



Regional summary - Canterbury

This is a summary of data relevant to transportation in this region, viewed from a Land Transport NZ perspective. Its purpose is to inform the Land Transport New Zealand Board about the current transport system and about regional issues, plans and initiatives 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 NZ 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 also been made between Christchurch City (which now includes former Banks Peninsula District) and the remainder of the region— to highlight the difference in the characteristics of transport in the rural and urban areas.

Summary

The Canterbury region has a population of about 533,000 (13% of the national total) of which 68% live in the Christchurch urban area. Average population densities are low and around 220 people per km² in Christchurch City. The region has a total length of road of 15,550 km, 16.6% of the national total. There are also north south rail lines to the city and ports and a rail link to the West Coast which carries mostly coal for export.

In recent years there has been strong economic growth in the Canterbury region, particularly in the dairy industry due to strong global commodity prices. The regional GDP has increased between 2002 and 2006 at an average of 8% per year. This growth rate is twice as high as the national average of 3.7%. Vehicle kilometres travelled (VKT) have also grown strongly reflecting the growth in GDP.

There is concern in Canterbury about the amount of urban sprawl that has occurred in recent years. The effect of this is apparent in the low mode share of passenger transport and walking and cycling. However, the number of bus boardings has increased since 2002 at an average of 5.3% per year.

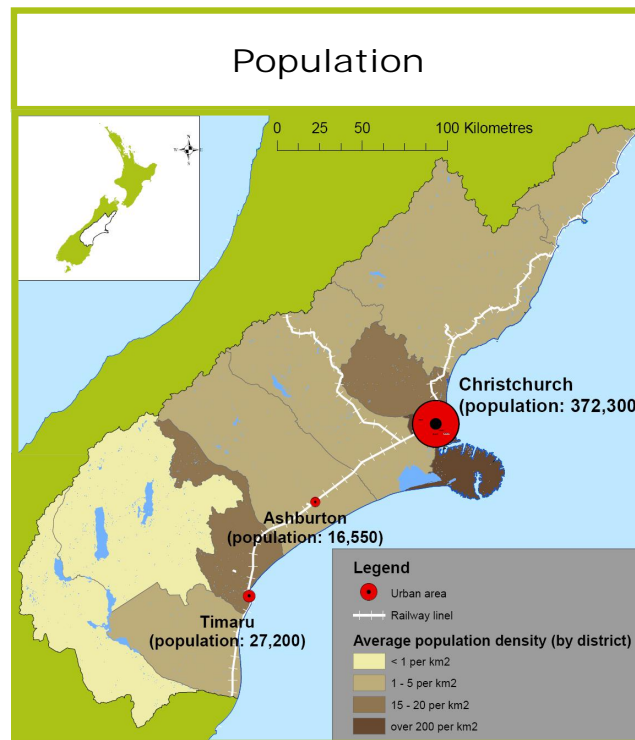
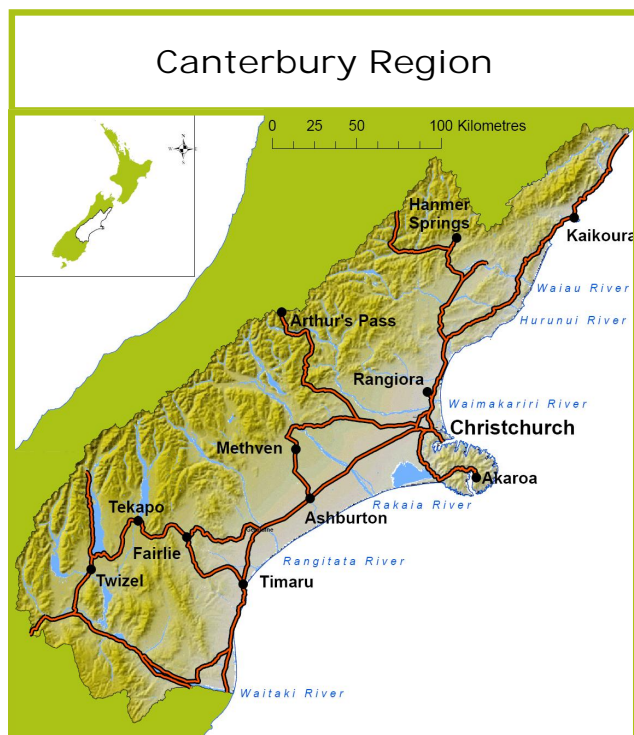
Assets in Christchurch are generally maintained at a condition slightly below the national average, although the condition is stable and not currently deteriorating significantly.

Vehicle safety for the years 2002-2006 in Canterbury, appears to fluctuate at around 300 fatal and serious crashes per year. Cyclist and pedestrian safety improved between 2002 and 2005.

Key Regional Indicators

	Current	Annual average change (2002-2006)	Annual change (2005/2006)
Population	533,000	1.5%	1.2%
VKT	4,996m km	3.4%	1.7%
GDP	\$24,938m (in current prices)	8.0% (95/96 prices, estimated)	12.9% (95/96 prices, estimated)
Bus boardings	16.6m	5.0%	3.3%
Road maintenance costs	\$46.9m	8.1%	5.1%
Light vehicle registrations	372,000	3.5%	2.3%
Heavy vehicle registrations	14,965	5.0%	2.1%
Fatal and serious crashes	286	0.9%	-9.8%
Vehicle CO ₂ emissions	2m tonnes	2.3%	-0.6%

1. Overview



General Statistics for 2006

	Christchurch (former Banks Peninsula District included)	Canterbury	National	Canterbury as % of Nation
Estimates population (year ending December)	360,400	532,900	4,139,500	12.9%
Population growth 2002-2006 (year ending December)	5.9%	5.8%	5.1%	-
Land area	1,610 km ²	45,346 km ²	275,446 km ²	16.5%
Total TA expenditure on land transport (year ending June. Includes Local and national contributions to territorial authority expenditure. Regional Council and Transit costs are excluded.)	\$39m	\$82m	\$931m	8.8%
VKT (year ending June)	1,951m km (local roads only)	4,966m km	39,663m km	12.5%
Total road length (year ending June)	2,270 km (local roads only)	15,550 km	93,460 km	16.6%
GDP (2006 prices) (year ending March)	-	\$24,850m	\$155,360m	16.0%
GDP per capita (2006 prices)	-	\$46,600	\$37,500	-

2. Economy and Land Use

Greater Christchurch Urban Development Strategy (September 2007)

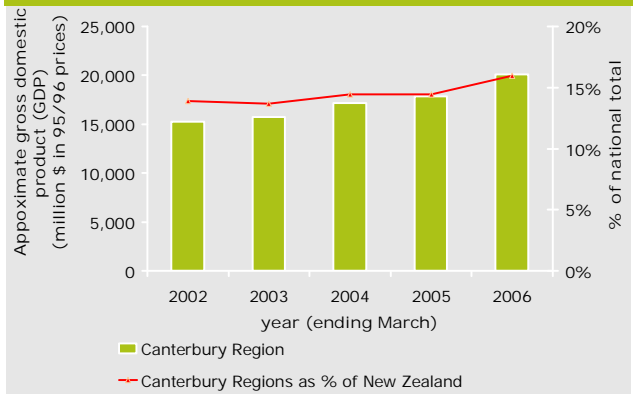
The Greater Christchurch Urban Development Strategy (UDS) was initiated to provide a primary strategic direction for the management of growth in the UDS area including the identification of funding sources. The UDS integrates various growth management issues such as land use, infrastructure, three waters, waste and transport. The UDS has been reflected in the Proposed Change 1 to the Regional Policy Statement (RPS) as well as in the recently released Draft Canterbury Regional Land Transport Strategy 2008-2018.

Industry Profile 2003

Main Industry Sector	Contribution to regional GDP	Contribution to national GDP
Manufacturing	16.9%	15.5%
Education, health and community services	10.5%	12.3%
Transport, storage and communication services	7.4%	10.2%
Agriculture	7.3%	5.0%
Retail trade	7.2%	7.4%

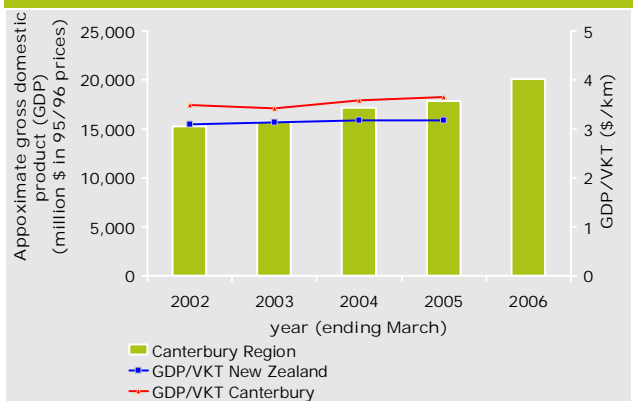
(Source: Statistics New Zealand)

GDP in 95/96 prices



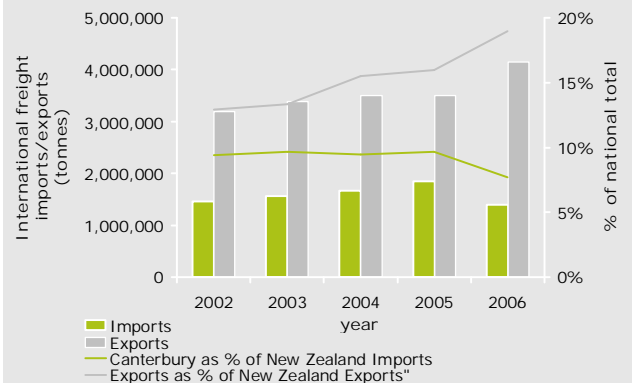
(Source: calculated from NZIER and Statistics NZ)

GDP in relation to VKT



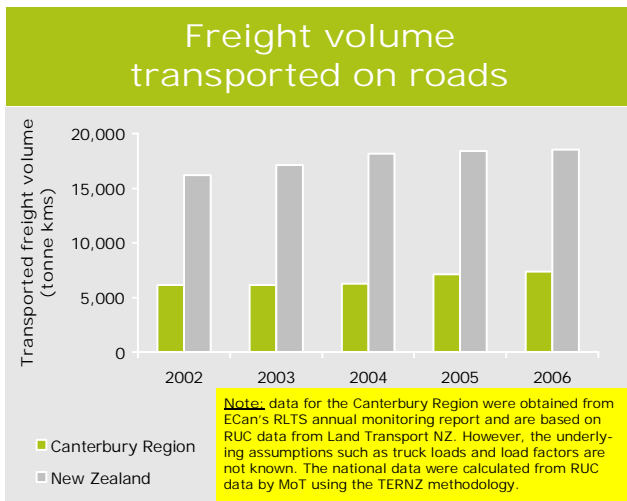
(Source: calculated from NZIER and Statistics NZ, Transit NZ local authorities)

International imports / exports (Canterbury)



(Source: Statistics NZ)

Economy and land use —continued



(Source: MoT, ECan quoting Land Transport NZ)

Rail freight tonnage is not included as the figures are currently unavailable. Nationally rail carried approximately 13% of freight by tonnage and 18% by tonne kilometres. In 2002 the Canterbury region generated 1.1 M tonnes of rail freight and attracted 3.1 M tonnes including 2.0 M tonnes of coal from the West Coast for export.

Comments

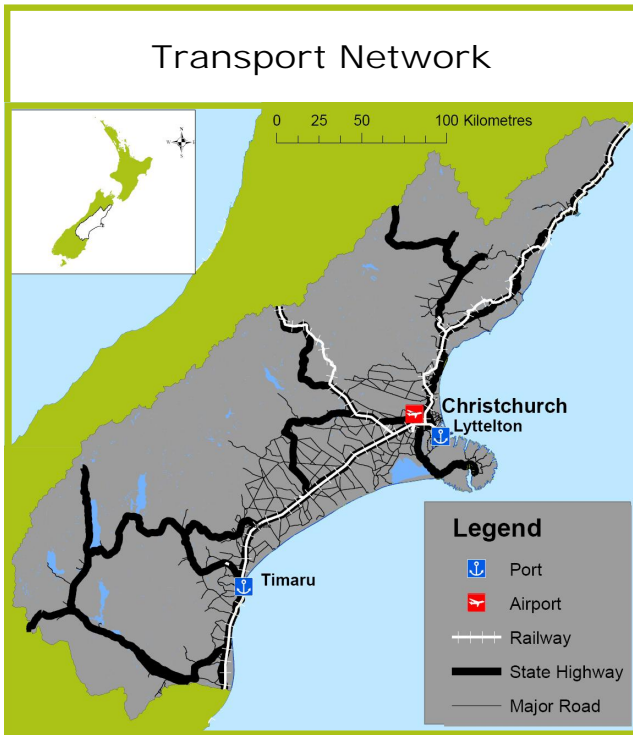
- In 2006 the estimated gross domestic product (GDP) for the Canterbury region was \$25 billion, contributing 16% to the national GDP.
- Over the period 2002-2006 the GDP for Canterbury increased annually in average by 8.0 % and the national GDP by about 3.7%.
- The manufacturing sector has been the main contributor to the regional GDP in 2003 (Statistics NZ).
- In recent years there is a trend of dispersed land use development in Canterbury with an increase in rural residential developments and lifestyle properties.
- The trend of dispersed land use development is increasingly being addressed in integrated land use and transport planning. The Greater Christchurch Urban development Strategy and a number of local structure plans and outline development plans are examples for this.

- The regional and national GDP has been increasing at a similar rate as VKT indicating the transport intensity remains unchanged. However, the regional GDP to VKT ratio is higher in Canterbury than the New Zealand average..
- In 2006 there has been a significant increase in international freight exports from Canterbury now making up 19% of all national exports by gross weight.

Emerging Issues

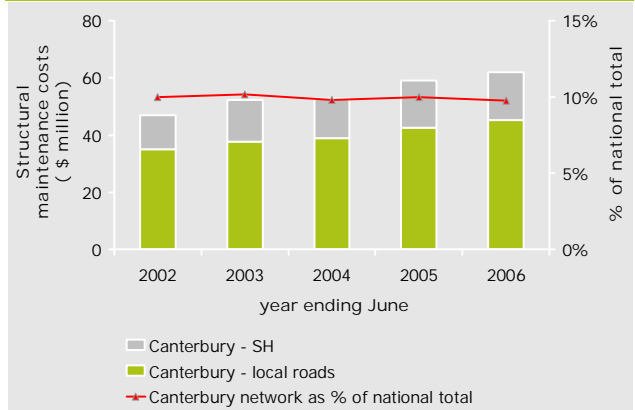
- The trend of dispersed land-use development (residential and business) is ongoing resulting in too great distances to cycle and walk or to provide economic public transport. Integrated land use planning will be required to address the trend. (Draft Canterbury Regional Land Transport Strategy, 2007).
- Population growth in the Greater Christchurch Metropolitan area will continue (UDS, 2007)
- Farming is becoming more intensive requiring more outsourcing of machinery and labour and more imported goods. (Draft Canterbury Regional Land Transport Strategy, 2007).
- Key freight links need to be developed and enhanced to support increasing economic vitality and growth. (UDS, 2007)
- Recent world wide increases in the price for commodities especially dairy products. This is leading to above average growth in the dairy sector which is likely to generate strong growth in the transport requirements for exports. For example milk tanker movements to and from the processing facility at Clandeboye, and freight movements to and from the regions ports.
- Crude oil prices have recently reached records highs of \$US 96 per barrel and the long term trend for oil prices is to increase as world demand increases and the supplies of cheap oil diminish. This increase in fuel supplies may decrease the growth rates and the total VKT in the future, unless alternative forms of energy for transport are developed in time. If increases in fuel costs occur this is likely to lead to travel mode switching to passenger transport and active modes.

3. Assets



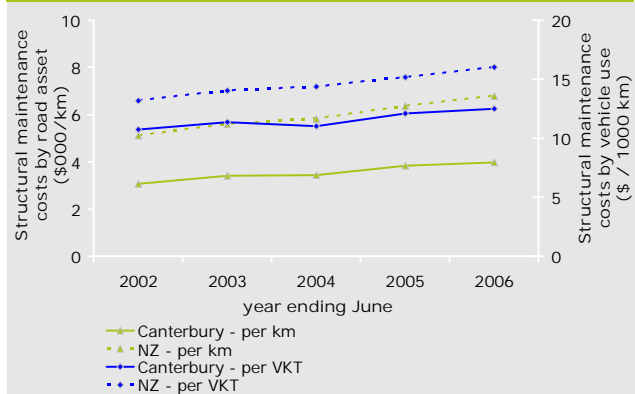
Structural maintenance costs

(Land Transport and approved organisation share for programmes funded through Land Transport NZ only)



(Source: Land Transport NZ)

Structural maintenance costs by road assets and vehicle use



(Source: Land Transport NZ)

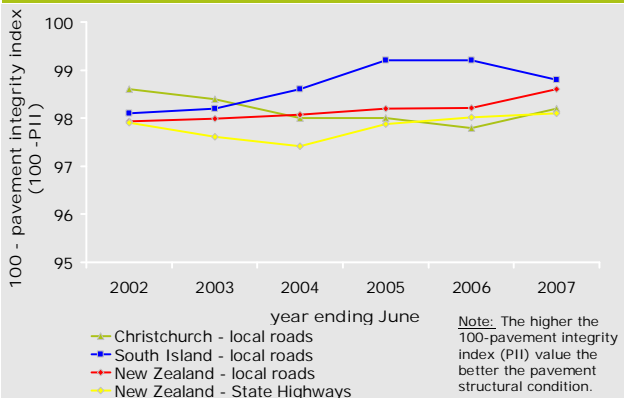
Road Length 2006

		Christchurch <i>(former Banks Peninsula District included)</i>	Canterbury	National	Canterbury as % of Nation
Local roads	Urban	1,520 km	2,400 km	17,050km	14.1%
	Rural	745 km	11,800 km	65,010 km	18.2%
	Special Purpose	-	17 km	510km	3.3%
Local roads - total		2,270 km	14,220 km	82,570 km	17.2%
State Highways		No data	1,330 km	10,900 km	12.2%
All roads		-	15,550 km	93,460 km	16.6%

(Source: Local Authorities, Transit NZ)

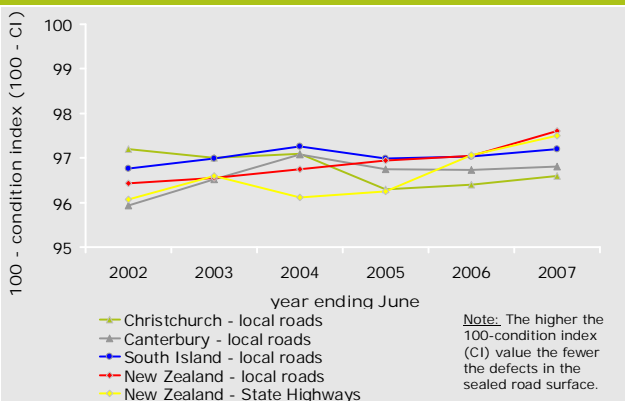
Assets—continued

100 — Pavement integrity index



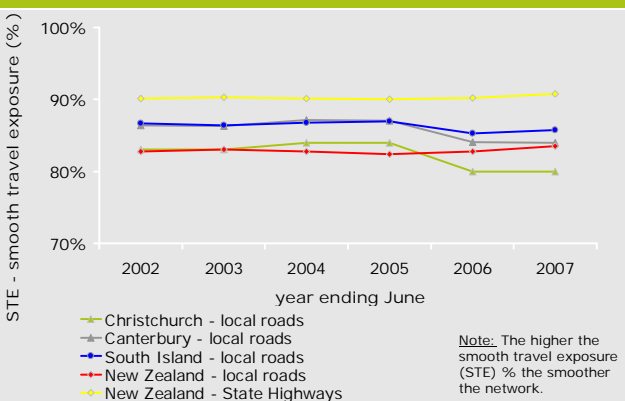
(Source: Local Authorities, Transit)

100 — Condition index



(Source: Local Authorities, Transit)

Smooth travel exposure (STE)



(Source: Local Authorities, Transit)

Comments

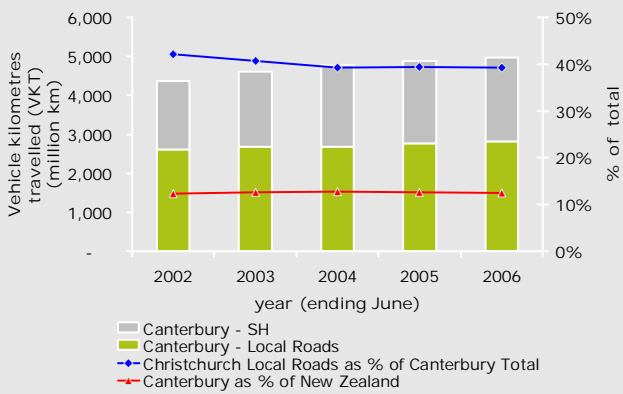
- Existing railway lines connect Picton, Christchurch, Lyttelton, Greymouth, Timaru and Dunedin. They are mainly used for freight transport (bulk cargos like coal and containers), but also for tourists on scenic routes.
- 16.6% of the national road network is located within Canterbury while it receives 10% of the funding for structural maintenance. This results in lower than national average structural maintenance costs per km as well as per VKT.
- The road bridge stock in Canterbury is sound and up-to-date (Land Transport NZ, Christchurch office).
- Local pavement conditions in Christchurch are slightly below the national average and are being maintained at about the same level. The average condition of local roads in NZ is slightly improving.

Emerging Issues

- Increasing maintenance costs on roads. This can be attributed to the growth in rural industries such as dairy and crop farming and forestry (Draft Canterbury Regional Land Transport Strategy, Environment Canterbury, 2007).
- New Zealand railway network corridors are underutilised. Currently road transport holds advantages over rail transport. This may change with an increase in energy prices or change in government policies. (Ontrack Annual Plan, 2007)
- The dairy factory in Clandeboye is not directly connected to the railway network. However, Ontrack might consider the development of a new branchline when it prepares its 10-Year Rail Network Development Plan (NZ National Rail Strategy, MoT, 2005).
- To implement the Canterbury Regional Land Transport Strategy Environment Canterbury has identified a 370.2M funding gap associated with some key infrastructure projects. The projects are intended to form the backbone of a transportation system in and around Christchurch including key freight hubs. (Draft Canterbury Regional Land Transport Strategy, Environment Canterbury, 2007).

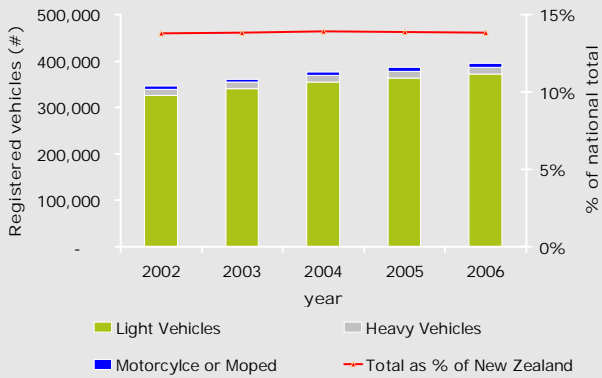
4. Access and Mobility

Vehicle use (VKT)



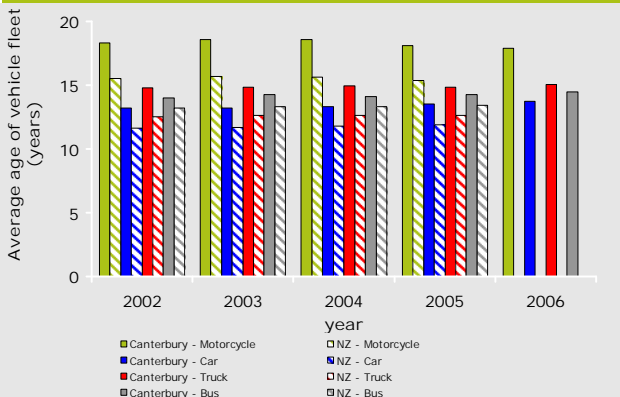
(Source: Local Authorities, Transit NZ)

Vehicle fleet - numbers



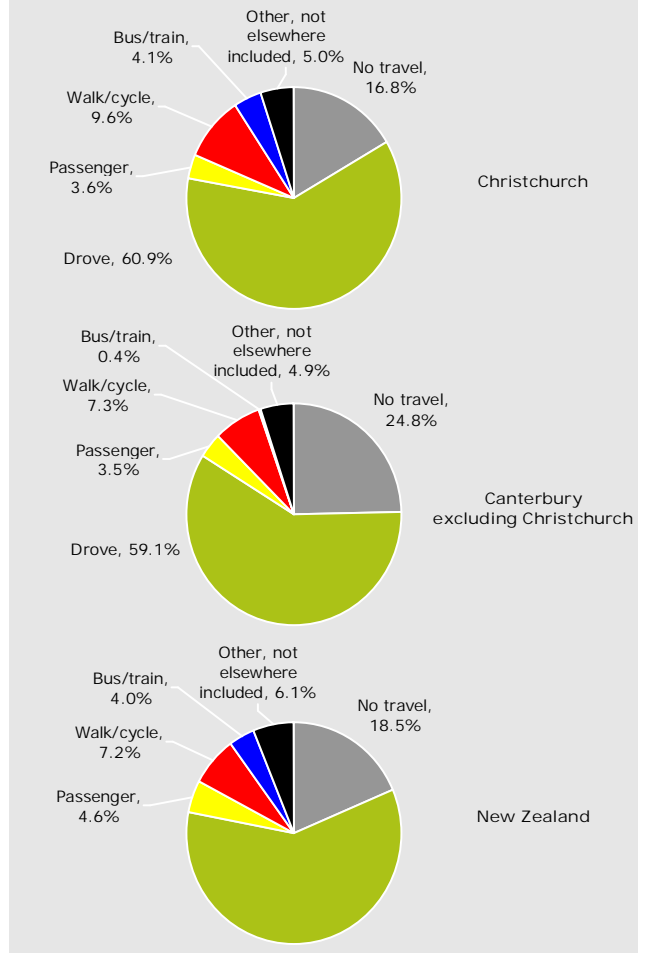
(Source: Motor Vehicle Register)

Vehicle fleet - age



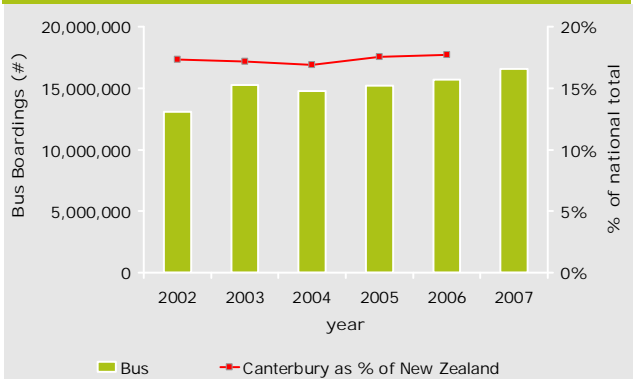
(Source: Motor Vehicle Register)

Travel mode share (travel to work)



(Source: Statistics NZ, 2006 Census)

Bus boarding numbers



(Source: ???)

Access and Mobility continued

Distance to bus routes

78.5% of the target community in Canterbury lives within 500m of a bus route.

(Source: LTP Online—Annual Achievement Return for Canterbury 06/07)

Total mobility scheme boarding numbers



(Source: Environment Canterbury)

Comments

- Vehicle use (VKT) on Canterbury roads has increased in average by 3.4% per year during the period 2002 to 2006. Most of the growth occurred on State Highways (5.6%) and on local roads outside Christchurch (2.6%).
- Driving is the main means of travel to work in Christchurch (61%) as well as the remaining area of Canterbury (59%). In Christchurch 9.6% walk or cycle to work, which is above the New Zealand average of 7.2%.
- The number of bus boardings has increased since 2002 at an average of 5.3% per year. Bus boarding numbers temporarily peaked in 2003 due to strong overseas student numbers, but, after falling in 2004 have now resumed an upward trend.
- The vehicle fleet numbers have shown an increase of 14% during the 2002 to 2006 period with heavy vehicles numbers being up by 20%.

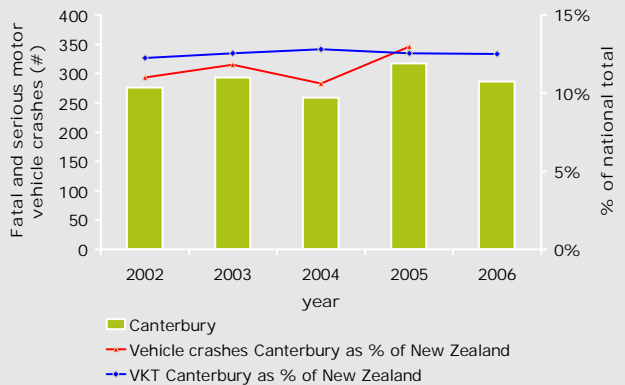
- The average age of the Canterbury vehicle fleet (car, bus, truck and motorcycle) is higher than the national average. The average age of the car, bus, and truck fleets is slightly increasing in Canterbury as well as nationally.
- The majority of Canterbury population has relatively good access to bus routes and bus boarding numbers have been slightly increasing. However, only 4.1% of the working population in Christchurch travel by bus while the share is negligible in the remaining Canterbury area.
- The number of total mobility boardings in Canterbury has decreased from 2004 – 2006 by about 2.4% and makes up around 15% of all total mobility scheme boardings in New Zealand.

Emerging Issues

- Analysis of the Christchurch Transportation Model suggests that congestion on Christchurch roads is expected to increase substantially from 1996 to 2011 (Draft Canterbury Regional Land Transport Strategy, Environment Canterbury, 2007). However, in 2007, congestion indicators (delay/km) calculated by Transit NZ show a slight decrease from the previous year (Transit Travel Time Indicator Report—March 2007, Transit NZ, 2007).
- The trend of increasing bus boarding numbers is expected to continue with high fuel prices and investment in bus priority. However, bus subsidy costs have increased considerably due to a rise in fuel and other costs.
- The application of the Vehicle Exhaust Emissions 2007 Rule (33001/2) may have effects on the average age of the vehicle fleet.
- ECan consider that growing freight volumes and related heavy vehicle traffic need to be taken into account in transport planning.

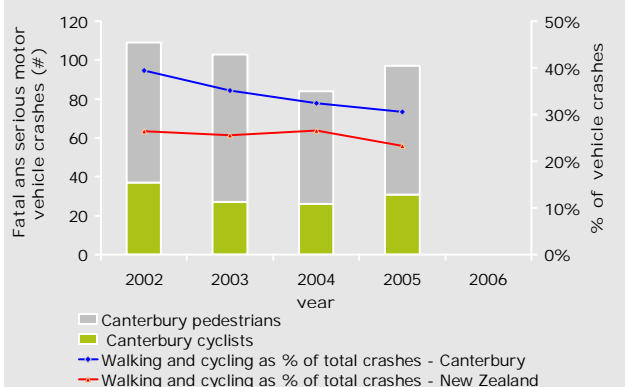
5. Safety

Fatal and serious vehicle crashes



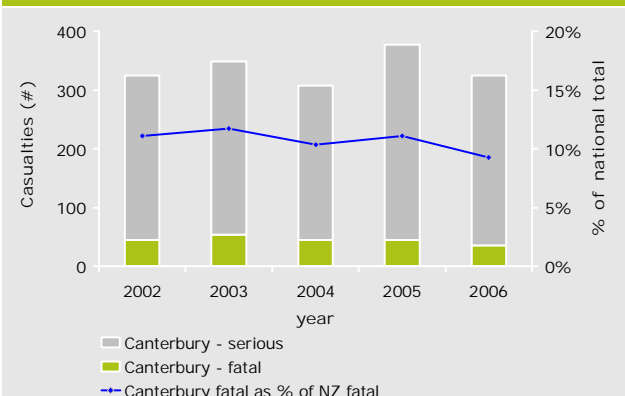
(Source: Land Transport NZ, CAS database)

Fatal and serious vehicle crashes involving cyclists and pedestrians



(Source: Land Transport NZ, CAS database)

Road Casualties



(Source: Land Transport NZ)

Comments

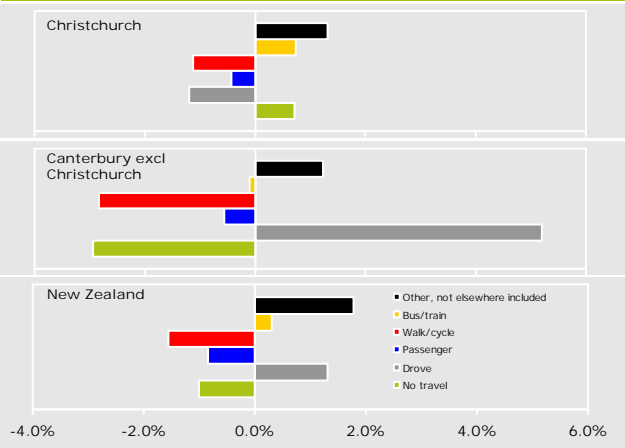
- From 2002 – 2006 the number of all fatal and serious vehicle crashes remained approximately constant at around 300 per year.
- The share of crashes involving cyclists and pedestrians has been declining from 39% to 31% in the 2002 to 2005 period, but is significantly higher than the national average of 23%.
- The number of fatal road casualties in Canterbury has been declining from 54 in 2003 to 36 in 2006. Also the proportion of Canterbury fatal road casualties on all fatal road casualties shows a decreasing trend.
- The social costs of crashes in Canterbury in 2006 was \$446 million.
- In 2002 to 2006 the main crash factors on Canterbury urban roads was poor observation and failure to give way / stop. On rural roads the main factors were poor observation followed by poor handling.

Emerging Issues

- A reduction of road deaths since 2003 has occurred, but further work is required to meet the 2010 national safety target of 300 deaths per year.
- More work is needed to reduce the social costs and therefore the number and severity of crashes (Draft Canterbury Regional Land Transport Strategy, Environment Canterbury, 2007).
- The safety of cycling and walking needs improvement (Draft Canterbury Regional Land Transport Strategy, Environment Canterbury, 2007).

6. Health and Environment

Changes in travel mode share 1996 –2006 (travel to work)



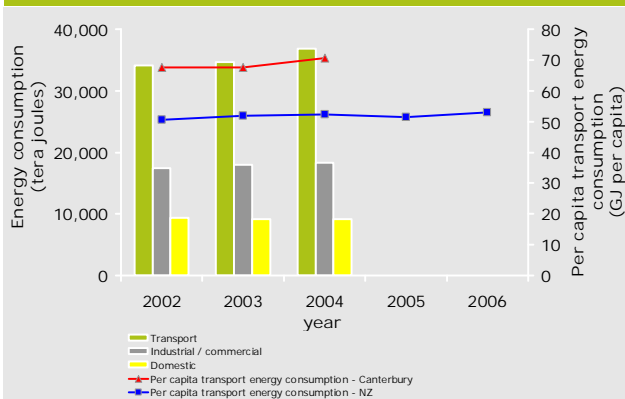
(Source: Statistics NZ)

Vehicle CO₂ emissions



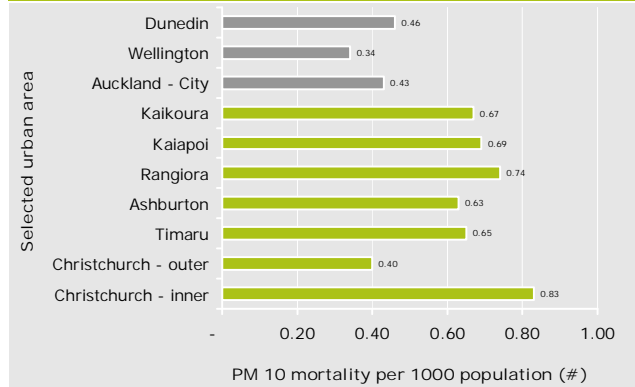
(Source: Environment Canterbury, MED)

Regional energy consumption by sector



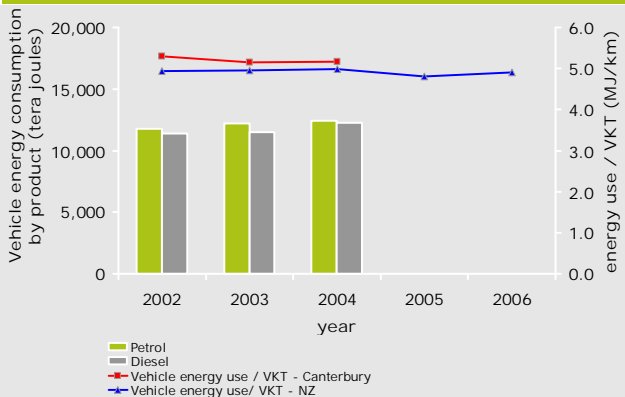
(Source: Environment Canterbury, MED, Statistics NZ)

PM₁₀ air pollution — mortality per 1000 population



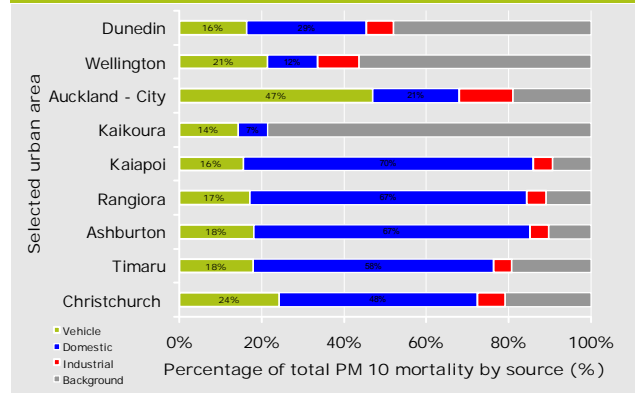
(Source: Health and air pollution in NZ, 2007 - research funded by Health Research Council of NZ, MfE, MoT)

Regional vehicle energy consumption by fuel type



(Source: Environment Canterbury, MED, Statistics NZ)

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

- Public transport in Christchurch appears to be on a rising trend since 2004. The reason is believed to be rising fuel prices, and also better public transport services offered (National Energy Strategy, MED, 2007).
- There are no passenger rail services in Christchurch, except for tourist services.
- The share of people walking and cycling to work is decreasing in Christchurch as well as in the remaining area of Canterbury.
- An increasing number of people in Christchurch appear to work from home and therefore do not to travel to work.
- In 2004 57% of energy used in Canterbury is used in the transport sector. This is the highest regional energy consumption.
- Ecan has reported a slight reduction in fuel consumption per capita in 2006 (Draft Canterbury Regional Land Transport Strategy, ECan, 2007).
- CO₂ emissions have been increasing steadily over recent years, but a slight reduction in land transport CO₂ emissions in 2006 could indicate a slowing in the growth trend (Draft Canterbury Regional Land Transport Strategy, ECan, 2007).
- Environment Canterbury is currently carrying out a 12 month biodiesel trial on four Metro buses. The biodiesel used in this trial will initially be a B5 (5%) blend of both plant oil and animal fat. Regular monitoring and testing will be undertaken throughout the trial to measure the reduction in emissions (ECan website).
- Of all urban areas in New Zealand Inner Christchurch has the second highest mortality rate (0.83) per 1000 population caused by exposure to PM₁₀ particulate matter in the air. In Christchurch, the PM₁₀ mortality is mainly attributed to domestic home heating emissions (48%) followed by vehicle emissions (24%).
- The vehicle stock effluent network is completed. Fleet and facilities will need ongoing management and maintenance. (Land Transport NZ, Christchurch)

Emerging Issues

- The Proposed Natural Resources Regional Plan (NRRP) introduces more stringent surface water quality standards. This is likely to require upgrades of the current management practices of runoff from the road network and is likely to increase the cost of new roading improvement projects.
- Concerns over excessive traffic noise have been raised in the recently released Draft Canterbury Regional Land Transport Strategy. However, there is a lack of data to quantify the problem (Land Transport New Zealand, Christchurch Office).
- Land Transport Rule 33001/2 Vehicle Exhaust Emissions 2007 is coming into effect on 3 January 2008 requiring car imports to meet emission standards of their country of origin for certain years of manufacture.
- The New Zealand government has announced a biofuel sales obligation coming into effect in April 2008. The obligation would require 3.4% of the total fuel sold by oil companies to be biofuel by 2012. The aim is to reduce greenhouse gas emissions and decrease the dependency on imported oil (Media Statement, 2007. Minister of Energy, Associate Minister of Transport).
- The government has made in-principle decisions to set a target to halving domestic transport emissions per capita from 2007 levels by 2040. (New Zealand Energy Strategy to 2050, MED, 2007)
- The government is seeking to increase diversity in transport fuels (bio fuels, electric cars) and to upgrade the provision for travel alternatives. (New Zealand Energy Strategy to 2050, MED, 2007).