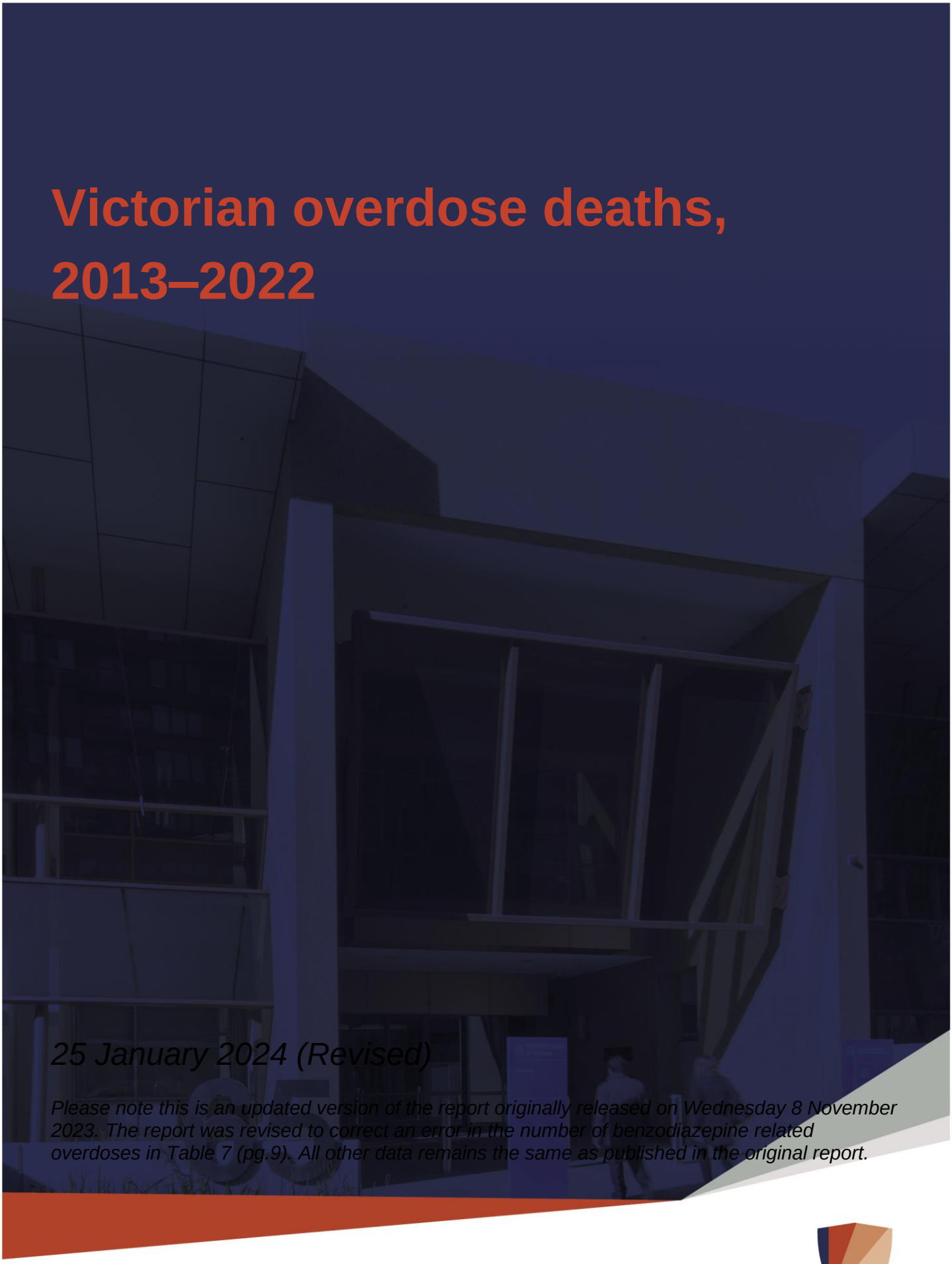
Victorian overdose deaths, 2013–2022



25 January 2024 (Revised)

Please note this is an updated version of the report originally released on Wednesday 8 November 2023. The report was revised to correct an error in the number of benzodiazepine related overdoses in Table 7 (pg.9). All other data remains the same as published in the original report.

Coroners Court of Victoria

Contents

1. Purpose

This report presents the 2022 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 Overdose Deaths Register maintained by the Court. The design and operation of the Register, together with relevant definitions and inclusion criteria and cautions to consider when interpreting the data, are described in **Attachment A**. The following are particularly important to note:

- Deaths are only included in the Overdose Deaths Register 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 Overdose Deaths Register 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 2013–2022

There were 4887 overdose deaths in Victoria between 2013 and 2022. 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 2013–2022. There was a steady increase in overdose deaths between 2013 and 2018, reaching 543 deaths in 2018. The annual number then retreated slightly, back to 500 in 2021, before increasing again to 549 overdose deaths in 2022. Males consistently accounted for approximately two-thirds of overdose deaths throughout the period, noting some slight variation from year to year in this.

Table 1: Annual number and proportion of overdose deaths by deceased sex, Victoria 2013–2022.

Sex	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number										
Male	241	253	302	331	336	347	331	349	353	349
Female	140	134	152	163	187	196	188	188	147	200
Total	**381**	**387**	**454**	**494**	**523**	**543**	**519**	**537**	**500**	**549**
Proportion										
Male	63.3	65.4	66.5	67.0	64.2	63.9	63.8	65.0	70.6	63.6
Female	36.7	34.6	33.5	33.0	35.8	36.1	36.2	35.0	29.4	36.4
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, 2013–2022. Rates rose steadily between 2013 and 2016 for males, and between 2013 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 not immediately apparent.

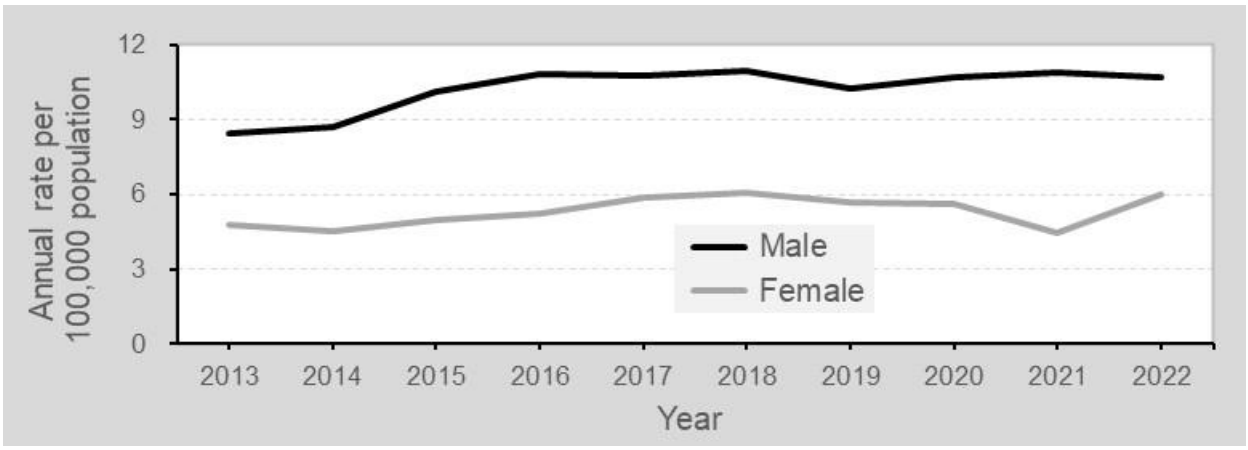


Figure A: Annual overdose death rate per 100,000 population by sex, Victoria 2013–2022.

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, 2013–2022.

When annual numbers were disaggregated by age group and sex, it was challenging to identify consistent trends or patterns over time. For certain groups, such as males and females aged 45 to 54 years, and females aged 55 to 64 years, there appeared to be a clear increasing trend across the period. However, in other groups such as males aged 24 to 34 years and females aged 25 to 34 years, the number of overdose deaths fluctuated from year to year with no apparent underlying pattern able to be discerned.

Table 2: Annual number of overdose deaths by deceased sex and age group, Victoria 2013–2022.

Age group by sex	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Males										
Under 18 years	1	0	0	3	1	0	4	0	0	2
18 to 24 years	13	7	12	20	11	16	15	27	17	24
25 to 34 years	60	52	57	52	69	67	47	59	76	58
35 to 44 years	74	91	110	111	112	107	93	93	93	86
45 to 54 years	51	57	84	83	80	99	92	99	96	93
55 to 64 years	27	32	24	40	36	42	47	44	47	61
65 years and over	15	14	15	22	27	16	33	27	24	25
Total	**241**	**253**	**302**	**331**	**336**	**347**	**331**	**349**	**353**	**349**
Females										
Under 18 years	2	1	1	1	3	1	1	0	0	0
18 to 24 years	5	6	7	6	8	13	8	5	7	6
25 to 34 years	21	29	15	25	23	28	22	36	23	23
35 to 44 years	40	27	46	47	44	48	39	52	36	43
45 to 54 years	32	35	36	39	44	36	54	47	42	61
55 to 64 years	25	25	27	29	36	41	32	24	22	40
65 years and over	15	11	20	16	29	29	32	24	17	27
Total	**140**	**134**	**152**	**163**	**187**	**196**	**188**	**188**	**147**	**200**
All people										
Under 18 years	3	1	1	4	4	1	5	0	0	2
18 to 24 years	18	13	19	26	19	29	23	32	24	30
25 to 34 years	81	81	72	77	92	95	69	95	99	81
35 to 44 years	114	118	156	158	156	155	132	145	129	129
45 to 54 years	83	92	120	122	124	135	146	146	138	154
55 to 64 years	52	57	51	69	72	83	79	68	69	101
65 years and over	30	25	35	38	56	45	65	51	41	52
Total	**381**	**387**	**454**	**494**	**523**	**543**	**519**	**537**	**500**	**549**

Figure B 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.

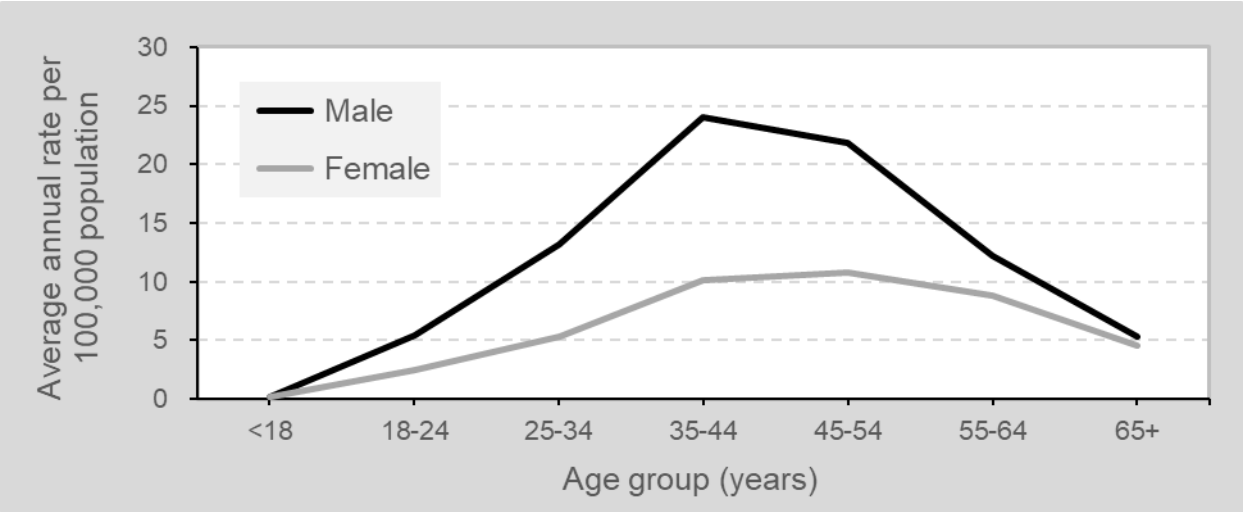


Figure B: Average annual overdose death rate per 100,000 population by sex and age group, Victoria 2013–2022.

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 2013–2022.

Fatal incident location	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number										
Metropolitan Melbourne	276	290	346	373	388	393	385	397	399	414
Regional Victoria	104	97	108	119	132	149	132	140	101	135
Total	**380**	**387**	**454**	**492**	**520**	**542**	**517**	**537**	**500**	**549**
Proportion										
Metropolitan Melbourne	72.6	74.9	76.2	75.8	74.6	72.5	74.5	73.9	79.8	75.4
Regional Victoria	27.4	25.1	23.8	24.2	25.4	27.5	25.5	26.1	20.2	24.6
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 steadily increased between 2013 and 2022, with a plateau between 2018 and 2021. The was a similar increase in Regional between 2013 and 2017, but a slight decline thereafter (and a pronounced dip in 2021) through to 2022. 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%.

Supplementing table 3, please see **Attachment A** 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 4887 overdose deaths in Victoria between 2013 and 2022.

3.1. Single drug and multiple drug toxicity

Table 4 shows the annual number and proportion of overdose deaths in Victoria for the period 2013–2022 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 2013–2022.

Contributing drugs	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number										
Single	119	101	131	136	123	133	131	141	132	123
Multiple	262	286	323	358	400	410	388	396	368	426
Total	**381**	**387**	**454**	**494**	**523**	**543**	**519**	**537**	**500**	**549**
Proportion										
Single	31.2	26.1	28.9	27.5	23.5	24.5	25.2	26.3	26.4	22.4
Multiple	68.8	73.9	71.1	72.5	76.5	75.5	74.8	73.7	73.6	77.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

From inspection of table 4 it appears that the increase over time in the number of Victorian overdose deaths was due primarily to an increase in deaths involving multiple drugs. This 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 B**, together with a discussion of classification challenges.

Table 5: Annual number of overdose deaths by contributing drug type, Victoria 2013–2022.

Contributing drugs	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number										
Pharmaceutical	314	318	358	385	414	428	409	404	377	405
Illegal	157	160	223	264	267	260	274	276	260	301
Alcohol	96	94	106	124	151	161	146	155	147	173
Total	**381**	**387**	**454**	**494**	**523**	**543**	**519**	**537**	**500**	**549**
Proportion										
Pharmaceutical	82.4	82.2	78.9	77.9	79.2	78.8	78.8	75.2	75.4	73.8
Illegal	41.2	41.3	49.1	53.4	51.1	47.9	52.8	51.4	52.0	54.8
Alcohol	25.2	24.3	23.3	25.1	28.9	29.7	28.1	28.9	29.4	31.5
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, playing a role in nearly three-quarters of all deaths. Illegal drugs contributed in just over half of overdose deaths, and alcohol in approximately 30%.

Further to this point, there appear to be some noteworthy trends within these numbers. Over time the proportion of overdose deaths involving pharmaceutical drugs declined, whereas the proportion of overdose deaths involving each of alcohol and illegal drugs increased. These trends were most pronounced in the years from 2013 to 2017.

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 2013–2022.

Drug group	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number										
Illegal drugs	157	160	223	264	267	260	274	276	260	301
Benzodiazepines	213	215	238	263	303	304	285	285	266	267
Pharmaceutical opioids	176	182	185	183	198	207	208	193	182	183
Antidepressants	135	144	161	165	196	196	171	182	159	174
Alcohol	96	94	106	124	151	161	146	155	147	173
Antipsychotics	76	81	91	107	136	109	103	113	99	110
Anticonvulsants	37	45	51	54	75	87	86	92	85	101
Non-benzo anxiolytics	56	48	60	40	56	47	54	51	46	51
Total	**381**	**387**	**454**	**494**	**523**	**543**	**519**	**537**	**500**	**549**
Proportion										
Illegal drugs	41.2	41.3	49.1	53.4	51.1	47.9	52.8	51.4	52.0	54.8
Benzodiazepines	55.9	55.6	52.4	53.2	57.9	56.0	54.9	53.1	53.2	48.6
Pharmaceutical opioids	46.2	47.0	40.7	37.0	37.9	38.1	40.1	35.9	36.4	33.3
Antidepressants	35.4	37.2	35.5	33.4	37.5	36.1	32.9	33.9	31.8	31.7
Alcohol	25.2	24.3	23.3	25.1	28.9	29.7	28.1	28.9	29.4	31.5
Antipsychotics	19.9	20.9	20.0	21.7	26.0	20.1	19.8	21.0	19.8	20.0
Anticonvulsants	9.7	11.6	11.2	10.9	14.3	16.0	16.6	17.1	17.0	18.4
Non-benzo anxiolytics	14.7	12.4	13.2	8.1	10.7	8.7	10.4	9.5	9.2	9.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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.

Table 6 shows the annual number and proportion of Victorian overdose deaths 2013–2022 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 annual numbers for each drug group in Table 6 sum to greater than the overall annual number of overdose deaths.

Benzodiazepines were overall the most frequent contributing pharmaceutical drug group, playing a role in an average 54.0% of overdose deaths across the period. However in 2022, for the first time since 2016, the number of overdose deaths involving illegal drugs exceeded the number of benzodiazepine-involved overdose deaths. The next most frequent pharmaceutical drug groups were opioids (an average 38.8% of overdose deaths across the period), antidepressants (annual average 34.4%) and antipsychotics (annual average 21.0%).

One notable trend in the data was the rise in anticonvulsant involvement over time. As shown below in Table 7, this trend was primarily driven by rising pregabalin involvement in Victorian overdose deaths. Another notable trend was the decline over time in the proportion of overdose deaths involving pharmaceutical opioids.

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 2013–2022. (*Noting that new psychoactive substances are a drug group rather than an 'individual drug'; these are analysed further in Section 4 of the Data Summary.)

Contributing drug	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Illegal drugs										
Heroin	128	136	171	190	220	203	212	187	173	230
Methamphetamine	51	53	72	120	93	96	111	116	137	141
Cocaine	5	7	15	11	10	17	20	28	23	19
New psychoactives*	3	0	2	8	2	8	17	33	35	46
MDMA	3	4	5	12	7	4	13	17	11	9
GHB	0	1	0	4	6	5	7	18	10	22
Total	**157**	**160**	**223**	**264**	**267**	**260**	**274**	**276**	**260**	**301**
Benzodiazepines										
Diazepam	165	169	192	204	242	235	232	219	217	213
Alprazolam	45	28	23	23	27	31	28	31	26	18
Clonazepam	19	25	33	31	48	40	35	43	45	42
Oxazepam	17	19	34	27	23	35	28	17	27	20
Temazepam	22	20	25	26	32	29	20	18	18	17
Nitrazepam	26	13	17	22	11	16	13	14	12	13
Lorazepam	4	6	2	7	7	6	9	12	10	5
Total	**213**	**215**	**238**	**263**	**303**	**304**	**285**	**285**	**266**	**267**

(Table 7 continued over page)

(Table 7 continued from previous page)

Contributing drug	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pharma opioids										
Methadone	70	67	67	72	71	72	75	67	67	72
Oxycodone	61	46	58	54	66	62	60	60	47	57
Codeine	46	47	48	46	37	34	42	40	26	31
Tramadol	24	23	32	26	32	35	37	28	20	17
Morphine	9	12	9	13	18	19	18	10	13	11
Fentanyl	11	11	23	13	14	18	5	5	13	2
Buprenorphine	3	7	4	2	8	20	11	17	10	17
Tapentadol	0	0	0	0	1	9	13	20	19	18
Total	**176**	**182**	**185**	**183**	**198**	**207**	**208**	**193**	**182**	**183**
Antidepressants										
Mirtazapine	30	29	50	25	42	59	45	57	50	69
Amitriptyline	25	41	28	34	47	40	42	33	33	33
Citalopram	25	25	26	28	35	26	26	34	25	29
Venlafaxine	20	19	10	22	27	18	20	19	20	25
Duloxetine	11	12	12	15	12	19	20	17	18	12
Sertraline	13	9	12	11	18	19	20	14	12	15
Desvenlafaxine	8	11	15	19	15	18	12	15	8	14
Fluoxetine	10	7	12	16	10	12	12	10	13	8
Total	**135**	**144**	**161**	**165**	**196**	**196**	**171**	**182**	**159**	**174**
Alcohol										
Alcohol	96	94	106	124	151	161	146	155	147	173
Total	**96**	**94**	**106**	**124**	**151**	**161**	**146**	**155**	**147**	**173**
Antipsychotics										
Quetiapine	41	48	49	57	74	53	50	53	44	43
Olanzapine	16	21	30	36	41	42	33	44	34	44
Risperidone	10	7	9	14	9	13	10	4	6	18
Zuclopenthixol	3	3	5	4	14	4	7	8	3	5
Total	**76**	**81**	**91**	**107**	**136**	**109**	**103**	**113**	**99**	**110**
Anticonvulsants										
Pregabalin	17	27	34	34	52	69	67	69	65	66
Valproic Acid	13	9	9	6	7	5	7	7	6	9
Lamotrigine	2	2	2	3	6	10	7	8	8	12
Gabapentin	1	1	4	2	5	5	2	11	7	8
Total	**37**	**45**	**51**	**54**	**75**	**87**	**86**	**92**	**85**	**101**

(Table 7 continued over page)

(Table 7 continued from previous page)

Contributing drug	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Non-benzo anxiolytics										
Zopiclone	14	11	17	13	17	13	22	18	15	17
Doxylamine	23	13	14	13	18	18	16	10	9	13
Pentobarbitone	8	15	18	9	10	6	9	4	8	2
Diphenhydramine	7	5	5	4	6	6	7	10	11	15
Zolpidem	4	6	11	6	8	6	8	8	9	9
Total	**56**	**48**	**60**	**40**	**56**	**47**	**54**	**51**	**46**	**51**
Other drugs of interest										
Paracetamol	37	37	42	30	32	32	47	33	18	18
Promethazine	6	11	11	11	16	27	18	17	16	21
Propranolol	8	6	12	8	17	13	12	11	14	9
Insulin	6	5	2	6	7	12	10	7	7	4
Ketamine	1	1	4	3	3	11	6	11	12	10
Amphetamine	6	8	9	1	3	5	3	4	6	5
Pholcodine	1	4	4	4	2	5	3	10	2	14
Metoprolol	2	1	4	5	1	6	10	5	7	3

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)

While there is increasing recognition and understanding of what NPS are, the following is a basic definition for people who have not yet encountered the term. NPS refers to a highly diverse family of drugs that have become established in unregulated drug markets internationally over the past 20 years. Many of them 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.

Table 8: Annual number of NPS-involved overdose deaths by contributing categories, Victoria 2013–2022.

NPS category	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Benzodiazepine	-	-	1	-	-	1	10	28	26	40
Stimulant	2	-	-	7	2	-	-	4	3	1
Cannabinoid	-	-	1	-	-	6	6	2	2	-
Opioid	-	-	-	1	-	-	1	-	3	6
Psychedelic	-	-	-	3	2	-	-	1	3	-
Empathogen	-	-	-	-	-	-	-	5	1	-
Dissociative	1	-	-	-	-	-	-	2	-	1
Other and unknown	-	-	-	-	-	1	-	-	-	1
Total	**3**	**-**	**2**	**8**	**2**	**8**	**17**	**33**	**35**	**46**

Benzodiazepines were the most frequent contributing NPS category. In 2022, most overdose deaths involving NPS benzodiazepines (25 of 40, 62.5%) were due to a combination of NPS benzodiazepines rather than a single drug. Recurring combinations (with no double-counting of deaths) included:

- Clobromazolam and phenazepam in eight deaths.
- Etizolam and flualprazolam in five deaths.
- Bromazolam, clonazolam, etizolam and flualprazolam in four deaths.
- Bromazolam and clonazolam in four deaths.

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 suggest 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 the combination of NPS benzodiazepines.

After benzodiazepines, the next most frequent contributing NPS category during 2022 was the opioids. Of particular note, in 2022 four NPS opioids were identified as contributing drugs for the first time in Victorian overdose deaths: N-pyrrolidino etonitazene, 2-naphthyl U-47700, protonitazene and metonitazene.

A common theme in NPS-involved overdoses across Victoria is that people often did not know what substance they consumed, or believed they were taking a different substance to what they actually consumed (for example, believed they were taking MDMA when the substance was actually 4-fluoroamphetamine instead). To address this situation and reduce the risk of NPS-involved mortality and morbidity, multiple Victorian coroners have now recommended that the Victorian Department of Health implement a drug checking service and a drug early warning service so that people who use drugs can have an opportunity to learn what are they taking.[2] To date the Victorian Department of Health has not accepted these recommendations or committed to implement drug checking.

4.2. Heroin

There was a 33% increase in heroin-involved overdose deaths between 2021 and 2022 (from 173 to 230). Figure C shows that most of this increase occurred in Metropolitan Melbourne rather than Regional Victoria.

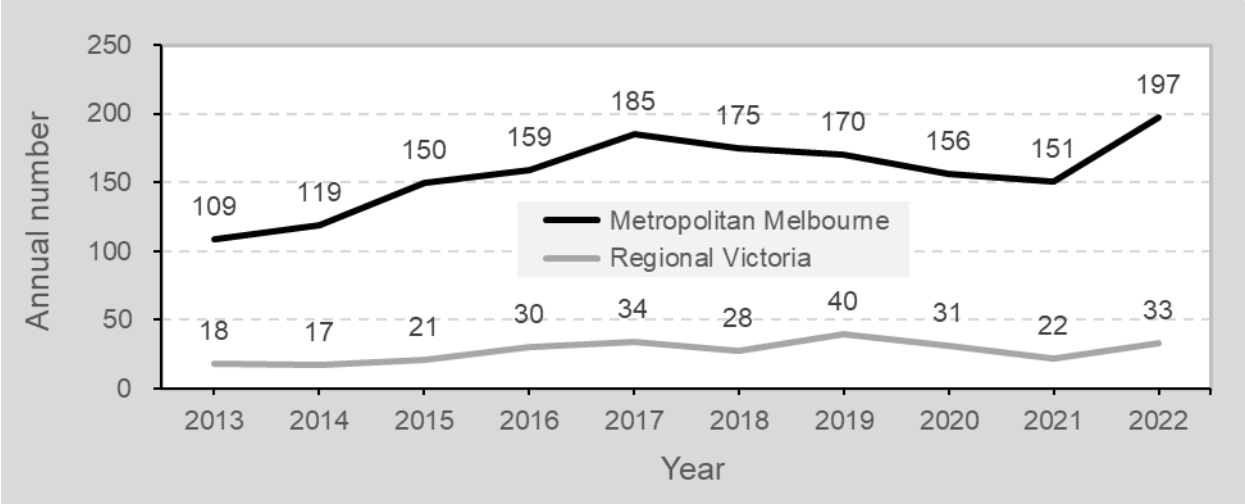


Figure C: Annual number of heroin-involved overdose deaths in Metropolitan Melbourne and Regional Victoria, 2013–2022.

2 Spanos P, "Finding into death of Jason with inquest", reference COR 2017 0214, Coroners Court of Victoria, delivered 31 March 2021; McGregor S, "Finding into death of FLJ without inquest", reference COR 2021 000475, Coroners Court of Victoria, delivered 28 March 2022; Gebert S, "Finding into death of Mr P without inquest", reference COR 2020 005219, Coroners Court of Victoria, delivered 20 May 2022; Gebert S, "Finding into death of Mr S without inquest", reference COR 2020 003434, Coroners Court of Victoria, delivered 29 April 2022. An additional finding that recommended drug checking though not in the context of NPS-involved overdose was Cain J, “Finding into death of Mr P without inquest”, reference COR 2022 001464, Coroners Court of Victoria, delivered 25 August 2023.

Table 9 shows the 12 local government areas (LGAs) that were the most frequent locations for heroin-involved overdose deaths during the past decade, as well as the annual number of heroin-involved overdose deaths that occurred in each LGA.

Overall, the data reveals substantial variation from year to year within each LGA, as well as between LGAs, which means it is difficult to discern any clear trends or patterns over time. For example, in 2022 Melbourne was the LGA with the highest number of heroin-involved overdose deaths; but in 2021 Melbourne was only the fifth ranked LGA.

Table 9: Annual number of heroin-involved overdose deaths in 12 LGAs that were most frequent locations for these deaths, Victoria 2013–2022.

LGA of fatal incident	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Yarra	11	11	19	20	16	26	17	9	11	14
Melbourne	12	16	12	7	15	13	10	14	9	24
Brimbank	12	7	5	13	19	10	15	17	8	19
Port Phillip	7	10	9	11	9	18	9	9	11	15
Greater Dandenong	6	4	11	11	11	10	14	9	10	7
Greater Geelong	6	6	4	12	6	10	12	5	10	7
Maribyrnong	1	7	9	5	9	7	5	6	5	14
Darebin	4	6	8	9	9	8	7	5	3	6
Merri-bek	2	3	5	4	8	9	8	5	3	9
Frankston	4	8	8	4	6	8	9	3	4	1
Knox	7	1	7	4	6	6	6	4	4	3

4.3. Methamphetamine

The annual number of methamphetamine-involved overdose deaths in Victoria nearly tripled between 2013 (51 deaths) and 2022 (141 deaths). Figure D shows that most of these deaths (on average 80% per year) occurred in Metropolitan Melbourne.

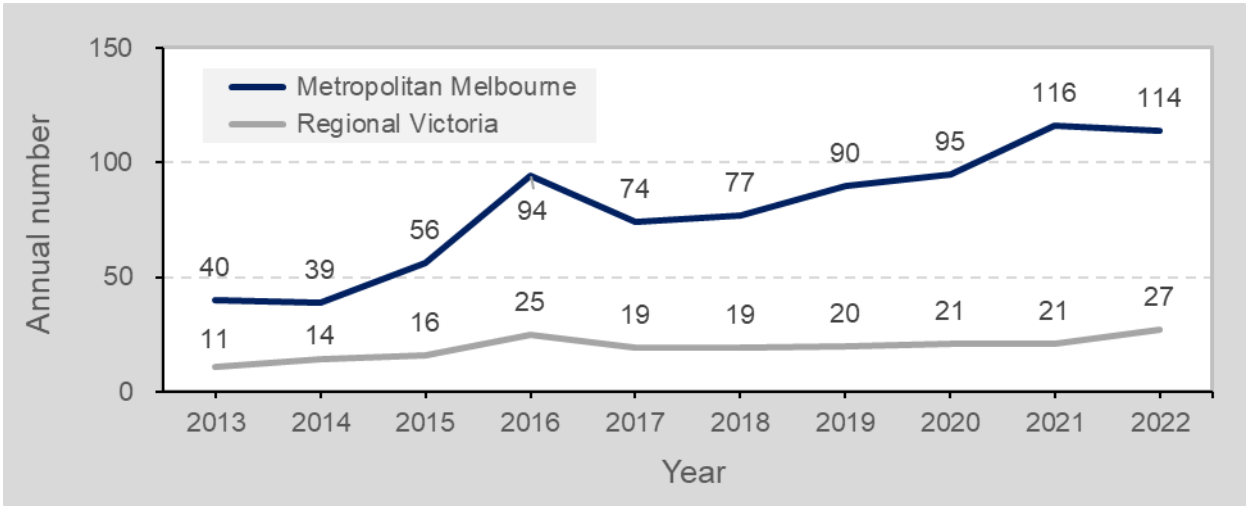


Figure D: Annual number of methamphetamine-involved overdose deaths in Metropolitan Melbourne and Regional Victoria, 2013–2022.

Table 10 shows most methamphetamine-involved overdose deaths that occurred between 2013 and 2022 also involved other drugs (884 of 990, 85.3%) rather than being methamphetamine-only overdoses (146 of 990, 14.7%). The most frequent co-contributing drugs were heroin (in 56.1% of the deaths), then diazepam (44.7%) and methadone (18.5%).

Table 10: Overall number and proportion of overdose deaths involving methamphetamine alone versus in combination with other drugs, Victoria 2013–2022.

Contributing drugs	N	%
Methamphetamine alone	**146**	**14.7**
Methamphetamine in combination	**844**	**85.3**
- with heroin	555	56.1
- with diazepam	443	44.7
- with methadone	183	18.5
- with clonazepam	116	11.7
- with alcohol	101	10.2
- with pregabalin	84	8.5
- with mirtazapine	81	8.2
- with quetiapine	80	8.1
- with olanzapine	80	8.1
- with alprazolam	75	7.6
- with new psychoactive substances	54	5.5
- with oxazepam	53	5.4
- with cocaine	53	5.4
Total	**990**	**100.0**

The data reflects the dangers of combining methamphetamine with 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.

4.4. SafeScript

The Victorian Department of Health developed the SafeScript real-time prescription monitoring system and made it available to Victorian medical practices and pharmacies on a voluntary opt-in basis in October 2018, before in April 2020 establishing a mandatory requirement for clinicians to check SafeScript prior to prescribing or dispensing a target drug.

The SafeScript system gathers information on the prescribing and dispensing of target drugs in real time, and stores this information in a central electronic database where it can be accessed by doctors when a patient attends for treatment, and by pharmacists when a patient presents a script for a drug. The target drugs monitored by SafeScript include most of the medicines that present a heightened risk of misuse, dependence and other harms including overdose:

- Opioid medications listed as Schedule 4 or Schedule 8 drugs in the Poisons Standard (often referred to as ‘strong opioids’).
- Benzodiazepines.
- The non-benzodiazepine hypnotics zolpidem and zopiclone.

- The stimulants dexamphetamine, lisdexamfetamine and methylphenidate.
- Selected other drugs presenting a heightened risk of misuse and harm, being ketamine and quetiapine. From 3 July 2023 the drugs pregabalin, gabapentin and tramadol have also been added to this list.

By enabling prescribers and dispensers to know what target drugs a patient has received and when, it is hoped that the SafeScript system will assist them to identify and prevent excessive use of medication, use of contraindicated drug combinations, prescription shopping, and other issues that underpin pharmaceutical drug harms including overdose deaths.

With SafeScript operating on a mandatory basis for over two and a half years by the end of 2022, the Victorian overdose deaths data for 2013–2022 was collated to examine whether there was any early evidence that it might be having its desired impact of reducing harms associated with the target drugs it monitors. Specifically, annual overdose deaths for the period were collated according to whether any of the following drugs contributed:

- Target drugs monitored by SafeScript.
- Non-target medicines (ie drugs that are legal to prescribe in Australia but are not monitored by SafeScript).
- Illegal drugs and/or alcohol.

In the collation process, if drugs from multiple categories contributed in a single death then that death was counted across all relevant categories (for example, if a death involved the illegal drug heroin plus the target drug diazepam, it would be counted under both the target drugs category and the illegal drugs and/or alcohol category).

Once data collation was complete, the annual proportion of overdose deaths involving each of target drugs, non-target medicines, and illegal drugs/and or alcohol was calculated. The results are graphed in Figure D.

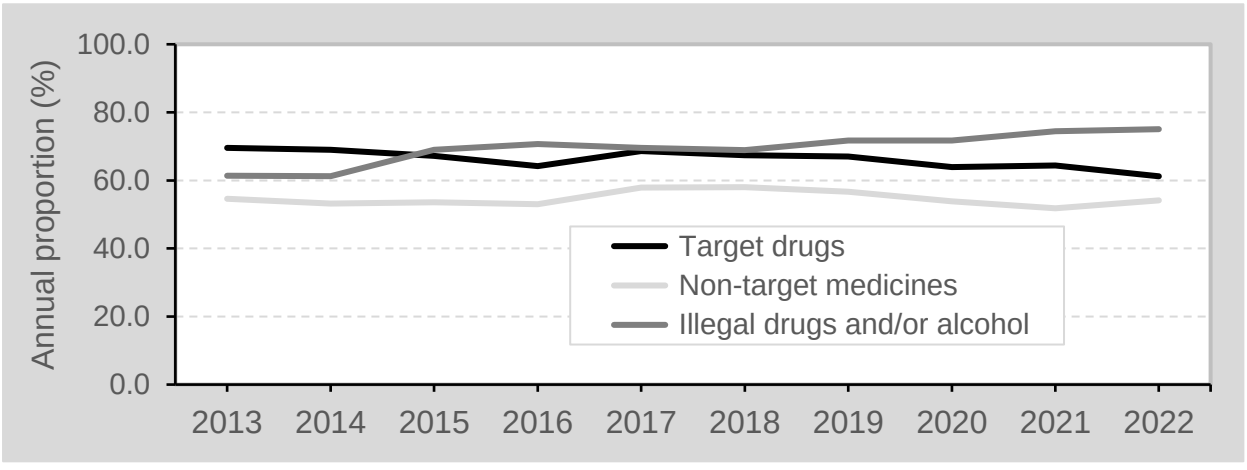


Figure D: Annual proportion of overdose deaths involving target drugs monitored by SafeScript, non-target medicines, and illegal drugs and/or alcohol, Victoria 2013–2022.

Figure D shows the following:

- The proportion of Victorian overdose deaths involving target drugs declined gradually during the period, from 69.6% of deaths in 2013 to 61.2% in 2022. The decline was most pronounced in 2020, 2021 and 2022, which were the years during which SafeScript was operating as a mandatory system.
- The proportion of Victorian overdose deaths involving non-target medicines was very stable across the period: 54.6% of overdose deaths in 2013, compared to 54.1% of overdose deaths in 2022, with some variation from year to year (the peak was 58.0% of overdose deaths in 2018).
- The proportion of Victorian overdose deaths involving illegal drugs and/or alcohol increased steadily across the period, from 61.5% of deaths in 2013 to 75.0% of deaths in 2022. The biggest jump occurred between 2014 (61.2% of deaths) and 2015 (68.9% of deaths).

Given the variation in the data from year to year, and the small (in absolute terms) changes that were observed, it is problematic to draw any firm conclusions from these findings. However, they provide a tentative indication that the SafeScript system may be having a positive impact in reducing harms relating to target drugs. More years of data (supported by robust statistical analysis) are required, though, before anything further can be said.

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 Victorian Overdose Death register 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).[3]

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 Register. 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, in the Overdose Deaths Register alcohol is also included as a drug, 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.

---

3 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. Sometimes the intent and/or mechanism will be changed because of what is learned during the course of the investigation, particularly when the cause of death is confirmed and again when the coroner makes their finding.

Victorian Overdose Deaths Register

While possible and probable overdoses may be identified during initial death surveillance, no case is added to the Victorian Overdose Deaths Register 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 Register 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 up to 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 was, 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 contents of the Victorian Overdose Deaths Register 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 Register 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 2013–2022.

Local government area	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alpine	-	-	1	-	-	1	-	-	-	1
Ararat	-	1	1	-	3	2	2	1	-	1
Ballarat	4	7	1	6	12	7	14	10	10	13
Banyule	6	9	8	12	9	5	15	9	10	10
Bass Coast	3	2	3	6	5	4	7	4	-	4
Baw Baw	3	3	3	4	5	3	2	4	4	4
Bayside	6	5	3	8	6	12	8	14	15	7
Benalla	-	1	1	1	1	-	-	1	-	3
Boroondara	11	4	15	8	8	6	10	11	5	10
Brimbank	19	17	17	15	24	16	22	28	16	29
Buloke	-	1	-	1	1	1	-	-	-	1
Campaspe	2	2	2	4	3	2	3	6	1	4
Cardinia	3	9	2	8	5	5	7	7	13	4
Casey	5	12	15	9	19	10	18	20	14	20
Central Goldfields	-	2	1	2	2	2	1	2	-	1
Colac Otway	1	4	1	2	-	-	-	1	-	3
Corangamite	-	-	1	-	1	2	2	-	1	1
Darebin	11	16	15	18	17	13	14	14	10	18
East Gippsland	1	2	2	4	3	2	6	6	4	2
Frankston	12	17	24	20	17	26	21	17	12	16
Gannawarra	-	-	1	-	-	-	-	-	-	1
Glen Eira	10	4	7	5	12	7	8	9	13	7
Glenelg	2	1	7	2	2	2	1	1	1	-
Golden Plains	-	2	3	1	-	2	-	-	1	-
Greater Bendigo	9	7	13	6	17	13	9	10	12	6
Greater Dandenong	11	8	16	16	19	17	24	19	21	13
Greater Geelong	20	17	13	20	23	26	23	22	23	22
Greater Shepparton	8	4	11	5	3	7	7	7	6	4
Hepburn	1	1	1	-	3	1	-	-	2	4
Hindmarsh	-	-	-	-	-	-	1	-	-	-
Hobsons Bay	4	7	3	5	7	7	6	8	11	13
Horsham	-	-	-	3	1	-	1	1	1	2
Hume	11	5	10	11	10	11	13	8	13	11
Indigo	1	1	1	2	1	1	3	-	-	-

(Continued over page)

(Continued from previous page)

Local government area	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Kingston	5	6	6	5	16	9	8	10	8	11
Knox	15	8	11	7	15	17	16	13	15	7
Latrobe	10	10	4	10	8	12	6	12	11	8
Loddon	-	1	2	1	1	1	-	-	-	2
Macedon Ranges	3	3	1	2	-	3	5	2	2	2
Manningham	4	1	8	4	3	8	4	4	5	2
Mansfield	2	-	-	-	1	1	2	2	-	1
Maribyrnong	4	12	15	6	14	12	10	13	14	22
Maroondah	7	6	10	13	8	7	15	4	14	8
Melbourne	15	23	24	22	25	25	19	26	28	32
Melton	3	6	5	12	9	10	14	13	9	16
Mildura	7	3	4	4	5	7	4	10	1	7
Mitchell	4	4	2	3	2	2	3	4	1	3
Moira	1	-	3	2	4	1	4	1	1	4
Monash	7	10	6	20	9	10	11	16	13	13
Moonee Valley	4	9	3	12	8	8	7	12	9	6
Moorabool	2	1	1	3	2	5	1	2	3	4
Merri-bek / Merri-bek	3	10	9	17	13	23	13	12	7	19
Mornington Peninsula	21	5	14	16	12	11	9	13	13	15
Mount Alexander	1	1	-	1	-	3	3	2	2	-
Moyne	-	1	1	1	-	1	-	-	1	2
Murrindindi	1	-	3	1	1	2	2	3	-	2
Nillumbik	-	1	5	4	3	3	3	3	1	5
Northern Grampians	3	-	1	-	-	1	1	1	-	1
Port Phillip	15	19	23	21	22	32	15	25	18	23
Pyrenees	-	1	-	-	1	1	-	-	-	-
Queenscliffe	-	-	-	-	-	-	-	2	-	-
South Gippsland	3	1	2	2	2	1	3	1	1	1
Southern Grampians	-	-	-	1	2	2	1	1	2	1
Stonnington	8	3	5	7	12	10	4	13	14	9
Strathbogie	1	-	2	-	-	-	1	1	1	2
Surf Coast	1	1	-	2	1	3	4	3	-	1
Swan Hill	1	1	1	1	1	1	2	1	1	-
Towong	1	-	-	1	1	2	-	1	-	1
Wangaratta	2	2	1	5	3	4	3	6	-	4
Warrnambool	1	2	3	2	3	4	1	3	1	4
Wellington	-	2	6	2	5	4	2	5	5	6

(Continued over page)

(Continued from previous page)

Local government area	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
West Wimmera	-	-	1	2	-	-	1	1	-	1
Whitehorse	11	10	18	12	16	10	9	9	21	8
Whittlesea	8	10	7	10	8	3	12	12	17	12
Wodonga	5	4	3	4	3	9	1	-	2	-
Wyndham	11	8	10	12	11	11	13	12	15	14
Yarra	19	22	23	27	20	32	25	16	18	21
Yarra Ranges	7	8	9	11	11	17	12	7	7	13
Yarriambiack	-	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, deschloroetizolam, diclazepam, etizolam, flualprazolam, flubromazepam, flubromazolam, lormetazepam, phenazepam.
- **Cannabinoids**: 5F-Cumyl-P7AICA, 5F-CUMYL-PINACA, 5F-MDMB-PICA, AB-CHMINACA, Cumyl-PeGACLONE, WIN55212-2.
- **Dissociatives**: 2-Fluorodeschloroketamine, 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**: 4-Fluoroamphetamine, 4-fluoromethylphenidate, cathinone, methcathinone, n-ethylhexadrone, n-ethylheptedrone, n-ethylpentylone, pentylone, PMMA.