

# Trends in Alcohol-Related Road Injury in Australia, 1990-1997.

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over time, they are not intended for use as absolute measures of the magnitude of alcohol or non-alcohol-related road injury. The technical report accompanying this Bulletin explains this further and is available on request.

## Summary Points

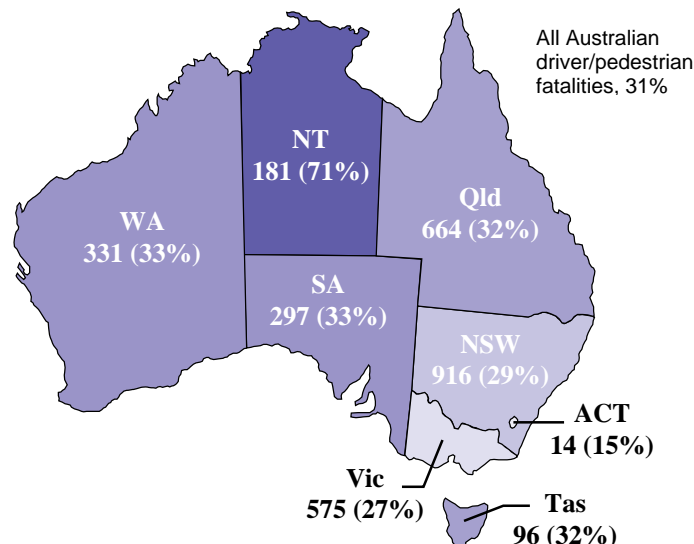
- ◆ It is estimated that between 1990 and 1997, 31% of all driver and pedestrian deaths on Australian roads were alcohol-related.
- ◆ National rates of alcohol-related road deaths and serious injury declined between 1990 and 1996, broadly following changes in per capita alcohol consumption. Most of this reduction occurred between 1990 and 1992; there was a slight increase from 1993 to 1995.
- ◆ Most jurisdictions followed the national trend. Only WA had slightly higher levels of alcohol-related road injuries by 1997, though non-alcohol-related injuries also increased there.
- ◆ Over 70% of people with serious alcohol-related road injuries were male, while only 56% of people with non-alcohol-related road injuries were male.
- ◆ The average age of alcohol-related crash victims was 27.5yrs with over 50% aged between 15 and 24yrs. The average age for non-alcohol-related road injuries was 37.6yrs.
- ◆ The NT had by far the largest estimated proportion of alcohol-related fatalities.

**Introduction.** Alcohol is a major cause of road injury in Australia. It was estimated that in 1997, high-risk drinking caused 418 road deaths and 7,789 hospitalisations<sup>1</sup>. The average cost of a single road fatality or hospitalisation in Australia has been estimated at about \$750,000 and \$132,000 respectively<sup>1,2</sup>, resulting in a total of over \$1.3 billion for 1997. The purpose of this Bulletin, the second in the NAIP series is to document national and state/territory trends in serious alcohol-related road injury (resulting in death or hospitalisation) between 1990 and 1997. These trends will be compared with trends for other serious road injuries (SRIs) known to have little or no relationship with alcohol use.

The blood alcohol concentration (BAC) of drivers and pedestrians involved in road crashes resulting in SRI is not routinely recorded in Australia. While coroners' records provide BAC data for about 80% of fatally injured drivers and pedestrians, BAC testing among hospitalised individuals is not consistently conducted and there is wide variability in recording practices between jurisdictions.

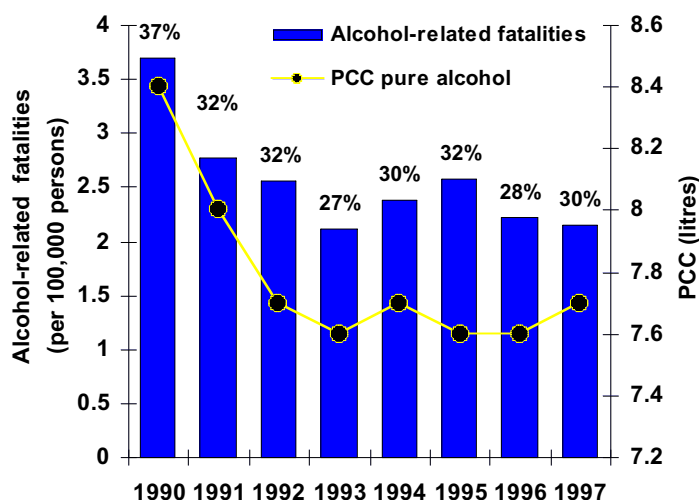
This report provides national estimates of alcohol-related driver/pedestrian fatalities from these data. This report also uses "surrogate" measures based on the time of day and day of week at which crashes occurred to identify trends in alcohol-related SRIs. It has been well-established that crashes occurring at times at night and the weekend are usually highly associated with prior alcohol consumption while those during the day on weekdays are rarely so. Surrogate measures have been widely used by researchers to examine trends in alcohol-related harm<sup>2,3</sup>. However, while the use of surrogate measures may provide reliable and consistent measures

## Alcohol-related driver and pedestrian fatalities.



**Map 1:** Estimated number and proportion of driver/pedestrian fatalities which were alcohol-related by state/territory, 1991-1997<sup>6</sup>.

Map 1 shows the estimated numbers and percentages of driver/pedestrian road fatalities occurring between 1991 and 1997 which were alcohol-related (BAC>0.05mg/ml) by jurisdiction. The estimated proportion of all Australian driver/pedestrian road fatalities involving alcohol was approximately 31%, however there was some variation between years (see column %, Fig 1). The NT indicated the largest proportion of alcohol-related fatalities (71%) and the ACT the smallest (15%)<sup>4</sup>. There was a downward trend in national rates of alcohol-related fatalities between 1990 and 1997, reflecting the trend in per capita alcohol consumption (Fig. 1). The estimated proportions of all driver/pedestrian road fatalities associated with BACs exceeding 0.10mg/ml and 0.15mg/ml were about 28% and 23% respectively.



**Figure 1:** Estimated rate of Australian alcohol-related driver/pedestrian fatalities (per 100,000 persons), proportion of all driver/pedestrian fatalities estimated as alcohol-related(%) and per capita alcohol consumption<sup>7</sup>.

**National trends in alcohol-related serious road injury.**

Figure 2 shows the national trend in per capita alcohol consumption and rates of alcohol-related SRIs for males and females between 1990 and 1996. Injury rates were consistently higher for men than for women. Between 1990 and 1996 there was an overall decline in the rate of alcohol-related SRI of over 20%. However, nearly all of this decline occurred between 1990 and 1992—directly reflecting the sharp fall in per capita consumption during that time. In particular, male rates declined by 25% between 1990 and 1992, and increased slightly by 1996 to show an overall fall of 22%. Between 1990 and 1992, female alcohol-related SRI rates had declined by only 7%, but continued to decline in subsequent years showing an overall fall of 15% by 1996. Non-alcohol-related SRIs declined by about 9% for males and increased by 1.5% for females between 1990 and 1996.

**Age and sex profile of alcohol-related serious road injuries.**

On average, males contributed to about 72% of all alcohol-related SRIs compared to only 56% of non-alcohol-related SRIs. The average age of persons with alcohol-related SRIs was about 27.5yrs compared to 37.6yrs people with non-alcohol-related SRIs. As shown in Figure 3, young people were greatly over-represented among alcohol-related SRIs. About 52% of fatal and hospitalised road injuries involved people aged between 15 and 24 years of age, while a further 23% involved 25 to 34 year olds. By comparison, only 26% of non-alcohol-related SRIs occurred among 15 to 24 year olds. Non-alcohol-related SRIs were also common among people aged 55 and over (23%). With the exception of the NT, similar age distributions for alcohol-related injuries were observed to occur among all jurisdictions. Notably, the NT indicated larger proportions of alcohol-related SRIs occurring among persons aged 45 and older with 10% fewer injuries occurring among the 15 to 24 year age group (42%).

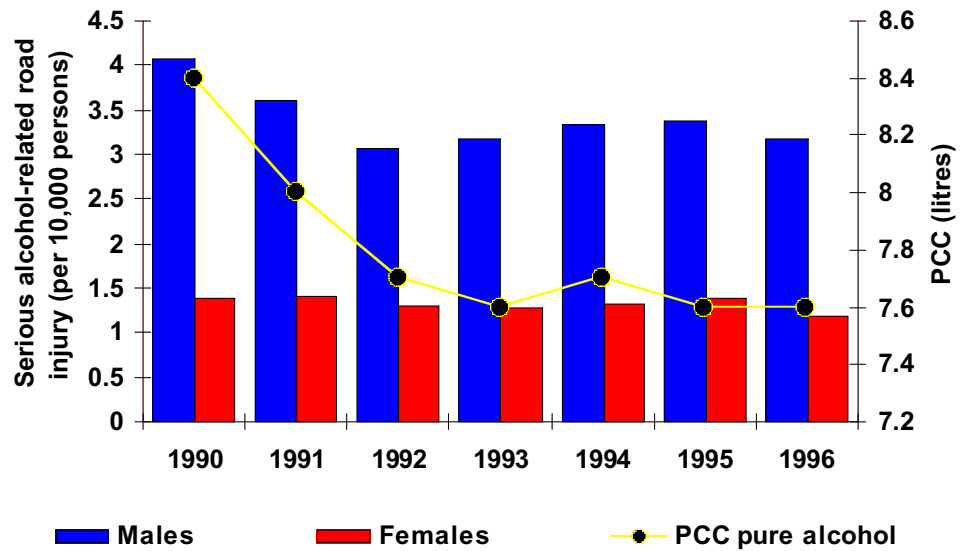


Figure 2: National trends in per capita consumption (PCC)<sup>5</sup> of pure alcohol and alcohol-related serious road injury per 10,000 persons, males and females, 1990-1996<sup>6,7</sup>.

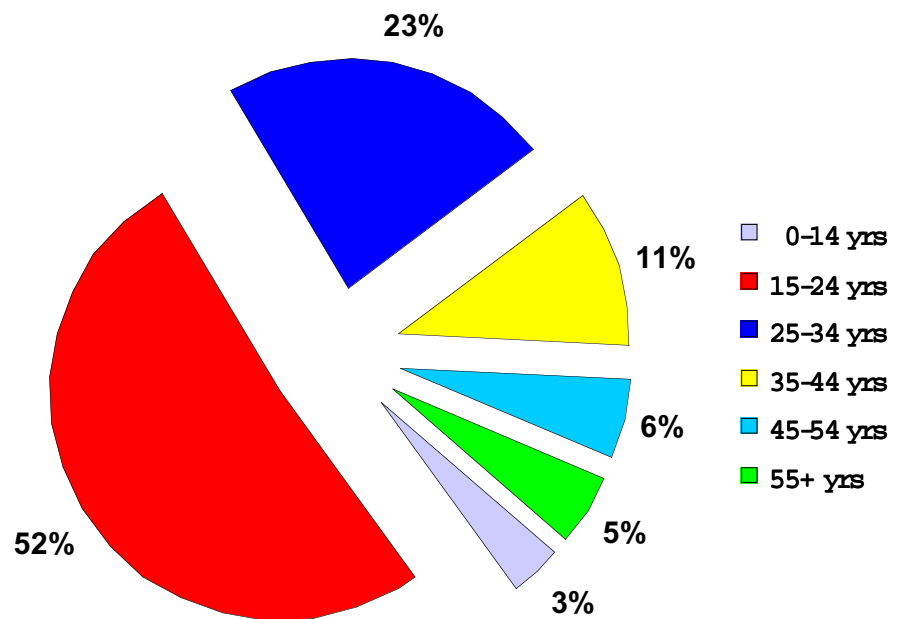


Figure 3: Overall age distribution among alcohol-related serious road injuries occurring on Australian roads, 1990-1997 (does not include Victoria<sup>8</sup>).

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Alcohol and non-alcohol-related serious road injury by jurisdiction, 1990 to 1997.. Legend: ■ alcohol-related ● non-alcohol-related  
Y Axis: Rate of serious road injury/10,000 persons

Fig 4 New South Wales<sup>6</sup>

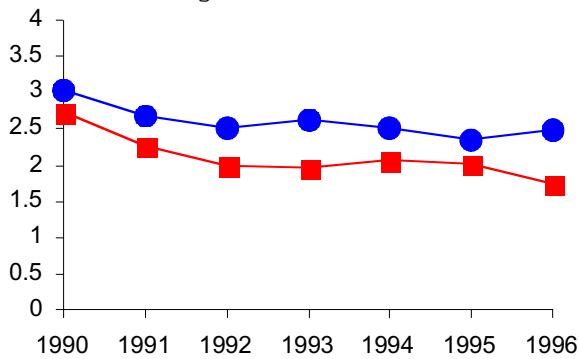


Fig 5 Victoria<sup>7</sup>

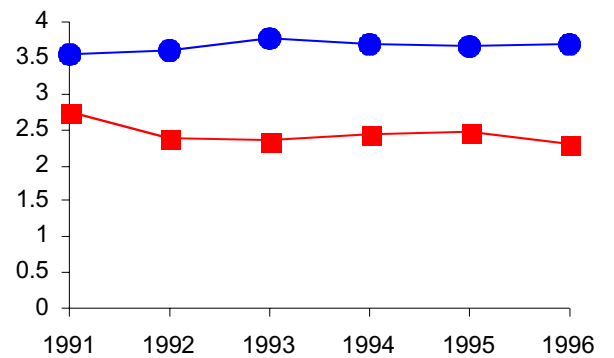


Fig 6 Queensland

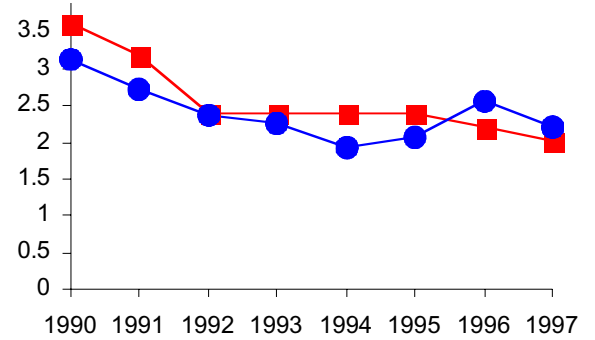
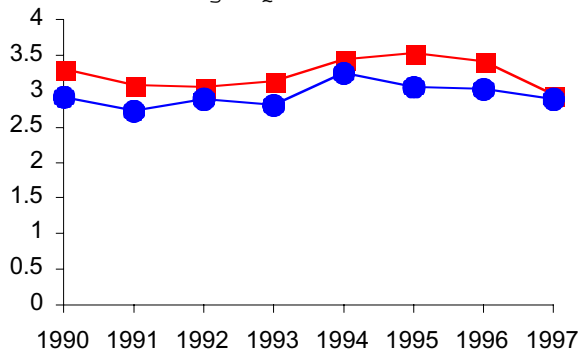


Fig 8 Western Australia

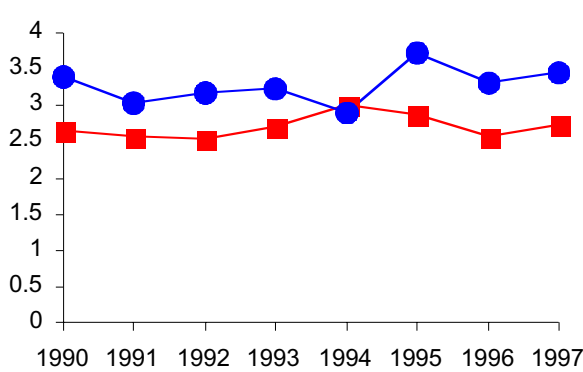


Fig 9 Tasmania

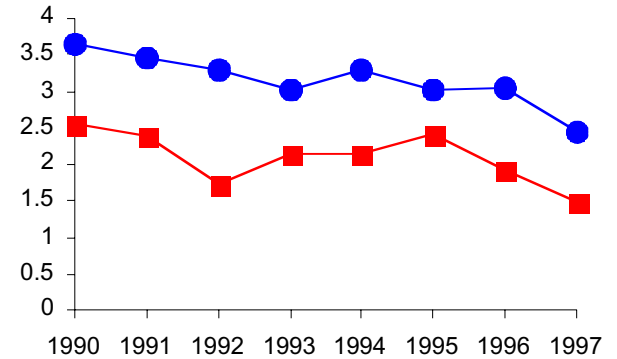


Fig 10 Northern Territory

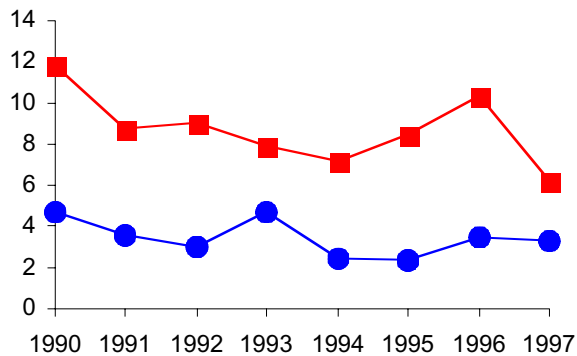
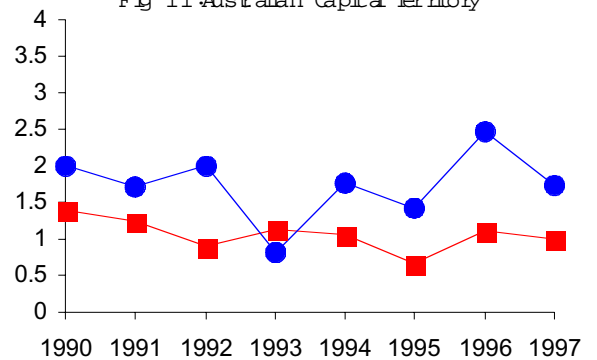


Fig 11 Australian Capital Territory



Most jurisdictions, with the exception of WA and Qld, showed overall declines in alcohol-related SRI between 1990 and 1997, with a pronounced decrease between 1990 and 1992. In most cases, the decline in alcohol-related injuries was greater than for non-alcohol-related injuries. In WA, Tas and the ACT the overall difference between rates of alcohol and non-alcohol-related injuries did not change across the full period of 1990 to 1997. Within that period, however, between the years of 1993 and 1995, rates of alcohol-related injuries increased to a greater degree than did non-alcohol-related injuries in nearly all jurisdictions

**Method**

**Data** on all SRIs resulting in death or hospitalisation occurring throughout Australia between 1990 and 1997 were obtained from the Federal Office of Road Safety (FORS)<sup>6,7</sup>. **Incomplete BAC data.** Currently in Australia there is no mandatory requirement that all non-fatally injured drivers undergo BAC testing. As a result, BAC information exists for only about 50% of hospital cases. The decision to test is often left to the judgement of the attending officer, favouring the testing of more obviously intoxicated drivers. However, the autopsy process for road fatalities (9% of all SRI) requires blood sampling. Australia-wide, from 1990 to 1997 about 80% of all fatally injured drivers and pedestrians were BAC tested. According to FORS, the remaining 20% largely involve administrative difficulties and were not related to subjective judgements by coroners<sup>8</sup>. In addition, examination of the proportion of all fatalities tested and the proportion of BACs exceeding the legal limit revealed no apparent relationship. From 1990 to 1997, NSW, Vic, WA, NT and Tas recorded BAC information in over 80% of driver and pedestrian fatalities. Qld, SA and the ACT indicated 70%, 60% and 51% respectively. In the absence of reliable BAC data for hospitalisations, alternative methodology incorporating the use of surrogate measures was employed for this report. **Deriving surrogate measures of alcohol-related and non-alcohol-related road SRIs.** Crashes occurring on particular weekdays and at specific times of day are known to be more strongly associated with alcohol than others, ie weekend nights<sup>2,3</sup>. Known fatality BACs, combining 1990-1997 data, were used to identify specific times during which above (alcohol-related times) and below (non-alcohol-related times) average proportions of drivers/pedestrians exceeded 0.05mg/ml blood alcohol for each individual jurisdiction. These surrogate measures were then applied to all SRIs (including passenger injuries<sup>11</sup>) and presented as rates per 10,000 persons. The comparison of alcohol-related and non-alcohol-related SRIs using these measures allows an assessment of whether trends are likely to be general effects involving both kinds of injuries alike or unique trends for alcohol-related injuries alone.

**References**

- <sup>1</sup> Chikritzhs, T., Jonas, H., Heale, P., Dietze, P., Hanlin, K. & Stockwell, T. (1999) *Alcohol-caused deaths and hospitalisations in Australia, 1990-1997*. National Alcohol Indicators, Bulletin No.1. National Drug Research Institute, Curtin university of Technology.
- <sup>2</sup> MAPP (1995) A first report of work in progress, National Centre for Research into the Prevention of Drug Abuse, Curtin University, Perth, WA.
- <sup>3</sup> Chikritzhs, T., Stockwell, T., Hendrie, D., Ying, F., Fordham, R., Cronin, J., Orlermann, K. & Phillips, M. (1999). *The public health, safety and economic benefits of the Northern Territory's Living With Alcohol Program 1992/2 to 1995/6*. National Drug Research Institute Monograph No.2.
- <sup>4</sup> Only a small number of ACT driver/pedestrian road deaths available for examination.
- <sup>5</sup> Sourced from: Higgins K, Cooper-Stanbury M & Williams P (2000) Statistics on drug use in Australia 1998 AIHW cat no. PHE 16. Canberra:AIHW (Drug Statistics Series).
- <sup>6</sup> Victorian data accessed from Vicroads with age categories not available, hospitalisations only available 1991-96, fatalities only 1991-97.
- <sup>7</sup> 1997 NSW hospitalisations not available due to changes in police coding.
- <sup>8</sup> FORS 1999, monograph 29.
- <sup>9</sup> Available Vic data insufficient to determine surrogate, NSW surrogate applied.
- <sup>10</sup> Due to small numbers of ACT fatalities, NSW surrogate applied.
- <sup>11</sup> Assumes that alcohol-related times also apply to passengers of intoxicated drivers.
- <sup>12</sup> Cost estimates kindly provided by Roadwatch University of Western Australia.

**Alcohol-related and non-alcohol-related times.** Table 1 outlines days of the week and times of day identified as alcohol and non-alcohol-related. For Australia and most jurisdictions, Friday, Saturday and Sunday nights were commonly associated with above average numbers of drivers exceeding the legal blood alcohol level for driving.

**Table 1:** Alcohol and non-alcohol-related times by state/territory.

Alcohol-related	Non-alcohol-related
<b>Australia</b>	
Sunday, 10pm-6am	Sunday, 2pm-6pm
Wednesday, 10pm-2am	Monday, 6am-2pm
Thursday, 10pm-2am	Tuesday, 6am-2pm
Friday, 10pm-2am	Wednesday, 10am-2pm
Saturday, 6pm-6am	Thursday, 6am-2pm
	Friday, 6am-10am
<b>NSW (Vic<sup>9</sup> and ACT<sup>10</sup>)</b>	
Sunday, 10pm-6am	Monday, 6am-6pm
Monday, 10pm-2am	Tuesday, 6am-2pm
Wednesday, 10pm-2am	Wednesday, 10am-2pm
Friday, 10pm-6am	Thursday, 6am-2pm
Saturday, 6pm-6am	Friday, 6am-10am
<b>Qld</b>	
Sunday, 6pm-6am	Monday, 6am-2pm
Tuesday, 10pm-2am	Tuesday, 10am-2pm
Wednesday, 10pm-2am	Wednesday, 6am-2pm
Thursday, 6pm-2am	Thursday, 6am-2pm
Friday, 10pm-6am	Friday, 6am-10am
Saturday, 6pm-6am	
<b>SA</b>	
Sunday, 2am-6am	Monday, 10am-2pm
Monday, 2am-6am	Tuesday, 6am-2pm
Tuesday, 10pm-2am	Wednesday, 6am-2pm
Wednesday, 10pm-2am	Thursday, 10am-2pm
Thursday, 10pm-2am	Friday, 6am-10am
Friday, 10pm-6am	Saturday, 10am-2pm
Saturday, 6pm-6am	
<b>WA</b>	
Sunday, 10pm-6am	Monday, 6am-2pm
Monday, 10am-2am	Tuesday, 6am-10pm
Tuesday, 10pm-6am	Wednesday, 6am-2pm
Wednesday, 10pm-2am	Thursday, 10am-2pm
Friday, 10pm-2am	Friday, 10am-2am
Saturday, 10pm-6am	Saturday, 10am-2pm
<b>Tas</b>	
Sunday, 10pm-6am	Sunday, 10am-6pm
Thursday, 10pm-2am	Monday, 6am-10am
Friday, 10pm-2am	Tuesday, 6am-10am, 2pm-6pm
Saturday, 6pm-6am	Wednesday, 6am-10am
	Thursday, 6am-2pm
	Friday, 10am-2pm
	Saturday, 10am-2pm
<b>NT</b>	
Sunday, 2pm-10pm	Monday, 10am-2pm
Tuesday, 6pm-10pm	Wednesday, 10am-6pm
Thursday, 6pm-10pm	Friday, 2pm-6pm
Friday, 6pm-6am	
Saturday, 6pm-6am	