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# Australian music festival attendees who seek emergency medical treatment following alcohol and other drug use

A Global Drug Survey data report

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# EXECUTIVE SUMMARY

Across 2018 and 2019 there have been a series of drug-related deaths at Australian music festivals. These tragedies have highlighted a lack of current and localised information about the circumstances surrounding acute harm events following drug use among Australian festivalgoers.

This report analyses data from the Global Drug Survey from late 2018, at the onset of the last Australian summer music festival season. We recruited a large sample of Australian festivalgoers (N = 4,391), all of whom (a) reported being residents of Australia, (b) reported attending one or more festivals in the last 12 months, and (c) answered at least one question about seeking emergency medical treatment (EMT)<sup>1</sup> in the last 12 months. This report provides information to assist the 2019 NSW Coronial Inquest into the drug-related deaths of music festival attendees pertaining to EMT seeking, including rates of EMT by drug type among Australian festivalgoers, and descriptions of the circumstances surrounding EMT, including symptoms and hospitalisations.

280 respondents reported seeking EMT at least once in the last 12 months; this equates to 6.4% of our respondents. But rates of EMT seeking varied according to the last drug consumed. For example, alcohol ranked highest with 4.30<sup>2</sup> per 100 last-year consumers reporting seeking EMT after alcohol use, followed by MDMA (2.50), LSD (1.48), cannabis (0.96) and cocaine (0.67).

Females aged 16-20 were the most likely to report seeking EMT, followed by males 16-20, whereas older respondents of both genders reported seeking EMT at a comparatively lower rate. This trend held for alcohol, MDMA and LSD, but not for cocaine (where males and females aged 21 plus reported higher rates of EMT) or for cannabis (with similar rates across all ages/genders).

A broad array of information was gathered about the circumstances surrounding EMT. For example, for those seeking EMT following alcohol consumption the median reported standard alcoholic drinks consumed was 15 (range 1-72), with 60% reporting either consuming only alcohol or combining alcohol and tobacco only. The most commonly mentioned symptoms here were nausea/vomiting (45%), accident/trauma (40%) and passing out/unconscious (37%), with 65% reporting being admitted to hospital as part of their last EMT following alcohol.

For those seeking EMT following MDMA consumption, the median quantity consumed during the session was 3 pills (range 0.5 to >10) or 0.4g (range 0.1 to 1.5g).<sup>3</sup> Most (81%) reporting combining MDMA with another psychoactive substance (alcohol and/or other illicit drugs). The most common symptoms experienced were confusion (40%), anxiety/panic (40%) and very low mood in the days afterwards (40%), with 48% reporting being admitted to hospital as part of their last EMT following MDMA.

Comparing symptoms across drug types indicates some differences. For example, more anxiety and confusion post LSD, more nausea/vomiting and passing out post alcohol, and more palpitations, extreme sweating and overheating post MDMA, while hospitalisation was more likely to follow the use of LSD and alcohol than MDMA.

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<sup>1</sup>'Emergency medical treatment' was not further defined in the question wording.

<sup>2</sup>To simplify expression, we provide the percentage of respondents reporting EMT following the use of drugs as a rate per 100.

<sup>3</sup>Note that knowledge or perception of strength/dose was not measured.

The analyses show that circumstances of seeking EMT following alcohol and other drug use are complex and unlikely to be attributable to one factor alone. But the analyses refute some potential explanations. For example, greater frequency of festival attendance (i.e., increased exposure) is unlikely to be a driver of increased reporting of EMT needs, and so any harm-reduction messages need to target both frequent and sporadic attendees of music festivals. In contrast, being both young and female may elevate the risk of acute drug-related harms. That said, we do not know for certain why being young and female is associated with elevated risk, although differences in body mass, consumption patterns and hormones that moderate stimulant drug sensitivity may play a role.

Profiling Australian festivalgoers requiring emergency medical attendance identified behavioural risk factors that tailored interventions could target, such as polydrug use, taking large doses, and not knowing the content/purity of drug(s) consumed. Having said that, people's capacity to modify their behaviour depends to an extent on whether they have accurate knowledge about the drugs they are taking. Expanded access to peer-run harm-reduction services like DanceWize may help better educate festivalgoers who take illegal drugs. These services would ideally be informed by, or work alongside, on-site forensic analysis of drugs (drug checking). Brief interventions that engage festivalgoers to reconsider their drinking practices are also warranted, given that in this dataset, the most prevalent substance resulting in the need for emergency services was alcohol. Attention to the broader risk environment, particularly policing and criminal statute of the laws surrounding drug taking at Australian festivals, is also warranted.<sup>4</sup>

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<sup>4</sup>As we discuss in the accompanying bulletin (Hughes, Barratt, Ferris, & Winstock, 2019a).

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# INTRODUCTION

Between Sep 2018 and Jan 2019, five young people died after attending music festivals in NSW. While there has been much policy deliberation surrounding these events, including establishment of a 2018 NSW Government Inquiry into Festival Safety and a 2019 NSW Coroner's Inquest into festival related deaths, these tragedies have highlighted a lack of current and localised information about the circumstances surrounding acute harm events following drug use among Australian festivalgoers.

The Global Drug Survey (GDS) has been exploring the link between drug use patterns and risk of harms for the last eight years. GDS first included a question measuring festival attendance in 2018, and this inclusion led to the capture of a large sample of Australian festivalgoers, including rates of emergency medical treatment (EMT) seeking, and circumstances surrounding EMT. We provide this report at the request of the NSW Coroner's office to better inform the understanding of the complex interplay of individual risk factors, including consumption patterns at festivals, and the risk of harm.

## AIMS

We have conducted analysis on Global Drug Survey data with the aim of providing current descriptions of a large sample of Australian festivalgoers to assist the 2019 NSW Coronerial Inquest into the drug-related deaths of music festival attendees, pertaining to EMT seeking. This report provides:

1. Rates (per 100 respondents and per 1000 episodes of use) of EMT by drug type among Australian festivalgoers, for the whole sample and by age/gender subgroups;
2. Demographic, festival and drug use characteristics that predict EMT presentation, for the five drug types from samples with >1000 respondents: alcohol, MDMA, LSD, cocaine and cannabis;
3. Descriptions of EMT events following the use of alcohol, MDMA, and LSD (where the number of EMT events described was >10); including amounts consumed, length of session of use, polydrug use, symptoms, transport to hospital and whether the negative event changed the respondent's drug use behaviour since the event.

For other information about the demographics, drug use patterns, policing experiences and help-seeking behaviours of Australian festivalgoers using the same dataset, please see Hughes et al. (2019a).

# METHODS

## DATA

Global Drug Survey (GDS) is the largest anonymous cross-sectional web survey of individuals who use or have used alcohol and other drugs. GDS is committed to make drug use safer, regardless of the legal status of the drug, through sharing data and promoting honest conversations about drug use (Lancet Editorial, 2018). GDS uses an anonymous, confidential, encrypted platform and is promoted by media and harm reduction partners in Europe, North America, South America, and Australasia. Full details about the composition of the survey, history of GDS, and recruitment and sampling information are available elsewhere (Barratt et al., 2017). GDS does not adopt a probability-based sampling method and thus cannot claim to be fully representative of the target population of this report. However, previous work has shown that GDS is able to recruit a similar sample of recent cannabis and alcohol users in terms of age and gender, compared to general household surveys conducted in Australia, the United States and Switzerland (Barratt, et al., 2017). GDS has previously used its data to describe rates of seeking EMT following the use of drugs including cannabis and synthetic cannabinoid receptor agonists (SCRAs) (Winstock, Lynskey, Borschmann, & Waldron, 2015; Winstock & Barratt, 2013). The survey took place between November–December 2018, collecting anonymous data from respondents around the world, and was available in 19 languages. Ethical approval was obtained from the University College London (11671/001), University of Queensland (2017001452) and University of New South Wales (HC17769) Research Ethics Committees.

## SAMPLE

For this report, we analysed a subsample that included residents of Australia who reported attending one or more festivals in the last 12 months and who answered at least one question about seeking EMT in the last 12 months (N = 4,391). The median age was 21 years (Interquartile range [IQR] 19-24; range 16-70). 55% identified as male, 44% as female, and 1% as other gender. Of those who reported their state/territory of residence (N = 3,218), 38% reported NSW, 28% Vic, 14% Qld, 11% WA, 5% SA, 3% ACT, 2% Tas and 1% NT. Compared to the distribution of estimated residential population for 15-34-year-olds in December 2018 (Australian Bureau of Statistics, 2019), the sample overrepresented NSW while underrepresenting Qld, but was otherwise similar in distribution across jurisdictions. Due to the small numbers seeking EMT, analysis pertains to all Australian festivalgoers, rather than those in NSW alone.

## MEASURES

The question items for data analysed in this report are as follows:

Attendance at festivals: 'How many festivals have you been to in the last 12 months?'. In this report we included all Australian respondents who reported attending at least one festival in the last 12 months.

Emergency medical treatment (EMT) was measured by asking the following sets of questions for each drug type: 'In the last 12 months have you sought emergency medical treatment<sup>5</sup> following the use of [drug type]?'. Yes/No. If yes, 'In the last 12 months how many times have you sought emergency medical treatment following the use of [drug type]?'. If yes to

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<sup>5</sup> 'Emergency medical treatment' was not further defined in the question wording.

seeking EMT, 'Would you be happy to tell us more about what happened?'. Yes/No. If yes, respondents were instructed to 'Please answer the following questions thinking about the last time you sought emergency treatment following the use of [drug type].' Further series of questions asking about the last EMT incident were tailored for each drug type.

Frequency of use was available in the following format for all drugs except alcohol<sup>6</sup> and new psychoactive substances: 'During the last 12 months, on how many days have you used [drug type]? For example: Daily=365, Twice weekly = 104, Weekly = 52, Monthly = 12'

Use of drugs in the last 12 months: 'When did you last use the following drugs?', where the answer for each drug type is either 'in the last 30 days', or 'between 31 days and 12 months'.

Drug types measured:

- Alcohol
- Cannabis
- LSD
- Magic mushrooms
- Cocaine
- Heroin
- MDMA
- Amphetamine powder
- Methamphetamine
- Ketamine
- Synthetic cannabinoid receptor agonists (SCRAs)
- GHB/GBL (gamma hydroxybutyrate/gamma butyrolactone)
- New psychoactive substances (NPS)

## ANALYSIS

Respondents to GDS can skip questions if they do not wish to complete specific items. As a result of this format, missing data to questions exist. For the purposes of this report we have primarily used complete case analysis (dropping any cases with missing data for that analysis). However, we conservatively imputed '1' (representing 1 time in the last 12 months) where respondents had previously indicated they had used that drug in the last 12 months but did not indicate how many times. In the case of subgroups where  $n < 10$ , we have not reported on these in as much detail, due to the instability of descriptions based on smaller numbers.

We also cleaned the dataset to ensure that where there was conflicting evidence, data were harmonised. For example, if in one question, the respondent reported being 'drunk' when taking MDMA, but failed to report drinking alcohol in the polydrug use question for MDMA, we recoded the latter response to 'yes'. In this case it is possible that some respondents did not consider alcohol to be a 'drug' and so failed to notice it in one question but did respond when asked directly about being 'drunk'.

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<sup>6</sup>Frequency of alcohol use was measured in a categorical format.



Rates of EMT were calculated as per the below formulae:

$$\text{Rate per person} = \frac{\text{Total respondents who sought EMT following [drug] in last the 12 months (a)}}{\text{Total respondents who used [drug] in the last 12 months (b)}}$$

$$\text{Rate per episode} = \frac{(a) \times \text{Number of episodes sought EMT following [drug] in the last 12 months (c)}}{(b) \times \text{Number of days used [drug] in the last 12 months (d)}}$$

Rates per person are calculated for all drug types. We were unable to calculate rates per episode of use for some drug types, including alcohol, NPS, and GHB, as data for (c) or (d) were not included in the survey. Rates were calculated for the whole sample and also for 4 groups: (1) Males aged 16-20 years, (2) Females aged 16-20 years, (3) Males aged 21+ years, and (4) Females aged 21+ years. We chose the cut-off between age groups of 20 years because the median age of the sample was 21 years, so this cut-off generated the most even groups between each gender. The full sample (N = 4,391) also contained 1% (N = 38) who identified as non-binary or different gender. These respondents are included in analysis of the full sample, but not analysed separately due to the small sample size. Comparisons between groups were conducted using chi square tests and median tests using a p value of .05.

# RESULTS

The following results should be interpreted with limitations in mind. First, because the GDS is a purposive sample, we do not know how representative the findings are of the general population or more specifically, Australian festivalgoers. Second, one important limitation, albeit common with some prior studies of similar populations (Lim, Hellard, Hocking, Spelman, & Aitken, 2010) is that analysis of drug use and EMT concern behaviour of festivalgoers, but are not restricted to practices at festivals themselves. That is, the drug taking and EMT seeking described below may pertain to activities outside of festival settings. Further limitations are described in the discussion. Nevertheless, this sample is the largest of its kind, and due to its size, has enabled us to profile relatively rare events among Australian festivalgoers.

## RATES OF SEEKING EMERGENCY MEDICAL TREATMENT

Overall, there were 280 respondents (6.4% of the Australian festivalgoer sample) who reported seeking EMT following the use of any drug (including alcohol). Table 1 and Figure 1 show rates of EMT by drug type. Two thirds (186 of 280) of those who reported seeking EMT did so following the consumption of alcohol. The highest rates of seeking EMT were recorded for SCRAs and heroin, but in both cases, the absolute number of people reporting use was too low to have confidence in the data. Among drug types with numbers of last-year consumption greater than  $n = 1,000$ , alcohol ranked highest with 4.30 per 100 last-year consumers reporting seeking EMT, followed by MDMA (2.50), LSD (1.48), cannabis (0.96) and cocaine (0.67). Because exposure to different drugs varies (i.e., some drugs are used more frequently by consumers than others), we have adjusted the rates of seeking EMT by exposure to give an estimate of the risk per episode of use. Adjusting for exposure for the drugs used by at least 1000 people, LSD ranked highest at 2.39 per 1000 episodes of use, following by MDMA (1.87), cocaine (0.72) and cannabis (0.15). SCRAs, heroin and methamphetamine rates adjusted for exposure were also high, but should be interpreted with caution.

Table 1: Rates of seeking emergency medical treatment among Australian festivalgoers by drug type

Drug type	Any EMT (a)	Any use (b)	Rate per 100 people	Number of EMT episodes (c)	Number of use episodes (d)	Rate per 1000 episodes
Alcohol	186	4326	4.30	259	n/a	n/a
Cannabis	23	2392	0.96	33	226977	0.15
MDMA	51	2044	2.50	61	32706	1.87
Cocaine	11	1639	0.67	14	19346	0.72
LSD	17	1146	1.48	18	7541	2.39
Ketamine	3	813	0.37	3	8734	0.34
Magic mushrooms	1	679	0.15	1	3506	0.29
Amphetamine powder	7	672	1.04	8	8135	0.98
Methamphetamine	6	139	4.32	7	5827	1.20
NPS	4	114	3.51	4	n/a	n/a
GHB/GBL	3	73	4.11	n/a	886	n/a
SCRAs	3	32	9.38	3	615	4.88
Heroin	2	21	9.52	4	1642	2.44
Any drug type	280	4391	6.38	n/a	n/a	n/a

**Note:** Formal definitions of each variable (a, b, c, d) can be found in the analysis section, p. 8. People were able to report seeking EMT after multiple drug types, although the median number reported among this subgroup of  $n = 280$  was 1. Rates per episode of use are unavailable for alcohol, NPS and GHB/GBL. We have not calculated the rate per episode of use for any drug type because it is not possible to discern whether episodes of use are additive. For example, EMT events reported are likely to include polydrug use and therefore be counted twice if added together.

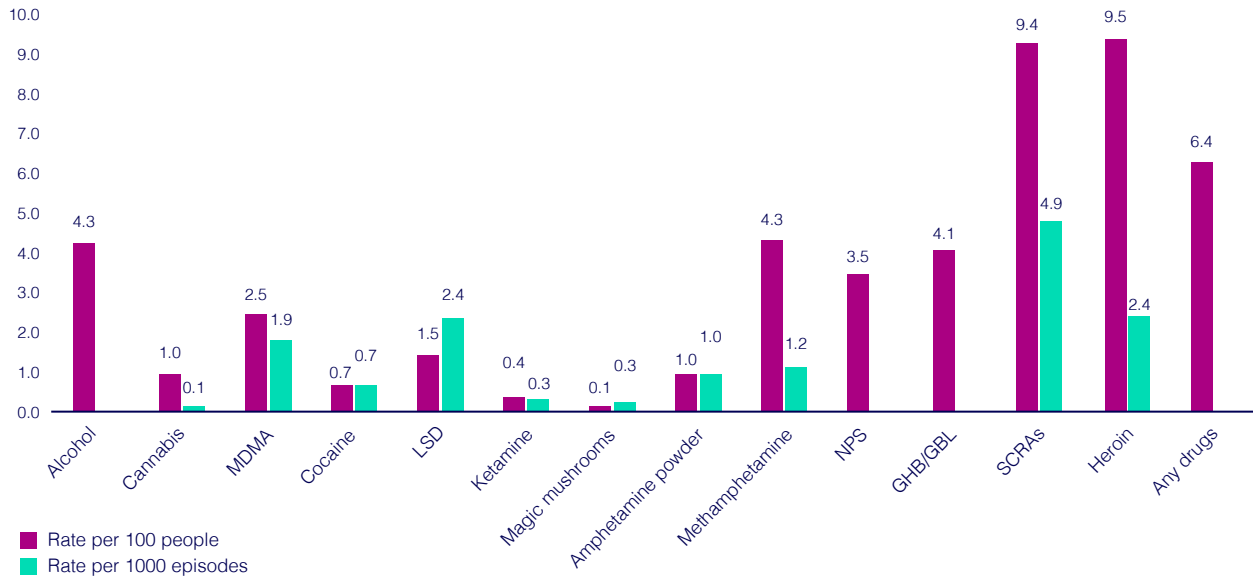


Figure 1: Rates of EMT by drug type

## RATES OF EMT BY AGE/GENDER GROUP

Herein we look at rates of EMT by age/gender for any drug, as well as for the most commonly noted – alcohol, MDMA, LSD, cocaine and cannabis – from samples of >1000 (refer to Table 1 for total number of respondents). Figure 2 shows the rates of EMT per person for any drug type for each age/gender group. Females aged 16-20 reported seeking EMT at the highest rate of 8.6%, followed by males 16-20 at 7.3%, with both genders for the older groups reporting EMT seeking at a similar and comparatively lower rate.

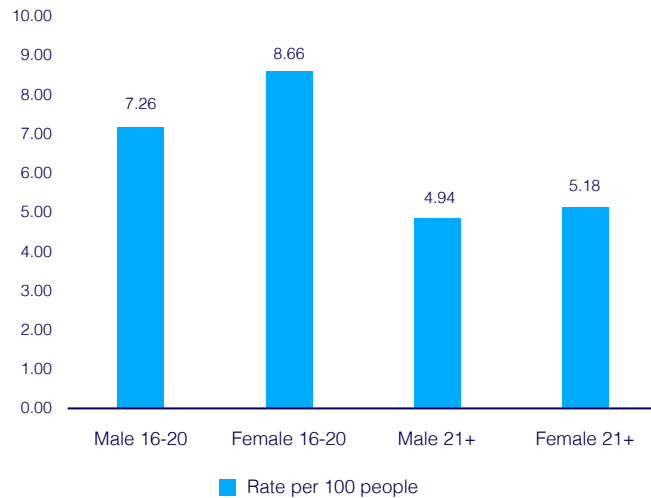


Figure 2: Rates of EMT per person for any drug type (including alcohol) by age/gender group

Figure 3 shows the same figures for alcohol consumption specifically. These follow a similar pattern, with young females reporting EMT following alcohol consumption at the highest rate.

Figures 4-7 provide both the rates per person and the rates adjusted by exposure (the latter rates could not be calculated for Figures 2-3).

Figure 4 shows rates of EMT following cannabis use by age/gender group. For cannabis, rates were similar across age/gender subgroups. When calculated by exposure, rates of seeking EMT following cannabis were very low across all groups.

Figure 5 shows rates of EMT following MDMA use by age/gender group. 1 in 25 females aged 16-20 (or 4%) reported seeking EMT following MDMA use in the last 12 months. When adjusted for exposure, females 16-20 still had the highest

years have the second highest rate when adjusted by exposure.

Figure 6 shows rates of EMT following LSD use by age/gender group. In this case males aged 16-20 were most likely to report seeking EMT following LSD use. When rates of EMT are measured by exposure, LSD use is more likely to be associated with EMT for both gender groups aged 16-20 years.

Figure 7 shows rates for cocaine, which follows a different pattern to all other drugs, with both genders in the older groups reporting seeking EMT at a greater rate than younger groups, albeit at low rates compared with MDMA, LSD and alcohol.

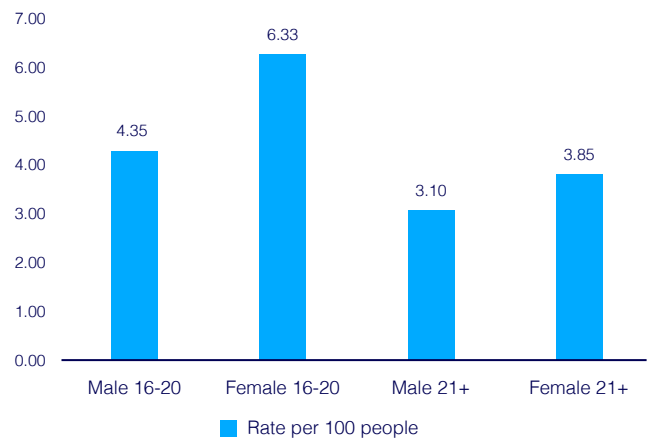


Figure 3: Rates of EMT following alcohol consumption by age/gender group

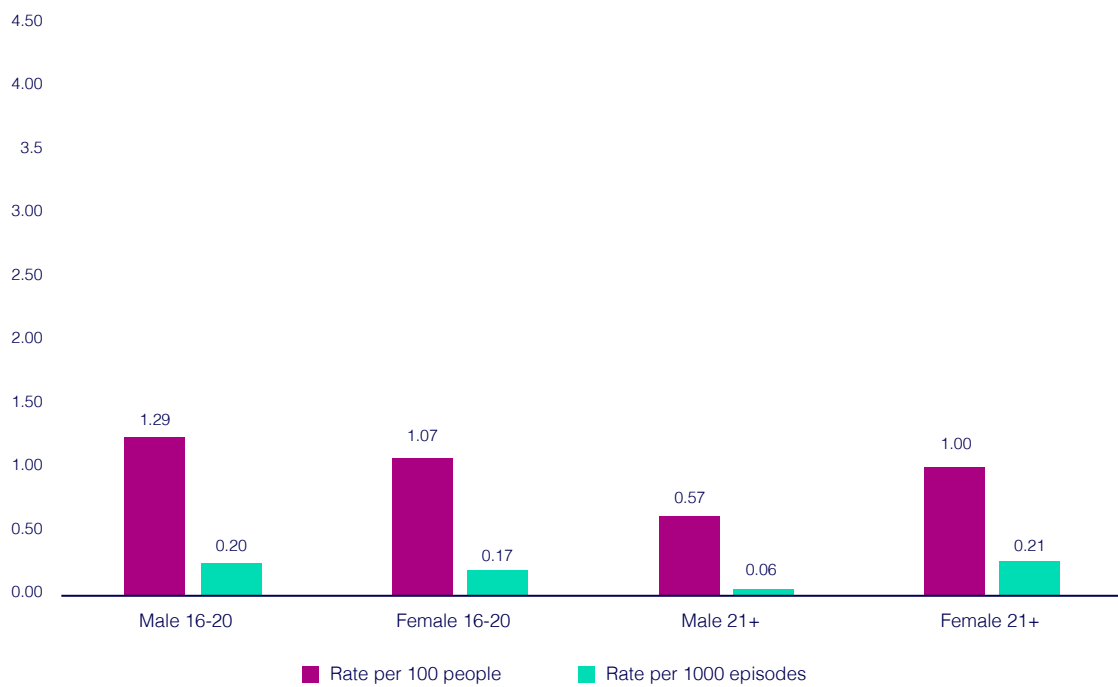


Figure 4: Rates of EMT following cannabis use by age/gender group



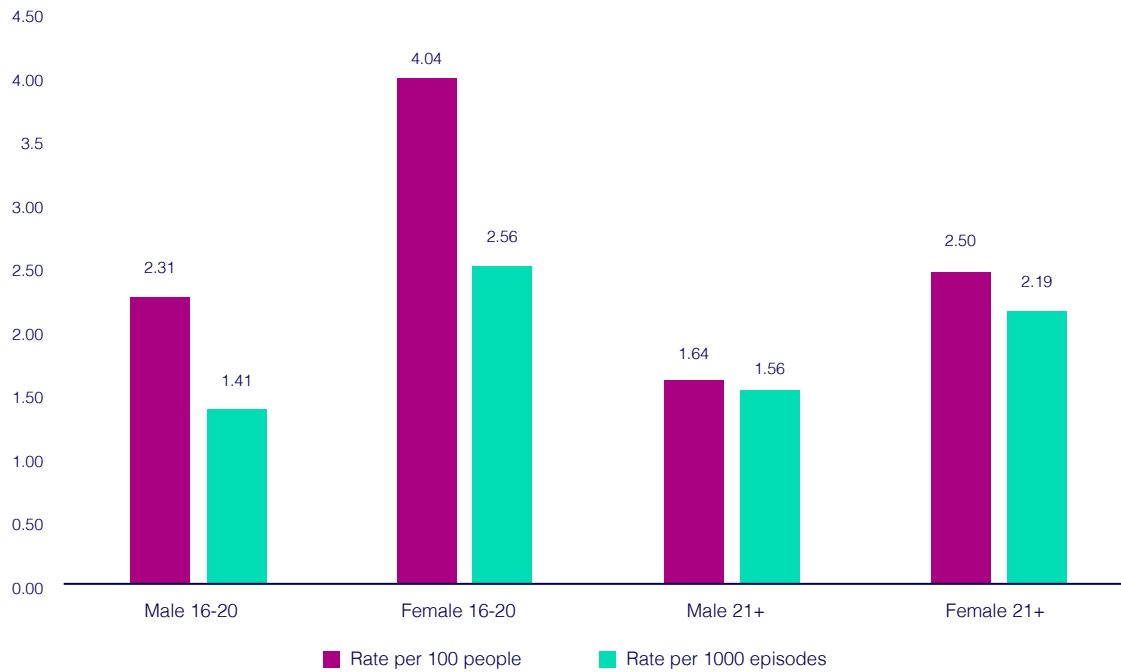


Figure 5: Rates of EMT following MDMA use by age/gender group

Note: The question asked respondents about 'Ecstasy/MDMA/Molly' use.

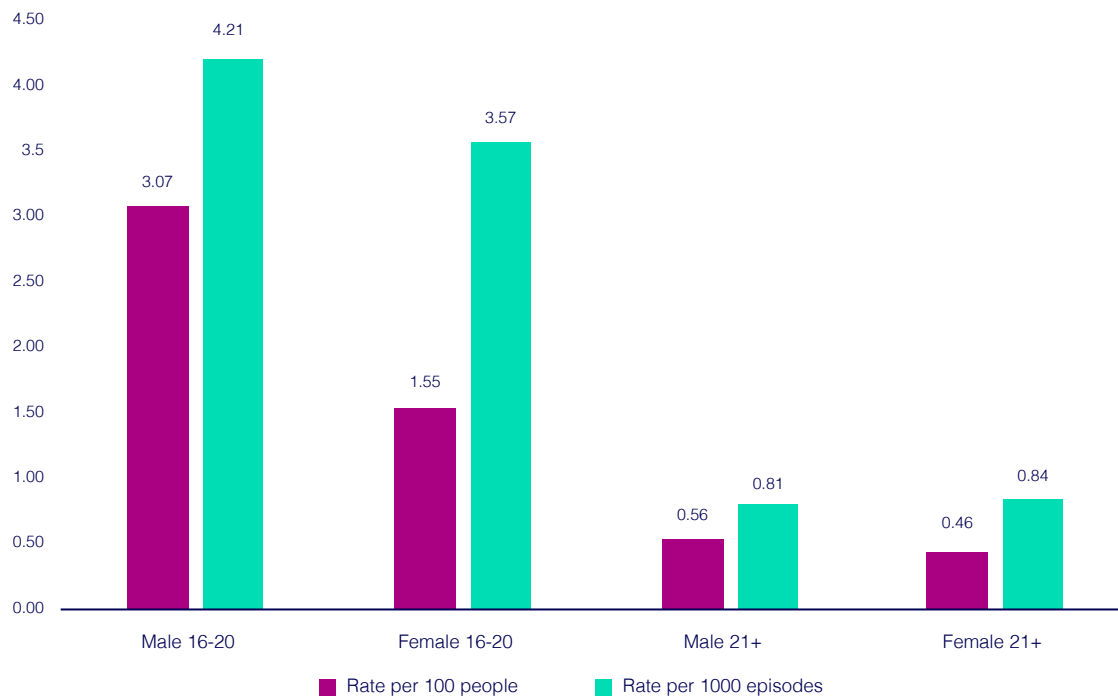


Figure 6: Rates of EMT following LSD use by age/gender group

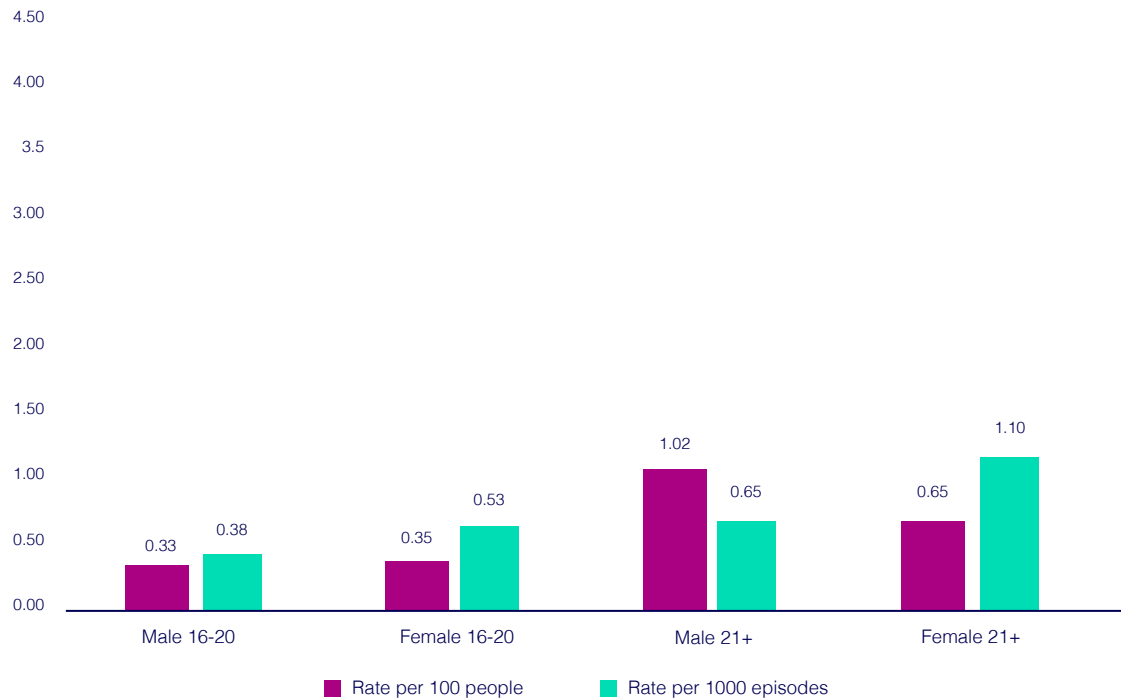


Figure 7: Rates of EMT following cocaine use by age/gender group

## CHARACTERISTICS THAT PREDICT EMT PRESENTATION

We compared the characteristics of those who reported seeking EMT following alcohol consumption with the remainder of the sample that reported alcohol consumption in the last 12 months (but no EMT seeking). EMT seekers were more likely to be younger (median age 20 vs 21;  $\chi^2_{(1)} = 7.50$ ,  $p = 0.006$ ) and more likely to be female (53% vs 44%;  $\chi^2_{(1)} = 4.96$ ,  $p = 0.026$ ). Both EMT seekers and non-EMT seekers reported the same median number of festivals attended in the last 12 months (median of 3).

Comparing the characteristics of those seeking EMT following MDMA consumption with other last-year MDMA consumers who did not seek EMT, we again found that EMT seekers were more likely to be younger (median age 20 vs 21;  $\chi^2_{(1)} = 5.02$ ,  $p = 0.025$ ) and more likely to be female, although this latter comparison did not reach statistical significance (59% vs 46%;  $\chi^2_{(1)} = 3.25$ ,  $p = 0.071$ ). Both groups reported the same median number of festivals attended in the last 12 months (median of 3). EMT seekers reported a greater number of days of MDMA use in the last 12 months than those who reported MDMA use but did not seek EMT (median days of use 14 vs 10;  $\chi^2_{(1)} = 5.39$ ,  $p = 0.020$ ).

A similar pattern was found for cannabis EMT seekers, who were a median age of 20, younger than other last-year cannabis users, although not statistically significant (median age 20 vs 21;  $\chi^2_{(1)} = 3.47$ ,  $p = 0.063$ ). Gender ratios were similar between groups. Cannabis EMT seekers reported attending less festivals in the last 12 months compared to other cannabis consumers (median 1 vs 2;  $\chi^2_{(1)} = 4.69$ ,  $p = 0.030$ ). Number of days of cannabis use was not significantly different between groups.

Again, among last-year LSD consumers, those who reported seeking EMT were significantly younger, reporting a median age of 18 years compared with 21 among the remainder of the sample ( $\chi^2_{(1)} = 4.45$ ,  $p = 0.035$ ). Other characteristics were similar between the LSD groups.

There were no statistically significant differences between those who reported seeking EMT following cocaine use and other last-year cocaine consumers.

## EMT EVENTS FOLLOWING ALCOHOL

Of the 186 respondents who reported seeking EMT following the use of alcohol, 132 were willing to provide more information about the last time they did this. The median reported standard alcoholic drinks consumed was 15 (range 1-72). The median length of drinking session was 5 hours (range 1->24 hours). When asked about other drugs consumed with alcohol during the EMT event, 60% reported either consuming only alcohol or combining alcohol and tobacco only. Of the n = 52 who combined alcohol with drugs other than tobacco, the most commonly mentioned were MDMA, cannabis and cocaine. The most commonly mentioned symptoms associated with alcohol use were nausea/vomiting (45%), accident/trauma (40%) and passing out/unconscious (37%; see Figure 8 below for all symptoms). 65% reported being admitted to hospital as part of their last EMT following alcohol. 48% reported reducing their alcohol consumption after seeking EMT following alcohol use.

## EMT EVENTS FOLLOWING MDMA

Of the 51 respondents who reported seeking EMT following the use of MDMA, 28 were willing to provide more information about the last time they did this. When asked what form of MDMA they consumed at the last EMT event, 50% reported only pills/tablets, 31% only powder/crystal and 19% reported both forms. For those who took pills, the median number consumed during the session was 3 pills (range 0.5 to >10). For those who took powder/crystal, the median amount consumed was 0.4g (range 0.1 to 1.5g)<sup>7</sup>. Of the 20 respondents who were able to estimate the length of their session of MDMA use, 55% reported the session was 6 hours long (range 6-36 hours).

When asked about other drugs consumed with MDMA during the last EMT event, most (81%) reported combining MDMA with another psychoactive substance. These 81% all reported drinking alcohol with MDMA, and when asked how much alcohol they drank, the median reported standard drinks consumed was 8 (range 2-13). Most of those who drank alcohol with MDMA (16 of 21) reported that they were 'already drunk' when they consumed MDMA on this occasion. Of the n = 12 who combined MDMA with other drugs (excluding alcohol/tobacco), the most commonly mentioned were cannabis, amyl nitrite, cocaine and ketamine. The most commonly mentioned symptoms associated with MDMA use were confusion (40%), anxiety/panic (40%) and very low mood in the days afterwards (40%; see Figure 8 below for all symptoms). 48% reported being admitted to hospital as part of their last EMT following MDMA.

Respondents answered some additional questions about the last time they sought EMT following MDMA use. 64% reported obtaining all of their MDMA from a 'trusted dealer or source' while 32% did not, and 4% were unsure or couldn't remember. While 32% reported that they had tried that particular batch of MDMA before, the majority had not (64%), while 4% could not recall. While 28% reported starting the session with a smaller 'test dose' of MDMA, most (72%) did not start their MDMA session in this way. The majority (56%) also reported that they took a larger than usual dose of MDMA on that occasion. When asked if they believed their MDMA was adulterated, most did not (52%), around a third did (36%) and the rest were unsure (12%). When asked how much water they drank on that occasion, the most common response was .5 L (36%) or 1 L (20%). 16% reported that they drank no water at all. When asked whether they felt physically and/or mentally drained before starting to use MDMA, most reported that they felt fine (64%), while the remainder (36%) reported feeling physically and/or mentally drained prior to consumption of MDMA.

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<sup>7</sup> One respondent gave the response of 7.5g. This data is likely to be an error, unless the powder/crystal was of unusually low purity. The next highest reported amount of powder/crystal consumed was 1.5g, as reported here.

When asked whether they had tried to find out about the content and purity of their MDMA before consumption at the last EMT event, over half of the sample had not tried to do so in any way (55%). The most common ways they had tried to find out content and purity information was to talk with friends who had already taken it (27%), check websites like pillreports.com (18%) and check online forums (9%). One respondent reported that a friend/dealer tested the MDMA at a testing facility, while no-one reported attending a drug checking facility themselves.

In response to their last EMT event following MDMA, 46% reported that they had changed the way they used MDMA to reduce harms, such as considering safer use strategies. 29% said the event had not changed their MDMA use, while 25% reported cutting down MDMA use and 8% reporting quitting MDMA use altogether.

## EMT EVENTS FOLLOWING LSD

Of the 17 respondents who reported seeking EMT following the use of LSD, 14 were willing to provide more information about the last time they did this. The median number of doses of LSD consumed was 2 (range 1-5). Most (69%) reported that the length of their LSD session was 6 hours (range 6-24 hours). Most (79%) reported consuming other drugs with LSD. 43% reported drinking alcohol, consuming a median of 4.5 standard drinks (range 2-10). Among those reporting illegal drug use with LSD, the most commonly mentioned drugs were cannabis, ketamine and MDMA. The most commonly mentioned symptoms associated with LSD use were confusion (64%), anxiety/panic (64%), seeing/hearing things/hallucinations (50%) and paranoia/suspiciousness (50%; see Figure 8 below for all symptoms). 79% reported admission to hospital during their last EMT following LSD.

Respondents were asked to reflect on why they thought that their most recent use of EMT following LSD had happened. 64% said that they were 'not in the right place (setting)', 57% attributed the event to 'mixing with other drugs', 29% said that they 'took too much', 29% were 'not in the right mood (mindset)', and 21% believed that what they took was 'not LSD'. In response to their last EMT event following LSD, 64% reported cutting down on LSD use, while 29% reported no change in LSD use.

## SYMPTOMS AND HOSPITALISATION

Figure 8 compares the symptoms reported for the last EMT event following alcohol (n = 128), MDMA (n = 25) and LSD (n = 14). EMT events related to other drugs were not profiled due to numbers less than 10. The percentages of respondents who reported that symptom are shown in Figure 8. Note that water intoxication and overheating were only asked of people reporting EMT following the use of MDMA. The symptom profiles are consistent with what would be expected for each drug type, with LSD presentations typically related to anxiety, confusion, hallucinations and accident/trauma; MDMA presentations typically related to anxiety, confusion, depressed mood, hallucinations, extreme sweating, paranoia and palpitations; and alcohol presentations typically related to vomiting, accident/trauma and passing out/unconscious. Seeking EMT following LSD was the most often reported to result in hospitalisation (79%), followed by EMT for alcohol (65%) then for MDMA (48%).



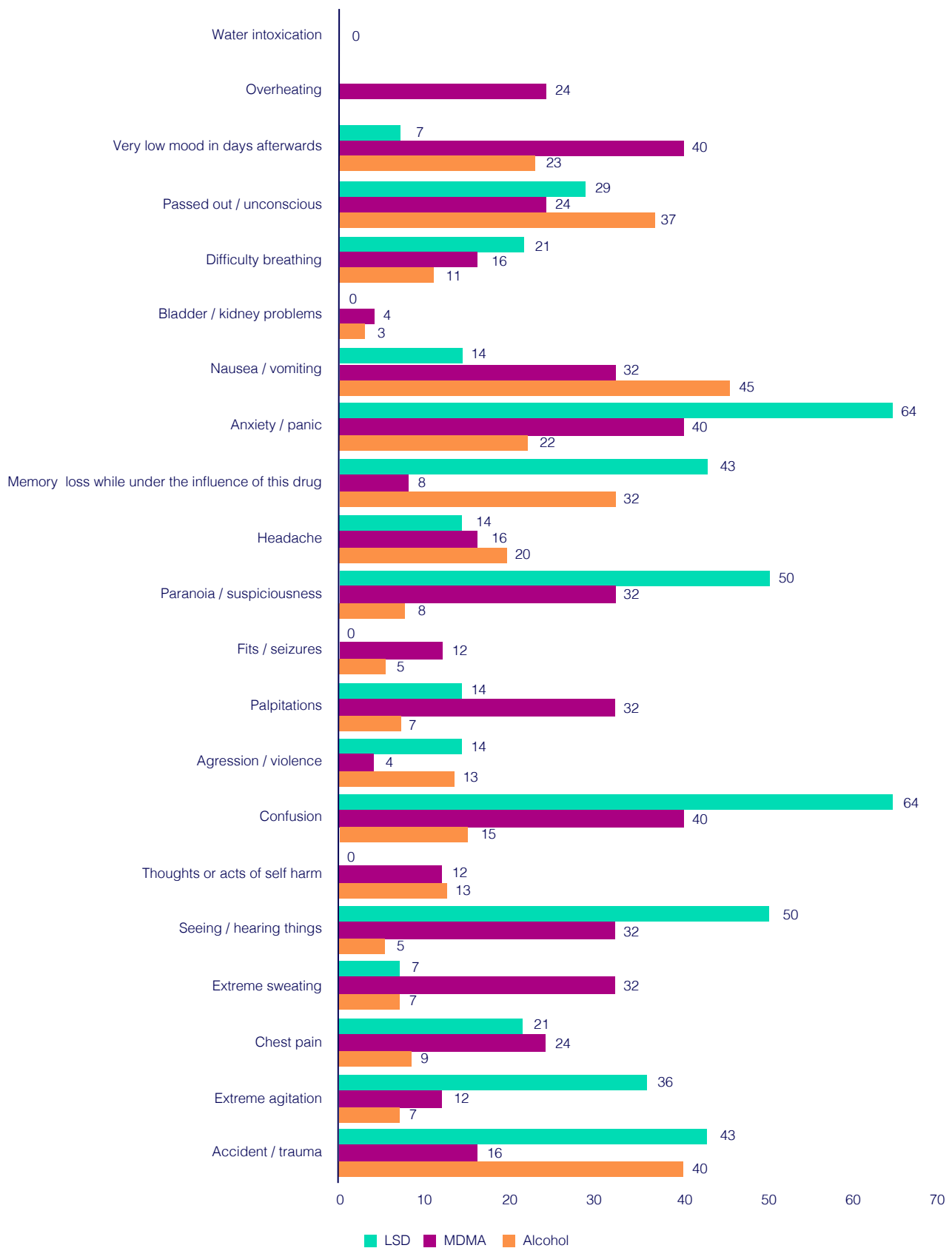


Figure 8: Symptom profile for EMT events following LSD, MDMA and Alcohol (%)

# DISCUSSION

While most participants used alcohol and other drugs without incurring serious risks of harm, a significant minority (6% of our festivalgoer sample) reported seeking emergency help. According to our data, young women are particularly vulnerable to experiencing acute harms from consumption of alcohol and other drugs. This vulnerability may reflect lower body mass, differing dosing patterns or physiological and hormonal variations in susceptibility to drug related harm.

While no pattern of consumption can be regarded as completely safe, some consistent patterns of use appear associated with increased risk. Individual consumption practices could be amenable to moderation or adjustment through appropriate engagement and education. For MDMA, reducing the amount used per session and the frequency of use combined with reducing alcohol consumption (especially prior to taking their first dose) could form the basis of effective harm-reduction messaging.

Alcohol remains the biggest contributor to drug related harms with excessive consumption being a key target for intervention in this group. The median number of standard drinks consumed when medical help was sought was 15. This amount is over 3 times the limit recommended by the NHMRC in the national guidelines to reduce “the risk of alcohol-related injury arising from that occasion” (National Health and Medical Research Council, 2009). It is timely therefore that a new free, digital alcohol resource offering brief advice and intervention, [the Drinks Meter app](#), developed by GDS and funded by NSW Health, has just been released. Festival promoters could be requested to promote this app as part of wider harm reduction strategies. The Drinks Meter adjusts risk based on the concurrent use of stimulant drugs and personalises its response to individuals with different risk profiles.

This research suggests that modifying individual behaviour remains a promising site for reducing drug-related harm. Peer-run harm-reduction services located on-site (e.g. DanceWize) are particularly well placed to offer a trusted environment for brief intervention. Peer education services have been demonstrated to be credible and accessible to young people at risk of drug-related harm in the nightlife and festival settings (Bleeker & Silins, 2008). It should be noted, though, that people’s capacity to modify their behaviour depends to an extent on whether they have accurate knowledge about the drugs they are taking. Taking a ‘test dose’ to determine the strength of a drug batch may still result in problems if the batch is a completely different drug with a significantly higher than expected potency. Choosing to use one drug type rather than mixing two drug types together may be thwarted if the drug batch used actually contains multiple drug types. It is in these situations that a drug checking service can provide highly relevant information to clients who submit drug samples for testing and talk through their drug use with qualified counsellors (Barratt, Kowalski, Maier, & Ritter, 2018; Measham, 2019; Smit-Rigter & van der Gouwe, 2019). Both peer education services and drug checking services (or a combination of both) also provide valuable opportunities for referrals to other services and treatment.

Attention to the broader risk environment, particularly policing and criminal statute of the laws surrounding drug taking at Australian festivals, is also warranted, as well as the differential likelihoods of criminal justice responses to use and possession across states/territories (Hughes, Seear, Ritter, & Mazerolle, 2019b). These issues are examined and discussed in the accompanying bulletin (Hughes et al., 2019a).

## LIMITATIONS

There are some important limitations that need to be considered when interpreting these findings. The first is that while each respondent in this sample reports attending at least one festival in the last 12 months, we do not know whether the EMT incidents they reported occurred at a festival. We also do not know whether the EMT event occurred in Australia – an Australian respondent may have been profiling an event that occurred when they were in another country. It is also the

case that if the EMT incident was very severe, resulting in permanent disability or in death, the person would be unable to complete a self-report survey about the incident. So, this sampling strategy will inevitably not capture the most severe incidents of EMT following drug use. The phrase 'emergency medical treatment' was also not further defined in the survey, which means we do not know what kind of EMT people were reporting, apart from attendance at hospital which was asked about specifically. Furthermore, our study is reliant upon self-report of symptoms and details which may be difficult for the respondent to recall, due to intoxication, incapacitation or due to the length of time since the incident, which could be up to 12 months. These limitations would make our findings conservative in their estimates.

Another issue to be noted is that when asked to report on seeking EMT following the use of different drugs, respondents may be referring to the same incident multiple times, especially if during that event, they took a wide range of drug types. We are unable to determine whether respondents were referring to the same or different EMT incidents, but we have described the levels of polydrug use reported.

Self-report of drug use can also only refer to the drugs people believe they consumed. Adulterated drugs cannot be fully accounted for unless forensic testing of bodily fluids or drug samples is conducted. While we included questions about suspected adulteration in the MDMA and LSD cases, these data cannot fully account for adulteration as a factor in these EMT events.

The sample itself, while large, will be biased towards people who access Time Out and Vice Australia and who follow clubbing and music festival promoter email lists and engage at a higher rate with social media platforms, as these were the methods of recruitment. We don't believe that digital access is problematic for sampling this population given the very high, almost saturation, of digital media use among Australian young adult populations (98% of 15-34 year olds, Australian Bureau of Statistics, 2018).

## CONCLUSIONS

Profiling Australian festivalgoers requiring emergency medical attendance identified behavioural risk factors that tailored interventions could target, such as polydrug use, taking large doses, and not knowing the content/purity of drug(s) consumed. Having said that, people's capacity to modify their behaviour depends to an extent on whether they have accurate knowledge about the drugs they are taking. Expanded access to peer-run harm-reduction services like DanceWize may help better educate festivalgoers who take illegal drugs. These services would ideally be informed by, or work alongside, on-site forensic analysis of drugs (drug checking). Brief interventions that engage festivalgoers to reconsider their drinking practices are also warranted, given that in this dataset, the most prevalent substance resulting in the need for emergency services was alcohol. Attention to the broader risk environment, particularly policing and criminal statute of the laws surrounding drug taking at Australian festivals, is also warranted.

In addition, it is worth noting that the Australian music festival scene is not the only scene where people use alcohol and other drugs. Many people take alcohol and other drugs within the night-time economy or while staying at home. While the focus of the NSW Coronial inquiry is necessarily limited to the music festival setting, many of the same recommendations apply equally to the wider community who may not participate in the festival scene, and who may also benefit from access to tailored harm-reduction services, including drug checking services in urban centres (Smit-Rigter & van der Gouwe, 2019).

We hope this information will assist in informing debate about the prevention of acute drug-related harms at festivals and other settings and in developing better policy responses. Risk from taking any substance cannot be reduced to zero. In a society where drug-taking still occurs regardless of what policy or policing measures are in place, we suggest aspiring to zero harm for those who use drugs as opposed to zero tolerance to using drugs (Winstock & Barratt, 2016).

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### Acknowledgment of Country

RMIT University acknowledges the Wurundjeri people of the Kulin Nations as the traditional owners of the land on which the University stands. RMIT University respectfully recognises Elders both past and present. We also acknowledge the traditional custodians of lands across Australia where we conduct business, their Elders, Ancestors, cultures and heritage.