Pub closing times and assault: Research evidence in heavily contested policy debate

Newcastle Hospitals Congress
7 August 2014

Kypros Kypri PhD
Centre for Clinical Epidemiology & Biostatistics
School of Medicine and Public Health
Outline

• The Newcastle experiment
  ~ Background
  ~ Initial effects
  ~ Effects 5 years on

• Other studies

• The Sydney story
1. The Newcastle experiment

- Police and community complain to state govt about high levels of crime from pubs in the Central Business District

- Liquor Administration Board requires 14 pubs to close earlier: 3am (with 1am “lockout” / “one-way door”) – previously 5am

- Took effect 21 March 2008 (weakened to 3.30am/1.30am on 29 July 2008)
Study aims

• Test the hypothesis that this intervention reduced the incidence of assault in the Newcastle CBD.

• Investigate geographic (from the CBD to the nearby control area) and temporal displacement (to earlier in the evening). [Not addressed today – see paper]

• Determine whether effects seen in the 1.5 years post change persisted in the following 3.5 years (to March 2013)
Methods

Controlled Before and After Design in which the Central Business District (CBD) was the intervention area and a nearby area with similar characteristics served as the control.

Update: Before and After Design in two locations and comparison of two post-change periods
Case definition

- Incidents in which police were called to, or themselves observed, a criminal act involving **common assault**, **actual or grievous bodily harm**, assault of police, or shooting with intent other than to murder, as defined under the NSW Crimes Act 1900, and irrespective of whether there was a subsequent charge or conviction. (Excludes domestic violence)

  ~ Occurred 10pm-6am
  ~ In postcode areas 2300 and 2302 (CBD) or 2303 (Hamilton)
  ~ Pre: April 2001 to March 2008 (28 quarters)
  ~ Post 1: April 2008 to September 2009 (6 quarters)
  ~ Post 2: October 2009 to March 2013 (14 quarters)
14 pubs forced to close earlier:
3.30am (previously 5am)

Open access: Google title
Assaults per quarter 7 years before and 18 months after the change in closing time

<table>
<thead>
<tr>
<th></th>
<th>Before N</th>
<th>After N</th>
<th>After-to-Before incidence rate ratio (95% CI)</th>
<th>Relative After-to-Before incidence rate ratio (95% CI)</th>
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</tr>
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<tbody>
<tr>
<td><strong>CBD</strong></td>
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<td>67.7</td>
<td>0.68 (0.58 to 0.80)</td>
<td>0.63 (0.48 to 0.82)</td>
<td>0.0005 (^a)</td>
</tr>
<tr>
<td>(Intervention area)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hamilton</strong></td>
<td>23.4</td>
<td>25.5</td>
<td>1.09 (0.88 to 1.35)</td>
<td>1.00 Reference</td>
<td>-</td>
</tr>
<tr>
<td>(Control area)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Were the effects sustained?

“The Sydney lockout: new location, but the same old mistakes” Sydney Morning Herald, 24 February 2014 (Nick Reece, Policy Fellow, University of Melbourne)

“In 2008, [the Victorian Premier] cited the "Ballarat model" as the basis for the lockout for inner-city Melbourne.”

“A recent a study of 10 years of crime data from Ballarat found the lockout had no discernible long-term impact on alcohol-related emergency department attendances. It remains to be seen what a similar study will find in Newcastle.”

### Assaults per quarter before and up to 5 years after the restriction in closing time

<table>
<thead>
<tr>
<th>CBD (Intervention area)</th>
<th>Mean number of assaults per quarter</th>
<th>Post/Pre Incidence rate ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Apr 2001 to Mar 2008</td>
<td>Pre 2008 to Sep 2009</td>
<td>Post 2 Oct 2009 to Mar 2013</td>
</tr>
<tr>
<td>99</td>
<td>68</td>
<td>71</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hamilton (Control area)</th>
<th>Mean number of assaults per quarter</th>
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</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>24</td>
<td>22</td>
</tr>
</tbody>
</table>

2. Evidence from elsewhere


~ 14 controlled studies (Australia, Brazil, Canada, UK, USA,)

“the balance of reliable evidence…suggests that extended late-night trading hours lead to increased consumption and related harms.”

~ US Task Force on Community Preventive Services

~ Reviewed:
  • 10 studies examining changes of ≥2 hours
  • 6 studies examining changes of <2 hours

“There was sufficient evidence…to conclude that increasing hours of sale by 2 or more hours increases alcohol-related harms

The evidence…was insufficient to determine whether increasing hours of sale by less than 2 hours increases excessive alcohol consumption and related.” [Not evidence of no effect but insufficient evidence]
3. The Sydney story

Daniel Christie, age 18, died on 11 January 2014 after 12 days in a coma.

Punched in Kings Cross on New Year’s Eve.
• Death of Thomas Kelly, aged 18 years, 7 July 2012

Both incidents occurred well before midnight

Why the change?
• The timing and nature of the deaths (young, innocent men, a 12 day coma)
• Sustained efforts by high profile, influential, articulate parents ("Thomas Kelly Foundation")
• Public opinion
• Murdoch Press
• AHA internal politics
• The summer break (no spin doctors, clearer head, Alan Jones on holiday)
• Policy relevant research and advocacy for its use in policy formation
From 24 Feb 2014
1.30 lockout;
3am cessation of alcohol sales

- A step in the right direction
- Lockout of dubious value
- Independent evaluation crucial – should have been initiated before the change
- Governments have to become contributors to the evidence base, not merely consumers of it
Lessons for Australia

• Permit all communities to initiate earlier cessation of drinking in licensed premises

• Dispense with lockouts: Maximum of 2am cessation of consumption (last drink sales at 1.30)? [California model]

• Address off-licence density

• Ensure independent evaluation is initiated well before regulatory change
Outline

• The Newcastle experiment
  ~ Background
  ~ Initial effects
  ~ Effects 5 years on

• Other studies
  ~ Systematic reviews
  ~ Notable recent studies

• The Sydney CBD
Background

- Opening hours widely considered to be important but surprisingly little empirical evidence until the 2000s

- Evidence mostly relates to liberalisation of hours
  - e.g., Chikritzhs et al (2002, 2006, 2007): 12am to 1am in Perth

- The rest concerned unusual conditions: border crossings, remote indigenous communities
  - US border w/ Mexico (Voas et al); w/ Canada (Vingilis et al)
  - Halls Creek, Australia (Douglas 1998)
The science to 2010


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Since 2010


• Rossow I & Norstrom T (2012). The impact of small changes in bar closing hours on violence. The Norwegian experience from 18 cities. *Addiction* 107(3) 530-7

The Newcastle experiment

- Police and community complain to state govt about high levels of crime from pubs in the Central Business District

- Liquor Administration Board requires 14 pubs to close earlier: 3am (with 1am “lockout” / “one-way door”) – previously 5am

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• Test the hypothesis that this intervention reduced the incidence of assault in the Newcastle CBD.

• Investigate geographic (from the CBD to the nearby control area) and temporal displacement (to earlier in the evening).

• Determine whether effects seen in the 1.5 years post change persisted in the following 3.5 years (to March 2013)
Methods

Design:

Controlled Before and After Design in which the Central Business District (CBD) was the intervention area and a nearby area with similar characteristics served as the control.

Update: Before and After Design in two locations and comparison of two post-change periods
The ideal control site

• Affected identically by determinants of drinking and other assault risk factors
  ~ macro-economic conditions
  ~ transport variables

• Consisting of the same demographic mix of patrons

• Same types of outlets

• Not too close to the intervention site
  ~ If close, smaller in size (to detect displacement)
Methods cont’d

Case definition

- Incidents in which police were called to, or themselves observed, a criminal act involving common assault, actual or grievous bodily harm, assault of police, or shooting with intent other than to murder, as defined under the NSW Crimes Act 1900, and irrespective of whether there was a subsequent charge or conviction. (Excludes domestic violence)

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- Post 1: April 2008 to September 2009 (6 quarters)
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14 pubs forced to close earlier: 3.30am (previously 5am)
Assaults per quarter before and after the change in closing time

<table>
<thead>
<tr>
<th>Area</th>
<th>Before N</th>
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<th>After/Before incidence rate ratio (95% CI)</th>
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</tr>
</tbody>
</table>

a For area by time interaction term in negative binomial regression model
Distribution of Assault Time

Before

CBD

Hamilton

After

Percent

Time of Assault: 10pm, 12am, 2am, 4am, 6am
## CBD

<table>
<thead>
<tr>
<th></th>
<th>Before 3am</th>
<th>After 3am</th>
<th>Chi-squared test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Pre</td>
<td>2000</td>
<td>73</td>
<td>738</td>
</tr>
<tr>
<td>Post</td>
<td>369</td>
<td>88</td>
<td>52</td>
</tr>
</tbody>
</table>

## Hamilton

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<tr>
<td></td>
<td>N</td>
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<td>N</td>
</tr>
<tr>
<td>Pre</td>
<td>522</td>
<td>79</td>
<td>138</td>
</tr>
<tr>
<td>Post</td>
<td>124</td>
<td>81</td>
<td>30</td>
</tr>
</tbody>
</table>
Selection bias?

• As a consequence of being under regulatory scrutiny, did licensees in the CBD under-report assaults to police after the intervention was in place to a greater extent than beforehand.

  ~ They threatened to do so
Were the effects sustained?

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“In 2008, [the Victorian Premier] cited the "Ballarat model" as the basis for the lockout for inner-city Melbourne.”

“A recent a study of 10 years of crime data from Ballarat found the lockout had no discernible long-term impact on alcohol-related emergency department attendances. It remains to be seen what a similar study will find in Newcastle.”

Restrictions in pub closing times and lockouts in Newcastle, Australia five years on

KYPROS KYPRI1, PATRICK McELDUFF2 & PETER MILLER2

1School of Medicine and Public Health, University of Newcastle, Newcastle, Australia, 2School of Psychology, Deakin University, Geelong, Australia

Abstract

Introduction and Aims. In 2008 pub closing times were restricted from 5am to 3.30am in the central business district (CBD) of Newcastle, Australia. A previous study showed a one-third reduction in assaults in the 18 months following the restriction. We assessed whether the assault rate remained lower over the following 3.5 years and whether the introduction of a ‘lockout’ in nearby Hamilton was associated with a reduction in assaults there. Design and Methods. We used a pre-post design with comparison against two post-change periods. The setting was Greater Newcastle (population 320,900) and subjects were persons apprehended for assault in the CBD and nearby Hamilton, an area with late-trading pubs where a lockout and other strategies were implemented in 2010. Cases were police-recorded assault apprehensions occurring from 10pm to 6am in one pre-change period: January 2001 to March 2008, and two post-change periods: (i) April 2008 to September 2009 and (ii) October 2009 to March 2013. Negative binomial regression with terms for secular trend and seasonal effects was used to estimate Post: Pre and Post: Pre Incidence Rate Ratios and confidence intervals. Results. In the CBD recorded assaults fell from 99/quarter before the restriction to 68/quarter in the first post-change period (Incidence Rate Ratio (IRR) 0.67, 95% confidence interval (CI) 0.55–0.82) and 71/quarter (IRR 0.68, 95% CI: 0.55–0.85) in the later post-change period. In the same periods in Hamilton, assault rates were 23, 24, and 22 per quarter respectively. Discussion and Conclusions. The restriction in closing time was associated with a sustained lower assault rate in the Newcastle CBD. We find no evidence that lockout and other outlet management strategies were effective in Hamilton. [Kypri K, McElhuff P, Miller P. Restrictions in pub closing times and lockouts in Newcastle Australia 5 years on. Drug Alcohol Rev 2014]

Key words: alcohol, assault, pub, licensed premise, trading hour.

Introduction

In March 2008, the liquor licensing authority of New South Wales, Australia, imposed a restriction on 14 pubs in the central business district (CBD) of Newcastle requiring them to close by 3am and to disallow patrons from entering venues after 1am (a ‘lockout’). After a legal challenge, this was relaxed to 3.30am and 1.30am, respectively from July 2008 [1]. Licensees were also required to adopt management plans, were subject to compliance audits, had to have a dedicated Responsible Service of Alcohol officer from 11pm until closing, could not serve shots after 10pm, had to cease selling alcohol 30 min before closing, could not permit drink stockpiling, had to adopt shared radio procedures and all staff had to be notified of the conditions.

We published a study showing that this intervention reduced assaults in the CBD by 34% [95% confidence interval (CI) 20% to 45%] in the 1.5 years to 30 September 2009. Taking account of the trends in the neighboring area of Hamilton, which was not subject to the restriction, the intervention effect was estimated to be...
Assaults per quarter before and up to 5 years after the restriction in closing time

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Discussion

• Assaults a third lower in the CBD compared with before the restriction
  ~ Effects have persisted

• No evidence of geographic or temporal displacement

• No evidence of selection bias due to misreporting by licensees

• Lockouts in Hamilton (Aug 2010) not associated with reductions in assault

• Threats to validity of effect estimates:
  ~ Initial lag longer than expected – plausible ?
  ~ Policing levels greater in intervention area? (toward null)

• Mechanisms:
  ~ Reduced exposure:
    • fewer patrons ?
    • less foot traffic ?
  ~ Reduced consumption
    • Improved service practices (effect of scrutiny) ?
    • Fewer hours of service
Assault incidents prevented in Newcastle

[Only 1/4 to 1/3 assaults in public places are reported to police]

120-160 per quarter; 480-640 per year

2880-3840 assaults prevented in the 6 years since the hours were changed
Rossow I & Norstrom T (2012). The impact of small changes in bar closing hours on violence. The Norwegian experience from 18 cities. *Addiction* 107(3) 530-7

8 cities extend hours
→ 20% increase in assaults per additional hour of trading

15 cities restrict hours
→ 20% decrease in assaults per hour restriction

Note: Newcastle: 21% reduction in assault per hour restriction
Sydney CBD

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Why the change?

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• Sustained efforts by high profile, influential, articulate parents
• Public opinion
• Murdoch Press
• AHA internal politics
• The summer break (no spin doctors, clearer head, Alan Jones on holiday)
• Policy relevant research and advocacy for its use in policy formation
• A step in the right direction
• Lockout of dubious value
• 3am should be the time of last drinking, not last drinks purchase
• 2am would prevent thousands of assaults per year
• Surry Hills should be included in the precinct
• Independent evaluation crucial – should have been initiated before change
Elsewhere in Australia

- Permit communities to initiate restrictions in the sale of alcohol (genuine community input)
- Address off-licence density
- Ensure independent evaluation is initiated well before regulatory change
Gender and age distributions of people involved in assaults in the study areas

<table>
<thead>
<tr>
<th></th>
<th>CBD</th>
<th>Hamilton</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td><strong>Person of interest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>2428 (82%)</td>
<td>521 (18%)</td>
</tr>
<tr>
<td>Post</td>
<td>209 (82%)</td>
<td>46 (18%)</td>
</tr>
<tr>
<td>Mean Age (SD)</td>
<td>23.8 (7.3)</td>
<td>20.0 (6.6)</td>
</tr>
<tr>
<td><strong>Victim</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>4170 (81%)</td>
<td>980 (19%)</td>
</tr>
<tr>
<td>Post</td>
<td>377 (76%)</td>
<td>118 (24%)</td>
</tr>
<tr>
<td>Mean Age (SD)</td>
<td>25.7 (8.2)</td>
<td>23.4 (7.2)</td>
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<table>
<thead>
<tr>
<th>Location</th>
<th>Quarter 4 2007</th>
<th>Quarter 4 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD</td>
<td>13 (9.9%)</td>
<td>7 (7.7%)</td>
</tr>
<tr>
<td></td>
<td>16 (12.2%)</td>
<td>6 (6.6%)</td>
</tr>
<tr>
<td></td>
<td>51 (38.9%)</td>
<td>35 (38.5%)</td>
</tr>
<tr>
<td></td>
<td>40 (30.5%)</td>
<td>35 (38.5%)</td>
</tr>
<tr>
<td></td>
<td>11 (8.4%)</td>
<td>8 (8.8%)</td>
</tr>
<tr>
<td>Hamilton</td>
<td>4 (8.2%)</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td></td>
<td>1 (2.0%)</td>
<td>6 (10.3%)</td>
</tr>
<tr>
<td></td>
<td>19 (38.8%)</td>
<td>24 (41.4%)</td>
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<tr>
<td></td>
<td>20 (40.8%)</td>
<td>20 (34.5%)</td>
</tr>
<tr>
<td></td>
<td>5 (10.2%)</td>
<td>7 (12.1%)</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 3.0, p = 0.554 \]

\[ \chi^2 = 5.6, a, p = 0.234 \]

Number and proportion of assaults recorded in CBD and Hamilton, by person reporting the assault and year (Q4 of 2007 or Q4 of 2008)
Assaults prevented
(inverse of excess morbidity)

= (Rate in CBD pre * Change in Hamilton pre-post) - Rate in CBD post

= (99.0 * 1.09) - 67.7

= 40 assaults prevented per quarter, 160 per year

Actual number prevented likely to be 3 - 4 times higher given under-reporting of assaults, i.e., c. 500 per year
Effects of restricting pub closing times on night-time assaults in an Australian city

Kypros Kypri¹, Craig Jones², Patrick McElduff³ & Daniel Barker¹

School of Medicine and Public Health, University of Newcastle, NSW, Australia¹ and NSW Bureau of Crime Statistics and Research, NSW, Australia²

ABSTRACT

Aims In March 2008 the New South Wales judiciary restricted pub closing times to 3 a.m., and later 3.30 a.m., in the central business district (CBD) of Newcastle, Australia. We sought to determine whether the restriction reduced the incidence of assault. Design Non-equivalent control group design with before and after observations. Setting Newcastle, a city of 530 000 people. Participants People apprehended for assault in the CBD and nearby Hamilton, an area with a similar night-time economy but where no restriction was imposed. Measurements Police-recorded assaults in the CBD before and after the restriction were compared with those in Hamilton. Cases were assaults occurring from 10 p.m.–6 a.m. from January 2001–March 2008, with April 2008–September 2009 as the post-restriction period. We also examined changes in assault incidence by time of night. Negative binomial regression with time, area, time × area interaction terms and terms for secular trend and seasonal effects was used to analyse the data. Autocorrelation was examined using generalized estimating equations. Findings In the CBD, recorded assaults fell from 99.0 per quarter before the restriction to 67.7 per quarter afterward [incidence rate ratio (IRR): 0.66, 95% confidence interval (CI): 0.55–0.80]. In the same periods in Hamilton, assault rates were 23.4 and 25.5 per quarter, respectively (IRR: 1.02, 95% CI: 0.79–1.31). The relative reduction attributable to the intervention was 37% (IRR = 0.63, 95% CI: 0.47–0.81) and approximately 33 assault incidents were prevented per quarter. Conclusion This study indicates that a restriction in pub closing times to 3/3.30 a.m. in Newcastle, NSW, produced a large relative reduction in assault incidence of 37% in comparison to a control locality.

Keywords Alcohol, assault, closing, hotels, licensed premises, opening hours, pubs, trading hours.
Political machinations

• Late 2008: Industry “self-regulation”
  ~ Hamilton voluntary adoption of some elements of intervention

• November 2009: NSW Government imposes restrictions in Hamilton but not on closing time (announced soon after a man was bashed to death in Hamilton and on the day BOCSAR report released)

• March/April 2010: Premier soft pedals on the implications of the Newcastle experiment; refers to “individual responsibility” and “local solutions for local problems”, “no one-size fits all approaches”, “no silver bullet”

• AHA seeks to muddy the waters (Press release about Police coding of data and attack on BOCSAR)

• Kings Cross red herring
Since 2010

Rossow I & Norstrom T (2012). The impact of small changes in bar closing hours on violence. The Norwegian experience from 18 cities. *Addiction* 107(3) 530-7

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Notes:
1. Newcastle: 21% reduction in assault per hour restriction
2. Similar estimate from a yet to be published study from Amsterdam