

Wellington CBD Cordon Survey 2001-2019



ABSTRACT

An overview of findings from the annual cordon survey. A count of public transport passengers, active modes and motor vehicles crossing into the Wellington City CBD.

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Contents

1	Introduction	1
2	The surveys and cordon boundary	1
3	Active mode trends	3
4	Public Transport trends	5
5	Private motor vehicle trends	9
6	Summary of findings	12

1 INTRODUCTION

This report presents the results of surveys collected annually during March for the Greater Wellington Regional Council (GWRC) and Wellington City Council (WCC) at selected collection points around the Wellington City CBD between 2000 and 2019. This report describes recent trends in travel patterns and modal choice.

The report is divided into the following areas:

- the surveys and the geographical location of the Wellington City CBD cordon
- Active mode trends
- Public transport trends
- Private motor vehicle trends.
- A summary of the main findings and key results from the report.

2 THE SURVEYS AND CORDON BOUNDARY

Each year surveys are commissioned¹ to count vehicle (private and public transport), pedestrian and cyclists as they cross the notional 'cordon' into the CBD whether they are on a bus or walking or by taxi. This report presents cordon count data for the period 2000 to 2019.

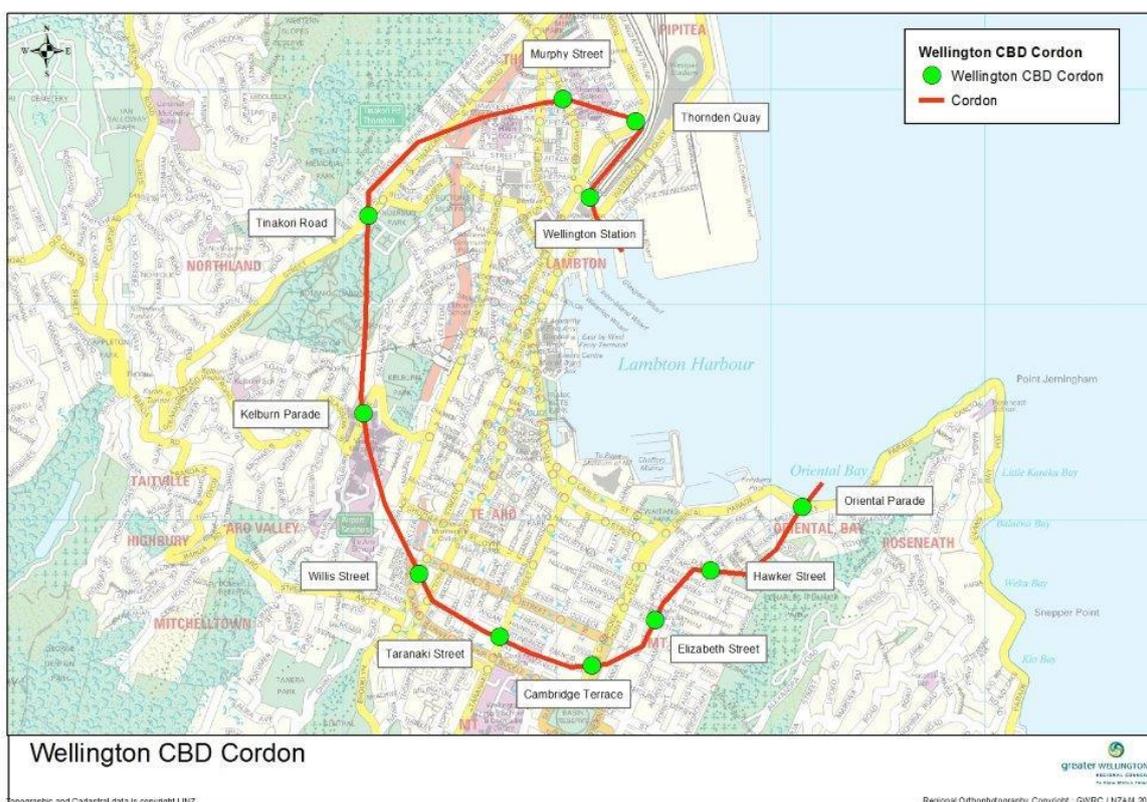
People are counted during the two-hour morning peak between 7am and 9am covering the following modes:

- active modes – walking, running, cycling
- public transport – passengers of rail, bus, ferry and cable car
- private and commercial motor vehicles – cars, light trucks, heavy trucks, vans, motorbikes, taxis and number of occupants

Figure 1 shows broadly how the Wellington City CBD cordon is defined. All inbound vehicles, passengers, public transport users, pedestrian and cyclists crossing the cordon are captured by the various surveys.

¹ Commissioned by the Wellington City Council and Greater Wellington Regional Council

Figure 1: Map of the Wellington City CBD cordon



The green dots represent locations where commuters cross the cordon and this is approximately where surveyors are positioned to count people and vehicle type. The number of cordon crossing points, however, varies by mode – for example, all rail passengers cross the cordon at Wellington railway station, buses cross the cordon at select locations (corresponding to bus corridors), other motor vehicles have a greater number of crossing points to choose from whilst cyclists/pedestrians have the greatest number of crossing points to choose from, including walking/cycling only routes such as the waterfront.

The duration of the surveys vary by mode:

- bus and rail – occur on different days for one day survey
- motor vehicle surveys – three day survey
- cyclist and pedestrian surveys – average of data gathered across one week

Given that the survey duration varies between modes, combined with the variability of the Wellington weather potentially affecting travel choices from one day to the next, some short-term variation from one year to the next might be expected due to local factors and limitations with the data rather than changes in travel behaviour. A three year rolling average has been applied to annual data to smooth out fluctuations due to yearly variation.

Over the long-term, the data is a useful indicator of changes in travel patterns and behaviour and is used to illustrate long term mode shift.

3 ACTIVE MODE TRENDS

The active mode count is collected in the two-hour morning peak period (7-9 AM) and is the number of pedestrians and cyclists crossing the cordon heading towards the CBD, shown in **table 1**. Pedestrians and cyclists entering and exiting the cordon are represented in **figure 2**. A three year rolling average has been applied to the cyclist and pedestrian counts.

Pedestrians

Pedestrian numbers grew by 21.6% between 2000 and 2019, from a much larger base compared to cyclists, in absolute terms this is 2800 pedestrians. Inbound pedestrian counts have been down in the last five years, a net downturn of 5.4% and a decrease between 2018 and 2019 of 1.4%.

The downward trend in the number of pedestrians crossing the cordon seems to be at odds with population growth in the Wellington City. The population for Wellington city is estimated to have grown by 3% in the last five years.

A decrease in pedestrians crossing the cordon can be explained in part by:

- People travelling into the city via other modes e.g. cycling, bus or car
- People travelling outside the 7 to 9 am peak period
- More people living in the inner city compared to previous years
- Organisations/business relocating out of the CBD
- Variations from year to year due to weather etc.

Table 1: Active travel in the morning 2 hour peak (inbound only)

Year	Pedestrians	Cyclists	Total active
2000	8,703	746	9,449
2001	9,383	1,007	10,391
2002	9,145	862	10,006
2003	9,280	915	10,195
2004	9,284	865	10,149
2005	9,553	909	10,463
2006	9,586	869	10,456
2007	10,033	991	11,024
2008	10,221	1,072	11,293
2009	10,484	1,314	11,797
2010	10,348	1,454	11,802
2011	9,754	1,520	11,274
2012	9,912	1,593	11,506
2013	10,124	1,620	11,744
2014	11,061	1,709	12,770
2015	11,191	1,833	13,024
2016	11,213	1,899	13,112
2017	10,705	1,879	12,583
2018	10,734	1,816	12,550
2019	10,587	1,862	12,449
<i>Net change 2000-2019</i>	21.6%	149.5%	31.7%
<i>Net change 2015-2019</i>	-5.4%	1.6%	-4.4%
<i>Net change 2018-2019</i>	-1.4%	2.6%	-0.8%

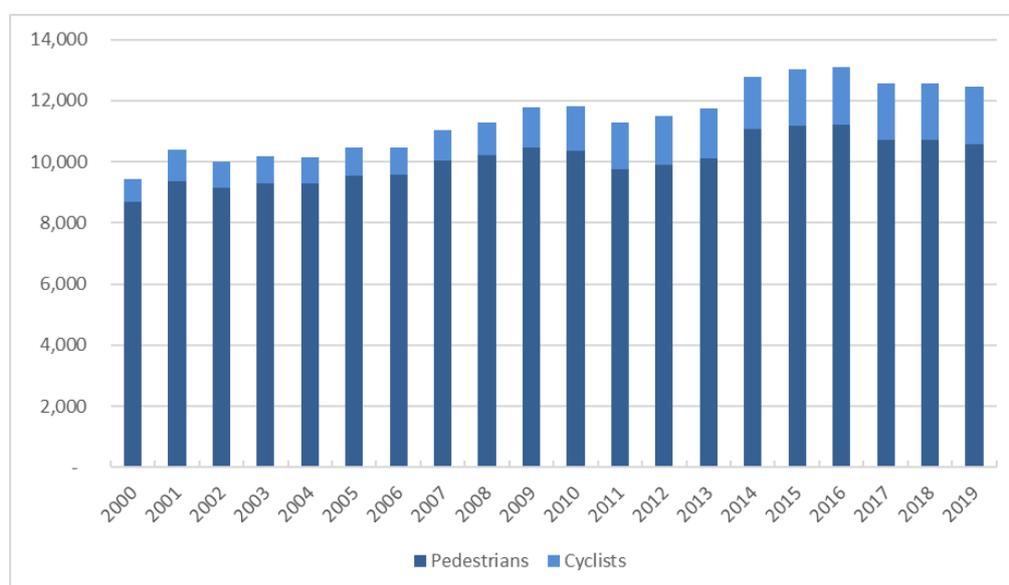
The active mode count increased between 2000 and 2019 by 31.7%, with the number of walkers and cyclists consistently above 12,000 from 2014 to 2019.

Cyclists

The data shows the average number of cyclists crossing the cordon (inbound only) between 7 and 9 AM from Monday to Friday. **Table 1** and **Figure 2** show that between 2000 and 2019 there was strong growth in cycling numbers; net growth in cyclists was 149.5% or an increase of 1,100. The majority of this growth appeared to occur in the period 2006 to 2010, followed by steady growth to 2017. Over the last five years only a 1.6% increase and between 2018 and 2019 cyclists increased by 2.6%.

Cyclist trips (like pedestrian) are influenced by weather conditions and this can explain some of the fluctuations from year to year. Additionally, the cordon survey takes place over one week in March so is only a snapshot of commuter activity. Cycle counters are now installed around the Wellington area which will provide more reliable data on cyclist numbers in the CBD and city suburbs.

Figure 2: Active travel crossing the cordon during morning peak – inbound only

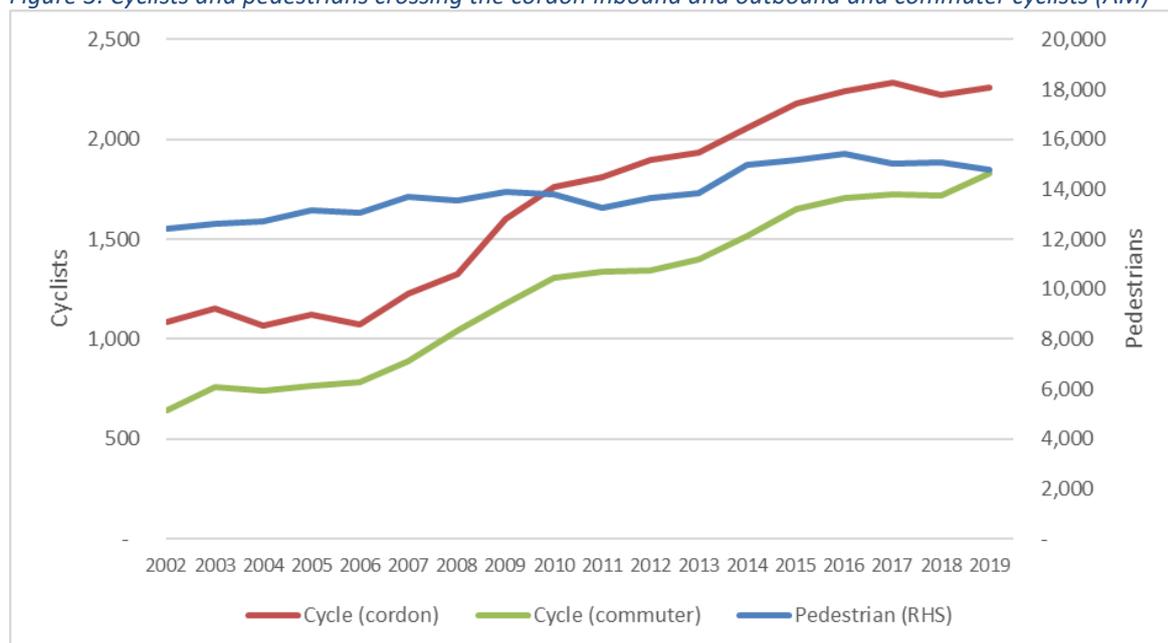


The Commuter survey records cyclists in other parts of Wellington City - further out from the cordon boundary to obtain a city wide view of cyclist activity. Cyclists are counted at five intersections² and over the same weekday morning peak times (as the cordon count).

Figure 3 shows both the cordon and commuter cyclists with pedestrians at morning peak times. The Commuter cyclists and cordon cyclist series follow a similar trajectory from 2000 to 2019. This is not unreasonable since there will be some overlap with cyclists counted in both surveys. The Commuter cyclists counts have increased by 319% from 2000-2019 and in the last five years a 10.8% increase. The Commuter survey started from a smaller base than Cordon cyclist count which would account for the higher net growth over the 2000-2019 period.

² Commuter cyclist survey covers five separate sites within the suburbs of Newtown, Kilbirnie, Kelburn, Thorndon and Ngauranga.

Figure 3: Cyclists and pedestrians crossing the cordon inbound and outbound and commuter cyclists (AM)



4 PUBLIC TRANSPORT TRENDS

Patronage counts on all types of public transport – rail, bus, ferry and cable car are shown in **Table 2**. A three year rolling average has been applied to passenger counts.

Between 2000 and 2019 public transport passengers increased by 44.4% from 20,600 to 29,748 for those passengers inbound between 7 and 9 AM into the Wellington CBD. **Table 2** shows that the harbour ferry made the greatest proportionate gains, increasing by 196.8% during this time. Rail has had strong passenger growth almost consistently from 2000 to 2019 with a net change of 58.3% growth also evident for bus at 29.2%. In contrast cable car passengers have reduced by 26.1%.

Patronage on all types of public transport increased in the last five years; between 2014 and 2019. Rail passengers³ increased by 15.2%, bus by 3.8%, ferry by 9.2% and cable car patronage by 4.0%. Note that rail and bus combined account for 99% of passengers in 2019, of which 56% were rail and 43% were bus.

Between 2018 and 2019 passenger numbers decreased across three out of four Public transport services (bus 1.3%, ferry 1.5% & cable car 0.6%) in contrast there was a 3.8% increase in rail passengers. **Figure 4** shows the trends in public transport passenger counts from 2000 to 2019.

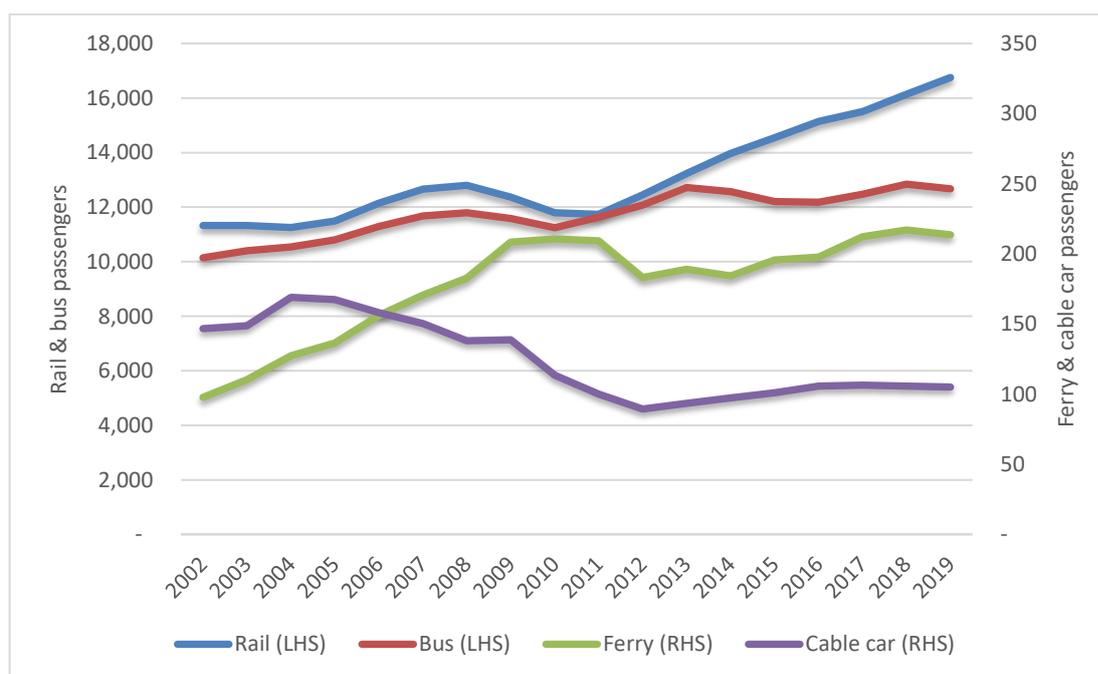
³ This refers to the number of people exiting Wellington railway station. Whilst these numbers could potentially include non-rail passengers walking through the station, the vast majority of people captured by the survey will be people who have just alighted from trains and are walking to the CBD, or towards the bus station to catch an onward bus service.

Table 2: Public transport passenger cordon count

Year	Rail (LHS)	Bus (LHS)	Ferry (RHS)	Cable car (RHS)	Total
2000	10,580	9,808	72	142	20,602
2001	11,948	10,116	92	135	22,291
2002	11,321	10,143	98	147	21,709
2003	11,320	10,404	110	149	21,982
2004	11,252	10,535	127	169	22,084
2005	11,487	10,798	136	167	22,589
2006	12,140	11,293	156	158	23,747
2007	12,656	11,677	171	150	24,654
2008	12,801	11,798	183	138	24,920
2009	12,369	11,579	208	139	24,295
2010	11,789	11,247	211	113	23,360
2011	11,740	11,627	209	100	23,676
2012	12,449	12,072	183	89	24,794
2013	13,237	12,720	189	93	26,240
2014	13,976	12,566	184	97	26,823
2015	14,543	12,207	196	101	27,047
2016	15,142	12,178	198	106	27,623
2017	15,501	12,478	212	106	28,298
2018	16,139	12,841	217	106	29,303
2019	16,753	12,676	214	105	29,748
Net change 2000-2019	58.3%	29.2%	196.8%	-26.1%	44.4%
Net change 2015-2019	15.2%	3.8%	9.2%	4.0%	10.0%
Net change 2018-2019	3.8%	-1.3%	-1.5%	-0.6%	1.5%

Note: A three year rolling average is applied to count data.

Figure 4: Public transport passengers crossing the cordon during morning peak



The number of ferry passengers increased from 2000 to 2009; from 2010 to 2015 numbers fluctuated and from 2016 to 2019 relatively stable around 210 passengers. Cable car trip numbers initially increased and fell after the 2004 peak to less than half the 2004 total in 2011. Since 2014 passenger numbers have been stable at around 105 passengers at morning peak (7-9am).

Figure 5: Arrival times at Wellington railway station

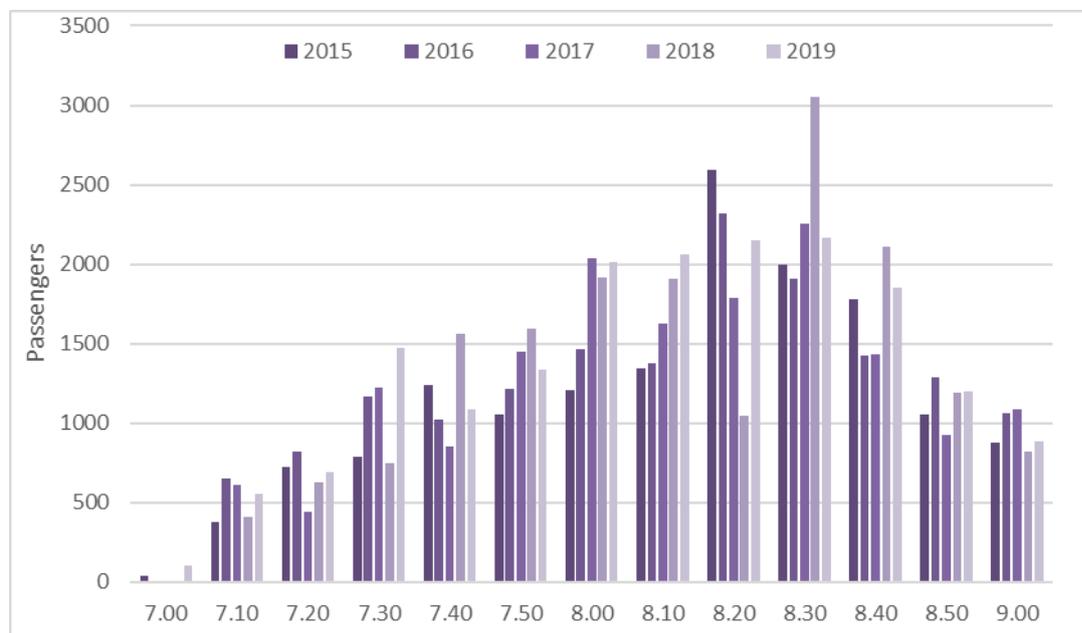


Figure 5 shows the exit profile for rail passengers leaving Wellington railway station in the AM peak, by 10 minute time period over the five years to 2019. It shows two peaks in passenger numbers; at 8:20 and 8.30am, when the majority of rail passengers arrive into Wellington.

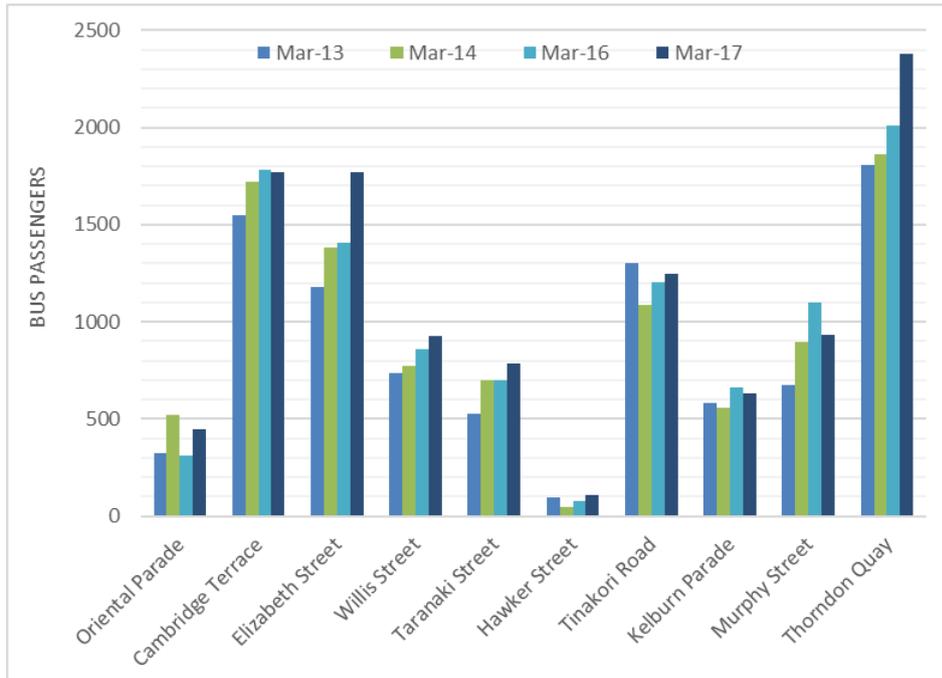
Table 3 shows that the peak counts for bus trips tend to be notably lower in the PM peak compared to the AM peak period, at 22% lower in 2017. (Note that these counts are only available for 2013-2017.) It is interesting to note that the count in the PM peak increased by 25% between 2013 and 2017, compared to a 5% increase in the AM peak. The ratio between the AM peak and PM peak counts in 2017 is 1.2:1, down from 1.44:1 in 2013 and steadily reducing since 2013.

Table 3: Bus AM and PM peak counts, 2013 to 2017

Bus count data	2013	2014	2016	2017	Net change 2013 - 2017
AM peak count	12,610	12,334	12,524	13,233	4.9%
PM peak count	8,775	9,546	10,097	10,989	25.2%
AM:PM peak ratio	1.44:1	1.29:1	1.24:1	1.20:1	

Figure 6 shows the bus passenger counts at the different cordon sites at pm peak times. The results are for the four years this afternoon survey has been conducted. Comparing passenger numbers from 2016 to 2017, significant growth (in absolute terms) in pm passengers for those buses exiting the cordon via Elizabeth Street and Thorndon quay. Passengers travelling to the eastern suburbs (Wellington city) travel via the Elizabeth street route and passengers travelling via Thorndon quay will likely be heading to the northern suburbs (Wellington city).

Figure 6: Passengers on bus routes for PM peak exiting the cordon



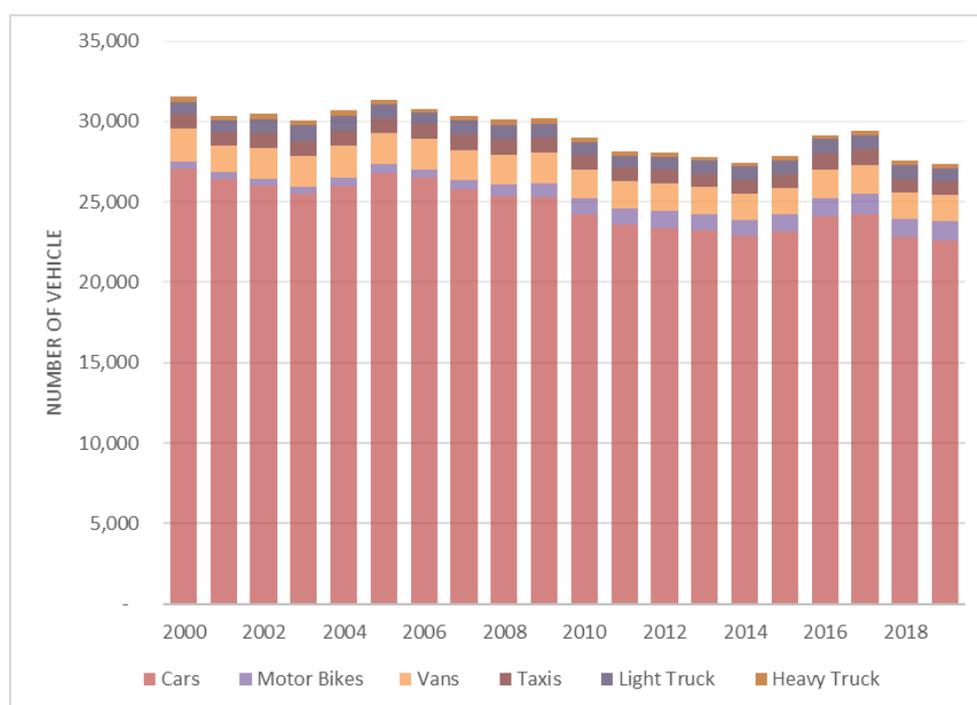
5 PRIVATE MOTOR VEHICLE TRENDS

The number of motor vehicles crossing the cordon fell between 2000 and 2019; the cordon results are shown with a three year rolling average in **Figure 7** and **Table 4**. Motor vehicles have decreased in absolute terms by 4,157 or 13.2% (from 2000 to 2019). The reduced vehicles numbers comprised of cars, a decrease of 16.7%, vans (22.6%), taxis (7.1%) and heavy trucks (13.2%). Increases were seen in numbers of motorbikes (213.3%) and light trucks (14.3%).

The decrease in private cars crossing the cordon can be explained in part by:

- People using alternative modes such as public transport or motorbikes
- People travelling outside the 7 to 9 am peak period

Figure 7: Motor vehicles crossing the cordon at morning peak



Private cars

Private cars account for 82% of all motor vehicles crossing the cordon in 2019. Over the five years to 2019, net car use decreased by 2.4% overall but increased during this period to a peak in 2017 (24,256 cars) and has decreased since. From 2018 to 2019, a decrease of 1.0%, in absolute numbers there were 230 fewer cars crossing the CBD cordon (based on a three year rolling average).

Motorbikes have proportionately shown the highest growth since cordon counts in 2000 and in the last five years, the number has grown by 18.3%. A high growth period occurred from 2006 to 2012 (110%), in the last year (from 2018 to 2019) the number of motorbikes showed a net growth of 128 or 9.8%.

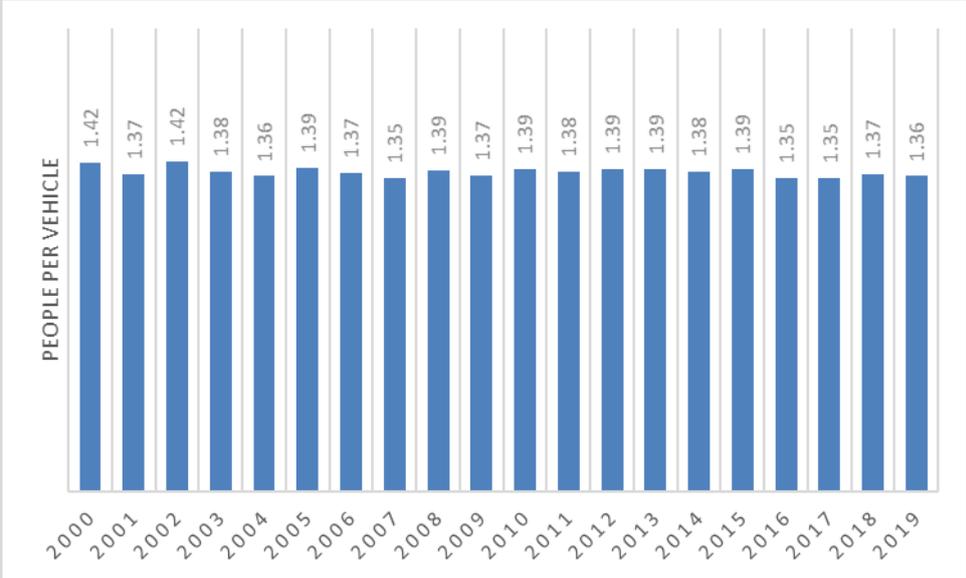
The number of taxis, vans and light trucks have all decreased in the last five years; taxis reduced by 6.9%, vans by 2.5% and light trucks by 3.4%. The number of heavy trucks were 279 in 2019, an increase since 2015 by 7.7% and in the last year by 13.9%.

Table 4: Number and type of vehicles entering the cordon in 2 hour AM peak

Year	Cars	Motor Bikes	Vans	Taxis	Light Trucks	Heavy Trucks	Totals
2000	27,107	402	2,063	924	711	327	31,534
2001	26,408	434	1,685	826	740	227	30,320
2002	26,032	405	1,936	897	866	326	30,462
2003	25,500	443	1,942	903	966	323	30,076
2004	26,034	456	2,004	913	955	311	30,673
2005	26,808	521	1,986	915	830	249	31,309
2006	26,534	504	1,859	935	726	242	30,800
2007	25,776	568	1,891	983	824	296	30,340
2008	25,354	694	1,909	979	841	327	30,105
2009	25,293	868	1,926	932	821	347	30,188
2010	24,241	1,019	1,777	917	740	337	29,030
2011	23,562	1,019	1,683	856	724	315	28,159
2012	23,387	1,059	1,725	846	795	252	28,064
2013	23,204	1,007	1,722	779	853	238	27,803
2014	22,877	968	1,643	878	845	223	27,434
2015	23,130	1,065	1,638	922	841	259	27,855
2016	24,080	1,182	1,749	1,013	877	240	29,141
2017	24,256	1,279	1,789	928	888	256	29,396
2018	22,809	1,148	1,642	831	883	245	27,559
2019	22,570	1,260	1,596	858	812	279	27,377
<i>Net change 2000-2019</i>	-16.7%	213.5%	-22.6%	-7.1%	14.3%	-14.6%	-13.2%
<i>Net change 2015-2019</i>	-2.4%	18.3%	-2.5%	-6.9%	-3.4%	7.7%	-1.7%
<i>Net change 2018-2019</i>	-1.0%	9.8%	-2.8%	3.3%	-8.0%	13.9%	-0.7%

Figure 8 shows average vehicle occupancy between 2000 and 2019. Records show that from a peak of 1.42 in 2000 and 2002, the average vehicle occupancy fluctuated between 2002 and 2010. Numbers stabilised around 1.38 and 1.39 between 2010 and 2015 and has continued to fluctuate since then. For the 2019 cordon count average vehicle occupancy was 1.36.

Figure 8: Average occupancy per vehicle



6 SUMMARY OF FINDINGS

This section presents a summary of the cordon data and trends presented in this report.

Active modes, vehicle occupants/passengers are shown in **Table 5** and illustrated in **Figure 9**. **Table 5** shows modal change between 2000 and 2019; active mode and public transport passengers crossing the cordon increased whilst the number of people in private motor vehicles decreased. The net changes from 2000 to 2019 were as follows:

- active modes – increase of 31.7%
- public transport passengers – increase of 44.4%
- People in private motor vehicles - decreased by 17% (vehicles decreased by 13.2%)

Over the five years from 2014–19, public transport patronage rose 10%; from 2018 to 2019 there was a 1.5% increase. People using active modes to travel to the CBD decreased by 3.9% over the five years to 2019 and by 0.8% between 2018 and 2019. People in private vehicles crossing the cordon decreased by 3.9% over the 2015–19 period and decreased by 0.5% between 2018 and 2019.

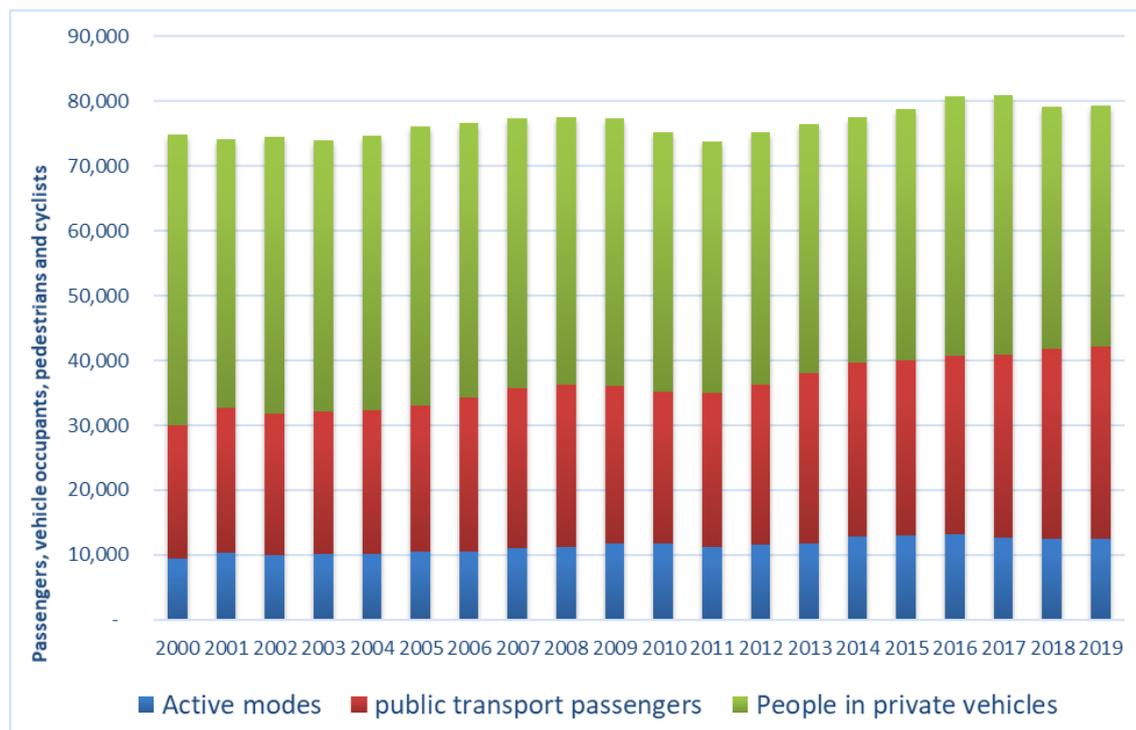
Looking at the total number of persons crossing the cordon and how these numbers have changed through time:

- 2000 to 2019 – increase of 6.1%
- 2015 to 2019 – increase of 0.8%
- 2018 to 2019 – increase of 0.2%

Table 5: Active modes and occupants of public transport and private vehicles - inbound, 2000 to 2019

Year	Active modes	PT passengers	People in private vehicles	Total
2000	9,449	20,602	44,778	74,829
2001	10,391	22,291	41,538	74,220
2002	10,006	21,709	42,773	74,488
2003	10,195	21,982	41,821	73,998
2004	10,149	22,084	42,531	74,763
2005	10,463	22,589	43,147	76,198
2006	10,456	23,747	42,382	76,585
2007	11,024	24,654	41,699	77,377
2008	11,293	24,920	41,288	77,502
2009	11,797	24,295	41,320	77,413
2010	11,802	23,360	40,081	75,243
2011	11,274	23,676	38,811	73,761
2012	11,506	24,794	38,883	75,183
2013	11,744	26,240	38,503	76,487
2014	12,770	26,823	38,028	77,621
2015	13,024	27,047	38,672	78,743
2016	13,112	27,623	40,058	80,793
2017	12,583	28,298	40,101	80,982
2018	12,550	29,303	37,361	79,214
2019	12,449	29,748	37,176	79,374
<i>Net change 2000-2019</i>	31.7%	44.4%	-17.0%	6.1%
<i>Net change 2015-2019</i>	-4.4%	10.0%	-3.9%	0.8%
<i>Net change 2018-2019</i>	-0.8%	1.5%	-0.5%	0.2%

Figure 9: Overview of inbound passengers, private vehicle occupants and active modes crossing the cordon



The general trends between 2000 and 2019 for trips heading inbound across the Wellington City CBD cordon are presented in **Table 6**.

The table includes population data which provides some context for growth in transport usage. In short, key findings from this report are:

- In the last five years, public transport passengers crossing the cordon have increased due mainly to rail which has increased by 15% and bus which has increased by 4%.
- The active mode trips into the CBD have decreased by 4% in the last five years; walking fluctuates but cycling continues to increase steadily (2% in the last year).
- Vehicle occupancy (this excludes public transport) is slightly below last year and over time has changed very little.
- Vehicles into the cordon have decreased slightly in the last five years, down by 2%, mainly due to a drop in cars by 2% and vans down by 3%.

Table 6: Cordon survey summary - % change all modes

Transport modes	Morning peak counts March 2019	Change (%) in passenger and vehicle numbers over 1, 5 and 20 years.		
		2018–19	2015–19	2000–19
Public transport passengers	29,748	2%	10%	44%
Active mode count	12,449	-1%	-4%	32%
Private motor vehicle occupants	37,176	0%	-4%	-17%
All persons	79,374	0%	1%	6%
Public transport:				
Rail passengers	16,753	4%	15%	58%
Bus passengers	12,676	-1%	4%	29%
Ferry passengers	214	-2%	9%	197%
Cable car passengers	105	-1%	4%	-26%
Active mode count:				
Cycling	1,862	3%	2%	150%
Walking	10,587	-1%	-5%	22%
Motor vehicle count:				
Cars	22,570	-1%	-2%	-17%
Motorbikes	1,260	10%	18%	214%
Vans	1,596	-3%	-3%	-23%
Taxis	858	3%	-7%	-7%
Light trucks	812	-8%	-3%	14%
Heavy trucks	279	14%	8%	-15%
Total Motor vehicles	27,377	-1%	-2%	-13%
Average vehicle occupancy	1.36	1%	-1%	-4%
Population growth	2019	2018–19	2015–19	2000–19
Wellington region	527,790	1%	6%	21%
Wellington City	210,400	1%	3%	24%

Note:

1. Morning peak counts are the average cordon counts over three - five working days in March for all modes except public transport.
2. A three year rolling average has been applied to all counts.
3. Percentages are rounded to nearest integer.
4. Estimated resident population from Statistics NZ.