



greater WELLINGTON

REGIONAL COUNCIL

Te Pane Matua Taiao

State of Cycling Report: Wellington region 2001-2012

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1. Introduction

Research shows that cycling has many potential benefits, both for communities and individuals. Cycling can play a critical role in promoting mobility, creating healthy lifestyles, reducing traffic congestion and emissions, saving money and generating economic activity (Greater Wellington Regional Council, 2008; Ministry of Transport, 2008). Even with all these potential benefits, the Household Travel Survey (2007-11) shows that only 1% of all trips in the Wellington region are made by bicycle, which rises to 1.5% when looking at trips less than 5km.

To encourage people to cycle for some of their transport trips and realise some of the potential benefits described above, people must have safe and convenient choices to change their current pattern of travel. This is also recognised in “Safer Journeys”, New Zealand’s Road Safety Strategy (Ministry of Transport, 2010). One of the aims of the strategy is to achieve a reduction in the crash risk for cyclists, while at the same time encouraging an increase in use of this mode through safer roading infrastructure.

A number of data sources are available that provide regional data relating to cycling. However, due to the publishing timetables of this data, results from different data sources are often viewed in isolation. To overcome this, this report brings together and analyses the available regional cycling data with the aim of providing a fuller picture of cycling in the region to help measure our progress and effectiveness, and achieve greater results.

This State of Cycling report provides an analysis of cycling in the Wellington region from information gathered via surveys, the census and cordon counts between 2001 and 2012, as well as cyclist crash and injury information.

2. Data Sources

2.1 Household Travel Survey

The New Zealand Household Travel Survey (HHTS) conducted by the Ministry of Transport since 2003 is an ongoing survey. The survey gathers information about daily personal travel in New Zealand. It collects information about how each leg of a journey is travelled. People in the survey report all their personal travel, including travelling in a vehicle, on foot, by bike and by public transport. The surveys provide information about travel patterns and how these have changed over time. The survey produces regional results on a four-year moving average basis.

The following information is used from this survey:

- Mode share of travel
- Cycling trips by frequency, purpose, time and distance
- Bike ownership

2.2 Transport Perceptions Survey (TPS)

This is a telephone/online survey of 1,000 residents, aged 13+, of the greater Wellington region. The survey is conducted in June and began in 2003, with further surveys conducted in 2004, 2006, 2008 and 2012.

The information used from this survey is:

- Transport mode use in the last 3 months
- Main form of transport to travel to work/study Feasibility of cycling to work/study
- Feasibility of cycling to work/study
- Perceptions about ease of travel by cycling, cycling safety, and level of service

2.3 Short-Trip Active Mode Survey

The short-trip active mode survey was first conducted in 2004 as an update to a major benchmark study into regional land transport carried out in 2001. Further update surveys have been carried out in 2006 and 2009.

The survey involves conducting telephone interviews with 800 randomly selected

Wellington region residents 16+ years of age. Questioning focused on their short trip behaviour in the previous 24 hours.

The information presented from this survey includes:

- The percentage of short trips, of less than one and two kilometres, which are made using cycling.
- The perceived barriers to cycling short trips of less than one or two kilometres.

2.4 Metlink Customer Satisfaction Survey

This is an annual telephone survey, conducted in April/May, of 750 Wellington region residents commissioned by Metlink and conducted by Premium Research. The first survey was conducted in 2003 and it has been conducted annually since then. The questionnaire content was substantially reviewed and updated for the 2010 survey, so comparisons can only be drawn with previous surveys when the question wording is the same.

Only information on mode use in the last 3 months is used from this survey.

2.5 New Zealand census

The census is the official count of how many people and dwellings there are in New Zealand. It takes a snapshot of the people in New Zealand and the places where we live. The information the census collects on mode of journey to work on census day (March) is used in this report.

2.6 School Travel Plan data

The School Travel Plan (STP) Programme is a joint-partnership between schools, local councils and Greater Wellington that supports school communities in developing and implementing action plans that improve road safety and promote active and sustainable travel to and from school. The programme has received funding from the New Zealand Transport Agency (NZTA), formally Transit New Zealand, since 2006.

Schools involved in the STP programme participate in data collection and monitoring phases. This involves using baseline surveys,

conducted at each participating school, that gather information from students and parents around current school travel methods, barriers and road safety concerns. Once travel plan activities are implemented, students and parents at the school are re-surveyed typically a year on from implementation.

Data from STP surveys provide information on:

- Mode of travel to school
- Mode shift in travel to school
- Perceptions on the safety of children cycling to school

2.7 Crash Analysis System (CAS)

The CAS is an integrated computer system that provides tools to collect, map, query, and report on road crash and related data. It contains data from all traffic crashes reported by police. The information provided by CAS is used to determine and analyse trends, which help direct recommendations around road safety funding allocations, target road safety programmes and monitor their performance. Data from CAS relating to crashes involving cyclists and cyclist injuries are presented in this report.

2.8 Sport New Zealand

A 2003 survey, commissioned by Sport New Zealand, formally SPARC, and the Cancer Society of New Zealand, collected information from adult New Zealanders relating to physical activity and healthy eating habits. The resulting “obstacles to action” database has regional data available on respondent’s frequency of cycling and their “cycling stage of change” (the extent that someone would cycle, or consider cycling a short journey if the weather was fine and they had nothing to carry).

Regional profiles were also released from the 2007/08 Active New Zealand Survey. In relation to cycling it provides a snapshot of cycling participation levels among adults.

2.9 Wellington City Council

(WCC) commissions annual cordon counts of pedestrians, cyclists and motor vehicles. Data from cyclist counts entering the Wellington CBD cordon (Figure 1), along with counts of cyclists commuting from surrounding suburbs (Figure 2) are presented in this report. Data is

collected at the beginning of March, each weekday morning, between 7am and 9am.

Figure 1. Wellington CBD cordon survey locations; WCC

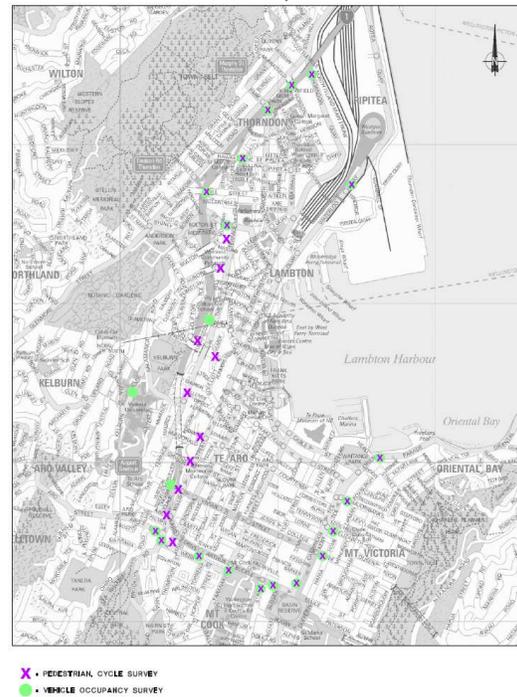
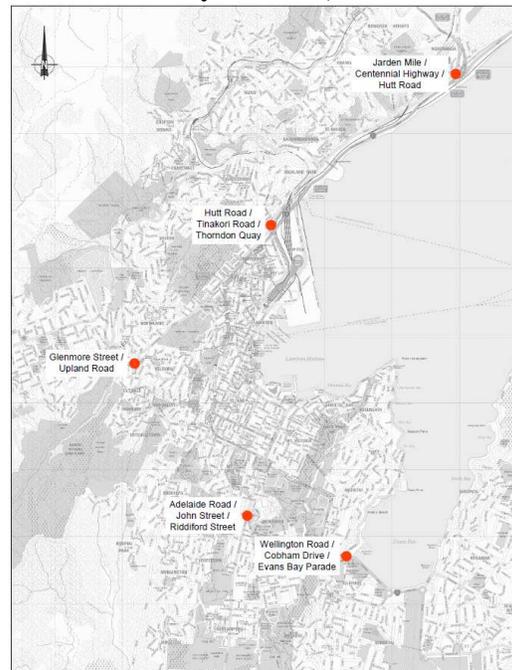


Figure 2. Wellington commuter cordon survey locations; WCC



The council also conducts an annual resident satisfaction survey, involving 600 residents, in February each year that looks at how well the city is achieving the goals councillors have set

during the annual plan process. This includes questions relating to mode of travel and preferred mode of travel on weekdays.

2.10 ACC claims

ACC collects data for injuries that have resulted in an ACC claim. This data is for all new claims, reported by the calendar year when the injury occurred. ACC data relating to cyclist injuries, by the scene of where the injury occurred are presented in this report.

2.11 National Injury Query System (NIQS)

The Injury Prevention Research Unit maintains a dedicated injury website, which utilises the NZHIS databases to provide injury information. The website allows the user to generate hospitalisation and mortality statistics for particular causes. In this report cyclist fatalities/injuries in motor vehicle (MV) traffic crashes and non-motor vehicle (NMV) traffic are presented.

3. Who is cycling and how often?

3.1 Bicycle ownership

Regional data on bicycle ownership and access is shown in Table 1 and Table 2 below. Information from the Short-Trip Active Mode Survey (Table 1) showed that 37% of respondents in 2006 owned or had access to a bicycle. This increased from 32% in 2004.

Table 1. Percentage of respondents owning or having ready access to a bicycle; Short-Trip Active Mode Survey

	2004	2006
Own a bicycle	27%	31%
Access to a bicycle	5%	6%
Own/access to bicycle	32%	37%
No access to a bicycle	68%	63%

Data from the Household Travel Survey (HHTS), shown in Table 2, provides more recent data. The 2007-2011 survey found that 47% of households had access to a bicycle in working order. Bicycle access has gradually increased over the last few years.

Table 2. Percentage of households with a bicycle in working order; HHTS

	Yes	No
2003-2007	46%	54%
2004-2008	44%	56%
2005-2009	45%	55%
2006-2010	44%	56%
2007-2011	47%	53%

Having access to a bicycle is a critical component in getting people to use a bicycle for their travel. In the region bicycle access has steadily been increasing, so more and more residents have the option of choosing cycling as a travel mode for their trips.

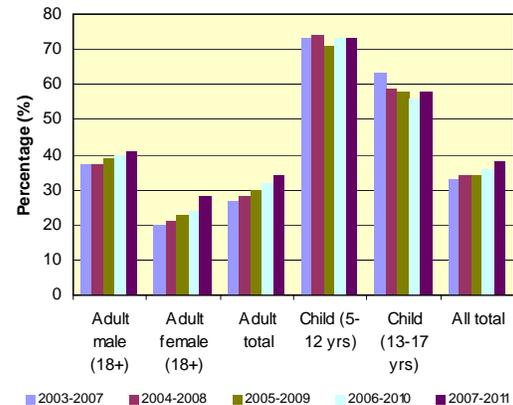
3.2 Cycling frequency

A number of sources provide data on the use of cycling in previous months. The proportion of the population who cycled in the last year, from the Household Travel Survey, is shown in Figure 3.

Data from the 2007-2011 survey period found that 34% of adults in the region, 73% of children aged 5-12 and 58% of children aged 13-17 had cycled within the last year. The proportion of the adult population that have

cycled in the last year has increased by 21% since the 2003-2007 survey. Over this time increases have been observed for both males and females, and even though males remain more likely to cycle than females this gap has been closing.

Figure 3. Proportion of the population who cycled in the last year; HHTS



Children are more likely to have cycled in the last year than adults. However, the proportion of children aged 13-17 cycling in the last few survey periods is lower than that observed in 2003-2007.

Information from the 2007/08 Active New Zealand Survey found that 29% of adults in the Wellington region had cycled over the last 12 months. Males were more likely to have cycled than females, 42% compared to 15%.

Table 3 uses data from the Transport Perceptions Survey (TPS) and shows the percentage of respondents that had made a trip in the region by cycling in the last 6 months.

Table 3. Percentage of respondents that had made a trip by cycling in the last 6 months; TPS

	Yes	No	Don't know
2003	19%	71%	10%
2004	17%	73%	10%
2006	21%	73%	6%
2008	23%	72%	4%

Total may not sum to 100% due to rounding

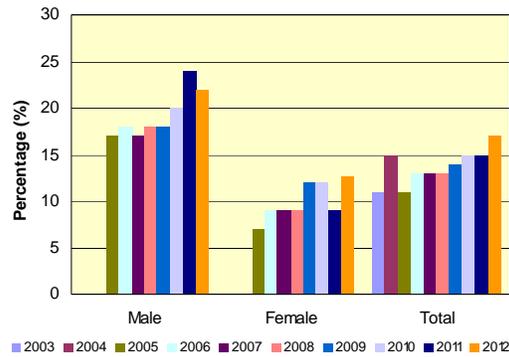
Over time increasing proportions of residents have made trips by cycling in the previous 6 months. In 2008, 23% of residents had cycled in the 6 months prior to the survey. Males were more likely to have cycled than females, with

32% of males and 15% of females cycling within the last 6 months.

In the 2012 update to the Transport Perceptions Survey the question was changed to look at travel within the last 3 months. The survey found that 15% of respondents had cycled in the region within the last 3 months. Males were twice as likely to have cycled as females, 20% compared to 9%.

Data on travel by cycling over the last 3 months is also collected in the Metlink Customer Satisfaction Survey, and is shown in Figure 4 by gender. In 2012, 17% of respondents had cycled in the last 3 months. Males were more likely to have cycled in the last 3 months than females, but in general both have seen gradual increases over time.

Figure 4. Proportion of residents who cycled in the last 3 months; Metlink



A 2003 survey by Sport New Zealand, formally SPARC, found that 18% of Wellington region respondents had cycled occasionally in the previous 3 months and 12% had cycled regularly. These numbers are much higher than those obtained from other surveys relating to cycling in the previous 3 months.

Finally, the Household Travel Survey also looks at the percentage of the population who have cycled in the last month. This has remained relatively unchanged at 17% (for the population 5 years and over) across the survey periods. Data relating to the adult population in the 2007-2011 survey period found that 14% had cycled in the last month.

3.3 Summary

Bicycle ownership/access has steadily increased in the region over the last few years, with just under half of households having access to a bicycle. Research shows that the

availability of a bicycle in a household is the single strongest predictor of travel by bicycle (Cervero, et al., 2009). So it is encouraging to see that this has occurred in the Wellington region, as at the same time that access to a bicycle has increased, use of a bicycle for travel around the region has also increased.

The proportion of adult residents travelling around the region by cycling, within the last year, 6 months, 3 months and 1 month have all increased over time. There is limited data relating to children, but data that is available suggests little change in the proportion of children cycling over the last few years but a decline compared to earlier in the decade.

Both males and females have increased their travel by cycling over the last few years. Males are more likely to cycle than females, but there is some evidence to suggest that this gap may be closing.

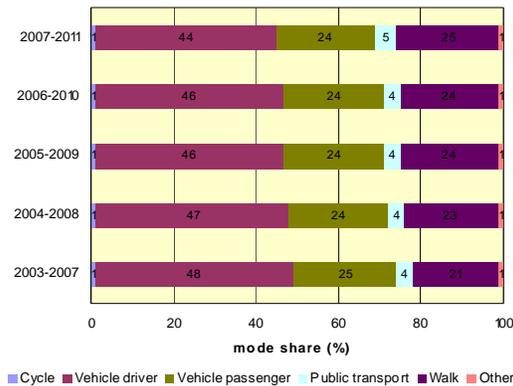
4. Cycle travel

4.1 Cycle mode share

4.1.1 All travel

Mode share of total trip legs (people aged 5 and over) from the Household Travel Survey is shown in Figure 5. The motor vehicle is by far the preferred mode of transport, with cycle trips only making up 1% of travel in the region. This has not changed over the measurement period.

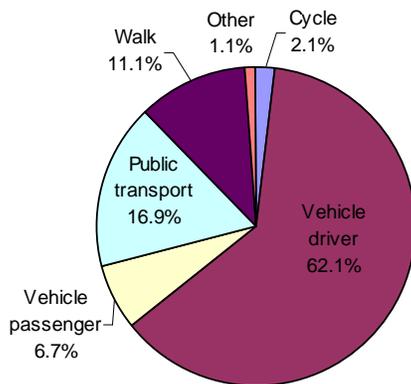
Figure 5. Overall mode share; HHTS



4.1.2 Travel to work

The Census collects mode of travel to work data for the day of the Census. The pie chart in Figure 6 shows mode of travel to work in the Wellington region in 2006.

Figure 6. Mode share of journey to work, census 2006

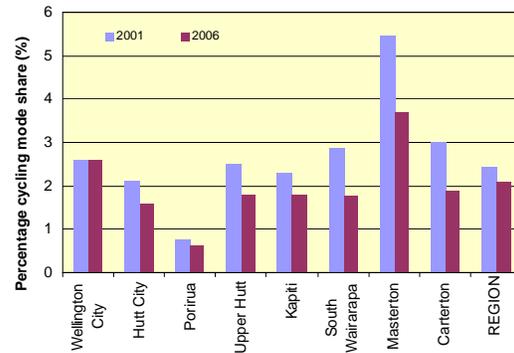


The Census found that the majority of travel to work is as a driver of a motor vehicle, with only 2.1% of journeys to work by cycling.

The population coverage of the Census means that it is also possible to analyse this data by territorial authority area (TA). Figure 7 shows

the cycling mode share of journeys to work by TA, for the 2001 and 2006 Census.

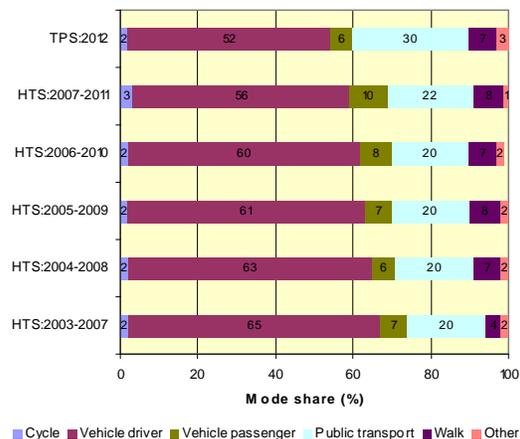
Figure 7. Cycling mode share of journeys to work by territorial authority; census



Cycling mode share of journeys to work has decreased in every TA, except Wellington city which remained unchanged, between 2001 and 2006. In both years Masterton district had the highest cycling mode share of journeys to work and Porirua city had the lowest.

More recent data on mode share of travel to work for full-time workers aged 16+, from the Household Travel Survey and respondents aged 13+ who were employed and/or in study from the Transport Perceptions Survey is shown in Figure 8.

Figure 8. Mode share¹ of travel to work, HHTS & TPS



¹ Data from the Household Travel Survey in the categories 'drive' and 'drive + walk' were combined to make the 'vehicle driver' category. 'Passenger' and 'passenger + walk' were combined to make the 'vehicle passenger' category. 'PT/walk or PT' and 'PT/car or PT/car/walk' were combined to make the 'public transport' category.

The 2007-2011 Household Travel Survey found cycling journeys to work made up 3% of travel to work. This has increased from 2% since the 2003-2007 survey.

The 2012 Transport Perceptions Survey found that 2% of journeys to work were by cycling. It also found that cycling mode share of journeys to work was slightly higher for residents of Wellington city TA at 4%. This also agrees with data from the 2011 Wellington City Residents Satisfaction Survey which found 4% of resident's cycle into central Wellington on weekdays. Interestingly, this survey found that 12% of residents would prefer to cycle into central Wellington most weekdays.

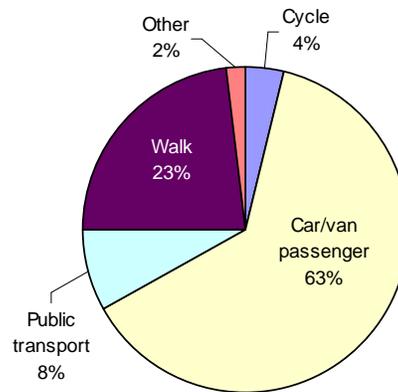
Although not regionally representative, mode share of travel to work can also be obtained from the region's Travel Plan Programme for Workplaces. Just focusing on the workplaces (n=8) that have been in the programme long enough to carry out an evaluation survey, it is found that these workplaces had a pooled cycling mode share of 6% that increased to 7% after participating in the travel plan programme for at least a year.

4.1.3 Travel to school

Although travel to school makes up only 4% of trip legs (Ministry of Transport, 2012), the health implications for children and the timing of school travel within the congested morning peak make it a topic of interest.

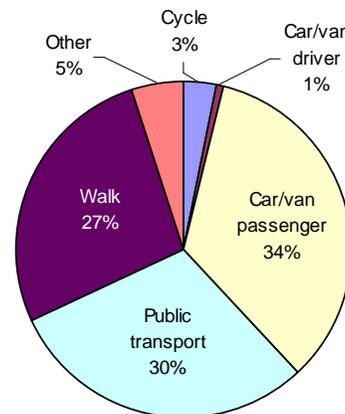
Regional travel to school information from the Household Travel Survey can be analysed by primary age children and secondary age children. Figure 9 shows that the majority (63%) of primary age children are driven to school. Only 4% of primary age children cycle to school.

Figure 9. Mode share of travel to school – ages 5-12, 2007-2011; HHTS



The travel to school behaviour of secondary age children differs to primary age children (see Figure 10). Higher proportions walk and use public transport, and lower proportions are driven. Once again, cycling only makes up a small proportion of travel to school, at 3%.

Figure 10. Mode share of travel to school – ages 13-17, 2007-2011; HHTS



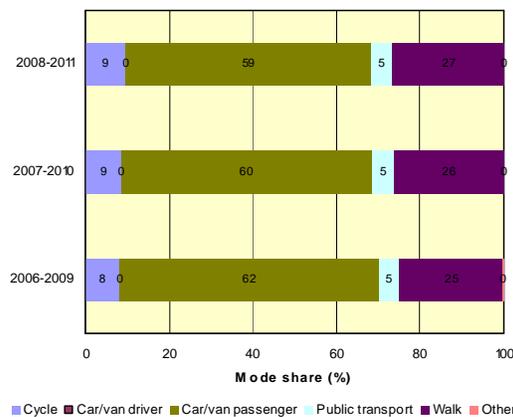
Around twenty years ago around a quarter of travel to school was by cycle but the use of this mode declined sharply through the 1990's (Ministry of Transport, 2009). Since this sharp decline there has been little change in the proportion of travel to school by cycle for both age groups.

Although not regionally representative, mode share of travel to school for primary age children can also be obtained from the region's School Travel Plan (STP) programme (see Figure 11). Once again it is found that the majority of primary age children are driven to school, but this data shows that in 2008-2011 cycling (which also includes travel by scooter or skateboard) accounted for 9% of travel to

schools that have signed up to the STP programme.

Just focusing on the schools in the STP programme that have been in the programme long enough to carry out an evaluation survey, it is found that at these schools cycling mode share has increased. On signing up to the programme these schools had a pooled cycling mode share of 9% that increased to 11% after participating in the programme for at least a year (Durling & Winslow, 2012).

Figure 11. Mode share of travel to school, STP programme



4.2 Cycle trips, distance and time

The information presented below is from the detailed travel reported by survey respondents over the two surveyed travel days in the Household Travel Survey. Across all modes, in 2007-2011, it was found that cycling only made up 1% of all our trips, 1% of our travel time and 0.4% of our distance travelled. Tables 4 to 6 show the number of trip legs cycled, the distance cycled and the time spent cycling for residents in the Wellington region respectively.

Table 4. Cycling trips; HHTS

	Trip legs per year (million)	Km per trip leg
2003-2007	8.0	2.9
2004-2008	8.2	2.9
2005-2009	6.8	2.7
2006-2010	5.6	3.2
2007-2011	7.1	3.5

The number of cycling trip legs decreased across the 2003-2007 to 2006-2010 survey periods, but increased by 27% (from 5.6 million to 7.1 million trips per year) from the 2006-2010 to 2007-2011 surveys. Similar trends were observed for distance cycled per year and time spent cycling per year.

Table 5. Cycled distance; HHTS

	Distance cycled per year (million km)	Km cycled per person per week
2003-2007	22.9	1.0
2004-2008	23.3	1.0
2005-2009	18.1	0.7
2006-2010	18.1	0.7
2007-2011	24.7	1.0

Comparing 2007-2011 with 2003-2007, we are now cycling fewer trips per year (7.1 million compared to 8.0 million), but these trips must be getting longer as distance cycled per year has increased (24.7 million km compared to 22.9 million km). This is confirmed in Table 4, where it is seen that the average kilometres travelled per trip leg has increased from 2.9km to 3.5km.

Table 6. Time spent cycling; HHTS

	Time spent cycling per year (million hours)	Minutes cycled per person per week
2003-2007	2.3	5.9
2004-2008	2.3	5.6
2005-2009	1.6	4.0
2006-2010	1.7	4.1
2007-2011	2.3	5.6

The distance cycled per person per week is unchanged at 1.0km, and the time spent cycling is slightly lower (5.6 compared to 5.9 minutes per person per week). This suggests that the average pace of cycling has decreased.

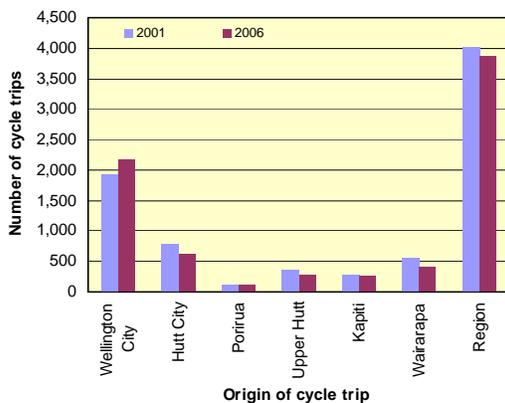
Cycle trips to work

The census collects travel to work data for the day of the census. The number of cycle trips to work on the 2001 and 2006 census days is

shown in Figure 12. Across the region the number of cycle trips to work has decreased by 3.4% from 2001 and 2006.

Cycle trips to work originating in Wellington city and Porirua city are the only areas to experience increases in cycle trips to work from 2001 to 2006. The number of cycling trips in all other areas has experienced declines.

Figure 12. Average weekday cyclist counts in and around Wellington city

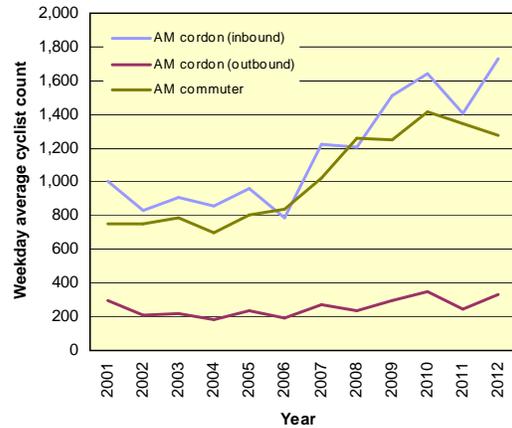


The decline in the number of cycle trips was mainly due to the decrease in trips originating and ending within the same territorial authority area. For example, in 2001 there were 498 trips to work that originated and ended in Hutt city, but this had decreased to 336 in 2006. For Porirua trips these decreased from 252 to 162, Kapiti trips decreased from 225 to 201 and Wairarapa trips decreased from 456 to 312.

Wellington City Council conducts annual monitoring surveys on cycle flows in and around the city. The surveys are conducted each day during the weekday morning peak, between the hours of 7am and 9am, so for the purpose of this report all trips are assumed to be trips to work.

The weekday average count (2 hour period) of cyclists crossing the Wellington CBD cordon, and the commuter cordon are shown in Figure 13.

Figure 13. Average weekday cyclist counts in and around Wellington city; WCC



There was little change in cyclist numbers in and around Wellington city from 2001 to 2006. Since this time there have been steady increases in cyclists numbers, especially those crossing the Wellington CBD cordon inbound and the commuter cordon. In 2012, the numbers of cyclists crossing the Wellington CBD cordon inbound (1,733) and the commuter cordon (1,274) were around 70% higher than 2001.

The numbers of cyclists crossing the Wellington CBD cordon outbound are much lower than those crossing inbound, but these numbers have increased by just over 10% since 2001.

4.3 Short-trips

The Regional Land Transport Strategy promotes cycling as an alternative to travel by private vehicle for short and medium length trips. Nationally it has been found that short trips, less than 5km, make up a large proportion of household travel (O’Fallon & Sullivan, 2008) Of trips less than 5km in the Wellington region, the Household Travel Survey found that only 1.5% were cycled in 2007-2011. This has increased slightly from 1.3% in 2005-2009.

The Short-Trip Active Mode survey collected information on short-trip travel in the previous 24 hours. As shown in Table 7, large proportions of respondents made short-trips in the previous 24 hours. In 2009, 79% of people made a short-trip up to 2km in length, with only 4% cycling a short-trip up to 2km in length. The proportion cycling short-trips has increased slightly over the survey periods.

Table 7. Percentage of respondents that made short trips in the previous 24 hours; Short-Trip Active Mode Survey

Year	Trips up to 1km		Trips 1-2km		Trips up to 2km	
	All modes	Cycle	All modes	Cycle	All modes	Cycle
2004	39	1	60	3	81	3
2006	36	1	71	3	89	3
2009	37	1	69	3	79	4

Of the short-trips that were cycled, the majority were for the purpose of returning home from somewhere or visiting the shops. Seven percent were to go to a place of work or study.

4.4 Summary

There are a number of data sources that can provide regional information on our travel choices including cycle travel. All of these sources show that the motor vehicle is by far the preferred mode of transport in the region. Wellington region also has a high proportion of trips taken by public transport and walking but cycling trips only make up a very small percentage of our travel.

Cycle trips make up 1% of all our travel, 1% of our travel time and 0.4% of our distance travelled. Household Travel Survey data on cycle trips, distance cycled and time spent cycling per year decreased from 2003-2007 to 2006-2010 but have all increased over the last survey cycle.

Comparing cycle behaviour from the 2007-2011 survey with that from the 2003-2007 survey it is found that we are cycling fewer trips per year, but these trips are getting longer. This has resulted in no change in the distance cycled per person per week, which is calculated to be 1km per week.

Travel to work by cycling accounts for between 2-3% of trips to work. The data indicates little change or a slight decline in cycling trips to work from 2001 to 2006, but there is evidence that cycle travel to work has increased over the last few years. Of particular note is the large increase in cyclists in and around Wellington city.

Travel to school data is more variable. The Household Travel Survey data shows around 4% of children cycle to school, whereas the region's School Travel Plan (STP) programme

data has around 9% of children cycling to school. However, this STP data is not regionally representative, and the cycling category also includes children travelling by skateboard and scooter, so this may account for the observed differences.

The increase in children being driven to school over the last 20 years has serious health implications for our children (Ministry of Transport, 2009). So it is encouraging to see that children at schools in the STP programme have increased their cycling mode share on exposure to the programme.

Cycling tends to be promoted as an alternative mode choice for short and medium length trips. Short-trips make up a large proportion of household travel but only a small proportion are cycled. In 2007-2011, 1.5% of trips less than 5km were cycled and in 2009 4% of trips less than 2km were cycled. These have both increased slightly over the last decade.

Cycling trips currently only make up a small proportion of our trips. However, there is evidence that after little change in cycling trips and mode share at the beginning of the millennium, cycling travel across the region is now increasing. Wellington also has a high number of trips taken via public transport and walking, but bringing about growth in cycling has the potential to significantly grow the sustainable transport mode share in the region.

5. Cycle Safety and Risk

Perceived safety issues are a key barrier to cycling and these may be compounded in the future due to more vehicle traffic for cyclists to contend with on the roads. However, there is also evidence that higher levels of cycling coincide with increased cycling safety (Turner et al., 2006; UK Department for Transport, 2010).

Cyclist safety is an area of high concern in the Wellington region (Greater Wellington Regional Council, 2010) and an area of medium concern nationally, under Safer Journeys (Ministry of Transport 2010). Crash data reported by Police is the main way in which road safety is monitored, however as more cyclists are injured in non-motor vehicle incidents this data only presents the ‘tip of the iceberg’.

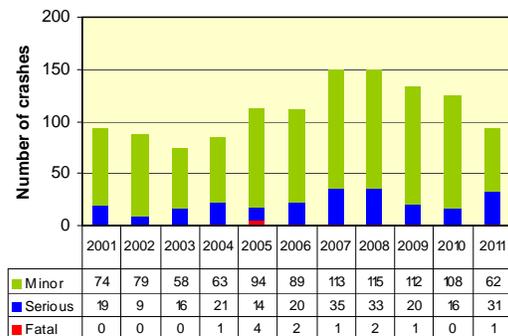
This chapter presents data not only from Police road crash reports but from other injury data collections to provide a broader picture of cyclist injury incidents in the region.

5.1 Cyclist injury crashes

Information from the Crash Analysis System (CAS), relating to on road cycle crashes, shows that in the 2007-2011 period cyclists were involved in 12% of all injury crashes and 14% of fatal and serious injury crashes.

The number of cyclist injury crashes from 2001 to 2011 is shown in Figure 14. The number of cyclist injury crashes increased from 2003 to 2008, then decreased each year since this time.

Figure 14. Cyclist injury crashes by injury severity, CAS



The number of fatal and serious cyclist injury crashes follows a similar trend, increasing from 2002 to 2007, and then decreasing from 2008 to

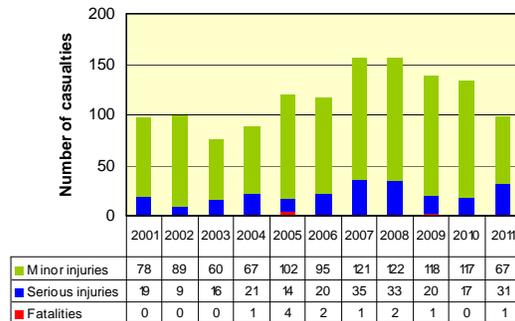
2010. However, over the last year fatal and serious injury crashes doubled from 16 to 32.

Crossing/turning was the movement characteristic most likely to be involved in cyclist injury crashes; 43% in 2007-2011. In these incidents vehicles tend to be crossing/turning across the path of a cyclist going straight. A crash can also be a combination of contributing factors, but poor observation (59%) and failing to give way or stop (41%) are the two factors most commonly involved in cyclist injury crashes.

5.2 Cyclist casualties

In a single crash it is possible to have more than one injury. So for completeness the number of cyclist casualties on the regions roads is shown in Figure 15. In 2011, from 94 cyclist injury crashes on the region’s roads there was 1 fatality, 31 serious injuries and 67 minor injuries. As would be expected the trend over time in cyclist casualties is similar to that for crashes (see Figure 14).

Figure 15. Cyclist road crash casualties, CAS



The number of cyclist casualties on the Wellington region’s roads, by broad age categories, is shown in Table 8.

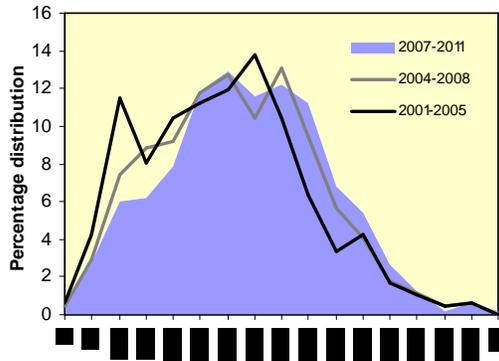
Table 8. Cyclist casualties on the road by age, CAS

	5-12 yrs	13-17 yrs	18+
2001-2005	50	44	373
2002-2006	54	42	389
2003-2007	50	50	445
2004-2008	46	54	517
2005-2009	51	48	559
2006-2010	47	49	572
2007-2011	40	40	566

In general, the number of school age cyclist casualties on the region’s roads has decreased slightly over the last decade, whereas the number of adult cyclist casualties has increased.

The effect of this is shown in Figure 16, which shows the age distribution of cyclists injured over the 2007-2011 period. The age distribution for the 2001-2005 and 2004-2008 periods are also shown.

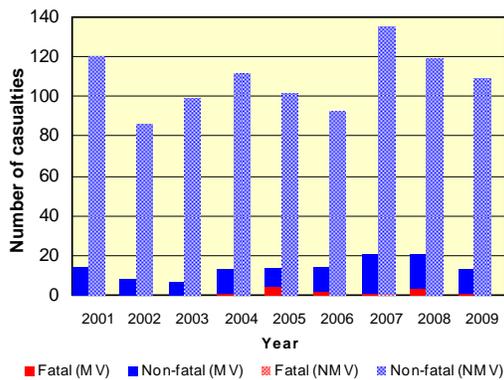
Figure 16. Age distribution of cyclist casualties on the road, CAS



The increase in casualties of older ages has resulted in a shift in the age distribution of cyclist casualties. With a decrease in the proportion of casualties in younger age groups (ages 5-29) and an increase in older age groups (45-59). This also follows a similar trend as observed nationally.

Data from the National Injury Query System (NIQS), based on hospital admissions and coronial records, also provide information on cyclist casualties. Figure 17 shows the number of fatal and non-fatal cyclist casualties as a result of motor vehicle crashes (MV) and non-motor vehicle incidents (NMV).

Figure 17. Cyclist motor vehicle (MV) and non-motor vehicle (NMV) casualties, NIQS



Over the last decade cyclist fatalities are more likely to have resulted from motor vehicle crashes than from non-motor vehicle incidents. However, higher numbers of cyclists are admitted to hospital as a result of non-motor vehicle incidents.

To result in a hospital admission it can be assumed that a cyclist injury must be relatively serious. Therefore, it is feasible to compare the fatal and serious injury data in Figure 15 from CAS to the data for motor vehicle casualties in Figure 17 from NIQS. Although CAS indicates higher numbers of cyclist injuries, both data sources show a similar trend with numbers peaking in the 2007 and 2008 years.

Of importance from this data source is the number of cyclist casualties as a result of non-motor vehicle incidents. Across the 2001-2009 period there has been 1 fatality and just under 1,000 hospital admissions from non-motor vehicle incidents. Cyclist hospital admissions from non-motor vehicle sources peaked in 2007 but decreased in 2008 and again in 2009. In 2009, there were 109 cyclist hospital admissions in the region from non-motor vehicle incidents.

The number of cyclist injuries in the Wellington region by broad age categories² is shown in Table 9. In general, the number of cyclist casualties of school age has decreased over the last decade, whereas the number of adult cyclist casualties has increased. This is similar to the trend observed for cyclist casualties on the region’s roads.

Table 9. Cyclist injuries by age, NIQS

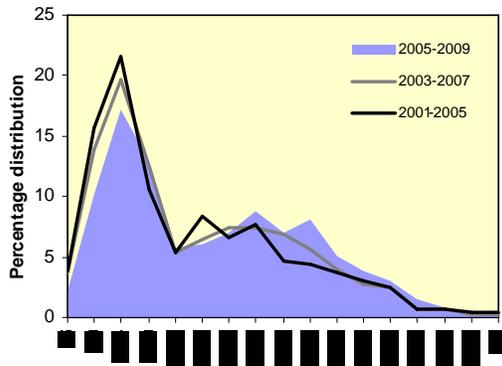
	5-14 yrs	15-19 yrs	20+
2001-2005	214	61	277
2002-2006	197	63	267
2003-2007	205	76	306
2004-2008	197	83	348
2005-2009	175	83	369

The age distribution of cyclist casualties is shown in Figure 18. This distribution profile is very different to that observed for cyclist casualties just on the road (Figure 16). Younger age groups are much more likely to be involved in cyclist incidents. However, over time there has been a decrease in the proportion

² Due to the way data is reported it was not possible to present the information in Table 9 in the same age categories as Table 8.

of injuries at younger age groups, with an increase in the proportion of injuries of 35-59 year olds.

Figure 18. Age distribution of cyclist casualties; NIQS



5.3 Risk on the road

If only the total number of road crashes involving cyclists is considered, it could be concluded that cyclists are quite safe on the road because there are very few crashes involving them. In fact, this is really a result of there being only a small number of cyclists on the road, compared to other road users.

Road crash statistics by themselves therefore do not tell us who is most at risk on the road because they don't take into account the time or distance travelled. The amount of travel can be combined with crash statistics to compare the risk of death and injury.

Cycling is the second most risky mode (Ministry of Transport, 2009) by time spent travelling and distance travelled (motorcycling is the most risky). As noted in previous sections, in 2007-2011 cycling only made up 1% of all our travel, 1% of our travel time and 0.4% of our distance travelled, but 12% of our injury crashes on the region's roads. Table 10 shows the region's cyclist casualties per 100 million km and 100 million hours.

Cyclist casualties per 100 million km and per 100 million hours increased steadily from 2003-2007 to 2006-2010 survey periods, but both have declined over the last survey period (2007-2011). Time spent cycling, and distance cycled (Tables 5 and 6) have increased over the last two survey periods but cyclist injuries (Table 8) have decreased resulting in the observed reduction of cyclist risk.

Table 10. Cyclist casualties per 100 million km and 100 million hours*; HHTS

	Casualties per 100 million.....	
	km	hours
2003-2007	449	44
2004-2008	502	51
2005-2009	689	76
2006-2010	697	76
2007-2011	474	50

*There were less than 100 respondents reporting cycling during the survey in each of these time periods so these results should be treated with caution

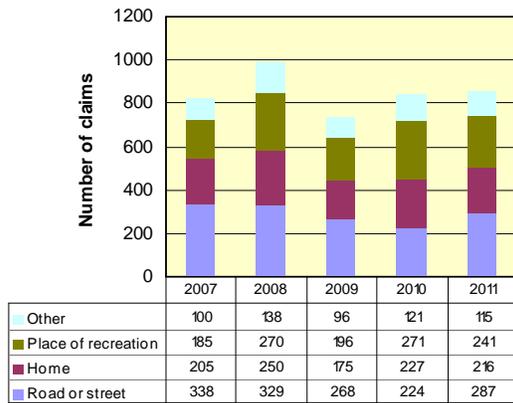
The small regional sample size means it is not possible to examine risk by age group. However, it is known that there has been a steady decline in the proportion of students cycling to school over the last couple of decades, and this has resulted in a decrease in the time and distance spent cycling by children (Ministry of Transport, 2011). Children have a lower risk of injury per time spent travelling but children cycle more slowly than adults and take longer to cover the same distance, so they have a higher risk per distance travelled due to the longer time exposure for travelling the same distance as older cyclists.

5.4 ACC claims

Another source of data which can provide a picture of cyclist safety is from ACC claims. The number of ACC claims related to cycling from the region's residents is shown in Figure 19. In 2011 there were 859 new ACC claims relating to cycling. Thirty-three percent (n=287) of claims were for incidents that occurred on a road/street, with the remaining occurring at home (25%, n=216), at a place of recreation/sport (28%, n=241) or other (14%, n=115).

The number of claims has fluctuated over the study period but has increased since 2009. The trend in road or street cycle claims is similar to the trend observed for serious injury casualties from CAS (Figure 15). From 2007 to 2010 there was a gradual decline in cyclist injuries/claims, followed by an increase from 2010 to 2011. However of particular note is the number of ACC claims compared to cyclist injuries reported through CAS (Figure 15) and hospital admission data (Figure 17).

Figure 19. Number of ACC claims relating to cycling; ACC



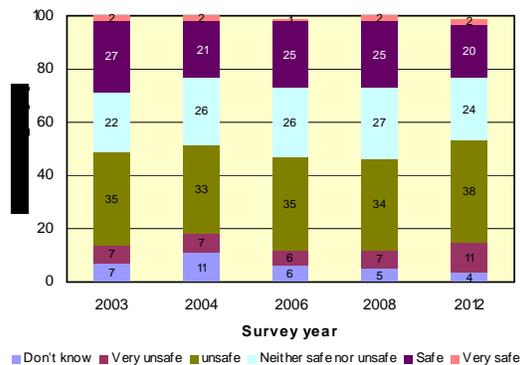
In 2011, CAS reported 98 serious/minor cyclist casualties whereas there were 287 ACC claims for on road cycle accidents (data from NIQS is currently not available for 2011). This suggests that CAS underestimates the number of on road cyclist incidents.

5.5 Perceptions of safety

It is known that people’s use or non-use of a particular mode of personal transport relates to how they perceive it. Therefore, a negative perception leads to resistance and non-use, while a positive perception catalyses usage.

The Transport Perceptions Survey collects perception information relating to cyclist safety. Figure 20 presents responses to the question: “How safe or unsafe do you think people in the Wellington region generally are when they cycle? Would you say....?”

Figure 20. Perception of cyclist safety; TPS



In 2012, 22% thought that cycling in the Wellington region was safe (includes “safe” and “very safe”), 24% thought it was “neither safe nor unsafe”, 49% thought it was unsafe

(includes “unsafe” and “very unsafe”) and 4% did not know. Across all years, very few residents (2%) rate cycling as “very safe”, and there has been a general decrease in the percentage of residents rating cycling in the region as “safe”.

Residents who had cycled in the last 3 months were significantly less likely to not know whether cycling in the Wellington region was safe or unsafe (0% responded “don’t know” compared to 4%). Residents who had cycled in the last 3 months were also more likely to rate cycling as unsafe (46% compared to 38%), however due to the small sample sizes this is not significant.

Transport Perceptions Surveys from 2003 to 2008 collected information on whether respondents would, or do, let a child (under the age of 12), cycle unsupervised in the vicinity of their home or to/from school (see Table 11).

Table 11. Percentage of respondents that would let a child (under the age of 12) cycle unsupervised in the vicinity of their home or to/from school; TPS

	In vicinity of home	To/from school
2003	34	72
2004	32	73
2006	37	74
2008	41	78

From 2003 to 2008 increasing proportions stated they would, or do let a child (under the age of 12) cycle unsupervised in the vicinity of their home (72% to 78%) or cycle to/from school (34% to 41%). Of those that would not let a child cycle unsupervised in the vicinity of their home or to/from school the main reason mentioned in the survey was:

- too much traffic

Other reasons included:

- No cycle lanes/narrow roads/poor condition of roads
- Hills/too steep
- Speeding traffic/drive too fast
- Poor driving/dangerous driving
- Too young/too immature
- Road/traffic danger/road safety

- Lack road sense/don't know road rules/unpredictable (this was more likely to be mentioned in relation to travel to/from school).

The latest Transport Perceptions Survey (2012) asked residents about how safe or unsafe children in their local area were if they cycle to school. The survey found that 34% thought they were safe (26% rated it as "safe" and 8% "very safe"), 15% thought they were "neither safe nor unsafe", 44% thought they were unsafe (40% rated it as "unsafe" and 4% "very unsafe"), and 6% did not know.

Parents of children at schools that signed up to the School Travel Plan programme in 2011 also supplied information on cycling safety to school. Parents were asked to what extent they agree or disagree that children are safe cycling to our school? Although not regionally representative, this data provides information from parents who can directly influence the mode of transport a child uses to travel to/from school. In 2011, it was found that 42% of parents agreed that children were safe cycling to their school (35% "agreed" and 7% "strongly agreed"), 42% disagreed (34% "disagreed" and 8% "strongly disagreed"), and 16% did not know.

5.6 Summary

As a region we greatly rely on the use of Crash Analysis System (CAS) data to provide a picture of regional cyclist safety. A wider look at other data sources suggests that CAS underestimates the number of on road incidents involving cyclists, and that on road cyclist injuries only make up a small proportion of all cyclist injuries that occur (10% of all cyclist hospital admissions, and 33% of all cyclist injury ACC claims). However, road incidents are a leading cause of cyclist fatalities in the region, and are more likely to result in serious injuries.

Cyclist injury data from all sources peaked in 2007/2008 but in general have declined since this time. Over the last decade there has also been a decrease in the proportion of injuries occurring amongst children, even though children remain most likely to be admitted to hospital from their injuries.

Most residents believe that cycling in the region is unsafe, and over time there has been a

decline in the proportion of residents that believe cycling in the region is safe. Cycling is found to have a higher relative risk than other modes; making up 1% of all our travel, but 12% of our injury crashes on the region's roads. Therefore perceptions of cycling safety, along with provision and quality of cycling facilities have an important part to play in increasing cycling levels.

6. Cycling: Stages of Change

Research shows that behaviour change is a process rather than an event and involves progress through a series of stages (Prochaska; Norcross & DiClemente, 1994). An individual’s stage of change is particularly useful for developing and monitoring cycling promotional strategies. This is because different strategies are necessary to move people to the next stage depending on their level of behavioural readiness (Gatersleben & Appleton, 2007).

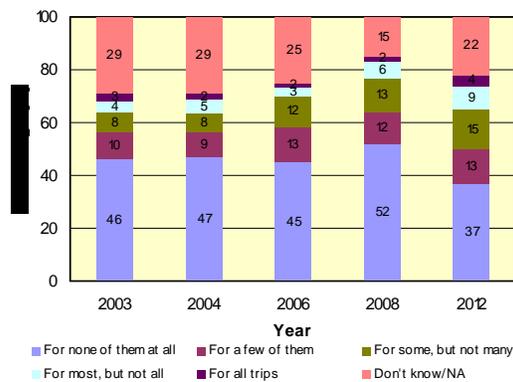
This chapter reports regional data relating to residents’ perceptions of the feasibility of cycling for work/study and shopping/leisure trips, along with available cycling stages of change data. This information is supplemented with information on people’s motivation to cycle, and perceived benefits and barriers to cycling.

6.1 Feasibility of cycling

The Transport Perceptions Survey collects information on whether residents considered cycling was a good option for the trips they made to work/study and shopping/leisure.³ Figure 21 and Figure 22 show the extent to which respondents consider cycling as a good option for trips to work/study and shopping/leisure respectively.

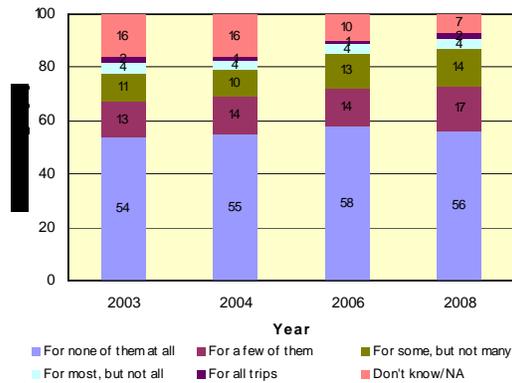
The five response categories provide a progression of behavioural change in relation to the feasibility of cycling for certain trips.

Figure 21. Feasibility of cycling for work/study trips, TPS



³ Information relating to shopping and leisure trips was not collected in the 2012 survey.

Figure 22. Feasibility of cycling for shopping/leisure trips, TPS



Comparing the two trip types it is found that higher proportions of the population would not even consider cycling for shopping/leisure trips. At the other end of the spectrum, only small proportions of the population would cycle “for most but not all” and “for all” their work/study and shopping/leisure trips.

Overtime there has been a gradual increase in the proportion of the population cycling “most but not all” and “all” their work/study trips. It is also encouraging to see that between the last two survey cycles there has been a large decrease (52% in 2008 to 37% in 2012) in the proportion that consider cycling a good option “for none” of their work/study trips.

Not unexpectedly, residents that had cycled within the last 3 months were significantly more likely to consider cycling as a good option (includes “for most but not all” and “for all of them”) for their work/study trips. Whereas residents aged 40-59 were significantly more likely to consider cycling as a good option “for none” of their work/study trips.

6.2 Stage of change measurement

A five stage, cycling stages of change question was asked in the 2003 Obstacles to Action Survey by Sport New Zealand, formally SPARC (see Table 12). This question related to cycling in general, rather than specific trips like journeys to work.

Just over half of respondents indicated little interest at all in cycling (56% in pre-

contemplation and contemplation). At the other extreme, relatively few placed themselves in the maintenance stages (14%). Twenty-seven percent were in the potential for change group (the action and ready for action stages).

Table 12. Cycling stages of change, 2003; Sport New Zealand

Stage of change	2003
Not even consider using a bicycle (pre-contemplation)	44%
Realise that you could use a bicycle but wouldn't actually do it (contemplation)	12%
Think seriously about the pros and cons of cycling but rarely do it (ready for action)	7%
Try cycling on some occasions (action)	20%
Cycle quite often (maintenance)	14%
Almost always cycle (maintenance)	
Not answered	3%

Cycling stage of change data specifically relating to travel to work/study was collected in the 2012 Transport Perceptions Survey. Five stage model results are shown in Table 13.

Table 13. Cycling stages of change for travel to work/study, 2012; TPS

Stage of change	2012
I would not even consider cycling to work/study (pre-contemplation)	58%
Sometimes I think about cycling, but never actually do it (contemplation)	22%
I think about the pros and cons of cycling, but rarely do it (ready for action)	7%
I cycle on some occasions (action)	6%
I cycle about half the time (maintenance)	1%
I almost always cycle to work/study (maintenance)	3%
Don't know	3%

Only 4% of respondents were in the maintenance stages, whereas at the other extreme, 80% had no interest in cycling (pre-contemplation and contemplation stages). Thirteen percent were in the potential for change group (ready for action and action). Positive behaviour change is more likely to occur with this latter group.

Respondents that had cycled within the last 3 months were significantly more likely to be in the maintenance and action stages and less likely to be in the pre-contemplation stages.

6.3 Motivation, perceived benefits and barriers

People's motivation to cycle, and their perceived benefits and barriers appear to be quite universal (Parkin et al., 2007), and residents in the Wellington region are no different.

The 2012 Transport Perceptions Survey found the top three reasons people cycled to work/study were:

- Exercise/fitness (51%)
- Cost/to save money (47%)
- Convenience/quicker (29%)

In previous Transport Perceptions Surveys information was collected on respondent's reasons for not cycling more often. The two main reasons, identified in each of the previous surveys were⁴:

- Don't have a bike/don't cycle/don't like cycling (37%)
- Safety/no cycle lanes/busy roads/traffic too fast (22%)

Other less mentioned reasons included:

- Terrain/hilly (9%)
- Weather conditions (7%)
- Convenience/habit (7%)
- Time factors (7%)
- Children factors (6%)
- Age factors (6%)
- Too much to carry (4%)

The two most mentioned barriers to cycling were consistently mentioned in each survey from 2003 to 2008. However, overtime the proportion mentioning "don't have a bike/don't cycle/don't like cycling" has decreased slightly (41% to 37%), whereas the proportion mentioning safety factors has increased (12% to 22%).

As would be expected from results presented earlier in this report, across all surveys females were more likely than males to identify "don't have a bike/don't cycle/don't like cycling" as a

⁴ Percentages shown in brackets are from the 2008 Transport Perceptions Survey.

barrier to cycling. However, this has decreased for both genders since 2003.

Safety factors were increasingly identified by females as a barrier to cycling from 2003 to 2008 (12% to 26%). Although this has also increased for men (13% to 17%), it was not of the same magnitude.

Safety factors were also the most mentioned barriers to cycling more often from residents that had cycled within the last 3 months. However, weather factors (18%), and convenience/habit (17%) became more prominent.

The Short-Trip Active Mode Survey also collected information on resident's reasons for not cycling short-trips. This information was only collected from respondents who owned or had access to a bicycle. Safety factors (14%), time factors (13%), weather factors (12%) and too much to carry (12%) were cited as the main barriers in the 2009 survey. This had changed slightly from the 2006 survey, where too much to carry (22%), habit (17%) and safety factors (11%) were the main reasons given for not cycling short-trips.

6.4 Summary

Research shows that behaviour change is a process rather than an event and involves progress through a series of stages (Prochaska; Norcross & DiClemente, 1994). The stages of change range from "pre-contemplation" (people at this stage do not intend to start the healthy behaviour in the near future, and may be unaware of the need to change) to "maintenance" (people at this stage have changed their behaviour).

Wellington residents are more likely to regard cycling as a possible option for their work/study trips than their shopping/leisure trips. Encouragingly, from 2008 to 2012 there has been a decline in the proportion of residents who do not think cycling is a good option for any of their work/study trips. This suggests a shift in attitude to cycling being regarded as a feasible transport option for travel in the region.

In saying this, data from 2003 found that 56% (pre-contemplation and contemplation stages) of residents had no interest in cycling, and 2012 data found that 80% of residents had no interest in cycling for their work/study trips.

Relatively few in the region place themselves in the maintenance stages for cycling, and the potential for change group (the action and ready for action stages) was 27% for cycling in general and 13% for cycling trips to work/study. Twenty-seven percent were in the potential for change group (the action and ready for action stages).

Evidence shows that different strategies are required to move individuals to the next stage of change depending on their level of behavioural readiness (Gatersleben & Appleton, 2007). Although it is found that individuals in the potential to change group are more likely to change their travel behaviour on exposure to travel behaviour change initiatives (Gatersleben & Appleton, 2007), those who are already contemplating cycling may experience a shift in attitude or intention, even if immediate behaviour change has not occurred.

Bringing about behaviour change is also related to a range of real or perceived factors that either facilitate or inhibit an individual's ability to cycle. Research shows that people's motivation to cycle, and perceived benefits and barriers are quite universal (Parkin et al., 2007), with only slight variations depending on locality.

Wellington residents' main motivations to cycle are exercise/fitness and cost/to save money followed by convenience/quicker. Numerous barriers to cycling were identified across studies. The two most frequently mentioned barriers are "don't have a bike/don't cycle/don't like cycling" and safety related factors. There is also evidence to suggest that barriers related to safety factors are much more prominent for females than males.

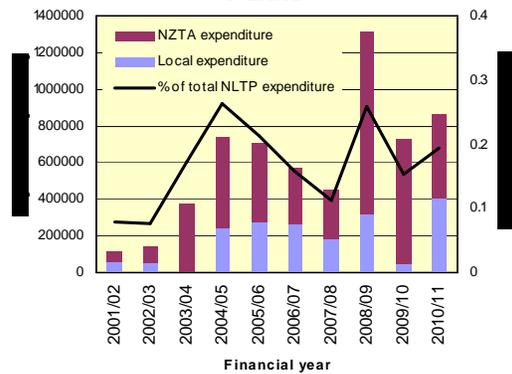
From this information it can be seen that knowledge of an individual's stage of change, along with an understanding of the motivations and perceived barriers to cycling, is particularly useful for developing and monitoring cycling promotional strategies.

7. Cycling Conditions

7.1 Funding

Funding information is collated by the New Zealand Transport Agency (NZTA). Expenditure in the region on cycling facilities is shown in Figure 23. Also, shown is the expenditure on cycling facilities as a percentage of all activities funded under the National Land Transport Fund (NLTF).

Figure 23. Expenditure on cycling facilities; NZTA



Expenditure on cycling facilities is significantly higher than it was around a decade ago. In the 2010/11 financial year, regional expenditure on cycling facilities was approximately \$865,000. This was 0.2% of NLTF expenditure in 2010/11.

The Communities at Risk Register (New Zealand Transport Agency, 2011) has been developed by NZTA to identify communities that are over-represented in terms of road safety risk. In the Wellington region the register highlights cyclists as an area of medium risk, and at TA level cyclists in Wellington city and Hutt city are identified as an area of high risk. Approved organisations should use the information contained in the register to support their application for funding from NZTA.

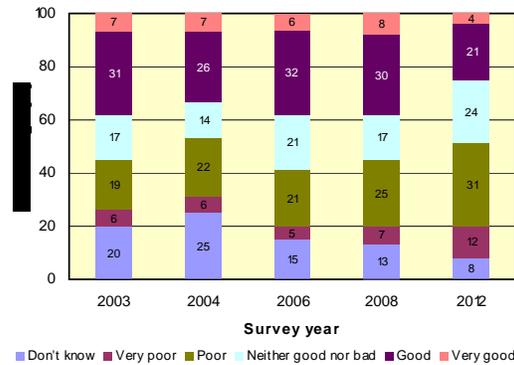
According to the NZTA Economic Evaluation Manual (New Zealand Transport Agency, 2010a), the health benefits for new and existing cyclists is only 16c/km, whereas the report “Valuing the health benefits of active transport modes” recommends that a health benefit value of \$2.14/km be applied to new cyclists and half of this to existing cyclists (New Zealand Transport Agency, 2008). If a higher value was given to valuing active modes it would be more

economic to justify greater expenditure on cycling infrastructure.

7.2 Ease of travel

Perceptions of the ease of cycling around the region can impact on people’s travel opportunities and choices. The Transport Perceptions Survey collects information on the ease of travelling around the region (Figure 24) through responses to the question: “How hassle free is it for a person to travel around the region by cycling? Would you rate it as....?”

Figure 24. Rating of how hassle-free it is to travel around the region by cycling; TPS



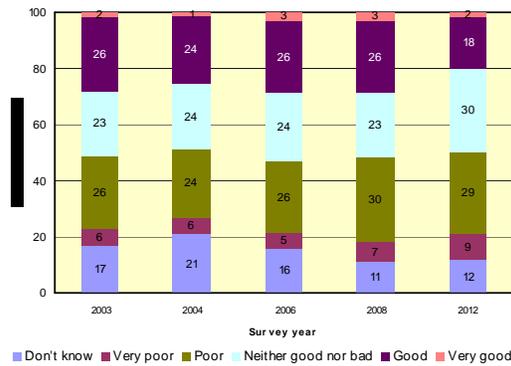
In 2012, 25% of resident’s thought that cycling in the Wellington region was hassle-free (includes “good” and “very good”), 24% thought it was “neither good nor bad”, 43% thought it was poor (includes “poor” and “very poor”) and 8% did not know. Since the 2003 survey, increasing proportions have rated the ease of travelling around the region by cycling as poor (including both includes “poor” and “very poor”). Fewer have rated the ease of travelling around the region by cycling as good (including both includes “good” and “very good”).

Also of note is the sharp decline in the proportion of respondents answering “don’t know”. While respondents who have cycled in the last three months were significantly less likely to answer “don’t know”, decreases are seen across all categories and demographics.

7.3 Level of service

Perceptions of the level of service⁵ for cyclists in the region is shown in Figure 25. In 2012, 20% thought the level of service for cyclists in the Wellington region was good (includes “good” and “very good”), 30% thought it was “neither good nor bad”, 38% thought it was poor (includes “poor” and “very poor”) and 12% did not know. Since the 2003 survey, increasing proportions have rated the level of service for cyclists as poor (includes both “poor” and “very poor”).

Figure 25. Perceptions of the level of service for cyclists; TPS



7.4 Cycle Infrastructure

7.4.1 Cycle paths

A list of key cycle infrastructure improvements relating to cycle paths, lanes and trails, over the last decade, can be found in Appendix 1.

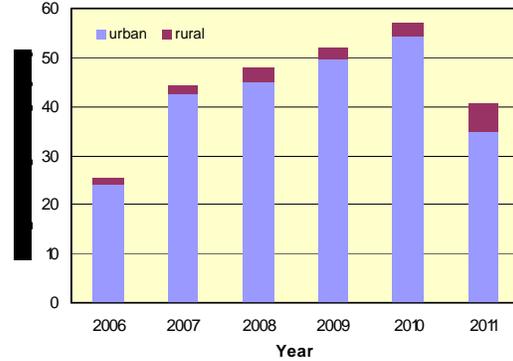
Estimates from 2012 cycling network map found that the Wellington region had approximately 44km of on-road cycle lanes and 68km of sealed shared paths. The region also has numerous kilometres of gravel and dirt tracks for recreational cycling.

Information on the length of cycle-ways in the region (see Figure 26) is also reported to the NZTA by territorial authorities (TAs).⁶ In 2011, it was reported that the region had 41km of cycle-ways. The large decrease in the reported length of cycle-ways across the region between 2010 and 2011 was due to a decrease in the reported length of cycle-ways in the Kapiti coast and Hutt city areas.

⁵ By level of service we mean getting around by bike on the region’s roads and paths is easy, safe and pleasant. There are sufficient places to park and lock up your bike at key destinations etc.

⁶ Note that this reporting is not mandatory and was not reported by all TAs across the measurement period.

Figure 26. Length of cycle-ways; NZTA



7.4.2 Public transport integration

Research has found that the integration of cycling and public transport can provide additional transport modal choice and flexibility in the use of existing public transport (New Zealand Transport Agency, 2010b). It can also increase cycling trips and public transport patronage.

In the Wellington region folding bikes can be carried on all public transport services in the region. Normal bikes cannot be taken on buses but can be carried free of charge on ferries and trains during off peak periods. During the peak, there is no charge for bike carriage, but spaces are limited.

Cycle storage at train stations

Bike parking is available at many railway stations. In 2009 there were 132 cycle storage spaces available at railway stations across the region. By 2010 this had increased to 182. An audit of cycle parking facilities in late 2010 (Cycling Advocates Network, 2010) found that usage of cycle parking, excluding cycle lockers, was low overall, except at Wellington station. However, where lockers are well-managed, there was a high level of utilisation and at some stations’ cycle storage facilities were oversubscribed. With cyclist-train numbers predicted to rise (New Zealand Transport Agency, 2010b) they recommended that the supply of secure bike parking increase by 10% each year.

In 2012, cycle storage spaces at the region’s railway stations had increased to 286, a 57% increase from 2010. However, the number of lockers has not increased.

Cycling to train stations

A survey of Wellington train passengers conducted during December 2005 found that 1% usually cycled to the train station (Greater Wellington Regional Council, 2006). Of those that cycled to the station nearly all lived within 3 to 5km of the station. In the same survey 24% of the regions train passengers indicated they would be “quite likely” or “very likely” to consider cycling to train stations in the future if suitable facilities were available.

Information from origin-destination surveys of the regions rail passengers in August 2011 also found that around 1% of passengers cycled to the station. As this survey was carried out during the winter it is likely that the percentage of rail passengers cycling to stations will be slightly higher during spring, summer and autumn months.

Bikes on trains

Train guards currently do not count the number of bikes travelling on the region’s trains as part of their patronage counts. However, a survey in July 2010 at Wellington station found that around 25 train passengers with bikes arrived at Wellington station during the morning peak period. On average these commuters caught the train with their bikes 4.2 days per week.

A similar survey of the afternoon peak in November 2010 found that around 60 train passengers with bikes depart Wellington station. The afternoon peak usage is significantly higher due to cyclists choosing to avoid climbing Ngaio and Ngauranga gorges, deteriorating weather/light; cyclists feeling State Highway 2 northbound is unsafe; or being exhausted at the end of the day.

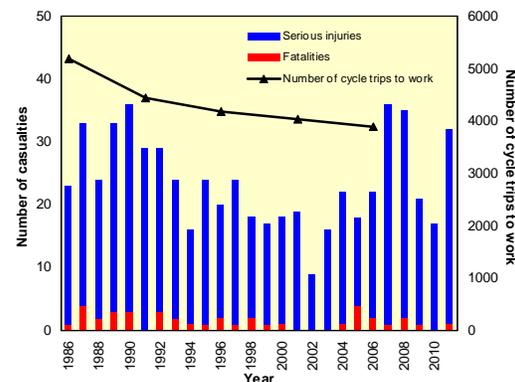
7.5 Helmet use

The Ministry of Transport’s annual survey of cycle helmet use, carried out in May, found that 93% of cyclists in the Wellington region wore helmets in 2011. Helmet use has varied over the study period but has increased from 88% in 2007.

Although out of the scope of this report, due to current debate around cycle helmet use it was thought appropriate to add a brief analysis of cycling numbers and road safety statistics across the period helmet use became mandatory.

Cycle helmet use became compulsory in January 1994. It is often stated that the number of cyclists decreased due to the introduction of the law. However, from Figure 27, although cyclist numbers did decrease over the period of introduction of the new law (6% decrease of cycle trips to work between 1991 and 1996), numbers had started to decrease prior to this (14% decrease from 1986 to 1991).

Figure 27. Fatal and serious cyclist road casualties and number of cycle trips to work; CAS and census



In 1994 when cycle helmet use became mandatory, there was a dip in fatal and serious cyclist casualties on the road. This was short lived with numbers increasing the following year.

Looking at long-term trends, in the eight years prior to the introduction of mandatory cycle helmets there were 18 cyclist fatalities and 213 serious injuries on the regions roads. In the eight years after introduction of mandatory cycle helmet use there were 9 cyclist fatalities and 147 serious injuries on the regions roads.

Although from this data it appears that after the introduction of mandatory cycle helmet use cyclist casualties have decreased, this has to be viewed in context of decreasing cyclist numbers. Comparing the eight years prior and post introduction of the cycle helmet law it is found that fatal and serious cyclist injuries decreased by 33%, whereas cyclist numbers decreased by 22%.

Cyclist fatalities and serious injuries in the region have decreased at a greater rate than cyclist numbers but from available data it is not possible to draw a causal link with the introduction of mandatory cycle helmet use.

7.6 Education & encouragement

Education and encouragement are two of the often cited factors needed for making a community cycling friendly (Pucher et al., 2010; Krizek et al., 2009).

7.6.1 Educating professionals and the public

Educating professionals

Government employees and other professionals working to promote, plan, and implement policies and provisions for cycling also need opportunities for continuing education, networking, and collaboration to further their work and profession.

The regional council facilitates a Regional Active Transport Forum that includes Police representatives, advocates from user groups, and road safety co-ordinators from the local authorities. The forum meets on a quarterly basis with the aim of facilitating information sharing across the region on cycling (and walking) issues.

There is also a Road Safety Forum that comprises representatives from ACC, Police, NZTA and road safety co-ordinators. This forum also meets on a quarterly basis and focuses on road safety education and training.

Guest speakers are often invited to present at these forums to encourage knowledge sharing and networking. The New Zealand Traffic Institute hosts an annual conference which is regarded as a premier forum for representatives from the traffic engineering, road safety and transportation planning community. The Cycling Advocates Network also host a national conference aimed specifically at cycling issues every one or two years.

Educating the public

Educating the public is a critical component of creating cyclist friendly communities. From roadside messages of share the road campaigns to cycle lights testing to cycle training programmes, the region is working to increase the safety of cyclists.

Share the Road Campaign

Internationally “Share the Road” is one of the most common phrases used in cycle education. The Wellington region has embraced this concept and developed its own campaign. This

started in 2005 with “Don’t Burst their Bubble”, this then became “Share the Road and most recently “Mind the Gap”. The most recent campaign has been running for three years and has included roadside banners, billboards, newspaper adverts and online resources. The main message of this campaign is to highlight the ideal passing space when motorists overtake cyclists, along with encouraging cyclists and motorists to obey road rules and show respect to other road users.

Cyclist and driver skills training

Cycle skills training programmes vary in their style of delivery, but in general cover topics on how to properly handle a bicycle, the rules of the road, and how to share the road with other users.

A number of cyclist training programmes are run as part of the regional council’s work on sustainable transport. Pedal Ready is a cycle skills programme, funded by Sport Wellington and supported by the Sustainable Transport team and Wellington Regional Council, which is provided free to schools in the Wellington region. The training involves a bike and helmet check, bike handling skills and exercises to build children’s confidence on a bike. The programme also trains instructors.

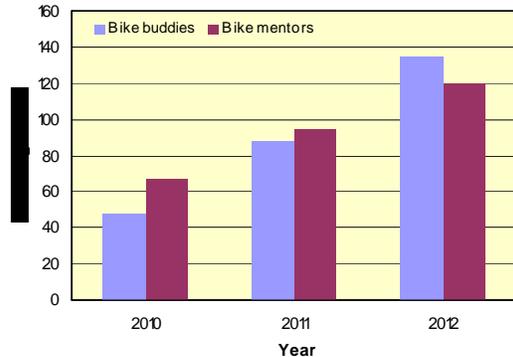
2012 is the first year of the Pedal Ready programme. In the July-September quarter, grade 1 skills training was delivered to 76 children, with 16 of these children continuing on with grade 2 training. During the same period there were two training sessions for instructor training for 19 participants. In the following quarter, grade 1 skills training was delivered to 370 children in the region, with 30 continuing on to grade 2. There was also one training session for instructors with 9 participants.

The “Active a2b” programme offers a three hour cycle training workshop for adults. The programme has been offered for two years with around 20 spaces available each year.

The region also offers a bike buddies scheme that matches experienced cyclists (bike mentors) with new riders in their area. Bike mentors ride with their buddy along the best routes for cycle commuting. They are there to help with building confidence and offer advice about keeping safe on the road. Bike buddies began in 2010 and the number of registered

buddies and mentors has increased since this time (see Figure 28). In 2012 there were a total of 134 bike buddies and 120 bike mentors registered in the region.

Figure 28. Cumulative total of registered bike buddies and bike mentors; GWRC



2012 is the third year in which bus/bike workshops have been run in the region. There are usually three workshops per year which can involve up to 20 bus drivers and cyclists. The workshops allow cyclists and bus drivers to switch places to understand each others' experiences on the road, so that all groups can understand how to safely co-exist on our roads. The reach of these workshops is much wider than just the participants, as promotional material and posters are placed in staff rooms and the workshops have been well-reported in local newspapers, and even on TV3 news.

Regional cycling maps

These maps, published by Wellington Regional Council, are designed to help cyclists choose a route that suits their individual needs and preferences. They include information such as sealed and un-sealed off-road paths; on-road cycle lanes and road shoulders; steep and very steep grades on through roads; busy arterial roads and highways. These maps also include safety tips of how best to share the road and safely navigate traffic. Over the last decade 60,000 copies of these maps have been printed for distribution.

7.6.2 Encouragement programmes and events

Go by Bike day/month

Go by Bike day is an annual event held at the beginning of February. The event has been run for 12 years and has grown in popularity. The day has become a chance for cycling advocates

to promote cycling as a healthy and fun alternative to driving. Encouragement and promotion events are organised around Go by Bike day and include commuter challenges, bicycle safety checks and breakfast meeting stations. In 2011 around 900 people turned up to the Wellington city Go by Bike day breakfast, with further cyclists also attending a Go by Bike day breakfast in Lower Hutt and Upper Hutt. In 2012, sadly the timing with the first day of school and the weather on the day saw a decrease in attendance at the breakfast to around 500 people in Wellington city.

The increasing popularity of Go by Bike day and growing awareness that cycling should be promoted as an alternative to driving on more than one day saw the development of Go by Bike month within the region. February is now the region's Go by Bike month and has been running for six years. The month provides a bigger window of opportunity to offer encouragement programs and events related to cycling.

Bike the Trail

Bike the Trail is a promotional ride along the Hutt River Trail in Lower Hutt. The event promotes cycling as a healthy and fun way to get around, and raises awareness of the Hutt River Trail as a cycle route. The event was previously called Valley to Sea Cycle Ride but no data was collected.

Bike the Trail began in 2006 with the number of cyclists participating varying over the event. The highest number of cyclists participating was 1,853 in 2008 and the lowest was 728 in 2011. In 2012 1,000 cyclists participated.

Table 14. Cyclist counts in bike the trail; HCC

Year	Count
2006	1200
2007	986
2008	1853
2009	1634
2010	1716
2011	728
2012	1000

Active a2b

Active a2b is a health and wellbeing encouragement programme run by the Regional

Council and supported by health partners to encourage employees to cycle and walk to/from work. The programme offers tools, promotional gear, challenges, events and social support. The programme has been successfully run for three years and has significantly increased participant's cycling trips to work.

Spring to the Street

Spring to the Street is the Regional Council's fun three week sustainable transport challenge. It coincides with the start of daylight savings and encourages participants to give their car a "spring break" and travel on foot, by bike, public transport and even carpool.

Spring to the Street began in 2011 with 1750 individuals, 190 teams and 110 workplaces from around the Wellington region participating. In 2012 there were around 1500 individuals, 156 teams and 113 workplaces.

7.7 Summary

Funding for cycling goes towards cycling facilities, new and improved infrastructure and travel demand management programmes. Regional expenditure is reported to NZTA but other than expenditure on cycling facilities, all other expenditure is grouped together with walking. Expenditure on cycling facilities in the region however, has significantly increased over the last decade, but in 2010/11 was only 0.2% of total expenditure through the National Land Transport Fund.

Although regional expenditure on cycling facilities has increased there has been a decrease in the proportion of the region's residents that perceive the level of service for cyclists as good, and that cycling round the region is hassle-free. In fact, in 2012 around 40% of residents rated the level of service for cyclists and the ease of cycling around the region as poor.

According to the NZTA Economic Evaluation Manual (New Zealand Transport Agency, 2010a), "cycling and passenger transport are complementary modes". Although the Wellington region has a high level of public transport use, integration with bicycle travel is low. In 2011 only around 1% of train passengers integrated their trip with bicycle travel. In other cities with high public transport use, integration with bicycle travel has allowed for greater patronage (particularly where Park

and Ride facilities have reached capacity). New Zealand research also shows that cycle-public transport integration is economically justified with benefit-cost-ratios from 2 to more than 10 depending on the centre and the scenario (New Zealand Transport Agency, 2010b).

Education and encouragement are also needed to assist in making a community cycling friendly. For example both cyclists and motorists need education on how to safely share the road and navigate traffic. Encouragement is needed to promote the spread of cycling as a means of transport, recreation and physical activity.

The region implements numerous programs and events in relation to cycling education and encouragement. Although education and encouragement efforts are potential contributing factors to increasing cycling levels and safety, establishing direct links is difficult. As a region it is only over recent years that data related to the region's programs and education efforts has been collected. This data enables evaluations of these activities to be conducted.

8. Discussion

The literature shows that increasing cycling is clearly in the public interest (Ministry of Transport, 2008; New Zealand Transport Agency, 2008; Pucher et al., 2010). Where cycling levels are higher, obesity, high blood pressure, and diabetes levels are lower. Higher levels of cycling also coincide with increased cyclist safety and higher levels of physical activity. As this report indicates, as a region we are making progress towards increasing cyclist numbers and safety, but much more remains to be done.

Bicycle ownership/access has steadily increased in the region over the last few years, with just under half of households now having access to a bicycle. Research shows that the availability of a bicycle in a household is the strongest single predictor of cycling for transportation (Cervero et al., 2009). In the Wellington region there is also evidence across a number of data sources that the proportion of residents travelling around the region by cycling is increasing. However, cycle use is low compared to other transport modes making up only 1% of all our travel, 1% of our travel time and 0.4% of our distance travelled.

Males are more likely to cycle than females but both have increased their travel by cycling over the last few years. There is also some evidence to suggest that this gap may be closing, with greater increases in the proportion of females cycling over this time.

Despite the growth in cyclist numbers over the last few years many of the region's residents have reservations about making the switch to cycling. Other than not having access to a bicycle, residents identified safety, environmental influences and convenience as their main barriers to cycling. Research shows that people's perceived barriers to cycling are quite universal (Parkin et al., 2007), with only slight variations depending on locality. In the Wellington region, just under half of residents believe that cycling in the region is unsafe, and the level of service and ease of cycling around the region is poor. The growth in the number of motor vehicles on the region's roads over the last decade is also likely to have had an impact on the level of service that existing infrastructure can offer cyclists, and therefore resident's perceptions.

As a region, and nationally, we greatly rely on the use of Crash Analysis System (CAS) data to provide a picture of cyclist safety. A wider look at other data sources shows that, not only does CAS data underestimate the number of cyclist incidents on our roads, but cyclist injuries from road incidents only make up a small proportion of all cyclist injuries. However, road incidents are a leading cause of cyclist fatalities in the region, and are more likely to result in serious injuries.

Cycling does have a higher relative risk compared to other modes of travel (except motorcycling); making up 1% of all our travel, but 12% of our injury crashes on the region's roads. Across all injury data sources it was found that cyclist injuries peaked in 2007/2008 but have declined over the last few years. Over the last decade there has also been a decrease in the proportion of injuries occurring amongst children, even though children remain most likely to be admitted to hospital from their injuries. In the region, an increase in cyclist numbers has coincided with a decline in cyclist injuries. This phenomenon of a critical mass of cyclists as a factor in cyclist's safety is widely reported in both the national and international literature (Turner et al., 2006; UK Department for Transport, 2010). That is, more people cycling is negatively correlated to the number of accidents involving cyclists.

Research shows that behaviour change is a process rather than an event and involves progress through a series of stages (Prochaska, J. O.; Norcross, J. C.; DiClemente, C. C., 1994). Wellington residents are more likely to regard cycling as a possible option for their work/study trips than their shopping/leisure trips. Encouragingly, from 2008 to 2012 there has been a

decline in the proportion of residents who do not think cycling is a good option for any of their work/study trips. This suggests a shift in attitude to cycling being regarded as a feasible transport option for travel in the region. In saying this, data from 2012 found that 80% of residents had no interest in cycling for their work/study trips, and 13% were classed in the potential-to-change group.

Different strategies are required to move individuals to the next stage of change depending on their level of behavioural readiness. Although it is found that individuals in the potential to change group are more likely to change their travel behaviour on exposure to travel behaviour change initiatives, those who are already contemplating cycling may experience a shift in attitude or intention, even if immediate behaviour change has not occurred (Gatersleben & Appleton, 2007). Therefore, knowledge of an individual's stage of change, along with their motivations and perceived barriers to cycling, are particularly useful for developing, monitoring and targeting cycling promotional strategies and interventions aimed at increasing cycling.

Ultimately the decision to cycle is a behavioural one, and an individual will only engage in the activity when they have reached a certain level of behavioural readiness and once several criteria have been met. We are constantly learning about these criteria and how they influence cycling levels. Research shows that a number of factors contribute to the choice to cycle (Cervero, et al., 2009; Krizek, et al., 2009; Pucher, et al., 2010); these include environmental influences such as climate, residential density, and infrastructure; socioeconomic and demographic factors such as income, age, gender, and car ownership; and other factors including access to a bicycle, education and existing levels of cycling. Although these factors are related to cycling behaviour there is no "silver bullet" combination that leads to optimum cycling levels.

Through researching and compiling data for this report, there are several areas in need of improved data collection:

- Survey sample sizes tend not to be large enough to enable further analysis of for example age group and gender.
- Funding data is collated by NZTA, but data related to cycling is often reported with that of walking. It would be good to have these separated into two different categories.
- Trend data on the quantity of cycling infrastructure such as length of bike lanes, shared paths, bike trails, the number of cycle racks etc was limited.
- Data relating to public transport integration is sparse and ad hoc. Bike counts on trains could easily be carried out as part of the train guards usual patronage counts.
- Data collected at education and encouragement events is sparse, and at best is limited to participation levels.
- Information related to cycling for recreation is limited.

Despite limited data in certain areas, there is a wide range of regional data available related to cycling. This report has brought together and analysed this data to provide a fuller picture of cycling in the region to help measure our progress and effectiveness, and enable us to better understand resident's attitudes to cycling.

Although cycling is an option for many people, a considerable number of them choose to use other forms of transport, with many residents having reservations about making the switch to cycling. That said, there is considerable potential to grow cycling and increase the region's sustainable transport mode share as well as raise the profile of cycling. Recent data indicates

that cycling may be undergoing a revival, which in part may be due to petrol price increases and the economic climate. Although this gives grounds for some optimism, there is much that needs to be done to make cycling more convenient, safe and enjoyable.

There is no doubt that government officials and advocates seeking to increase cycling levels have a lot of work ahead of them. As previously outlined: a shared commitment at national, regional and local levels is required that puts design of vibrant, liveable urban areas at the forefront of encouraging cycling; integrates cycling into regional and local transport planning; and has a comprehensive range of initiatives to encourage cycling that are designed for local conditions (Ministry of Transport, 2008).

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Appendix 1

Appendix 1 provides a list of cycle infrastructure improvements over the last decade, in each territorial authority area.

- Ara Tawa shared path
- Karo Drive shared path
- Basin Reserve shared path
- Met Service to Kelburn via Botanic Gardens, now shared path
- Re-routing and upgrading of Hataitai and Newtown to City shared paths
- Transient/Highbury Fling shared paths, Aro Valley-Brooklyn-Highbury
- Cycle lanes and shared path between Oriental Bay and Evans Bay
- Safety works to Hutt Rd shared path, Ngauranga-Thorndon
- Thorndon Quay, southbound morning peak clearway
- Bunny Street/Thorndon Quay cycle lanes
- Kilbirnie cycle lanes and shared paths (Airport to City route)
- Birdwood Street footpath changed to shared path
- Northern Walkway (Te Ahumairangi) changed to shared path
- Shoulder treatment and cyclist warning signs on SH2, Ngauranga to Petone
- Wellington Waterfront shared path upgrades
- Various intersection treatments (e.g. advanced stop boxes and traffic light trigger diamonds)
- Various bus lanes
- Various 30 kph and 40 kph speed zones and traffic calming measures

Hutt city council

- Upgrades to Hutt River Trail
- Marine Drive shared path, Eastbourne
- Cycle lanes and shared paths around Petone overbridge/roundabout
- Eastern Hutt Road cycle lanes and shared path
- Wainuiomata cycle lanes (Parkway and Wainuiomata Roads)

Upper Hutt city council

- Hutt River Trail through to Te Marua
- Access to Rimutaka Rail Trail (SH2 underpass, and GWRC forestry road).
- Cycle lanes in vicinity of Maidstone Park
- Totara Park-Harcourt Park bridge

Porirua city council

- Kenepuru to Semple St shared path
- Okawai St to Porirua Station shared path
- Whitford Brown Ave cycle lanes
- Ara Harakeke shared path
- Bothemley Park shared paths

Kapiti Coast district council

- Otaihanga Road shared path
- Kapiti Coastal Cycleway & foreshore shared paths
- Mazengarb Stream and Rd shared paths
- Kapiti Road shared path
- Wharemauku Stream shared path
- KiwiRail shared path (Otaihanga Rd-Waterstone Ave)
- Waikanae River shared paths
- Tasman Rd shared path, Otaki
- Mill Rd cycle lane, Otaki
- Otaki Station shared path
- Paraparaumu cycle lanes (Kapiti Rd, Rimu Rd, Te Roto Rd, SH1 south of Otaihanga Rd)
- Parata St cycle lanes, Waikanae

Wairarapa

- Chapel Road cycle lanes, Masterton
- Colombo Road cycle lanes, Masterton
- Greytown Station Rail Trail
- Rimutaka Rail Trail upgrades

Glossary

ACC	Accident Compensation Corporation
CAS	Crash Analysis System
CBD	Central Business District
GWRC	Greater Wellington Regional Council
HCC	Hutt City Council
HHTS	Household Travel Survey
MV	Motor Vehicle
NIQS	National Inquiry Query System
NLTF	National Land Transport Fund
NMV	Non Motor Vehicle
NZHS	New Zealand Health Information Service
NZTA	New Zealand Transport Agency
SPARC	Sport and Recreation New Zealand
STP	School Travel Plan
TA	Territorial Authority
TPS	Transport Perceptions Survey
WCC	