



**Alcohol related Emergency
Department presentations**
Brewers Association of Australia

December 2018

Contents

Glossary	i
Executive summary	ii
1 Published AOD and ED data	3
1.1 Types of alcohol related ED presentations	3
1.2 Official data on the number of alcohol related ED presentations	4
2 Analysis of AOD presentations by jurisdiction and type	7
2.1 AOD category analysis	7
2.2 Jurisdictional analysis	9
2.3 Total selected AOD related ED presentations	11
2.4 Selected AOD related ED presentations per 1,000	12
ED presentations by category, per 1,000 population	12
2.5 Breakdown of selected AOD related ED presentations per 1,000 population	13
Alcohol abuse by jurisdiction	13
Alcohol induced mental disorders by jurisdiction	15
Other drug induced mental disorder by jurisdiction	16
2.6 Proportions of selected AOD ED presentations	18
3 Comparison to other studies	19
3.1 Literature review	19
3.2 Methodologies	19
Conclusions	23
References	25
Limitation of our work	27
General use restriction	27

Tables

Table 1.1: ICD10 codes for AOD related conditions	4
Table 1.2: ED presentations in total and AOD related, Australia, 2013-14 to 2016-17.....	5
Table 2.1: ED presentations, by selected AOD related conditions, Australia, 2014-15 to 2016-17	8
Table 2.2: AOD related hospital separations, Australia, 2014-15	8
Table 2.3: ED presentations, by selected AOD categories, Australian Capital Territory, 2014-15, 2016-17 and the calculated assumption for 2015-16	11
Table 2.4: Total selected AOD related ED presentations per 1,000 population, by year and jurisdiction	12
Table 3.1: Australian academic studies on the number of alcohol related ED presentations in Australia	20

Figures

Figure 1.1: ED presentations by diagnosis, Australia, 2016-17	5
Figure 2.1: AOD related ED presentations and hospital separations, Australia, 2014-15	9
Figure 2.2: Share of national ED presentations, by selected AOD categories and by jurisdiction, 2016-17	10
Figure 2.3: Total selected AOD related ED presentations, by year and jurisdiction	11
Figure 2.4: Total selected AOD related ED presentations per 1,000 population, by year and jurisdiction	12
Figure 2.5: ED presentations by category, per 1,000 population by jurisdiction 2016-17	13
Figure 2.6: Alcohol abuse, ED presentations per 1,000 population, by jurisdiction, 2014-15 to 2016-17	14
Figure 2.7: Alcohol induced mental disorders, ED presentations per 1,000 population, by jurisdiction, 2014-15 to 2016-17	15
Figure 2.8: Other drug induced mental disorders, ED presentations per 1,000 population, by jurisdiction, 2014-15 to 2016-17	17
Figure 2.9: All selected events, split by their category as a proportion of all selected events	18
Figure 3.1: ED presentations by category per 1,000 population, by jurisdiction 2016-17	23

Glossary

Acronym	Full name
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
AOD	alcohol and other drugs
BAC	blood alcohol concentration
ED	emergency department
ICD10	International Classification of Diseases, 10 th edition
NSW	New South Wales
NT	Northern Territory
SA	South Australia
SNOMED	Systematized Nomenclature of Medicine
WA	Western Australia

Executive summary

This report examines the relative contribution of alcohol to emergency department (ED) presentations across years and jurisdictions, and compares official data to selected estimates from other published studies.

The analysis in this report examines published official data from the Australian Institute of Health and Welfare (AIHW) in Chapter 2, and additional AIHW obtained through a special data request in Chapter 3. Published data are only available for 'alcohol and other drugs' (AOD) as a combined category. Disaggregated data for ED presentations due to 'alcohol' and 'other drugs' separately, was made available by special request for around three quarters of conditions, categorised as 'alcohol abuse', 'alcohol related disorders' and 'other drug disorders', but data for the fourth category 'other drug abuse' was unfortunately not available. AOD related ED presentations data from the years 2013-14 to 2016-17 were available for all jurisdictions in all years, except ACT data for 2015-16.

According to official AIHW sources, the share of alcohol related ED presentations in the total is small (around 0.6%) and becoming smaller.¹ The published share of AOD in ED presentations has shrunk from 1.20% in 2013-14 to 0.98% in 2016-17, and the alcohol share shrunk from 64% of AOD in 2014-15 to 60% in 2016-17.² Despite some data limitations, the results are generally consistent, both cross-sectionally across jurisdictions, and longitudinally over time. The share of AOD ED presentations attributable to alcohol misuse is also consistent with its share of hospital admissions (around two thirds in both cases).

Perhaps because official data have only been available in recent years (since 2013-14) and then only published as an aggregate AOD figure, if this is the primary reason for presentation, a range of other studies have also aimed to estimate alcohol related ED presentations. While official data is sourced from direct clinical diagnosis, these other studies relied on clinical data only partially or not at all. Instead they relied on self-reporting, searching admission records for text that might be alcohol related, or using the time of admission (such as Saturday night) as a proxy for being alcohol related. The differences in the estimates from these other studies ranged from 4% (Indig 2009) to (Hulse et al 2001), who estimated that 41% of ED presentations were alcohol related. Preliminary results from a new study indicate one in 10 patients presented to an ED in Melbourne after drinking alcohol. (Egerton-Warburton, forthcoming).

Another complicating consideration is that alcohol may be one of many factors related to an ED presentation; for example, a patient may have used alcohol but also used other drugs, and have a pre-existing mental health disorder. One of the main ED presentation reasons where alcohol is likely to be a contributory factor for some patients is injury. As a proportion of all ED presentations, injuries accounted for fewer than a quarter (23.4%) of presentations in 2016-17 (AIHW 2017). A recent Australian study Hobday et al (2015) estimates that 2.3% of injury presentations are alcohol related.

Deloitte Access Economics

¹ AIHW special data request, and AIHW (2014, 2015, 2016, 2017).

² In both cases, these are the only range of years data are available across.

1 Published AOD and ED data

Short term harms from alcohol misuse can lead to ED presentations. This study examines official data to estimate the number of such presentations annually in Australia.

Alcohol consumption has long been a contentious topic among health professionals. While excessive alcohol consumption is known to cause serious health problems, moderate alcohol consumption has been shown to confer health benefits compared to abstinence. Not only does moderate alcohol consumption³ provide many Australians with enjoyment, the AIHW has also demonstrated that it leads to fewer cases of dementia, type 2 diabetes, ischaemic heart disease, strokes, rheumatoid arthritis and 'other' cancers i.e. not breast, liver, oesophageal or mouth/pharynx.⁴

However, excessive alcohol consumption is associated with detrimental long term impacts including additional cases of cirrhosis, hypertensive disease, inflammatory heart disease, pancreatitis, as well as additional ED presentations from road transport accidents, falls, fires, drowning, occupational injuries, poisoning, suffocation, violence and inhalation.

1.1 Types of alcohol related ED presentations

Excessive alcohol consumption can be related to the following types of ED presentations:

- Alcohol induced mental disorders
- Consequences of alcohol abuse – diseases and injuries
 - Diseases include alcoholic gastritis and alcoholic liver disease.
 - Intentional injuries include suicide, intentional self-harm, assault and abuse.
 - Unintentional injuries: including road traffic accidents (including drivers, passengers and pedestrians), falls, drowning, alcohol poisoning and other unintentional injuries.⁵

³ Moderate consumption is defined as an average of up to two standard drinks per day on average for long term impacts and a maximum of four standard drinks for short term impacts as per National Health and Medical Research Council (NHMRC) Guidelines.

⁴ Begg et al (2007)

⁵ WHO (2011)

Table 1.1: ICD10 codes for AOD related conditions

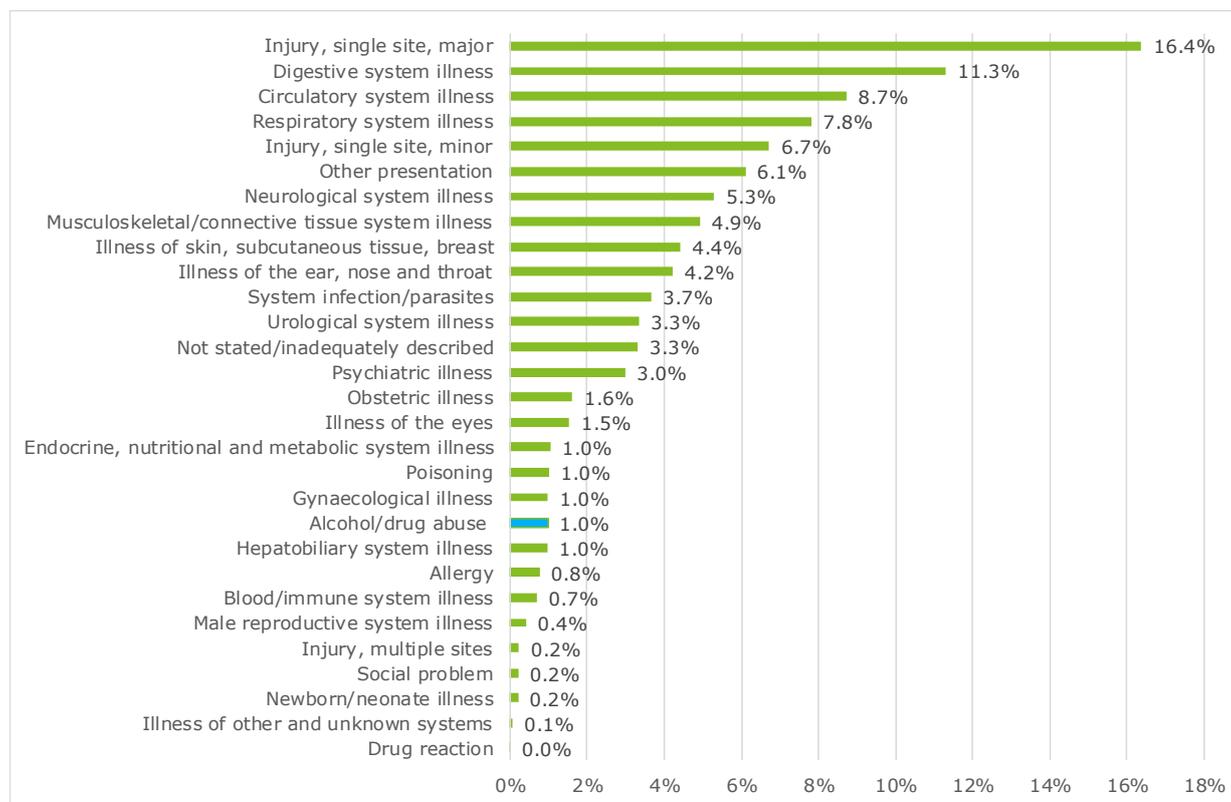
ICD10 Code	Description
	<i>Alcohol induced mental disorders</i>
F10	Mental and behavioural disorders due to use of alcohol
	<i>Other drug mental disorders</i>
F11	Mental and behavioural disorders due to use of opioids
F12	Mental and behavioural disorders due to use of cannabinoids
F13	Mental and behavioural disorders due to use of sedatives or hypnotics
F14	Mental and behavioural disorders due to use of cocaine
F15	Mental and behavioural disorders due to use of other stimulants, including caffeine
F16	Mental and behavioural disorders due to use of hallucinogens
F17	Mental and behavioural disorders due to use of tobacco
F18	Mental and behavioural disorders due to use of volatile solvent
F19	Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances
	<i>Alcohol abuse</i>
G31.2	Degeneration of nervous system due to alcohol
G62.1	Alcoholic polyneuropathy*
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K70	Alcoholic liver disease
X45	Accidental poisoning by and exposure to alcohol
	<i>Other drug abuse</i>
X41	Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs
X42	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens]

Source: World Health Organization

1.2 Official data on the number of alcohol related ED presentations

Official statistics combine alcohol and other drugs (AOD) as a cause of ED presentations, which together account for a very small fraction (0.98%) of all ED presentations (Figure 1.1).

Figure 1.1: ED presentations by diagnosis, Australia, 2016-17



Source: AIHW (2017)

Not only is AOD's share small as a cause of ED presentations, it has fallen over the four years for which data are published (2013-14 to 2016-17). While total ED presentations have risen steadily from 6.98 million to 7.76 million, total AOD related ED presentations fell from 83,494 in 2013-14 to 75,856 in 2016-17 (Table 1.1), albeit with a rise in 2015-16. Further, for the three years for which data were available from a special data request from the AIHW, alcohol's share of combined AOD presentations also declined, from 64% in 2014-15 to 60% in 2016-17, with a lower share (56%) in 2015-16.⁶

Table 1.2: ED presentations in total and AOD related, Australia, 2013-14 to 2016-17

	2013-14	2014-15	2015-16	2016-17
Total ED presentations	6,983,938	7,366,442	7,465,869	7,755,606
AOD related ED presentations	83,494	69,698	80,390	75,856
AOD related % of total ED presentations	1.20%	0.95%	1.08%	0.98%

Source: AIHW special data request. AIHW (2014, 2015, 2016, 2017)
 Note: 2015-16 does not include data for the Australian Capital Territory.

Official data may underestimate the number of alcohol related ED presentations, since it is not mandatory for Australian EDs to screen for or collect alcohol related presentation data. Official statistics are based on alcohol related International Classification of Diseases (ICD10) codes and may not include presentations that are not directly alcohol related but could still have alcohol related causes. For example, a patient might be recorded as presenting for a fracture, but that in turn may have been a result of being intoxicated earlier.

⁶ Although neither three nor four years are adequate to establish trends.

However, injuries only account for fewer than a quarter (23.4%) of ED presentations (AIHW, 2017). A study by Hobday et al (2015) estimates that a maximum of 2.3% of injury presentations are alcohol related.⁷ Whereas preliminary results from the Australasian College for Emergency Medicine's ongoing study *Driving Change* based on ED presentations to St Vincent's Hospital Melbourne indicate one in 10 patients presented after drinking alcohol. On weekends, this figure was one in four (ACEM, 2018).

Further, all jurisdictions report that data in their ED collections are of sufficient quality and appropriate for publication. The AIHW (2017) gives extensive coverage of ED data quality issues. It notes that some data, such as Indigenous status and ED waiting times in some jurisdictions should be treated with caution. However, it does not raise any such concerns for AOD presentations.

⁷ This was the alcohol related share of injuries in its peak period of weekend nights. On weekday nights, it was 1.9%.

2 Analysis of AOD presentations by jurisdiction and type

This chapter analyses data provided by the AIHW on selected ED presentations between 2014-15 and 2016-17 by jurisdiction and for three categories: alcohol abuse, alcohol related disorders and other drug abuse.

The AIHW collects data from states and territories on AOD related admissions, and aggregates these into national figures. In March 2018, Deloitte Access Economics made a request to the AIHW to purchase these data broken down by jurisdiction, and separated into 'alcohol' and 'other drugs'. The request also asked that both categories be divided into abuse (physical reasons for admission) and disorders (mental reasons for admission).

In November 2018, the AIHW supplied data for all individual jurisdictions for three years - 2014-15, 2015-16 and 2016-17. However, data for the ACT were not available for 2015-16.

The AIHW was only able to supply data for three of the four categories requested: 'alcohol abuse', 'alcohol induced mental disorders' and 'other drug mental disorders'. The AIHW advised it was not able to supply data on 'other drug abuse' – even at the national level – for confidentiality reasons.

- However, as the AIHW (2015, 2016, 2017) already publishes total AOD presentations for each of these years, it was possible to subtract the sum of three categories available in the special data request to derive national totals for 'other drug abuse' as a residual (Table 2.1).
- As state and territory total AOD presentations are not published, this method could not be employed to generate a jurisdictional break down of 'other drug abuse' (Section 2.2).

2.1 AOD category analysis

Alcohol's share of ED presentations and hospital separations⁸ are broadly similar. Until this year, the AIHW has not published breakdowns of hospital separations by individual AOD categories. However, AIHW (2018) does contain a breakdown of AOD abuse separations for the year 2014-15. This enables comparisons to be made across ED admissions and hospital separations for both 'alcohol' and 'other drugs' for that year (Figure 2.1).

⁸ The AIHW measures hospital stays by separations rather than admissions, so that it can capture length of stay.

Table 2.1: ED presentations, by selected AOD related conditions, Australia, 2014-15 to 2016-17

Selected AOD related conditions	2014-15	2015-16	2016-17	Average share
Alcohol induced mental disorders	34,480	34,552	35,971	46%
Alcohol abuse	10,080	10,399	10,814	14%
<i>Total alcohol</i>	<i>44,560</i>	<i>44,951</i>	<i>46,785</i>	<i>60%</i>
Other drug mental disorders	13,883	16,887	17,065	21%
Other drug abuse	11,255	18,552	12,006	19%
<i>Total other drugs</i>	<i>25,138</i>	<i>35,439</i>	<i>29,071</i>	<i>40%</i>
Total AOD	69,698	80,390	75,856	100%
Alcohol share of total AOD	64%	56%	60%	60%

Source: AIHW data request. AIHW (2015, 2016, 2017)

Note: 2015-16 does not include data for the Australian Capital Territory.

Table 2.2: AOD related hospital separations, Australia, 2014-15

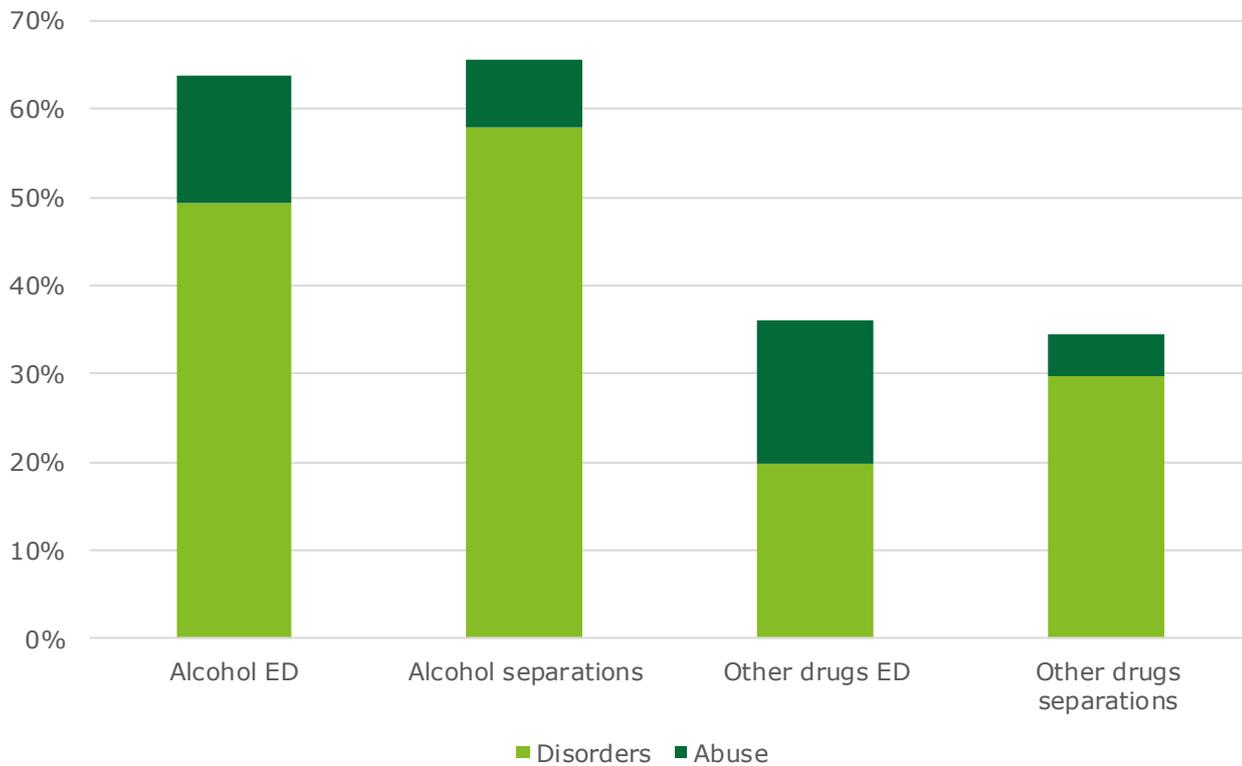
Condition	Separations
Alcohol induced mental disorders	53,824
Alcohol abuse	7,183
<i>Total alcohol</i>	<i>61,007</i>
Other drug induced disorders	27,635
Other drug abuse	4,334
<i>Total other drugs</i>	<i>31,969</i>
Total	92,976

Source: AIHW data request. AIHW (2017), AIHW Hospital Morbidity database, AIHW (2018)

Alcohol's share of all AOD related ED presentations (64%) in 2014-15 was essentially the same as its share of hospital separations (66%). As with other drugs, the majority of both presentations and separations were due to disorders rather than abuse. However, the proportion of alcohol related disorders relative to abuse was considerably higher in hospital admissions than in ED presentations – which was also the case for other drugs.

- It is also worth noting from Table 2.1 and Table 2.2 that, for alcohol related disorders and abuse combined ('conditions'), hospital separations (61,007) in 2015 were 37% higher than ED presentations (44,560). For other drugs in 2015, hospital separations were 27% higher than the number of ED presentations.
- There were 40% more alcohol abuse cases presenting at EDs (10,080) than were admitted to hospitals (7,183). However, there were 2.6 times as many cases of other drug abuse presenting to EDs than being hospitalised.

Figure 2.1: AOD related ED presentations and hospital separations, Australia, 2014-15



Note: Percentages total to 100 for total ED presentations, and to 100 for total hospital separations.
 Source: AIHW data request. AIHW (2017), AIHW Hospital Morbidity database, AIHW (2018)

2.2 Jurisdictional analysis

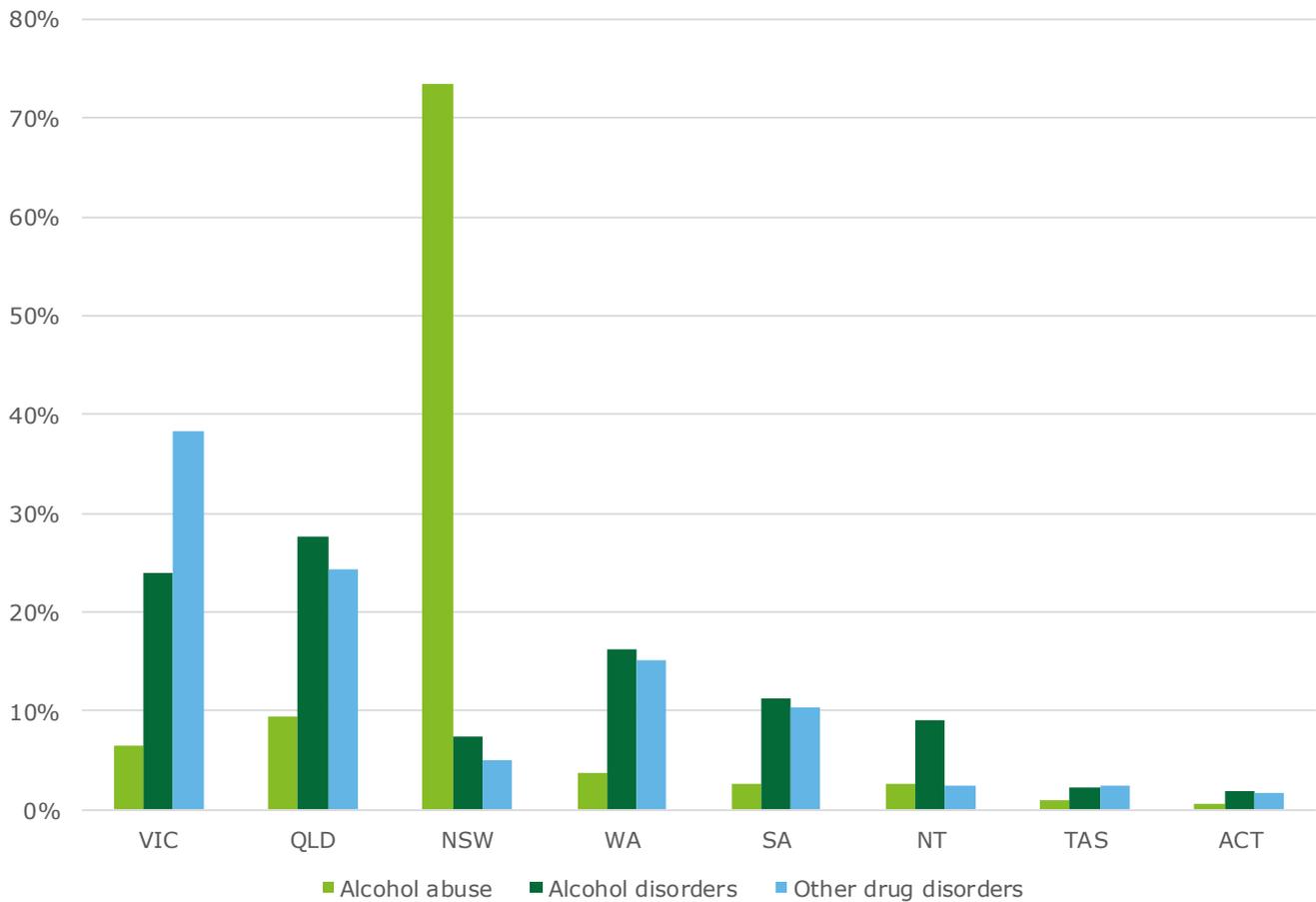
While it was possible to estimate national totals for ED presentations for the category 'other drug abuse', it was not possible to disaggregate this category by jurisdiction.

- If jurisdictions' shares of national totals had been roughly similar for each of the other three categories where the AIHW could supply data, it might have been reasonable to assume that each jurisdiction's share of 'other drug abuse' would have been similar to that jurisdiction's share for the other three categories. However, within each jurisdiction, its share of national totals for any one category bore little resemblance to its share for any other categories (Figure 2.2).
- This may be due in part to categories being reported differently across jurisdictions. While most jurisdictions use ICD10, some hospitals are still using ICD9, while others use a completely different system still, called SNOMED (Systematized Nomenclature of Medicine).

Accordingly, for the purposes of assessing differences between jurisdictions, and trends within jurisdictions, the three 'selected' categories that can be analysed at a jurisdictional level in this section are:

1. Alcohol abuse;
2. Alcohol induced mental disorders; and
3. Other drug mental disorders.

Figure 2.2: Share of national ED presentations, by selected AOD categories and by jurisdiction, 2016-17



Note: NSW high share of alcohol abuse appears to be due to its SNOMED system using different definitions of abuse and disorders than the nation-wide ICD system. NSW’s share of total alcohol and other drug ED presentations is proportional to its share of the national population. Source: AIHW data request.

As noted in Section 2.1 the AIHW has no data on presentations for the Australian Capital Territory (ACT) in 2015-16. For national trends, this should not have a substantial impact, given the ACT’s small size (between 0.6% to 2.1% of categories over the years data are available). However, for comparative purposes only, an assumption was made that 2015-16 data for the ACT could be proxied by averaging its 2014-15 and 2016-17 data, for the three available conditions (Table 2.3).

Table 2.3: ED presentations, by selected AOD categories, Australian Capital Territory, 2014-15, 2016-17 and the calculated assumption for 2015-16

Australian Capital Territory	2014-15	2015-16*	2016-17	2015-16 calculated assumption
Alcohol induced mental disorder	707	n.a.	703	705
Other drug mental disorder	212	n.a.	302	257
Alcohol abuse	82	n.a.	62	72
Total	1,001	n.a.	1,067	1,034

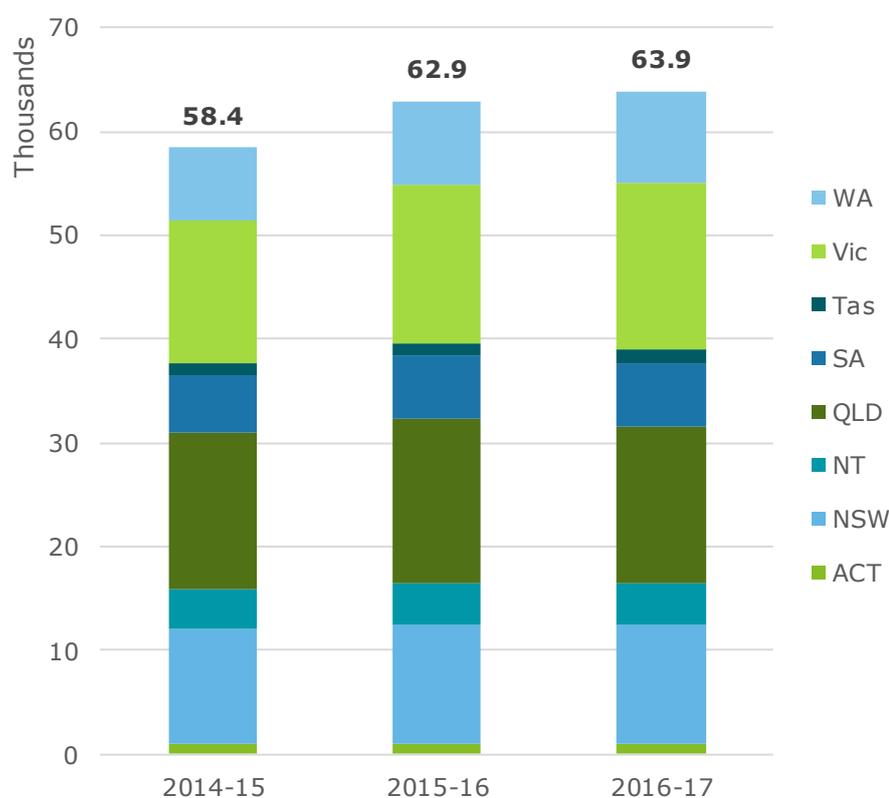
Note* The 2015-16 National Non-Admitted Patient Emergency Department Care Database does not hold data for the Australian Capital Territory Source: AIHW (2018), Deloitte Access Economics (2018)

2.3 Total selected AOD related ED presentations

Data from the AIHW indicates that the total selected AOD related ED presentations for all jurisdictions in 2016-17 was 63,850. This represents an increase of 9.3% from 2014-15. Victoria and Queensland have the highest number of presentations of all jurisdictions, at 15,905 and 15,110 respectively. The ACT and Tasmania have the lowest number of presentations of all jurisdictions, at 1,067 and 1,378 respectively.⁹

Figure 2.3 shows annual selected AOD related ED presentations for 2014-15 to 2016-17, by jurisdiction. A slight increasing trend for overall presentations can be observed.

Figure 2.3: Total selected AOD related ED presentations, by year and jurisdiction



Source: AIHW (2018), Deloitte Access Economics (2018)

⁹ Figures for individual conditions are discussed later in this chapter.

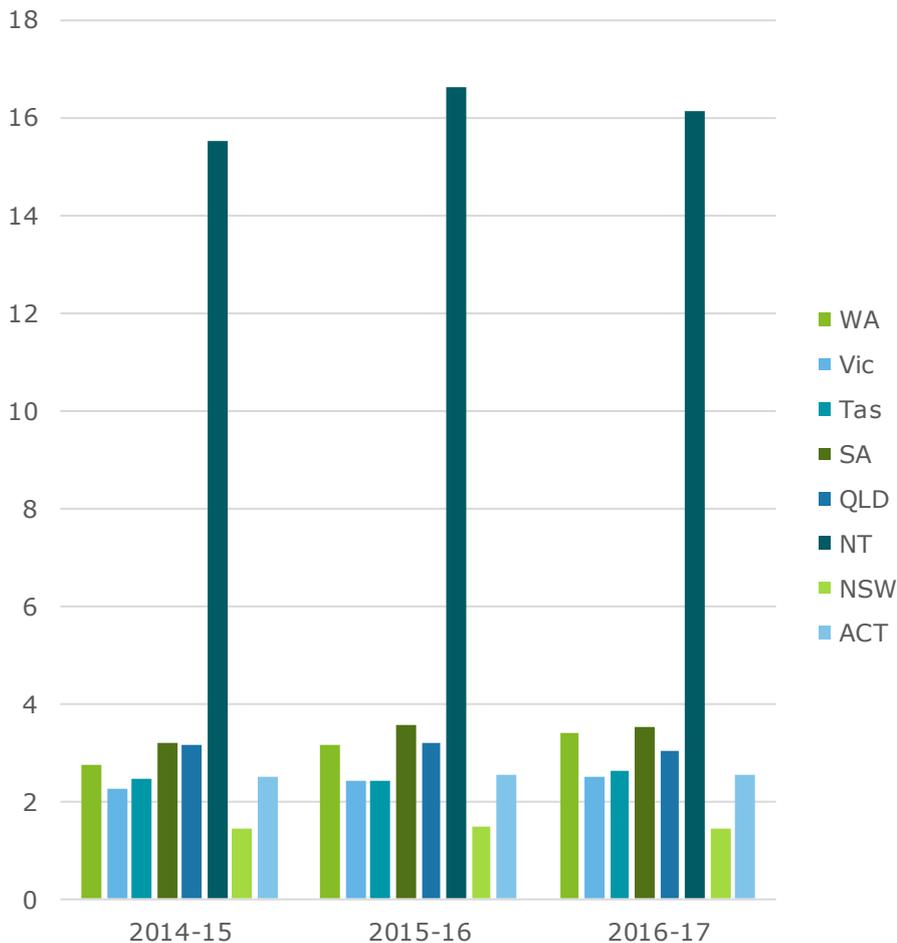
2.4 Selected AOD related ED presentations per 1,000

To better compare each jurisdiction's rate of selected AOD related ED presentations, ED presentations were calculated as a proportion of their respective populations.

As shown below in Figure 2.4 and Table 2.4, all jurisdictions, with the exception of the NT, have between 1.4 to 3.5 ED presentations per 1,000 of their respective populations (in 2016-17). The NT has the highest rate of selected AOD related ED presentations, at over 11 times the rate of presentations in NSW (in 2016-17).

ED presentations have remained relatively stable for each jurisdiction, and in Australia as a whole, over the three years from 2014-15.

Figure 2.4: Total selected AOD related ED presentations per 1,000 population, by year and jurisdiction



Source: AIHW (2018), Deloitte Access Economics (2018)

Table 2.4: Total selected AOD related ED presentations per 1,000 population, by year and jurisdiction

Year	ACT	NSW	NT	QLD	SA	Tas	Vic	WA
2014-15	2.5	1.4	15.5	3.1	3.2	2.5	2.2	2.7
2015-16	2.5	1.5	16.6	3.2	3.6	2.4	2.4	3.1
2016-17	2.5	1.4	16.1	3.0	3.5	2.6	2.5	3.4

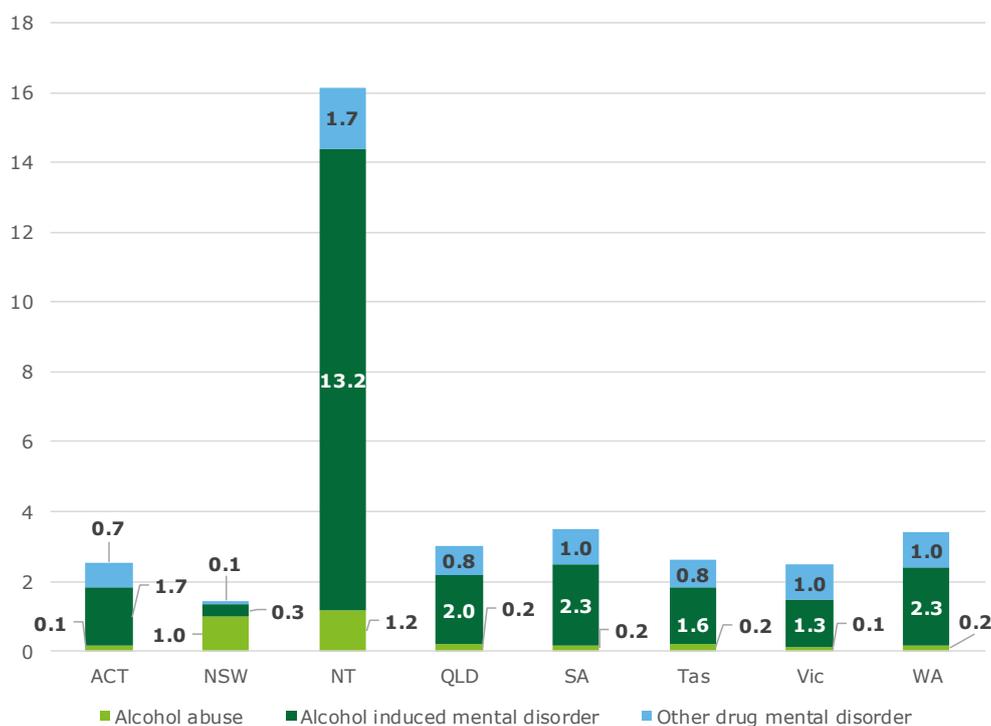
Source: AIHW (2018), Deloitte Access Economics (2018)

ED presentations by category, per 1,000 population

Figure 2.5 shows ED presentations per 1,000 people by category (for all selected codes) in 2016-17. The chart demonstrates considerable variations for each jurisdiction. The NT was the clear outlier – almost solely due to

a very high number of alcohol induced mental disorders. Whilst no jurisdiction, apart from the NT, had more than four ED presentations per 1,000 people in 2016-17 – there was still significant variation between these jurisdictions. Overall, NSW had the lowest of all jurisdictions at 1.4 per 1,000 population. With the exclusion of the NT, WA had the highest at 3.4 per 1,000 population. The NT, as the outlier, had almost 5 times more presentations than WA, at 16.1 per 1,000 for all categories.

Figure 2.5: ED presentations by category, per 1,000 population by jurisdiction 2016-17



Source: AIHW (2018), Deloitte Access Economics (2018)

2.5 Breakdown of selected AOD related ED presentations per 1,000 population

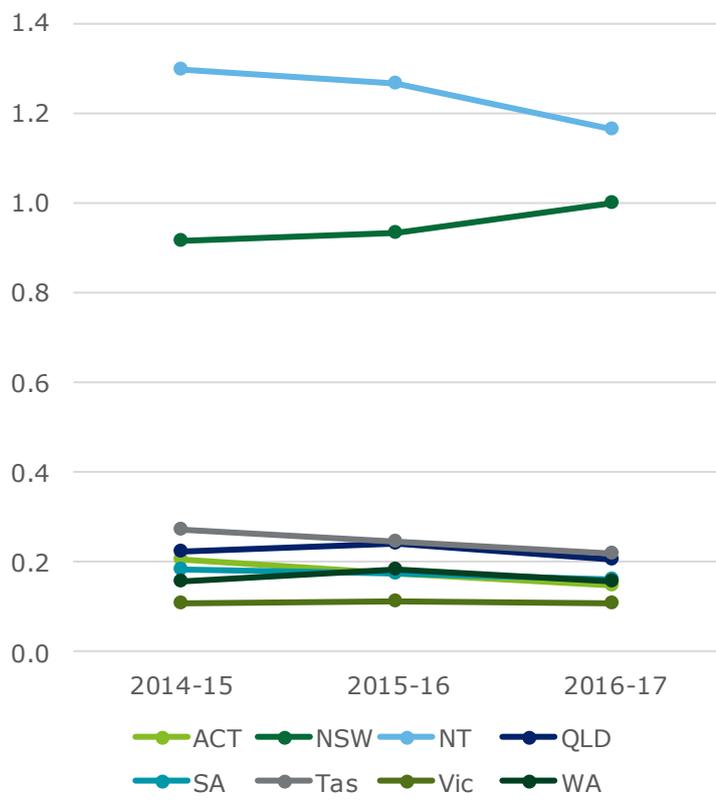
Each of the three categories that make up the selected AOD related ED presentations can be broken down into their respective prevalence by jurisdiction, which highlights large differences by jurisdiction.

Alcohol abuse by jurisdiction

Alcohol abuse is the smallest component of all the selected ED presentations. At 10,814 presentations in 2016-17, it comprised 16.9% of all the selected ED presentations across Australia for that year. However, this is not consistent across all jurisdictions.

The NT had highest rate of alcohol abuse presentations at 1.2 per 1,000 in 2016-17 and NSW was second highest, at 1.0 per 1,000 in 2016-17. Victoria had the lowest alcohol abuse presentations, at 0.1 per 1,000. It can be seen in Figure 2.6 that most jurisdictions, notably with the exception of NSW, have experienced stable or a modest decline in alcohol abuse presentation rates since 2014-15.

Figure 2.6: Alcohol abuse, ED presentations per 1,000 population, by jurisdiction, 2014-15 to 2016-17



Source: AIHW (2018), Deloitte Access Economics (2018)

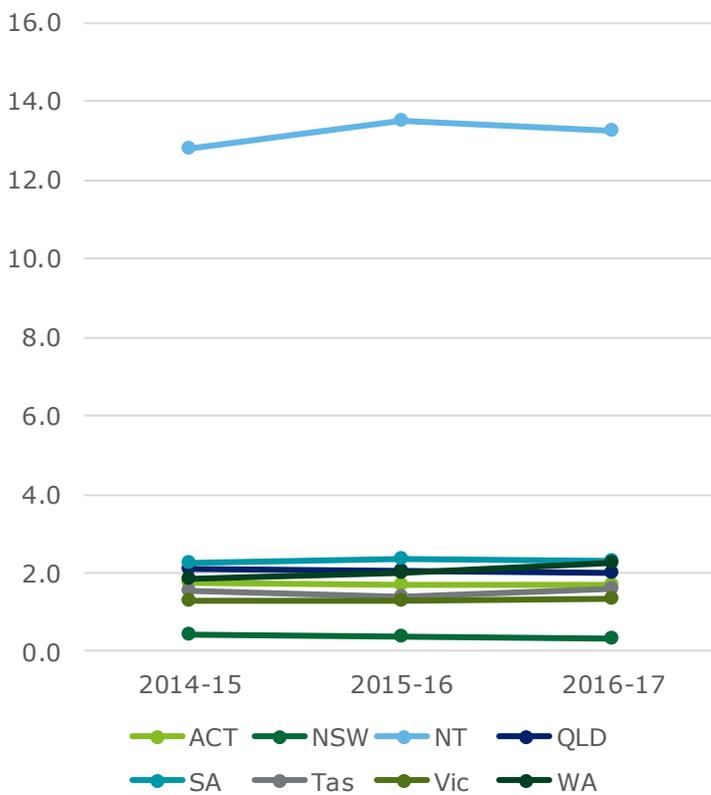
Alcohol induced mental disorders by jurisdiction

Overall, alcohol induced mental disorders have the largest impact on each jurisdiction per 1,000 of their respective populations, except for NSW. In 2016-17 this category contributed 56.3% of all selected AOD ED presentations.

Rates of ED presentations related to alcohol induced mental disorders vary considerably for each jurisdiction, as can be seen in Figure 2.7. The NT had the highest presentation rate presentations at 13.2 per 1,000 in 2016-17. This was 39 times higher than NSW, which had the lowest rate, at 0.3 per 1,000 in 2016-17.

WA and South Australia had the next highest rates, at 2.3 per 1,000 in 2016-17. All jurisdictions have remained relatively stable since 2014-15.

Figure 2.7: Alcohol induced mental disorders, ED presentations per 1,000 population, by jurisdiction, 2014-15 to 2016-17



Source: AIHW (2018), Deloitte Access Economics (2018)

Tables 2.1 to 2.3 show that alcohol has accounted for between 0.4% (NSW in 2016-17) and 2.4% (NT in 2014-15) of all ED presentations in recent years.

Table 2.1: Emergency department presentations by jurisdiction and type, 2014-15

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Alcohol	10,261	8,512	11,301	5,145	4,159	948	789	3,445	44,560
AOD	23,101	13,205	14,206	8,207	5,384	1,138	954	3,503	69,698
All causes	2,681,466	1,610,623	1,378,883	803,821	469,368	150,076	129,961	142,244	7,366,442

Note: Alcohol is alcohol abuse and alcohol induced mental disorders. AOD is AOD abuse and AOD induced mental disorders
Source: AIHW special data request

Table 2.2: Emergency department presentations by jurisdiction and type, 2015-16

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Alcohol	10,434	8,755	11,340	5,628	4,316	845	n.a.	3,633	44,951
AOD	30,519	14,681	14,724	9,480	6,040	1,145	n.a.	3,801	80,390
All causes	2,733,520	1,679,886	1,439,143	829,431	481,889	153,541	n.a.	148,459	7,465,869

Note: Alcohol is alcohol abuse and alcohol induced mental disorders. AOD is AOD abuse and AOD induced mental disorders

Source: AIHW special data request

Table 2.3: Emergency department presentations by jurisdiction and type, 2016-17

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Alcohol	10,611	9,356	10,966	6,263	4,319	952	765	3,553	46,785
AOD	24,576	15,400	14,169	9,588	6,042	1,315	1,018	3,748	75,856
All causes	2,784,545	1,731,040	1,457,083	835,551	493,268	156,323	143,860	153,936	7,755,606

Note: Alcohol is alcohol abuse and alcohol induced mental disorders. AOD is AOD abuse and AOD induced mental disorders

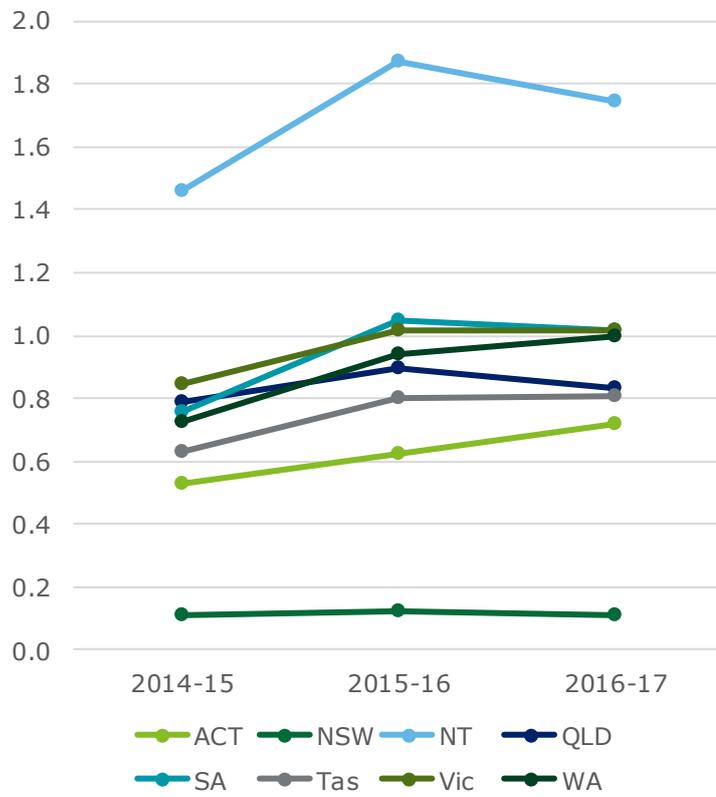
Source: AIHW special data request

Other drug induced mental disorder by jurisdiction

Consistent with the two other categories for the selected ED presentations, the NT has the highest ED presentation rate of other drug induced mental disorders per 1,000 population, at 1.7 in 2016-17. It also has the largest growth in other drug disorders admissions. In contrast, NSW has the lowest other drug induced mental disorders at 0.1 per 1,000 in 2016-17.

All other jurisdictions report comparable ED presentation rates of other drug induced mental disorders per 1,000 population. In 2014-15 this was between 0.5 (ACT) to 0.8 (Victoria) and in 2016-17 between 0.7 (ACT) and 1.0 (Victoria) per 1,000 population.

Figure 2.8: Other drug induced mental disorders, ED presentations per 1,000 population, by jurisdiction, 2014-15 to 2016-17



Source: AIHW (2018), Deloitte Access Economics (2018)

2.6 Proportions of selected AOD ED presentations

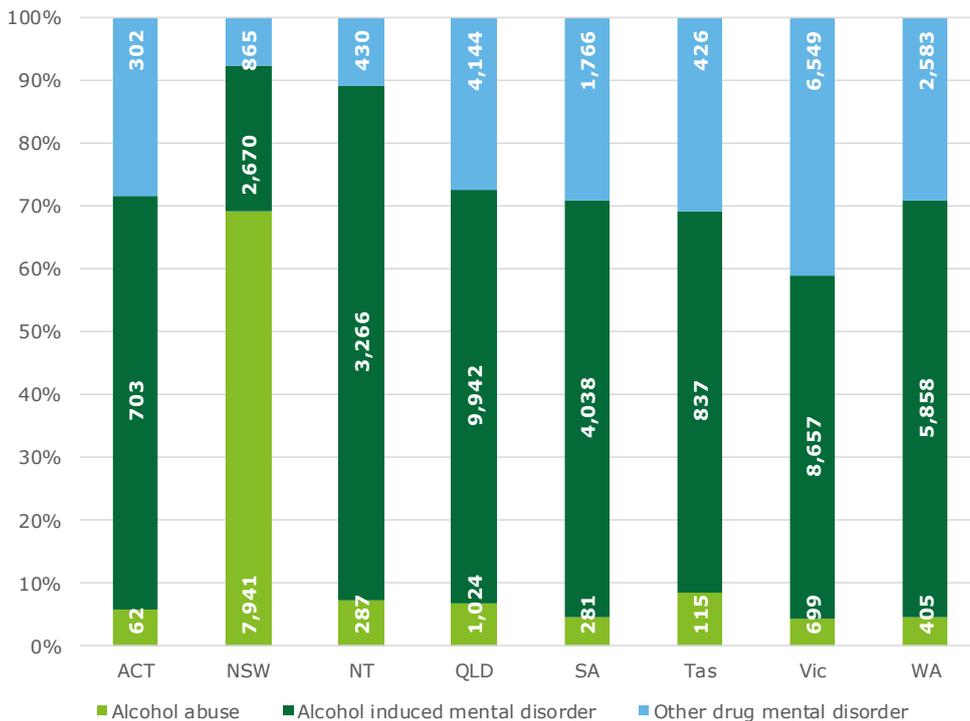
To provide another view of how each category of selected ED presentations¹⁰ vary, it is possible to see the proportions of each category of selected AOD ED presentations by jurisdiction. Figure 2.9 below shows these three categories as a proportion of the overall selected ED presentation data. With one exception (NSW), the smallest, middle and largest category (being alcohol abuse, other drug mental disorders and alcohol induced mental disorders respectively) are consistent across each jurisdiction.

Alcohol related events (alcohol abuse and alcohol induced mental disorders) account for between 59% (in Victoria) to over 90% (in NSW) of all the selected ED presentations. These proportions highlight the disproportionate impact that alcohol related disorders have on EDs, compared to other drug induced mental disorders. (Note that these data do not include ED presentations for other drug abuse, which is a limitation of this analysis.)

Alcohol induced mental disorders were the largest contribution to all jurisdiction's presentations with the exception of NSW. Alcohol abuse was the smallest contributor in all jurisdictions, again with the exception of NSW, where it was the largest. This anomaly may be a result of different coding methods – NSW is the only state to use a mix of SNOMED and ICD10 across different hospitals.

As can be seen in Figure 2.9, Victoria has the largest proportion of other drug mental disorder ED presentations. In Victoria, deaths from prescription opioids now result in more deaths than motor vehicle accidents.¹¹

Figure 2.9: All selected events, split by their category as a proportion of all selected events



Source: AIHW (2018), Deloitte Access Economics (2018)

¹⁰ As per section 2.2 'selected' ED presentation categories are the three for which state data are available: alcohol abuse, alcohol induced mental disorders and other drug induced mental disorders.

¹¹ <https://www.racgp.org.au/afp/2016/december/prescription-drug-abuse-a-timely-update/>

3 Comparison to other studies

Other selected studies reviewed in this analysis used proxy measures to infer the number of ED presentations in Australia that are alcohol related.

3.1 Literature review

A literature review was conducted to identify studies on alcohol related ED presentations in Australian settings. The methods of data collection were reviewed and compared with the methods of the AIHW's official statistics. The ability to attribute alcohol use to the reason for an ED presentation was also considered.

3.2 Methodologies

The results of the literature review are outlined in Table 3.1. All of the studies identified use proxy measures to infer the number of ED presentations in Australia that are alcohol related.

The main criticism of the official statistics is that alcohol related admissions are attributed using alcohol related ICD10 codes, as outlined in Table 1.1. of Section 1, which may underestimate the contribution of alcohol to other ED presentations such as injuries. This could be collected by directly measuring alcohol use for all ED presentations, for example recording BAC readings. However, the identified studies relied only partly or not at all on direct methods of data collection. As such, they may overstate ED presentation rates that are attributable to alcohol as opposed to other or combined factors.

Table 3.1: Australian academic studies on the number of alcohol related ED presentations in Australia

Study	Population and setting	Method of data collection	Strength of attribution	Alcohol related ED presentations
Egerton-Warburton (forthcoming) <i>Driving Change: Using Emergency Department Data To Reduce Alcohol-related Harm study</i> . ¹²	A five year project looking at patients presenting at EDs in nine hospitals in Melbourne, Geelong, Sydney, Canberra and Warrnambool.	Unclear.	Newspaper article only. Full study results, including the methodology is yet to be published (as of December 2018).	Over a 3 month period in 2018, at the St Vincent's Hospital Melbourne ED one in 10 patients presented after drinking alcohol. On weekends this figure was one in four.
Butler K, Reeve R, Viney R, Burns L (2016) <i>Estimating the prevalence of drug and alcohol presentations to hospital emergency departments in NSW, Australia</i> .	Patients were recruited from eight NSW public hospitals presenting to the hospital ED over a 10 day period.	Participants completed a self-reported survey on AOD use.	Identification of alcohol use relied on self-report, and data may therefore be limited by recall and social desirability bias. Due to the voluntary nature of the study, bias may also exist if there are systematic differences between people who respond and people who do not.	35% of the total sample were identified as having problematic AOD use.
Egerton-Warburton D, et al (2014), <i>Survey of alcohol related presentations to Australasian emergency departments</i> .	Patients in 106 EDs in Australia and New Zealand.	A point prevalence survey of ED patients either waiting to be seen or currently being seen conducted at 02:00 local time on 14 December 2013 (weekend night shift).	An observational study, so inferred alcohol related presentations indirectly. ¹³	14.3% of patients presented for alcohol related reasons.
Hobday M, Chikritzhs T, Liang W, Meuleners L (2015), <i>The effect of alcohol outlets, sales and trading hours on alcohol related injuries presenting at emergency</i>	A retrospective population-based study in the Perth metropolitan area using panel data from an 8 year period (1	A proxy measure of ED alcohol related injury was applied. Presenting day of week and time of day data were used to identify cases that are	A proxy measure was used to indirectly measure the number of alcohol related ED presentations. This measure is likely to overestimate the number of alcohol	1.9% of night injuries and 2.27% of weekend night injuries presented at ED due to toxic effects of alcohol.

¹² <http://online.isentialink.com/heraldsun.com.au/2018/12/05/7547a00f-044a-4f4e-bb0e-0486f88a70dc.html>

¹³ Included "apparent" intoxication and intoxication which may have been caused other drugs, as well as intoxication not related to the presenting cause.

Study	Population and setting	Method of data collection	Strength of attribution	Alcohol related ED presentations
<i>departments in Perth, Australia, from 2002 to 2010.</i>	July 2002 to 30 June 2010).	likely to be alcohol related.	related ED presentations.	
Hulse G, Robertson S, Tait R (2001), <i>Adolescent emergency department presentations with alcohol- or other drug-related problems in Perth, Western Australia.</i>	12-19 year olds in Perth, Australia.	A 4-week retrospective review of hospital records. Identified alcohol related presentations by inspecting the hospital records for all cases where AODs was implicated by such terms as: overdose, adverse drug reactions, intoxication, drug induced psychosis and psychosis. Also reviewed the records in cases of fractures, wounds, deliberate self-harm/suicide attempt and nausea/vomiting.	Included records with and without biochemical validation of alcohol or other drug use.	41% of presentations were alcohol related.
Indig D (2009), <i>Why are alcohol related emergency department presentations under-detected? An exploratory study using nursing triage text.</i>	The ED of a major teaching hospital in Sydney, Australia.	A retrospective review of hospital records for all ED presentations from 2004 to 2006. Each record included two nursing triage free-text fields, which were searched for over 60 alcohol related terms.	Included records with and without biochemical validation of alcohol or other drug use.	Approximately 4.5% of ED presentations were identified as alcohol related.
Livingston M, et al (2010), <i>Diverging trends in alcohol consumption and alcohol-related harm in Victoria.</i>	All EDs in Victoria, Australia.	Using the Victorian Emergency Minimum Dataset from 1999/2000 to 2007/08, all presentations with an ICD-10 diagnosis code of F10.0 (acute intoxication due to alcohol) were extracted.	This study only looked at one alcohol related diagnosis code, so is likely to underestimate the number of alcohol related ED presentations.	From 1999/2000 to 2007/2008 the rate of emergency presentations for intoxication have almost doubled, increasing by 98%.
Stockwell T, McLeod R, Stevens M, Phillips M, Webb M, Jelinek G (2002), <i>Alcohol consumption, setting, gender and activity as</i>	Patients presenting to an ED in Western Australia. Matched with population case controls.	Population case control. Cases were injured patients from a hospital emergency department. Participants were interviewed regarding	Identification of alcohol consumption in the prior 6 hours relied on self-report, and data may therefore be	Patients who drank 0-30g of alcohol in the prior 6 hours were 2.3 times more likely to present at the

Study	Population and setting	Method of data collection	Strength of attribution	Alcohol related ED presentations
<i>predictors of injury: A population-based case-control study.</i>		their activities in the 6 hour period preceding their injury.	limited by recall and social desirability bias.	ED with an injury compared with the control group.

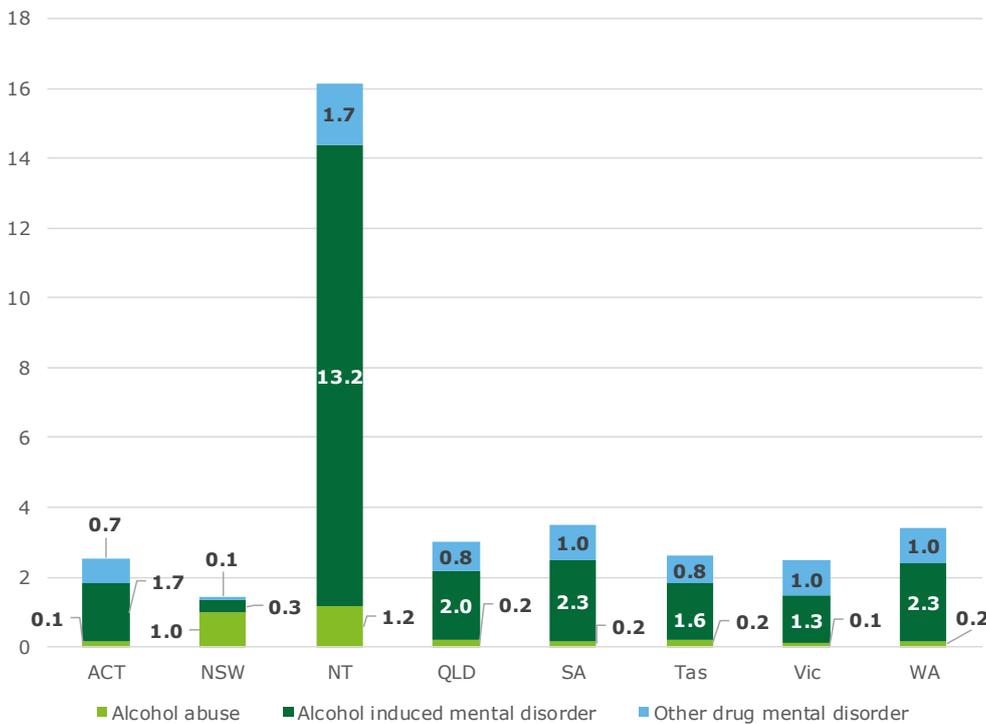
Conclusions

The AIHW publishes national data for both hospital separations and ED presentations for the combined category 'alcohol and other drugs'. However, it does not publish data for the separate categories 'alcohol' and 'other drugs' for ED presentations. Nor did it do so for hospital separations until this year.

Deloitte Access Economics requested data on ED presentations disaggregated into alcohol and other drugs. However, the AIHW was only able to do so for three categories: alcohol induced mental disorders, alcohol abuse and other drug mental disorders. For confidentiality reasons, no data on other drug abuse could be released.

State splits and trends broadly followed national splits and trends – for the conditions and years data were available. However, there were outliers for some conditions in NSW and the NT.

Figure 3.1: ED presentations by category per 1,000 population, by jurisdiction 2016-17



A number of studies in Australia have estimated higher impacts of alcohol on ED presentations. Almost all of the studies identified relied on proxy measures to infer the number of alcohol related ED admissions. While there are limitations to the methodology of the official statistics, such as causes of injuries not always being reported, it seems unlikely that this would result in an under-estimation of alcohol impacts by a factor of more than fourfold (Indig, 2009) – far less the forty fold implied by Hulse et al (2001).

- Deloitte Access Economics' literature search did not find any Australian studies that relied on BAC readings. The WHO (2009) produced a 300 page report on alcohol related injury ED presentations. The proportion of injury patients with any positive BAC in studied individual EDs ranged widely, from 4% to 29% with an average of around 17%. While the transferability of these individual results to Australia as a whole may be problematic, it could imply an upper range for injuries that alcohol may have contributed to, but which were not captured under official statistics, of around 17%. That is, alcohol-related major injuries may constitute around 2.5% of ED presentations.¹⁴

¹⁴ Equals major injuries at 16% of ED presentations (AIHW, 2017) times 17%.

- Similarly, the literature search found no studies which provided a percentage of injuries which were indirectly due to alcohol. Notably, Crompton et al (2011) consider that only a “very small proportion” of injuries would be due to third party alcohol consumption. This report has examined data from eight jurisdictions over three years using three different reporting methods. It does not seem probable that all of these data points are consistently under reporting alcohol impacts by several orders of magnitude.

References

- Australian Institute of Health and Welfare (2018) *Trends in hospitalised injury, Australia 1999–00 to 2014–15*. Injury research and statistics series no. 110. Cat. no. INJCAT 190. Canberra: AIHW.
- Australian Institute of Health and Welfare (2017). *Emergency department care 2016–17: Australian hospital statistics*. Health services series no. 80. Cat. no. HSE 194. Canberra: AIHW.
- Australian Institute of Health and Welfare (2016). *Emergency department care 2015–16: Australian hospital statistics*. Health services series no. 72. Cat. no. HSE 182. Canberra: AIHW.
- Australian Institute of Health and Welfare (2015). *Emergency department care 2014–15: Australian hospital statistics*. Health services series no. 65. Cat. no. HSE 168. Canberra: AIHW.
- Australian Institute of Health and Welfare (2014). *Australian hospital statistics 2013–14: Emergency department care*. Health services series no. 58. Cat. no. HSE 153. Canberra: AIHW
- Begg et al (2007) The Burden of Disease and Injury in Australia in 2003.
- Butler, K., Reeve, R., Arora, S., Viney, R., Goodall, S., Gool, K., & Burns, L. (2016). The hidden costs of drug and alcohol use in hospital emergency departments. *Drug and alcohol review*, 35(3), 359-366.
- Cherpitel, C. J. (1995). Screening for alcohol problems in the emergency department. *Annals of Emergency Medicine*, 26(2), 158-166.
- Crampton E, Burgess M, Taylor B (2011) *The Cost of Cost Studies*, University of Canterbury Working Paper No.29/2011
- Egerton-Warburton D, et al (ongoing) *Driving Change: Using Emergency Department Data To Reduce Alcohol-related Harm study*. <http://online.isentialink.com/heraldsun.com.au/2018/12/05/7547a00f-044a-4f4e-bb0e-0486f88a70dc.html>
- Egerton-Warburton, D., Gosbell, A., Wadsworth, A., Fatovich, D. M., & Richardson, D. B. (2014). 'Survey of alcohol related presentations to Australasian emergency departments'. *The Medical Journal of Australia*, 201(10), 584-587.
- Hobday, M., Chikritzhs, T., Liang, W., & Meuleners, L. (2015). 'The effect of alcohol outlets, sales and trading hours on alcohol-related injuries presenting at emergency departments in Perth, Australia, from 2002 to 2010'. *Addiction*, 110(12), 1901-1909.
- Hulse G, Robertson S, Tait R (2001), Adolescent emergency department presentations with alcohol- or other drug-related problems in Perth, Western Australia, Volume 96, Issue7, 1059-1067.

Indig D (2009), Why are alcohol related emergency department presentations under-detected? An exploratory study using nursing triage text, *Drug and Alcohol Review*, Volume 27, 2008 - Issue 6.

Livingston M, et al (2010), Diverging trends in alcohol consumption and alcohol-related harm in Victoria, Australian and New Zealand Journal of Public Health, Volume 34, Issue 4, 368-373.

Stockwell T, McLeod R, Stevens M, Phillips M, Webb M, Jelinek G (2002), Alcohol consumption, setting, gender and activity as predictors of injury: A population-based case-control study, *Journal of Studies on Alcohol*, 63: 372-379.

WHO (2011), *Global status report on alcohol and health*, ISBN 978 92 4 156415 1

WHO (2009) *Alcohol and Injuries: Emergency department studies in an international perspective*. ISBN 978 92 4 154784 0

Limitation of our work

General use restriction

This report is prepared solely for the use of Brewers Association of Australia. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of set out in our engagement letter dated 1 May 2018. You should not refer to or use our name or the advice for any other purpose

Deloitte.

Access Economics

Deloitte Access Economics

ACN: 149 633 116
8 Brindabella Circuit
Brindabella Business Park
Canberra Airport ACT 2609
Tel: +61 2 6263 7000
Fax: +61 2 6263 7004

Deloitte Access Economics is Australia's pre-eminent economics advisory practice and a member of Deloitte's global economics group. For more information, please visit our website

www.deloitte.com/au/deloitte-access-economics

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/au/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

The entity named herein is a legally separate and independent entity. In providing this document, the author only acts in the named capacity and does not act in any other capacity. Nothing in this document, nor any related attachments or communications or services, have any capacity to bind any other entity under the 'Deloitte' network of member firms (including those operating in Australia).

About Deloitte

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 150 countries, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte's approximately 244,000 professionals are committed to becoming the standard of excellence.

About Deloitte Australia

In Australia, the member firm is the Australian partnership of Deloitte Touche Tohmatsu. As one of Australia's leading professional services firms, Deloitte Touche Tohmatsu and its affiliates provide audit, tax, consulting, and financial advisory services through approximately 7,000 people across the country. Focused on the creation of value and growth, and known as an employer of choice for innovative human resources programs, we are dedicated to helping our clients and our people excel. For more information, please visit our web site at www.deloitte.com.au.

Liability limited by a scheme approved under Professional Standards Legislation.

Member of Deloitte Touche Tohmatsu Limited

© 2018 Deloitte Access Economics Pty Ltd