



Alcohol  
and Drug  
Foundation

# Minimising the harm of illicit drug use among Young Adults

Exploring the data and  
the strategies that work

June 30, 2021

Alcohol and Drug Foundation  
12/607 BOURKE STREET, MELBOURNE,  
VICTORIA 3001

© Alcohol and Drug Foundation, 2021





**This Alcohol and Drug Foundation (ADF) Report summarises the data available regarding illicit drug use by young adults (18-25-year-olds) in Australia as well as effective approaches to harm reduction messaging for this group.**

**The ADF is supported by funding from the Victorian Department of Health. ADF would like to acknowledge the input from Dr Jacqueline Burgess and Dr Allison Salmon, as well as Liz Barrett and Professor Alison Ritter from the Drug Policy Modelling Program, University of NSW, in the development of the Report.**

Alcohol and Drug Foundation  
12/607 Bourke St, Melbourne VIC 3001  
(03) 9611 6100

© Alcohol and Drug Foundation, 2021

Suggested citation: Alcohol and Drug Foundation. [2021]. Minimising the harm of illicit drug use among young adults — exploring the data and the strategies that work. Report. Melbourne: Alcohol and Drug Foundation.

# Contents

|                             |          |
|-----------------------------|----------|
| <b>Snapshot of Findings</b> | <b>5</b> |
| <b>Executive Summary</b>    | <b>6</b> |
| <b>Introduction</b>         | <b>9</b> |

## Section 1

|  |           |
|--|-----------|
| <b>Illicit Drug Use among Young Adults – Exploring the Data</b>          | <b>10</b> |
| 1.1. Drug use patterns among young adults in Australia, ever used        | 10        |
| 1.2. Drug use patterns among young adults in Australia, recently used    | 13        |
| 1.3. Drug use patterns among young adults in Australia, frequency of use | 14        |
| 1.4. Drug use patterns among young adults in Victoria                    | 14        |
| 1.5. Drug use patterns among young adults, international data            | 16        |
| 1.6. Drug use patterns among young adults, high risk and harmful         | 17        |
| 1.7. Drug use among young adults, related deaths and hospitalisations    | 19        |
| 1.8. Drug use among young adults, priority populations                   | 21        |
| 1.9. Drug use among young adults, where and why                          | 21        |
| 1.10. Demographic profiles of young adults who use illicit drugs         | 22        |
| 1.11. Drug use among young adults – workers and apprentices              | 23        |
| 1.12. Drug use among young adults – nightclubs and music festivals       | 24        |
| 1.13. Drug use among young adults - LGBTIQ+ people                       | 24        |
| 1.14. Summary of key findings from Section 1                             | 25        |
| 1.15. Identified groups at risk/risk factors:                            | 26        |
| 1.16. Section 1 supplementary data tables and figures                    | 26        |

## Section 2

|  |           |
|--|-----------|
| <b>Harm Reduction Messaging – Strategies that Work</b>             | <b>27</b> |
| 2.1 Information sources preferred by young adults                  | 27        |
| 2.2 Messaging content preferred by young adults                    | 28        |
| 2.3 Mass media campaigns   | 29        |
| 2.4 Targeted media campaigns                                       | 29        |
| 2.5 Harm reduction information via recreational nightlife settings | 29        |
| 2.6 Harm reduction information via peers                           | 30        |
| 2.7 Harm reduction information via pill-testing services           | 31        |

|      |  |    |
|------|--|----|
| 2.8  | Harm reduction via environmental and policy approaches       | 31 |
| 2.9  | Digital provision of harm reduction interventions            | 31 |
| 2.10 | Website-based harm reduction interventions                   | 32 |
| 2.11 | Mobile phone/SMS harm reduction interventions                | 33 |
| 2.12 | App-based harm reduction interventions                       | 34 |
| 2.13 | Gaming-based harm reduction interventions                    | 34 |
| 2.14 | University interventions                                     | 34 |
| 2.15 | TAFE, trainee and workplace interventions                    | 35 |
| 2.16 | Harm reduction intervention targeted at trainees/apprentices | 36 |
| 2.17 | General literature on workplace harm reduction initiatives   | 36 |
| 2.18 | Summary of key findings from Section 2                       | 37 |

### Section 3

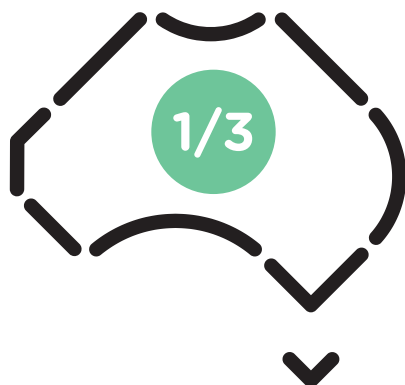
|  |           |
|--|-----------|
| <b>Recommendations for Harm Reduction Efforts for Young Adults</b> | <b>39</b> |
| 3.1 Existing opportunities for young adult harm reduction          | 39        |
| 3.2 Young adult males  | 39        |
| 3.3 LGBTIQ+ people   | 40        |
| 3.4 Key elements of effective messaging for young adults           | 40        |
| 3.5 Options for future research                                    | 41        |

|   |           |
|---|-----------|
| <b>1 Appendices</b>   | <b>42</b> |
| Appendix A: NDSHS 2019 data on numbers of young adults who use drugs            | 42        |
| Appendix B: NDSHS 2019 data on frequency of drug use                            | 43        |
| Appendix C: NDSHS 2019 data on forms of drugs taken                             | 45        |
| Appendix D: Drug-related deaths and hospitalisation data from NDARC Drug Trends | 46        |

|                     |           |
|---------------------|-----------|
| <b>2 References</b> | <b>50</b> |
|---------------------|-----------|

# Snapshot of findings

1/3 of **18-24-year-olds** used an illicit drug in the past 12 months



25%

cannabis

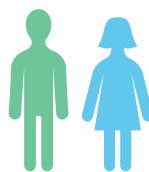
11%

cocaine

11%

ecstasy

Of those, the most commonly used were cannabis 25%, cocaine 11%, and ecstasy 11%



## 18-25 **age-group**

most likely to have used illicit drugs recently, yet they have lowest drug-related death rate



## Young adult **workers**

more likely to use illicit drugs than other young adults



**Significant increases** in rates of ecstasy, cocaine and ketamine use by young adults between 2016-19



## Higher risky drug use behaviours **by young adults working in**

construction and commercial cooking industries, and among hospitality workers

3%

Increase

The **3% increase** in drug use between 2016-19 was solely by young males



Young males use illicit drugs **more than young females** across all drug types, with significant increases between 2016-19



Cannabis 25% > 30%  
(females 22% to 20%)



Cocaine 6% > 13%  
(females 5% to 8%)



Ecstasy 7% > 13%  
(females 9% to 8%)



## Compared to **international counterparts**

x2

Cocaine use is double that of young adults in USA and Europe

x2

Average dose of ecstasy consumed in one session twice as much as USA and UK

# Executive Summary

## Why we did this research

Young adults aged 18-25 are the most likely to have used illicit drugs in the past 12 months of any age group in Australia. We know that some subgroups of young adults are more likely to use drugs in ways that put them at high risk of harm.<sup>1</sup>

The aims of this research were two-fold:

- We wanted to understand the extent, settings, patterns of use and commonly used drug types by young adults in Australia and identify high-risk subgroups and behaviours most likely to benefit from harm reduction efforts.
- We wanted to know what works in terms of effective harm reduction messaging for young adults.

## How we did the research

Relevant data sources were reviewed to better understand illicit drug use patterns in Australian young adults, including the 2019 National Drug Strategy Household Survey (NDSHS) and the 2019 Ecstasy and Related Drugs Reporting System (EDRS).

A **narrative review** of evidence for harm reduction messaging for young adults who are already using illicit drugs (rather than preventing uptake) was also undertaken to determine the most effective types of messaging interventions and delivery modes for this age-group.

## What we found

### Illicit drug use

- Young adults, aged 18-24 years, are most likely to have used illicit drugs in the past 12 months, compared to any other age group.
- The most commonly used illicit drugs, for those who had used drugs in the past 12 months, were cannabis (25%), cocaine (11%) and ecstasy (11%).
- There were significant increases in the use of cocaine (up by 6%), ecstasy (up by 3%), and ketamine (up by 3%) by young adults between 2016-19.
- Compared to other countries, a significantly higher proportion of Australian young adults use cocaine and ecstasy. Australian young adults also consume more ecstasy pills per session than their international peers.
- Polydrug use is common among those who use illicit drugs. EDRS data show 95% of respondents used more than one drug (including alcohol) when they last used a stimulant and 76% combined stimulants and depressants.
- The highest rates of drug-related hospitalisations across all age groups were in those aged 20-29 years.
- NSW, VIC, NT, and ACT had the highest proportions of recent drug use among 18-24-year-olds, with all four regions recording increases in drug use between 2016-19.
- Drug-induced deaths were least common in young adults compared to other age groups – despite 18-25-year-olds having the highest rates of recent drug use.
- Opioids were the leading cause of drug-related deaths in 15-24-year-olds.
- Since 2013, there has been a slight increase in the number of deaths of 15-24-year-olds from anti-epileptic drugs, barbiturates, benzodiazepines, and anti-Parkinson drugs. These drugs are the second highest cause of drug-related deaths in this age-group.

## High risk groups

Our research identified higher rates of illicit drug use and high-risk drug taking behaviours in a range of young adult groups, demonstrating a significant need for harm reduction messages that specifically engage with these groups.

### Groups include:

|   |   |
|---|---|
| <b>Young adult males</b>                        | Higher drug use overall and across each drug type. Young men led the increase in recent drug use between 2016-19. They also had 50% more hospitalisations due to drug use than young women.   |
| <b>Young adult trainees/apprentices</b>         | High instances of risky drug use (particularly in male-dominated industries like carpentry and commercial cooking, and hospitality workers).  |
| <b>Young adults who use ecstasy and cocaine</b> | Increased use between 2016-19 (especially by males), and higher dose per session by young Australians.  |
| <b>Young adult LGBTIQ+ people</b>               | Higher use of ecstasy, cannabis, and amyl nitrite. Within this group, young adults who engage in Party and Play (sometimes known as chemsex) have been identified with high-risk drug types (methamphetamines, ketamine and GHB/GBL), drug behaviours and polydrug use. |
| <b>Polydrug use</b>                             | Significant polydrug use among young adults, particularly alcohol alongside illicit drugs, and the role of polydrug use in drug-related deaths and hospitalisations.  |

## What works?

There is limited evidence available on the impact of drug harm reduction programs, services, campaigns and messages targeting young adults.

While peer and community organisations do an enormous amount of work in drug harm reduction, there has been little research in this space. Evaluation of peer-led harm reduction communications is needed so future campaigns and activities can be designed using a well-developed evidence base.

From the evidence available, several key components stand out as being integral to effective harm reduction messaging aimed at young adults.

- Young adults must be involved in co-design to ensure harm reduction messages are relevant, engaging and accepted. When these activities are carried out in the language of subcultures and delivered through peers, the messaging becomes culturally relevant, trusted, and credible. These types of peer-led processes have the potential to help overcome stigma that can be associated with help-seeking.
- Messaging should incorporate real information on actual situations, be non-judgemental, and relatable to young adult experiences with reasons for drug taking included (e.g. for fun and pleasure seeking).
- Understanding key motivations for using drugs among young adults is critical in order to shape messaging. For instance, young people with a positive attitude towards drugs (e.g. that believe drugs are fun), have been found to influence consumption behaviour, and also how they believe drug issues should be addressed in their communities.
- Recognising young adults as a non-homogenous group is critical. Young adults are made up of diverse and complex subgroups with different social, political, geographic, and cultural backgrounds and needs.
- For specific industries or social groups where frequent, heavy, or high-risk drug use is the norm, use targeted messages that recognise the environment, social influencers, pressures, and interactions that contribute to drug use.

- Most harm reduction campaigns, regardless of the place or mode (festival, workplace, digital or face-to-face), are more effective when they include some level of interaction with a real person – either face-to-face or online.
- Targeted harm reduction efforts should be aimed at venues with increased ecstasy and cocaine use such as night clubs, bars, parties, and music festivals.
- Digital technologies have a lot of potential for drug harm reduction efforts aimed at young adults as stand-alone methods of providing harm reduction services or integrated into broader programs. Smartphone apps and web-based services offer:
  - anonymity where stigma may be a barrier
  - reach to rural and remote areas
  - 24-hour access
  - screening and assessment tools at a low cost.

Overall, the literature on harm reduction messaging tells us that harm reduction communications should be positive, truthful, culturally and locally relevant, informative and action oriented. The engagement of young adults in co-designing harm reduction efforts is critical to achieving this.

## Our recommendations

This Report summarises the latest available evidence on illicit drug use by Australians aged 18-25 years, noting the patterns and subgroups who use illicit drugs in a way that puts them at increased risk of harm; specifically:

- high-risk subgroups (young adult males, trainees, and apprentices, LGBTIQ+ young adults)
- high-risk drug types (ecstasy, cocaine, and methamphetamine)
- high-risk drug behaviours (polydrug use, Party and Play/chemsex)
- high-risk venues (nightclubs, bars, and music festivals).

We recommend the development of targeted messages in programs, services, and campaigns to engage these specific high-risk groups using the harm reduction components highlighted above, with co-design central to ensuring the response is credible, relevant, and accepted.

Recognising the important work already happening in this space, we also recommend supporting community and peer-led organisations working with these young adults to build capacity, including program and service evaluation. In this way we can contribute to the evidence base to strengthen harm reduction communication efforts.



# Introduction

The ambition of the ADF is to change knowledge, attitudes and practices so that we can prevent and delay uptake of alcohol and other drugs among young people.

We have a focus on strengthening prevention and harm reduction strategies for all through increased adoption of evidence-based approaches.

To focus our work in this area with young adults – defined as those aged 18-25 years – we have reviewed the data on illicit drug use among this group and the evidence for effective harm reduction messaging.

**This Report summarises our findings and is organised into three sections:**

## Section 1

**Data on young adult illicit drug use**

## Section 2

**A review of the evidence for harm reduction messaging for young adults**

## Section 3

**Recommendations for harm reduction efforts for young adults who use illicit drugs.**

<sup>i</sup> 'Harm reduction' for the purposes of this report aligns with the traditional harm reduction focus of reducing harms among people who are already using substances (as opposed to prevention of uptake). This use might range from very occasional use to the regular injection of drugs.

# Illicit drug use among young adults – exploring the data

We have predominantly relied on the latest data (2019) from the National Drug Strategy Household Survey (NDSHS), and the Ecstasy and Related Drugs Reporting System (EDRS).

**The NDSHS** is a national Australian survey conducted every three years that examines patterns of drug use including alcohol, tobacco and other illicit drugs, and misuse of pharmaceutical drugs.

While these data provide a nationally representative sample, the NDSHS only surveys households, not people who are homeless or living in institutions who are more likely to use illicit drugs and experience problematic drug use.<sup>2</sup> Additionally, household surveys have been found to have lower reported rates of drug use than online surveys.<sup>3</sup> Due to these factors, additional data sets are drawn upon to provide a more complete picture of drug use, behaviours and harms.

**The EDRS** is a national monitoring system for ecstasy and related drugs that is intended to identify emerging trends of local and national interest in the markets for these drugs.

The EDRS is based on the Illicit Drug Reporting System (IDRS) methodology and consists of interviews with people who regularly use ecstasy and other stimulants, as well as analysis and examination of indicator data sources related to ecstasy and other related drugs. It is designed to be sensitive to trends, providing data in a timely manner, rather than describing issues in extensive detail.

In addition to the data presented in this Report, additional Tables are available in the Appendices.

## 1.1 Drug use patterns among young adults in Australia, ever used

The NDSHS (2019) provides a broad overview of young adults aged 18-24 who have ‘ever’ taken an illicit drug.<sup>ii</sup> It includes the following findings for this age group:

- approximately 1.1 million had **ever** used an illicit drug, equating to almost half (45%) of all young adults in Australia (see Table 1)
- between 2016 and 2019 there was a significant increase (43% to 48%) of male young adults reporting **ever** having used an illicit substance (see Figure 1)
- drug/s **ever** used were (see Table 2):
  - 40% cannabis
  - 17% ecstasy
  - 15% cocaine
  - 11% hallucinogens
  - 8% ‘any opioid’<sup>iii</sup>
  - 6% ketamine
  - 4% meth/amphetamine.

<sup>ii</sup> Data note: The NDSHS round population numbers to the nearest 100,000 and provide analysis of sex by male and female only. Population numbers have been estimated using relevant ABS data for June of each year (rounded to the nearest thousand) against proportions of young people who have used drugs. For original NDSHS 2019 tables see Appendix A.

<sup>iii</sup> Any opioid includes use of heroin, non-medical use of pain-killers/pain-relievers and opioids or non-medical use of methadone/buprenorphine

**Table 1**

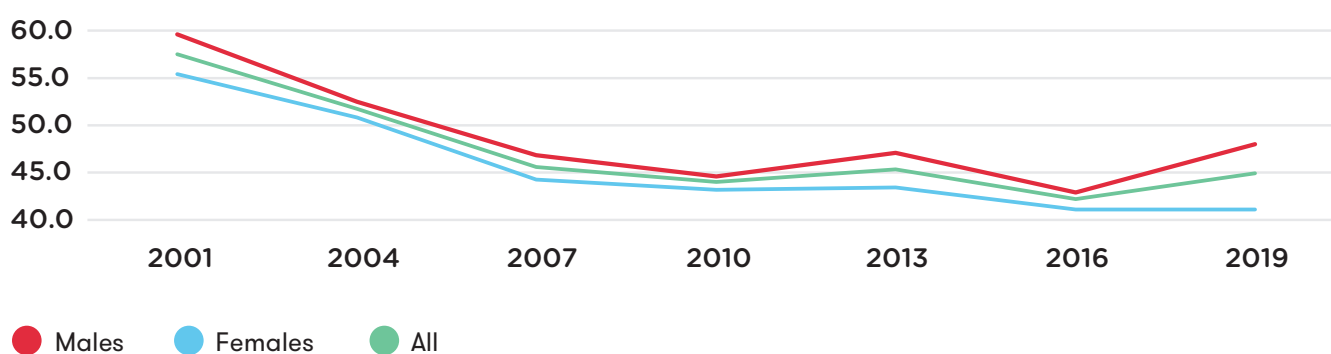
**Estimated number of young people aged 18-24 who have ever taken an illicit drug (NDSHS 2019)**

|                | 2010    | 2013      | 2016    | 2019      |
|----------------|---------|-----------|---------|-----------|
| <b>Males</b>   | 521,000 | 541,000   | 504,000 | 581,000   |
| <b>Females</b> | 475,000 | 476,000   | 458,000 | 474,000   |
| <b>All</b>     | 998,000 | 1,018,000 | 967,000 | 1,061,000 |

Source: Australian Demographic Statistics <sup>4,7</sup> and proportions of young adults provided in NDSHS 2019

**Figure 1**

**Proportion of young adults (aged 18-24) who have ever used an illicit drug (NDSHS 2019)**



Source: Australian Demographic Statistics <sup>4,7</sup> and proportion of young adults provided in NDSHS 2019

Table 2

Estimated number of young people aged 18-24 who have ever taken an illicit drug (NDSHS 2019)

|                         | 2001 | 2004 | 2017 | 2010 | 2013 | 2016 | 2019 |
|-------------------------|------|------|------|------|------|------|------|
| <b>Cannabis</b>         |      |      |      |      |      |      |      |
| Male                    | 57   | 50   | 43   | 40   | 40   | 37   | 43#  |
| Female                  | 51   | 47   | 40   | 39   | 37   | 36   | 36   |
| Cannabis all            | 54   | 48   | 41   | 40   | 38   | 36   | 40   |
| <b>Cocaine</b>          |      |      |      |      |      |      |      |
| Male                    | 9    | 7    | 9    | 11   | 10   | 9    | 17#  |
| Female                  | 7    | 5    | 7    | 9    | 8    | 9    | 12#  |
| Cocaine all             | 8    | 6    | 8    | 10   | 9    | 9    | 15#  |
| <b>Ecstasy</b>          |      |      |      |      |      |      |      |
| Male                    | 21   | 21   | 18   | 20   | 17   | 13   | 20#  |
| Female                  | 17   | 17   | 18   | 18   | 15   | 14   | 14   |
| Ecstasy all             | 19   | 19   | 18   | 19   | 16   | 13   | 17#  |
| <b>Meth/amphetamine</b> |      |      |      |      |      |      |      |
| Male                    | 21   | 20   | 11   | 10   | 10   | 6    | 5    |
| Female                  | 18   | 17   | 11   | 9    | 7    | 4    | *2   |
| Meth/amphetamine all    | 20   | 18   | 11   | 9    | 8    | 5    | 4    |
| <b>Any opioid</b>       |      |      |      |      |      |      |      |
| Male                    |      |      |      |      |      | 9    | 10   |
| Female                  |      |      |      |      |      | 9    | 6    |
| Any opioid all          |      |      |      |      |      | 9    | 8    |
| Hallucinogens all       | 14   | 9    | 6    | 10   | 11   | 9    | 11   |
| Ketamine all            |      | 3    | 2    | 3    | 2    | 3    | 6#   |

Any opioid includes use of heroin, non-medical use of pain-killers/pain-relievers and opioids or non-medical use of methadone/buprenorphine.

Opioid data was not collected prior to 2016.

NDSHS defines 'any opioids' as heroin, methadone or buprenorphine and pain-killers. Data for all people aged over 14 suggests the overwhelming majority of people who used 'any opioids' in 2019 (97.2%) also use/misuse pain-killers, with 9.7% reporting recent use of heroin and 6.6% recent use of methadone or buprenorphine.

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

# indicates a statistically significant change from the previous year.



## 1.2 Drug use patterns among young adults in Australia, recently used

The 2019 NDSHS provides data on what drugs young adults have used recently – in the last 12 months. It found:

- Approximately 737,000 young adults had used an illicit drug in the past 12 months, almost one third (31%) of all 18-24-year-olds (see Table 3 below for details).
- Young adult males reported higher proportions of recent drug use than females (see Tables A1 and A2, Appendix A), across each drug type (where data provides a breakdown of sex<sup>iv</sup>).
- Recent drug use by young adult men rose from 30% in 2016 to 35% in 2019; whereas recent reported drug use among females remained fairly stable.<sup>1</sup>
- Cannabis use represents 81% of all recent illicit drug use, with one quarter of young adults (n=600,000) using cannabis in 2019.
- Ecstasy and cocaine are the next most commonly used illicit drugs, with 11% (approx. 255,000 young adults) reporting recent use.
- Young adults reported recent use of hallucinogens, ketamine and ‘any opioids’ at significantly higher rates than methamphetamines in 2019.
- There were significant increases in the rates of ecstasy, cocaine and ketamine use among 18-24-year-olds between 2016-19.

**Table 3**

**Proportion of adults who have used illicit drugs in the past 12 months by age (NDSHS 2019)**

| Age   | 2001 | 2004 | 2017 | 2010 | 2013 | 2016 | 2019 |
|-------|------|------|------|------|------|------|------|
| 14-17 | 23   | 17   | 13   | 15   | 14   | 11   | 10   |
| 18-24 | 37   | 33   | 27   | 27   | 29   | 28   | 31   |
| 25-34 | 26   | 26   | 24   | 24   | 22   | 23   | 25   |
| 35-44 | 16   | 16   | 13   | 15   | 16   | 18   | 17   |
| 45-54 | 9    | 9    | 10   | 11   | 12   | 14   | 15   |
| 55-64 | 5    | 5    | 4    | 7    | 10   | 10   | 11   |
| 65+   | 4    | 4    | 4    | 5    | 6    | 6    | 6    |

<sup>iv</sup> Sex breakdown data not provided for hallucinogens and ketamine.

**Table 4**

**Recent use of different drug types by people aged 18-24 as a proportion of illicit drug use, 2019**

| Drug type        | %  |
|------------------|----|
| Cannabis         | 81 |
| Cocaine          | 35 |
| Ecstasy          | 35 |
| Hallucinogens    | 17 |
| Ketamine         | 13 |
| Any opioid       | 13 |
| Meth/amphetamine | 7  |

Source: NDSHS 2019 and Australian Demographic Statistics<sup>4</sup>

Note: proportions sum to greater than 100% because some people use more than one drug type

See Appendix A for additional Tables and Figures on recent drug use patterns.

### 1.3 Drug use patterns among young adults in Australia, frequency of use

To understand the frequency of drug use among young adults, we reviewed both the NDSHS 2019 data (Table B1, Appendix B) as well as the EDRS data from 2019.

The EDRS<sup>8</sup> targets people who identify as taking illicit substances and indicates that among 18-26-year-olds in 2019:

- 28% of survey respondents used ecstasy weekly or more
- 7% had recently (past 6 months) taken cocaine and did so weekly.

The 2019 EDRS<sup>8</sup> also reports the median amount of drugs in a 'typical' session:

- **Ecstasy:** the median number of pills or capsules used was 2, for powder the median quantity was 0.4 grams and crystal 0.25 grams – this is double the global average, as per the Global Drug Survey<sup>vi 9,10</sup>
- **Methamphetamine:** median was 0.25 grams for people using powder and 0.2 grams for people using crystal
- **Cocaine** (noting that crack cocaine is very rarely used): 0.5 grams
- **Cannabis:** three cones, or 1.2 grams
- **Ketamine:** 0.3 grams
- **LSD:** one tab or 200 micrograms.

### 1.4 Drug use patterns among young adults in Victoria

NDSHS data<sup>vii</sup> on recent drugs use among young adults in Victoria:

- Victoria, along with NT, ACT and NSW, has the highest proportions of recent drug use among 18-24 year-olds (see Table 5).
- For all states and territories, cannabis is the drug most used.
- In Victoria, the proportion using cocaine in the past 12 months increased from approximately 3% in 2016 to 11% in 2019 (see Table 6 and Figure 2).

<sup>vi</sup> The Global Drug Survey (GDS) run the world's largest drug survey directed at people who use drugs. They do not use a probability-sample, so findings are not representative of a wider population. For more on the GDS: <https://www.globaldrugsurvey.com/>

<sup>vii</sup> Note that the NDSHS does not provide breakdown by numbers of illicit drug use by state/territory, only proportions for recent use

**Table 5**

**Proportion of 18-24 year-olds who have used illicit drugs in the past 12 months by state/territory from 2001 to 2019 (NHSDS 2019)**

| State/territory | 2001 | 2004 | 2007 | 2010 | 2013 | 2016 | 2019 |
|-----------------|------|------|------|------|------|------|------|
| NSW             | 35   | 29   | 21   | 25   | 30   | 25   | 32   |
| Vic             | 38   | 31   | 26   | 25   | 30   | 28   | 34   |
| Qld             | 36   | 35   | 32   | 30   | 29   | 32   | 30   |
| WA              | 45   | 43   | 33   | 35   | 24   | 29   | 26   |
| SA              | 42   | 33   | 25   | 29   | 28   | 29   | 28   |
| Tas             | 23   | 36   | 28   | 20   | 28   | 40   | 31   |
| ACT             | 40   | 37   | 34   | 27   | 27   | *22  | 37   |
| NT              | 43   | 52   | 32   | 25   | 30   | 30   | 39   |
| Australia       | 37   | 33   | 27   | 27   | 29   | 28   | 31   |

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

**Table 6**

**Vic recent drug use by 18-24-year-olds 2001-2019 (per cent)**

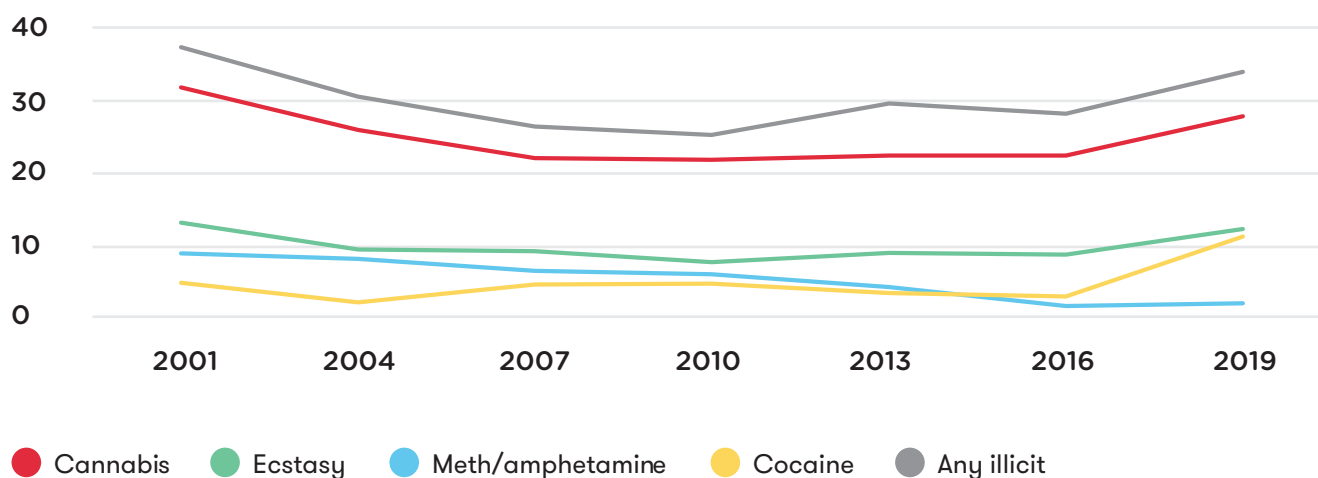
| Vic              | 2001 | 2004 | 2007 | 2010 | 2013 | 2016 | 2019 |
|------------------|------|------|------|------|------|------|------|
| Cannabis         | 32   | 26   | 22   | 22   | 23   | 23   | 28   |
| Ecstasy          | 13   | 10   | 9    | 8    | 9    | 9    | 12   |
| Meth/amphetamine | 9    | 8    | *7   | 6    | 5    | *2   | *2   |
| Cocaine          | 5    | *2   | *5   | 5    | *4   | *3   | 11#  |
| Any illicit      | 37   | 31   | 26   | 25   | 30   | 28   | 34   |

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

\*\* Estimate has a high level of sampling error (relative standard error of 51% to 90%), meaning that it is unsuitable for most uses.

# Statistically significant change between 2016 and 2019.

Source: NDSHS 2019 Table S.29; AIHW analysis of the National Drug Strategy Household Survey.

**Figure 2****Vic recent drug use by 18-24-year-olds 2001-2019 (per cent)****1.5 Drug use patterns among young adults, international data**

A comparison of drug use among Australian young adults and those in other countries (Europe<sup>viii</sup>, the United States<sup>ix</sup> and the United Kingdom<sup>x</sup>, Table 7), shows:

- Australia has lower proportions of recent (past 12 month) drug use and ‘ever’ drug use when compared to the United States; but higher recent drug use than England and Wales (data from Europe is not available).
- Cannabis is the illicit drug used most in all countries.
- Australian young adults have significantly higher proportions of recent use of cocaine and ecstasy, compared to closest age groups in the United States (ages 18-25), Europe (ages 15-34) and England and Wales (ages 16-24).
- The proportion of young Australian adults who used cocaine recently (11%) was almost double that of the United States (6%) and England and Wales (5%).<sup>xi</sup>
- Australia has higher proportions of recent ecstasy use (11%) than the United States (3%) and all of Europe (2%).
- Internationally, there are higher proportions of young men than young women taking illicit drugs across all drug categories.<sup>11</sup>

<sup>viii</sup> From the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) European Drug Report: Trends and Developments. Luxembourg. 2019.

<sup>ix</sup> From Monitoring the Future's National Survey on Drug Use and Health (NSDUH), National Institute on Drug Abuse. National Survey of Drug Use and Health: Trends & Statistics. United States,; 2020.

<sup>x</sup> Office for National Statistics. Drug misuse in England and Wales: year ending March 2020. UK.

<sup>xi</sup> In Europe recent cocaine use among those aged 15-34 years (the closest age bracket available) was 2.1% (EMCDDA, 2019).



Table 7

## Comparison of drug use trends between USA, Europe and Australia

| Country Region                     | USA                     | Europe |       | England and Wales | Australia |
|------------------------------------|-------------------------|--------|-------|-------------------|-----------|
| Year                               | 2018                    | 2019   | 2019  | 2019-2020         | 2019      |
| Age bracket                        | 18-25                   | 18-24  | 15-34 | 16-24             | 18-24     |
| Lifetime use %                     | 56                      | na     | na    | Na                | 45        |
| Illicit drugs past 12 months use % | 39                      | na     | 16    | 21                | 31        |
|                                    | Past 12 months use for: |        |       |                   |           |
| Cannabis                           | 35                      | 18     | 14    | 19                | 25        |
| Ecstasy                            | 1                       | na     | 2     | 4                 | 11        |
| Cocaine                            | 6                       | na     | 2     | 5                 | 11        |
| Hallucinogens                      | 7                       | na     | <1    | 1                 | 5         |
| Ketamine                           | na                      | na     | na    | 3                 | 4         |

Notes: England and Wales data is from March 2019 to March 2020, prior to any COVID-19 restrictions USA data from NSDUH website: <https://www.drugabuse.gov/drug-topics/trends-statistics/national-drug-early-warning-system-ndews/national-survey-drug-use-health>, European data from the European Monitoring Centre for Drugs and Drug Addiction<sup>12</sup>, UK data from the Office for National Statistics<sup>13</sup>

## 1.6 Drug use patterns among young adults, high risk and harmful

To establish the drug use by young adults that presents the most high risk and the most potential harm, we used the 2019 NDSHS data and Nutt's Drug Harm Classification Scale.<sup>14</sup> As summarised in Table 8 we estimated that the most harmful drugs used by young adults in 2019 were:

- methamphetamine
- cocaine
- amphetamines
- cannabis.<sup>xii</sup>

<sup>xii</sup> Note: The classification of ecstasy as a drug with a low risk profile may seem incongruous given that there was a high profile media debate in Australia, and in NSW in particular, following on from a number of deaths at music festivals in the mid to late 2010s.<sup>15</sup> This example demonstrates the importance of recognising the other factors that increase risk for people when they use drugs (such as polydrug use).

Table 8

**Estimation of young adults (aged 18-24) who have used an illicit substance in the past 12 months (2019) against Nutt's Drug Harm Classification Scale**

| Drug type         | Overall harm score | Estimated 18-24-year olds who have taken drug in past 12 months (2019) | Notes   |
|-------------------|--------------------|--|---|
| Heroin            | 55                 | **9,215  |   |
| Crack cocaine     | 44                 | not applicable   | Only very small proportion of all population (<0.2%) report using crack cocaine in 2019   |
| Methamphetamine   | 33                 | *25,000  | Numbers given for meth/amphetamine all, but data on forms used indicates roughly half reported using methamphetamine and half reported using amphetamines |
| Cocaine           | 27                 | 300,000  |   |
| Amphetamine       | 23                 | *25,000  | See notes on methamphetamine  |
| Cannabis          | 20                 | 600,000  |   |
| GHB               | 19                 | no data  |   |
| Benzodiazepines   | 15                 | no data  |   |
| Ketamine          | 15                 | 93,000   |   |
| Methadone         | 14                 | ** 6,270   |   |
| Mephedrone        | 13                 | no data  |   |
| Butane            | 11                 | no data  |   |
| Khat              | 9                  | no data  |   |
| Anabolic steroids | 10                 | no data  |   |
| Ecstasy           | 9                  | 300,000  |   |
| LSD               | 7                  | *90000   | Data on forms of hallucinogens used suggests 73% took LSD and 61% took mushrooms  |
| Buprenorphine     | 7                  | no data  |   |
| Mushrooms         | 6                  | *80000   | See notes on LSD  |

\*Numbers are derived from proportions of forms of drugs used from 2019 NDSHS against 2019 ABS population data (see Appendix C for extra data tables).

\*\* Numbers likely to underestimate use and should be used with caution. Total numbers of young adults who have used illicit drugs will not match earlier tables, because it is likely many of the same people are taking multiple forms of drugs (e.g. methamphetamine and amphetamine).

**Polydrug use** – the use of more than one drug together (either at the same time, or in the same session) tends to increase risks to health through toxicity<sup>16</sup>, and is causally linked to drug-related deaths and drug-related hospitalisations in Australia.

In EDRS 2019 data,<sup>8</sup> 95% of survey respondents reported using one or more other drugs (including alcohol) on their last occasion of stimulant use.<sup>xiii</sup>

There was also a high reported use of ‘downers’<sup>xiv</sup> in addition to stimulant use with 76% of the EDRS sample combining stimulants and depressants on their last occasion of use.

**There is very limited data on injecting drug use among young adults** in Australia<sup>2</sup>. A national survey of people who used needle and syringe programs, show a relatively small proportion of respondents from young adults aged under 25 years.

In 2019 they were 4% of all respondents, down from 30% in 1995.<sup>17</sup> The EDRS reports on injecting methamphetamine use (not heroin)<sup>xv</sup>. Of people reporting to have taken methamphetamine in the past six months, 21% injected methamphetamine crystal, and 9% injected methamphetamine powder.

More common routes of administration were snorting for methamphetamine powder (73%), and smoking for crystal (80%).<sup>8</sup>

## 1.7 Drug use among young adults, related deaths and hospitalisations

To understand drug-related deaths among young adults, we reviewed an analysis of ABS data (1999 to 2019) by the National Drug and Alcohol Research Centre (NDARC)<sup>18,xvi</sup> (see Figure 3 for detail).

NDARC found that in the 15-24 year old age group:<sup>18</sup>

- 2.6 deaths occurred per 100,000 in 2018 (approximately 43 deaths)
- drug-related deaths decreased from 1999 to 2018
- drug-induced deaths were least common among 15-24-year-olds, compared to 35-44-year-olds and 45-54-year-olds
- opioids remain the leading cause of drug-related death for 15-24-year-olds, despite decreasing significantly since 1999
- overall, men have higher drug-related deaths than women, but the male death rate is only slightly higher than women for 15-24-years-olds
- since 2013, there has been a slight increase in the number of deaths among 15-24-year-olds from anti-epileptic drugs, sedative-hypnotic (barbiturates and benzodiazepines) and anti-Parkinson drugs. These drugs are now the second highest cause of drug-related deaths among 15-24-year-olds.

<sup>xiii</sup> Stimulants refers to ecstasy and other drugs including MDA, methamphetamine, cocaine, LSD, mephedrone or other New Psychoactive Substances.

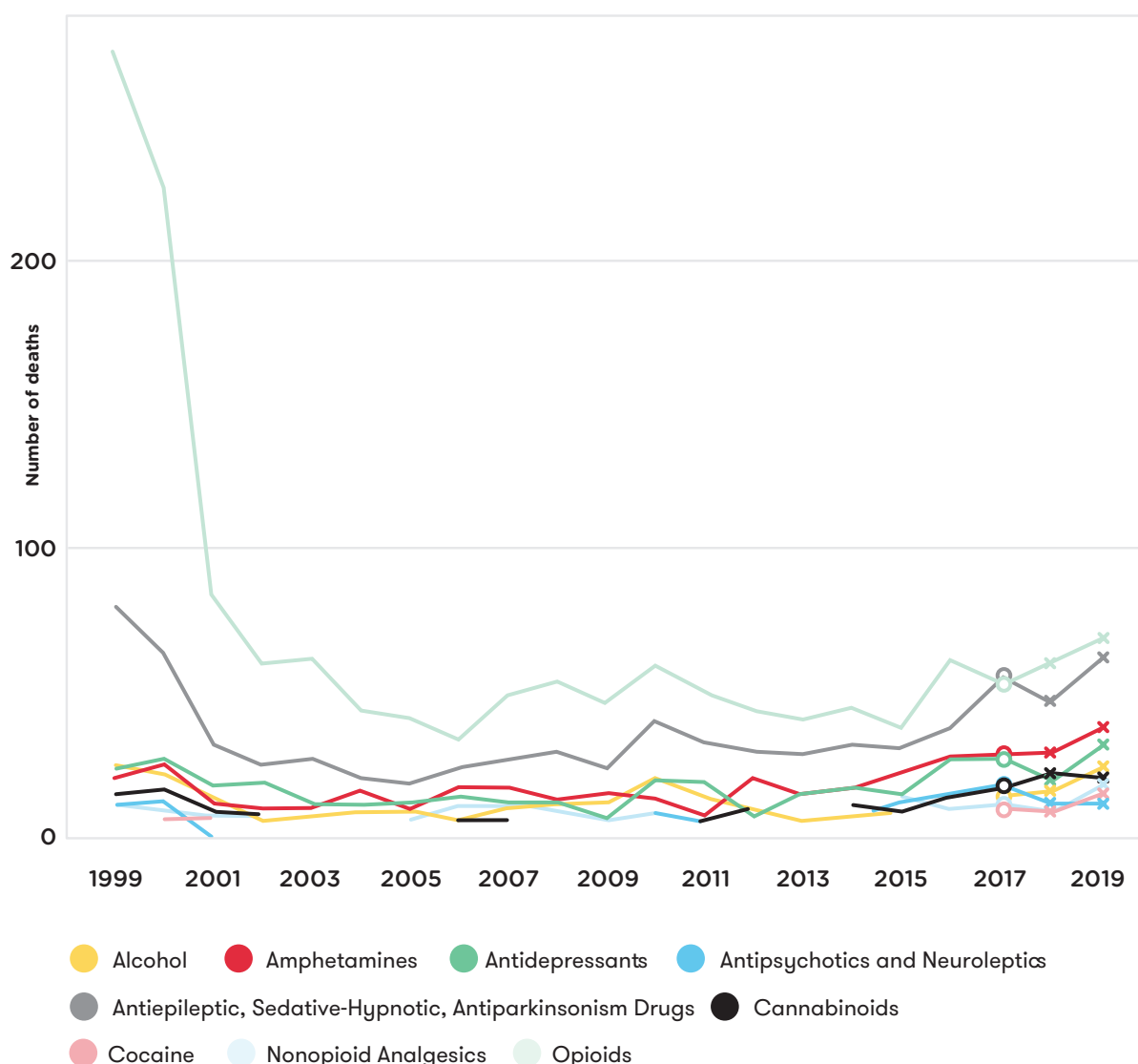
<sup>xiv</sup> Downers refers to depressants, a group of drugs that produce a sedative effect.

<sup>xv</sup> Note that NDARC produce a yearly report on injecting drug use – the IDRS – but this does not contain any age breakdowns.

<sup>xvi</sup> It is important to note that currently, it is not possible to determine what proportion of drug-related deaths of 15-24-year-olds, including those from barbiturates and benzodiazepines, were unintentional versus intentional.

**Figure 3**

**ABS data on drug-induced deaths of 15-24 year-olds by primary drug involved 1999 to 2019**  
(source for figure is NDARC, DrugTrends)



The latest (2017-18) NDARC data<sup>19</sup> on drug-related hospitalisations (excluding alcohol and tobacco) does not have data breakdown for 18-25-year-olds; however, analysis of the closest age-range (20-29) shows:

- 20-29-year-olds<sup>xvii</sup> have the highest rates of drug-related hospitalisations of any age group
- amphetamine and other stimulant-related drugs (ATS)<sup>xviii</sup> accounted for the majority of hospitalisations in this age range (see Table 9 below)
- men accounted for 50% more hospitalisations than women for ATS and cannabinoids
- many drug-related hospitalisations involved polydrug use
- since 1999, for this age group, opioid-related hospitalisations have decreased and ATS and cannabinoids-related hospitalisations have increased.

(see Appendix D for detailed gender, age and drug hospitalisation data).

<sup>xvi</sup> And, there is no data on unintentional drug-related deaths for young people aged 15-24, or for young people aged 18-25 (Penington Institute has data on accidental drug-related deaths for people aged 20-29 only (Penington Institute, 2020).

<sup>xvii</sup> 18-25-year-old specific data is not available.

<sup>xviii</sup> Includes methamphetamine, MDMA, ecstasy, pharmaceutical stimulants such as dexamphetamine and other legal stimulants, e.g. caffeine.



**Table 9****Number of drug-related hospitalisations 2017-18 of 20-29-year-olds by drug type<sup>xix</sup>**

| Drug                             | Hospitalisations 2017-18 | Hospitalisation rate per 100,000 |
|----------------------------------|--------------------------|----------------------------------|
| Opioids                          | 1,355                    | 37                               |
| Amphetamine and other stimulants | 4,567                    | 126                              |
| Cannabinoids                     | 2,606                    | 72                               |
| Cocaine                          | 310                      | 9                                |

Source: NDARC Drug Trends<sup>19</sup>**1.8 Drug use among young adults, priority populations**

The Australian Institute of Health and Welfare (AIHW) has identified 'priority populations' among people who use alcohol and other drugs (AOD) as those groups who are either more disadvantaged, more likely to suffer adverse health impacts from AOD use and/or are more likely to engage in risky AOD use.

These are:

- Aboriginal and Torres Strait Islander communities
- people experiencing homelessness
- people in contact with the criminal justice system
- people who identify as lesbian, gay, bisexual, intersex or queer
- people who inject drugs.

**1.9 Drug use among young adults, where and why**

The 2019 NDSHS found that the main reason young adults take illicit drugs is for enjoyment and to have fun (55%), followed by 'wanting to enhance experiences' (13%) and 'wanting to improve mood' (11%) [See Table 10].

The usual place of drug use (see Table 11), although not presented by age, showed:

- ecstasy and cocaine were more frequently consumed at parties, raves/dance parties and in licensed venues, consistent with international data<sup>12</sup>
- cannabis and methamphetamine had higher rates of use at home.

**Table 10****Main reason why people aged 18-24 who have used illicit drugs, continue to use illicit drugs 2019 (NDSHS)**

| Main reason                      | %  |
|----------------------------------|----|
| Enjoyment/ wanting to have fun   | 55 |
| Wanting to enhance experiences   | 13 |
| Wanting to improve mood          | 11 |
| Wanting to do something exciting | 7  |
| Influence of friends or family   | 6  |
| Other                            | 6  |
| Addiction/ dependency            | 1  |

<sup>xix</sup> Note that age data only provided for these 4 drugs whereas drug hospitalisation data includes other drugs such as pharmaceuticals. This table therefore represents a snapshot of drug-related hospitalisations only and does not account for total hospitalisations in this age group.

Table 11

Usual places of illicit drug use, people who have recently used them aged 14 and over, 2019 (per cent) NDSHS 2019

| Place   | Cannabis<br>% | Ecstasy<br>% | Meth/amphetamine<br>% | Cocaine<br>% |
|---|---------------|--------------|-----------------------|--------------|
| In a private home                               | 91            | 50           | 74                    | 65           |
| At private parties                              | 34            | 57           | 39                    | 60           |
| At raves/dance parties                          | 8             | 66           | 26                    | 34           |
| At a public establishment (i.e. licensed venue) | 4             | 41           | 20                    | 43           |
| In public places (e.g. parks)                   | 13            | 12           | 5                     | 6            |
| In a car or other vehicle                       | 8             | 3            | 9                     | 6            |
| Somewhere else (includes school, TAFE, work)    | 10            | 6            | 18                    | 7            |

### 1.10 Demographic profiles of young adults who use illicit drugs

To understand the demographic profiles of young adults who use illicit drugs, we looked further at the NDSHS and EDRS data from 2019.

The NDSHS data showed that for all people aged over 14:

- **Cannabis** was more likely to be used by people who were unemployed, Indigenous and/or identified as homosexual or bisexual.
- **Cocaine** use was highest among those who were employed, lived in major cities and high socioeconomic areas.
- **Ecstasy** was more likely to be used by people who were employed, identified as homosexual or bisexual, living in the most advantaged socioeconomic areas and residing in cities.
- **Methamphetamine/amphetamine** use was higher among people who were unemployed.<sup>1</sup>

EDRS survey data are collected from people who identify as taking illicit substances (most, but not all of whom are 18-26-year-olds). While not nationally representative, the EDRS data provides useful insights into the demographic profiles of young adults who use illicit drugs. Of the 2019 survey respondents:<sup>xx, 8</sup>

- 22% were employed full-time
- 45% were either full or part-time students
- 27% were unemployed
- 48% were in rental accommodation
- 4% owned their own home
- 40% lived with family
- 5% resided in a boarding house or hostel
- 1% had no fixed address
- median weekly income was \$500
- 54% had post-school qualifications.

<sup>xx</sup>This study includes amphetamines, methamphetamines, cannabis, hallucinogens, MDMA and ketamine as 'ecstasy and related substances'.

## 1.11 Drug use among young adults – workers and apprentices

A number of industries in Australia have been connected to higher levels of alcohol and other drug use, including risky drug use behaviours – particularly those in male-dominated, blue-collar industries, with construction and commercial cooking notable areas in the literature.<sup>20-23</sup>

Young apprentices in construction and cooking have been found to have high levels of risky drinking and AOD use<sup>24,25</sup>, with higher proportions using methamphetamine and cannabis compared to other people of the same age.<sup>26</sup>

To explore this issue, the National Centre for Education and Training on Addiction (NCETA) conducted secondary analysis of NDSHS data from 2007-16, specifically looking at 15-24-year-olds and employed young people (across all industries) (see Table 12 below).<sup>27</sup>

NCETA reported:

- young Australian workers are more likely to use illicit drugs of all types than other young people (aged 15 to 24)
- cannabis is the most used drug by young workers (23%), followed by ecstasy (10%) and cocaine (7%)
- between 2007 and 2016:
  - methamphetamine use decreased
  - cannabis and hallucinogens increased
  - illicit drug use among hospitality workers significantly increased.

**Table 12**

**Roche et al (2020) analysis of NDSHS data showing alcohol and illicit drug use in the past 12 months among young people and young workers (aged 15-24), 2016**

| Drug use (past year) | Young people 2016 (%) | Young workers 2016 (%) |
|----------------------|-----------------------|------------------------|
| Cannabis             | 20                    | 27                     |
| Ecstasy              | 6                     | 10                     |
| Methamphetamine      | 2                     | 2                      |
| Cocaine              | 4                     | 7                      |
| Hallucinogens        | 3                     | 4                      |
| Any                  | 22                    | 30                     |

Notes: Any drug use means use of at least one of the following drugs for non-medical purposes: cannabis, ecstasy, methamphetamine, cocaine, hallucinogens, inhalants, heroin, ketamine, GHB, tranquilisers, steroids, methadone and/or injectable drugs.

## 1.12 Drug use among young adults – nightclubs and music festivals

‘Party drugs’, including ecstasy and other amphetamines, have been linked to electronic dance music scenes since the 1980s.<sup>28</sup>

Recent studies have found strong links between people who attend nightclubs and use of ecstasy<sup>29,30</sup> and generally high rates of illicit drug use by people who attend music festivals, in particular.

A survey of attendees at an Australian music festival, aged 18 to 30 years (n=642), found 73% of people reporting they had used an illicit drug in the past 12 months.<sup>31</sup> Risky drug use by music festival attendees included ‘double dropping’ (taking two doses of a drug at once) as a common practice.<sup>32</sup>

Analysis of data from the Global Drug Survey, found that almost all Australian music festival attendees (98%) had, in the last 12 months, used an illicit drug – ecstasy (79%), cannabis (74%) and cocaine (69%).<sup>15</sup>

An analysis of festival attendees who self-reported seeking emergency medical treatment (EMT) found that those seeking EMT after ecstasy consumption had consumed a median quantity of three pills, with most (81%) combining ecstasy with another psychoactive substance, specifically alcohol and/or other illicit drugs.<sup>33</sup> Internationally, prevalence of such polydrug use is high among people attending music/dance-related settings including music festivals, nightclubs and raves/parties.<sup>34</sup>

## 1.13 Drug use among young adults – LGBTIQ+ people

Literature suggests that drug use and risky drug use is significantly higher amongst lesbian, gay, bisexual, trans and gender diverse, intersex and queer (LGBTIQ+) people than heterosexual people in Australia, with LGBTIQ+ people more vulnerable to drug-related harms.<sup>2,35-38</sup>

A 2019 national online survey on the health of young LGBTIQ+ Australians (n=6,418)<sup>39</sup> found that among those aged 18 to 21 years:

- one-third (42%) reported using drugs for non-medical purposes in the past six months (compared to 31% of other 18-to-24-year-olds who used drugs in the past 12 months)
- drugs most commonly used in the past six months were cannabis (36%), ecstasy (12%) and amyl nitrite (8%).

Men who engage in chemsex<sup>xxi</sup> (known as ‘Party and Play’ in Australia) are also identified as high risk in their drug use, due to:

- frequent use of high-risk drug types, such as methamphetamine, ketamine, mephedrone and GHB/GBL
- high-risk drug consumption behaviours, such as polydrug use and injecting drug use
- risky sexual practices that put participants at higher risk of blood-borne virus transmission.<sup>40</sup>

While international literature estimates that only a small proportion of men who have sex with other men engage in Party and Play/chemsex<sup>41</sup>, Australian data from Sydney Gay Community Periodic Survey 2020 (of all people aged 16 and above) found 22% of respondents were using ‘party drugs’ for sex in the previous six months.<sup>37</sup>

<sup>xxi</sup> The use of drugs in a sexual context.



## 1.14 Summary of key findings from Section 1

While every attempt has been made to accurately reflect the data on young adult drug use, it is important to be aware that young adult drug use is likely underestimated.

- In 2019, 45% of 18-24-year-olds in Australia had ever used an illicit drug.
- Almost one third of all 18-24-year-olds in Australia (approx. 700,000 people) had used an illicit drug in the past 12 months.
- The most commonly used drugs in the past 12 months were cannabis (25%), followed by cocaine (11%) and ecstasy (11.8%).
- Cannabis represented 81% of all recent illicit drug use by 18-24-year-olds.
- Amongst young people (aged 14 to 29<sup>xxii</sup>) who used drugs frequently and are therefore at higher risk of harm, there are some large numbers of young people who could benefit significantly from harm reduction messaging, specifically:
  - cannabis users – of the 1.1 million people aged 14-29 who used cannabis in the last year, 525,000 (48%) used it about once a month or more and 115,100 (1%) used it daily
  - ecstasy users – over one in five people, aged 14-29, who use ecstasy reported using it at least once a month (approx. 102,750 people)
  - cocaine – of the total number of young people who used cocaine in the past 12 months (440,000), 78,800 (18%) used it at least once a month but the majority reported using it every few months or once or twice a year
  - meth/amphetamine – of the 110,000 14-29-year-olds who used meth/amphetamine in the past year, 33,170 (30%) used it about once a month or more, with 16,830 people (15%) using it daily.
- Despite being the age group most likely to have used drugs recently, young people aged 15-24 have the lowest drug-related death rate of any age bracket.
- People aged 20-29 years have the highest drug-related hospitalisation rates in Australia. There is a lack of national age-specific data for drug-related hospitalisations of 18-25-year-olds, so this is an area that needs further research.
- There could also be value in exploring the extent of injecting drug use in young adults. Because the NDSHS does not collect information from vulnerable people residing in institutions or who are experiencing homelessness, it is likely to underestimate the number of people who inject drugs.<sup>42</sup> As a segment of the population likely to be highly marginalised and disadvantaged, and experience multiple negative health consequences from drug use (including higher risk of overdose and higher risk of blood borne viruses)<sup>2</sup>, better data could help target messaging and campaigns to help reduce illicit drug harms.

<sup>xxii</sup> NDSHS data on age groups was a bit sporadic for some data sets. Ages 14-19 and 20-29 were the most relevant age brackets from data on drug use frequency.

## 1.15 Identified groups at risk/risk factors:

- **Increased use by men** – There is a significant gendered dimension to young adults' drug use with a higher proportion of young men using drugs overall and across each drug type than young women. An increase in recent young adult drug use (ages 18-24) between 2016-19 of 3% was almost entirely driven by increases in drug use by young men, with usage increasing from 29.6% to 35.3%. Particularly significant increases in the numbers and proportions of young men using ecstasy and cocaine were also recorded.
- **Polydrug use** – The use of multiple drugs at the same time increases the risks of health harms<sup>16</sup> and is a common practice in Australia, particularly using alcohol with cocaine, ecstasy and meth/amphetamine. Polydrug use is a causal factor in many drug-related deaths and hospitalisations in Australia. Research with young adults who use ecstasy-related drugs suggests that polydrug use is common.<sup>8</sup>
- **Night-time economy** – The use of some drugs, particularly ecstasy and cocaine, is connected to the night-time economy (bars, clubs, raves and parties). These venues may provide guidance for the location of targeted harm reduction campaigns.
- **Cannabis more common** – Considering numbers alone (and not other risk factors), cannabis would appear to be the most important drug for harm reduction messaging, followed by cocaine and ecstasy.
- **Ecstasy and cocaine** – Given the significant increase in use of both ecstasy and cocaine between 2016-19, people who use these drugs may also be a consideration for targeted harm reduction messaging, especially males.
- **Young adult sub groups** – Individual research targeted at young workers (particularly in male-dominated blue collar industries), LGBTIQ+ people, and young adults who go to clubs and music festivals) have found higher prevalence of illicit drug use and high-risk drug taking behaviours, compared to the population average among the same age group.

## 1.16 Section 1 supplementary data tables and figures

Supplementary tables and figures are available in the Appendices, including:

Table A1: Number of young adults (aged 18-24) who have ever used an illicit drug (NDSHS 2019)

Table A2: Number of young adults (aged 18-24) who have used an illicit drug in the past 12 months (NDSHS 2019)

Table A3: NDSHS 2019 data on the number of 18-24-year-olds in Australia who used illicit drugs in last 12 months by drug type and sex (over time)

Table B1: Frequency of drug use, reported by people aged 14-19 and 20-29, who have used drugs in the past 12 months (NDSHS, 2019)

Table B2: Frequency of drug use, reported by proportion of people aged 14-29, who have used drugs in the past 12 months against the total population of 14-29-year-olds in Australia (NDSHS, 2019)

Table C1: NDSHS data on main forms of drugs used by drug type among people aged 14 and over who have recently (past 12 months) used drugs, 2019

Table C2: Forms of hallucinogens used by people aged 18-24 amongst those who have recently (past 12 months) used hallucinogens, 2019

Figure D1: Rate (per 100,000 people) of drug-induced deaths for Australian males and females, by age group 1997-2019 from NDARC Drug Trends

Figure D2: Crude rate (per 100,000) of drug related hospitalisations by age group and sex

Figure D3: Age and sex profile of opioid-related hospital separations 1999 to 2019

Figure D4: Age and sex profile of Amphetamine-Type Substances-related hospital separations 1999 to 2019

Figure D5: Age and sex profile of cannabinoid-related hospital separations 1999 to 2019

## Section 2

# Harm reduction – strategies that work

A narrative review was undertaken to identify the most effective types of messaging, interventions and delivery modes for young adults. The review considered Australian and international evidence, published and grey literature.

In this section, we present:

- sources of information most accessed by young adults in relation to drug use and health
- types of messages that are most effective
- efficacy of specific harm reduction interventions.

Given the limited evidence of program effectiveness available, only information pertinent to the high-risk subgroups, drug types and behaviours identified in Section 1 are included here. The complete [narrative review](#) is provided on the Alcohol and Drug Foundation's website.

## 2.1 Information sources preferred by young adults

Understanding the sources of information used by young adults when seeking information about alcohol and other drugs (AOD) is important for targeting effective education strategies and establishing credible and relevant interventions.<sup>3</sup> Findings regarding information seeking for mental health issues are also reported to inform our understanding of 'what works' when communicating with young adults.

In 2013, Australian young people (n=2335, aged 16 to 25 years) were surveyed about drug policies and harm reduction.<sup>3</sup> The top three sources of information rated by participants were the internet (88%), a friend (63%) and a doctor, nurse or other health professional (45%).

The role of experienced users was noted as a possible influential strategy for young adults.<sup>3</sup>

The sources they said they would use least are parents and relatives, mass media and telephone hotlines.

Subsequent studies have also found that young adults experiencing problems with AOD prefer to go to friends for advice, rather than parents or health professionals.<sup>43</sup>

With technology playing a central role in the lives of young adults<sup>44</sup>, use of the internet has now extended to searching for information about health, and help-seeking for a range of issues, often through their phones.<sup>45,46</sup> Online sources of information about issues that are stigmatised such as mental health and AOD use are preferred by people seeking anonymity and confidentiality<sup>46</sup>, and are often accessed via a Google search, or through social networking sites.<sup>45</sup>

Young LGBTIQ+ people report that they are more likely to face discrimination in healthcare settings (especially trans and non-binary youth) and are more likely to use informal sources of information found online and through friends.<sup>47,48</sup>

Young LGBTIQ+ people in Australia report they most commonly use a search engine or Wikipedia for information on mental health (74%), followed by friends (54%) and then online mental health services and/or information (51%).<sup>47</sup>

When websites are used, official health-branded websites are among the more-trusted sites of online information for young adults.<sup>45</sup> However, opinions on government-branded sites were more mixed, with some studies finding that less than a quarter of young adults would trust or use them for mental health information.<sup>45</sup>

Only small proportions of young LGBTIQ+ people used health services (22%) or family (19%).<sup>47</sup>

## 2.2 Messaging content preferred by young adults

There are inconsistent published findings regarding ‘what works’ when it comes to messages for young adults, with most authors drawing conclusions based on their own point of view.

For example, research from neuroscientists highlights that the inclusion of neuroscience evidence, such as brain imaging, might be useful in harm reduction campaigns.<sup>49</sup>

Research about general health messaging suggests that positive messaging (what can be gained from behaviour change), rather than negative messaging (what will be lost), is potentially more effective.<sup>50</sup> There is also some evidence that positive behaviour change messaging and positive psychology are more credible among older adolescents.<sup>49</sup>

The use of negative ‘scare tactics’ in public messaging around drug use has been common in Australia and internationally since the 1960s.<sup>51,52</sup> Researchers generally agree that negative ‘scare’ campaigns have limited - to no - impact on people already using drugs and can in some cases lead to greater drug use, greater stigma and discrimination, deterring help-seeking (see mass media information in the [Narrative Review](#)).<sup>51</sup>

A review of Australian drug education in schools found that harm reduction messaging for young adults in Australia has been framed as an escape from trauma, which inevitably ends in psychosis and paranoia.<sup>53</sup> For many young adults, these messages do not resonate with their experiences of taking illicit drugs<sup>53</sup>, particularly as they take illicit drugs for enjoyment, to have fun and to enhance experiences.<sup>1,54</sup>

Young adults have been found to want ‘real information on actual situations’ that is accessible, relevant and from a non-judgemental source. Where young adults do not trust the information provided to them or doubt its credibility, they are more likely to ignore it.<sup>3</sup>

Understanding young adult’s motivation for drug use and the role of drugs in pleasure seeking, opens up the possibility for creating relevant, realistic, targeted harm reduction policy and practice.<sup>49,50,55</sup> It can better incorporate practical and truthful information that helps young adults navigate drug-related harms.<sup>56</sup>

As noted by Rigg and Sharp, when discussing MDMA harm reduction:

*“With only ‘just say no’ messages available for consumption, individuals who decide to use MDMA are left with very little guidance on how to lower their risk of MRD [MDMA-Related Deaths] . . . In other words, users should be provided with the type of information that is most likely to keep them safe and alive if a decision to use MDMA is made.”<sup>56</sup>*

In developing any messaging campaign for young adults, the participation of young adults who use drugs is critical for creating relevant and authentic messages.<sup>57</sup>

Studies show that the best way to understand why young adults may or may not find drug use messaging effective is to ask them, and then find out what it is they need and want from drug education and information programs.<sup>3</sup>

Engaging young adults in messaging can also assist in creating appropriate messages for diverse groups of young people with respect to their social, political, geographic and cultural circumstances. Harm reduction messaging which reflects these differences:

*“. . . holds the potential to speak directly to the ways in which youth use and manage their use and thereby support resilience and may reduce the possibility of harms associated with substance use.”<sup>57</sup>*

Other – albeit very limited – studies from the United Kingdom suggest that messaging campaigns are more impactful when championed by respected, credible and influential community figures rather than the government or government agencies.<sup>58</sup>

Studies from Australia also suggest peer-led education among young adults is more credible.<sup>54</sup> Peer-led education is believed to be particularly important in settings where drug use is the norm, and where social influences and interactions contribute to the initiation of maintenance or problematic AOD use.<sup>49,59</sup>

Overall, the literature on AOD harm reduction messaging suggests it should be:

- positive
- truthful
- normative
- culturally and locally relevant
- informative
- action oriented.

The engagement of young adults in developing messages is critical to achieving this.

## 2.3 Mass media campaigns

Use of mass media campaigns in AOD harm reduction are common, with most focusing on preventing uptake or promoting abstinence, rather than reducing harms among people who use drugs.<sup>60</sup>

Reviews examining the evidence for mass media campaigns have found that they do not work in reducing drug use in the general population,<sup>61,62</sup> or in young people<sup>63</sup> and may actually increase the interest of young people wanting to use illicit drugs<sup>60</sup> and increase the number of young people who use drugs.<sup>62</sup> [For additional information see [Narrative Review](#)]

## 2.4 Targeted media campaigns

While mass media campaigns have often focussed on preventing the uptake of drugs in the general population, a number of community organisations and peer-led harm reduction services have delivered targeted information campaigns focussed on educating a core demographic of people who use drugs, to minimise risks.

These have generally comprised multi-media information campaigns, or providing educational information in locations where young adults are known to consume drugs, such as at clubs, bars and music festivals.

There is limited evidence on the impact of targeted multi-media campaigns on drug use due to a lack of studies in this area. Generally, however, drug harm reduction interventions targeted towards people who use drugs are more successful than universal campaigns [for additional information see [Narrative Review](#)].

## 2.5 Harm reduction information via recreational nightlife settings

Most of the literature on harm reduction responses delivered in recreational settings relate to alcohol, and related environmental policies such as limiting discounted drinks and opening hours.

There is little evidence available on targeted drug use interventions in these settings.<sup>64,65</sup> What is available suggests that reducing drug-related harm in recreational nightlife settings needs an integrated approach with a range of interventions employed at the level of user, staff, environment, stakeholders and the police.<sup>66,58</sup>

A systematic review of AOD prevention in nightlife settings found only two studies on independent information campaigns - one on alcohol and one on ecstasy and GHB which involved distributing leaflets and infocards to clubbers about drug effects, risks and harm reduction strategies.<sup>64</sup> This review, however, found very small impacts of the interventions on attitudes.

Provision of harm reduction materials alone is unlikely to be effective and should be integrated into a comprehensive response.<sup>66,67</sup>

It is difficult to draw any conclusion on the effectiveness and impact of independent information campaigns aimed at drug use.

## 2.6 Harm reduction information via peers

Peer-led interventions for at-risk youth have the potential to overcome stigma associated with help-seeking and allow harm reduction to occur in the relevant language of subcultures, making it more culturally relevant and relatable.<sup>59,68,69</sup>

Peers are also a more trusted and credible source than other authorities.<sup>69</sup>

Peer-organisations have attempted to diversify how information is delivered to young adults at clubs and music festivals.

For example, DanceWize NSW is a program by the NSW Users and Aids Association (NUAA) that produces credible information on reducing drug harms, safer partying and safer drug use.<sup>70</sup>

It distributes this information at music festivals through roving Key Peer Educators who are trained in welfare and peer support, and through fixed services such as chill out spaces.<sup>70,71</sup> Peer Educators are trained to assist and monitor distress and intoxicated patrons, provide substance-specific education and refer people on to medical services.<sup>71</sup>

Although there is no evaluation data available on the behavioural impacts of DanceWize NSW's initiatives, some information from an evaluation of a 2018 pilot reveals the reach of the program.

During the pilot, 80 Key Peer Educators provided services including first aid and advice and information to people about drug overdose, psychedelic/mental health crisis, psychopharmacology, sexual assault and risky drug-taking behaviour.<sup>71</sup>

They had 255 major care interventions, 4,421 peer-education interactions and 12,858 field interactions. Over 87% of care interactions were with young adults aged 18-29.<sup>71</sup>

Research on AOD-related harms supports the presence of onsite youth-led services positioned to provide outreach to young people:

*"The high prevalence of AOD use particularly among males and those attending electronic music festivals, indicates that there is a need for harm reduction services and interventions within festival settings."*<sup>72</sup>

The benefits to patrons of such services are described through descriptive case studies.

For instance, a peer-organisation run 'sanctuary' space at Canada's Shambala Music Festival provided non-medical peer support for overwhelmed guests. Patrons were able to take a break from dancing, get rehydrated and cool down without having to approach a medical tent for assistance, thereby making the services accessible for people who may otherwise avoid professional help. Over 1,000 people approached the sanctuary space during the five-day festival in 2014.<sup>73</sup>

There is, however, very limited evidence available on the impact of peer-distributed information on drug use.

One Australian study looking at the impact of peer-delivered information at music events in Australia on MDMA and methamphetamine use, found that people given a unique message on MDMA risks by peer educators were better able to recall the message immediately post intervention and three months later than those provided with usual information (control group).<sup>74</sup>

Those who received the peer-education, self-reported significant reductions in mean days of ecstasy and methamphetamine use, and recent use of methamphetamine, compared to the control group.<sup>74</sup>

A review of evidence of peer-led AOD education for at-risk youth by Hunt et al.<sup>59</sup> found a number of key components that had demonstrated effectiveness including:

- programs based on social influence and social learning theories<sup>xxiii</sup>
- programs selecting peer leaders based on the nomination of their peers, rather than selection by adults or volunteers
- programs where the peer leaders adopted the desired target behaviours associated with the intervention
- programs involving the target population in the development of the content.

<sup>xxiii</sup> Social influence/social learning theories look at how individual behaviours are influenced by or learned from others.



This review also noted the lack of Australian evidence on peer-led interventions for AOD use in at-risk youth and argued that this remains an important area to pursue in future research.<sup>59</sup>

Additional ‘in-place’ harm-reduction initiatives, including pill-testing and venue policies, have been suggested as a means to increase consumer knowledge and/or assist in timely distribution of information on harms for people who use drugs.

## 2.7 Harm reduction information via pill-testing services

Recently there has been a focus in Australia on the absence of drug-checking (pill-testing) services as a critical harm-reduction measure at music festivals and other sites of AOD risk.

Pill-testing services invite people to anonymously submit drug samples for analysis. A trained chemist then establishes whether the substance is: what the patron expected; different to what the patron expected; or, contains a dangerous or undocumented substance.

Advocates for pill testing emphasise that the wrap-around services provided at the point of drug checking, which includes counselling, education and motivational interviewing, are just as – or more – important than the actual substance testing.<sup>75-77</sup>

*“[Pill] checking is the ‘hook’ that engages users in conversations that promote health and prevent injury and illness.”<sup>73</sup>*

Information gained from pill testing sites on potentially adulterated substances have also been used to provide real-time harm reduction information, for instance through alert announcements at clubs or via the media.<sup>78</sup>

Although there is a reasonable amount of literature on pill checking services, evaluations are self-selecting (i.e. by pill-checking tent attendees) and mostly based on self-reported intentions, with limited measure of actual behaviour change (generally where drugs were disposed of following an intervention – but not all studies captured this).<sup>79,80</sup>

Such studies show overall good intentions, with many people disposing of drugs where harmful adulterants were found or indicating they would take their drugs in a different way, such as in smaller quantities or over a longer period of time.<sup>77</sup>

Studies have also found enthusiastic support for pill testing services from those who take MDMA – quite simply, they want these services.<sup>81,82</sup>

## 2.8 Harm reduction via environmental and policy approaches

A range of environmental and policy approaches to support greater harm reduction for people who use drugs in recreational settings are supported by guidelines and standards drawn up by the European Community ‘Club Health’ project and recommended by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) as being best practice.<sup>83</sup> Initiatives include addressing environmental risk factors such as provision of chill-out zones and free water.<sup>83</sup>

There has also been a call from advocates for the training and education of staff who work in the night-time economy on the reasons for drug use, the effects and risks of drug use, and how staff should respond to those risks.<sup>58</sup>

## 2.9 Digital provision of harm reduction interventions

A range of different digital mediums exist to promote harm reduction messages including websites, SMS (text messaging) interventions, apps, interactive games, social media and online peer support groups<sup>84</sup> (explored individually below).

These technologies have been employed as stand-alone methods of providing harm reduction services or integrated into broader harm reduction programs.

There are many perceived benefits of using online/digital interventions over face-to-face interactions for harm reduction, including the provision of anonymity where stigma may be a barrier, reach to geographically remote areas, 24-hour access and little to no cost.<sup>85</sup>

Overall, technologies have the potential to increase access to harm reduction interventions, reduce burden on face-to-face services and fill gaps in service delivery.<sup>86-88</sup>

Young adults are believed to be a good target for interventions that utilise technologies due to difficulties in engaging them in face-to-face services and because of their online presence.<sup>87,88</sup> Additionally, technological delivery of harm reduction is seen as relevant given that young adults predominantly use the internet to get information on drugs and a range of health and mental health issues, often through their phones.<sup>46,89</sup>

In Australia, the use of digital technologies in health and mental health harm reduction and treatment services has been encouraged<sup>90,87,91</sup>; however, the types of interventions provided vary greatly:

- passive information provision (e.g. messages on safer use)
- online assessment and screening tools
- brief interventions
- websites of peer-support
- more comprehensive treatment (e.g. online counselling).<sup>92</sup>

How these interventions are delivered also varies – some provide one-off sessions or passive access to a website, and others provide interventions over many sessions and many weeks or months.<sup>93</sup>

Systematic reviews studying digitally delivered harm reduction interventions have found mixed results.<sup>92,93</sup>

While a major concern of online/digital harm reduction initiatives is whether or not they are significantly different in outcomes compared to face-to-face delivery, there is very limited information comparing the two delivery mechanisms for young adults who use drugs. Given the lack of studies it is hard to draw any definite conclusions. Greater research in this area would be of benefit.

What is clear is that most digital harm reduction interventions, across alcohol, drugs and mental health, find benefits when compared to no intervention.

## 2.10 Website-based harm reduction interventions

There is limited quality evidence on the impact of internet-facilitated harm reduction interventions on alcohol and other drug use in Australia<sup>61</sup> and limited studies outside of school and university contexts. Given the paucity of data on drugs-related programs, data from mental health has also been included here.

What can be deduced from the available literature is that:

- Computer-based interventions for the prevention and management of illicit recreational drug use are more effective in reducing use in the immediate and mid-term when they are targeted at people who use recreational drugs, rather than being universal.<sup>94</sup>
- Online youth mental health and smoking interventions that perform best have some level of interactivity and engagement with a real person, either through online chat, face-to-face guidance, or follow-up telephone calls by health professionals.<sup>95, 96</sup>
- High attrition rates are an issue in online mental health programs (including information, screening, referral and treatment) targeted at young adults<sup>95</sup> – an issue also found in online interventions aimed at reducing illicit substance misuse among university students.<sup>97</sup> Researchers suggest that to be more effective, online interventions need to be tailored to individual need.<sup>63</sup>

A key area that is missing in the literature is the link between how young adults use the internet to find information on drugs and other issues (i.e. Google searches/social media) and how harm reduction organisations respond to this through their own online presence.

The research demonstrates that government branded websites are less trusted than peer-based websites and health websites<sup>45</sup> so, ensuring visibility in search returns for young adults Googling drug-related harm reduction information may be a good practical step to take.

## 2.11 Mobile phone/SMS harm reduction interventions

Three papers were found that reviewed existing evidence on the use of mobile phone text messaging in harm reduction in alcohol use in adults<sup>98</sup>, alcohol and tobacco use in adolescents<sup>86</sup>, and risky drinking patterns in university students.<sup>99</sup>

Each provided very broad findings and overall results were inconclusive. Some interventions reduced use, some had no impact (for additional information see [Narrative Review](#)).

As the systematic reviews included all forms of intervention (from provision of simple harm reduction messages to treatment), it is useful to look at evidence from just those interventions concerned with harm reduction messaging.

Although limited, it appears that elements of success in text-messaging harm reduction programs include:<sup>100-102</sup>

- the integration of peers in messaging and the roll-out of the program
- providing information tailored to individual need, and/or
- providing an interactive component such as time with a counsellor.

Two example studies of text messaging drug use harm reduction interventions (with groups other than university students) are below.

- **One small study in Australia**<sup>102</sup> signed up 700 young people, aged 12-26 years, at a town festival in Victoria to the Register and Get Educated (RAGE) program. Participants received 20 text messages over six months on harm reduction concerning different drug types. Texts were co-designed between a Youth Steering Committee (created especially for the project), project workers from a local harm reduction service and AOD counsellors. Surveyed participants said that messages were relevant, they gained new knowledge and some reported shifts in attitudes in relation to some drugs. However, the study did not attempt to capture impacts on use and there was no control group. Despite limitations, this study offers a potential case study in how to implement a co-designed, youth-specific drug harm reduction intervention via text message.
- **One US study**<sup>103</sup> on text messaging for men who have sex with men and use methamphetamine found significant decreases in frequency of methamphetamine use, and unprotected sex while using methamphetamine after the intervention (note: this study did not have a control group). Participants were actively recruited at gay venues and through community organisations. Participants were sent one to four texts per day with information on drug use and safe sex and they could text questions and chat in real time, via text, to online counsellor.

One other factor that may impact the effectiveness of text message interventions is the timing of implementation, especially where they can be used with people at point of crisis or who have reached out for assistance.

The 'Your Call' trial in Auckland, NZ, signed people into the program who presented at hospital with alcohol-related injuries. Participants received targeted text messages over four-weeks in the 7-10 days after being discharged from hospital.<sup>104</sup> The study found a significant reduction in hazardous drinking compared to control (usual care) group at three, six and 12 months after intervention but no differences in alcohol related harms and troubles. Potentially then, utilising a harm reduction text messaging intervention with young adults who have been hospitalised due to drug use may have some benefit.

## 2.12 App-based harm reduction interventions

There is limited evidence available on stand-alone mobile phone apps as a drug harm reduction intervention, with apps generally integrated into broader multi-media initiatives.

One study in Italy used a mobile e-health smartphone application (D-ARIANNA) for binge-drinking targeted at students (18-24 years, n=590).<sup>105</sup> D-ARIANNA acted as a risk screening and information tool. Personalised feedback on the level of risk associated with drinking was provided and participants reported a reduction in binge drinking.<sup>105</sup>

The Australian website/blog: 'Hello Sunday Morning', utilised an in-phone app called 'Daybreak' to provide broader support to people wanting to stop drinking or reduce their alcohol intake. The Daybreak app, aimed at people aged 18+ years, asks people to sign up to a three-month abstinence program, set goals and record their reflections and progress on Hello Sunday Morning blogs and social networks, with other participants able to comment and 'like' posts.<sup>106</sup> Participants were mostly those with hazardous or high-risk drinking. Four months after the program, significant decreases in alcohol consumption were found, although factors influencing success rates appeared to be engagement with community and access to peer support, rather than harm reduction education.<sup>106</sup> Providing access to an online professional clinical component (access to trained clinicians via smartphone chat) was found to further improve outcomes.<sup>107</sup>

Given the illegal nature of drug consumption, it is not clear if apps that require either inputting information about drug use or discussing drug use online would be spaces where young adults who use drugs would feel safe and confident to share information.

A small study (n=21) looking at the priorities of young people (aged 16-21) in using social media to give and receive support for mental health issues found that trust and privacy (through private accounts and groups) and trusting peer relationships were key.<sup>108</sup>

## 2.13 Gaming-based harm reduction interventions

There is a small but promising evidence base on the impact of serious educational online games in reducing harm from alcohol and other drugs.<sup>61</sup>

Trials of games aimed at improving partygoer's awareness of the risks related to psychoactive substances<sup>109,110</sup>, found that self-reported awareness of risks increased after completing the game both in a nightlife setting and in a laboratory setting.

A study comparing the effectiveness of a harm reduction game versus an information leaflet with young adults at nightclubs in Italy (average age 23.53, n=136, not screened for drug use) did not find a significance in difference between the mode of delivery.<sup>110</sup>

## 2.14 University interventions

The majority of AOD harm reduction studies undertaken in university settings focus on reducing alcohol consumption. Most require targeted recruitment strategies to engage students and are not mandatory.

Looking at studies that target university students, results are variable with low evidence that on-campus programs are successful in reducing smoking and drug use, due to fewer quality studies available<sup>111</sup> (for additional information see [Narrative Review](#)).

Looking at programs concerning illicit drugs only, there are some studies with university students on the content of these interventions but, as noted, limited evidence on the impact of the programs themselves.

A systematic review of eight studies on e-interventions among university students for illicit substance use harm<sup>97</sup> found only two that reported a significant reduction in drug use.

The types of interventions in the review were varied across the studies.

Most used personalised feedback, providing participants with information on health, costs of substance misuse, and tips to decrease use in a short (20 to 45 minute) session and were designed to prompt self-reflection and consideration of decreased use.

Two studies used self-affirmation theory, where participants were asked to select their most important personal values and identify opportunities to act on their intentions. Participants received messages based on their selected values.

A third program used social cognitive theory and was delivered two to four times a week over four weeks, as part of a six-month life-skills training program.<sup>97</sup> This program comprised observational learning, facilitation and self-regulation.

A final study in the systematic review had participants completing the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) followed by a brief interview.

Overall, the quality of studies in the systematic review were poor.

Of the five studies that reported any positive outcome (including reduction in use, reduction in negative consequences from drug use and/or attitudinal changes), four used personalised feedback and the other delivered the ASSIST questionnaire. Interaction and engagement was found to be an issue with many of the interventions, with people not completing online activities and high rates of attrition.<sup>97</sup>

The review concluded that e-interventions for student illicit drug use have potential, but more needs to be known about the process of study design to ensure messaging is relevant, engaging and the intervention acceptable to the target population.<sup>97</sup>

A systematic review of ‘user-centred design’ practices in the development of illicit substance use interventions in higher-education found “limited consideration of end user experience and minimal engagement of UCD [user-centred design] practices”<sup>112</sup> that had impacted program effectiveness and sustainability.

Later work, by the same authors, on the development of a protocol for digitally delivered harm reduction for students in higher education, suggests programs adopt processes that include end users (target group) in all stages of development from design to evaluation.<sup>113</sup>

They also noted that given the illegal status of substance use, it cannot be assumed that those interventions evaluated as successful/effective for alcohol and tobacco will be effective for illicit drugs, so different approaches to harm reduction interventions may be needed.<sup>97</sup>

## **2.15 TAFE, trainee and workplace interventions**

Workplaces have been identified as a site for possible interventions to address AOD use and other health issues, given that most people spend large amounts of time at them.<sup>114</sup>

Young adults transitioning to workplaces are particularly vulnerable: pressures exist for young workers to ‘fit in’ to workplace cultures, including those that involve high levels of risky AOD use.<sup>26</sup>

Workplace cultures, policies and environments, stress, bullying and other psychosocial factors can have significant impacts on workers’ physical and mental health, with poor workplace environments found to lead to higher rates of substance use.<sup>25</sup>

Industries in Australia with higher levels of alcohol and other drug use, risky drug use and lower levels of mental health are predominantly male-dominated blue-collar industries.<sup>20-23</sup>

Apprentices in these industries are found to be particularly vulnerable to workplace bullying and endure poorer working conditions than older counterparts, such as long hours, low wages and job insecurity, with little power and control.<sup>115</sup>

Where studies have been undertaken in construction and cooking industries, apprentices have been found to have high levels of risky drinking<sup>24</sup> and high to very high levels of AOD use<sup>25</sup>, including higher proportions of people using methamphetamine and cannabis than other people their age.<sup>26</sup>

Despite this, there is limited research on AOD harm reduction interventions aimed at trainees. No systematic reviews were found. Three relevant studies were found, all from Australia, with two from the National Centre on Education and Training on Addiction (NCETA).

## 2.16 Harm reduction intervention targeted at trainees/apprentices

In two Australian studies<sup>22,26</sup>, interventions to reduce substance use and increase wellbeing were evaluated in apprentice chefs and tradesmen trainees (both groups aged under 24 years), with both interventions run through TAFE and voluntary.

In the interventions with trainee chefs<sup>22</sup>, participants received either two brief face-to-face psychological wellbeing and substance use sessions (1×1hr and 1×2hr session) as well as five related information sheets, or only the information sheets.

The first face-to-face session focused on enhancing coping and communication skills, including practical exercises for stress reduction and alternative coping strategies (e.g. talking to co-workers and supervisors about work-related issues).

The second session focussed on understanding and reducing AOD-related harm and risks.

The study found improvement in the intervention group in psychological wellbeing, including dealing with stress and coping with verbal abuse - all factors that reduce risk of AOD harm.<sup>22</sup> However, there was only a limited impact on alcohol consumption rates.<sup>22</sup>

The intervention with carpentry apprentices<sup>20</sup> used a similar program, with the intervention group receiving the same face-to-face psychosocial sessions and 'usual treatment' (information sheets on mental health and AOD use delivered as part of the normal TAFE orientation process) or receiving the information only. This evaluation found no effect on either group on all measured outcomes.<sup>26</sup>

Despite the two studies using an almost identical program, differences in results can partly be accounted for by method differences (the second study did not have good follow-up rates), and also context.

The first study took place among apprentice chefs and program content was tailored to the needs of the workforce, determined by pre-research in the industry including focus groups and stakeholder interviews.<sup>22</sup> The second study of carpentry apprentices just used the exact same apprentice chef program.<sup>26</sup>

Tailored interventions that acknowledge different workplace cultures and needs are likely to be more successful than those that assume the needs of young trainees are homogenous (despite any similar characteristics such as presence of high levels of AOD use).

## 2.17 General literature on workplace harm reduction initiatives

Overall, most studies on workplace interventions are concerned with alcohol consumption rather than drug use, with many focussed on the use of mandatory AOD testing and Employment Assistance Programs (work-provided access to counselling).<sup>61</sup>

Studies on different workplace interventions regarding AOD use show mixed results.

A US evaluation of the impact of the PREVENT program on alcohol use and smoking among young adults (aged 18–29) in the railroad industry found significant decreases in drinking post-intervention, compared to workers who were not in the program. There was no difference in rates of smoking, however.

PREVENT is a two-day health promotion program that uses interactive teaching methods (i.e. group discussion, motivational interviewing and classroom activities). Participants are compensated on full pay to participate in the program.<sup>116</sup>

Given the mixed results from different workplace interventions, researchers suggests that successful implementation of workplace harm reduction initiatives addressing alcohol and other drug use should include co-design in addressing gaps, needs and in designing best mode of implementation.<sup>117</sup>

Literature from mental health and psychology investigates how best to improve mental health and workplace resilience in individuals through different psychological approaches.<sup>118</sup>



The focus of this literature is more on the psychological approach (such as Cognitive Behavioural Therapy) used by workplace interventions.<sup>119,120</sup> However, given the many structural factors that contribute to workplace stress and AOD use, some argue that programs need to move beyond individual interventions to address systemic workforce and labour market regulation in order to address AOD harms.<sup>115</sup>

Roche et al. suggest that top-down approaches are needed to implement workplace cultural change and address stigma around AOD use, with raising management awareness of AOD issues the first step.<sup>25</sup>

## 2.18 Summary of key findings from Section 2

There is limited evidence on the impact of many harm-reduction interventions targeted to young adults who use drugs due to a lack of program evaluations.

The evidence base, however, is strong on the role of peer-based educators as a preferred and trusted source of information among young adults.

There is also clear and measured demand and use of peer-provided harm reduction services in music festivals and clubs, such as chill-out spaces and pill-testing facilities.

Although not harm reduction information/messaging per se, there is clearly a role for peer organisations to engage in policy debates and advocacy where licensing and other restrictions prevent the distribution of harm reduction information and services to people who use drugs.

A major finding across all harm reduction interventions aimed at young adults who use drugs is that they must be involved in co-designing the interventions in order for them to be relevant, credible, properly targeted, engaging and acceptable to the target population.

There is also a strong evidence base to support the role of peers in delivery of harm reduction messaging, as they are a more trusted, preferred and credible source of information than, for instance, government officials.

Funding for future evaluations of targeted community and peer-led harm reduction campaigns is needed, and a worthy investment considering the amount of funds going towards mass media campaigns which are evidenced to have little impact<sup>xxiv</sup>.

Outside of targeted programs, most young adults search for information online via Google searches and trust peer and health organisations above government sources. Therefore, strategies to improve search engine optimisation of peer harm reduction organisations is worthy of investigation.

In nightlife settings, harm reduction information campaigns and initiatives may be hampered where a 'zero-tolerance' approach is taken by venue owners.

Broader policy approaches may be needed to address barriers to implementing effective harm reduction programs as well as peer-provided services that have clear and measured demand, such as chill-out spaces and pill-testing facilities.

There is also clearly a role for peer organisations to engage in policy debates and advocacy where licensing and other restrictions prevent the distribution of harm reduction information and services to young adults who use drugs.

Most interventions regardless of the place or mode (e.g. school or work, text or face-to-face) work better when there is some interaction with a trained professional and where information is personalised and tailored to individual need. In workplaces, this includes creating programs specifically for industries, taking account of unique structural and cultural issues and the needs of young workers.

<sup>xxiv</sup> La Trobe University has been working with a number of community and peer-led organisations on the W3 project: 'What works and why?' in order to develop evaluation and monitoring framework for peer-organisations working in HIV and hepatitis C. It is hoped that this can improve knowledge on program effectiveness which in turn can be used to improve organisational influence within the community and policy environments. This will potentially be a good resource for other peer-based organisations to help develop the evidence base of interventions: <http://www.w3project.org.au/>

It is not entirely clear if face-to-face harm reduction interventions work better with young adults than digital interventions. The research with young adults in mental health and alcohol suggest not.

What is clear is that digital innovations have a lot of promise in reaching stigmatised, marginalised and remote communities and that extending digital drug harm reduction information/education and services to young adults makes sense given their online presence and mobile phone use. There may also be opportunities to engage young adults with digital interventions at particular points of crisis, such as after a drug-related hospitalisation.

Although there are a range of successful online interventions for alcohol use and mental health, more work is needed to develop relevant online/digital interventions for young adults who use illicit drugs, as the illegal nature of substance use means that it is not clear initiatives will translate across. The involvement of peers in developing appropriate technological channels is again critical to ensure they are properly targeted and relevant.

In terms of location-based harm reduction interventions, the success of workplace initiatives is mixed, with limited studies on trainees and most studies concerned with alcohol are not age limited.

Individual harm reduction messaging and programs (e.g. that help build resilience and help-seeking) may only go so far in industries where high AOD use is a product of broader socio-cultural and industrial issues. In these contexts, harm reduction programs may work better when they are integrated into broader workplace reform, involving senior staff (managers and supervisors), and seeking to improve basic working conditions.

# Recommendations for harm reduction efforts for young adults

## 3.1 Existing opportunities for young adult harm reduction

Patterns of illicit drug use highlighted in this report indicate opportunities to target specific drugs, cohorts or settings including:

- high-risk subgroups (young adult males, trainees and apprentices, LGBTIQ+ young adults)
- high-risk drug types (ecstasy, cocaine and methamphetamine)
- high-risk drug behaviours (polydrug use, Party and Play/chemsex)
- high-risk venues (nightclubs, bars and music festivals).

Of course, many of these high-risk areas overlap which can make it easier to focus efforts at targeted demographic groups to address multiple issues.

Based on information gathered in this report, harm reduction efforts to two demographic subgroups are recommended – young adult males and LGBTIQ+ young adults.

## 3.2 Young adult males

Young males are a clear target for harm reduction messaging given they represent the higher proportion of people who use drugs overall and across each drug type, and have led the increase in recent drug use between 2016 and 2019.

There are multiple reasons to engage young adult men in harm reduction, including:

- high drug use overall, especially noting the significant increases in cocaine, ecstasy and ketamine use
- high risk of drug-related hospitalisations (men aged 20-29) – almost 50% higher than women – from using high-risk drug types, high doses and polydrug use
- high drug use and risky drug behaviours by trainees/apprentices in male-dominated industries (construction and commercial cooking).

### 3.3 LGBTIQ+ people

Young LGBTIQ+ people are another potential target audience for harm reduction messaging. There are multiple reasons to engage them in harm reduction, including:

- higher than average use of drugs for non-medical purposes
- participate in Party and Play/chemsex with its associated harms – from high-risk drug type and consumption behaviour (polydrug use) with risky sexual practices and risk of blood-borne virus transmission
- use of unreliable online AOD information sources as an alternative to health services which are avoided due to previous experiences or expectations of discrimination.

The literature shows that identifying core demographics or subgroups for targeted campaigns is more effective than broader ‘one-size-fits-all’ approaches.

The best chance of success comes from understanding the knowledge, attitudes, beliefs and behaviours of the target audience so that messaging can be framed to reflect and address their needs.

This can be achieved through formative research with young adult representatives to provide direction on the campaign focus, delivery channel/s, setting and content development, ensuring harm reduction messaging is relevant, credible and acceptable to the target audience.

Another option may be to identify existing peer and community organisations currently working with young adult males or LGBTIQ+ young adults and help them develop evaluation measures to detail the efficacy of their harm reduction programs. Noting the many gaps in the evidence highlighted in this Report, evaluations of harm reduction campaigns are desperately needed in order to build an evidence base.

### 3.4 Key elements of effective messaging for young adults

From the existing evidence, several key components stand out as being integral to harm reduction messaging aimed at young adults.

- Young adults must be involved in co-design to ensure harm reduction messages are relevant, engaging and accepted. When these activities are carried out in the language of subcultures and delivered through peers, the messaging becomes culturally relevant, trusted, and credible. These types of peer-led processes have the potential to help overcome stigma that can be associated with help-seeking.
- Messaging should incorporate real information on actual situations, be non-judgemental, and relatable to young adult experiences with reasons for drug taking included (e.g. for fun and pleasure seeking).
- Recognising young adults as a non-homogenous group is critical. Young adults are made up of diverse and complex subgroups with different social, political, geographic, and cultural backgrounds and needs.
- For specific industries or social groups where frequent, heavy, or high-risk drug use is the norm, use targeted messages that recognise the environment, social influencers, pressures, and interactions that contribute to drug use.
- Most harm reduction campaigns, regardless of the place or mode (festival, workplace, digital or face-to-face), are more effective when they include some level of interaction with a real person – either face-to-face or online.
- Targeted harm reduction efforts can be aimed at venues with increased ecstasy and cocaine use, such as night clubs, bars, parties, and music festivals.
- Digital technologies have a lot of potential for drug harm reduction efforts aimed at young adults as stand-alone methods of providing harm reduction services or integrated into broader programs. Smartphone apps and web-based services offer:
  - anonymity, where stigma may be a barrier
  - reach to rural and remote areas
  - 24-hour access
  - screening and assessment tools at a low cost.

Overall, the literature on harm reduction messaging tells us that harm reduction communications should be positive, truthful, culturally and locally relevant, informative and action oriented.

The engagement of young adults in co-designing harm reduction efforts is critical to achieving this.

### 3.5 Options for future research

This report has revealed a number of gaps in the data regarding drug use among young adults aged 18-25 years.

They are the age group most likely to have recently (in the past 12 months) consumed an illicit substance and therefore there is merit in further detailed research being conducted on young adult drug use in Australia.

Specific areas that currently lack age-specific data and are worthy of future investigation include:

- drug-related hospitalisations for people aged 18-25
- the use of pharmaceutical opioids and barbiturates/benzodiazepines. These are the leading cause of drug-related deaths in young people (aged 15-24), yet there is no age-relevant data in the NDSHS about their use. Further research is needed to understand the use of pharmaceutical drugs in this age group (e.g. intentional/unintentional overdose; use in conjunction with stimulants to 'come down'; etc.) and their relationship to drug-related hospitalisations and potential areas of harm reduction
- young adults residing in institutions (e.g. homeless shelters, FOYERS and other assisted living), who are homeless or incarcerated. Research shows they are one of the most vulnerable populations, yet they are not represented in the NDSHS data
- detailed information on frequency of drug use and dosing. This could help tailor harm reduction messaging to areas of highest risk
- drug use among young LGBTIQ+ populations. Existing regular survey data – Following Lives Undergoing Change (Flux), and the Gay Community Periodic Survey (GCPS) only survey adult gay and bisexual men and do not have detailed age-segmented data. Other youth LGBTIQ surveys provide some information on drug use, albeit fairly limited. The NDSHS is also limited given that sex is defined by male and female only with no option to record 'other', or different genders (as now recommended by the ABS).<sup>121</sup> LGBTIQ+ people are identified as a priority population by the AIHW and are more likely to engage in risky drug use practices and experience harm. Understanding more about drug use practice and harms among LGBTIQ+ young adults therefore has merit.

Additional areas that currently lack data and could benefit from increased research include:

- young adult-specific information on places where drugs are consumed
- detailed information on types of drugs used by young adults in the ACT, Tasmania and the NT
- exploring the extent of injecting drug use in young adults.

This Report has also highlighted the limited evidence available on the impact of drug harm reduction programs, services and campaigns targeting young adults.

While peer and community organisations do an enormous amount of work in drug harm reduction, there has been little research in this area. Evaluation of peer-led harm reduction communications is needed to ensure future campaigns and activities are designed using a well-developed evidence base.

There is also a strong need to better understand the most effective way to deliver harm reduction messages to young adults, and the opportunities that technology may, or may not, offer.

# 1 Appendices

## Appendix A: NDSHS 2019 data on numbers of young adults who use drugs

**Table A1: Number of young adults (aged 18-24) who have ever used an illicit drug (NDSHS 2019)**

|         | 2001      | 2004      | 2017    | 2010      | 2013      | 2016      | 2019      |
|---------|-----------|-----------|---------|-----------|-----------|-----------|-----------|
| Males   | 600,000   | 500,000   | 500,000 | 500,000   | 500,000   | 500,000   | 600,000   |
| Females | 500,000   | 500,000   | 400,000 | 500,000   | 500,000   | 500,000   | 500,000   |
| All     | 1,100,000 | 1,000,000 | 900,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,100,000 |

**Table A2: Number of young adults (aged 18-24) who have used an illicit drug in the past 12 months (NDSHS 2019)**

|         | 2004    | 2007    | 2010    | 2013    | 2016    | 2019    |
|---------|---------|---------|---------|---------|---------|---------|
| Males   | 400,000 | 300,000 | 300,000 | 400,000 | 300,000 | 400,000 |
| Females | 300,000 | 200,000 | 300,000 | 300,000 | 300,000 | 300,000 |
| All     | 600,000 | 500,000 | 600,000 | 600,000 | 600,000 | 700,000 |

**Table A3: NDSHS 2019 data on the number of 18-24-year-olds in Australia who used illicit drugs in last 12 months by drug type and sex (over time)**

|                         | 2001    | 2004    | 2017    | 2010    | 2013    | 2016    | 2019    |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|
| <b>Cannabis</b>         |         |         |         |         |         |         |         |
| Male                    | 400,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 400,000 |
| Female                  | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 |
| Cannabis all            | 600,000 | 500,000 | 400,000 | 500,000 | 500,000 | 500,000 | 600,000 |
| <b>Cocaine</b>          |         |         |         |         |         |         |         |
| Male                    | 50,000  | 30,000  | 60,000  | 70,000  | 60,000  | 70,000  | 200,000 |
| Female                  | 30,000  | 20,000  | 30,000  | 50,000  | 40,000  | 50,000  | 90,000  |
| Cocaine all             | 80,000  | 50,000  | 90,000  | 100,000 | 100,000 | 100,000 | 300,000 |
| <b>Ecstasy</b>          |         |         |         |         |         |         |         |
| Male                    | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 90,000  | 200,000 |
| Female                  | 90,000  | 100,000 | 100,000 | 90,000  | 90,000  | 100,000 | 100,000 |
| Ecstasy all             | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 300,000 |
| <b>Meth/amphetamine</b> |         |         |         |         |         |         |         |
| Male                    | 100,000 | 100,000 | 70,000  | 60,000  | 60,000  | 30,000  | 40,000  |
| Female                  | 100,000 | 100,000 | 40,000  | 50,000  | 40,000  | 20,000  | <10,000 |
| Meth/amphetamine all    | 200,000 | 200,000 | 100,000 | 100,000 | 100,000 | 50,000  | 50,000  |
| Any opioid all*         |         |         |         |         |         | 108,000 | 95,000  |
| Hallucinogens all*      |         |         |         | 127,000 | 111,000 | 84,000  | 118,000 |
| Ketamine all*           |         |         |         | 16,000  | 16,000  | 36,000  | 93,000  |

Note that NDSHS data provided for young adult cannabis, cocaine, ecstasy and meth/amphetamine only and provided in rounded numbers

\*Data numbers for opioids, hallucinogens and ketamine calculated using ABS data and rounded to nearest thousand. ABS data only available from 2010 onwards. NDSHS data on 'any opioid' only comparable for 2016 and 2019.



## Appendix B: NDSHS 2019 data on frequency of drug use

**Table B1: Frequency of drug use, reported by people aged 14-19 and 20-29, who have used drugs in the past 12 months (NDSHS, 2019)**

| Frequency of drug use        | 14-19 |        | 20-29 |         | 14-29   |
|------------------------------|-------|--------|-------|---------|---------|
| Cannabis                     | %     | #s     | %     | #s      | #s      |
| Every day                    | *45   | 9,800  | 12    | 105,300 | 115,000 |
| Once a week or more          | 26    | 51,800 | 21    | 192,600 | 244,000 |
| About once a month           | 17    | 33,200 | 15    | 132,300 | 166,000 |
| Every few months             | 24    | 47,800 | 18    | 163,800 | 212,000 |
| Once or twice a year         | 29    | 57,600 | 34    | 306,000 | 364,000 |
| <b>Ecstasy</b>               |       |        |       |         |         |
| At least once a month        | *25   | 17,150 | 21    | 85,600  | 103,000 |
| Every few months             | *29   | 20,300 | 38    | 151,200 | 172,000 |
| Once or twice a year         | 47    | 32,550 | 41    | 163,600 | 196,000 |
| <b>Meth/amphetamines</b>     |       |        |       |         |         |
| At least once a week or more | n.p.  | n.p.   | *19   | 16,830  | n.p.    |
| About once a month           | **39  | 7,700  | *10   | 8,640   | 16,000  |
| Every few months             | n.p.  | n.p.   | *26   | 23,040  |         |
| Once or twice a year         | *53   | 10,660 | 46    | 41,490  | 52,000  |
| <b>Cocaine</b>               |       |        |       |         |         |
| At least once a month        | n.p.  | n.p.   | 20    | 78,800  | n.p.    |
| Every few months             | *29   | 11,680 | 31    | 124,000 | 136,000 |
| Once or twice a year         | 67    | 26,960 | 49    | 197,600 | 225,000 |

\* Estimate has a relative standard error of 25% to 50% and should be used with caution

\*\* Estimate has a high level of sampling error (relative standard error of 51% to 90%), meaning that it is unsuitable for most uses.

n.p. not published because of small numbers, confidentiality or other concerns about the quality of the data.

Proportion shown is against total number of people who have used each drug type

**Table B2:** Frequency of drug use, reported by proportion of people aged 14-29, who have used drugs in the past 12 months against the total population of 14-29-year-olds in Australia (NDSHS, 2019)

| Frequency of drug use                   | People aged 14-29 |  |                                  |
|---|-------------------|--|----------------------------------|
|   | #s                | % who used drug type in past 12 months | % of total population aged 14-29 |
| <b>Cannabis</b>                         |                   |  |                                  |
| Every day                               | 115,000           | 11                                     | 2                                |
| Once a week or more                     | 244,000           | 22                                     | 5                                |
| About once a month                      | 166,000           | 15                                     | 3                                |
| Cannabis total frequent use             | 525,000           | 48                                     | 10                               |
| Cannabis all use past 12 months         | 1,100,000         | 100                                    |                                  |
| <b>Ecstasy</b>                          |                   |  |                                  |
| At least once a month                   | 103,000           | 22                                     | 2                                |
| Ecstasy all use past 12 months          | 470,000           | 100.0                                  |                                  |
| <b>Meth/amphetamines</b>                |                   |  |                                  |
| At least once a week or more            | 17,000            | 15                                     | <1                               |
| About once a month                      | 16,000            | 15                                     | <1                               |
| Meth/amphetamines total frequent use    | 33,000            | 30                                     | 1                                |
| Meth/amphetamine all use past 12 months | 110,000           | 100                                    |                                  |
| <b>Cocaine</b>                          |                   |  |                                  |
| At least once a month                   | 78,800            | 18                                     | 2                                |
| Cocaine all use past 12 months          | 440000            | 100                                    |                                  |

## Appendix C: NDSHS 2019 data on forms of drugs taken

Some NDSHS classifications of drugs (such as meth/amphetamine) combine different drug types such as methamphetamine ('ice') and amphetamine ('speed'). Some of these drug types have very different risk profiles, therefore it is useful to examine the prevalence of different forms of drugs used. NDSHS provides breakdown of forms used for:

- cocaine - all people aged over 14
- meth/amphetamine - all people aged over 14
- 'Any opioid' - all people aged over 14
- Hallucinogens broken down by age bracket, including 18-24-year-olds.

Of note is the overwhelming majority of all people who use 'any opioid' in Australia during 2019 (96%) are in fact, 'misusing' opiate painkillers (compared to 10% of people who used heroin).

**Table C1: NDSHS data on main forms of drugs used by drug type among people aged 14 and over who have recently (past 12 months) used drugs, 2019**

| Drug type and form                                 | Proportion |
|--|------------|
| <b>Cocaine</b>                                     |            |
| Cocaine powder                                     | 99         |
| Crack cocaine (smokeable crystal)                  | ** <1      |
| Other  | **1        |
| <b>Meth/amphetamine</b>                            |            |
| Powder/speed                                       | 20         |
| Liquid   | —          |
| Crystal, ice                                       | 50         |
| Base/paste/pure                                    | **1        |
| Tablet   | *10        |
| Prescription amphetamines for non-medical purposes | 14         |
| Capsules   | *5         |
| Other  | n.p.       |
| <b>Opioids</b>                                     |            |
| Pain-killers/pain-relievers and opioids(a,b)       | 96         |
| Methadone or Buprenorphine(a)                      | 5          |
| Heroin   | *3         |

\* Estimate has a relative standard error of 25% to 50% and should be used with caution.

\*\* Estimate has a high level of sampling error (relative standard error of 51% to 90%), meaning that it is unsuitable for most uses.

n.p. not published because of small numbers, confidentiality, or other concerns about the quality of the data.

(a) For non-medical purposes.

(b) Excludes over-the-counter medications such as paracetamol and aspirin.

**Table C2: Forms of hallucinogens used by people aged 18-24 amongst those who have recently (past 12 months) used hallucinogens, 2019**

| Age group (years) | LSD/acid/tabs | Mushrooms/psilocybin | Other |
|-------------------|---------------|----------------------|-------|
| 18-24             | 76            | 68                   | *25   |

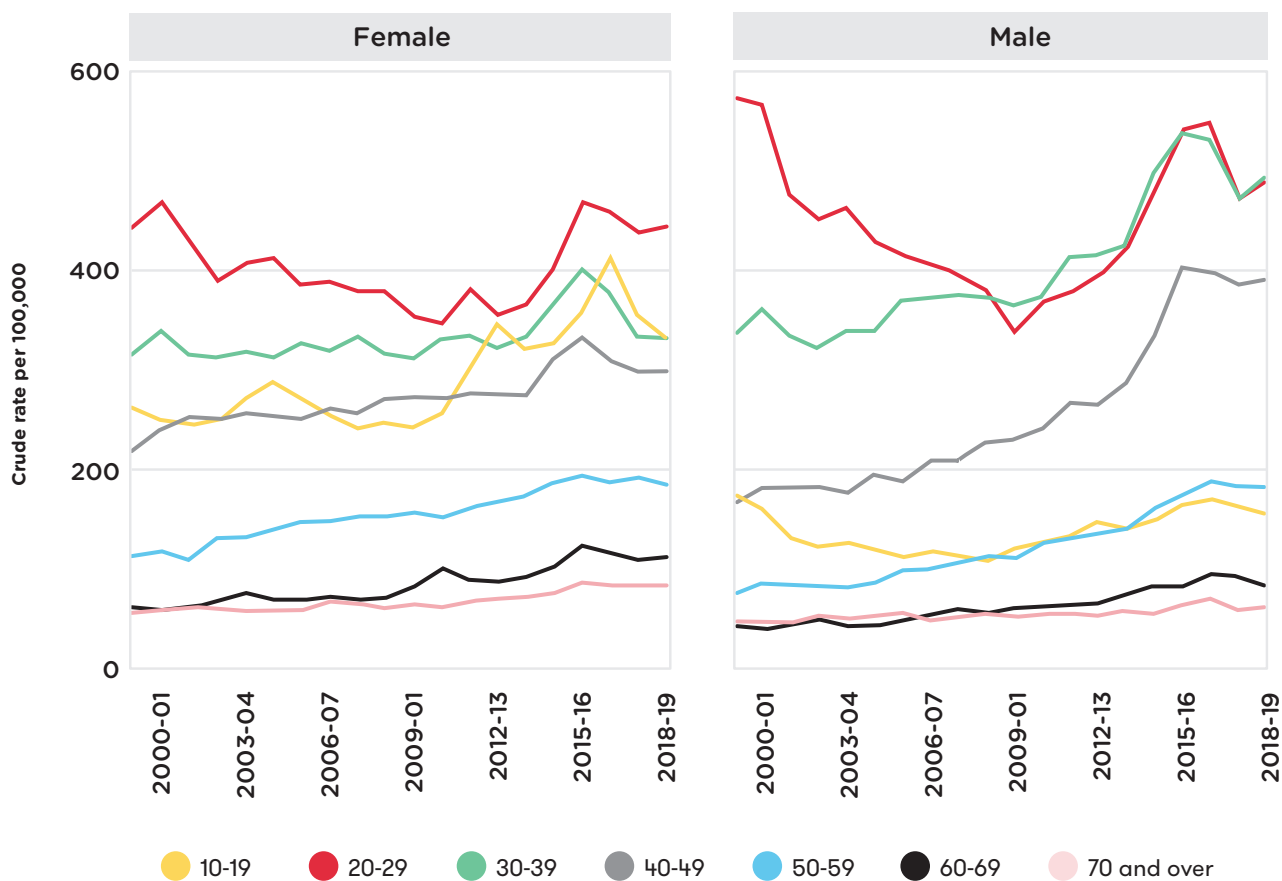
## Appendix D: Drug-related deaths and hospitalisation data from NDARC drug trends

**Table D1: Rate (per 100,000 people) of drug-induced deaths for Australian males and females, by age group 1999-2019 from NDARC Drug Trends<sup>18</sup>**

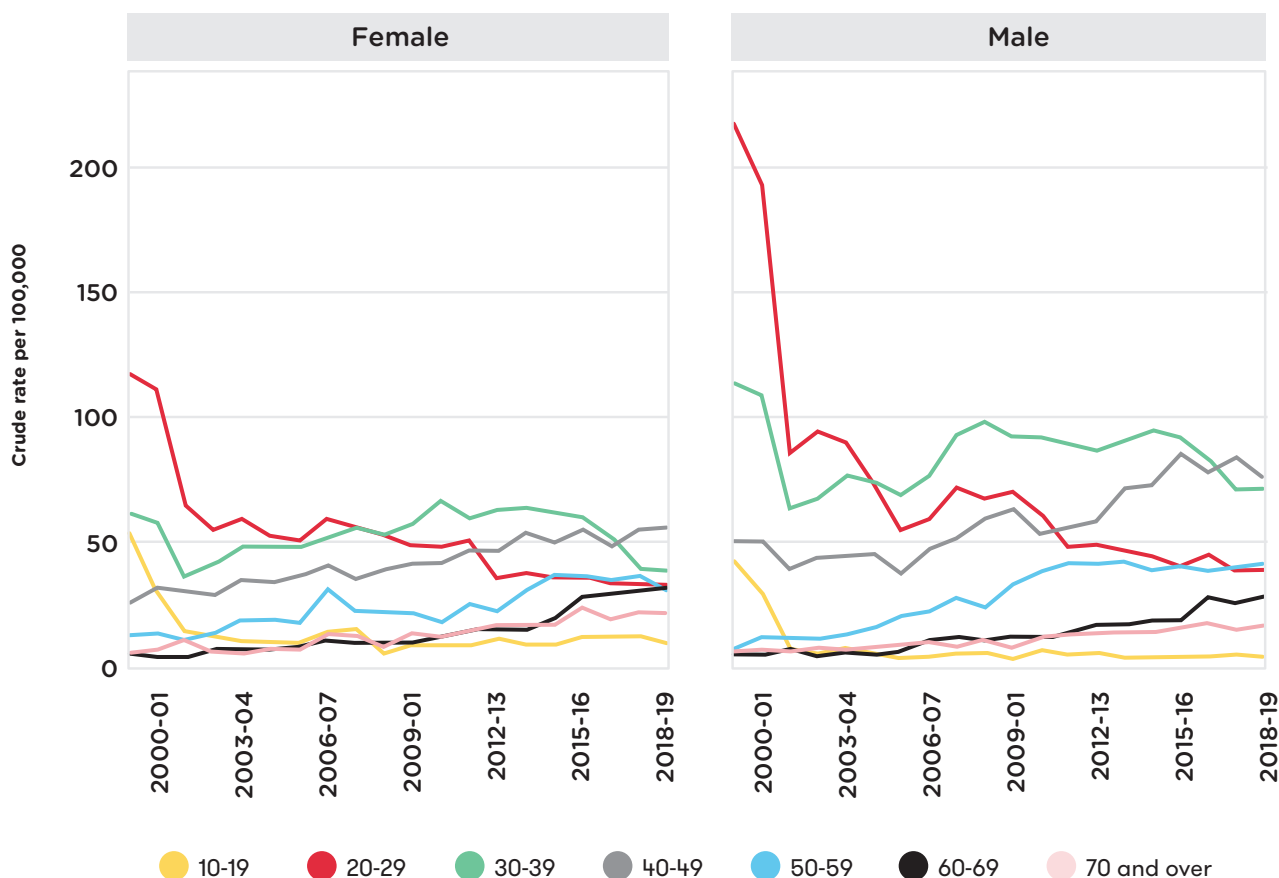
All data below sourced from NDARC Drug Trends<sup>19</sup>.



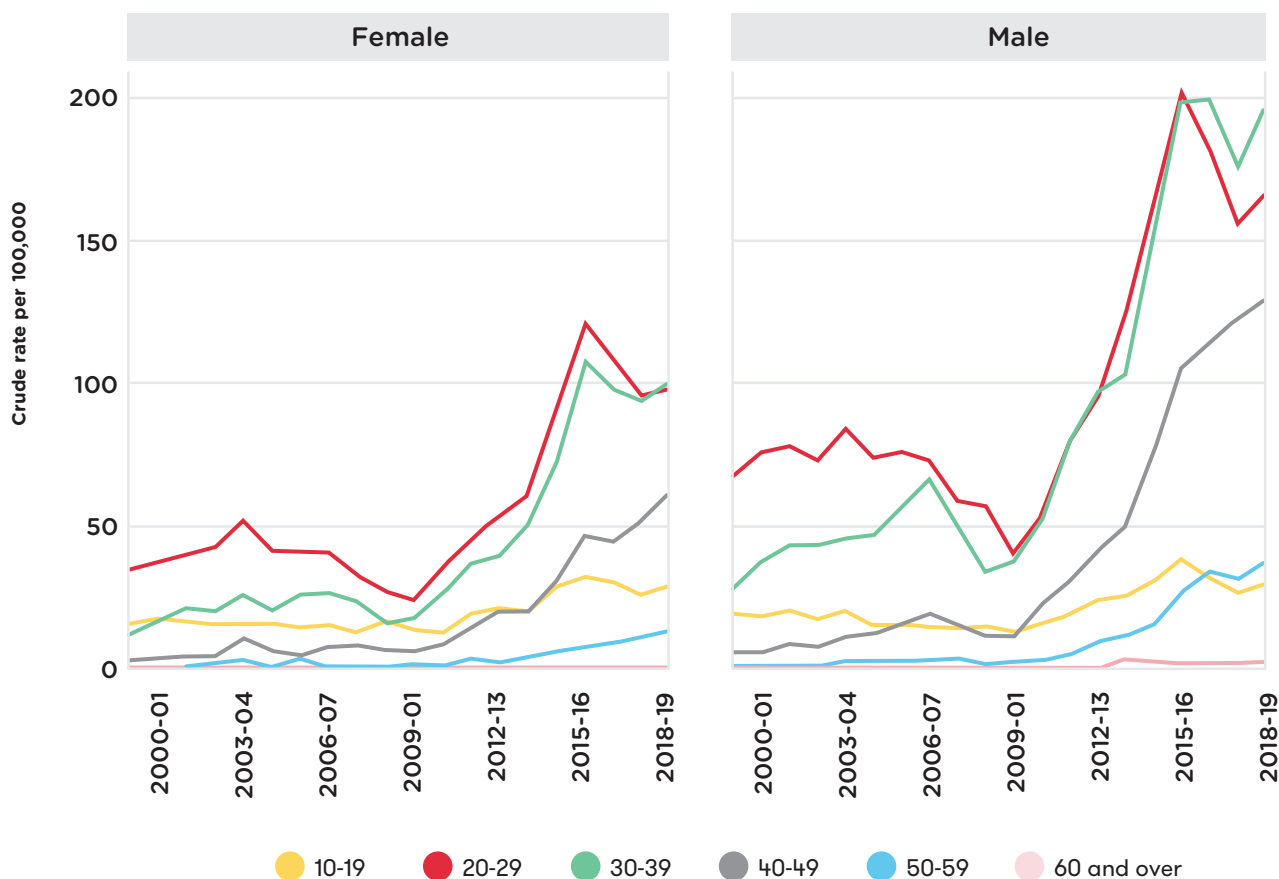
**Table D2: Crude rate (per 100,000) of drug related hospitalisations by age group and sex**



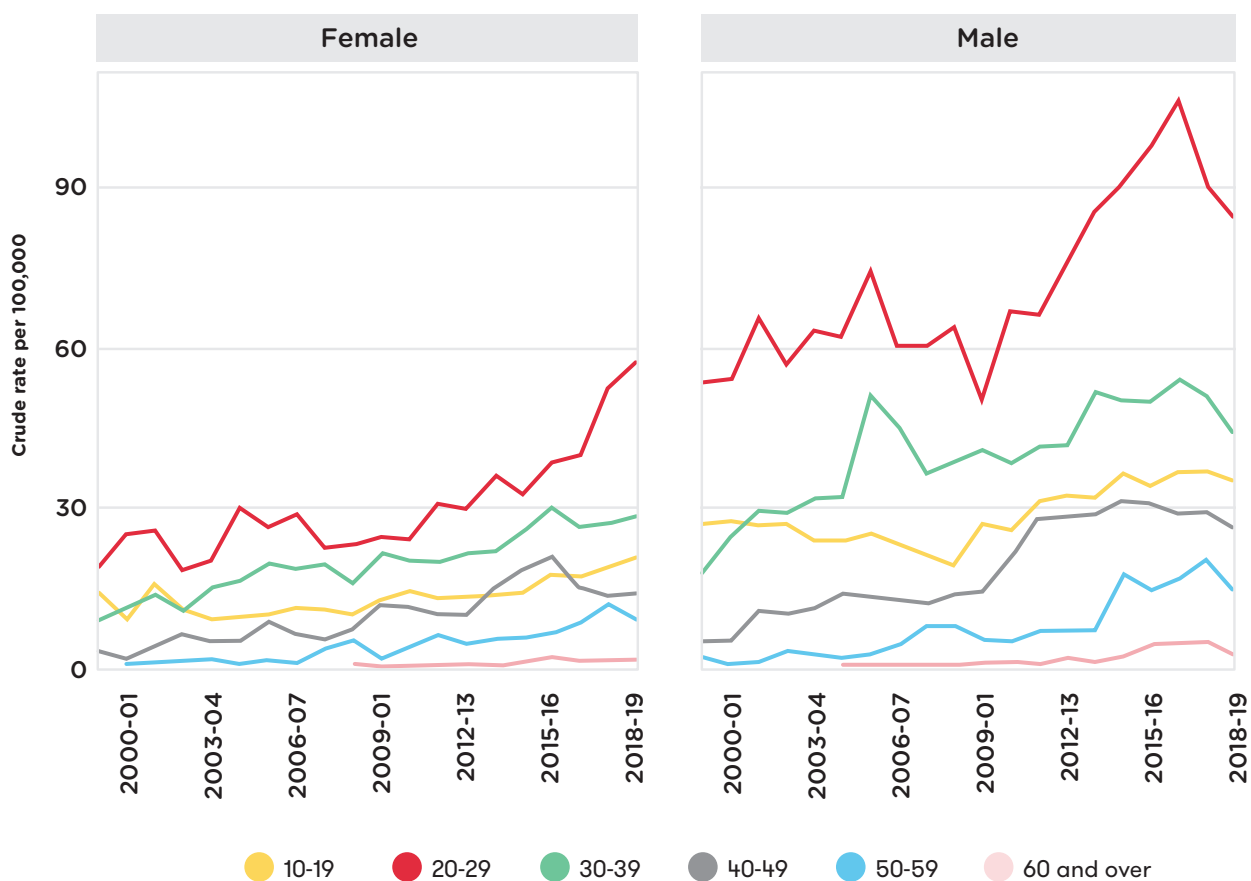
**Table D3: Age and sex profile of opioid-related hospital separations 2000 to 2019**



**Table D4: Age and sex profile of Amphetamine-Type Substances-related hospital separations 2000 to 2019**



**Table D5: Age and sex profile of cannabinoid-related hospital separations 2000 to 2019**





## 2 References

### Reference list

1. Australian Institute of Health and Welfare. National Drug Strategy Household Survey. Canberra; 2019. Contract No.: March 2, 2021.
2. Australian Institute of Health and Welfare. Alcohol, tobacco & other drugs in Australia. Canberra: AIHW; 2020.
3. Lancaster K, Ritter A, Matthew-Simmons F. Young people's opinions on alcohol and other drugs issues. Sydney; 2013.
4. ABS. 3101.0 ABS Australian Demographic Statistics, June. Canberra; 2019.
5. ABS. 3101.0 ABS Australian Demographic Statistics, June. Canberra; 2016.
6. ABS. 3101.0 ABS Australian Demographic Statistics, June. Canberra; 2013.
7. ABS. 3101.0 ABS Australian Demographic Statistics, June. Canberra; 2010.
8. Peacock A, Karlsson A, Uporova J, Gibbs D, Swanton R, Kelly G, et al. Australian Drug Trends 2019: Key Findings from the National Ecstasy and Related Drugs Reporting System (EDRS) Interviews. Sydney: UNSW; 2019.
9. Winstock A. Global Drug Survey 2020 Key Findings Report: Executive Summary. London; 2021.
10. Morgan J, Jones A. Pill-testing as a harm reduction strategy: time to have the conversation. *The Medical Journal of Australia*. 2019;211(10).
11. EMCDDA. Differences in patterns of drug use between women and men. Luxembourg: European Monitoring Centre for Drugs and Drug Addiction; 2005.
12. EMCDDA. European Drug Report: Trends and Developments. Luxembourg: European Monitoring Centre for Drugs and Drug Addiction; 2019.
13. Office for National Statistics. Drug misuse in England and Wales: year ending March 2020. UK; 2020.
14. Nutt DJ, King LA, Phillips LD. Drug harms in the UK: a multicriteria decision analysis. *The Lancet*. 2010;376(9752):1558-65.
15. Hughes C, Barratt M, Ferris J, Winstock A. Australian music festival attendees: A national overview of demographics, drug use patterns, policing experiences and helpseeking behaviour. Sydney; 2018.
16. EMCDDA. Polydrug use: Patterns and responses. Luxembourg; 2009.
17. Heard S, Iversen J, Geddes L, Maher L. Australian NSP survey: Prevalence of HIV, HCV and injecting and sexual behaviour among NSP attendees, 25-year National Data Report 1995-2019. Sydney; 2020.
18. Man N, Chrzanowska A, Dobbins T, Degenhardt L, Peacock A. Trends in drug-induced deaths in Australia. Sydney; 2019.
19. Chrzanowska A, Man N, Degenhardt L, Dobbins T, Peacock A. Trends in drug-related hospital separations in Australia, 1999-2018. Sydney; 2019.
20. Pidd K, Duraisingam V, Roche A, Trifonoff A. Young construction workers: substance use, mental health, and workplace psychosocial factors. *Advances in Dual Diagnosis*. 2017;10(4):155-68.
21. Chapman J, Roche A, Duraisingam V, Phillips B, Finnane J, Pidd K. Working at heights: patterns and predictors of illicit drug use in construction workers. *Drugs: Education, Prevention and Policy*. 2021;28(1):67-75.
22. Pidd K, Roche A, Fischer J. A recipe for good mental health: A pilot randomised controlled trial of a psychological wellbeing and substance use intervention targeting young chefs. *Drugs: Education, Prevention and Policy*. 2015;22(4):352-61.
23. Pidd K, Roche A, Kostadinov V. Trainee chefs' experiences of alcohol, tobacco and drug use. *Journal of Hospitality and Tourism Management*. 2014;21:108-15.
24. Roche AM, Chapman J, Duraisingam V, Phillips B, Finnane J, Pidd K. Construction workers' alcohol use, knowledge, perceptions of risk and workplace norms. *Drug and Alcohol Review*. 2020;39(7):941-9.
25. Roche A, Kostadinov V, McEntee A, Julaine A, Meumann N, McLaughlin L. Evaluation of a workshop to address drugs and alcohol in the workplace. *International Journal of Workplace Health Management*. 2019;13(1):2-14.
26. Pidd K, Roche A, Duraisingam V, Trifonoff A, Kostadinov V. Wellbeing & alcohol and other drug use among construction industry apprentices. Adelaide, SA; 2017.
27. Roche A, Kostadinov V, Chapman J, McEntee A. Have decreases in young workers' risky drinking resulted in an increase in illicit drug use? *Health Promotion Journal of Australia*. 2020;n/a(n/a).
28. Green AR, Mehan AO, Elliott JM, Shea E, Colado MI. The Pharmacology and Clinical Pharmacology of 3,4-Methylenedioxymethamphetamine (MDMA, "Ecstasy"). *Pharmacological Reviews*. 2003;55(3):463.
29. Leslie EM, Smirnov A, Cherney A, Wells H, Kemp R, Legosz M, et al. Engagement with different nightlife venues and frequent ecstasy use in a young adult population. *Drugs: Education, Prevention and Policy*. 2015;22(4):380-4.
30. Miller P, Curtis A, Jenkinson R, Droste N, Bowe SJ, Pennay A. Drug use in Australian nightlife settings: estimation of prevalence and validity of self-report. *Addiction*. 2015;110(11):1803-10.
31. Day N, Criss J, Griffiths B, Gujral SK, John-Leader F, Johnston J, et al. Music festival attendees' illicit drug use, knowledge and practices regarding drug content and purity: a cross-sectional survey. *Harm Reduction Journal*. 2018;15(1):1.
32. Grigg J, Barratt MJ, Lenton S. Double dropping down under: Correlates of simultaneous consumption of two ecstasy pills in a sample of Australian outdoor music festival attendees. *Drug and Alcohol Review*. 2018;37(7):851-5.

33. Barratt M, Hughes C, Ferris J, Winstock A. Australian music festival attendees who seek emergency medical treatment following alcohol and other drug use: A Global Drug Survey data report. Melbourne; 2019.
34. Fernández-Calderón F, Díaz-Batanero C, Barratt MJ, Palamar JJ. Harm reduction strategies related to dosing and their relation to harms among festival attendees who use multiple drugs. *Drug Alcohol Review*. 2019;38(1):57-67.
35. Roxburgh A, Lea T, de Wit J, Degenhardt L. Sexual identity and prevalence of alcohol and other drug use among Australians in the general population. *International Journal of Drug Policy*. 2016;28:76-82.
36. Hammoud MA, Jin F, Degenhardt L, Lea T, Maher L, Grierson J, et al. Following Lives Undergoing Change (Flux) study: Implementation and baseline prevalence of drug use in an online cohort study of gay and bisexual men in Australia. *International Journal of Drug Policy*. 2017;41:41-50.
37. Chan C, Broady T, Bavinton B, Mao L, Bear B, Mackie B, et al. Gay Community Periodic Survey: Sydney 2020. Sydney; 2020.
38. Ritter A, Matthew-Simmons F, Carragher C. Prevalence of mental health problems, and alcohol and other drug problems amongst the gay, lesbian, bisexual and transgender community, and intervention responses: A review of the literature. Sydney; 2012.
39. Hill A, Lyons A, Jones J, McGowan I, Carman M, Parsons M, et al. Writing Themselves in 4: The health and wellbeing of LGBTQA+ young people in Australia. Melbourne; 2021.
40. Herrijgers C, Poels K, Vandebosch H, Platteau T, van Lankveld J, Florence E. Harm Reduction Practices and Needs in a Belgian Chemsex Context: Findings from a Qualitative Study. *Int J Environ Res Public Health*. 2020;17(23):9081.
41. Maxwell S, Shahmanesh M, Gafos M. Chemsex behaviours among men who have sex with men: A systematic review of the literature. *International Journal of Drug Policy*. 2019;63:74-89.
42. Australian Institute of Health and Welfare. Alcohol, tobacco & other drugs in Australia 2020 [Accessed 2 March, 2021]. Available from: <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia>.
43. Lubman DI, Cheetham A, Jorm AF, Berridge BJ, Wilson C, Blee F, et al. Australian adolescents' beliefs and help-seeking intentions towards peers experiencing symptoms of depression and alcohol misuse. *BMC Public Health*. 2017;17(1):658.
44. Australian Psychological Society. Digital Me: A survey exploring the effect of social media and digital technology on Australian's wellbeing. Melbourne; 2017.
45. Pretorius C, Chambers D, Coyle D. Young People's Online Help-Seeking and Mental Health Difficulties: Systematic Narrative Review. *Journal of Medical Internet Research*. 2019;21(11):e13873.
46. Pretorius C, Chambers D, Cowan B, Coyle D. Young People Seeking Help Online for Mental Health: Cross-Sectional Survey Study. *JMIR Ment Health*. 2019;6(8):e13524.
47. Byron P, Rasmussen S, Toussaint D, Lobo R, Robinson K, Paradise B. 'You learn from each other'. LGTIQ young people's mental health help-seeking and the RAD Australian online directory. Sydney; 2017.
48. McDermott E, Hughes E, Rawlings V. Queer Futures: Understanding lesbian, gay, bisexual and trans (LGBT) adolescents' suicide, self-harm and help-seeking behaviour. UK; 2016.
49. Debenham J, Newton N, Birrell L, Askovic M. Alcohol and other drug prevention for older adolescents: It's a no brainer. *Drug and Alcohol Review*. 2019;38(4):327-30.
50. Gallagher KM, Updegraff JA. Health Message Framing Effects on Attitudes, Intentions, and Behavior: A Meta-analytic Review. *Annals of Behavioral Medicine*. 2012;43(1):101-16.
51. Esrick J, Kagan RG, Carnevale JT, Valenti M, Rots G, Dash K. Can scare tactics and fear-based messages help deter substance misuse: a systematic review of recent (2005–2017) research. *Drugs: Education, Prevention and Policy*. 2019;26(3):209-18.
52. Department of Health. Submission to the Parliamentary Joint Committee on Law Enforcement Inquiry into public communication campaigns targeting drug and substance abuse. Canberra; 2020.
53. Farrugia A. Assembling the dominant accounts of youth drug use in Australian harm reduction drug education. *International Journal of Drug Policy*. 2014;25(4):663-72.
54. Deans E, Ravulo J, Blignault I, Conroy E. Understanding the needs of local youth to inform drug and alcohol prevention and harm reduction services: A qualitative study. *Health promotion journal of Australia : official journal of Australian Association of Health Promotion Professionals*. 2020.
55. Fry M-L. Seeking the pleasure zone: Understanding young adult's intoxication culture. *Australasian Marketing Journal (AMJ)*. 2011;19(1):65-70.
56. Rigg KK, Sharp A. Deaths related to MDMA (ecstasy/molly): Prevalence, root causes, and harm reduction interventions. *Journal of Substance Use*. 2018;23(4):345-52.
57. Jenkins EK, Slemon A, Haines-Saah RJ. Developing harm reduction in the context of youth substance use: insights from a multi-site qualitative analysis of young people's harm minimization strategies. *Harm Reduction Journal*. 2017;14(1):53.
58. Fisher H, Measham F. Night Lives: Reducing drug-related harm in the night time economy. UK; 2018.
59. Hunt S, Kay-Lambkin F, Simmons M, Thornton L, Slade T, Killackey E, et al. Evidence check: Peer-led education for at risk youth. NSW; 2016.
60. EMCDDA. Mass media campaigns for the prevention of drug use in young people. Lisbon; 2013.
61. Mewton L, Visontay R, Chapman C, Newton N, Slade T, Kay-Lambkin F, et al. Universal prevention of alcohol and drug use: An overview of reviews in an Australian context. *Drug & Alcohol Review*. 2018;37:435-69.

62. Allara E, Ferri M, Bo A, Gasparri A, Faggiano F. Are mass-media campaigns effective in preventing drug use? A Cochrane systematic review and meta-analysis. *BMJ Open*. 2015;5(9):e007449.
63. Stockings E, Hall WD, Lynskey M, Morley KI, Reavley N, Strang J, et al. Prevention, early intervention, harm reduction, and treatment of substance use in young people. *The Lancet Psychiatry*. 2016;3(3):280-96.
64. Bolier L, Voorham L, Monshouwer K, Hasselt Nv, Bellis M. Alcohol and Drug Prevention in Nightlife Settings: A Review of Experimental Studies. *Substance Use & Misuse*. 2011;46(13):1569-91.
65. Akbar T, Baldacchino A, Cecil J, Riglietta M, Sommer B, Humphris G. Poly-substance use and related harms: A systematic review of harm reduction strategies implemented in recreational settings. *Neuroscience & Biobehavioral Reviews*. 2011;35(5):1186-202.
66. EMCDDA. Responding to drug use and related problems in recreational settings. Lisbon; 2012.
67. EMCDDA. Policy and practice briefings: Nightlife, festivals and other recreational settings. Lisbon; 2021.
68. Stardust Z, Kolstee J, Joksic S, Gray J, Hannan S. A community-led, harm-reduction approach to chemsex: case study from Australia's largest gay city. *Sexual Health* [Online]. 2018;15(2):179-81.
69. Kimmel SD, Gaeta JM, Hadland SE, Hallett E, Marshall BDL. Principles of Harm Reduction for Young People Who Use Drugs. *Pediatrics*. 2021;147(Supplement 2):S240.
70. DanceWize: NSW. About Us. Sydney; 2021.
71. Harrod M, Capell-Hattam T, Murray J, Henderson C, Burns D. The fresh face of volunteerism in peer-led harm reduction models. Sydney; 2018.
72. Douglass CH, Raggatt M, Wright CJC, Reddan H, O'Connell H, Lim MSC, et al. Alcohol consumption and illicit drug use among young music festival attendees in Australia. *Drugs: Education, Prevention and Policy*. 2021:1-7.
73. Munn MB, Lund A, Golby R, Turris SA. Observed Benefits to On-site Medical Services during an Annual 5-day Electronic Dance Music Event with Harm Reduction Services. *Prehospital Disaster Medicine*. 2016;31(2):228-34.
74. Silins E, Bleeker A, Simpson M, Dillon P, Copeland J. Does peer-delivered information at music events reduce ecstasy and methamphetamine use at three month follow-up? Findings from a quasi-experiment across three study sites. *Journal of Addiction & Prevention*. 2014;1:1-8.
75. Brunt T. Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges. The Netherlands; 2017.
76. Saleemi S, Pennybaker SJ, Wooldridge M, Johnson MW. Who is 'Molly'? MDMA adulterants by product name and the impact of harm-reduction services at raves. *Journal of Psychopharmacology*. 2017;31(8):1056-60.
77. Measham FC. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service. *International Journal of Drug Policy*. 2019;67:102-7.
78. Brunt TM, Nagy C, Bücheli A, Martins D, Ugarte M, Beduwe C, et al. Drug testing in Europe: monitoring results of the Trans European Drug Information (TEDI) project. *Drug Test Anal*. 2017;9(2):188-98.
79. Palamar JJ, Fitzgerald ND, Keyes KM, Cottler LB. Drug checking at dance festivals: A review with recommendations to increase generalizability of findings. *Experimental and Clinical Psychopharmacology*. 2021.
80. Palamar JJ, Salomone A, Barratt MJ. Drug checking to detect fentanyl and new psychoactive substances. *Current Opinion in Psychiatry*. 2020;33(4):301-5.
81. Olsen A, Wong G, McDonald D. ACT Pill Testing Trial 2019: Program evaluation. Canberra; 2019.
82. Betzler F, Ernst F, Helbig J, Viohl L, Roediger L, Meister S, et al. Substance Use and Prevention Programs in Berlin's Party Scene: Results of the SuPrA-Study. *European Addiction Research*. 2019;25(6):283-92.
83. European Institute of Studies on Prevention. Set of standards to improve the health and safety of recreational nightlife venues. Spain; 2011.
84. Kahl B, Miller H, Cairns K, Giniunas H, Welland L, Nicholas M. A measurable impact: Helping young people to be and stay well. Sydney; 2020.
85. Dunne T, Bishop L, Avery S, Darcy S. A Review of Effective Youth Engagement Strategies for Mental Health and Substance Use Interventions. *Journal of Adolescent Health*. 2017;60(5):487-512.
86. Mason M, Ola B, Zaharakis N, Zhang J. Text messaging interventions for adolescent and young adult substance use: a meta-analysis. *Prevention Science*. 2015;16(2):181-8.
87. Hickie I, Davenport T, Burns J. Project Synergy: co-designing technology-enabled solutions for Australian mental health services reform. *Medical Journal of Australia*. 2019;211(7).
88. Vogl G, Ratnaik D, Ivancic L, Rowley A, Chandy V. One click away? Insights into mental health digital self-help by young Australians. Sydney; 2016.
89. Robinson J, Bailey E, Browne V, Cox G, Hooper C. Raising the bar for youth suicide prevention. Melbourne; 2016.
90. National Mental Health Commission. Fifth National Mental Health and Suicide Prevention Plan. Canberra; 2017.
91. PricewaterhouseCoopers. Scoping and development of a National Digital Mental Health Framework. Canberra; 2020.
92. Kaner EFS, Beyer FR, Garnett C, Crane D, Brown J, Muirhead C, et al. Personalised digital interventions for reducing hazardous and harmful alcohol consumption in community - dwelling populations. *Cochrane Database of Systematic Reviews*. 2017(9).
93. Schinke S, Schwinn TM. Computer-Based Prevention and Intervention to Reduce Substance Use in Youth. *Current Addiction Reports*. 2017;4(4):410-21.

94. Wood SK, Eckley L, Hughes K, Hardcastle KA, Bellis MA, Schrooten J, et al. Computer-based programmes for the prevention and management of illicit recreational drug use: A systematic review. *Addictive Behaviors*. 2014;39(1):30-8.
95. Välimäki M, Anttila K, Anttila M, Lahti M. Web-Based Interventions Supporting Adolescents and Young People With Depressive Symptoms: Systematic Review and Meta-Analysis. *JMIR Mhealth Uhealth*. 2017;5(12):e180.
96. Taylor GMJ, Dalili MN, Semwal M, Civiljak M, Sheikh A, Car J. Internet - based interventions for smoking cessation. *Cochrane Database of Systematic Reviews*. 2017(9).
97. Dick S, Whelan E, Davoren MP, Dockray S, Heavin C, Linehan C, et al. A systematic review of the effectiveness of digital interventions for illicit substance misuse harm reduction in third-level students. *BMC Public Health*. 2019;19(1):1244.
98. Fowler LA, Holt SL, Joshi D. Mobile technology-based interventions for adult users of alcohol: A systematic review of the literature. *Addictive Behaviors*. 2016;62:25-34.
99. Berman AH, Gajecski M, Sinadinovic K, Andersson C. Mobile Interventions Targeting Risky Drinking Among University Students: A Review. *Current Addiction Reports*. 2016;3:166-74.
100. Bock BC, Barnett NP, Thind H, Rosen R, Walaska K, Traficante R, et al. A text message intervention for alcohol risk reduction among community college students: TMAP. *Addictive Behaviour*. 2016;63:107-13.
101. Tahaney KD, Palfai TP. Text messaging as an adjunct to a web-based intervention for college student alcohol use: A preliminary study. *Addict Behav*. 2017;73:63-6.
102. Crockett B, Keleher H, Rudd A, Klein R, Locke B, Roussy V. Using SMS as a harm reduction strategy : an evaluation of the RAGE (Register And Get Educated) project. *Youth Studies Australia*. 2013;32:26-36.
103. Reback CJ, Grant DL, Fletcher JB, Branson CM, Shoptaw S, Bowers JR, et al. Text Messaging Reduces HIV Risk Behaviors Among Methamphetamine-Using Men Who Have Sex with Men. *AIDS and Behavior*. 2012;16(7):1993-2002.
104. Sharpe S, Kool B, Whittaker R, Lee AC, Reid P, Civil I, et al. Effect of a text message intervention on alcohol-related harms and behaviours: secondary outcomes of a randomised controlled trial. *BMC Research Notes*. 2019;12(1):267.
105. Carrà G, Crocamo C, Bartoli F, Carretta D, Schivalocchi A, Bebbington PE, et al. Impact of a Mobile E-Health Intervention on Binge Drinking in Young People: The Digital-Alcohol Risk Alertness Notifying Network for Adolescents and Young Adults Project. *Journal of Adolescent Health*. 2016;58(5):520-6.
106. Kirkman JJJ, Leo B, Moore JC. Alcohol Consumption Reduction Among a Web-Based Supportive Community Using the Hello Sunday Morning Blog Platform: Observational Study. *Journal of medical Internet research*. 2018;20(5):e196-e.
107. Tait RJ, Paz Castro R, Kirkman JJJ, Moore JC, Schaub MP. A Digital Intervention Addressing Alcohol Use Problems (the "Daybreak" Program): Quasi-Experimental Randomized Controlled Trial. *Journal of Medical Internet Research*. 2019;21(9):e14967.
108. Gibson K, Trnka S. Young people's priorities for support on social media: "It takes trust to talk about these issues". *Computers in Human Behavior*. 2019;102.
109. Gamberini L, Spagnoli A, Nucci M, DeGiuli G, Villa C, Monarca V, et al., editors. *A Gamified Solution to Brief Interventions for Nightlife Well-Being. Persuasive Technology; 2016 2016//; Cham: Springer International Publishing.*
110. Gamberini L, Nucci M, Zamboni L, DeGiuli G, Cipolletta S, Villa C, et al., editors. *Designing and Testing Credibility: The Case of a Serious Game on Nightlife Risks. Persuasive Technology; 2018 2018//; Cham: Springer International Publishing.*
111. Plotnikoff RC, Costigan SA, Kennedy SG, Robards SL, Germov J, Wild C. Efficacy of interventions targeting alcohol, drug and smoking behaviors in university and college students: A review of randomized controlled trials. *Journal of American College Health*. 2019;67(1):68-84.
112. Organ D, Dick S, Hurley C, Heavin C, Linehan C. A Systematic Review of User-Centred Design Practices in Illicit Substance Use Interventions for Higher Education Students. *Research Papers*. 2018;192.
113. Dick S, Vasiliou VS, Davoren MP, Dockray S, Heavin C, Linehan C, et al. A Digital Substance-Use Harm Reduction Intervention for Students in Higher Education (MyUSE): Protocol for Project Development. *JMIR Res Protoc*. 2020;9(8):e17829.
114. Wolfenden L, Goldman S, Stacey FG, Grady A, Kingsland M, Williams CM, et al. Strategies to improve the implementation of workplace - based policies or practices targeting tobacco, alcohol, diet, physical activity and obesity. *Cochrane Database of Systematic Reviews*. 2018(11).
115. Einboden R, Choi I, Ryan R, Petrie K, Johnston D, Harvey SB, et al. 'Having a thick skin is essential': mental health challenges for young apprentices in Australia. *Journal of Youth Studies*. 2020:1-17.
116. Spicer RS, Miller TR. The Evaluation of a Workplace Program to Prevent Substance Abuse: Challenges and Findings. *Journal of Primary Prevention*. 2016;37(4):329-43.
117. Cameron J, Pidd K, Roche A, Lee N, Jenner L. A co-produced cultural approach to workplace alcohol interventions: barriers and facilitators. *Drugs: Education, Prevention and Policy*. 2019;26(5):401-11.
118. Joyce S, Shand F, Tighe J, Laurent SJ, Bryant RA, Harvey SB. Road to resilience: a systematic review and meta-analysis of resilience training programmes and interventions. *BMJ Open*. 2018;8(6):e017858.
119. Wan Mohd Azam Y, Musiat P, Brown JSL. Systematic review of universal and targeted workplace interventions for depression. *Occupational and Environmental Medicine*. 2018;75(1):66.
120. Carolan S, Harris PR, Cavanagh K. Improving Employee Well-Being and Effectiveness: Systematic Review and Meta-Analysis of Web-Based Psychological Interventions Delivered in the Workplace. *Journal of Medical Internet Research*. 2017;19(7):e271.
121. ABS. *Standard for Sex, Gender, Variations of Sex Characteristics and Sexual Orientation Variables*. Canberra; 2021.

