An evaluation of the Whangarei one-way door policy

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Commissioned Research Report

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Disclaimer

The views expressed in this report are those of the authors and do not reflect any official position on the part of the University of Waikato, or the Health Promotion Agency.

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Executive Summary

- This research project was commissioned by the Health Promotion Agency (HPA), and evaluates the one-way door policy implemented in Whangarei CBD on 7 April 2015.
- **Overall we conclude that there is suggestive evidence that the overall impacts of the one-way door policy have been positive.**
- We used a mixed-methods approach, incorporating both quantitative (interrupted time series and difference-in-difference analysis) and qualitative (key informant interviews) components.
- An important caveat is that on the same date that the one-way door restriction was put in place, CitySafe officers began regular patrols in the Whangarei CBD. Thus, it is not possible to isolate the effect of the one-way door policy independent of this additional change.
- The quantitative analysis used observational data on antisocial behaviour incidents taken from monitored closed-circuit television (CCTV) in the Whangarei CBD, over the period from 4 November 2011 to 30 October 2016, and Police calls-for-service data by category (violent offences, property damage, and drug and alcohol offences) and in total for the period 6 January 2006 to 26 March 2017.
- The interrupted time series analysis demonstrated a statistically significant *increase* in observational data on antisocial behaviour incidents between the period before and the period after the implementation of the one-way door restriction. This result can be attributed to the simultaneous introduction of CitySafe patrols into the Whangarei CBD, which led to increased vigilance and improved monitoring and recording of incidents of antisocial behaviour.
- The interrupted time series analysis also demonstrated a statistically significant *decrease* in violence offence and drug and alcohol offence calls-for-service to police. However, after implementation of the one-way door policy, the incidence of violent offence calls-for-service returned to the long-term trend. The decrease in drug and alcohol offence calls-for-service was sustained over time.
- The difference-in-difference analysis showed conflicting results, with statistically significant decreases in violent offences, drug and alcohol offences, and total calls-for-service in Whangarei CBD compared with the rest of Whangarei urban area, but no decreases relative to three other CBD areas of regional cities (Rotorua, Gisborne,

and Whanganui) in the North Island. However, the assumptions on which these latter results rely are likely violated and they lack robustness.

- The qualitative analysis was based on key informant interviews undertaken with 33 people from eight main stakeholder groups.
- The qualitative analysis found that there was a strong consensus that the one-way door policy had been implemented in the way it was intended to be. Moreover, a large majority of interviewees thought that the policy had reduced alcohol-related harm and that the CBD was now safer at night.
- Changes in bar ownership had been accompanied by changes in practices relevant to alcohol-related harm and inner-city safety, which along with the closure of large or what were considered "unsavoury" premises, may have had contributed to a reduction of alcohol-related harm in the CBD and to enhanced safety.
- A number of possible unintended consequences were also noted in the qualitative research, including a reallocation of police resources, fewer people in the night-time economy in Whangarei, displacement of drinking and alcohol-related harm from the CBD to the suburbs, and concentration of demand for taxi services.
- Overall, we cannot definitively conclude from the quantitative analysis that the Whangarei one-way door policy has decreased Police calls-for-service or observed antisocial behaviour in the Whangarei CBD. However, the qualitative evidence based on the observations of those who are likely to be best able to evaluate the on-the-ground reality of the implementation and effects of the policy, suggests that the overall impacts have been positive.

1. Introduction

In its review of alcohol laws in New Zealand, the Law Commission (2010) identified the substantial growth in the 'night-time economy' that has occurred in New Zealand since 1989, and the challenges for police and other emergency services in dealing with a substantial increase in drunkenness, disorder and crime associated with the night-time economy over that period. Following the review, the government passed the Sale and Supply of Alcohol Act 2012 (SSAA), which included a number of provisions for local authorities to have greater control over how and when alcohol is available for sale in their communities. Among those provisions, local authorities were now able to implement a Local Alcohol Policy (LAP), which could include provisions that were different from those operating at the national level, and potentially more appropriate for the needs and aspirations of their community.

One of the focuses of some LAPs has been on enabling greater control over the sale and supply of alcohol in the night-time economy. Alcohol-related violence, disorder and crime can and often does occur when intoxicated people interact out on the streets. The movement of people between bars and nightclubs during the night increases the likelihood of intoxicated people interacting, which in some cases leads to violence and disorder. Routine activity theory (Clarke and Felson, 1993; Cohen and Felson, 1979), postulates that violence and other crime may occur when motivated offenders interact with potential victims, in the absence of a suitable guardian. In such interactions, alcohol is a 'chemical facilitator' of crime (Clarke and Eck, 2005), in that provides offenders with a release from moral constraints and inhibitions about risk, as well as impairing the potential victim.

When there is a universal maximum closing time within an entertainment precinct, large numbers of people may leave bars and nightclubs and go out on to the street to make their way home at the same time. This increases the number of interactions between alcohol-impaired people, increasing the risk of alcohol-related harm, including violence, disorder and other crime. Moreover, large numbers of people seeking transport to their homes at the same time creates a potential problem of excess demand for transport, and conflict over transport may lead to increased incidence of violence. Large numbers of alcohol-impaired people with potential for conflict creates a situation that is difficult for police to manage. Thus, it is appropriate that local authorities consider options to better manage the night-time economy to reduce instances of conflict and to reduce alcohol-related harm.

Indeed, the object of the SSAA as outlined in Section 4 of the Act is that:

> "(a) the sale, supply, and consumption of alcohol should be undertaken safely and responsibly; and
>
> (b) the harm caused by the excessive or inappropriate consumption of alcohol should be minimised."

Among other provisions, the SSAA allowed local authorities to include one-way door restrictions (also known as lockouts), either as a discretionary condition for an on-licence, or as part of a Local Alcohol Policy (LAP). Section 5 of the SSAA defines a one-way door restriction as:

> "a requirement that, during the hours stated in the restriction,—
>
> (a) no person is to be admitted (or re-admitted) into the premises unless he or she is an exempt person; and
>
> (b) no person who has been admitted (or re-admitted) into the premises while the restriction applies to the licence is to be sold or supplied with alcohol."

One-way door restrictions are designed to minimise disorder and crime resulting from large numbers of people on the streets by stopping patrons entering premises after a particular time. Patrons are able to remain on the premises until the closing time, but if they leave they will not be able to re-enter, or enter another premises. The argument is that this has the potential to stagger departure times, and by deterring large numbers of people from exiting licensed premises at the same closing time to reduce the potential for disorder and crime because of the reduced number of interactions between impaired drinkers. However, it may also be argued that a one-way door restriction can increase conflict, particularly among patrons who are attempting to enter a licensed premise before the restriction time begins, as well as if departure times that were previously staggered instead concentrate at closing time.

When included in a LAP, a one-way door restriction may apply to all on-licences in the local authority area, or only in some part of the local authority area, e.g. a central business district (CBD) or entertainment district. Many local authorities have implemented or notified a LAP, and few have included a one-way door restriction, with one exception being Whangarei District Council. Whangarei District Council implemented a one-way door restriction for the Whangarei CBD, with effect from 7 April 2015. This policy was introduced under the previous Sale of Liquor Act 1999, but had taken some time to put in place. Under the

Whangarei one-way door policy, all licensed premises in the Whangarei CBD are required to have a one-way door restriction in place between 1 a.m. and closing time at 3 a.m.

The majority of provisional LAPs are being appealed and the Alcohol Regulatory and Licensing Authority (ARLA) in hearing the appeals needs to satisfy itself that there is supporting local evidence for the policy decisions within a local authority's provisional LAP. The Health Promotion Agency engaged the University of Waikato to evaluate the effects of the Whangarei one-way door policy implementation at the request of Whangarei District Council. This would also be useful information for other local authorities on the effectiveness (or otherwise) of including one-way door restrictions as part of their LAPs. There is currently a paucity of evidence on the effectiveness of one-way door restrictions, especially in New Zealand. Much of the research undertaken to date has had mixed results, often with other concurrent policy changes confounding the analysis (Palk et al., 2012).

A voluntary one-way door restriction was implemented in central Christchurch from October 2006 to March 2007 as part of the Christchurch Central Business District Alcohol Accord. This involved a one-way door policy on Thursday, Friday and Saturday nights from 4am. An evaluation by the Alcohol Advisory Council (ALAC) found the goal of a 10% reduction in alcohol-related crime and violence in the inner city was not met, but that there were reductions in some subsets of crime, such as serious violence offences on Saturday/Sunday nights (Kirkwood and Parsonage, 2008). There was also a positive impact on perceptions of safety and crime levels. The majority of licensees reported that their turnover had not been adversely affected by the policy. However, like the Whangarei one-way door policy, the policy in Christchurch was part of a package of interventions, which included increased enforcement of the liquor ban area.

Several studies have evaluated one-way door policies in Australia, and have shown inconsistent results in terms of the efficacy of these policies. Kypri et al. (2011) reported that the introduction of a 3 am lockout in Newcastle (NSW) reduced the incidence of assault by 37%. In a subsequent five-year follow-up on the same intervention, Kypri et al. (2014) report that the reduction in assault rates has been sustained. However, they also report that the same lockout restriction in nearby Hamilton had no effect on assault rates. The Newcastle lockout policy was not a *pure* lockout intervention, in that a number of other alcohol outlet management strategies were implemented at the same time. Thus, it is difficult to attribute the effect to the lockout itself, or to identify the proportion (if any) of the reported change in

assault rates in Newcastle is attributable to the lockout policy rather than the other contemporaneous policy changes.

Mazerolle et al. (2012) evaluated the impact of 3 am lockout legislation on violence in and around two entertainment districts in Queensland, and found that the lockout led to a direct and significant reduction in the number of violent incidents inside licensed premises. In contrast, De Andrade et al. (2016) found that found that a pilot 3 am lockout policy in Surfers Paradise (Queensland) had no statistically significant impact on rates of crime, violence, head and neck injuries, or intoxication over the two years following its implementation. Moreover, there was limited evidence of displacement of crime to areas outside of those affected by the lockout. Finally, Menendez et al. (2015) reported early results of the January 2014 reforms in Kings Cross and Sydney CBD (NSW). They found that there had been a reduced incidence of assault in the Kings Cross and CBD Entertainment Precincts. However, they noted that the extent to which this reduction was due to a change in alcohol consumption or a change in the number of people visiting the Kings Cross and Sydney Entertainment Precincts remained unknown.

Given the lack of consistent evidence on one-way door policies (or lockouts), this report investigates the effectiveness of the Whangarei one-way door policy. However, we must note a key limitation from the outset. On the same date that the one-way door restriction was put in place, one further important change was made that affects the night-time economy in Whangarei – CitySafe officers began regular patrols in the Whangarei CBD. Thus, similar to some of the Australian studies and the Christchurch study cited above, it is not possible to evaluate the effect of the one-way door restriction in isolation. This is because, for any observed quantitative impact, we cannot separately disentangle the effects of the one-way door restriction from the effects of the CitySafe patrols. Under the circumstances, the quantitative evaluation (and aspects of the qualitative evaluation) should be interpreted as being an evaluation of the package of policy (one-way door restrictions, and CitySafe patrols) implemented in April 2015.

The report is structured as follows:

- Section 2 details the data and methodology;
- Section 3 presents the results of the quantitative evaluation of the policy;
- Section 4 presents the qualitative evaluation of the policy; and
- Section 5 concludes.

2. Research Methods

In this evaluation, we adopted a mixed-methods approach to investigate the effects of the Whangarei one-way door policy. In this, we combined a quantitative evaluation of changes in observed antisocial behaviour and other incidents drawn from CCTV data, and a further quantitative evaluation of changes in police calls-for-service, with a qualitative evaluation based on key informant interviews. A similar mixed-methods approach has previously been applied to an evaluation of the impacts of alcohol outlet density in Manukau City (see Cameron et al., 2012). The key advantage of this approach is that it allows a more holistic evaluation of the effects of the policy to be undertaken.

2.1 Quantitative methods

In the quantitative data analysis, we adopted a quasi-experimental approach. This essentially involves a comparison of the number of events (observed incidents of antisocial behaviour, or police calls-for-service) occurring in the period before the introduction of the one-way door restriction, with the number of such events occurring in the period after the introduction of the one-way door restriction.

We used two data sources for the quantitative analysis: (1) observational data on antisocial behaviour from Whangarei District Council; and (2) police calls-for-service data from the New Zealand Police. The two data sources require slightly different methods of analysis (described further below), because the observational data were only available for the Whangarei CBD where the one-way door restriction was in place, whereas the police data were also available for comparable areas where on-licence outlets were not subject to one-way door restrictions.

Analysis of observational data on antisocial behaviour

Observational data were obtained from Whangarei District Council on the number of antisocial behaviour events occurring within the Whangarei CBD. These data were derived from Whangarei District Council's network of CCTV cameras located around the central

business district of Whangarei (see Figure A1 in the Appendix for the locations of these cameras). The period covered was from 4 November 2011 to 30 October 2016 and was coded into fifteen categories[1] by volunteer observers. For our purposes, the data were first collapsed into "weekends", where a weekend covers the period from 6 p.m. Friday to 6 a.m. Saturday and 6 p.m. Saturday to 6 a.m. Sunday, as it was felt that these periods focused attention on the times when the effects of the one-way door restriction were most likely to be felt.

Of the fifteen categories of incident used by the volunteer observers, six (Breach Liquor Ban, Damage, Disorder, Drugs, Intoxicated and Gangs), were aggregated together to produce a measure of antisocial behaviour (ASB). The "other offence" and "other incident" categories were excluded even though they were used in the construction of Whangarei District Council's own antisocial behaviour data for internal reporting. This was because, after 7 April 2015, "other offences" and "other incidences" included breaches of the one-way door policy, so including those categories within our measure of ASB would have rendered the data inconsistent over the study period. Table 1 shows the basic descriptive statistics for our ASB variable, while Figure 1 depicts its evolution over time.

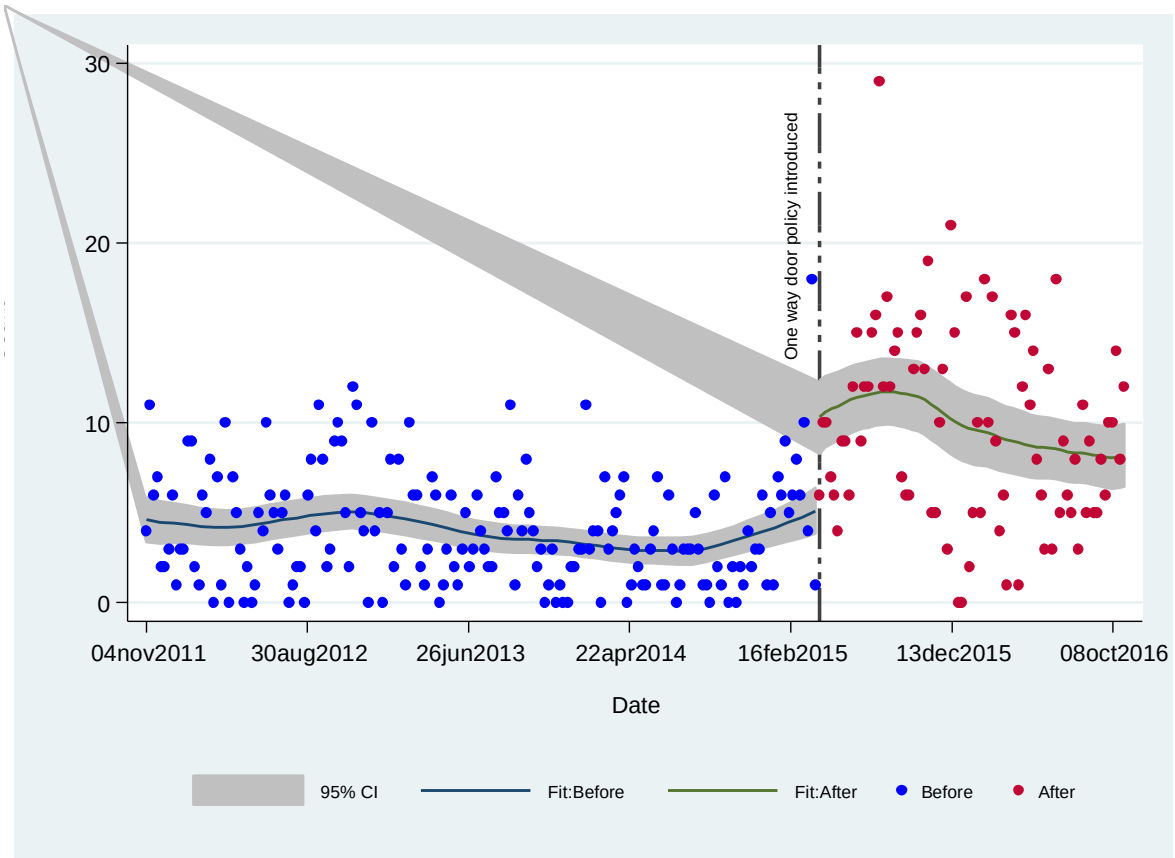
Table 1: Antisocial behaviour (ASB) summary statistics, per weekend

Period	**N**	**Mean**	**Median**	**Std.Dev**	**Min**	**Max**
Before 7 April 2015*	179	4.1	3	3.2	0	18
After 7 April 2015†	82	9.8	9.5	5.4	0	29
Total	261	5.9	5	4.8	0	29

* The time period before implementation of the one-way door policy includes all weekends from 4 November 2011 to 7 April 2015; † The time period after implementation of the one-way door policy includes all weekends from 7 April 2015 to 30 October 2016.

[1] Breach Liquor Ban; Damage; Dishonesty; Disorder; Drugs; Other Offence; Bikes in Mall; Dogs; Intoxicated; Gangs; Skateboards; Suspicious; Truancy; Vehicles; and Other Incidents.

Figure 1: Antisocial behaviour (ASB) in Whangarei CBD, 2011-2016



The data possess several features that dictate the approach that was taken in the analysis. First, the data is in the form of counts, which renders standard approaches that are designed for the analysis of continuous data inappropriate. In such circumstances, it is common practice to use an approach based on Poisson regression, which is often in practice comes with its own set of difficulties arising from the fit of the assumed Poisson distribution to the observed data. These difficulties commonly take the form of either over-dispersion (too many zero counts) or, less commonly, under-dispersion (too few zero counts).

The second feature of note is that the data takes the form of a time series – that is it is a series of observations of a phenomenon over time. Such data raises a number of issues, for instance the number of observed occurrences of an event may vary with the season, vary around a trend, or otherwise be correlated with past occurrences of the variable (what is called auto-correlation). In the case of both these examples, the observations are not independent of one another, as is assumed by standard linear regression. Thus, special methods must be adopted to deal with the challenges posed by time series. At its simplest this entails including some

allowance for past values of the variable of interest, by introducing a limited number of past values of that variable, known as lags, to the model.

Third, if the one-way door restriction is effective in reducing antisocial behaviour, the time series of the ASB variable is expected to have a marked disjuncture at the point that the one-way door restriction was implemented, i.e. the time series is *interrupted* at the point of implementation of the policy. This disjuncture provides the basis for our estimation of the impact of the policy.

As discussed by Bernal et al (2016), the analysis of interrupted time series requires, at a minimum, three variables:

- T: the time elapsed since the start of the study, with the unit representing the frequency with which observations are taken (e.g. month or year);
- X_t : a dummy variable indicating the pre-intervention period (coded 0) or the post-intervention period (coded 1); and
- Y_t : the outcome at time *t*.

In the standard interrupted time series set up, the following econometric model specification is used:

$$Y_t = \beta_0 + \beta_1 T + \beta_2 X_t + \beta_3 T X_t$$

where β_0 represents the baseline level of the outcome (antisocial behaviour) at $T = 0$, β_1 is interpreted as the change in outcome associated with a time unit increase (representing the underlying pre-intervention time trend in antisocial behaviour), β_2 is the level change following the intervention (the 'average' increase in antisocial behaviour between the time before and the time after the implementation of the one-way door policy), and β_3 indicates the slope change following the intervention (using the interaction between time and intervention: TX_t, and representing the change in time trend in antisocial behaviour between the time before and the time after the implementation of the one-way door policy). The key coefficients of interest are β_2 and β_3, as they demonstrate any quantitative effect of the policy on the level and trend in antisocial behaviour respectively.

As noted earlier, the data used are a time series of counts of antisocial behaviour, and hence any evaluation of the impact of the one-way door policy must take account of both the count

and time series features of the data. Schwartz et al (1996) developed a Poisson-based methodology that deals with both the count, autocorrelation and dispersion issues within a single framework, which has been used extensively in the analysis of count time series (see also Katsouyanni et al., 1996). This approach is utilised here, and is available as a user written command (*arpois*) in Stata version 14.

A key limitation arises in the analysis of these observational data. While there may be some minor issues with the quality of the observational data drawn from the CCTV footage (e.g. see TNS New Zealand, 2016), bigger issues arise as a result of the short period of data that is available prior to the implementation of the one-way door restriction, and because of changes in the intensity of CCTV camera observations between the period prior to, and the period after, the implementation. Specifically in the latter case, once the CitySafe patrols began (alongside the one-way door restriction), CitySafe officers would alert the CCTV volunteers of incidents they believed should be reviewed. We believe that this led to a substantial increase in recorded events in the CCTV data after the implementation of the one-way door policy, a point that we will return to in the quantitative results later in the report.

Analysis of data on police calls-for-service

Data on police calls-for-service were obtained from the New Zealand Police Communications and Resource Deployment (CARD) database. This dataset covered the period from 6 January 2006 to 26 March 2017 (this being the maximum period of data that was available at the time). The dataset was first cleaned to remove duplicate events or occurrences. Following Cameron et al. (2013), the data were then restricted to events that were coded to specific offences. We further restricted our analysis to categories that were most likely to relate to alcohol-related offending (Violent offences; Property damage; and Drug and alcohol offences) and total calls-for-service.

The data were geo-coded using an automated process in ArcGIS, then converted to counts of each category (and total calls-for-service) *per weekend* for the Whangarei CBD area. We used the same method to derive counts per weekend for the rest of the Whangarei urban area (excluding the CBD), and for the CBDs of three similarly sized regional centres in the North Island (Rotorua, Gisborne, and Whanganui). The area of Rotorua, Gisborne, and Whanganui to be included was determined by visual inspection of the pattern of police events around the

CBD of each city, mapped onto 2013 meshblocks. Similarly, the area of Whangarei outside the CBD was defined by the overall settlement pattern shown on Google Maps, mapped onto 2013 meshblocks

Table 2 shows the mean numbers of calls-for-service for each area for each category, for the periods before and after implementation of the one-way door policy in Whangarei. Prior to implementation of the one-way door policy in Whangarei, all three comparable cities (Rotorua, Gisborne, and Whanganui) had similar numbers of violent offences and property damage offences per weekend and similar numbers of total calls-for-service. In terms of drug and alcohol offences, Gisborne CBD had substantially more than the other cities, while Whanganui and Rotorua had fewer drug and alcohol offences on average than Whangarei. However, such direct comparisons between the cities do not tell us much, since the cities differ in size, resident population of the CBD, and other key features. The number of calls-for-service for Whangarei CBD decreased in total and in all three categories of interest between the time before, and the time after, implementation of the one-way door policy. However, with the exception of total calls-for-service in Rotorua, and drug and alcohol offences in Whanganui, the numbers of events also reduced in the other three cities, where one-way door restrictions were not in force. This suggests that some caution is required in interpreting the reduction in calls-for-service in Whangarei directly, because the number of calls-for-service has been in decline more generally over time.

Table 2: Mean police calls-for-service by category, per weekend

Period and area	**Violent offences**	**Property damage**	**Drug and alcohol offences**	**Total calls-for-service**
Before 7 April 2015[*]				
Whangarei CBD	0.58	0.37	0.58	5.08
Whangarei Urban (not CBD)	1.95	0.21	1.54	16.52
Rotorua CBD	0.55	0.41	0.34	4.49
Gisborne CBD	0.55	0.41	1.02	5.97
Whanganui CBD	0.40	0.32	0.22	4.00
After 7 April 2015[†]				
Whangarei CBD	0.32	0.21	0.20	3.97
Whangarei Urban (not CBD)	1.73	0.84	0.20	14.85
Rotorua CBD	0.50	0.20	0.17	4.78
Gisborne CBD	0.38	0.29	0.20	3.56
Whanganui CBD	0.17	0.28	0.25	2.64

N.B. [*] The time period before implementation of the one-way door policy in Whangarei includes all weekends from 6 January 2006 to 7 April 2015; [†] The time period after implementation of the one-way door policy in Whangarei includes all weekends from 7 April 2015 to 26 March 2017.

Given the time series data on police calls-for-service are available for the Whangarei CBD and for other areas of interest, we applied two methods of analysis. The first method we applied was an interrupted time series analysis, as described in the previous sub-section on the observational data on antisocial behaviour. The second method was a difference-in-differences (DID) approach (see Angrist & Pischke, 2009).

The DID technique estimates the effect of a treatment by comparing the average change over time for the group that has been exposed to a treatment (in our case, the area that was exposed to the one-way door policy), to the average change over time for a control group. The choice of control group is important, and we report models that use two alternative control groups: (1) the area of urban Whangarei where the one-way door policy was not in force; and (2) the average of the CBD areas of Rotorua, Gisborne, and Whanganui. Using the remainder of urban Whangarei as a control allows us to control for locally-specific common trends in calls-for-service over time, as well as considering any displacement effects of the one-way door policy to other parts of the city. If there are significant displacement effects,

then the estimated impact of the one-way door policy would be larger (a greater reduction in calls-for-service would be observed for the treatment area, compared with the control area). Using the average of three other cities as a control (rather than a single city) reduces the amount of random noise observed in the control group, which is important given the small counts of some events (e.g. violence) each weekend.

More formally, in the DID analysis the following econometric model specification is used:

$$Y_t = \beta_0 + \beta_1 D + \beta_2 M_t + \beta_3 D M_t$$

where Y_t is the outcome (police calls-for-service, by category or in total) at time *t*, *D* is a dummy variable coded to zero for periods before the intervention (the one-way door policy) was implemented and coded to one thereafter, *M* is a dummy variable coded to zero for the area where the intervention was not implemented and coded to one for areas where the intervention was (or was going to be) implemented (i.e. this variable is equal to one only for Whangarei CBD). In the above equation, β_0 represents the baseline level of the outcome at *T* = 0, β_1 is interpreted as the average difference in outcome *for all areas* between the time period before and the time period after the intervention was implemented, β_2 is interpreted as the average difference in outcome between the intervention and non-intervention areas (i.e. between Whangarei CBD and other areas), and β_3 indicates the difference in the changes over time between the intervention and non-intervention areas. The coefficient β_3 is the coefficient of interest, as it shows the effect of the intervention (in this case, the one-way door policy).

The main limitation with the DID approach is that it relies on the assumption that the trend in outcome for the control group and the trend in outcome for treated group prior to the treatment are the same. This is referred to as the 'common trend assumption'. Visual inspection of plots of our outcome data and associated trends over time suggest that this assumption is unlikely to hold. That is, the trends in calls-for-service over time are different for Whangarei CBD when compared with the rest of Whangarei urban area, and different between Whangarei CBD and the CBDs of Rotorua, Gisborne, and Whanganui. Thus, we present the results of this analysis, but note that they should be viewed with caution.

Finally, similar to the observational data on antisocial behaviour described in the previous sub-section, the data on Police calls-for-service are count data, and Poisson regression would be a common choice of estimator. However, in this case we apply negative binomial

regression instead for both the interrupted time series analysis and DID analysis, because it adequately deals with the observed over-dispersion of the calls-for-service data.

2.2 Qualitative methods

Collecting qualitative information via stakeholder interviews has allowed us to contextualise the implementation of the one-way door policy. Specifically, the interviews helped us understand the fidelity with which the policy is being implemented, identify possible confounding factors (other changes in the setting which may have had an impact on the desired outcomes), describe process factors which may have contributed to (or undermined) the effectiveness of the policy, and identify any unintended consequences of the policy.

Participants

We interviewed 33 people from eight main stakeholder groups. These include those who have a statutory responsibility for licensing matters (Whangarei District Council, New Zealand Police) or for managing alcohol-related health issues (Northland District Health Board). They include businesses that are likely to be affected by the one-way door policy (central city bars, taxi companies and other businesses that operate in the early hours of the morning). They also include NGOs that have a role in enhancing the safety of the inner city, namely CitySafe, community patrols and the volunteers who monitor the CCTV cameras that operate in the city centre.

While each of the abovementioned groups has a “stake” in the one-way door policy, it is obvious that the nature of that stake differs from group to group. It is also worth mentioning that the members of the stakeholder groups varied in the perspective from which they could comment on the one-way door policy and its impact. For example, some participants were often in the CBD or observing the CBD during the early morning hours and were able to provide first-hand accounts of the impact of the policy on central city safety. Others, who may have lacked this first-person experience of the CBD, were nevertheless able to provide a wider view of what was happening in the city. Still others provided useful perspectives on what they saw as the impact of the one-way door policy on their organisations. Finally, for some participants, the main source of information about the impact of the policy was the analyses being generated by the working group monitoring the policy. While all participants had valuable things to say, it was important in our analysis to consider the context from

which they spoke. This was important if we were to avoid an echo-chamber effect by reporting as a "fresh" perspective, views on the impact of the policy that had been formed by access to the quantitative analyses reported elsewhere in our report.

The composition of our purposive sample of participants is summarised in Table 3 below.

Table 3: Qualitative interview participants

Group	Number	Role	Perspective
Whangarei District Council	4	Community Services Manager, Statistics, Environmental Health, Community Safety Officer	Statutory responsibilities in relation to the policy. Second-hand observers.
Northland District Health Board	2	Medical Officer of Health, Technical Officer of Alcohol	Focusing on reducing negative impacts of alcohol on health. Second-hand observers.
New Zealand Police	5	Frontline, Area Prevention Manager, Alcohol Harm Reduction Officer	Community safety and law enforcement. Front line officers have a first-hand view of alcohol-related harm in the CBD
City safe and Community patrols	3	CitySafe Officer, CitySafe Manager, Community Patrol Leader	Inner-city safety and security. First-hand view of alcohol-related harm in the CBD
CCTV Volunteers	2	Volunteers	Review of camera footage in CBD.
Hospitality industry	10	Licensed Premises Managers	Required to implement the policy - which potentially will have an impact on business. First-hand observers.
Taxi drivers and late night businesses	4	Taxi Company Manager, Taxi Driver, late night business owners.	Potentially affected by policy. Drivers are first-hand observers of some parts of the CBD
Others	3	Regional Hospitality Manager, CEO of Chamber of Commerce, Retailers Association Manager	Wider view of impact on business

Analysis

All participant interviews were digitally recorded. The recordings were used to prepare partial transcripts: that is, key passages were transcribed word-for-word while other parts were summarised. Our approach to the analysis of our material accords with Braun and Clarke's (2006) description of thematic analysis. We first established high level themes that mapped on to the key issues we wanted to address: fidelity of implementation; confounding factors; the impact of the one-way door policy on alcohol-related harm in the Whangarei CBD; unintended consequences of the policy; possible refinements to the policy; and process factors relating to the development and implementation of the policy. We categorized sections of the text under one or more of these themes. Then, within these high-level themes, we identified sub-themes: particular patterns among the responses that provided varying accounts of the main themes. As can be seen in Section 3.2, when there was a high level of consensus about a sub-theme, this has been noted in our analysis. However, it is also important to note that the comments of a small minority of respondents, sometimes just one or two, have sometimes been influential in shaping our conclusions. That is, in evaluating the responses, we prioritised those from interviewees who were in the best position to comment on particular issues, generally because they were reporting on things that they had observed directly rather than reporting things that they had heard from others. While our account aims to encompass the voices of all the relevant stakeholder groups, in discussing each of the main themes, we have given more weight to responses from those interviewees who best qualified to comment on the particular issues.

3. Results and discussion

This section outlines and discusses the results of both the quantitative and qualitative analyses. We first present the quantitative analysis, and then turn to the qualitative analysis. In part, this is because of the lack of statistical significance of the quantitative analysis.

3.1 Quantitative analyses

As noted in the previous section, quantitative analyses were conducted to estimate the effect of the one-way door policy, using two datasets. We first present the results of an interrupted

time series analysis of the observational data on antisocial behaviour. We then present the results of analyses of the Police calls-for-service data.

Analysis of observational data on antisocial behaviour

Two sets of quantitative results are presented in this sub-section, showing the results of our estimation of the interrupted time series models both without time period lags (Model 1) and with time period lags (Model 2). In the case of Model 2, after some experimentation and consultation of the relevant diagnostics, it was determined that it was reasonable to include four lags, i.e. the model included the counts for the number of anti-social incidents in the previous four weekends.

Table 4 summarises the results of both models, reported as incident-rate ratios with robust standard errors in parentheses below. In both models, the only statistically significant variable is X_t (post-intervention dummy variable), with an incident-rate ratio of more than three. This indicates that there was a statistically significant *increase* in the number of antisocial behaviour incidents recorded from the CCTV data between the period before the implementation of the one-way door policy and the period after. Specifically, the ratio suggests that there was three-times higher incident rate after the one-way door was implemented. The lack of statistical significance of the variable T suggests that there was no statistically significant change in the antisocial behaviour data over time (i.e. no time trend), prior to the implementation of the one-way door policy. The lack of significance of the variable TX_t suggests that there was no statistically significant change in this null time trend after the one-way door policy was implemented, i.e. that there was also no statistically significant change in the antisocial behaviour data over time after the implementation of the one-way door policy.

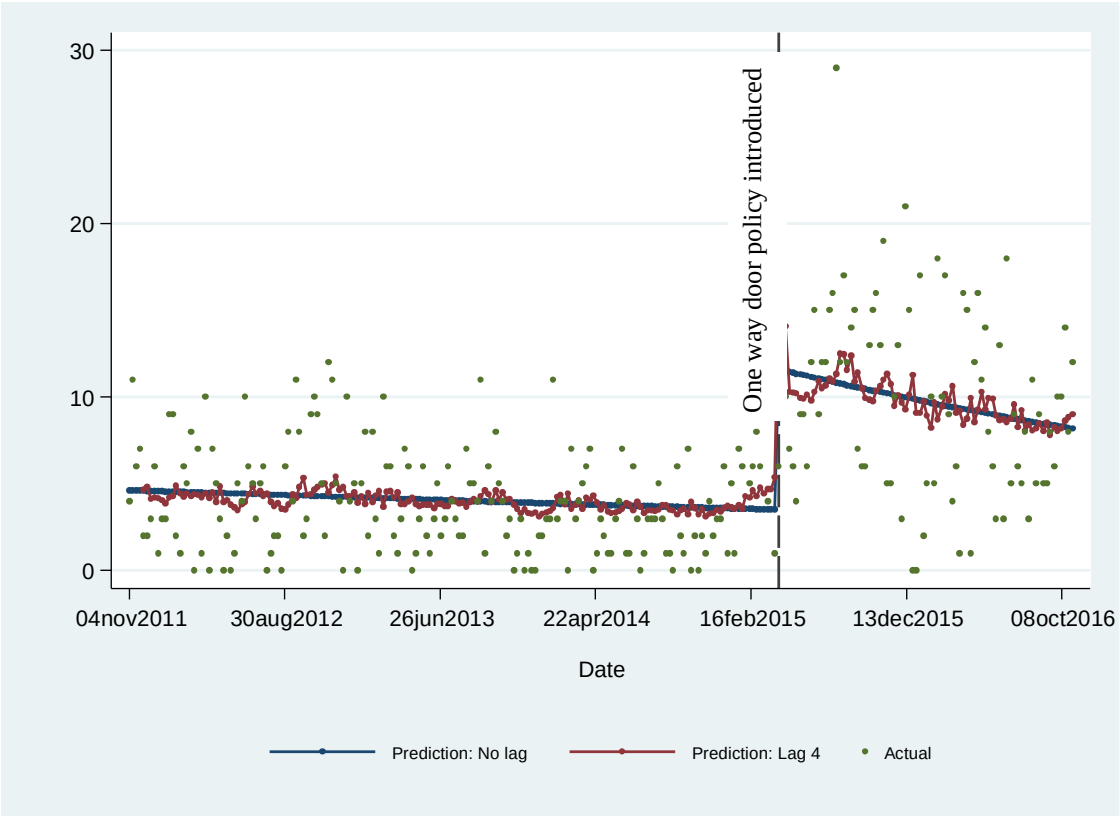
Table 4: Interrupted time series analysis results – observational data on antisocial behaviour

Variable	**Model 1**	**Model 2**
T (time since implementation of the one-way door policy)	0.998 (-0.001)	0.999 (-0.001)
X_t (post-intervention dummy variable)	3.312*** (0.166)	3.074*** (0.169)
TX_t	0.997 (-0.003)	0.997 (-0.003)
First period lag	-	1.077 (0.063)
Second period lag	-	1.082 (0.058)
Third period lag	-	1.010 (0.058)
Fourth period lag	-	1.073 (0.058)
N	261	257
Adjusted R^2	0.309	0.321

N.B. Results are reported as incident-rate ratios, with standard errors in parentheses; *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

These results are further illustrated in Figure 2, which shows the actual counts (in green) of antisocial behaviour events (per weekend), along with the predicted values from Model 1 (in blue) and Model 2 (in red). The substantial increase in events after the implementation of the one-way door policy is abundantly clear in this figure. It is also apparent that there has been a substantial increase in the variability in the number of recorded antisocial behaviour events (per weekend) since the implementation of the one-way door policy. This is demonstrated by the much greater dispersion of the actual counts of events in the period after implementation of the one-way door policy.

Figure 2: Actual and modelled antisocial behaviour (ASB) in Whangarei CBD, 2011-2016



The approximate tripling of antisocial behaviour incidents per weekend after implementation of the one-way door policy would seem to be perverse given that one of the aims of the policy was to reduce the incidence of antisocial behaviour. There are a number of possible explanations of this result, such as problems with the adequacy of the measure. However, the most plausible centres on whether or not the implementation of the one-way door policy was the only change that occurred at that time. As noted in the introduction, at the time of the implementation of the one-way door policy, Whangarei CBD began to be patrolled by four CitySafe personnel. From discussions with those involved, it appears that CitySafe interacted directly with the volunteers who monitor and code the CCTV footage, directing the cameras to particular events, or asking if the volunteers had observed something. It would seem reasonable then to argue that the observed increase in instances of antisocial behaviour was not due to the one-way door policy, but rather was due to the interaction between City Safe and the CCTV volunteers. In other words, the one-way door policy did not lead to an increase in antisocial behaviour in the Whangarei CBD, but led to an increase in the number of *recorded* events due to greater vigilance in the monitoring of the CBD.

Analysis of data on police calls-for-service

Two sets of quantitative results are presented in this sub-section, based on: (1) an interrupted time series analysis of Police calls-for-service data; and (2) a DID analysis of the same data. We note up-front that the DID analysis lacks some validity, as the common trends assumption is not met for the data. Therefore, our preferred results are from the interrupted time series analysis.

The interrupted time series results are presented in Table 5, for each of the three categories of calls-for-service, and for total calls-for-service. For simplicity, we report the results for models that exclude any lagged variables.[2] The variable of interest, X_t (the post-intervention dummy variable), is statistically significant for both violent offences and drug and alcohol offences, in both cases with an incident-rate ratio of less than one. This indicates that there was a statistically significant decrease in the number of these categories of calls-for service between the period before the implementation of the one-way door policy and the period after. Specifically, the ratios (0.355 for violent offences, and 0.336 for drug and alcohol offences) suggest that there was decrease in these events by around two-thirds after the one-way door was implemented. However, the other results shown in the table moderate the interpretation of these effects somewhat. First, in the case of violent offences, the variable TX_t is also statistically significant, with an incident-rate ratio of greater than one. That suggests that there was an increase in the time trend of violent offences after the implementation of the one-way door policy. Reading those results together, it suggests that the one-way door policy was associated with an immediate decrease in the number of violent offences, but that since implementation the number of offences has been increasing over time and back towards the long-term trend. Second, in the model for total calls-for-service, none of the variables are statistically significant. That suggests that, while there may have been decreases in violent offences and drug and alcohol offences associated with the time of implementation of the one-way door policy, those decreases have been offset by increases in other categories of Police calls-for-service.

These results are further illustrated in Figures 3 to 6, which show the actual counts (in green) of each category of calls-for-service or total calls-for-service (per weekend), along with the

[2] The results are qualitatively similar if time period lags are included. For example, see the previous results on the observational data on antisocial behaviour.

predicted values from the interrupted time series model. The decrease in violent offences followed by subsequent increase in time trend is clearly visible in Figure 3, as are the step-decrease in drug and alcohol offences (Figure 5), and the null changes in property damage (Figure 4) and total calls-for-service (Figure 6).

Table 5: Interrupted time series analysis results – Police calls-for-service, by type and in total

Variable	**Violent offences**	**Property damage**	**Drug and alcohol offences**	**Total calls-for-service**
T (time since implementation of the one-way door policy)	0.999** (<0.001)	1.000 (0.001)	1.001* (0.001)	1.000 (<0.001)
X_t (post-intervention dummy variable)	0.355** (0.157)	0.773 (0.332)	0.336** (0.166)	0.837 (0.107)
TX_t	1.014** (0.006)	0.995 (0.007)	0.995 (0.008)	1.000 (0.002)
N	570	570	570	570
Pseudo R^2	0.018	0.007	0.020	0.004

N.B. Results are reported as incident-rate ratios, with standard errors in parentheses; *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

Figure 3: Actual and modelled violent offence calls-for-service in Whangarei CBD, 2006-2017

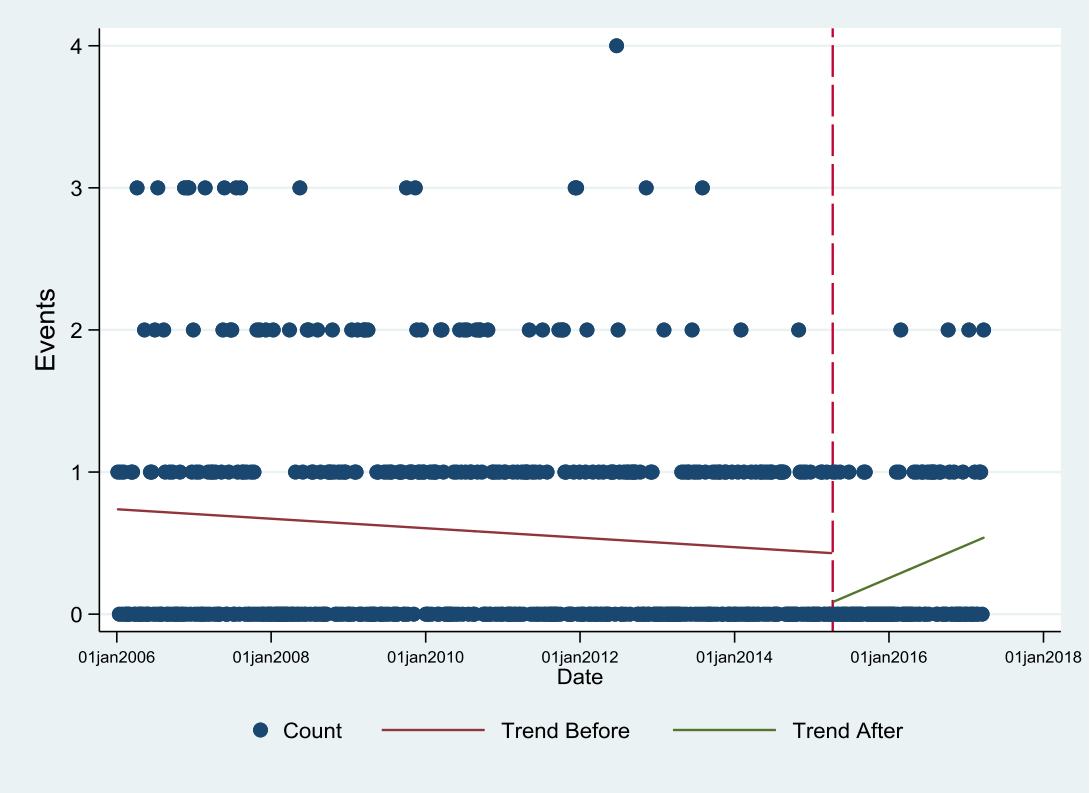


Figure 4: Actual and modelled property damage calls-for-service in Whangarei CBD, 2006-2017

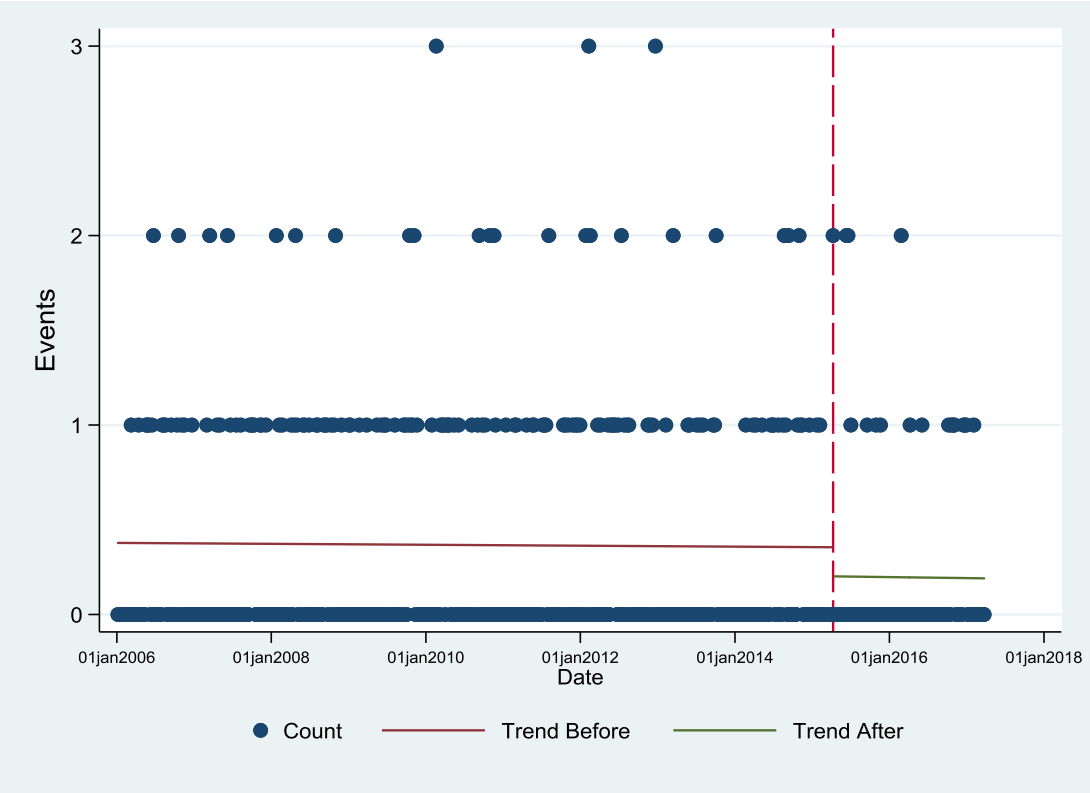


Figure 5: Actual and modelled drug and alcohol offence calls-for-service in Whangarei CBD, 2006-2017

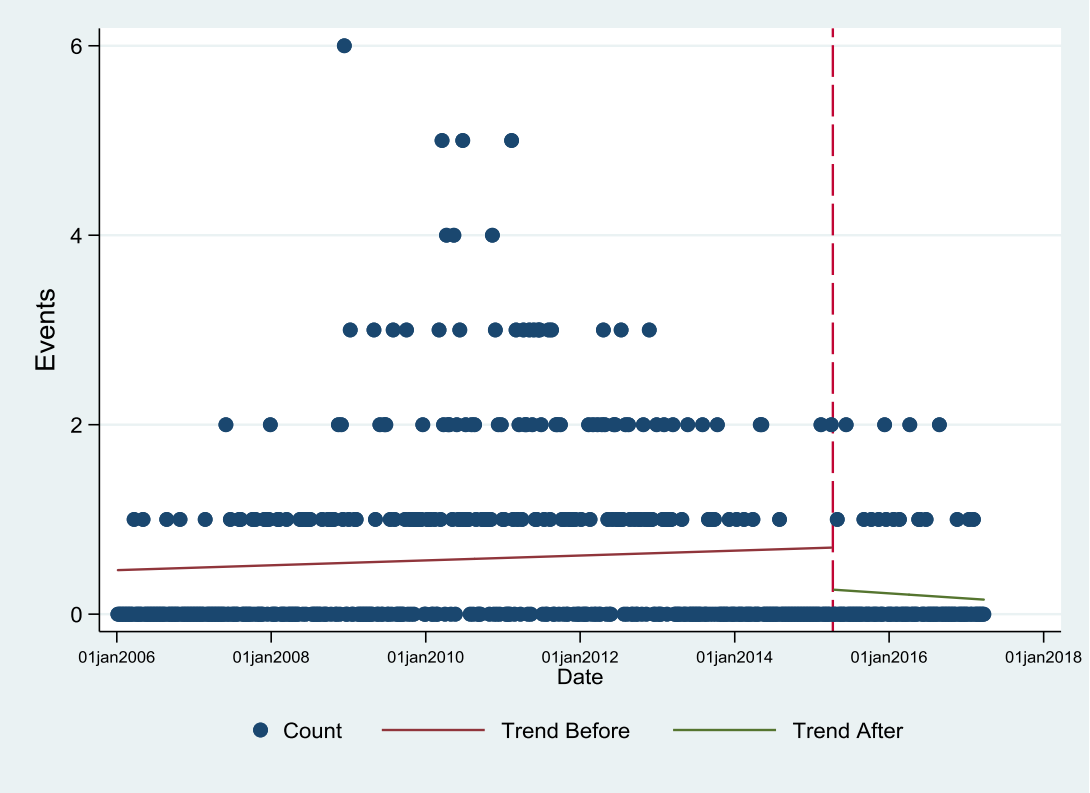
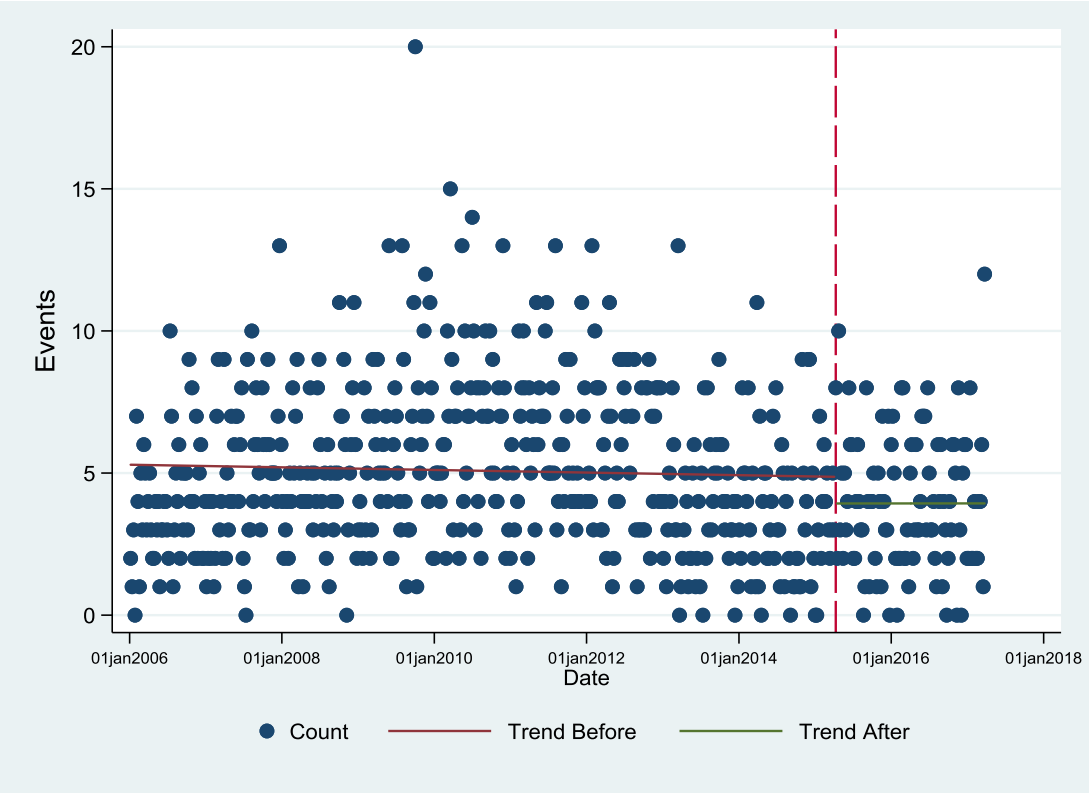


Figure 6: Actual and modelled total calls-for-service in Whangarei CBD, 2006-2017



The DID model results are presented in Table 6, using the rest of Whangarei urban area as a control. The variable of interest is DM_t, which is statistically significant with an incidence-rate ratio of less than one for violent offences, drug and alcohol offences, and total calls-for-service. This demonstrates that, calls-for-service have declined in Whangarei CBD at a faster rate, compared with the rest of Whangarei, after the one-way door policy was implemented. Specifically, the incidence rates are 38 percent, 64 percent, and 13 percent lower for violent offences, drug and alcohol offences, and total calls-for-service respectively. However, this alone cannot be taken as evidence for the success of the one-way door policy. This is because these results could have arisen because of a relative decrease in calls-for-service in the Whangarei CBD, a relative *increase* in calls-for-service in the Whangarei urban area outside the CBD (such as a negative displacement effect of the one-way door policy into the rest of the city), or a combination of the two. Combining these results with the earlier reported results from the interrupted time series analysis suggests that much of the effect may be driven by a decrease in calls-for-service in the Whangarei CBD, rather than negative displacement effects.

Table 6: DID analysis results with Whangarei urban as a control – Police calls-for-service, by type and in total

Variable	**Violent offences**	**Property damage**	**Drug and alcohol offences**	**Total calls-for-service**
D (post-intervention dummy variable)	0.885 (0.077)	0.547*** (0.066)	0.975 (0.255)	0.899*** (0.035)
M_t (treatment dummy variable)	0.299*** (0.021)	0.237*** (0.021)	2.792*** (0.367)	0.308*** (0.009)
DM_t (DID variable of interest)	0.620** (0.127)	1.066 (0.278)	0.358*** (0.129)	0.869** (0.062)
N	1172	1172	1172	1172
Pseudo R^2	0.110	0.114	0.042	0.165

N.B. Results are reported as incident-rate ratios, with standard errors in parentheses; *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

The DID model results are presented in Table 7, using the average count of calls-for-service for Rotorua CBD, Gisborne CBD, and Whanganui CBD combined as a control. As above, the variable of interest is DM_t, which is statistically *insignificant* in all models. This suggests that, relative to calls-for-service in the CBDs of other regional cities, the calls-for-service in Whangarei CBD have not changed after the one-way door policy was implemented. This contrasts strongly with the results of the interrupted time series analysis, and the DID analysis that used the rest of Whangarei as a control. There are a number of reasons why this might be observed.

First, the overall time trend in police calls-for-service has been downward in all of these places – both CBD areas and for the non-CBD urban area of Whangarei (see Table 2). If decreases in calls-for-service over time have generally been greater for CBD areas than for suburban areas, and especially if the trends have diverged close to or after the implementation of the one-way door policy in Whangarei CBD, then this would explain most of our quantitative results. Interrupted time series analysis would show a decrease in calls-for-service between the period before and the period after the intervention (in part because of the diverging overall trends in calls-for-service), a DID using suburban Whangarei as a control would show a large impact of the intervention (because of the different trends in calls-for-service between the CBD and the suburban area), and a DID analysis using other city CBDs as a control would show no statistically significant effects (because the observed decline in calls-for-service is a feature of CBDs generally, rather than specific to Whangarei CBD). Second, in the DID models, the period after the intervention is very short relative to the period before the intervention (see Figures 3 to 6). This reduces the robustness of the analysis of observed post-implementation trends, and reduces the statistical power of the analyses. This lower statistical power may in part explain the statistically insignificant results in the DID analysis when compared with other CBDs. Third, the 'common trends' assumption does not hold for the Police calls-for-service data. Violation of the common trends assumption may arise when there are omitted variables that affect the trend of the outcome in one area differently from in other areas. This leads to bias in the reported DID analyses. So, because our data violate the common trends assumption the DID analyses we have reported lack robustness and should be viewed with caution, and the interrupted time series results should be the preferred results.

Table 7: DID analysis results with Rotorua/Gisborne/Whanganui average as a control – Police calls-for-service, by type and in total

Variable	**Violent offences**	**Property damage**	**Drug and alcohol offences**	**Total calls-for-service**
D (post-intervention dummy variable)	0.692*** (0.076)	0.824 (0.105)	0.394*** (0.068)	0.760*** (0.034)
M_t (treatment dummy variable)	0.389*** (0.028)	0.389*** (0.036)	0.370*** (0.036)	0.351*** (0.010)
DM_t (DID variable of interest)	0.793 (0.172)	0.707 (0.185)	0.887 (0.272)	1.029 (0.079)
N	1172	1172	1172	1172
Pseudo R^2	0.070	0.059	0.051	0.133

N.B. Results are reported as incident-rate ratios, with standard errors in parentheses; *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

3.2 Qualitative analysis

3.2.1 Fidelity of implementation

An important part in the evaluation of any policy is investigating whether it has been implemented as intended. Without such an investigation, findings on effectiveness may be misattributed. For example, "no change" findings (as in our quantitative analysis in the previous section) may lead to a potentially good policy being needlessly abandoned because the problem was in the implementation rather than the design.

Overall, there was a strong consensus that the policy has been implemented in the way it was intended to be. Several participants mentioned a single incident in which the policy appeared to be blatantly breached. This incident involved premises under the management of a licensee who is no longer operating within the CBD, It was described by one interviewee in the following terms:

> *From staff and doorman – what we all observed on the footage is that they were letting people in through the back door and it looked to us as if the doorman was telling people 'just go round the corner, out the back, and we'll let you in'. That was nipped in the bud then after we spoke to the licensee, although he didn't really acknowledge that they were let in. (WDC)*

Some other "minor slippages" were observed: "occasional" cases of someone being allowed back into a bar and some laxity about timing ("five minutes here or there (but), you've got to provide for a margin of error"). Such departures from "good practice" were routinely followed up. As was pointed out by several participants, the availability of CCTV footage, the presence of CitySafe officers and the fact that Whangarei is "a pretty small town (in which) we talk a bit between ourselves" all meant that the policy was closely monitored and corrective action was taken when needed. Moreover, it is likely that monitoring compliance has become easier: it is our understanding that there are now only two premises that regularly continue to operate beyond 1 a.m.

3.2.2 Confounding factors

Just as fidelity of implementation is important in the evaluation of a policy, so too is the possibility of confounding factors. That is, it is important to consider what other contemporaneous changes may have occurred in the setting that may have had an impact on the desired outcomes. Without considering such factors, there is a risk that an ineffective policy may be evaluated positively, because the identified desired outcomes were the result of other factors. Alternatively, the positive effects of a potentially effective policy may be masked by the negative effects of an unrelated change in the setting.

Monitoring of the CBD

Our participants identified a number of changes that may have had a confounding effect on alcohol-related harm in the CBD. Although it is difficult to assess the impact of these, potentially, the most significant of these involved changes in the way the CBD is being patrolled and monitored. Prior to the policy, police patrolled the streets in the CBD without support or communication. As previously noted, as part of the implementation of the one-way door policy the Whangarei District Council hired CitySafe Officers to patrol the streets at night time, both to act as ambassadors for the council, and to monitor the behaviour and incidents that occurred within the CBD. The CitySafe officers have radio contact with each other, the CCTV volunteers, and the police. This is believed to have improved the police response to incidents in the CBD, as explained by a council officer:

> *You know what we have seen has been improved responses from the police. So initially we were challenged by some response times by the police, but with the one-way door policy, what we have drawn down from that, is that the timeframe for incidents occurring has narrowed quite a bit, and that's assisted police with resource deployment. And in fact what we've got from that is better response times from the police. So it's great to have a CCTV system, but when we observed something happening it's there to enable the police to get there quicker and to be able to know what they're dealing with, where they're dealing with it, and when. So they can get there faster. (WDC)*

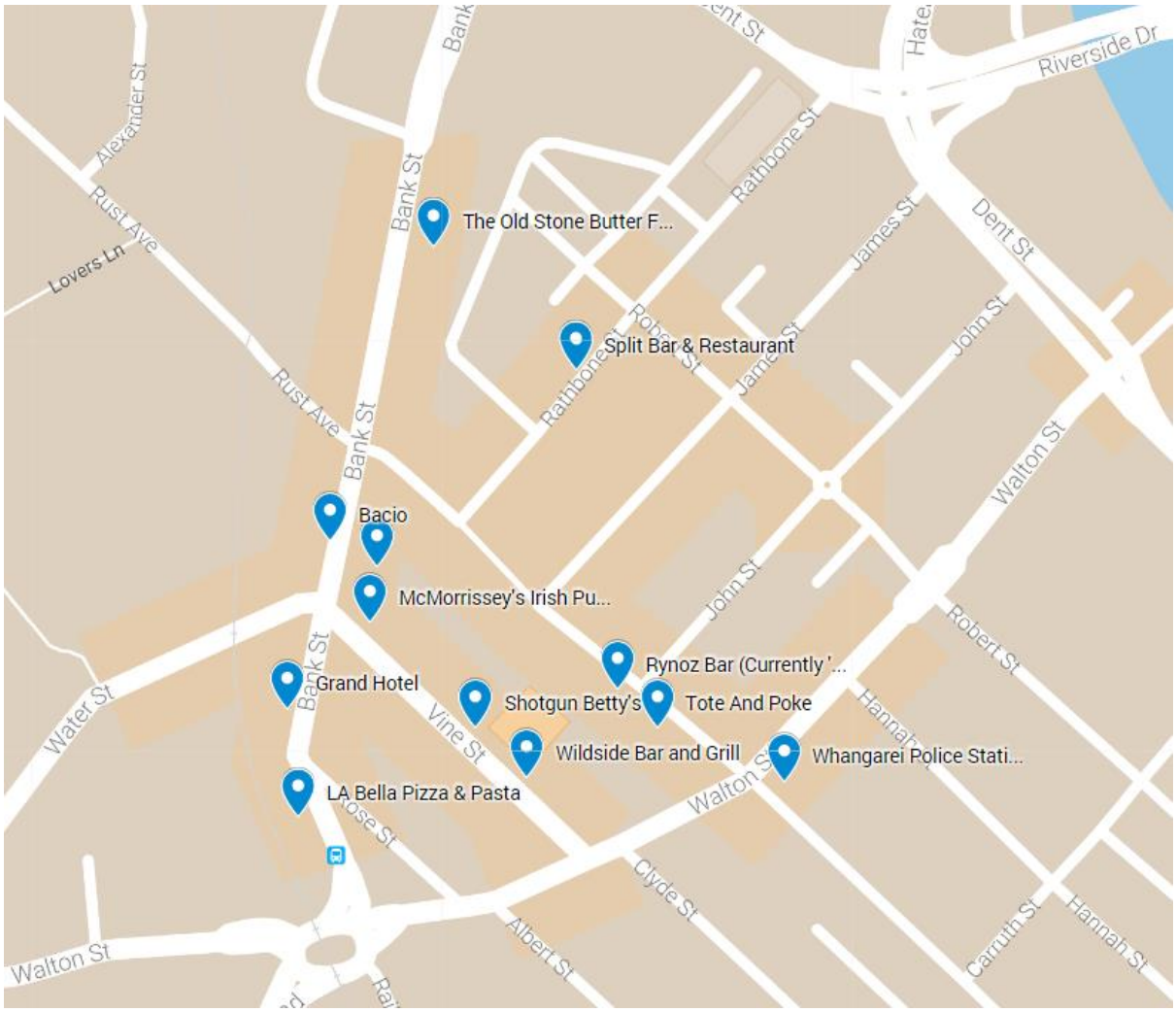
Citysafe Officers have been on patrol since the implementation of the policy, with four officers originally being employed to work on weekends from 12 a.m. to 4 a.m. Originally, they were employed for one year as a part of the implementation process, but due to the success of the officers, this has been extended.

It seems plausible to assume that both the presence of Citysafe officers and a quicker police response would enhance safety in the CBD. While we have not been able to quantify the impact (see the previous section), it is possible that these changes could have contributed to reductions in alcohol-related harms.

Premises within the CBD

A number of changes to the operation of licensed premises within the CBD setting were noted. According to a licensee, "Pretty much every big hospitality business in the CBD has changed hands" since the policy was put in place. We understand such changes included ownership of *McMorriseys*, *Killer Prawn*, *Rynoz*, and *Tote and Poke* (see Figure 7 for the location of various off-licence outlets in Whangarei CBD). It is possible that changes in ownership have been accompanied by changes in practices relevant to alcohol-related harm and inner-city safety.

Figure 7: Whangarei CBD and the location of on-licence outlets



Several licensed premises within the CBD have closed since the implementation of the policy, including S*hotgun Betty's, Head Office, Bank Street Social Club, Billiard Ball Room*, and *The Piano Bar*. Their closure is likely to have had an impact on patterns of patronage. This is particularly relevant to *Shotgun Betty's*. By some margin, this was the largest nightclub in the CBD, with the capacity for approximately 500 patrons. Following the closure of *Shotgun Betty's*, there are now only medium-small premises within the CBD, and, as mentioned, only two of these regularly remain open after 1 a.m.

Some participants commented that the closure of "bad" or "unsavoury" bars can lead to a significant improvement in the behaviour that occurs within the CBD. In this context, many participants described the history of Vine Street, described by one participant as the "worst street... for years and years." For example, a police officer commented,

> *Lots of old cops tell lots of war stories about the Friday and Saturday nights on Vine Street, which in many ways felt like you were in a war zone, and you could always tell from the CCTV where the fights were because the crowd would rush one way...and then the crowd would rush another way. And there were big crowds, because there was quite a number of licensed premises down that side, and not particularly good ones (Police)*

According to our interviewees, the closure of the main bars on Vine Street, some of which occurred prior to the one-way door policy implementation, some after, has meant that the street is now a less problematic area of the CBD. Purportedly, a number of the patrons that attended these premises then moved to a new premises on Cameron Street,[3] which became a problem area following that.

> *You know we had a very unsavoury nightclub which was called Heaven. It closed down – it was on Vine Street. So Vine Street was like 30-40 years, Vine Street's been the worst street. All the nightclubs were on Vine Street, it was the worst street. The two main players on Vine Street closed down, only leaving one. So when Heaven closed down, it was just full of gang members okay, and then they went to sort of Shotgun Betty's, and Rynoz. Shotgun Betty's on Vine Street closed down because of several [reasons]…So Shotgun Betty's closed down and Rynoz has kind of inherited the unsavoury element, as well as the average Joe Blogg and average punter that goes out nightclubbing or out drinking…I wouldn't say it's a gang bar but it's – you know – people are a lot rougher there. More likely to fight and air their differences and frustrations (WDC)*

While conducting interviews in November of 2016, participants mentioned that Rynoz had ceased to be a late night venue in the few weeks prior, and that it had made a difference to the atmosphere in town. While it is only one weekend without the premises being open late, it is worth noting that several participants noted the difference in alcohol related behaviour in the CBD.

> *Now that Rynoz is gone completely, it closes at 11 o'clock, the whole town has changed. Completely. There's no cars cruising round with attitude,*

[3] Cameron Street is the unlabelled street in Figure 7 that runs parallel to Vine Street, between the end of Rust Avenue and the Whangarei Police Station.

> *there's no people from that bar with attitude, they've all gone home or gone somewhere else, and last weekend we've had one of the quietest weekends that we've ever had, and that is purely because that bar has closed (CCTV volunteer)*

Potentially, each of the changes mentioned above, especially the closure of large or what were considered "unsavoury" premises, may have had contributed to a reduction of alcohol-related harm in the CBD and to enhanced safety. These changes are plausible confounding factors, in terms of understanding the pure effect of the one-way door restrictions, as changes in ownership, and especially closure of bars, may affect the number of people in the CBD at night as well as their levels of intoxication.

Additional Factors

While the changes within the CBD were the main factors mentioned by multiple participants, a number of other possible confounding factors were also mentioned. These included: the lowering of the drink driving limit; a general downward trend in violent crime; reduced discretionary spending as a result of the financial crisis; lack of police monitoring the liquor ban; a change in the dynamics of inter-gang relationships; and the police changing their focus to targeting domestic violence. These seem quite speculative, their purported timing does not necessarily correspond closely to the introduction of the policy, and in some cases, the direction of any influence cannot be taken for granted. We do not put much weight on these additional factors.

Overall assessment of confounding factors

Our questions about possible confounding factors elicited a range of responses. Some were quite speculative and while they cannot be dismissed outright, neither is there compelling evidence that they should be given much weight. Nevertheless, the introduction of Citysafe patrols and the closure of certain premises are both changes that could have had an impact on the CBD during the implementation of the one-way door policy. The latter seems to have had an effect on the quantitative analysis reported in Section 3.1. While we cannot be certain

about their impact, these are changes that suggest caution in making attributions about any observed changes in alcohol-related harm and safety within the CBD.

3.2.3 Impact on alcohol-related harm in the CBD

We asked all our participants what changes they had observed in alcohol-related harm and crime that could be attributed to the implementation of the OWD policy. We also asked them a more specific question about possible changes to the safety of the CBD at night. A large majority of interviewees thought that the policy had reduced alcohol-related harm and that the CBD was now safer at night. However, as mentioned above, while some of our participants could draw on first-hand observation in answering these questions, others relied on secondary sources. Moreover, some of our participants were in a better position than others to make before-and-after comparisons on issues of harm and safety. These differences mean that we have had to proceed cautiously evaluating claims about the impact – or otherwise – of the policy.

Police officers were unanimously of the view that the policy had improved the situation, although not all of them had first-hand experience of the CBD in the early hours of the morning. One who did have such first-hand experience told us,

> *I personally, from what I've seen, I think there's been a huge reduction in disorder and crime in town, purely because I don't think you get all the hangers-on sort of hanging around outside the clubs and things. They know at one o'clock they can't get in, so it's just time to go home. Whereas prior to that policy, you know you'd just have dozens of people just sitting on the side of curbs and footpaths and hanging outside clubs because they've got nothing else to do. (Police)*

The positive accounts from police officers were corroborated by a member of a different group of stakeholders – a licensee. Like the police officer quoted above, this interviewee was able to speak from personal experience:

> *I've noticed big changes for us in a positive way, for example from 1 a.m. – because as an owner I'm actually here every weekend so I see it 100% everything that happens, I work on the door – from 1 a.m. my stress level*

has gone from 100% down to probably 30% due to the simple fact that we don't have to worry about what's walking up the street, you know, we can concentrate on what we're doing... Aggression at the door has decreased, I would say 90%.... due to the fact that we don't have to say to people "Hey sorry mate you can't come in, you're too intoxicated" or "you've got the wrong shoes" or whatever reason. Quite simply we say "Sorry guys, it's against the law and monitored by the police. There's nothing we can do." So in that respect it has been very positive (Licensee)

A third positive account came from the owner of a business in the CBD. Although she was not in a position to observe behaviour in the streets in the early hours of the morning, she was well positioned to comment on what could be considered a proxy measure of alcohol-related harm, the cleanliness of the CBD:

Before the policy came in it was pretty normal that every Monday morning you'd come into town and there'd be blood spatters on the pavement. There's a post box outside my shop and because it's directly across the road from a couple of pubs that people would trundle out of, and someone would inevitably get their head smashed into it, and there'd be blood over it. We had one Monday morning where we came into work and it was covered in human excrement, as was my window… And then one-way door policy came in, and it was immediate. Immediate difference. Monday morning there's no blood spatters all over the place. You still get the occasional vomit in the doorway, but nothing like it used to be. It's a massive, massive difference. (Retailer)

A fourth very positive account came from a volunteer who had been monitoring the inner-city security cameras. When asked if there had been a reduction in alcohol-related harm, he replied,

Huge. Because it's taken the binge drinking, yahooing afterwards, basically off the street. They don't, to a degree they don't hang around anymore, they've had their fun and within probably 10-20 minutes of the bars closing, everybody is gone. So yeah it's just taken it off the street. (CCTV volunteer)

Most of the other interviewees who were in a position to observe early morning behaviour on inner city streets also gave positive accounts of the impact of the policy on alcohol-related harm and safety. Both taxi drivers we interviewed considered that the streets were quieter and that there were fewer intoxicated people about. Similarly, one of the late night food vendors we interviewed commented that the CBD is "a safer place now because there's less people there."

In varying ways, all of the above are first-hand accounts. It is also noteworthy that they came from interviews drawn from different stakeholder groups. Both of these factors suggest that these positive accounts of the impact of the policy should be given some weight.

However, some interviewees were not so positive. For example, one of the volunteers monitoring inner city security camera thought that there had been a reduction in alcohol-related harm only to "some degree" and that it was "hard to gauge." When asked if the CBD was safer as a result of the policy, one of the late night food vendors replied:

> *No not really, because I've been told of people waiting in doorways for people that have been mugged or smacked and tried to grab their wallet and things like that. So I'm still hearing a lot of that. (Late night food vendor)*

Scepticism about the effectiveness of the policy was strongest among interviewees involved in the hospitality industry. Among this group, the majority thought that the policy had made little or no difference in reducing alcohol-related harm or in enhancing inner-city safety. Nevertheless, there was some ambiguity in such responses. For example, one licensee initially said he had not noticed any reduction in problem behaviour because:

> *At the end of the day, at 3 o'clock in the morning, there's still a whole lot of drunk people released on the streets. (Licensee)*

He went on to say that there was more drinking in the streets by people who cannot get into bars after the lockout and that much of the trouble was caused by people too young to get into bars and thus unaffected by the policy. However, later in the interview he commented,

> *Yes probably there has been a reduction in crime but that's because there's a reduction of people physically out (on the streets). (Licensee)*

Overall assessment of impact

In weighing up the varying responses of our interviewees, there were a number of factors we had to consider. One was the possibility of a confirmation bias: that is, some advocates of the policy may be unconsciously more attuned to evidence of its effectiveness than to evidence of its failure. To some extent, this concern is offset by the fact that such a bias could work both ways: interviewees who could be expected to be less enamoured of the policy might be more attuned to evidence of its failure than to evidence of its success. While we cannot absolutely exclude the possibility of a confirmation bias, we were struck by the fact that most interviewees gave quite nuanced accounts of the impact of the policy.

A second factor in weighing up the responses is that we thought it wise to give greater weight to the responses of interviewees who were able to give first-person accounts than to responses from interviewees who could not. This minimized the risk of an echo chamber effect: one in which some respondents were simply repeating what they had heard from others. It is also important to note that positive accounts of the impact of the policy came from all stakeholder groups, even if some of those groups, particularly the licensees, also provided some negative accounts.

Bearing these factors in mind, we conclude that the qualitative data does provide evidence demonstrating that the policy has been effective. This conclusion needs to be treated with caution. As mentioned in the previous section, we cannot dismiss the possibility that positive changes might be at least partly attributed to confounding factors, such as changes in the setting other than the introduction of the one-way door policy.

We now turn our attention to the issue of possible unintended consequences of the policy.

3.2.4 Unintended consequences

The one-way door policy is a single intervention into a complex set of inter-connected processes and relationships. While the aim of the policy was to reduce alcohol-related harm and crime in the Whangarei CBD, it could be expected that there may be other consequences. We asked our participants if they had noticed other changes as a result of the policy. This question generated a lot of responses, but often these were contradictory. For example, some people told us that the policy had resulted in more people drinking in cars and carparks in the

inner city, while others told us that the policy had resulted in fewer people doing so. We were told that there was now more pre-loading (consuming cheaper alcohol at home before coming into town), and we were told that there was now less pre-loading. Some people complained about a loss of "vibrancy" in city night life, while others thought it was more vibrant because increased numbers of people "go there for more of a sophisticated dining experience." There were also contradictory reports about the effect of the policy on turnover in licensed premises: some licensees noted reductions, but at least one reported an increase. However, there was a reasonable consensus about four changes thought to be attributable to the policy.

First, it appears that one consequence of the introduction of the policy is that it has allowed a reallocation of police resources. A police sergeant put it this way:

> *With this door policy, it's not using as much police resources in town. So what's that meaning is we'd normally… have two sergeants and probably have half a dozen boys and girls… walk(ing) around town, which now we are getting away with just perhaps one sergeant and perhaps three or four. And then those other staff members can actually get out in the suburbs for all the burglaries and thefts of cars and all that sort of stuff that's happening. So it's changed the way we can actually resource and manage what's actually happening. So it's not soaking up as many resources in town. Yeah. (Police)*

Second, there is some evidence that fewer people have been coming into town at night since the introduction of the policy. Here it is important to distinguish reports of quieter streets during the 1 a.m. to 3 a.m. lockout from more general observations about the number of people in town. Only some interviewees commented on the latter, but when they did they invariably considered that there were fewer people in the CBD at nights. For example, a police officer commented that there "has definitely been a decline in the sheer numbers of people out and about." A late night food vendor reported a loss of business, which he attributed to fewer people coming into the CBD. In his view, local people were staying at home and fewer visitors were coming to Whangarei for a night out.

The idea of fewer people coming into town is consistent with a third possible consequence of the policy. That is, several of our interviewees described a displacement effect: people who might previously have come into the CBD are now drinking at private parties and public venues in the suburbs. A taxi driver commented:

> *We're carrying a lot more people to the liquor shops and that before half past ten-ten o'clock to pick up booze, and take home. It's stopped a lot of people coming into town to drink; they're now drinking at home. (Taxi driver)*

He went on to note that before policy was implemented, most night-time fares were, initially, from the suburbs to the CBD and later, from the CBD to the suburbs. This, he said, had changed: "Now it's moving from suburb to suburb, rather than into town." More of his night-time business involved driving people to "parties out of town." Similarly some – but not all – police officers thought that there was more drinking being done outside the CBD than was the case previously.

A final unintended consequence of the policy is that it may have changed the pattern of business for taxi companies. As evident above, it may have resulted in more suburb-to-suburb hires and fewer hires between suburbs and the CBD. The policy may have also concentrated the demand for taxis at certain times. That is, before the policy, the demand for hires from the CBD to the suburbs was somewhat spread throughout the night. Now, there is little demand between 1 a.m. and 3 a.m., but an increased demand once the bars close at 3 a.m. A licensee noted that customers often "have to wait here about an hour at least, at peak hours" and a CitySafe worker recalled an incident sheet that recorded 22 people waiting at a taxi rank. Several interviewees described the rise of an informal taxi service: drivers unlicensed to carry paying passengers who took people home in return for a "donation."

3.2.5 Refinements

Some of our participants suggested ways in which the one-way door policy could be modified to improve its effectiveness or to reduce negative impacts. The main suggestion was that the policy allow for some flexibility. That is, patrons who had a good reason to go outside for a time could be given a pass-out card that would allow them to re-enter the premises. This could be used, interviewees said, by a sober driver who could take a friend home and then return for others. Alternatively, it could be used by someone to escort a woman to a taxi or to her parked car. While these are hypothetical scenarios, one incident was related in which a disabled patron had to leave a bar to get a new tube for his urine drainage bag – and caused "a lot of trouble" when he was not allowed back in.

Some licensees thought that there was a need to publicise the policy more effectively. They found that some patrons were unaware of the one-way door policy, particularly visitors to Whangarei, and that this caused unnecessary conflict.

3.2.6 Process factors

Following the example of the evaluation of the Christchurch OWD policy (Kirkwood & Parsonage, 2008), we wanted to identify process factors that may have been influential in determining the effectiveness of the policy in Whangarei. Thus, we asked participants to reflect on the way various organisations worked together on the development and implementation of the policy.

In the words of one interviewee, referring to proceedings before ARLA, the one-way door policy "got off on the wrong foot." Nevertheless, the general view was that there is now a high level of cooperation between the various stakeholder groups. For example, while interviewees acknowledged that, initially, there had been some operational factors to iron out, they were generally of the view that there is a strong relationship between CitySafe officers, police, Whangarei District Council, and the CCTV volunteers. Interviewees from each of these groups almost invariably spoke positively about the other groups. The communication between these groups means they are able to implement the policy efficiently, while creating a successful system to monitor the behaviour and policy implementation within the CBD. As noted by a CitySafe officer,

> *One group can't do it by themselves out there, but all of us working together has made a really good team to make this happen and make this work (CitySafe officer)*

For example, when problems have been identified with breaches of the policy, CitySafe officers and CCTV volunteers noted that were followed up quickly and effectively by Council staff.

There were more varied views about the level of collaboration between the hospitality stakeholders and the other groups. For example, there were certain licensees who were quite critical of the District Council officers, who were variously described as not caring about the industry, as failing to respond to concerns, and as listening "but with ear plugs." Some

licensees resented paying the required fees (although it should be noted that licensing fees are set by central government, not local councils). Fewer negative comments were made about the police, but one licensee considered that officers did not take the time to build relationships with the sector. However, to some extent, such negative views were balanced by more positive appraisals of both Council and police staff. One licensee described the police as "absolutely fantastic"; he appreciated officers' efforts to build good relationships with industry players. Similarly, an operator new to the city felt that that Council staff had done a good job in explaining the policy to him and helping him understand his obligations. Moreover, as one police officer noted, Whangarei is "small place" which makes it easy for people to get to know one another and build good working relationships. Another police officer noted that most licensees acted responsibly and those who didn't did not last long. His assessment of the level of collaboration was that "everyone has got on board,"

4. Conclusions

This report evaluated the Whangarei one-way door restriction, which was introduced on 7 April 2015, using a combination of quantitative and qualitative analysis. The quantitative analysis demonstrated a statistically significant *increase* in antisocial behaviour observed in CCTV footage after the implementation of the policy. However, it is important to note that this was based on observational data, and that the simultaneous introduction of CitySafe patrols into the Whangarei CBD has led to increased vigilance and improved monitoring, which probably explains the increased in observed antisocial behaviour. This point was also supported by the qualitative research, which suggested the introduction of CitySafe patrols was a potential confounding factor that would affect any analysis of the impact of the one-way door policy.

In contrast, an evaluation of Police calls-for-service data suggested that there had been statistically significant *decreases* in violent offences and drug and alcohol offences in the Whangarei CBD. However, there was no significant effect on property damage or on total calls-for-service. The latter is somewhat surprising, since it suggests that, while there may have been decreases in violent offences and drug and alcohol offences, these decreases were offset by increases in calls-for-service for other crimes in the Whangarei CBD. Moreover, the decrease in violent offences appears to have been countered somewhat by an increasing trend since the implementation of the one-way door policy, such that the number of violent

offences had returned to its long-run trend by March 2017. Further analysis of the Police calls-for-service data using a difference-in-difference approach revealed decreases in violent offences, drug and alcohol offences, and total calls-for-service in Whangarei CBD compared with the rest of Whangarei urban area, but no decreases relative to three other CBD areas of regional cities (Rotorua, Gisborne, and Whanganui) in the North Island. However, the assumptions on which these latter results rely are likely violated and they lack robustness.

The qualitative analysis found that there was a strong consensus that the one-way door policy had been implemented in the way it was intended to be. Moreover, a large majority of interviewees thought that the policy had reduced alcohol-related harm and that the CBD was now safer at night. This conclusion should be treated with some caution, as it may be subject to some degree of confirmation bias, and we cannot dismiss the possibility that positive changes might be at least partly attributed to confounding factors. A number of possible unintended consequences were also noted in the qualitative research, including a reallocation of police resources, fewer people in the night-time economy in Whangarei, displacement of drinking and alcohol-related harm from the CBD to the suburbs, and concentration of demand for taxi services.

One notable refinement suggested by interviewees was the introduction of limited pass-out cards that would allow some patrons to exit premises and later return, for specified purposes. However, in spite of finding favour with interviewees, it is likely that such an approach is not allowable under the SSAA (see the relevant wording from Section 5 of the SSAA on page 5 of this report, and the definition of an exempt person in the Appendix). Better communication between the Council and licensees would likely reduce this misunderstanding, and lead to improvements in the continued implementation of the policy.

Overall, we cannot definitively conclude from the quantitative analysis that the Whangarei one-way door policy has decreased Police calls-for-service or observed antisocial behaviour in the Whangarei CBD. In part this is due to the short period of data available after the implementation of the one-way door policy, and this analysis could usefully be replicated when two or more additional years of data have become available. However, based on the qualitative observations of those who are likely to be best able to evaluate the on-the-ground reality of the implementation and effects of the policy and the quantitative results as they stand, there is strong suggestive evidence that the overall impacts have been positive.

References

Angrist, J.D., and Pischke, J.S. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, N.J.: Princeton University Press.

Bernal, J.L., Cummins, S., and Gasparrini, A. (2016). Interrupted time series regression for the evaluation of public health interventions: a tutorial. *International Journal of Epidemiology*, dyw098.

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(1), 77-101.

Cameron, M.P., Cochrane, W., Gordon, C., and Livingston, M. (2013). *The Locally-Specific Impacts of Alcohol Outlet Density in the North Island of New Zealand, 2006-2011*, research report commissioned by the Health Promotion Agency, Hamilton: National Institute for Demographic and Economic Analysis, University of Waikato.

Cameron, M.P., Cochrane, W., McNeill, K., Melbourne, P., Morrison, S.L., and Robertson, N. (2012). *The Impacts of Liquor Outlets in Manukau City – Summary Report*. Wellington: Alcohol Advisory Council of New Zealand.

Clarke, R.V., and Eck, J. (2005). *Crime Analysis for Problem Solvers in 60 Small Steps*. Washington, DC: U.S. Department of Justice, Office of Community Oriented Policing Services.

Clarke, R.V., and Felson, M. (Eds). (1993). *Routine Activity and Rational Choice*. New Brunswick, NJ: Transaction Publishers.

Cohen, L.E., and Felson. M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review, 44*, 588-605.

De Andrade, D., Homel, R., and Townsley, M. (2016) Trouble in paradise: The crime and health outcomes of the Surfers Paradise licensed venue lockout. *Drug and Alcohol Review*, 35, 564-572.

Katsouyanni K., Schwartz J., Spix C., et al. (1996). Short-term effects of air pollution on health: A European approach using epidemiological time series data. The APHEA protocol. *Journal of Epidemiology and Community Health*, 50(Suppl 1), S12-S18.

Kirkwood, L., and Parsonage, P. (2008). *Evaluation of the Christchurch city one-way door intervention – Final report*. Wellington: Alcohol Advisory Council of New Zealand and Accident Compensation Corportion.

Kypri, K., Jones, C., McElduff, P., and Barker, D. (2011), Effects of restricting pub closing times on night-time assaults in an Australian city. *Addiction*, 106, 303-310.

Kypri, K., McElduff, P., and Miller, P. (2014), Restrictions in pub closing times and lockouts in Newcastle, Australia five years on. *Drug and Alcohol Review*, 33, 323-326.

Law Commission. (2010). *Alcohol in our lives: Curbing the harm – A report on the review of the regulatory framework for the sale and supply of liquor*. Law Commission Report No. 114. New Zealand: Law Commission.

Mazerolle, L., White, G., Ransley, J. and Ferguson, P. (2012), Violence in and around entertainment districts: A longitudinal analysis of the impact of late-night lockout legislation. *Law & Policy*, 34, 55–79.

Menéndez, P., Weatherburn, D., Kypri, K., and Fitzgerald, J. (2015). Lockouts and last drinks: The impact of the January 2014 liquor licence reforms on assaults in NSW, Australia. *Crime and Justice Bulletin No. 183*. Sydney: New South Wales Bureau of Crime Statistics.

Palk, G.R.M., Davey, J.D., Freeman, J., and Morgan, H. (2012). Perspectives on the effectiveness of late night liquor trading lockout legislative provisions. *Criminal justice policy review*, 23, 465-492.

Schwartz, J., Spix, C., Touloumi, G., et al. (1996). Methodological issues in studies of air pollution and daily counts of deaths or hospital admissions. *Journal of Epidemiology and Community Health*, 50(Suppl 1): S3-S11.

TNS New Zealand. (2016). *Scoping the opportunity to evaluate the Whangarei Council one way door policy*. Auckland: TNS New Zealand.

Appendix

The definition of an exempt person, from the Sale and Supply of Alcohol Act 2012, is:

exempt person, in relation to licensed premises to whose licence a one-way door restriction applies,—

(a) means a person who—

(i) is the licensee; or

(ii) is the licensee's spouse, civil union partner, or de facto partner; or

(iii) is a manager; or

(iv) is a manager's spouse, civil union partner, or de facto partner; or

(v) is a member of the immediate family of the licensee or a manager; or

(vi) during the hours he or she is employed to work on the premises, and for 60 minutes after those hours have ended, is an employee of the licensee who does not live on the premises; or

(vii) is an agent of the licensee, or acting under a contract with the licensee or a manager, and has the authority of the licensee or a manager to enter the premises at that time—

(A) to clean, repair, or restock the premises (or any equipment in them); or

(B) to check or remove cash; or

(viii) is a person who has the authority of the licensee or a manager to enter the premises to remove equipment (for example, band equipment); or

(ix) is an employee of the licensee who lives on the premises; or

(x) is a person who—

(A) lives or lodges in the building in which licensed premises are situated; and

(B) is a tenant, lodger, or employee of the licensee; or

(xi) is a genuine guest of a person who—

(A) is a person of a kind described in subparagraph (x); and

(B) is on the premises; and

(b) at any particular time, includes a person who,—

(i) at that time, is authorised by an enactment other than this Act to enter the premises; or

(ii) enters the premises to deal with an emergency occurring at that time.

Figure A1: Location of CCTV cameras in Whangarei CBD