Drug use in Adelaide Monitored by Wastewater Analysis

Project commissioned by Drug and Alcohol Services South Australia (DASSA)

Analyses performed by:
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Please note that drug consumption levels may vary slightly from report to report due to adjustments made to sewerage flow rates in some of the treatment plants. The South Australian population has also been updated from August 2016 according to the 2016 Census release (Australian Bureau of Statistics).
Purpose of the project

> To determine the prevalence of drug use in South Australia, initially in metropolitan Adelaide, through wastewater analysis.
Wastewater analysis CAN tell us:

> The pattern of drug consumption over the week.

> Drug consumption levels every two months since December 2011.
Wastewater analysis CANNOT tell us:

> The characteristics of people who use drugs.

> In what regions of metropolitan Adelaide drug consumption is occurring.

> The form and way drugs were taken.
Wastewater sampling

> Sampling over one week every two months from Adelaide Metropolitan treatment plants, commencing December 2011.

> In response to COVID-19, sampling will be monthly from May to December 2020*.

> Drugs tested:
  > • Stimulants: cocaine, MDMA, and methamphetamine.
  > • Opioids: morphine, codeine, methadone, oxycodone, fentanyl and heroin.
  > • Cannabis (THC).
  > • Nicotine and anabasine (tobacco-specific alkaloid).
  > • Alcohol.

*Consumption levels in May are based on weighted averages as sampling only occurred on two days. June samples were taken before restrictions on alcohol consumption were lifted in restaurants and pubs. Sampling in July in three of the four plants excludes Wednesday.
Although methamphetamine levels have increased since June 2019, they are below those seen from 2016 to 2018. There was a decrease in July 2020.

Methamphetamine consumption levels increase slightly on weekends.

Average daily consumption (dose/day/1000 people) of methamphetamine over the week. Dose=30mg.
Cocaine consumption levels have increased steadily over time, with levels in July 2020 the highest since reporting began.

Average consumption (dose/week/1000 people) of cocaine for 2012-2018. Weekly consumption (dose/week/1000 people bi-monthly from February 2019 to April 2020 and monthly from May 2020. Dose=100mg.
Cocaine consumption levels are higher on weekends.

Average daily consumption (dose/day/1000 people) of cocaine over the week. Dose=100mg.
The upward trend in ecstasy (MDMA) consumption levels in 2019 has been maintained in 2020, with levels in July 2020 the highest since reporting began.

Average consumption (dose/week/1000 people) of MDMA for 2012-2018. Weekly consumption (dose/week/1000 people bi-monthly from February 2019 to April 2020 and monthly from May 2020. Dose=100mg.
Ecstasy

Ecstasy (MDMA) consumption levels are higher on weekends.

Average daily consumption (dose/day/1000 people) of MDMA over the week. Dose = 100mg.
Stimulants

Average consumption (dose/week/1000 people) 2012-2018. Weekly consumption (dose/week/1000 people) of cocaine (100mg dose), MDMA (100mg dose) and methamphetamine (30 mg dose) from February 2019 to April 2020 and monthly from May 2020.
Stimulants - summary

> Methamphetamine:
  > Highest consumption levels of the stimulants tested.
  > Although levels have increased since June 2019, they are still below those seen from 2016 to 2018. There was a decrease in July 2020.

> Cocaine:
  > Consumption levels have increased since 2015 but are low compared with methamphetamine.
  > Consumption levels in July 2020 are the highest since reporting began.

> Ecstasy (MDMA):
  > Consumption levels have increased since 2019, with levels in July 2020 the highest since reporting began.
Opioids

- Opioids are a class of drugs that are used for pain relief (e.g. codeine, morphine) or for the treatment of opioid dependence (e.g. methadone).
- Codeine in the samples can originate from prescription or over the counter medications. In February 2018 codeine was rescheduled and is no longer available over the counter.
- Morphine, methadone, oxycodone and fentanyl can be used legally on prescription or may be sourced illegally.
- The analysis of opioids, except for heroin, cannot differentiate illicit from licit use.
Heroin

Heroin consumption levels have decreased since 2013. The increase in May 2020 was not sustained, with levels in June and July returning to those in early 2020.

Heroin consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of heroin over the week. Dose = 20mg.
Pharmaceutical Opioids

Average consumption (dose/week/1000 people) for 2012-2018. Weekly consumption (dose/week/1000 people) bi-monthly from February 2019 to April 2020 and monthly from May 2020. Codeine (200mg dose), morphine (30mg dose), methadone (100mg dose), oxycodone (10mg dose) and fentanyl (0.2mg dose).
Opioids - summary

> Oxycodone and fentanyl showed increases in consumption levels from 2012-2015, but have decreased from that time to levels below those seen prior to 2016. Levels of fentanyl decreased in July 2020.

> Codeine, morphine and methadone consumption levels have decreased over the reporting period, with codeine and methadone decreasing further in July 2020.

> Consumption levels of pharmaceutical opioids are constant over the week.

> Heroin consumption levels decreased since 2013 and stayed low. The increase seen in May 2020 was not sustained in June and July.
There was a downward trend in average cannabis consumption levels from 2012-2017, followed by increases in 2018 and 2019. There were further increases from April to July 2020.

Cannabis consumption levels are fairly constant over the week.

Average daily consumption (dose/day/1000 people) of THC over the week. Dose=125 mg.
Nicotine*

Nicotine consumption levels showed a gradual decline from 2012-2016, although they have since stabilised. There was an increase in July 2020.

Average consumption (dose/week/1000 people) of nicotine for 2012-2018. Weekly consumption (dose/week/1000 people) bi-monthly from February 2019 to April 2020 and monthly from May 2020. Dose=1mg.

*Does not differentiate between tobacco and nicotine replacement therapy (NRT) use.
Nicotine consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of nicotine over the week. Dose=1mg.
Anabasine*

Anabasine consumption levels declined from 2015-2018, followed by a gradual increase in 2019. Levels in 2020 to date are the highest since sampling began.

Average excretion (mg excreted/week/1000 people) from 2015-2018 (2015 includes December only). Weekly excretion (mg excreted/week/1000 people) bi-monthly from February 2019 to April 2020 and monthly from May 2020. As yet there is no excretion rate to convert to number of cigarettes smoked.

*Tobacco specific alkaloid
Alcohol

Alcohol consumption levels have decreased since 2016, with consumption levels in 2020 to date the lowest since sampling began.

Average consumption (standard drinks/week/1000 people) in 2018 (excludes February). Weekly consumption (standard drinks/week/1000 people) bi-monthly from February 2019 to April 2020 and monthly from May 2020. Ethanol excretion=0.012 % of ethanol consumption, 10g ethanol per standard drink.
Alcohol consumption levels are higher on weekends.

Average daily consumption (standard drinks/day/1000 people) of ethanol over the week. Dose=10g ethanol per standard drink.
Summary

> Methamphetamine is the predominant stimulant consumed in metropolitan Adelaide and consumption levels increased from 2012-2017.
> Methamphetamine consumption levels dropped in April 2018, and although levels have increased since June 2019, they are still below those seen from 2016 to 2018.
> Other stimulants are consumed at lower levels.
> Cocaine consumption levels have increased since 2015.
> MDMA consumption levels have increased since 2019.
There have been decreases over time in consumption levels of all opioids, with only small changes observed in July 2020.

Cannabis consumption levels showed a downward trend from 2012-2017, but consumption levels in 2019 and 2020 to date are the highest since 2013.

Nicotine and anabasine consumption levels have shown a gradual decline over the sampling period, although anabasine levels have increased since 2019.

Alcohol consumption levels have decreased since 2016, with levels in 2020 to date the lowest since sampling began.