



PENINGTON
INSTITUTE

Australia's Annual Overdose Report 2018

A Penington Institute Report

August 2018

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Revised September 24, 2018

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Penington Institute would like to thank Dr Shaun Greene and Associate Professor Suzanne Nielsen for their assistance in ensuring this report is of the highest quality. We would also like to acknowledge the services and assistance provided by the Australian Bureau of Statistics.

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Suggested citation: Penington Institute 2018. *Australia's Annual Overdose Report 2018*, August, Melbourne: Penington Institute.

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Executive summary

The number of Australians who die from accidental drug overdose each year continues to rise. This report outlines key statistics relating to overdose deaths in Australia from 2001 to 2016. The report focuses on accidental deaths caused by drugs, excluding drug-deaths that were deemed homicidal, suicidal or of undetermined intent (see Explanatory Notes). This is to ensure that drugs and the public health consequences that arise from them remain the primary focus of the report without the complicating factors attending suicide and homicide.

While it is possible to overdose on many different drug types, the class of drug that contributes most to fatal overdose is opioids. Opioids are analgesics — used to treat pain — and include pharmaceutical medicines like codeine, oxycodone and fentanyl, as well as illicit substances like heroin. Opioids slow down ('depress') the central nervous system (CNS), including the respiratory system. Taking a high dose of an opioid, taking multiple opioids concurrently or taking opioids in combination with other CNS depressants like alcohol or benzodiazepines puts a person at serious risk of overdose. Other factors that contribute to overdose risk include loss of tolerance after a period of abstinence, experiencing chronic pain and having experienced an overdose within the last 12 months.

Changes to drug deaths over the last two decades have been significant. Twenty years ago, the most common drug causing accidental death was heroin, an illicit opioid. Today, it is pharmaceutical opioids that are responsible for the majority of overdose deaths, with a strong association between increases in prescription of opioids and increased mortality. While growth in deaths involving pharmaceutical opioids appears to be slowing somewhat, deaths involving heroin appear to be on the rise.

While opioids contribute most to accidental drug-related mortality in Australia, detections of other drugs in accidental deaths are increasing. Detections of benzodiazepines, amphetamines and cannabinoids in accidental deaths have increased significantly in recent years (see Graph 4). The increases in accidental deaths involving amphetamines (likely driven by crystal methamphetamine or 'ice') and cannabinoids (likely attributable to synthetics) are particularly concerning, as fifteen years ago these drugs were implicated in significantly fewer deaths.

Drug-related death is not confined to either illegal drugs or those taken as medicines; it is also possible to overdose on alcohol (known as 'alcohol-poisoning'). When used in conjunction with other drugs, alcohol may readily contribute to a fatal overdose. Up until recently, alcohol was the third most common drug detected in accidental drug-related deaths, though has recently been surpassed by amphetamines (see Graph 4).

While drugs and overdose are issues stereotypically associated with younger people, this report shows that it is middle-aged (30-59 years) Australians who bear the greatest burden of drug-related mortality (see Graph 5). Further, the gap between this middle-age cohort and Australians under-30 or over-60 has expanded rapidly in the last fifteen years and continues to widen.

Drugs and overdose also tend to be associated with cities, however, the data reveals that the highest growth in accidental drug-related deaths is occurring in regional settings, away from capital cities (see Graph 19). This trend poses significant challenges for responding to overdose, as regional areas tend to have less access to drug treatment and support services, and longer delays in ambulance attendance.

This report has been compiled by Penington Institute based on data from the Australian Bureau of Statistics (ABS).

The key findings of the report are as follows:

In 2016, there were a total of 2,177 drug-related deaths (accidental, suicidal, homicidal, and undetermined) in Australia (see Graph 1). This represents a significant increase in the fifteen years since 2002 when 1,231 deaths were recorded.

- Drugs continue to be a major contributor to accidental mortality in Australia: of 7,158 accidental deaths in 2016, drugs were determined to be the primary cause in 1,704 (approximately 23%).
- Twice as many men died from overdose than women. In 2016, there were 1,453 drug-related deaths for males compared to 724 for females.

The gap between accidental drug-related deaths and the road-toll continues to widen (see Graph 3).

- Over the past 15 years, accidental drug deaths have increased while accidental road deaths have decreased, resulting in the number of accidental drug deaths exceeding the number of road deaths in 2013.
- Accidental drug related deaths continue to exceed those caused by road accidents; there were 1,704 accidental drug-related deaths in 2016 compared to 1,331 road deaths.
- The number of accidental drug-related deaths is more than double the number of those killed in car accidents (1,704 compared to 751 for 2016). Fifteen years ago, the number of car accident deaths and drug-related deaths were comparable.

Accidental death due to drug-use has increased consistently over the past 15 years, from 903 in 2002 to 1,704 in 2016.

- Accidental deaths involving opioids continue to overshadow those involving other drugs.
- Between the years 2012-2016, there were 3,993 accidental drug-related deaths caused by an opioid (see Table 2). This represents a significant increase from the five-year period 2002-2006, with 1,877 accidental deaths involving opioids.
- Oxycodone, morphine, or codeine continue to be the main contributors to deaths involving opioids, recording 1.6 deaths per 100,000 people in the period 2012-2016 (see Graph 15).
- There continues to be a marked increase in overdose deaths across regional Australia, as the per capita rate of accidental drug-related death for regional Australia continues to outstrip metropolitan areas (see Graphs 19-23).

Middle-aged Australians are far more likely to die from an accidental overdose than either younger or older Australians (see Graph 5).

- In 2016, 68% of all accidental drug-related deaths occurred within the 30-59 age group. Since 2002, the number of accidental drug-related deaths per year within the 30-59 age group has more than doubled from 536 to 1181.

In 2016, nearly 68,000 potential years of life were lost in Australia to accidental drug-related death.

- This equates to an average of 33 years of life lost for every person who dies from a drug-related accident.

Aboriginal and Torres Strait Islander people are significantly over-represented across all drug types (see Graphs 12 and 13).

- In 2016, across the five jurisdictions that report nationally (NSW, QLD, WA, SA and NT), the accidental death rate per 100,000 for Aboriginal people was 20.7 compared with 6.4 for non-Aboriginal Australians.
- This means that the rate of drug-related mortality for Aboriginal and Torres Strait Islanders is more than three times that of non-Aboriginal Australians.

When looking at the per capita rate of accidental drug-related deaths involving pharmaceutical opioids, the greatest increases were seen in Western Australia, New South Wales and Queensland (see Table 4).

- Comparing 2002-2006 against 2012-2016:
 - Western Australia recorded a 2.7-times increase;
 - New South Wales recorded a 2.3-times increase;
 - Queensland recorded a 4.5-times increase;

Heroin deaths, which peaked in the late 1990s before a steep decline, are rising again, particularly among females.

- In 2006, there were fewer than 100 deaths involving heroin. In 2016 this has risen to almost 400 (see Graph 15);
- Between 2002-06, there were 271 female deaths involving heroin. Between 2012-16, this rose to 869, a 3.5-times increase (see Table 3).

Deaths involving amphetamines are increasing steadily, likely driven by crystal methamphetamine or 'ice, a highly potent form of amphetamine (see Table 3)

- Until 2011, the rate of accidental deaths involving amphetamines was relatively stable at approximately 100 per year, though since then it has increased to more than 400 in 2016;
- Between 2002-06, there were 298 deaths involving amphetamines, this rose to 1,237 for 2012-16.

Benzodiazepines continue to contribute substantially to accidental drug-related deaths, usually in the context of poly-drug use:

- From 2001 to 2007, deaths involving benzodiazepines were relatively stable at about 200 per year. This has steadily increased to approximately 650 in 2016. While this growth is concerning, the proportion of deaths in which benzodiazepines are detected has remained stable from 2001 to 2016.

Definitions and explanatory notes

This report is about accidental drug-related deaths in Australia. It is based on cause of death information, which is certified by doctors or coroners (as the case requires), collected by state and territory governments, and validated and compiled by the Australian Bureau of Statistics (ABS).

Unless otherwise referenced, data in this report was sourced from the ABS in a customised report provided in June 2018. The full explanatory notes for cause of death data are available on the ABS website.¹

It is important to note that data relating to the most recent 24-month period in this report (that is, 2015 and 2016) is not final. In Australia, almost all drug-related deaths must be reported to a coroner and these investigations can, in some instances, take several years. This means that 2015 and 2016 data are likely to be revised as cases progress. This also means that, in this report, the data for 2014 and 2015 will appear different from the 2017 Penington Institute report.

Current numbers for 2015 and 2016 should be considered preliminary. Based on past reporting, the number of deaths for 2015 and 2016 is expected to rise. In graphs depicting a time-series, data not yet finalised (2015 and 2016) are represented as a broken line.

The table below depicts the process of revising and finalising data. The first available data is preliminary, it is then revised the following year and then finalised the year after that. In Penington Institute's 2017 Overdose Report, the data for 2014 was revised, the data for 2015 data was preliminary, and the data for 2016 was not yet available. In the current report, data for 2014 is finalised, data for 2015 is revised, and data for 2016 is preliminary.

Data/Year	2017 Overdose Report	2018 Overdose Report
All drug-related deaths, 2014	2043 (revised)	2068 (final)
All drug-related deaths, 2015	2023 (preliminary)	2114 (revised)
Accidental drug deaths, 2014	1490 (revised)	1513 (final)
Accidental drug deaths, 2015	1489 (preliminary)	1604 (revised)
Accidental drug deaths <30, 2014	140 (revised)	143 (final)
Accidental drug deaths <30, 2015	121 (preliminary)	136 (revised)
Accidental drug deaths 30-59, 2014	1047 (revised)	1066 (final)
Accidental drug deaths 30-59, 2015	1071 (preliminary)	1062 (revised)
Deaths involving opioids, 2014	829 (revised)	1011 (final)
Deaths involving opioids, 2015	774 (preliminary)	1147 (revised)

Causes of death statistics for states and territories in this publication have been compiled based on the state or territory of usual residence of the deceased, regardless of where in Australia the death occurred. Deaths of

¹ ABS (2017) '3303.0 - Causes of Death, Australia, 2015', <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3303.0Explanatory%20Notes12015?OpenDocument>

persons usually resident overseas which occur in Australia are included in the state/territory in which their death was registered.

A reference to a 'death' means a drug-related death, unless otherwise specified.

All deaths includes drug-related deaths due to all intents, i.e. homicide, suicide, accidents and undetermined intent.

Accidental deaths includes drug-related deaths determined to be accidental by legal rulings. This includes accidental overdose of a drug, wrong drug given or taken in error, drug taken inadvertently, and accidents in the use of drugs, medicaments and biological substances in medical and surgical procedures.

Drug includes illicit drugs (such as heroin and methamphetamine), pharmaceuticals (such as pain medicines and sedatives), alcohol and other substances with a psychoactive effect that may be licit, illicit or of undetermined legal status.

Overdose occurs when a person takes more of a drug than their body can handle. How an overdose manifests and what it looks like depends on several factors such as the type of drug taken and the person's response to it. Most overdoses are not fatal, though even non-fatal overdose can have serious and long-term health effects. Most fatal overdoses are caused by opioids (often in combination with other substances) but it is possible to overdose on other drugs like methamphetamines, benzodiazepines, alcohol and some cannabinoids.

Drug-related death means a death caused directly by drug use. This may include a range of specific causes of death and clinical states which broadly fall into either drug poisoning or mental and behavioural disorders due to psychoactive substance use. The definition excludes accidents, homicides, and other causes indirectly related to drug use, such as where drugs may have played a contributory role in a fatal road accident.

Road traffic accidents includes all deaths due to road-related accidents, including trucks, cars, buses, pedestrians, motorbikes and cyclists.

Car accidents means persons who died as occupants of a car involved in a collision or accident.

Amphetamines are a class of stimulants that are primarily taken for recreational purposes, though pharmaceutical amphetamines are also used in medical treatments. Illicit amphetamines are commonly available in powder (known as speed), tablets and increasingly as crystal methamphetamine ('crystal meth' or 'ice'), a highly potent form. In this report, the recreational drug MDMA or 'ecstasy' is classed as an amphetamine.

Benzodiazepines are medicines used to treat anxiety, relax people and assist with sleep. Long-term use of benzodiazepines can lead to the development of tolerance and physical and psychological dependence. Like opioids, benzodiazepines slow down the central nervous system and are consistently the second most common class of drug detected in drug-induced deaths.² When taken alone, the effects of benzodiazepines on the respiratory system is limited. However, the effect is increased when combined with other drugs like alcohol or opioids, making concurrent use of benzodiazepines with alcohol and/or opioids especially dangerous.

Cannabinoids refers to drugs containing chemical compounds that act upon the brain's cannabinoid receptors. The most notable cannabinoid is tetrahydrocannabinol (THC) – the primary psychoactive substance found in the cannabis plant. However, this category also includes synthetic cannabinoids (often sold as 'synthetic marijuana' or

² ABS (2017) 'Drug Induced Deaths in Australia: A changing story', *Australian Bureau of Statistics*: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Drug%20Induced%20Deaths%20in%20Australia~6>

other names such as 'spice') which can be highly potent and have been linked to an array of harms including fatal overdoses.

The medicinal value of pharmaceutical cannabinoids in treating a variety of conditions is subject to ongoing debate, though the use of pharmaceutical cannabinoids for medicinal purposes is increasing. In this report, the term 'cannabinoids' refers to illicit substances.

Opioids refers to substances derived from or mimicking the effects of opium by acting on the body's opioid receptors. Opioids depress the central nervous system (including the respiratory system) making overdoses involving opioids particularly dangerous. Some opioids, such as morphine are derived from the opium poppy, whereas others (such as oxycodone and fentanyl) are synthetic or semi-synthetic. Some synthetic opioids such as fentanyl are highly potent.

The term '**pharmaceutical**' is used throughout the report as a broad term to include pharmaceutical drugs acquired through prescription, over the counter and through illegal means.

Pharmaceutical opioids refers only to the following six opioids: oxycodone, morphine, codeine, fentanyl, pethidine and tramadol. Pharmaceutical opioids can be taken medically (for the purpose they were prescribed), or non-medically (for a purpose other than what they were prescribed for).

The ABS groups some opioids together into single categories: oxycodone, morphine and codeine form one category, and fentanyl, pethidine and tramadol form another. This report uses ABS data and is therefore unable to provide further information relating to individual drugs within these categories.

Heroin is an illicit opioid derived from the opium poppy most commonly used for recreational and/or non-medical purposes. In Australia, heroin is typically injected, though it can be smoked, snorted or swallowed (though injecting is less common in some other countries). As the sale of heroin is not regulated, it may be mixed with a range of harmful adulterants.

Methadone is a synthetic opioid *not* included in the pharmaceutical opioid category. This is because it is primarily used as a treatment for opioid addiction as part of Opioid Maintenance Therapy (OMT)³, though it is also used in the treatment of chronic pain. While taking methadone for OMT reduces a person's risk of overdose, methadone can be a risk factor for overdose if other central nervous system depressants such as opioids, benzodiazepines and alcohol are taken concurrently.

³ Opioid Maintenance Therapy or OMT is also known as Opioid Substitution or Replacement Therapy (OST/ORT) as well as Medication Assisted Treatment for Opioid Dependence (MATOD). This report uses the acronym OMT.

Alcohol overdose refers to alcohol poisoning, which involves drinking large amounts of alcohol over a short period of time. This results in a toxic blood alcohol concentration. Data on accidental alcohol-related death refers to deaths in which alcohol is considered the underlying cause of death though does not exclude the presence of other drugs. Deaths involving combined alcohol and drug use are only recorded as alcohol overdoses if the coroner states alcohol was the underlying cause of death.

How individual deaths are counted

The data used to produce this report related to drugs determined to have contributed significantly to a person's death, however, do not necessarily indicate the primary cause of death. For example, a coroner may determine that while opioids were the primary cause of one individual's death, alcohol and benzodiazepines also contributed significantly. In this case, this person would be included in three categories, however, this individual will only be counted once in the total.

If multiple drugs are involved in a death and the coroner has not determined that one drug was the cause of death, then the underlying cause is coded to ICD Code X44 and all the drugs involved are listed as multiple causes in the order listed by the coroner.

To provide more robust statistical analysis, this report uses comparison periods. These five-year periods are 2002-2006 and 2012-2016. Ratios are calculated by dividing the number of deaths in the more recent period over the number of deaths in the reference period. The ratio shows how much the number of deaths has increased or decreased relative to the previous period. For example, a ratio of 2.0 means there were twice as many deaths from 2012-16 as there were from 2002-2006; a ratio of 3.0 means there were three times as many deaths, and so on. A ratio of 0.5 means there were half as many (50 per cent fewer) deaths in the recent period as in the reference period.

This method allows for a more accurate representation of changes in the rate of deaths than year-to-year comparisons. This is because five-year comparison periods reduce the impact of localised spikes or outliers. It also reduces the impact of the data finalisation process.

Data cubes are provided under each graph. These contain the values (numbers) from each graph, allowing readers to see the raw data used to produce each graph.

Poly-drug use

It is important to note that most deaths from a drug overdose are caused by a combination of drugs and not the result of a single drug.

For example, as shown in Graph 4 (p.13), benzodiazepines have been recorded as the second most common drug causing death. While benzodiazepines were the second highest underlying cause of death, they are seldom the sole cause of death. Most benzodiazepines determined to have contributed to an overdose death had been used concurrently with other drugs. In contrast, among people who died from an overdose, heroin is the drug causing most deaths where only one drug was detected. A 2017 report by the Australian Bureau of Statistics indicates that multiple drugs were detected in over half (59%) of accidental drug-related deaths in 2016.⁴

Limitations

⁴ ABS (2017) Ibid.

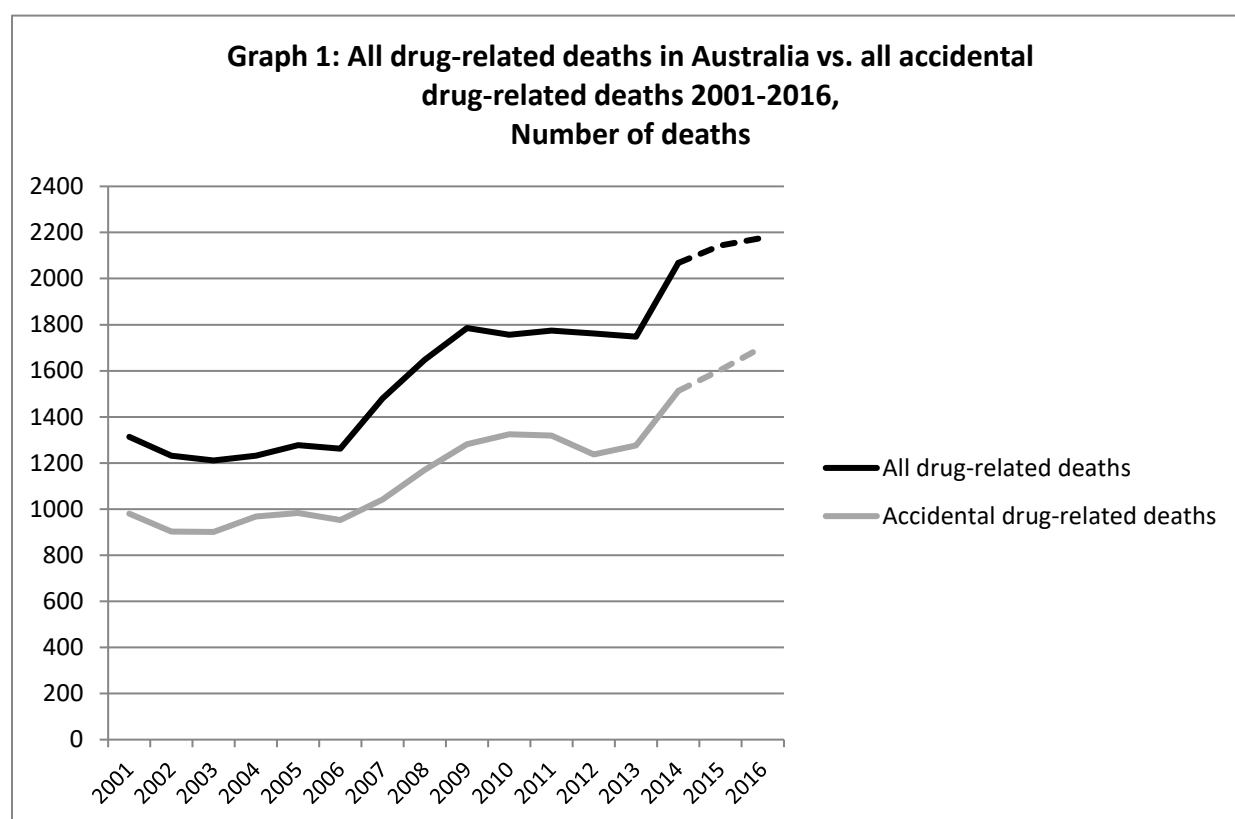
Data availability – The data used to produce this report was provided by the Australian Bureau of Statistics (ABS). The ABS groups substances into single categories (such as the category 'fentanyl, pethidine and tramadol'). Data for less common substances (opioids like dextropropoxyphene, tapentadol and others) are not collected and so are not included in this report.

Buprenorphine – Buprenorphine is a synthetic opioid used in Opioid Maintenance Therapy (OMT) and less commonly as a pain treatment (usually in palliative care settings). Data on drug-related deaths involving buprenorphine were not available for the current report.

Drug-related deaths

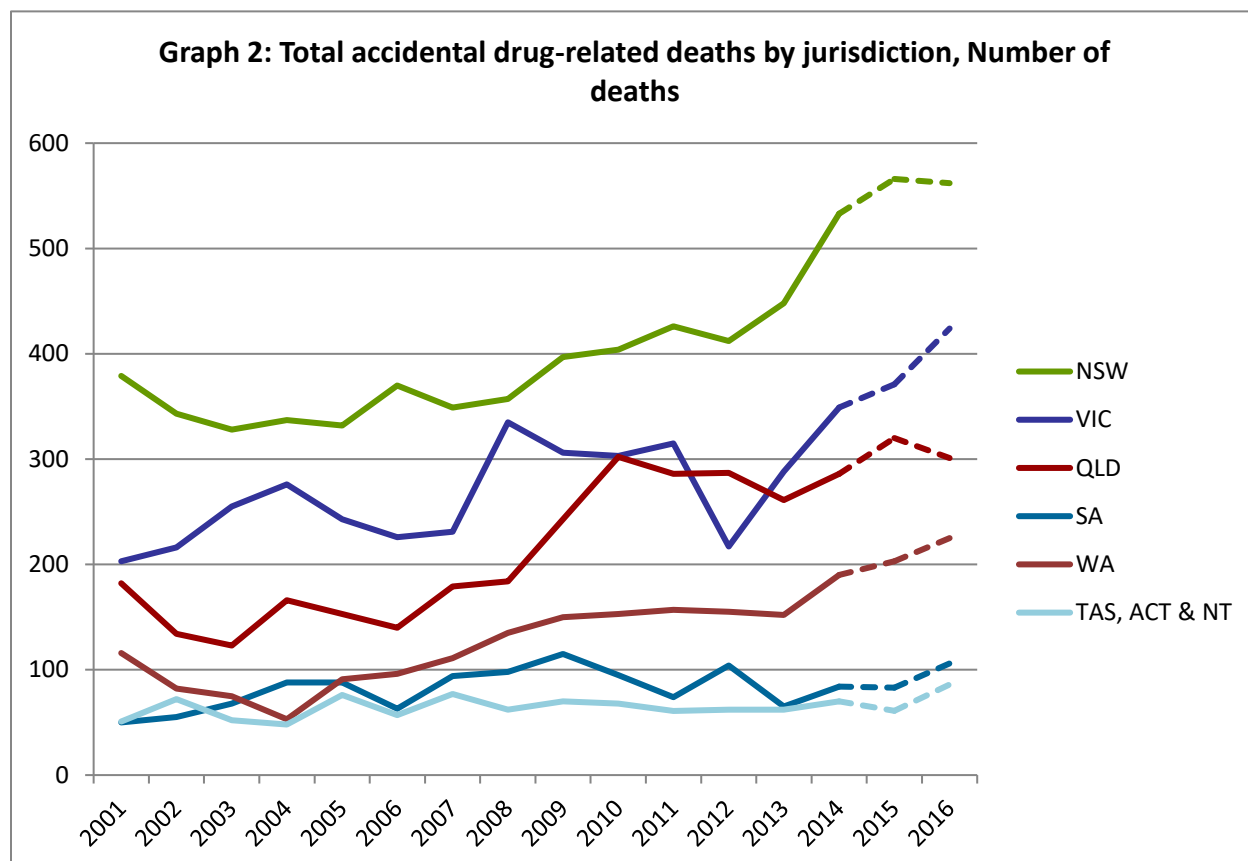
Drug-related mortality continues to pose an ongoing challenge to Australia's public health. In 2016, there were a total of 2,177 drug-related deaths (accidental, suicidal, homicidal and undetermined intent) in Australia. The majority (1,704 or 78%) of deaths in which drugs were the underlying cause were accidental; suicidal deaths comprise most of the remainder at 416 (19%), with 57 deaths were classified as either homicidal or undetermined (2%).

The increasing rates of overdose mortality put Australia in line with several other countries (such as the United States, Canada and the United Kingdom), which have also experienced sharp increases in numbers of fatal overdoses in recent years.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All deaths	1,313	1,231	1,211	1,231	1,278	1,262	1,480	1,648	1,785	1,756	1,775	1,762	1,748	2,068	2,144	2,177
Accidental deaths	981	903	901	968	983	952	1,041	1,171	1,281	1,325	1,319	1,237	1,276	1,513	1,604	1,704

- In 2016, there were a total of 2,177 drug-related deaths in Australia, up from 1,231 in 2002.
- Accidental deaths include deaths that were determined to be accidental by legal rulings. This includes accidental overdose of a drug, wrong drug given or taken in error, drug taken inadvertently and accidents in the use of drugs, medicaments and biological substances in medical or surgical procedures. Accidental deaths due to drug overdose are consistently the key driver of all drug-related deaths in Australia.
- The number of drug-related deaths was highest in Australia's three most populous states: New South Wales, Victoria and Queensland.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
NSW	379	343	328	337	332	370	349	357	397	404	426	412	448	533	566	562
VIC	203	216	255	276	243	226	231	335	306	303	315	217	288	349	371	424
QLD	182	134	123	166	153	140	179	184	243	302	286	287	261	286	320	301
SA	50	55	68	88	88	63	94	98	115	95	74	104	65	84	83	106
WA	116	82	75	53	91	96	111	135	150	153	157	155	152	190	203	225
TAS, ACT & NT	51	72	52	48	76	57	77	62	70	68	61	62	62	70	61	86

Table 1: All drug-related deaths by area of usual residence, 2016.

	Number	Rate per 100,000	Proportion
Greater Sydney	375	7.3	55.1
Rest of NSW	306	11.5	44.9
NSW (total)	681	8.6	100.0
Greater Melbourne	393	8.3	73.5
Rest of VIC	142	10.0	26.5
Vic (total)	535	8.7	100.0
Greater Brisbane	172	7.3	43.3
Rest of QLD	225	9.1	56.7
QLD (total)	397	8.2	100.0
Greater Adelaide	123	9.3	82.0
Rest of SA	27	6.4	18.0
SA (total)	150	8.7	100.0
Greater Perth	229	11.3	77.1
Rest of WA	68	12.5	22.9
WA (total)	297	11.6	100.0
Greater Hobart	32	13.8	48.5
Rest of TAS	34	10.8	51.5
Tas (total)	66	12.1	100.0
Greater Darwin	6	np	na
Rest of NT	9	np	na
NT (total)	15	np	na
Australian Capital Territory	36	9.0	na
Greater capital cities (total)	1366	8.3	62.7
Rest of states (total)	811	10.2	37.3
Australia	2177	8.9	100.0

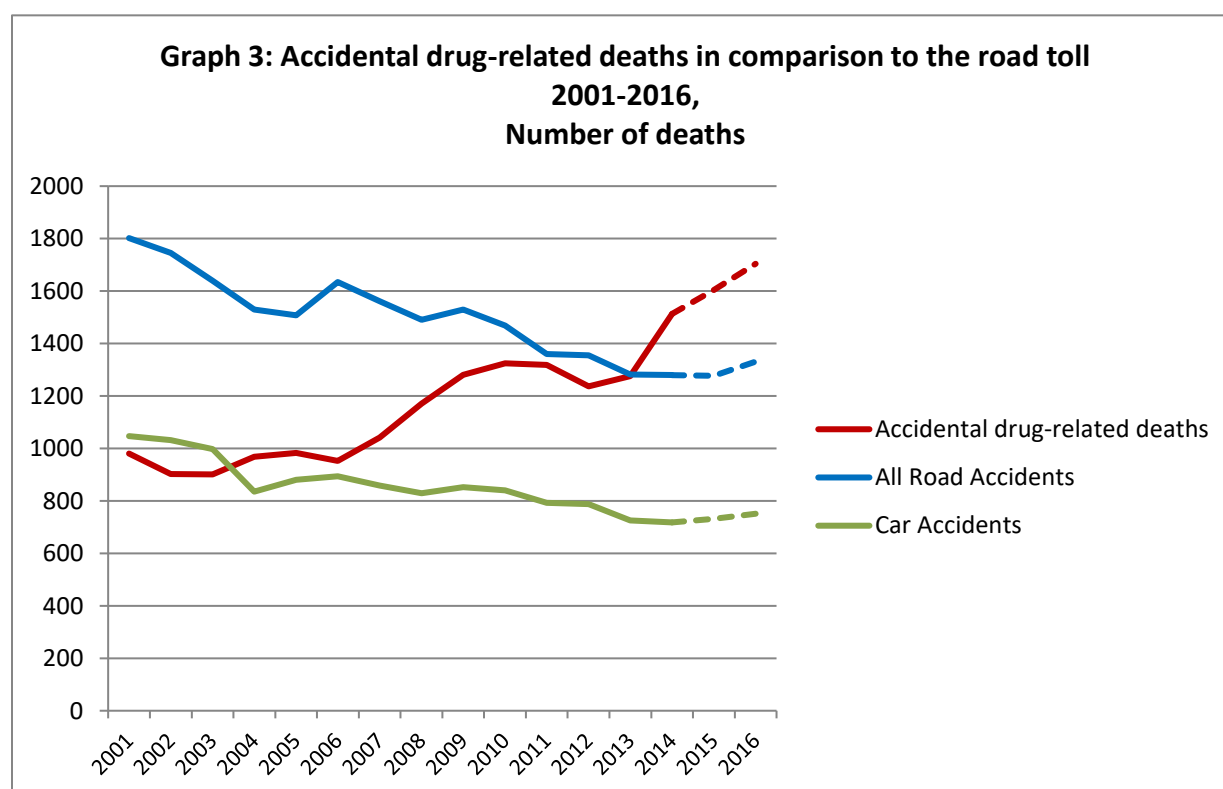
Note: Rate and proportion for NT and ACT have not been published due to low numbers limiting the robustness of statistical analyses.

Deaths compared to the road toll

Fifteen years ago, significantly more deaths were caused by road accidents than drugs in Australia. As the number of road deaths has declined, the number of accidental drug-related deaths has increased. In 2013, the number of accidental drug-related deaths surpassed the number of road accident deaths, and the gap has continued to widen.

In the early 2000s, the number of people killed in car accidents and from accidental drug-related deaths were roughly equivalent. However, as accidental drug-related deaths have risen and deaths from car accident declined, the number of accidental drug-related deaths is now more than double those killed in car accidents. Demonstrably, drug-related death is responsible for a significant (and growing) proportion of accidental mortality in Australia. In fact, of all accidental deaths in Australia in 2016, drugs are determined to have been the underlying cause of fatality in almost one-quarter (23%).

Nationally, accidental drug-related deaths have increased over the past 15 years from 903 in 2002 to 1,704 in 2016.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Accidental drug-related deaths	981	903	901	968	983	952	1041	1171	1281	1325	1319	1237	1276	1513	1604	1704
All road accident deaths	1802	1745	1639	1530	1508	1635	1561	1491	1529	1468	1360	1355	1282	1280	1277	1331
Car accident deaths	1047	1032	997	835	881	894	858	829	853	840	793	788	726	718	732	751

Accidental deaths by drug class

Opioids continue to be the main cause of accidental drug-related deaths in Australia. This broad category includes both illicit opioids (like heroin), pharmaceutical opioids such as oxycodone and fentanyl, and methadone (a synthetic opioid commonly used to treat opioid addiction). Pharmaceutical opioids are used in a range of contexts including medical and non-medical uses and obtained from a range of supply sources (pharmacies, family or friends, or purchased illicitly). From 2001-2005, deaths involving opioids were steady at approximately 450 per year. However, this rate has increased significantly from 2006 onwards to over 1100 per year since 2014.

Benzodiazepines, a category of depressants used to treat anxiety and sleep-disorders, are the second most common drug class detected in accidental drug-related deaths. However, poly-drug use is an important factor here. While benzodiazepines are the second most common drug class involved in accidental drug-related deaths, they are unlikely to be the sole drug detected in a drug-related fatality. A recent report by the Australian Bureau of Statistics shows that in over 96% of deaths where benzodiazepines were present, they had been taken in conjunction with other drugs including alcohol.⁵ Since 2013, benzodiazepines have been detected in more than 600 deaths per year.

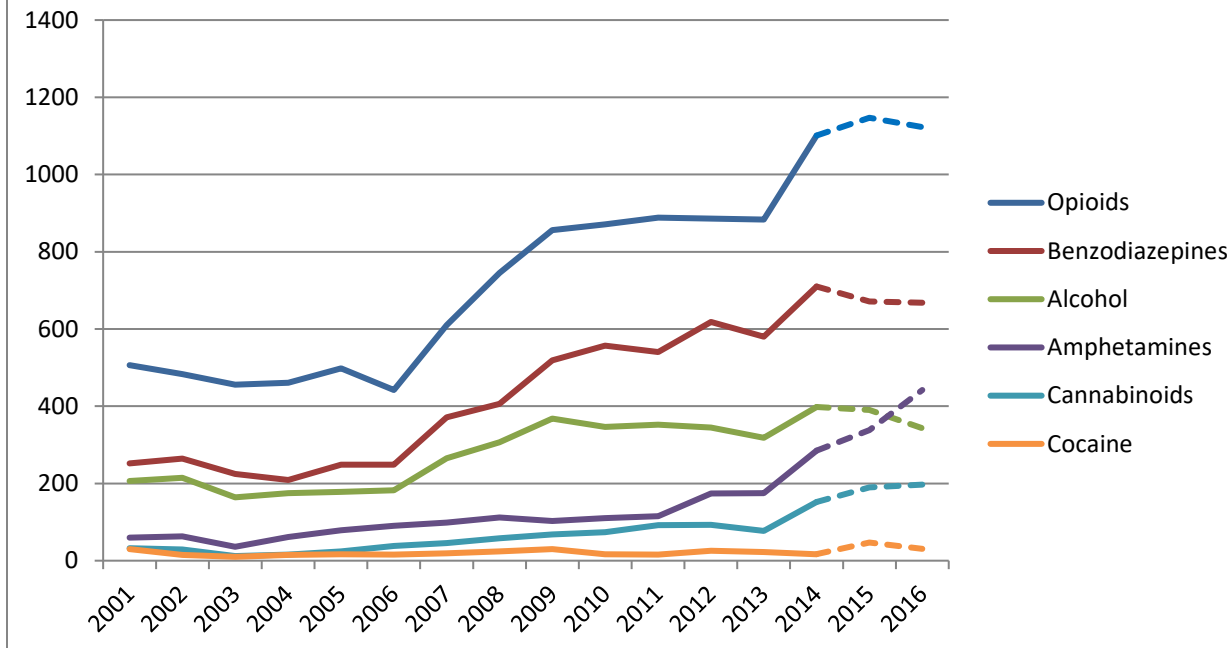
Recent increases in deaths involving amphetamines are likely driven by the increasing availability of crystal methamphetamine (known as 'ice'), a highly potent form of amphetamine. In 2013, amphetamines contributed to 175 deaths, though this increased to 442 in 2016. The recent growth in deaths involving amphetamines has led to amphetamines surpassing alcohol as the third most common substance detected in accidental drug-related deaths in Australia.

Prior to the introduction of synthetic cannabinoids, cannabis was rarely implicated as an underlying cause in drug-related deaths. However, the rate of cannabinoids being implicated in drug-related deaths has risen steadily since 2001 and rose significantly from 2013 onwards. While research into synthetic cannabinoids is limited, it is highly likely that the increase in the number of deaths in which cannabinoids are implicated is linked to the increasing availability of synthetic cannabinoids.

In 2001, alcohol was implicated in approximately 200 deaths per year, though with steady growth this has risen to approximately 400 per year.

⁵ ABS (2017) 'Drug Induced Deaths in Australia: A changing story', *Australian Bureau of Statistics*: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Drug%20Induced%20Deaths%20in%20Australia~6>

**Graph 4: Accidental drug-related death by drug class 2001-2016,
Number of deaths**



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Opioids	506	483	456	461	498	442	610	745	856	871	888	886	883	1101	1147	1123
Benzodiazepines	252	264	225	209	249	249	371	406	519	557	540	618	580	710	671	668
Alcohol	206	215	164	175	178	182	265	307	368	346	352	345	318	398	390	343
Amphetamines	60	63	36	61	79	90	99	112	103	110	115	174	175	285	338	442
Cannabinoids	32	29	12	16	24	38	46	58	68	74	92	93	77	152	190	197
Cocaine	30	15	10	15	17	16	19	24	30	17	16	26	22	17	47	31

Table 2: Changes in per capita (pc) rates of accidental drug-related deaths by drug class, 2002-06 vs. 2012-16

	2002-2006 (n)	2012-2016 (n)	2002-2006 (pc)	2012-2016 (pc)	Ratio (pc)
Amphetamines	298	1,237	0.3	1.1	3.7
Benzodiazepines	812	2,177	0.8	1.9	2.4
All opioids (total)	1,877	3,993	1.9	3.5	1.8
Heroin	554	1,183	0.6	1.1	1.8
Oxycodone, morphine, codeine	801	1,798	0.8	1.6	2
Methadone	408	856	0.4	0.8	2
Fentanyl, pethidine, tramadol	55	746	0.1	0.7	7
Cannabinoids	106	613	0.1	0.5	5
Alcohol	700	1,356	0.7	1.2	1.7
All accidental drug-related deaths	4,707	7,334	4.7	6.2	1.3

At the national level the rate of accidental death has increased across all drug classes:

- The fentanyl, pethidine and tramadol category recorded the largest increase from 2002-06 to 2012-16 (increasing by seven times). However, there was a very low number of deaths in the reference period (2002-06);
- Deaths involving cannabinoids have increased significantly in recent years. This growth in overdoses involving cannabinoids is likely attributable to the increasing availability of synthetic cannabinoids such as 'spice' and 'K2', however, more data is required to confirm this;
- Deaths involving amphetamines increased 3.7 times between the comparison periods. This is likely attributable to the increasing use of stronger amphetamines such as crystal methamphetamine or 'ice' – a highly potent form of amphetamine;
- The ratio of increase of accidental deaths across all drug types was 1.3;
- Note: the sum of values in Table 2 will be greater than the listed total. This is because many deaths involve multiple drugs ('poly-drug use') and so will appear in multiple categories (see explanatory notes).

Accidental drug-related deaths by age

Australians in middle age (between 30 and 59 years) are the most likely to die from an accidental drug-related death. This cohort was also the most likely to die from drug-related causes fifteen years ago, however, the recent growth in death among this cohort has been dramatic. The number of deaths among those aged 30-59 years has more than doubled since 2001 and since 2013 has risen from approximately 850 per year to almost 1200 per year. Those aged 30-59 accounted for approximately 70% of all accidental drug-related deaths in 2016.

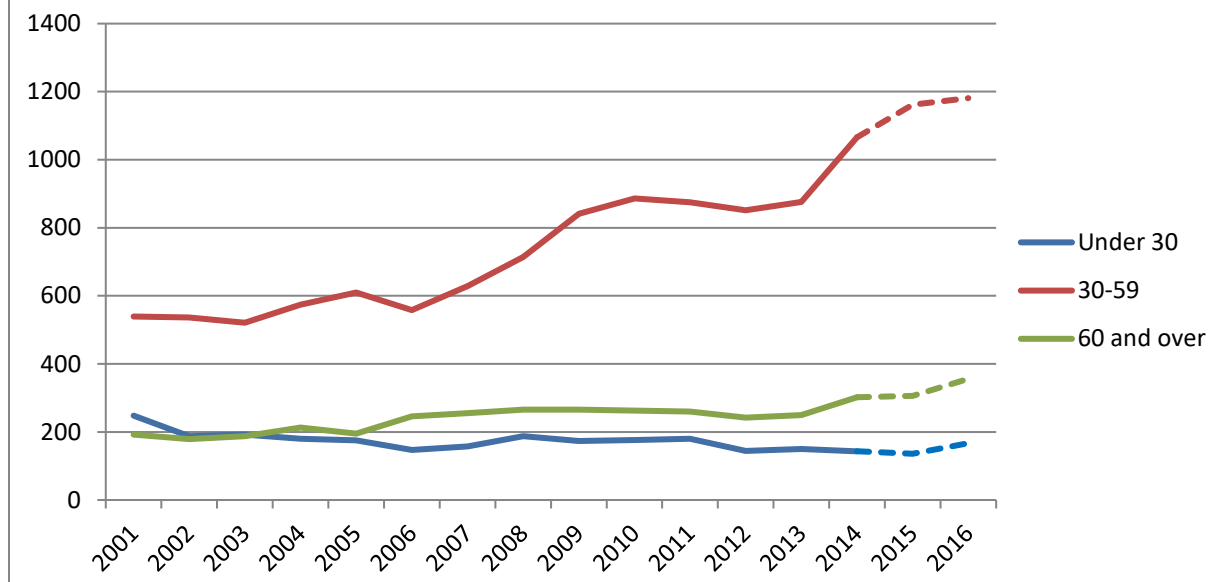
Deaths among those aged under 30 years have remained steady since declining in 2001. The accidental death rate among people aged over 60 years has been largely stable, though has seen a small but steady increase since 2013.

The over-representation of Australians in middle age in accidental drug-related deaths likely reflects several factors. The Australian population is aging generally; the cohort of people who inject drugs (who are at high-risk of overdose) is also aging; and middle-aged Australians are prescribed pharmaceutical opioids at a higher rate than those aged under 30.⁶

However, it is interesting to note that those aged 60 and over (who are prescribed the most pharmaceutical medicines) are so under-represented compared to those aged 30-59.

⁶ Roxburgh A. et al (2011) 'Prescription of opioid analgesics and related harms in Australia', *Medical Journal of Australia*, vol. 195(5): 280-4.

**Graph 5: Accidental drug-related deaths by age group 2001-2016,
Number of deaths**



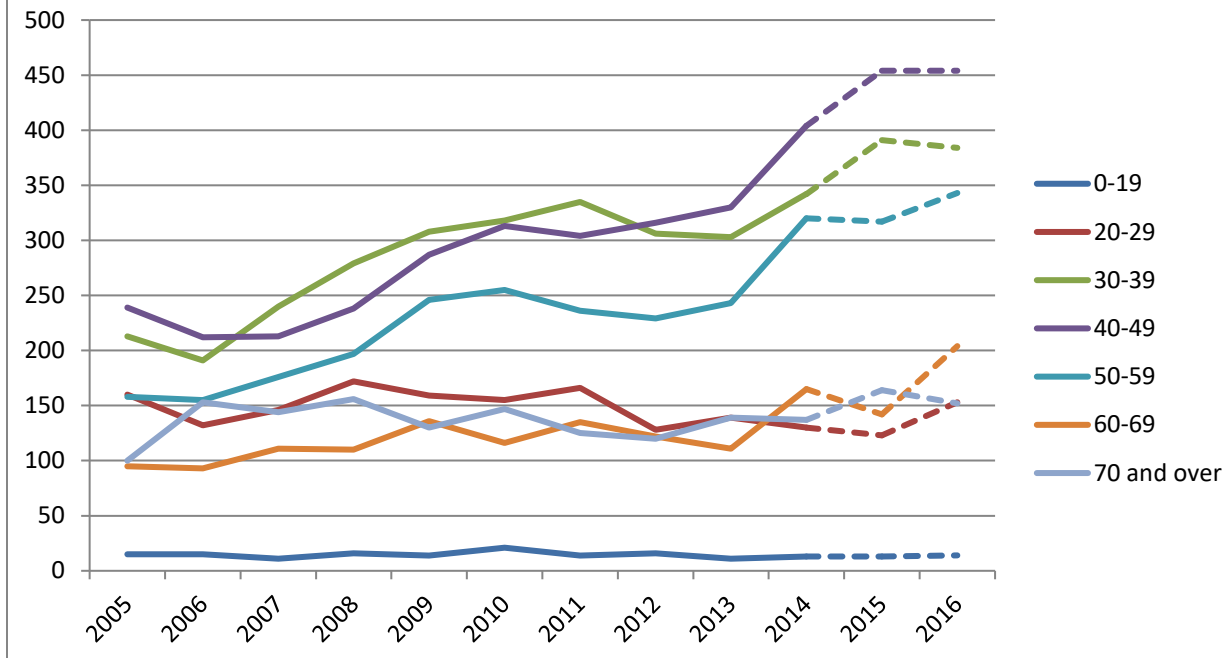
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Under 30	248	188	192	180	175	147	157	188	173	176	180	144	150	143	136	167
30-59	539	536	521	574	610	558	629	714	841	886	875	851	876	1066	1162	1181
60 and over	192	179	188	203	195	246	225	266	266	263	260	242	250	302	306	356

Looking closely at middle-aged Australians (Graph 6), the 40-49-year age bracket is the most likely to die accidentally from a drug overdose. This has been the case since 2012, when the 40-49 bracket overtook the 30-39 bracket as the cohort most likely to die from accidental drug-related death. The 50-59 bracket has consistently ranked third in accidental drug-related deaths since 2005.

While the over-representation of those in middle age is longstanding, today, the typical drug-related death is a man aged 40+ using a combination of pharmaceutical opioids and benzodiazepines and is increasingly likely to be living in regional Australia. In 1999, the typical drug-related death was a man in his early thirties using heroin or morphine, more likely in a metropolitan setting.⁷

⁷ ABS (2017) 'Drug Induced Deaths in Australia: A changing story', *Australian Bureau of Statistics*: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Drug%20Induced%20Deaths%20in%20Australia~6>

**Graph 6: Accidental drug-related deaths by age group 2005-2016,
Number of deaths**



	0-19	20-29	30-39	40-49	50-59	60-69	70+
2005	15	160	213	239	158	95	100
2006	15	132	191	212	155	93	153
2007	11	146	240	213	176	11	144
2008	16	172	279	238	197	110	156
2009	14	159	308	287	246	136	130
2010	21	155	318	313	255	116	147
2011	14	166	335	304	236	135	125
2012	16	128	306	316	229	122	120
2013	11	139	303	330	243	111	139
2014	13	130	342	404	320	165	137
2015	13	123	391	454	317	142	164
2016	14	153	384	454	454	204	152

- Middle-aged Australians (aged 30-59 years) constitute almost 70% of accidental drug-related deaths in Australia annually;
- While drug use and overdose may be stereotypically associated with younger people, the burden of mortality and morbidity is greatest for middle-aged Australians;
- From 2013 to 2016, the number of accidental drug-related deaths of Australians aged 60-69 has almost doubled: from just over 100 per year over in 2013 to more than 200 in 2016.

Premature mortality and drug-related death

Australia boasts a high average life expectancy (82.4 years on average) ⁸ and more than 50% of all deaths in Australia occur after the age of 80 years.⁹ While high life expectancy is undoubtedly a good thing, the amount of years of life Australia loses to drug-related death is stark.

An estimated 67,697 years of life were lost to drug overdose in 2016 in Australia.

At the level of the individual, a person who dies from a drug overdose loses on average 33 years of life. This is down from an average of 40 years in 2000, however, this likely reflects the increased age of the average drug-related death today compared to the year 2000.

⁸ ABS (2017) '3302.0.55.001 Life Tables, States, Territories and Australia, 2014-2016', <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/3302.0.55.001Main%20Features22014-2016?opendocument&tabname=Summary&prodno=3302.0.55.001&issue=2014-2016&num=&view>

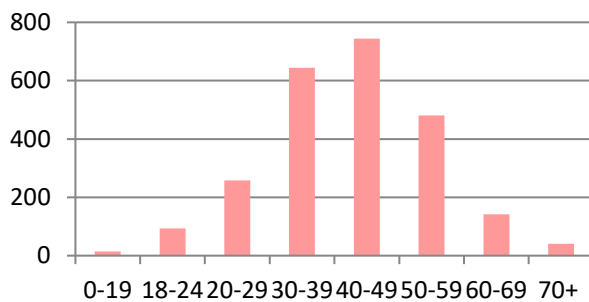
⁹ ABS (2017) 'Drug Induced Deaths in Australia: A changing story', *Australian Bureau of Statistics*: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Drug%20Induced%20Deaths%20in%20Australia~6>

Deaths by age and drug type

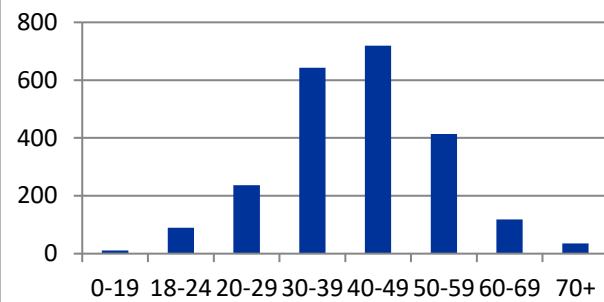
The graphs below show that there are distinct patterns with age and drug type. Using pharmaceutical opioids or benzodiazepines and being aged between 30-49 places a person at higher risk of experiencing a fatal overdose.

Age is also correlated with type of drug used. Deaths involving prescription opioids and benzodiazepines were correlated more with the 40-49 age bracket. These drug types are obtainable through legitimate means (via prescription), though this does not necessarily mean they are used for their intended purpose. However, what is clear is that these two categories of Central Nervous System (CNS) depressants, are most popular among those aged 30-59 years.

Graph 7: Accidental drug-related deaths involving pharmaceutical opioids, cumulative 2012-2016, Number of deaths



Graph 8: Accidental drug-related deaths involving benzodiazepines, cumulative 2012-2016, Number of deaths

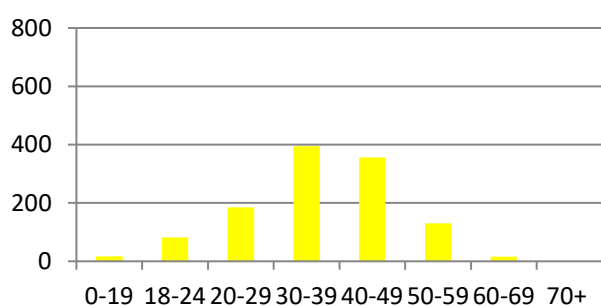


	0-19	18-24	20-29	30-39	40-49	50-59	60-69	70+
Pharmaceutical opioids	14	94	258	644	744	481	142	41
Benzodiazepines	11	90	237	643	719	414	118	35

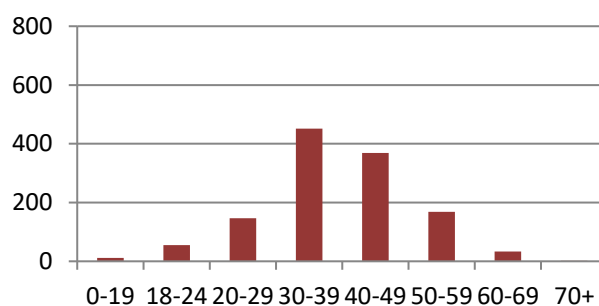
In contrast, heroin and amphetamines (substances that are far less likely to have been obtained legally) are involved in fewer deaths overall and show a slightly high representation with the 30-39 age bracket. This suggests that these illicit drugs are, on average, more likely to be used by younger Australians than licit drugs like pharmaceutical opioids and benzodiazepines.

Given that the 40-49 age bracket is the most likely to die from accidental drug-related death, this supports claims that pharmaceutical drugs are the primary driver of overdose mortality in Australia

Graph 9: Accidental drug-related deaths involving amphetamines, cumulative 2012-2016, Number of deaths



Graph 10: Accidental drug-related deaths involving heroin, cumulative 2012-2016, Number of deaths



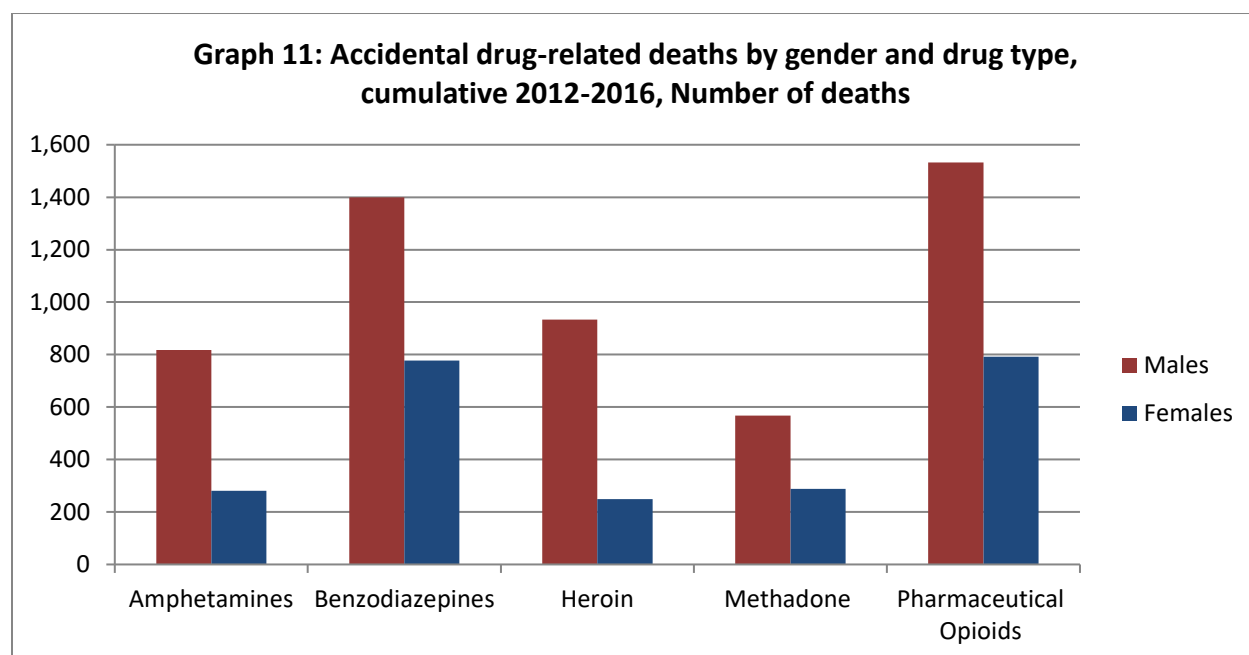
	0-19	18-24	20-29	30-39	40-49	50-59	60-69	70+
Amphetamines	17	82	185	395	356	130	16	0
Heroin	12	55	147	451	369	168	33	2

Accidental drug-related deaths by gender

Men die in significantly greater numbers from accidental drug-related death than women, comprising approximately two-thirds of deaths across all drug types. However, accidental drug-related death among women is increasing at a greater rate than among men.

Comparing the 2002-06 to the 2012-16 time periods, female deaths involving benzodiazepines increased 2.6 times (compared to 2.3 for men), deaths involving pharmaceutical opioids increased by 3 times (compared to 2.5 for men) and deaths involving heroin increased 3.5 times (compared to 1.9 for men). So, while men make up the majority of accidental drug-related deaths, deaths among women are growing at a faster rate.

Amphetamines was the only category where the rate of growth was higher for men than for women. There were two-and-a-half times more deaths involving amphetamines among men than women in the 2012-16 period. Further, the rate of male deaths involving amphetamines increased 4.3 times from 2002-06 to 2012-16 compared to 2.5 times across the same period for women.



	Males	Females
Amphetamines	818	281
Benzodiazepines	1,400	777
Heroin	934	249
Pharmaceutical opioids	1,533	792

Looking further at drug types, the greatest gender disparities were detected for pharmaceutical opioids and amphetamines. Comparing the 2002-06 and 2012-16 periods, there were three times more deaths involving amphetamines among men than women, and for pharmaceutical opioids this increases to six and a half times more male deaths than female.

Between 2002-06 and 2012-16, rates of accidental drug-related death among men were lower for methadone compared to amphetamines, benzodiazepines, pharmaceutical opioids and heroin. For women, rates of death involving methadone were comparable to amphetamines and heroin.

Both men and women have seen overall increases in the total number of accidental drug-related deaths: 1.3- for men and 1.4 for women across the comparison periods.

While men are dying at greater numbers, the higher rate of growth among women is clearly visible.

Table 3: All accidental drug-related deaths, 2002-06 vs. 2012-16 by drug class

Drug	Gender	2002-2006 (n)	2012-2016 (n)	Ratio
Alcohol	Male	538	952	1.5
Alcohol	Female	162	404	2.3
Amphetamines	Male	215	930	4.3
Amphetamines	Female	83	307	2.5
Benzodiazepines	Male	546	1,400	2.3
Benzodiazepines	Female	266	777	2.6
Pharmaceutical opioids	Male	585	1,625	2.5
Pharmaceutical opioids	Female	100	249	3.0
Heroin	Male	454	934	1.9
Heroin	Female	271	869	3.5
Methadone	Male	297	568	1.7
Methadone	Female	111	288	2.2
All drugs **	Male	3,319	5,068	1.3
All drugs **	Female	1,388	2,266	1.4

**includes other drug categories not listed in table.

The most significant findings for different classes of drug between the comparison periods are found in amphetamines, benzodiazepines and heroin. From 2002-06 to 2012-16:

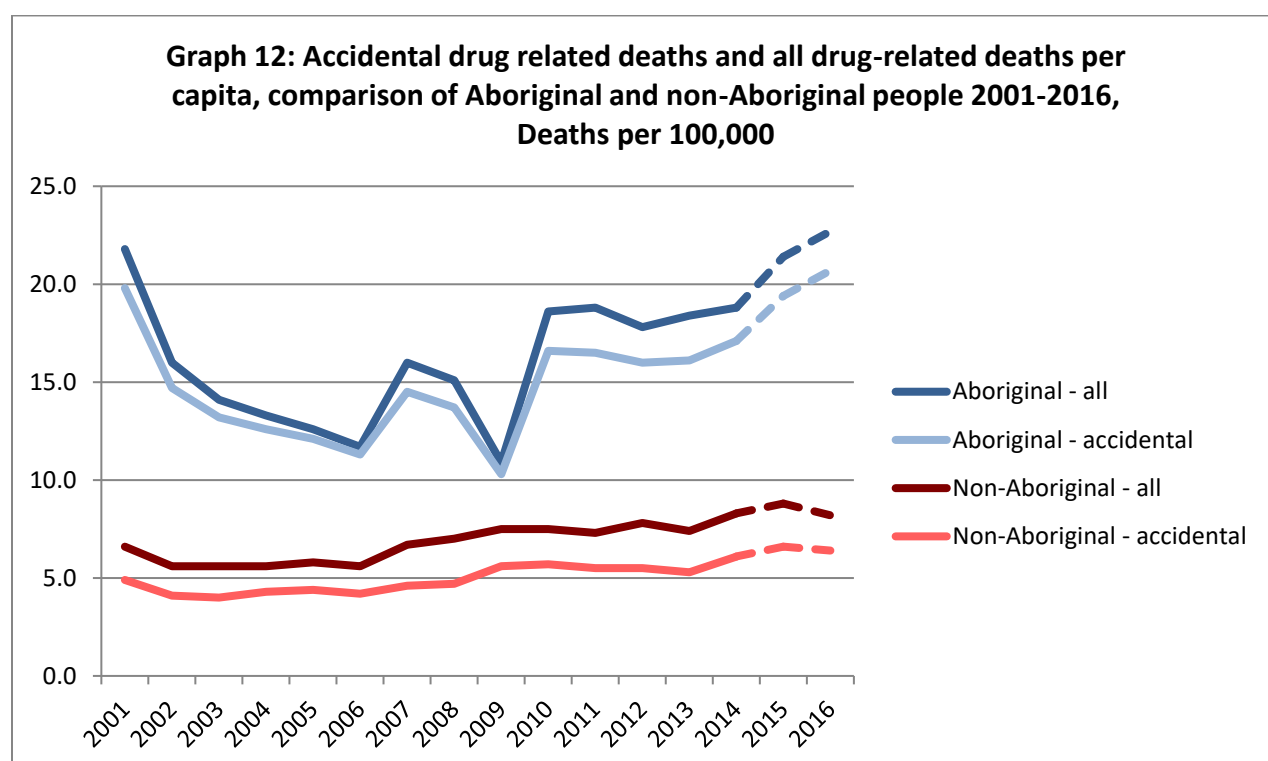
- Deaths involving amphetamines increased from 83 to 307 (3.7 times) among women and from 215 to 930 (4.3 times) among men;
- Deaths involving benzodiazepines increased from 266 to 777 (2.6 times) among women and from 546 to 1,400 (2.3 times) among men;
- Deaths involving heroin increased from 454 to 934 (1.9 times) among men and an alarming 271 to 869 (3.5 times) among women.

Drug-related deaths – Aboriginal and Torres Strait Islanders

In Australia, Aboriginal and Torres Strait Islander people die at more than twice the rate of non-Aboriginal people for all drug-related deaths (accidental, suicidal, homicidal and undetermined). Like with non-Aboriginal people, most of these deaths are accidental. A total of 98 Aboriginal and Torres Strait Islander people died from accidental drug overdose in 2016, an increase on the previous year (90 in 2015) and substantially higher than 10 years prior (46 in 2006).

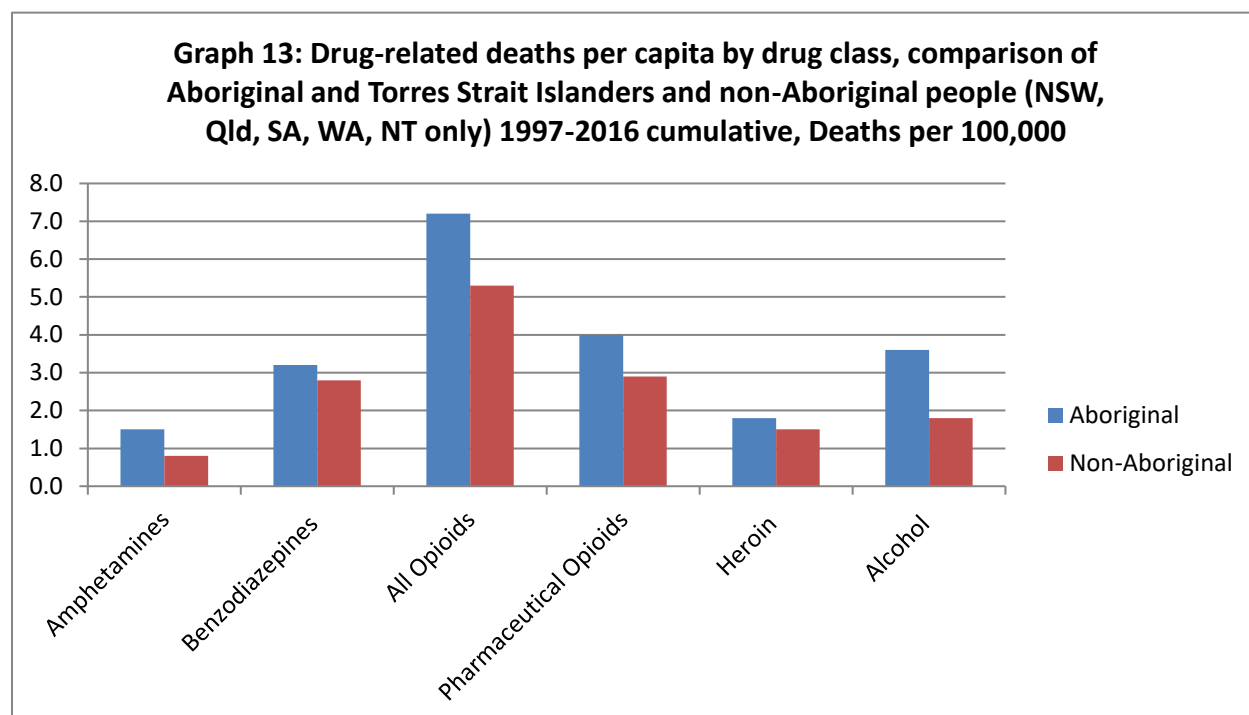
Deaths among Aboriginal and Torres Strait Islanders by drug type are similar to non-Aboriginal: dominated by opioids and commonly involving poly-drug use. In terms of age, Aboriginal people are more likely to die younger (in the 30-39 age bracket) than their non-Aboriginal counterparts.

The per capita rate of accidental drug-related death among Aboriginal and Torres Strait Islanders has grown significantly since from 2013, a trend which appears to be continuing. In contrast, the per capita death rate among non-Aboriginal Australians registered a more modest increase over the same period which appears to have levelled off.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Aboriginal drug-related deaths	21.8	16.0	14.1	13.3	12.6	11.7	16.0	15.1	10.9	18.6	18.8	17.8	18.4	18.8	21.4	22.7
Aboriginal accidental drug-related deaths	19.8	14.7	13.2	12.6	12.1	11.3	14.5	13.7	10.3	16.6	16.5	16.0	16.1	17.1	19.4	20.7
Non-Aboriginal drug-related deaths	6.6	5.6	5.6	5.6	5.8	5.6	6.7	7.0	7.5	7.5	7.3	7.8	7.4	8.3	8.8	8.2
Non-Aboriginal accidental drug-related deaths	4.9	4.1	4.0	4.3	4.4	4.2	4.6	4.7	5.6	5.7	5.5	5.5	5.3	6.1	6.6	6.4

Aboriginal and Torres Strait Islanders are over-represented in accidental deaths across all drug-types compared to non-Aboriginal Australians. The gap between Aboriginal and non-Aboriginal is most pronounced in the 'All Opioids', 'Alcohol' and 'Amphetamines' categories.



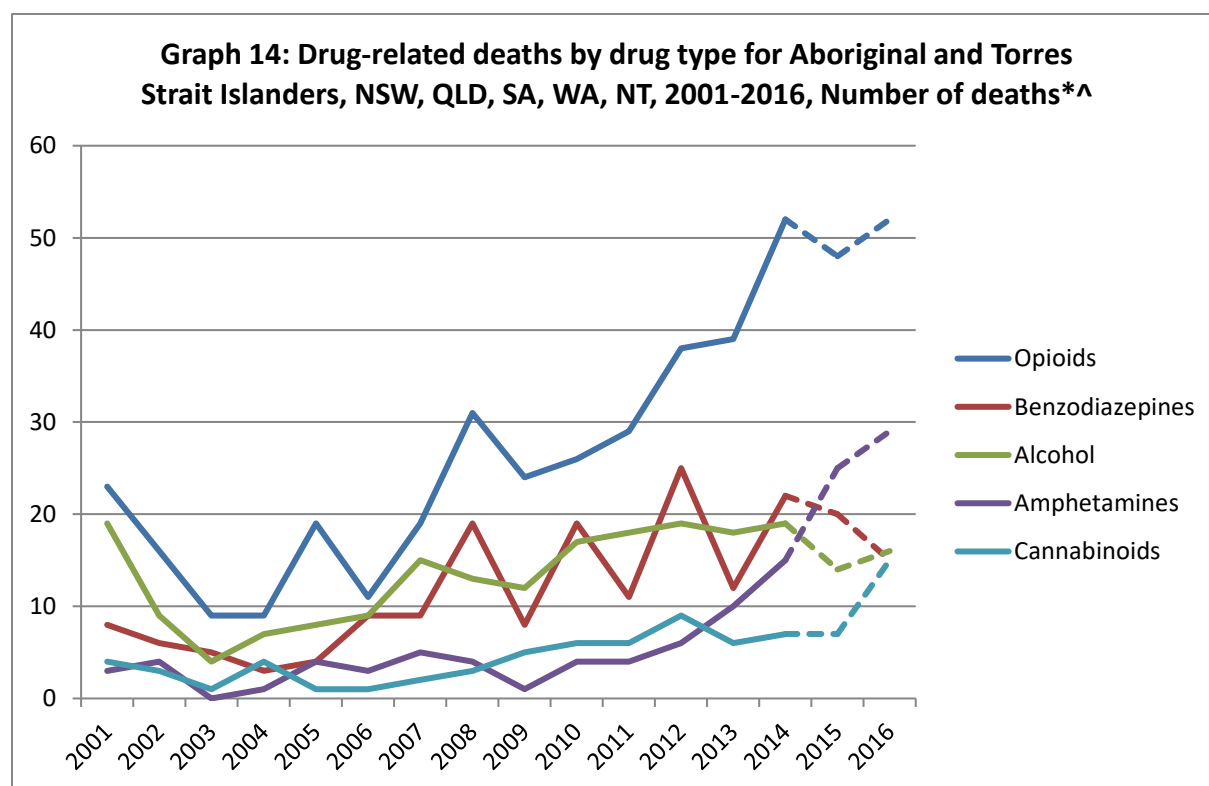
Note: Per capita means deaths per 100,000 people based on 2016 population for the five jurisdictions. Data are reported by jurisdiction of usual residence for NSW, QLD, WA, SA, and the NT only. Only these five states and territories have evidence of a sufficient level of Aboriginal identification and sufficient numbers of Aboriginal deaths to support mortality analysis.

Rate per 100,000	Aboriginal	Non-Aboriginal
Amphetamines	1.5	0.8
Benzodiazepines	3.2	2.8
All opioids	7.2	5.3
Pharmaceutical opioids	4	2.9
Heroin	1.8	1.5
Alcohol	3.6	1.8

The drug profile for deaths among Aboriginal and Torres Strait Islanders is broadly similar to non-Aboriginal Australians. Deaths are dominated by opioids, with benzodiazepines, alcohol and amphetamines making up the majority of the remainder. The number of deaths year to year appears much more erratic, though this is attributable to the comparatively low numbers of deaths compared to non-Aboriginal Australians (though not the higher per capita rate among Aboriginal Australians shown in Graph 12).

Of note is the very low number of drug-related deaths around 2003-04, even including opioids. Since then, deaths involving opioids have seen steep increases, deaths involving alcohol have grown steadily, and deaths involving benzodiazepines have been erratic though trending upwards.

Most concerning in the recent growth in deaths involving amphetamines and cannabinoids, similar to non-Aboriginal people.



* Values for cannabinoids are low making statistical reporting unreliable. Data for cannabinoids among Aboriginal and Torres Strait Islanders should be read with caution.

^ Values for cocaine deaths among Aboriginal and Torres Strait Islanders were so low that we have decided not to include them for to maintain statistical integrity.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Opioids	23	16	9	9	19	11	19	31	24	26	29	38	39	52	48	52
Benzodiazepines	8	6	5	3	4	9	9	19	8	19	11	25	12	22	20	15
Amphetamines	3	4	0	1	4	3	5	4	1	4	4	6	10	15	25	29
Alcohol	19	9	4	7	8	9	15	13	12	17	18	19	18	19	14	16
Cannabinoids	4	3	1	4	1	1	2	3	5	6	6	9	6	7	7	15

Drug-related deaths by opioid type

From 2012 to 2016, opioids were determined to be the underlying cause in 5,140 drug-related deaths (accidental, homicidal, suicidal and undetermined) in Australia. Of these, accidental deaths comprised the majority (3,993).

In the late 1990s, the illicit opioid heroin was responsible for the majority of accidental drug-related deaths in Australia. However, since then pharmaceutical opioids have come to account for a far greater proportion of drug mortalities. There are two main reasons for this. The first is a sudden drop in the availability of heroin from the year 2000 (colloquially referred to as the 'heroin drought'). The second is the large increase in the number of prescriptions for pharmaceutical opioids being issued annually: from 10 million in 2009 to over 14 million today.¹⁰

Today, pharmaceutical opioids account for more drug-related deaths in Australia than any other drug category. The pharmaceutical opioids oxycodone, morphine and codeine are the most commonly detected opioids in drug-related deaths. Until recently, low-dose codeine formulations have been available in Australia without a prescription. In 2018, the Australian Government rescheduled codeine and patients now require a prescription to access the drug. The rationale for rescheduling was that there is limited evidence of efficacy at low doses for pain relief, in contrast with serious harms such as rising rates of fatal overdoses in which codeine was detected. The effect of this rescheduling will not become apparent for several years.

While the rate of deaths involving pharmaceutical opioids represents a significant change from the late-1990s when heroin was the primary cause of drug deaths, the number of deaths involving heroin has increased steadily since 2011, as the graph below (graph 15) demonstrates.

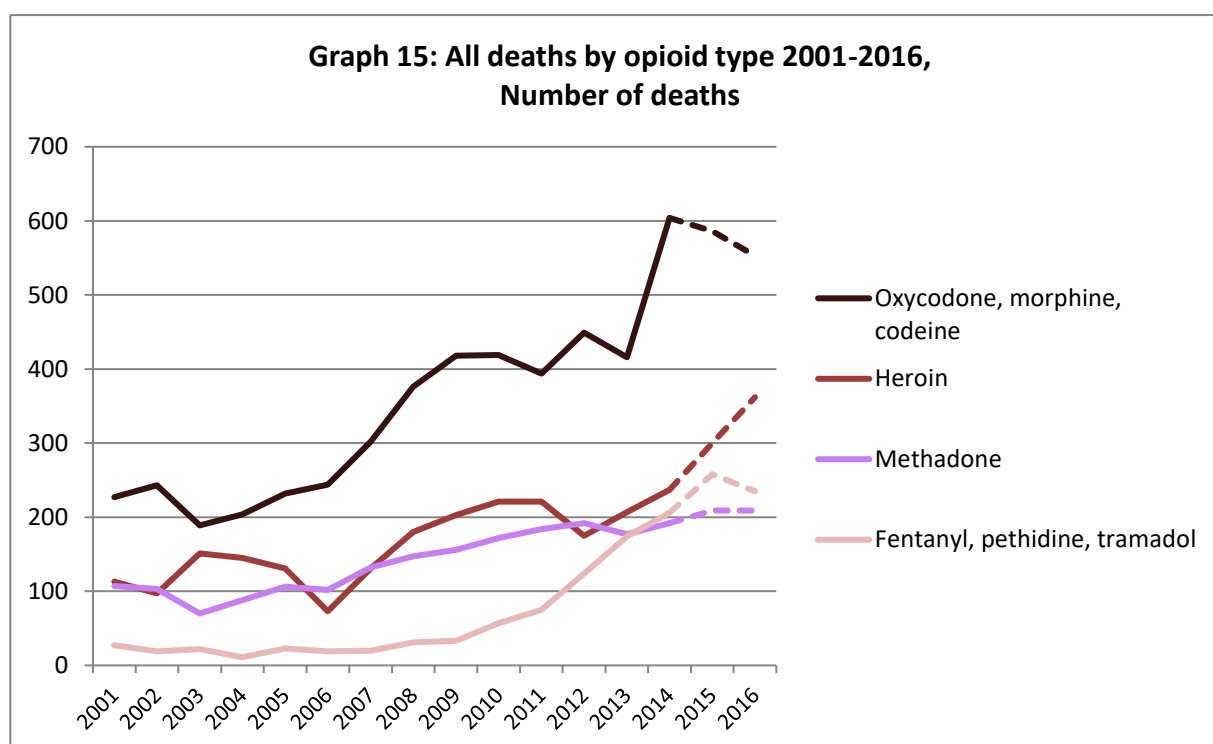
The number of deaths caused by heroin reduced significantly in 2000 and remained stable (in the low 100s per year) until 2007. Since then, deaths involving heroin have increased almost every year. In 2016, 362 deaths involving heroin were detected and this number is expected to rise as data is finalised.

Methadone is a synthetic opioid commonly used to treat opioid addiction (as opioid maintenance therapy), and to a lesser degree, chronic pain including in palliative care settings. While methadone is implicated in the lowest number of deaths of all opioid categories, it still accounts for a significant number. It is highly likely that most deaths involving methadone involve other substances taken concurrently. Methadone has a long half-life compared to other opioids (it stays in the body longer – approximately 24 hours). Taking a substance with a long half-life means that people may not be aware there are still drugs in their system some time later. Taking other opioids or other substances that depress the central nervous system (alcohol or benzodiazepines) concurrently with methadone puts a person at a greater risk of overdose.

¹⁰ TGA (2018) 'Prescription strong (Schedule 8) opioid use and misuse in Australia – options for a regulatory response', Therapeutic Goods Administration, *Australian Government Department of Health*.

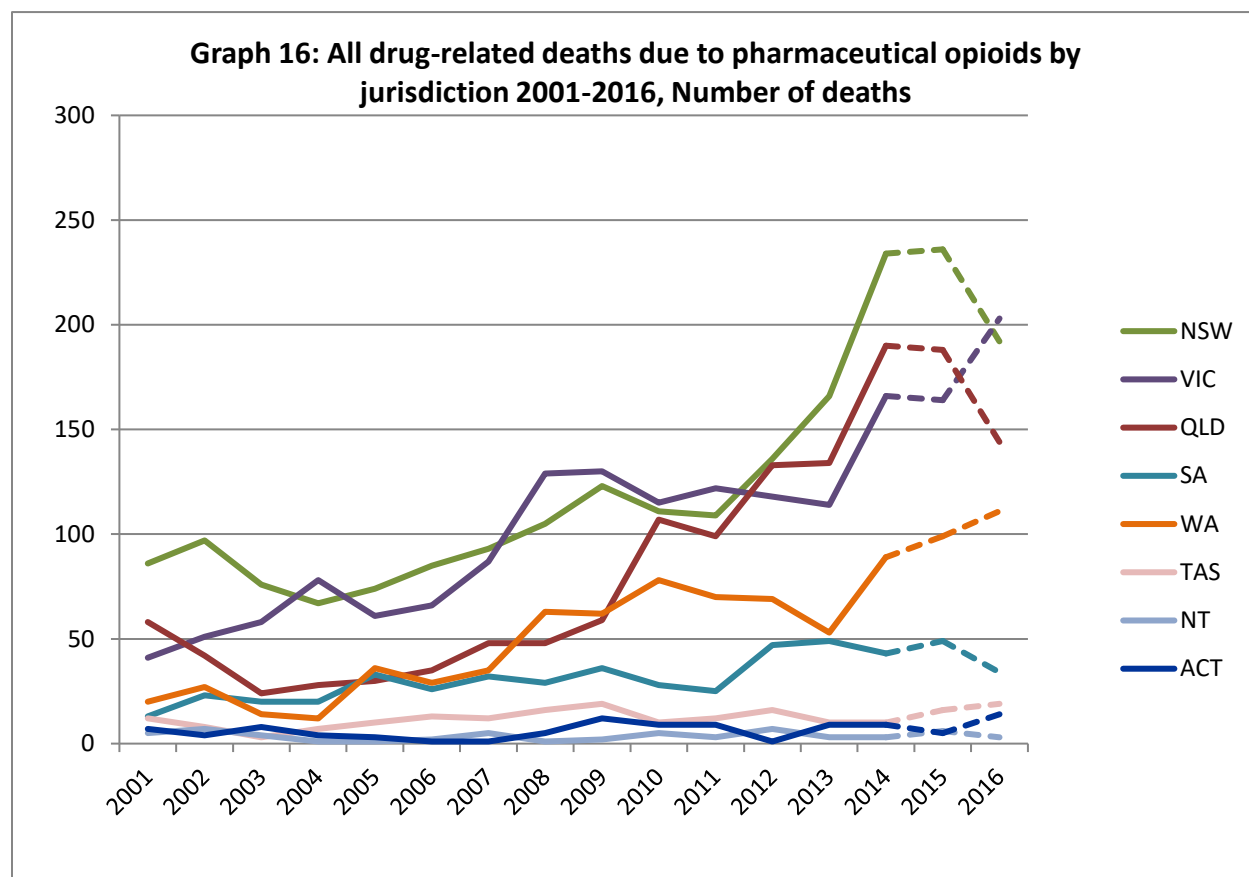
Opioids continue to be implicated in the majority of drug-related deaths in Australia. Graph 15 (below) shows the total number of deaths by opioid type. Comparing accidental deaths in 2002-06 to 2012-16, Graph 2 (on page 15) shows that:

- The rate of accidental deaths involving heroin increased 1.8 times;
- The rate of accidental deaths involving oxycodone, morphine or codeine doubled (two-times increase);
- The rate of accidental deaths involving methadone doubled (two-times increase);
- The rate of accidental death involving fentanyl, pethidine or tramadol increased by seven times.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Oxycodone, morphine, codeine	227	243	189	204	232	244	302	376	418	419	394	449	416	604	586	553
Heroin	113	97	151	145	131	73	131	180	203	221	221	175	207	237	300	362
Methadone	107	103	70	88	106	102	132	147	156	172	184	192	177	192	209	209
Fentanyl, pethidine, tramadol	27	19	22	11	23	19	20	31	33	57	75	124	174	206	258	235

The graph below (Graph 16) appears to show a significant drop in deaths involving pharmaceutical opioids in New South Wales and Queensland (the states with among the highest pharmaceutical opioid-related mortality) since 2015. Data for 2015 and 2016 is not yet final, however, based on past reporting it is likely these figures will increase, mitigating against this apparent drop.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
NSW	86	97	76	67	74	85	93	105	123	111	109	136	166	235	236	192
VIC	41	51	58	78	61	66	87	129	130	115	122	118	114	166	164	203
QLD	58	42	24	28	30	35	48	48	59	107	99	133	134	190	188	144
SA	13	23	20	20	33	26	32	29	36	28	25	47	49	43	49	34
WA	20	27	14	12	36	29	35	63	62	78	70	69	53	89	99	111
TAS	12	8	3	7	10	13	12	16	19	10	12	16	10	10	16	19
NT	5	7	4	1	1	2	5	1	2	5	3	7	3	3	6	3
ACT	8	4	8	3	3	1	1	5	12	9	9	1	9	9	5	14
Australia	242	257	206	249	249	257	315	398	444	463	448	529	538	745	763	720

Table 4: Accidental deaths due to pharmaceutical opioids by number and by per capita rates (per 100,000), 2002-06 vs. 2012-16

	2002-06 (n)	2012-16 (n)	2002-06 (pc)	2012-16 (pc)	Ratio (pc)
NSW	299	777	0.9	2.1	2.3
VIC	229	585	0.9	2	2.2
QLD	105	616	0.6	2.7	4.5
SA	73	136	1	1.7	1.7
WA	101	345	1	2.7	2.7
TAS	29	39	1.2	1.6	1.3
NT	10	15	np	np	1.3
ACT	10	31	np	1.6	2.7
Australia	856	2,544	0.9	2.2	2.4

Note: Ratio calculations based on low numbers (fewer than 20) suffer limitations in statistical robustness. The ratios of increase for NT and ACT in the above table should be read with this in mind.

Overall, the rate of accidental deaths involving pharmaceutical opioids between the 2002-06 and 2012-16 comparison periods has increased 2.4 times across Australia. In the five years between 2012 and 2016, Australia's three most populous states — New South Wales, Victoria, and Queensland — accounted for the highest proportion of accidental deaths involving pharmaceutical opioids (77% of the national total or 1,978 of 2,544).

In terms of growth, the rate of accidental death involving pharmaceutical opioids between the periods 2002-06 and 2012-16 increased 2.7 times in WA and 4.5 times in Queensland.

The apparent reductions in 2015 and 2016 (which may be corrected once data is finalised) also follow significant increases over the last fifteen years, meaning that numbers are still considerably higher than they were ten years ago.

It should also be noted that numbers for 2015 and 2016 are expected to rise following the finalisation of data.

Deaths involving fentanyl

The synthetic opioid fentanyl has been implicated in a growing number of drug-related deaths in recent years, both in Australia and internationally. In Australia, fentanyl was listed on the PBS in 1999 for the management of non-cancer pain, and in 2006 this was expanded to include the treatment of non-cancer pain.¹¹

The Australian Bureau of Statistics (ABS) groups fentanyl into the same category as two other synthetic opioids: pethidine and tramadol. The number of deaths involving this category of opioids has increased significantly in recent years. However, it is highly likely that fentanyl is the major factor driving this increase. Pethidine has not been listed on the PBS for many years and is not commonly prescribed in Australia. Prescriptions for tramadol (which is a relatively low-potency opioid) have remained steady since 2003, whereas fentanyl prescriptions have risen steadily since the late 1990s before plateauing in 2011.¹²

While numbers of deaths involving fentanyl, pethidine and tramadol are currently small, the rate of growth is concerning. At the national level, the rate of deaths involving fentanyl, pethidine and tramadol saw a nine-times increase from 2001 to 2016. As the graph below (graph 17) demonstrates, this is reflected in the states, with Queensland, New South Wales, Victoria and Western Australia seeing rapid growth since 2011.

The rapid growth of detections of this category in accidental drug-related death over time correlates to increases in the number of pharmaceutical opioids (including fentanyl) being prescribed. Since 2009, there has been a significant increase in the number of prescriptions for pharmaceutical opioids being issued in Australia, from about 10 million to 14 million annually.¹³ Prescriptions for fentanyl and the amount of fentanyl being dispensed per prescription have increased steadily over the past 15 years, appearing to increase at a faster rate from 2006 onwards (when fentanyl was approved for treatment of non-cancer pain).¹⁴

Queensland and New South Wales, the states with the highest number of deaths involving fentanyl, pethidine and tramadol, have recorded significant drops since 2015. These drops may be mitigated once data for 2015 and 2016 is finalised, though could also be partially explained by increased rates of deaths involving heroin (signalling a shift in consumption practices).

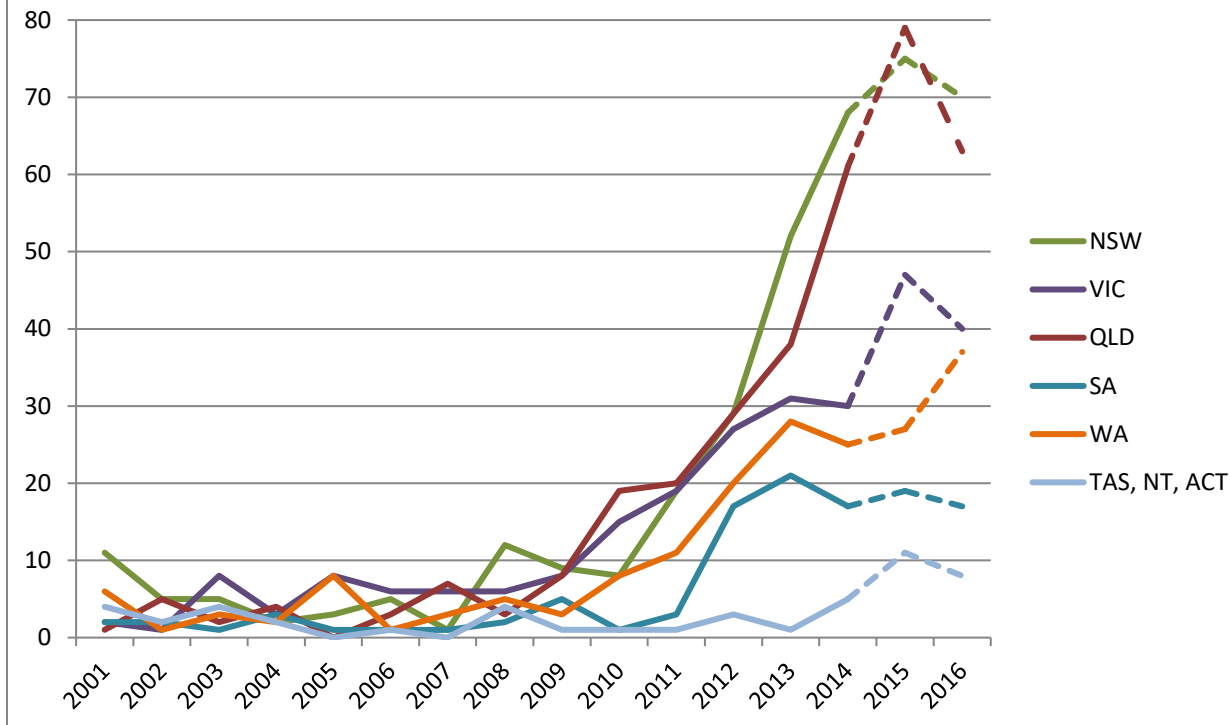
¹¹ Roxburgh, et al (2013) 'Trends in fentanyl prescriptions and fentanyl related mortality in Australia', *Drug and Alcohol Review*, vol. 32(3): 269-75.

¹² Roxburgh, et al (2013) Ibid.

¹³ TGA (2018) 'Prescription strong (Schedule 8) opioid use and misuse in Australia – options for a regulatory response', Therapeutic Goods Administration, *Australian Government Department of Health*.

¹⁴ Roxburgh, et al (2013) Ibid.

Graph 17: All drug-related deaths due to fentanyl, pethidine and tramadol by jurisdiction 2001-2016, Number of deaths



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
NSW	11	5	5	2	3	5	1	12	9	8	19	29	52	68	75	70
VIC	2	1	8	3	8	6	6	6	8	15	19	27	31	30	47	40
QLD	1	5	2	4	0	3	7	3	8	19	20	29	38	61	79	63
SA	2	2	1	3	1	1	1	2	5	1	3	17	21	17	19	17
WA	6	1	3	2	8	1	3	5	3	8	11	20	25	25	27	37
TAS, NT, ACT	4	2	4	2	0	1	0	4	1	1	1	3	5	5	11	8
Australia	27	19	22	11	23	19	20	31	33	57	75	124	174	206	258	235

- Australia has experienced a significant increase in fatal overdose caused by fentanyl, pethidine and tramadol. In the five-year period from 2012-2016, 997 Australians died from an overdose caused by fentanyl, pethidine or tramadol compared to 94 deaths for 2002-2006. This constitutes a nine-times increase between the two periods.
- This is likely driven by increases in fentanyl prescribing since 2006.
- The growth in deaths involving fentanyl, pethidine and tramadol is concentrated in four states: New South Wales, Victoria, Queensland and Western Australia;
- From 2012-16, New South Wales and Queensland recorded the most deaths due to fentanyl, pethidine and tramadol (recording 294 and 270 respectively). Together, these two states account for more than half the total number of deaths caused by fentanyl, pethidine or tramadol in Australia.

- In contrast to New South Wales, Queensland and Victoria (which all saw drops since 2015), the rate of deaths involving fentanyl, pethidine or tramadol in Western Australia continues to rise.

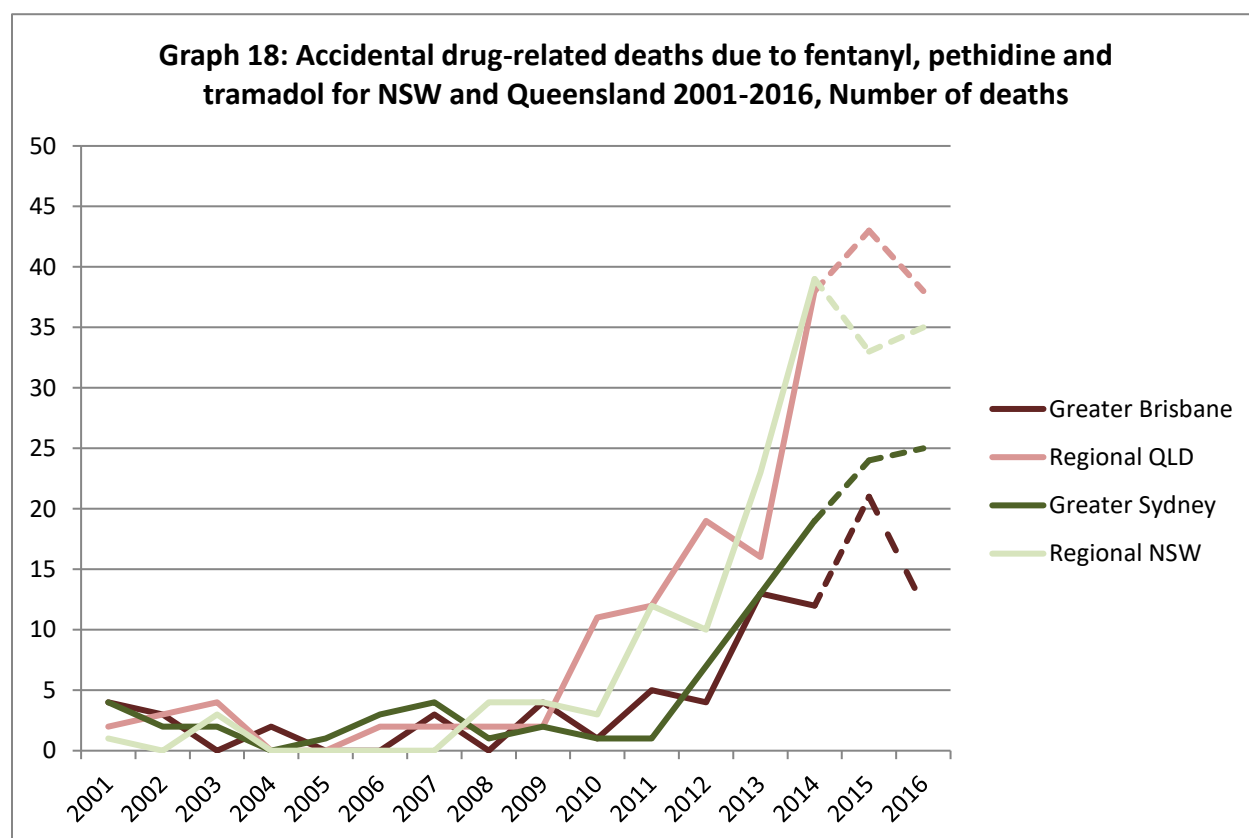
Table 5: Increase in deaths due to fentanyl, pethidine and tramadol, by jurisdiction, 2002-06 vs. 2012-16

	2002-2006	2012-2016	Ratio
NSW	19	294	8.0
VIC	27	175	6.0
QLD	10	270	12.0
SA	15	91	5.5
WA	17	137	5.5
TAS, NT, ACT	6	30	—
Australia	94	997	9.0

Note: Ratio calculations based on low numbers (fewer than 20) suffer limitations in statistical robustness. The ratios of increase for QLD, SA, WA and TAS, NT, ACT in the above table should be read with this in mind.

Upon closer analysis of the data, it becomes clear that regional areas are driving the increases in fentanyl-related mortality. In QLD and NSW, the two states with the highest rate of fentanyl-related mortality, the greatest number of deaths occur outside of the capital cities. In 2016:

- There were 1.5 deaths per 100,000 (n=38) in regional QLD, compared to 0.5 deaths per 100,000 (n=12) for Greater Brisbane; and
- There were 1.3 deaths per 100,000 (n=35) in regional NSW, compared to 0.5 deaths per 100,000 (n=25) for Greater Sydney.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greater Brisbane	4	3	0	2	0	0	3	0	4	1	5	4	13	12	21	12
Regional QLD	2	3	4	0	0	2	2	2	2	11	12	19	16	38	43	38
Greater Sydney	4	2	2	0	1	3	4	1	2	1	1	7	13	19	24	25
Regional NSW	1	0	3	0	0	0	0	4	4	3	12	10	23	39	33	35

Accidental drug-related deaths by state and territory

The per capita death rate for accidental drug-related death has risen nationally over the past 15 years. However, there is variation in this trend at the jurisdictional level: South Australia and Tasmania saw only small increases, whereas accidental drug-related deaths in Western Australia nearly doubled.

The only jurisdictions not to record an increase between comparison periods (2002-06 and 2012-16) were the Northern Territory and the ACT. The accidental death rate in the ACT remained steady at 1.0 and the rate for the Northern Territory decreased slightly at 0.9.

All other jurisdictions recorded increases. The largest of these were detected in Queensland and Western Australia which increase by 1.6 and 1.9 times in accidental drug-related deaths respectively. While these states are not the most populous, they are leading growth in accidental drug-related mortality in Australia.

Table 6: Changes in per capita rates of accidental death due to drugs by jurisdiction, 2002-06 vs. 2012-16.

	2002-06 (n)	2012-16 (n)	2002-06 (pc)	2012-16 (pc)	Ratio (pc)
NSW	1,710	2,521	5.1	6.6	1.3
VIC	1,216	1,649	4.9	5.6	1.1
QLD	716	1,455	3.8	6.2	1.6
SA	362	442	4.7	5.1	1.1
WA	397	925	4	7.4	1.9
TAS	142	170	5.8	6.4	1.1
NT	74	70	7.8	6.9	0.9
ACT	89	101	5.3	5.2	1.0
Australia	4,707	7,334	6.2	6.2	1.3

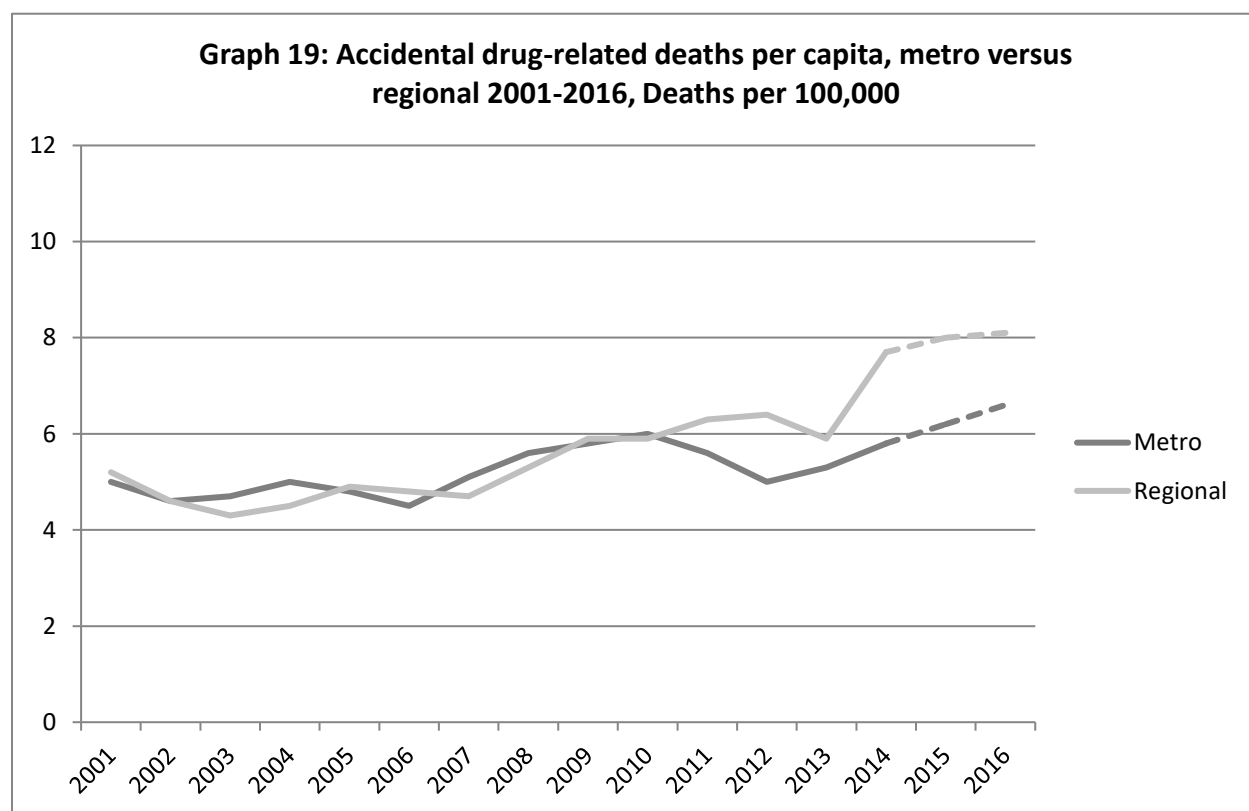
Table 7: Accidental deaths due to benzodiazepines, amphetamines and opioids, by number and by per capita rates (per 100,000), 2002-06 vs.2012-16

	2002-06 (n)	2012-16 (n)	2002-06 (pc)	2012-16 (pc)	Ratio (pc)
Benzodiazepines					
NSW	301	670	0.9	1.8	2.0
VIC	255	694	1.0	2.4	2.4
QLD	72	412	0.4	1.8	4.5
SA	42	89	0.6	1.1	1.8
WA	82	231	0.8	1.9	2.4
TAS	44	50	1.9	2.1	1.1
NT	8	11	np	np	—
ACT	8	20	np	1.0	—
Australia	812	2,177	0.8	1.9	2.4
Amphetamines					
NSW	130	388	0.4	1.1	2.8
VIC	75	334	0.3	1.2	4.0
QLD	22	232	0.1	1.0	10.0
SA	16	46	0.2	0.6	3.0
WA	39	197	0.4	1.6	4.0
TAS	6	18	np	np	—
NT	0	6	np	np	—
ACT	10	16	np	np	—
Australia	298	1,237	0.3	1.1	3.7
Pharmaceutical Opioids					
NSW	299	777	0.9	2.1	2.3
VIC	229	585	0.9	2.0	2.2
QLD	105	616	0.6	2.7	4.5
SA	73	136	1.0	1.7	1.7
WA	101	345	1.0	2.7	2.7
TAS	29	39	1.2	1.6	1.3
NT	10	15	np	np	—
ACT	10	31	np	1.6	—
Australia	856	2,544	0.9	2.2	2.4
Heroin					
NSW	133	280	0.4	0.8	2.0
VIC	319	485	1.3	1.7	1.3
QLD	43	142	0.2	0.6	3.0
SA	21	59	0.3	0.7	2.3
WA	20	187	0.2	1.5	7.5
TAS	3	2	np	np	—
NT	0	0	np	np	—
ACT	17	29	np	1.5	—
Australia	554	1,183	0.6	1.1	1.8

Accidental drug-related deaths, metropolitan vs. regional

In 2010, the per capita accidental drug-related death rate of metropolitan and regional Australia were similar at 6.0 (metropolitan) and 5.9 (regional). In 2016, the rate of accidental drug-related deaths per 100,000 in regional Australia was 8.1, compared to 6.6 in metro areas, revealing an increase in drug-related deaths in regional Australia.

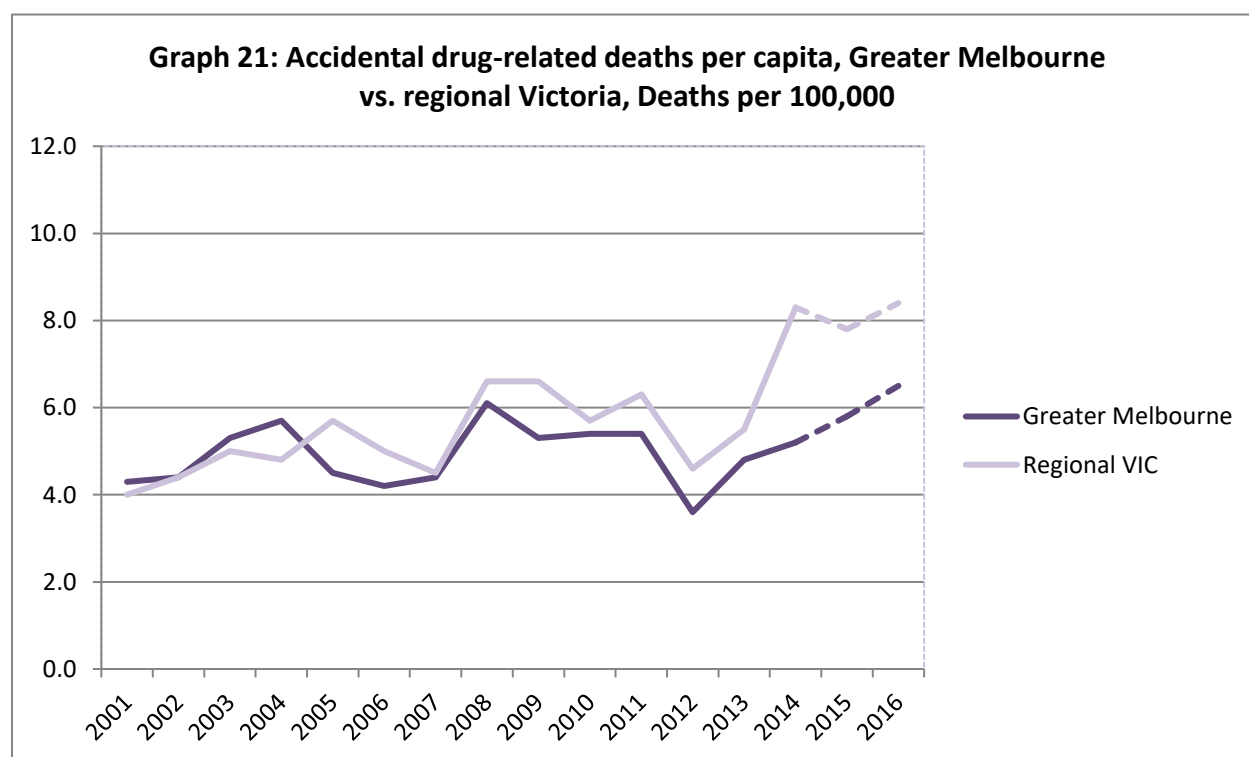
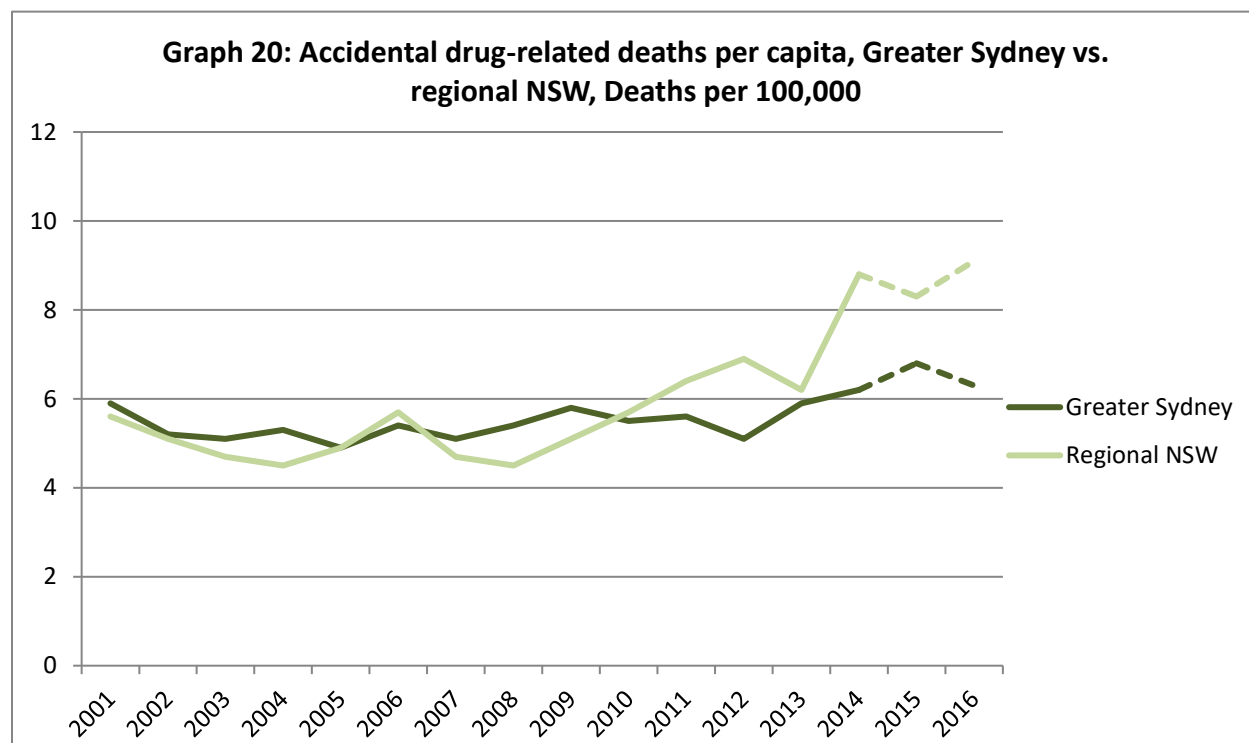
However, the ratio of increase between 2015 and 2016 was greater for metropolitan areas than regional. The rate of accidental drug-related death in metropolitan areas increased from 6.2 to 6.6 between 2015 and 2016, whereas regional Australia only saw an increase from 8.0 to 8.1 in the same period. This possibly indicates that metropolitan areas are now catching up to regional Australia.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Metro	5	4.6	4.7	5	4.8	4.5	5.1	5.6	5.8	6	5.6	5	5.3	5.8	6.2	6.6
Regional	5.2	4.6	4.3	4.5	4.9	4.8	4.7	5.3	5.9	5.9	6.3	6.4	5.9	7.7	8	8.1

The following graphs compare the per capita accidental drug-related death rate in metropolitan and regional areas for New South Wales, Victoria, Queensland and Western Australia.

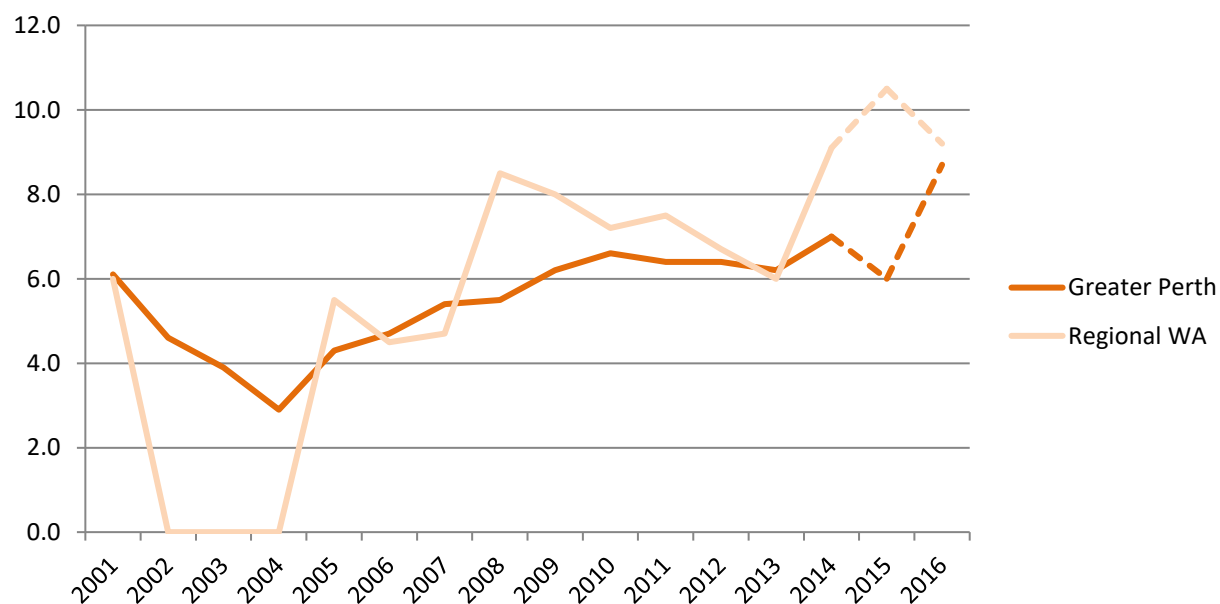
Note: Data is not available for regional SA, NT, ACT and TAS.



Graph 22: Accidental drug-related deaths per capita, Greater Brisbane vs. regional Queensland, Deaths per 100,000



Graph 23: Accidental drug-related deaths per capita, Perth vs. regional WA, Deaths per 100,000



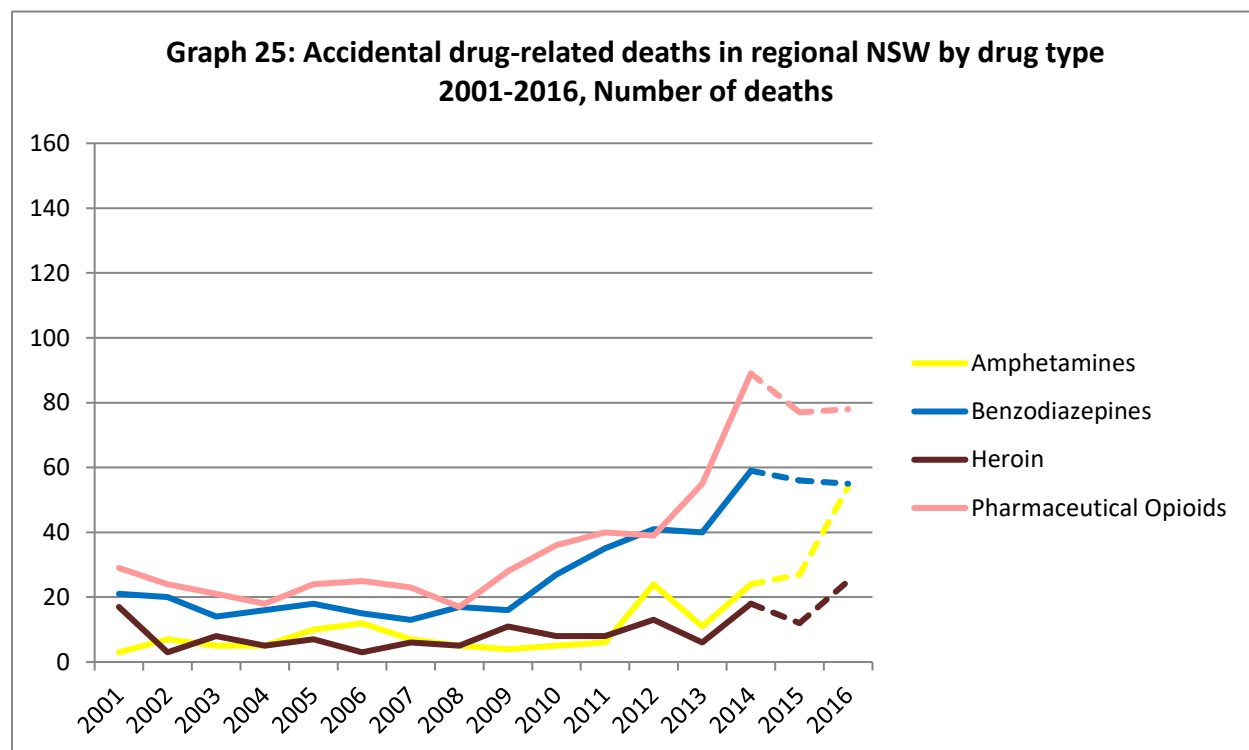
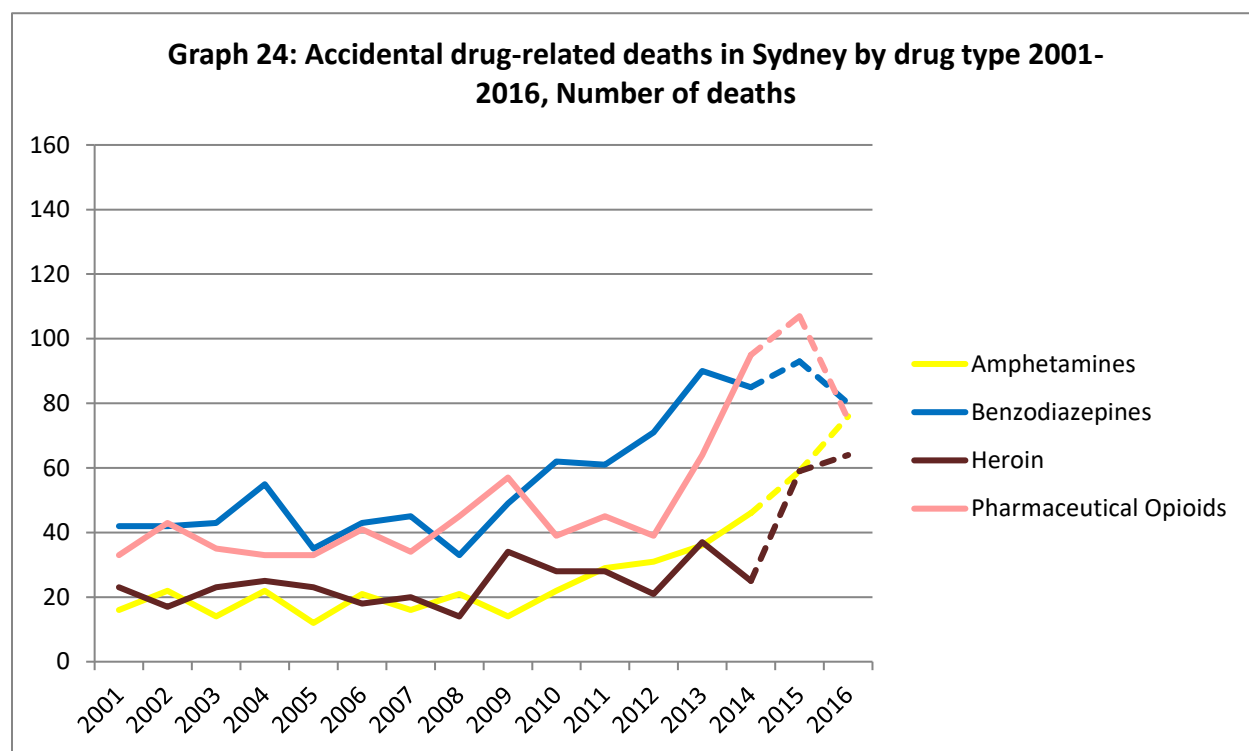
Accidental drug-related deaths per capita, metro vs. regional: NSW, VIC, QLD, WA

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Greater Sydney	5.9	5.2	5.1	5.3	4.9	5.4	5.1	5.4	5.8	5.5	5.6	5.1	5.9	6.2	6.8	6.3
Regional NSW	5.6	5.1	4.7	4.9	5.7	5.7	4.7	4.5	5.1	5.7	6.4	6.9	6.2	8.8	8.3	9.1
Greater Melbourne	4.3	4.4	5.3	5.7	4.5	4.2	4.4	6.1	5.3	5.4	5.4	3.6	4.8	5.2	5.8	6.5
Regional VIC	4.0	4.4	5.0	4.8	5.7	5.0	4.5	6.6	6.6	5.7	6.3	4.6	5.5	8.3	7.8	8.4
Greater Brisbane	4.3	3.8	3.3	3.9	3.9	3.1	4.3	4.1	5.2	7.5	6.2	5.4	4.9	5.7	5.8	5.3
Regional QLD	6.0	3.6	3.3	4.8	4.0	3.8	4.4	4.7	6.0	6.4	6.4	7.2	6.4	6.5	7.7	7.3
Greater Perth	6.1	4.6	3.9	2.9	4.3	4.7	5.4	5.5	6.2	6.6	6.4	6.4	6.2	7.0	6.0	8.7
Regional WA	6.0	np	np	np	5.5	4.5	4.7	8.5	8.0	7.2	7.5	6.7	6.0	9.1	10.5	9.2

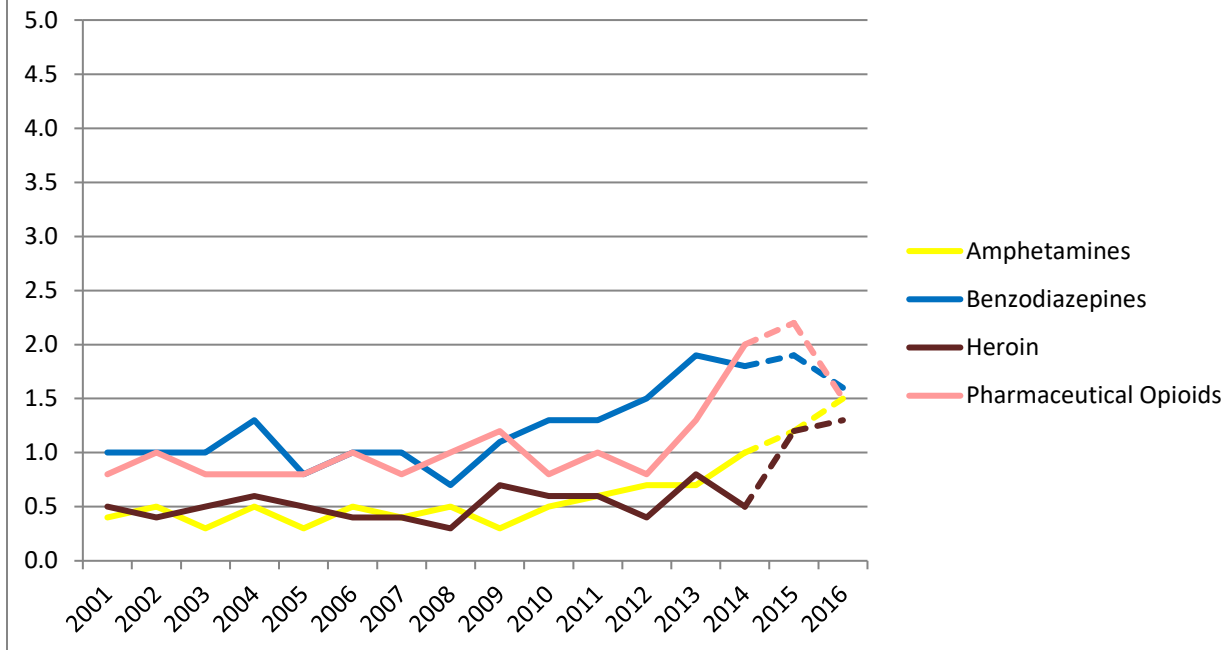
The gap in the rate of accidental drug-related deaths between metropolitan and regional areas has emerged recently, and in most places, has either grown or remained steady. However, preliminary data for WA indicates a drop in deaths in regional areas in 2015 and 2016. This will likely change as data is finalised.

The most significant gap between metropolitan and regional areas in 2016 was detected in New South Wales (6.3 metro against 9.1 regional). This difference is stark when considering in 2001 the regional rate was 5.6 compared to 5.9 for metropolitan. More specifically, Sydney appears to have recorded a drop in deaths involving pharmaceutical opioids and benzodiazepines whereas deaths involving heroin and amphetamines are increasing (see graphs 24 to 27 below). Deaths involving amphetamines and heroin are also increasing in regional NSW, whereas pharmaceutical opioids and benzodiazepines have remained steady.

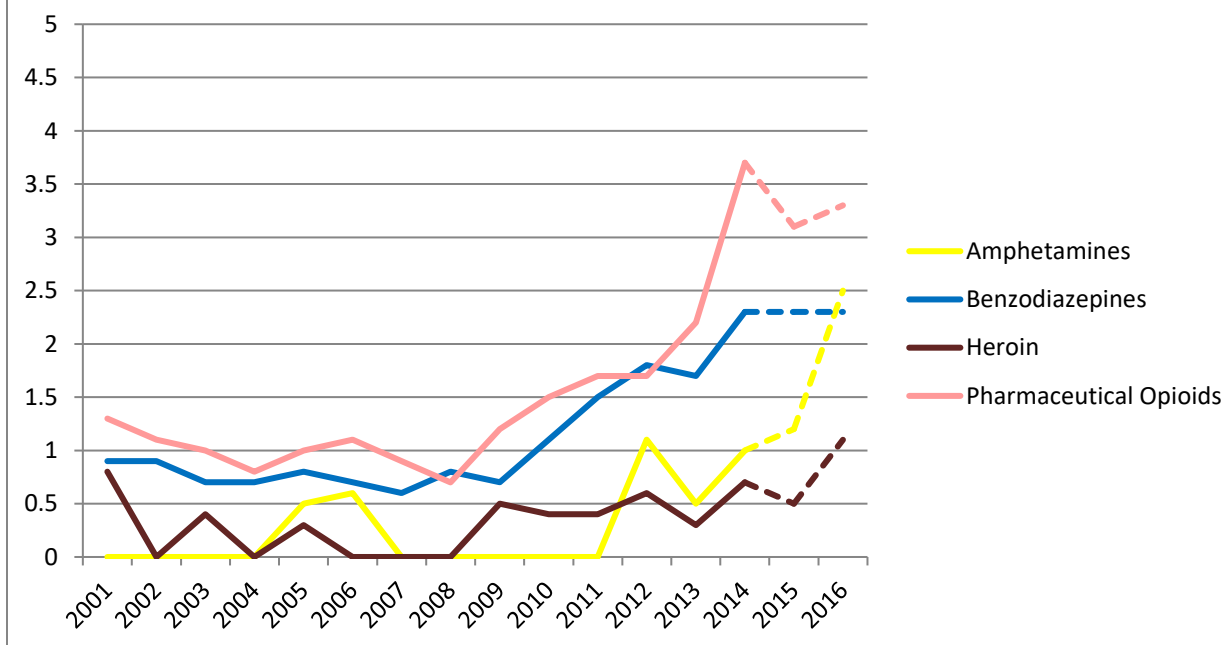
Sydney vs. regional NSW



Graph 26: Accidental drug-related deaths in Sydney per capita by drug type 2001-2016, Deaths per 100,000



Graph 27: Accidental drug-related deaths in regional NSW per capita by drug type 2001-2016, Deaths per 100,000

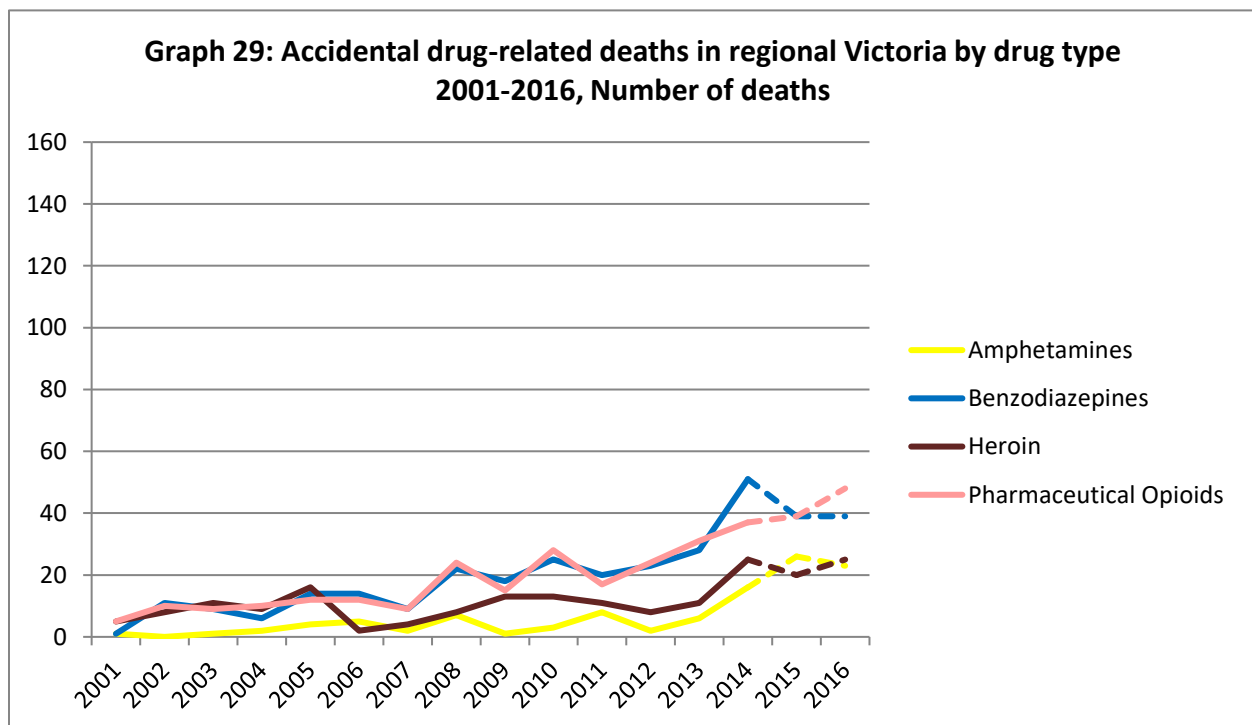
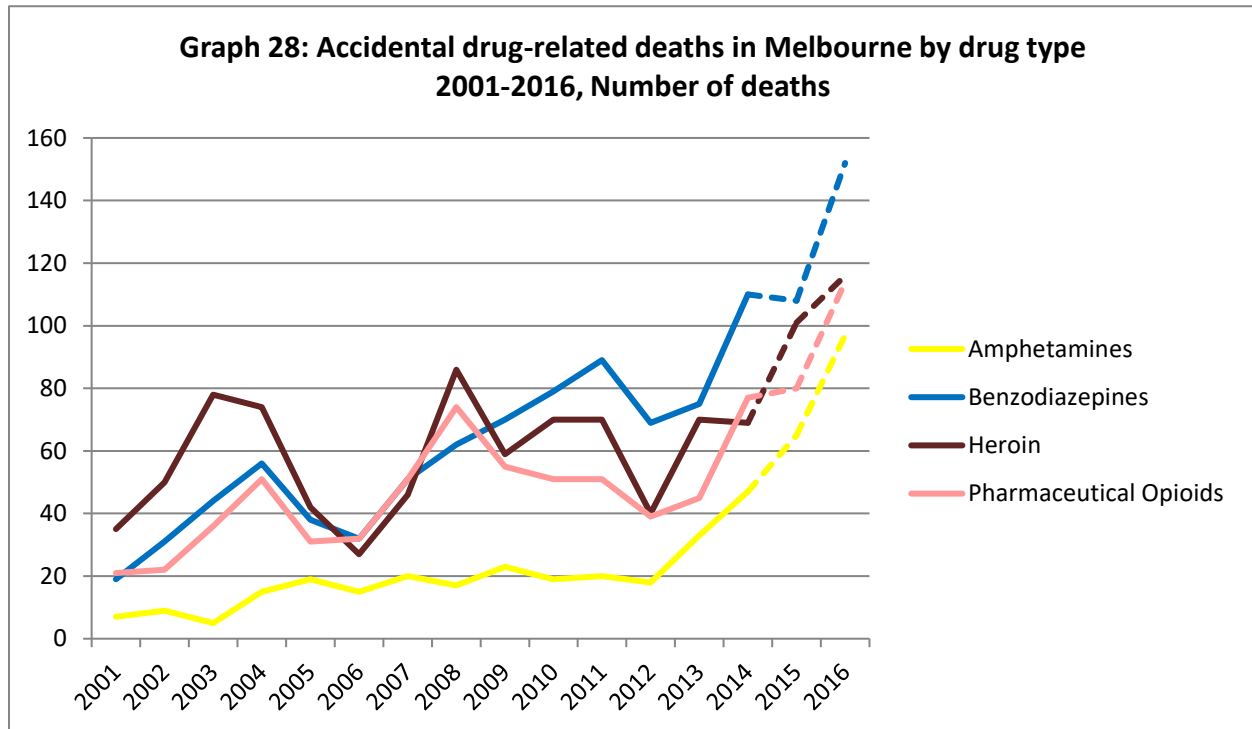


New South Wales – metro vs. regional, number of deaths by drug type

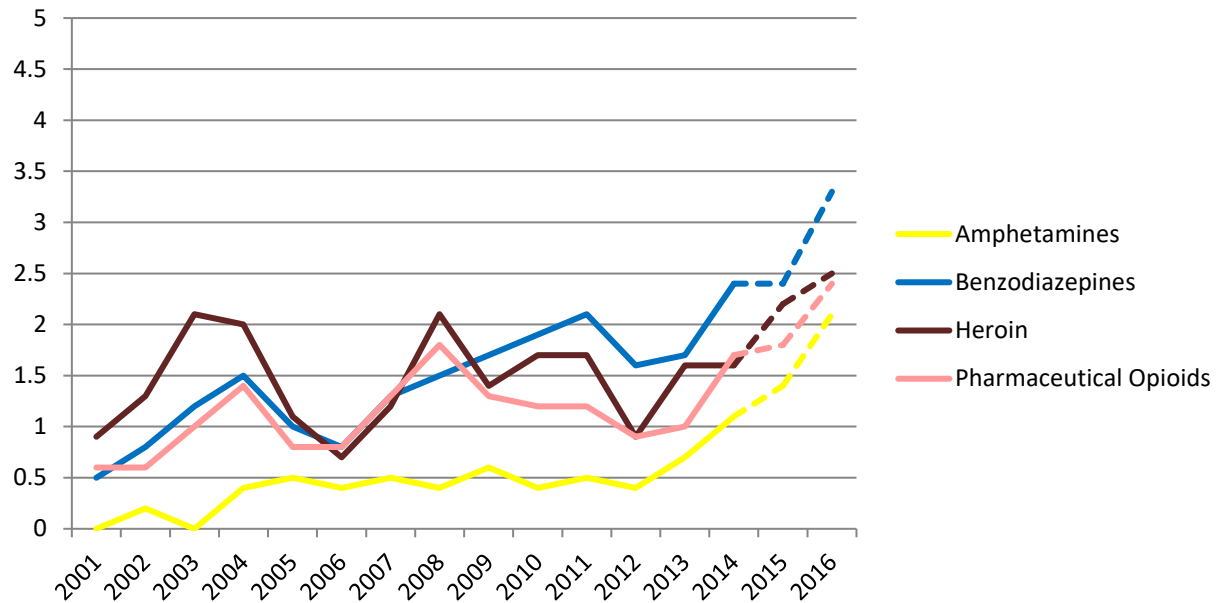
Australia's Annual Overdose Report 2018

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Amphetamines - metro	16	22	14	22	12	21	16	21	14	22	29	31	36	46	59	76
Amphetamines - regional	3	7	5	5	10	12	7	5	4	5	6	24	11	24	27	54
Benzodiazepines - metro	42	42	43	55	35	43	45	33	49	62	61	71	90	85	93	80
Benzodiazepines - regional	21	20	14	16	18	15	13	17	16	27	35	41	40	59	56	55
Heroin - metro	23	17	23	25	23	18	20	14	34	28	28	21	37	25	59	64
Heroin - regional	17	3	8	5	7	3	6	5	11	8	8	13	6	18	12	25
Pharmaceutical opioids - metro	33	43	35	33	33	41	35	45	57	39	45	39	64	95	107	75
Pharmaceutical opioids - regional	29	24	21	18	24	25	23	17	28	36	40	39	55	89	77	78

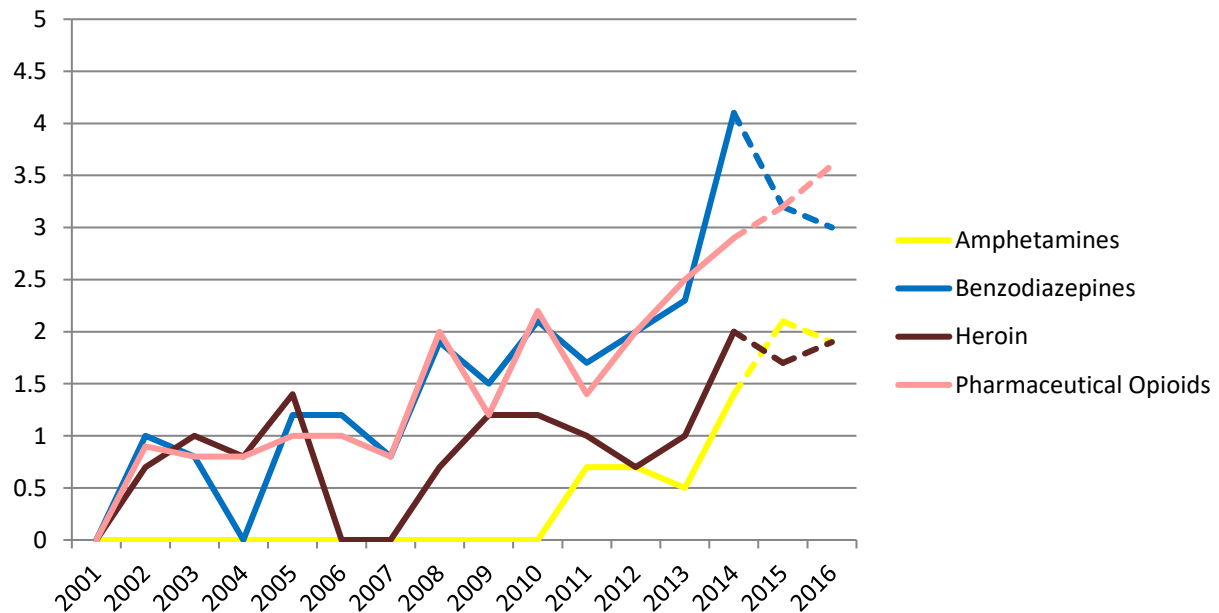
Melbourne vs. regional Victoria



Graph 30: Accidental drug-related deaths in Melbourne per capita by drug type 2001-2016, Deaths per 100,000



Graph 31: Accidental drug-related deaths in regional Victoria per capita by drug type 2001-2016, Deaths per 100,000



Victoria – metro vs. regional, number of deaths by drug type

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Amphetamines - metro	7	9	5	15	19	15	20	17	23	19	20	18	33	47	65	97
Amphetamines - regional	1	0	1	2	4	5	2	7	1	3	8	2	6	16	26	23
Benzodiazepines - metro	19	31	44	56	38	32	51	62	70	79	89	69	75	110	108	152
Benzodiazepines - regional	1	11	9	6	14	14	9	22	18	25	20	23	28	51	39	39
Heroin - metro	35	50	78	74	42	27	46	86	59	70	70	40	70	69	101	116
Heroin - regional	5	8	11	9	16	2	4	8	13	13	11	8	11	25	20	25
Pharmaceutical opioids - metro	21	22	36	51	31	32	51	74	55	51	51	39	45	77	80	114
Pharmaceutical opioids - regional	5	10	9	10	12	12	9	24	15	28	17	24	31	37	39	48

Drug-related deaths by Primary Health Network

Primary Health Networks are healthcare bodies coordinating primary health and other services for geographic catchments areas in Australia. There are 31 PHNs in Australia. The following table represents accidental drug-related deaths and total drug-related deaths by PHN.

Table 8: All and accidental deaths by PHN, number of deaths and per capita rates (per 100,000), 2002-06 vs. 2012-16.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007-11 (n)	2012-16 (n)	2007-11 (per capita)	2012-16 (per capita)
PHN101 Central and Eastern Sydney														
Accidental Drug Related Deaths	96	95	107	99	86	82	117	114	129	129	484	571	6.6	7.3
Total Drug Related Deaths	133	143	137	133	114	114	140	140	158	146	660	698	9.0	8.9
PHN102 Northern Sydney														
Accidental Drug Related Deaths	26	27	26	32	38	38	37	28	44	45	149	191	3.4	4.1
Total Drug Related Deaths	41	45	44	46	52	56	54	37	59	52	227	256	5.2	5.5
PHN103 Western Sydney														
Accidental Drug Related Deaths	24	40	44	38	53	44	44	41	55	47	200	232	5.1	5.3
Total Drug Related Deaths	32	55	52	49	63	60	59	51	67	55	251	294	6.4	6.7
PHN104 Nepean Blue Mountains														
Accidental Drug Related Deaths	18	23	16	21	29	23	22	21	24	35	106	125	6.4	7.1
Total Drug Related Deaths	27	25	27	30	32	30	29	29	30	37	140	155	8.5	8.9
PHN105 South Western Sydney														
Accidental Drug Related Deaths	43	44	57	47	44	42	47	68	73	46	235	276	5.7	6.2
Total Drug Related Deaths	55	53	72	59	60	60	53	90	82	52	299	337	7.2	7.6
PHN106 South Eastern NSW														
Accidental Drug Related Deaths	34	26	33	30	37	38	38	55	52	60	160	243	5.6	7.9
Total Drug Related Deaths	44	50	45	47	59	57	52	67	66	78	245	320	8.5	10.5
PHN107 Western NSW														
Accidental Drug Related Deaths	9	16	15	18	27	12	22	33	27	37	85	130	5.6	8.8
Total Drug Related Deaths	14	20	17	21	28	15	27	40	31	42	100	154	6.7	10.4

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007-11 (n)	2012-16 (n)	2007-11 (per capita)	2012-16 (per capita)
PHN108 Hunter New England and Central Coast														
Accidental Drug Related Deaths	53	45	51	70	68	70	62	94	99	85	287	410	4.8	6.7
Total Drug Related Deaths	80	75	81	86	89	107	93	126	127	116	411	569	7.0	9.4
PHN109 North Coast														
Accidental Drug Related Deaths	25	22	26	33	28	39	36	54	40	44	134	213	5.4	8.6
Total Drug Related Deaths	54	38	47	49	32	50	45	72	55	61	220	283	9.0	11.3
PHN110 Murrumbidgee														
Accidental Drug Related Deaths	9	10	11	8	8	16	11	16	16	20	47	80	4.0	7.0
Total Drug Related Deaths	13	13	11	14	14	22	15	17	25	25	66	105	5.7	9.3
PHN201 North Western Melbourne														
Accidental Drug Related Deaths	61	105	71	82	97	67	81	91	106	116	416	461	5.9	5.7
Total Drug Related Deaths	81	125	118	107	126	99	104	119	135	144	557	601	7.9	7.5
PHN202 Eastern Melbourne														
Accidental Drug Related Deaths	50	66	67	58	59	35	70	65	68	73	300	311	4.4	4.3
Total Drug Related Deaths	73	91	97	84	87	64	90	92	98	103	432	447	6.3	6.1
PHN203 South Eastern Melbourne														
Accidental Drug Related Deaths	64	78	83	89	76	55	62	81	92	117	390	407	5.8	5.6
Total Drug Related Deaths	89	113	133	120	110	83	82	116	125	146	565	552	8.4	7.5
PHN204 Gippsland														
Accidental Drug Related Deaths	12	14	23	17	14	9	17	27	20	29	80	102	6.9	8.3
Total Drug Related Deaths	15	19	29	22	25	14	22	37	23	34	110	130	9.3	10.1
PHN205 Murray														
Accidental Drug Related Deaths	23	29	31	24	34	29	38	36	45	50	141	198	5.2	7.2
Total Drug Related Deaths	34	37	41	30	50	45	55	53	59	63	192	276	7.0	9.7
PHN206 Grampians and Barwon South West														
Accidental Drug Related Deaths	26	42	35	35	35	25	20	46	40	42	173	173	6.1	5.8
Total Drug Related Deaths	35	57	48	47	55	42	27	61	46	51	242	227	8.6	7.6

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007-11 (n)	2012-16 (n)	2007-11 (per capita)	2012-16 (per capita)
PHN301 Brisbane North														
Accidental Drug Related Deaths	43	36	43	65	55	56	45	53	62	59	242	274	5.7	5.8
Total Drug Related Deaths	59	50	61	78	77	77	69	81	86	77	324	389	7.6	8.2
PHN302 Brisbane South														
Accidental Drug Related Deaths	36	38	49	76	64	55	49	69	52	49	263	274	5.3	5.1
Total Drug Related Deaths	55	62	64	96	76	78	71	90	81	73	353	393	7.1	7.3
PHN303 Gold Coast														
Accidental Drug Related Deaths	19	19	26	24	36	39	31	40	49	42	124	201	4.8	7.0
Total Drug Related Deaths	34	38	40	35	44	45	49	59	68	56	191	277	7.3	9.6
PHN304 Darling Downs and West Moreton														
Accidental Drug Related Deaths	14	19	37	27	28	25	28	23	41	31	126	148	5.3	5.7
Total Drug Related Deaths	24	30	47	31	35	35	40	34	57	40	168	206	7.0	7.9
PHN305 Western Queensland														
Accidental Drug Related Deaths	3	5	2	6	5	2	6	4	3	1	19	20	5.8	5.7
Total Drug Related Deaths	2	5	3	7	5	5	6	4	6	1	21	24	6.3	7.0
PHN306 Central Queensland and Sunshine Coast														
Accidental Drug Related Deaths	32	38	46	63	52	64	65	66	59	62	231	316	6.1	8.1
Total Drug Related Deaths	45	55	60	76	64	84	97	92	91	84	300	448	7.8	11.0
PHN307 Northern Queensland														
Accidental Drug Related Deaths	31	28	37	39	43	36	33	30	53	53	178	204	5.6	6.0
Total Drug Related Deaths	42	35	46	47	62	50	44	42	69	62	232	266	7.3	7.8
PHN401 Adelaide														
Accidental Drug Related Deaths	73	76	86	77	52	84	46	68	56	85	364	339	6.3	5.6
Total Drug Related Deaths	97	110	116	110	87	119	90	113	95	119	520	536	9.0	8.8
PHN402 Country SA														
Accidental Drug Related Deaths	20	21	28	17	21	20	19	15	27	21	107	102	4.2	3.8
Total Drug Related Deaths	29	32	32	25	37	34	35	28	43	31	155	171	6.3	6.6

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007-11 (n)	2012-16 (n)	2007-11 (per capita)	2012-16 (per capita)
PHN501 Perth North														
Accidental Drug Related Deaths	49	51	77	62	59	71	65	64	74	85	298	359	6.3	6.9
Total Drug Related Deaths	72	69	100	88	76	97	88	91	101	113	405	490	8.6	9.4
PHN502 Perth South														
Accidental Drug Related Deaths	41	44	34	55	60	49	55	77	72	91	234	344	5.7	7.4
Total Drug Related Deaths	58	57	52	78	76	77	69	101	92	116	321	455	7.8	9.7
PHN503 Country WA														
Accidental Drug Related Deaths	20	40	36	35	36	35	28	47	54	48	167	212	6.8	7.8
Total Drug Related Deaths	27	46	43	42	43	45	33	60	67	64	201	269	8.1	9.9
PHN601 Tasmania														
Accidental Drug Related Deaths	32	27	40	28	36	28	27	37	30	45	163	167	6.3	6.3
Total Drug Related Deaths	49	40	60	41	47	42	45	54	45	66	237	252	9.3	9.3
PHN701 Northern Territory														
Accidental Drug Related Deaths	20	12	12	16	9	17	11	10	13	9	69	60	7.6	6.1
Total Drug Related Deaths	22	15	12	19	11	19	13	16	18	12	79	78	8.8	7.8
PHN801 Australian Capital Territory														
Accidental Drug Related Deaths	22	22	17	20	16	12	23	21	16	29	97	101	5.4	5.2
Total Drug Related Deaths	28	28	30	25	22	17	27	31	24	36	133	135	7.4	6.9

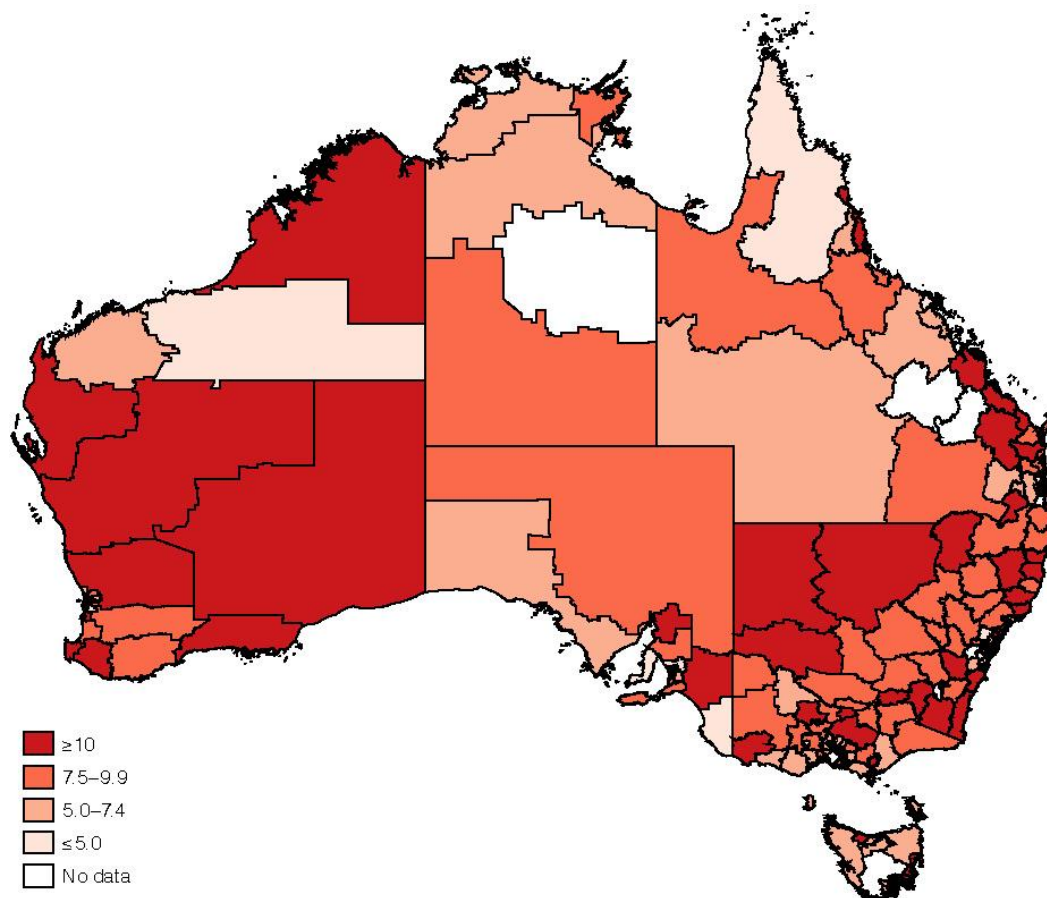
Drug-related deaths by local areas

The following figures represent the per capita rate of all drug-related deaths by Statistical Area 3 (SA3) over the 2012-16 period. SA3s are geographic designations used by the ABS to provide a means for regional analysis. Most SA3s have a population of between 30,000 and 130,000 people, though in major cities they represent areas serviced by a major transport and commercial hub (and may have a population of greater than 130,000).

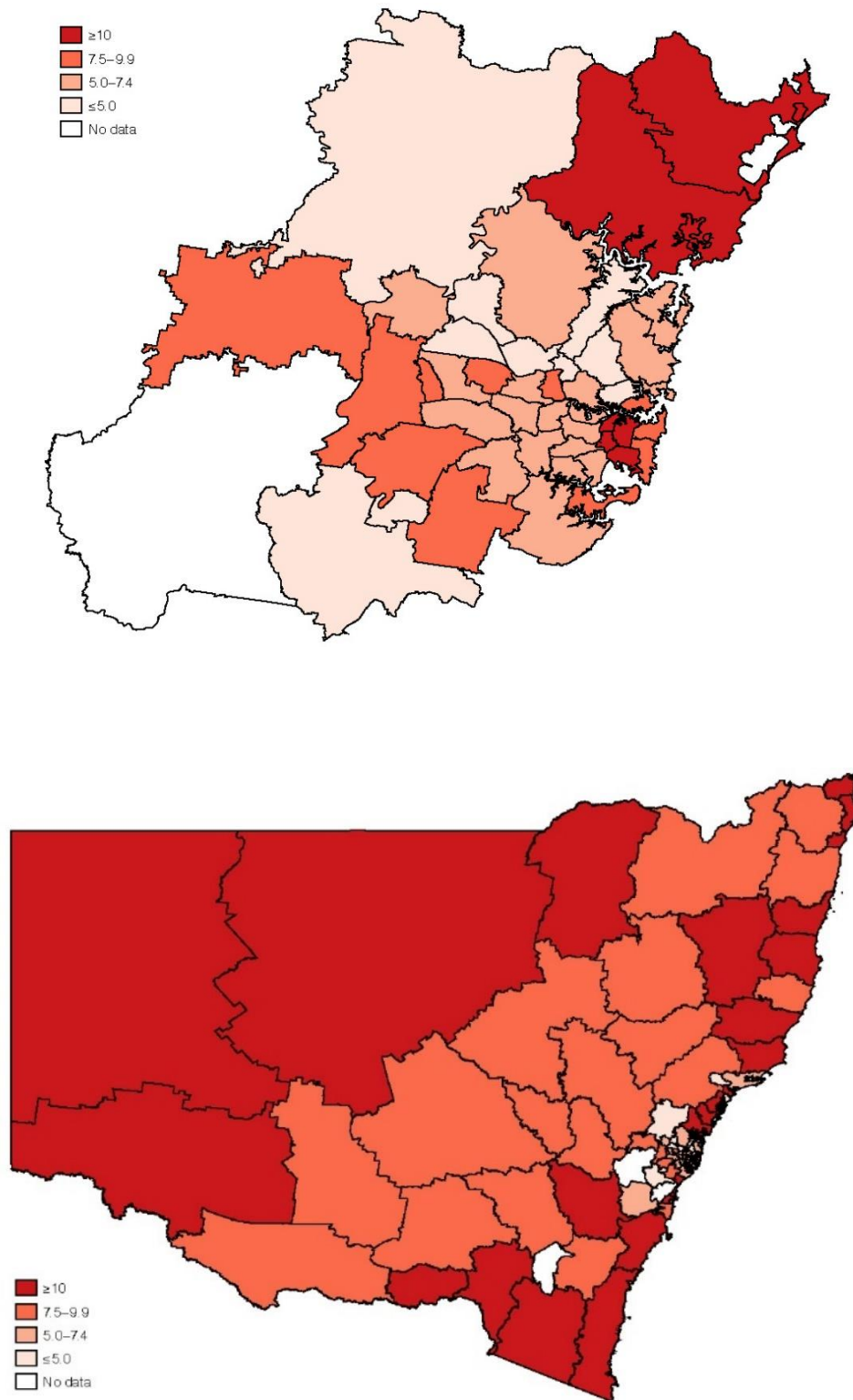
Darker shading indicates a higher rate of drug-related death per 100,000 people. The darkest shading (red) indicates an area has a per capita rate of accidental drug-related death greater than 10 deaths per 100,000 people. The national per capita rate of drug-related death for the 2012-16 period is 8.4 deaths per 100,000 people.

For areas with no shading (white), there was not sufficient data available to accurately estimate the per capita rate.

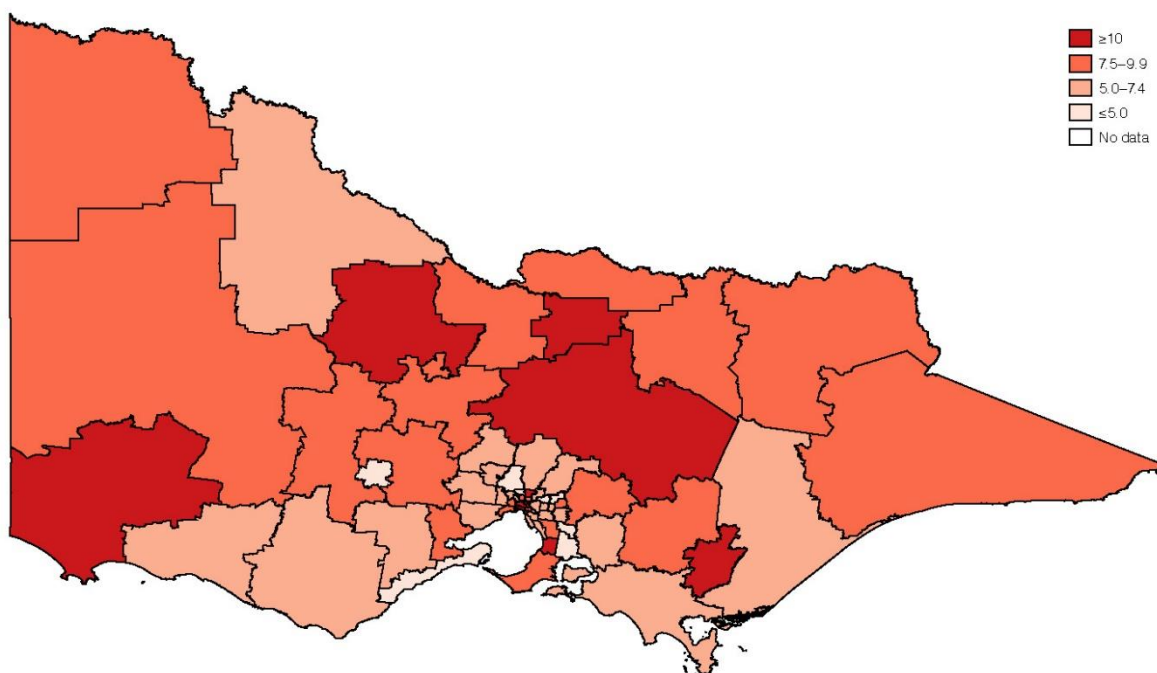
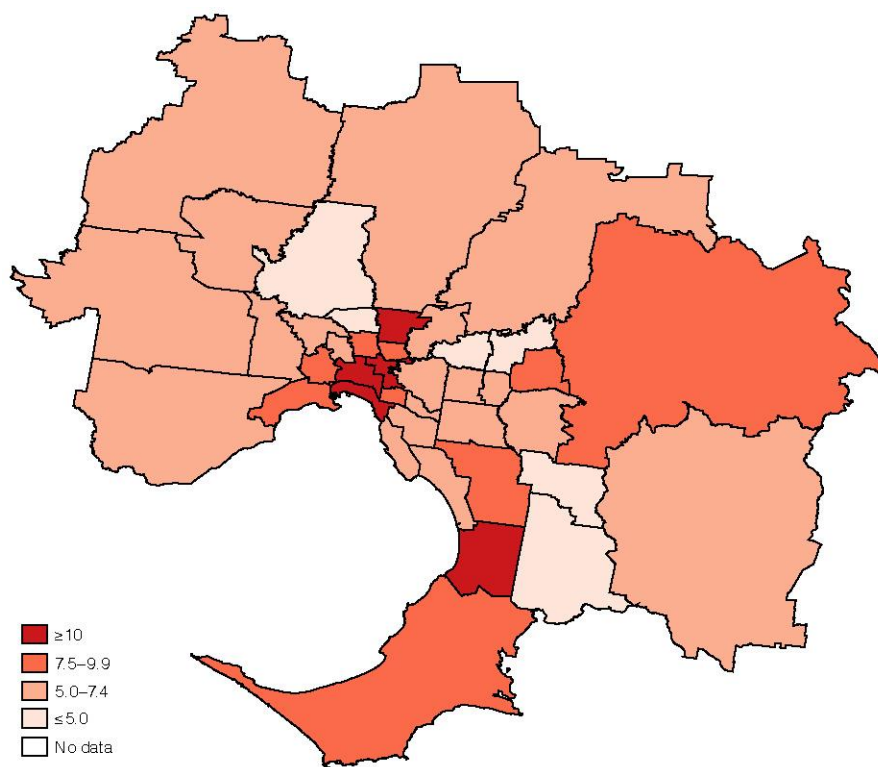
Figure 1: Australia: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



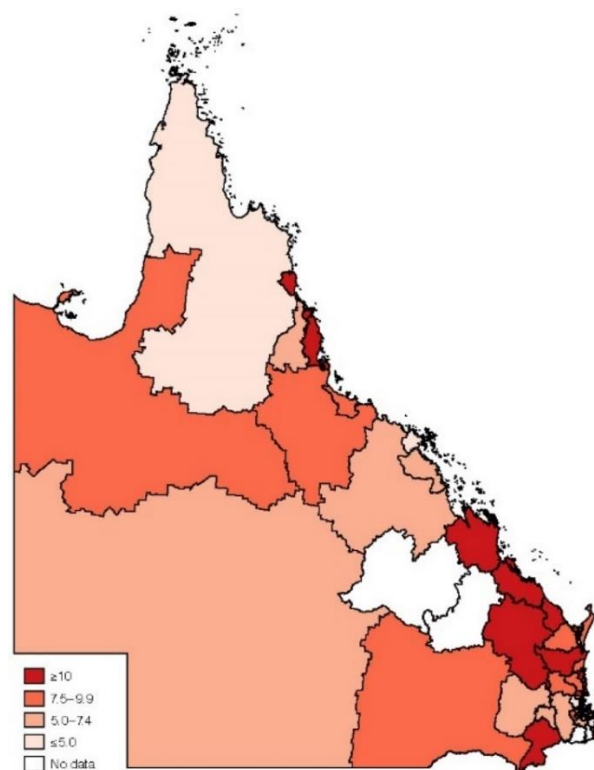
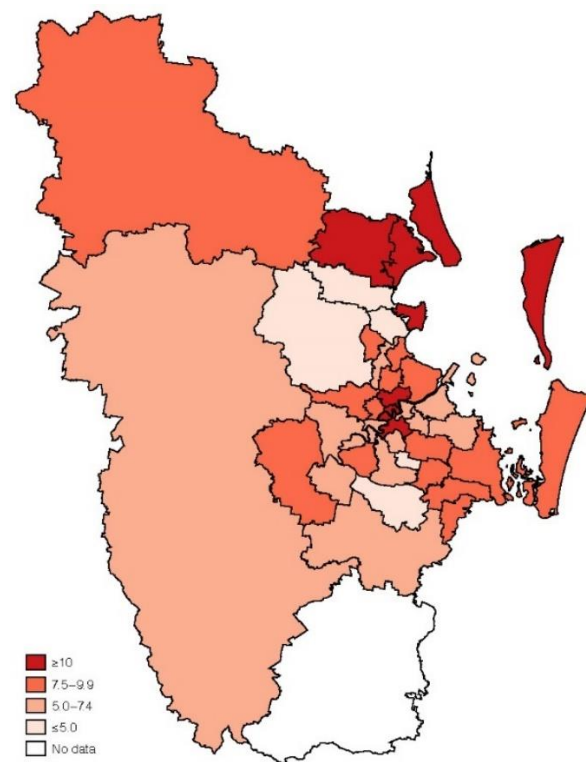
Figures 2 and 3: Sydney and NSW: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



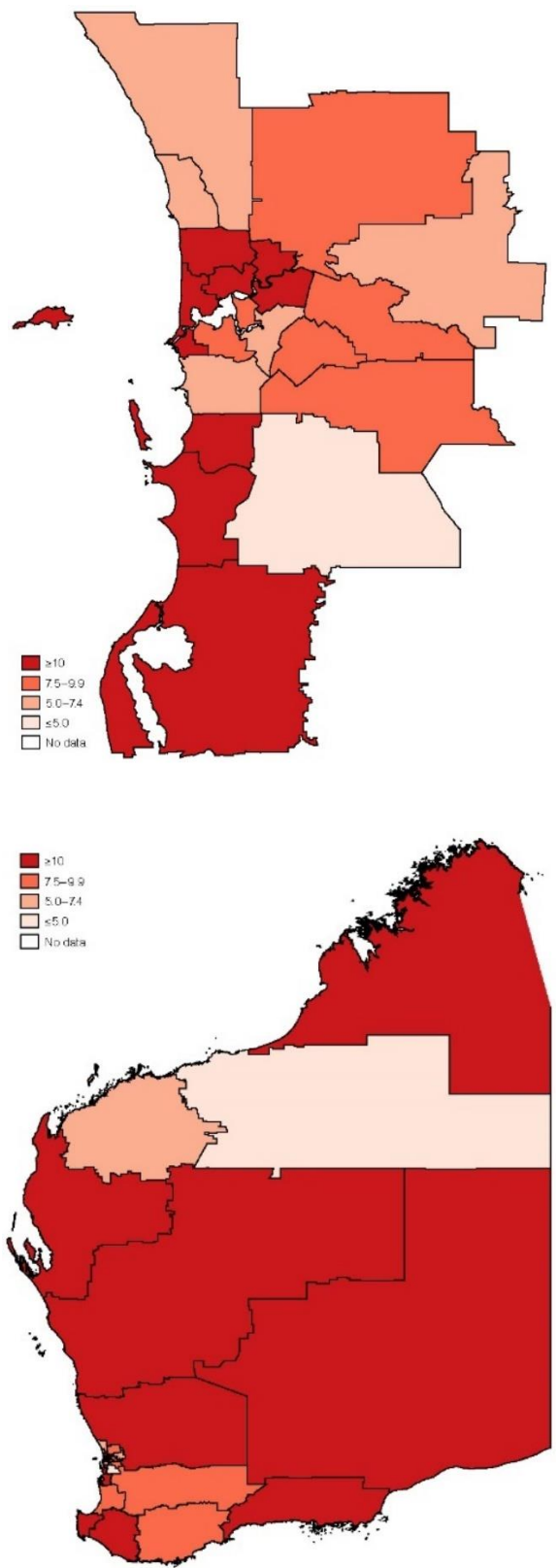
Figures 4 and 5: Melbourne and Victoria: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



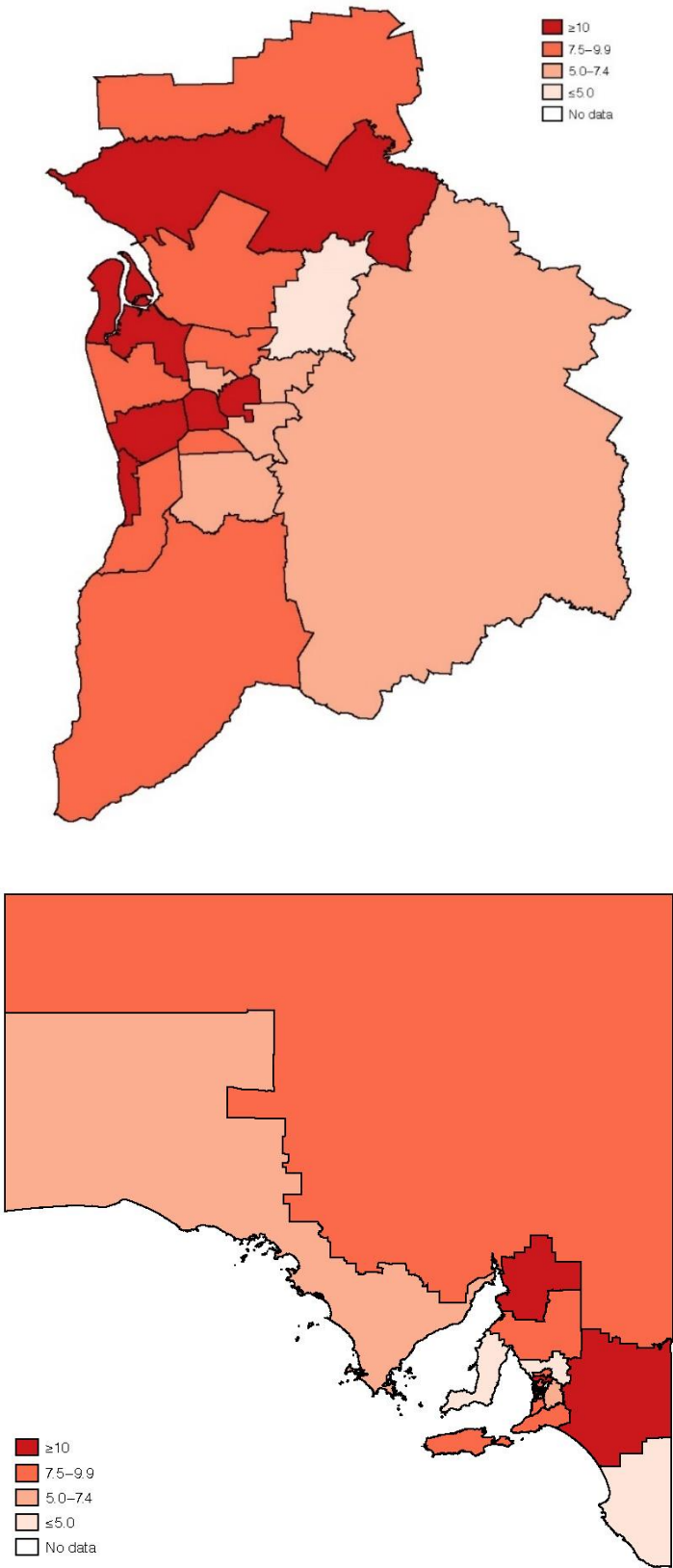
Figures 6 and 7: Brisbane and Queensland: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



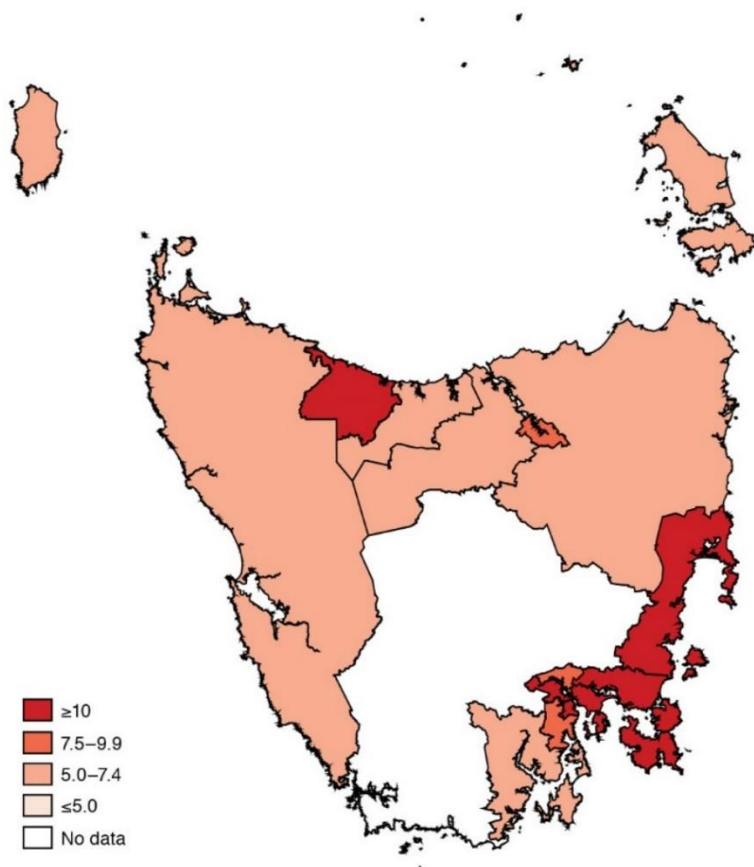
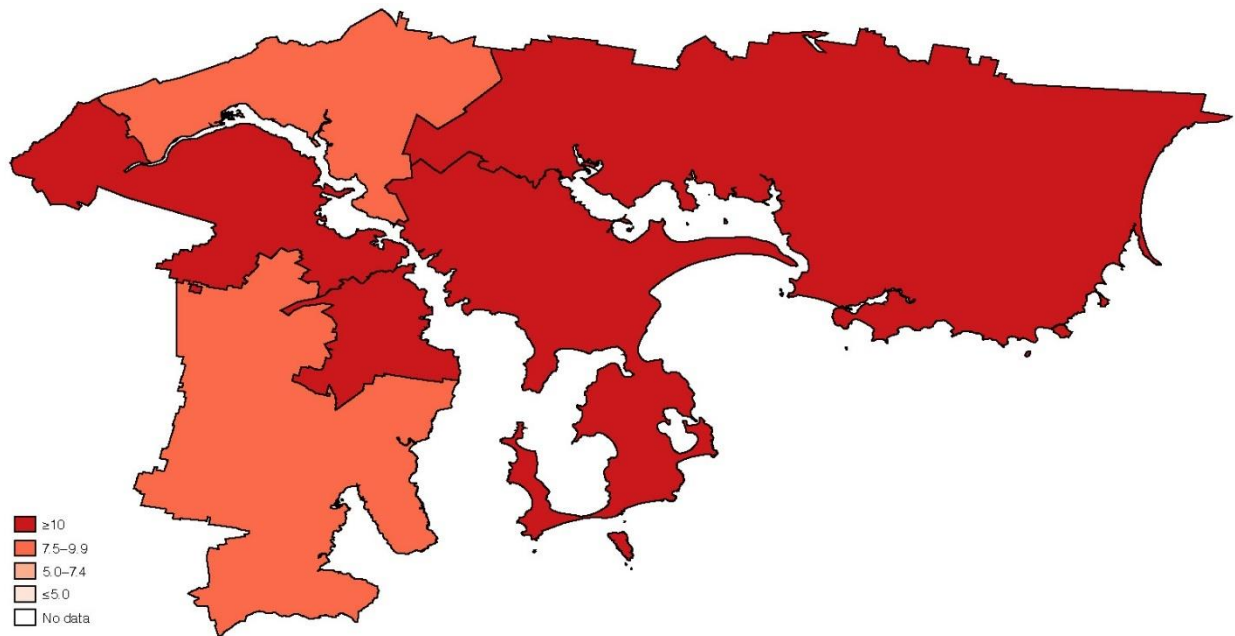
Figures 8 and 9: Perth and WA: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



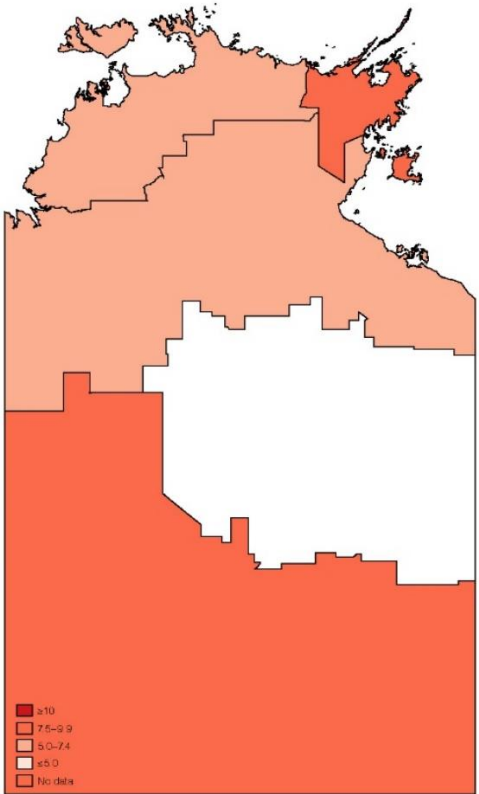
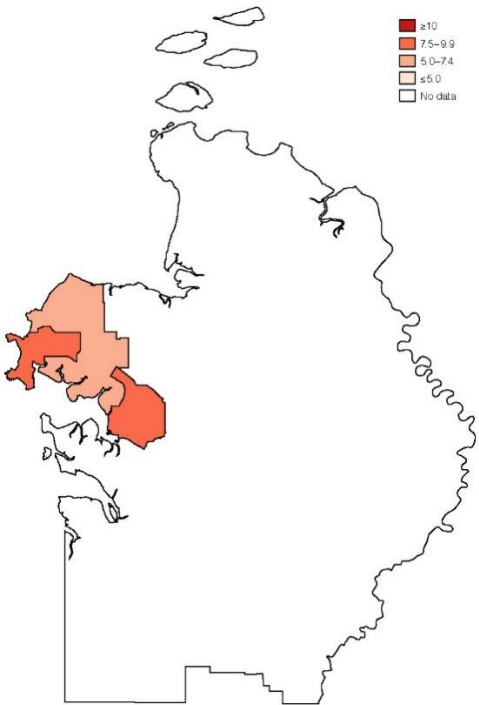
Figures 10 and 11: Adelaide and SA: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



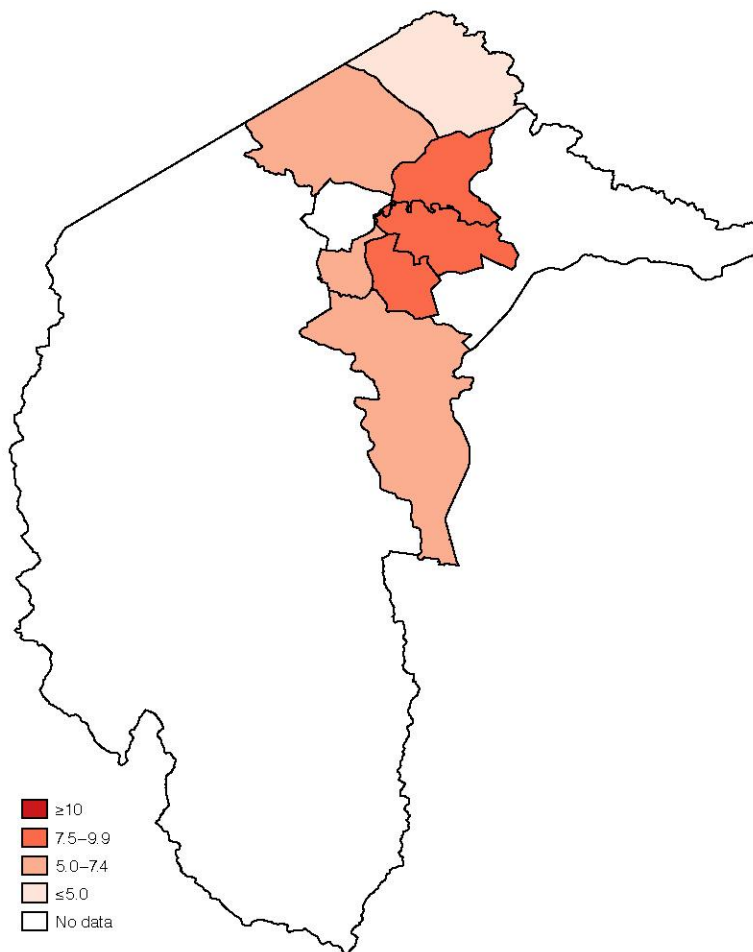
Figures 12 and 13: Hobart and Tasmania: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



Figures 14 and 15: Darwin and NT: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



Figures 16: ACT: All drug-related deaths 2012-2016 (Statistical Area 3), rate per 100,000



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