

Auckland Regional Land Transport Strategy
Report on Progress 2007/09

February 2010

CONTENTS

EXECUTIVE SUMMARY	3
Chapter 1: Introduction and Context	4
Chapter 2: Travel Demand Management	5
Chapter 3: Progress toward Objectives	10
Objective 1: Assist Economic Development	10
Objective 2: Assisting Safety and Personal Security	15
Objective 3: Improving Access and Mobility	17
Objective 4: Protecting and Promoting Public Health	26
Objective 5: Ensuring Environmental Sustainability	31
Objective 6: Supporting the Auckland Regional Growth Strategy	32
Objective 7: Achieving Economic Efficiency	34

Executive Summary

This report updates progress over the last two years (July 2007 – June 2009) towards achieving the outcomes sought by the 2005 Regional Land Transport Strategy (RLTS). With the passing in July 2008 of the Land Transport Management Amendment Act, the RLTS is currently undergoing a significant review and modification (the Regional Transport Committee is currently in deliberations following the public hearing process for the submissions to the Draft RLTS).

The report describes travel demand management initiatives undertaken to support implementation of the strategy and reports on progress against each of the seven strategy objectives as summarized below:

- Assisting economic development – while there is considerable variability in the data, results suggest congestion worsening in the morning and inter-peak periods, but an easing of congestion in the evening peak. It is not clear why the trends should be different in different time periods, but it should be noted that there have been road works in various parts of the network which may be clouding results.
- Assisting safety and personal security - a particular success is that 2008 recorded the lowest level of fatalities for 28 years; only 55 deaths were recorded in 2008 compared with 61 in the previous year. The number of casualties also fell, leading to a marginal decrease in the rate per 10,000 people. These statistics are reflected in the improved public perception of safety.
- Improving access and mobility - there has been strong growth in passenger transport numbers for the region for the 2008/09 period with just over 58.6 million boardings in the Auckland Region; up from 54.4 in 2007/08. There are now over 2 million more passenger transport boardings than the previous peak in 2003. The cost of private vehicle travel has increased but the cost of travel by passenger transport in real terms has declined. These outcomes are reflected in the improved public perception of access provided by PT and are likely to account, in part, for the growth in PT patronage.
- Protecting and promoting public health - data shows that in most years the maximum recorded values for PM_{2.5}, PM₁₀ and NO₂ at sites across the region exceed the relevant air quality targets. However, PM₁₀ and CO concentrations appear to have decreased and levelled off.
- Environmental Sustainability – sales of petrol have fallen slightly in the last 10 years while the sale of diesel has increased slightly
- Supporting the Growth Strategy – based on statistics from census data, businesses are increasingly locating in growth centres and along growth corridors.
- Economic efficiency - recorded costs per passenger kilometre for passenger transport operations are falling slightly by 2.4 per cent overall

Chapter 1: Introduction and Context

This report provides a brief and selected update of progress toward achieving the outcomes sought by the 2005 Regional Land Transport Strategy (RLTS). The current 2005 RLTS was adopted and issued by the Auckland Regional Council (ARC) in December 2005 in response to the requirements of the Land Transport Management Act 2003 and the Local Government Auckland Amendment Act 2004.

The 2005 RLTS set out the vision, objectives and policies for the 10 year period 2006 to 2016 and provided for a step change increase in investment in public transport (PT), and an emphasis on changing travel behaviour, aimed at shifting people away from private car journeys to energy efficient alternatives. However, it was accepted that there is a need to complete key elements of the strategic road network in order to increase the capacity of the strategic and regional arterial road network and to optimize the performance of the existing network.

In July 2008 of the Land Transport Management Amendment ACT was passed. As a result the RLTS has been required to undergo significant review and modification to comply with the new legislation. This process is now underway and expected to be completed by April 2010. The revised RLTS will consider a much longer 30 year planning horizon. The legislation stipulates that progress in implementing the new strategy must be reported every 3 years, with the first review set down for 30 June 2011.

This report firstly updates progress toward implementing the key policy areas of managing travel demand by the application of Travel Demand Management (TDM) measures. It then sets out progress toward achieving the seven policy objectives of the strategy including:

1. Assisting Economic Development;
2. Assisting Safety and Personal Mobility;
3. Improving Access and Mobility;
4. Protecting and Promoting Public Health;
5. Ensuring Environmental Sustainability;
6. Supporting the Auckland Regional Growth Strategy; and
7. Achieving Economic Efficiency

Chapter 2: Travel Demand Management

The RLTS recognizes that it is not possible to adopt a “predict and provide” approach to transport in Auckland. While additional transport services and infrastructure are required, the region will also increasingly need measures that reduce the demand or the need for travel, particularly by private vehicles. To this end, the strategy includes policies to:

- Ensure that land use development and transport support each other and recognize the importance of catering for non-vehicular travel
- Provide attractive transport choices for individuals, communities and businesses
- Ensure that resources are available to understand and influence people’s travel choices
- Ensure that the planning and management of parking resources supports the region’s land use and transport outcomes
- Evaluate options to establish an efficient road pricing system.

The RLTS sets an overall target of 20,000 fewer vehicle trips each morning peak by 2016, thus halving the expected increase in vehicle traffic on Auckland’s roads. The strategy recognizes that TDM is one of the most cost effective ways of reducing car trips.

Progress has been made with the implementation of the Sustainable Transport Plan by ARTA in 2008. This is a 10-year plan that seeks to achieve the RLTS targets and is complemented by local council walking and cycling strategies and other local community initiatives.

There have been many on-the-ground achievements demonstrating that ARTA and TAs are already helping people in Auckland make more sustainable travel choices. These achievements can be summarized under the headings of travel planning, walking and cycling.

2.1.1 Walking

Almost 20% of trips made in the Auckland region are 2km or shorter, and around half of these trips are made by walking. Typically, short trips are made to school, within the CBD and around town centres. A number of residents walk to work regularly – the 2006 Census found that 24,000 usual residents walked or jogged to work on Census Day (5 per cent of all trips to work).

Auckland’s CBD is the most important destination for walking; over 46,000 people walk on Queen St each day. Auckland City Council has significantly improved the pedestrian environment of Queen St, with mid-block crossings, wider footpaths, seating and artworks. Red light cameras have been installed at key CBD intersections where red light running was a significant safety issue for pedestrians.

Two regional programmes delivered by ARTA and local councils that are designed to encourage walking in the region are: Walking School Buses and Neighbourhood Accessibility Plans.

- Walking School Buses encourage parents and children to walk to and from school. More detail on these is included below under ‘School Travel Plans’.
- Neighbourhood Accessibility Plans have been initiated in Grey Lynn and Rosebank, which have involved the community in identifying safety and access problems

(including perceived barriers) for cyclists and pedestrians. Auckland City is now developing strategies (based on engineering, including environmental improvement, education, encouragement and enforcement) to address identified problems.

A set of "be active" maps have been prepared covering the Auckland City area, to encourage people to get out on foot and explore what their local community has to offer.

2.1.2 Cycling

People choose to cycle for many reasons, including cycling for leisure, recreation, physical health and as a means of transport to and from education or work. The 2006 Census found that approximately 5,000 people cycled to work in the Auckland region on Census Day (1 per cent of all trips to work).

The regional cycle network (RCN) has been used to guide investment in cycle infrastructure to 2016 and provides indicative future links for construction beyond 2016. The RCN will be 938km long when completed. When the network was conceived in 2006, 112km (12%) was already constructed. At the end of June 2009, 193km (21%) of the RCN had been completed.

ARTA coordinates on behalf of NZTA and the territorial authorities a manual survey of cycling across the region. The survey has the goal of providing consistent and comparable results each year. The first regional survey was conducted at 69 sites for both the morning and evening peak periods, on 6 March 2007. This was repeated in March 2008 (including an additional 8 sites) and again in 2009 when 83 sites were monitored. The results indicated that the numbers of people cycling which had been falling for many years has now stabilized and where good cycling facilities have been provided, there is a considerable increase in numbers. ARTA and the territorial authorities are exploring opportunities to install continuous cycling monitoring equipment in the region, which would provide much better data to consider where and when people are cycling and help guide future investment decisions.

Successful events including Bike to Work breakfasts were held across the region during Bike Wise Month in February 2009.

2.1.3 Travel Planning

2.1.3.1 School and University Travel Plans:

Trips to school make up around a third of all morning peak trips in Auckland, and just over half of these trips are made by car. This dominance of trips by car causes a multiplicity of problems with traffic congestion and parking, safety, and contributes to an overall decline in children's health and fitness. The 2005 RLTS sets a target of 12,600 fewer car trips to school by 2014. A vital approach to achieving this target is ARTA's school travel programme, which is already reducing car trips to school by 4,503 each morning in 2007/08 and 5,010 in 2008/09.

A school travel plan involves regular surveys of children's travel patterns, and working with the school and parents to promote and enable safer, healthier ways of getting to school. The school travel plan programme is active in 194 schools across the region to date.

ARTA also co-ordinates the regional Walking School Bus programme. This was first established in the region in 2001 and at the end of 2008, there were 262 walking school buses operating from 112 schools. The programme is now also succeeding in low decile schools as a result of additional investment. The Ministry of Health in partnership with ARTA has funded a new full time position focused upon increasing the number of low decile walking school buses entering the programme.

The evaluation of both programmes at the end of the 2008 school year found a 3.71 per cent decrease in car use and a corresponding increase in walking to school, use of public transport and carpooling. During 2008/09, the School Travel Plan and Walking School Bus programmes are estimated to have resulted in:

- ❑ Direct reduction of 1,091 tonnes of CO2 emissions
- ❑ Reduction of 2.96 million vehicle km travelled
- ❑ Reduction of 2.56 million car trips

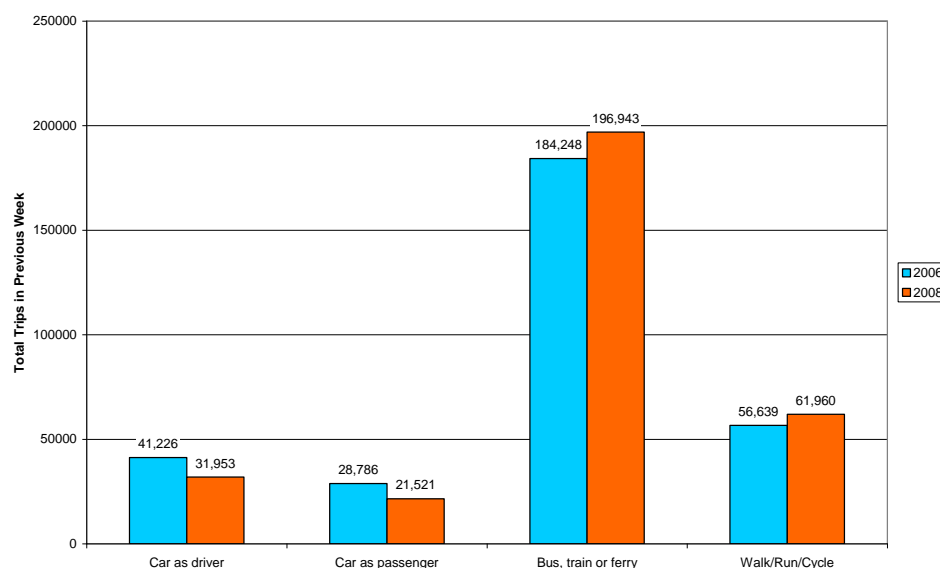
However, it is the perspective of the children that really determine the success of the programmes:

"[The Walking Bus is] really nice because you get to stretch in the morning and when you get to school its good and you're not all tired and dopey."

Auckland's largest travel plan covers the Learning Quarter of the Auckland CBD, and has involved the University of Auckland, AUT, ACC, Transit and ARTA. Since the launch of the Travel Plan in September 2007, ARTA has increased the discount on tertiary fares to 40%, and worked with the Student Unions to ensure that all students and potential students are aware of the discount and of the advantages of catching public transport, walking, or cycling to University. An important part of the travel plan is the development of the Central Connector route (formerly known as the Central Transit Corridor). This route provides a priority corridor for existing buses operating between Britomart and Newmarket, connecting key central city destinations including the University/AUT precinct, Auckland Hospital/Medical School and the Domain. It forms part of the regional quality transport network and is designed to ensure that bus journey times will decrease by up to 14 minutes and bring further improvements to walking and public transport options to the CBD universities. The project was commenced by Auckland City Council in April 2008 and has recently (November 2009) been completed ahead of schedule.

A student travel choice survey was undertaken in 2008 to assess the impact of the travel plan one year on. Students from AUT and Auckland University were asked how many trips they made to/from university the previous week. The results are illustrated below and show that there has been a significant increase in travel by modes other than by private vehicle since 2006 when base-line data for the Travel Plan was obtained demonstrating the success of the project.

Figure 1: AUT and University Student Travel Choice Survey (2006 and 2008)



Source: ARTA

2.1.3.2 Workplace Travel Plans

Over half of all car trips in the morning and evening peak traffic periods are trips to work. The 2006 Census found that almost 400,000 residents travelled to work by car on Census Day (79 per cent of all those who travelled to work that day).

ARTA coordinates Workplace Travel Plans across the region. These aim to provide better choices for travel to work or study, smart options for in-work travel and a better understanding of the real costs of different travel choices. By mid 2009, ARTA's workplace travel plan programme was 42 workplaces/tertiary institutes with a total of 93,318 staff and students (Travelwise Workplace Travel Plan Programme 2008 V6.xls.). This compares with a target, set in the RLTS, of 90,000 employees and tertiary students involved in the programme by 2016.

Six of the seven local councils in the region have joined the programme and are in various stages of completing their travel plans for their own organisations. North Shore City Council has reduced travel to work in single occupant vehicles by 6.6%, and Waitakere City Council (where the Travel Plan was part of a relocation of their main office) reduced single occupant car travel by 29%. These results place local councils in a strong position to advise other workplaces on reducing their car use.

To date, workplace travel plans at five workplaces have been evaluated and have resulted in 355 fewer car trips to work each morning resulting in:

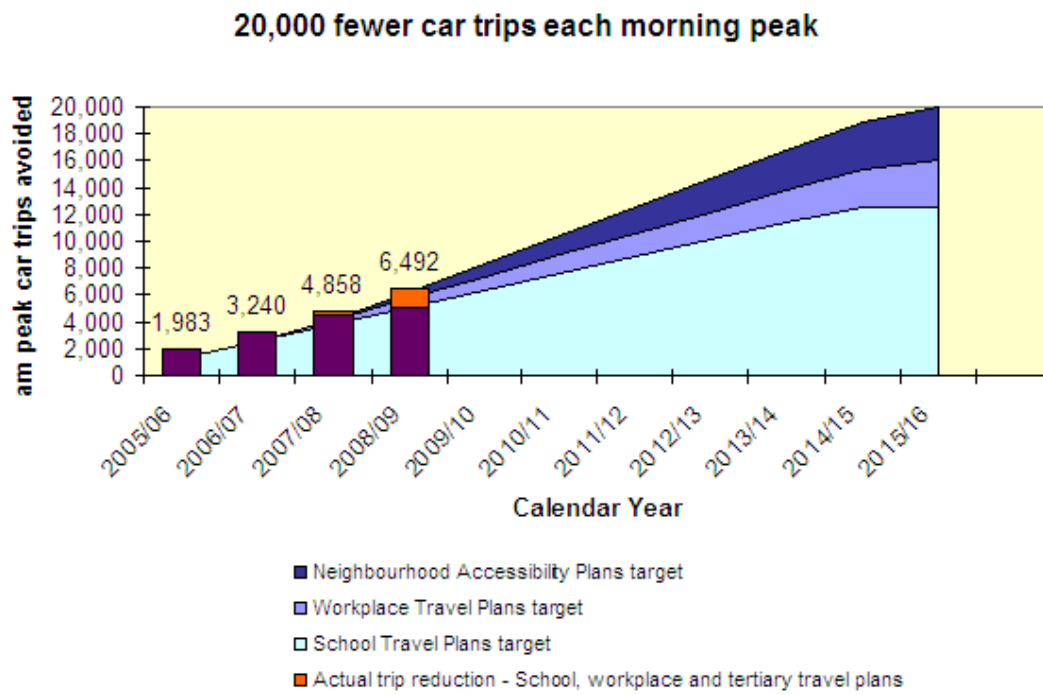
- Direct reduction of 778 tonnes of CO2 emissions
- Reduction of 2.4 million vehicle km travelled

Based on client feedback the workplace travel plan programme underwent an operational review. As a result all guidance material has been updated to ensure a more user friendly approach to the planning.

2.1.3.3 Combined Impact of Plans

The following figure provided by ARTA illustrates the success with which travel plans are being introduced and the significant impact this is having reducing travel by private car with an estimated 6,492 fewer trips for the 2008/09 period. As noted above the RLTS target set is 20,000 fewer trips each morning peak by 2016.

Figure 2: Impact of Travel Plans on Travel by Private Car



Source: ARTA

Chapter 3: Progress toward Objectives

Objective 1: Assist Economic Development

Congestion

Two measures have been used to assess the degree of congestion within the Auckland region:

- Average delay per kilometre – General
- Average delay per kilometre – Freight Routes

Average Delay per Kilometre – General

Measure Used: Average minutes of delay per kilometre on a sample of Auckland's strategic and arterial road network at various times of day during the working week.¹ This measure is also referred to as the '**Congestion Indicator**'. Survey results all refer to a one-week sample period in March of this and previous years.

Results: The results show considerable variability since monitoring began, however results for March 2009 suggest a worsening in Auckland's traffic congestion both in the morning and inter peak periods. While congestion in the evening peak has declined for the past three years, due to the variability over the whole time series it is not possible to tell if this is a long term trend.

The morning peak continues to experience greatest delays, averaging 0.88 minutes (68.2 seconds) per kilometre in March 2009 compared with 0.76 minutes (45 seconds) in 2008.

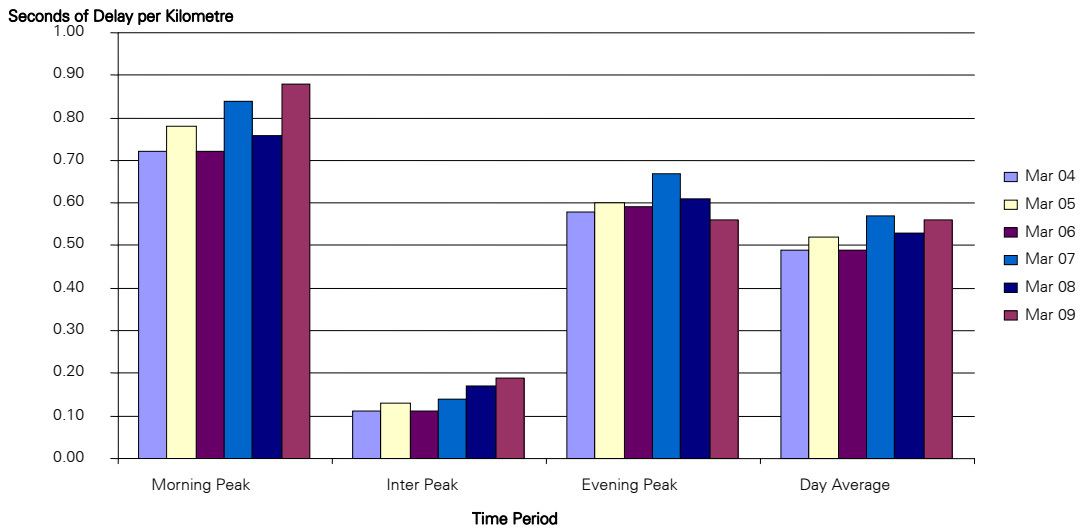
It should be noted that there have been road works in various parts of the network which may be clouding results.

Figure 3: Average Minutes of Delay per Kilometre, Auckland Region (2004 to 2009)

¹ Measurements are for March only and recorded over selected routes during the following periods:

- Morning (AM) Peak Period 7:30am to 9:30am
- Inter-peak (IP) Period 10:00am to 12:00pm.
- Evening (PM) Peak Period 4:00pm to 6:00pm.

The methodology involves 'floating car' travel time surveys carried out on a sample of Auckland's strategic and regional arterial networks, over a one week period, including state highways, regional arterial roads and local roads. Results show amount of delay compared with free-flow conditions at the speed limit. Results above are for the dominant direction of travel only during the AM and PM peak periods.



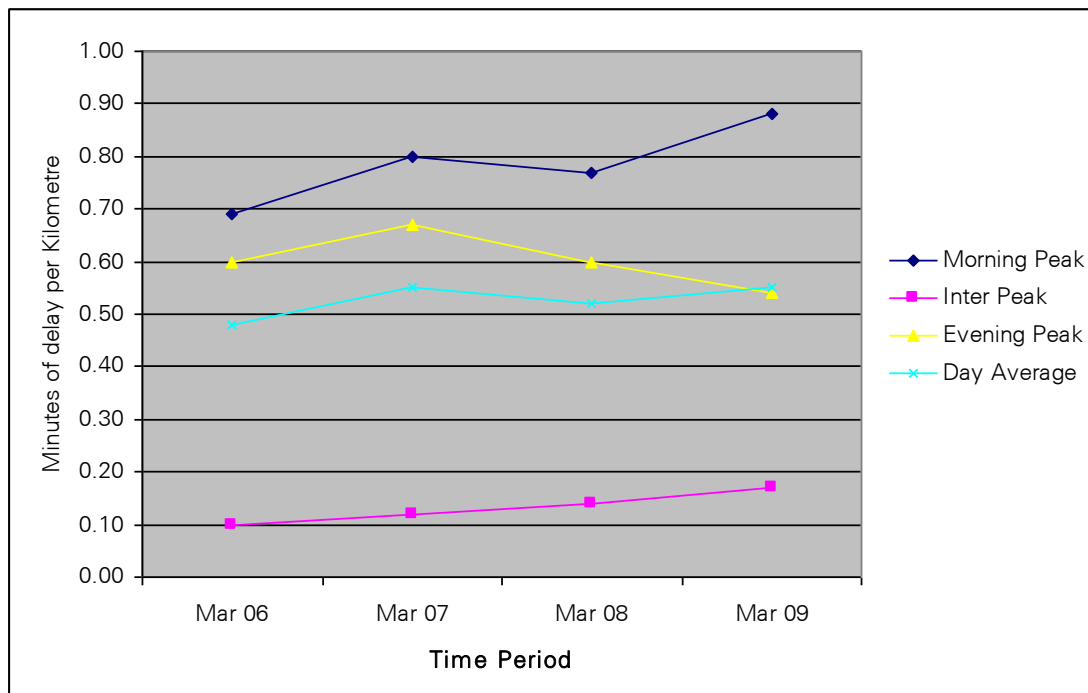
Source: ARC Auckland Travel Time Surveys

Average Delay per Kilometre - Freight Routes

Measure Used: Average delay (minutes per kilometer) on a sample of Auckland’s strategic road network used heavily by freight traffic. Survey results obtained for various times during the day, during the working week.

Results: Congestion in March 2009 appears to be increasing during the Morning and Interpeak, inline with the wider network results, with 0.88 minutes of measured delay per kilometer in the morning peak, compared with 0.77 minutes last year. The PM peak recorded delays of 0.60 minutes. This compares with delays of 0.14 minutes per kilometer for the inter-peak period, a slight gain on last years’ result on 0.12 minutes.

Figure 4: Average Minutes of Delay per Kilometer for Freight Routes across the Auckland Region (2004 to 2009)



Average Delay per Kilometre - Key Sections of the Motorway

Measure Used: Average minutes of delay per kilometre along four key sections of the Auckland motorway network including:

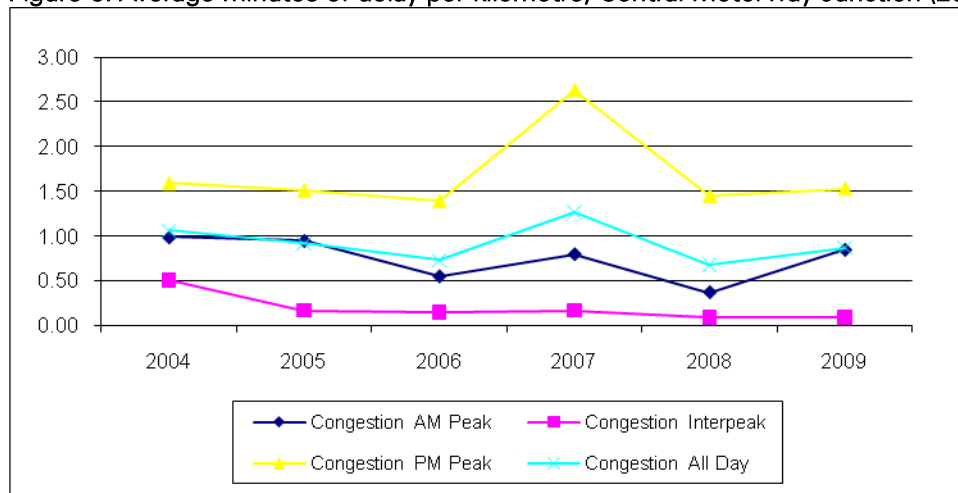
Central Motorway Junction (CMJ):

1. Northern Motorway: Between Esmonde Rd Interchange and Tristram Ave
2. Northwestern Motorway: Between Pt Chevalier and Te Atatu Interchange
3. Southern Motorway: Between Otahuhu and Mount Wellington off-ramp.

Results: Central Motorway Junction

Congestion is generally very high through the CMJ. The average delay over the past four years during the evening peak is one minute and 43 seconds per kilometre. In 2009 congestion increased slightly in the AM Peak, after a big reduction from the jump in 2007. All other time periods stayed at a similar level to 2008.

Figure 5: Average minutes of delay per kilometre, Central Motorway Junction (2004 to 2009)

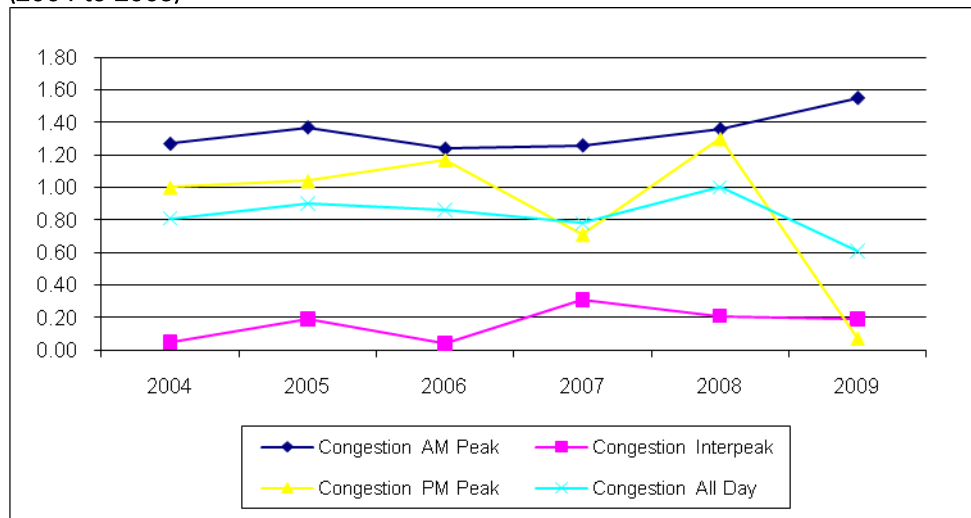


Source: ARC Auckland Travel Time Surveys

Results: Northern Motorway- Esmonde Road Section

There has been considerable fluctuation in congestion levels on this section of motorway. Since works have been completed on the northbound part of the Esmonde Road section congestion during the PM peak has declined to almost non-existent levels. There has been a smaller, but significant drop during the interpeak, but the AM peak has continued to increase, a trend that started in 2007.

Figure 6: Average minutes of delay per kilometre, Esmonde Road section of the Motorway (2004 to 2009)

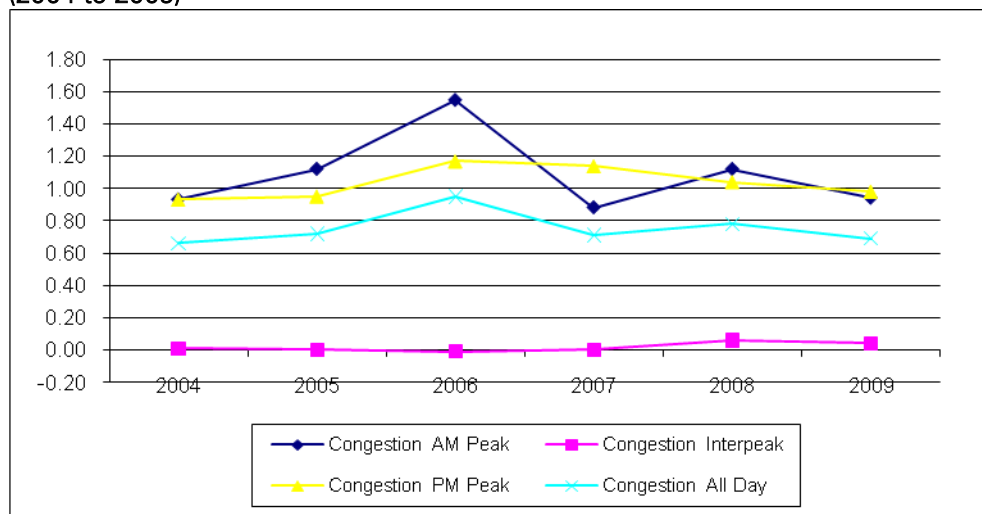


Source: ARC Auckland Travel Time Surveys

Results: North Western Motorway – Causeway

The reductions in congestion along the North Western Motorway Causeway in 2007 have largely held in 2008. There have been small increases during the AM peak and Interpeak, but congestion during the PM peak had decreased.

Figure 7: Average minutes of delay per kilometre, Northwestern motorway (Causeway section) (2004 to 2009)

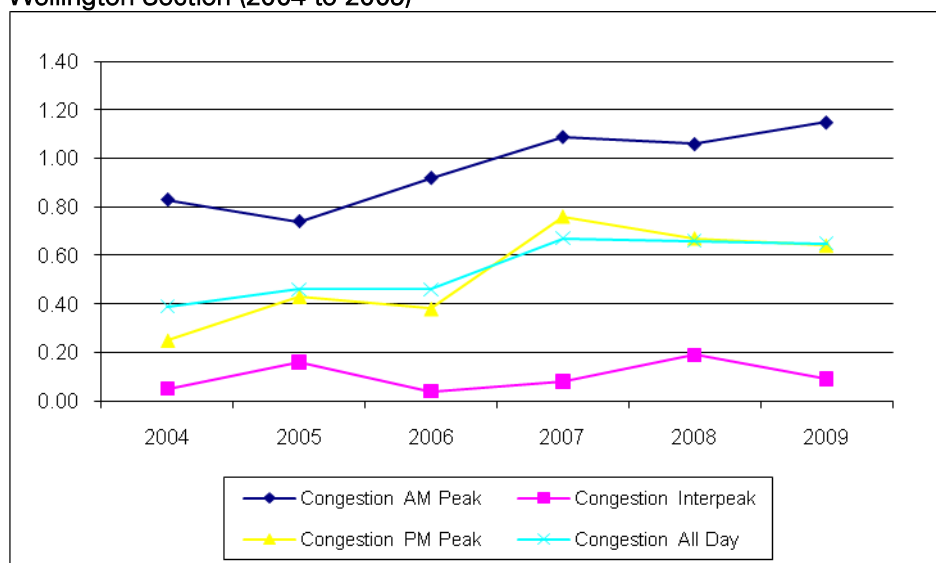


Source: ARC Auckland Travel Time Surveys

Results: Southern Motorway - Otahuhu to Mt Wellington Section

Congestion increased slightly in 2009 during the AM peak on this section of the motorway. However, the Interpeak and PM periods experienced a decrease in congestion.

Figure 8: Average minutes of delay per kilometre, Southern Motorway – Otahuhu to Mt Wellington Section (2004 to 2009)



Source: ARC Auckland Travel Time Surveys

Access by Public Transport (Key Employment Centres)

The level of PT service to key employment centres in the region may positively or negatively impact on choices made by employees and businesses around travel modes. The provision of convenient, cost effective and reliable PT, that is a good alternative to travel by private vehicles, can help to reduce travel times into key employment areas and reduce traffic congestion.

Measure Used: The number of key employment centres that have 'high', 'medium', or 'low' levels of PT accessibility (measured in terms of the total cost of getting to an employment area using PT).²

Results: Since 2001, the number of key employment centres with high levels of PT service has increased, while the number of centres with low accessibility has decreased.

Table 1: Number of key employment centres within the Auckland region that receive high, medium and low levels of public transport accessibility (2001 and 2006)

	CBD and Sub- Regional Centres (e.g. Newmarket, Manukau City)		Large Industrial and Business Centres (eg: Penrose, East Tamaki)		Large Residential Centres (e.g. St Lukes, Glenfield)	
	2001	2006	2001	2006	2001	2006
High	5	6	3	5	4	5
Medium	3	3	4	2	3	2
Low	3	2	2	2	2	2
None	0	0	1	1	0	0

² The cost is made up of the financial cost (fares) and the time cost (interchanges, walking to stops etc). It is calculated using the ARC's transport model with 2006 bus, rail and ferry service route and frequency details. The measure is the average accessibility from a traffic zone to all other traffic zones (or to a zone). There are about 900 zones within the region, and these have been ranked into three equal sized groups with high, medium or low levels of public transport accessibility.

The 30 employment areas used here are classified into three categories – the CBD and sub-regional centres, which are defined by the Regional Policy Statement; large industrial and business centres, such as Penrose; and large residential centres, which are generally large shopping strips and malls. PT accessibility index data is from 2001 and 2006 and was calculated using the Auckland Regional Council's Transport model.

Objective 2: Assisting Safety and Personal Security

People need to be able to travel throughout the region with confidence. This means minimizing crashes, injuries and fatalities. It also means protecting property and creating places where people feel safe when walking, cycling or using public transport. Safety and personal security need to be considered at all stages of the design, construction, operation and maintenance of all parts of the transport system.

The RLTS outlines several policies that are designed to maximize safety and personal security in Auckland's transport network. These include implementing the key road safety priorities identified in the Regional Road Safety Plan 2004 to 2010; including safety and security related issues in the development of projects and programmes; and ensuring that at-risk road users and communities have high priority for regional safety initiatives.

Crash Statistics

The number of deaths and casualties on the Auckland region's roads is a direct reflection of the level of road safety and security. This includes driver behaviour as well as road maintenance and conditions.

Measure Used: Number of deaths and casualties per 10,000 population in the Auckland region in the year ended December 2007, and for the four priority action areas as defined within the Auckland Regional Road Safety Plan 2004-2010 i.e. alcohol, speed, intersection, and pedestrian safety. Other emerging areas of interest have been added for cyclists and motorcyclists.

Results: In 2008 there were 55 deaths on the Auckland region's roads, a significant reduction compared with previous years. 2008 saw the lowest recorded number of deaths in the last 28 years.

During 2008 there were 4260 fatal, serious and minor casualties (30 per 10,000 people), compared with 4304 (31 per 10,000 people) in 2007. The absolute number of injuries has fallen from 2006's high point. However, the per capita rate has remained broadly stable for the last few years

Table 2: Road Deaths and Casualties in the Auckland Region (year end December 2000 to 2008)

Road Crash Data per Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Deaths									
Number of Road Deaths (Fatal Casualties)	70	74	84	81	93	77	84	61	55
Injury Crashes									
Total Casualties (fatal, serious and minor)	3197	3437	3834	4187	4151	4175	4494	4304	4260
Casualties/10,000 Population	26	28	30	32	31	32	32	31	30
Priority Action Areas									
Alcohol related									
deaths	17	16	31	39	39	25	26	22	29
casualties	539	525	629	620	660	641	871	701	724
Speed									
deaths	16	28	33	39	51	37	33	23	23

casualties	568	615	603	718	768	701	810	675	722
Intersections									
casualties	1020	1036	1268	1391	1323	1314	1462	1396	1454
Pedestrian Safety									
deaths	11	19	14	15	13	8	13	13	6
casualties	349	408	422	430	379	345	371	290	329
Motorcycle Safety									
deaths	4	5	7	8	8	13	7	4	7
casualties	168	169	190	205	192	252	294	355	360
Cycle Safety									
deaths	2	3	3	1	0	1	2	0	1
casualties	166	154	204	180	179	223	198	192	209

Source: Land Transport New Zealand (based upon extract from Appendix 2 Regional Road Safety Plan 2008 to 2009 published by ARTA)

Residents' Perceptions of Road Safety

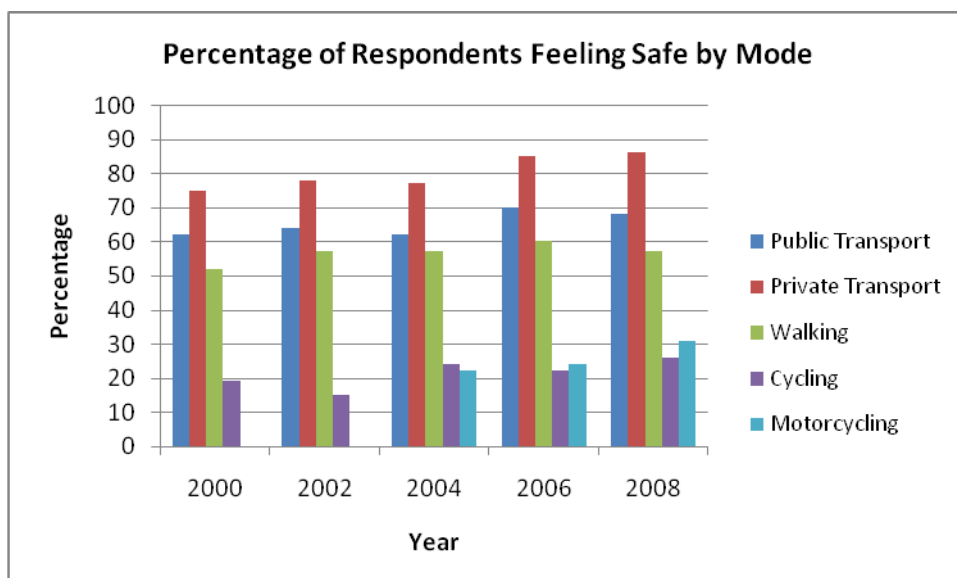
Perceptions of levels of safety for self and others (e.g. for children) is an important factor in people's decision making around using different types of transport, particularly with regard to passenger transport and more active forms such as walking and cycling.

Measure used: Rating by respondents to the ARC biennial Transport Choices Survey of their own personal safety and of others safety while using different transport modes in the Auckland region, including public and private transport, walking, cycling and motorcycling.³

Results: Results overall for 2008 are similar to 2006. In 2006 a higher proportion of respondents stated they felt 'always' or 'mostly safe' while using private transport, than when using public transport (85 per cent compared with 70 per cent). A significant proportion of respondents considered walking to be safer than cycling or motorcycling.

Figure 9: Percentage of respondents who felt 'always' or 'mostly' safe when using different transport modes in the Auckland region (2000 to 2008)

³ This measure uses five separate questions around perceptions of safety from the Transport Choices Survey. Questions vary slightly. With regard to using public transport and private vehicles in the region, respondents were asked to think about their feelings of their own personal safety. For cycling, walking and using motorbikes, respondents were asked to think about the safety of people in general. This survey is undertaken bi-annually and will be run again in 2010.



Source: ARC Community Perceptions of Personal Transport Choices Surveys

Note: Results indicate proportion of respondents who 'always' or 'mostly' felt safe when travelling by each mode. Results cannot be summed across modes.

Objective 3: Improving Access and Mobility

Transport networks exist so that people can get around easily and safely to get to work, places of education, shopping destinations and all other destinations to meet their social, economic and cultural needs. Provision needs to be made for a range of travel choices, including the car, and some choices need to be actively encouraged. Special attention needs to be given to those who find it difficult to travel independently, so that everyone is able to actively participate in society.

The RLTS includes several policies that are designed to improve access and mobility, including: implementation of network techniques to optimize the performance of the transport network; preparation of a Regional Passenger Transport Plan; and encouraging the provision of additional infrastructure to improve conditions for cycling and walking.

Modes of Travel

The monitoring of how people travel around the region - whether by car, bus, train, ferry, walking or cycling - and the relative proportion of these types of travel over time to each other and to the general population, indicates the dominant modes of travel, and the choices that people feel they have to use different forms of transport.

Four measures have been used to provide information on modes of travel used by residents within the Auckland region:

1. Journey to work:
2. The share of trips on public transport
3. Annual Passenger Transport Boardings – Auckland region
4. Annual Passenger Transport Boardings - Auckland Central Business District.

Journey to Work

Measure Used: This measure presents data on how residents aged 15 years and over and in full-time employment travelled to work in the Auckland region on Census Day.

Results: Mode share is obtained from census data; the latest results are from 2006. Therefore the key findings are repeated below for completeness and to support the general picture, patterns and trends presented within this report.

The census data shows around 74.9 per cent of those travelling to work on Census Day in 2006 travelled by car for the main part of their journey. The data indicates that the proportion travelling by car has remained fairly constant although with increasing population there has been a steady increase in actual numbers, adding to stresses on the roading and parking system.

Since 1991, the proportion of people travelling by each mode to get to work has remained fairly constant. However, when we consider growth and change over time within each mode, it can be seen that there has been disproportionate growth in two areas:

- ❑ **Use of rail:** Improvements to rail services in recent years have encouraged use, resulting in a 133 per cent increase in numbers who used rail to get to work between 2001 to 2006
- ❑ **Walking and jogging:** There was a 28.3 per cent increase in those who walked or jogged between 2001 and 2006, compared to 18 per cent increase in numbers going to work overall).

As noted in Table 3 below, there has been a steady increase in the number and proportion of those employed who worked from home on Census Day, from 19,227 in 1991 to 40,880 in 2006 (a 112 per cent increase during that time).

Table 3: Mode used for main part of journey to work or study on Census Day (1991, 1996, 2001 and 2006)

Mode	1991		1996		2001		2006	
	numbers	%	numbers	%	numbers	%	numbers	%
Drove a Vehicle	258,375	72.7	309,744	74.0	336,650	74.7	396,765	74.9
Passenger in a Vehicle	27,222	7.7	26,358	6.3	24,036	5.3	28,635	5.4
Public Bus	23,670	6.7	23,805	5.7	26,340	5.8	28,563	5.4
Train	1,515	0.4	2,286	0.5	2,418	0.5	5,646	1.1
Cycled	7,092	2.0	5,979	1.4	4,920	1.1	5,013	0.9
Walked/Jogged	18,399	5.2	17,985	4.3	18,747	4.2	24,045	4.5
Worked at Home	19,227	5.4	32,259	7.7	37,527	8.3	40,880	7.7
TOTAL	355,550		418,416		450,638		529,548	
Did not go to work Census Day	39,009		46,089		57,174		59,844	

Source: Statistics New Zealand, Census of Population and Dwellings

Note: Those in the 'Drove a vehicle' category include residents who drove a private or company car, truck or van and those who used a motorbike. Figures presented above do not include those who said they did not go to work on Census Day, or responses that were categorized as 'other', or 'not elsewhere included'. It is worth noting that the number of employed residents who stated they did not go to work on Census Day increased from 39,009 in 1991 to 59,844 in 2006; an increase of 53 per cent more (not included in this analysis).

The Share of Trips on Public Transport

Measure Used: The proportion of people counted on several key transport routes to the Auckland isthmus using PT during the morning peak period (7am to 9am). This survey was last undertaken in 2006 and will next be repeated in 2009.⁴

Results: The mode share of PT in 2009 increased on most of the routes with significant increases occurring over the Auckland Harbour Bridge, from West Auckland and into the CBD. This may be a reflection of new PT services and infrastructure such as the Northern Busway that have been put on to service areas of high population growth

Table 2: Proportion of People Travelling on Public Transport in morning peak– Screenline Comparison

	1991/92	1996/97	2001	2006	2009
Harbour Bridge	13%	15%	24%	27%	32%
North-Western Motorway	10%	10%	6%	11%	12%
West Auckland	10%	12%	9%	19%	24%
Manukau-West Isthmus	13%	10%	10%	9%	9%
Manukau-Central Isthmus	11%	13%	16%	10%	9%
Manukau-East Isthmus	8%	8%	8%	19%	18%
CBD Screenline	32%	29%	35%	39%	48%

Source: ARC Mode Spilt Research Study

Annual Passenger Transport Boardings - Auckland Region

Measure Used: Total public transport passenger boardings include bus, ferry and train boardings in the whole of the Auckland region for the last financial year.⁵

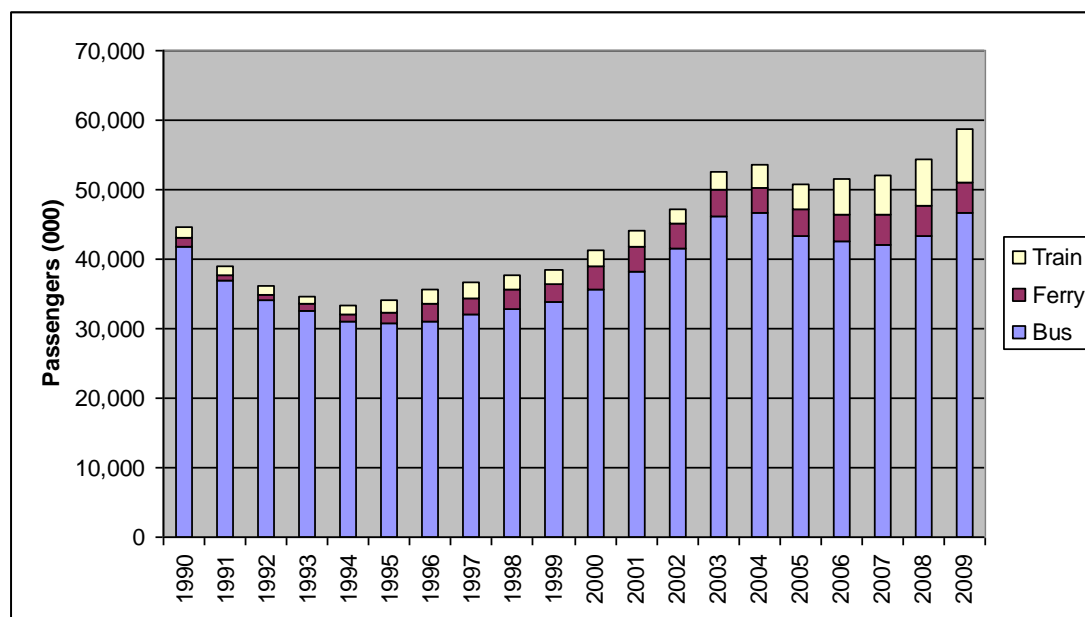
Results: There were 58.6 million boardings in the Auckland Region in 2008/09, up from 54.4 in 2007/08. This represents a significant increase of around 4.2 million or 7.7 per cent gain in boardings on Passenger transport and continues an upward trend following a slight dip in 2005.

The majority of trips, 79.5 per cent, were by bus, 13 per cent were by train and 7.5 per cent were by ferry.

⁴ The information used to compile this measure comes from the ARC Mode Spilt Research Study series, which actually comprises several surveys. In 2006 three surveys were undertaken: Private Vehicle Occupancy Survey; Walking and Cycling Mode Spilt Survey; Passenger Transport Survey. These were all undertaken by BECA in 2006. Counts are of morning peak. This survey will be repeated in 2009.

⁵ This is a count of the total trips taken and, therefore, not the number of people using public transport.

Figure 10 : Auckland Regional Annual Passenger Transport Boardings (1990 to 2009)



Source: ARTA

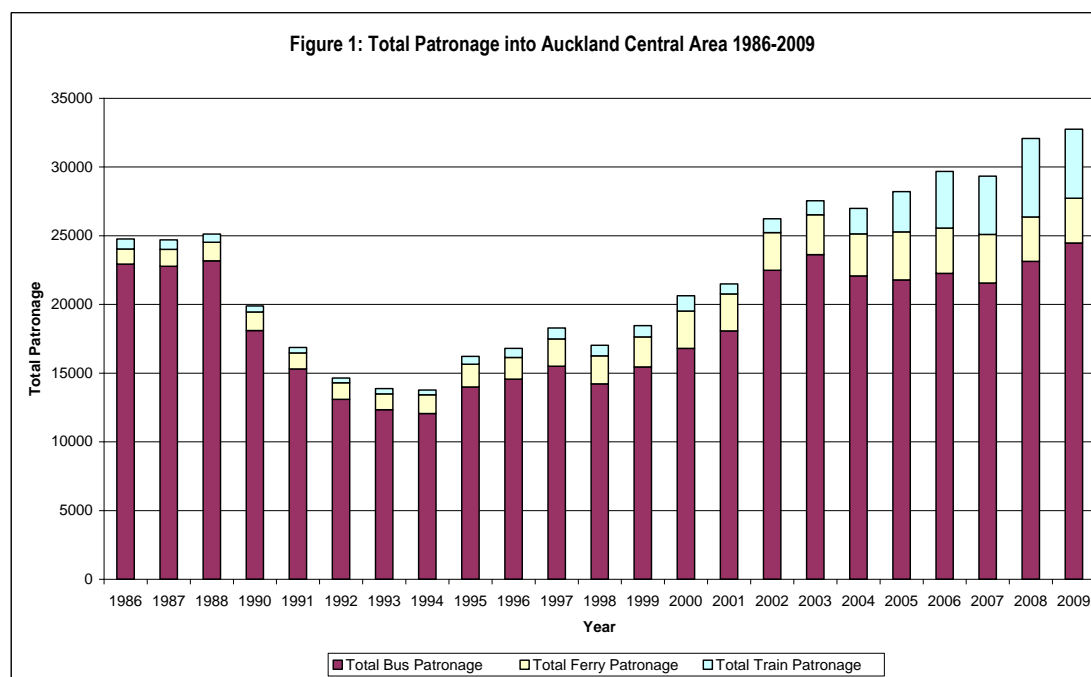
Annual Passenger Transport Boardings - Auckland Central Business District

Measure Used: Total public transport passenger boardings in the morning peak entering the Auckland CBD.

Results: Results from the 2009 Central Area Passenger Transport Patronage Survey show that overall passenger service patronage during the morning peak hours (7:00am to 9:00am) has increased by 4.7 per cent from 2008 levels. Bus, rail and ferry patronage has increased. Bus patronage has continued to be boosted by the opening of the North Shore Busway, and its associated services. Average occupancy rates of passenger services have declined for all public transport modes.

Rail patronage rose by 2.4 per cent in 2009 (119 extra passengers), and total patronage rose by 4.7 per cent. These figures are inline with the longer term trend that has occurred since Britomart was opened.

Figure 11: Total Number of Passenger Boardings into the Auckland CBD - Between 7am and 9am (1990 to 2009)



Source: ARTA

Travel Costs and Affordability

Actual and perceived costs of using various forms of travel can impact on people's travel opportunities and choices. This is particularly important for people and families on lower incomes.

Three measures have been used to explore travel cost and affordability in the Auckland region:

- Cost of public and private transport
- Residents' perceptions of travel costs
- Access by public transport (for areas rated 9 or 10 on NZ Dep Index)

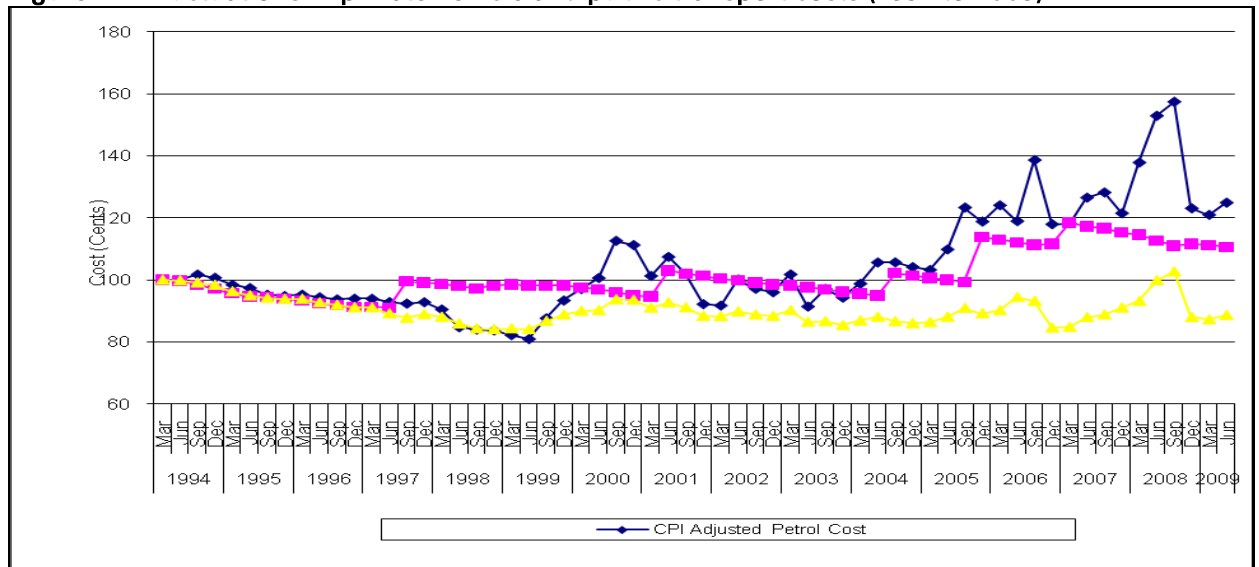
Cost of Public and Private Transport

Measure Used: Public and private travel costs are calculated as the cost of an adult one-stage cash fare. Private vehicle costs are calculated for fuel as well as overall running costs including fuel.⁶

Results: Overall, the costs of petrol decreased significantly during 2009 compared with 2008, and have returned to levels similar to those seen in 2007. Overall, petrol prices have been erratic for the past 10 years. PT fares generally increased in line with petrol prices up until 2006 since when they have declined in comparison whilst petrol prices which have soared.

⁶ Costs have been adjusted for inflation using the Consumer Price Index (CPI), with a 1994 base, to identify real changes in cost.

Figure 12: Fluctuations in private vehicle and public transport costs (1994 to 2009)



Source: Statistics NZ and ARC

Residents' Perceptions of Travel Costs

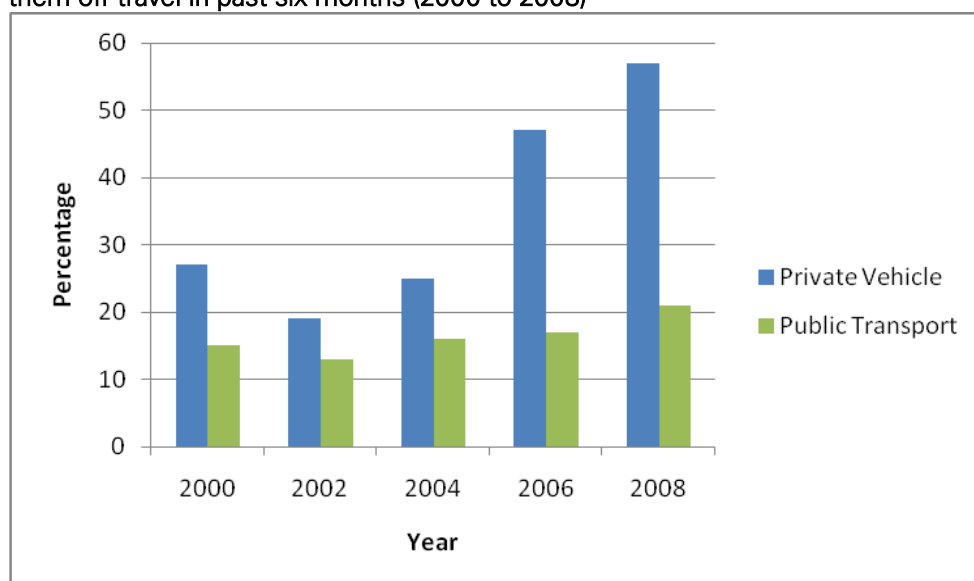
Measure used: Percentage of respondents to the ARC Transport Choices survey who felt that cost had hindered their travel choices in the previous six months.⁷

Result In line with previous surveys, a larger proportion of respondents stated that the cost of private transport had put them off making some trips, when compared to costs of PT. The proportion who had decided not to take trips, or who made fewer trips, in the last year due to costs of private transport had jumped significantly from 25 per cent in 2004 to 46 per cent (almost half) in 2006, to 57% in 2008. This suggests that increases in fuel costs may be affecting travel choices.⁸

⁷ This measure uses two separate questions around perceptions of cost from the Transport Choices Survey. The questions asked were: 'In the last six months or so have you decided not to make a trip, or made fewer trips than you wanted in the Auckland region because the cost of using a private vehicle / cost of public transport put you off?'

⁸ This survey is done bi-annually and will be repeated again in 2010.

Figure 13: Percentage of respondents who stated that the cost of public and private transport had put them off travel in past six months (2000 to 2008)



Source: Biennial ARC survey "Community Perceptions of Personal Transport Choices" July 2008

Note: This measure asks respondents to judge each mode independently. Therefore percentages cannot be summed and do not add to 100.

Access by Public Transport (for areas rated 9 or 10 on NZ Dep Index)

Measure Used: Proportion of Auckland regional population who live in areas rated 9 or 10 on the 2001 NZ Deprivation Index that receive 'high', 'average', or 'low' levels of public transport accessibility (measured in terms of the total cost of getting to and from these areas using public transport).⁹

Results: In 2006, an estimated 25 per cent of people living in areas of higher socio-economic deprivation received 'high' levels of passenger transport service (16 per cent in 2001), while 55 per cent received 'average' levels (62 per cent in 2001) and 20 per cent received 'low' levels of service (22 per cent in 2001).

Accessibility

Accessibility refers to the ability to get where you want to go. The actual and perceived accessibility by using various forms of travel can impact on people's travel opportunities and choices. This is particularly important for people and families on lower incomes, who are physically disadvantaged, and the elderly.

Three measures have been used to explore accessibility in the Auckland region:

- Wheelchair accessibility on public transport
- Residents' perceptions of level of access - general
- Residents' perceptions of level of access - walking or cycling

⁹ Data Sources: ARC Transport models, 2001 Deprivation Index (compiled by Victoria University Health Department), Statistics New Zealand. The Deprivation Index combines a range of key socio-economic factors from the 2001 Census and estimates an overall score of material and social deprivation for a particular area on a scale of 1 (least deprived) to 10 (most deprived). It is estimated that about 234,000 people lived in areas rated 9 or 10 as at the 2001 Census. The 2006 Deprivation index is not yet available.

Wheelchair Accessibility on Public Transport

Measure Used: The proportion of PT facilities and vehicles with high quality wheelchair or disabled services. Specifically, this includes the number of buses with low floors that are also able to accommodate passengers in wheelchairs and the number of trains, ferries and ferry terminals with wheelchair accessibility.¹⁰

Results: The proportion of buses with low floors able to accommodate wheelchairs has increased from 23 per cent in 2000 to around 55 per cent of Auckland's regional bus fleet in 2009. It should be noted that around 67% of the Auckland bus fleet has low floors, although not all are able to accommodate wheelchairs.

Since the removal of the Silver Fern trains from Pukekohe services, all Auckland's trains are wheelchair accessible; a significant improvement compared to 58 per cent in 2005, and 85 per cent in 2006. The majority of ferry terminals (90 per cent) and ferries (75 per cent) are wheelchair accessible, the same proportion as in 2006.

Residents' Perceptions of Level of Access - general

Measure Used: Percentage of respondents to ARC transport choices survey who rated each mode of travel as a good option for taking 'most' or 'all' of their trips to study or work.¹¹

Results: A total of 67% of respondents rated private transport as suitable for 'most' or 'all' their work or study based trips. This estimate is largely unchanged from previous years.¹²

The percentage of respondents who rated public transport as suitable for most or all trips has increased significantly from 14 per cent in 2000 to 24 per cent in 2008, a little less than the 25% recorded in 2006. Perceptions of travel by other modes remain consistent with previous years.¹³

Notably, a significant increase was recorded in the number of respondents stating that cycling or travel by motorcycle was suitable for these trips, compared with previous years. For cycling the increase is from 11 to 14 per cent since 2004 and for motorcycling the increase is from 17 to 26 per cent.

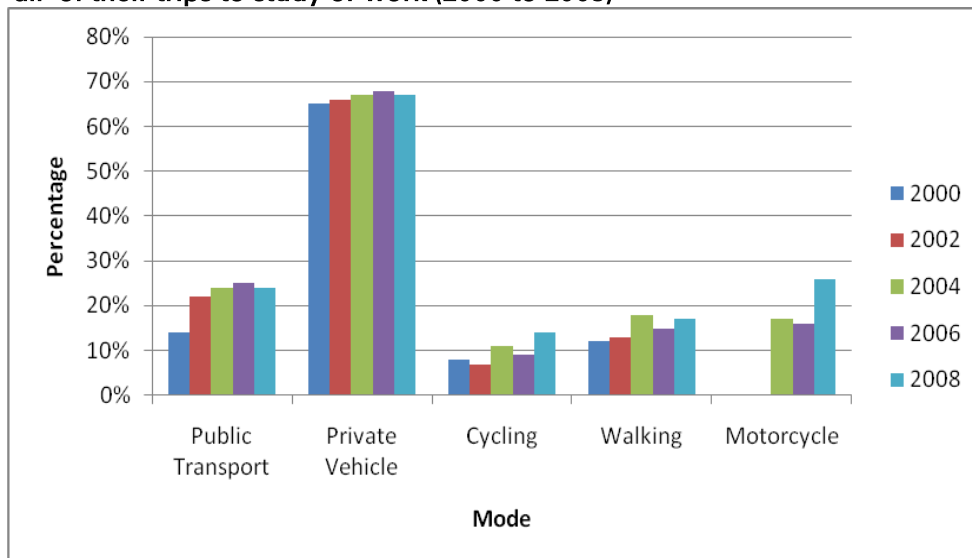
¹⁰ Data is supplied by ARTA.

¹¹ This measure does not identify actual levels of use of these transport modes by respondents.

¹² This measure uses five separate questions around perceptions of each mode from the Transport Choices Survey. The question relating to public transport asked respondents to consider taking "the bus, train, ferry, or some combination of these", on a 5 point scale of 'for all such trips', 'for most, but not all', 'for some, but not many', 'for very few trips', 'for none'. Around 43% of respondents said public transport was suitable for 'very few' trips or 'none at all' - down from 48% in 2006.

¹³ This survey is done bi-annually and will be repeated in 2010.

Figure 14: Percentage of survey respondents who rated each mode suitable for 'most' or 'all' of their trips to study or work (2000 to 2008)



Source: ARC Community Perceptions of Personal Transport Choices Surveys

Note: This measure uses five separate questions, therefore percentages do not add to 100.

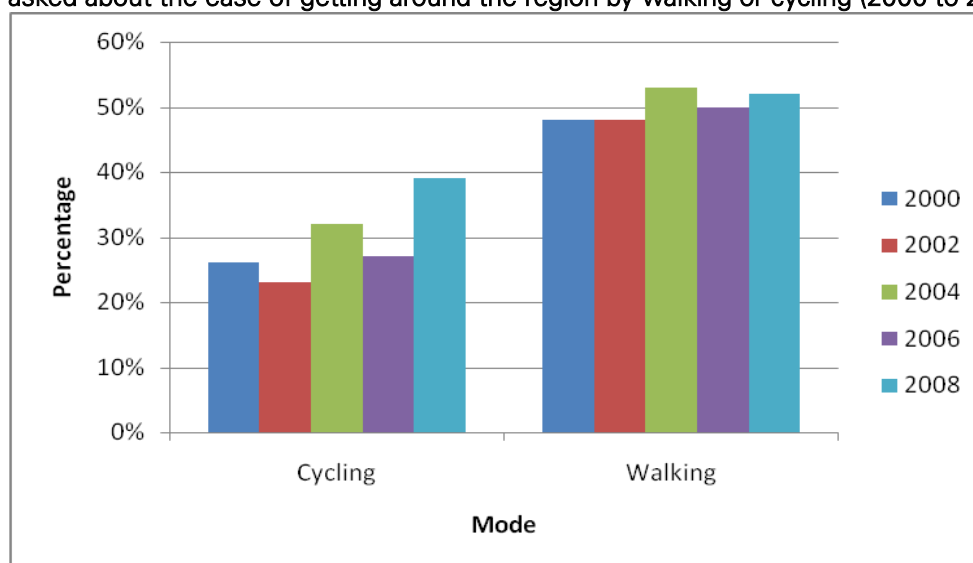
Residents' Perceptions of Level of Access - walking or cycling

Measure Used: Percentage of respondents to ARC transport choices survey who responded 'extremely' or 'quite well' when asked 'how free from hassles can a person get to where they want to go, around the region, by walking or cycling?'.¹⁴

Results: Half (50 per cent) of respondents felt that a person could get around the region extremely or quite well by walking, compared with 39 per cent for cycling. The results show a marked increase in those who perceive cycling as relatively hassle free; up from 27 per cent in 2006. The number that consider walking to be relatively hassle free has increased only slightly from previous surveys.

¹⁴ Again, this measure does not identify actual levels of cycling or walking by respondents.

Figure 15 : Percentage of survey respondents who responded 'extremely' or 'quite well' when asked about the ease of getting around the region by walking or cycling (2000 to 2008)



Source: ARC Community Perceptions of Personal Transport Choices Surveys

Note: This measure uses five separate questions, therefore percentages do not add to 100.

Objective 4: Protecting and Promoting Public Health

Transport plays a vital role in building healthy communities. The RLTS identifies three key areas to generate positive health outcomes for the Auckland region. These include reducing pollution from vehicle emissions, reducing the impacts of noise and vibration and promoting more active travel choices for people - this includes public transport, walking and cycling.

Air Quality

Motor vehicle emissions have a significant impact on air quality in the Auckland region. Between 50 and 80 per cent of various pollutants discharged to air in the region are from motor vehicles. These have negative health impacts on the population, including heart and respiratory conditions, increased asthma attacks and cases of bronchitis.

Two measures have been used to explore air quality in the Auckland region:

- Average pollutant levels
- The number of days which the MfE air quality guidelines are exceeded

Pollutant Levels

Measure used: Levels of each of the four priority pollutants - PM_{2.5} particles, PM₁₀ particles, nitrogen dioxide (NO₂) and carbon monoxide (CO) at peak (traffic) sites.

Results: In most years the maximum recorded values for PM_{2.5}, PM₁₀ and NO₂ at peak sites in the region exceed the relevant air quality targets.¹⁵ Although PM₁₀ and CO concentrations appear to have decreased, this trend has recently levelled off.

¹⁵ The Ministry for the Environment has established national environmental standards (NES) and ambient air quality guidelines for a number of contaminants. These standards and guidelines are intended to protect human health and the environment. Exceeding these levels at any site is unacceptable by national and international standards

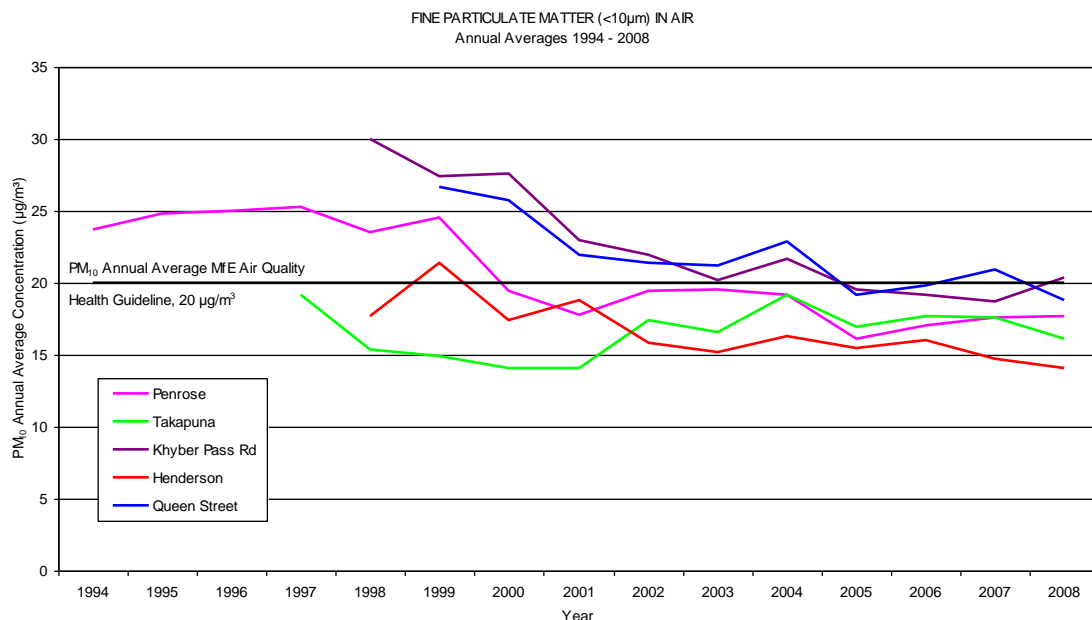
Levels of PM₁₀ and Sulphur Dioxide (SO₂) in the Auckland region are discussed in some more detail below.

PM₁₀ emissions

The most important air quality related health issue for the Auckland region is the reduction of the annual average PM₁₀ emissions. Assessment under the National Environmental Standards shows that a 53 per cent reduction of PM₁₀ is required by 2013. The air quality National Environmental Standard, which has been breached for PM₁₀ since October 2005, is a short term 24 hour standard. As transport is the largest contributor to this pollutant a transport emission reduction of more than 53 per cent is required over this period.

Although PM₁₀ levels have reduced, it is important to note that there is no recognised safe level of PM₁₀ and the World Health Organisation (WHO) recommends achieving the lowest concentrations possible. Adverse effects on human health occur at concentrations of one tenth of the current air quality guidelines.

Figure 16: Annual average PM10 concentrations recorded at peak monitoring sites



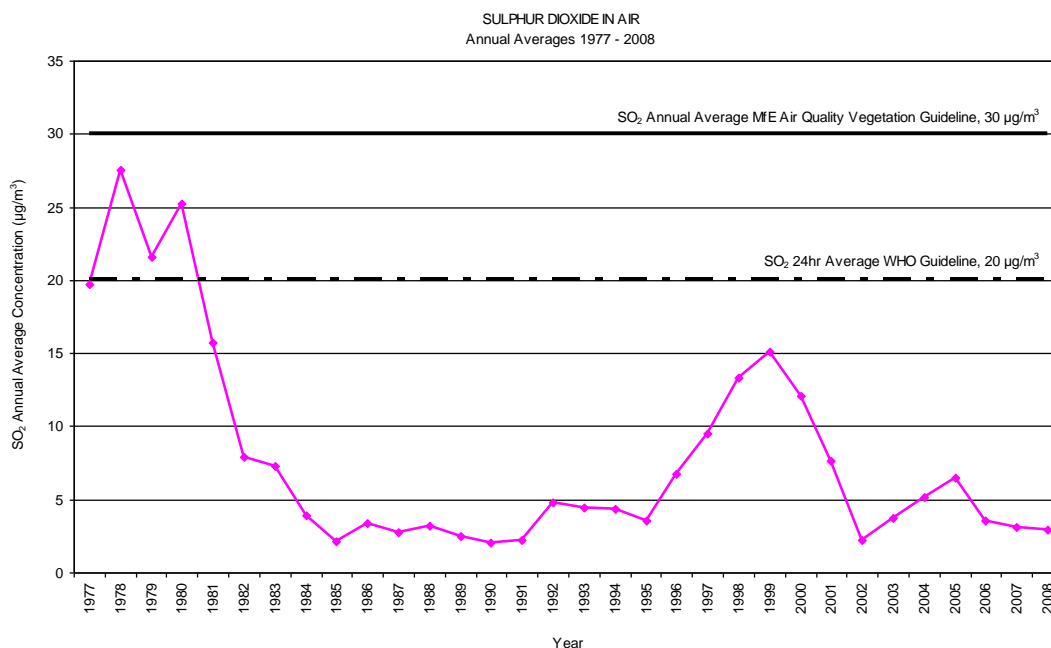
Source: ARC and Ministry for the Environment

Sulphur Dioxide Emissions

Vehicle emissions are a significant source of sulphur dioxide (SO₂) in the region. Concentrations steadily increased in the region from 1995 until 1999. This increase was most likely due to the increasing prevalence of diesel vehicles in the vehicle fleet and to the higher content of sulphur in diesel compared with petrol. Recent reductions in the sulphur content of diesel have resulted in a significant decrease in SO₂ levels, although the concentrations appeared to increase again between 2002 and 2005, possibly due to an increase in light duty diesel vehicles.

The annual average concentrations of SO₂ recorded at the ARC's Penrose peak monitoring site since 1977 are illustrated below.

Figure 17: Annual average SO₂ concentrations at Penrose peak monitoring site (1997 to 2008)



Source: ARC and Ministry for the Environment

Number of Days Ministry of Environment Guidelines are Exceeded

Measure used: The number of days on which peak targets have been exceeded at any monitoring site. The Ministry for the Environment has established national environmental standards (NES) and ambient air quality guidelines for a number of contaminants.

Results: There have been regular exceedances of the air quality targets for PM_{2.5}, PM₁₀ and NO₂ since monitoring of these pollutants commenced. However, in 2006 the number of NO₂ exceedances decreased dramatically. The reasons for this are not entirely clear and may be a result of meteorological conditions or changes in traffic patterns during that time.¹⁶ The majority of the NO₂ exceedances during 2007 appear to be associated with road works in Queen Street.

The PM₁₀ air quality national environmental standard was exceeded on six days in 2008, which is similar to the previous two years.

¹⁶ Many previous exceedances were recorded in Khyber Pass, which has recently experienced a change in traffic patterns following the successful completion of Grafton Gully link between the Ports of Auckland and State Highway 1, and the modifications associated with the Central Motorway Improvements implemented by Transit NZ.

Table 3: Number of days where at least one exceedances has occurred (1998 to 2008)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
PM _{2.5}	6	3	3	4	1	6	5	2	5	8	3
PM ₁₀	2	4	4	7	3	2	2	4	6	7	6
NO ₂	23	27	23	38	30	8	30	26	1	11	0
CO	32	31	3	3	2	0	0	0	0	0	0
Total	53	57	33	49	35	15	36	30	8	21	9

Source: ARC Air Quality Monitoring Programme

Use of Active Modes of Travel

Encouraging active modes of travel contributes to positive health outcomes for the Auckland region population as they typically involve higher levels of physical activity. Active modes include walking, cycling and public transport (public transport trips include at least one active mode component). Identifying the number of people who use these modes of travel is important in understanding the aggregate health effects of this indicator.

Two measures have been used to explore use of active modes of travel in the Auckland region:

1. Journey to Work by Walking and Cycling
2. Cycle counts

Journey to Work by Walking and Cycling

Measure used: The number of Auckland regional residents aged 15 years and over and in full-time employment who either walked or cycled to work on Census day.

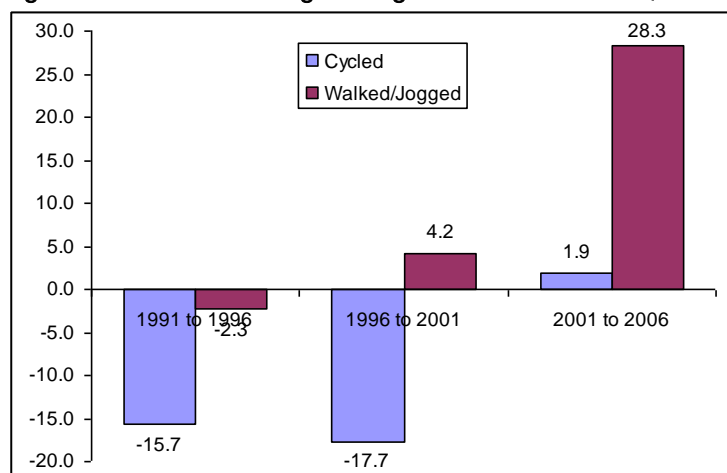
Results: Journey to work data is also obtained from census data hence the latest results are from 2006. The results are repeated below for completeness and to support the general picture, patterns and trends presented within this report.

In 2006, 24,045 Auckland region residents said they walked or jogged to work - representing 4.5 per cent of those who worked on Census Day. While the proportion of residents in this category has remained static over recent years, there has been a significant increase in the actual number of people – an increase of 28.3 per cent between 2001 and 2006, compared to 18 per cent growth overall.

In 2006, 5,013 Auckland region residents said they cycled to work - representing one percent of those who worked on Census Day. The proportion that cycled to work has remained fairly low since 1991 and there was actually a decrease in the number who cycled to work between 1991 and 2001, from 7,092 in 1991 to 4,920 in 2001. However, 2006 Census results show a slight increase of about 100 more people cycling. While this is encouraging, it may be too early to say whether this is an upward trend.

Refer to the previous Journey to Work indicator for more detail.

Figure 18: Percentage change within each mode (1991 to 2006)



Source: Statistics New Zealand, Census of Population and Dwellings

Cycle Counts

Measure Used: The number of cyclists counted on key cycling routes in Auckland region.¹⁷

Results: Standardized regional cycle monitoring commenced for the first time in March 2007 at 69 sites across the region; overall results show that:

A total of 4,407 cyclist movements¹⁸ were recorded across 70 sites within the region during the morning peak period (between 6:30am and 9:00am) in 2009. The comparable figure for 2008 was 4,390 suggesting overall that cycling has remained stable during the morning peak. Thirty-four sites recorded increases of more than 3 per cent compared to 2008. The most notable increases are at:

- Henderson Creek – up from 11 to 27 movements (145 per cent);
- Rosedale/East Coast Road – up 52 to 105 movements (102 per cent);
- Swanson/Ranui Station Road/Armada Drive – up from 21 to 37 movements (76 per cent);
- Massey/Buckland Road – up 11 to 19 movements (73 per cent); and
- Oteha Valley/East Coast Road – up 40 to 69 movements (73 per cent).

In contrast, 30 sites recorded declines of more than 3 per cent in 2009 compared with 2008. The most notable decreases are at:

- D'Oyly Reserve cycleway – down from 19 to 5 movements (74 per cent); and
- Gulf Harbour Drive/Laurie Southwick Parade – down from 14 to 5 movements (64 per cent).

As in 2007 and 2008, the busiest site out of the 83 in the morning peak is the intersection of Tamaki Drive and The Strand (321 movements, down from 416 movements in 2008), while the lowest levels of morning cyclist traffic were observed at the Karaka/Glenbrook Road/SH22 intersection in Franklin district (2 movements) and Jelas Road/Croi Bridge (1 movement).

¹⁷ This indicator has changed slightly from previous years. It is only since 2007 that manual cycle counts have been carried out on a consistent and comparable basis. For that reason, prior to 2007, only results for Auckland City were presented. However, in 2007 a total of 69 sites were surveyed across the region on a consistent basis and that survey was increased in 2008 to 77 sites.

¹⁸ It is important to note that this figure represents individual cyclist movements rather than total cyclist numbers. For example, the same cyclist may be counted at more than one site, particularly where they are in close proximity or if they traversed the same intersection twice during the survey.

Access by Public Transport (Hospitals and Emergency Centres)

An important element of the interaction between the public health system and the transport system is the ability of the transport system to provide effective access to health care providers, particularly by public transport for those who do not have access to a car.

Measure Used: The number of Hospitals and Accident and Emergency centres that receive 'high', 'medium', or 'low' levels of public transport accessibility (measured in terms of the total cost of getting to a hospital and emergency centres using public transport).¹⁹

Results: Since 2001, the number of Accident and Emergency centres and hospitals receiving either high or low levels of PT service has increased, while those receiving medium levels of service have decreased. With regard to the table below, it would appear this decrease is equally contributing to the other two levels of service.

Table 4: Number of Hospitals and Accident and Emergency centres within the Auckland region that receive high, medium and low levels of public transport accessibility (2001, 2006)

Level of Passenger Transport Service	Accident and Emergency Centres		Hospitals	
	2001	2006	2001	2006
High	8	9	15	17
Medium	9	7	13	10
Low	3	5	2	3
None	1	0	0	0

Sources: ARC Transport models, Statistics New Zealand

Objective 5: Ensuring Environmental Sustainability

The transport system (and motor vehicles in particular) are a major source of adverse environmental effects in the region on ecosystems (including communities), water quality, air quality, cultural and natural heritage sites, noise and amenity. The pressures imposed by the transport system on the natural and physical environment (including the built environment) are likely to increase as the region grows. A well-designed transport system reduces reliance on non-renewable resources and fits into the natural and physical environment in ways which avoid, remedy or mitigate adverse effects on the environment.

As part of its objectives under the Land Transport Management Act 2003 the RLTS seeks to avoid adverse environmental effects through improved management of the transport system. Key policies designed to give effect to this include: better traffic management; congestion reduction through decreased numbers of vehicle trips; vehicle fleet improvement; minimising the use of non renewable resources; and better monitoring of roading and traffic effects on communities.

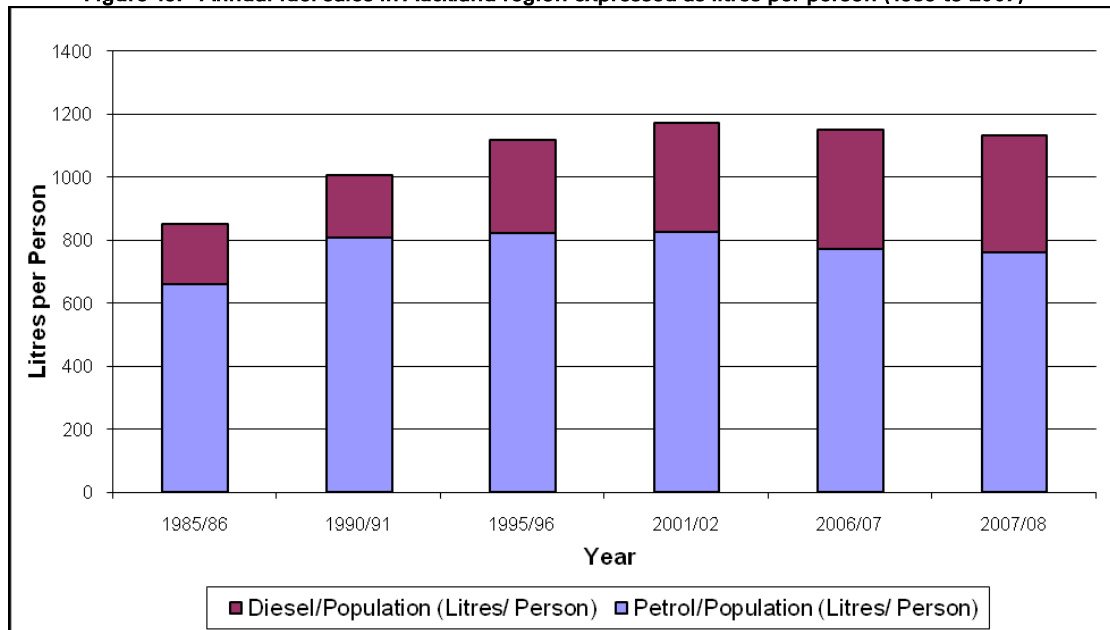
Fuel Sales Per Capita

The use of non renewable resources by transport in the region has adverse effects on the environment, including air and water quality.

Measure Used: Annual petrol and diesel sales, expressed as litres per person (total population) in the Auckland region. This includes fuel used by public and private forms of transport.

¹⁹ For more detail on this measure please refer to footnote number 10.

Figure 19: Annual fuel sales in Auckland region expressed as litres per person (1985 to 2007)



Source: Auckland City Council and Statistics New Zealand

Results: From the period 1986 to 2008, sales of petrol were higher than sales of diesel. However, recently it appears that sales of petrol are decreasing. Diesel, after a number of years of increased demand fell for the first time in 2007/08. Consumption of petrol peaked at 826.2 litres per capita in 2001/03 compared to 773.2 litres in 2006/07.

Objective 6: Supporting the Auckland Regional Growth Strategy

The Auckland Regional Policy Statement (RPS) and the Auckland Regional Growth Strategy (RGS) are key documents that set out the form of urban development desired in the region. Both advocate limiting expansion into rural areas and concentrating growth inside the existing metropolitan boundary. The 2005 RLTS and the proposed 2010 RLTS support the vision, objectives and policies for regional growth outlined in those documents. In particular, growth is intended to focus on high density centres and corridors with efficient transport access that supports good urban design. High density, mixed use development needs to be associated with quality passenger transport facilities and measures that encourage walking and cycling.

Growth Trends in RGS Centres and Nodes

Monitoring the growth in the proportion of Auckland region's population who live and work in areas designated by the RGS and RPS as agreed centres for future intensified growth is an indication of the success of the strategies.

Two measures have been created to explore these growth trends in the Auckland region:

- Growth in resident population
- Growth in employment and business

Growth in Resident Population

Measure used: Numbers of usual residents living in areas identified as growth strategy nodes (Based on current Census data).

Results: The proportion of population living in growth nodes has increased slightly over the past 10 years

Table 5: Measure Used - Numbers of usual residents living in areas identified as growth strategy nodes.

Year	Proportion of population living within growth centres (as identified in 1999 RGS)
1996	17.1%
2001	17.3%
2006	17.5%

Residential Development in the CBD

Data on residential population is derived from the five yearly census of Populations and Dwellings by Statistic New Zealand. Results presented in 2006 are the most up-to-date data and have therefore been repeated below to provide a more complete picture of patterns and trends in this report.

According to this data, Auckland CBD is the most dominant centre in the region and experienced significant growth in both dwellings and population over the last decade, particularly between the 2001 and 2006 census surveys. Population increased by 56 per cent (or 6440 people) and the number of dwellings, particularly apartments, increased by 97 per cent (or 4152 dwellings) during that period.

Figure 20: Numbers of dwellings, usual residents and average dwelling size in the CBD (1991, 1996, 2001 and 2006)

	Occupied Dwellings	Usual Resident Population	Residents per Dwellings
1991	777	2691	2.9
1996	1725	5586	3.1
2001	4257	11,442	3.2
2006	8409	17,882	2.1

Source: Statistics New Zealand, Census of Population and Dwellings

Growth in Business

Measure used: Number of businesses and employees within areas identified as growth strategy nodes (as at 2001 Census boundaries).²⁰

Result: In 2008 40.6% of employees and 27% of businesses were located within growth nodes. As in the 2006-2007 period, the percentage of employees within growth centres and corridors has increased, while the number of business has fallen by a very small amount.

²⁰ Number of geographical units are presented here as 'number of businesses'. These represent a single business spatial unit and can include branches of businesses. So while this is not equivalent to a count of the number of enterprises, it does identify the number of business units operating in an area.

Figure 19: Number of businesses and employees within areas identified as growth strategy nodes Feb 2006, 2007 and 2008

	Employee Count			Businesses		
	2006	2007	2008	2006	2007	2008
Total within Auckland Region	610,522	627,250	644,920	139,428	156,141	159,403
Number within nodes and corridors	226,976	248,460	262,074	38,147	42,533	43,058
Percentage within nodes and corridors	37.2%	39.6%	40.6%	27.4%	27.2%	27.0%

Source: Statistics New Zealand Business Demographics Survey

Objective 7: Achieving Economic Efficiency

Economic efficiency involves ensuring that the investment of the region's limited financial resources in the transport system is undertaken in ways that maximize both the tangible and intangible benefits it generates. (The benefits are described in the preceding five objectives.)

Both the 2005 RLTS and the proposed 2010 RLTS recognize the need to evaluate the total benefits to the Auckland region from the outcomes of different funding and investment options. Both tangible and intangible benefits as well as short and long-term costs and returns are encompassed in these assessments. An approach needs to be taken to evaluate the different decisions made by different agencies as projects cannot be considered in isolation.

Cost Effectiveness of PT delivery

Measure used: The cost per passenger and cost per passenger kilometre by bus, rail and ferry for services contracted to ARTA.

Results: The overall cost per passenger kilometre has fallen significantly over the year by around 17.6% per cent despite the cost per passenger increasing by around 5.9 per cent. This follows a 39.4 per cent increase in passenger kilometres overall along with an increase of 14.2 per cent in the cost of providing those services.

Figure 21: ARTA expenditure on contracted public transport operations in the Auckland region (2006/07 and 2008/09)

Mode/ Year	Passengers (million)			Passenger kilometres (million)			Net Cost (\$ million)			Cost per passenger (\$)			Cost per passenger kilometre (\$)		
	06/07	07/8	08/9	06/7	07/8	08/9	06/7	07/8	08/9	06/7	07/8	08/9	06/7	07/8	08/9
Bus	42,730	43,23	46,59	179,304	192,677	302,551	76,347	80,275	93,384	1.79	1.86	2.00	0.43	0.42	0.31
Rail	5,737	6,794	7,650	94,603	111,696	124,713	34,845	41,187	45,125	6.07	6.06	5.90	0.37	0.37	0.36
Ferry	3,947	4,380	4,374	9,661	8,024	8,083	3,654	4,134	4,961	0.93	0.94	1.13	0.38	0.52	0.61
Total	52,414	54,40	58,62	283,568	312,397	435,347	114,846	125,596	143,470	2.19	2.31	2.45	0.41	0.40	0.33
% Change		3.8%	7.7%		10.2%	39.4%		9.4%	14.2%		5.5%	5.9%		-2.4%	-17.6%

Source: ARTA