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National Drug-Related Deaths Index

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Drug Poisoning Deaths in Ireland in 2021: Data from the National Drug-Related Deaths Index (NDRDI)

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Glossary of Terms

Drug	Examples
Antipsychotics are used to treat conditions involving psychosis, confused thoughts, or mania, such as schizophrenia, bipolar depression, and dementia.	Olanzapine, quetiapine
Antidepressants are drugs used to alleviate depression. Antidepressants may also be used to treat other conditions including generalised anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder, and chronic pain.	Amitriptyline, mirtazapine, sertraline, venlafaxine
Antihistamines are drugs mainly used to treat allergy symptoms but sometimes prescribed for motion sickness and short-term sleeping issues.	Promethazine, diphenhydramine
Benzodiazepines are mainly used to treat anxiety. Benzodiazepines may also be used to treat seizures and alcohol withdrawal.	Alprazolam, diazepam, flurazepam
Cocaine is an illicit (illegal) and highly addictive stimulant drug that increases energy and alertness. Cocaine can be in a powder form ("coke") that is typically snorted, or in a smokable crystal or "rock" form known as "crack".	Cocaine powder or crack cocaine
Gabapentinoids are used to treat nerve pain and epilepsy. These drugs have relaxant and sedative effects and may be misused alone or with other drugs to produce desired effects. Pregabalin is sometimes used to treat generalised anxiety disorder.	Pregabalin, gabapentin
Non-opioid analgesics are pain relief drugs that are not opioids.	Paracetamol, ibuprofen
New psychoactive substances (NPS) are narcotic or psychotropic drugs that are not controlled by the United Nations Drug Control Conventions. Sometimes called "designer drugs", NPS are often designed to mimic the effects of illegal drugs like cocaine and ecstasy, or prescribable drugs like diazepam.	Etizolam, adinazolam (NPS benzodiazepines), nitazenes (NPS synthetic opioids)
Opioids are drugs that help relieve pain. Opioids include illicit drugs such as **heroin**, and prescribable drugs such as **codeine**. Methadone is an opioid agonist used to treat opioid use disorder.	Heroin, methadone, tramadol, codeine, oxycodone
Street drugs, where used in this report, refers to a prescribable drug obtained illegally or shared without a prescription and used recreationally or to self-medicate. An example is methadone acquired and used without a prescription, or the misuse of prescribed methadone.	Street methadone
Z drugs are non-benzodiazepine hypnotic drugs that have a sedating effect and are used to treat insomnia.	Zopiclone, zolpidem

Introduction

This bulletin describes drug poisoning deaths in 2021 using data from Ireland's National Drug-Related Death Index (NDRDI). Trends in drug poisoning deaths for the years 2012 to 2021 are also described.[1]

Data in this bulletin supersede all data previously published by the NDRDI.

Background

The NDRDI was established in 2005 in response to the *National Drugs Strategy 2001-2008*[2]; specifically, Action 67 - 'to develop an accurate mechanism for recording the number of drug-related deaths in Ireland'. The NDRDI enables Ireland to meet its mandatory reporting requirements to the European Union and United Nations, as well as being widely used to provide evidence for national policy and planning.

The NDRDI is jointly funded by the Department of Health and Department of Justice and is maintained by the National Health Information Systems Unit of the Health Research Board (HRB).

NDRDI data sources

The primary source of NDRDI data is coroner files. The NDRDI also includes data from the Hospital Inpatient Enquiry (HIPE) system, the Central Treatment List (CTL), and the General Mortality Register (GMR) via the Central Statistics Office (CSO).[3]

Annual NDRDI data are routinely updated when new coronial information becomes available following the completion of inquests. Therefore, previously published figures may have changed.[4, 5]

Data published by the CSO and Eurostat were used in calculating mortality rates.[6, 7] Data on deaths among people who were experiencing homelessness are validated with the Dublin Regional Homeless Executive (DRHE).

Policy context

Reducing drug-related deaths and other drug-related harms is a strategic focus of the current National Drug and Alcohol Strategy *Reducing Harm, Supporting Recovery: A Health Led Response to Drug and Alcohol Use in Ireland 2017–2025* (Strategic Action 2.2.30),[8] and a key initiative within Priority 1 of the Department of Health's current *Statement of Strategy 2023-2025*.[9] The data published in this bulletin span the implementation periods of both the previous (2009 to 2016)[10] and current (2017 to 2025)[8] national drugs strategies.

Methodology

Inclusion criteria

Poisoning (overdose) deaths are deaths due to the toxic effects of one or more substances. Included in this bulletin are poisoning deaths due to illicit drugs and poisoning deaths due to the use or misuse of prescribable drugs.

Exclusion criteria

Alcohol poisoning deaths where no other substance was implicated (referred to as *alcohol-only poisoning deaths*), are not included within the figures for *drug poisoning deaths* in this bulletin. The number of *alcohol-only* poisoning deaths and key characteristics of these deaths are described separately in Appendix A. Deaths where alcohol is implicated as part of a polysubstance poisoning death are included in the main body of the report. In Appendix B, all poisoning deaths with alcohol implicated are described.

Non-poisoning deaths

Non-poisoning deaths are deaths among people with a history of drug dependency or non-dependent problematic use of drugs, whether or not the use of the drug had a direct impact on the cause of death. Data on non-poisoning deaths (2012 to 2021) will be presented in a separate HRB StatLink publication.

Completeness of data

Information in coronial files is not originally generated for research purposes and so the data are not complete for some NDRDI variables (e.g. ethnicity and mental health history). Where relevant in this bulletin, variables with incomplete data are highlighted, with language such as “where known” and “at least” used to describe the findings. For some variables, it may be that positive instances are indicated in files (e.g. the deceased was once imprisoned), while the opposite is less likely to be stated (i.e. the deceased was never imprisoned).

Summary

This bulletin presents NDRDI data on drug poisoning deaths in 2021, with key trends over the period 2012 to 2021.

1. Number of deaths

In 2021, **354 drug poisoning deaths** were recorded in Ireland. This equates to seven deaths per 100,000 of the population in that year. The deceased were 227 (64.1%) males and 127 (35.9%) females.

2. Drugs implicated in drug poisoning deaths in 2021

Opioids (68.9%), benzodiazepines (52.8%), and antidepressants (35.0%) were the three most common ***drug groups*** implicated in poisoning deaths overall. The main ***specific drugs*** implicated were methadone (36.4%), diazepam (31.6%), alprazolam (30.2%), cocaine (30.2%), alcohol (25.7%), and pregabalin (23.4%).

- **Methadone** was implicated in more than 1 in 3 (36.4%) deaths and in a greater proportion of deaths among males (38.3%) than among females (33.1%).
- **Heroin** was implicated in 1 in 5 (22.3%) deaths; these were mostly among males (83.5%).
- **Diazepam** (31.6%) and **alprazolam** (30.2%) were the most common benzodiazepines, and each was implicated in 3 in 10 deaths overall.
- **Antidepressants** were implicated in a greater proportion of deaths among females (47.2%) than among males (28.2%). **Mirtazapine** (13.6%) was the most common antidepressant.
- **Cocaine** was implicated in 3 in 10 (30.2%) poisoning deaths overall, the majority (4 in 5) (81.3%) of which were among males.
- **Pregabalin** was implicated in almost 1 in 4 (23.4%) deaths and in a greater proportion of deaths among females (28.3%) than among males (20.7%).

In 2021, 4 in 5 (81.4%, 288) drug poisoning deaths were **polysubstance poisonings** (more than one drug was implicated).

- **Methadone** (40.6%), **diazepam** (38.9%), **alprazolam** (36.5%), **cocaine** (31.6%), **alcohol** (31.6%), **pregabalin** (28.5%), and **heroin** (25.3%) were the most common drugs in polysubstance poisonings.
- Over 1 in 5 (22.9%) polysubstance poisoning deaths had **more than one opioid** implicated, while almost 3 in 10 (28.3%) had **more than one benzodiazepine implicated**.

3. Location, place, and context of drug poisoning deaths in 2021

- **Dublin** (city and county) (42.9%) had the largest proportion of poisonings, followed by Cork (city and county) (11.6%), and Waterford (city and county) (4.5%).
- HSE Dublin and North East (28.5%) was the **health region** where the largest proportion of poisonings occurred, followed by HSE Dublin and Midlands (22.9%), and HSE Dublin and South East (18.1%).
- 3 in 4 (75.1%) poisonings occurred in a **private dwelling**.
  - A small proportion (7.9%) of poisonings occurred in a **public place** such as a car park, street, or derelict building.
- 1 in 10 (11.3%) poisonings occurred in **accommodation for people who are homeless**.
- 2 in 5 (41.0%) of the deceased were **alone** when the incident occurred.
  - Of *those who were alone* (145), 1 in 10 (11.0%) were also injecting at the time of death.
- 6.5% (23) of people were **injecting at the time of death** (mostly males).

4. Characteristics of the deceased in 2021

Sociodemographic profile

- The median **age** of the deceased was 42.5 years (41 years for males and 47 years for females).
- 1 in 2 (52.2%) deaths were among people aged 35 to 54 years.
- At least 1 in 2 (51.1%) of the deceased were **not in employment**.
- Most (76.8%) of the deceased were living in **stable accommodation**.
- More than 1 in 10 (15.3%) of the deceased were experiencing **homelessness**.
- Most of the deceased were **residing** in the HSE Dublin and North East (28.5%) **health region**, followed by HSE Dublin and Midlands (23.4%), and HSE Dublin and South East (19.2%).

Health and health risk behaviours

The majority (79.9%, 283) of the deceased had a **history of substance misuse or dependency.** Of those:

- **Opioids** (mainly heroin) were used by 7 in 10 (69.3%).
- **Heroin** (46.3%) was the most common substance used, followed by **cocaine** (41.7%), and **alcohol** (28.3%).

A history of **polysubstance use** (the use of more than one drug) was recorded for more than 1 in 2 (55.6%) of the deceased (63.9% of males vs 40.9% of females).

Almost 1 in 5 (17.5%, 62) of the deceased were *known* to have **ever injected** drugs.

- Of those, more than 1 in 3 (37.1%) were **injecting at the time of death.**
  - 7 in 10 (69.6%) of those injecting at the time of death were also **alone at the time**.

Other health issues:

- At least 15.8% of the deceased had a history of a **blood borne virus**.
- Almost 1 in 2 (48.0%) of the deceased had a recorded history of **mental health** issues (52.0% of females vs 45.8% of males).
  - Most (78.2%) of the deceased were in contact with medical services, including substance use treatment services, at the time of death.
- At least 1 in 4 (24.9%) of the deceased were in **opioid agonist treatment** (OAT) at the time of death (27.8% of males vs 19.7% of females).

5. Trends in drug poisoning deaths 2012 to 2021

Number of deaths and mortality rates

- In 2020, there was a 17.1% (64) increase in the number of drug poisoning deaths compared to 2019, and this was followed by a decrease of 19.4% (85) in 2021. This pattern is unlikely to reflect a true change in trend but rather a phenomenon of the COVID-19 pandemic, as was experienced in other countries.
- An overall upward trend in the number of drug poisoning deaths over the period 2012 to 2021 appears to have plateaued in 2019 to 2021, even when population structure and changes over the period are considered (see pages 30-32).
- While the sex distribution of deaths has fluctuated over the period, **males** are continually in the majority, accounting for at least 6 in 10 drug poisoning deaths in every year since 2012.

Drugs implicated in drug poisoning deaths 2012 to 2021

An upward trend in the number of deaths was observed for opioids, benzodiazepines, antidepressants, cocaine, and gabapentinoid/antiepileptic drugs (mainly pregabalin). Between 2012 and 2021:

- **Opioids** increased by 34.1% (from 182 to 244 deaths).
  - **Methadone** increased by 48.3% (from 87 to 129 deaths) and was the most common opioid implicated in each year.
  - **Heroin** increased by 23.4% (from 64 to 79 deaths), but 2021 had the third lowest rate of the period.

  - **Other opioids** (mainly tramadol, codeine, and oxycodone) also increased, following a similar pattern in trend to methadone and heroin, but at lower numbers.

- **Benzodiazepines** increased by 45.0% (from 129 to 187 deaths), mainly attributable to an almost sixfold (494.4%) increase in **alprazolam** (from 18 to 107 deaths).
- **Antidepressants** increased by 55.0% (from 80 to 124 deaths), largely driven by **mirtazapine** (from 21 to 48 deaths) and **sertraline** (from fewer than 5 deaths to 28 deaths).
- The number of deaths with **cocaine** implicated quadrupled (311.5%) (from 26 to 107 deaths).
- **Pregabalin** increased by 492.9% from 14 deaths to 83 deaths (2013 to 2021).

In 2012, 7 in 10 (71.4%) drug poisoning deaths were **polysubstance poisonings** compared to 8 in 10 (81.4%) in 2021.

Characteristics of the deceased and circumstances of death 2012 to 2021

Between 2012 and 2021:

- The median **age at death** increased from 36 years to 42.5 years, mainly due to an increase in the median age for males.
- A **history of substance misuse or dependency** increased from 7 in 10 people (69.7%) to 8 in 10 (79.9%).
- A **lifetime history of injecting** decreased from 23.8% to 17.5%, the lowest rate of the period.
- Among *those who had ever injected,* **injecting at the time of death** was at the lowest level (37.0%) in 2021.
- Being **alone at the time of the incident** leading to death increased from 34.4% to 41.0%.

Overview

Drug poisoning deaths represent the worst consequences of problem drug use and misuse, with devastating outcomes for people who use drugs and for their family members, friends, and communities. However, drug poisoning deaths are preventable deaths. NDRDI data provide the evidence base for policy and other measures to reduce drug poisoning deaths in Ireland.

In this bulletin, data on drug poisoning deaths in Ireland are presented as follows:

1. **The number of drug poisoning deaths in 2021**: number of deaths and mortality rates by sex.

2. **Drugs implicated in drug poisoning deaths in 2021**: drug groups and specific drugs implicated, deaths where more than one drug is implicated (polysubstance poisonings), and main polysubstance combinations.

3. **Location, place, and context of drug poisoning deaths in 2021**: relevant circumstances of drug poisoning deaths.

4. **Characteristics of the deceased in 2021**: sociodemographic profile, health, and health risk behaviours.

5. **Trends in drug poisoning deaths from 2012 to 2021**: the number of deaths and mortality rates over time, drugs implicated, polysubstance poisonings, the profile of the deceased, and circumstances of deaths.

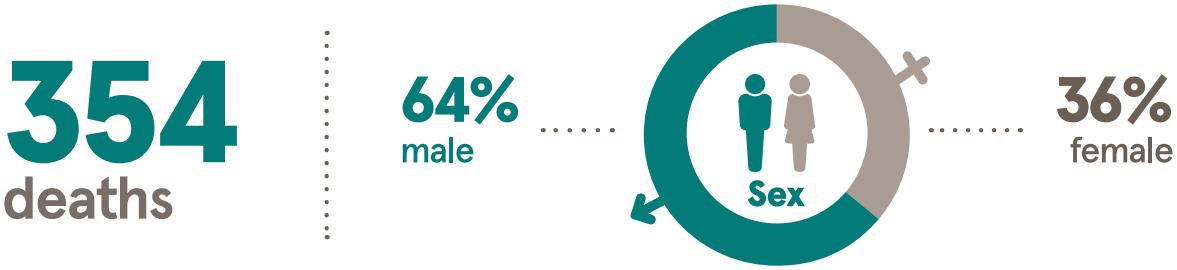
1. The number of drug poisoning deaths in 2021

Number of deaths in 2021

In 2021, **354 drug poisoning deaths** were recorded in Ireland. This equates to seven drug poisoning deaths per 100,000 of the population in Ireland in that year.[11]

The deceased were 227 males (64.1%) and 127 females (35.9%).

Number of deaths & breakdown by sex



2. Drugs implicated in drug poisoning deaths in 2021

2.1 Drug groups implicated in drug poisoning deaths

The NDRDI records up to 20 drugs implicated in an individual death. For each drug, the specific drug name (e.g. diazepam) is recorded, as well as the drug group to which the drug belongs (e.g. benzodiazepine). More than one specific drug (e.g. diazepam and alprazolam) from a drug group (e.g. benzodiazepines) can be implicated in a death. In this section, drug poisoning deaths are described by drug group and sex. The specific drugs implicated are described in Section 2.2.

In 2021, opioids (244), benzodiazepines (187), and antidepressants (124) were the three most common drug groups implicated in poisoning deaths overall and for both males and females (Table 1). **Opioids** were implicated in almost 7 in 10 (68.9%) poisoning deaths and for a greater proportion of deaths among males (70.9%) than among females (65.4%). **Benzodiazepines** were implicated in 1 in 2 (52.8%) deaths, and the proportion was also greater for males (55.1%) than for females (48.8%). While **antidepressants** were the third main drug group implicated (35.0%), with a similar number of deaths among males (64) and females (60), the proportion of deaths was much greater for females (47.2%) than for males (28.2%).

Cocaine (107) was the fourth main drug group implicated in drug poisoning deaths in 2021 (Table 1). Cocaine was implicated in 3 in 10 (30.2%) poisoning deaths overall, the majority of which were among males (81.3%, 87).

Gabapentinoid/antiepileptic drugs (97) were implicated in more than 1 in 4 (27.4%) deaths, and while the number of deaths was greater among males (53) than among females (44), the proportion of deaths was greater for females (34.6%) than for males (23.3%) (Table 1).

Around 1 in 4 (25.7%) deaths overall, and among males (26.9%) and females (23.6%), had alcohol implicated along with other drugs (Table 1 and Appendix B). Fewer than 1 in 5 deaths involved **Z drugs** (18.6%), **non-opioid analgesics** (14.7%), **antipsychotics** (14.1%), **other medications** (12.4%), **novel psychoactive substances (NPS)** (6.8%), **other amphetamine/stimulant drugs** (3.4%), or **other drugs** (6.8%). For these drug groups, rates were similar among males and females, with the exception of non-opioid analgesics (20.5% among females and 11.5% among males), and other medications (21.3% among females and 7.5% among males).

Table 1 Number of drug poisoning deaths by drug group and sex, NDRDI 2021

	All		Males		Females	
	n	%	n	%	n	%
Number of deaths[a]	**354**	**100.0**	**227**	**64.1**	**127**	**35.9**
Opioids	244	68.9	161	70.9	83	65.4
Benzodiazepines	187	52.8	125	55.1	62	48.8
Antidepressants	124	35.0	64	28.2	60	47.2
Cocaine	107	30.2	87	38.3	20	15.7
Gabapentinoids/ antiepileptics	97	27.4	53	23.3	44	34.6
Alcohol[b]	91	25.7	61	26.9	30	23.6
Z drugs	66	18.6	43	18.9	23	18.1
Non-opioid analgesics	52	14.7	26	11.5	26	20.5
Antipsychotics	50	14.1	33	14.5	17	13.4
Other medications[c]	44	12.4	17	7.5	27	21.3
Novel psychoactive substances	24	6.8	16	7.0	8	6.3
Other amphetamine/ stimulant[d]	12	3.4	11	4.8	~	
Other drugs[e]	24	6.8	17	7.5	7	5.5

a An individual death may have more than one drug implicated

b Alcohol as part of a polysubstance poisoning

c For example, antihistamines

d For example, MDMA (ecstasy)

e For example, hallucinogens and volatile inhalants

~ Five deaths or fewer

2.2 Specific drugs implicated in drug poisoning deaths

In 2021, 99 different specific drugs were implicated in drug poisoning deaths. The majority of these (85.6%) were prescribable drugs. Almost 9 in 10 (88.4%) deaths in 2021 had one or more prescribable drugs implicated.

The most common specific drugs implicated in poisoning deaths in 2021 are presented in Table 2. The remaining drugs are not listed due to the relatively small number of deaths in which each drug was implicated.

In 2021, the main specific drugs implicated in poisoning deaths were methadone (street or prescribed) (129), diazepam (112), alprazolam (107), and cocaine (107) (Table 2). More than 1 in 3 deaths (36.4%) overall had **methadone** implicated, while the proportion was greater for males (38.3%) than for females (33.1%). Methadone was the most common opioid implicated, followed by heroin (22.3%), tramadol hydrochloride (9.0%), codeine (7.9%), and oxycodone hydrochloride (5.4%). **Heroin** was implicated in 3 in 10 (29.1%) deaths among males compared to 1 in 10 (10.2%) deaths among females. Moreover, deaths with heroin implicated were mostly among males (66, 83.5%). Among females, tramadol hydrochloride (15) and heroin (13) were implicated in a similar number of deaths.

Diazepam (31.6%) and **alprazolam** (30.2%) were the most common benzodiazepines, and each was implicated in 3 in 10 deaths overall (Table 2). Among males, these drugs were each implicated in more than 1 in 3 deaths (33.5% diazepam and 34.8% alprazolam). Among females, diazepam (28.3%) was more common than alprazolam (22.0%). Flurazepam was implicated in 7.6% of deaths overall.

Although **cocaine** was the third specific drug implicated overall (ranked alongside alprazolam), the pattern is different when examined by sex (Table 2). Among males, cocaine and methadone were implicated in 87 deaths (38.3%) each, making these two drugs the most common specific drugs among males. Among females, methadone (33.1%) was the most common specific drug, followed by pregabalin (28.3%) at the same rate as diazepam (28.3%). Cocaine ranked 7th among females.

Pregabalin was the most common gabapentinoid/antiepileptic drug implicated in poisoning deaths in 2021, accounting for 83 (85.6%) of the 97 deaths in this drug group (Table 1 and Table 2). Almost 1 in 4 (23.4%) poisoning deaths in 2021 had pregabalin implicated. Among females, pregabalin was implicated in 3 in 10 (28.3%) deaths, compared to 1 in 5 (20.7%) deaths among males. After pregabalin, gabapentin (6) was the most common gabapentinoid/antiepileptic drug implicated.

Zopiclone (16.7%) was the most common Z drug in 2021 (Table 2). Zopiclone was implicated in a slightly greater proportion of deaths among males (18.1%) than among females (14.2%) (Table 2).

Mirtazapine (13.6%) was most common antidepressant, followed by sertraline (7.9%), amitriptyline (5.1%), fluoxetine (3.7%), and venlafaxine (3.7%) (Table 2).

Paracetamol (11.9%) was the most common non-opioid analgesic drug implicated in poisoning deaths in 2021, and it was more common among females (18.1%) than among males (8.4%) (Table 2).

Olanzapine (5.9%) was the most common antipsychotic drug implicated in 2021, followed by quetiapine (5.1%) (Table 2).

Of the 24 NPS drugs implicated in poisoning deaths in 2021 (Table 2), **etizolam** (12, 50.0%) and **adinazolam** (8, 33.3%) were the most common.

The NPS drugs implicated in deaths in 2021 did not include **nitazenes**, which are highly potent synthetic opioid drugs sometimes mixed into illicit drugs like heroin or counterfeit benzodiazepines.[12] Nitazenes are of increasing concern in Ireland, having emerged on the Irish drug market **in 2023** and since leading to several clusters of overdoses.[13] The nitazene drug N-pyrrolidino protonitazene was identified in two such clusters in Dublin and Cork.[14]

In 2021, the antihistamine drug **promethazine** was implicated in 16 deaths (Table 2), while another antihistamine drug, **diphenhydramine**, was implicated in 11 (not included in Table 2). Due to their sedating effects, these drugs have the potential for misuse and are sometimes combined with opioids, alcohol, or other drugs to induce desired effects.[15, 16 17]

Table 2 Number of drug poisoning deaths by specific drug implicated and sex, NDRDI 2021*

	All		Males		Females	
	n	%	n	%	n	%
Number of deaths[a]	**354**	**100**	**227**	**64.1**	**127**	**35.9**
Methadone (street or prescribed)	129	36.4	87	38.3	42	33.1
Diazepam	112	31.6	76	33.5	36	28.3
Alprazolam	107	30.2	79	34.8	28	22.0
Cocaine	107	30.2	87	38.3	20	15.7
Alcohol[b]	91	25.7	61	26.9	30	23.6
Pregabalin	83	23.4	47	20.7	36	28.3
Heroin	79	22.3	66	29.1	13	10.2
Zopiclone	59	16.7	41	18.1	18	14.2
Mirtazapine	48	13.6	29	12.8	19	15.0
Paracetamol	42	11.9	19	8.4	23	18.1
Tramadol hydrochloride	32	9.0	17	7.5	15	11.8
Sertraline	28	7.9	18	7.9	10	7.9
Codeine	28	7.9	17	7.5	11	8.7
Flurazepam	27	7.6	16	7.0	11	8.7
Olanzapine	21	5.9	14	6.2	7	5.5
Oxycodone hydrochloride	19	5.4	9	4.0	10	7.9
Amitriptyline	18	5.1	8	3.5	10	7.9
Quetiapine	18	5.1	11	4.8	7	5.5
Promethazine	16	4.5	8	3.5	8	6.3
Morphine	15	4.2	8	3.5	7	5.5
Fluoxetine	13	3.7	~		8	6.3
Venlafaxine	13	3.7	6	2.6	7	5.5

* Specific drugs for which there were fewer than 13 deaths are not listed

a An individual death may have more than one drug implicated

b Alcohol as part of a polysubstance poisoning

~ Five deaths or fewer

2.3 Polysubstance poisoning deaths

Polysubstance use (the use of more than one drug) increases the risk of adverse outcomes, including non-fatal and fatal overdose. In 2021, 4 in 5 (81.4%, 288) drug poisoning deaths involved more than one drug (Table 3). The rate of polysubstance poisoning was similar for both males (81.1%, 184) and females (81.9%, 104). Half of polysubstance poisoning deaths had 4 drugs or more implicated.

Among polysubstance poisoning deaths, the main specific drugs implicated were **methadone** (40.6%), **diazepam** (38.9%), **alprazolam** (36.5%), **cocaine** (31.6%), **alcohol** (31.6%), **pregabalin** (28.5%), and **heroin** (25.3%) (Table 3). Among males, the main drugs were methadone (41.8%), alprazolam (41.8%), diazepam (41.3%), and cocaine (41.3%), whereas among females, the main drugs were methadone (38.5%), diazepam (34.6%), pregabalin (34.6%), and alcohol (28.8%). All deaths in which diazepam, mirtazapine, sertraline, flurazepam, and promethazine were implicated were polysubstance poisonings (Table 2 and Table 3).

All deaths with **promethazine** and/or **diphenhydramine** implicated (25 deaths) were polysubstance poisonings and one half had 7 or more drugs implicated. The most common additional drugs implicated were opioids (68.0%), benzodiazepines (64.0%), antidepressants (56.0%), gabapentinoid/antiepileptics (56.0%), and antipsychotics (52.0%).

In 2021, more than 1 in 5 (22.9%) polysubstance poisoning deaths had **more than one opioid implicated**, and rates were similar for both males (22.8%) and females (23.1%) (Table 4).

Almost 3 in 10 (28.3%) polysubstance poisoning deaths in 2021 had **more than one benzodiazepine** implicated, and the proportion was higher for males (28.3%) than for females (23.1%) (Table 4).

One in ten (10.4%) polysubstance poisoning deaths had **more than one antidepressant** drug implicated, and the proportion was slightly higher for females (11.5%) than for males (9.8%) (Table 4).

For all other *drug groups*, there were small numbers of deaths in which more than one specific drug was implicated and hence they are not included in Table 4.

Table 3 Most common specific drugs implicated in polysubstance poisoning deaths and the number of deaths by sex, NDRDI 2021*

	All deaths		Males		Females	
	n	%	n	%	n	%
Number of poisoning deaths[a]	**354**	**100**	**227**	**64.1**	**127**	**35.9**
Number of polysubstance deaths	**288**	**81.4**	**184**	**81.1**	**104**	**81.9**
Methadone	117	40.6	77	41.8	40	38.5
Diazepam	112	38.9	76	41.3	36	34.6
Alprazolam	105	36.5	77	41.8	28	26.9
Cocaine	91	31.6	76	41.3	15	14.4
Alcohol[b]	91	31.6	61	33.2	30	28.8
Pregabalin	82	28.5	46	25.0	36	34.6
Heroin	73	25.3	60	32.6	13	12.5
Zopiclone	59	20.5	41	22.3	18	17.3
Mirtazapine	48	16.7	29	15.8	19	18.3
Paracetamol	35	12.2	18	9.8	17	16.3
Sertraline	28	9.7	18	9.8	10	9.6
Tramadol hydrochloride	28	9.7	16	8.7	12	11.5
Flurazepam	27	9.4	16	8.7	11	10.6
Codeine	26	9.0	16	8.7	10	9.6
Olanzapine	21	7.3	14	7.6	7	6.7
Oxycodone hydrochloride	18	6.3	8	4.3	10	9.6
Quetiapine	17	5.9	10	5.4	7	6.7
Amitriptyline	16	5.6	7	3.8	9	8.7
Promethazine	16	5.6	8	4.3	8	7.7
Morphine	14	4.9	7	3.8	7	6.7

* Specific drugs for which there were a small number of deaths are not listed

a An individual death may have more than one drug implicated

b Alcohol as part of a polysubstance poisoning

Table 4 Number of polysubstance poisoning deaths where more than one a). opioid, b). benzodiazepine, and c). antidepressant were implicated, by sex, NDRDI 2021*

	All deaths		Males		Females	
	n	%	n	%	n	%
Number of polysubstance deaths	**288**		**184**		**104**	
More than one opioid	66	22.9	42	22.8	24	23.1
More than one benzodiazepine	76	28.3	52	28.3	24	23.1
More than one antidepressant	30	10.4	18	9.8	12	11.5

* Drug groups for which there were small numbers of deaths with more than one specific drug implicated are not included

2.3.1 Polysubstance combinations

Table 5 presents the most common additional drugs implicated in polysubstance poisoning deaths for the six most common poisoning drugs (excluding alcohol) in 2021, along with the number of deaths for each combination. For example, for deaths in which methadone was implicated, the most common drugs also implicated (e.g. diazepam, alprazolam, cocaine etc) and the number of deaths for each dyad is listed.

The majority of deaths with **methadone** implicated were polysubstance poisonings (90.7%, 117) (Table 5). The most common drugs implicated with methadone were diazepam (65) and alprazolam (62), followed by cocaine (46), and pregabalin (42).

All deaths with **diazepam** (112) implicated were polysubstance poisonings (Table 5). After methadone (65), the most common drugs implicated with diazepam were alprazolam (54), pregabalin (48), and cocaine (40).

The majority of deaths with **alprazolam** implicated were polysubstance poisonings (98.1%, 105) (Table 5). After methadone (62) and diazepam (54), the most common drugs implicated with alprazolam were heroin (42), cocaine (41), and pregabalin (41).

The majority of deaths with **cocaine** implicated were polysubstance poisonings (91, 85.0%) (Table 5). After methadone (46), the most common drugs implicated in these deaths were heroin (43), alprazolam (41), and diazepam (40).

Deaths with **pregabalin** implicated were almost all polysubstance poisonings (98.8%, 83), the most common additional drugs implicated being diazepam (48), methadone (42), and alprazolam (41) (Table 5).

The majority of deaths with **heroin** implicated (92.4%, 73) were polysubstance poisonings (Table 5). Cocaine (43), alprazolam (42), and diazepam (31) were the most common drugs implicated with heroin in polysubstance poisonings.

In 3 in 10 (31.3%) deaths where **mirtazapine** was implicated, **zopiclone** was also implicated.

Overall, in 2021, the majority (60.5%, 214) of deaths were polysubstance poisonings where *opioids were implicated along with other non-opioid drugs.*[18]

Table 5 Polysubstance combinations and number of deaths for the six most common poisoning drugs (excluding alcohol)* implicated in polysubstance poisoning deaths, NDRDI 2021

	Methadone	Diazepam	Alprazolam	Cocaine	Pregabalin	Heroin
Additional poisoning drug	**n=117**	**n=112**	**n=105**	**n=91**	**n=82**	**n=73**
Methadone		65	62	46	42	29
Diazepam	65		54	40	48	31
Alprazolam	62	54		41	41	42
Cocaine	46	40	41		27	43
Pregabalin	42	48	41	27		21
Heroin	29	31	42	43	21	
Zopiclone	36	37	28	23	26	17
Paracetamol	9	18	11	12	16	9
Mirtazapine	29	27	25	12	21	13
Sertraline	16	12	11	~	10	6
Tramadol hydrochloride	11	14	8	~	18	~
Flurazepam	17	19	11	12	12	6
Codeine	~	7	~	~	6	~
Olanzapine	13	14	11	8	13	7
Oxycodone hydrochloride	6	10	6	6	10	~
Quetiapine	~	6	8	7	10	6
Alcohol	22	25	18	23	16	17

* All deaths with alcohol implicated are presented in Appendix B

~ Five deaths or fewer

2.4 Opioid poisoning deaths in 2021

- Opioids were implicated in 7 in 10 (244) deaths
- Almost 7 in 10 of the deceased were males
- The median age was 41 years for males and 43 years for females
- 1 in 4 had ever injected
- 1 in 10 were injecting at the time of death
- 1 in 3 females and 1 in 2 males had ever received substance use treatment
- 1 in 3 were receiving OAT at the time of death (40.4% of males vs 27.7% of females)
- 1 in 5 females had a history of previous drug overdose (< 1 in 5 males)
- 9 in 10 had a history of polysubstance use
- The most common opioid poisoning drugs were methadone (street or prescribed) (129), heroin (79), tramadol hydrochloride (32), and codeine (28)
- 9 in 10 were polysubstance poisonings
- 1 in 4 had more than one opioid implicated
- Benzodiazepines (159), antidepressants (89), gabapentinoids/antiepileptics (83), and cocaine (77) were the most common additional drug groups implicated[a]
- 2 in 5 were alone at the time of incident leading to death
- 3 in 4 were in a private dwelling
- For 1 in 2, the incident occurred in Dublin

a An individual death may have more than one specific drug implicated from a drug group, and may have specific drugs from more than one drug group.

2.5 Cocaine poisoning deaths in 2021

- Cocaine was implicated in 3 in 10 (107) deaths
- 8 in 10 of the deceased were males
- The median age was 39 years (for males and females)
- 1 in 4 had ever injected
- 1 in 10 were injecting at the time of death
- 3 in 10 females and 2 in 5 males had ever received substance use treatment
- 1 in 5 females had history of previous drug overdose (< 1 in 5 males)
- More than 8 in 10 had a history of polysubstance use
- 3 in 4 were polysubstance poisonings
- Opioids (77), benzodiazepines (65), gabapentinoids/antiepileptics (28), and antidepressants (26) were the main drug groups implicated with cocaine[a]
- 16 were single drug (cocaine only) poisonings
- 2 in 5 were alone at the time of incident leading to death
- 3 in 4 were in a private dwelling
- For 3 in 5, the incident occurred in Dublin

a An individual death may have more than one specific drug implicated from a drug group, and may have specific drugs from more than one drug group.

3. Location, place, and context of drug poisoning deaths in 2021

3.1 Location of poisoning incident

County of incident

For 2 in 5 (42.9%) drug poisoning deaths in 2021, the poisoning occurred in Dublin (city and county) (Table 6). A greater proportion of deaths among males (46.3%) than among females (37.0%) occurred in Dublin. Outside of Dublin, Cork (city and county) (11.6%) had the greatest proportion of poisonings, followed by Waterford (city and county) (4.5%). The number of poisonings for each county is presented in Appendix C.

HSE health region of incident[19]

Nationally, HSE Dublin and North East (28.5%) was the health region where the largest proportion of poisonings occurred in 2021, followed by HSE Dublin and Midlands (22.9%), and HSE Dublin and South East (18.1%) (Table 6). The number of deaths for each health region is presented below (Figure 1) and in Appendix D.

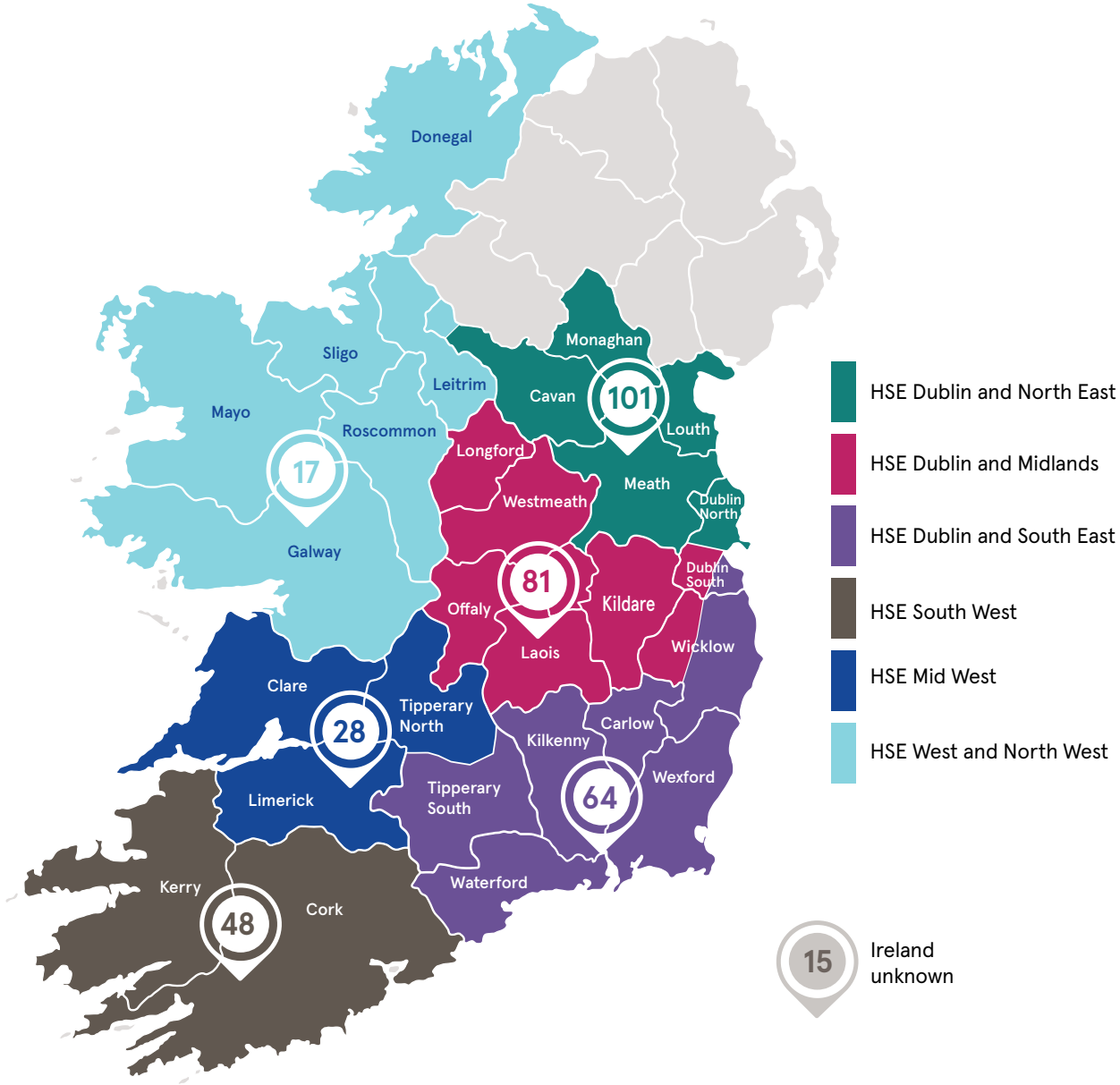
Place of incident

For 3 in 4 (75.1%) drug poisoning deaths in 2021, the place of incident was a private dwelling (Table 6). Females (79.5%) were more likely than males (72.7%) to have died following a poisoning in a private dwelling.

A small proportion (7.9%) of poisonings occurred in a public place such as a car park, street, or derelict building and these were predominantly among males (Table 6). For 1 in 10 (10.6%) deaths among males, the poisoning occurred in a public place.

For 1 in 10 (11.3%) poisoning deaths in 2021, the incident occurred in accommodation for people who are homeless, and rates were similar for males (11.9%) and females (10.2%).[20]

Figure 1: Number of deaths by HSE health region where the poisoning occurred, NDRDI 2021



3.2 Context of poisoning incident

Alone at the time of the incident leading to death

Solitary drug use increases the risk for people who use drugs, as there is no opportunity for intervention when an overdose occurs.[21] In 2021, 2 in 5 (41.0%) poisoning deaths in Ireland were among people who were alone when the incident occurred (Table 6). Rates were similar for males (41.9%) and females (39.4%). Of *those who were alone* (145), 1 in 10 (11.0%) were also injecting at the time of death. Deaths among people who were alone are profiled further in Section 3.3 and trends are provided in Section 5.5.

Injecting at the time of death

Information about injecting at the time of death was known for 31.9% of deaths (113) in 2021. Of those, 23 people were injecting at the time of death, and the majority of these were males (Table 6). Seven in ten (69.6%) of those who were injecting were alone at the time of the incident. Deaths among those injecting at the time of death are profiled in Section 3.4 and trends are provided in Section 5.5.

Ever injected

At least **18%** **(62 people)** **ever injected**

Injecting at time of death

7% **23 people** → **91%** were **polysubstance poisonings** **71%** were **alone**

Alone and injecting at the time of death

At least 4.5% (16) of *all* deaths were among people who were alone and injecting at the time of death (Table 6).

Table 6 Number of drug poisoning deaths by location, place, and context of death and sex, NDRDI 2021

	All deaths		Males		Females	
	n	%	n	%	n	%
Number of deaths	**354**	**100**	**227**	**64.1**	**127**	**35.9**
County of incident[a]						
Dublin (city and county)	152	42.9	105	46.3	47	37.0
Cork (city and county)	41	11.6	24	10.6	17	13.4
Waterford (city and county)	16	4.5	11	4.8	~	
HSE health region of incident[b]						
HSE Dublin and North East	101	28.5	68	30.0	33	26.0
HSE Dublin and Midlands	81	22.9	54	23.8	27	21.3
HSE Dublin and South East	64	18.1	43	18.9	21	16.5
Place of incident						
Private dwelling	266	75.1	165	72.7	101	79.5
Public place[c]	28	7.9	24	10.6	~	3.10
Accommodation for people who are homeless	40	11.3	27	11.9	13	10.2
Context						
Alone at the time of incident	145	41.0	95	41.9	50	39.4
Injecting at the time of incident	23	6.5	20	8.8	~	
Alone and injecting at the time of death	16	4.5	14	6.2	~	

a Number of deaths by county of incident is presented in Appendix C

b Number of deaths by health region of incident is presented in Appendix D

c Includes public place, street, or park, and derelict or other public building

~ Five deaths or fewer

3.3 Deaths among people who were alone at the time of poisoning in 2021

- **145 people** were alone at the time of the incident leading to death
- 2 in 3 were males
- The median age was 45 years (42 for males and 48 for females)
- 3 in 5 were of single relationship status (69.5% of males vs 54% of females)
- 1 in 4 were experiencing homelessness (29.5% of males vs 16% of females)[22]
- 1 in 5 had ever injected
- 8 in 10 were polysubstance poisonings
- The most common poisoning drug groups were opioids (102), benzodiazepines (90), antidepressants (60), and gabapentinoids/antiepileptics (42), and cocaine (40)[a]
- The main opioids implicated were methadone (55), heroin (31), and codeine (13)
- Deaths with heroin implicated were mostly among males
- 1 in 10 were injecting at the time of death (mostly males)
- 3 in 5 were alone in a private dwelling (74.0% of females vs 55.8% of males)
- 1 in 5 males were alone in a public place (few females were in a public place)
- For 1 in 5, the incident was in accommodation for people who are homeless
- For 2 in 3, the incident occurred in Dublin

a An individual death may have more than one specific drug implicated from a drug group, and may have specific drugs from more than one drug group.

3.4 Deaths among people who were injecting at the time of death in 2021

- **23 people** were injecting at the time of death, and these were mostly males[a]
- The median age of the deceased was 39 years
- 1 in 2 were aged 40 to 49 years
- 2 in 5 were experiencing homelessness[22]
- All had a history of heroin use; 2 in 3 had a history of cocaine use
- 7 in 10 were receiving OAT
- The most common poisoning drugs were heroin (23), alprazolam (15), methadone (11), and cocaine (10)
- 9 in 10 were polysubstance poisonings
- 1 in 2 had more than one opioid implicated
- For 1 in 2, the incident took place in Dublin
- 7 in 10 were alone at the time of incident leading to death

a Figures are not disaggregated by sex due to the small number of females

4. Characteristics of the deceased in 2021

4.1 Sociodemographic profile

Age at the time of death

In 2021, the majority of drug poisoning deaths were among people aged 25 to 69 years at the time of death (Table 7). The median age at death was 42.5 years (41 years for males and 47 years for females) (Table 7).

Across age groups, the highest proportions of deaths were among the 35 to 44 (28.8%) and 45 to 54 (23.4%) years age groups, which together accounted for over one half (52.2%) of all deaths in 2021 (Figure 2).

Males accounted for the majority of deaths in all age groups under 55 years, whereas females were in the majority among those aged 55 and over (Figure 2). Indeed, 1 in 3 (37.8%) deaths among females were among those aged 55 years and over, compared to 1 in 10 (12.8%) deaths among males.

A small proportion of deaths (4.8%) were among young people aged under 25 years, and these were mostly males (Figure 2).

Employment

At least 1 in 2 (51.1%) of the deceased were not in employment at the time of death and therefore, were either unemployed, retired, or unable to work due to disability (Table 7). Rates were similar for males (52.0%) and females (49.6%). In addition, 1 in 10 deaths (10.7%) were among people who were known to be in employment. Males (13.2%) were twice as likely as females (6.3%) to be in employment at the time of death.

Accommodation

The majority (76.8%) of the deceased (75.3% of males and 79.5% of females) were living in stable accommodation at the time of their death (Table 7).

Among the deceased, 54 (15.3%) people were experiencing homelessness (Table 7).[22] Most of these individuals were males (42). Homelessness was twice as common among males (18.5%) than among females (9.4%).[12]

Relationships

For 3 in 5 (63.0%) of the deceased, relationship status was described as single at the time of death (Table 7). Single status was more common among males (71.8%) than among females (47.2%).

A minority of the deceased (11.9%) were known to be parents of children aged under 18 years (Table 7). However, for 61.6% of deaths, information on parental status was not known.

History of imprisonment

A small proportion of deaths in 2021 (4.5%) were among people known to have ever been in prison, and these deaths were mostly among males (Table 7).

County of residence

The deceased were mostly residing in Dublin (city and county) (43.5%), followed by Cork (city and county) (11.3%), and Waterford (city and county) (5.4%) (Table 7). The county of residence of the deceased closely corresponds to the county in which the poisoning incident occurred (Appendix C).

HSE health region of residence[19]

The deceased were mostly residing in the HSE Dublin and North East (28.5%) health region, followed by HSE Dublin and Midlands (23.4%), and HSE Dublin and South East (19.2%) (Table 7). Others were residing in HSE South West (13.8%), HSE Mid West (7.9%), and HSE West and North West (5.6%). The HSE health region of *residence* closely corresponds to the health region where the poisoning incident occurred (Figure 1 and Appendix D).

Country of birth

At least 7.6% of deaths were among people born outside Ireland, and these were mostly among males (Table 7). One half of people born outside Ireland were from the United Kingdom. Other countries represented in the data are not reported here due to the small number of deaths recorded for each.

While the NDRDI has the capacity to record **ethnicity**, this information is usually not known for the majority of the deceased.

Table 7 Sociodemographic characteristics of people whose death was due to drug poisoning, NDRDI 2021

	All deaths		Males		Females	
	n	%	n	%	n	%
Number of deaths	**354**	**100**	**227**	**64.1**	**127**	**35.9**
Median age (range[a])	42.5 (25-69)		41 (24-61)		47 (28-77)	
Not in employment[b]	181	51.1	118	52.0	63	49.6
Stable accommodation	272	76.8	171	75.3	101	79.5
Homelessness[c]	54	15.3	42	18.5	12	9.4
Relationship status single	223	63.0	163	71.8	60	47.2
Parent of child(ren) under 18 years	42	11.9	27	11.9	15	11.8
History of imprisonment	16	4.5	12	5.3	~	
Born outside of Ireland[d]	27	7.6	22	9.7	~	
County of residence						
Dublin (city and county)	154	43.5	104	45.8	50	39.4
Cork (city and county)	40	11.3	23	10.1	17	13.4
Waterford (city and county)	19	5.4	13	5.7	6	4.7
HSE health region of residence[e]						
HSE Dublin and North East	101	28.5	67	26.5	34	26.8
HSE Dublin and Midlands	83	23.4	54	23.8	29	22.8
HSE Dublin and South East	68	19.2	46	20.3	22	17.3

a Age range is 5th percentile to 95th percentile (90% of cases are included within this range)

b Refers to those unemployed, retired, or unable to work due to disability

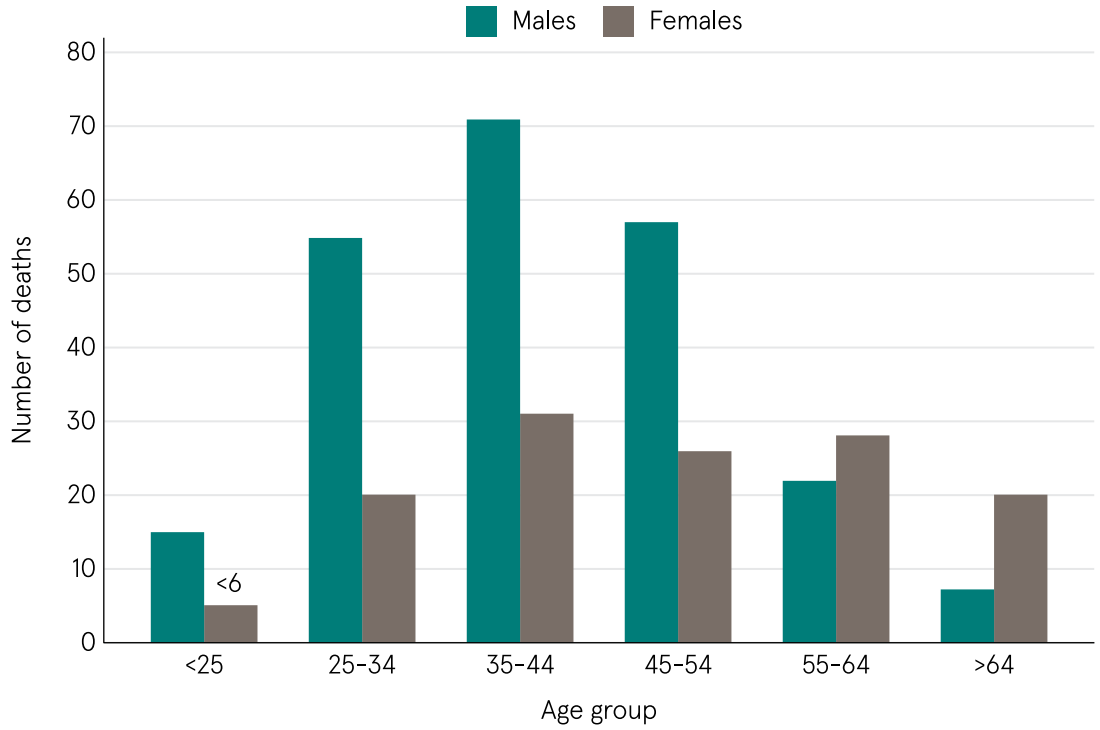
c Homelessness is based on the ETHOS Framework definition[22]

d Country of birth was not recorded for 241 (68.1%) people

e Number of deaths by health region of *incident* is presented in Appendix D

~ Five deaths or fewer

Figure 2 Number of drug poisoning deaths by age group and sex, NDRDI 2021



4.2 Health and health risk behaviours

Substance use history

Four in five (79.9%) of the deceased (283 people) had a history of substance misuse or dependency (Table 8). Rates were higher among males (88.1%) than among females (65.4%). For the majority (71.7%), this involved drugs other than alcohol. Indeed, almost 3 in 4 (74.0%) males and 2 in 3 (66.3%) females had a history of drug misuse or dependency, without alcohol dependency. Almost 1 in 5 (18.4%) of the deceased had a history of both alcohol dependency and other drug misuse or dependency (Table 8).

Opioids (mainly heroin) were used by 7 in 10 (69.3%) of those who had a history of substance misuse or dependency (283 people) (Table 8). Heroin (46.3%) was the most common substance used overall, followed by cocaine (41.7%), and alcohol (28.3%).

Of those who had a history of substance misuse or dependency, a history of heroin use was more common among males (52.5%) than among females (31.3%) (Table 8). Similarly, cocaine use was more common among males (51.5%) than among females (21.3%). However, a greater proportion of females (33.7%) than males (26.0%) had a history of alcohol dependence. The majority of people (85.9%) had used one or more drugs within one month of their death.

A history of alcohol dependency only (without drug misuse or dependency) was recorded for 1 in 10 (9.9%) people and for a greater proportion of females (16.9%) than males (7.0%).

More than one in two (55.6%) of the deceased had **a history of polysubstance use** (the use of more than one drug), and polysubstance use was more common among males (63.9%) than among females (40.9%) (Table 8). Among those with a history of polysubstance use (197 people), cocaine (65.0%) was the most common drug, followed by heroin (59.9%).

Injecting history

Where known, almost 1 in 5 (17.5%) of the deceased had ever injected drugs, 44 (19.4%) males and 18 (14.2%) females (Table 8). Of those who had ever injected, more than 1 in 3 (37.1%) were injecting at the time of death.

History of previous overdose

Information about overdose history was known for 55 of the deceased. Of these, 50 (14.1% of all people) had experienced a previous overdose (29 males and 21 females) (Table 8). For 39 of these individuals, the timeframe within which the previous overdose occurred was recorded; twenty of the deceased had a previous overdose within six months of their deaths, while seven of those had overdosed within one month of death. Of the 50 people, 2 in 5 (44.0%) were known to have ever injected and fewer than six were injecting at the time of death.

Although the NDRDI has the capacity to record information about naloxone[23] administration associated with previous overdose, this information is rarely provided in the available information sources. For 2021 deaths, this information was known for eight people who had a previous overdose, and in six of those cases, naloxone was administered.

History of blood borne viruses

Among the deceased were 56 (15.8%) people known to have a history of blood borne virus (Hepatitis B, Hepatitis C, or HIV) (Table 8). The rate was slightly higher among males (16.7%) than among females (14.2%). Nine people (2.3%) were known to have had more than one blood borne virus.

History of epilepsy

At least 5.6% (20) of the deceased had a diagnosis of epilepsy, 10 males and 10 females (Table 8). Among these, were seven people with a history of alcohol dependence. Of the 20 people with a diagnosis of epilepsy, eight had antiepileptic drugs in their systems at death, and six had more than one antiepileptic drug.

Mental health history

Information about a deceased person's mental health history comes from medical professionals or depositions from family members or others at inquest and is not always recorded in the death investigation file. At least 48.0% (170) of the deceased had experienced mental health issues (other than a substance use disorder), with a greater proportion of females (52.0%) than males (45.8%) in this group (Table 8). For the majority of cases (58.2%), a medical professional was the source of diagnosis.

Of those with a history of mental health issues, the majority (78.2%) were known to be in contact with medical services (58.6% of males and 41.4% of females), including substance use treatment services, at the time of death.

Mental health

At least
48%
had a mental health issue

Substance use treatment history

At least 1 in 3 (35.3%) of the deceased had received substance use treatment at some point in their lifetime (Table 8). A greater proportion of males (39.6%) than females (27.6%) had ever received substance use treatment.

Information about current substance use treatment (at the time of death) was recorded for 50.5% (179) of deaths. At least 1 in 4 (26.8%) of the deceased were in treatment for substance use at the time of death (Table 8). Males (30.0%) were more likely than females (21.3%) to have been receiving treatment.

The majority of those who were in substance use treatment at the time of death were receiving opioid agonist treatment (OAT) (92.6%, 88), which was mainly treatment with methadone. Overall, 1 in 4 (24.9%) of the deceased were known to be in OAT at the time of death, 27.8% of males and 19.7% of females (Table 8).

Of those with a known history of opioid use (196 people), 44.9% (88) were currently receiving OAT, 44.7% (63) of males and 45.5% (25) females.

Prescribed medications

At least 3 in 5 (62.7%, 222) of the deceased were receiving prescribed medications at the time of death (Table 8). These medications were not necessarily related to the drugs implicated in the deaths. Rates were higher among females (67.7%) than among males (59.9%). Excluding those who were on OAT at the time of death, almost 2 in 5 (134, 37.9%) of the deceased were in receipt of prescribed medications, 32.2% of males and 48.0% of females.

Table 8 Number of drug poisoning deaths by health status, health risk behaviours, and sex of the deceased, NDRDI 2021

	All deaths		Males		Females	
	n	%	n	%	n	%
Number of deaths	**354**	**100**	**227**	**64.1**	**127**	**35.9**
Substance use history	**283**	**79.9**	**200**	**88.1**	**83**	**65.4**
Drug use only	203	71.7	148	74.0	55	66.3
Drug use and alcohol dependency	52	18.4	38	19.0	14	16.9
Alcohol dependency only	28	9.9	14	7.0	14	16.9
Most common substances used[a]	**283**	**79.9**	**200**	**88.1**	**83**	**65.3**
Any opioid	196	69.3	141	70.5	55	66.3
Heroin	131	46.3	105	52.5	26	31.3
Methadone (street)	56	19.8	34	17.0	22	26.5
Cocaine	144	41.7	117	51.5	27	21.3
Any benzodiazepine	54	15.3	34	15.0	20	15.7
Alcohol	80	28.3	52	26.0	28	33.7
Use within one month of death	243	85.9	184	92.0	59	71.1
Number of deaths	**354**	**100**	**227**	**64.1**	**127**	**35.9**
History of polysubstance use	197	55.6	145	63.9	52	40.9
Ever injected	62	17.5	44	19.4	18	14.2
Injecting at the time of death (% of ever injected)	23	37.1				
History of previous overdose	50	14.1	29	12.8	21	16.5
History of blood borne virus	56	15.8	38	16.7	18	14.2
History of epilepsy	20	5.6	10	4.4	10	7.9
History of mental health issues	170	48.0	104	45.8	66	52.0
Treatment history	**354**	**100**	**227**	**64.1**	**127**	**35.9**
Ever treated for substance use	125	35.3	90	39.6	35	27.6
Current substance use treatment	95	26.8	68	30.0	27	21.3
Current OAT	88	24.9	63	27.8	25	19.7
Prescribed medications	222	62.7	136	59.9	86	67.7

a Of those with a history of substance use (n = 283)

~ Five deaths or fewer

5. Trends in drug poisoning deaths 2012 to 2021

5.1 Number of drug poisoning deaths 2012 to 2021

Between 2012 to 2021, the number of drug poisoning deaths increased by 81, an increase of 29.7% (Table 9). While the number of deaths fluctuated during the period, the overall trend appears upward from 2017 onwards, peaking in 2020.[24]

In 2020, there was a 17.1% (64) increase in the number of drug poisoning deaths compared to 2019, and this was followed by a decrease of 19.4% (85) in 2021 (Table 9). The increase in 2020 and subsequent decrease in 2021 appears a phenomenon of the COVID-19 pandemic. Similar patterns were observed elsewhere.[25, 26] Norway, for example, saw a 16.5% increase in drug poisoning deaths in 2020, before a return to the pre-pandemic baseline in 2021.[26] While the 2021 figures reported herein for Ireland represent a decrease on numbers reported for 2019, this may reflect an acceleration of deaths among especially vulnerable people (notably females) during 2020. Additionally, it is expected that an upward revision of figures as inquests are completed will bring 2021 numbers somewhat closer to the pre-pandemic level. Overall, the pattern observed between 2019 and 2021 is unlikely to reflect a true change in trend but rather a phenomenon of the COVID-19 pandemic.

The three-year moving average number of drug poisoning deaths is presented in Figure 3. Where there are annual fluctuations and extremes, moving averages can provide a better indication of long-term trends than can be gained from examining differences between two individual years. The moving averages show that, having been relatively stable to 2015-2017, the number of deaths increased before plateauing in 2019-2021.

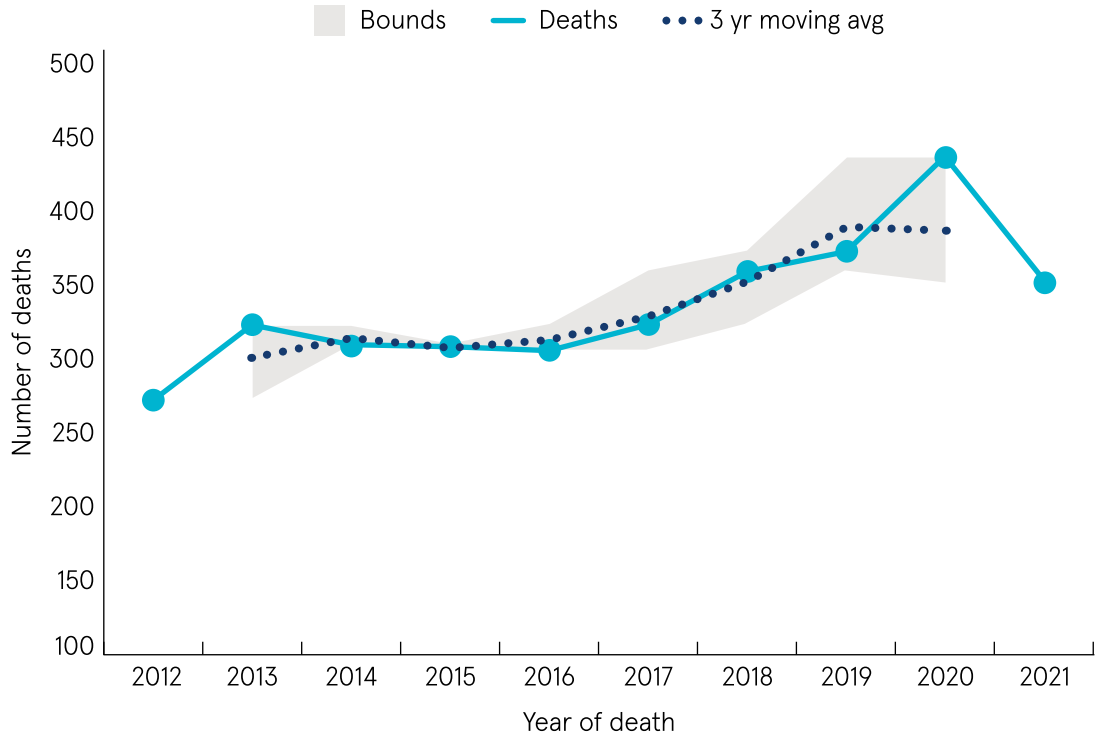
While the sex distribution of deaths has fluctuated over the period, males are continually in the majority, accounting for at least 3 in 5 deaths in every year (Table 9). However, between 2019 and 2020, deaths among females increased by 44.8% (52) as compared to 4.6% (12) among males, possibly reflecting the impact of COVID-19.

Table 9 Number of drug poisoning deaths by sex, NDRDI 2012 to 2021*

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total		**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Male	n	199	208	221	202	201	221	231	259	271	227
	%	72.9	64.2	71.1	65.2	65.5	68.0	64.0	69.1	61.7	64.1
Female	n	74	116	90	108	106	104	130	116	168	127
	%	27.1	35.8	28.9	34.8	34.5	32.0	36.0	30.9	38.3	35.9

*Data presented in this bulletin supersede all previously published NDRDI data

Figure 3 Three-year moving average number of drug poisoning deaths, NDRDI 2012 to 2021



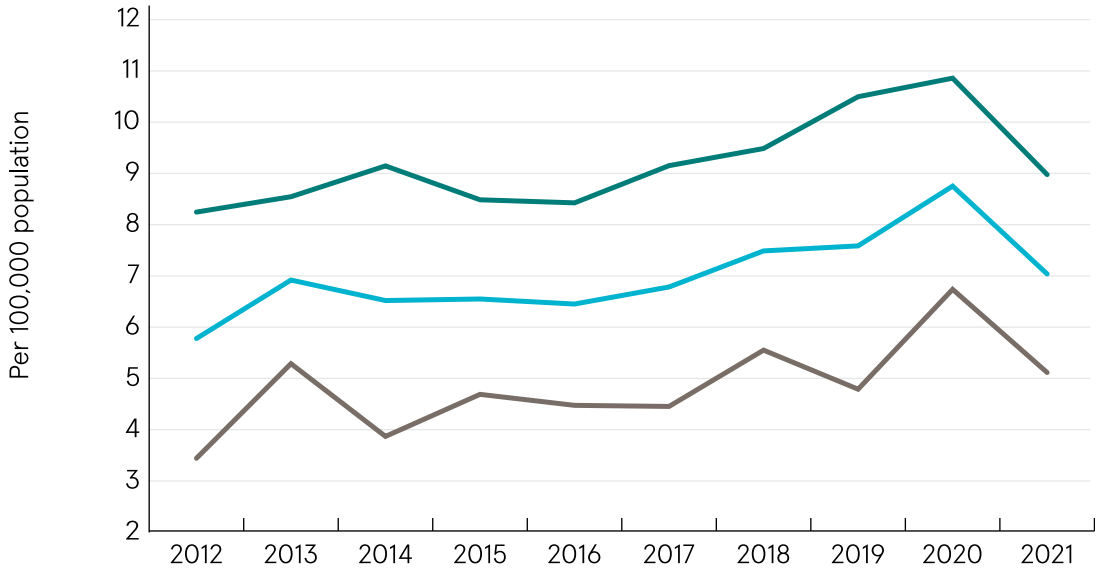
5.2 Age standardised mortality rates 2012 to 2021

The age standardised mortality rate (ASMR) enables mortality rates to be compared by year while accounting for differences in population age and structure.[27] ASMRs are presented below per 100,000 of the population standardised to the 2013 European Standard Population.[7]

When changes in population age and structure are considered, the mortality rate for drug poisoning deaths increased over the period 2012 to 2021 (Figure 4). In 2021, the ASMR for drug poisoning deaths was 7.1 deaths per 100,000 standard population, an increase from 5.8 deaths per 100,000 standard population in 2012 (Figure 4). This increase occurred mainly from 2016 onwards, peaking in 2020. Three-year moving average ASMRs for drug poisoning deaths similarly show an upward trend between 2012 and 2021, which mainly occurred from 2015-2017. Nevertheless, the three-year moving average ASMRs show little difference (a very slight decrease) between the rates for the periods 2019-2021 and 2018-2020, again suggesting that rates have plateaued (Figure 5).

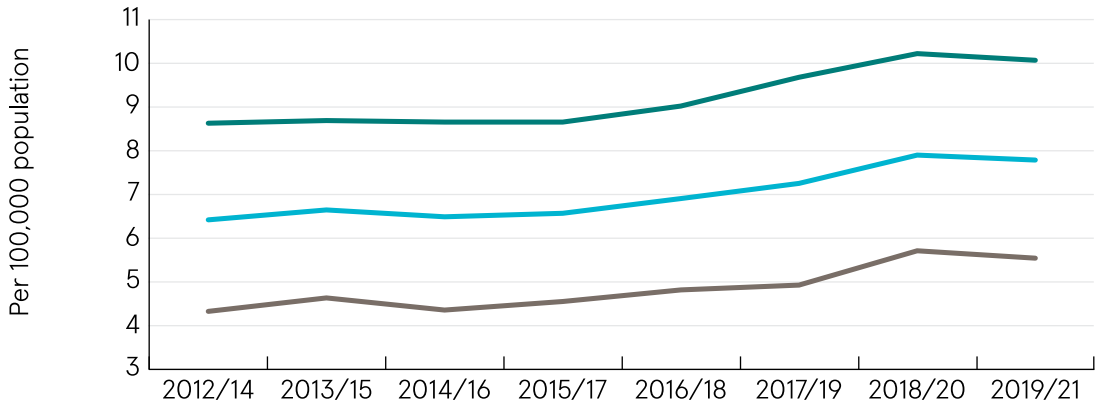
While ASMRs for males and females both increased between 2012 and 2021, the increase in rate was greater for females than for males (Figure 4).

Figure 4 Age standardised mortality rates (ASMR) for drug poisoning deaths, by sex, NDRDI 2012 to 2021



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
All	5.8	6.9	6.5	6.5	6.4	6.8	7.5	7.6	8.7	7.1
Male	8.2	8.5	9.1	8.5	8.4	9.1	9.5	10.4	10.8	9.0
Female	3.4	5.3	3.9	4.7	4.5	4.5	5.5	4.8	6.7	5.1

Figure 5 Three-year moving average age standardised mortality rates (ASMR) for drug poisoning deaths, by sex, NDRDI 2012 to 2021



	2012/14	2013/15	2014/16	2015/17	2016/18	2017/19	2018/20	2019/21
All	6.4	6.6	6.5	6.6	6.9	7.3	7.9	7.8
Male	8.6	8.7	8.7	8.7	9.0	9.7	10.2	10.1
Female	4.2	4.6	4.4	4.5	4.8	4.9	5.7	5.5

5.3 Drugs implicated in drug poisoning deaths 2012 to 2021

Over 2012 to 2021, there was an upward trend in the number of deaths for opioids, benzodiazepines, antidepressants, cocaine, and gabapentinoid/antiepileptic drugs (Figure 6). The largest increase over the period was for **gabapentinoids/antiepileptics**, which increased from 19 deaths in 2013 to 97 deaths in 2021 (an increase of 410.5%). This increase was largely due to **pregabalin**, which increased from 14 deaths in 2013 to 83 deaths in 2021. Pregabalin was not routinely included in postmortem toxicology screening by the State Laboratory before 2013.

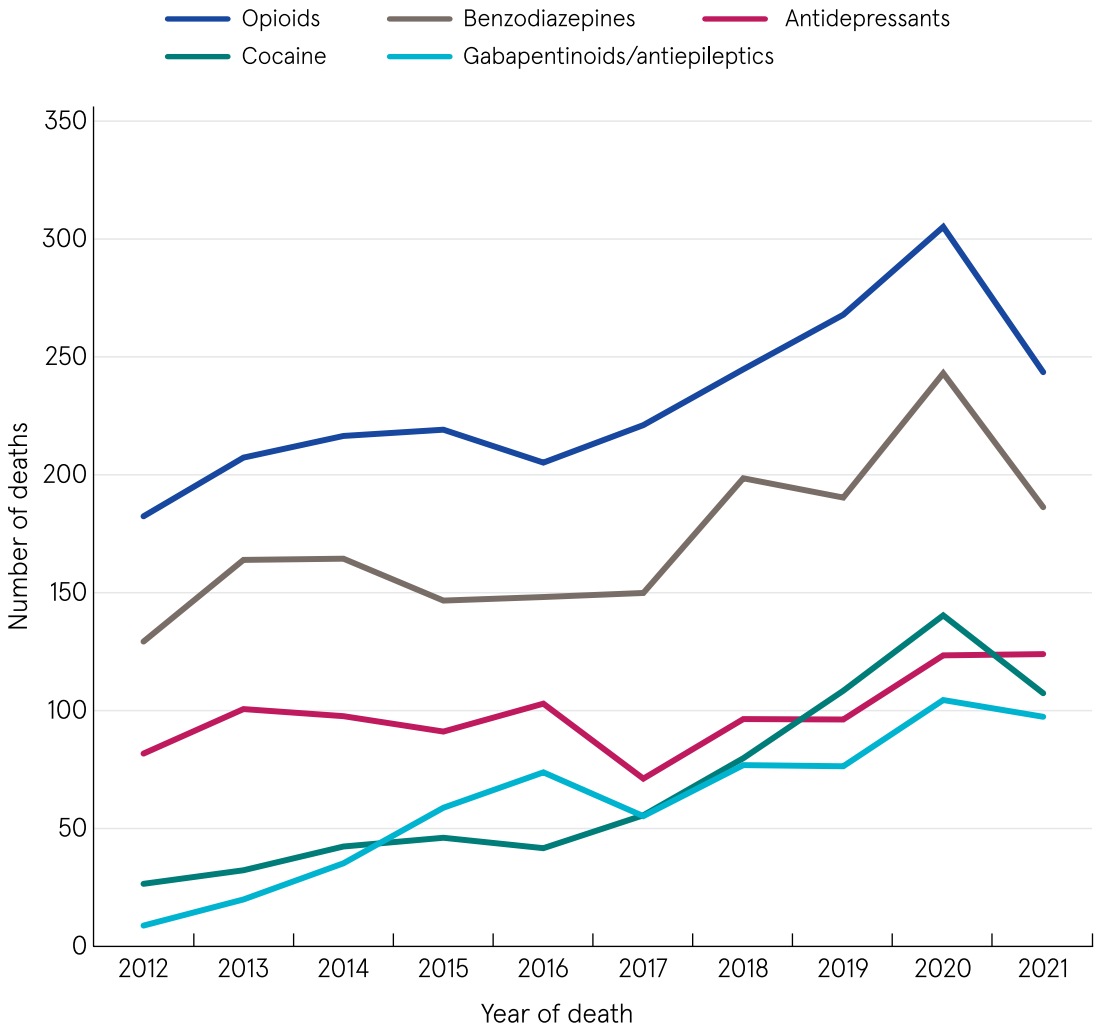
Between 2012 and 2021, the number of deaths with **cocaine** implicated quadrupled (311.5%), increasing from 26 to 107 (Figure 6 and Table 10). In the same period, **antidepressants** increased by 55.0% (Figure 6 and Table 10), largely driven by **mirtazapine** and **sertraline** (Appendix E). Deaths with **benzodiazepines** implicated increased by 45.0% over the same period (Figure 6 and Table 10); this was mainly attributable to the increase in **alprazolam**, which was implicated in 18 deaths in 2012 compared to 107 in 2021 (an increase of 494.4%) (Appendix E).

Over the period, the number of deaths with **opioids** implicated increased by 34.1% from 182 in 2012 to 244 deaths in 2021 (Figure 6 and Table 10). **Methadone** was the most common opioid implicated in deaths in each year (Figure 7 and Appendix E). The number of deaths with methadone implicated increased from 87 in 2012 to 129 in 2021, an increase of 48.3%. As can be seen in Figure 8, the number of deaths with **heroin** implicated has fluctuated over the ten years. While the figure for 2021 is the third lowest over the period and a 35.8% decrease on 2019, it still represents an increase of 23.4% on 2012 (Figure 7 and Appendix E).

Deaths where **other opioids** (mainly tramadol hydrochloride, codeine, and oxycodone hydrochloride) were implicated also increased in number over the period (Table 10). While the trend was similar in pattern to methadone and heroin, overall numbers were lower (Figure 7). Further trends in opioid poisoning deaths are presented in Section 5.3.1.

The number of deaths with **promethazine** implicated has been increasing (Appendix E) and **diphenhydramine** has followed a similar pattern (not included in Appendix E).

Figure 6 Number of drug poisoning deaths by selected drug groups implicated, NDRDI 2012 to 2021*



*An individual death may have more than one specific drug implicated from a drug group, and may have specific drugs from more than one drug group.

Table 10 Number of drug poisoning deaths for each drug group implicated, NDRDI 2012 to 2021*

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths[a]	**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Opioids	182	207	216	219	205	220	244	267	305	244
Benzodiazepines	129	163	164	147	148	150	198	190	243	187
Antidepressants	80	100	97	91	103	71	96	96	123	124
Cocaine	26	32	42	46	42	55	79	108	140	107
Gabapentinoids/ antiepileptics	8	19	35	58	73	56	76	76	104	97
Alcohol[b]	54	82	70	67	81	68	72	92	88	91
Z-drugs	29	59	80	76	76	51	53	84	80	66
Non-opioid analgesics	21	32	31	26	37	44	28	43	49	52
Antipsychotics	37	42	37	42	44	33	35	38	57	50
Other medications[c]	19	16	28	23	26	21	27	22	30	44
Novel psychoactive substances	7	17	15	15	7	7	7	15	21	24
Other amphetamine /stimulant[d]	15	19	16	10	9	19	21	25	22	12
Others[e]	21	14	15	10	12	16	27	31	20	24

*Number of deaths for specific drugs is presented in Appendix E

a An individual death may have more than one drug implicated

b Alcohol as part of a polysubstance poisoning

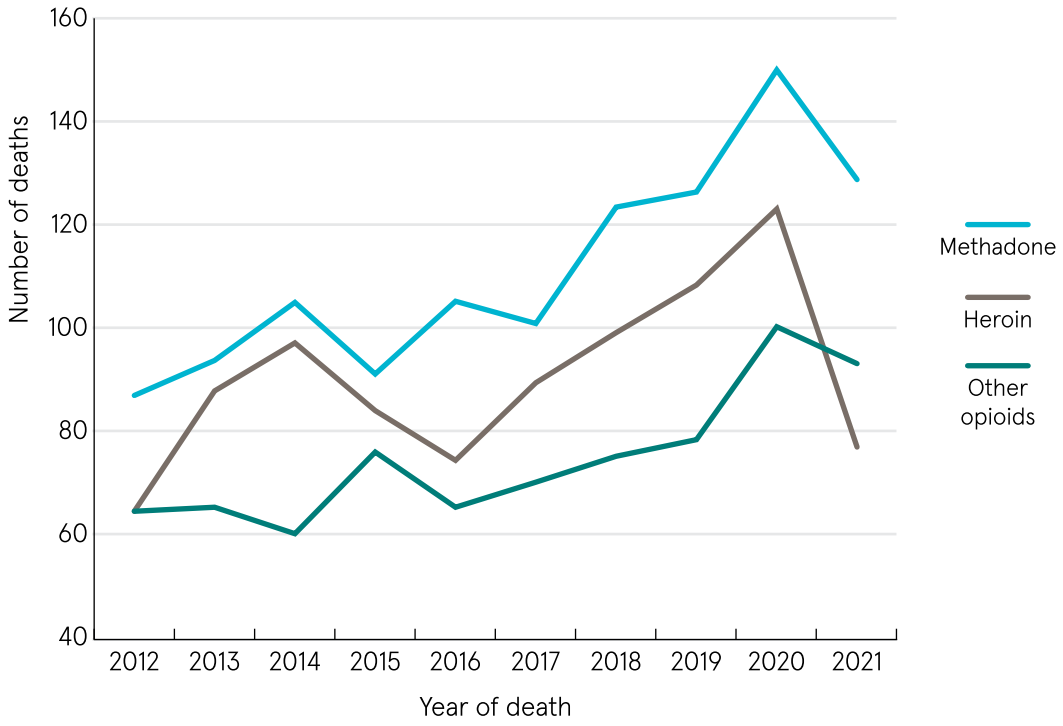
c For example, antihistamines

d For example, MDMA (ecstasy)

e For example, hallucinogens and volatile inhalants

~ Five deaths or fewer

Figure 7 Number of opioid poisoning deaths by opioid type (methadone, heroin, or other opioids) implicated, NDRDI 2012 to 2021 *



*An individual death may have more than one opioid drug implicated

5.3.1 Trends in opioid poisoning deaths 2012 to 2021

- Opioids were implicated in at least 6 in 10 deaths every year
- The number of deaths with opioids implicated increased by 34.1% from 182 in 2012 to 244 in 2021 (peaking at 305 in 2020[24])
- The median age increased from 34 years in 2012 to 41 years in 2021
- The rate of polysubstance poisoning increased from 79.7% in 2012 to 88.5% in 2021
- Heroin was implicated in 1 in 3 (35.2%) opioid poisoning deaths in 2012 compared to 1 in 4 (26.2%) in 2021
- Methadone increased from 31.9% of deaths in 2012 to 36.5% in 2021
- Benzodiazepines were consistently the most common drug group implicated with opioids, followed by antidepressants, and rates have been increasing for both
- Between 2013 and 2021, there was a 730.0% increase in gabapentinoids/antiepileptics (mainly pregabalin) implicated in opioid poisoning deaths
- Between 2012 and 2021, there was a 305.3% increase in cocaine implicated in opioid poisoning deaths
- The rate of lifetime injecting decreased from 1 in 3 (33.5%) in 2012 to 1 in 4 (25.0%) in 2021
- Of those who had ever injected, 1 in 2 (52.5%) were injecting at the time of death in 2012, compared to 2 in 5 (39.0%) in 2021
- 1 in 4 (25.8%) were in substance use treatment at the time of death in 2012 compared to 1 in 3 (36.5%) in 2021

5.4 Trends in polysubstance poisoning deaths 2012 to 2021

The proportion of deaths that were polysubstance poisonings increased from 71.4% in 2012 to 81.4% in 2021 (Figure 8). After increasing from 2012 (71.4%) to 2014 (77.8%), polysubstance poisoning deaths decreased in proportion between 2014 (77.8%) and 2017 (72.9%) before steadily rising again.

Females experienced the initial increase to 2015 (77.8%), then diverged from males between 2016 and 2018, with the proportion increasing steadily again thereafter.

Figure 8 Proportion of poisoning deaths with more than one drug (polysubstance) implicated, by sex, NDRDI 2012 to 2021

The number of deaths with **more than one opioid** implicated increased from 39 in 2012 to 66 in 2021, while the proportion increased slightly from 20.0% to 22.9% of polysubstance poisonings (Table 11). For males, there was a similar increase in the proportion of deaths with more than one opioid, while for females, the increase was greater (from 17.6% to 23.1% of polysubstance poisonings).

The number of deaths with **more than one benzodiazepine** implicated increased from 41 in 2012 to 76 in 2021, an increase from 21.0% to 26.4% of polysubstance poisonings (Table 11). The increase was similar for males (22.9% to 28.3%) and slightly greater for females (15.7% to 23.1%).

The number of deaths with **more than one antidepressant** drug implicated increased from 10 in 2012 to 30 in 2021, while the proportion increased from 5.1% to 10.4% of polysubstance poisonings (Table 11). While the proportions fluctuated in the intervening years for both males and females, rates were higher overall for females. Additionally, females experienced a larger increase (from 3.9% to 11.5%) compared to males (5.1% to 10.4%) though numbers were relatively small.

Table 11 Number of polysubstance poisoning deaths with more than one specific poisoning drug implicated within selected drug groups (opioids, benzodiazepines, and antidepressants) by sex, NDRDI 2012 to 2021*

		Year of death									
		2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021
All deaths		**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Polysubstance poisoning deaths	n	**195**	**240**	**242**	**233**	**227**	**237**	**277**	**299**	**352**	**288**
Males	n	**144**	**156**	**173**	**149**	**148**	**157**	**178**	**210**	**219**	**184**
Females	n	**51**	**84**	**69**	**84**	**79**	**80**	**99**	**89**	**133**	**104**
More than one opioid											
All deaths	n	39	46	47	43	45	47	58	54	84	66
	%	20.0	19.2	19.4	18.5	19.8	19.8	20.9	18.1	23.9	22.9
Males	n	30	40	35	28	31	34	38	40	49	42
	%	20.8	25.6	20.2	18.8	20.9	21.7	21.3	19.0	22.4	22.8
Females	n	9	6	12	15	14	13	20	14	35	24
	%	17.6	7.1	17.4	17.9	17.7	16.3	20.2	15.7	26.3	23.1
More than one benzodiazepine											
All deaths	n	41	62	61	62	72	72	96	71	96	76
%	%	21.0	25.8	25.2	26.6	31.7	30.4	34.7	23.7	27.3	26.4
Males	n	33	42	41	39	50	53	69	54	65	52
%	%	22.9	26.9	23.7	26.2	33.8	33.8	38.8	25.7	29.7	28.3
Females	n	8	20	20	23	22	19	27	17	31	24
%	%	15.7	23.8	29.0	27.4	27.8	23.8	27.3	19.1	23.3	23.1
More than one antidepressant											
All deaths	n	10	21	25	14	15	13	17	24	24	30
	%	5.1	8.8	10.3	6.0	6.6	5.5	6.1	8.0	6.8	10.4
Males	n	8	6	12	8	9	~	~	10	8	18
	%	4.1	2.5	5.0	3.4	4.0			3.3	2.3	6.3
Females	n	~	15	13	6	6	8	12	14	16	12
	%		17.9	18.8	7.1	7.6	10.0	12.1	15.7	12.0	11.5

* From 2019 onwards the NDRDI was able to record up to 20 drugs implicated in deaths, compared to 6 previously

~ Five deaths or fewer

5.5 Characteristics of the deceased and circumstances of death 2012 to 2021

Between 2012 and 2021, the median **age at death** increased from 36 years to 42.5 years (Table 12). This increase was mainly due to an increase in the median age for males (from 34 years to 41 years).

The proportion of poisoning deaths that were among people with **a history of substance misuse or dependency** increased over time from 7 in 10 (69.7%) in 2012 to 8 in 10 (79.9%) in 2021 (Table 12). The highest level was in 2019 (82.9%). Of those with a history of substance use, around 2 in 5 were known to have **ever received substance use treatment**. The proportion that received treatment increased from 37.4% in 2012 to 44.2% in 2021.

The proportion of deaths that were among people with a **lifetime history of injecting** decreased from 23.8% in 2012 to 17.5% in 2021, which was the lowest rate of the period (Table 12). Of *those who had ever injected*, **injecting at the time of death** increased from 53.8% in 2012 to a high of 63.6% in 2015, before decreasing to the lowest level (37.0%) in 2021. Trends among those injecting at the time of death are described in Section 5.6.

In Ireland, deaths among **people who were alone at the time of the poisoning incident** increased in proportion from 34.4% in 2012 to 41.0% in 2021 (Table 12). The proportion was relatively stable in the intervening years. A decrease in 2019 (37.6%), preceded an increase in 2020 (40.5%) and 2021 (41.0%), which appears more as a return to the pre-2019 level than a change in trend associated with the COVID-19 period.[28] However, among *those who were injecting at the time of death*, there was an increase in 2021 in the proportion that were alone (but not in the number of deaths) (see Section 5.6).

Table 12 Characteristics of the deceased and circumstances of death, NDRDI 2012 to 2021*

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths		**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Median age (range[a])		36 (21-64)	38.5 (22-69)	37 (22-65)	39 (23-66)	41 (22-69)	41 (23-67)	41 (25-68)	41 (23-64)	42 (23-69)	42.5 (25-69)
Homelessness[c]	n	25	36	47	32	44	32	42	42	66	54
	%	10.7	11.3%	15.6	10.4	14.5	10.5	11.9	11.2	15.0	15.3
Health and health risk behaviours											
History of substance use or dependency	n	190	240	248	238	241	257	289	311	362	283
	%	69.7	74.1	79.9	76.9	78.5	79.1	80.6	82.9	82.5	79.9
Ever treated for substance use	n	71	104	104	106	126	119	138	133	166	125
% of those with a history of substance use or dependency	%	37.4	43.3	41.9	44.5	52.3	46.3	47.8	42.8	45.9	44.2
History of mental health issues	n	113	151	136	174	151	160	181	188	223	170
	%	41.4	46.6	43.7	56.1	49.2	49.2	51.1	50.1	50.8	48.0
Ever injected	n	65	79	85	77	79	72	87	89	91	62
	%	23.8	24.4	27.3	24.8	25.7	22.2	24.6	23.7	20.7	17.5
Injecting at the time of death	n	35	47	53	49	32	37	48	45	49	23
% of those who had ever injected	%	53.8	59.5	62.3	63.6	40.5	51.2	55.1	50.6	53.8	37.0
History of previous overdose	n	30	53	50	40	46	30	40	60	71	50
	%	11.0	16.4	16.1	12.9	15.0	9.2	11.1	16.0	16.2	14.1
Place of incident											
Private dwelling	n	195	220	233	253	233	238	259	278	332	266
	%	83.3	67.9	81.6	81.6	75.9	73.2	71.7	74.1	75.6	75.1
With whom at the time of incident											
Alone	n	94	127	136	130	123	138	148	141	178	145
	%	34.4	39.2	43.7	41.9	40.1	42.5	41.0	37.6	40.5	41.0

a Age range is 5th percentile to 95th percentile (90% of cases are included within this range)

b Refers to those unemployed, retired, or unable to work due to disability

c Homelessness is based on the ETHOS Framework definition[22]

5.6 Deaths among people injecting at the time of death 2012 to 2021

Of the ten years, 2021 had the lowest number (23) and proportion (6.5%) of deaths where the person was **injecting at the time of death** (Table 13). The number and proportion of these deaths peaked in 2014 (53, 17.0%) and rates have been lower since then. After 2016, both the number and proportion of deaths decreased overall when compared to the preceding five years (202 (10.9%) for 2017 to 2021 compared to 216 (14.2%) for 2012 to 2016). The period from 2016 coincides with the commencement and subsequent roll out of the HSE naloxone project.[29] Naloxone is a potentially life-saving medicine that can temporarily reverse the effects of an opioid overdose.

In every year, **males** accounted for the majority of deaths where the person was injecting at the time of death (Table 13). The number of females increased between 2016 and 2020, although numbers were relatively low.

Over the period, **opioids** were implicated in the vast majority of deaths where the person was injecting at the time of death (Table 13). In 2021, where opioids were implicated, 1 in 2 (52.2%) deaths had **more than one opioid** implicated, compared to 3 in 10 (31.3%) deaths pre-2021.

In every year, at least 2 in 5 deaths among people injecting at the time of death were in people who were also **alone at the time** (Table 13). Over 2017 to 2020, there was a decrease in the proportion of deaths where the person was alone (but not in the number of deaths). However, the proportion increased to its highest level in 2021, where 7 in 10 (69.9%) people who were injecting were alone at the time. Nevertheless, 2021 had the *lowest number of deaths* (16) since 2012 (16) where the person was both alone and injecting at the time of death.

In 2021, 3 in 10 people who were injecting at the time of death were in a **public place** when the incident occurred (Table 13). The proportion of deaths in a public place increased from 14.3% in 2012 to 30.4% in 2021. In the same period, the proportion of deaths where the incident occurred in a **private dwelling** decreased from 65.7% to 47.8%. The proportion of deaths where the incident occurred in **accommodation for people who are homeless** also increased over the period.[20]

Table 13 Characteristics of drug poisoning deaths among people known to be injecting at the time of death, NDRDI 2012 to 2021

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
All deaths		**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Injecting at the time of death[a]	n	**35**	**47**	**53**	**49**	**32**	**37**	**48**	**45**	**49**	**23**
% all deaths	%	12.8	14.5	17.0	15.8	10.4	11.4	13.6	12.0	11.2	6.5
Males	n	30	42	47	44	28	29	35	38	38	20
% of current injecting	%	85.7	89.4	88.7	89.8	87.5	78.4	72.9	84.4	77.6	87.0
Females	n	~	~	6	~	~	8	13	7	11	~
% of current injecting	%			11.3			21.6	27.1	15.6	22.4	
Opioid poisoning	n	32	46	51	46	30	37	47	44	48	23
% of current injecting	%	91.4	97.9	96.2	93.9	93.8	100.0	97.9	97.8	98.0	100.0
More than one opioid	n	10	13	12	11	8	10	14	9	15	12
% of opioid poisoning	%	31.3	28.3	23.5	23.9	26.7	27.0	29.8	20.5	31.3	52.2
Place of incident											
Public place	n	~	7	18	10	12	13	10	16	12	7
% of those current injecting	%	14.3	14.9	34.0	20.4	37.5	35.1	20.8	35.6	24.5	30.4
Private dwelling	n	23	31	28	29	15	19	27	21	24	11
% of those current injecting	%	65.7	66.0	52.8	59.2	46.9	51.4	56.3	46.7	49.0	47.8
With whom at the time of incident											
Alone	n	16	27	27	24	18	21	26	20	24	16
% of those current injecting	%	45.7	57.4	50.9	49.0	56.3	56.8	54.2	44.4	49.0	69.6

a Also referred to as *current injecting*

~ Five deaths or fewer

Acknowledgements

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Special thanks to Dr Ena Lynn and all our former NDRDI Team members for their invaluable contributions to ensuring NDRDI data are timely, accurate, relevant, and impactful.

The NDRDI would also like to acknowledge the support and expertise of the members of the NDRDI Steering Committee.

Finally, we would like to acknowledge the families who have lost loved ones due to drugs and the many service providers who support all those affected.

Notes

1. To cite this publication: Kelleher C., Riordan, F. and Lyons S. (2024) *Drug poisoning deaths in Ireland in 2021: Data from the National Drug-Related Deaths Index*. HRB StatLink Series 20. Available at https://www.drugsandalcohol.ie/41601

2. Department of Tourism, Sport and Recreation, Ireland (2001) *Building on Experience: National Drugs Strategy 2001 – 2008*. Dublin: Stationery Office.

3. More detailed information on the NDRDI methodology can be found in previously published HRB Trends Series papers: www.hrb.ie/data-collections-evidence/alcohol-and-drug-deaths/publications/publications/3/

4. Figures for 2020 were revised upwards as inquests delayed due to COVID-19 restrictions were completed and included. Data validation processes for previous years may have also revised figures (upward or downward). However, overall trends have not changed.

5. Since the last publication of NDRDI data in June 2023, data from the GMR for 2018 to 2021 have been included in the dataset and annual figures have been adjusted accordingly.

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18. Based on the European Union Drugs Agency (EUDA) classification of *drug-related deaths* (DRD) as per below:

Poisoning deaths in 2021 by European DRD classification	n	%
All deaths	**354**	**100**
Poisoning by opioids only (excluding methadone)	18	5.1
Poisoning by methadone only	12	3.4
Poisoning by polysubstances including opioids	214	60.5
Poisoning by (poly)substances excluding opioids	36	10.2
Poisoning by unspecified/unknown substances	6	1.7
Others[a]	68	19.2

a Prescribable drugs only or prescribable drugs in conjunction with alcohol. These do not apply to the EU classification.

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2009) *Standard protocol version 3.2 for the EU Member States to collect data and report figures for the key indicator drug-related deaths, EMCDDA project CT.02.P1.05*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: https://www.euda.europa.eu/html.cfm/index107404EN.html_en

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20. The HRB will publish a StatLink bulletin on 2021 deaths among people who were experiencing homelessness, with a three-year trend analysis for 2019 to 2021.

21. Wojcicki, J.M. (2019) Dying alone: The sad irrelevance of naloxone in the context of solitary opiate use, *Addiction*, 114, 574–575. https://doi.org/10.1111/add.14508

22. *Homelessness* was classified using the ETHOS Framework: Edgar, B. (2012) The ETHOS definition and classification of homelessness and housing exclusion. *European Journal of Homelessness*, 6(2), 219–25.

23. Naloxone is potentially life-saving medicine that can temporarily reverse the effects of an opioid overdose.

24. The figure for deaths in 2020 has increased from 409 previously published due to the addition of data from the GMR and from completed inquests.

25. European Union Drugs Agency (EUDA) (2024) *European Drug Report 2024. Drug-induced deaths – the current situation in Europe (European Drug Report 2024).* Available at www.euda.europa.eu

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27. ASMRs were calculated using the direct method: *Statistics Canada (2023) Age-standardized rates*. Available at: https://www.statcan.gc.ca/en/dai/btd/asr

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Appendix A

Alcohol-only poisoning deaths

Alcohol-only poisoning deaths are not included in the figures reported in the main bulletin.

In 2021, 64 alcohol-only poisoning deaths were recorded, and 4 in 5 (79.7%) of these deaths were among males (Table 14). The median age of the deceased was 56.5 years.

Over the ten-year period 2012 to 2021, 627 alcohol-only poisoning deaths were recorded (Table 14). The majority of deaths were among males (74.0%). The median age over the period was 52 years but had increased from 50 years in 2012 to 56.5 years in 2021. Over 1 in 2 (56.3%) of the deceased had a history of alcohol dependency, while almost 1 in 10 (9.4%) had a history of other drug misuse or dependency.

The majority of alcohol-only poisonings (4 in 5) occurred in a private dwelling (80.4%) and the person was often alone (51.4%) when the incident occurred. Over the period, the majority of incidents occurred in Dublin (city and county) (23.0%) followed by Cork (city and county) (8.6%), Mayo (6.9%), Donegal (5.4%), Galway (city and county) (4.6%), and Louth (4.3%).

Among HSE health regions, the majority of incidents occurred in HSE Dublin and North East (24.1%), followed by HSE West and North West (19.5%), HSE Dublin and Midlands (18.7%), and HSE Dublin and South East (14.8%), HSE South West (10.5%), and HSE Mid West (7.0%).

Table 14 Characteristics of the deceased and deaths due to alcohol-only poisoning, NDRDI 2012 to 2021

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths		**76**	**61**	**51**	**48**	**58**	**66**	**64**	**67**	**72**	**64**
Male	n	59	49	39	31	44	48	49	49	45	51
	%	77.6	80.3	76.5	64.6	75.9	72.7	76.6	73.1	62.5	79.7
Female	n	17	12	12	17	14	18	15	18	27	13
	%	22.4	19.7	23.5	35.4	24.1	27.3	23.4	26.9	37.5	20.3
Median age (range[a])		50 (26-76)	50 (25-71)	49 (26-70)	54 (27-68)	52 (33-66)	48.5 (31-71)	55 (28-68)	53 (30-69)	51.5 (31-72)	56.5 (28-75)
Homelessness[b]	n	7	~	~	~	7	~	~	7	6	6
	%	9.2				12.1			10.4	8.3	9.4
Heath and health behaviours											
History of alcohol dependency	n	39	35	22	23	33	40	31	41	48	41
	%	51.3	57.4	43.1	47.9	56.9	60.6	48.4	61.2	66.7	64.1
History of other drug misuse or dependency	n	~	8	~	~	~	10	~	8	10	~
	%		13.1				15.2		11.9	13.9	
History of mental health issues	n	17	10	8	6	13	15	10	19	20	10
	%	22.4	16.4	15.7	12.5	22.4	22.7	15.6	28.4	27.8	15.6
Ever treated for any substance	n	11	9	~	~	15	11	8	12	15	6
	%	14.5	14.8			25.9	16.7	12.5	17.9	20.8	9.4
Place of incident											
Private dwelling	n	57	54	43	43	40	58	45	53	60	51
	%	75	88.5	84.3	89.6	69	87.9	70.3	79.1	83.3	79.7
With whom at the time of incident											
Alone	n	42	40	32	24	27	34	30	31	31	31
	%	55.3	65.6	62.7	50	46.6	51.5	46.9	46.3	43.1	48.4

a Age range is 5th percentile to 95th percentile (90% of cases are included within this range)

b Homelessness is based on the ETHOS Framework definition[11]

~ Five deaths or fewer

Appendix B

All alcohol-related poisoning deaths

In 2021, 155 alcohol-related poisoning deaths were recorded. The majority of these were among males (112, 72.3%) (Table 15). Of the 155 deaths, 91 (alcohol in conjunction with other drugs) are also included in the figures reported in the main bulletin above and 64 (alcohol-only) are also reported separately in Appendix A.

In total, 1,392 alcohol-related poisoning deaths were reported for 2012 to 2021 (Table 15). Of these, 765 (alcohol in conjunction with other drugs) are included in the figures reported in the main bulletin above, and 627 (alcohol-only) are reported separately in Appendix A.

Over the period, the majority deaths (70.8%) were among males (Table 15). The median age was 47 years but increased from 47 years in 2012 to 50 years in 2021. One in two (51.5%) of the deceased had a history of alcohol dependency, while more than 1 in 3 (36.8%) also had a history of other drug misuse or dependency.

The majority (76.4%) of alcohol-related poisonings occurred in a private dwelling, and the person was often alone (47.7%) (Table 15). Over the period, most of the incidents occurred in Dublin (city and county) (29.7%), followed by Cork (city and county) (11.3%), Limerick (city and county) (4.9%), Donegal (4.2%), and Galway (city and county) (4.1%).

Among HSE health regions, the majority of incidents occurred in HSE Dublin and North East (24.0%), followed by HSE Dublin and Midlands (21.6%), HSE West and North West (14.1%), HSE Dublin and South East (13.9%), HSE South West (12.9%), and HSE Mid West (8.7%).

Of deaths where alcohol was implicated along with other drugs, the median number of drugs implicated was three. Over the period, 31.2% of deaths had five drugs or more implicated.

Overall, prescribable drugs were the most common drugs implicated with alcohol. The most common **drug groups** implicated along with alcohol were benzodiazepines (mainly diazepam and alprazolam), opioids (mainly heroin and methadone) and anti-depressant drugs (mainly mirtazapine and amitriptyline). The top 8 **specific drugs** implicated along with alcohol are presented in Table 16.

Table 15 Characteristics of the deceased and deaths due to alcohol-related poisoning, NDRDI 2012 to 2021

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths		**130**	**143**	**121**	**115**	**139**	**134**	**136**	**159**	**160**	**155**
Male	n	100	103	90	77	99	95	92	113	105	112
	%	76.9	72	74.4	67	71.2	70.9	67.6	71.1	65.6	72.3
Female	n	30	40	31	38	40	39	44	46	55	43
	%	23.1	28	25.6	33	28.8	29.1	32.4	28.9	34.4	27.7
Median age (range[a])		47 (25-71)	47 (23-67)	43 (24-70)	44.5 (24-66)	47 (29-68)	47 (28-67)	49.5 (27-68)	50 (26-69)	46 (26-69)	50 (26-67)
Homelessness[b]	n	12	13	11	13	20	16	15	16	18	23
	%	9.2	9.1	9.1	11.3	14.4	11.9	11	10.1	11.3	14.8
Health and health behaviours											
History of alcohol dependency	n	56	71	61	54	75	84	66	81	88	81
	%	43.1	49.7	50.4	47.0	54.0	62.7	48.5	50.9	55.0	52.3
History of other drug misuse or dependency	n	30	50	46	47	57	51	41	66	69	55
	%	23.1	35.0	38.0	40.9	41	38.1	30.1	41.5	43.1	35.5
History of mental health issues	n	34	49	31	43	50	42	44	56	67	51
	%	26.2	34.3	25.6	37.4	36	31.3	32.4	35.2	41.9	32.9
Ever treated for any substance	n	22	30	27	24	45	27	22	39	37	31
	%	16.9	21.0	22.3	20.9	32.4	20.1	16.2	24.5	23.1	20.0
Place of incident											
Private dwelling	n	97	114	98	90	100	109	95	117	124	119
	%	74.6	79.7	81	78.3	71.9	81.3	69.9	73.6	77.5	76.8
With whom at the time of incident											
Alone	n	63	76	68	54	58	67	70	61	76	71
	%	48.5	53.1	56.2	47.4	41.7	50	51.5	38.4	47.5	45.8

a Age range is 5th percentile to 95th percentile (90% of cases are included within this range)

b Homelessness is based on the ETHOS Framework definition[11]

Table 16 Most common additional drugs implicated in alcohol-related poisoning deaths, NDRDI 2012 to 2021'

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths		**130**	**143**	**121**	**115**	**139**	**134**	**136**	**159**	**160**	**155**
Most common additional drugs implicated with alcohol		54	82	70	67	81	68	72	92	88	91
Diazepam	n	21	30	29	33	26	19	28	23	22	25
	%	16.2	21.0	24.0	28.7	18.7	14.2	20.6	14.5	13.8	16.1
Heroin	n	15	19	21	17	23	20	17	26	24	17
	%	11.5	13.3	17.4	14.8	16.5	14.9	12.5	16.4	15.0	11.0
Methadone	n	12	10	19	15	18	12	12	24	19	22
	%	9.2	7.0	15.7	13.0	12.9	9.0	8.8	15.1	11.9	14.2
Alprazolam	n	~	10	~	12	15	9	25	19	24	18
	%		7.0		10.4	10.8	6.7	18.4	11.9	15	11.6
Cocaine	n	~	6	9	12	8	8	14	17	25	23
	%		4.2	7.4	10.4	5.8	6.0	10.3	10.7	15.6	14.8
Zopiclone	n	~	18	18	14	18	6	6	17	11	15
	%		12.6	14.9	12.2	12.9	4.5	4.4	10.7	6.9	9.7
Pregabalin[a]	n	0	0	2	6	10	8	11	14	17	16
	%	0.0	0 .0	1.7	5.2	7.2	6.0	8.1	8.8	10.6	10.3
Mirtazapine	n	~	9	8	~	11	~	~	11	10	12
	%		6.3	6.6		7.9			6.9	6.3	7.7

a Pregabalin was included in routine postmortem toxicology screening by the State Laboratory from 2013

~ Five deaths or fewer

Appendix C

Number of drug poisoning deaths by county of incident, NDRDI 2012 to 2021

Table 17 Number of drug poisoning deaths by county of incident, NDRDI 2012 to 2021

	Year of death									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths	**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Dublin (city and county)	110	132	143	140	144	133	137	162	181	152
Cork (city and county)	20	22	27	28	34	39	35	41	52	41
Limerick (city and county)	9	9	15	7	13	10	13	9	17	14
Waterford (city and county)	14	~	10	14	~	10	12	7	13	16
Tipperary	6	7	7	13	7	8	18	14	10	10
Louth	~	12	12	9	6	10	8	11	14	11
Kildare	8	~	8	9	11	~	14	12	19	7
Wicklow	9	~	10	~	10	10	10	11	15	11
Meath	7	10	~	6	6	10	11	~	13	10
Galway	~	8	6	11	7	6	~	12	13	8
Kerry	7	~	7	6	8	~	6	8	6	7
Clare	~	13	~	~	~	8	8	10	~	9
Donegal	~	10	~	~	9	~	8	6	8	~
Wexford	~	~	6	~	~	6	6	9	11	7
Westmeath	~	~	~	~	~	~	8	~	6	~
Laois	~	7	6	6	~	6	6	6	~	~
Kilkenny	~	~	8	~	~	~	7	~	7	~

	Year of death									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Cavan	0	~	~	~	7	~	6	~	6	~
Carlow	0	~	~	9	~	~	~	7	~	6
Offaly	0	~	~	~	~	~	~	6	7	~
Sligo	~	~	~	~	~	9	~	~	~	~
Mayo	~	~	0	~	~	~	~	~	~	~
Longford	~	~	~	~	0	~	~	~	~	~
Monaghan	~	~	~	~	~	~	~	~	~	~
Roscommon	~	0	~	~	0	~	~	~	~	0
Leitrim	~	~	0	~	0	~	~	~	~	0
Ireland unknown	46	43	15	8	9	21	24	9	12	15

~ Five deaths or fewer

Appendix D

Drug poisoning deaths by HSE health region of incident, NDRDI 2012 to 2021

Table 18 Number of drug poisoning deaths by HSE health region of incident, NDRDI 2012 to 2021

		Year of death									
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
HSE Dublin and North East	n	66	101	90	93	82	92	80	99	111	101
	%	24.2	31.2	28.9	30.0	26.7	28.3	22.2	26.4	25.3	28.5
HSE Dublin and Midlands	n	61	69	90	88	93	79	105	107	132	81
	%	22.3	21.3	28.9	28.4	30.3	24.3	29.1	28.5	30.1	22.9
HSE Dublin and South East	n	46	32	50	50	45	45	61	60	69	64
	%	16.8	9.9	16.1	16.1	14.7	13.8	16.9	16.0	15.7	18.1
HSE South West	n	22	26	31	32	39	38	39	49	58	48
	%	8.1	8.0	10.0	10.3	12.7	11.7	10.8	13.1	13.2	13.6
HSE Mid West	n	13	25	16	12	16	21	26	21	22	28
	%	4.8	7.7	5.1	3.9	5.2	6.5	7.2	5.6	5.0	7.9
HSE West and North West	n	14	27	16	23	20	25	24	28	35	17
	%	5.1	8.3	5.1	7.4	6.5	7.7	6.6	7.5	8.0	4.8
Ireland unknown / other[a]	n	51	44	18	12	12	25	26	11	12	15
	%	18.7	13.6	5.8	3.8	3.9	7.7	7.2	3.0	2.8	4.2

a Other: relevant geocodes were not available

HSE health regions

HSE Dublin and North East: North Dublin, Meath, Louth, Cavan, Monaghan

HSE Dublin and Midlands: Longford, Westmeath, Offaly, Laois, Kildare, parts of Dublin and Wicklow

HSE Dublin and South East: Tipperary South, Waterford, Kilkenny, Carlow, Wexford, Wicklow, part of South Dublin

HSE South West: Kerry and Cork

HSE Mid West: Limerick, Tipperary North, Clare

HSE West and North West: Donegal, Sligo, Leitrim, Roscommon, Mayo, Galway

Appendix E

Specific drugs implicated in drug poisoning deaths, NDRDI 2012 to 2021

Table 19 Number of drug poisoning deaths by main specific drugs implicated, NDRDI 2012 to 2021*

	Year of death									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of deaths[a]	**273**	**324**	**311**	**310**	**307**	**325**	**361**	**375**	**439**	**354**
Methadone	87	94	105	91	105	101	123	126	150	129
Diazepam	92	113	121	109	101	97	122	104	139	112
Cocaine	26	32	42	46	42	55	79	108	140	107
Alprazolam	18	43	49	50	53	70	115	100	132	107
Alcohol[b]	54	82	70	67	81	68	72	92	88	91
Pregabalin[c]	~	14	28	50	68	48	69	62	94	83
Heroin	64	88	97	84	74	89	99	108	123	79
Zopiclone	20	53	73	67	67	48	42	74	69	59
Mirtazapine	21	37	41	31	48	26	38	32	51	48
Paracetamol	20	38	33	32	46	44	37	38	42	42
Tramadol hydrochloride	23	25	19	29	23	26	38	26	45	32
Sertraline	~	6	8	10	8	12	12	14	14	28
Codeine	20	17	16	22	18	28	28	21	26	28
Flurazepam	30	42	36	35	44	35	47	31	32	27
Olanzapine	19	28	18	19	23	18	20	15	30	21
Oxycodone hydrochloride	11	6	14	15	7	8	11	20	22	19
Amitriptyline	14	21	23	28	31	11	20	20	23	18
Quetiapine	10	13	18	20	20	13	8	14	24	18
Promethazine	~	~	~	6	~	~	~	~	11	16
Morphine	7	12	10	8	14	~	7	11	13	15
Fluoxetine	~	6	11	~	6	~	10	8	11	13
Venlafaxine	6	12	12	11	9	9	14	13	17	13

* Specific drugs for which there were fewer than 13 deaths are not listed

a An individual death may have more than one drug implicated

b Alcohol as part of a polysubstance poisoning

c Pregabalin was included in routine postmortem toxicology screening by the State Laboratory from 2013

~ Five deaths or fewer

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