

Victorian overdose deaths, 2012-2021

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Purpose

This report presents the 2021 update to Victorian overdose death statistics.

The report is produced under the Court's initiative to release timely and accessible information on deaths to the Victorian public, and to support drug harm reduction initiatives in the community.

Victorian Overdose Deaths Register

In Victoria, all deaths from suspected non-natural causes, including suspected overdoses, are required to be reported to the Coroners Court of Victoria. These deaths are recorded by the Court in the Victorian Overdose Deaths Register, which is the data source for this report.

The Register is implemented consistently with the United States Substance Abuse and Mental Health Services Administration (SAMHSA) Consensus Panel recommendations for determining and documenting drug poisoning deaths.¹ Regular searches are conducted across coronial databases to identify Victorian overdose deaths. Any such death is added to the Register and information is recorded including the following:

- Deceased's age
- Deceased's sex
- The specific drug or drugs that the expert death investigators identified as playing a contributory role. (Only contributing drugs are coded, not all drugs detected.)
- The location of fatal incident and location where the deceased usually resided.
- Whether the death was drug induced (an overdose death in the absence of any non-drug contributing factors) or drug related (an overdose death where factors unrelated to drug toxicity also played a contributory role, such as cardiomegaly or respiratory disease).²

Definition of overdose

The term "overdose" is used throughout this data summary to describe 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 SAMHSA.

1 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.

2 For more on the Overdose Deaths Register design, definitions, case inclusion criteria and coding process see Dwyer J, Ogeil O, Bugeja L, Heilbronn C, Lloyd B, *Victorian Overdose Deaths: The Role of Pharmaceutical Drugs and Drug Combinations*, Richmond: Turning Point, February 2017.

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 this data summary alcohol is also included as a drug, whereas it is explicitly excluded under the SAMHSA definition.

Considerations when interpreting the data

There is substantial variation over time in the Victorian overdose death data, including the annual frequency of overdose deaths among particular cohorts defined by age and sex; the annual frequency in particular locations; and the annual frequency involving specific contributing drugs and drug combinations.

Caution should be exercised in interpreting this variation. In some instances, an observed increase or decrease may reflect underlying trends and patterns in drug-related harms; but in other instances it might result from random factors. Particular care is required when considering 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.

Changes in reported frequencies over time

The contents of the Register are regularly revised and updated as coronial investigations progress. Through the coroner's investigation, an overdose death initially characterised as involving one drug might be determined to have involved two other drugs; or a death initially thought to be unrelated to drug consumption might be found to be a fatal overdose.

Another type of revision that might take place is in how drugs are grouped and categorised for analysis. This can occur when the Court revises its approach to understanding and describing drug-related harms, usually in response to expert advice and feedback.

Therefore, overdose deaths data reported from the Register can change over time.

1. Overdose deaths, Victoria 2012-2021

There were 4699 overdose deaths in Victoria between 2012 and 2021. This section provides an overview of basic frequencies and the socio-demographics of the deceased.

1.1. Annual frequency and rate by sex

Table 1 shows the annual frequency and proportion of Victorian overdose deaths by sex of the deceased person for the period 2012-2021. There was a steady increase in overdose deaths between 2012 and 2018, then a slight decline from the 2018 peak between 2019 and 2021. This decline between 2019 and 2021 primarily appeared to be due to a decrease in the number of overdose deaths among females; the frequency among males was quite steady. Males consistently accounted for two-thirds of overdose deaths throughout the period, noting the slight departure from this trend in 2021, which may be due to random variation.

Table 1: Annual frequency and proportion of overdose deaths by deceased sex, Victoria 2012-2021.

Sex	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Male	244	241	253	302	331	336	347	329	349	353
Female	121	140	134	152	163	187	196	187	187	147
Total	365	381	387	454	494	523	543	516	536	500
Male	66.8	63.3	65.4	66.5	67.0	64.2	63.9	63.8	65.1	70.6
Female	33.2	36.7	34.6	33.5	33.0	35.8	36.1	36.2	34.9	29.4
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, 2012-2021. There was a slight increasing trend over time among males, whereas for females the rate increased between 2012 and 2018 before declining slightly in the most recent three years.

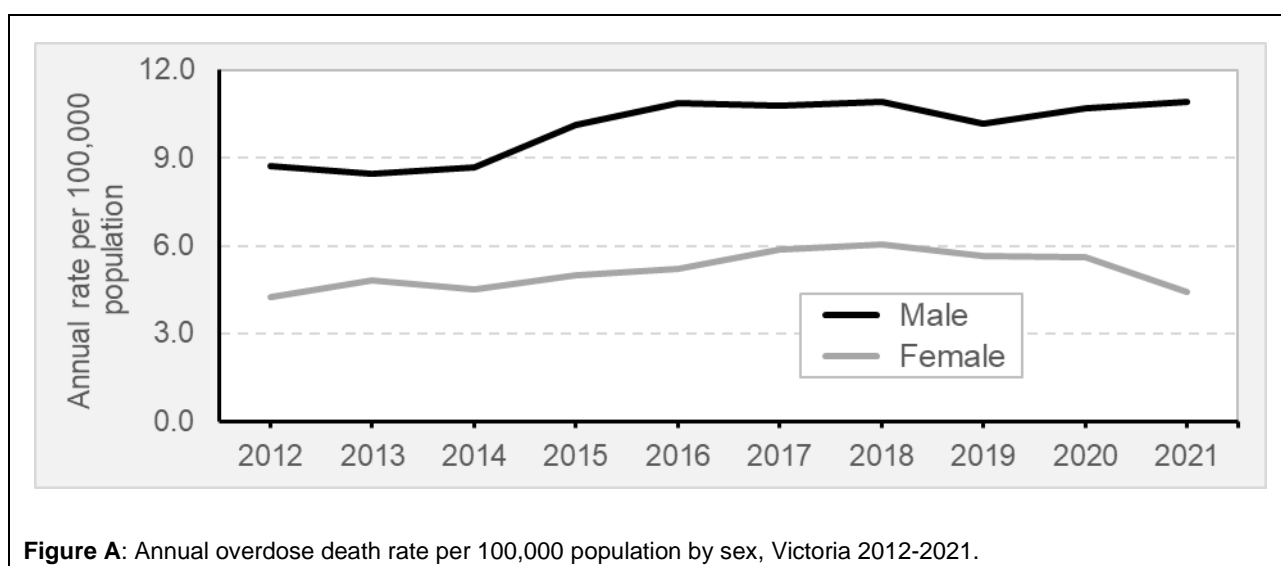


Figure A: Annual overdose death rate per 100,000 population by sex, Victoria 2012-2021.

1.2. Annual frequency by sex and age group

Table 2 shows the annual frequency of Victorian overdose deaths by sex and age group of the deceased person, 2012-2021. There was substantial variation in the data by age group and sex over time. The frequency was generally lowest among the youngest and oldest age groups and peaked among those aged 35 to 54. In addition:

- For younger males (aged up to 34 years) the annual frequency of overdose deaths was quite steady throughout the period, whereas among older males (aged 35 and over) the number of overdose deaths increased over time.
- Among females there were no clear trends apparent by age group over time.

Table 2: Annual overdose death frequency by deceased sex and age group, Victoria 2012-2021.

Age group by sex	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Males										
Under 18 years	2	1	0	0	3	1	0	4	0	0
18 to 24 years	17	13	7	12	20	11	16	15	27	17
25 to 34 years	79	60	52	57	52	69	67	47	59	76
35 to 44 years	73	74	91	110	111	112	107	92	93	93
45 to 54 years	39	51	57	84	83	80	99	92	99	96
55 to 64 years	25	27	32	24	40	36	42	46	44	47
65 years and over	9	15	14	15	22	27	16	33	27	24
Total	244	241	253	302	331	336	347	329	349	353
Females										
Under 18 years	0	2	1	1	1	3	1	1	0	0
18 to 24 years	4	5	6	7	6	8	13	8	5	7
25 to 34 years	19	21	29	15	25	23	28	21	36	23
35 to 44 years	35	40	27	46	47	44	48	39	51	36
45 to 54 years	30	32	35	36	39	44	36	54	47	42
55 to 64 years	21	25	25	27	29	36	41	32	24	22
65 years and over	12	15	11	20	16	29	29	32	24	17
Total	121	140	134	152	163	187	196	187	187	147
All people										
Under 18 years	2	3	1	1	4	4	1	5	0	0
18 to 24 years	21	18	13	19	26	19	29	23	32	24
25 to 34 years	98	81	81	72	77	92	95	68	95	99
35 to 44 years	108	114	118	156	158	156	155	131	144	129
45 to 54 years	69	83	92	120	122	124	135	146	146	138
55 to 64 years	46	52	57	51	69	72	83	78	68	69
65 years and over	21	30	25	35	38	56	45	65	51	41
Total	365	381	387	454	494	523	543	516	536	500

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 35-54, before declining among older Victorians.

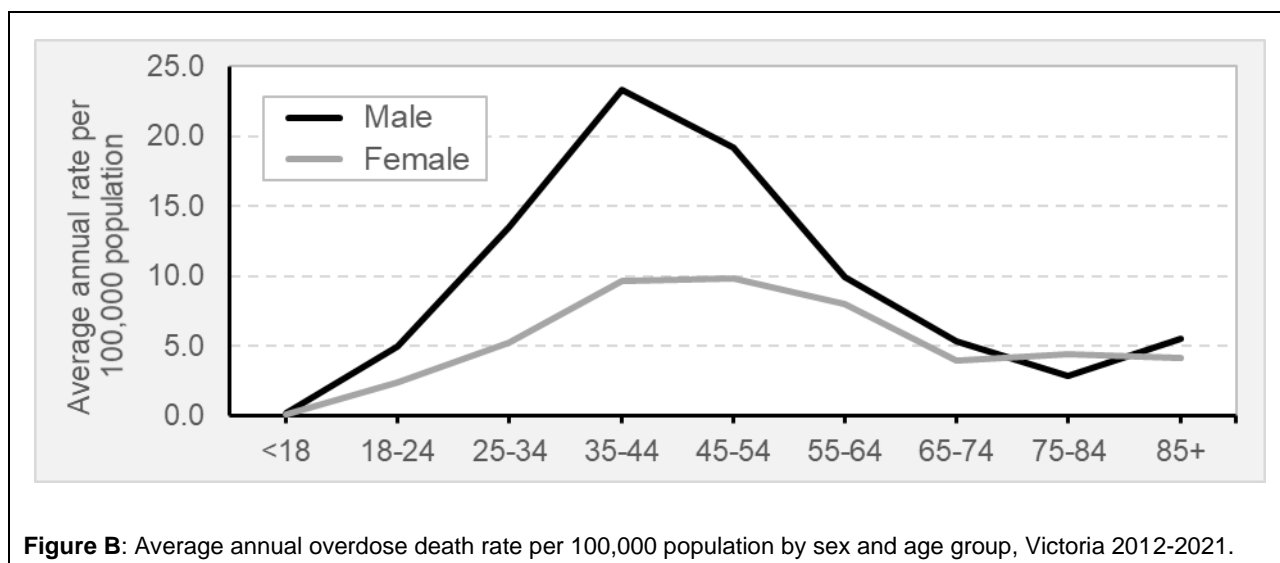


Figure B: Average annual overdose death rate per 100,000 population by sex and age group, Victoria 2012-2021.

1.3. Metropolitan Melbourne and Regional Victoria

Table 3 shows the annual Victorian overdose death frequency and proportion for 2012-2021 occurring in Metropolitan Melbourne and Regional Victoria.

The annual frequency in Metropolitan Melbourne steadily increased between 2012 and 2018, then plateaued between 2019 and 2021. The annual frequency in Regional Victoria similarly increased between 2012 and 2018, but declined thereafter. The decline was particularly pronounced in 2021, down to 101 deaths (from 149 deaths at the peak in 2018).

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%.

Table 3: Annual overdose death frequency and proportion by fatal incident location, Victoria 2012-2021.

Fatal incident location	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Metropolitan Melbourne	264	276	290	346	373	388	393	383	396	399
Regional Victoria	99	104	97	108	119	132	149	130	140	101
Total	365	381	387	454	494	523	543	516	536	500
Metropolitan Melbourne	72.3	72.4	74.9	76.2	75.5	74.2	72.4	74.2	73.9	79.8
Regional Victoria	27.1	27.3	25.1	23.8	24.1	25.2	27.4	25.2	26.1	20.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figures C1 and C2 (over page) show the annual overdose death rate for men and women in Metropolitan Melbourne and Regional Victoria respectively:

- For males in Metropolitan Melbourne, the annual overdose death rate generally rose between 2012 and 2021. By contrast, the rate among males in Regional Victoria peaked in 2018 and appears to have declined slightly thereafter.

- Among females in both Metropolitan Melbourne and Regional Victoria, there was a general increasing trend in annual rate between 2012 and 2018, then a decline in the most recent three years, which was more pronounced in Regional Victoria.

The Regional Victorian rates showed substantially more variation from year to year than the Metropolitan Melbourne rates; the reason for this is likely to be that lower frequencies lead to greater random variance in the data.

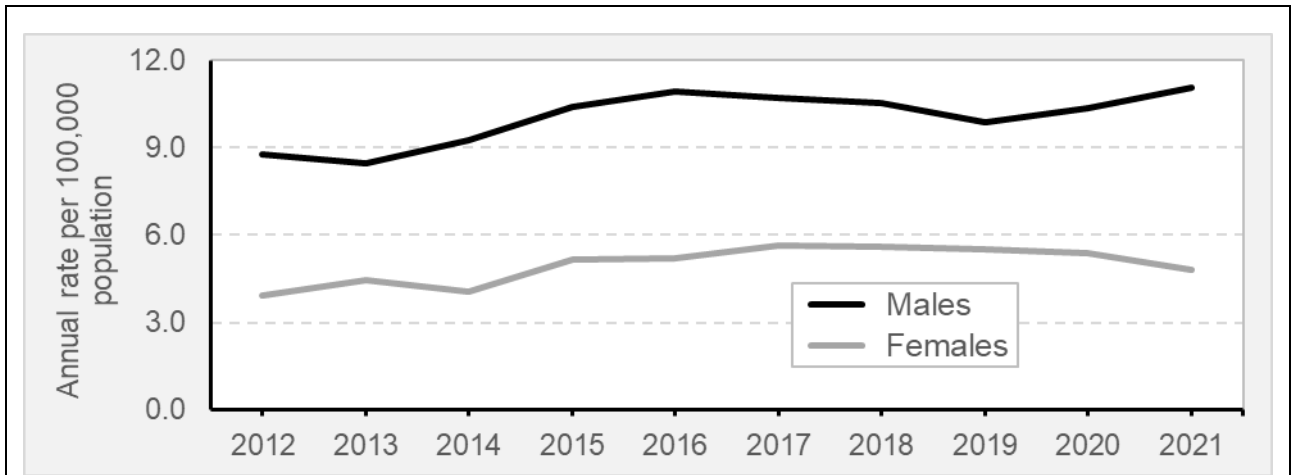


Figure C1: Annual overdose death rate per 100,000 population by sex, Metropolitan Melbourne 2012-2021.

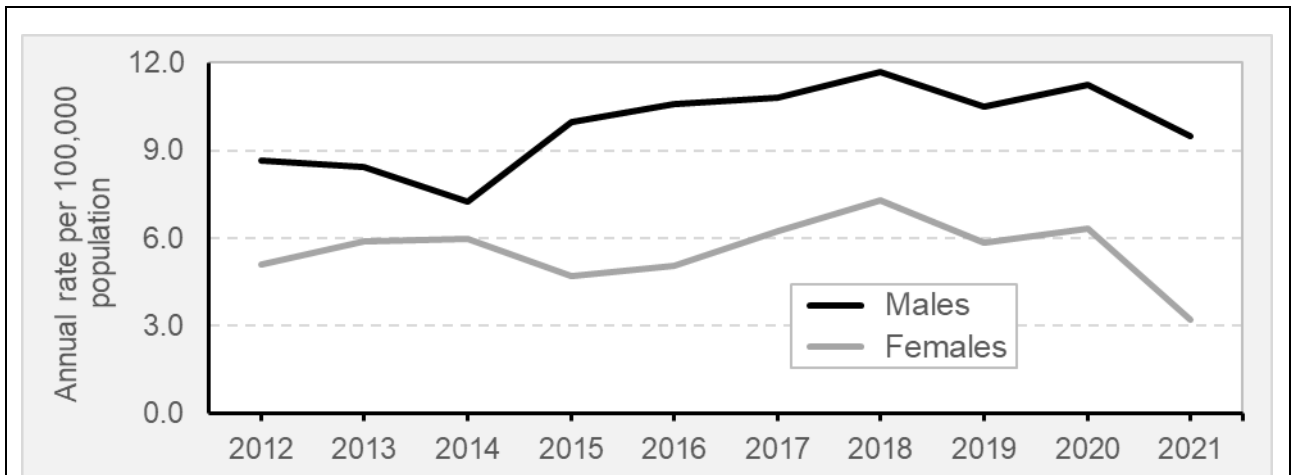


Figure C2: Annual overdose death rate per 100,000 population by sex, Regional Victoria 2012-2021.

Supplementing the tables and figures presented in this section, Attachment A to this data summary shows the annual frequency of overdose deaths by local government area of fatal incident, Victoria 2012-2021.

2. Contributing drugs

This section provides an overview of main drug types, drug groups and individual drugs that contributed to the 4699 overdose deaths in Victoria between 2012 and 2021.

2.1. Single drug and combined drug toxicity

Table 4 shows the annual frequency and proportion of overdose deaths in Victoria for the period 2012-2021, which were due to the acute toxic effects of a single drug versus multiple drugs.

Table 4: Annual frequency of single drug and multiple drug overdose deaths, Victoria 2012-2021.

Contributing drugs	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Single drug	114	119	101	131	136	123	133	129	141	132
Multiple drugs	251	262	286	323	358	400	410	387	395	368
Total	365	381	387	454	494	523	543	516	536	500
Single drug	31.2	31.2	26.1	28.9	27.5	23.5	24.5	25.0	26.3	26.4
Multiple drugs	68.8	68.8	73.9	71.1	72.5	76.5	75.5	75.0	73.7	73.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

On average, 73% of Victorian overdose deaths during the period involved multiple drugs. This underscores the importance of highlighting drug combinations when delivering harm reduction education and other overdose prevention initiatives.

2.2. 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 shows the annual frequency and proportion of Victorian overdose deaths involving pharmaceutical drugs, illegal drugs and alcohol. Most overdose deaths were from combined (multiple) drug toxicity, which is why the annual frequencies for each drug type in Table 5 sum to greater than the overall annual frequency.

Table 5: Annual frequency of overdose deaths by contributing drug type, Victoria 2012-2021.

Contributing drugs	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Pharmaceutical	304	314	318	358	385	414	427	407	402	376
Illegal	126	157	160	223	264	267	260	274	276	260
Alcohol	80	96	94	106	124	151	161	145	155	147
Total	365	381	387	454	494	523	543	516	536	500
Pharmaceutical	83.3	82.4	82.2	78.9	77.9	79.2	78.6	78.9	75.0	75.2
Illegal	34.5	41.2	41.3	49.1	53.4	51.1	47.9	53.1	51.5	52.0
Alcohol	21.9	25.2	24.3	23.3	25.1	28.9	29.7	28.1	28.9	29.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In 2021, pharmaceutical drugs remained the most frequent contributors to Victorian overdose deaths, playing a role in three-quarters of all deaths. Illegal drugs contributed in just over half of overdose deaths, and alcohol in approximately 30%. These proportions are consistent with the years immediately preceding 2021.

2.3. Combinations of contributing drug types

To explore further how pharmaceutical drugs, illegal drugs and alcohol interacted, each death was classified according to the combination of drug types that contributed to the fatal overdose. The seven mutually exclusive combinations were:

- Pharmaceutical drugs only (no contributing illegal drugs or alcohol).
- Pharmaceutical and illegal drugs (no alcohol).
- Illegal drugs only (no pharmaceutical drugs or alcohol).
- Pharmaceutical drugs and alcohol (no illegal drugs).
- Pharmaceutical and illegal drugs and alcohol.
- Alcohol only (no contributing pharmaceutical or illegal drugs).
- Illegal drugs and alcohol (no contributing pharmaceutical drugs).

Table 6 shows the annual frequency and proportion of Victorian overdose deaths for each combination of contributing drugs.

Table 6: Annual frequency and proportion of overdose deaths by contributing drug type, Victoria 2012-2021.

Contributing drugs	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Pharma only	173	154	163	156	154	168	177	152	155	136
Pharma + illegal	73	77	90	124	146	136	133	160	144	153
Illegal only	39	54	40	68	70	68	71	59	81	63
Pharma + alcohol	47	58	46	53	47	62	72	54	64	51
Pharma + illegal + alc	11	25	19	25	38	48	45	41	39	36
Alcohol only	19	12	18	22	29	26	34	36	41	53
Illegal + alcohol	3	1	11	6	10	15	11	14	12	8
Total	365	381	387	454	494	523	543	516	536	500
Pharma only	47.4	40.4	42.1	34.4	31.2	32.1	32.6	29.5	28.9	27.2
Pharma + illegal	20.0	20.2	23.3	27.3	29.6	26.0	24.5	31.0	26.9	30.6
Illegal only	10.7	14.2	10.3	15.0	14.2	13.0	13.1	11.4	15.1	12.6
Pharma + alcohol	12.9	15.2	11.9	11.7	9.5	11.9	13.3	10.5	11.9	10.2
Pharma + illegal + alc	3.0	6.6	4.9	5.5	7.7	9.2	8.3	7.9	7.3	7.2
Alcohol only	5.2	3.1	4.7	4.8	5.9	5.0	6.3	7.0	7.6	10.6
Illegal + alcohol	0.8	0.3	2.8	1.3	2.0	2.9	2.0	2.7	2.2	1.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

One potential trend observed in the data was the decline over time in the frequency and proportion of Victorian overdose deaths involving only pharmaceutical drugs, and the concomitant rise in overdose deaths involving pharmaceutical and illegal drugs in combination. Another potential trend

was the rise over time in the frequency and proportion of alcohol-only overdose deaths. Given the low annual frequency of cases in some groups, as well as the substantial year-to-year variability in the data, these trends should be interpreted with some caution.

2.4. Contributing drug groups

Pharmaceutical drugs were further disaggregated into drug groups for more detailed analysis, using a slightly modified version of the US Drug Abuse Warning Network (DAWN) Drug Vocabulary level two groupings.³

Table 7 shows the annual frequency and proportion of Victorian overdose deaths 2012-2021 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 frequencies for each drug group in Table 7 sum to greater than the overall annual frequency.

Table 7: Annual frequency and proportion of contribution to overdose deaths, among major contributing pharmaceutical drug groups plus alcohol and illegal drugs, Victoria 2012-2021.

Drug type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Benzodiazepines	199	213	215	238	263	303	304	285	284	266
Illegal drugs	126	157	160	223	264	267	260	274	276	260
Pharmaceutical opioids	188	176	182	185	183	198	207	207	192	182
Antidepressants	141	135	144	161	165	196	196	170	181	159
Alcohol	80	96	94	106	124	151	161	145	155	147
Antipsychotics	78	76	81	91	107	136	109	103	113	99
Anticonvulsants	10	37	45	51	54	75	87	85	92	85
Non-benzo anxiolytics	38	56	48	60	40	56	47	54	51	46
Non-opioid analgesics	44	39	49	46	35	38	40	50	37	21
Total	365	381	387	454	494	523	543	516	536	500
Benzodiazepines	54.5	55.9	55.6	52.4	53.2	57.9	56.0	55.2	53.0	53.2
Illegal drugs	34.5	41.2	41.3	49.1	53.4	51.1	47.9	53.1	51.5	52.0
Pharmaceutical opioids	51.5	46.2	47.0	40.7	37.0	37.9	38.1	40.1	35.8	36.4
Antidepressants	38.6	35.4	37.2	35.5	33.4	37.5	36.1	32.9	33.8	31.8
Alcohol	21.9	25.2	24.3	23.3	25.1	28.9	29.7	28.1	28.9	29.4
Antipsychotics	21.4	19.9	20.9	20.0	21.7	26.0	20.1	20.0	21.1	19.8
Anticonvulsants	2.7	9.7	11.6	11.2	10.9	14.3	16.0	16.5	17.2	17.0
Non-benzo anxiolytics	10.4	14.7	12.4	13.2	8.1	10.7	8.7	10.5	9.5	9.2
Non-opioid analgesics	12.1	10.2	12.7	10.1	7.1	7.3	7.4	9.7	6.9	4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Benzodiazepines were the most frequent contributing pharmaceutical drug group, playing a role in an average 54.7% of overdose deaths annually across the period. The next most frequent

3 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.

pharmaceutical drug groups were opioids (an average 40.4% of overdose deaths each year), antidepressants (annual average 35.1%) and antipsychotics (annual average 21.1%).

One notable trend in the data was the rise in anticonvulsant involvement over time. As shown in Table 8, this trend was primarily driven by rising pregabalin involvement in Victorian overdose deaths.

2.5. Individual contributing drugs

Table 8 shows the annual frequency of overdose deaths, Victoria 2012-2021, involving the most frequent contributing individual drugs. The individual drugs are tabulated by the major drug groups to which they belong.

Table 8: Annual frequency and proportion of contribution to overdose deaths, among most prevalent individual contributing drugs, Victoria 2012-2021.

Contributing drugs	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Benzodiazepines										
Diazepam	133	165	169	192	204	242	235	232	218	217
Alprazolam	18	19	25	33	31	48	40	35	43	45
Clonazepam	57	45	28	23	23	27	31	28	31	26
Oxazepam	40	17	19	34	27	23	35	28	17	27
Temazepam	34	22	20	25	26	32	29	20	18	18
Nitrazepam	24	26	13	17	22	11	16	13	14	12
Lorazepam	1	4	6	2	7	7	6	9	12	10
Total	199	213	215	238	263	303	304	285	284	266
Illegal drugs										
Heroin	107	128	136	171	190	220	203	212	187	173
Methamphetamine	34	51	53	72	120	93	96	111	116	137
Cocaine	3	5	7	15	11	10	17	20	28	23
NPS	0	3	0	2	8	2	8	17	33	35
MDMA	1	3	4	5	12	7	4	13	17	11
GHB	1	0	1	0	4	6	5	7	18	10
Total	126	157	160	223	264	267	260	274	276	260
Pharma opioids										
Methadone	75	70	67	67	72	71	72	74	66	67
Oxycodone	46	61	46	58	54	66	62	59	60	47
Codeine	55	46	47	48	46	37	34	42	40	26
Tramadol	18	24	23	32	26	32	35	37	28	20
Morphine	13	9	12	9	13	18	19	18	10	13
Fentanyl	17	11	11	23	13	14	18	5	5	13
Buprenorphine	4	3	7	4	2	8	20	11	17	10
Tapentadol	0	0	0	0	0	1	9	13	20	19
Total	188	176	182	185	183	198	207	207	192	182

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Drug type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Antidepressants										
Mirtazapine	26	30	29	50	25	42	59	45	56	50
Amitriptyline	32	25	41	28	34	47	40	41	33	33
Citalopram	25	25	25	26	28	35	26	26	34	25
Venlafaxine	15	20	19	10	22	27	18	20	19	20
Duloxetine	14	11	12	12	15	12	19	20	17	18
Sertraline	12	13	9	12	11	18	19	20	13	12
Desvenlafaxine	6	8	11	15	19	15	18	12	15	8
Fluoxetine	13	10	7	12	16	10	12	12	10	13
Doxepin	8	6	4	4	4	6	7	4	3	3
Total	141	135	144	161	165	196	196	170	181	159
Alcohol										
Total	80	96	94	106	124	151	161	145	155	147
Antipsychotics										
Quetiapine	41	41	48	49	57	74	53	50	53	44
Olanzapine	22	16	21	30	36	41	42	33	44	34
Risperidone	8	10	7	9	14	9	13	10	4	6
Zuclopenthixol	6	3	3	5	4	14	4	7	8	3
Chlorpromazine	10	6	3	5	5	5	4	5	4	4
Clozapine	4	6	2	4	5	3	3	3	6	5
Total	78	76	81	91	107	136	109	103	113	99
Anticonvulsants										
Pregabalin	0	17	27	34	34	52	69	66	69	65
Valproic Acid	6	13	9	9	6	7	5	7	7	6
Lamotrigine	2	2	2	2	3	6	10	7	8	8
Total	10	37	45	51	54	75	87	85	92	85
Non-benzo anxiolytics										
Doxylamine	21	23	13	14	13	18	18	16	10	9
Zopiclone	13	14	11	17	13	17	13	22	18	15
Pentobarbitone	1	8	15	18	9	10	6	9	4	8
Zolpidem	5	4	6	11	6	8	6	8	8	9
Diphenhydramine	2	7	5	5	4	6	6	7	10	11
Total	38	56	48	60	40	56	47	54	51	46
Non-opioid analgesics										
Paracetamol	42	37	37	42	30	32	32	47	33	18
Ibuprofen	5	2	7	5	4	1	7	4	2	0
Total	44	39	49	46	35	38	40	50	37	21

Some notable findings from inspection of Table 8 are presented in the next section of this data summary.

3. Themes and issues

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

3.1. COVID-19 and overdose death

As noted in the 2021 iteration of the Court's Victorian overdose deaths report,⁴ despite widely articulated concerns that the onset of the COVID-19 pandemic might be accompanied by a shift in drug-related harms, the number of Victorian overdose deaths in 2020 did not depart substantially from what was reported in 2019. The 2021 data extended this finding: overdose deaths declined to 500, from 536 in 2020.

3.2. New psychoactive substances (NPS)

The rapid rise of NPS involvement in Victorian overdose deaths in 2019 and 2020 was a significant development. This rise appears to have slowed in 2021, with 35 NPS-involved overdose deaths compared to 33 in 2020.

Table 9 shows the annual frequency of Victorian overdose deaths involving NPS, disaggregated by the main categories to which the NPS belonged. (The mapping of the individual NPS to category is described in Attachment C.)

Table 9: Annual frequency of NPS-involved overdose deaths by contributing categories, Victoria 2012-2021.

NPS type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Benzodiazepine	0	0	0	1	0	0	1	10	28	26
Stimulant	0	2	0	0	7	2	0	0	4	3
Cannabinoid	0	0	0	1	0	0	6	6	2	2
Psychedelic	0	0	0	0	3	2	0	0	1	3
Empathogen	0	0	0	0	0	0	0	0	5	1
Opioid	0	0	0	0	1	0	0	1	0	3
Dissociative	0	1	0	0	0	0	0	0	2	0
Other and unknown	0	0	0	0	0	0	1	0	0	0
Total	0	3	0	2	8	2	8	17	33	35

In 2021, Coroner Paresa Spanos recommended that the Victorian Department of Health implement two evidence-based interventions to address the rise in fatal NPS-related harms:⁵ a drug early warning network, to alert people who use drugs to potentially risky NPS substances circulating in unregulated drug markets; and a drug checking service (known colloquially as a 'pill testing' service), so people who use drugs can learn about the contents of substances they have obtained

4 Coroners Court of Victoria, *Victorian overdose deaths 2011-2020*, <<https://www.coronerscourt.vic.gov.au/sites/default/files/2021-07/CCOV%20-%20Overdose%20deaths%20in%20Victoria%202011-2020%20-%2029Jul2021.pdf>>, 29 July 2021.

5 Lead case: Spanos P, "Finding into death of Jason with inquest", reference COR 2017 0214, Coroners Court of Victoria, delivered 31 March 2021, <<https://www.coronerscourt.vic.gov.au/sites/default/files/2021-04/COR%202017%200214%20-%20Jason.pdf>>, accessed 23 June 2021.

from unregulated drug markets. This year, Coroner Sarah Gebert echoed these recommendations in two investigations into NPS-related deaths of young men, one who believed he was using MDMA,⁶ and the other who was using 'Xanax' tablets that contained novel benzodiazepines.⁷ To date the Department of Health has not committed to a drug checking service.

3.3. Heroin

Heroin-involved overdose deaths declined in 2021 to 173 deaths, and Figure D shows this decline occurred across both Metropolitan Melbourne and Regional Victoria.

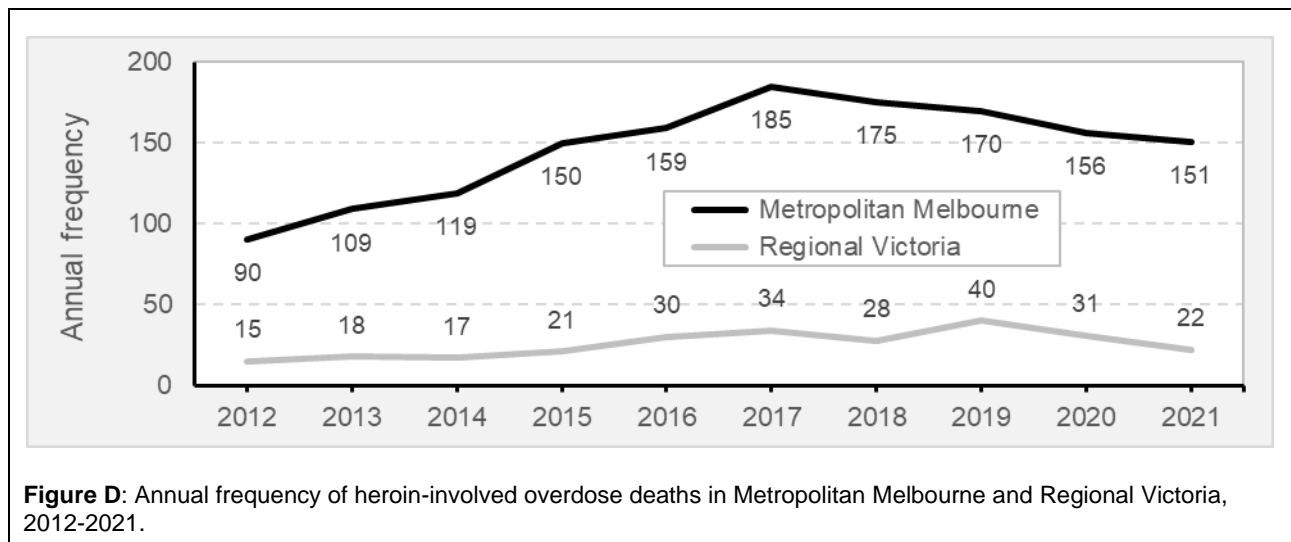


Table 10: Annual frequency of heroin-involved overdose deaths in 10 LGAs that were most frequent locations for these deaths, Victoria 2012-2021.

LGA of fatal incident	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Yarra	5	11	11	19	20	16	26	17	9	11
Melbourne	10	12	16	12	7	15	13	10	14	9
Brimbank	7	12	7	5	13	19	10	15	17	8
Port Phillip	8	7	10	9	11	9	18	9	9	11
Greater Dandenong	7	6	4	11	11	11	10	14	9	10
Greater Geelong	4	6	6	4	12	6	10	12	5	10
Darebin	3	4	6	8	9	9	8	7	5	3
Maribyrnong	6	1	7	9	5	9	7	5	6	5
Frankston	1	4	8	8	4	6	8	9	3	4
Moreland	4	2	3	5	4	8	9	8	5	3

6 Gebert S, "Finding into death of Mr P without inquest", reference COR 2020 005219, Coroners Court of Victoria, delivered 20 May 2022, <https://www.coronerscourt.vic.gov.au/sites/default/files/COR%202020%20005219%20-%20Coroners%20Finding-%20Redacted_0.pdf>, accessed 24 August 2022.

7 Gebert S, "Finding into death of Mr S without inquest", reference COR 2020 003434, Coroners Court of Victoria, delivered 29 April 2022, <https://www.coronerscourt.vic.gov.au/sites/default/files/COR%202020%20003434%20-%20Coroners%20Finding_Redacted_0.pdf>, accessed 24 August 2022.

Table 10 shows the annual frequency of heroin-involved overdose deaths across the 10 LGAs that were the most frequent locations for these during the past decade. It demonstrates that the decline is generally spread across all these LGAs, rather than being restricted to a particular area.

3.4. Methamphetamine

While heroin-involved overdose deaths fell in 2021, methamphetamine-involved overdose deaths hit a new peak of 137 in the same year. Figure E suggests that this increase was focused in Metropolitan Melbourne; the annual frequency of methamphetamine-involved overdose deaths in Regional Victoria by contrast has been steady since 2017.

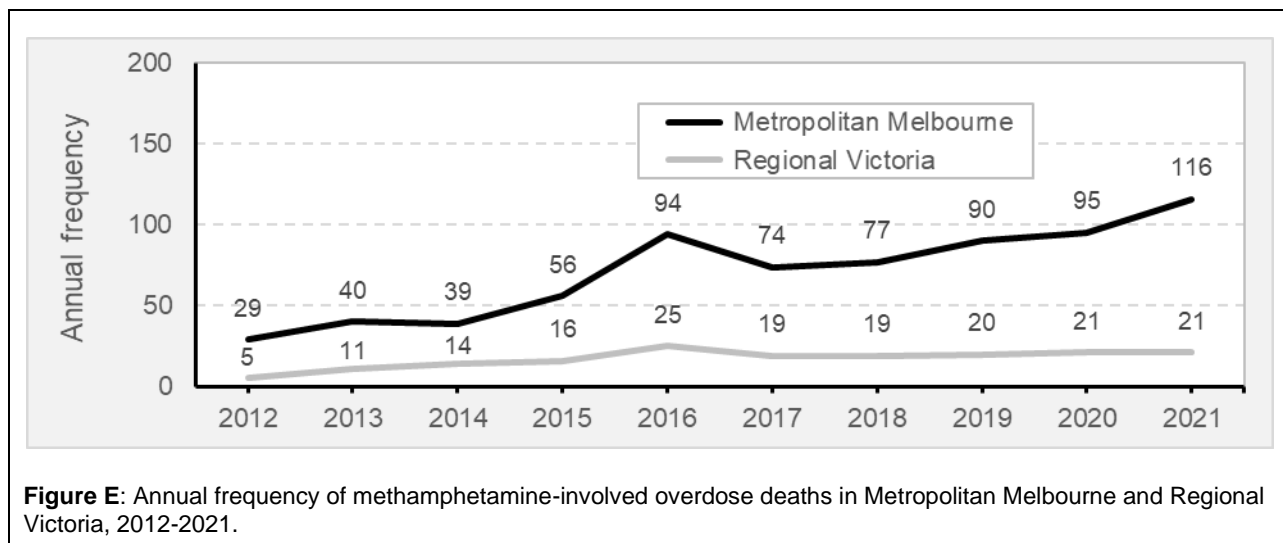


Table 11: Annual frequency of methamphetamine-involved overdose deaths in 10 LGAs that were most frequent locations for these deaths, Victoria 2012-2021.

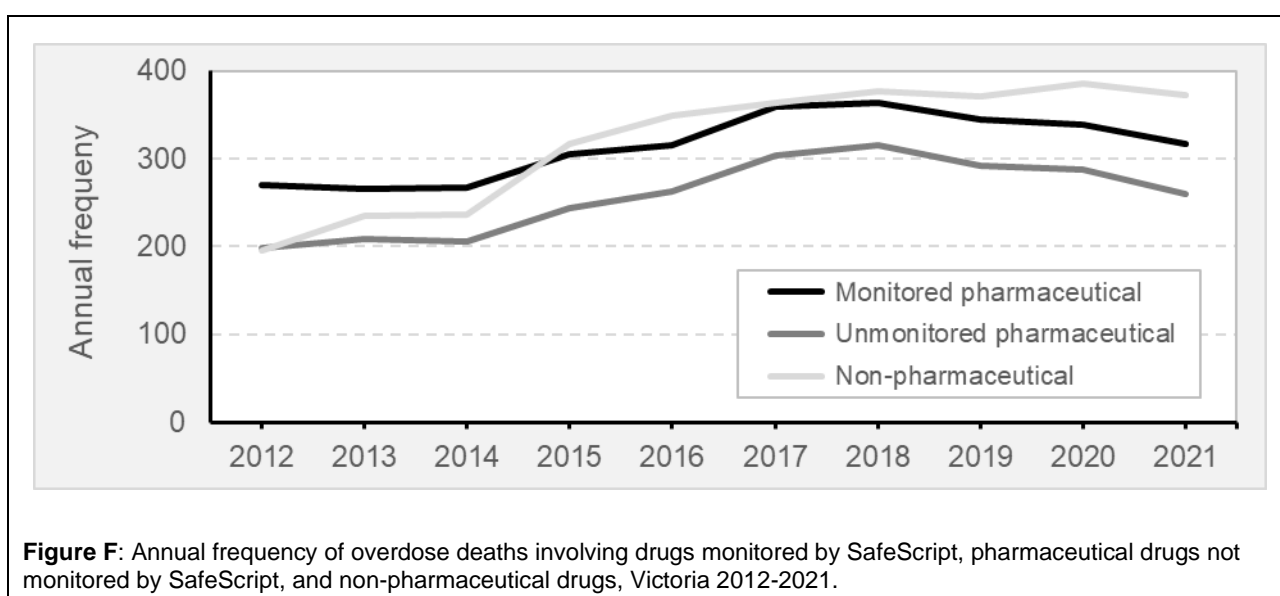
LGA of fatal incident	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Melbourne	3	2	2	3	6	6	8	4	9	10
Frankston	1	4	5	5	9	5	7	7	4	4
Greater Dandenong	2	4	1	4	2	8	5	9	4	12
Port Phillip	2	1	3	5	6	3	7	3	9	11
Brimbank	2	4	3	4	4	6	2	8	6	9
Yarra	1	0	6	3	9	3	3	7	6	6
Greater Geelong	0	0	1	3	8	4	2	5	1	5
Wyndham	1	2	0	3	6	2	1	5	4	5
Hume	3	1	2	2	2	0	5	4	5	2
Knox	0	1	0	2	1	5	3	5	4	5

Table 11 shows the annual frequency of methamphetamine-involved overdose deaths across the 10 LGAs that were the most frequent locations for these during the past decade. Several LGAs including Melbourne, Greater Dandenong, Port Phillip and Brimbank show what appears to be an increasing trend over time. Given these LGAs are also among those with the highest numbers of heroin-involved overdose deaths, there may be a rationale here to consider harm reduction education and interventions in these areas that assist people who use a range of drugs.

3.5. SafeScript

2021 was the first full year during which it was mandatory in Victoria to check the SafeScript real-time prescription monitoring system prior to prescribing or dispensing a medicine monitored through the system. This mandatory checking came into force in April 2020, after SafeScript was made available to Victorian medical practices and pharmacies on a voluntary opt-in basis in October 2018.

Last year, the Coroners Court of Victoria reported some tentative evidence that SafeScript may be having a positive impact on drug-related harms.⁸ Specifically, there was a historical increasing trend over time between 2011 and 2018 in the annual frequency of Victorian overdose deaths involving pharmaceutical drugs tracked by SafeScript as well pharmaceutical drugs not tracked by SafeScript, but in 2019 and 2020 this trend was reversed. This reversal coincided with the 2018 SafeScript implementation.



As noted at the time, there may be many explanations for these findings, but the 2019 and 2020 interruption to the historical increasing trend in overdose deaths is a cautiously positive result. Further to this point, as shown in Figure F, the decreasing trend has continued into 2021, with further declines in the number of overdose deaths involving pharmaceutical drugs monitored by SafeScript as well as pharmaceutical drugs that SafeScript does not presently monitor.

8 Coroners Court of Victoria, *Victorian overdose deaths 2011-2020*, <<https://www.coronerscourt.vic.gov.au/sites/default/files/2021-07/CCOV%20-%20Overdose%20deaths%20in%20Victoria%202011-2020%20-%2029Jul2021.pdf>>, 29 July 2021.

Attachment A

Annual frequency of overdose deaths by local government area of fatal incident, Victoria 2012-2021.

Local government area	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Alpine	-	-	-	1	-	-	1	-	-	-
Ararat	1	-	1	1	-	3	2	2	1	-
Ballarat	3	4	7	1	6	12	7	14	10	10
Banyule	6	6	9	8	12	9	5	14	9	10
Bass Coast	1	3	2	3	6	5	4	7	4	-
Baw Baw	7	3	3	3	4	5	3	2	4	4
Bayside	3	6	5	3	8	6	12	8	14	15
Benalla	-	-	1	1	1	1	-	-	1	-
Boroondara	9	11	4	15	8	8	6	10	11	5
Brimbank	10	19	17	17	15	24	16	22	28	16
Buloke	-	-	1	-	1	1	1	-	-	-
Campaspe	3	2	2	2	4	3	2	3	6	1
Cardinia	4	3	9	2	8	5	5	7	7	13
Casey	10	5	12	15	9	19	10	18	20	14
Central Goldfields	1	-	2	1	2	2	2	1	2	-
Colac Otway	-	1	4	1	2	-	-	-	1	-
Corangamite	-	-	-	1	-	1	2	2	-	1
Darebin	8	11	16	15	18	17	13	14	14	10
East Gippsland	2	1	2	2	4	3	2	6	6	4
Frankston	15	12	17	24	20	17	26	21	17	12
Gannawarra	-	-	-	1	-	-	-	-	-	-
Glen Eira	5	10	4	7	5	12	7	8	9	13
Glenelg	5	2	1	7	2	2	2	1	1	1
Golden Plains	1	-	2	3	1	-	2	-	-	1
Greater Bendigo	10	9	7	13	6	17	13	9	10	12
Greater Dandenong	16	11	8	16	16	19	17	24	18	21
Greater Geelong	19	20	17	13	20	23	26	23	22	23
Greater Shepparton	6	8	4	11	5	3	7	7	7	6
Hepburn	1	1	1	1	-	3	1	-	-	2
Hindmarsh	-	-	-	-	-	-	-	1	-	-
Hobsons Bay	10	4	7	3	5	7	7	6	8	11
Horsham	1	-	-	-	3	1	-	1	1	1
Hume	10	11	5	10	11	10	11	13	8	13
Indigo	1	1	1	1	2	1	1	3	-	-

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Local government area	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Kingston	7	5	6	6	5	16	9	8	10	8
Knox	6	15	8	11	7	15	17	15	13	15
Latrobe	7	10	10	4	10	8	12	6	12	11
Loddon	-	-	1	2	1	1	1	-	-	-
Macedon Ranges	1	3	3	1	2	-	3	5	2	2
Manningham	3	4	1	8	4	3	8	4	4	5
Mansfield	1	2	-	-	-	1	1	2	2	-
Maribyrnong	11	4	12	15	6	14	12	10	13	14
Maroondah	4	7	6	10	13	8	7	15	4	14
Melbourne	20	15	23	24	22	25	25	19	26	28
Melton	5	3	6	5	12	9	10	14	13	9
Mildura	4	7	3	4	4	5	7	4	10	1
Mitchell	3	4	4	2	3	2	2	2	4	1
Moira	2	1	-	3	2	4	1	4	1	1
Monash	4	7	10	6	20	9	10	11	16	13
Moonee Valley	3	4	9	3	12	8	8	7	12	9
Moorabool	1	2	1	1	3	2	5	1	2	3
Moreland	12	3	10	9	17	13	23	13	12	7
Mornington Peninsula	11	21	5	14	16	12	11	9	13	13
Mount Alexander	1	1	1	-	1	-	3	3	2	2
Moyne	1	-	1	1	1	-	1	-	-	1
Murrindindi	1	1	-	3	1	1	2	2	3	-
Nillumbik	3	-	1	5	4	3	3	3	3	1
Northern Grampians	-	3	-	1	-	-	1	1	1	-
Port Phillip	16	15	19	23	21	22	32	15	25	18
Pyrenees	2	-	1	-	-	1	1	-	-	-
Queenscliffe	1	-	-	-	-	-	-	-	2	-
South Gippsland	1	3	1	2	2	2	1	3	1	1
Southern Grampians	-	-	-	-	1	2	2	-	1	2
Stonnington	5	8	3	5	7	12	10	4	13	14
Strathbogie	-	1	-	2	-	-	-	1	1	1
Surf Coast	1	1	1	-	2	1	3	4	3	-
Swan Hill	1	1	1	1	1	1	1	2	1	1
Towong	-	1	-	-	1	1	2	-	1	-
Wangaratta	2	2	2	1	5	3	4	3	6	-
Warrnambool	2	1	2	3	2	3	4	1	3	1
Wellington	2	-	2	6	2	5	4	2	5	5

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Local government area	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
West Wimmera	-	-	-	1	2	-	-	1	1	-
Whitehorse	13	11	10	18	12	16	10	9	9	21
Whittlesea	4	8	10	7	10	8	3	12	12	17
Wodonga	3	5	4	3	4	3	9	1	-	2
Wyndham	9	11	8	10	12	11	11	13	12	15
Yarra	11	19	22	23	27	20	32	25	16	18
Yarra Ranges	11	7	8	9	11	11	17	12	7	7
Yarriambiack	-	-	1	-	-	-	1	-	-	-

Attachment B

To aid analysis of the overdose deaths data, contributing drugs across all Victorian overdose deaths were 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 fitted within this classification system, a small number could have been both pharmaceutical and illegal. These included:

- **Ketamine**, which is approved for anaesthesia and (less commonly) to manage symptoms of opioid withdrawal, but is also illegally imported and sold in unregulated drug markets. Ketamine was classified as a pharmaceutical drug because it can be obtained legally in Australia, while recognising that in many 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 presented a substantial challenge. The following approach was adopted:
 - a. Amphetamine that contributed in the absence of methamphetamine detection was classified as a pharmaceutical drug. The reason was, in most cases where the amphetamine source was identified, it was a pharmaceutical preparation such as dexamphetamine or lisdexamfetamine.
 - b. Methamphetamine was classified as an illegal drug. A review of Victorian overdose deaths identified no instances where it was clearly prescribed.
 - c. Amphetamine detected in the presence of methamphetamine was assumed to be a metabolite of methamphetamine (rather than present in its own right) unless there was 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 was classified as a pharmaceutical drug because it can be obtained legally in Australia, while recognising that (like ketamine) the health system was 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 was 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 was classified as an illegal drug because there were no clear examples in the Victorian overdose deaths of clinical cocaine being used.

Attachment C

There are several different classification systems for NPS, so 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, clonazolam, delorazepam, desalkylflurazepam, diclazepam, etizolam, flualprazolam, flubromazolam, lorazepam.
- **Cannabinoids:** 5F-Cumyl-P7AICA, 5F-Cumyl-PINACA, 5F-MDMB-PICA, AB-CHMINACA, Cumyl-PeGACLONE, WIN55212-2.
- **Dissociatives:** 2F-deschloroketamine, 2-fluorodeschloroketamine, benzylpiperazine.
- **Empathogens:** 6-APB, ethylone, eutylone.
- **Opioids:** AP-238, butyl fentanyl, etodesnitazene, isotonitazene, ocfentanil.
- **Psychedelics:** 25C-NBOMe, 5-MeO-DMT, bufotenine.
- **Stimulants:** 4-fluoroamphetamine, 4-fluoromethylphenidate, cathinone, methcathinone, n-ethylhexadron, n-ethylheptadron, n-ethylpentylone, PMMA.