



# The association between State of Origin and assaults in two Australian states

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# Introduction

There is a growing body of evidence linking sport, alcohol and violence in high-income countries (1). Links between outcomes of football matches and outcomes involving alcohol, assault and domestic violence have been demonstrated in numerous settings (2-4), while studies of both players and spectators highlight the links between heavy drinking and aggression (5, 6).

At a population level, previous work in Victoria has highlighted that acute alcohol intoxication problems peak on predictable nights – New Year’s Eve and public holidays - and also on days related to major Victorian sporting events (the Australian Football League Grand Final and The Melbourne Cup) (7). A study in New South Wales highlighted the day-to-day correlation between alcohol intoxication presentations in emergency departments and police records of violence (8), so similar peaks for violence are likely.

In this study, we explore whether rates of police recorded assault (both domestic and non-domestic) are higher in New South Wales on the nights of the State of Origin rugby league matches. Three of these matches are played each year, with the venue shared between Sydney and Brisbane (and occasionally Melbourne). Even when played interstate, the three Origin matches are typically the highest rated television broadcasts of the year in New South Wales (e.g. (9)). Matches are often the focus of parties in private settings (10) or displayed on big screens in licensed venues (11).

We hypothesise that these high-profile matches will result in higher rates of assaults in New South Wales. We include a comparison analysis in Victoria and hypothesise no impact on assaults there due to the substantially lower profile of State of Origin in that state (9). In a previous study of the impact of State of Origin on emergency presentations in Queensland, Furyk and colleagues (12) found a *decrease* in presentations on game days, although that study combined all attendances and did not focus explicitly on violence or alcohol intoxication. They also used data only from 6pm until midnight and found an increase in presentations between 11:00pm and 11:59pm (after the match had completed). With this in mind, we expanded the time window for this study and examined assaults between 6pm and 6am the next day.

# Data

The data in this study are recorded domestic and non-domestic assaults in New South Wales and Victoria on Wednesday nights (between 6pm Wednesday to 6am Thursday) for the weeks around rugby league State of Origin games. The data was collected over a six-year period (2012-2017) and includes every Wednesday from two weeks prior to the first game of each series to two weeks after the final game (11 weeks per year). The series typically spans May – July each year, although there is one Wednesday from August included. Data from Victoria was included as a quasi-control measure, given the substantially lower interest in rugby league in that state. It is important not to directly compare the assault numbers between NSW and Victoria due to different counting rules and data systems used in each jurisdiction – our main interest here is the impact of State of Origin on assaults in each state.

## Analyses

Simple regression models were run for each outcome (domestic assaults, non-domestic assaults, total assaults). Other analytical approaches were considered because the assault data are not strictly from a process with a normal distribution, but exploratory histograms showed broadly normally distributed data<sup>1</sup>. Models were adjusted for year and month. The key exposure variable was whether or not a State of Origin game was on during the Wednesday in question – we had 18 Wednesdays with a game and 48 without.

## Results

Mean numbers of domestic, non-domestic and total assaults are provided in Table 1. On average, all kinds of assaults were higher on Origin Wednesdays than on non-Origin Wednesdays for New South Wales.

		State of Origin	Non-State of Origin	All weeks	p-value of t-test comparing origin with non-origin weeks
New South Wales	Domestic assaults	38.3 (35.8-40.9)	27.5 (25.9-29.2)	30.5 (28.6-32.3)	<0.01
	Non-domestic assaults	41.9 (35.7-48.0)	24.5 (22.6-26.4)	29.2 (26.4-32.1)	<0.01
	Total assaults	80.2 (74.3-86.1)	52.0 (49.4-54.7)	59.7 (55.7-63.7)	<0.01
Victoria	Domestic assaults	17.7 (16.0-19.4)	17.3 (15.7-18.9)	17.4 (16.1-18.6)	0.39
	Non-domestic assaults	21.4 (18.1-24.7)	21.2 (19.5-22.8)	21.2 (19.7-22.7)	0.45
	Total assaults	39.1 (35.3-42.8)	38.4 (35.8-41.1)	38.6 (36.4-40.8)	0.40

<sup>1</sup> We also ran models using the log of each outcome variable as a robustness check and found significant and positive effects of State of Origin on violence. These models estimated increases of 35.5% for domestic assaults, 53.8% in non-domestic assaults and 44.8% in all assaults.

These relationships were formally tested in regression models, with results are provided in Tables 2 and 3. The impact of State of Origin was positive and significant for all three outcome variables in New South Wales. According to these models, there were 11.2 more domestic assaults on Origin Wednesdays than on the control Wednesdays, 17.6 more non-domestic assaults and 28.7 more assaults in total. This represents an increase of 40.7% in domestic assaults, 71.8% in non-domestic assaults and 55.2% in total assaults for State of Origin nights compared with non-State of Origin nights.

*Table 2 – Regression models of the association between State of Origin and assaults in New South Wales*

	Domestic assaults			Non-domestic assaults			All assaults		
	Coef	Confidence interval	P-value	Coef.	Confidence interval	P-value	Coef	Confidence interval	P-value
<i>Year (2012 as reference)</i>									
2013	1.1	-4.0 - 6.2	0.67	-0.8	-7.0 - 5.5	0.81	0.3	-7.8 - 8.5	0.93
2014	3.5	-1.5 - 8.4	0.17	-6.7	-12.8 - -0.6	0.03	-3.2	-11.2 - 4.7	0.42
2015	2.7	-2.3 - 7.6	0.29	-13.0	-19.1 - -6.9	<0.01	-10.4	-18.3 - -2.4	0.01
2016	2.9	-2.1 - 7.8	0.25	-14.2	-20.3 - -8.1	<0.01	-11.3	-19.3 - -3.4	0.01
2017	2.4	-2.6 - 7.4	0.34	-10.0	-16.1 - -3.9	<0.01	-7.6	-15.6 - 0.4	0.06
<i>Month (July as reference)</i>									
May	2.2	-1.6 - 5.9	0.25	1.3	-13.8 - 16.4	0.87	8.4	-11.2 - 28.1	0.39
June	-0.1	-3.4 - 3.3	0.97	-1.5	-5.6 - 2.6	0.47	-1.6	-6.9 - 3.8	0.56
August	7.2	-5.1 - 19.4	0.25	-0.3	-4.9 - 4.4	0.91	1.9	-4.1 - 7.9	0.53
<i>Origin week</i>	<b>11.2</b>	<b>8.0 - 14.4</b>	<b>&lt;0.01</b>	<b>17.6</b>	<b>13.6 - 21.5</b>	<b>&lt;0.01</b>	<b>28.7</b>	<b>23.6 - 33.9</b>	<b>&lt;0.01</b>
<i>Constant</i>	24.7	20.5 - 28.9	<0.01	32.5	27.3 - 37.7	<0.01	57.2	50.5 - 64.0	<0.01

In contrast, there was no significant association between State of Origin and any of the assault measures in Victoria.

Table 3 – Regression models of the association between State of Origin and assaults in Victoria

	Domestic assaults			Non-domestic assaults			All assaults		
	Coef	Confidence interval	P-value	Coef.	Confidence interval	P-value	Coef	Confidence interval	P-value
Year (2012 as reference)									
2013	0.2	-4.3 – 4.8	0.92	1.9	-3.0 – 6.7	0.44	2.1	-5.5 – 9.7	0.58
2014	-0.2	-4.6 – 4.3	0.94	0.6	-4.1 – 5.3	0.78	0.5	-6.9 – 7.9	0.90
2015	-0.7	-5.1 – 3.7	0.75	4.4	-0.3 – 9.1	0.07	3.7	-3.6 – 11.0	0.32
2016	0.3	-4.1 – 4.8	0.88	6.3	1.5 – 11.0	0.01	6.6	-0.8 – 14.0	0.08
2017	-0.1	-4.5 – 4.4	0.99	7.8	3.1 – 12.5	<0.01	7.8	0.4 – 15.2	0.04
Month (July as reference)									
May	0.3	-3.0 – 3.7	0.84	0.3	-3.3 – 3.9	0.87	0.6	-4.9 – 6.2	0.56
June	-2.1	-5.1 – 0.9	0.17	-0.2	-3.3 – 3.0	0.91	-2.3	-7.2 – 2.7	0.36
August	7.0	-4.0 – 17.9	0.21	14.8	3.2 – 26.4	0.01	21.8	3.6 – 40.0	0.02
Origin week	<b>0.8</b>	<b>-2.1 – 3.7</b>	<b>0.58</b>	<b>0.6</b>	<b>-2.5 – 3.6</b>	<b>0.71</b>	<b>1.4</b>	<b>-3.4 – 6.2</b>	<b>0.56</b>
Constant	17.8	14.0 – 21.5	<0.01	17.3	13.3 – 21.3	<0.01	35.1	28.9 – 41.4	<0.01

## Discussion

As expected, we found significant increases in violence in New South Wales on State of Origin nights compared with the surrounding Wednesday nights. These effects were evident for both domestic and non-domestic assaults and were substantial – an increase of around 40% in domestic assaults and more than 70% in non-domestic assaults. In contrast, there were no significant increases in violence in Victoria, which provides at least some suggestion that the effects identified in New South Wales are causal.

These significant spikes in assaults on State of Origin nights are likely to reflect increases in social activities (parties, going to bars) and alcohol consumption, but may also at least partly relate to changes in policing practices. The findings raise significant questions for harm reduction – shifting the focus of major sporting events away from alcohol is likely to reduce the magnitude of these effects, but the inherent aggression involved in sports like rugby league may mean increased violence regardless. The results also suggest important implications for resourcing and planning among police and health-system workers.

The findings are in line with much of the literature identifying increases in violence around major sporting events, but contrast with the one previous study of State of Origin (12). This may relate to differences in methodology – this study focused on violence and a timeframe that includes late-night hours when harm is more likely. It may also relate to setting. This study is based in New South Wales, who have lost the vast majority of matches over the study period, while the previous study was in Queensland. There is some evidence that violence associated with major sporting events is more affected by losing than winning (3), although this is not consistent in the literature (13).

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