

The point prevalence of smoking and vaping in downtown locations in Wellington:

Report for the Wellington City Council on observations in November 2018



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Summary

Aim

To observe and report on the point prevalence of smoking and vaping at four downtown locations of Wellington City (Midland Park, Civic Square, Chews Lane and Te Aro Park). Point prevalence is the proportion of people smoking at a particular time. Observations were also made in Midland Park, Civic Square, and Te Aro Park in November 2015.

Methods

In November 2018, five minute scans were used to count the number of smokers and vapers, those aged over 12 years, and those aged 12 years or under. Observations were carried out in the downtown locations during five weekdays.

Results

From 120 five-minute scans, a total of 6196 people aged over 12 years were observed, with 247 smokers recorded (an average point prevalence of smokers of 3.98% for a five-minute scan, compared to 3.1% in 2015). The point prevalence of smoking ranged from 10% (3.9% in 2015) for Te Aro Park, 4.12% (3.3% in 2015) for Midland Park, 2.59% for Chews Lane, to 2.37% (2.47% in 2015) for Civic Square. These results were statistically significantly different from 2015 for Te Aro Park ($p=0.000$), but not significant for Midland Park (0.06) or for Civic Square.

The proportion of the population who were children aged 12 or under was 3.16% but varied across the locations with the proportion of smokers (higher smoking prevalence, less children) ($p=0.000$ for trend).

Discussion

Smoking in Midland Park and Te Aro Park appears to have increased, and slightly decreased in Civic Square.

Introduction

This report details the process and results of observations of smoking and vaping in four central Wellington locations. The observations were of the point prevalence of smoking and vaping, and a comparison is made with observations of smoking in 2015.

The point prevalence of smoking is the proportion of people smoking during a particular period of time. Similarly, point prevalence for vaping is the proportion of people vaping at a particular point of time. Observing the trends in the point prevalence of smoking and vaping for a location enables policymakers to compare the extent of smoking and vaping across locations, and to observe smoking and vaping trends over time. These observations also enable policymakers to focus on those areas where there is higher prevalences.

Previous observation studies in Wellington city have found a wide range of smoking point prevalences, from one to 18%, depending on the location, type of place and time of day.^{1,2} However, in 2011-12 similar locations (shopping streets, pedestrian areas, parks and transport waiting areas) in Wellington and other New Zealand cities had a point prevalence of smoking of 3.5%.³ An observation study in November 2015 at three

downtown locations (Midland Park, Civic Square and Te Aro Park) found a point prevalence of smokers of 3.1% (Te Aro Park at 3.9%, Midland Park at 3.3%, and Civic Square at 2.5%).⁴

The aim of this report was to observe and report on the point prevalence of smoking and vaping in four downtown locations in Wellington (Midland Park, Civic Square, Te Aro Park and Chews Lane) and, for the three areas previously observed, compare with the results from November 2015 report.

The Wellington City Council has an ‘educational’ smokefree policy for Civic Square and Midland Park (some notices, but no legal basis for enforcement). The policy was in place for Midland Park in 2015, and for Civic Square the ‘smokefree’ policy was introduced in May 2016.⁵ See Appendix 3 for photos of smokefree signs in these two locations

The Council website (<https://wellington.govt.nz/your-council/plans-policies-and-bylaws/policies/smokefree-wellington>) has an ambiguous message for the scope of the policy for the Civic Precinct and Civic Square – ‘All public entrance ways out to 10 meters’.

Methods

Observations were made over five weekdays in four central city locations (see Table 1). Each city location was divided into sections for observation, according to the concentration of people, and the feasibility of scanning the areas accurately. Details of the sections were recorded for later mapping. In Midlands Park, smoking in the ‘private’ outdoor areas of the two cafes were observed separately (this was not done in 2015).

Table 1: Locations and sections observed

| Centre city locations (weekdays) | Number of sections per location |
|-----------------------------------|---------------------------------|
| Civic Square | 4 |
| Midland Park (Lambton Quay) | 6 |
| Te Aro Park (Courtney Place) | 2 |
| Chews Lane | 3 |
| Total observation sections | 15 |

The observation was trialled at the four downtown locations by two observers counting separately until the inter-observer variation was zero or near zero. From then, each of the observation sections at each location or park was scanned at least eight times by a single observer. A scan involved a five-minute period in which the number of ‘adults/teenagers’, children, smokers and vapers were counted. The data was recorded using the ‘Counterman’ app (published by Binary Arm (Pty) Ltd on App store) on an iPhone.

A child was defined as a person who subjectively looked 12 years old or under 12. A smoker was defined as a person who possessed a cigarette, whether in mouth or hand. A vaper was defined as a person who possessed an electronic cigarette, whether vaping (inhaling) or in their hands. We counted smokers rather than cigarettes. This meant that, if in a 5-minute

scan, one person consumed from more than one cigarette, they were only counted as one smoker. If, for example, two people shared the same cigarette, they were counted as two smokers. Observation scans were done from a stationary point or along a line of movement (see Appendix 1), as was necessary to have a good enough view of all people in the section.

For an observation session at a location, all observation *sections* were observed before moving onto the next location or park. The scans were done between 9:20 am and 4:00 pm, on six weekdays (November 12-16 and November 28, 2018) with no rain.

Data was transferred from the smartphone onto an Excel spreadsheet. Numbers were collated for each location, and the point prevalences calculated, by dividing the number of smokers and vapers by the number of those over the age of 12.

Images of each of the locations were found on Google Maps and captured. The observation sections were mapped on to the images and the observation points marked (see Appendix 1). Weather data for observation days was obtained from the Metrological Service website (see Appendix 2).

Results

In the five days of observation, 6196 people aged over 12 years were observed, with (i) 247 smokers recorded (a point prevalence of smokers of 3.98% for a five-minute scan – Table 2) and (ii) 76 vapers (point prevalence of 1.22% - Table 3). A total of 202 children who appeared to be aged 12 and under were observed.

The observation results were from 120 five-minute scans – totalling 10 hours observation. Full details of the observations are in the accompanying Excel sheets. All observations were done in the absence of rain, but in a variety of temperatures (ranging from 10 to 21 degrees Celsius), wind (ranging from 26 to 76 km/h) and cloud levels (from overcast to clear – see Appendix 2). The temperatures were similar to those for the observations in November 2015, but there was less wind than in 2015.

On the Friday (November 16th) a teachers' strike meant greater numbers of children were in the downtown area compared to normal school days.

Point prevalence for locations

Te Aro Park had the highest point prevalence for smoking (10%) followed by Midland Park (4.12%), Chews Lane (2.59%) and Civic Square (2.37%). The comparison with 2015 is shown in Table 2.

Table 2: Point prevalence of smoking in center city locations in November 2015 and November 2018

| Location | November 2015 | November 2018 |
|-----------------|----------------------|----------------------|
| Te Aro Park | 3.89% (69/1775) | 10% (72/716) |
| Midland Park | 3.26% (154/4731) | 4.12% (97/2355) |
| Civic Square | 2.47% (102/4125) | 2.37% (34/1430) |
| Chews Lane | - | 2.58% (44/1695) |
| Overall | 3.06% (325/10631) | 3.98% (247/6196) |

The point prevalence for vaping in Te Aro Park was 1.96%, for Midland Park 1.53%, Chews Lane 1.13% and Civic Square 0.56%. The point prevalence data for vaping at the four downtown locations are shown in Table 3.

Table 3: Point Prevalence of vaping in center city locations in November 2018

| Location | Point prevalence for vaping |
|-----------------|------------------------------------|
| Te Aro Park | 1.96% (14/716) |
| Midland Park | 1.53% (36/2355) |
| Civic Square | 0.56% (8/1430) |
| Chews Lane | 1.06% (18/1695) |

The proportion of all people who were children, across all the four locations studied in November 2018, was 3.15%. The proportion varied across the locations with the proportion of smokers (higher smoking prevalence, less children) ($p=0.000$) lowest at Te Aro Park (1.2%), and highest in the Civic Square (6.3%) (see Table 4). There was an increase in the proportion of children compared to in November 2015, with the greatest increase in Civic Square (Table 4). No child was observed to be smoking or vaping.

Table 4: Proportion of all people who were aged less than 12 years in center city locations in November 2015 and November 2018

| Location | The proportion of people aged less than 12 years during November 2015 | The proportion of people aged less than 12 years during November 2018 |
|-----------------|--|--|
| Te Aro Park | 0.95% (17/1792) | 1.24% (9/725) |
| Midland Park | 1.6% (77/4808) | 2.85% (69/2424) |
| Civic Square | 3.21% (137/4262) | 6.3% (96/1526) |
| Chews Lane | - | 1.63% (28/1723) |
| Total | 2.13% (231/10862) | 3.15% (202/6398) |

Other findings

In the Midland Park, smokers and vapers were mostly found in the covered café areas and the corridor areas with entrances from Johnson Street and Waring Taylor Street (see areas E and F in the Midland Park map (Appendix 1). In Te Aro Park, the majority of people observed were walking across the park, but most smokers were sitting in the park. In the Chews Lane, most smokers and vapers were in section C, which is an entrance from Willis Street, and also outside the restaurants (section A – see Appendix 1). Most smokers in the Civic Square were found in section C, which is an entry/exit point, between the i-Site and Library, as well as some area of the covered pathway to the council offices. (For images see Appendix 1).

Discussion

There was an increase in the point prevalence of smoking in two areas (Midland Park and Te Aro Park) in November 2018, compared to November 2015 (Table 2). Possible reasons include: (i) There was a difference in the timings of the observations during the observation days; (ii) Slightly better weather (less wind) in 2018 compared to 2015 enabled or encouraged more smokers to be outside or to smoke in these locations. The low prevalence of smoking where there were more children may be due the reluctance by smokers to smoke around children, or social pressure on smokers to not smoke, or may be due to the effect of smokefree polices in these areas.

The slight decrease in smoking prevalence in Civic Square may be due to the introduction of the ‘smokefree’ policy for the Square in May 2016.⁵ Another possibility is that the increased proportion of the overall population who were children may have had an effect on the level of smoking. Previous research outside of Wellington bars and cafés has indicated an inverse relationship between the level of smoking and the presence of children.²

The point prevalence for vaping was higher in Te Aro Park and Midland Park, compared to the other locations. This was in line with comparatively higher smoking prevalences in those two locations. The higher point prevalence for vaping in Te Aro Park may be related to the surrounding vape/e-cigarette shops, or the shop locations may be influenced by the local population.

Strengths and weaknesses

We have used simple and cost-effective methods to observe four downtown locations for the prevalence of smoking and vaping. These methods were trialed with two observers before starting the study observations, to ensure a high level of accuracy before the project data was collected. We have divided the locations into smaller observation sections to ensure the accuracy of pedestrians counted, and in Midland Park used smaller sections compared to in 2015. Unlike previous studies, we have also observed the prevalence of vaping at these four downtown locations.

The difficulty of judging if someone is 12 years old or younger simply by looking at them must be acknowledged. The point prevalences found are conservative. They would be different if a higher age for ‘children’ had been set than at 12 years or under, and the ‘smoking population’ denominator against which the number of smokers set was therefore smaller. For instance, if the denominator had been the population 15 years or over, the point prevalences found would be lightly higher.

The structure of some locations made them difficult to observe. For example, at Midland Park, there were large pillars that could obscure people sitting in the café areas. This posed a challenge for observation from a stationary position and may have affected the results. Some movement in the observation point was allowed for in order to try and mitigate this. It was also difficult to observe sections at Midland Park during midday periods (11:30 am – 2 pm) as the park was very crowded. In these times it also became very difficult to observe whole corridors and the two café areas during one scan. So, they were divided and observed. At Civic Square Section D (see Appendix 1 for maps), it was difficult to count the number of people, as sometimes there were a large group of people coming out of City Gallery at the same time.

Further research

In order to further investigate the effect of the presence of children, further observation research could study more areas with higher proportions of children, such as the waterfront, Frank Kitts Park, outside Te Papa and at markets, or at times when there were more children in the city center (such as weekends). Such areas (and others) could also be studied to find the extent of smoking that tourists are exposed to. More accurate results could be obtained by sampling from more Wellington locations, and for longer periods (more five-minute observation scans).

Policy implications

The increased concentrations of smokers in Civic Square outside the entrance to Wellington City Council premises, and at the cafés and building entrances at Midland Park, suggested that particular efforts would be required to get effective smokefree policies. These efforts could include further work with the café managements, and cessation work and incentives with City staff. With the increased concentrations in smokers in Te Aro Park, the implementation of smokefree policies at Te Aro Park should be considered.

Acknowledgements

This report is closely based on that by Thomson and Pathmanathan in 2015, and shares some wording with that report. We warmly acknowledge the foundation work done by Nethran Pathmanathan on the 2015 project and report.

Appendix 1: Location maps

Te Aro Park (Courtney Place)

Te Aro Park was divided into two sections for observation. It is an A shaped park, with a number of walkways through it, but only one goes straight from one side to the other. This walkway, and everything until the sculpture at the vertex of the A, was considered section A. Everything from before this walkway, until the public toilet building and the end of the grass patch was considered section B. The footpaths at the perimeter of the park were excluded. The blue spots indicate observation points.



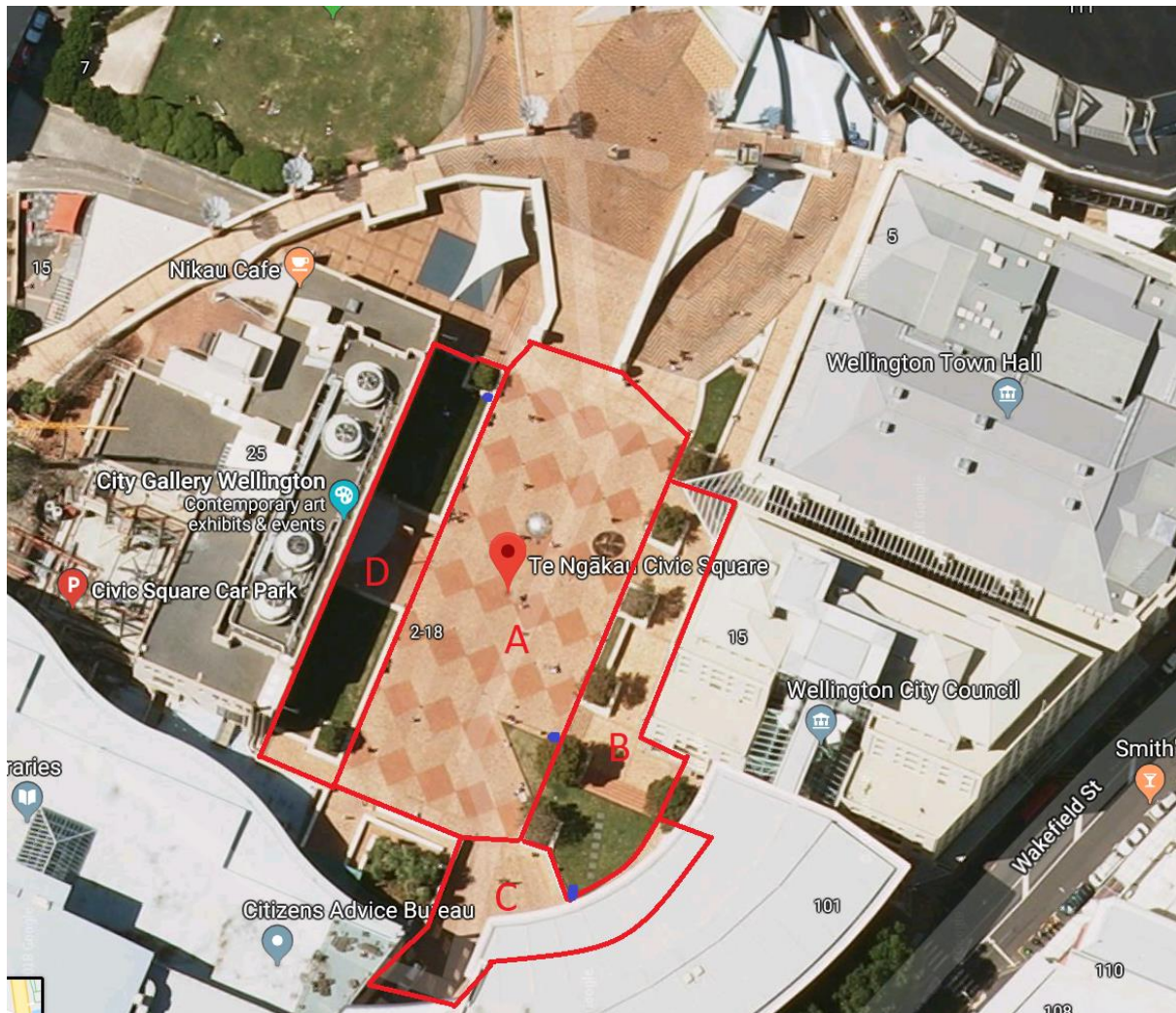
Midland Park

Midland Park was divided into six sections for observation. Two of them, A and B, were towards Johnson street, and covered the grass patches and seats in the centre of the park, as well as half of the covered walkway parallel to Lambton Quay and walkway parallel to Johnson Street. Sections C and D included another half of the walkway parallel to Lambton Quay towards Waring Taylor Street. Section E included the entrances from Johnson Street and Waring Taylor Street up to the entrance to the office building. Section F covered both the café areas. Section A covered the seats on the Johnson Street side and D covered the seats on the entrance from Waring Taylor Street. Neither of these locations covered people on the street footpaths. The blue dots indicate fixed observation positions.



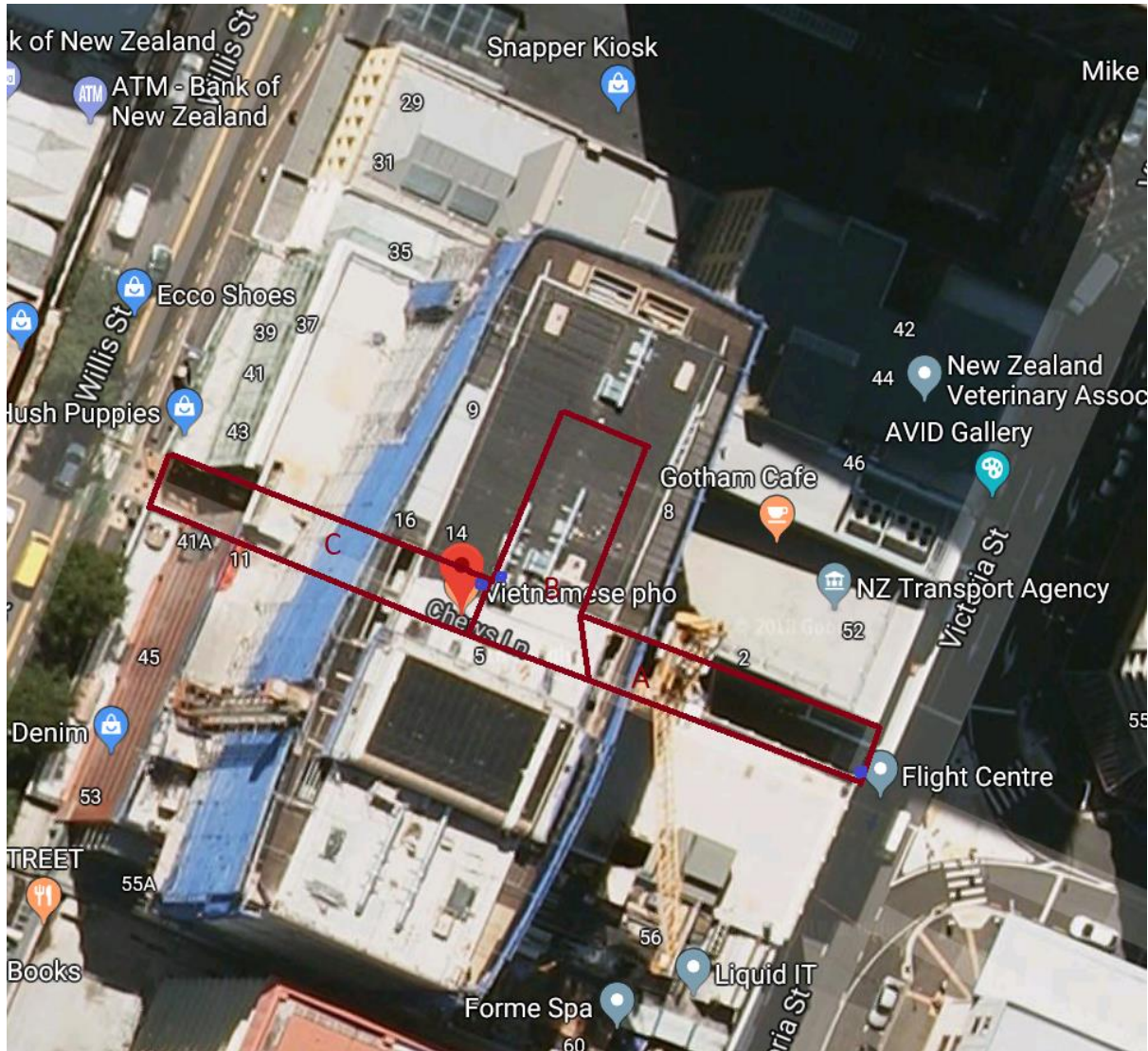
Civic Square

For observation, Civic Square was divided into four sections. One covered most of the square proper, which had an artificial mini football pitch (A). Another covered a grass patch and a section down some steps, outside the council office entrance (B). A further one covered another entry/exit point, between the i-Site and Library, as well as some of the covered pathway to the council offices (C). Section D included the entrance to the City Gallery and two grass patches (also included the seats on that side).



Chews Lane

Chews Lane was divided into three sections. Section A included the area towards Victoria Street and also included seats outside the café. Section B included the walkway into the NZTA building and included the seats outside the Vietnamese take-away, and section C was the part towards Willis Street (see Appendix 4 for photos). The blue dots indicate fixed observation positions.



Appendix 2: Data collection dates and times in 2015 and 2018, with weather observations

For 2015 Report

For Civic Square, observations occurred during 11.30am – 12.30pm, 3.00 – 4.00pm Monday 9th, 11.20 – 11.20am, 2.25 – 3.25pm, Tuesday 10th; 11.20am – 1.30pm, 3.51 – 5.03pm Friday 13th; 11.23am - 12.37pm, 2.55pm – 4.30pm Monday 16th. Area D was not observed on Monday morning 9th. Total- 24 scans, except for Area D which had 21 scans.

For Midland Park, observations occurred during: 9.45 -10.45am, 1.40 – 2.40pm, Monday 9th November; 9.50 – 10.50am, 1.35 – 2.30pm, Tuesday 10th November; 9.56am – 11.10am, 2.15 – 3.43pm Friday 13th November; 10.00 – 11.09am, 1.35 – 2.45pm, Monday 16th November. Three scans per session (six per day) except for one scan with lost data on the morning of the 13th. Total – 23 scans.

For Te Aro Park, observations occurred at 1.15 – 2.15pm, 4.40 –5.40pm, Monday 9th; 12.35 – 1.20pm, 4.25 – 5.15pm Tuesday 10th; 1.40 – 2.10pm Friday 13th; 12.45 – 1.17pm, 4.20 – 5.25pm Monday 16th. Three scans per session (six per day) except for Friday 13th when there was only one session due to rain, and Monday 16th, when six scans were done in the last session to compensate for the lost session on the 13th. Total – 24 scans.

All observations were done in the absence of rain, but in a variety of temperatures (ranging from 13 to 19 degrees Celsius), wind (ranging from 39 to 96km/h) and cloud levels (from overcast to clear).

For 2018 Report

For Civic Square, observations occurred during 10:20-11:40am on Monday 12th November, 2:10pm-3:10pm on Tuesday 13th November, 10:10am-11:20am on Wednesday 14th November and 1:15pm-2pm on Friday 16th November. Total – 8 scans.

For Midland Park, observations occurred during 10am -12noon on Tuesday 13th November, 9:20am-11:30am on Thursday 15th November, 2:45pm-3:55pm on Friday 16th November and 10am-11:05am on Wednesday 28th November. Total – 8 scans. The observation session on Wednesday 14th November was aborted due to diminished power in the smart phone. We did not include the data from this aborted session. So, we repeated the session on Wednesday 28th November.

For Te Aro Park, observations occurred during 12:10pm-12:45pm on Monday 12th November, 1:30pm-2pm on Tuesday 13th November, 1:35pm-2:15pm on Wednesday 14th November and 12:45pm-1:10pm on Friday 16th November. Total- 8 scans.

For Chews Lane, observations occurred during 11am-12noon on Tuesday 13th November, 1:40pm-2:40pm on Wednesday 14th November, 2:05pm-2:40pm on Friday 16th November

and 11:10am-11:45am on Wednesday 28th November. Total – 8 scans. Observation session on Monday 12th November was aborted due to low battery power on the smart phone. We did not include the data from this aborted session. So, we repeated the session on Wednesday 28th November.

All observations were done in the absence of rain, but in a variety of temperatures (ranging from 10 to 21 degrees Celsius), wind (maximum ranging from 39 to 76km/h) and cloud levels (from overcast to clear) (<https://www.metservice.com/towns-cities/wellington/wellington-city#!/your-weather>).

Weather observations during 12th-16th November and 28th November 2018

From the Met Service Kelburn observations

| Date | Temperature (degree Celsius) | Wind (kmph) |
|---------------------------------|------------------------------|-------------|
| 12 th November, 2018 | 10-20 | 39 |
| 13 th November, 2018 | 11-19 | 43 |
| 14 th November, 2018 | 11-21 | 44 |
| 15 th November, 2018 | 14-19 | 61 |
| 16 th November, 2018 | 14-18 | 76 |
| 28 th November, 2018 | 12-18 | 26 |

Appendix 3: Photos of smokefree signs at two observed locations



Smokefree signs were observed in both Sections B and C at Civic Square.



Photo at Midland Park (section D)

Appendix 4: Some photos of Chews Lane







References

1. Pearson AL, Nutsford D, Thomson G. Measuring visual exposure to smoking behaviours: a viewshed analysis of smoking at outdoor bars and cafes across a capital city's downtown area. *BMC Public Health* 2014;14:300. <http://www.ncbi.nlm.nih.gov/pubmed/24708883>

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