

## Preventing Excessive Alcohol Use: Maintaining Limits on Days of Sale

### Summary Evidence Tables

Author/ Design	Population/ Study Time Period	Intervention/ Comparison	Analysis/ Outcome	Reported Findings	Review Effect Size
<b>Days, On-premises</b>					
<p>Ligon, J., Thyer, B. A., and Lund, R. (1996)<sup>1</sup></p> <p><u>Design suitability:</u> Greatest</p> <p>Before and After study with comparison</p> <p><u>Quality of execution:</u> Fair (4 Limitations)</p>	<p>Athens, GA</p> <p>January 1992 through December 1993</p>	<p><u>Intervention:</u> On December 8, 1992 Athens-Clarke County amended the Alcoholic Beverage Ordinance. Prior to the law change, Sunday sales of liquor were completely banned. After the law change, restaurant patrons were able to purchase alcoholic beverages with food, but bars and taverns remained closed and off-premise sales were still prohibited.</p> <p><u>Comparison:</u> Monday through Saturday.</p>	<p>Chi-square</p> <p>DUI arrests</p>	<p>Following the change in law, the incidence of DUIs was greatest for Sundays. The frequency of DUI arrests made on Sundays were statistically higher than all other days combined.</p>	<p><u>Relative % Change</u> 44%</p>

<p>Smith, D. I. (1978)<sup>2</sup></p> <p><u>Design suitability:</u> Greatest</p> <p>Before and After study with comparison</p> <p><u>Quality of execution:</u> Fair (2 Limitations)</p>	<p>Perth, Western Australia</p> <p>3 years before and 3 years after new law (Used the midpoint of June 30, 1970)</p>	<p><u>Intervention:</u> On July 7, 1970 the sale and supply of alcoholic beverages on Sundays in the Perth Metropolitan area of Western Australia became legal. In general, 2 2-hour drinking sessions were permitted. Prior to the above date, trading was permitted only between 10AM and 10PM, Monday to Saturday.</p> <p><u>Comparison:</u> The remainder of the state.</p>	<p>Chi-squares</p> <p>Traffic crashes: Persons killed and motor vehicle crashes</p>	<p>Significant increase in the proportion of persons killed and the number of crashes on Sundays as compared with the other 6 days of the week in Perth. No increases in the proportions of persons killed or in the number of crashes occurring on Sundays in comparison with the other days of the week for the rest of the state.</p> <p>11% of the 453 persons killed in Perth traffic crashes were killed on Sundays; after the new law, 16.9% of 486 persons were killed on Sundays (<math>\chi^2 = 6.134</math>, <math>p &gt; .02</math>).</p> <p>Rest of the state proportions were 18% and 17.4% before and after (<math>\chi^2 = .0318</math>, <math>p &gt; .80</math>).</p> <p>Crashes occurring on Sundays in the Perth area increased from 12.4% of 11,598 before the new law to 14.2% of 11,870 afterward (<math>\chi^2 = 16.85</math>, <math>p &lt; .001</math>).</p>	<p><u>Relative % Change</u></p> <p>Persons Killed: 58.9*</p> <p>Crashes: 22.6*</p> <p>*CIs were not calculable due to the lack of data.</p>
--	--	---	---	--	---

				In the rest of the state the proportion of crashes occurring on Sunday decreased from 19.7 to 18.4% ( $\chi^2 = 15.95, p > .20$ ).	
Smith, D. I. (1988) <sup>3</sup>  <u>Design suitability:</u> Greatest  Pre- post with comparison  <u>Quality of execution:</u> Fair (2 Limitations)	Brisbane, Australia  Before period: April 1, 1968 to March 31, 1970  After period: April 1, 1970 to March 31, 1973  3-Year after period: April 1, 1973 to March 1976.	<u>Intervention:</u> On April 3, 1970, Sunday alcohol sales were introduced in Brisbane, Australia. Sunday sessions were from 11AM to 1PM and 4PM to 6PM.  <u>Comparison:</u> Other days of the week and the Queensland rest of the state.	Chi-square  Traffic crashes	<b>1<sup>st</sup> After period</b> Only the segment from 6:00PM to 7:59 gave a significant result for Brisbane. In comparison to the other 6 days of the week, and after allowing for the slight change in the control data from the before to the after period, the annual increase was 129.8%. No significant differences in Brisbane causality crashes on Sundays between 8PM to 10:59AM. No significant increases in Queensland Sunday crashes occurred for any of the time segments.  3 year follow-up available but data	<u>Relative % Change</u> (95% CI)  65.0 (30.5, 108.6)

<p>Smith, D. I. (1987)<sup>4</sup></p> <p><u>Design suitability:</u> Greatest</p> <p>Before and After study with comparison</p> <p><u>Quality of execution:</u> Fair (3 Limitations)</p>	<p>New South Wales, Australia</p> <p>Before period: December 7, 1976-December 6, 1979</p> <p>After period: December 7, 1979-December 6, 1981</p>	<p><u>Intervention:</u> In 1978 Select Committee of the New South Wales Parliament considered the issue of hotel alcohol sale hours in th3 state. Subsequently it was recommended on December 7, 1979 that the hotel sale hours of noon to 10:00PM on Sundays be introduced.</p> <p><u>Control:</u> Other days of the week and the Queensland rest of the state.</p>	<p>Chi-square</p> <p>Motor Vehicle Fatalities</p> <p>Traffic Crashes</p>	<p>incomplete.</p> <p>After the introduction of a ten-hour hotel session in New-South Wales, for the 12-hour period from noon to 11:59PM, there was a 22.2% increase in Sunday fatal crashes. None of the analyses for the control period of midnight to 11:59AM gave significant results in the same direction as for motor vehicle fatalities or traffic crashes.</p>	<p><u>Relative % Change</u> (95% CI)</p> <p>Motor Vehicle Fatalities 15.5 ( -.1, 33.6</p> <p>Traffic Crashes 6.7 (.56, 13.2)</p>
<p>Smith, D. I. (1990)<sup>5</sup></p> <p><u>Design suitability:</u> Greatest</p> <p>Before and After Study with comparison</p> <p><u>Quality of execution:</u> Fair (3 Limitations)</p>	<p>Victoria, Australia</p> <p>Before period and after periods for the 2, 2-hour Sunday permit were January 1, 1980-December 31, 1983 and January 1, 1984-December 31, 1984 respectively.</p>	<p><u>Intervention:</u> 2 legislative changes which increased the Sunday availability of alcoholic beverages in Victoria. Policies: Prior to July 13, 1983, hotels and licensed clubs in Victoria could only sell alcoholic beverages on Sunday for consumption with a meal. After that date hotels and clubs were allowed to obtain a permit which permitted them to open for 2, 2-hour periods on Sunday between noon and 8PM. The two drinking periods had to</p>	<p>Chi-square</p> <p>Traffic crashes</p>	<p>The introduction of the two, two-hour drinking sessions on Sundays did not adversely affect the number of crashes.</p>	<p><u>Relative % Change</u> (95% CI)</p> <p>9.9 (3.3,17.0)</p>

		<p>be at least 2 hours apart. Following an amendment to the Victorian Liquor Control Act, as of November 1984, hotels and clubs could apply for a permit which enabled them to open between noon and 8PM on Sundays. The 1984 amendment also allowed for hotels to obtain a permit to continue Monday to Saturday ordinary bar trading from 10PM to midnight. The amendment also introduced Sunday restaurant hours of noon to 11:30PM. Previously the Sunday restaurant opening hours were noon to 4PM and 6PM to 10PM. (Change in hours will be examined in an upcoming review.)</p> <p><u>Control:</u> The other days of the week.</p>			
<p>Knight, I. and Wilson, P. (1980)<sup>6</sup></p> <p><u>Design suitability:</u> Least</p> <p>Before and After study without comparison</p>	<p>4 major cities and central belt of Scotland</p> <p>Before: March 1977 After: October 1977</p>	<p><u>Intervention:</u> Following the report of the Clayson Committee on Scottish Licensing Law in 1973, the government reviewed its policy and decided on a limited measure of reform. Not all of the recommendations</p>	<p>Change in standard units</p> <p>Consumption and patterns of consumption</p>	<p>Increase in weekly consumption by an average of .63 standard units. Increase was greater for men and was appreciably higher among men 46 and under. Slight decrease among older</p>	<p>Change in standard units (95% CI)</p> <p><b>Men (overall)</b> 1.3 (-.4, 2.8) 18-45 years 2.4 (.6, 4.2) Over 45 years .5 (-2.4, 1.3)</p> <p>-</p>

<p><u>Quality of execution:</u> Fair (4 Limitations)</p>		<p>of the Committee were followed. The two main changes were the extension of evening hours on weekdays to 11 PM (previously 10PM) and the provision for special licenses to allow public houses to open regularly on Sundays. The extra evening hour was brought into effect on the 13<sup>th</sup>, but the Sunday licenses were not issued for approved public houses until October 1977 when the newly established licensing courts were in session.</p> <p><u>Control:</u> No comparison group.</p>		<p>men and virtually no change among women. But when statistical error is taken into account there is little reliable evidence or any overall changes. With the exception of the CI interval for men under 46, all of the 95% CIs included 0. The increase among the men aged 18-45 was found to be statistically valid at a 99% CI level.</p>	<p><b>Women(overall)</b> -.6 (-1.6, .5) 18-45 years -.6 (-1.8, .7) Over 45 years .6 (-2.6, 1.4)</p>
<p><b>Days, Off-premises</b></p>					
<p>McMillan, G.P. and Lapham, S.C. (2006)<sup>7,8</sup></p> <p>McMillan, G. P., Hanson, T., and Lapham, S. C. (2007)</p> <p><u>Design suitability:</u> Greatest</p> <p>Time series; prospective data collection</p> <p><u>Quality of execution:</u></p>	<p>New Mexico</p> <p>Intervention: July 1, 1995</p> <p>Pre-period: July 1, 1990 – June 30, 1995</p> <p>Follow-up: July 1, 1995 – July 2000</p>	<p><u>Intervention:</u> Legalized Sunday off-premises sales.</p> <ul style="list-style-type: none"> <li>•Between the hours of 12:00 p.m. and 12:00 a.m.</li> <li>•Alcohol was available on-premises prior to law change</li> <li>•Provision for local option to reinstate ban, municipalities to bear cost of referendum and enforcement</li> </ul> <p><u>Control:</u> Pre-post</p>	<p>Relative Risk</p> <p>Alcohol-related crashes (ARC) and fatalities</p>	<p><u>ARCs RR (95% CI)</u> 1.29 (1.05, 1.58)</p> <p><u>ARC fatalities (95% CI)</u> 1.42 (1.05, 1.93)</p> <p>Mean RR ARC Fatalities rest of week 1.07 (0.80, 1.45)</p> <p><u>Excess ARCs in study period (95%, CI)</u> 543.1 (158.9, 927.4)</p> <p><u>Excess ARC fatalities</u> 41.6 (6.6, 76.6)</p>	<p><u>Relative % changes (95% CI)</u></p> <p>Alcohol related Sunday crash fatalities: 32.3% (95% CI 3.4, 71.4)</p>

Fair (3 Limitations)		study, non-Sunday days serve as control. Also comparison of alcohol- and non-alcohol-related crash trends.		<u>2007 Study:</u> Three counties that overturned ban repeal right away had lowest ARC RR; only one other county had RR in lowest category.	
Nordlund, S. (1985)	Norway  Before: 1983 After: 1984	<p><u>Intervention:</u> In select villages, alcohol shops were allowed to re-open on Saturdays, in contrast to the newly instituted Saturday closing in the rest of the country.</p> <p><u>Comparison:</u> Shops in control cities (matched by size and demographic characteristics to be similar to intervention towns). These remained open on Saturday as always.</p>	<p>Simple pre- post-rate comparisons.</p> <p>Liters pure alcohol Liters total sale all outlets Arrests for drunkenness Reports of drunkenness Reports domestic trouble Reports of violence</p>	<p>Customers made fewer trips to state alcoholic beverage monopoly stores. Total sales at these outlets declined, but the total sales at all outlets went up slightly. Reports of drunkenness went down, but not significantly, while drunkenness arrests declined significantly. Reports of domestic trouble went down a sizeable and significant 16%, whereas reports of violence overall went up 5%. General effects were consistent but small; ordinary drinkers consumed about the same total amount, purchased in fewer trips to the monopoly stores, with larger purchases per trip. Ultimately, the Saturday closing was repealed because of</p>	<p><u>Relative % changes:</u> Liters pure alcohol: -3.1% Arrests for drunkenness: -5.8% Reports of drunkenness: -5.0% Reports domestic trouble: -15.9% Reports of violence: 5%</p>

				insufficient evidence of benefit.	
<p>Norstrom, T. and Skog, O. (2003)<sup>9,10</sup></p> <p>Norstrom, T. and Skog, O. (2005)</p> <p><u>Design suitability:</u> Greatest</p> <p>Experimental time-series design</p> <p><u>Quality of execution:</u> Good (1 Limitation)</p>	<p>Sweden</p> <p>Pre-intervention: January 1995—July 2000</p> <p>Phase I (experimental): February 2000—June 2001</p> <p>Phase II (whole country receives intervention): July 2001—July 2002</p>	<p><u>Intervention:</u> Saturday sales allowed experimentally for six counties (phase I)</p> <ul style="list-style-type: none"> <li>• 43% of population</li> <li>• 3.83 million inhabitants</li> </ul> <p>Saturday sales extended to whole country (phase II)</p> <p><u>Control (phase I):</u></p> <ul style="list-style-type: none"> <li>• Seven control counties</li> <li>• Middle and southern regions of Sweden</li> <li>• 3.03 million inhabitants</li> <li>• 34% of population</li> <li>• Separated from experimental regions by border buffer zone</li> <li>• Buffer zones 22% of population, 1.96 million inhabitants</li> </ul>	<p>ARIMA, and parametric models</p> <p>Alcohol sales, assaults, drunken driving, and positive breath analyzer tests</p>	<p>Effects appear uniform across 3 experimental areas, tendency toward weaker effect in Northern Sweden not sign.</p> <p><u>Phase I consumption</u> (rel. % chg):</p> <ul style="list-style-type: none"> <li>• Beer (7.6%)</li> <li>• Wine (2.5%)</li> <li>• Spirits (3.7%)</li> <li>• Total alcohol (3.7%).</li> </ul> <p><u>Phase II consumption</u> (rel. % chg):</p> <ul style="list-style-type: none"> <li>• Beer (1.8%)</li> <li>• Wine (1.2%),</li> <li>• Total alc (3.6%)</li> </ul>	<p><u>Relative % changes</u> (95% CI)</p> <p>Drunk driving: 11.3% (4.2, 18.4)</p> <p>Alcohol sales (liters pure alcohol per capita per year): 3.6% (2.6, 4.6)</p> <p>Assaults, women (indoors): .6% (-6.5, 7.7)</p> <p>Assaults, total: -1.3% (-5.6, 3.0)</p>
<p>Olsson, O. and Wikstron, P. H. (1982)<sup>11</sup></p> <p><u>Design suitability:</u> Greatest</p> <p>Experimental time-series design</p> <p><u>Quality of execution:</u></p>	<p>Sweden</p> <p>Pre-period: June 1980—September 1980</p> <p>Follow-up: June 1981—September 1981</p> <p>Intervention:</p>	<p><u>Intervention:</u> Saturday closure of retail liquor stores</p> <p><u>Control:</u> Non-Saturdays</p>	<p>Police interventions with intoxicated persons</p> <p>Domestic disturbances</p> <p>Outdoor assaults</p>	<p><u>Sales of Alcohol:</u> Slight decline could not be attributed to effects of Saturday closing.</p> <p><u>Illegal sales:</u> (Police judgment) % of districts reporting:</p> <ul style="list-style-type: none"> <li>• No change: 69%</li> <li>• Increase: 24%</li> <li>• Decrease: 7%</li> </ul>	<p><u>Relative % changes</u> (95% CI)</p> <p>Outdoor assaults: -17.7% (-45.8, 25.0)</p> <p>Domestic disturbances -17.3% (-34.8, 4.8)</p> <p>Police interventions against intoxicated persons</p>



Fair (3 Limitations)	May 1981			Overall declines in: <ul style="list-style-type: none"><li>• Drunkenness</li><li>• Domestic Disturbances</li><li>• Public disturbances (not attributable to policy)</li><li>• Assaults declined</li></ul>	-35.7% (-43.8, -26.4)
----------------------	----------	--	--	---	-----------------------

<p>Stehr, M. (2007)<sup>12</sup></p> <p><u>Design suitability:</u> Greatest</p> <p>Econometric state level time-series analysis</p> <p><u>Quality of execution:</u> Fair (2 Limitations)</p>	<p>United States</p> <p>1990-2004</p> <p>Bans were repealed in the following states:</p> <p>1995: NM 2002: OR 2003: DE KS MA NY PA 2004: RI ID KY OH VA 2005: WA</p>	<p><u>Intervention:</u> Sunday ban on off-premises purchase (twelve states during the study period). Specific to either beer or liquor, but wine not included.</p> <p><u>Control:</u> States that did not allow sales on Sunday in each year of data collection.</p>	<p>Time-series analysis of state-level variables, including Sunday bans.</p> <p>Controlled for pre-repeal trends in states that self-selected for repeal</p>	<p><u>Per capita beer sales in gallons</u></p> <ul style="list-style-type: none"> <li>-2.4 rel. % change due to Sunday bans controlling for pre-repeal trends</li> <li>-4.1 rel. % change due to Sunday ban not controlling for pre-repeal trends</li> </ul> <p><u>Per capita spirits sales in gallons</u></p> <ul style="list-style-type: none"> <li>-3.5 rel % change due to Sunday ban</li> <li>-5.2 rel. % change due to Sunday ban not controlling for pre-repeal trends.</li> </ul>	<p>Beer sales: 2.4% rel change due to repeal of bans</p> <p>Spirits sales: 3.5% rel change due to repeal of bans</p> <p><u>Note:</u> although authors coded for presence of Sunday bans, as reported at left, all policy changes during the study period were in the direction of repeal, so the signs have been reversed in reporting effect (above).</p>
--	--	--	--	---	--

## References

1. Ligon J, Thyer BA, Lund R. Drinking, eating, and driving: Evaluating the effects of partially removing a Sunday liquor sales ban. *Journal of Alcohol and Drug Education* 1996; 42(1): 15-24.
2. Smith DI. Impact on traffic safety of the introduction of Sunday Alcohol Sales in Perth, Western Australia. *Journal of Studies on Alcohol* 1978; 39(7): 1302-4.
3. Smith DI. Effect on traffic accidents of introducing Sunday alcohol sales in Brisbane, Australia. *International Journal of the Addictions* 1988; 23(10): 1091-9.
4. Smith DI. Effect on traffic accidents of introducing Sunday hotel sales in New South Wales, Australia. *Contemporary Drug Problems* 1987; 279-94.

5. Smith DI. Effect on casualty traffic accidents of changing Sunday alcohol sales legislation in Victoria, Australia. *The Journal of Drug Issues* 1990;20(3):417-26.
6. Knight I, Wilson P. Scottish licensing laws. London: Office of Population Censuses and Surveys, Social Survey Division, 1980.
7. McMillan GP, Lapham SC. Effectiveness of bans and laws in reducing traffic deaths: legalized Sunday packaged alcohol sales and alcohol-related traffic crashes and crash fatalities in New Mexico. *Am J Public Health* 2006;96(11):1944-8.
8. McMillan GP, Hanson TE, Lapham SC. Geographic variability in alcohol-related crashes in response to legalized Sunday packaged alcohol sales in New Mexico. *Accident Analysis and Prevention* 2007;39(2):252-7.
9. Nordlund S. Effects of Saturday closing of wine and spirits shops in Norway. Oslo, Norway: Statens institutt for alkoholforskning, 5-1-1985.
10. Norstrom T, Skog OJ. Saturday opening of alcohol retail shops in Sweden: An impact analysis. *Journal of Studies on Alcohol* 2003;64(3):393-401.
11. Norstrom T, Skog OJ. Saturday opening of alcohol retail shops in Sweden: an experiment in two phases. *Addiction* 2005;100(6):767-76.
12. Olsson O, Wikstrom PH. Effects of the experimental Saturday closing of liquor retail stores in Sweden. *Contemporary Drug Problems* 1982;325-53.
13. Stehr M. The effect of Sunday sales bans and excise taxes on drinking and cross-border shopping for alcoholic beverages. *National Tax Journal* 2007;60(1):85-105.

Page last reviewed: March 7, 2013

This page includes all of the information available and will not be updated.