

# Shifting trends in the Perth ecstasy market: Harm reduction implications

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## Key findings:

- The Perth ecstasy market has diversified, with indications capsule forms are now almost as easy to access as pills.
- Ecstasy is at its cheapest since data collection commenced in 2003.
- While traditionally ecstasy in Perth has been perceived mainly as low to medium purity and fluctuating, newer forms on the market are perceived by most as high purity and stable.
- Unsurprisingly, usage rates for forms perceived as higher purity have increased.
- While non-fatal 'overdoses' attributed to ecstasy have declined in Perth EDRS samples, in the context of a shifting market marred by increasing deaths, it is critical to closely monitor ecstasy markets alongside patterns of use to help provide up-to-date harm reduction advice.

## Introduction

Ecstasy-related deaths have become an increasing public health concern in recent years. In Australia in the past 5 years alone, there have been at least 15 deaths linked to drugs sold as 'ecstasy' (1-8). While deaths involving 'ecstasy' have typically been linked to issues such as hyperthermia (overheating), hyponatremia (water intoxication) and misrepresentation/adulteration (9-13), and experts have ranked ecstasy as one of the least harmful drugs (14), there has been increasing concern about the risk of 'overdoses' from high purity MDMA (4, 15-17). This concern stems from increasing detection of high purity ecstasy pills and capsules in Australia and internationally, in some cases up to three times a 'normal' recreational dose of MDMA (>300 mg) (15, 18, 19). However, it is unclear how common these high dose pills are as the best available source of evidence in Australia - the Illicit Drug Data Report (20) - groups ecstasy with wider phenethylamines (e.g. MDA, mescaline and PMA) and only reports the median, minimum and maximum purity percentage (i.e. not doses detected in ecstasy pills). While recognising WA seizure purities were highly variable in the most recent 2016/17 reporting period (0.9%-94%), the detection of a 94% purity phenethylamine sample suggests it is possible high dose ecstasy could exist in the WA illicit drug market. Overall, although ecstasy-related deaths in Australia have mainly taken place at music festivals in the eastern states, it has perhaps never been more critical to better understand what is happening in ecstasy markets in all jurisdictions in order to provide current harm reduction advice.

Data from the EDRS can help provide critical insights into shifting trends in the Perth ecstasy market and patterns of use which could contribute to the risk of harm. These insights could help inform local harm reduction initiatives, and more generally help enhance our understanding of the current culture of ecstasy use. Thus, in response to concern about future ecstasy-related harm, this bulletin examines trends in the Perth ecstasy market (e.g. price, purity and availability), alongside trends in patterns of use (amounts being used, frequency of use) and reports of non-fatal ‘overdoses’ attributed to ‘ecstasy’.

## Method

This bulletin draws on data from the 2003-2018 WA Ecstasy and related Drugs Reporting System (EDRS). The EDRS has been conducted annually in all Australian jurisdictions since 2003 and remains the most comprehensive national monitoring study aimed at detecting emerging trends in illicit ‘party drug’ markets. The structured face-to-face interviews ask participants about a range of topics, such as demographic characteristics, drug use patterns, perceptions of the illicit drug market, health measures, help seeking, risk behaviours and crime. Full details of the [methods for the annual interviews](#) are available for download.

This bulletin focuses on perceptions of the ecstasy market, specifically questions related to the price, purity/potency and availability of drugs sold as ‘ecstasy’. First, the price per ecstasy pill, capsule or gram of crystal is examined in relation to the question “How much did ecstasy cost the last time you purchased it in the last six months?”. Second, purity/potency is examined in relation to the question “How strong would you say ecstasy [pills/capsules/crystals/powder] are at the moment?”. Third, availability is examined in relation to the question “How easy is it to get ecstasy [pills/capsules/crystals/powder] at the moment?” Trends in patterns of use are also examined for questions “what is the average and maximum amount of ecstasy [pills/capsules] you used per occasion in the past 6 months?” and “In the last six months, how many days did you use [pills/capsules/crystals/powder]”. Lastly, the proportion experiencing a recent ecstasy-related ‘overdose’ is determined by those nominating ‘ecstasy’ as the main drug they would attribute their recent (past 12 month) stimulant overdose to. For the purpose of this survey, stimulant overdose was defined to participants as “the experience of these symptoms: nausea, vomiting, chest pain, tremors, increased body temperature, increased heart rate, seizure, extreme paranoia, extreme anxiety, panic, extreme agitation, hallucinations, excited delirium that are outside your normal drug experience, or where professional assistance would have been helpful.”

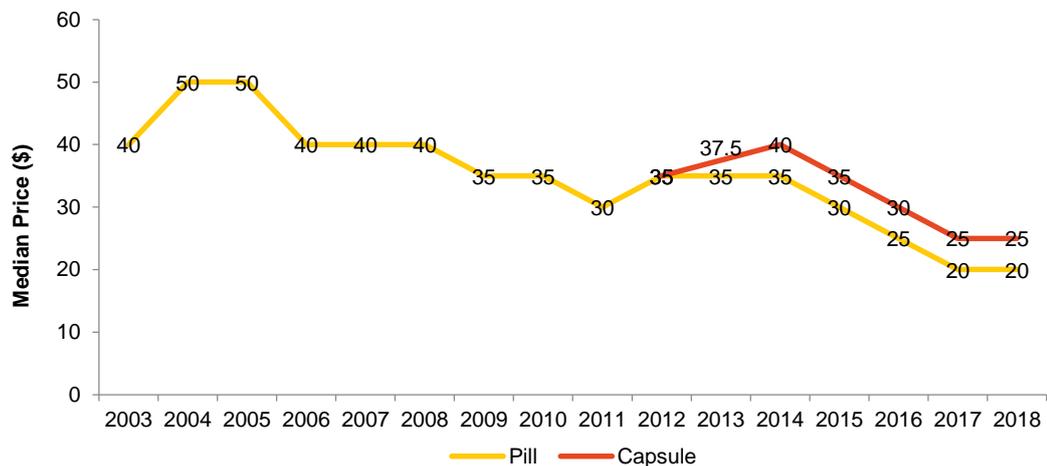
Descriptive statistics were run for the above drug variables. All analyses were conducted using IBM SPSS Statistics for Windows release 25.0 (21). As noted in the below figures, questions on non-pill forms of ecstasy were added to the survey as they began to enter the Australian illicit drug market. However, powder forms have been excluded from a number of the analyses for this bulletin due to low numbers able to comment across data collection years.

## Results

### Price of ecstasy

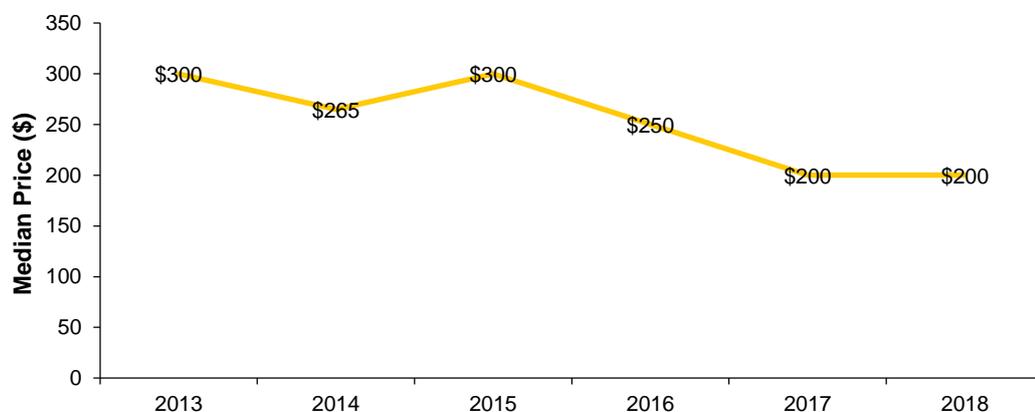
As evident in Figure 1 and 2 below, the price of ecstasy has been gradually declining since data collection commenced in 2003. In 2018, the median price for a traditional ecstasy pill was only \$20 (IQR=15-25), less than half what it cost in 2004 (\$50, IQR=40-50), while more novel capsule forms cost slightly more at a median of \$25 (IQR=20-25), down from \$40 in 2014 (IQR=35-40). Lastly, a gram of ecstasy crystals cost a median of \$200 (IQR=200-250), down from \$300 in 2013. In 2018, for all forms of ecstasy, the price was perceived by most as stable. However, up to a fifth believed price was still declining.

**Figure 1: Median price per ecstasy pill and capsule, 2003-2018**



*Note.* Among those who commented. Data collection for the price of ecstasy capsules started in 2008, but due to low numbers commenting, have been reported from 2012.

**Figure 2: Median price per gram of ecstasy crystals, 2013-2018**

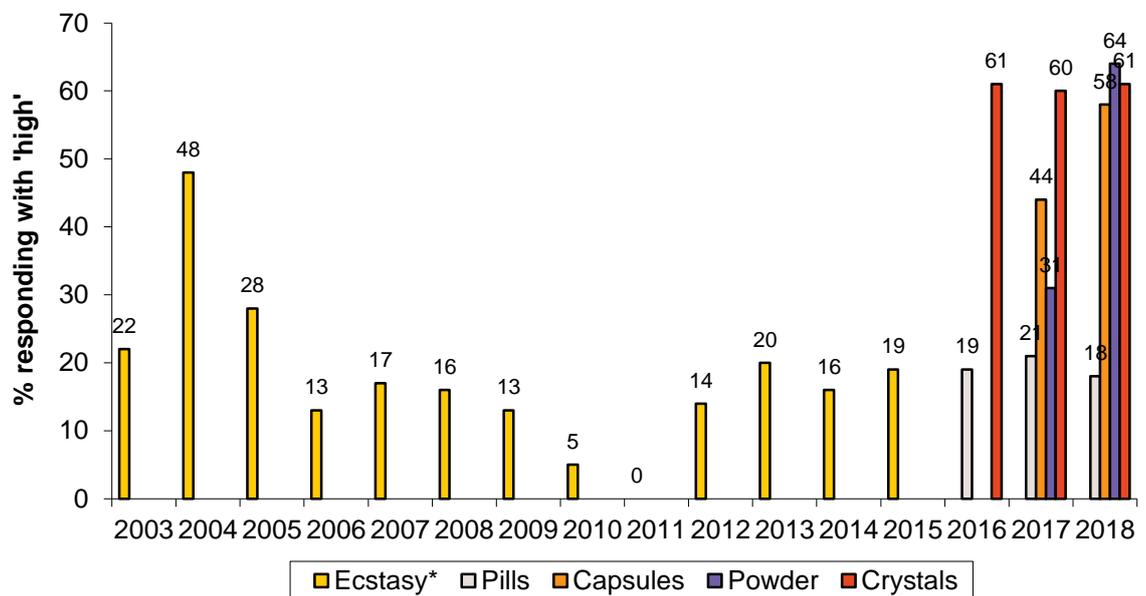


*Note.* Among those who commented. Data collection for the price of ecstasy crystal started in 2013.

### Perceptions of purity/potency

Figure 3 presents the proportion of consumers across years who rated the purity/potency of 'ecstasy' as 'high'. The data suggest that, until the last few years, most participants did not rate ecstasy available within the Perth market as 'high' purity. However, in 2018, most rated capsule, crystal and powder forms as 'high', while traditional pill forms continued to be perceived by most as lower purity (only 18% reporting high). Overall, the data suggest perceptions of purity have reached record highs, although this is attributable to the emergence of novel non-pill forms.

**Figure 3: Proportions who rated as ecstasy as 'high' purity/potency, 2003-2018**

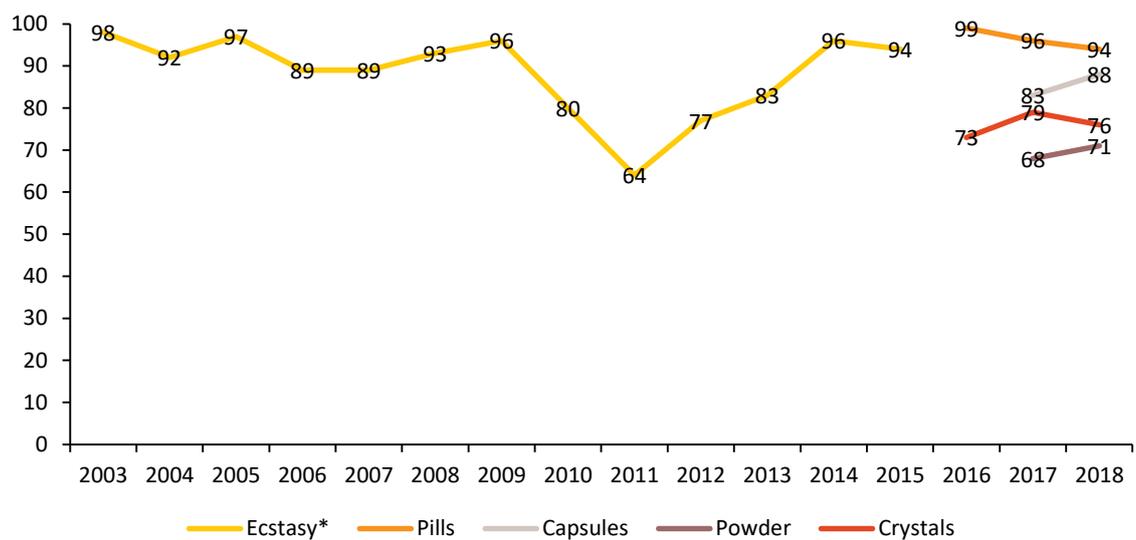


\* From 2003-2015, the survey asked about the strength of ecstasy generally (i.e. did not specify pills, powder, crystals or capsules). Then, in 2016, once non-pill forms were more established in the Australian market, the survey asked participants to comment on pills, powder or caps, and then crystals separately. However, due to low numbers nominating to comment on capsules and powder in 2016, these forms are excluded from the figure. From 2017, all forms were asked about separately.

### Perceptions of availability

As evident in Figure 4, availability of ecstasy declined after 2009 (likely in response to international precursor shortages, (18)) before returning to previous levels in 2014. However, there are now preliminary indications that perceived availability of traditional pill forms among consumers may be on a downward trend, while potentially higher purity non-pill forms may be on an upward trend. Additionally, it should also be noted that had the survey asked about capsule/powder/crystal forms from 2003, there would likely have been a very strong positive trendline given non-pill forms were anecdotally known to be unavailable in the Perth market in earlier data collection years. Overall, however, the data suggest that in 2018 traditional pills remain the easiest form of ecstasy to access, followed very closely by capsules.

**Figure 4: Proportions who rated access as 'easy or very easy', 2003-2018**

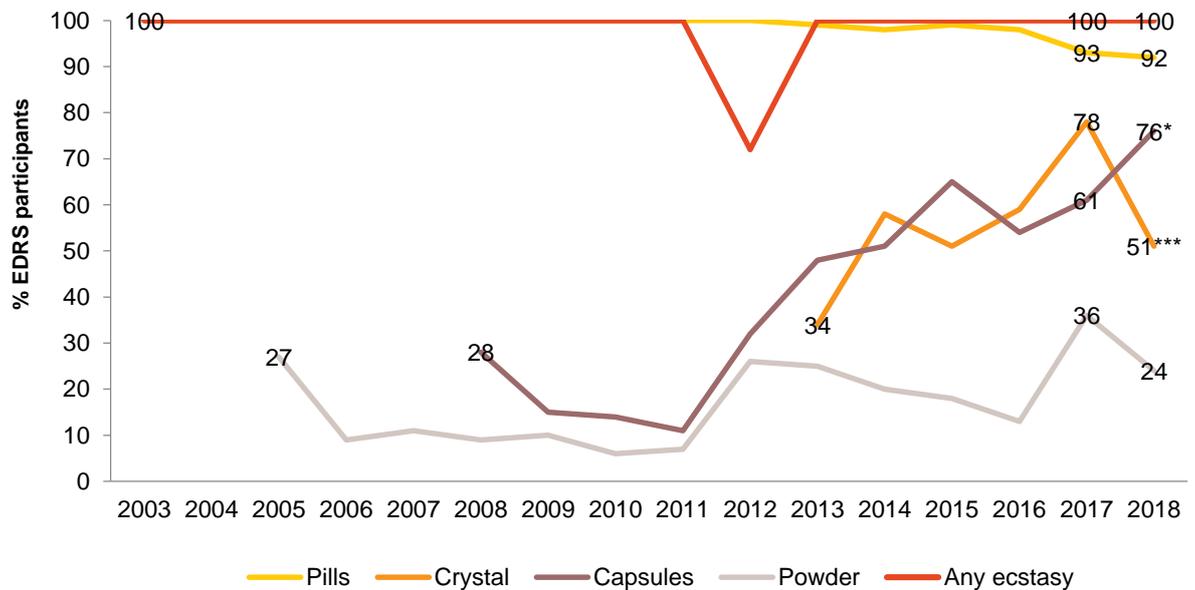


\* From 2003-2015, the survey asked about the strength of ecstasy generally (i.e. did not specify pills, powder, crystals or capsules). Then, in 2016, the survey asked participants to comment on pills, powder or caps and then crystal separately. However, due to low numbers nominating to comment on capsules and powder in 2016, these forms are excluded from the figure. From 2017, all forms were asked about separately.

### Forms of ecstasy being used

Pills also remained the most common form of ecstasy used by Perth participants in 2018 (92%). However, the gap between pills and capsules has been closing since 2011, with capsule use significantly increasing to 76% in 2018 ( $p=.022$ ). While crystal use significantly declined between 2017 and 2018 ( $p<.001$ ), it is important to note that capsules typically contain pre-packaged crystals. Thus, this decline in crystals more likely reflects the way in which the drug is being sold and packaged, as opposed to a decline in the availability of ecstasy/MDMA crystals in the Perth illicit drug market.

**Figure 5: Recent (past six months) use of any ecstasy, and different forms of ecstasy, 2003-2018**

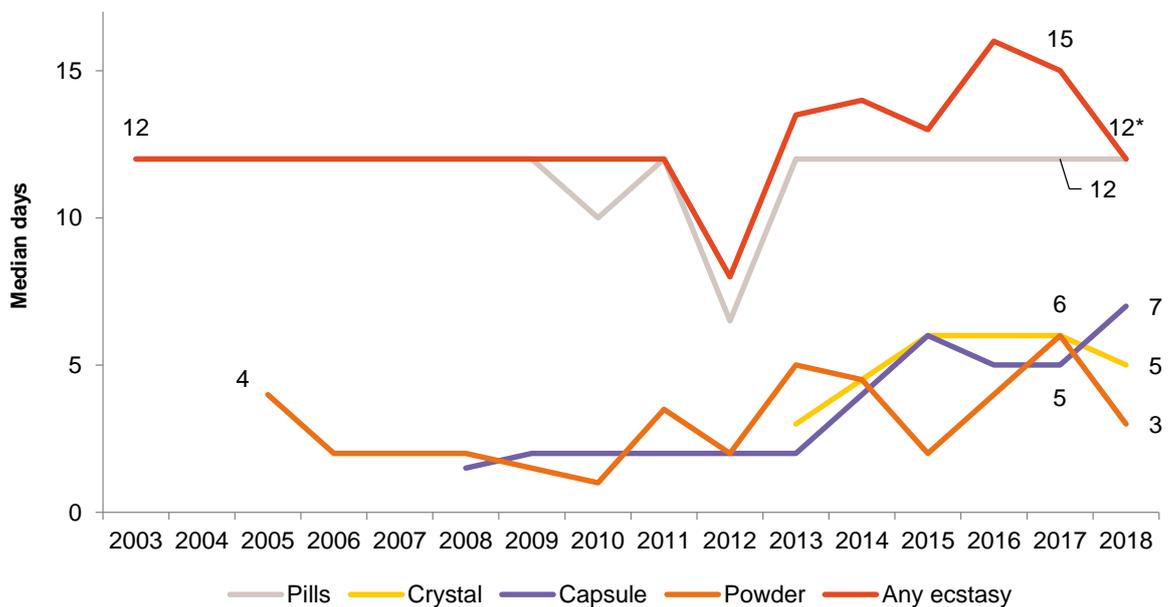


*Note.* In response to recruitment difficulties in 2011 (most likely due to an international MDMA drought), in 2012 the participant eligibility was expanded to broader illicit stimulant use. Data collection for powder started in 2005, capsules in 2008 and MDMA crystal in 2013. \* $p<0.050$ ; \*\* $p<0.010$ ; \*\*\* $p<0.001$  for 2017 versus 2018.

### Frequency of use

Participants reported using ecstasy (in any form) on a median of 12 days, equivalent to fortnightly (IQR=10-24; n=91) in the preceding six months (vs. 15 days in 2017,  $p=.054$ ). The proportion of the sample that reported weekly or greater use of any form of ecstasy also remained stable at 29% (vs. 37% in 2017;  $p=.229$ ). Overall, while there appears to be an increasing trend in the median number of days participants recently used capsule forms, there was no increasing trend in the frequency of any ecstasy use.

**Figure 7: Median days of ecstasy use in the past six months, 2003-2018**

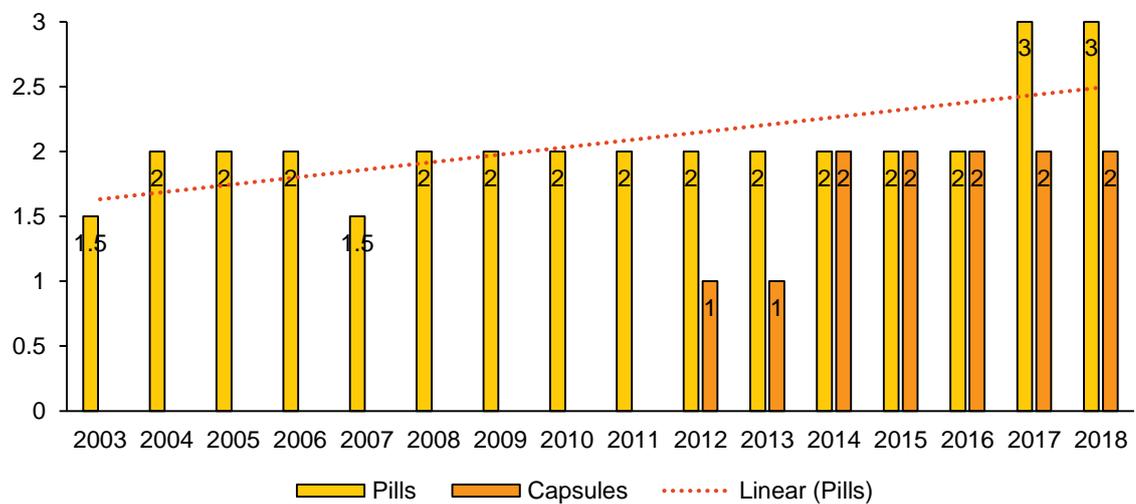


*Note.* In 2012 participant eligibility was expanded to broader illicit stimulant use. Data collection for powder started in 2005, capsules in 2008 and MDMA crystal in 2013. Median days computed among those who reported recent use (maximum 180 days). Median days rounded to the nearest whole number. \* $p<0.050$ ; \*\* $p<0.010$ ; \*\*\* $p<0.001$  for 2017 versus 2018.

### Amounts being used

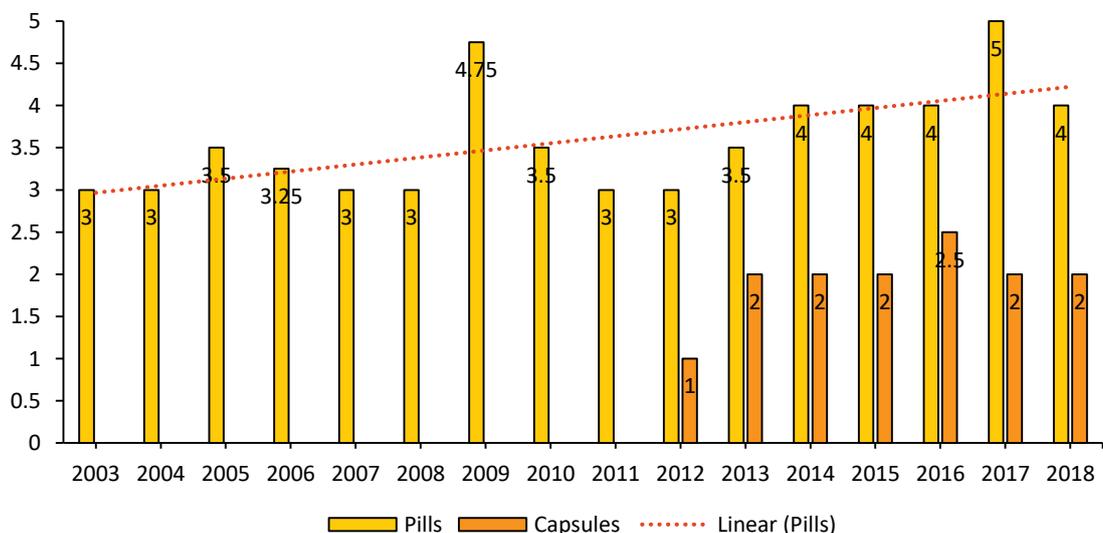
Figure 8 and 9 show a potential upward trend in the amount of ecstasy pills being used per occasion. The last two years of data collection mark the highest median ‘typical’ amount of pills used per occasion ( $Mdn=3$ ,  $IQR=2-4$ ), which corresponds with record lows in price. While the amount of capsules being consumed in a typical session increased from a median of 1 to 2 capsules in 2014, it has remained stable ever since. However, it is important to note that the EDRS data cannot reveal whether actual doses of MDMA being consumed has changed over time, given pills and capsules are known to highly variable in content and dose.

**Figure 8: Median typical amount used per occasion, 2003-2018**



Note. 2011 data for capsules was excluded from the figure due to low numbers ( $n<5$ ).

**Figure 9: Median maximum amount used per occasion, 2003-2018**



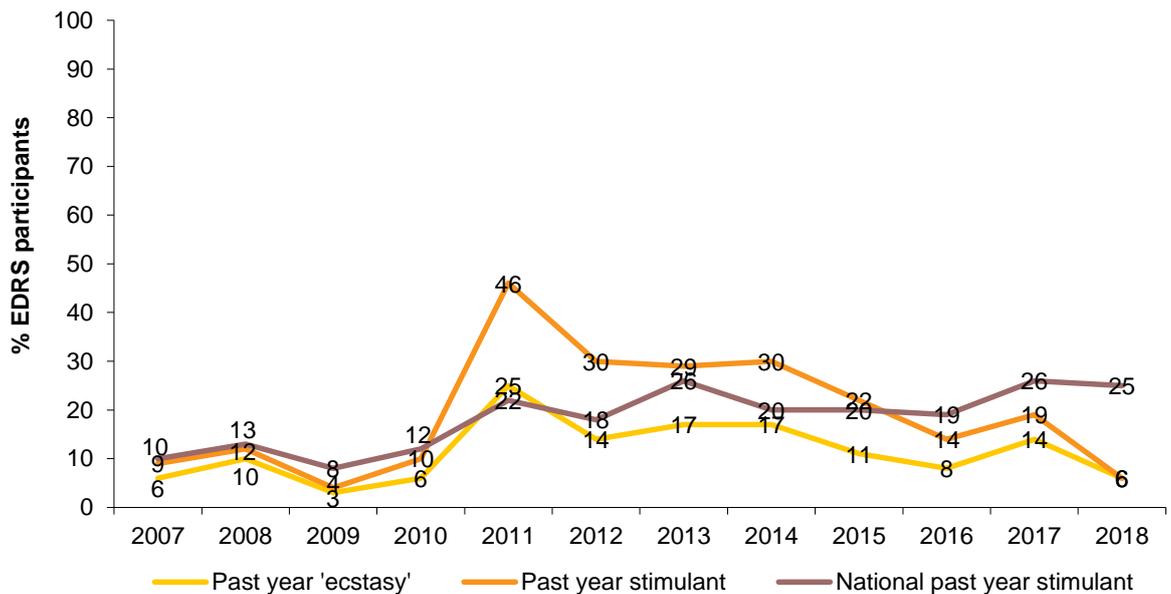
Note. 2011 data for capsules was excluded from the figure due to low numbers ( $n<5$ ).

### Recent not-fatal 'overdose' attributed to 'ecstasy'

Figure 10 below demonstrates that, despite a small spike in 2017, reports of non-fatal stimulant 'overdoses', and 'overdoses' attributed to 'ecstasy' have been on a gradual decline in Perth EDRS samples since 2011.

While the reasons for this decline are unclear from the data, it could be related to: (1) people who use ecstasy no longer switching to other riskier stimulants (e.g. with ecstasy being more available, there may be less overdoses from intentional NPS use)-this explanation is partially supported by the declining gap between all stimulant 'overdoses' versus ecstasy 'overdoses'; (2) purer ecstasy in Perth could be leading to less adverse effects (e.g. pills no longer being regularly substituted with piperazines (18), widely known to cause significant adverse effects); and/or (3) sampling issues (expanding the criteria in 2012 and smaller sample sizes) or an array of other unknown factors (e.g. safer using practices).

**Figure 10: Recent not-fatal 'overdoses' attributed to 'ecstasy'**



Note. WA experienced recruitment difficulties in 2011 ( $n=28$ ), likely due to international declines in ecstasy availability and purity. Thus, in 2012 the selection criteria was expanded to wider stimulant use ( $n=90$ ). The 2011/12 sampling differences should be considered when interpreting this figure. \* $p<0.050$ ; \*\* $p<0.010$ ; \*\*\* $p<0.001$  for 2017 versus 2018.

## Discussion

Overall, the data provide a number of important insights into the Perth ecstasy market. First, the data suggest the market has significantly diversified and now features a variety of different forms of ecstasy (pills, capsules, crystals and powder), all of which are perceived by most as easy to access, particularly pills and capsules. There are also preliminary indications the availability of non-pill forms in Perth may be on an upward trend. Second, the price of ecstasy has reached record lows, costing a median of \$20 per pill, \$25 per cap or \$200 per gram of crystals. Third, while traditionally the purity/potency of ecstasy available in the Perth market was mainly rated as low to medium and fluctuating, newer non-pill forms of ecstasy are perceived by most as high purity and stable. Thus, unsurprisingly, while pills remain the most popular form used (likely due to lowest cost and highest availability), rates of use for capsule forms (perceived as purer) are now closing in. Ultimately, one could conclude the data suggest ecstasy is the cheapest and purest (according to perceptions, not objective scientific data) it has been since data collection commenced in 2003.

## Risk and harm reduction implications

These shifting market trends raise a number of points of concern and have a number of implications for harm reduction. First, the diversification of the market raises concern about a potential lack of general knowledge on dosage and safer using practices for non-pill forms. Given crystals and capsules are now imbedded in the market, updated harm reduction advice on dosing should be provided. Importantly, one should not assume that one capsule equates to one normal dose. Ecstasy can start as loose crystals and be packaged into capsules at varying points in the supply chain by people with varying levels of knowledge (if any) of the content/purity. Internationally, harm reduction groups have promoted messages like “crush, dab, wait” (22), which involves finely crushing the crystals, licking their finger and dabbing it into the powder (estimated as 70-100mg), and then waiting two hours before redosing. While recognising this is not a sophisticated way to measure the powder (and scales would be more accurate), such messages may be useful in settings like music festivals where many struggle to moderate amounts they are taking and simply guess (often swallowing varying sized crystal chunks) (22). Thus, similar harm reduction messages may also need to be considered here. Of course, sophisticated drug checking services which have the capacity to chemically analyse both *content* and *dose* of drugs submitted would provide an opportunity for more informed decisions about usage/dosage (23). Drug checking services could also provide more objective information about shifts in the ecstasy market over time, and differences across jurisdictions.

Second, high rates of trust over purity raise concern about complacency. Harm reduction messages should raise awareness that crystal and capsule forms are not necessarily pure, and even if they are, they are not necessarily safe. Recent deaths are suspected to be attributed to pure ecstasy/MDMA (4, 17). Thus, risks related to high potency pills, particularly in high risk environments (e.g. festivals), should be emphasised (e.g. hyperthermia, hyponatremia), as well as the ongoing threat of NPS misrepresentation, even when buying capsule and crystal forms.

Third, the lowered cost could make ecstasy more accessible (e.g. young people with small budgets). This could result in increased uptake by naive users, while existing users may be inclined to use more frequently and/or use greater amounts per session. Lower prices may also encourage consumers to purchase greater quantities, particularly since bulk buying typically results in discounts. Having an excess supply may also encourage more frequent and/or heavy use. That said, data presented in this bulletin do not show increasing trends in the frequency of use, although usage rates for capsule forms may be on an upward trend. Additionally, while the data suggest participants may be using more ecstasy pills per session, capsule use remains relatively stable. However, it is critical to note the data cannot tell us whether MDMA doses consumed are increasing, as the doses contained in pills and capsules are known to be highly variable. Overall, to help determine the potential impacts of market changes, patterns of use should be closely monitored. Additionally, harm reduction messages should emphasise that higher doses are riskier and do not equal 'more fun'.

Fourth, the lowered cost may also increase the appeal of ecstasy in comparison to other drugs. With most participants reporting using a median of 3 pills or 2 capsules per occasion, this equates to approximately \$50-60 (and less if bulk buying)-less than most would spend during a typical night out on the town drinking. The low cost means ecstasy is also likely to remain an attractive option for events such as festivals which are known for long lines selling high cost, low alcohol content beverages. Festivals may therefore act as key spaces to target novice users and provide education on market trends and harm reduction.

Lastly, perceptions of high purity ecstasy, in a context where there are preliminary indications suggesting ecstasy-related deaths are increasing, of course raise concern about an increased risk of overdose. However, reports of non-fatal overdoses attributed to 'ecstasy' seem to have been on a downward trend in Perth EDRS samples. Self-reported non-fatal overdose rates in Perth EDRS samples were at their highest in 2011 when there were ecstasy shortages, which followed a period of international precursor shortages leading to highly adulterated tablets on the market (18). During this time, the number and purity of WA phenethylamine seizures was also very low (24), and EDRS participants anecdotally reported being sold misrepresented drugs and/or switching to other illicit stimulants.

It is unclear why this declining trend contrasts with the national EDRS data. However, it may partly reflect market differences across jurisdictions, cultural differences related to drug using practices and/or unknown sampling differences. Given a number of deaths occurred in late 2018 (after the 2018 EDRS data collection period) (4), data for recent non-fatal 'overdoses' attributed to 'ecstasy' will be closely examined in the next data collection period.

## Conclusions

According to EDRS data, there have been significant shifts in the Perth ecstasy market in recent years. Most notably, the market has diversified and now features capsule, crystal and powder forms which are perceived as higher purity/potency than traditional pills. Additionally, ecstasy is the cheapest it has been since data collection commenced in 2003. Future harm reduction initiatives should consider the risk implications of these market changes (e.g. a potential increased risk of overdosing on high purity MDMA). Lastly, in addition to helping people make more informed decisions about drug use, drug checking services which can chemically analyse both content and dose, could help provide timely, objective drug market data to complement subjective EDRS data and significantly improve our ability to monitor trends over time.

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### Suggested citation

Grigg, J. & Lenton, S. (2019). Shifting trends in the Perth ecstasy market: Harm reduction implications. Drug Trends Bulletin Series. Sydney: National Drug and Alcohol Research Centre, University of New South Wales.