



# Regional summary - Otago

This is a summary of data relevant to transportation in the Otago region, viewed from a New Zealand Transport Agency perspective. The purpose of this document is to inform the New Zealand Transport Agency and its sector partners about the current transport system, regional issues, plans and initiatives in the Otago region that will have an impact on regional transport into the future.

The data have been grouped in a way that aligns with the objectives of the New Zealand Transport Strategy, as follows:

1. Overview
2. Economy and Land Use
3. Assets
4. Access and Mobility
5. Safety
6. Health and Environment

Regional indicators are generally presented with a comparison to national data. Where possible, a differentiation has been made between the Territorial Authorities; Dunedin City, Central Otago District, Clutha District, Queenstown Lakes District and Waitaki District.

## Summary

The Otago region has a population of approximately 202,000 (nearly 5% of the national total), of which 61% live in the urban Dunedin area. The average population densities are low with 36 people per km<sup>2</sup> in the urban Dunedin area and 6.2 people per km<sup>2</sup> in the overall region.

Otago has a total road length of 7,804 km, 12% of the national total. The region has two railway lines; the Taieri Gorge Railway and the Seaside, from Dunedin to Palmerston. Both of which have become primarily tourist railways.

Road assets (especially the rural network) are maintained at a condition considerably below the national average. Concern for network deterioration might arise if the drop in structural maintenance expenditure in the previous year (-11.2%) proves to become a trend.

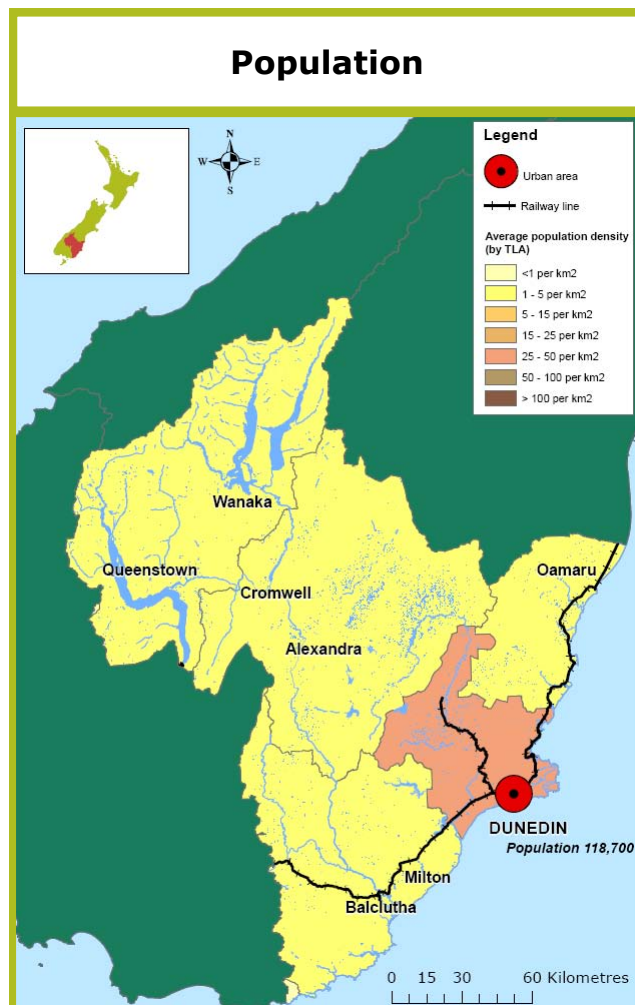
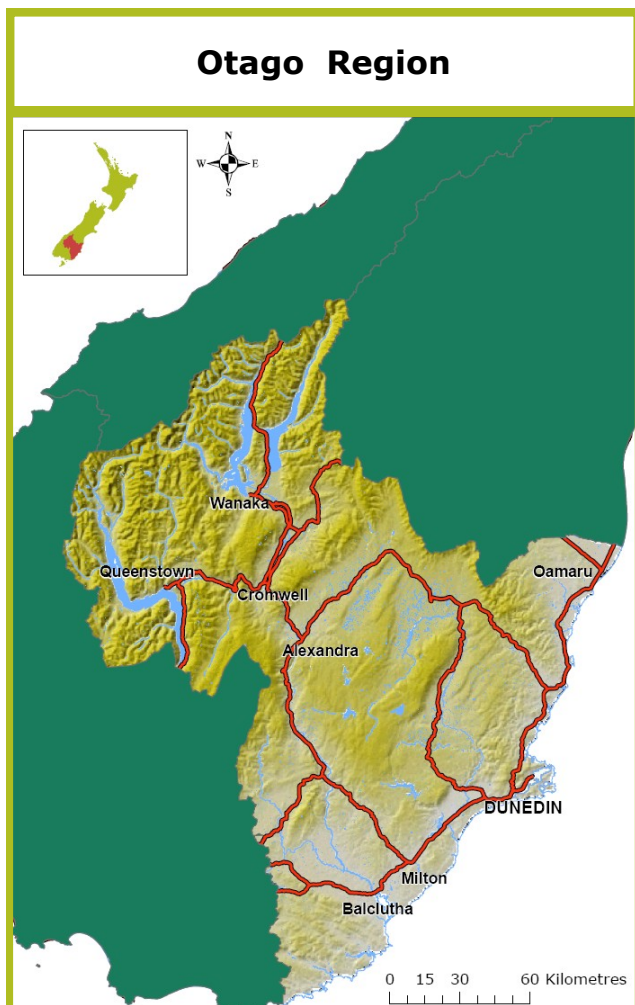
Although public transport boarding has seen a sharp increase over the last year (+10%), the vast majority (86%) still commute to work by car or motorbike. Road safety issues therefore revolve around these road users, with a relatively high number of crashes involving car drivers and occupants.

A decline since 2001 in net outflow of 25-29 year olds out of the region may indicate that growing economic opportunities have encouraged more people to remain beyond the completion of their studies.

## Key regional indicators

	Current (2008)	Average annual change (2004-2008)	Annual change (2007 - 2008)
<b>Population</b>	201,700 (2007)	1.2% (2003-2007)	1.0% (2006-2007)
<b>VKT</b>	2,177 million km	3.0%	2.1%
<b>GDP</b>	\$6,931 million (in current prices—2007)	1.2% (95/96 prices, estimated—2003-2007)	-2.6% (95/96 prices, estimated—2006-2007)
<b>Public transport boardings</b>	1.44 million	1.0%	10.0%
<b>Structural maintenance costs for roads</b>	\$42.5 million	3.4%	-11.2%
<b>Light vehicle registrations</b>	134,135 (2006)	2.8% (2003-2006)	No data available yet
<b>Heavy vehicle registrations</b>	6,060 (2006)	5.1% (2003-2006)	
<b>Fatal and serious crashes</b>	196 (2006)	-8.3% (2003-2006)	
<b>Regional fuel sales (diesel plus petrol)</b>	Not Available	Not Available	Not Available

# 1. Overview



## General statistics for 2007–2008

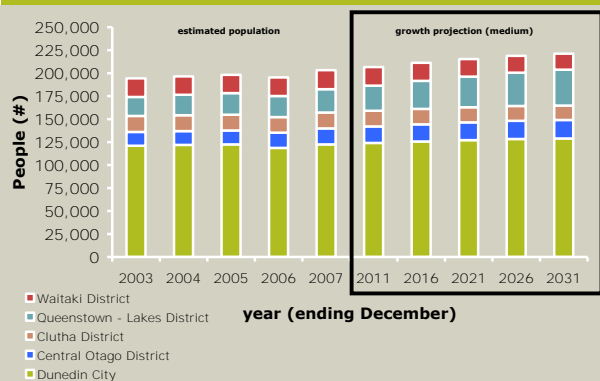
	Dunedin City	Otago Region	National	Otago as % of Nation
<b>Estimated population</b> <i>(provisional, year ending June 2007)</i>	122,500	201,700	4,228,000	4.8%
<b>Population growth 2003-2007</b> <i>(year ending December 2007)</i>	1.2%	4.6%	5.5%	-
<b>Land area</b>	3,340 km <sup>2</sup>	31,990 km <sup>2</sup>	275,446 km <sup>2</sup>	11.6%
<b>Total TA expenditure on land transport</b> <i>(year ending June 2008. Includes local and national contributions to territorial authority expenditure. Regional Council and NZ Transport Agency costs are excluded.)</i>	\$30 million	\$80 million	\$1,446 million	5.5%

## General statistics for 2007–2008 - continued

	Dunedin City	Otago Region	National	Otago as % of Nation
<b>VKT</b> <i>(year ending June 2008)</i>	446 million km <small>(2007)</small>	2,177 million km <small>(2008)</small>	40,692 million km <small>(2008)</small>	5.3% <small>(2008)</small>
<b>Total road length</b> <i>(year ending June 2008)</i>	1,753 km	10,564 km	93,805 km	11.3%
<b>GDP (2007 prices)</b> <i>(year ending March 2007)</i>	-	\$6,931 million	\$163,390 million	4.2%
<b>GDP per capita (2007 prices)</b>	-	\$43,363	\$38,645	-

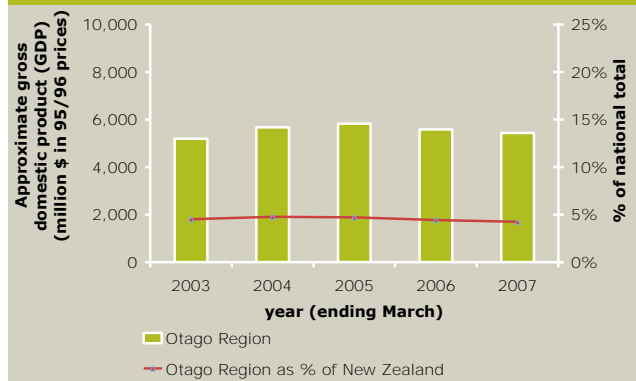
## 2. Economy and land use

### Population change



(Source: Statistics New Zealand)

### GDP in 95/96 dollars



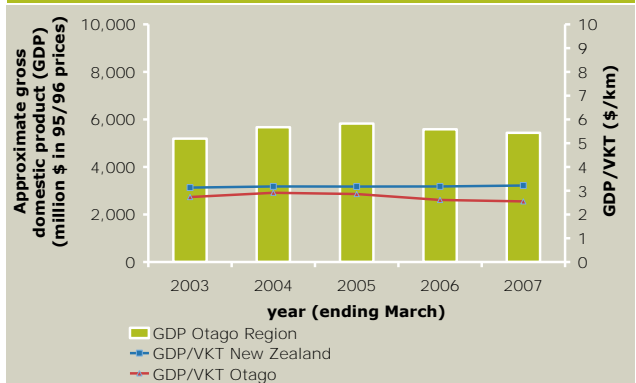
(Source: calculated from NZIER and Statistics NZ)

### Industry profile 2003

Main industry sector	Contribution to regional GDP	Contribution to national GDP
Manufacturing	14.0%	15.5%
Education, health & community services	12.9%	12.3%
Mining, construction, electricity, gas & water supply	11.8%	9.1%
Agriculture	8.8%	5.0%

(Source: Statistics New Zealand)

### GDP in relation to VKT



(Source: calculated from NZIER and Statistics NZ, NZ Transport Agency and local authorities)

## Economy and land use —continued

### International imports / exports (Otago)



(Source: Statistics NZ)

### Land use

The Otago Region occupies 12% of New Zealand's land mass and has 4.8% of the nation's population. This creates sparsely populated stretches between the urban centres, on which the fourth largest GDP contributor agriculture (8.8%) dominates.

Urban land use, which is constrained by topography and geography within the two main centres of Dunedin and Queenstown, must be strategically developed to enhance the main GDP contributors of manufacturing (14%) and education, health & community services (12.9%).

### Comments

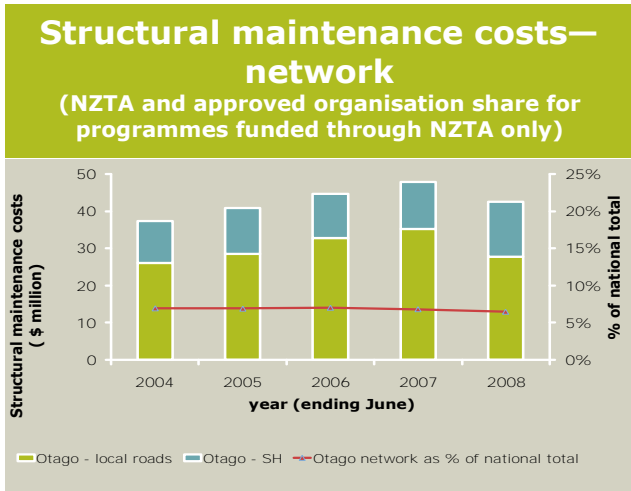
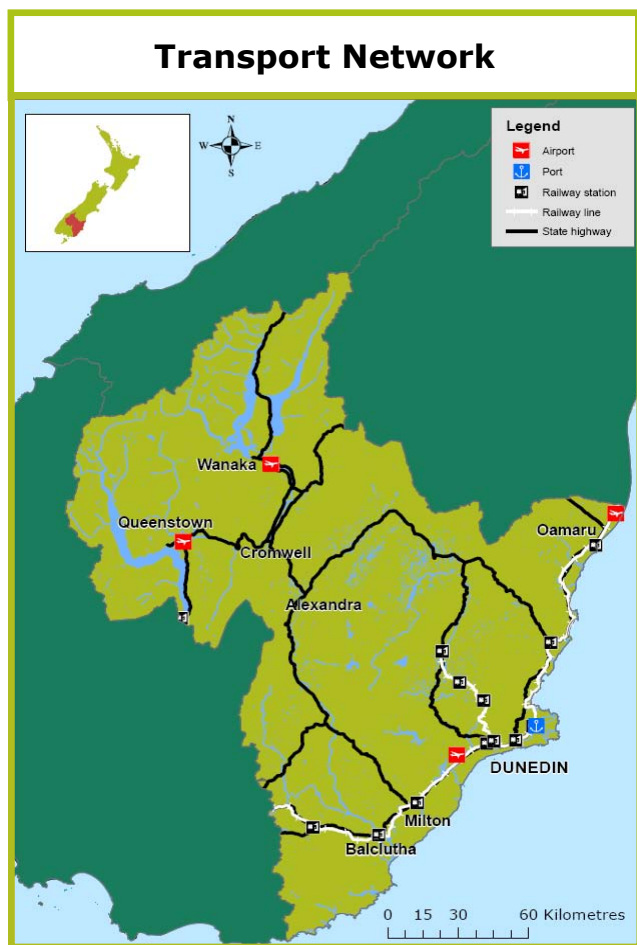
- The major contributors to the regions GDP are manufacturing (14%), education, health and community services (13%), mining, construction, and electricity, gas and water supply (11%) and agriculture (9%). The sector contributions have remained relatively constant over the last five years.
- **Tourism's contribution to the regions GDP** is growing through industries such as retail trade, accommodation, restaurants & bars and cultural & recreational services; which provide approximately 13% of the regions GDP collectively.
- **Otago's economy is strongly reliant on key regional gateways** that enable the flow of freight, goods, services and visitors. These are the state highway and railway networks connecting to the north and south, to Port Chalmers, and the international airports of Queenstown and Dunedin. (ORLTS)
- **Otago's VKT are a relatively small share** (5.3%) of the national vehicle kilometres travelled compared to its share of road length. This low use may contribute to reasons why the rural road network is being maintained at a condition considerably below the national average.
- The regions GDP depends heavily on the ability to transport goods and services from industries between the urban centres and regional gateways.
- The GDP/VKT ratio was below the national average due to a relatively low GDP and an increased VKT. This low road efficiency is partially related to the large amount of tourist traffic and the large distances between urban centres.
- International freight exports remained steady over the 2003-2005 period before beginning a steady increase through the 2006-2007 period, finishing with 6.7% of the total national freight exports.
- **The Otago region's population has increased** 4.6% over the 2003-2007 period. This is slightly less than the national average. Growth was centred in the Dunedin City and Queenstown regions.
- In 2007, Otago's regional GDP (\$6,931 M) made up 4.2% of New Zealand's total GDP. The annual increase in GDP has been slightly below the national average since 2003. In 2006-2007 Otago only experienced a 0.6% GDP increase, compared to 4.6% nationally.

## Economy and land use —continued

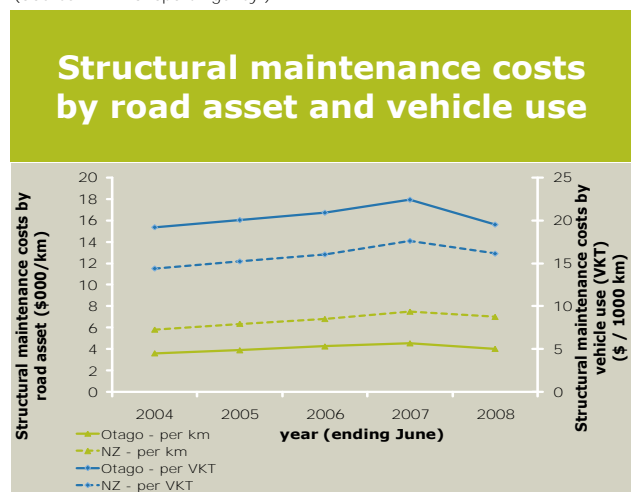
### Emerging Issues

- **Otago’s economy is dependant on an efficient rural and urban transport system** to transfer freight and goods. Predicted increases in freight, in line with national trends, will place emphasis on an optimised inter-modal integration of the road, rail and air networks to maintain a buoyant economy.  
(ORLTS)
- Significant volumes of freight are currently trans-shipped to Christchurch due to the availability of flights. Increased access to airfreight would increase economic viability for some businesses.  
(ORLTS)
- The regions population is predicted to increase, especially in Dunedin and Queenstown Lakes districts. This will increase congestion throughout urban centres as the public, tourist traffic and freight compete for the same road spaces and corridors.
- Particular consideration must be paid to the Caversham Valley corridor in Dunedin City, which will have increased peak time congestion in line with the increasing population and transportation trends.
- Continued dairy conversion of farms in Otago, particularly in South Otago, and forecast efficiency gains will increase the amount of milk tanker traffic on rural and regional roads.  
(ORLTS)
- The Otago RLTS has identified rail as an important method to minimise congestion within the Dunedin City area, due to the increasing number of heavy vehicles travelling through the urban area.
- An extended and integrated rail system would benefit the growing dairy and forestry industries. Consideration has been given to transporting logs to Port Chalmers for export, and dairy products to Clandeboye, via rail.  
(ORLTS)
- Tourism is a major growth driver and will have a pronounced effect on traffic on tourist routes throughout the region due to increased bus, campervan, car and recreational cyclist numbers. Measures such as adequate passing lanes, rest stops and signage have been identified by the Otago RLTS as measures to provide adequate service for the increasing demand.

### 3. Assets



(Source: NZ Transport Agency)



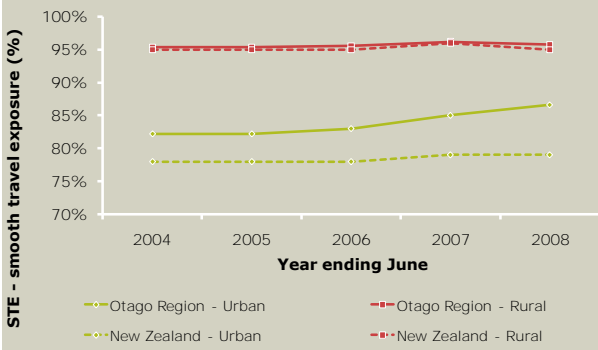
(Source: NZ Transport Agency)

Road length 2008					
		Dunedin City	Otago Region	National	Otago as % of Nation
Local roads	Urban	691 km	1,332 km	17,298 km	7.7%
	Rural	1,062 km	7,804 km	65,088 km	12.0%
	Special purpose	No data	124 km	513 km	24.2%
<b>Local roads - total</b>		1,753 km	9,260 km	82,899 km	11.0%
<b>State Highways</b>		No data	1,304 km	10,906 km	12.0%
<b>All roads</b>		-	<b>10,564km</b>	<b>93,805 km</b>	<b>11.3%</b>

## Assets — continued

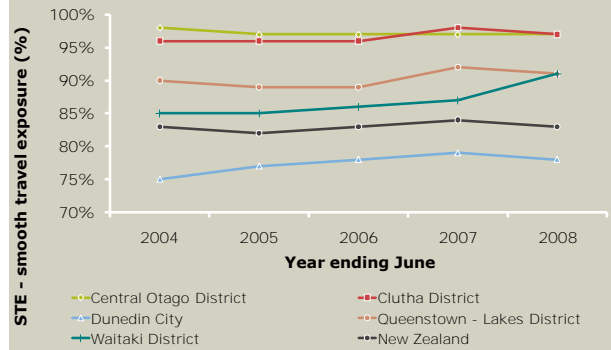
### Smooth travel exposure (STE) - region

Note: The higher the smooth travel exposure (STE) % the smoother the network.



(Source: Local Authorities, NZ Transport Agency)

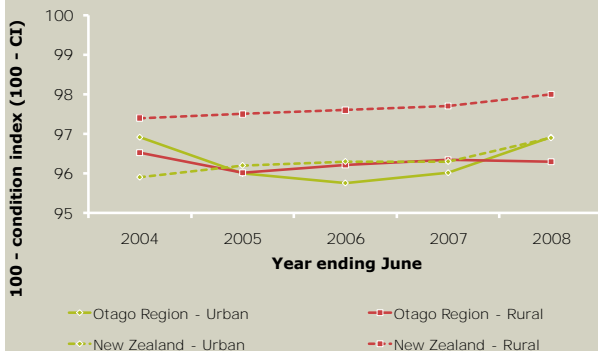
### Smooth travel exposure (STE) local roads - Otago TAs



(Source: Local Authorities)

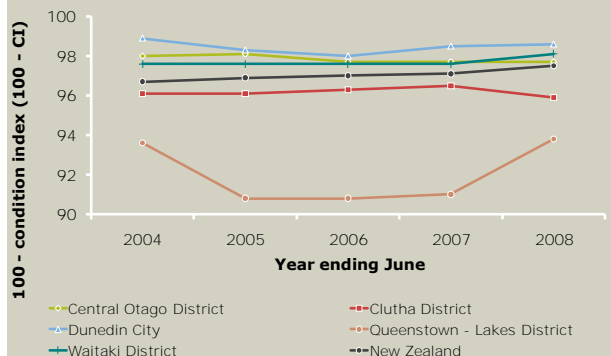
### 100 — Condition index - region

Note: The higher the 100-condition index (CI) value the fewer the defects in the sealed road surface.



(Source: Local Authorities, NZ Transport Agency)

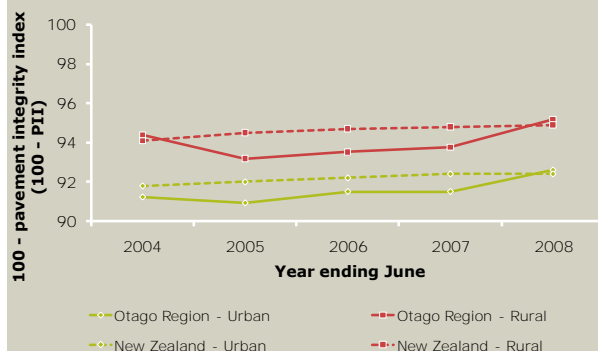
### 100 — Condition index local roads - Otago TAs



(Source: Local Authorities)

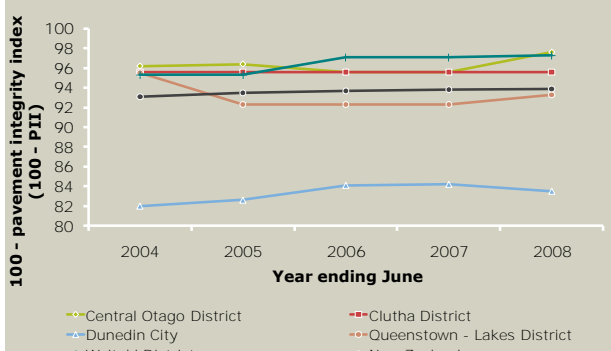
### 100 — Pavement integrity index

Note: The higher the 100-pavement integrity index (PII) value the better the pavement structural condition.



(Source: Local Authorities, NZ Transport Agency)

### 100 — Pavement integrity index local roads— Otago TAs



(Source: Local Authorities)



## Assets – continued

### Comments

- Local pavement conditions in Otago are comparable to the national average. An exception is pavement in Dunedin City, which is in a considerably worse condition.
- The Otago region contains 290km of existing railway lines consisting of the main north-south rail link near the East Coast and the Taieri tourist rail link which travels into central Otago.  
(ORLTS)
- Otago contains two international airports, situated in Dunedin and Queenstown, both of which receive direct flights from Australia. Wanaka is now a designated passenger airport and its role will likely continue to grow over time as an alternative to Queenstown in adverse weather conditions. In turn this will also increase the importance of the Crown Range link.  
(ORLTS)
- Port Chalmers is a major international port situated in Dunedin City, and has excellent rail links.

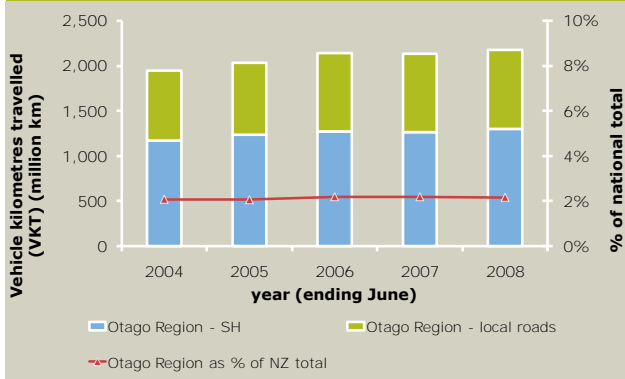
### Emerging Issues

- In 2008, Otago received 6.5% of the national expenditure on structural maintenance of roads. This was a 11% **reduction in Otago's total structural** maintenance expenditure compared to the previous year. Spending increased 16.7% on state highways compared to a 21% decrease in expenditure on local roads, which was in line with national trends.
- Throughout Otago there are 9,190 km of local roads (of which 65% are unsealed). Some of these routes are increasingly being used for tourist traffic. There is also potential for land use conversion to relieve localised traffic pressures.  
(ORLTS)



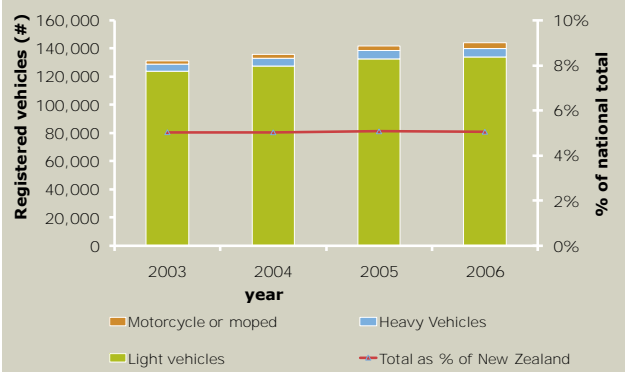
## 4. Access and mobility

### Vehicle use (VKT)



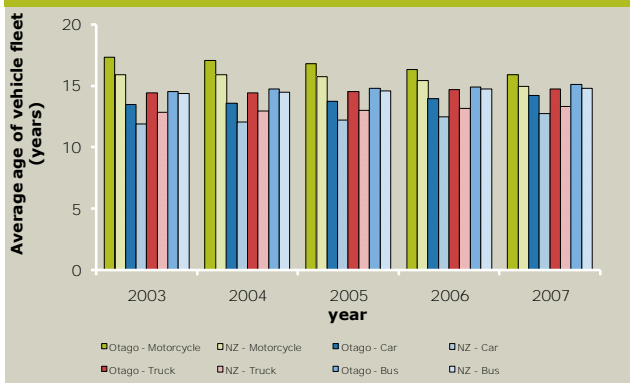
(Source: Local Authorities, NZ Transport Agency)

### Vehicle fleet - numbers



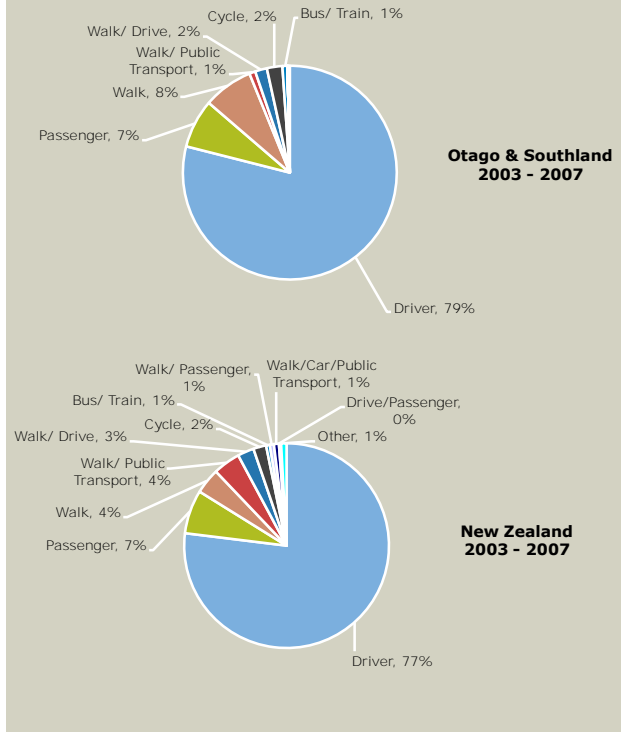
(Source: Motor Vehicle Register)

### Vehicle fleet - age



(Source: Motor Vehicle Register)

### Travel mode share 2003–2007 (travel to work)



(Source: Ministry of Transport Household Travel Survey)

### Passenger transport boarding numbers



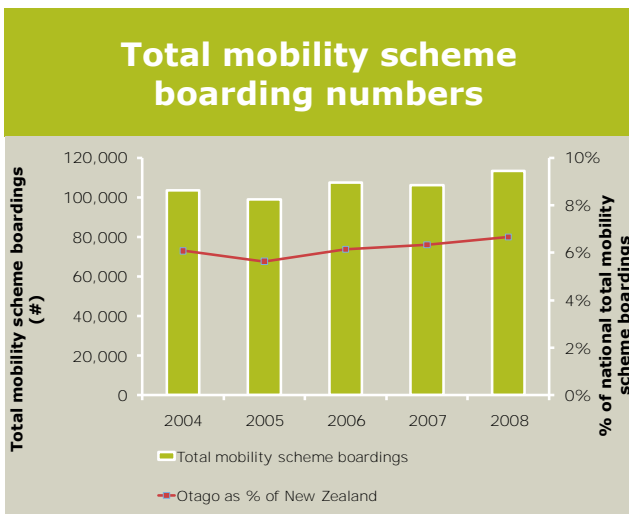
(Source: Otago Regional Council)

### Distance to bus routes

**97% of the target community in the Otago region lives within 500m of a bus route.**

(Source: LTP Online Returns)

## Access and mobility —continued



(Source: Otago Regional Council)

- An aging population will increase reliance on modes of transportation other than private car use in the future.
- The Otago vehicle fleet has remained a constant size and comprises approximately 5% of the national fleet. The total fleet increase over the 2003-2006 period was driven by a 19.2% increase in moped / motorcycle and a 5.2% increase in heavy vehicle fleet.
- Currently, no passenger rail service is available in the Otago region. The Taieri rail link provides an alternative to SH87 for tourists travelling into Central Otago.

### Comments

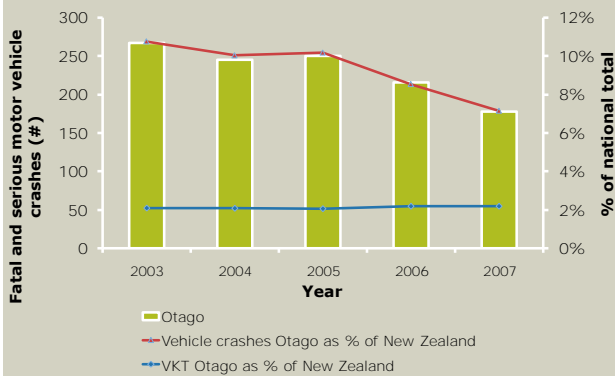
- Public passenger transport operates at different scales around Otago, from fully commercial regular shuttle and bus services linking communities, to the integrated services provided in Dunedin. This reflects the varying densities of population and distances between urban areas in the region.  
(ORLTS)
- Buses within Dunedin travel on mainly historic routes, as the topography of the area restrains movements to the current road network. This topography also ensures that bus-use is an important tool to reduce congestion in the CBD.  
(ORLTS)
- **The majority of Otago's requirements for urban passenger services are provided by commercial operators without public subsidy. This has been a conscious policy decision.**  
(ORLTS)
- The total mobility scheme operates in Queenstown, Wanaka, Alexandra, Cromwell, Balclutha and the Dunedin area. **Otago's total mobility boardings made up 6.7% of national mobility boardings in 2008.**

### Emerging Issues

- There is an opportunity for continued improvements in provision and quality of public transport to respond to rising demand. Real time information in Dunedin and Queenstown has been considered.
- For the research period 2003—2007, all **categories in Otago's vehicle fleet were above national average age.** This is not a desirable trend on environment and safety grounds.
- The predicted increase in private car use should not adversely affect other modes such as walking, cycling and public transport. The Otago RLTS has recognised the need for particular attention to be given to footpath and crossing quality along urban regional routes, public transport availability and quality, and mobility assistance.
- The Otago Regional Council has identified the need to address mobility, accessibility, economic and safety outcomes through a review of the total mobility programme and updating the current Regional Passenger Transport Plan. Simple measures such as increased low floor bus access and improved infrastructure, e.g. bus shelters and seating, have been identified.

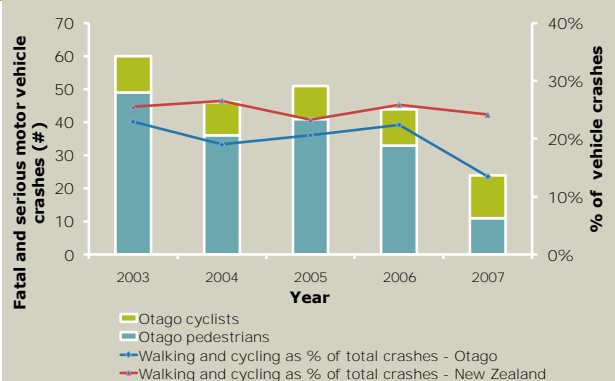
## 5. Safety

### Fatal and serious vehicle crashes



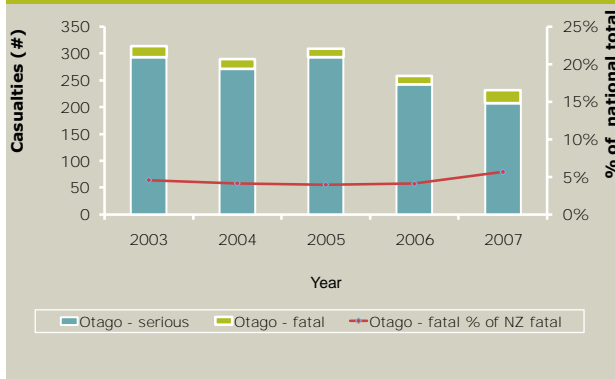
(Source: NZ Transport Agency, CAS Database)

### Fatal and serious vehicle crashes involving cyclists and pedestrians



(Source: NZ Transport Agency, CAS Database)

### Fatal and serious road casualties



(Source: NZ Transport Agency)

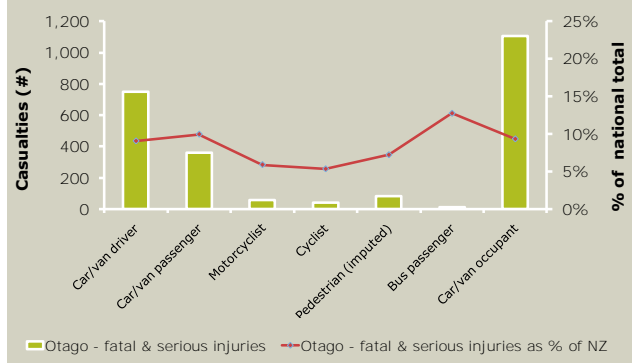
### Comments

- The predicted increase in tourism and freight movement in Otago has raised concerns over road safety. The RLTS has identified the need for increased passing lanes on tourist and freight routes, greater frequency of rest areas and greater signage in rural areas, especially on tourist routes.
- The region has a high social cost of crashes due to several factors; winter driving conditions, high presence of tourist traffic and a high proportion of young people interacting with the state highway network. (ORLTS)
- Otago has several major fault lines running through the region and a variable topography. When natural disaster occurs, these characteristics have the potential to isolate areas. It is essential to have alternative access to the urban centres and to have measures in place to mitigate the risk. (ORLTS)

### Emerging Issues

- A number of high profile seal extensions have been carried out in recent years to address tourist safety issues e.g. Chaslands Highway and Crown Range Road.

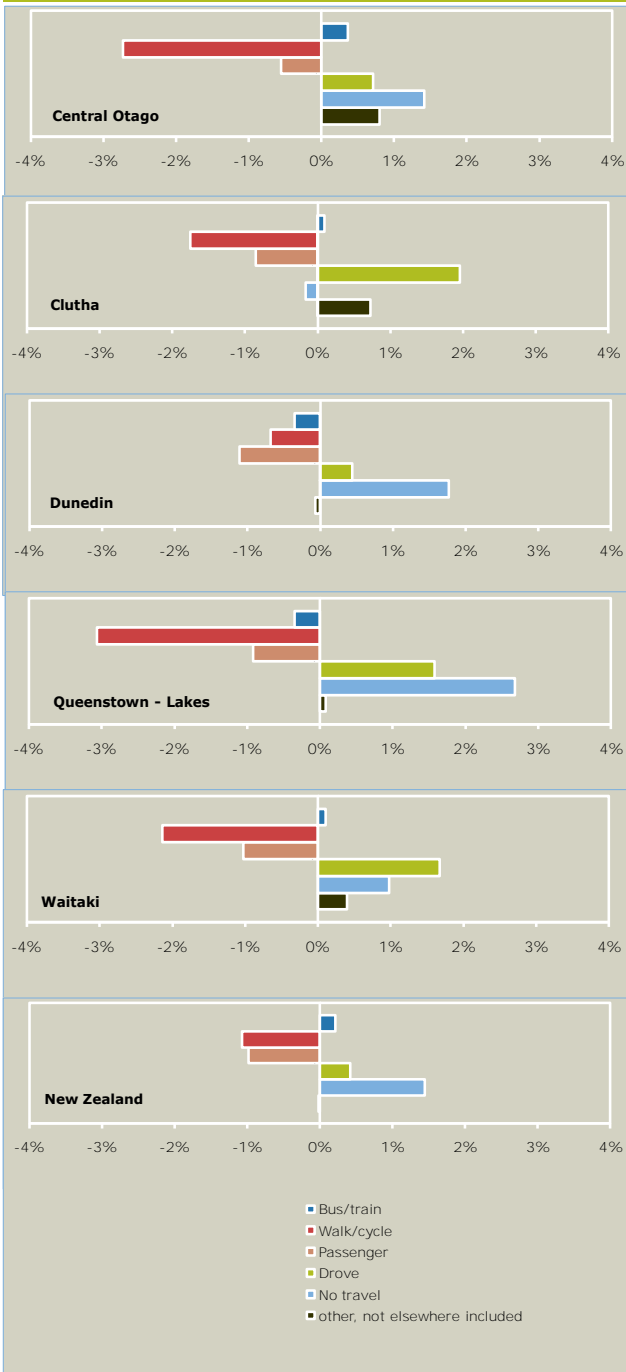
### Fatal & serious road casualties per road user group Annual rates 2003–2007



(Source: NZ Transport Agency)

## 6. Health and Environment

### Changes in travel mode share 1996 – 2001 (travel to work)



(Source: Statistics NZ)

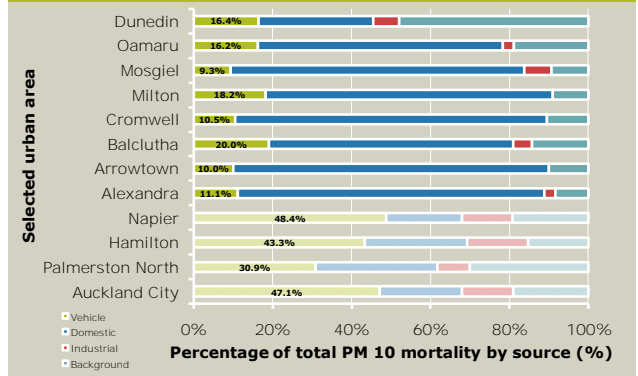
**Note:** The NZ Transport Agency has significant concerns about data contained in the report *Health and air pollution in New Zealand*. However, for the completeness of this document the data in the graphs below was sourced from that report.

### PM10 air pollution – mortality per 1000 population



(Source: Health and air pollution in NZ, 2007 - research funded by Health Research Council of NZ, MfE, MoT)

### Sources of PM10 mortality



(Source: Health and air pollution in NZ, 2007 - research funded by Health Research Council of NZ, MfE, MoT)

## Health and Environment – continued

### Comments

- Walking is the second most popular mode of transport to work within Dunedin City (12%). Cycling follows with 4%. The main factors restricting active modes of transport are perceptions of safety, topography, weather, and footpath/roadway quality and/or design.
- The Otago RLTS identified the need for promotion of walking and cycling for short trips through land use planning, urban design, direct investment in quality footpaths, walkways & cycle ways, and **marketing of 'healthy transport alternatives'**.
- The ORLTS aims to reduce harmful emissions from road vehicles through advocacy and potentially direct investment in vehicle testing (including standard setting and enforcement). CO<sub>2</sub> emissions will be reduced through implementation of central government national policy directives.
- Commuting as a passenger, and the active modes of transport (walking / cycling) have seen a negative change since 1996 in all TAs. Driving to work, and working from home, have gained popularity. This reflects the changes in travel to work modes that were observed on a national scale.

### Emerging Issues

- There is an ongoing high social cost of Otago road crashes (over \$150M per year, of which just under a third occurred on the State Highway network). Preventative measures to improve the functioning of the regional network need to remain a high priority.  
(ORLTS)
- Transportation planning considerations should be integrated with land use development (including subdivision) to ensure that the existing and future functionality of the roading network is protected from the adverse effects of intensification of land use development.  
(ORLTS)