 2009 (down 4.4%). Vans are again the second most common vehicle entering the CBD, with numbers decreasing by 14.9% this year. Numbers of taxis dropped by 8.3%, and light trucks by 22.1%.

Comments: After remaining constant in 2008, the total number of vehicles crossing the cordon into the Wellington CBD decreased in 2009. The highest number of motorbikes since 2000 was recorded in 2009, whilst light truck and van numbers decreased substantially – for light trucks this instance has occurred for the second year running.

Non-car classified vehicles make up approximately 16% of the total volume counted. The increase in numbers of motorcycles entering the CBD is consistent with the rising number of registrations with the NZ Transport Agency (see Figure 112 in *Appendix 1 – Regional Demographics*).





The decrease in the total number of inbound vehicles in 2009 may be due to fuel price impacts, which peaked in 2008 and have remained high this year. Less travel is occurring generally in the region – and this is evidenced by the State Highway traffic counts (see *Appendix 2*), and is perhaps a consequence of the current global economic downturn.

## 3.3 Reduced fuel consumption

**Target: No more than 442 mega litres of petrol and diesel per annum will be used for transport purposes**

### Fuel consumption

Definition: The graph shows total petrol and diesel sales for the region as collected monthly for the local body fuel tax. The RLTS and GWRC LTCCP target of no more than 442 mega litres of fuel per annum used for transport, is also shown.

Although some non-retail sales occur, and some fuel is purchased outside the region but used in it (and vice versa), this is the best measure of total regional fuel consumption available. Sub-regional data would add little value as fuel is not necessarily used in the area in which it is purchased.

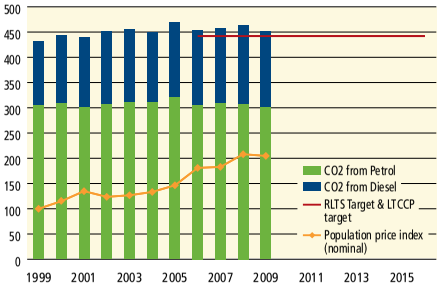



Figure 48: Fuel (diesel and petrol) consumption (M litres), Wellington Region. Sources: local authorities

Interpretation: Total regional fuel sales fell by 2.6% to 451 million litres in total in 2009 (from 463 in 2008). Petrol consumption decreased by 7 million litres to 301, and diesel use decreased by 5 million litres to 150 million litres this year.

Fuel sales in the western part of the region (where 86% of regional fuel is sold annually) experienced an overall decrease of 2.4%, due to a 3% decrease in diesel use, and a 2.1% decrease in petrol use. Wairarapa fuel sales also decreased overall - by 3.7% in 2009 - due to a 4.4% decrease in diesel use, and a 3.1% decrease in petrol use.

The RLTS target of less than 442 million litres of fuel consumed per annum is based on 2001 petrol and diesel sales and has been exceeded in all subsequent years. In 2009 total fuel consumed in the Wellington Region was 9 million litres above this level. Growth in total fuel use from 2001 to 2009 was 2.4%.

Comments: *The Travel Demand Management Plan* (2005) outlines measures to reduce fuel use. The regional travel behaviour change programme includes the implementation of travel plans for schools, workplaces and communities. Through travel plans a range of travel choices and initiatives are actively supported and promoted to reduce dependency on vehicle use.

### Fuel consumption by region

Definition: The graph shows total petrol and diesel sales in the Wellington, Canterbury and Auckland Regions, as collected monthly for the local body fuel tax.

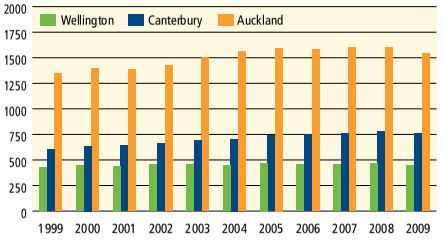



Figure 49: Total fuel consumption (M litres), by region. Sources: GWRC; ARC; ECan (Environment Canterbury)

Note: Canterbury fuel sales information is yearly ending in April. Wellington and Auckland data is for financial years ending in June.

Interpretation: Fuel sales decreased in all three regions in 2009. In Auckland fuel sales dropped by 3.6% (a substantial drop in diesel of 6.3% and 2.3% in petrol). Canterbury saw sales decreasing 1.9% (a 2.1% drop in diesel and a 1.7% drop in petrol), and in Wellington by 2.6% (diesel decreasing by 3.3% and petrol by 2.2%).

Despite these decreases, diesel sales have made pronounced increases in all three regions since 1999. Canterbury shows the highest growth rate in diesel consumption at over 49% (125 million litres) over the last ten years, with Auckland at 24% (95 million litres). Wellington Region's diesel use has grown by 19% (24 million litres) over the same period.

Approximately twice as much petrol as diesel is sold in both Auckland and Wellington Regions while the volumes are roughly equivalent in Canterbury.

Comments: Fuel sales in Auckland dropped the most in 2009, followed by Wellington and then Canterbury.

### Fuel price index

Definition: The graph shows the March quarter measure of the fuel component of the Farm Expenses Price Index (FEPI). The FEPI measures price changes of fixed inputs of goods and services to the farming industry. The data is collected quarterly as part of the Commodity Price Survey.

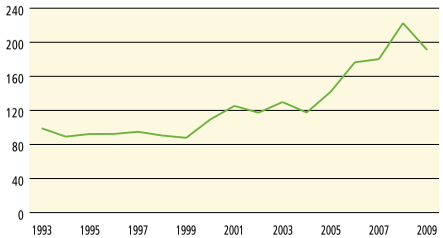



Figure 50: Fuel component of national Farm Expenses Price Index. March quarter. 1993 = 100. Source: Statistics New Zealand

Interpretation: A period of growth occurred from 2004 to 2008 totalling 89%, however, 2009 results show a decrease of 14%. Despite this recent reduction, over the past 10 years the index has increased by almost 120%.

Comment: The steep increase in the index in 2008 was representative of the fuel price at the pump which was approximately $1.76 per litre (91 octane petrol retail price, March 2008).[9] Peak fuel prices of around $2.15 per litre (91 octane petrol retail price)[10] were experienced in July 2008, and although slightly less this year, have remained high in 2009.

## 3.4 Increased private vehicle occupancy

**Target: Vehicles entering the Wellington CBD during the 2 hour AM peak contain on average at least 1.5 people per vehicle**

### Vehicle occupancy

Definition: The graph shows the average occupancy of vehicles entering the Wellington CBD. Data is generated from the same survey described in the indicator Wellington CBD cordon vehicle counts featured earlier in this section. Only traffic heading into the city is counted during the two-hour morning commuter peak. Buses are not included.

The RLTS target of 1.5 people on average per vehicle entering the Wellington CBD is also shown.

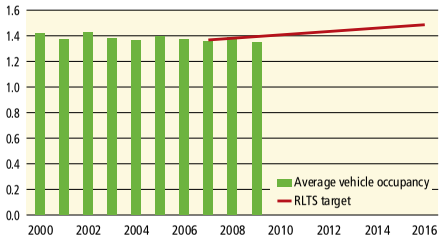



Figure 51: Wellington CBD cordon inbound vehicle occupancy, weekday AM two-hour peak, March. Source: Wellington City Council

Interpretation: Average occupancy of vehicles into the Wellington CBD decreased to 1.37 persons in 2009, back to the low level recorded in 2006. The highest occupancy level of 1.42 was recorded in both 2000 and 2002.

Comments: The slight decrease in vehicle occupancy moves away from the RLTS target of 1.5 people by 2016. Therefore, more emphasis is required to encourage carpooling or ridesharing if the target is to be reached.

[9] http://www.med.govt.nz/templates/contenttopicsummary____38614.aspx
[10] Ministry of Transport (2008). *The New Zealand Transport Strategy 2008.* Ministry of Transport, Wellington, pp. 23, 95.





The high proportion of single-occupancy vehicles represents an inefficient means of transportation. An emphasis on moving *people* rather than *vehicles* would significantly improve efficiency. GWRC is committed to promoting initiatives to increase car occupancy in the region - the implementation of a regional carpool programme was launched earlier this year; and the regional council also continues to coordinate workplace, school and community travel plans for the region.

## Conclusion

Carbon dioxide comprises the bulk of greenhouse gas emissions from transport and 18% of New Zealand's total greenhouse gas emissions are from the transport sector.[10] Without intervention, these emissions are predicted to grow by 35% over the next quarter century.[11] A reduction in transport sector emissions will therefore significantly impact overall greenhouse gas levels.[12]

Reducing the need to travel and improving the efficiency of the transport network will contribute to a reduction in the amount of fuel consumed by vehicles and the associated $CO_2$ produced. Increasing fuel prices may encourage the use of transport modes alternative to the private vehicle. Greater Wellington's travel demand management policies such as promoting the use of active modes and public transport aim to reduce the impact the transport sector has on the environment.

[11] Ministry for the Environment (2007). *Understanding Climate Change. Get a Grasp of the facts.* Ministry for the Environment, Wellington, p. 7.
[12] Ministry of Economic Development (2007). *New Zealand Energy Strategy to 2050.* Ministry of Economic Development, Wellington, p. 34.

# Road network efficiency outcomes

## Introduction

This section discusses items relating to the RLTS road network efficiency outcomes.

The following key outcome for road network efficiency is sought for the region's land transport network:

- **Reduced severe road congestion**

The performance indicators associated with this key outcome are:

  - Road congestion: all day average
  - Road congestion: time of day comparison
  - Perceptions about the state of congestion

Related outcomes and associated performance indicators for road network efficiency are:

- **Maintained vehicle travel times between communities and regional destinations**
  - Key route travel speed by road
  - Variability of travel time by road
- **Improved reliability of the strategic roading network**
  - Key route road closure
  - Perceptions of network reliability

## Key outcome

### 4.1 Reduced severe road congestion

**Target: Average congestion on selected roads will remain below 20 seconds delay per km travelled despite traffic growth**

### Road congestion: all day average

Definition: The graph shows all day average congestion on a selection of the region's strategic road network. Information is from NZ Transport Agency's March travel time surveys (see *Road congestion: time of day comparison* below). The RLTS and GWRC LTCCP target to 2019 is shown (congestion to remain below 20 seconds delay per km travelled).

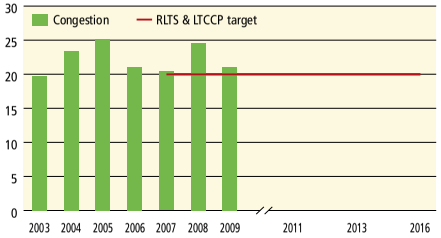



Figure 52: All day average congestion (seconds delay/km travelled), Wellington Region, March. Source: New Zealand Transport Agency

Interpretation: All day average congestion on the region's roads was 21.0 seconds delay per km travelled in 2009. This represents a 15% decrease from the near record high 2008 congestion levels (24.6 seconds delay per km travelled).

Comments: The all day average congestion level was showing a decreasing trend towards the target from 2005 to 2007, but then exceeded it by almost five seconds in 2008. In 2009 the all day average congestion level reduced again to one second above the target.

Congestion is a result of the level of demand on the transport network, and therefore rises and falls with the level of use of that network (see Figure 123 on State Highway vehicle kilometres travelled in *Appendix 2*).

### Road congestion: time of day comparison

Travel time performance is monitored by the NZ Transport Agency in March and November of each year on the following Wellington Region strategic routes:

Route 1: Waikanae – Wellington airport

Route 2: Upper Hutt – Wellington Railway Station

Route 3: Porirua – Seaview (via SH58)

Route 4: Karori – Island Bay

These routes can be seen on the map. This information yields a measure of congestion as minutes of delay per kilometre travelled for the morning peak period (AM), inter-peak period (IP) and afternoon peak period (PM).





Figure 53: Greater Wellington Region travel time performance monitoring network. Source: New Zealand Transport Agency

Data is susceptible to day-to-day aberrations in network performance such as crashes, breakdowns and road works. The March 2007 surveys were undertaken within the period when the effects of the opening of the Inner City Bypass had not completely settled down.

Definition: The graph shows results from the Wellington Region travel time surveys conducted by NZ Transport Agency in March of each year. Congestion is shown across three periods of the day.

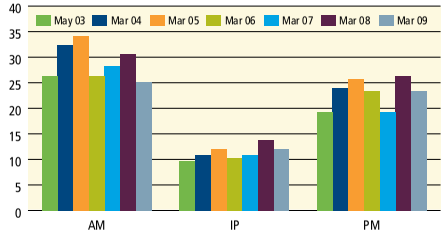



Figure 54: Congestion (seconds delay/km travelled), Wellington Region. Source: New Zealand Transport Agency

Interpretation: Congestion decreased across all periods of the day in 2009. Morning peak period congestion decreased by six seconds delay per kilometre travelled to 25 seconds delay in 2009. Congestion during the inter-peak period reduced from the record high in 2008 to 12 seconds. A reduced delay during the PM peak was evident from 2005 - 2007 but then increased to the highest level since 2003, now it reduced again to 23 seconds. The resulting all day average (as discussed in *Road congestion: all day average* above) shows a similar trend.

Comments: While the survey results reflect the level of service the road network offers, the fact that it is averaged out over the whole measured network means localised problems are masked. The pattern of congestion in the Wellington Region appears to be focused during the peak periods on a number of pinch points over the network such as the merge of State Highway 1 and State Highway 2 at Ngauranga. NZ Transport Agency's travel time surveys continue to show that Wellington's congestion levels generally compare favourably with other New Zealand centres.

### Perceptions about the state of congestion

Definition: The graph shows how Wellingtonians and Aucklanders believe traffic congestion has changed over the previous two years.

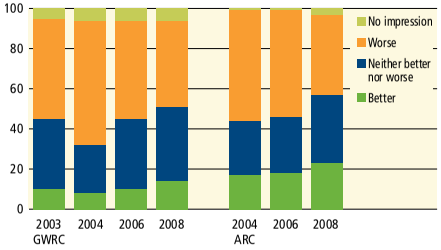



Figure 55: Do you think traffic congestion is better than it was two years ago? (%). Sources: GWRC and ARC transport perceptions surveys

Interpretation: In 2008, 43% of Wellingtonians considered congestion had worsened over the previous two years (49% in 2006). 37% thought congestion was neither better nor worse (35% in 2006) and 13% said it had improved (10% in 2006).

Aucklanders' perceptions that congestion levels were better in 2008 than in 2006 increased from 18% to 23%. This result is almost 10% higher than the same perception in Wellington. The perception in Auckland that congestion was worse decreased by 13% in 2008 to 40%.

In 2008, 3% more people in Wellington than in Auckland perceived that congestion was worse than two years previous. This is a reversal of the 2006 result.

Comments: A continued reduction in the percentage of Wellingtonians reporting a perception of congestion being worse than two years prior is pleasing. However, this result is at odds with the measured results above.

## Related outcomes

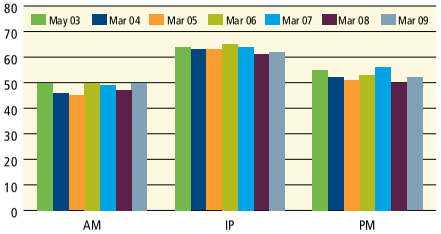
## 4.2 Maintained vehicle travel times between communities and regional destinations

**Target: No decrease in average vehicle journey "speeds" shown in travel time surveys for selected key routes**

### Key route travel speed by road

Definition: This indicator shows results from the Wellington Region travel time surveys conducted by NZ Transport Agency in March of each year (see the indicator *Road congestion: time of day comparison* in this section for a description of the surveyed routes).

The graph shows the average vehicle speed for the road network. This is calculated by dividing the surveyed actual travel time by the length of the road network. Speed of travel is given across three periods of the day.




56: Road network average vehicle speeds (km/h), Wellington Region. Source: New Zealand Transport Agency

Interpretation: Average travel speeds on the road network increased across all periods of the day in 2009 and are consistently slowest in the AM peak (50 km/h in 2009). Afternoon peak speeds increased by 4% (2 km/h) from 2008 to an average of 52 km/h. The average inter-peak travel speed remained the highest at 62 km/h, an increase of 1 km/h from 2008. The all day average travel speed increased from 52 to 54 km/h.

Comments: The difference between speed of travel in the AM and PM peak periods reduced to 2 km/h in 2009. The faster all day average speed of travel indicates less congestion.

Increases in travel speed should lead to a general reduction in travel time on the region's roads and reflect an improved overall level of service on the road network. Localised problem areas on the surveyed routes where congestion occurs are masked by the average results.





### Variability of travel time by road

Definition: This indicator shows results from the Wellington Region travel time surveys conducted by NZ Transport Agency in March of each year (see the indicator *Road congestion: time of day comparison* in this section for a description of the surveyed routes).

The graph shows a percentage of the average travel time as a measure of the reliability or certainty of travel times. Variability of travel time is given across three periods of the day.

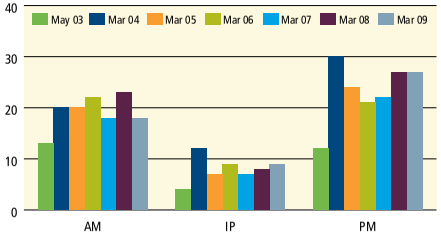



Figure 57: Travel time variability by road (%), Wellington Region. Source: New Zealand Transport Agency

Interpretation: Variability of travel time by road decreased by 5% in both the AM peak to 18% (the same as 2007). The PM peak stayed the same as 2008 (27%). There was also a slight increase during the inter-peak period (from 8% to 9%). The PM peak has consistently shown the most variability in travel time since 2003 with the exception of 2006, when the AM peak was more variable.

The all day average percentage uncertainty in travel time decreased to 19%. With the exception of 2008, when it jumped to 21%, the all day average percentage uncertainty has remaining fairly consistent at around 18% from 2005.

Comment: A general improvement in travel time variability was shown over time until 2008 when the variability of average travel time on the road network increased across all periods of the day. In 2009 the drop in the all day average was solely the result of reduced variability during the AM peak.

## 4.3 Improved reliability of the strategic roading network

**Target: Key routes are very rarely affected by closure**

### Key route road closure

Definition: The graph shows an estimate of the duration of incidents and number of vehicles delayed per annum on the region's strategic roading network.

Police data on traffic incidents on the strategic network has been combined with traffic flow information from the Wellington Transport Strategic Model (WTSM). The duration of the incident (shown on the left axis of the graph) combined with the average number of vehicles that would pass through that part of the network gives the number of vehicles delayed (right axis of the graph).

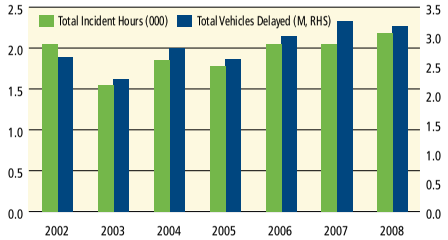



Figure 58: Total incident minutes (000) and total vehicles delayed (M) on the strategic roading network, Wellington Region. Calendar year. Source: NZ Police; GWRC WTSM

Note: NZ Police data is susceptible to variable reporting rates.

Interpretation: In 2008 nearly 3.2 million vehicles (a decrease of over 100,000 from 2007) were delayed by a record high total of 2,180 incident hours (an increase of 130 hours).

Comment: The overall trend is for an increasing number of vehicles to be affected by an increasing number of incidents.

# Road network efficiency outcomes

In 2008, fewer vehicles were delayed by an increased amount of time, despite increased State Highway VKT (see Figure 123 in *Appendix* 2). This suggests that more serious incidents are occurring at times of reduced traffic volumes (e.g. inter-peak period and evening) or in areas with a lesser percentage of total regional VKT.

### Perceptions of network reliability

Definition: The graph shows the percentage of people surveyed who rate the main commuter transport networks in the Wellington Region as 'reliable'.

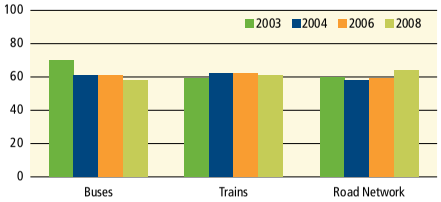



Figure 59: Reliability rating of regional transport networks (%). Source: GWRC transport perceptions surveys

Interpretation: In 2008, respondents felt the roading network was the most reliable of the transport network services surveyed at 64%, in contrast to 2004 and 2006, when roads were perceived to be the most unreliable transport network surveyed. Reliability rating of the bus and train networks both dropped slightly to 58% and 61% respectively in 2008.

Since 2003, the perception of reliability of the bus network has fallen by 17%. However, the train (3%) and road (7%) network reliability ratings improved slightly over the same period. An average of approximately 61% of people thought the transport networks in the Wellington Region were reliable in 2008.

Comment: Overall, this perception indicates that a relatively low level of service is being provided on the region's transport networks. Despite 60% of the surveyed Wellington Region residents perceiving the key public transport networks in the region to be reliable, the rating of the roading network reliability is higher. This will be a contributing factor to the dominant mode share of the private vehicle.

See Figure 27 in the *Passenger transport outcomes* section for the measured reliability of bus and train services.

## Conclusion

The regional Travel Demand Management Plan identifies measures to further improve the level of congestion on the roads by promoting alternatives to car travel. Many school, workplace and community travel plans are well established throughout the region and more schools and organisations are joining Greater Wellington's Travel Plan Programme on an ongoing basis.

RLTS proposals seek to maximise road network efficiency while encouraging travellers to use public transport and active modes for appropriate journeys. Current measures are relatively passive and rely on voluntary behavioural change. It is likely that direct incentives, such as road charges, congestion pricing and tolls, will be required in future to sustain changes in travel behaviour.



# Road safety outcomes

## Introduction

This section discusses items relating to the RLTS road safety outcome.

The following key outcome for road safety is sought for the region's land transport network:

- **Improved regional road safety**

The associated performance indicators included in this section are:

- Road crash fatalities attributable to road network deficiencies
- Killed and serious injured
- Injury crashes by district
- Casualties by severity type with crash reporting rate
- Casualties by region
- Fatalities and hospitalisations
- Relative risk by transport mode: Casualties per million hours travelled; Casualties per million kilometres travelled
- Combined modal safety perceptions
- Motorcyclist casualties
- Perceptions of road network safety
- Causal Factors: Age, Speed, Alcohol, Red-light running, Fatigue
- Police hours

There are no related outcomes for road safety.

## Key outcome

### 5.1 Improved regional road safety

**Target: There are no road crash fatalities attributable to roading network deficiencies**

### Road crash fatalities attributable to road network deficiencies

A method for monitoring this indicator has not yet been developed. NZTA assesses all fatalities on the state highway network to determine whether roading deficiency factors were a significant factor. Road crash fatalities are monitored at a regional level in line with national Road Safety to 2010 targets. Data availability will continue to be investigated.

### Killed and seriously injured

Definition: The graph shows a time-series of fatal and serious injury casualties for all vehicle types in the Wellington Region. Reported serious crash numbers have been factored up to take account of the indicative underreporting rate published by NZTA (see *Casualties by severity type with crash reporting rate* below).

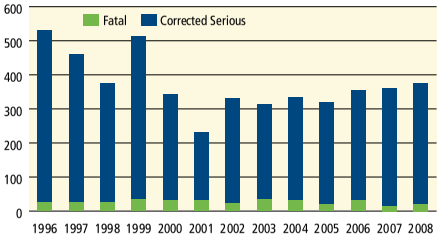



Figure 60: Total fatal and corrected serious injury casualties, Wellington Region. Calendar year. Source: New Zealand Transport Agency

Interpretation: With the exception of a spike in 1999, from 1996 to 2000 there was an overall downward trend of fatal and serious injury casualties, followed by a steady increase since 2001. 2008 saw 21 fatal casualties (an increase of 6) and an increase of serious casualties from 345 to 355 after the indicative crash reporting rate was taken into account.

Comments: Vehicle safety improvements, driver education and proactive road safety engineering have previously all contributed to reductions in crash numbers. More intervention is required if road safety is to be sustainably improved.

## Injury crashes by district

Definition: The graph shows total recorded injury crashes (minor, serious and fatal) for all vehicle types in the Wellington Region, by Wellington City and the rest of the region.

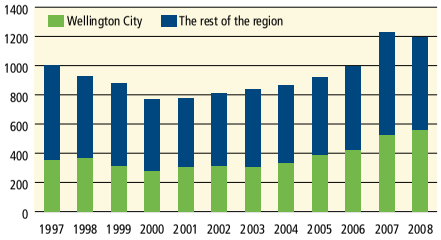



Figure 61: Total injury crashes for Wellington City and the rest of the region. Calendar year. Source: New Zealand Transport Agency

Interpretation: There were 1,193 injury crashes recorded in 2008, a marginal decrease of 19 from 2007. A general downward trend is shown across the region as a whole until 2000. Since 2001 total regional injury crashes have continued to increase, and despite a small reduction in 2008 the numbers from Wellington City increased by 36 injury crashes to 557.

Comments: Wellington City is taking up a growing proportion of total injury crashes, 47% of total injury crashes in 2008 up from 39% in 1996.

## Casualties by severity type with crash reporting rate

Definition: The graph shows the reporting rate of injuries and casualties classified as fatal and serious in severity. The severity of a crash is determined as the most severely injured casualty in the crash. The crash reporting rate 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. The reporting rate was not calculated every year, so average reporting rate values had to be used to fill gaps in annual data. Therefore, the reporting rate values should be considered as indicative only.

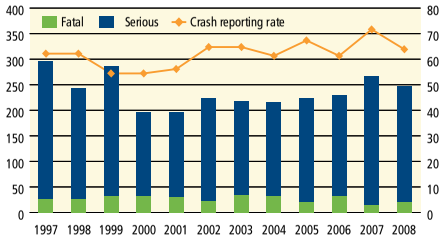



Figure 62: Fatal and serious casualties, by type, and crash reporting rate (%), Wellington Region. Calendar year. Source: New Zealand Transport Agency

Note: *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.[13]

Interpretation: Fatalities rose from 15 to 21 (an increase of 40%) in 2008, while serious casualties reduced from 252 to 227 (10%). There was an overall decrease of 7% in fatal and serious casualties in 2008. Indicative reporting rates have fluctuated significantly between 53% and 73%. There is no clearly discernable long-term relationship between reported serious injuries and indicative reporting rate fluctuations.

Comments: The yearly trends in serious and fatal casualties roughly correspond to yearly trends in total injury casualties, which include minor injuries. Variability in reporting rates does not appear to be a primary factor in yearly changes in reported serious injuries.

## Casualties by region

Definition: The graph shows the rate of the number of casualties per 100,000 population in the Wellington, Auckland and Canterbury Regions.

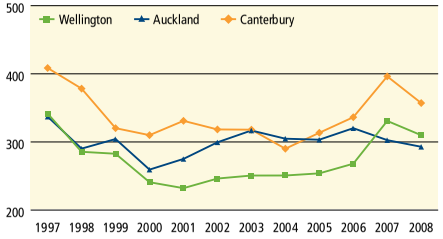



Figure 63: Casualties per 100,000 population, by region. Calendar year. Sources: New Zealand Transport Agency; Statistics New Zealand

[13] New Zealand Transport Agency (2009). *Wellington Region Road Safety Report 2004 to 2008*, p. 4.





Interpretation: Casualties per 100,000 population in the Wellington Region have remained the lowest of the three regions until 2007 when they rose above the casualty rate in Auckland. Overall, 2008 was a better year with casualty rates decreasing across all three regions: 6.3% in Wellington, 3.2% in Auckland, and 9.9% for Canterbury. However, Wellington remains above Auckland by approximately 17 casualties per 100,000 population in 2008.

Wellington's casualty rate followed the national change by reducing a moderate amount in 2008, but remains above the rate in Auckland. Auckland's casualty rate has remained relatively steady over the past 10 years.

Comments: It is unclear whether the 2008 figures signal a decreasing trend in casualty rates, or if 2007 was a uniquely bad year in Wellington and Canterbury. The long-term casualty rates for Wellington and Canterbury shows overall increasing trends – Wellington since 2001 and Canterbury since 2004.

## Fatalities and hospitalisations

This indicator specifically measures progress against the regional targets for road casualties as set out in the Wellington Regional Road Safety Plan (2004) and in line with the national *Road Safety to 2010* strategy.

Definition: The graph shows the number of deaths plus the number of people hospitalised; deaths plus those hospitalised more than one day; and deaths plus those hospitalised for more than three days.

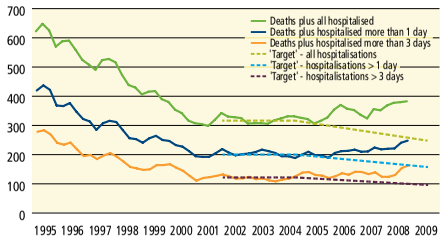



Figure 64: Number of deaths plus hospitalisations (12-month totals) resulting from road crashes, Wellington Region. Source: New Zealand Transport Agency

Note: Hospitalisations are the number of hospital admissions reported by the New Zealand Health Information Service. Along with deaths, the numbers of people hospitalised for more than one day and more than three days have been included as measures of more serious injuries.[14]

Interpretation: After a strong decline from 1995 to 2001, the trend in each category has been slowly increasing. Wellington Region's targets have been adjusted down proportionally from 2004 towards 2010 in line with national targets. However, 2008/09 saw a dramatic increase in deaths plus hospitalisations more than 1 and 3 days, while deaths plus all hospitalisations have levelled off after an initial increase.

Comment: The number of deaths plus hospitalisations in the Wellington Region fluctuated around the targets between approximately 2002 and 2004, but has generally exceeded the targets since then. It now seems very unlikely that the 2010 targets will be achieved.

## Relative risk by transport mode

In the following graphs travel data is sourced from the New Zealand Household Travel Survey (collected between July 2003 and June 2008). Casualties are reported by New Zealand Police to NZTA via the Crash Analysis System (CAS). Due to sample size, motorcyclist risk estimates could be calculated at the national level only. Risks shown for cyclists and bus passengers are based on relatively small numbers of people and may be subject to large fluctuations from year to year. Distances were not collected for walking trips but have been imputed from the durations, using the conversion factor of 4.4km/h.[15]

Definition: The graph shows the number of people killed and injured in **New Zealand** per million hours spent travelling, by mode, from 2003 to 2008.

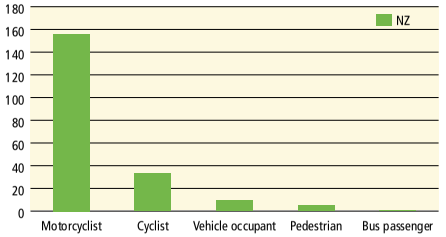



Figure 65: Casualties per million hours travelled, by transport mode, 2003-2008, national. Source: Ministry of Transport

Note: *Vehicle occupants* refer to trips made in light, four-wheeled vehicles i.e. cars, vans, utilities and sports utility vehicles (SUV). *Trip* refers to a segment of travel by a single mode, for a single purpose, to one stop. For example, walking to the bus, riding the bus to town and walking to work would be three trips.

[14] Land Transport Safety Authority (2003). *Road Safety to 2010*, p. 12.
[15] O'Fallon, C. & Sullivan, C. (2005). *Trip chaining: understanding how New Zealanders link their travel*. Wellington: Transfund New Zealand.

Interpretation: The relative risk of travelling by each mode is determined using an 'exposure-to-risk' indicator of casualties per million hours travelled. The data shows that per million hours travelled, a cyclist is 3.5 times as likely as a vehicle occupant to become a casualty and 7 times more likely than a pedestrian. Bus travel represents the mode of travel with the least casualty risk and motorcyclists face the greatest risk of casualty.

Comment: Reducing cyclist risk is a priority for road safety initiatives. Cycling is 'less safe' than other modes of transport but cycling in itself is not 'unsafe'. There is only one chance per 30,000 hours cycled of experiencing a casualty.[16] This is an improvement from the prior reporting period when there was a one chance in 26,000 hours cycled.

Pedestrian travel remains safe with only one chance of casualty per 213,000 hours spent travelling,[16] an improvement from 185,000 hours in the prior reporting period. National and regional road safety initiatives will assist with addressing vehicular risk.

Definition: The graph shows the number of people killed and injured in New Zealand and for the first time, in the Wellington Region, per million kilometres travelled, by mode, from 2003 to 2008.

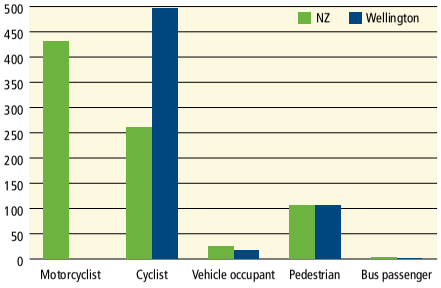



Figure 66: Casualties per million kilometres travelled, by transport mode, 2003-2008, New Zealand and Wellington Region. Source: Ministry of Transport

Interpretation: In the Wellington Region, a cyclist is 30 times as likely as a vehicle occupant to become a casualty and 4.7 times more likely than a pedestrian. The risk for a Wellington cyclist far exceeds the national risk, however all other modes present slightly less risk in Wellington.

The national data shows that per million kilometres travelled, a cyclist is 10 times as likely as a vehicle occupant to become a casualty and 2.4 times more likely than a pedestrian. Bus travel represents the mode of travel with least casualty risk and motorcyclists face the greatest risk of casualty nationally.

Comment: The risk to cyclists by distance travelled is alarmingly greater than any other risk, a trend that has worsened over the last year. This indicates a significant need to improve the level of service for cyclists.

## Combined modal safety perceptions

Definition: The following chart presents the difference in the perception of safety across the road network, public transport, walking and cycling.

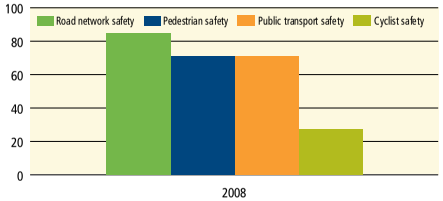



Figure 67: The percentage of respondents who felt 'safe' using each mode (%). Source: GWRC perception survey

Interpretation: Only 27% of respondents felt that cycling was a safe mode of travel. This compares poorly to the 85% of respondents said they felt the roading network was safe. An equal percentage though public transport and walking were safe modes (71%).

Comment: When compared with the relative risk indicators above, the actual risk and perception of risk for the road network is as expected, with the exception of motorcyclists, for both time and distance travelled. While the perceived safety of public transport is high, that it is lower than road network is somewhat surprising given that public transport has the lowest level of risk over both time and distance.

The perception of risk around walking and cycling each correspond closer to the actual risk per distance travelled rather than over time.

## Perceptions of road network safety

Definition: The graph shows how safe respondents in the Wellington and Auckland Regions feel when using a car.

[16] Ministry of Transport, NZ Household Travel Survey and reported crashes, 2003-2008.





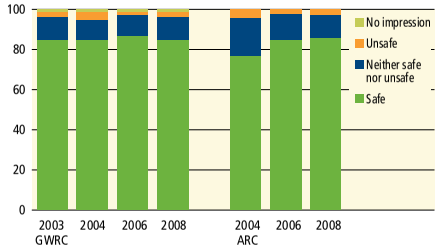



Figure 68: How safe do you feel when using a car? (%) Sources: GWRC and ARC perception surveys

Interpretation: In 2008, 85% of Wellington respondents said they felt 'safe' when using a car (87% in 2006), while 3% thought it was 'unsafe' (2% in 2006). Results in the Auckland Region in 2008 are very similar to these.

Comments: With such high mode use, many people perceive they are safest when travelling by car.

## Motorcyclist casualties

Definition: The graph shows the total number of motorcyclist casualties for the region. Motorcycle registration numbers are given as a comparison.

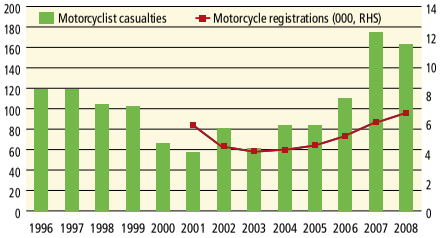



Figure 69: Motorcyclist casualties (calendar year) and registrations (financial year), Wellington Region. Source: New Zealand Transport Agency

Interpretation: Motorcyclist casualties in 2008 totalled 163 for the region, representing an annual decrease of 4%. This was due to decreases in motorcyclist casualties in Wairarapa (33%) and Hutt City (21%). Porirua experienced an increase from 7 to 12 motorcyclist casualties. Until 2001, a clear downward trend in casualties was shown, followed by some fluctuation and then a rapid jump in 2007. Since 2005, casualty numbers have doubled.

The number of motorcycles registered in the region increased by over 3,000 (74%) from 2003 to 2009. Registrations have risen about 7% in 2009 after increases of around 12% and 16% in 2008 and 2007 respectively.

Comments: The strong downward trend in motorcyclist casualty figures has reversed and the number has soared in 2007. The overall number of casualties is increasing at a much faster rate than that of motorcycle registrations (167% and 63% between 2003 and 2007 respectively).

## Causal Factors

This section details selected causal factors for crashes and casualties in the Wellington Region as identified in the Greater Wellington Road Safety Investigation 2008. The following figures derive from crashes reported by New Zealand Police to NZTA via the Crash Analysis System (CAS). Since a single crash can have several causal factors, the totals and the percentages given in this section do not add up to the total numbers or percentages of crashes in the Wellington Region. Vehicle fleet age is covered in *Appendix 1 – Regional Demographics* as Figures 109 and 110.

### Age

Definition: The following table displays the total casualties for the 5 year period between 2004 and 2008 that involved a person aged 15 to 19 years old, 20 to 24 years old, and the combined two age groups. The table also shows the percentage of those age groups in the total casualties over the same time period.

| Age | 5 year total casualties | % of total casualties |
|---|---|---|
| 15 - 19 | 1166 | 18.3% |
| 20 - 24 | 926 | 14.6% |
| Combined | 2092 | 32.9% |

Table 5: 5 year total casualties and percentage of total casualties of youths aged 15-19, 20-24, and combined. 2004-2008 calendar years. Source: New Zealand Transport Agency

Interpretation: 15 to 19 year olds are the most at risk age cohort with 1,166 casualties reported between 2004 and 2008 (18.3% of total casualties). 20 to 24 year olds are the next highest at-risk age cohort with 926 casualties, or 14.6% of total regional casualties. Combined to two age cohorts make up nearly 33% of the Wellington Region's road toll.

Comments: Young adults aged 15 to 24 are significantly overrepresented in casualty statistics for the Wellington Region, far outpacing the next highest at risk age cohort – 25 to 29 year olds (628 total casualties) by 47%.

## Speed

Definition: The following chart shows the number of crashes where speed was identified as a causal factor and the percentage of total injury crashes where speed was a causal factor.

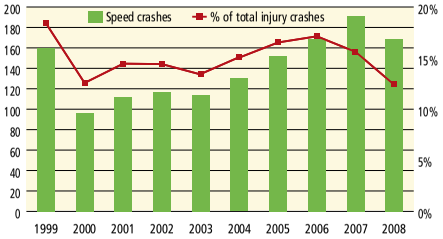



Figure 70: Injury crashes where speed was identified as a causal factor and the percentage of total injury crashes. Calendar year. Source: New Zealand Transport Agency

Interpretation: There was a significant drop in speed related crashes from 1999 to 2000, followed by a steady increase to 2007 (96 crashes in 2000 to 191 in 2007). The speeding number dropped in 2008 by 12% to 169 speeding crashes. Speeding as a causal factor in total crashes throughout the Wellington Region has reduced over the prior two years from 17% in 2006 to 14% in 2008.

Comments: The trends in the number of speeding crashes follows the overall trend in total injury crashes, but the proportion of speeding crashes has begun to decrease to near 2003 levels. However, speeding remains the most common of the selected causal factors in both the number and proportion of crashes in the Wellington Region.

## Alcohol

Definition: The following chart shows the number of crashes where alcohol was identified as a causal factor and the percentage of total injury crashes where alcohol was a causal factor.

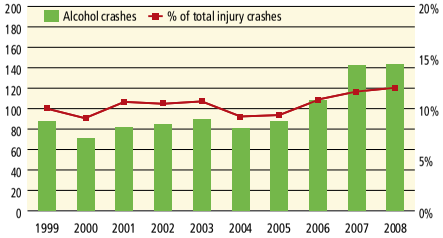



Figure 71: Injury crashes where alcohol was identified as a causal factor and the percentage of total injury crashes. Calendar year. Source: New Zealand Transport Agency

Interpretation: The number of injury crashes where alcohol was identified as a causal factor remained relatively steady since 1999, but jumped to just over 140 crashes in 2007. The proportion of total crashes where alcohol was identified as a causal factor has remained somewhat flat, although has been increasing since 2004. Figures for 2008 are 143 crashes which constitutes 12% of total crashes in the Wellington Region.

Comments: Alcohol is a close second most prominent of the selected causal factors both in terms of numbers and percentage of total crashes in the Wellington Region.

## Red-light running

Definition: The following chart shows the number of injury crashes where red-light running was identified as a causal factor and the percentage of total injury crashes where red-light running was a causal factor. Red-light running is defined as crashes where drivers did not stop at red and amber signals, whether solid or flashing, and where drivers failed to notice traffic lights. Non-injury crashes have not been included.

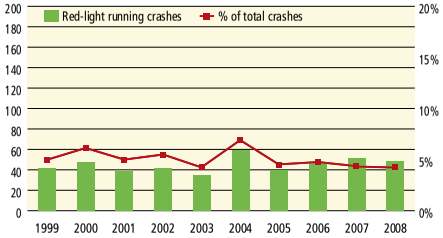



Figure 72: Injury crashes where red-light running was identified as a causal factor and the percentage of total injury crashes. Calendar year. Source: New Zealand Transport Agency





Interpretation: The numbers and proportion or red-light running as a causal factor in crashes has remained relatively stable since 1999. There was a significant increase in 2004 when total numbers jumped to 59 crashes and 6.8% of total crashes. Figures for 2008 are 48 crashes which constitutes 4% of total crashes in the Wellington Region.

Comments: Red-light running has a similar effect on the Wellington regional road toll as crashes involving fatigue.

## Fatigue

Definition: The following chart shows the number of crashes where fatigue was identified as a causal factor and the percentage of total injury crashes where fatigue was a causal factor.

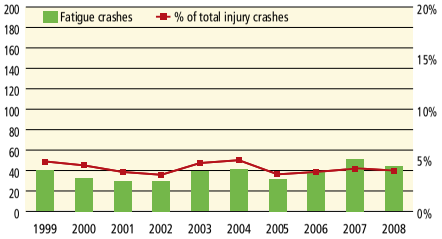



Figure 73: Injury crashes where fatigue was identified as a causal factor and the percentage of total injury crashes. Calendar year. Source: New Zealand Transport Agency

Interpretation: Injury crashes in which fatigue was identified as a causal factor have remained steady since 1999, mostly staying below 40 crashes per calendar year. The percentage of total crashes in which fatigue was identified as a causal factor also remained flat at about 4%. Figures for 2008 are 44 crashes which constitutes 3.7% of total crashes in the region.

Comments: While there are numerous opportunities to pull off the road to rest throughout the region, a measurable proportion of drivers continue to suffer fatigue related crashes.

## Police hours

Definition: The table shows the total amount of staff hours allocated by New Zealand Police in the Wellington Region for road safety as a proportion of population. The New Zealand Police have changed their method of reporting from total hours to full time equivalent staff (1500 hours) for the 2006/07 financial year. For the years after 2006/07 the total full time equivalent staff data is multiplied by 1500 to get the total hours.

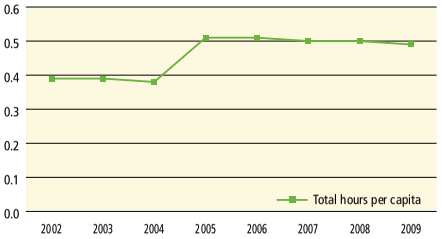



Figure 74: Total Wellington Police District allocated hours per capita. Source: New Zealand Police; Statistics New Zealand

Interpretation: The total number of allocated road safety hours steadily decreased to 2004 before jumping up to 0.52 hours (just over 30 minutes) per capita in 2005. Then the amount of allocated hours remained steady resulting in a decline per capita.

Comments: New Zealand Police allocate hours at the start of the financial year, but don't publish information on the amount of hours delivered. Therefore, whether or not the actual amount of delivered police hours to road safety matches the allocation is unknown.

## Conclusion

Overall, 2008 saw slight improvements in many indicators, but more data and time is required to determine if these are sustainable trends. An increased focus on road safety issues and causal factors throughout the region is required to improve overall regional safety.

A strong downward trend in total injury crashes is evident from the very high number of injury crashes in the mid-1980's through to the end of the 1990's. Since 2000, however, road injury crash numbers have increased significantly with young adults, speeding and alcohol contributing significantly.

To address this issue continued cross-agency efforts are required through engineering, enforcement and education programmes, as well as advocacy surrounding the most prominent issues and causal factors in the Wellington Region.

# Land use and transport integration outcomes

## Introduction

This section discusses items relating to the RLTS land use and transport integration outcomes.

The following key outcome for land use and transport integration is sought for the region's land transport network:

- **Improved land use and transport integration (in line with the WRS and local authority urban development strategies)**

The performance indicators associated with this key outcome are:

  - Urban development integrated with active modes and public transport
  - Density of new subdivisions
  - New lots by district

The following related outcomes and associated performance indicators for land use and transport integration are:

- **Improved integration between transport modes**
  - Public transport services with integrated ticketing
  - Cycle storage and park and ride facilities
- **Sustainable economic development supported (in line with the WRS)**
  - State highway vehicle kilometres travelled per GDP
- **Improved transport efficiency**
  - Public transport expenditure per passenger
  - Public transport expenditure per GDP
  - Roading expenditure per GDP

## Key outcome

### 6.1 Improved land use and transport integration (in line with the WRS and local authority urban development strategies)

**Target: All large subdivisions and developments include appropriate provision for walking, cycling and public transport**

### Urban development integrated with active modes and public transport

A review [17] of local authority procedures in 2008 identified that while there is some consideration of active modes and public transport in all district plan policies, there are varying degrees of implementation, and hence, scope for improvement in this area. Local authorities do not consider any form of indicator measuring relative performance as reliable or helpful. For this reason, a checklist was produced and distributed in December 2008 to provide guidance to local authorities when assessing consent applications in the short term and when reviewing district plans in the longer term. The checklist has received positive feedback from local authorities. Progress in the implementation of these measures will be reviewed periodically.

### Density of new subdivisions

Definition: The following maps show the density and location of new subdivisions less than eight hectares in size in the western and eastern (Wairarapa) parts of the region, from July 2000 – June 2009.

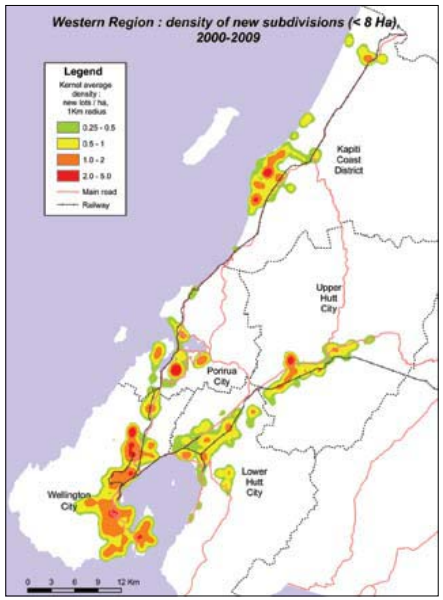



Figure 75: Density of new subdivisions < 8 Ha in area, western Wellington Region, 2000 – 2009. Source: GWRC

[17] Greater Wellington Regional Council. (2008). *Land Use & Transport Integration: Assessment Report*, p16.





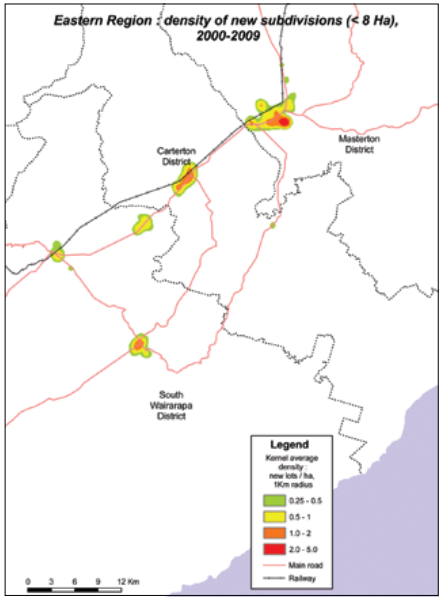



Figure 76: Density of new subdivisions < 8 Ha in area, Wairarapa, 2000 – 2009. Source: GWRC

Interpretation: From the map of the western part of the region it is evident that growth has occurred in all centres, particularly since 2005. A higher density of new subdivisions now exists particularly in Paraparaumu, Raumati, Porirua East, North Wellington and Riverstone Terraces (in Upper Hutt). Growth in Wellington City has been strong.

In Wairarapa, the area of higher density to the east and south of Masterton town centre remained relatively unchanged. Carterton township continued to show an increase in density.

Comments: Most areas of land use densification and infilling are occurring around the region's rail corridor. However, the area of development in eastern Masterton is somewhat removed from rail.

In Wairarapa, the area of higher density to the east of Masterton town centre remained relatively unchanged. Carterton township continued to show an increase in density.

Comments: Most areas of land use densification and infilling are occurring around the region's rail corridor. However, the area of development in eastern Masterton is somewhat removed from rail.

Urban sprawl leads to an increased dependence on private vehicle use, as subdivisions are often located away from public transport networks. Long cul-de-sacs, a common feature of new subdivisions can also require walking and cycling some distance to local or main amenities. Land use planning integrated with existing and future transport nodes will provide more sustainable transport choices.

### New lots by district

Definition: The graph shows the location and number of new lots created in the Wellington Region between 2001 and 2009.

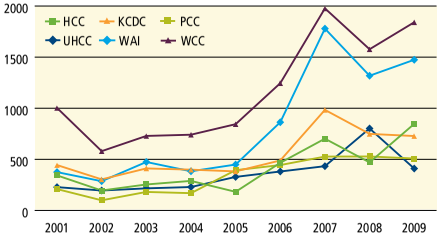



Figure 77: New lots created < 8 Ha in area, by district, 2000 – 2008. Source: GWRC

Interpretation: The development of new lots increased in half of the districts across the region in 2009 and remained high in most others. Total new developments were up by 7%. In Upper Hutt, new developments decreased to 410 (down almost 50% from 2008). Kapiti Coast and Porirua slightly decreased (2.8% and 3.8% respectively).

The number of new lots created in Wairarapa districts and Wellington City soared from 2005 to 2007. Despite the renewed growth in those two areas, the number of new developments is still down in 2009 than the highs experienced in 2007. Kapiti Coast District and Hutt City experienced strong growth over the same period. Development in Kapiti has continued to decrease while Hutt City has continued to grow. Porirua and Upper Hutt cities exhibited moderate increases in new lots created up to 2007 (and Upper Hutt experienced strong growth in 2008) but since then both have modestly declined.

Comments: The establishment of higher density housing in areas which are already built up, e.g. new residential development in existing buildings is desirable from an environmental sustainability viewpoint. Residential intensification through redevelopment and refurbishment of central city buildings in Wellington City has slowed, as has the development which was evident in Wairarapa between 2005 and 2007. This may be the product of a slowing economy.

## Related outcome

## 6.2 Improved integration between transport modes

**Target: The majority of passenger transport services covered by integrated ticketing**

### Public transport services with integrated ticketing

Definition: As many journeys are multi-modal, a good level of integration between the different transport modes is sought by the RLTS. Integrating the fare structures and ticketing systems used on public transport throughout the region is a vital step in this process.

Interpretation: Currently, no overall system of fares or ticketing integration is operational in the Wellington Region. Only some ad hoc, manually based integrated ticketing arrangements exist within the region including the 'Hutt Plus' bus/rail transfer, the similar, experimental 'KapitiPlus' and the 'Metlink Explorer' off-peak ticket. The electronic 'Snapper' payment card is now on a significant part of the Wellington bus network, and the SuperGold free travel concession for seniors has been introduced.

Comment: An integrated, electronic ticketing system for the whole region remains a policy aspiration. Electronic ticketing on rail and a suitable system of fares integration continues to be investigated in the context of the expected regional and national influences of the Auckland integrated fares and ticketing tender.

### Cycle storage and park and ride facilities

Definition: The graph shows the number of regional railway station 'park and ride' car parks and cycle locker facilities.

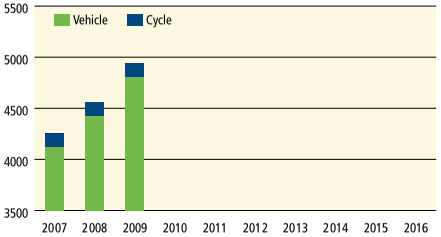



Figure 78: Number of vehicle car parks and cycle lockers at railway stations, Wellington Region. Source: GWRC

Interpretation: In 2009 there were a total of 4,807 car parks and 132 cycle storage spaces available to commuters at railway stations across the region. Park and ride car parks increased in number by 379 (7.9%) while cycle storage remained the same.

Comments: A trial programme for a maximum of two bicycles per baggage compartment carried free of charge on the region's commuter trains began 1 July 2008. These facilities for the region are limited and are available on a first in, first served basis. Park and ride facilities were extended in Woburn, Khandallah, Featherston, Petone, Pukerua Bay and Upper Hutt during the 2008/09 year.

## 6.3 Sustainable economic development supported (in line with the WRS)

**Target: Reduced vehicle kilometres travelled per GDP**

### State highway vehicle kilometres travelled per GDP

Definition: The graph shows the ratio of VKT (vehicle kilometres travelled) on the state highway network to GDP for the region.





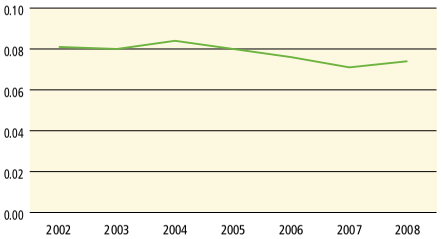



Figure 79: State highway VKT per GDP. Sources: New Zealand Transport Agency; Business and Economic Research Limited (BERL)

Note: GDP = real value added GDP (2008$) for the Wellington Region

Interpretation: There was a 5% increase State Highway vehicle kilometres travelled per GDP in 2008. However, between 2002 and 2008 an overall decline in VKT per GDP of 9% was shown.

Comments: The slight downward trend shown indicates more efficiency. There is less traffic on the region's state highway network for each unit of GDP. Despite the increases seen in 2004 and 2008 some progress towards the target of reduced VKT per GDP is evident.

## 6.4 Improved transport efficiency

**Target: Reduced passenger transport expenditure per passenger**

### Public transport expenditure per passenger

Definition: The graph shows the ratio of operational expenditure on public transport services to the number of passengers using train, bus and ferry services.

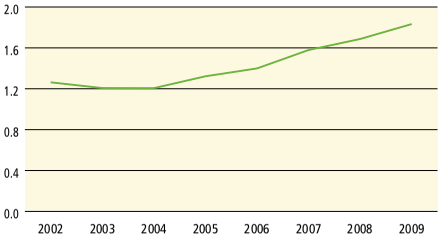



Figure 80: Public transport expenditure ($) per passenger. Source: GWRC

Interpretation: An overall increase in public transport operational expenditure per passenger of 45% was shown between 2002 and 2009. After an initial decrease in 2003, followed by no growth for a year, a steady increase since 2004 has occurred. In 200, public transport expenditure per passenger increased by 8.7%.

Comments: The target of reduced passenger transport per passenger is not being met. Between 2002 and 2003 the relationship between expenditure on regional passenger transport services versus patronage improved, i.e. the region was spending a relatively lesser amount for increasing patronage. Since 2003 this has reversed, meaning the region is paying increasingly more for each person moved by the public transport system. This largely reflects an increase of 109% in bus contract costs since 2004. Significant investment in rail improvements is yet to be incurred.

### Public transport expenditure per GDP

Definition: The graph shows the relationship between expenditure on public transport services and GDP for the region.

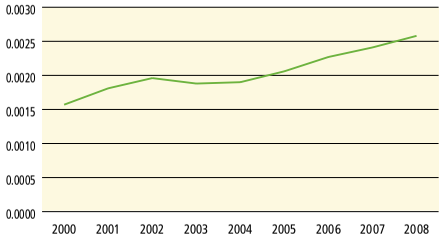



Figure 81: Public transport expenditure ($) per GDP. Sources: GWRC; BERL

Note: GDP = real value added GDP (2008$) for the Wellington Region

Interpretation: Between 2000 and 2008 public transport expenditure per GDP increased by 98%. A decline of 4% was shown between 2002 and 2003 and a 40% increase occurred from 2004 to 2007. In 2008, the increase amounted to 7.3%.

Comments: Since 2000 (apart from a dip between 2002 and 2003) the region has continued to pay increasingly more for passenger transport improvements as a proportion of total regional GDP. Like the previous indicator *(Public transport expenditure per passenger)* the increase shown from 2004 to 2008 largely reflects the increase of 86% in bus contract costs over that time.

Expenditure will need to increase over the short term in order to address the most pressing public transport needs, particularly on rail.

**Target: Reduced roading expenditure per GDP**

### Roading expenditure per GDP

Definition: The graph shows the relationship between expenditure on roading and GDP for the region.

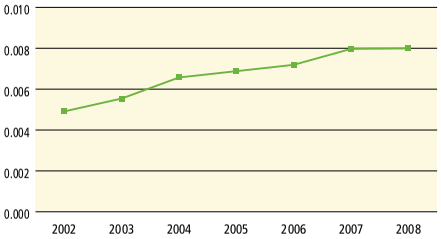



Figure 82: Roading expenditure ($) per GDP. Sources: Road Controlling Authorities (RCA); BERL

Note: GDP = real value added GDP (2008$) for the Wellington Region

Interpretation: A 63% increase in roading expenditure per GDP overall was shown between 2002 and 2008. During 2004 an increase of almost 20% occurred, driven by a 29% increase in capital expenditure on the region's roads, followed by a steady rise. In 2008, roading expenditure per GDP was flat from the previous year, increasing only by 0.3%.

Comments: Since 2002 the region has continued to pay increasingly more for roading improvements as a proportion of total regional GDP. The target of reduced expenditure on the region's roads per GDP is therefore not being met.

## Conclusion

The RLTS has targets of: *Reduced passenger transport expenditure per passenger*, and: *Reduced roading expenditure per GDP*. Unfortunately the current trend shown in both cases is in the opposite direction.

In the long run, these RLTS outcomes are meant to decouple transport costs from economic development.

While it is desirable to seek an improvement in financial efficiency for the operation of the region's transport system, there is a backlog of works that has built up as a result of significant under investment for much of the last 20 years.

Supporting and advocating for integrated land use and transport planning through district plans, the Regional Policy Statement and the Wellington Regional Strategy will influence higher density development around public transport infrastructure.

Specific integrated land use strategies that can encourage public transport use and other more sustainable modes of transport include downtown redevelopment and intensification, clustered suburban development, more compact residential development in and along public transport corridors, mixing land use activities (work, recreation, residential), pedestrian and cycle-friendly urban design, and the physical integration of new development with public transport services. These strategies, often called Transit-Oriented Development (TOD) should be encouraged as they offer an alternative to auto-oriented development through integrating transportation and land use planning. This provides the necessary context for implementing other TDM strategies and ultimately reducing automobile dependence.



# Freight outcomes

## Introduction

This section discusses items relating to the RLTS freight outcomes.

The following key outcome for freight is sought for the region's land transport network:

- **Improved regional freight efficiency**

The performance indicators associated with this key outcome are:

  - Journey times for road freight between key destinations
  - Heavy vehicles on key routes

Related outcomes and associated performance indicators for freight are:

- **Improved inter-regional freight efficiency**
  - Removal of rail freight infrastructure constraints
  - Inter-regional freight movements

## Key outcome

### 7.1 Improved regional freight efficiency

**Target: Improved road journey times for freight traffic between key destinations**

### Journey times for road freight between key destinations

Representative routes for heavy goods movement were selected as follows:

- Seaview - Porirua via SH58
- Seaview - Porirua via SH1 and SH2
- Seaview - CentrePort

New Zealand Transport Agency travel time survey data was used to create route travel times by combining sections of the regional routes used in *Road Network Efficiency Outcomes*.

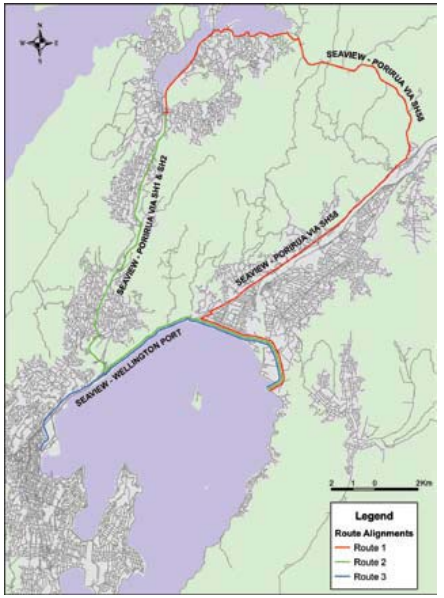



Figure 83: Representative regional road freight routes. Sources: New Zealand Transport Agency; GWRC

Definition: The graphs show all day average travel time in minutes for the routes listed and shown on the map. These routes are representative of typical road freight movements across the region.

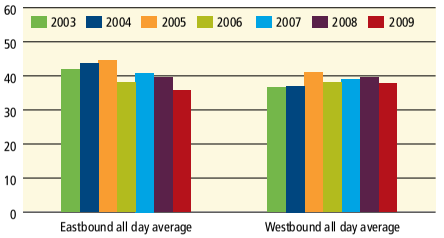



Figure 84: All day average travel time (mins) on road freight, Route 1: between Seaview and Porirua via SH58, March. Sources: New Zealand Transport Agency; GWRC

Interpretation: The all day average time taken to travel between Porirua and Seaview (eastbound) via State Highway 58 has decreased when compared to 2003, whilst the westbound route travel time has increased very slightly over the same period. This has had the effect of lessening the directional difference in all day average travel time on this route. In 2009 the all day average travel time was just under 37 minutes in either direction (3 minutes less than the 2008 all day average).

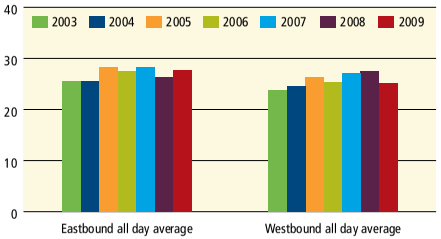



Figure 85: All day average travel time (mins) on road freight, Route 2: between Seaview and Porirua via SH1 and SH2, March. Sources: New Zealand Transport Agency; GWRC

Interpretation: Travel between the same locations (Seaview and Porirua) via State Highways 1 and 2 presents a lower all day average travel time by approximately 8 minutes. A slight increase in all day average travel time is shown over the five year period. All day average travel time in the westbound direction was slightly less than on the eastbound route (25 and 28 minutes respectively).

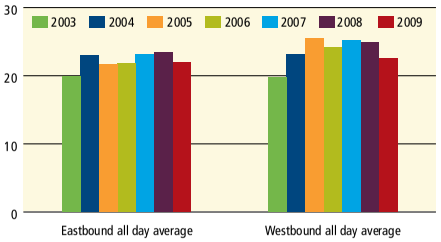



Figure 86: All day average travel time (mins) on road freight, Route 3: between Seaview and CentrePort, March. Sources: New Zealand Transport Agency; GWRC

Interpretation: At 22 minutes (eastbound) and 23 minutes (westbound) in 2009, all day average travel time between Seaview and CentrePort have decreased slightly since 2008. Since 2003, the travel time on this route has increased by approximately 2 minutes.

Comment: All day average travel times on the surveyed routes have decreased slightly from 2008 to 2009. Localised problem areas on these routes where congestion occurs are masked by the averaged results. Worsening congestion on key routes will impact negatively upon the efficiency of freight movements on the road network and consequently on the regional economy.

### Heavy vehicles on key routes

Definition: Data for the graphs displaying heavy vehicle percentages is obtained from permanent telemetry sites. These sites record the length of each vehicle, with anything more than 5.5 metres defined as 'heavy'. The percentage of heavy vehicles on selected key routes is shown on both weekdays and weekends.

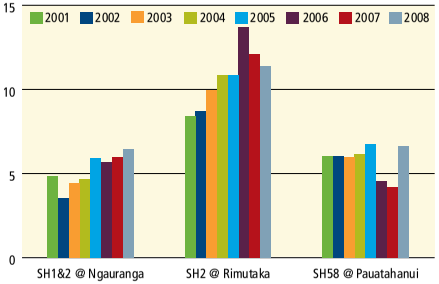



Figure 87: Heavy vehicles on major routes (%), weekdays. Calendar year. Sources: GWRC; New Zealand Transport Agency

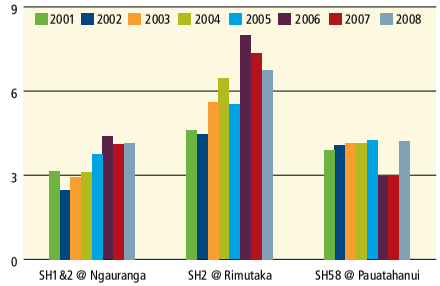



Figure 88: Heavy vehicles on major routes (%), weekends. Calendar year. Sources: GWRC; New Zealand Transport Agency

Interpretation: During both weekdays and weekends in 2008, heavy vehicles on State Highway 1 & 2 at Ngauranga, and State Highway 58 at Pauatahanui increased compared to 2007. However, they decreased on State Highway 2 at Rimutaka.





State Highway 2 at Rimutaka continues to carry a higher percentage of heavy vehicles than the other routes monitored, at 11% of all traffic at this site on weekdays and 7% on weekends. The volume of heavy vehicles passing this site is small when compared with that on the overall network.

Comments: Heavy vehicles make up a greater proportion of total traffic at sites further removed from the urban areas, e.g. Rimutaka and on State Highway 58 (until 2005). Closer to the major urban areas and during weekends, there are more light vehicles on the network, resulting in lower percentage figures for heavy vehicles.

Commercial vehicle traffic is related to economic activity. For the region's continued economic wellbeing it is important to allow for this growth while not compromising the needs of other road users.

## Related outcome

## 7.2 Improved inter-regional freight efficiency

**Target: All infrastructure constraints to rail freight movements are removed**

### Removal of rail freight infrastructure constraints

Definition: Infrastructure constraints which are limiting the movement of rail freight through the region are listed. This information was provided by KiwiRail.

Interpretation: Three key restrictions to rail freight movement were identified on the network as follows:

**Kaiwharawhara throat**

This area of constraint on the rail network is located just north of Wellington Station where the Wairarapa and the North Island Main Trunk Lines (NIMT) meet. Addressing the merging and capacity issues and alleviating this bottleneck will lead to less conflict between freight and commuter services especially during peak times.

**North-South junction**

The section of railway line between Pukerua Bay and Paekakariki is known as North-South junction and is currently single tracked.

Freight trains experience much difficulty restarting if they are forced to stop on uphill sections of the track to wait for other trains to pass. This occurs particularly during the peak commuter periods due to conflict between commuter and freight services. Similarly, commuter trains are often held up by freight trains. Double tracking through this section would address this constraint.

**Paekakariki to Waikanae**

Freight trains are sometimes forced to queue from Paraparaumu to Waikanae due to single track restrictions between Paekakariki and Paraparaumu. A delay of over 30 minutes for a freight service can occur while a commuter unit travels from Paekakariki north to Paraparaumu, offloads passengers then reloads and travels south again. Similarly, commuter trains are often held up by freight trains. Double tracking the section of railway line between MacKays Crossing and Waikanae would significantly alleviate this issue.

Comment: The Kaiwharawhara throat issue is currently being addressed by KiwiRail and work is expected to continue into next year. Partial track duplication at the North-South junction is part of Rail Scenario 1 (from the Regional Rail Plan 2008) which was included as a high priority in the Regional Land Transport Programme 2009-12. Full double tracking of the North-South junction is included in Rail Scenario A as part of the Regional Rail Plan. Double tracking from MacKays Crossing to Waikanae is currently underway.

### Inter-regional freight movements

Definition: The graph shows a freight movement index. Freight is measured in a range of non-comparable units. For this reason, and because some data is commercially confidential, absolute numbers are not given. The aggregate measure (total) is based on several assumptions and is for indicative purposes only. Much recorded freight does not have a regional origin or destination and is counted twice. For example a container of logs may enter the region by road and leave by sea. Air freight figures are unavailable.

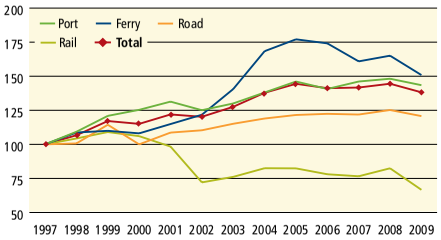



Figure 89: Inter-regional freight movements. 1997 = 100. Sources: CentrePort; Strait Shipping; New Zealand Transport Agency; KiwiRail

Note: Road freight refers to the previous calendar year.

Interpretation: An overall decline in the percentage of inter-regional freight movement was experienced by all modes in 2009. Inter-regional freight movement by ferry showed a steady increase from 2000 followed by a period of significant growth at a rate totalling 46% between 2002 and 2005. Some of this growth may be attributable to the addition of the Strait Shipping Bluebridge service in 2002. Since 2005 ferry freight has declined again (by 15% overall, and by 9% from 2008 to 2009). However, freight carried by ferry has shown the greatest overall growth rate of all freight modes since 1997, at 51%.

Conversely, rail freight has shown an overall decline of 33% since 1997 despite experiencing modest growth between 2002 and 2008 of 14%. Freight movement through the port and by road has shown steady growth overall, and since 2002 has grown at a rate of 15% and 9% respectively.

Comments: Overall there is a positive trend with the aggregate measure indicating growth of 3% per annum over the measured period. Road is the key freight transport mode in the region with strong freight movement growth occurring over time. This reinforces the need to maintain and improve the quality and reliability of the state highway network.

## Conclusion

Easing congestion has a positive effect on regional economy as freight by road is able to move more freely. Road traffic correlates strongly with regional economic activity, and there is a direct relationship between economic growth and freight growth. Wellington Region's economic growth trend is therefore expected to result in increased freight volumes and consequently, freight traffic across its boundaries – despite the current downturn which reflects the wider global economic recession.

Freight access to CentrePort and the ferry terminals by road and rail is affected by problems experienced on those networks. Improved access will lessen this impact on the volume of onward freight by sea.

Inter-regional rail freight movements are expected to continue to decline in the face of competition from a deregulated road freight environment.

Rail freight issues relate primarily to a lack of infrastructure and rolling stock constraining use of the rail network. Efficiency improvements and addressing existing constraints on the rail network will increase the viability of medium and long haul freight by rail.

International air freight out of Wellington is limited both in terms of capacity and destination. As technology allows, air freight capacity is likely to improve.



# Environmental quality

This section sets out and discusses items relating to environmental quality which, in addition to other sustainability indicators elsewhere in the report, contribute to Objective 5 of the RLTS:

*Ensure environmental sustainability.*

*Improve the environmental performance of the transport network, and avoid to the extent reasonable in the circumstances, adverse effects of transport on the environment (in line with the RPS) and communities. This includes, but is not limited to: increased use of passenger transport, cycling and walking; reduced use of private and company cars; increased energy efficiency of the vehicle fleet; reduced greenhouse gas emissions; and a high standard of environmental design of transport infrastructure.*

The following performance indicators are considered:

- Air quality
  - Particulate matter ($PM_{10}$)
  - Carbon monoxide (CO)
  - Nitrogen dioxide ($NO_2$)
- Noise adjacent to arterial routes
- Surface water quality

Associated indicators with an environmental focus can be found in each of the RLTS outcomes sections of this report (see especially the *Environmental outcomes* section).

## Performance indicators

### Air quality

GWRC operates a transport ambient air quality monitoring programme. The programme collects air quality information from urban locations likely to be affected by emissions from transport. Data is collected and reported in a way that allows comparison with national guidelines and standards as well as assessment of the effectiveness and appropriateness of Greater Wellington's objectives and targets concerning air quality in the Regional Land Transport Strategy 2007-2016 and the GWRC LTCCP 2009-2019.

Two transport air quality monitoring stations are operational at the sites specified below. A third station at Ngauranga, which was located near the Centennial Highway in Ngauranga Gorge, was decommissioned on 4 August 2008 due to the influence of non-traffic related sources of particulates. Meteorological monitoring instruments are co-located at each monitoring site to assist with the interpretation of air quality data.

NZTA 2006 traffic count data estimates that on average approximately 35,000 vehicles (southbound and northbound) travel past the Melling station daily and 40,000 pass by the Wellington central station.

| Site | Location | Sensitivity of surrounding land use[18] | Status |
|---|---|---|---|
| Wellington central | Corner of Vivian & Victoria Streets, Te Aro | Medium to high | Permanent |
| Melling | SH2, Melling intersection | High | Mobile |

Table 6: Current Wellington Region transport air quality monitoring programme sites

The contaminants monitored are particulate matter ($PM_{10}$), carbon monoxide (CO) and nitrogen dioxide ($NO_2$). These contaminants are by-products of fuel combustion and all have known adverse human health effects when concentrations in air are elevated.

Definition: Ambient air quality associated with land transport is continuously monitored in the Wellington Region at the two sites described above. Air quality measured at these sites is compared against national standards and guidelines.

2008/09 results for the three pollutants described are shown in the following tables and graphs. Historical information from the Ngauranga station has been included, although will not be updated.

### Particulate matter ($PM_{10}$)

The ambient air quality monitoring results for $PM_{10}$ have been assessed against the national guideline of 20 $\mu g/m^3$ (annual average).

The ambient air quality monitoring results for $PM_{10}$ have also been assessed against the national standard of 50 $\mu g/m^3$ (24-hour average).

[18] MfE 2008: Good practice guide for assessing discharges to air from land transport. May 2008, p41.

| Site | Year | Mean (annual) | Median | Max |
|---|---|---|---|---|
| Wellington central | 2004/05 | 17 | 16 | 49 |
| | 2005/06 | 15 | 15 | 30 |
| | 2006/07 | 14 | 14 | 37 |
| | 2007/08 | 14 | 14 | 60 |
| | 2008/09 | 13 | 12 | 46 |
| Melling | 2006/07 | 15 | 14 | 32 |
| | 2007/08 | 14 | 13 | 34 |
| | 2008/09 | 11 | 11 | 24 |
| Ngauranga | 2006/07 | 17.8 | 17.4 | 44.4 |
| | 2007/08 | 18.5 | 17.2 | 52.6 |

Table 7: Descriptive statistics $PM_{10}$ $\mu g/m^3$ (24-hour average). Source: GWRC

Interpretation: Annual means range from 11 to 17 $\mu g/m^3$, which is within the national guideline. The concentration of $PM_{10}$ has reduced at both the Wellington central and Melling sites over the monitoring period.

Definition: The graph below shows ambient $PM_{10}$ daily average concentrations by percentage of days per year, in each air quality category (Excellent, Good, Acceptable, Alert and Action).

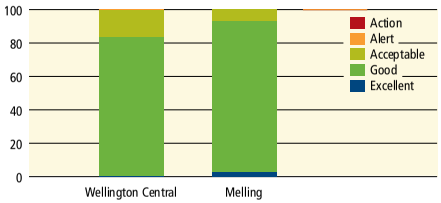



Figure 90: $PM_{10}$ (24-hour average) by air quality category, % of days per year, 2008/09. Source: GWRC

Comment: There was one day at the Wellington central station when the 'alert' level was reached. There were no 'action' days at either site where the national standard for $PM_{10}$ was exceeded. This represents an improvement from the prior reporting period when there were two exceedence days. However, the two 'action' days in 2007/08 were not thought to be traffic-related.

## Carbon monoxide (CO)

Carbon monoxide monitoring results have been assessed against the national standard of 10 $mg/m^3$ (8-hour moving average calculated on the hour). None of the transport monitoring sites exceeded the national standard for carbon monoxide during 2008/09.

The ambient air quality monitoring results for carbon monoxide were also assessed against the national guideline of 30 $mg/m^3$ (1-hour average). None of the transport monitoring sites exceeded the national guideline for carbon monoxide during the 2008/09 reporting period.

| Site | Year | Mean (annual) | Median | Max |
|---|---|---|---|---|
| Wellington central | 2005/06 | 0.6 | 0.5 | 3.3 |
| | 2006/07 | 0.6 | 0.4 | 3.7 |
| | 2007/08 | 0.6 | 0.4 | 3.3 |
| | 2008/09 | 0.6 | 0.5 | 3.0 |
| Melling | 2006/07 | 0.5 | 0.3 | 3.5 |
| | 2007/08 | 0.4 | 0.2 | 3.6 |
| | 2008/09 | 0.5 | 0.4 | 2.6 |
| Ngauranga | 2006/07 | 0.5 | 0.3 | 4.5 |
| | 2007/08 | 0.7 | 0.5 | 4.5 |

Table 8: Descriptive statistics CO $mg/m^3$ (8-hour moving mean). Source: GWRC

Interpretation: No exceedences of the national standard or the national guideline for carbon monoxide occurred at either of the monitored sites in 2008/09.

Definition: The graph below shows concentrations of carbon monoxide in air by percentage of hours per year, by air quality category (Excellent, Good, Acceptable, Alert and Action).

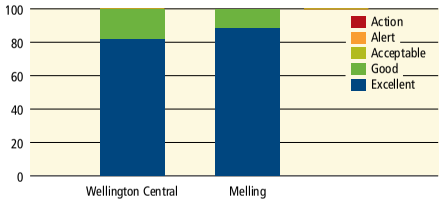



Figure 91: CO (8-hour moving average) by air quality category, % of hours per year, 2008/09. Source: GWRC





Interpretation: Across both the transport monitoring sites levels of carbon monoxide were either 'good' or 'excellent'.

Comment: The 2008/09 results are an improvement from the prior year when 'acceptable' levels were recorded.

## Nitrogen dioxide ($NO_2$)

The ambient air quality monitoring results for nitrogen dioxide have been assessed against the **national standard** of 200 $\mu g/m^3$ (1-hour average); the **national guideline** of 100 $\mu g/m^3$ (24-hour average) and the **WHO guideline** of 40 $\mu g/m^3$ (annual average)

| Site | Year | Mean (annual) | Median | Max |
|---|---|---|---|---|
| Wellington central | 2005/06 | 33.7 | 30.1 | 135.8 |
| | 2006/07 | 33.0 | 30.0 | 141.9 |
| | 2007/08 | 32.6 | 30.9 | 95.7 |
| | 2008/09 | 32.2 | 29.8 | 100.7 |
| Melling | 2007/08 | 21.8 | 18.1 | 112.0 |
| | 2008/09 | 19.1 | 15.4 | 93.9 |
| Ngauranga | 2006/07 | 21.9 | 20.5 | 68.8 |
| | 2007/08 | 23.4 | 21.8 | 101.3 |

Table 9: Descriptive statistics $NO_2$ $\mu g/m^3$ (1-hour average). Source: GWRC

Interpretation: None of the transport monitoring sites exceeded the national standard or either of the guidelines for nitrogen dioxide during the 2008/09 reporting period.

Definition: The graph below shows ambient air quality monitoring results for nitrogen dioxide by percentage of the number of hours per year, in each air quality category (Excellent, Good, Acceptable, Alert and Action).

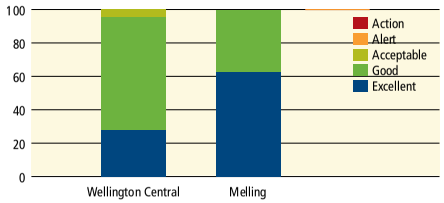



Figure 92: $NO_2$ (1-hour average) by air quality category, % of hours per year, 2008/09. Source: GWRC

Interpretation: Across both monitoring sites levels of nitrogen dioxide were at least 'acceptable' or better.

Summary: There were no 'action' levels of the three monitored air pollutants recorded throughout 2008/09 when standards or guidelines were exceeded. One 'alert' day at the Wellington central station was recorded for $PM_{10}$ concentrations.

Concentrations of particulates and nitrogen dioxide were well within the national guidelines and standards and remained at 'acceptable' levels or better throughout the monitoring period. Carbon monoxide levels remained at 'good' or 'excellent' levels over the monitoring period.

As with the previous reporting period, annual mean and median concentrations of nitrogen dioxide were generally higher at the Wellington central site than measured at Melling. This is a reflection of the greater volume of traffic that passes by the Wellington central site.

## Noise adjacent to arterial routes

Definition: The graph shows motor vehicle generated noise levels (as 24 hour $L_{eq}$[19] averaged over five days) at selected sites next to state highways as follows:

- SH1, Inner City Bypass at Vivian Street, Wellington City
- SH1 & 2, urban motorway at Kaiwharawhara, Wellington City
- SH2 at Western Hutt Road, Hutt City
- SH1 at Mana Esplanade, Porirua City.

These sites represent some of the busiest roads in the region. This indicator will be measured every five years.

[19] A-frequency weighted time average

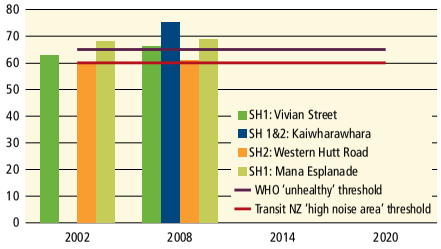



Figure 93: Noise adjacent to arterial routes (noise level 24hr $L_{eq}$, dBa, one-week average). Source: GWRC survey, 2008

Note 1: World Health Organisation (WHO 1995, 1999) criteria are widely quoted as suitable to protect health and well-being. In Australia, 55 dB(A) $L_{eq}$ (24 hour) is considered the threshold above which **adverse** effects on people and communities may commence. At above 65 dB(A) $L_{eq}$ (24 hour) is demarcated possible **unhealthy** levels of noise exposure(Lansdell & Cameron, 1998).[20]

Note 2: Appendix 6 of Transit New Zealand's Planning Policy Manual (1999) contains guidelines for dealing with road traffic noise for new roads or improvements that require a new designation. The guidelines apply to some noise-sensitive facilities adjacent to new state highway stretches
aimed at achieving cost-effective noise avoidance and mitigation. The Noise Guidelines are a 'design' guideline, to assist NZTA to design new roads and major road improvements in a manner that ensures traffic noise does not exceed a reasonable level. The noise levels that a new road is to be designed to are highly dependent on the ambient noise levels in the locality in that noisier roads are permitted in noisier areas, under the following categorisation of ambient noise levels:

- low-noise areas: 50dBA $L_{eq}$ (24 hr)
- medium-noise areas: 50-59dBA $L_{eq}$ (24 hr)
- high-noise areas: >59dBA $L_{eq}$ (24 hr)

Residential areas and teaching environments are considered the most sensitive receptors of noise in the Guidelines. The NZTA Noise Guidelines are essentially the only New Zealand guidelines on land transport noise emissions. Although less then perfect, the guidelines are widely referred to by NZTA, other roading authorities and local authorities. The guidelines are adhered to closely and only in exceptional cases are they deviated from, up or down. Lack of other guidelines means they are at times used for purposes outside the narrow application they were written for, such as new roads or substantial improvements requiring a new designation by NZTA. There are several significant limitations of the guidelines, which limit either their use by NZTA, or their wider application for land use planning. These include:

- Limited application to the design of new roads or substantial improvements requiring a new designation by NZTA. On this basis, the guidelines do not apply to new roads or substantial improvements which may have been designated decades ago
- A lack of application and consideration of how to deal with existing transportation noise impacts and the cumulative effects of noise. The inclusion only of provisions for new roads and improvements fails to address the impacts of changes to traffic volumes, flows, and cumulative noise arising from new roads and improvements
- The measurement location for noise, being one metre in front of the most exposed façade of permanently occupied buildings, does not account for undeveloped land for which urban development is likely. This includes areas with a residential zoning or areas on the urban fringe. Given the often long-term nature of planning for new roads, by the time the road is built it can then be surrounded by sensitive receivers. The measurement location has also attracted some Environment Court criticism, particularly with respect to schools
- The $L_{eq}$ (24hr) measure has limitations, including the applicability of the measure to buildings or facilities that are occupied for less than 24 hours, such as schools. In addition, it recognised that $L_{eq}$ (24hr) is not ideal for 'describing' the noise level actually perceived by receivers. The guidelines do not cater for undeveloped, residentially zoned areas, or future planning [21]

Interpretation: Between 2002 and 2008 noise levels adjacent to the selected arterial routes increased by 1 dB(A) at the SH2 Western Hutt Road site (to 61 dB(A)) and SH1 Mana site (to 68 dB(A)). The noise level at the SH1 Vivian St site increased from 63 dB(A) to 66 dB(A). No comparison can be made at the SH1 & 2 Kaiwharawhara site due to a fault with the monitoring equipment which resulted in no 2002 data.

Comments: Monitored noise levels at three sites exceeded the WHO level of 'above 65 dB(A) $L_{eq}$ (24 hour)' which represents potential exposure to a possible unhealthy level of noise. Two of these sites are residential (Vivian Street and Mana Esplanade). The urban motorway at Kaiwharawhara, Wellington City (SH1 & 2) recorded the highest result, but is not in an environment sensitive to noise as there is no residential area nearby.

Although the NZTA threshold (>59 dB(A) $L_{eq}$ 24 hour) has been exceeded at all monitored sites in 2008, the guidelines were not written to assess noise levels adjacent to existing roads (see *Note 2* above).

[20] Malcolm Hunt Associates, Beca Carter Hollings & Ferner, Transport Research Laboratory. (2004). Noise impacts of Land Transport – Stage 3: Development of Policies For The Management of Noise From Land Transport. Section 2 Defining the Problem, pp 16-17.
[21] McCallum-Clark, M., Hardy, R., Hunt, M. (2006). Transportation and noise: land use planning options for a quieter New Zealand. Land Transport New Zealand Research Report 299. pp 60-61.





## Surface water quality

Contaminants in discharges from the national road network include fuels, additives, oil, grease and brake and tyre residues containing a variety of toxic and eco-toxic components. These can include heavy metals and organic compounds. Research indicates that environments such as enclosed harbours and estuaries are most susceptible to adverse effects of road runoff. Evidence also exists that the cumulative effects of discharges from road networks can also adversely impact on certain types of streams, wetlands and lakes. New highway construction and traffic growth is expected to exacerbate this situation.[22]

A pilot study was undertaken in 2005 for Porirua Harbour including Pauatahanui Inlet and an associated wetland, and the section of Porirua Stream adjacent to the estuary. This area comprises a sensitive receiving environment and a mixture of local roads and state highways (SH1 and SH58).[22]

NZTA is piloting catchpit filter systems near the western end of Pauatahanui Inlet, Porirua Harbour adjacent to SH58. This system treats road runoff before in enters the inlet.

Greater Wellington has undertaken sediment quality sampling in both Porirua Harbour and Wellington Harbour in recent years – which are natural 'sinks' for contaminants in stormwater and road runoff – and is seeking to implement long-term monitoring programmes in both of these coastal receiving environments. Results of subtidal sampling to date have confirmed the presence of elevated concentrations of some contaminants in surface sediments (notably zinc, copper and polycyclic aromatic hydrocarbons) derived from urban stormwater, including road run-off. A report was completed on the initial Wellington Harbour sediment quality sampling in June last year and a report has recently been completed on the third survey of subtidal sediment quality in Porirua Harbour.[23]

Greater Wellington has also undertaken various stormwater-related investigations to date and routinely monitors water quality and ecological health at 56 river and stream sites across the region. In early 2008, testing of heavy metals and suspended solids – common contaminants found in road runoff – was introduced at the urban stream monitoring sites. Results to date confirm the presence of dissolved metals in many urban streams, with some concentrations above national water quality guidelines.

Greater Wellington's environmental monitoring and investigative programmes, together with other national developments in road runoff research and analysis, help to inform on the impact road runoff has on surface waters in the Wellington Region.

## Conclusion

Levels of transport-generated air contaminants are relatively low in the Wellington Region. Further investigation and development would be required to monitor surface water quality attributable to the region's road network to build off of prior research. While there is a potential concern over the levels of noise generation at certain sites, there is yet no feedback from communities to justify mitigating interventions.

Land transport activity that produces pollutants can have significant detrimental effects on the environment. Measures to reduce overall car use and improve travel efficiency will reduce fuel consumption, air and water pollution, and noise levels adjacent to arterial routes.

[22] Gardiner, L. & Armstrong, B. (2006). Identifying sensitive receiving environments at risk from road runoff. Proceedings of the NZWWA Stormwater Conference, Rotorua, New Zealand, 4-5 May 2006.
[23] Stephenson, G.; Milne, J.R.; Sorensen, P. (2008). Wellington Harbour marine sediment quality investigation. GWRC, Publication No. GW/EMI-T-08/83.

This section sets out and discusses items relating to Objective 6 of the RLTS:

*Ensure that the Regional Transport Programme is affordable for the regional community.*

*Take account of funding likely to be available, economic efficiency, and the impact of funding options on regional communities when considering transport packages. Consider the affordability of transport options for all members of the community, including low income groups.*

The following performance indicators are considered:

- Maintenance expenditure: roading
- Capital expenditure: roading
- Public transport subsidy expenditure
- Total Mobility Scheme expenditure
- Public transport investment
- Household travel expenditure
- Car operating costs
  - Price of petrol
- Perceptions of private transport user costs

Associated economic indicators can be found in other sections of this report as follows:

- Public transport user costs and perceptions of those costs (in Public Transport Outcomes, 1.3: *Improved passenger transport **accessibility** for all, including disabled people or from low income groups*)
- Fuel price index (in Environmental Outcomes, 3.3: *Reduced fuel consumption*)
- Vehicle kilometres travelled per GDP (in Land Use and Transport Integration Outcomes, 6.3: *Sustainable economic development supported (in line with the WRS)*)
- Public transport expenditure per passenger and per GDP; Roading expenditure per GDP (in Land Use and Transport Integration Outcomes, 6.4: *Improved transport efficiency*)

## Performance indicators

### Maintenance expenditure: roading

Definition: The graph shows total annual expenditure on maintenance works associated with the road network, by road-controlling authority (RCA).

Maintenance expenditure: operational and maintenance expenditure for the roading network excluding replacements/renewals and any expenditure on emergency works. This includes road safety operation (i.e. power for street lights). Depreciation and activities where expenditure has been recovered are excluded. As of the 2007/08 financial year seal widening, unsealed road metalling, and some road marking work categories have been recategorised to capital expenditure by the NZ Transport Agency.

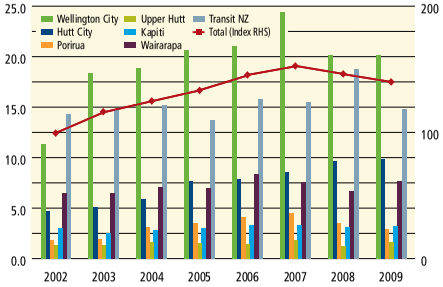



Figure 94: Maintenance expenditure ($M) by RCA, by year. Index: 2002 = 100. Sources: local authorities, New Zealand Transport Agency

Interpretation: Total expenditure decreased by 3.6% in 2008, and decreased again by 4.8% in 2009.

Comments: Maintenance expenditure on roading throughout the region rose steadily from 2002 to 2007 but apparently reduced in 2008 and again in 2009. However, these reductions may be due to a change in accounting practices.

### Capital expenditure: roading

Definition: The graph shows total gross annual expenditure on capital works associated with the road network, by road-controlling authority (RCA). Note that NZ Transport Agency's expenditure includes property purchases for new roading developments.

Capital expenditure: new works and replacement/renewal of existing assets for the roading network including expenditure on public transport improvements such as bus lanes/bus shelters which are a part of the roading network and funded or part-funded by GWRC. This includes new traffic signals, roundabouts, road links, footpaths, bus lanes, street furniture, street lighting and seal replacement on roads and footpaths. Note that this now includes seal widening, unsealed road metalling and more road marking activities that have been reclassified as "renewal".





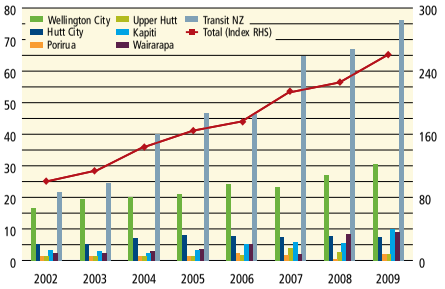



Figure 95: Capital expenditure ($M) by RCA, by year. Index: 2002 = 100. Sources: local authorities, New Zealand Transport Agency

Interpretation: Overall expenditure increased by 15.1% in 2009. After a 3.5% increase in capital expenditure by the NZ Transport Agency in 2008, their expenditure increased by 13.4% in 2009. Expenditure in Porirua City also increased significantly, from 0.6 million to 2.07 million, mainly due to big expenditures on new traffic lights, road resealing, and footpath renewals.

Comments: Overall capital expenditure for the region increased at a more substantial rate in 2009 compared to 2008. This is mostly due to increases in capital expenditure by the NZ Transport Agency.

### Public transport subsidy expenditure

Definition: The graph shows combined GWRC and NZ Transport Agency financial contributions to the public transport contracted services operating costs.

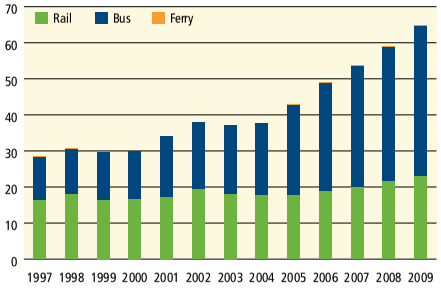



Figure 96: Public transport operating expenditure on contracted services ($M). Source: GWRC

Interpretation: The total public transport subsidy increased by 9.9% in 2009 to $64.9 million ($59.1 million in 2008). The subsidy for bus services grew by 12.2%; rail by over 6.1%; and harbour ferry services remained constant after substantial growth in recent years, rising very slightly by 0.9%.

Comment: The overall increase in contracted services subsidy in 2009 is primarily due to bus contract inflation costs. The cost contributions of GWRC and NZTA to public transport have increased over time mainly related to increases in services.

### Total Mobility Scheme expenditure

Definition: The graph shows total GWRC and NZ Transport Agency expenditure on the Total Mobility Scheme since 2000. This scheme assists people who have difficulty using public passenger transport services and is administered by GWRC. A voucher system provides a 50% discount on taxi fares to people who meet certain eligibility criteria. These criteria are endorsed by the Ministry of Transport.

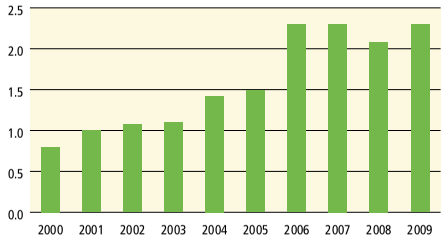



Figure 97: Total Mobility Scheme expenditure ($M). Source: GWRC

Interpretation: Expenditure on the Total Mobility Scheme in 2009 rose by 10.4%, bringing it in line with 2007 and 2006 expenditure after a 9.6% drop in 2008.

Comment: The data has been updated with the latest figures back to 2006. This brings the expenditure more in line with the Total Mobility Scheme patronage data from 2008 – a decrease of just under 3% (see Figure 19 in Chapter 1 *Passenger transport outcomes*). Taxi fare increases due to the rising cost of fuel is the main reason for increased expenditure since 2005.

## Public transport improvements

Definition: This indicator comprises expenditure on enhancements to public transport infrastructure and rail rolling stock.

Interpretation: In 2008/09 GWRC invested $71.6 million in improvements to public transport; a huge increase from the previous year ($25.1 million).

Comment: Expenditure was primarily on rail infrastructure upgrades, most notably at the Johnsonville Tunnel and the 'Kaiwharawhara Throat'.

## Household travel expenditure

Definition: The graph shows national average weekly household expenditure and highlights the proportion spent on transportation. This data is not available by individual region. The Household Economic Survey collects this information three-yearly so the next update will be in the 2010/11 AMR.

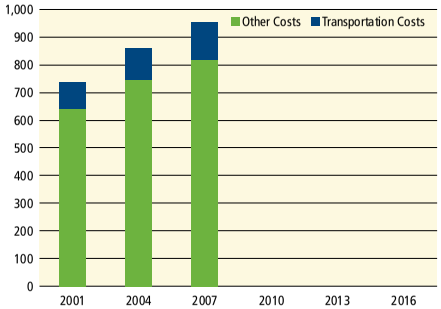



Figure 98: National average weekly expenditure per household ($). Source: Statistics New Zealand

Note: Transportation costs relate to domestic travel only.

Interpretation: The total average weekly household expenditure in 2007 was $956 of which domestic travel accounted for $136 (or 14%). The proportional expenditure on travel in 2001 and 2004 was comparable at 13%. Total household expenditure increased by 11% in 2007 and travel expenditure by almost 19% between 2004 and 2007.

Comments: The proportion of average weekly travel expenditure relative to average total expenditure per household has seen little change between the three surveys. Like any economic good or service, consumption is influenced by price. If the cost of travel increases relative to other costs, total travel demand is likely to reduce, and vice versa.

## Car operating costs

Definition: The graph shows vehicle operating costs per kilometre for a petrol-engine car driven 14,000km a year. To reflect current popular vehicle size, the cc rating was lowered in 2008 to include 1500cc – 2000cc engine size ('compact car'). Costs are broken down into fixed (unrelated to vehicle use) and running (proportional to use). Parking charges are not included.

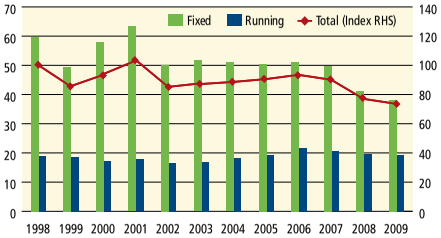



Figure 99: Petrol driven car operating cost per kilometre (cents). Index: 1998 = 100. Source: Automobile Association of New Zealand

Note: For 1601-2000 cc car; 1998-2001 = 12,000 km/yr; 2002-2007 = 14,000 km/yr. From 2008: for 1500-2000 cc car; 14,000 km/yr. Cars were used more in 2002 than in previous years. The average running distance per year increased to 14,000 km from 12,000 km which had the effect of lowering the cost per kilometre by 7%.

Interpretation: The total cost of operating the specified sized car fell by 5.6% in 2009 after decreasing by 13.5% in 2008 and 3.6% the year previous (which was the first overall decrease in operating cost since 2002).

In 2009, fixed costs decreased by 7.7% (a 17.1% drop in 2008) while the combined direct running costs of petrol, oil, tyres, repairs and maintenance declined by 1% (a 4.9% in drop 2008). By comparison, a significant increase in running costs of 13% was experienced between 2005 and 2006.





The price of petrol has fluctuated greatly since 2005, dropping and rising sharply each year. The 2009 analysis uses a petrol price of $1.67.

| Year | Month | Petrol per litre ($) |
|---|---|---|
| 1998 | May | 0.91 |
| 1999 | May | 0.82 |
| 2000 | March | 1.02 |
| 2001 | January | 1.01 |
| 2002 | March | 1.05 |
| 2003 | January | 1.09 |
| 2004 | March | 1.17 |
| 2005 | April | 1.32 |
| 2006 | May | 1.73 |
| 2007 | May | 1.52 |
| 2008 | April | 1.85 |
| 2009 | March | 1.67 |

Table 10: Price of petrol used in the running cost calculation in **Figure 99**. Source: Automobile Association of New Zealand

Comments: The overall cost of operating a car decreased again in 2009 mainly due to a drop in fixed costs. Lower interest and petrol costs were the main reasons for this decrease.

Despite the continued relatively high fuel cost recorded in this analysis, the running cost of a petrol-engine car decreased again in 2009. This may be partly attributable to the inclusion of smaller engine sizes (1500-1600 cc) in this category.

Although the price of petrol is a prominent consideration in travel mode choice, it has little effect on overall cost.[24] Fluctuating fuel prices have a minimal effect on overall vehicle ownership.[25] The costs of owning, operating and maintaining a car are usually considered when choosing a mode of transport. However, often comparison of public transport costs with only the variable or marginal costs of running a car are made.

## Petrol cost and hourly earnings

Definition: The graph shows an index of the cost of petrol (CPI Petrol Index) and income over time.

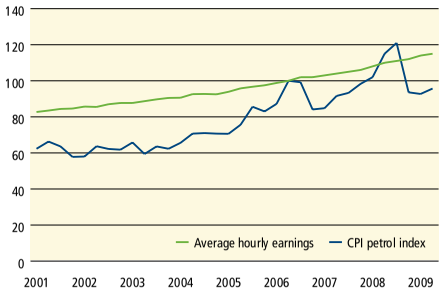



Figure 100: Petrol cost index and average hourly earnings, national. Index: June 2006 = 100. Source: Reserve Bank.

Interpretation: The petrol CPI tracked below income until June 2006. Due to a petrol price spike in early 2008, the relative cost of fuel rose above average hourly earnings. In late 2008 and early 2009 the price of petrol dropped dramatically and then rose slightly. This brought the petrol CPI back down below income.

Comment: The CPI petrol index reduced in comparison to income from June – December 2006, but grew at a faster rate until September 2008. Since then, the economic downturn had a significant effect on the price of petrol, but surprisingly little effect on average hourly earnings, which continued its steady rise despite budgetary pressures.

[24] Automobile Association of New Zealand (2006). *Car costs: What does it cost to drive for a year?* In *AA Directions (Winter 2006)*, p. 61.
[25] Automobile Association of New Zealand (2007). *Car costs: What does it cost to drive for a year?* http://www.aa.co.nz/motoring/owning/runningcosts, accessed 27 July 2007

# Affordability

## Perceptions of private transport user costs

Definition: The graph shows the percentage of people who considered cost to be a barrier to their use of private transport. Comparison between the Auckland and Wellington Regions is made.

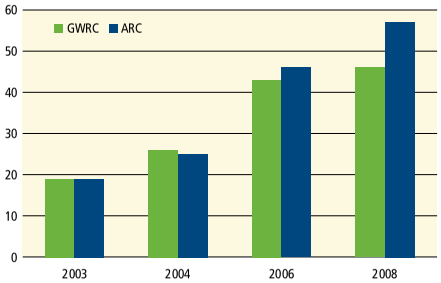



Figure 101: Private transport costs as a barrier to use (%), Wellington and Auckland Regions. Source: GWRC and ARC transport perceptions surveys

Note: First ARC results are sourced from a 2002 survey.

Interpretation: 46% of those people surveyed in 2008 in the Wellington Region felt that the cost of using a private vehicle hindered their use of it (compared with 43% in 2006).

Comments: A slight increase in the perception that cost was a barrier to private transport use occurred in Wellington in 2008 but a marked shift in this perception occurred in Auckland with over half of respondents indicating that cost is a barrier to private vehicle use. It is likely that fuel price increases led to this result.

## Conclusion

Despite the economic downturn, the RCAs of the Wellington Region and GWRC continue to invest heavily in the transport infrastructure. Running and operating costs for most indicators have decreased over the past year, making personal transport more affordable to commuters.

The transport network requires ongoing investment to maintain and improve accessibility and efficiency levels. In particular, continuing investment in public transport infrastructure and services needs to be made to meet the changing requirements of the community. Demographic changes and increasing transport needs of those with mobility challenges may then be addressed, catering for all socio-economic groups.



# RLTS implementation

## Overall progress achieved in 2008/09

Highlights of the 2008/09 year include:

- delivery of short term additional capacity rolling stock
- total passenger boardings across all public transport modes up 2.14%
- almost 1.2 million bus, rail and ferry services funded
- completed alteration of rail station at Naenae (April 2009)
- introduction of new Metlink bus and train fare structure and new fares (September 2008)
- launch of the Let's Carpool website (May 2009)
- 11 more schools are participating in the travel plan programme
- adoption of the Ngauranga to Wellington Airport Corridor Plan (October 2008)
- adoption of the Regional Walking Plan (October 2008)
- adoption of the Regional Cycling Plan (December 2008)
- endorsement of the Wellington Regional Rail Plan (February 2009)
- completed the first Regional Land Transport Programme 2009-12 (June 2009)

## Major 2009/10 actions programmed

Major programmes and projects anticipated to **be completed** in 2009/10 include:

- launch of the Cycling and Walking Journey Planner
- completion of Johnsonville Line upgrades
- award tender for Wellington regional passenger transport Real Time Information system
- complete replacement of Wellington's trolley bus fleet
- complete investigation of bus priority measures in Wellington CBD
- completion of the Dowse to Petone upgrade
- adoption of the updated Regional Road Safety Plan
- adoption of the updated Regional Travel Demand Management Plan

Major programmes anticipated to **commence or continue** in 2009/10 include:

- continue delivery of new trolley buses
- continue the design and commence construction of Matangi rolling stock EMUs and associated works
- continue Kaiwharawhara Throat track upgrades
- continued construction of Western Corridor double tracking
- commence refurbishment of the Ganz Mavag prototype units
- continue trial of free cycle carriage on trains at all times
- continue the development of the Western Link Road project
- continue Transmission Gully preparation activities
- continue the Cyclist Skills Training Programme
- continuing the Wellington Region Travel Behaviour Change Travel Plan Programme
  - 24 schools are participating in the school travel plan programme
  - 12 workplaces are participating in the workplace travel plan programme
- coordination with Territorial Authorities on annual Bike the Bays (Wellington) and Bike the Trail (Hutt River Trail)
- continue investigation of electronic ticketing for passenger rail in the Wellington Region
- commence review of the Wairarapa Corridor Plan
- commence review of the Hutt Corridor Plan

## Project, activity and action programme progress

Detailed reporting of progress for each project, activity and action in the various implementation documents is no longer reported through the AMR. Instead, progress is continually reported through the quarterly Agency Progress Reports to the RTC which are available on Greater Wellington's website. These include:

- Passenger transport projects
- Passenger transport activities
- Roading projects
- Travel Demand Management actions
- Walking, Cycling, and Road Safety actions

## Obstacles to implementing the RLTS

### Funding impediments

While the Government has committed a total of $621M additional funding to support the region's transport needs over the next 3 years, very little of this funding has yet flowed into purchasing additional services or projects. This is primarily due to project start-up lead times and difficult funding allocation processes. The recent economic downturn has reduced the capacity for the Government to fund projects and activities through the National Land Transport Programme.

Likewise, funding of the local share component of project costs presents affordability issues for a number of projects and activities. Such issues continue to be discussed with various Crown agencies.

### Resource impediments

In addition to funding, the provision of adequate resources to deliver on all of the projects identified through the RLTS implementation plans continues to be an issue for the region. One example of such a challenge will be provision of staff resources to develop and implement local walking and cycling strategies.

### Legislative/institutional impediments

The weak requirement for agencies to 'take into account' the relevant RLTS when preparing land transport programmes has been strengthened with the new provisions for Regional Land Transport Programmes in the Land Transport Management Amendment Act 2008.

The 2009-12 National Land Transport Programme's investment in Wellington's public transport network has changed significantly with KiwiRail's purchase of all track-related rail infrastructure and most current urban rolling stock. New governance and funding arrangements have yet to be fully developed to manage the future provision of rail services and infrastructure investment.



# Appendix 1 - Regional demographics

## Introduction

This section discusses trends in regional demographic variables driving transport demand. The following indicators are described:

- Population
  - Population growth rates
- Population age distribution
- Occupied dwellings
  - Number of persons per occupied dwelling
- Unemployment
- Economic activity by region
- Building activity
- Vehicle ownership per household
- Vehicle fleet age
- Car registrations
- Motorcycle registrations

## Performance indicators

### Population

Definition: The graph shows estimated and projected population by district based on the New Zealand Census and Statistics New Zealand projections in five year increments out to 2031. As the census is conducted on these five yearly intervals the projected population figures will be updated with each census. The next updated will be in 2012.

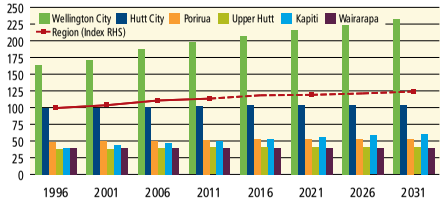



Figure 102: Population, estimated and projected (000), by district. Index: 1996 = 100. Source: Statistics New Zealand

Note: Projections are based on estimated population at 30 June from the December 2007 medium projection series from Statistics New Zealand.

Interpretation: The total 2006 regional population was 466,380 with 40% living in Wellington City. 30% were resident in the Hutt Valley, 11% in Porirua, 10% in Kapiti and 8% in Wairarapa.

The projected population change for the region to 2031 shows 13.4% growth from the 2006 population to a total of 529,000. Wellington City and Kapiti populations are forecast to increase by 23.4% (approximately 44,000) and 27.8% (13,200) respectively by 2031. The forecasted increase of 2.4% in the Hutt Valley would result in population growth of almost 3,400, although a decreasing Upper Hutt population lowers the projected values down 0.4% from 2026. Wairarapa's population increased slightly to around 40,000 in 2011, but then is projected to level off and decrease by about 2% to approximately 38,800.

Table 11 shows retrospective growth rates by district over the five year periods between the prior two census years. All areas of the region experienced population growth from 2001 to 2006. Wellington City and Kapiti District growth rates were strongest at 9.7% and 8.9% respectively. The overall population growth rate for the region was 6% or 26,240, a higher rate than previous census period. This growth is mainly due to Wellington City's population increase of about 16,600.

| District | 1996 to 2001 | | 2001 to 2006 | |
|---|---|---|---|---|
| | Actual change | % change | Actual change | % change |
| Wellington City | 7,700 | 4.7% | 16,600 | 9.7% |
| Kapiti District | 4,200 | 10.7% | 3,900 | 8.9% |
| Upper Hutt City | 0 | 0.0% | 2,000 | 5.3% |
| Porirua City | 1,300 | 2.7% | 1,100 | 2.2% |
| Hutt City | 300 | 0.3% | 2,200 | 2.2% |
| Wairarapa | -250 | -0.6% | 440 | 1.1% |
| **Wellington Region** | **13,250** | **3.1%** | **26,240** | **6.0%** |

Table 11: Population growth rates, by district. Source: Statistics New Zealand

Comments: Relatively modest regional population growth is both evident from census and projected data. Steady population growth in Kapiti has been sustained since 1996. Upper Hutt City, formerly in population decline, experienced a moderate increase in population in the 2006 census period due chiefly to significant development and to a lesser extent infill and rural lifestyle subdivision.

Wellington City's population growth from 2001 to 2006 is largely due to markedly increased housing density in the central city supported by steady increases generally across the city. Inner city intensification leads to increased use of sustainable transport modes (public transport, walking and cycling) where supporting infrastructure exists, and less use of the private car.

## Population age distribution

Definition: The graph shows the distribution of the population in broad age groups for the Wellington Region. Information to 2006 is actual census data and beyond this date population projections based on estimates are shown. Census data is collected five-yearly, so this indicator will next be updated in 2012.

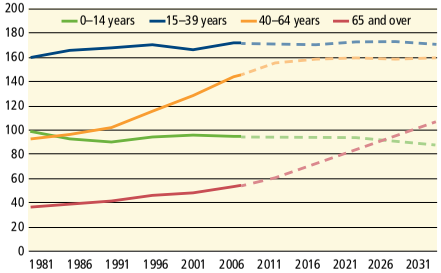



Figure 103: Age distribution by broad age groups, actual and projected (000), Wellington Region. Source: Statistics New Zealand

Note: Projections are based on estimated population at 30 June. Forecast population data is based on the December 2007 medium projection series from Statistics New Zealand.

Interpretation: Statistics New Zealand forecasts indicate that by 2031, the population of the 0-39 year age groups will decrease by around 2.9% from that of the same groups in 2006. Conversely, the 40+ age groups will increase significantly in number by 2031, up by around 35.6% from 2006.

Comments: By 2031, the older working age group (40-64 years) and the population aged 65 years and over are together, forecast to make up almost 51% of the total population. Currently (2006) these groups represent 43% overall. The proportion of the older working age group will have a significant impact on the labour force and demand for various types of goods and services in 2031.

## Occupied dwellings

Definition: The graph shows occupied dwellings by district. Census data is collected five-yearly and this indicator will next be updated in 2012.

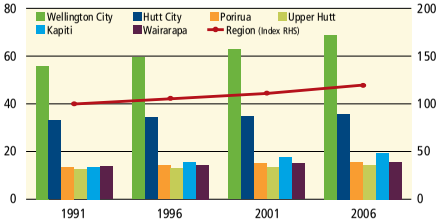



Figure 104: Occupied dwellings (000), by district. Index: 1991 = 100. Source: Statistics New Zealand

Interpretation: The number of occupied dwellings in the region has increased by over 7% in 2006. This follows increases of more than 5% over the previous two census periods (1996 and 2001). Wellington City experienced almost 10% growth in occupied dwellings (over 6,000) between 2001 and 2006. **Table 12** shows changes in the average number of people per occupied dwelling over the past four census periods.

| District | Number of persons per occupied dwelling | | | |
|---|---|---|---|---|
| | 1991 | 1996 | 2001 | 2006 |
| Wellington City | 2.7 | 2.7 | 2.6 | 2.6 |
| Kapiti District | 2.6 | 2.5 | 2.4 | 2.4 |
| Upper Hutt City | 3.0 | 2.9 | 2.7 | 2.7 |
| Porirua City | 3.4 | 3.3 | 3.2 | 3.1 |
| Hutt City | 2.9 | 2.8 | 2.8 | 2.7 |
| Wairarapa | 2.8 | 2.7 | 2.6 | 2.5 |
| **Wellington Region** | **2.8** | **2.8** | **2.7** | **2.7** |

Table 12: Average number of persons per occupied dwelling, by district. Source: Statistics New Zealand

Comment: Patterns of absolute and relative growth are closely linked to population. Intensification in central Wellington accounts for the significant growth in the number of dwellings in the city. Household size has generally decreased across the region with the largest households in Porirua and the smallest in Kapiti. The latter reflects the large retirement-aged population living in Kapiti Coast.





## Unemployment

Definition: The graph shows district labour force status, with unemployment as a percentage of population. Census data is collected five-yearly and this indicator will next be updated in 2012.

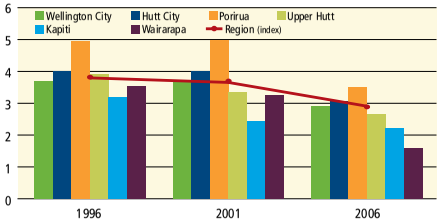



Figure 105: Unemployment (%), by district. Source: Statistics New Zealand

Interpretation: Unemployment rates in 2006 have fallen markedly in all districts across the region, most noticeably in Wairarapa and Porirua. Kapiti unemployment rates remained fairly static in 2006. Porirua unemployment rates remain the highest in the region followed by Hutt and Wellington cities, with Wairarapa now experiencing the lowest rate.

Comments: Transportation demand is likely to be inversely correlated with unemployment rates. Higher levels of unemployment result in lower levels of transportation demand.

## Economic activity by region

Definition: The graph shows a composite measure of economic activity that includes: business and consumer confidence; retail sales; new motor vehicle registrations; regional exports; registered unemployment; building consents; real estate turnover; job advertisements; accommodation; and results from the Household Labour Force Survey.

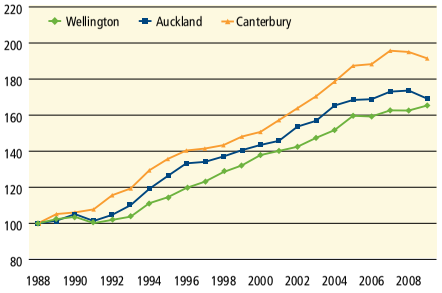



Figure 106: Economic activity by region. March quarter. Index: 1988 = 100. Source: National Bank

Interpretation: The Wellington Region experienced an uptick in economic activity of 1.7% for the year ending on 31 March 2009, following a decrease of 0.1% in 2008. Economic activity in both Canterbury and Auckland decreased by 1.8% and 2.6% respectively in 2009. This follows a slight decrease in economic activity in Canterbury of 0.4% and a static Auckland which grew by 0.3% in 2008. Despite growing while the other two regions declined, the Wellington Region has experienced the least overall increase in economic activity since 1988. Canterbury continues to show the highest economic activity compared with other regions.

Comments: The decline in economic activity in both Auckland and Canterbury followed the overall decline in the New Zealand economy of 2.2%. While Wellington managed to increase economic activity over the past year, there has been little growth in the Wellington Region, as well as in Auckland and Canterbury, since 2005.

Economic growth increases the demand for movement of people and freight which in turn, has a greater impact on the transport network.

## Building activity

Definition: The graph shows the number of new residential and non-residential buildings in the region. The construction value is given as an index. Data is available monthly and relates to the year ended March.

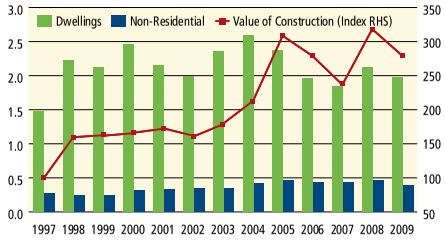



Figure 107: Building activity (000) and construction value, Wellington Region. Year ended March. Index: 1997 = 100. Source: Statistics New Zealand

Interpretation: The number of building consents issued in the year ended March 2009 decreased by 9.2% following an increase the year before of almost 14%. A decline of 7.3% in the number of residential consents, and a drop of 17.7% of consents for non-residential properties occurred in 2009.

A 13.8% decline in the 'value of construction' index resulted from decreases in both the value of non-residential consents issued (9.1%) and residential consents (17%) in 2009.

Comments: A sharp decline following significant growth in consent numbers may suggest that the construction market has become rather volatile since 2005 when economic activity began to level off (see above).

The construction industry generates demand for transport as well as being a 'barometer' of regional economic activity. Demand for travel (both freight and passenger) is positively correlated with regional economic activity.

Whilst the value of construction is a useful measure of total construction activity, it should be noted that this is susceptible to variation in the unit costs associated with the construction sector, which do not necessarily have any implications for levels of transportation activity.

## Vehicle ownership per household

Definition: The graph shows the average number of cars per household, by district. Census figures are available five-yearly and this indicator will next be updated in 2012.

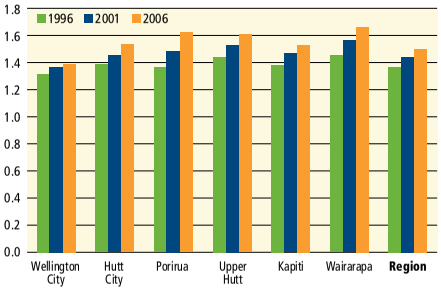



Figure 108: Average car ownership per household, Wellington Region. Source: Statistics New Zealand

Interpretation: Over the five years from 2001 to 2006 the average number of cars per household rose from 1.4 to 1.5 or by 4%. Average car ownership per household grew in every district in 2006 with the highest growth of over 9% in Porirua and the lowest in Wellington City (1.5%). The lowest average number of cars per household is in Wellington City and the highest in Wairarapa.

Comments: Levels of car ownership correlate inversely with urban density. The lower rate of vehicle ownership by household in Wellington City reflects a trend for inner-city living and proximity to employment.

## Vehicle fleet age

Definition: The following charts show the average vehicle fleet age for both heavy vehicles and light vehicles in Wellington, Auckland and Canterbury.

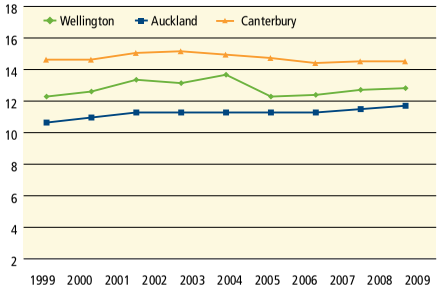



Figure 109: Average heavy vehicle fleet age (years). Source: Statistics New Zealand

Interpretation: The average fleet age for heavy vehicles in the Wellington Region fluctuated between 12.3 and 13.6 years old since 2000. The average heavy vehicle fleet age in Auckland has increased by 1 year from 2000 to 2008, from an average age of 10.7 to 11.7. The Canterbury heavy vehicle fleet age has remained static: 14.6 in 2000 and 14.5 in 2008.

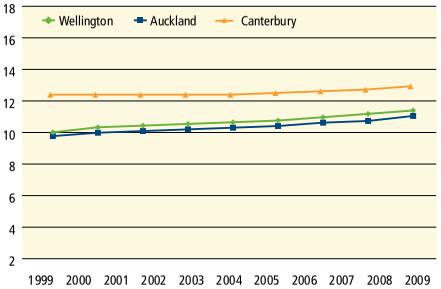



Figure 110: Average light vehicle fleet age (years). Source: Statistics New Zealand

Interpretation: The average age of light vehicles in both the Wellington and Auckland Regions has remained about the same, steadily increasing since 2000. The light vehicle fleet age is slightly higher in





Wellington, 10 years old in 2000 and 11.3 in 2008. In Auckland the average age increases from 9.8 to 11 years old. The average age was higher in Canterbury for light vehicles but has remained static since 2000, increasing from 12.4 to 12.9 years old.

Comments: Turnover rates have kept the average vehicle fleet age for both heavy and light vehicles from increasing significantly across the three regions. Wellington has an intermediately aged heavy and light vehicle fleet, while Canterbury consistently has the oldest.

This has implications for road safety, fuel economy and vehicle emissions, since it suggests that newer technologies are not being rapidly incorporated into the vehicle fleets of the three selected regions.

## Car registrations

Definition: The graph shows licensed car numbers in Wairarapa and the rest of the region ('Wellington') recorded on the register by the NZ Transport Agency.

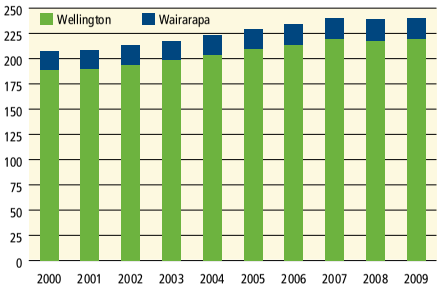



Figure 111: Licensed cars (000), Wellington Region. Source: New Zealand Transport Agency

Interpretation: The total number of licensed cars on the register increased by 0.8% in 2009, erasing the decline in 2008 and returning to roughly 2007 numbers (240,447 registered cars in 2007, and 240,516 in 2009). This increase was mainly influenced by a rise of 0.8% in licensed cars in Wellington; whereas an increase of over 0.4% occurred in Wairarapa. Since 2000, the total number of cars registered has risen by 16%.

Comments: The number of cars registered in the region has remained essentially static over the past 3 years. The availability of private cars influences car use, demands on the road network and pressure on the environment.

## Motorcycle registrations

Definition: The graph shows the number of licensed motorcycles registered with the NZ Transport Agency in Wairarapa and the rest of the region ('Wellington').

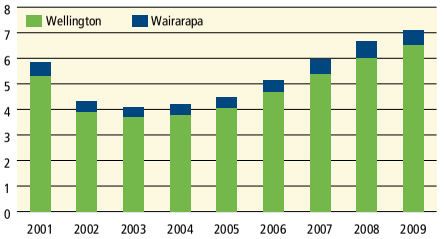



Figure 112: Licensed motorcycles (000), Wellington Region. Source: New Zealand Transport Agency

Interpretation: After declining in number early in the decade, motorcycle registrations have steadily increased throughout the region since 2003. Registrations increased by 8% and 7% respectively in Wellington and Wairarapa in 2009. This follows increases in 2007 and 2008 of approximately 15% and then 12% in both areas of the region.

Comments: The increasing cost of fuel may be influencing the number of licensed motorcycles in the region, as a more economic alternative to travelling by private car.

## Conclusion

Despite the national economic slow-down over the past three years, the impact on the Wellington Region has been much less noticeable. Transportation demand is expected to rise markedly driven by increasing car ownership, modest population growth and economic activity. Current initiatives to discourage peak-period car use (e.g. Travel Planning) rely mainly on a voluntary change in travel behaviour only and are anticipated to affect the demand for travel at the margins.

Ultimately tolls, congestion pricing and parking fees will be needed to give travellers direct financial incentives to change their behaviour and ensure the network can efficiently accommodate transportation demand. To a large extent transport demand is driven by factors over which the RLTS has no control, such as fuel prices and economic activity.

# Appendix 2 - Regional travel demand

## Introduction

This section discusses trends in regional travel demand variables affecting the transport network. The following indicators are described:

- Mode share of trip legs
- Mode of journey to work (all modes)
- Mode use in previous six months
- Inter-regional passenger movements
  - Number of inter-regional passengers by mode
- State highway traffic volumes
- State highway hourly traffic profiles: Ngauranga
- State highway vehicle kilometres travelled
  - State highway network characteristics
- Strategic road network level of service
- Work from home
- CBD parking supply: regional centres
- Perceptions of parking supply: Wellington CBD
- Perceptions of parking prices: Wellington CBD

## Performance indicators

### Mode share of trip legs

Definition: The graph shows the mode of travel for journeys in the Wellington Region between 2004 and 2008. A journey or "trip leg" is a unit of non-stop travel by a single mode for a single purpose. For example, walking to work with a stop at the shop is two trip legs. Excludes trips under 100 metres, off-road travel and travel on private property (e.g. farms, malls).

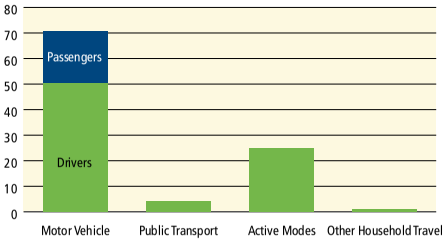



Figure 113: Travel behaviour – mode share of trip legs 2004-2008 (Wellington Region). Source: Ministry of Transport – Transport Monitoring Indicator Framework version 2 TP002 (10 September 2009)

Interpretation: The predominant mode of travel for all trip legs in the Wellington Region is by car/van (70% of all trip legs), with drivers accounting for 46% and passengers accounting for 24%. Active modes comprise 25% of all trip legs (pedestrians 24% and cyclists only 1%), 4% is attributable to public transport, and 1% to other household travel.

Comments: When compared to *Mode of journey to work* (next section), the percentage of people travelling in cars/vans stays approximately the same. However, more people use public transport to get to work than for trips in general, and less people use active modes to get to work than they do for journeys in general.

### Mode of journey to work (all modes)

Definition: The graph shows the 'main means of travel to work' across all modes for the regional population on census day. The following definitions of modes have been collated from the New Zealand Census categories:

- Motor vehicle: 'drove private car, truck or van; drove company car, truck or van; passenger in car, truck or van or company bus; motorcycle or powercycle'
- Public transport: 'public bus; train'
- Active modes: 'walked or jogged; bicyle'
- Other: 'e.g. taxi, ferry, plane'

As the census is conducted five-yearly this indicator will next be updated in 2012.

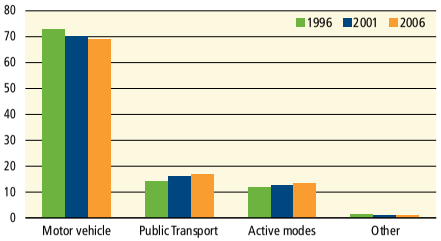



Figure 114: Journey to work mode share (%). Source: Statistics New Zealand

Interpretation: Public transport, walking and cycling mode share increased in 2001 and 2006. Motor vehicle mode share has decreased over the 10 year period but approximately 10,000 more trips were made by vehicles in 2006 compared with 2001.

For analysis of each mode share result see the associated RLTS outcome sections.





Mode of journey to work:

- Motor vehicle – Figure 46 in *Environmental Outcomes, 3.2 Reduced private car mode share*
- Public transport – Figure 5 in *Passenger Transport Outcomes, 1.1 Increased peak period passenger transport mode share*
- Active modes – Figure 28 in *Active Mode Outcomes, 2.1 Increased mode share for pedestrains and cyclists*

Comments: While the share of sustainable transport modes has risen and that of motor vehicles has declined, the number of trips made by motor vehicles has increased over the last census period.

Definition: The following graph gives a detailed breakdown of each mode within the 'main means of travel to work' definitions used above. Results are for the 2006 census only.

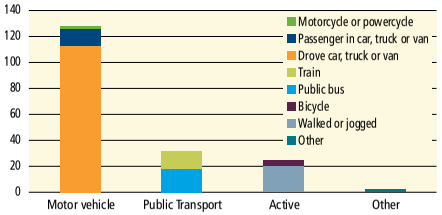



Figure 115: Disaggregated journey to work trips by mode (000s), 2006. Source: Statistics New Zealand

Interpretation: Driving a car, truck or van on census day accounted for approximately 90% of all motor vehicles while passengers made up only 9% of the total. The split between bus and train showed bus passengers dominating at 57% over those travelling by train. The active mode split was weighted towards walking and jogging (84% of the total ) over cycling in 2006.

Comments: Travelling to work by driving a car, truck or van is the outstandingly prevalent travel mode of choice in the Wellington Region. More people travelled to work by public bus than train on census day in 2006, and walking or jogging were a more popular means of getting to work than cycling.

### Mode use in previous six months

Definition: The graph shows how many people used the four main modes of transport (private and public transport, walking and cycling) for any of their trips in the previous six months to June 2003, 2004, 2006 and 2008.

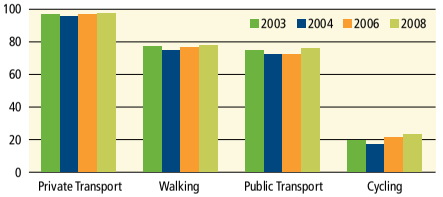



Figure 116: Transport modes used for any trips over the six months to June (%), Wellington Region. Source: GWRC transport perceptions surveys

Interpretation: 98% of respondents in 2008 said they had made trips in the previous six months by private transport, 78% by walking and 76% by public transport. Cycling trips represented 23% of trips in 2008.

Comment: An increase was shown for all modes in 2006 and 2008. Private transport remains the main travel mode of choice for the Wellington Region. There is a high level of use of public transport and of trips made by walking. Cycling as the travel mode of choice is increasing in popularity.

### Inter-regional passenger movements

Definition: The graph shows a passenger movement index. Figures relate to numbers of people crossing regional boundaries by air, sea (inter-island ferries only), rail or road. Buses are excluded as information is unavailable. Because some data is commercially confidential, absolute numbers are not given.

Some double counting of passenger movements will be included (e.g. passengers may arrive in the region by car and leave by ferry). An average vehicle occupancy factor of 1.7 has been applied to road traffic counts.

Wellington airport's function as a domestic network hub results in many movements not destined for or originating in the region, but counted as crossing regional boundaries.

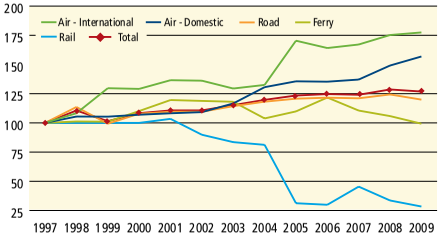



Figure 117: Inter-regional passenger movements. 1997 = 100. Sources: Wellington International Airport; KiwiRail; Strait Shipping; New Zealand Transport Agency

Note: Air passenger figures refer to year ended March. Rail passengers include The Overlander and Northerner services until November 2004 when The Northerner rail service ceased operation. Passengers by road refer to the previous calendar year. The Interislander Lynx service terminated in May 2005.

**Table 13** shows absolute numbers of travellers. Figures for the inter-island ferries (operated by Strait Shipping and KiwiRail) and inter-regional passenger trains (operated by KiwiRail) have been omitted to protect commercial confidentiality.

| Mode | Number of persons (million) |
|---|---|
| Air – domestic | 4.6 |
| Air – international | 0.6 |
| Rail | Not available for publication |
| Ferry | Not available for publication |
| Road (except buses) | 10.9 |

Table 13: Number of inter-regional passengers by mode. Sources: Wellington International Airport; New Zealand Transport Agency

Note: Air = April 2007 – March 2008; Road = 2007 calendar year.

Interpretation: Domestic and international air passenger movements have increased by 5% and 1% respectively in 2009. Since 1997, domestic passenger numbers have risen by 57% and international passenger numbers have risen by 77%.

Inter-regional rail passenger numbers decreased by 15% in 2009. A marked decrease in patronage of 63% was shown between 2004 and 2006, coinciding with the Northerner ceasing operation in 2005; this has contributed to rail passenger numbers decreasing by 72% since 1997.

Inter Island ferry patronage declined for a third year, dropping by over 6% in 2009. Passenger numbers by road decreased almost 4% in 2009.

Comments: Road-based travel is vital to the region and continues to be the dominant land transport mode for inter-regional passenger movements. Travel both to other New Zealand destinations and overseas via Wellington International Airport is proving to be a growth area and domestic air travel is the region's second largest passenger mover. Not all rail journeys begin or end at the Wellington Rail Station, so use of Overlander service is under-represented.

Overall, there is steady growth in passenger movements averaging 2.2 % per annum since 1997.

## State highway traffic volumes

Definition: The graphs show annual average daily traffic (AADT) volumes derived from automatic counters operating on each road section over a calendar year. The overall traffic volume at all monitored sites in the region is shown, followed by traffic volumes in the western and eastern parts of the region.

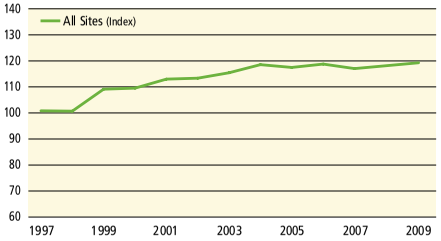



Figure 118: Annual average daily traffic volumes, all sites. Index: 1997 = 100. Calendar year. Source: New Zealand Transport Agency

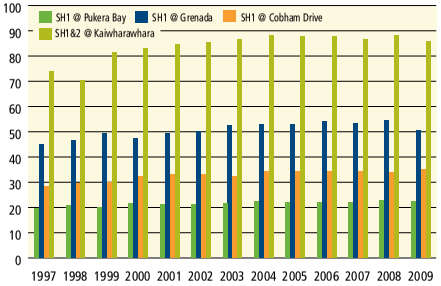



Figure 119: State highway annual average daily traffic volumes (000), western region. Calendar year. Source: New Zealand Transport Agency





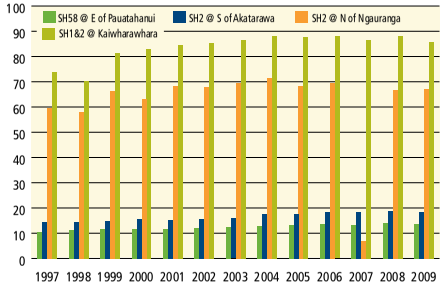



Figure 120: State highway annual average daily traffic volumes (000), eastern region. Calendar year. Source: New Zealand Transport Agency

Interpretation: Fairly strong growth in traffic volumes was shown from 1997 to 2004 at 19%. Since that time the annual average has stabilised.

Comment: Results should be interpreted with care as many vehicles are counted several times depending on their route through the network. Counts record only vehicles on the network; vehicle trips that are avoided because of perceived congestion cannot be quantified.

## State highway hourly traffic profiles: Ngauranga

Definition: The graph shows hourly traffic flow distribution on State Highway 1 and State Highway 2 at Ngauranga over the course of an average weekday, Saturday and Sunday, in March and October 2008.

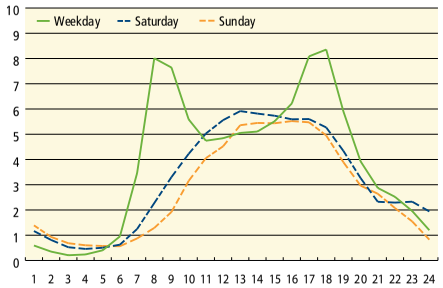



Figure 121: Average hourly traffic volumes at Ngauranga (000), combined directions. Weekday, Saturday and Sunday, 2008. Source: New Zealand Transport Agency

Interpretation: The weekend profiles show a single broad peak occurring across the middle of the day with Sunday's profile slightly narrower than that of Saturday. This analysis uses combined two-way traffic volumes. Directional volumes would show more pronounced peaks especially in the direction of commuter traffic volumes. Peak weekday hourly volumes are approximately 40% higher than peak weekend hourly volumes.

Comment: Comparison with peak weekday hourly volumes shows that capacity is not an issue at Ngauranga on the weekend.

Definition: The graph shows a comparison of average weekday hourly traffic volumes at the same location, State Highway 1 and State Highway 2 at Ngauranga, in March and October 1999, 2003 and 2008.

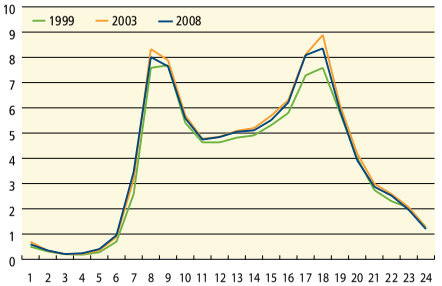



Fig 122: Average weekday hourly traffic volumes at Ngauranga (000), combined directions. 1999, 2003 and 2008. Source: New Zealand Transport Agency

Interpretation: The three profiles have the same overall shape.

Morning peak traffic at Ngauranga builds up rapidly as is shown by the sharply increasing profile between 6.00am and 8.00am. The lowest volume of traffic during the day at Ngauranga is experienced at 11.00am and the increase shown between 2.00pm and 4.00pm is possibly attributable to the end of the school day and flexible or part time working hours.

The afternoon peak occurs from 4.00pm until 6.00pm, after which traffic volumes decrease at a lesser rate than the profile shows at the beginning of the day. This may be due to commuters timing their journey home to avoid high volumes of traffic.

Comment: The PM peak spread which occurred between 1999 and 2003 has not continued in 2008. Higher fuel prices may be contributing to the stability in morning and evening commuter peaks and hence, hourly traffic volumes in 2008 are similar to 2003.

## State highway vehicle kilometres travelled

Definition: The graph shows information that New Zealand Transport Agency gathers from traffic counters to determine total annual vehicle kilometres travelled (VKT) on each section of regional state highway. Information for 2002 and 2003 is indicative only and should not be compared with data for subsequent years.

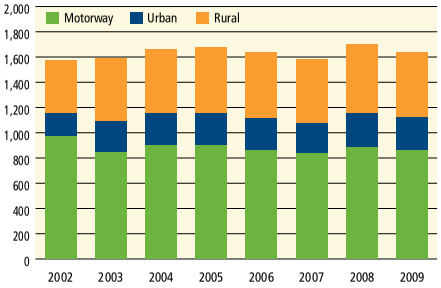



Figure 123: State highway VKT (M). Source: New Zealand Transport Agency

Interpretation: VKT on the state highway network decreased by nearly 4% in total and across each classification in 2009.

In 2008, total VKT rose to the highest level since 2002; in 2009 it decreased again slightly. The composition per highway class differs with 11% less kilometres travelled on motorways in 2009 than in 2002; and almost 45% and 19% more on urban and rural highways respectively.

**Table 14** shows that over half of state highway VKT is occurring on the motorway system.

| Class | State highway network 2009 | |
|---|---|---|
| | Percentage of network length | Percentage of VKT |
| Motorway | 24 | 53 |
| Urban | 17 | 16 |
| Rural | 59 | 31 |
| **Region** | **100** | **100** |

Table 14: State highway network characteristics, Wellington Region, 2009. Source: New Zealand Transport Agency

Comments: State highway network loadings vary widely by location. Rural requirements are very different from those of a city. Continued monitoring is needed to ensure state highway network components give the best service possible within topographical and financial constraints.

## Strategic road network level of service

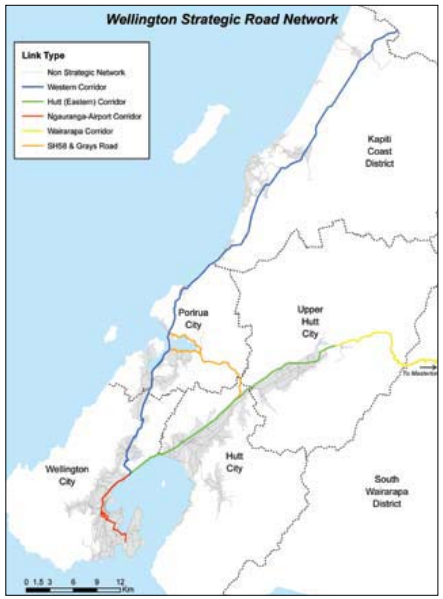



Figure 124: Wellington Region strategic road network, 2006. Source: GWRC

Definition: The graph shows vehicle hours segmented by condition of travel (congested, interrupted, freeflow) and vehicle kilometres travelled, operating during the AM peak period. This indicates the level of service for the 2006 strategic roading network of the Wellington Region, as illustrated in the map. The strategic roading network is defined by the following corridors: Western; Hutt; Ngauranga – Aiport; Wairarapa; and State Highway 58 and Grays Road.





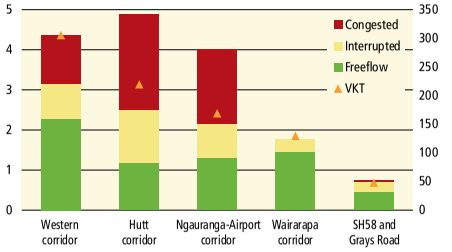



Figure 125: Roading strategic network level of service, 2006. Y-axis: LHS = vehicle hours (000s); RHS = VKT (000s). Source: GWRC Wellington Transport Strategic Model

Interpretation: The Western corridor strategic network has the highest vehicle usage of all the corridors, as shown by the highest VKT value (a combination of high volumes and long average distances). The Hutt corridor however has higher total travel times due to higher levels of congestion than the Western corridor. The Ngauranga – Airport corridor has lower total usage than both the Western and Hutt corridors due primarily to the shorter definition of the corridor, but has total travel times comparable with the Western corridor, indicating the higher overall levels of congestion. Congestion is less of an issue for the Wairarapa and State Highway 58 corridors.

Comments: The Hutt and Ngauranga – Airport corridors are the most congested in the region. Total distance travelled within the Western strategic network is higher than other corridors.

## Work from home

Definition: The graph shows the percentage of people in employment who worked from home on census day. A breakdown by district throughout the region is given. Census information is collected five-yearly and this indicator will next be updated in 2012.

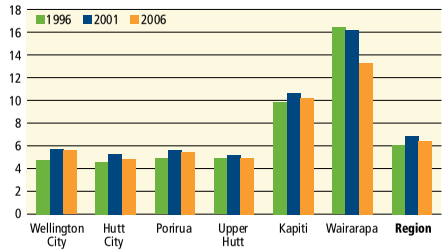



Figure 126: People working, who work at home (%), by district. Source: Statistics New Zealand

Interpretation: The percentage of those working from home showed a decrease in all districts in 2006. This contrasts with the increase from 1996 levels across the region (except Wairarapa) shown by the 2001 census.

Comments: The 2006 result of less people working at home does not correlate with technological advances that should make it easier for people to do so. An increased uptake of technology allowing work from home or teleworking for at least one day each week will reduce peak period traffic demands on the region's transport network.

## CBD parking supply: regional centres

Definition: The graph shows parking supply in regional city centres from a March 2003 report commissioned by GWRC and as supplied by the region's Territorial Authorities in 2008. Both public and private carpark numbers are given. The data is only indicative of parking supply in the region.

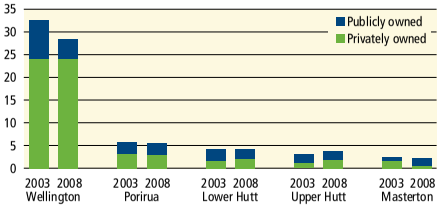



Figure 127: Parking supply by city centre (000), Wellington Region. Sources: Wellington Regional Parking Study, Booz Allen Hamilton (2003); Territorial Authorities (2008)

Interpretation: Wellington City has the largest number of carparks in the region with a total of over 28,000 of which approximately 24,000 are privately owned. Parking supply in Porirua is the next most abundant and other city centres have less than 5,000 parking spaces.

Comments: The availability and cost of city centre parking are factors considered by residents when deciding on the mode of travel to work, for shopping or leisure.

# Appendix 2 - Regional travel demand

## Perceptions of parking supply: Wellington CBD

Definition: The graph indicates what people thought about the availability of car parking in the Wellington CBD in 2003, 2004, 2006 and 2008.

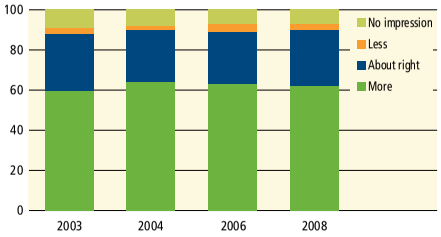



Figure 128: Perceptions of Wellington CBD parking supply (%).
Source: GWRC transport perceptions surveys

Interpretation: Some 62% of respondents in 2008 thought there should be more car parks in Wellington (63% in 2006). 28% thought the number was about right, (26% in 2006). Only 3% thought there should be fewer car parks in Wellington CBD (4% in 2006).

Comments: These results remain relatively unchanged since 2004. Almost two-thirds of respondents thought that the parking supply in the Wellington CBD was inadequate.

## Perceptions of parking prices: Wellington CBD

Definition: The graph shows what people thought about the cost of car parking in the Wellington CBD in 2003, 2004, 2006 and 2008.

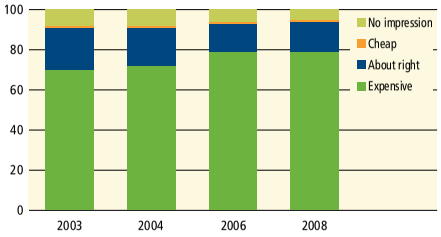



Figure 129: Perceptions of Wellington CBD parking pricing (%).
Source: GWRC transport perceptions surveys

Interpretation: The graph shows that 79% of people in 2008 thought the cost to park in Wellington CBD was expensive (the same result as in 2006). 15% thought the cost was about right (c.f. 14% in 2006) and only 1% thought it was cheap (as in previous years).

Comments: Parking pricing is one method of deterring people from driving into city centres. Over three-quarters of people thought parking was expensive which demonstrates a level of parking constraint operating in the Wellington CBD.

## Conclusion

The main routes to and from the region, State Highway 1 and State Highway 2, account for around two-thirds of passenger movements across the regional boundary. State Highway 1 accounts for over 80% of total movements, highlighting its national importance.

Demand for passenger movement to and from the region is expected to grow steadily in future years. The predominance of road-based travel requires reliable connections, particularly the State Highway 1 corridor to the north of Wellington. The reduced inter-regional passenger rail service is likely to be causing increased demand on the State Highway network.

Passenger rail travel plays a small part in inter-regional passenger movements, with the single remaining long-distance service being the daytime Overlander train to and from Auckland. The Northerner night-time train ceased service in November 2004. The Bay Express service to Napier was also discontinued in 2001. Rail passenger movements have declined steadily in accordance with discontinued services. The current Capital Connection to and from Palmerston North is essentially a commuter service and is not included.

Take-up rates of home and teleworking should be increasing (although this was not shown in 2006) as changes in technology and lifestyle allow. Depending on level of uptake, this is likely to have only a marginal effect on regional travel demands.



# Glossary

| | |
|---|---|
| 000 | Thousand |
| AADT | Annual average daily traffic |
| AMR | Annual Monitoring Report |
| ARC | Auckland Regional Council |
| CBD | Central business district |
| cc | Cubic centimetre |
| CDC | Carterton District Council |
| CO | Carbon monoxide |
| $CO_2$ | Carbon dioxide |
| dB(A) | Decibel (A-weighted) |
| ECan | Environment Canterbury |
| EMU | Electric multiple units |
| FEPI | Farm Expenses Price Index |
| Golden Mile | Lambton Interchange to Courtenay Place |
| GIS | Geographical information system |
| GWRC | Greater Wellington Regional Council |
| HCC | Hutt City Council |
| KCDC | Kapiti Coast District Council |
| Km/h | Kilometres per hour |
| $L_{eq}$ | Time-averaged sound level |
| LOS | Level of service |
| LTCCP | Long-term Community Council Plan |
| LTCCP Target | GWRC LTCCP target to 2016 |
| LTMA 2003 | Land Transport Management Act 2003 |
| M | Million |
| Metlink | Greater Wellington's public transport network |
| MDC | Masterton District Council |
| mins | Minutes |
| MOT | Ministry of Transport |
| NES | National Environmental Standard |
| NIMT | North Island Main Trunk line |
| $NO_2$ | Nitrogen dioxide |
| NOx | Nitrogen oxides |
| NZTA | New Zealand Transport Agency |
| PCC | Porirua City Council |
| $PM_{10}$ | Particulate matter |
| Police | New Zealand Police |
| RCA | Road Controlling Authority |
| RHS | Right hand side |
| RLTS | Regional Land Transport Strategy |
| RTC | Regional Transport Committee |
| SDI | Social deprivation index |
| SH | State highway |
| SWDC | South Wairarapa District Council |
| TDM | Travel demand management |
| TOD | Transit-Oriented Development/ Design |
| UHCC | Upper Hutt City Council |
| VFEM | Vehicle Fleet Emissions Model |
| VKT | Vehicle kilometres travelled |
| WAI | Wairarapa |
| WCC | Wellington City Council |
| WRS | Wellington Regional Strategy |
| WTSM | Wellington Transport Strategy Model |

Water, air, earth and energy – elements in Greater Wellington's logo combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, cultural and social needs of the community

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