

SHORT REPORT

## Smoking in outdoor areas of bars and cafés: Large differences between midday and evening prevalences

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**Aim:** There have been only two studies of the smoking prevalence outside bars/cafés worldwide, both undertaken in Australia. The aim of this study was to further develop the assessment of the prevalence of smoking outside bars/cafés in a busy urban area. It is important for smokefree places policymaking to have baseline data on smoking visibility at these places, so as to be able to gauge the effects of policy changes that may alter levels of smoking.

**Methods:** Researchers observed smoking during eight 15-minute periods (during 12–1 pm and 7–8 pm) in April 2013 at 14 bar/cafés locations in central Wellington, New Zealand.

**Results:** Of 2600 people observed in the outdoor areas of bars/cafés, 15.8% were observed smoking (95% confidence interval (CI): 14.5%–17.5%); 18.5% in the evening (95% CI: 16.8%–20.4%) compared to 9.1% at midday (95% CI: 7.2%–11.4%).

**Conclusion:** Smoking was observed in the outdoor areas of the bars/cafés at a prevalence of double that found in the previous Australian studies. This may be accounted for by observation method or observation times, or may be due to a much wider range of premises in the Australian cities with outdoor areas, which are open later, or a much wider variety of patrons who used such areas, compared to in Wellington. We found twice the prevalence of smoking outside bars/cafés in evenings compared to midday. Such differences may be related to a greater consumption of alcohol in evenings or to a different patronage then. Smokefree policies covering these settings could help denormalize smoking.

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### INTRODUCTION

Smokefree outdoor places are a growing area of health policy (American Nonsmokers' Rights Foundation, 2013; Global Smokefree Partnership, 2009). There is evidence that smokefree area policies decrease smoking prevalence through reducing smoking opportunities and denormalising smoking (IARC, 2009). Exposure to smoking and the perceived normality of smoking are major risk factors for uptake by children and young adults (Leatherdale & Manske, 2005; Leonardi-Bee, Jere, & Britton, 2011) and for relapse by ex-smokers (Blakely, van der Deen, Woodward, Kawachi, & Carter, 2013; Ivory, Blakely, Richardson, Carter, & Thomson, 2013). The effect of increased social unacceptability of smoking suggests that denormalizing policies reduce smoking, by reinforcing tobacco-free identities and norms (Alamar & Glantz, 2006).

Smoking initiation and relapse, as well as levels of consumption, may be strongly influenced by social environments, such as bars and restaurants. In these milieu, alcohol consumption may affect cognition and decision-making (George, Rogers, & Duka 2005) which, alongside various 'social pressures', can increase people's susceptibility to smoke or to relapse (Trotter, Wakefield, & Borland 2002). Greater alcohol use is associated with decreased odds of smoking cessation (Augustson et al., 2008). Even moderate alcohol consumption can play a role in smoking relapse (Kahler, Spillane, & Metrik, 2010). Evidence from New Zealand (Edwards & Wilson 2011; Wilson, Edwards, & Parry, 2011) and elsewhere (Lopez et al., 2012; St Helen et al., 2012; Stafford, Daube, & Franklin, 2010) indicates that secondhand smoke in the outside areas of bars/cafés can be a significant health hazard.

A number of countries (including most Australian states, some US cities, US states and Canadian provinces) have smokefree policies for at least the eating areas outside of bars and cafés (ACT Government Health Directorate 2012; American Nonsmokers' Rights Foundation 2013; Department of Health (WA), 2010; Department of Health (NT), 2013; New South Wales Parliament, 2012; Queensland Government, 2010; Queensland Health, 2011; Tasmanian Parliament, 2012). The New Zealand Government has a 'smokefree nation' goal of under 5% smoking prevalence by 2025 (New Zealand Government, 2011), but the country still has incomplete coverage of smokefree areas. Since 2004, the legislated requirements are for *indoor* public areas and workplaces and the grounds of schools and early childhood centres (Ministry of Health, 2013). 'Educative' smokefree policies exist for some parks and playgrounds including in Wellington City (Cancer Society of New Zealand, 2013). These policies seek to reduce smoking by public pressure, rather than legal enforcement (Hyslop & Thomson, 2009).

While there has been some published observation of the prevalence of smoking in outdoor areas such as parks, streets, hospital grounds, stadia, near public doorways and on university campuses in North America, England and Australasia (Jancey et al., 2014; Okoli, Johnson, Pederson, Adkins, & Rice, 2013; Thomson, Russell, Jenkin, Patel, & Wilson, 2013), there have been only two studies of the smoking prevalence outside bars/cafés, both in Australia. One study, of a 'purposive sample of 20 pubs and bars within a 7-km radius of the centre' of Melbourne, involving observations on Friday and Saturdays during 7–12 pm, recorded a smoking prevalence of 6.2% and 7.3% before and after the introduction of smokefree indoor policies in 2007 (Brennan et al., 2010). The second, using a convenience sample of 25 strips of cafés in Melbourne and Adelaide, and observing in daylight hours 'when the areas were likely to be busy with patrons' found a smoking prevalence of 8.3% before and 6.5% after the introduction of tobacco plain packaging during October to December 2012 (Wakefield et al., 2013; Zacher et al., 2014). We found no other published studies that have recorded smoking prevalence via observations of the outside areas of bars and cafés.

There is also little literature on the observed prevalence of smoking by time of day. Studies of smoking in cars found no differences in Ireland by time of day (Gilroy et al., 2013), but in New Zealand, statistically significantly more smoking was observed in vehicles in mornings (7.30–9.30) compared with evenings (Patel, Thomson, & Wilson, 2013).

Because of the importance of the outside of bars and cafés as sites for potential smoking uptake, normalisation and relapse, the lack of research on the smoking prevalence at these sites outside of Australia, and the lack of field observation research on smoking and time

of day, this study aimed to assess the prevalence of smoking outside bars/cafés within the Central Business District (CBD) of Wellington, New Zealand. The questions that arise from the limited literature on smoking outside bars and cafés include: are there differences by country, or by variables such as time of day or day of week? It is important for smokefree places policymaking to have baseline data on smoking visibility at these places, so as to be able to gauge the effects of policy changes that may alter levels of smoking.

## METHODS

We used systematic observations to assess smoking prevalence in the leased outdoor pavement areas of bars/cafés in the Wellington CBD. A list of 50 premises with alcohol licences and pavement leases was obtained from the Wellington City Council. Sites were included in this study if they were within a defined area covering the downtown business and entertainment area (the CBD) and had both an alcohol licence and a pavement lease serviced area in use between the hours of 11 am and 11 pm. In New Zealand licensed premises, alcohol is served for all the hours that a premise is allowed to be open and is open. The business and entertainment area is small (less than 2 km by 1 km) with no discernible differences in socio-economic deprivation within the CBD.

There were 19 sites that met the inclusion criteria. Because of the size of the observer team and the time available, 14 sites were randomly selected (using a random number generator) and assigned to the seven available pairs of researchers (two sites per pair).

The observation design was based on one of the methods trialled in a previous study (Thomson et al., 2013). Pairs of researchers recorded the number of patrons and number of lit cigarettes at five minute intervals, using 30-second visual scans (one observer counted patrons and the other lit cigarettes). For each location, a total of four scans were recorded over 15 minutes, twice a day (during 12–1 pm and 7–8 pm), on Wednesdays and Fridays over two consecutive weeks in April 2013, for a total per location of 32 scanning episodes in eight observation periods. The times of day were chosen so as to explore any differences in smoking prevalence between lunchtime and evening. The days of the week were chosen to provide one evening that was before a work day and one that was not.

Sites were observed from an unobtrusive place or by walking past the area. To increase unobtrusiveness, data were recorded using smartphones with note-taking applications such as 'Note' and 'S Memo'. Alongside the smoking prevalence data, information was collected on four binary questions (yes/no). One was recorded for each scan: children present. One was recorded for each 15-minute observation period: foot traffic ('heavy' – 10 or more passers-by in the first two

minutes; 'light' – fewer than 10). Two were recorded only once for the bar/café: the presence/absence of *privately* owned outdoor serviced areas in addition to the publically owed pavement lease, and presence of ashtrays.

Ethics approval for this research was obtained from the University of Otago Human Ethics Committee.

### Data analysis

The overall prevalence of smoking was calculated by dividing the sum of the total cigarettes lit by the total number of patrons. We used the Mann–Whitney U test in Microsoft Excel (Redmond, WA) to assess differences in the prevalence of smoking between midday and evening and between Wednesday and Friday, as well as the overall association between prevalence and the four binary questions.

## RESULTS

Unobtrusive observation outside bars/café, recording four variables for each scan, was found to be practical for this paired observer method, with no observer safety concerns arising. During the two-week observational period, in the 448 visual scans, a total of 2600 patrons were counted (71% in the evening period). A total of 412 lit cigarettes (84% of which were in the evening period) were observed, giving an overall smoking point prevalence of 15.8% (95% confidence interval (CI): 14.5%–17.5%).

The point prevalence of smoking in the pavement lease areas was significantly higher between 7–8 pm (345/1864 = 18.5%; 95% CI: 16.8%–20.4%) than between 12 and 1 pm (67/736 = 9.1%; 95% CI: 7.2%–11.4%). There was no significant difference between the prevalence on Wednesdays versus Fridays, or with the presence of a private outdoor serviced area, ashtrays or children; or by the heaviness of foot traffic.

## DISCUSSION

The overall point prevalence of smoking identified using both evening and midday observations (at 15.8%) was double that in the only other studies we identified of smoking prevalence outside bars (Brennan et al., 2010; Wakefield et al., 2013; Zacher et al., 2014), including the only other study with evening observations (Brennan et al., 2010). A small part of this difference between Australia and New Zealand may be accounted for by differences in overall population smoking prevalence (in 2011, 16.8% in the Australian state of Victoria and 18.4% in New Zealand were current smokers) (Alexander, Hayes, & Durkin, 2012; Ministry of Health, 2012). In Wellington City, in the 2013 Census, 83% of the population said they were never smokers or ex-smokers (Wellington Regional Council, 2014).

However, differences in the sample, observation method or local smoking culture may be more

important contributors to the differences. The 2011–2013 Australian study, observing a prevalence of 6–8% in daylight hours (Wakefield et al., 2013; Zacher et al., 2014) is similar to our observations during 12–2 pm, which found a prevalence of 9%. However, the prevalence that we found during 7–8 pm (18.5%) was over double that found in the 2007 Australian study that observed smoking outside bars in the evenings (Brennan et al., 2010). This found a 7% prevalence *after* indoor smokefree policy introduction, but *before* the introduction of plain packaging for tobacco products (Brennan et al., 2010).

The sample of 14 bars and cafés in Wellington that were observed were from a group of 19 (of 50 with pavement leases and alcohol licenses), which had pavement leases used until 11 pm. Only 38% of the 50 did so. The nature of these premises may have been different to those who did not stay open until 11 pm, and they may attract more smokers or more who smoke while drinking. Alternately, there may be a much wider range of premises in the Australian cities with outdoor areas, which are open later, or a much wider variety of patrons who used such areas, and thus the Australian smokers might be a smaller proportion of those using the outdoor areas of bars and cafés.

There is little literature that indicates any determinants of smoking culture that may differ between Victoria and South Australia, and New Zealand, and that could explain large differences between the jurisdictions in the prevalence of smoking outside bars and cafés. Apart from tobacco plain packaging since 2012, there are similar regulations on tobacco marketing with no retail displays (since 2009–2012 in Australian states, 2012 in New Zealand) and no tobacco advertising. However, Australia appears to spend more on tobacco control media campaigns than New Zealand (Eriksen, Mackay & Ross, 2012; Hurley, Spittal, Scollo, Durkin, & Wakefield, 2009; Wilson, Thomson, & Edwards, 2008). Another difference may be the greater prevalence of smokefree outdoor policies across Australia, with at least four states (Queensland, New South Wales, Tasmania, Western Australia) having adopted smokefree outdoor eating area policies (Department of Health (WA) 2010; New South Wales Parliament, 2012; Tasmanian Parliament, 2012; Queensland Health, 2011). This may have altered behaviour around smoking outside bars and cafés in Victoria and South Australia.

This study appears to be one of the first to report on differences in the prevalence of smoking outside bars/café at different times of the day. Such differences may be related to a greater consumption of alcohol in evenings, or to a different patronage (e.g. office workers at lunchtime, more people in the evenings who work outside the CBD and go there for recreational reasons). Further studies could explore differences in smoking prevalence that might be related to the availability and consumption of alcohol and food, the presence of children, weekdays compared to

weekends and socio-economic or other contextual factors.

Point prevalence results such as this could be used to prepare for and evaluate policy change. Repeated studies could measure trends in the visibility of smoking over time and measure the effects of smoke-free and other policy changes that may alter levels of smoking in these settings. These could include changes that are influenced by the amount of alcohol consumed in these environments.

### Possible policy implications

The visibility of smoking found by this study suggests that a smokefree outdoor area policy for the outside of bars/cafés could foster denormalization, reduce smoking visibility in this social setting and reduce the association of smoking with alcohol. Given the high risk of smoking initiation and relapse in these settings, complete smokefree policies for *all* the outside areas of premises licensed for alcohol would be the simplest to implement, with the best health outcomes.

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