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 use over the week.

> The prevalence of drug use every two months over a seven year period.
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 every two months from Adelaide Metropolitan wastewater commenced in December 2011.

> Drugs tested:
  > Stimulants: cocaine, MDMA, and methamphetamine.
  > Opioids: morphine, codeine, methadone, oxycodone, fentanyl and heroin.
  > Cannabis (THC).
  > Nicotine.
  > Anabasine (a tobacco-specific alkaloid).
  > Alcohol.
Methamphetamine consumption levels increased from 2012 to 2017. A further increase in February 2018 was followed by a large drop in April 2018, with levels after this below those seen in 2016 and 2017.

Stimulants

Methamphetamine consumption levels increase slightly on weekends.

Average daily consumption (dose/day/1000 people) of methamphetamine over the week. Dose = 30 mg.
Stimulants

Cocaine consumption levels have increased since 2015 with a spike in December 2018, but overall consumption levels are low.

Stimulants

Cocaine consumption levels are higher on weekends.

Average daily consumption (dose/day/1000 people) of cocaine over the week. Dose = 100 mg.
Ecstasy (MDMA) consumption levels decreased from 2012 to 2016, with a small upward trend seen over the last 12 months.

Average consumption (dose/week/1000 people) of MDMA for 2012-2017. Weekly consumption (dose/week/1000 people bi-monthly from February 2018. Dose = 100 mg.
Stimulants

Ecstasy (MDMA) consumption levels are higher on weekends.

Average daily consumption (dose/day/1000 people) of MDMA over the week. Dose = 100 mg.
Average consumption (dose/week/1000 people) 2012-2017. Weekly consumption (dose/week/1000 people) of cocaine (100mg dose), MDMA (100mg dose) and methamphetamine (30 mg dose) from Feb 2018.
Stimulants - summary

> Methamphetamine:
  > Highest level of consumption of the stimulants.
  > Steady increase in consumption levels from 2012-2017.
  > A further increase in February 2018 was followed by a large drop in April 2018, with levels after this below those seen in 2016 and 2017.

> Cocaine:
  > Consumption levels have increased since 2015 but overall consumption levels are low.

> Ecstasy (MDMA):
  > Consumption levels decreased from 2012 to 2016 with a small upward trend seen over the last 12 months.
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 consumption levels have decreased since 2013.

Opioids

Heroin consumption levels are constant over the week.

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

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Average consumption (dose/week/1000 people) for 2012-2017. Weekly consumption (dose/week/1000 people) bi-monthly from February 2018. Codeine (200mg dose), morphine (30mg dose), methadone (100mg dose), oxycodone (10mg dose) and fentanyl (0.2mg dose).
Opioids

Codeine consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of codeine over the week. Dose = 200 mg.
Opioids

Methadone consumption levels are constant over the week.

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

Morphine consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of morphine over the week. Dose = 30mg.
Opioids

Oxycodone consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of oxycodone over the week. Dose = 10 mg.
Fentanyl consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of fentanyl over the week. Dose = 0.2mg.
Opioids - summary

> Oxycodone and fentanyl showed increases in consumption levels from 2012-2015, but have decreased from 2016 to levels below those seen during the period 2012-2015.

> Codeine, morphine and methadone consumption levels have decreased over the reporting period.

> Heroin consumption levels have decreased since 2013 and have stayed low.
Cannabis

There was a small downward trend in cannabis consumption levels from 2012-2017, with increases from February 2018.


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Cannabis

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 consumption levels have shown a gradual decline since 2012.


*Does not differentiate between tobacco and nicotine replacement therapy (NRT) use.
Nicotine

Nicotine consumption levels are constant over the week.

Average daily consumption (dose/day/1000 people) of nicotine over the week. Dose = 1mg.
Anabasine consumption levels declined from 2015-2017, followed by a gradual increase over the last 12 months.

Average excretion (mg excreted/week/1000 people) from 2015-2017 (2015 includes December only). Weekly excretion (mg excreted/week/1000 people) bi-monthly from February 2018. As yet there is no excretion rate to convert to number of cigarettes smoked.

*Tobacco specific alkaloid
Alcohol consumption levels decreased slightly between 2016 and 2017, and levels remained fairly stable in 2018 and 2019.

Average consumption (standard drinks/week/1000 people) in 2017 (excludes February). Weekly consumption (standard drinks/week/1000 people) bi-monthly from February 2018.

Ethanol excretion = 0.012 % of ethanol consumption, 10g ethanol per standard drink.
Alcohol

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.

> A further increase in February 2018 was followed by a large drop in April 2018, with levels after this below those seen in 2016 and 2017.

> Other stimulants are consumed at lower levels.

> Cocaine consumption levels have increased; MDMA consumption levels decreased from 2012-2016 with a small upward trend from 2018.

> Consumption levels increase on the weekends.
Summary (continued)

> Opioid consumption levels are relatively constant across the week.

> Oxycodone and fentanyl consumption levels increased to 2015, and decreased since then.

> Cannabis consumption levels showed a downward trend from 2012-2017, but average consumption levels in 2018 and in 2019 are the highest since 2013.

> Nicotine and anabasine consumption levels have shown a gradual decline over the sampling period, although anabasine levels have increased in the last 12 months.

> Alcohol consumption levels decreased slightly between 2016 and 2017, and have remained fairly stable since then.