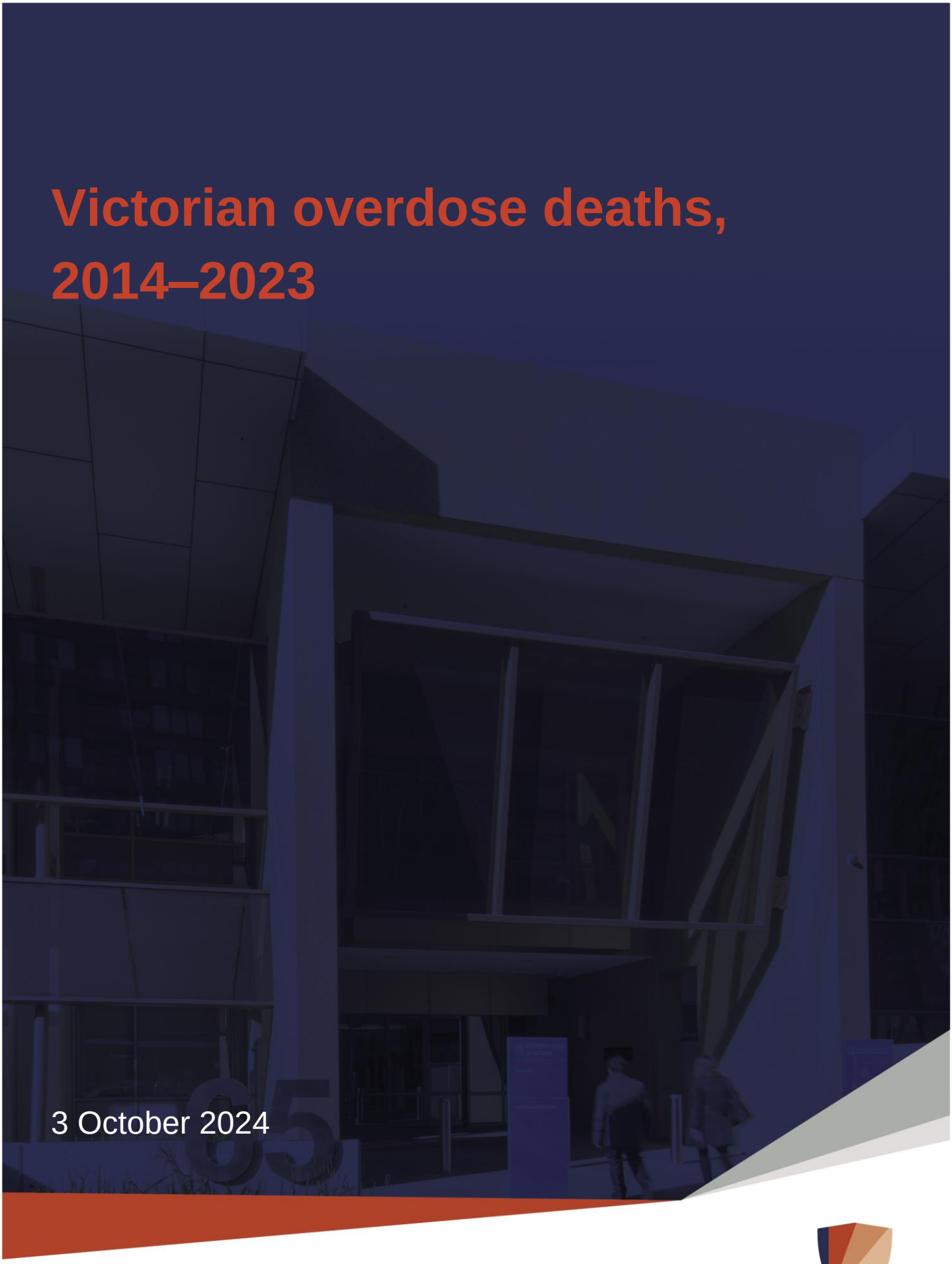
# Victorian overdose deaths, 2014–2023



3 October 2024

Coroners Court of Victoria

# Contents

# 1. Purpose

## This report presents the 2023 update to Victorian overdose death statistics. It was prepared under the Coroners Court of Victoria's initiative to make mortality data accessible to the community and to organisations engaged in reducing preventable deaths.

Data for this report was collated from the Victorian Overdose Deaths Register (**VODR**) maintained by the Court. The design and operation of the VODR, together with relevant definitions and inclusion criteria and considerations for data interpretation, are described in **Attachment A**. The following are particularly important to note:

- Deaths are only included in the VODR after the forensic medical cause of death has been established. In some cases this can take days or weeks, but in other cases (particularly where multiple potential causes of death are considered) the forensic pathologist may require some months. Approximately 90% of forensic medical causes of death in fatal overdoses are confirmed within three months of death report; this rises to around 98% after six months. This is why the Court cannot release overdose deaths data immediately, and instead must wait to ensure the data is as accurate as possible before publication.
- The contents of the VODR are continually reviewed and deaths re-coded as coroners' investigations progress and more is known about the circumstances in which they occurred. Therefore, some of the data reported here may differ slightly from what has been reported previously.
- Variations over time in the data should be interpreted with caution. Sometimes an apparent increase or decrease in the numbers may reflect a shift in underlying trends and patterns in drug use and related harms; but equally it might result from random factors.
- Particular care is required when interpreting any apparent increase or decrease that involves low frequencies (for example 20 or fewer deaths per year), because the influence of random factors is far greater at lower frequencies and can create the illusion of a trend where there is none.

# 2. Overdose deaths, Victoria 2014–2023

There were 5052 overdose deaths in Victoria between 2014 and 2023. This section provides an overview of basic numbers and the socio-demographics of the deceased.

## 2.1. Annual number and rate by sex

Table 1 shows the annual number and proportion of Victorian overdose deaths by sex of the deceased person for the period 2014–2023. There was a steady increase in overdose deaths between 2014 and 2018, reaching 542 deaths in 2018. The annual number then retreated slightly to 500 in 2021, before rising again to 550 overdose deaths in 2022 and 547 in 2023. Males consistently accounted for around two-thirds of overdose deaths throughout the period, noting some slight variation from year to year.

**Table 1**: Annual number and proportion of overdose deaths by deceased sex, Victoria 2014–2023.

| Sex | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number** | | | | | | | | | | |
| Male | 253 | 301 | 331 | 336 | 346 | 332 | 349 | 353 | 349 | 344 |
| Female | 134 | 152 | 163 | 187 | 196 | 188 | 187 | 147 | 201 | 203 |
| **Total** | **387** | **453** | **494** | **523** | **542** | **520** | **536** | **500** | **550** | **547** |
| **Proportion** | | | | | | | | | | |
| Male | 65.4 | 66.4 | 67.0 | 64.2 | 63.8 | 63.8 | 65.1 | 70.6 | 63.5 | 62.9 |
| Female | 34.6 | 33.6 | 33.0 | 35.8 | 36.2 | 36.2 | 34.9 | 29.4 | 36.5 | 37.1 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

Figure A shows the crude annual overdose death rate per 100,000 males and females in the Victorian population, 2014–2023. Rates rose initially between 2014 and 2016 for males, and between 2014 and 2018 for females, confirming that the annual number of overdose deaths at the time was increasing faster than the Victorian population grew. The annual rate after 2018 was generally steady for both males and females, though noting a pronounced dip for females in 2021, the meaning of which is still not apparent.

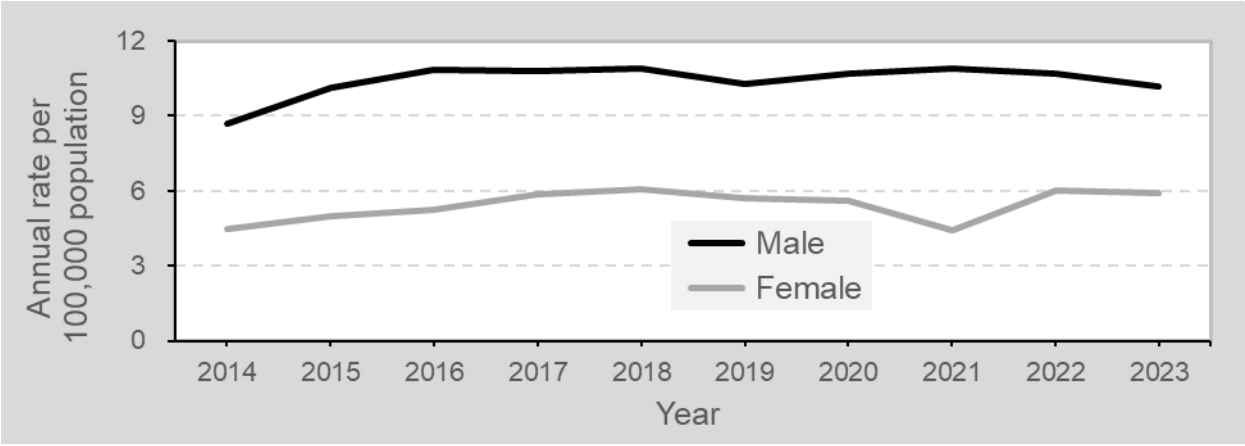



**Figure A**: Annual overdose death rate per 100,000 population by sex, Victoria 2014–2023.

## 2.2. Annual number by sex and age group

Table 2 shows the annual number of Victorian overdose deaths by sex and age group of the deceased person, 2014–2023.

**Table 2**: Annual number of overdose deaths by deceased sex and age group, Victoria 2014–2023.

| Age group by sex | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Males** | | | | | | | | | | |
| Under 18 years | 0 | 0 | 3 | 1 | 0 | 4 | 0 | 0 | 2 | 4 |
| 18 to 24 years | 7 | 12 | 20 | 11 | 16 | 16 | 27 | 17 | 24 | 22 |
| 25 to 34 years | 52 | 57 | 52 | 69 | 67 | 47 | 59 | 76 | 58 | 46 |
| 35 to 44 years | 91 | 110 | 111 | 112 | 106 | 93 | 93 | 93 | 86 | 90 |
| 45 to 54 years | 57 | 84 | 83 | 80 | 99 | 92 | 99 | 96 | 93 | 96 |
| 55 to 64 years | 32 | 24 | 40 | 36 | 42 | 47 | 44 | 47 | 61 | 57 |
| 65 years and over | 14 | 14 | 22 | 27 | 16 | 33 | 27 | 24 | 25 | 29 |
| **Total** | **253** | **301** | **331** | **336** | **346** | **332** | **349** | **353** | **349** | **344** |
| **Females** | | | | | | | | | | |
| Under 18 years | 1 | 1 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 3 |
| 18 to 24 years | 6 | 7 | 6 | 8 | 13 | 8 | 5 | 7 | 6 | 6 |
| 25 to 34 years | 29 | 15 | 25 | 23 | 28 | 22 | 35 | 23 | 23 | 37 |
| 35 to 44 years | 27 | 46 | 47 | 44 | 48 | 39 | 52 | 36 | 43 | 48 |
| 45 to 54 years | 35 | 36 | 39 | 44 | 36 | 54 | 47 | 42 | 61 | 49 |
| 55 to 64 years | 25 | 27 | 29 | 36 | 41 | 32 | 24 | 22 | 40 | 30 |
| 65 years and over | 11 | 20 | 16 | 29 | 29 | 32 | 24 | 17 | 28 | 30 |
| **Total** | **134** | **152** | **163** | **187** | **196** | **188** | **187** | **147** | **201** | **203** |
| **All people** | | | | | | | | | | |
| Under 18 years | 1 | 1 | 4 | 4 | 1 | 5 | 0 | 0 | 2 | 7 |
| 18 to 24 years | 13 | 19 | 26 | 19 | 29 | 24 | 32 | 24 | 30 | 28 |
| 25 to 34 years | 81 | 72 | 77 | 92 | 95 | 69 | 94 | 99 | 81 | 83 |
| 35 to 44 years | 118 | 156 | 158 | 156 | 154 | 132 | 145 | 129 | 129 | 138 |
| 45 to 54 years | 92 | 120 | 122 | 124 | 135 | 146 | 146 | 138 | 154 | 145 |
| 55 to 64 years | 57 | 51 | 69 | 72 | 83 | 79 | 68 | 69 | 101 | 87 |
| 65 years and over | 25 | 34 | 38 | 56 | 45 | 65 | 51 | 41 | 53 | 59 |
| **Total** | **387** | **453** | **494** | **523** | **542** | **520** | **536** | **500** | **550** | **547** |

When annual numbers were broken down in this way, it was challenging to identify consistent trends. For most groups across sex and age there was a general increase in the annual number when comparing 2014 to 2023 (which mirrored the overall annual growth in overdose deaths), but fluctuations from year to year were quite marked within most groups and no apparent underlying pattern was able to be discerned. This reinforces the need for caution in interpreting the data: changes over time might reflect shifting drug-related harms in the Victorian population, but might simply reflect volatility in the numbers themselves.

The risk of overdose death by age group and sex became clearer, though, when the overall numbers were used to calculate rates. Figure B (over page) shows the sex-specific and age-specific average annual rate of overdose deaths per 100,000 Victorians across the 10-year period. For both males and females, the lowest rate was among those aged under 18 years. The rate then

increased steadily to peak in males aged 35–44, and in females aged 45–54, before declining among older Victorians.

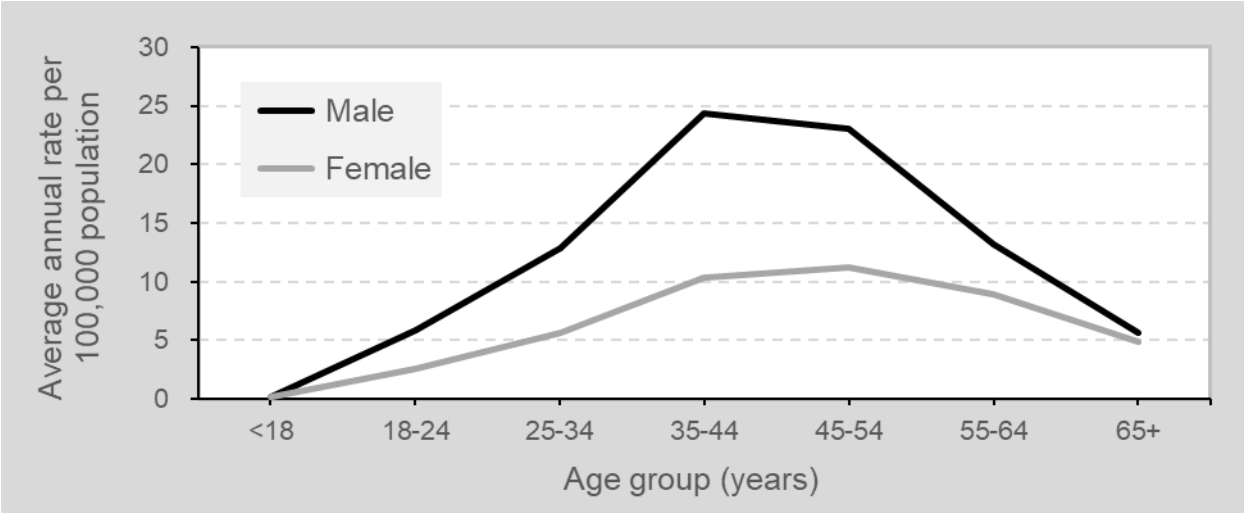



**Figure B**: Average annual overdose death rate per 100,000 population by sex and age group, Victoria 2014–2023.

## 2.3. Metropolitan Melbourne and Regional Victoria

Table 3 shows the annual number and proportion of Victorian overdose deaths occurring in Metropolitan Melbourne and Regional Victoria. Please note that deaths were excluded where the location of fatal incident was not known with certainty; this is why the total number of deaths in some years in Table 3 sums to slightly lower than in previous tables.

**Table 3**: Annual number and proportion of overdose deaths by fatal incident location, Victoria 2014–2023.

| Fatal incident location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number** | | | | | | | | | | |
| Metropolitan Melbourne | 290 | 345 | 373 | 388 | 393 | 385 | 396 | 399 | 414 | 409 |
| Regional Victoria | 97 | 108 | 119 | 132 | 148 | 133 | 140 | 101 | 136 | 136 |
| **Total** | **387** | **453** | **492** | **520** | **541** | **518** | **536** | **500** | **550** | **545** |
| **Proportion** | | | | | | | | | | |
| Metropolitan Melbourne | 74.9 | 76.2 | 75.8 | 74.6 | 72.6 | 74.3 | 73.9 | 79.8 | 75.3 | 75.0 |
| Regional Victoria | 25.1 | 23.8 | 24.2 | 25.4 | 27.4 | 25.7 | 26.1 | 20.2 | 24.7 | 25.0 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

The annual number of overdose deaths in Metropolitan Melbourne generally increased over time between 2014 and 2023. There was a similar increase in Regional Victoria between 2014 and 2018, but a slight decline thereafter (and a pronounced dip in 2021) through to 2023. Just over a quarter of Victorian overdose deaths each year occurred in Regional Victoria, with very little variation in this proportion over the 10-year period except for 2021, when the proportion dropped to 20% of all overdose deaths.

Supplementing table 3, please see **Attachment B** for the annual number of overdose deaths by local government area of fatal incident.

# 3. Contributing drugs

This section provides an overview of main drug types, drug groups and individual drugs that contributed to the 5052 overdose deaths in Victoria between 2014 and 2023.

## 3.1. Single drug and multiple drug toxicity

Table 4 shows the annual number and proportion of overdose deaths in Victoria for the period 2014–2023 which were due to the acute toxic effects of a single drug versus multiple drugs (the latter is also known as combined drug toxicity).

**Table 4**: Annual number of single drug and multiple drug overdose deaths, Victoria 2014–2023.

| Contributing drugs | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number** | | | | | | | | | | |
| Single | 101 | 130 | 136 | 123 | 132 | 131 | 140 | 132 | 123 | 156 |
| Multiple | 286 | 323 | 358 | 400 | 410 | 389 | 396 | 368 | 427 | 391 |
| **Total** | **387** | **453** | **494** | **523** | **542** | **520** | **536** | **500** | **550** | **547** |
| **Proportion** | | | | | | | | | | |
| Single | 26.1 | 28.7 | 27.5 | 23.5 | 24.4 | 25.2 | 26.1 | 26.4 | 22.4 | 28.5 |
| Multiple | 73.9 | 71.3 | 72.5 | 76.5 | 75.6 | 74.8 | 73.9 | 73.6 | 77.6 | 71.5 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

On average three-quarters of Victorian overdose deaths each year involve multiple contributing drugs, which underscores the importance of highlighting drug combinations when delivering harm reduction education and other overdose prevention initiatives.

## 3.2. Contributing drug types

Contributing drugs across all Victorian overdose deaths were classified into three main types for further analysis, being pharmaceutical drugs, illegal drugs and alcohol. Definitions of these drug types are found in **Attachment A**, together with a discussion of classification challenges.

**Table 5**: Annual number of overdose deaths by contributing drug types, Victoria 2014–2023.

| Contributing drugs | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number** | | | | | | | | | | |
| Pharmaceutical | 318 | 357 | 385 | 414 | 428 | 409 | 403 | 377 | 406 | 379 |
| Illegal | 160 | 223 | 264 | 267 | 259 | 275 | 276 | 260 | 301 | 323 |
| Alcohol | 94 | 106 | 124 | 151 | 161 | 146 | 155 | 147 | 173 | 153 |
| **Total** | **387** | **453** | **494** | **523** | **542** | **520** | **536** | **500** | **550** | **547** |
| **Proportion** | | | | | | | | | | |
| Pharmaceutical | 82.2 | 78.8 | 77.9 | 79.2 | 79.0 | 78.7 | 75.2 | 75.4 | 73.8 | 69.3 |
| Illegal | 41.3 | 49.2 | 53.4 | 51.1 | 47.8 | 52.9 | 51.5 | 52.0 | 54.7 | 59.0 |
| Alcohol | 24.3 | 23.4 | 25.1 | 28.9 | 29.7 | 28.1 | 28.9 | 29.4 | 31.5 | 28.0 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

Table 5 shows the annual number and proportion of Victorian overdose deaths involving pharmaceutical drugs, illegal drugs and alcohol. Most overdose deaths were from multiple drug

toxicity, which is why the annual numbers for each drug type in Table 5 sum to greater than the overall annual number.

Overall, pharmaceutical drugs were the most frequent contributors to Victorian overdose deaths, though the annual proportion of overdose deaths in which they played a contributory role declined over time, from 82.2% in 2014 to 69.3% in 2023. Across the same period the proportion of Victorian overdose deaths involving illegal drugs increased, from 41.3% (in 2014) to 59.0% (in 2023). Alcohol's role was relatively steady over time, at least between 2017 and 2023 when it contributed to on average around 29% of overdose deaths per year

## 3.3. Contributing drug groups

Pharmaceutical drugs were further disaggregated into drug groups for more detailed analysis, using a modified version of the US Drug Abuse Warning Network (DAWN) Drug Vocabulary level two groupings.[1]

**Table 6**: Annual number and proportion overdose deaths in which major pharmaceutical drug groups (plus alcohol and illegal drugs) contributed, Victoria 2014–2023.

| Drug group | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number** | | | | | | | | | | |
| Illegal drugs | 160 | 223 | 264 | 267 | 259 | 275 | 276 | 260 | 301 | 323 |
| Benzodiazepines | 215 | 238 | 263 | 303 | 304 | 285 | 285 | 266 | 268 | 265 |
| Pharmaceutical opioids | 182 | 185 | 183 | 198 | 207 | 208 | 193 | 182 | 183 | 180 |
| Antidepressants | 144 | 161 | 165 | 196 | 196 | 172 | 181 | 159 | 174 | 146 |
| Alcohol | 94 | 106 | 124 | 151 | 161 | 146 | 155 | 147 | 173 | 153 |
| Antipsychotics | 81 | 91 | 107 | 136 | 109 | 103 | 113 | 99 | 111 | 108 |
| Anticonvulsants | 45 | 51 | 54 | 75 | 87 | 86 | 92 | 85 | 101 | 93 |
| Non-benzo anxiolytics | 48 | 60 | 40 | 56 | 47 | 54 | 51 | 46 | 51 | 51 |
| **Total** | **387** | **453** | **494** | **523** | **542** | **520** | **536** | **500** | **550** | **547** |
| **Proportion** | | | | | | | | | | |
| Illegal drugs | 41.3 | 49.2 | 53.4 | 51.1 | 47.8 | 52.9 | 51.5 | 52.0 | 54.7 | 59.0 |
| Benzodiazepines | 55.6 | 52.5 | 53.2 | 57.9 | 56.1 | 54.8 | 53.2 | 53.2 | 48.7 | 48.4 |
| Pharmaceutical opioids | 47.0 | 40.8 | 37.0 | 37.9 | 38.2 | 40.0 | 36.0 | 36.4 | 33.3 | 32.9 |
| Antidepressants | 37.2 | 35.5 | 33.4 | 37.5 | 36.2 | 33.1 | 33.8 | 31.8 | 31.6 | 26.7 |
| Alcohol | 24.3 | 23.4 | 25.1 | 28.9 | 29.7 | 28.1 | 28.9 | 29.4 | 31.5 | 28.0 |
| Antipsychotics | 20.9 | 20.1 | 21.7 | 26.0 | 20.1 | 19.8 | 21.1 | 19.8 | 20.2 | 19.7 |
| Anticonvulsants | 11.6 | 11.3 | 10.9 | 14.3 | 16.1 | 16.5 | 17.2 | 17.0 | 18.4 | 17.0 |
| Non-benzo anxiolytics | 12.4 | 13.2 | 8.1 | 10.7 | 8.7 | 10.4 | 9.5 | 9.2 | 9.3 | 9.3 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

Table 6 shows the annual number and proportion of Victorian overdose deaths 2014–2023 involving each of the major contributing pharmaceutical drug groups, with illegal drugs and alcohol included for context. Most overdose deaths were from combined drug toxicity, which is why the

1 The main modifications were that the DAWN 'anxiolytics' group was divided into benzodiazepine and non-benzodiazepine anxiolytics, and the DAWN 'analgesics' group was divided into pharmaceutical opioids and non-opioid analgesics.

annual numbers for each drug group in Table 6 sum to greater than the overall annual number of overdose deaths.

Across the 10-year period, benzodiazepines were overall the most frequent contributing pharmaceutical drug group, playing a role in an average 53.3% of overdose deaths per year. However, in 2022 and 2023 the number of overdose deaths involving illegal drugs markedly exceeded the number of benzodiazepine-involved overdose deaths. The next most frequent pharmaceutical drug groups were opioids (an average 37.6% of overdose deaths annually across the period) and antidepressants (annual average 33.5%), both of which saw declines over time in the annual proportion of overdose deaths to which they contributed.

## 3.4. Individual contributing drugs

Table 7 shows the annual number of overdose deaths involving each of the most frequent contributing individual drugs. The individual drugs are tabulated by the major drug groups to which they belong.

**Table 7**: Annual number of overdose deaths in which individual drugs contributed, Victoria 2014–2023. (*Noting that new psychoactive substances are actually a drug group rather than an individual drug; these are analysed further in Section 4 of the Data Summary.)

| Contributing drug | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Illegal drugs** | | | | | | | | | | |
| Heroin | 136 | 171 | 190 | 220 | 203 | 212 | 187 | 173 | 230 | 204 |
| Methamphetamine | 53 | 72 | 120 | 93 | 95 | 111 | 116 | 137 | 141 | 164 |
| New psychoactives* | 0 | 2 | 8 | 2 | 8 | 17 | 33 | 35 | 46 | 42 |
| Cocaine | 7 | 15 | 11 | 10 | 17 | 21 | 28 | 23 | 19 | 32 |
| GHB | 1 | 0 | 4 | 6 | 5 | 7 | 18 | 10 | 22 | 24 |
| MDMA | 4 | 5 | 12 | 7 | 4 | 14 | 17 | 11 | 9 | 8 |
| **Total** | **160** | **223** | **264** | **267** | **259** | **275** | **276** | **260** | **301** | **323** |
| **Benzodiazepines** | | | | | | | | | | |
| Diazepam | 169 | 192 | 204 | 242 | 235 | 232 | 219 | 217 | 213 | 213 |
| Clonazepam | 25 | 33 | 31 | 48 | 40 | 35 | 43 | 45 | 42 | 51 |
| Alprazolam | 28 | 23 | 23 | 27 | 31 | 28 | 31 | 26 | 18 | 22 |
| Oxazepam | 19 | 34 | 27 | 23 | 35 | 28 | 17 | 27 | 20 | 15 |
| Temazepam | 20 | 25 | 26 | 32 | 29 | 20 | 18 | 18 | 17 | 10 |
| Nitrazepam | 13 | 17 | 22 | 11 | 16 | 13 | 14 | 12 | 14 | 9 |
| Lorazepam | 6 | 2 | 7 | 7 | 6 | 9 | 12 | 10 | 5 | 8 |
| **Total** | **215** | **238** | **263** | **303** | **304** | **285** | **285** | **266** | **268** | **265** |

(Table 7 continued over page)

(Table 7 continued from previous page)

| Contributing drug | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Pharma opioids** | | | | | | | | | | |
| Methadone | 67 | 67 | 72 | 71 | 72 | 75 | 67 | 67 | 72 | 66 |
| Oxycodone | 46 | 58 | 54 | 66 | 62 | 60 | 60 | 47 | 57 | 41 |
| Codeine | 47 | 48 | 46 | 37 | 34 | 42 | 40 | 26 | 31 | 24 |
| Tramadol | 23 | 32 | 26 | 32 | 35 | 37 | 28 | 20 | 17 | 12 |
| Morphine | 12 | 9 | 13 | 18 | 19 | 18 | 10 | 13 | 11 | 17 |
| Buprenorphine | 7 | 4 | 2 | 8 | 20 | 11 | 17 | 10 | 17 | 23 |
| Tapentadol | 0 | 0 | 0 | 1 | 9 | 13 | 20 | 19 | 18 | 38 |
| Fentanyl | 11 | 23 | 13 | 14 | 18 | 5 | 5 | 13 | 2 | 6 |
| **Total** | **182** | **185** | **183** | **198** | **207** | **208** | **193** | **182** | **183** | **180** |
| **Antidepressants** | | | | | | | | | | |
| Mirtazapine | 29 | 50 | 25 | 42 | 59 | 45 | 57 | 50 | 69 | 34 |
| Amitriptyline | 41 | 28 | 34 | 47 | 40 | 42 | 32 | 33 | 33 | 37 |
| Citalopram | 25 | 26 | 28 | 35 | 26 | 26 | 34 | 25 | 29 | 27 |
| Venlafaxine | 19 | 10 | 22 | 27 | 18 | 20 | 19 | 20 | 25 | 14 |
| Duloxetine | 12 | 12 | 15 | 12 | 19 | 20 | 17 | 18 | 12 | 8 |
| Sertraline | 9 | 12 | 11 | 18 | 19 | 20 | 14 | 12 | 15 | 11 |
| Desvenlafaxine | 11 | 15 | 19 | 15 | 18 | 12 | 15 | 8 | 14 | 10 |
| Fluoxetine | 7 | 12 | 16 | 10 | 12 | 12 | 10 | 13 | 8 | 13 |
| **Total** | **144** | **161** | **165** | **196** | **196** | **172** | **181** | **159** | **174** | **146** |
| **Alcohol** | | | | | | | | | | |
| Alcohol | 94 | 106 | 124 | 151 | 161 | 146 | 155 | 147 | 173 | 153 |
| **Alcohol** | **94** | **106** | **124** | **151** | **161** | **146** | **155** | **147** | **173** | **153** |
| **Antipsychotics** | | | | | | | | | | |
| Quetiapine | 48 | 49 | 57 | 74 | 53 | 50 | 53 | 44 | 43 | 47 |
| Olanzapine | 21 | 30 | 36 | 41 | 42 | 33 | 44 | 34 | 45 | 45 |
| Risperidone | 7 | 9 | 14 | 9 | 13 | 10 | 4 | 6 | 18 | 7 |
| Zuclopenthixol | 3 | 5 | 4 | 14 | 4 | 7 | 8 | 3 | 5 | 3 |
| Aripiprazole | 2 | 4 | 3 | 6 | 6 | 4 | 5 | 6 | 8 | 10 |
| **Total** | **81** | **91** | **107** | **136** | **109** | **103** | **113** | **99** | **111** | **108** |
| **Anticonvulsants** | | | | | | | | | | |
| Pregabalin | 27 | 34 | 34 | 52 | 69 | 67 | 69 | 65 | 66 | 78 |
| Valproic Acid | 9 | 9 | 6 | 7 | 5 | 7 | 7 | 6 | 9 | 2 |
| Lamotrigine | 2 | 2 | 3 | 6 | 10 | 7 | 8 | 8 | 12 | 5 |
| Gabapentin | 1 | 4 | 2 | 5 | 5 | 2 | 11 | 7 | 8 | 5 |
| **Total** | **45** | **51** | **54** | **75** | **87** | **86** | **92** | **85** | **101** | **93** |

(Table 7 continued over page)

(Table 7 continued from previous page)

| Contributing drug | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Non-benzo anxiolytics** | | | | | | | | | | |
| Zopiclone | 11 | 17 | 13 | 17 | 13 | 22 | 18 | 15 | 17 | 15 |
| Doxylamine | 13 | 14 | 13 | 18 | 18 | 16 | 10 | 9 | 13 | 16 |
| Pentobarbitone | 15 | 18 | 9 | 10 | 6 | 9 | 4 | 8 | 2 | 4 |
| Diphenhydramine | 5 | 5 | 4 | 6 | 6 | 7 | 10 | 11 | 15 | 13 |
| Zolpidem | 6 | 11 | 6 | 8 | 6 | 8 | 8 | 9 | 9 | 5 |
| **Total** | **48** | **60** | **40** | **56** | **47** | **54** | **51** | **46** | **51** | **51** |
| **Other drugs of interest** | | | | | | | | | | |
| Paracetamol | 37 | 42 | 30 | 32 | 32 | 47 | 33 | 18 | 18 | 16 |
| Promethazine | 11 | 11 | 11 | 16 | 27 | 18 | 17 | 16 | 21 | 30 |
| Propranolol | 6 | 12 | 8 | 17 | 13 | 12 | 11 | 14 | 9 | 10 |
| Ketamine | 1 | 4 | 3 | 3 | 11 | 6 | 11 | 12 | 10 | 18 |
| Insulin | 5 | 2 | 6 | 7 | 12 | 10 | 7 | 8 | 4 | 5 |
| Amphetamine | 8 | 9 | 1 | 3 | 5 | 3 | 4 | 6 | 5 | 11 |

Some notable themes and issues emerging from the data presented here, are introduced in the next section.

# 4. Themes and issues

The following is a selection of themes and issues that emerge from consideration of the Victorian overdose deaths data presented already.

## 4.1. New psychoactive substances (NPS)

NPS are a highly diverse family of drugs that have become established in unregulated drug markets internationally over the past 20 years. Many NPS are specifically designed to mimic the effects of 'classic' illegal drugs such as cannabis, MDMA, heroin and cocaine. Some are illegal forms or analogues of drugs approved for clinical purposes, such as benzodiazepines and opioids. NPS are rapidly evolving, with new drugs constantly being produced and offered for sale.

Table 8 shows the annual number of Victorian overdose deaths involving NPS, disaggregated by the main categories to which the NPS belonged. (The mapping of individual NPS to categories is described in **Attachment C**.) There was a steady year-on-year increase in NPS involvement in Victorian overdose deaths between 2019 and 2022, with 46 NPS-involved overdose deaths identified in 2022 and 42 in 2023.

**Table 8**: Annual number of NPS-involved overdose deaths by contributing categories, Victoria 2014–2023.

| NPS category | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzodiazepine | - | 1 | - | - | 1 | 10 | 28 | 26 | 40 | 34 |
| Stimulant | - | - | 7 | 2 | - | - | 4 | 3 | 1 | 8 |
| Cannabinoid | - | 1 | - | - | 6 | 6 | 2 | 2 | - | - |
| Opioid | - | - | 1 | - | - | 1 | - | 3 | 6 | 9 |
| Psychedelic | - | - | 3 | 2 | - | - | 1 | 3 | - | - |
| Empathogen | - | - | - | - | - | - | 5 | 1 | - | - |
| Dissociative | - | - | - | - | - | - | 2 | - | 1 | 1 |
| Other and unknown | - | - | - | - | 1 | - | - | - | 1 | - |
| **Total** | **-** | **2** | **8** | **2** | **8** | **17** | **33** | **35** | **46** | **42** |

NPS benzodiazepines were the most frequent contributing NPS category in 2023, as well as across the decade more generally. There were some clear shifts in NPS benzodiazepine involvement over time, demonstrating how NPS availability evolves. For example:

- Between 2015 and 2021 etizolam was the most frequent contributing NPS benzodiazepine in Victorian overdose deaths.
- In 2020 and 2021 flualprazolam and flubromazolam (in combination with each other and/or etizolam) became prevalent in the overdose deaths.
- Around the beginning of 2022 etizolam stopped being detected in the overdose deaths, and new NPS benzodiazepines such as bromazolam, clobromazolam and clonazolam appeared.
- By the end of 2022 bromazolam had become by far the most frequent contributing NPS benzodiazepine in Victorian overdose deaths, and remained this throughout 2023.

In just over 40% of the 140 Victorian overdose deaths that involved NPS benzodiazepines between 2014 and 2023, the expert death investigators concluded that two or more NPS benzodiazepines had contributed to the death. The contribution of multiple NPS benzodiazepines in a single death does not necessarily mean that the deceased consumed multiple substances,

each containing a separate NPS benzodiazepine. Instead, the circumstances of the deaths suggested that in most cases the deceased had consumed a single substance (usually a tablet that was described as “Xanax” or “street Xanax” or a “Xannie” or similar) and this likely contained a combination of NPS benzodiazepines.

After benzodiazepines, the next most frequent contributing NPS category during 2023 was the opioids. Nitazenes were the predominant type of NPS opioids that contributed to Victorian overdose deaths in both 2022 and 2023. Concerns about the increased number of deaths involving nitazenes, particularly in circumstances where the deceased didn’t know about the nitazene content of the substances they were using, spurred a coroner to recommend in March 2024 that Victoria trial a drug checking service so people who use drugs can have an opportunity to learn what are they taking.[2] This was the sixth such recommendation made by a Victorian coroner over the past three years. In June 2024 the Victorian Department of Health announced a commitment to run an 18-month trial of such a service.

## 4.2. Heroin

While the number of heroin-involved overdose deaths in 2023 eased to 204 from a peak of 230 in 2022, heroin was still the second most prevalent contributing drug in Victorian overdose deaths (close behind diazepam). Just on 85% of heroin-involved overdose deaths in 2023 occurred in Metropolitan Melbourne rather than Regional Victoria, and this has been a consistent finding across the decade under examination.

Table 9 shows the 13 local government areas (LGAs) that were the most frequent locations for heroin-involved overdose deaths during the period 2014–2023, as well as the annual number of such deaths that occurred in each LGA.

**Table 9**: Annual number of heroin-involved overdose deaths in 13 LGAs that were most frequent locations for these deaths, Victoria 2014–2023.

| LGA of fatal incident | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Yarra | 11 | 19 | 20 | 16 | 26 | 17 | 9 | 11 | 14 | 19 | 162 |
| Brimbank | 7 | 5 | 13 | 19 | 10 | 15 | 17 | 8 | 19 | 14 | 127 |
| Melbourne | 16 | 12 | 7 | 15 | 13 | 10 | 14 | 9 | 24 | 7 | 127 |
| Port Phillip | 10 | 9 | 11 | 9 | 18 | 9 | 9 | 11 | 15 | 12 | 113 |
| Greater Dandenong | 4 | 11 | 11 | 11 | 10 | 14 | 9 | 10 | 7 | 17 | 104 |
| Greater Geelong | 6 | 4 | 12 | 6 | 10 | 12 | 5 | 10 | 7 | 10 | 82 |
| Maribyrnong | 7 | 9 | 5 | 9 | 7 | 5 | 6 | 5 | 14 | 9 | 76 |
| Darebin | 6 | 8 | 9 | 9 | 8 | 7 | 5 | 3 | 6 | 7 | 68 |
| Merri-bek | 3 | 5 | 4 | 8 | 9 | 8 | 5 | 3 | 9 | 9 | 63 |
| Frankston | 8 | 8 | 4 | 6 | 8 | 9 | 3 | 4 | 1 | 11 | 62 |
| Stonnington | 1 | 2 | 2 | 5 | 7 | 2 | 5 | 10 | 5 | 10 | 49 |
| Whitehorse | 4 | 8 | 6 | 6 | 3 | 2 | 2 | 6 | 4 | 6 | 47 |
| Wyndham | 3 | 5 | 5 | 6 | 5 | 2 | 3 | 4 | 7 | 7 | 47 |

2 Giles I, "Finding into death of Mr SL without inquest", reference COR 2022 006970, Coroners Court of Victoria, delivered 13 March 2024.

There was substantial variation from year to year within each LGA, as well as between LGAs, making it difficult to discern any clear trends or patterns over time (except for in Yarra, where heroin-involved overdose deaths were consistently elevated). For example, in 2022 Melbourne had clearly the highest number of heroin-involved overdose deaths, but in 2023 there were nine LGAs with higher numbers than Melbourne.

## 4.3. Methamphetamine

The annual number of methamphetamine-involved overdose deaths in Victoria more than tripled between 2014 (53 deaths) and 2023 (164 deaths). Figure C shows that most of these deaths (on average 80% per year) occurred in Metropolitan Melbourne, but also that there was a general increase over time in both Metropolitan Melbourne and Regional Victoria.

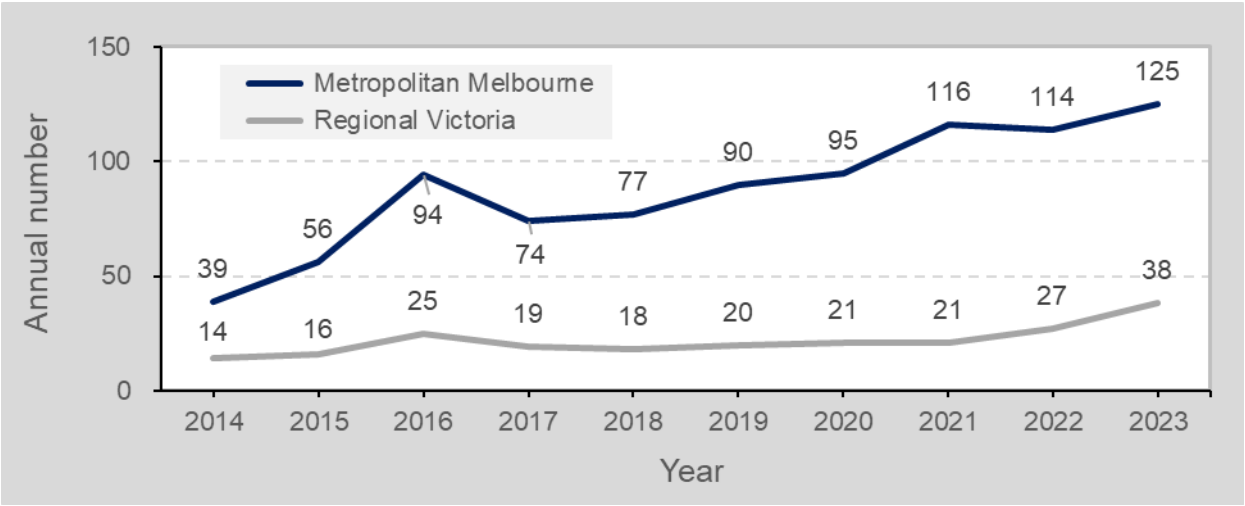



**Figure C**: Annual number of methamphetamine-involved overdose deaths in Metropolitan Melbourne and Regional Victoria, 2014–2023*. (*The location of a small number of methamphetamine-involved overdose deaths could not be confirmed from the available evidence, which is why the annual numbers in this Figure sum in certain years to less than the annual numbers of methamphetamine-involved overdose deaths reported in table 7.)

Table 10 shows most methamphetamine-involved overdose deaths that occurred between 2014 and 2023 also involved other drugs (931 of 1102, 84.5%) rather than being methamphetamine-only overdoses (171 of 1102, 15.5%). Both pharmaceutical drugs and illegal drugs were frequent co-contributors, with heroin being the most frequent co-contributing individual drug (in 55.3% of the deaths), then diazepam (43.5%) and methadone (17.2%).

**Table 10**: Overall number and proportion of overdose deaths involving methamphetamine alone versus in combination with other drug types, Victoria 2014–2023.

| Contributing drugs | N | % |
|---|---|---|
| **Methamphetamine alone** | **171** | **15.5** |
| **Methamphetamine in combination** | **931** | **84.5** |
| - with pharmaceutical drugs | 711 | 64.5 |
| - with other illegal drugs | 760 | 69.0 |
| - with alcohol | 110 | 10.0 |
| **Total** | **1102** | **100.0** |

The data presented in table 10 highlights the dangers of combining methamphetamine with central nervous system depressants such as heroin, methadone, alcohol and benzodiazepines (the combination is sometimes colloquially referred to as a 'speedball', particularly when heroin or another opioid is the depressant). The drugs can intensify and/or mask one another's effects, creating a heightened risk of harm.

Another danger highlighted in the data is the long-term (chronic) effects that methamphetamine can have on heart health. Among the 164 methamphetamine-involved overdose deaths that occurred in Victoria in 2023, there were 51 deaths (31.1%) resulting from the acute toxic effects of methamphetamine in combination with chronic health conditions. In most of these deaths the chronic health conditions were related to the heart (for example cardiomegaly or coronary artery atherosclerosis or ischaemic heart disease) and the forensic pathologist explicitly drew a link from the health condition back to chronic methamphetamine use. Additionally, there were at least 24 deaths in Victoria in 2023 where the chronic effects of methamphetamine use were explicitly identified as contributory but the drug's acute toxic effects did not contribute. These deaths were not counted as overdoses (the definition of an overdose includes acute toxic effects) but they are part of the overall burden of methamphetamine-related deaths.

The link between chronic methamphetamine use, cardiovascular disease and death is well established,[3] and might present particular challenges from a prevention perspective. For example, harm reduction approaches accept that people will use substances and focus on how risks associated with that substance use can be managed; there does not appear to be any treatment at present to manage the risk that a person will develop cardiovascular disease over time when using methamphetamine.

## 4.4. Overdose and intent

The numbers presented in the main body of this report relate to all Victorian overdose deaths regardless of the deceased's intent. The reasons for grouping the deaths in this way include that a range of drug harm reduction interventions (such as overdose education for families and friends of people who use drugs, restricting the amount of risky pharmaceutical drugs a person can access at once, and naloxone distribution) are relevant regardless of a person's intent in using drugs. However some harm reduction interventions are intent-specific, and so in this section we present some orienting data on how intent and fatal overdose intersect in Victoria.

The deceased's intent is coded into the VODR using the following (mutually exclusive) options:

- Unintentional, if the available evidence on the balance of probabilities indicated the deceased did not intend to die in the fatal drug consumption incident. (These are sometimes referred to colloquially as 'accidental' overdoses.)
- Intentional self-harm, if the available evidence on the balance of probabilities indicated the deceased intended to die in the fatal drug consumption incident, and understood that death was the likely result of the drug consumption. (These are suicides.)

3 Mantinieks D, et al, "Methylamphetamine toxicity and its involvement in death: A retrospective observational study of deaths reported to the Victorian Coroner, Australia", *Forensic Science, Medicine and Pathology*, 2023, doi: 10.1007/s12024-023-00724-0; Kevil CG, et al, "Methamphetamine Use and Cardiovascular Disease: In Search of Answers", *Arteriosclerosis Thrombosis and Vascular Biology*, 39(9), 2019, doi: 10.1161/ATVBAHA.119.312461.

- Unable to be determined, if there was insufficient evidence or conflicting evidence regarding the deceased's intent.

Intent is coded in line with the principles and practices of the Victorian Suicide Register (VSR) team at the Coroners Court of Victoria, and coding is regularly reconciled between the VODR and the VSR to ensure accuracy and consistency.[4]

Table 11a shows the annual number of overdose deaths among males in Victoria for the period 2019–2023 by deceased intent. Unintentional overdose deaths accounted for on average 82% of all overdose deaths among males across the five-year period, with intentional self-harm accounting for a further 13.5% of the deaths. There was minor variation in the proportions from year to year, but this is probably not meaningful.

**Table 11a**: Annual number and proportion of overdose deaths in males by deceased intent, Victoria 2019–2023.

| Intent | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|
| **Number** | | | | | | |
| Unintentional | 276 | 273 | 285 | 296 | 284 | 1414 |
| Unable to be determined | 14 | 19 | 15 | 11 | 20 | 79 |
| Intentional self-harm | 42 | 57 | 53 | 42 | 40 | 234 |
| **Total** | **332** | **349** | **353** | **349** | **344** | **1727** |
| **Proportion** | | | | | | |
| Unintentional | 83.1 | 78.2 | 80.7 | 84.8 | 82.6 | 81.9 |
| Unable to be determined | 4.2 | 5.4 | 4.2 | 3.2 | 5.8 | 4.6 |
| Intentional self-harm | 12.7 | 16.3 | 15.0 | 12.0 | 11.6 | 13.5 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

Table 11b (over the page) shows the same numbers as Table 11a, but for females. We found the contrast with males to be quite stark: around 60% of the overdose deaths in females were unintentional, compared to 32.5% for intentional self-harm. This finding is consistent with the suicide literature in multiple countries, which shows that overdose (drug poisoning) is generally a more prevalent suicide method among females than males.[5]

4 For detailed information on the Victorian Suicide Register and intent classification and coding at the Coroners Court of Victoria, please see State of Victoria, *Response to NTG-VIC-002*, Royal Commission into Defence and Veteran Suicide, Exhibit B-01.003, published 28 July 2022.

5 See for example Varnick A, et al, "Suicide methods in Europe: a gender-specific analysis of countries participating in the European Alliance Against Depression", *Journal of Epidemiology and Community Health*, 62(6), 2008, pp.545-551.

**Table 11b**: Annual number and proportion of overdose deaths in females by deceased intent, Victoria 2019–2023.

| Intent | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|
| **Number** | | | | | | |
| Unintentional | 114 | 120 | 83 | 122 | 111 | 550 |
| Unable to be determined | 13 | 17 | 11 | 16 | 18 | 75 |
| Intentional self-harm | 61 | 50 | 53 | 63 | 74 | 301 |
| **Total** | **188** | **187** | **147** | **201** | **203** | **926** |
| **Proportion** | | | | | | |
| Unintentional | 60.6 | 64.2 | 56.5 | 60.7 | 54.7 | 59.4 |
| Unable to be determined | 6.9 | 9.1 | 7.5 | 8.0 | 8.9 | 8.1 |
| Intentional self-harm | 32.4 | 26.7 | 36.1 | 31.3 | 36.5 | 32.5 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

To explore these findings further, we broke down the overall number of overdose deaths in the period 2019–2023 by sex, deceased intent and contributing drug types, to establish whether particular drug types were associated with particular intents for males and females. The results are shown over the page in Table 12a (for males) and Table 12b (for females).

For both males and females the proportion of overdose deaths involving pharmaceutical drugs was higher in intentional self-harm than in unintentional deaths; and the proportion involving illegal drugs and alcohol was far lower in intentional self-harm than unintentional overdose deaths. The other notable finding across the two tables was, regardless of intent a higher proportion of overdose deaths among males than females involved illegal drugs, and a lower proportion involved pharmaceutical drugs.

**Table 12a**: Overall number and proportion of overdose deaths in males by deceased intent and contributing drug groups, Victoria 2019–2023.

| Intent | Pharmaceutical | Illegal | Alcohol | Total |
|---|---|---|---|---|
| **Number** | | | | |
| Unintentional | 901 | 995 | 471 | **1414** |
| Unable to be determined | 72 | 35 | 24 | **79** |
| Intentional self-harm | 223 | 43 | 48 | **234** |
| **Proportion** | | | | |
| Unintentional | 63.7 | 70.4 | 33.3 | **100.0** |
| Unable to be determined | 91.1 | 44.3 | 30.4 | **100.0** |
| Intentional self-harm | 95.3 | 18.4 | 20.5 | **100.0** |

**Table 12b**: Overall number and proportion of overdose deaths in females by deceased intent and contributing drug groups, Victoria 2019–2023.

| Fatal incident location | Pharmaceutical | Illegal | Alcohol | Total |
|---|---|---|---|---|
| **Number** | | | | |
| Unintentional | 415 | 329 | 161 | **550** |
| Unable to be determined | 68 | 17 | 14 | **75** |
| Intentional self-harm | 295 | 16 | 56 | **301** |
| **Proportion** | | | | |
| Unintentional | 75.5 | 59.8 | 29.3 | **100.0** |
| Unable to be determined | 90.7 | 22.7 | 18.7 | **100.0** |
| Intentional self-harm | 98.0 | 5.3 | 18.6 | **100.0** |

The data in tables 12a and 12b suggests that there might be complex interactions between sex, intent and contributing drugs in the Victorian overdose deaths. However, further exploration of this data is beyond the scope of this summary.

## 4.5. Monthly variation in overdose death numbers

In recent years the annual number of overdose deaths has appeared to be relatively steady, hovering around 530 deaths per year with variation of less than 10% from this average in any particular year.

To test whether this consistency was replicated within as well as across years, we calculated the monthly number of Victorian overdose deaths for the period January 2019 to December 2023. The results of the analysis are graphed in Figure D. (The red bars in Figure D indicate January of each year, to assist with interpretation.)

Figure D shows far greater monthly variation than the annual data would suggest. In all years, there was a difference of at least 30% between the month with the least number of overdose deaths and the month with the most. Furthermore, there was no evidence of seasonality in the numbers. (Seasonality refers to regular changes over the course of the year that recur across consecutive years. An example might be if there were more overdose deaths in summer months and fewer in winter months each year).

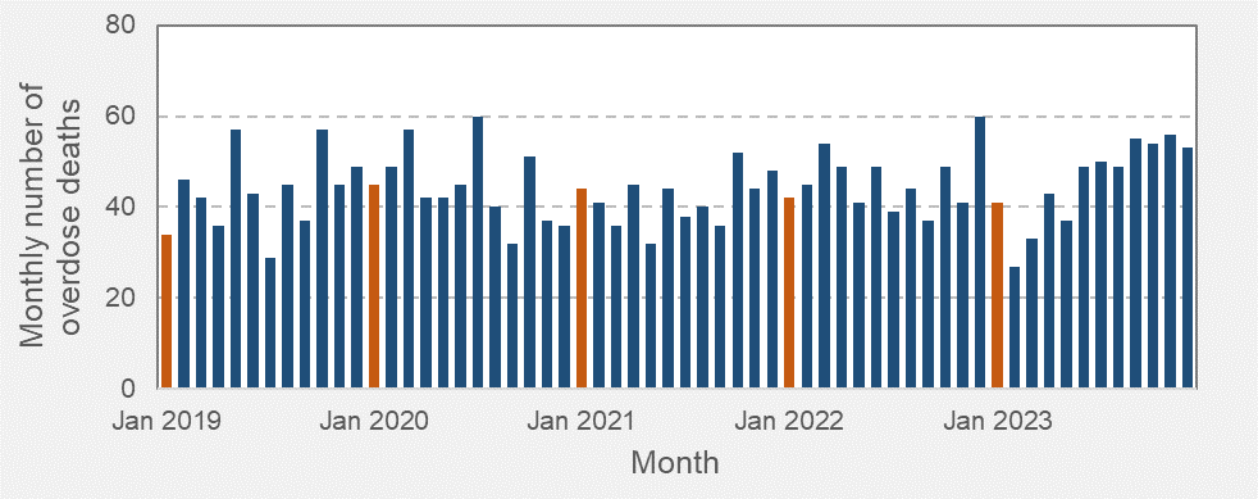



**Figure D**: Monthly number of overdose deaths, Victoria January 2019 – December 2023.

The substantial variation and lack of seasonality in the monthly overdose death numbers reinforces yet again that caution is required when interpreting the data to infer trends or patterns. A month or two of lower or higher overdose death numbers than average does not necessarily mean that an underlying change has occurred.

## 4.6. Pharmaceutical opioids

Table 6 showed a decline over the past decade in the annual proportion of overdose deaths involving pharmaceutical opioids (from 47.0% in 2014 to 32.9% in 2023), which is a positive development. The decline may be related to the Royal Australian College of General Practitioners' efforts since 2012 to develop prescribing guidelines for drugs of dependence (including two guidelines specifically relating to opioids).[6] It may also be related to the Victorian Department of Health implementing the SafeScript real-time prescription monitoring system[7] to assist clinicians to understand and monitor the drugs (including opioids) prescribed and dispensed to their patients; though we note that SafeScript use only became compulsory in 2020, whereas the decline in pharmaceutical opioid involvement appears to have commenced before this.

Mirroring the general decline in pharmaceutical opioid involvement, table 7 showed that the annual number of Victorian overdose deaths involving most individual pharmaceutical opioids either remained steady or declined during the period. The main exceptions here were buprenorphine and tapentadol, both of which reached 10-year highs in 2023.

---

6 The Royal Australian College of General Practitioners commenced developing these guidelines in response to recommendations from Coroner Audrey Jamieson in the death of David Andrew Trengrove (Court reference COR 2008 004042) delivered on 18 May 2012. The first guideline was published in 2015. All current guidelines can be accessed at Royal Australian College of General Practitioners, "Prescribing drugs of dependence in general practice", revised 28 November 2022, <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/drugs-of-dependence>, accessed 21 August 2024.

7 Real-time prescription monitoring was another important drug harm reduction intervention championed by Victorian coroners through multiple recommendations directed to the Victorian Department of Health. The SafeScript system and its potential impacts on Victorian overdose deaths are addressed in the 2023 edition of this data summary.

In the case of buprenorphine this was potentially due to initiatives to expand its use in opioid maintenance therapy.[8] It would be expected that if a drug with elevated risk of misuse and overdose is prescribed more, its associated harms also rise.

The increase in tapentadol-involved overdose deaths was probably also related to expanded usage. Tapentadol is a relatively new opioid in Australia; it was approved by the Therapeutic Goods in 2011 for treatment of chronic severe pain and listed on the Pharmaceutical Benefits Scheme in 2014. The amount of tapentadol prescribed in Australia each year has since grown steadily over time.[9]

Further to this point, the rise in tapentadol-involved overdose deaths is reminiscent of what happened when other analgesic products (such as extended release oxycodone, fentanyl patches, and pregabalin for neuropathic pain) were introduced to the Australian market in recent years. Like these products, tapentadol was initially promoted with claims that it is safer, has lower abuse potential and less risk of adverse events than similar existing drugs.[10] The data presented here, as well as the experience of coroners investigating tapentadol-related deaths, suggests that regardless of its relative 'safety' tapentadol still presents risks to those who use it.

8 Data from the National Opioid Pharmacotherapy Statistics Annual Data collection showed that the proportion of people receiving buprenorphine formulations in opioid pharmacotherapy treatment in Victoria increased between 2017 and 2023, albeit the increase was not large. See Australian Institute of Health and Welfare, "National Opioid Pharmacotherapy Statistics Annual Data collection", updated 30 May 2024, <https://www.aihw.gov.au/reports/alcohol-other-drug-treatment-services/national-opioid-pharmacotherapy-statistics/contents/about>, accessed 21 August 2024.

9 Mirrabella J, et al, "Prescribing trend of tapentadol in a Sydney local health district", *British Journal of Clinical Pharmacology*, 88(9), 2022, pp.3929-3935; Busingye D, et al, "Patterns of real-world opioid prescribing in Australian general practice (2013–18)", *Australian Journal of Primary Health*, 27(5), 2021, doi: 10.1071/PY20270; Nielsen S, et al, "Cohort profile: Using primary care data to understand Opioid Prescribing, Policy Impacts and Clinical Outcomes (OPPICO) in Victoria, Australia", *BMJ Open*, 2023, doi: 10.1136/bmjopen-2022-067746; Camacho X, et al, "Quality use of publicly subsidised tapentadol in Australia: a population-based analysis", *Internal Medicine Journal*, 54(6), 2024, doi: 10.1111/imj.16335.

10 Polati E, et al, "Tapentadol: an overview of the safety profile", *Journal of Pain Research*, 12, 2009, doi: 10.2147/JPR.S190154; Peacock A, et al, "Opioid use and harms associated with a sustained-release tapentadol formulation: a postmarketing study protocol", BMJ Open, 8(3), doi: 10.1136/bmjopen-2017-020006.

# Attachment A

The following definitions and explanatory notes are included to assist in understanding and interpreting the contents of this report.

## Definition of overdose

For purposes of VODR coding, an ‘overdose’ is any death where the expert death investigators (the coroner, forensic pathologist and forensic toxicologist) determined the acute toxic effects of a drug or drugs played a contributory role. This usage is consistent with the definition of a 'drug poisoning death' recommended by the United States Substance Abuse and Mental Health Services Administration (SAMHSA).[11]

Deaths associated with the behavioural effects of drug taking (for example, a fatal motor vehicle collision while affected by drugs and alcohol) or its chronic effects (for example, alcoholic liver disease) are excluded from the VODR. Likewise, deaths resulting from allergic reactions to drugs are excluded, and deaths caused by injuries during drug administration.

The definition of the term ‘drug’ largely reflects the SAMHSA definition:

> *Any chemical compound that may be used by or administered to humans or animals as an aid in the diagnosis, treatment, or prevention of disease or injury; for the relief of pain or suffering; to control or improve any physiologic or pathologic condition; or for the feeling it causes.*

However alcohol is also included as a drug in the VODR, whereas it is explicitly excluded under the SAMHSA definition.

## Death surveillance

In Victoria, all deaths from suspected non-natural causes, including suspected overdoses, are required to be reported to the Coroners Court of Victoria. When a death is reported, the Court's trained staff review the Police Report of Death for the Coroner and any other available material (for example notes on the electronic case record) and code basic information about the deceased into the Court's Surveillance database. The information includes:

- Name.
- Sex.
- Age.
- Date of birth.
- Address where the deceased usually resided.
- Address where the fatal incident occurred.

---

11 Goldberger BA, Maxwell JC, Campbell A, Wilford BB, "Uniform Standards and Case Definitions for Classifying Opioid-Related Deaths: Recommendations by a SAMHSA Consensus Panel", *Journal of Addictive Diseases*, 2013;32(3): 231-243.

- Evidence of Aboriginal and Torres Strait Islander identity.
- Summary of circumstances as set out in the police report to the coroner.

Additionally, at this initial stage Court staff code information about the deceased's likely intent and the mechanism of death, using a slightly modified version of the ICD-10 Chapter 20 external causes of morbidity and mortality classification system. For example, if a death upon initial report appeared to be an unintentional drug overdose, the intent would be coded as "Unintentional" and the mechanism would be "Poisoning".

The coding of intent and mechanism is reviewed as the coroner's investigation progresses and more is known about what happened in each case (particularly when the cause of death is confirmed and again when the coroner makes their finding). Sometimes the intent and/or mechanism will be changed because of what is learned during the course of the investigation.

## Victorian Overdose Deaths Register

While possible and probable overdose deaths may be identified during initial death surveillance, no case is added to the VODR until the forensic medical cause of death has been established. This is because SAMHSA recommends that the formal cause of death must be established before a death can be classified as an overdose.

Trained coders conduct regular searches across the Surveillance database, scanning cases with newly confirmed causes of death and reviewing autopsy reports to establish whether each case meets the definition of an overdose death. Any such death is added to the VODR and further information is recorded about the context in which it occurred. At this stage, the coders record the specific drug or drugs that the expert death investigators identified as playing a contributory role in the death. (Only contributing drugs are coded; any detected drugs that were not found to contribute to the death are set aside.)

## Delay between death report and data collation

The requirement for a confirmed forensic medical cause of death means that Victorian overdose deaths data cannot be produced as quickly as some other types of coronial data. In some cases, the forensic pathologist and forensic toxicologist may be able to arrive at a forensic medical cause of death very quickly (within one to two weeks after the death is reported); but in other cases where there are complex circumstances and competing possibilities to assess, they may require several months to formulate the cause of death.

As a rule of thumb, the Court usually releases overdose deaths data with at least a six-month delay or time lag from date of death report, to ensure that most forensic medical causes of death are confirmed and therefore the data is as accurate as possible.

## Drug type classification

To aid analysis of the overdose deaths data, the contributing drugs across all Victorian overdose deaths are classified into three main types, being:

- **Pharmaceutical drugs**, defined as drugs that have approved clinical uses and can be accessed through the health system in Australia.
- **Illegal drugs**, defined as drugs that are prohibited from manufacture, sale or possession in Australia.

- **Alcohol.**

While most contributing drugs fit within this classification system, a small number could be both pharmaceutical and illegal. These include:

- **Ketamine**, which is approved for anaesthesia and (less commonly) to manage symptoms of opioid withdrawal, and is also illegally imported and sold in unregulated drug markets. Ketamine is classified as a pharmaceutical drug because it can be obtained legally in Australia, while recognising that in some cases it was probably not sourced via the health system.

- **Amphetamines**, which are approved for treatment of conditions such as narcolepsy and attention deficit disorders but are also illegally imported and sold in unregulated drug markets. These present a substantial classification challenge, and the following approach has been adopted:

a. An amphetamine that contributed in the absence of methamphetamine detection is classified as a pharmaceutical drug. The reason is, in most cases where the amphetamine source is identified in Victorian overdose deaths, it is a pharmaceutical preparation such as dexamphetamine or lisdexamfetamine.

b. Methamphetamine is classified as an illegal drug.

c. Amphetamine detected in the presence of methamphetamine is assumed to be a metabolite of methamphetamine (rather than present in its own right) unless there is positive evidence of separate pharmaceutical amphetamine consumption.

- **Pentobarbitone**, which is approved for sedation and euthanasia of animals in Australia, and is also distributed for assisted dying in Victoria, but is very often found to have been imported illegally in Victorian deaths. Pentobarbitone is classified as a pharmaceutical drug because it can be obtained legally in Australia, while recognising that (like ketamine) the health system is probably not the source in most Victorian overdose deaths.

- **Etizolam**, which is a legal benzodiazepine in some countries but has no approved clinical use (and therefore is illegal) in Australia. Etizolam is classified as an illegal drug for this reason.

- **Cocaine**, which has clinical uses as well as being a major illegal drug imported into Australia. Cocaine is classified as an illegal drug because there are no clear instances in the Victorian overdose deaths data of clinical-sourced cocaine being used.

## Changes in reported frequencies over time

The VODR's contents are regularly revised and updated as coronial investigations progress. Through the coroner's investigation, an overdose death initially characterised as unintentional may be reclassified as a suicide; or a death initially thought to be unrelated to drug consumption might be found to be a fatal overdose. The data reported out of the VODR represents the Court's best understanding of the deaths at the time when it was extracted, but data extracted at another time may be different.

# Attachment B

Annual number of overdose deaths by local government area of fatal incident, Victoria 2014–2023.

| Local government area | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Alpine | - | 1 | - | - | 1 | - | - | - | 1 | - |
| Ararat | 1 | 1 | - | 3 | 2 | 2 | 1 | - | 1 | 2 |
| Ballarat | 7 | 1 | 6 | 12 | 7 | 14 | 10 | 10 | 14 | 14 |
| Banyule | 9 | 8 | 12 | 9 | 5 | 15 | 9 | 10 | 10 | 9 |
| Bass Coast | 2 | 3 | 6 | 5 | 4 | 7 | 4 | - | 4 | 6 |
| Baw Baw | 3 | 3 | 4 | 5 | 3 | 3 | 4 | 4 | 4 | 4 |
| Bayside | 5 | 3 | 8 | 6 | 12 | 8 | 14 | 15 | 7 | 7 |
| Benalla | 1 | 1 | 1 | 1 | - | - | 1 | - | 3 | 2 |
| Boroondara | 4 | 15 | 8 | 8 | 6 | 10 | 11 | 5 | 10 | 4 |
| Brimbank | 17 | 17 | 15 | 24 | 16 | 22 | 28 | 16 | 29 | 27 |
| Buloke | 1 | - | 1 | 1 | 1 | - | - | - | 1 | 1 |
| Campaspe | 2 | 2 | 4 | 3 | 2 | 3 | 6 | 1 | 4 | 2 |
| Cardinia | 9 | 2 | 8 | 5 | 5 | 7 | 7 | 13 | 4 | 6 |
| Casey | 12 | 15 | 9 | 19 | 10 | 18 | 20 | 14 | 20 | 15 |
| Central Goldfields | 2 | 1 | 2 | 2 | 2 | 1 | 2 | - | 1 | 2 |
| Colac Otway | 4 | 1 | 2 | - | - | - | 1 | - | 3 | 2 |
| Corangamite | - | 1 | - | 1 | 2 | 2 | - | 1 | 1 | - |
| Darebin | 16 | 15 | 18 | 17 | 13 | 14 | 14 | 10 | 18 | 14 |
| East Gippsland | 2 | 2 | 4 | 3 | 2 | 6 | 6 | 4 | 2 | 2 |
| Frankston | 17 | 24 | 20 | 17 | 26 | 21 | 17 | 12 | 16 | 16 |
| Gannawarra | - | 1 | - | - | - | - | - | - | 1 | 1 |
| Glen Eira | 4 | 7 | 5 | 12 | 7 | 8 | 9 | 13 | 7 | 13 |
| Glenelg | 1 | 7 | 2 | 2 | 2 | 1 | 1 | 1 | - | 2 |
| Golden Plains | 2 | 3 | 1 | - | 2 | - | - | 1 | - | - |
| Greater Bendigo | 7 | 13 | 6 | 17 | 13 | 9 | 10 | 12 | 6 | 9 |
| Greater Dandenong | 8 | 16 | 16 | 19 | 17 | 24 | 19 | 21 | 13 | 25 |
| Greater Geelong | 17 | 13 | 20 | 23 | 25 | 23 | 22 | 23 | 22 | 27 |
| Greater Shepparton | 4 | 11 | 5 | 3 | 7 | 7 | 7 | 6 | 4 | 6 |
| Hepburn | 1 | 1 | - | 3 | 1 | - | - | 2 | 4 | - |
| Hindmarsh | - | - | - | - | - | 1 | - | - | - | - |
| Hobsons Bay | 7 | 3 | 5 | 7 | 7 | 6 | 8 | 11 | 13 | 5 |
| Horsham | - | - | 3 | 1 | - | 1 | 1 | 1 | 2 | 2 |
| Hume | 5 | 10 | 11 | 10 | 11 | 13 | 8 | 13 | 11 | 13 |
| Indigo | 1 | 1 | 2 | 1 | 1 | 3 | - | - | - | 1 |

(Continued over page)

(Continued from previous page)

| Local government area | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Kingston | 6 | 6 | 5 | 16 | 9 | 8 | 10 | 8 | 11 | 15 |
| Knox | 8 | 11 | 7 | 15 | 17 | 16 | 13 | 15 | 7 | 10 |
| Latrobe | 10 | 4 | 10 | 8 | 12 | 6 | 12 | 11 | 8 | 8 |
| Loddon | 1 | 2 | 1 | 1 | 1 | - | - | - | 2 | 1 |
| Macedon Ranges | 3 | 1 | 2 | - | 3 | 5 | 2 | 2 | 2 | 2 |
| Manningham | 1 | 8 | 4 | 3 | 8 | 4 | 4 | 5 | 2 | 7 |
| Mansfield | - | - | - | 1 | 1 | 2 | 2 | - | 1 | 1 |
| Maribyrnong | 12 | 15 | 6 | 14 | 12 | 10 | 13 | 14 | 22 | 17 |
| Maroondah | 6 | 10 | 13 | 8 | 7 | 15 | 4 | 14 | 8 | 6 |
| Melbourne | 23 | 24 | 22 | 25 | 25 | 19 | 26 | 28 | 32 | 27 |
| Melton | 6 | 5 | 12 | 9 | 10 | 14 | 13 | 9 | 16 | 7 |
| Merri-bek | 10 | 9 | 17 | 13 | 23 | 13 | 11 | 7 | 19 | 17 |
| Mildura | 3 | 4 | 4 | 5 | 7 | 4 | 10 | 1 | 7 | 3 |
| Mitchell | 4 | 2 | 3 | 2 | 2 | 3 | 4 | 1 | 3 | 4 |
| Moira | - | 3 | 2 | 4 | 1 | 4 | 1 | 1 | 4 | 2 |
| Monash | 10 | 6 | 20 | 9 | 10 | 11 | 16 | 13 | 13 | 8 |
| Moonee Valley | 9 | 3 | 12 | 8 | 8 | 7 | 12 | 9 | 6 | 6 |
| Moorabool | 1 | 1 | 3 | 2 | 5 | 1 | 2 | 3 | 4 | 1 |
| Mornington Peninsula | 5 | 14 | 16 | 12 | 11 | 9 | 13 | 13 | 15 | 10 |
| Mount Alexander | 1 | - | 1 | - | 3 | 3 | 2 | 2 | - | 4 |
| Moyne | 1 | 1 | 1 | - | 1 | - | - | 1 | 2 | 2 |
| Murrindindi | - | 3 | 1 | 1 | 2 | 2 | 3 | - | 2 | 2 |
| Nillumbik | 1 | 5 | 4 | 3 | 3 | 3 | 3 | 1 | 5 | 3 |
| Northern Grampians | - | 1 | - | - | 1 | 1 | 1 | - | 1 | - |
| Port Phillip | 19 | 23 | 21 | 22 | 32 | 15 | 25 | 18 | 23 | 20 |
| Pyrenees | 1 | - | - | 1 | 1 | - | - | - | - | - |
| Queenscliffe | - | - | - | - | - | - | 2 | - | - | - |
| South Gippsland | 1 | 2 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 1 |
| Southern Grampians | - | - | 1 | 2 | 2 | 1 | 1 | 2 | 1 | - |
| Stonnington | 3 | 5 | 7 | 12 | 10 | 4 | 13 | 14 | 9 | 17 |
| Strathbogie | - | 2 | - | - | - | 1 | 1 | 1 | 2 | 1 |
| Surf Coast | 1 | - | 2 | 1 | 3 | 4 | 3 | - | 1 | 3 |
| Swan Hill | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | - | - |
| Towong | - | - | 1 | 1 | 2 | - | 1 | - | 1 | 1 |
| Wangaratta | 2 | 1 | 5 | 3 | 4 | 3 | 6 | - | 4 | - |
| Warrnambool | 2 | 3 | 2 | 3 | 4 | 1 | 3 | 1 | 4 | 5 |
| Wellington | 2 | 6 | 2 | 5 | 4 | 2 | 5 | 5 | 6 | 4 |

(Continued over page)

(Continued from previous page)

| Local government area | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| West Wimmera | - | 1 | 2 | - | - | 1 | 1 | - | 1 | 2 |
| Whitehorse | 10 | 17 | 12 | 16 | 10 | 9 | 9 | 21 | 8 | 14 |
| Whittlesea | 10 | 7 | 10 | 8 | 3 | 12 | 12 | 17 | 12 | 8 |
| Wodonga | 4 | 3 | 4 | 3 | 9 | 1 | - | 2 | - | 3 |
| Wyndham | 8 | 10 | 12 | 11 | 11 | 13 | 12 | 15 | 14 | 20 |
| Yarra | 22 | 23 | 27 | 20 | 32 | 25 | 16 | 18 | 21 | 33 |
| Yarra Ranges | 8 | 9 | 11 | 11 | 17 | 12 | 7 | 7 | 13 | 10 |
| Yarriambiack | 1 | - | - | - | 1 | - | - | - | 1 | 1 |

# Attachment C

There are several different classification systems for NPS. To assist those who may use other classifications, the following are the specific NPS that contributed in Victorian overdose deaths and the category to which each was assigned in this data summary:

- **Benzodiazepines**: Bromazolam, Clobromazolam, Clonazolam, Delorazepam, Desalkylflurazepam, Desalkylglidazepam, Deschloroetizolam, Diclazepam, Estazolam, Etizolam, Flualprazolam, Flubromazepam, Flubromazolam, Lormetazepam, Phenazepam.
- **Cannabinoids**: 5F-Cumyl-P7AICA, 5F-CUMYL-PINACA, 5F-MDMB-PICA, AB-CHMINACA, Cumyl-PeGACLONE, WIN55212-2.
- **Dissociatives**: 2F-Deschloroketamine, 2-Fluorodeschloroketamine, 2-Fluoro-2-Oxo PCE, 3-Hydroxyphencyclidine, Benzylpiperazine.
- **Empathogens**: 6-APB, Ethylone, Eutylone.
- **Opioids**: 2-Naphthyl U-47700, AP-238, Butyl Fentanyl, Etodesnitazene, Isotonitazene, Metonitazene, N-Pyrrolidino Etonitazene, Ocfentanil, Protonitazene.
- **Psychedelics**: 25C-NBOMe, 5-MeO-DMT, Bufotenine.
- **Stimulants**: 3-Fluoromethamphetamine, 4-Fluoroamphetamine, 4-Fluoromethylphenidate, Cathinone, Dimethylpentylone, Methcathinone, Methylone, N-Cyclohexylmethylone, N-Ethylheptedrone, N-Ethylhexadrone, N-Ethylpentylone, Pentylone, PMMA.