

Drug-related deaths in Scotland in 2020 - Annexes



Published on 30 July 2021

This document contains the Annexes of the “Drug-related Deaths in Scotland in 2020” publication. They provide background information (e.g. on the definitions used) and, in a few cases, comment on certain aspects of the statistics.

Contents

Annex A: The definition of drug-related deaths used for these statistics (the National Records of Scotland (NRS) implementation of the ‘baseline’ definition for the UK Drugs Strategy)	3
Annex B: Some other definitions of drug-deaths.....	10
Annex C: Data sources	16
Annex D: Fluctuations in the numbers of drug-related deaths.....	22
Annex E: So-called ‘New Psychoactive Substances’	25
Annex F: A consistent series of drug-related death numbers, based on the classification at the end of the latest year covered by the publication.....	30
Annex G: Drug-related Deaths – comparison with other countries	34
Annex H: ‘Prescribable’ and ‘street’ benzodiazepines.....	40

The following Annexes include some comments on some aspects of the statistics:

- Annex B - some other definitions of drug-deaths
- Annex E - deaths involving New Psychoactive Substances
- Annex F - extra deaths counted in the consistent series
- Annex G - comparisons with other countries

Some Annexes refer to various Tables and Figures. All the material related to this edition of the publication can be found in the documents and workbooks which are available on the NRS website’s pages for:

- [the publication](#)
- most of the [Tables](#) and all the [Figures](#)
- the Additional Data (Tables [SUB1](#), [SUB2](#), [HBX](#) and [CX](#))
- the [Additional Analyses](#)

Annex A: The definition of drug-related deaths used for these statistics (the National Records of Scotland (NRS) implementation of the 'baseline' definition for the UK Drugs Strategy)

A1. Background

The definition of a 'drug-related death' is not straightforward. Useful discussions on definitional problems may be found in articles in the Office for National Statistics (ONS) publication 'Population Trends' and in the journal 'Drugs and Alcohol Today' (please see the References at the end of this Annex). 'Reducing drug related deaths', a report by the Advisory Council on the Misuse of Drugs (ACMD, also mentioned in the References), considered (what were, at that time) the current systems used in the United Kingdom to collect and analyse data on drug related deaths. In its report, the ACMD recommended that 'a short life technical working group should be brought together to reach agreement on a consistent coding framework to be used in future across England, Wales, Scotland and Northern Ireland'. A predecessor of National Records of Scotland (NRS), the then General Register Office for Scotland (GROS), was represented on this group, and this publication presents information on drug-related deaths using the approach that was agreed, on the basis of the definition as it was implemented by GROS and, now, NRS. The Office for National Statistics uses this definition to produce figures for what are described as 'drug misuse' deaths in England and Wales.

A2. The definition

The 'baseline' definition for the UK Drugs Strategy covers the following cause of death categories (the relevant codes from the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision [ICD10], are given in brackets):

- a) deaths where the underlying cause of death has been coded to the following sub-categories of 'mental and behavioural disorders due to psychoactive substance use':
 - (i) opioids (F11);
 - (ii) cannabinoids (F12);
 - (iii) sedatives or hypnotics (F13);
 - (iv) cocaine (F14);
 - (v) other stimulants, including caffeine (F15);
 - (vi) hallucinogens (F16); and
 - (vii) multiple drug use and use of other psychoactive substances (F19).

- b) deaths coded to the following categories and where a drug listed under the Misuse of Drugs Act (1971) was known to be present in the body at the time of death (even if the pathologist did not consider the drug to have had any direct contribution to the death):
 - (i) accidental poisoning by and exposure to drugs, medicaments and biological substances (X40 – X44);
 - (ii) intentional self-poisoning by and exposure to drugs, medicaments and biological substances (X60 – X64);
 - (iii) assault by drugs, medicaments and biological substances (X85); and
 - (iv) poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent (Y10 – Y14).

A3. Deaths which are excluded from the NRS implementation of the definition

The NRS implementation of the definition excludes a small proportion of the deaths which were coded to one of the ICD10 codes listed in Section A2, specifically:

- deaths coded to drug abuse where the direct cause of death was secondary infections or later complications of drug use. The statistics therefore exclude deaths from:
 - secondary infections such as clostridium or anthrax infection resulting from the injection of contaminated drugs;
 - conditions which could be regarded as later complications of drug use, such as bronchopneumonia, lobar pneumonia, bilateral pneumonia, septicaemia or organ failure where drug misuse was not specified as the direct and immediate cause of death (even though it may have damaged greatly the person's health over the years - so reference to, for example, 'chronic' or 'long-term' drug abuse does not necessarily mean that it was the direct and immediate cause of death).
- deaths where a drug listed under the Misuse of Drugs Act was likely to be present only as part of a compound analgesic or cold remedy. For this purpose, NRS identified the following compound analgesics and cold remedies when producing its statistics:
 - for 2018 and earlier years:
 - Co-codamol (paracetamol and codeine sulphate);
 - Co-dydramol (paracetamol and dihydrocodeine);
 - Co-proxamol (paracetamol and dextropropoxyphene); and
 - Dextropropoxyphene alone (as explained below).
 - for 2019 onwards:
 - Codeine and aspirin (co-codaprin);
 - Codeine and brompheniramine maleate;
 - Codeine and dextropropoxyphene;
 - Codeine and diphenhydramine hydrochloride;
 - Codeine and ibuprofen;
 - Codeine and paracetamol (co-codamol, as before);
 - Dextropropoxyphene and paracetamol (co-proxamol, as before);
 - Dextropropoxyphene alone (as before, as explained below);
 - Dihydrocodeine and aspirin;
 - Dihydrocodeine and dextropropoxyphene;
 - Dihydrocodeine and paracetamol (co-dydramol, as before);
 - Pholcodine;
 - Tramadol and paracetamol;

Three points should be noted on these matters:

- Such deaths are excluded because compound analgesics and cold remedies contain relatively small quantities of drugs that are listed under the Misuse of Drugs Act. It would not be appropriate to count as 'drug-related' a death for which a controlled substance was present only because the deceased had taken a compound analgesic or cold remedy.
- The list of compound analgesics and cold remedies was expanded for the production of the statistics for 2019 after a Public Health Scotland (PHS) National Drug-Related Deaths Database local data co-ordinator queried NRS counting as 'drug-related' a death, in 2018, from an overdose of aspirin and codeine. NRS sought advice from PHS and the Office of National Statistics (ONS, which later consulted Public Health England and Public Health Wales). It was agreed that NRS and ONS should both use the above longer list of compound analgesics and cold remedies when producing their statistics for 2019 onwards. NRS's historical data included at most a dozen

deaths, in almost 20 years, which might have been counted differently had NRS been using that longer list: far too few to warrant revising previous years' numbers. ONS also had only a small number of such cases in its historical data, and agreed that the cost of updating the back series would outweigh the benefits. Therefore, the introduction of the longer list has increased only slightly the accuracy of the statistics for 2019 onwards, and caused only a slight break, between 2018 and 2019, in the time-series.

- As it is believed that dextropropoxyphene has rarely, if ever, been available other than as a constituent of a paracetamol compound, deaths caused by dextropropoxyphene have been excluded even if there is no mention of a compound analgesic or paracetamol. However, deaths for which other controlled substances (such as codeine or dihydrocodeine) were reported without any mention of (e.g.) aspirin or paracetamol have been included, as these drugs are available on their own and are known to be abused in that form.

A4. Exclusions do not apply to the immediate or short-term effects of drugs (provided that the drugs are ones that are counted for these statistics)

The exclusions described in the first paragraph of Section A3 do not apply in the case of conditions which could be regarded as the immediate or short-term effects of drugs (provided that the drugs are ones that are counted for these statistics – that is, they are listed under the Misuse of Drugs Act and are not likely to be present only as part of a compound analgesic or cold remedy) and where terms such as 'intoxication', 'poisoning', 'toxicity', 'overdose', 'acute drug misuse', 'adverse effects of', 'combined effects of', 'possible intoxication' or 'suspected drug overdose' appear. For example, deaths for which the cause was given as

- complications of acute and chronic drug misuse or
- bronchopneumonia [due to] heroin intoxication or
- hypoxic brain injury [due to] morphine and methadone intoxication or
- multi-organ failure [due to] cardiac arrest [due to] multi-drug intoxication

would be included in these statistics. It would be assumed either that the death was due to the effects of the drugs (rather than the medical condition) or that the medical condition was an immediate consequence of the drug-taking.

In cases where there is a reference to (for example) drug intoxication, deaths caused by (e.g.) the inhalation of gastric contents, aspiration pneumonia or choking on food are counted in these figures, as they are regarded as immediate consequences of drug intoxication. Similarly, hypothermia may be an immediate consequence of drug intoxication. The statistics also include deaths for which the cause was given as 'cocaine-related cardiac arrhythmia' and 'acute intracerebral haemorrhage [due to] amphetamine use', unless it is clear that the drugs were not used recently.

A5. Some other points on the definition

Under the ICD10 rules, if a death was reported as being due to the joint effects of two (or more) conditions, the first-mentioned condition should be selected as the underlying cause of the death for the purpose of mortality statistics. Therefore, deaths for which the cause was given as, for example:

- Adverse effects of methadone, etizolam, gabapentin and benzodiazepines and chronic bronchitis and emphysema
- Amphetamine toxicity and coronary artery atheroma
- Cocaine intoxication and cardiac enlargement
- Cocaine toxicity and chronic obstructive pulmonary disease

- Cocaine toxicity and left ventricular hypertrophy
- Combined drug intoxication (morphine, etizolam and pregabalin) and ketoacidosis
- Etizolam and codeine intoxication with fatty change of the liver
- Heroin, cocaine and alcohol intoxication and hypertensive heart disease
- Methadone and etizolam intoxication and bicuspid aortic valve stenosis
- Methadone, etizolam and pregabalin intoxication and cirrhosis of the liver
- Methadone intoxication and acute myocardial infarction
- Morphine and tramadol intoxication, pulmonary adenocarcinoma and ischaemic heart disease
- Morphine (heroin) intoxication with severe pulmonary emphysema
- Multi-drug toxicity and ischaemic heart disease
- Tramadol toxicity with atherosclerotic cardiovascular disease

are included in these statistics, because (in each case) it is the toxic effect of the drugs that is selected as the underlying cause of death (for the purpose of mortality statistics), as it was mentioned first, rather than the medical condition.

However, deaths for which the cause was given as, for example:

- Coronary artery thrombosis and morphine, etizolam and diclazepam intoxication
- Ischaemic heart disease and methadone and etizolam intoxication
- Probable hypoglycaemia (insulin dependent diabetes mellitus and suspected insulin overdose) and etizolam intoxication

are not included in these statistics, because (in each case) it is the medical condition that is selected as the underlying cause of death (for the purpose of mortality statistics), as it was mentioned first, rather than the toxic effect of the drugs.

If a drug's legal status changes, NRS aims to count it on the basis of its classification on the day the person died (as NRS does not know when the drug was taken). For example, mephedrone was banned under the Misuse of Drugs Act with effect from 00.01 on 16 April 2010. Therefore, if mephedrone was the only drug found to be present in the body, a death coded to one of the categories listed under (b) in Section A2 would not be counted in NRS's implementation of the Drugs Strategy 'baseline' definition if it occurred before 16 April 2010.

Examples of deaths which were not counted because they were due to a secondary infections are deaths caused by clostridium novyi infection: Annex A of 'Drug-related Deaths in Scotland in 2000' explained that 22 such cases had been identified when the 2000 deaths data file was closed in May 2001, adding that it was not clear whether additional deaths had subsequently been identified. Similarly, these figures exclude the 13 deaths which were caused by the outbreak of anthrax that was associated with contaminated heroin and started in December 2009.

A number of categories of what some might think should be counted as 'drug-related' deaths do not come within the scope of the definition because the underlying cause of death was not coded to one of the ICD10 codes listed above. Examples of deaths which are not counted for this reason are:

- deaths coded to mental and behavioural disorders due to the use of volatile substances;
- deaths from AIDS where the risk factor was believed to be the sharing of needles;
- deaths from drowning, falls, road traffic and other accidents which occurred under the influence of drugs; and
- deaths due to assault by a person who was under the influence of drugs, or as a result of being involved in drug-related criminal activities.

A6. Identifying deaths which are drug-related, and why there are slight discrepancies in the figures for a few years between 2000 and 2006

There are a few minor discrepancies between the figures for 2006 and earlier years that were published at the time and those which were produced more recently. This is due to a change in the way in which 'drug-related' deaths are identified using the data held by NRS. This process has two stages:

- first, extract all the records of deaths which satisfy the ONS 'wide' definition ([Annex B](#)). The method used for this stage has not been changed; and
- second, scrutinise the extracted records and set a 'flag' to identify the ones which should be counted under NRS's implementation of the Drugs Strategy 'baseline' definition. The method used for this stage was changed with effect from June 2008.

Previously, the data were examined by the former GROS Vital Events Statistician, who had considerable knowledge and experience of dealing with information about drug-related deaths. He used Excel's facilities to set a number of indicators, and so identified the cases which should be counted under GROS's implementation of the Drugs Strategy 'baseline' definition. This method clearly relied greatly on the Statistician's personal expertise. He retired in Spring 2008.

Now, most of this work is done by SAS computer programs, using a look-up table to identify particular types of drugs (John Corkery of the University of Hertfordshire and, prior to that, the Programme Manager of the National Programme on Substance Abuse Deaths supplied most of the content of the first version of the look-up table). However, manual scrutiny is still required to identify deaths which should be excluded for the kinds of reasons that are described in Section A3. The work involved is reduced by using computer programs to produce separate lists of deaths which may be drug-related and which have certain details in common that are relevant to decisions on whether to count them. An example is a list of cases which would be excluded if it were found that controlled substances were present only as part of compound analgesics or cold remedies. That list is of cases which fall within the definition in Section A2, for which compound analgesics or cold remedies were reported, and for which the controlled substances that were present did not include any of the most commonly reported ones that are not found in compound analgesics and cold remedies (such as heroin/morphine, methadone, diazepam and cocaine - as a death would normally be counted as drug-related if any of them were present). An NRS Statistician and the Head of Public Health Scotland's Drugs Team (who is a consultant in public health medicine) look through those lists and decide which deaths to exclude for the reasons given in Section A3 (and taking account of the points set out in the other sections).

The database starts with data for 2000 because that was the first year for which NRS used ICD10. NRS used the classification's previous version (ICD9) for 1979 to 1999. Because the data are coded differently for the years up to 1999 and the years from 2000, NRS's current database starts with the data for 2000. It contains one record for every death which is counted by the ONS 'wide' definition. The database is not limited only to records for deaths which are counted by the standard (Drugs Strategy 'baseline') definition: NRS produces figures on the latter basis by selecting the records which have been 'flagged' appropriately.

The new method was tested by using it to prepare figures for each year for 2000 to 2006, inclusive. The results were the same as, or within just 1-2 of, the figures which had been published previously. After examining the cases which were being counted differently by the old and the new methods, it was concluded that any flaws in the new method were not significant, and that it should be used henceforth. However, to avoid confusing users

of these statistics with minor changes to the figures, the tables which appeared in the editions of this publication which were produced before the method was changed give figures for 2006 and earlier years which were extracted from the database produced by the old method, and so are as published previously. However, new analyses of the data for 2000 onwards now use the database produced by the new method, and so may include some totals or sub-totals (for the years from 2000 to 2006, inclusive) that differ slightly from the figures which were published previously, because the new method was used to produce the database of relevant cases for those years.

A7. Revisions to figures for previous years

When a new edition of this publication is produced, some of the figures that were published in the previous edition may be revised slightly, following a correction to the substance name 'look-up table' (referred to in the previous section) that is used to determine (for example) whether each substance that has been reported as being found in a body is one that should be counted as a controlled substance for the purpose of the standard (Drugs Strategy 'baseline') definition that is used to produce these statistics. For example:

- after the "... in 2014" edition was prepared, it was found that an error in the look-up table entry for one drug led to one death wrongly not being counted as drug-related. Correcting the error raised the total number of drug-related deaths registered in 2013 by one. Some of the other figures (e.g. the number of females, the number aged 25-34) also increased as a result.
- after the "... in 2015" edition was prepared, it was found that an error in the look-up table entry for one drug led to one death wrongly not being counted as drug related. Correcting the error raised the total number of drug-related deaths registered in 2014 by one. Some of the other figures (e.g. the number of males, the number aged 55-64) also increased as result. It was also found that an error in the look-up table entry for another drug had led to some deaths wrongly being counted as ones for which diazepam was implicated in, or contributed to, the cause of the death (one death in 2013, two in 2014 and seven in 2015), and as ones for which diazepam was found to be present in the body. The latter error did not affect the number of drug-related deaths, or any of the other figures for those years.
- after the "... in 2016" edition was prepared, it was found that an error in the look-up table entry for one drug led to one death, registered in 2016, wrongly not being counted as drug-related. Correcting the error raised the total number of drug-related deaths registered in 2016 by one. Some of the other figures (for example, the number of males, and the number aged 45-54) also increased as result.
- after the "... in 2017" edition was prepared, it was found that an error in the look-up table entry for one drug led to one death, registered in 2016, wrongly being counted as involving a New Psychoactive Substance. It was also found that two substances had wrongly been classified as being controlled, and that two other substances each had an incorrect value for one of their indicators. Correcting these errors did not change the number of drug-related deaths registered in any year, nor how they are broken down by (for example) age and sex. However, it reduced by one the number of 'New Psychoactive Substance' deaths for 2016, and led to (for example) Table Y showing fewer 'phenazepam' deaths in some years.
- after the "...in 2019" edition was prepared, it was found that an error in the look-up table entry for one drug led to one death, registered in 2019, wrongly not being counted as drug-related. Correcting the error raised the total number of drug-related deaths registered in 2019 by one. Some of the other figures also increased as result.

In addition, very occasionally, some of the figures that were published in a previous edition may have to be revised for another reason. This happened after the figures for 2019 were published, when NRS was sent (much later than it should have been) information about the substances involved in some Highland deaths, without which it had been unable to classify some of them as being drug-related. Adding the extra information to the NRS drug-death database increased by 15 the number of drug-related deaths that were registered in 2019. With the correction of the error in the look-up table (referred to in the previous paragraph), this increased the total number of drug-related deaths registered in 2019 by 16. The total for Highland was 15 higher than before, and several of the other numbers (e.g. by age and sex) were revised.

A8. References

Arrundale J and Cole S K	Collection of information on drug related deaths by the General Register Office for Scotland	General Register Office for Scotland 1995
Christophersen O, Rooney C and Kelly S	Drug related mortality: methods and trends	'Population Trends' 93, Office for National Statistics, 1998
Corkery, J	UK drug-related mortality – issues in definition and classification	'Drugs and Alcohol Today' volume 8 issue 2, Pavilion Journals, 2008
The Advisory Council on the Misuse of Drugs	Reducing drug related deaths	Home Office, 2000

Annex B: Some other definitions of drug-deaths

B1. Other bodies may use other definitions for other purposes: this annex gives some examples. It then discusses how some deaths from certain other causes might be counted as well, to obtain a wider view of mortality arising from drug misuse.

'Drug poisoning' deaths

(Office for National Statistics [ONS] 'wide' definition)

and

'drug induced' deaths

(European Monitoring Centre for Drugs and Drug Addiction [EMCDDA] 'general mortality register' definition)

B2. First, there is a 'wide' definition which is used by the Office for National Statistics (ONS) to provide figures for 'drug poisoning' deaths. It covers the following cause of death categories (the relevant codes from the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision [ICD10], are given in brackets):

a) deaths where the underlying cause of death has been coded to the following sub-categories of 'mental and behavioural disorders due to psychoactive substance use':

- opioids (F11);
- cannabinoids (F12);
- sedatives or hypnotics (F13);
- cocaine (F14);
- other stimulants, including caffeine (F15);
- hallucinogens (F16);
- volatile solvents (F18); and
- multiple drug use and use of other psychoactive substances (F19).

b) deaths coded to the following categories:

- accidental poisoning by and exposure to drugs, medicaments and biological substances (X40 – X44);
- intentional self-poisoning by and exposure to drugs, medicaments and biological substances (X60 – X64);
- assault by drugs, medicaments and biological substances (X85); and
- poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent (Y10 – Y14).

The main differences between this 'wide' definition and the one used to produce the statistics given in this publication (the 'baseline' definition for the UK Drugs Strategy) are:

- the first part also includes deaths coded to 'volatile substances' (F18); and
- the second part is not restricted to cases where a drug listed under the Misuse of Drugs Act (1971) was known to be present in the body at the time of death.

Therefore, the 'wide' definition's figures are markedly higher.

B3. Second, there is the 'drug induced deaths' definition used by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) for its 'general mortality register'. The rules for this definition refer to particular codes for the underlying causes and the types of substance involved, and (in some cases) specify the combinations that must occur for a death to be counted under this definition. It produces figures which are broadly similar to those of the standard (Drugs Strategy 'baseline') definition, but which cover deaths which

involved the use of a different (albeit overlapping) range of drugs: so some deaths which are counted under the EMCDDA definition are not counted under the standard (Drugs Strategy 'baseline') definition, and vice versa. In the '... in 2015' edition, the EMCDDA figures for some of the years from 2000 to 2014 were revised slightly from those published previously, following advice, from Public Health England (which co-ordinated the provision of figures for the UK to the EMCDDA) that deaths satisfying some other criteria should be counted in the EMCDDA definition.

- B4. Because National Records of Scotland (NRS) has details of all the deaths which were registered in Scotland, it can produce figures using the 'drug poisoning' (ONS 'wide') definition and the 'drug induced' (EMCDDA 'general mortality register') definition, as well as using the standard (Drugs Strategy 'baseline') definition. These are given in Table X. As the table and Figure X1 show, the numbers produced using the three definitions tend to rise and fall in broadly similar ways, and so all three definitions give similar impressions of the long-term trend, although they differ regarding the numbers of deaths in each year. Figures based on the 'drug poisoning' (ONS 'wide') definition have been provided for 1979 onwards, but numbers based on the other two definitions are only available for 1996 and later years. A separate note, ['Figures for drug-related deaths for Scotland for 1995 and earlier years'](#) is available on the NRS website, explains why NRS cannot produce figures for drug-related deaths for 1995 and earlier years on the basis of the standard (Drugs Strategy 'baseline') definition, comments on the potential reliability of the numbers on the basis of the 'drug poisoning' (ONS 'wide') definition for 1979 to 1999, and explains why it is not possible to produce reliable figures for drug-related deaths on that basis for 1978 or earlier years.
- B5. As explained above, the 'drug poisoning' (ONS 'wide') definition includes all deaths coded to accidental poisoning, and to intentional self-poisoning by drugs, medicaments and biological substances, whether or not a drug listed under the Misuse of Drugs Act was present in the body. Table Y shows the numbers of deaths (on this basis) in each year for the latest year, and over the previous ten years, for which a range of drugs (including anti-depressants, anti-psychotics, paracetamol or a compound, and tramadol) were reported, including recent years' rises in the numbers of deaths involving certain drugs (such as diclazepam, etizolam, gabapentin and pregabalin) which have only been controlled for a few years (and others which have yet to be controlled).

Examples of definitions which have been used by the Police

- B6. The former Scottish Crime and Drug Enforcement Agency (SCDEA) used a different definition. In Autumn 2007, the then General Register Office for Scotland (GROS) compared some of the details of the drug-related deaths (in terms of the 'baseline' UK Drug Strategy definition) in 2006 that were held by GROS and the deaths that were recorded in an SCDEA database of drug-related deaths. The results may be summarised as follows:
- 321 deaths were counted by both GROS and SCDEA;
 - 100 deaths were counted by GROS but not by SCDEA. These included:
 - 14 deaths occurring in December 2005 which were not registered until 2006;
 - 28 definite suicides;
 - 19 probable suicides (classified as 'events of undetermined intent');
 - 8 cases coded to 'accidental overdose'; and
 - 29 cases coded to 'drug abuse'.
 - 53 cases were counted by SCDEA but not by GROS. These comprised:

- 13 deaths occurring in December 2006 which were not registered until 2007 - most (if not all) of which will be included in the GROS figures for 2007;
- 21 deaths for which drugs (whether named or unspecified) were recorded in the GROS database - but either the drugs mentioned were not covered by the 'baseline' definition or the deaths were coded to causes other than drug abuse or drug overdose;
- 19 deaths which had no mention of drugs in the GROS database (13 were coded to 'unascertained' cause of death). Returns from Procurators Fiscal were still outstanding for several of these when the GROS database for 2006 was closed at the end of June 2007. SCDEA recorded the involvement of heroin or methadone in 15 deaths, so it is likely that some of them would have been counted in GROS's figures for drug-related deaths had all the relevant information been available before its database for 2006 closed.

B7. Because the numbers involved are smaller, and because there may be differences in the way in which cases are counted against geographical areas, there may be larger (in percentage terms) differences between NRS and other bodies in their figures for parts of Scotland. For example, in September 2010, the then Grampian Police investigated the difference between its figure of 43 and the then GROS's figure of 52 for the number of drug-deaths in the Grampian area in 2009. The Police's results may be summarised as follows:

- 39 deaths were counted by both the then GROS and the Police;
- 13 deaths were counted by the then GROS but not by the Police. These comprised of:
 - nine cases of suicide, or suspected suicide (the Police did not include suicides which involve drugs in their figures for 'drug-related' deaths);
 - two deaths which had been registered in 2009 but had actually occurred in 2008 (and so were not in the Police figures for 2009). As mentioned in Annex C, NRS counts events on the basis of the date of registration, since the date of occurrence may not be known;
 - the death of someone from Grampian who had been living elsewhere in Scotland for 3 months. As explained in the information about the geographical basis of the Vital Events statistics (available via the vital events [general background information](#) section of the NRS website), NRS normally counts someone who had been living at an address for less than a year on the basis of the previous address. The Grampian Police had not known about this death, so could not have counted it; and
 - a death from an overdose of prescribed medication. The Police had not counted this death as 'drug-related' because the controlled substances which caused the death had been obtained legitimately, being medication which had been prescribed to the deceased.
- 4 deaths were counted by the Police but not by NRS (formerly GROS). These comprised of:
 - two deaths which occurred in December 2009 but which had not been registered until 2010 (and so were not in the GROS figures for 2009);
 - a death caused by a medical condition upon which the consumption of controlled drugs had a bearing (GROS had counted this death as being due to the medical condition rather than as being drug-related); and

- the death in Grampian of someone who had been living elsewhere. (GROS counted this in its statistics for the other part of Scotland, because NRS's figures are based on its understanding of the area of residence of the deceased, if that was within Scotland).

Grampian Police also looked at the statistics for individual local authority areas, and found further differences between its figures and those of the then GROS. These were due to different practices for counting deaths against geographical areas. For example, the Police figures for Aberdeen City included deaths, which had occurred in Aberdeen, of people who had lived in Aberdeenshire or Moray. GROS counted such cases on the basis of its understanding of the area of residence of the deceased.

Other bodies' definitions: discussion

- B8. It follows that there will inevitably be differences between NRS's figures and those of other bodies, because different organisations may use different definitions, perhaps because their reasons for compiling their figures differ because they need to use them for different purposes. For example, the Police did not include suicides in their drug-related death figures because their need for such figures was to monitor the numbers of cases where people have died accidentally after taking controlled drugs, as they have a duty to investigate any potential criminal activity involved in the supply of controlled drugs to the deceased. The Police investigate suicides in a different way (for which it does not matter what method was used, such as legal or illegal drugs, hanging, or falling from a height), and therefore did not include suicides involving drugs in their drug-related death figures. In addition, NRS and other bodies may hold different information in some cases (for example when registering a young person's death, a parent may say that the person's usual place of residence was the family's home address, whereas the Police records may hold a different address). This may sometimes lead to differences in the direction of the year-to-year change shown by NRS's and another body's statistics (for example one set of data might suggest a slight rise, the other a slight fall). However, such differences between NRS's and other bodies' figures should not be a cause for concern, because they can be explained by the kinds of reasons given above. In addition, as mentioned in Annex D, the figures for any given part of Scotland may be subject to year-to-year fluctuations: using 5-year moving averages should provide a better indication of the level and any long-term trend than looking only at (say) the figure for the latest year and the change from the previous year.
- B9. Other organisations may interpret the term 'drug-related deaths' in other ways. For example, drug-related deaths which were known to be suicides were excluded from the National Drug-Related Deaths Database (Scotland) Report 2009, which was prepared by the Information Services Division (ISD) of NHS National Services Scotland, which is now part of Public Health Scotland (PHS). That report is available (along with the corresponding reports for 2010 and later years) on the [ISD \(now PHS\) website](#). However, that definition of drug-related deaths was changed to include confirmed suicides for the first time in the ISD database for 2012. ISD's database was established to collect detailed information, from a range of local data sources, on the nature and circumstances of people who had died a drug-related death - for example, including data on the person's social circumstances, medical and drug use history, and previous contact with health and criminal justice services. The ISD publication for 2009 included sections on Sociodemographics, Drug Use History, Medical and Psychiatric History and Adverse Life Events, the Death, Toxicology and Substance Prescribing, and Contact With Services. It also had an appendix on the reasons for differences between ISD's figures and those given here, which include some differences in coverage and definitions (such as the exclusion of confirmed suicides for the years before 2012) and the fact that ISD's local contacts did not provide data for some drug-related deaths.

Deaths counted in the ‘wide’ definition but not in the NRS implementation of the ‘baseline’ definition; some other causes of death that may be associated with drug misuse; and the numbers of volatile substance abuse deaths

B10. Among the recommendations made by the National Forum on Drug-related Deaths in its annual report for 2009/10 was one which relates to this publication:

‘In recognition of the expanding range of causes of drug related deaths, and in keeping with the aims of the Advisory Committee on Misuse of Drugs report on Drug Related Deaths (published in 2000) to include a wider view of mortality caused by drug misuse, the forum recommends:

- that GROS include a table within their annual drug related deaths report that reflects deaths from ‘some causes which may be associated with present or past drug misuse’;
- that in the coming year, this includes detail on deaths caused by Hepatitis C and HIV; and
- that the forum and GROS explore the possibility of including violence, trauma and road traffic accidents in future reports.’

As a result, Table Z was added to a previous edition of this publication.

B11. The top part of Table Z gives the numbers of deaths counted by the ‘drug poisoning’ (ONS ‘wide’) definition, with separate figures for:

- the basis used for the statistics in this publication (this is the Drug Strategy ‘baseline’ definition, as implemented by GROS/NRS);
- deaths which are within the ‘baseline’ definition but are excluded from the figures produced by GROS/NRS for reasons which are given in Section A3 of Annex A;
- all other deaths which are counted by the ‘drug poisoning’ (ONS ‘wide’) definition.

B12. The next part of Table Z gives some information which was requested by members of the National Forum, starting with the numbers of deaths from some causes which may be associated with present or past drug misuse. At present, this shows only the following two causes of death:

- Hepatitis C - the virus can be transmitted through sharing needles when injecting drugs. Health Protection Scotland (HPS), which is now part of Public Health Scotland (PHS), estimated that, in 2017-18, 57% of people who injected drugs were Hepatitis C antibody positive. From data on all the people who had been diagnosed as Hepatitis C antibody positive in Scotland by the end of 2017, HPS found that 91% of those with a known risk factor were people with a history of injecting drug use. In only a small proportion of cases was the infection known to have been transmitted in another way (such as through sexual contact, a tattoo or body piercing with equipment that had not been properly sterilised, a bite, blood spillage, blood transfusion, using medical equipment that was not adequately sterilised, or perinatal risk). Accordingly, most deaths caused by Hepatitis C occur in people with a history of injecting drug use.
- HIV - using a needle or syringe that has already been used by someone who is infected is one of the two main ways to become infected, the other being unprotected sexual intercourse with an infected person. Therefore, only a proportion of deaths caused by HIV will be due to drug misuse.

- B13. The final part of Table Z shows the number of volatile substance abuse deaths in Scotland. Two sets of figures are provided, the first of which has not been updated for many years. It used to be produced and published by the International Centre for Drug Policy (ICDP) at St George's, University of London. A few deaths per year could be counted as both 'drug-related' and 'volatile substance abuse' (for example if the cause was 'combined toxic effects of methadone and butane'). ICDP produced its figures for Scotland using information from NRS, the Crown Office and Procurator Fiscal Service, and other sources. More details of the figures that ICDP used to produce are given in its Volatile Substance Abuse Mortality Report, available via the [news and publication](#) section of the St George's website.
- B14. The second set of statistics of volatile substance abuse deaths was produced by NRS, on the basis which was used for an ONS publication which had figures for the whole of Great Britain. Again, some deaths may be counted as both 'drug-related' and 'volatile substance abuse'. More information about these figures is given in material which is part of the [Deaths section of the NRS website](#).

Annex C: Data sources

Death registration records

- C1. The National Records of Scotland (NRS) holds details of all deaths which are registered in Scotland. By convention, deaths are counted on the basis of the calendar year in which they are registered rather than the year of occurrence (as the latter might not be known). NRS usually closes its statistical database for a calendar year about four months after the end of the calendar year, but the statistics for 2020 are based upon the information which NRS had obtained by 18 June 2021. NRS classifies the underlying cause of each death using International Statistical Classification of Diseases and Related Health Problems (ICD) codes, based on what appears in the medical certificate of the cause of death together with any additional information which is provided subsequently by (for example) certifying doctors, pathologists and Procurators Fiscal.

Obtaining information about the substances that were involved in the death

- C2. Drug-related deaths are identified using details from death registrations supplemented by information from a specially-designed questionnaire, which is completed by forensic pathologists and lists the drugs and solvents that were found. NRS requests this information for all deaths involving drugs or persons known, or suspected, to be drug-dependent. Additionally, NRS follows up all cases of deaths of people where the information on the death certificate is vague or suggests that there might be a background of drug abuse. This enhancement to the data collection system was described in a paper published by NRS in June 1995 (which is referred to in the References at the end of Annex A). A copy of the questionnaire that was used from 2008 to 2013 appears in those years' editions of this publication. A new version of the questionnaire was introduced at the start of 2014, a copy of which is at the end of this Annex. The new questionnaire did not change greatly what was collected in respect of each death, but covers a wider range of deaths than before. This does not alter the definition of drug-related deaths used for these statistics, but allows NRS to produce information about a wider range of deaths than that covered by the standard definition. (The form was revised slightly in July 2017, to include a bit more guidance on how to answer a few questions, but this did not change the kinds of information provided.)
- C3. It should be noted that, in the case of deaths which involved drugs which are available on prescription, NRS does not know whether those drugs had been prescribed to the deceased: such information is not collected by the death registration process nor by the pathologists' questionnaires. Therefore, NRS does not know how many of the deaths which involved (say) methadone were of people who had been prescribed the drug (some information about this is available from the NHS reports referred to in paragraph B9 of Annex B).

Changed collection of information about, and basis of figures on, substances

- C4. The questionnaire was revised for 2008, in order to collect more complete information about the substances present in the body. This caused a break in the series of figures for 'drugs reported' because:
- pre-2008, the form asked about the 'principal drug or solvent found in a fatal dose' and about 'any other drugs or solvents involved in this death' - so some pathologists reported only the substances which, they believed, contributed directly to each death; and

- the form now asks about the drugs or solvents ‘implicated in, or which potentially contributed to, the cause of death’ and about ‘any other[s] which were present, but which were not considered to have had any direct contribution to this death’- so some pathologists now report substances which they would not have mentioned previously.

C5. NRS's data from the questionnaires for 2008 onwards distinguish between (a) drugs which were implicated in, or which potentially contributed to, the cause of death and (b) any other drugs which were present, but which were not considered to have had any direct contribution to the death. As a result, NRS can produce figures for 2008 onwards:

- on the ‘drugs which were implicated in, or which potentially contributed to, the cause of death’ basis – that is, counting only drugs which were reported under (a); and
- on the ‘all drugs which were found to be present in the body’ basis – that is, covering drugs which were reported under either (a) or (b).

Following consultation with the National Forum on Drug-related Deaths, ‘drugs which were implicated in, or which potentially contributed to, the cause of death’ became the normal basis for the figures for 2008 onwards that NRS produces for individual drugs, with effect from the 2009 edition.

C6. It should be noted that, although the old questionnaire referred to the ‘principal drug ...’ and ‘other drugs ... involved’, the figures for 2007 and earlier years are not directly comparable to the figures for 2008 onwards on the new normal basis. This is because, in 2007 and earlier years, some pathologists reported, in the old questionnaire, all the drugs that they found (that is, not just the drugs that they believed were implicated in, or contributed to, the cause of death) - so they provided information on the ‘all drugs which were found to be present in the body’ basis (that is, not on the new normal basis). More information about the change (including why NRS cannot produce figures on the normal basis for 2007 or earlier years) is available in the 2009 edition.

Changed classification of the underlying cause of death

- C7. At the start of 2011, NRS implemented a number of World Health Organisation (WHO) updates to the ICD rules for identifying the underlying cause of death. This caused a break in the series of figures for the underlying cause of death. ‘Drug abuse’ deaths from ‘acute intoxication’, which would previously have been counted under ‘mental and behavioural disorders due to psychoactive substance use’, are now counted under the appropriate ‘poisoning’ category. Examples are the deaths of known or suspected habitual drug abusers, for whom the cause of death was certified as ‘adverse effects of heroin’, ‘methadone toxicity’ or ‘morphine intoxication’. Under the old coding rules, the underlying cause of those deaths would have been ‘mental and behavioural disorders due to use of opioids’ (unless NRS had been informed that the deaths were due to intentional self-harm, or assault, in which case the underlying cause would have been ‘intentional self-poisoning ...’ or ‘assault by drugs ...’, whichever was appropriate).
- C8. Under the new coding rules, the underlying cause of such deaths is the appropriate type of poisoning. For example, if NRS is informed that the overdose is believed to have been accidental, the underlying cause will be coded as ‘accidental poisoning by and exposure to narcotics and psychodysleptics (hallucinogens)’. A note on the changes to the way in which NRS has coded the underlying cause of death with effect from the start of 2011 is available within the [Death Certificates and Coding Cause of Death](#) section of its website.

C9. NRS has estimated what the figures for 2011 onwards would have been, had the data been coded using the old rules. This makes it possible to see the changes between 2010 and 2011, and the longer-term trends, without a break in the series. NRS hopes to continue to estimate the breakdown by underlying cause of death on the basis of the old coding rules for at least a few more years.

Are the total numbers of drug-related deaths affected?

C10. The overall total number of drug-related deaths has not been affected by the changes to (i) the basis of the figures for individual drugs and (ii) how the underlying cause of death is coded. The first change has just reduced the number of drugs that are counted, for the purpose of the normal figures, for some deaths; the second has just altered the categories for the underlying cause of death against which many deaths are counted.

C11. However, the total number of drug-related deaths has been affected by changes in the list of drugs which are controlled under the Misuse of Drugs Act. Annex F explains that the 'coverage' of NRS's standard (Drugs Strategy 'baseline') definition 'widens' every time another drug is added to the list of controlled substances, because all subsequent deaths from poisoning by that drug will be counted as drug-related. In practice, changes in the classification of drugs that occurred in the years up to and including 2013 had little effect on the figures (refer to paragraph F4 of Annex F), but the change in the classification of tramadol and zopiclone in 2014 could have caused a noticeable break in the continuity of NRS's figures (as explained in paragraph F5 of Annex F). Therefore, in order to give more accurate indications of changes and trends, NRS developed a 'consistent series' of numbers of drug-related deaths in previous years, which is based on the classification of each substance at the end of the latest year covered by the publication. In this edition, the consistent series shows that gabapentin and pregabalin becoming controlled under the Misuse of Drugs Act with effect from 1 April 2019 had very little effect on the continuity of the drug-death statistics.

C12. The statistics of drug-related deaths may be affected by other differences, between years and/or between areas, in the way in which the information was produced. For example:

- technical advances may enable the detection of small quantities of substances that could not have been found in the post-mortems that were performed several years ago;
- the range of substances for which tests are conducted may change – for example for a number of years, a laboratory did not routinely test for the presence of cannabis (because the view was that, in general, it did not contribute to causing deaths), but now does so more often, because Procurators Fiscal are now more likely to want to know whether the deceased had been using it. More generally, advice is that there is a demand to obtain more complete and thorough toxicology on all cases tested for drugs, which includes fuller examinations for, and hence a greater possibility of finding, more drugs;
- if pathologists in one area report any findings of benzodiazepines by referring to that group of drugs unless they are sure that only one particular benzodiazepine (for example diazepam) was used, the areas which they serve will appear to have low proportions of deaths for which diazepam is mentioned (compared to areas where diazepam is more likely to be named specifically, and where there are proportionately fewer reports of benzodiazepines as a group);
- pathologists may decide not to describe a drug as being 'implicated in, or potentially contributing to, the cause of death' if it is found at what they would regard as within the levels that one might expect for the therapeutic use of a drug, and may change what they regard as the minimum level for reporting a substance.

For example, in one part of Scotland, diazepam used to be reported if its level was at least 0.4 mg/litre, but the 'cut-off' was raised to about 1 mg/litre. All else being equal, the area would then have fewer deaths in which diazepam was implicated, because cases with levels of between 0.4 and 1 mg/litre would no longer be counted; and

- there may be cases where different pathologists could have different views on whether a particular drug should be described as 'implicated in, or potentially contributing to, a death' - for example, because they have different views on what would have been a fatal dose of the drug for the person concerned, or (if the person had also taken other substances) on the level of harm that would be caused by the combination of the drug and one or more of the other substances taken.

The basis of the statistics for areas within Scotland

- C13. Deaths are normally classified by geographical area on the basis of the usual place of residence of the deceased (or, if that is not known, or is outwith Scotland, on the basis of the location of the place of death).
- C14. The statistics for the NHS Board areas are based on the boundaries which apply with effect from 1 April 2014. The figures for earlier years show what the numbers would have been, had the new boundaries applied in those years.

The questionnaire used to obtain further information about drug-related deaths, with effect from 2014

- C15. The questionnaire introduced in 2014 appears on the next page. Different questionnaires were used for 2007 and earlier years, and for 2008 to 2013. Copies of those questionnaires can be found in the relevant editions of this publication. Following consultation with members of the Pathologists sub-group of the National Forum on Drug-related Deaths, the version shown here was used from 2014. In July 2017, the form was revised slightly to include a bit more guidance on how to answer a few questions (but that did not change the kinds of information provided). The notes of guidance for the completion of the form are from the "2017" version.

Notes for completion:

General:

The information collected by this form is essential for the correct coding and monitoring of drug-related deaths in Scotland. If you have any queries about the form or its completion, please contact:

Frank Dixon (NRS), telephone: 0131 XXX XXXX.

Coverage:

A form should be completed, by a pathologist following post-mortem/toxicological examinations, if:

(i) **the death involved or resulted from the use of drugs or solvents, such as any of the following:**

- **illicit drugs**
- **substances controlled under the Misuse of Drugs legislation* which had been prescribed**
- **new psychoactive substances (e.g. so-called "legal highs")**

or

(ii) **the death was from other causes, such as:**

- **medical conditions**
- **suicides**
- **accidents**

in those cases where the deceased was a known or suspected drug/solvent abuser

Please note that

(a) forms should be completed for all deaths (including suicides) involving drugs or solvents for which the immediate cause of death was **intoxication, overdose or poisoning**, or was a medical condition that was an **immediate consequence of the drug toxicity** - e.g. if the cause of death is: 1(a): pneumonia 1(b): heroin intoxication .

A form should be completed for every such death, even if the deceased was not a known or suspected drug/solvent abuser and/or it is thought that the drugs were obtained legally. For example, a form should be completed for every death that was the result of an overdose of a prescribed controlled substance.

(b) forms should **also** be completed for deaths which were due to medical conditions, chronic infections or diseases (e.g. heart or liver problems, Hepatitis C or HIV), suicide by other means (e.g. hanging, jumping from a height), and accidents (e.g. road accidents, house fires, falls, drownings), **in those cases where the deceased was a known or suspected drug/solvent abuser**

(c) as requested by the Pathologists sub-group of the National Forum on Drug-Related Deaths (NFDRD), **the coverage of the ME4 form is wider than in 2013 and earlier years**. However, **this should not increase the published number of drug-related deaths**, because NRS has not changed the definition of a drug-related death that is used for that purpose. NRS will use the data from the additional ME4 forms to produce (e.g. for NFDRD) information about a wider range of drug-related deaths than that covered by the standard statistical definition.

Q4 - Drugs/solvents to be recorded:

All drugs/solvents involved should be recorded, not just 'illicit' or 'controlled' drugs. However, it is not necessary to record additional metabolic by-products found by the toxicology.

Please note that, in part (i), the drugs/solvents which were implicated in (or contributed to) the cause of death may be listed in any order: NRS will **not** assume that the first one was the most important.

Q6 - Cause of death:

Please record the full details as they would appear on a medical certificate of cause of death (Form 11).

* Controlled substances under the Misuse of Drugs legislation

A detailed list is available from the Home Office Website: see:

<http://www.homeoffice.gov.uk/publications/controlled-substances/drugs/drug-licences/controlled-drugs-list>

and further information is available via: <http://www.homeoffice.gov.uk/drugs/drug-law> .

When this form was revised, controlled drugs included (e.g.) methadone, morphine, cocaine, ecstasy and heroin (Class A); codeine, dihydrocodeine, amphetamines and cannabis (Class B); diazepam and temazepam (Class C).

Completed forms should be returned to:

Vital Events Branch,
National Records of Scotland,
Ladywell House,
Ladywell Road,
Edinburgh EH12 7TF

Annex D: Fluctuations in the numbers of drug-related deaths

- D1 General information about fluctuations in death statistics is given in a separate [section of the NRS website](#). This Annex gives some examples that are specific to statistics of drug-related deaths.
- D2. The figures in Table 1 show that, in some periods (such as from 2001 to 2005, and from 2008 to 2013) there were rises and falls in the number of drug-related deaths. When there appear to be year to year fluctuations, moving annual averages are likely to provide a better guide to any long-term trend than the change between any two individual years. Figure 1 in the publication illustrates this: the dashed line, which is the 5-year moving average, “smoothes” out most of the year-to-year variation, and so should show any overall trend (or stability) better than the individual years’ values (which are given by the continuous line, and sometimes appear to have quite large percentage year-to-year fluctuations). From its first value (for 1996-2000, the period centred on 1998), the 5-year moving average rose for many years, suggesting that there was a clear long-term upward trend. When the figure for 2013 was obtained, the 5-year moving average fell slightly, from 554 for 2008-2012 (the period centred on 2010) to 544 for for 2009-2013 (the period centred on 2011), because there were fewer deaths in the year which had entered the calculation (2013, with 527 deaths) than in the year which had dropped out of the calculation (2008, with 574 deaths). However, with the number of deaths rising to 614 in 2014, and further increases in subsequent years, the 5-year moving average rose again.
- D3. The shaded area shows the likely range of random statistical variation around the 5-year moving average. Statistical theory suggests that, if the number of deaths can be represented as the result of a Poisson process, for which the underlying rate at which the events (deaths) occur is given by the 5-year moving average, then random year to year variation would result in only about one year in 20 having a figure outwith this range (which is a ‘95% confidence interval’, calculated thus: the underlying rate of occurrence plus or minus 1.96 times its standard deviation; for a Poisson process, the standard deviation is the square root of the underlying rate of occurrence).
- D4. Looking at Figure 1, it is clear that:
- up to (and including) 2007, the individual years' figures tended to fluctuate around a long-term upward trend, and were generally within the likely range for random statistical year to year variation about the trend;
 - from 2008 (when 574 deaths were registered) to 2013 (527 deaths), there was not much overall change in the numbers: the individual years’ figures tended to fluctuate from year to year, remaining between 485 (in 2010) and 584 (in 2011). The figure for 2008 appeared unusually high (being above the upper end of the likely range of random statistical variation around the 5-year moving average, which is assumed to represent the underlying rate for that time), and the figures for 2010 and 2013 appeared unusually low (both being below the lower end of the likely range of random statistical variation). The figures for the other three years in that period (2009, 2011 and 2012) were all close to the 5-year moving average value, and so were broadly in line with what appeared to be the underlying rate for that time;
 - for 2014 onwards, each year’s figure is much more than in the previous year. With 614 deaths in 2014, 706 in 2015, 868 in 2016, 934 in 2017, 1,187 in 2018, 1,280 in 2019 and 1,339 in 2020, the apparent long-term trend is one of rapid increases;

- the numbers for 2014 to 2018 are all within 7% of the value of the 5-year moving average that is centred on those years, and so are all broadly in line with the apparent long-term trend;
- the figure for 2019 is roughly in line with what one might expect the 5-year moving average to be, if one were to extrapolate the apparent trend suggested by its most recent four values.
- the figure for 2020 may be below the likely range of values for 2020 that one might expect on the basis of the apparent trend suggested by the 5-year moving average's most recent four values – but, if that is the case, at the time of writing, one cannot know what is the cause (e.g. an unusual level of random variation in 2020? a change in the long-term trend's annual rate of increase?);

- D5. As the overall total may fluctuate from year to year, it is not surprising that there may be greater (in percentage terms) year-to-year variation in the figures for sub-groups of the population, or for areas within Scotland. For example, Table 4 shows that the number of deaths in a particular age-group can fluctuate markedly over the years (for example, the number of 15 to 24 year olds who died was 100 in 2002, 47 in 2005, 94 in 2007, 65 in 2010, 32 in 2013, 46 in 2014, 30 in 2015, 42 in 2016, 36 in 2017 and 64 in 2018). Therefore, using 5-year moving annual averages should 'smooth out' the effects of any fluctuations, and so provide a better indication of the longer-term trends. That will also apply for other analyses of the statistics: for example, the number of deaths involving some drugs may fluctuate greatly (in percentage terms) from year to year.
- D6. In the case of the numbers of drug-related deaths for each NHS Board area (Table HB1), the generally small numbers involved (particularly for some areas) mean that great care should be taken when assessing any apparent trends: as 'random' year-to-year variation in the figures could produce apparently large percentage changes. This is more likely for the areas with smaller populations, but sometimes can also be seen in the figures for the more populous areas (for the purpose of this publication, 'more populous' areas have populations of at least 300,000). For example:
- Greater Glasgow & Clyde had 127 deaths in 2003, 147 in 2004, an unusually low 109 in 2005, 156 in 2006 and 147 in 2007;
 - Greater Glasgow & Clyde had 183 deaths in 2011, 187 in 2012, an unusually low 138 in 2013, 189 in 2014 and 221 in 2015;
 - Ayrshire & Arran had 43 deaths in 2014, 43 in 2015, an unusually high 85 in 2016, an unusually low 61 in 2017, 82 in 2018 and 108 in 2019;
 - Forth Valley had 25 deaths in 2014, 31 in 2015, an unusually high 51 in 2016, an unusually low 36 in 2017, 72 in 2018 and 75 in 2019;
 - Dumfries & Galloway had 22 deaths in 2017, 20 in 2018, an unusually high 35 in 2019 and 22 in 2020.
- D7. This point also applies to the drug-related death rates (per 1,000 population) for various age-groups that are shown in Table HB4. Even though the figures are five-year averages, they must still be used with caution for the less populous areas. For example when the annual averages for 2007 to 2011 were calculated, just three 15-24 year old drug-related deaths in Shetland caused it to have a rate for that age-group which was double that of Scotland as a whole.
- D8. Tables C1 provides figures for individual council areas. Again, because of the relatively small numbers involved, particularly for some areas, great care should be taken when using these figures. Even the numbers for the most populous areas may be subject to large percentage year-to-year fluctuations. As examples:
- Glasgow's figures from 2003 to 2008 were as follows: 93, 106, 75 (unusually low), 113, 90 (now low), 121;

- Edinburgh's from 2003 to 2010 were: 26, 17, 41 (unusually high), 30 (now low), 43, 66 (unusually high), 45, 47;
- South Lanarkshire's from 2013 to 2019 were: 34, 31, 64 (unusually high), 49, 58, 68;
- Fife's from 2017 to 2020 were: 66, 64, 81 (unusually high), 65.

- D9. As the numbers of drug-related deaths for areas within councils (such as electoral wards) will be lower, and may be subject to proportionately larger year-to-year fluctuations, it is unlikely that much useful information could be obtained from looking at the figures for such small areas for a single year, or even for a few years taken together. There could also be concerns about the sensitivity of data relating to small areas, as it might be possible, in some circumstances, to infer something about identifiable individuals from such data. Therefore, one should only look at such figures for many years taken together. Even then, the smaller the areas are, the more (in percentage terms) their figures may be influenced by how NRS allocates deaths to areas, based upon the details that are collected by the registration process. Information about the basis of NRS's statistics about deaths, and examples of the fluctuations in and possible unreliability of figures for small areas, are available from the [Vital Events – General Background Information](#) and the [Deaths – Background Information](#) pages within the vital events section of the NRS website.
- D10. An example of the scale of the numbers for small areas is given by an analysis for the National Forum on Drug-related Deaths, which used data for postal districts for the eight years from 2000 to 2007 (inclusive). This was done in response to a request, at a Forum meeting in September 2008, to 'identify any geographical concentrations of drug-related deaths'. Postal districts are not normally used for statistical analysis, but in this case they provided a convenient way to describe the extent to which the numbers of drug-related deaths were concentrated in certain parts of Scotland, by using a geography that would be more meaningful to Forum members than, say, the data zones or intermediate zones that were used in Scottish Neighbourhood Statistics. The database had records for 2,893 drug-related deaths (on the basis of the standard definition) in Scotland in the specified eight years (paragraph A4 of [Annex A](#) explains why there is a slight difference from the total of the published figures for those years). Of the postal districts, 'G21' had the largest number (67 - an average of 8.4 per year). Four other postal districts had totals of 50 or more drug-related deaths for that period: 'G33' (54); 'G20' (53); 'G32' (51); and 'AB24' (50). Figures were not provided for every individual postal district, because of the numbers involved. There were 25 postal districts which each had 29 or more drug-related deaths over the eight years: each of them accounted for more than 1% of the total for Scotland for that period. Taken together, these 25 postal districts accounted for about a third of all drug-related deaths in Scotland between 2000 and 2007. The remaining two-thirds of drug-related deaths in that period were deaths of residents of postal districts which had, at most, 28 such deaths over the eight years – this is areas which had, on average, at most three and a half drug-related deaths per year (many averaged fewer than one drug-related death per year). It follows that, while some postal districts have markedly more drug-related deaths than others, the problem is clearly a very widespread one, with most deaths being of people living in areas which had relatively few drug-related deaths

Annex E: So-called 'New Psychoactive Substances'

- E1 The term 'New Psychoactive Substances' (NPSs) is meant to cover the kinds of substances that people have, in recent years, begun to use for intoxicating purposes. In general, when an NPS first became available, it would not have been a controlled substance under the Misuse of Drugs Act 1971. Some NPSs may still not be controlled under that Act: if so, they will be covered by the Psychoactive Substances Act, which came into force on 26 May 2016. The definition of NPSs therefore includes substances which some people used to describe as 'legal highs' (by which is meant substances which were legally available at the time of the death, whether or not they have since become controlled under the Misuse of Drugs Act or become subject to the Psychoactive Substances Act).
- E2 Tables NPS1 to NPS3 show the numbers of deaths involving NPSs. The main points from those figures are set out in paragraph E8 onwards, but first we must say something about the kinds of statistics that are available and which drugs are counted as NPSs. The tables distinguish between deaths for which NPSs:
- a) were implicated in, or potentially contributed to the death; and
 - b) were present but not considered to have contributed to the death.

In each case, the figures are sub-divided into:

- (i) deaths which fall within the definition of 'drug-related deaths' that is used to produce the statistics that are given in the main body of this report (whether because the NPS was controlled at the time, or because the person had also used a controlled substance, like heroin or methadone); and
- (ii) deaths not counted in the statistics in the main body of this report (for example cases where the deceased person appears to have used only an NPS that was not controlled at that time).

In addition, the figures under (a) are further sub-divided, in order to show the extent to which deaths appear to have been due to the use of one (or more) NPSs alone or due to the use of combination of them and other types of substance.

- E3 Deaths involving a particular substance may be counted in different ways at different times, because the classification of that substance may have changed. For example, mephedrone is an NPS. It was a 'legal high' until 15 April 2010, because it was not a controlled substance until it became a Class B drug with effect from 00.01 hours on 16 April 2010. Therefore, a death which was due solely to mephedrone, with no other substance found to be present in the body, would be counted as follows:
- if it occurred up to 15 April 2010, it would not be included in this publication's statistics of drug-related deaths, because the death did not involve any substance that was controlled at the time of the death. However, it would be counted in the figures for deaths involving NPSs (for example, in the first line of part (a) (ii) of Table NPS2).
 - if it occurred after 15 April 2010, it would be included in this publication's statistics of drug-related deaths, because the death involved a substance that was controlled at the time of death. It would also be counted in the figures for deaths involving NPSs (for example, in the first line of part (a) (i) of Table NPS2).

Note: National Records of Scotland (NRS) uses the date of death to determine how to count a drug because the information that NRS has does not include when the person used the drug.

- E4. The next three paragraphs list the NPSs which are counted for the purpose of statistics of deaths registered in Scotland up to the end of 2020, distinguishing between:
- NPSs which were already controlled substances at the start of 2009 (as that was the first year in which deaths involving NPSs were registered in Scotland);
 - NPSs which became controlled substances between the start of 2009 and the end of 2020 (that is, ones whose classification changed during the period covered by these figures for deaths involving NPSs); and
 - NPSs which were not controlled substances at the end of 2020 (some of which may have since become controlled substances).

Please note two points.

- First, these are not comprehensive lists of NPSs: they cover only the NPSs which were involved in deaths which were registered in Scotland by the end of 2020. (They do not include a few other NPSs whose names are in the look-up table that NRS uses to identify the types of substance that are involved in drug-related deaths.)
- Second, these lists may contain an occasional error. Sometimes, a Home Office circular about substances which will become controlled from a particular date describes them in chemical terms (e.g. "... replacement of the indole ring with indane, indene, indazole, pyrrole, pyrazole ...") rather than giving specific substance names. In such cases, it is unfortunately very easy for someone who does not know about chemical structures to fail to realise that a particular substance has become controlled. NRS seeks expert advice on these matters, but unfortunately that does not guarantee absolute accuracy. For example, in the "... in 2018" edition, paragraph E7 wrongly described AB-FUBINACA and 5F-MDMB-PINACA as not having become controlled by the end of 2018. Fortunately, the effect of such errors on the figures is likely to be very slight, for two reasons: first, such substances are involved in few deaths; second, those deaths may well still be counted correctly as "drug-related", if they also involved other substances which were controlled (as is often the case: the vast majority of drug-deaths are of people who took more than one substance).

- E5 The following NPSs were already controlled substances at the start of 2009:

- acetyl fentanyl
- PMA / paramethoxyamphetamine
- PMMA / paramethoxymethamphetamine

A death due solely to one of these drugs would be counted in this publication's statistics of drug-related deaths. It would also be counted in the figures for deaths involving NPSs.

- E6 The following NPSs became controlled substances between the start of 2009 and the end of 2020 (note: 'TCDO' means Temporary Class Drug Order).

Substance	Controlled with effect from:
BZP / Benzylpiperazine	23 December 2009
CPP / Chlorophenylpiperazine	23 December 2009
TFMPP / Trifluoromethylphenylpiperazine	23 December 2009
Chloromethcathinone	16 April 2010
MDPV / Methylenedioxypropylvalerone	16 April 2010
Mephedrone / 4-Methylmethcathinone	16 April 2010
4-MEC / Methylethcathinone	16 April 2010
Methylone	16 April 2010

PVP	16 April 2010
Naphyrone	23 July 2010
Phenazepam	13 June 2012
3-Methoxyphencyclidine	12 February 2013
APB / 2-aminopropyl-benzofuran/ 5 APB / 6 APB	10 June 2013 (TCDO); 10 June 2014 (Class B drug)
API / 5-API / 5-IT / 5-(2-aminopropyl)indole - APB	10 June 2013 (TCDO); 10 June 2014 (Class B drug)
AMT / Alphamethyltryptamine	7 January 2015
5-MEO-DALT	7 January 2015
4-4'DMAR	11 March 2015
Ethylphenidate	10 April 2015 (TCDO); 31 May 2017 (Class B drug)
MPA / Methylthienylpropamine / Methiopropamine	27 November 2015 (TCDO) 27 November 2017 (Class B)
AB-FUBINACA	14 December 2016
AKB48	14 December 2016
MDMB-CHMICA	14 December 2016
4F-MDMB-BINACA	14 December 2016
5F-MDMB-PICA	14 December 2016
5F-MDMB-PINACA	14 December 2016
5F-PB-22	14 December 2016
Adinazolam	31 May 2017
Clonazolam	31 May 2017
Diclazepam	31 May 2017
Etizolam	31 May 2017
Flubromazepam	31 May 2017
Flubromazolam	31 May 2017
Pyrazolam	31 May 2017
4F-EPH / 4-Fluoroethylphenidate	31 May 2017
8 AMINOCLONAZOLAM	31 May 2017

A death due solely to one of these drugs would not be counted in this publication's statistics of drug-related deaths if it occurred before the relevant date, because it would not have involved a drug that was controlled at the time. However, it would be counted in the figures for deaths involving NPSs.

A death due solely to one of these drugs would be counted in this publication's statistics of drug-related deaths if the person died on or after the specified date. It would also be counted in the figures for deaths involving NPSs.

E7 The following are among the NPSs that had not become controlled substances by the end of 2020:

- Camfetamine
- Diphenidine
- Flualprazolam (but see "NB" below)
- Kratom
- Mexedrone
- Mitragynine
- MXP

A death involving only these substances would not be counted in this publication's statistics of drug-related deaths because it would not have involved a drug that was controlled at the time. However, it would be counted in the figures for deaths involving NPSs.

NB: on 8 September 2020, it was announced that flualprazolam, flunitrazolam and

norfludiazepam will become controlled as Class C drugs under the Misuse of Drugs Act 1971. However, that does not affect how deaths involving flualprazolam are counted for the purpose of the statistics in this (“... in 2020”) edition of this publication, because it had not become controlled by the end of 2020 (at the time of writing, in June 2021, the proposal had yet to be approved by the UK Parliament).

- E8. Table NPS1 provides the numbers of deaths involving NPSs which were registered in Scotland in 2020. The figures are broken down as described in paragraph E2, and also by the type(s) of NPS that were involved, distinguishing between cases where:
- benzodiazepine-type NPSs were present, with no other types of NPS present;
 - other types of NPS were present, with no benzodiazepine-type NPS present; and
 - both benzodiazepine-type NPSs and other types of NPS were present.
- The figures in Table NPS1 may be understood better by looking also at Table NPS3, which lists all the substances that were reported to NRS for every death, registered in Scotland in 2020, which involved NPSs. From Table NPS3, one can find out which NPSs were found in the body in each case, whether the person had taken more than one NPS, and whether other substances (such as cocaine, heroin, methadone, morphine and/or other ‘traditional’ drugs) were also present.
- E9. The top half of part (i) of Table NPS1 shows that there were 872 deaths in 2020 for which one or more NPSs were implicated in, or potentially contributed to, the cause of death. In 868 cases, the only NPSs present were benzodiazepines (usually etizolam, but sometimes another, such as diclazepam, flualprazolam, flubromazolam or phenazepam); there were four deaths for which both benzodiazepine NPSs and other types of NPS were present; and there were no cases where only another type of NPS was present. Almost all of these deaths (864 out of 872) fall within the definition of ‘drug-related deaths’ that is used to produce the statistics given in the main body of this report – that is, 864 out of 872 are included in the 1,339 drug-related deaths that were registered in 2020. In only a small proportion of cases (19 out of 872) were NPSs the only substances that were implicated in the cause of death. That there were relatively few deaths for which NPSs were the only substances that were implicated in their causes can also be seen from part (i) of Table NPS3: its lists of the substances which were reported for each death show that, in most cases, ‘traditional’ drugs (such as cocaine, heroin, methadone and morphine) were also implicated in the causes of these deaths.
- E10. The lower half of part (i) of Table NPS1 provides a breakdown of the 872 deaths (in which one or more NPSs were implicated in, or potentially contributed to, the cause of death) by the deceased’s person’s age (for example, there were 195 aged 25-34, 288 in the 35-44 age-group, and 265 who were 45-54) and sex (646 were men).
- E11. Part (ii) of Table NPS1 shows that there were 35 deaths in 2020 for which NPSs were present but were not considered to have contributed to the death. In all but one case, the only NPSs present were benzodiazepines (one death involved another type of NPS and no benzodiazepine NPSs); and all but one of the deaths were counted in the statistics in the main body of this report – that is, 34 out of the 35 are included in the 1,339 drug-related deaths that were registered in 2020. The table shows that most of these deaths were of people who were aged 35-44 (eleven) or 45-54 (ten), and most were men (30). In Table NPS3, part (ii) lists the substances which were reported for such deaths: it shows that ‘traditional’ drugs (such as cocaine, heroin and methadone) were usually implicated in these deaths.
- E12. Table NPS2 provides a summary of the numbers of deaths which have involved NPSs in recent years. As far as NRS knows, the first Scottish deaths involving NPSs were registered in 2009. Of course, it is possible that NPSs were involved in some deaths in

Scotland in earlier years, but their presence was not identified (for example, perhaps because other drugs were found, and it appeared to the investigators that those other drugs had caused the deaths) - but all the data can tell us is that none of the deaths that were registered in Scotland in 2008 or earlier years were reported to involve NPSs.

- E13. The number of deaths involving NPSs at first increased rapidly, from 4 in 2009 (a year which is not shown in this edition's Table NPS2, because it starts with 2010) to 113 in 2013, was almost unchanged in 2014 and 2015, then more than trebled to 345 in 2016, rose slightly to 363 in 2017, increased markedly to 588 in 2018 and 805 in 2019, and reached 907 in 2020. The sub-totals at the foot of Table NPS2 show that this report's statistics of drug-related deaths for each year include almost all the deaths which involved NPSs (for example, 8 out of 11 such deaths in 2010, 108 out of 112 in 2015, 585 out of 588 in 2018, and 898 out of 907 in 2020).
- E14. Table NPS2 also shows that deaths for which NPSs were the only substances implicated in, or potentially contributing to, the death, generally represented only a small proportion of deaths which involved NPSs. Examples of the relevant numbers are 5 out of 47 in 2012, 3 out of 112 in 2015, 9 out of 588 in 2018, and 19 out of 907 in 2020. There was a large proportion in only one year, 2010, when it was 7 out of 11 (for several of those deaths, mephedrone was the only substance that was implicated in the death).

Annex F: A consistent series of drug-related death numbers, based on the classification at the end of the latest year covered by the publication

- F1. The 'coverage' of NRS's standard definition of a drug-related death 'widens' every time another drug is added to the list of substances which are controlled under the Misuse of Drugs Act, because all subsequent deaths from poisoning by that drug will be counted as drug-related. Therefore, in order to give more accurate indications of changes and trends, NRS has developed a 'consistent series' which is based on the classification of drugs at the end of the latest year covered by the publication. This Annex is about that series.
- F2. The standard (Drugs Strategy 'baseline') definition of a drug-related death that National Records of Scotland (NRS) uses for its statistics is set out in Section A2 of Annex A. Simplifying slightly, NRS counts a death as 'drug-related' if:
- either (a) the underlying cause of death was coded to one of certain specified categories of mental and behavioural disorders due to psychoactive substance use
 - or (b) the underlying cause was coded to one of certain specified categories of poisoning (or self-poisoning) and a drug listed under the Misuse of Drugs Act (1971) was known to be present in the body at the time of death.

Following the definition, a note in Section A5 adds that:

If a drug's legal status changes, NRS aims to count it on the basis of its classification on the day the person died For example, mephedrone was banned under the Misuse of Drugs Act with effect from 00.01 on 16 April 2010. Therefore, if mephedrone was the only drug found to be present in the body, a death coded to one of the categories listed under (b) would not be counted in NRS's implementation of the Drugs Strategy 'baseline' definition if it occurred before 16 April 2010.

(Other notes explain why a few deaths in the specified categories are excluded.)

- F3. As the 'mephedrone' example indicates, the requirement that a drug listed under the Misuse of Drugs Act must be present for a death to be counted as drug-related (under part [b] of the standard definition) means that whether NRS will count as drug-related a death from poisoning by a drug which is now controlled depends on when the death occurred: pre- or post-control. So the 'coverage' of NRS's standard definition 'widens' every time another drug is added to the list of controlled substances, because all subsequent deaths from poisoning by that drug will be counted as drug-related. In theory, this could cause a break in the continuity of NRS's figures for drug-related deaths (using the standard [Drugs Strategy 'baseline'] definition) every time that another drug becomes controlled.
- F4. In practice, changes in the classification of drugs that occurred in the years up to and including 2013 had little effect on the figures: in that period, almost all the deaths which involved substances that were uncontrolled then, but are now controlled, also involved drugs that were already controlled, and so were counted as drug-related (in terms of the standard [Drugs Strategy 'baseline'] definition). For example, the foot of Table NPS2 (in the '... in 2013' edition of this publication) showed that almost all the deaths which involved New Psychoactive Substances (as defined for the purposes of that publication) were included in NRS's standard figures for drug-related deaths (in total, over the five years from 2009 to 2013, only 11 'NPS' deaths were not included in the standard figures). This is because (for example) there were few 'mephedrone only' deaths before it was controlled; any deaths from (say) 'mephedrone and diazepam intoxication' were counted as drug-related because (say) diazepam was present.

- F5. However, changes in the classification of drugs that occurred in 2014 could have caused a noticeable break in the continuity of NRS's figures (based on the standard definition). Tramadol became a controlled substance with effect from 10 June 2014, along with some other substances. In 2013, there were over two dozen 'poisoning' deaths which involved only tramadol, or only tramadol and one or more other substances which were not controlled at that time. Using NRS's standard (Drugs Strategy 'baseline') definition, such deaths (and those like them in the first part of 2014) are not counted as drug-related, but their equivalents from 10 June 2014 are counted as drug-related. So tramadol being controlled with effect from 10 June 2014 could have increased the number of deaths in 2014 counted as drug-related by a few percent (compared to what would have happened without that change), and there could, in due course, have been a similar effect on the figure for 2015 (because that was the first year for which tramadol was controlled throughout). It follows that NRS's standard figures could give a misleading impression of changes and any trends in drug-related deaths between 2013 and 2014, and between 2014 and 2015.
- F6. Therefore, in order to give more accurate indications of changes and trends, NRS developed a 'consistent series' of numbers of drug-related deaths in previous years, which is based upon the classification of each substance at the end of the latest year covered by the publication. This 'consistent series' includes all the deaths involving tramadol, mephedrone and the other substances which have become controlled in recent years, regardless of their status at the time of death. It should show changes and trends which would be unaffected by the reclassification of substances. The consistent series goes back to 2000, as that is the first year of NRS's current drug-related deaths database.
- F7. For simplicity, the consistent series is based on the classification of drugs at the end of the latest year covered by the publication (rather than, say, at the time the publication was prepared), so it does not take account of any reclassifications after the final year for which the publication gives figures. The basis of the consistent series was therefore 'as at 31 December 2014' for the 'in 2014' edition, 'as at 31 December 2015' for the 'in 2015' edition, 'as at 31 December 2016' for the 'in 2016' edition, and so on. In consequence, the consistent series' figures for previous years may be revised retrospectively every year, following more substances becoming controlled, if those substances had been involved in deaths (registered in earlier years) which had not been counted in the consistent series before because none of the substances involved were controlled at the end of the previous year.
- F8. The consistent series appears in Table 1 in order to show the underlying trends for Scotland. The rightmost three columns of Table 1 show the consistent series' number of drug-related deaths, and the 'extra' deaths (number and percentage) in earlier years that would have been counted as drug-related on the basis of the latest year's list of controlled substances. As will be seen, the consistent series' figures have never been much more than 6% above the number of drug-related deaths on the standard (Drugs Strategy 'baseline') definition (they were 5.6% higher in 2010, and 6.1% more in 2013). It follows that the changes in the classification of drugs have not had a great effect on the overall total number of drug-related deaths. The year-to-year variation in the number of 'extra' deaths has not been large, so the consistent series' patterns (of rises and falls, and of 'peaks' and 'troughs') are similar to those of the numbers produced by the standard definition.
- F9. The most noticeable break in the continuity of the number of drug-related deaths was caused by tramadol and zopiclone becoming controlled under the Misuse of Drugs Act

with effect from 10 June 2014. The numbers for 2014 and changes from 2013 are as follows:

- standard definition: 614 deaths in 2014, compared with 527 in 2013 – implying a rise of 87 or 17%; and
- consistent series: 624 deaths in 2014, compared with 559 in 2013 – implying a rise of 65 or 12%

Using the consistent series, between 2010 and 2020, the number of drug-related deaths increased from 512 to 1,339 – i.e. a rise of 827, or 162%. That is not much less than the standard definition's increase from 485 to 1,339 – i.e. a rise of 854 or 176%.

- F10. It should be noted that the consistent series' figures for 2013 and 2014 (and all the other years) also include deaths which involved other substances that subsequently became controlled under the Misuse of Drugs Act (such as gabapentin and pregabalin, which have been controlled with effect from 1 April 2019). So the figures given above do not show the precise scale of the break in the continuity of the number of drug-related deaths that was caused by tramadol and zopiclone becoming controlled.
- F11. Tables CS1 and CS2 provide the consistent series' numbers of 'extra' deaths in each year (i.e. the deaths which have been added retrospectively to the numbers that were originally produced using the standard [Drugs Strategy 'baseline'] definition), broken down by the names of the relevant drugs (i.e. the drugs for which the change in classification has caused deaths which were not counted as drug-related at the time to be included in the consistent series) and by sex and age-group.
- F12. Table CS1 shows how the number of 'extra' deaths, based on the classification of drugs at the end of the latest year covered by this edition, varied from year to year. It should be noted that the total number of 'extra' deaths could be less than the sum of the figures for the individual drugs, due to deaths which involved more than one of the drugs. For example, a death in (say) 2013 for which the cause was given as 'tramadol and zopiclone intoxication' would be counted in the figures for both of those drugs, but only once in the total number of 'extra' deaths.
- F13. The number of 'extra' deaths for 2014 (10) is not on the same basis as the figure for 2013 (32), because the figure for 2014 includes (e.g.) 'tramadol only' deaths only for the period up to 9 June 2014 whereas the figure for 2013 includes such deaths for the whole of the year. 'Tramadol only' deaths in the rest of 2014 are included in the standard (Drugs Strategy 'baseline') definition (and are therefore not counted as 'extra' deaths) because tramadol became a controlled substance with effect from 10 June 2014.
- F14. The fact that the consistent series has only 10 'extra' deaths for 2014 indicates that the drug classification changes in 2014 (and later years) had slightly less effect on the figures than one would have expected from the previous years' numbers of (e.g.) 'tramadol only' deaths. With between 25 and 32 'extra' deaths (involving any of the substances) in each of the previous five years, one would have expected a dozen or so between 1 January and 9 June 2014 (assuming that, say, 'tramadol only' deaths continued at the same rate, a dozen or so would be the 'pro rata' number for the part of 2014 for which they would not be counted in the standard definition). However, as it turned out, 1 January to 9 June 2014 had few (e.g.) 'tramadol only' deaths, so the consistent series has only 10 'extra' deaths for 2014. (It will be seen from Table Y that tramadol was implicated in, or potentially contributed to, the cause of 38 deaths in 2014: markedly fewer than the 64 in 2013. Note: these figures cover both 'tramadol only' deaths and those for which tramadol and one or more other drugs were implicated in, or potentially contributed to, the cause of death.)

- F15. The table shows that, for most of the years from 2000 to 2014, most of the 'extra' deaths involved tramadol. There were also several involving zopiclone (which has also been controlled from 10 June 2014) or gabapentin or pregabalin. The latter two drugs, which became controlled under the Misuse of Drugs Act with effect from 1 April 2019, were involved in most of the 'extra' deaths for the years from 2015 to 2019. It is clear that gabapentin and pregabalin becoming controlled had little effect on the continuity of the figures. The table also shows that a few of the 'extra' deaths for some years involved other substances, not controlled at the time, which were controlled by the end of the period covered by this edition, for example: mephedrone (with none after 2010, because it has been controlled from 16 April 2010); phenazepam (controlled from 13 June 2012); and etizolam (controlled from 31 May 2017). Some other drugs were involved in 'extra' deaths, but they do not appear individually in the table because each had very few 'extra' deaths.
- F16. Table CS2 shows that women tend to account for a higher proportion of the 'extra' deaths than females do of the deaths which are counted in the standard (Drugs Strategy 'baseline') definition: in some years, there were more 'extra' deaths of women than of men. The table also shows the number of 'extra' deaths in each of five age-groups: in some of the years, this has tended to be highest for the '55 and over' age-group (in contrast to the standard figures for drug-related deaths, which are much higher for '25-34', '35-44' and '45-54' than for '55 and over' – see Table 4).
- F17. The "in 2018" edition of this publication reported that NRS data for the years 2000 to 2013 combined (which do not appear in a table) showed that the vast majority of the 'extra' deaths which involved tramadol were of people who were aged 35 and over, and that, of all the age-groups, 55+ was the one which had the largest number (around a third) of the 'extra' deaths which involved tramadol. This was the case for both males and females. The position was broadly similar for the 'extra' deaths which involved zopiclone. At that time, the numbers of extra deaths involving other substances were too small for such analysis. Little more can be said, following gabapentin and pregabalin becoming controlled under the Misuse of Drugs Act with effect from 1 April 2019. They were involved in totals of 27 (gabapentin) and 15 (pregabalin) 'extra' deaths for the years from 2000 to 2019: numbers which are too small for detailed analysis (in comparison, zopiclone was involved in 46 'extra' deaths, and tramadol in 170, over the same period).
- F18. The numbers of 'extra' deaths counted in the consistent series for NHS Board areas appear in the lower part of in Table HB1, in order to show their scale. As all the figures are relatively small, it is clear that the use of the consistent series would not change markedly the level of, or the trend in, the number of drug-related deaths for any area.
- F19. The consistent series and the numbers of 'extra' deaths do not appear in any other tables, because a proliferation of additional figures could cause confusion – especially as the consistent series figures may, in theory, be revised every year (for the reason given in the paragraph F7).

Annex G: Drug-related Deaths – comparison with other countries

G1. This Annex uses figures for the latest year (at the time of writing) for which other countries' statistics were available from a European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) report. It explains that Scotland's drug-related death figures imply a drug-death rate (relative to the number of people aged 15 to 64, inclusive) which is higher than those that have been reported by the European countries for which figures are available from the EMCDDA (although the EMCDDA warns that caution is required when comparing different countries' drug-death figures due to issues of coding, coverage and under-reporting in some countries). This Annex concludes by using more up-to-date data to show that the normally-published figures for Scotland imply a drug-death rate (relative to the size of the population of all ages) of over 3½ times that of the UK as a whole.

G2. When using the EMCDDA's figures for other countries, it must be remembered that the EMCDDA stated that
difference in the national practices of coding the causes of deaths implies that direct comparisons between countries in the numbers or rates of DRDs should be made with caution

(in the 'Limitations' section of its note on the ['Methods and Definitions'](#) used for the Statistical Bulletin which it published on 6 June 2019, which is available on the EMCDDA's website). That note gave some examples of differences between countries, such as (Note: the points in square brackets have been added by NRS):

- ... differences in which codes are applied. In particular, in some countries 'T' codes [which, for deaths from poisoning, identify the types of substances that were involved] are never or rarely used, whereas in others they are more frequently used. Where 'T' codes are not applied, the number of drug-induced deaths [refer to paragraph G4] would be an underestimate;
- ... differences between countries in procedures for recording cases, and in the frequency of post-mortem toxicological investigations; and
- information exchange between General Mortality Registers [GMRs, such as NRS] and Special Registers (forensic or police) is insufficient or lacking in some countries, which may compromise the completeness of the information.

More recently, the ['methods and definitions for overdose deaths' page](#) of the 'Statistical Bulletin 2021' which the EMCDDA published on 9 June 2021 included the following:

The EMCDDA encourages countries to both harmonise their data collection and reporting. Nevertheless, differences in the availability of autopsies and in coding practices between countries will influence the interpretation and comparability of the results.

And, further down the page, the points made under 'Limitations' included the following:

The key factors in the quality of the data on drug-induced deaths are the availability and nature of post-mortem investigations and the full use of this information for death certification and coding. The comparability of the national figures depends on the harmonisation of coding practices at national levels.

Notable issues related to coding include the following:

- There are country differences in which codes are applied. In particular, in some countries T codes are never or rarely used, whereas in others they are more frequently used. Where T codes are not applied, the number of drug-induced deaths would be an underestimate.
- A few countries still include cases due to psychoactive medicines or non-overdose deaths, generally as a limited proportion of the total.
- The GMR will not identify the presence of new psychoactive substances as there are no specific codes in the ICD-10 to code these substances. Deaths

involving these substances would be coded with more general codes such as 'other stimulants'.

In addition, there are still differences between countries in procedures for recording cases, and in the frequency of post-mortem toxicological investigations. Information exchange between GMRs and SRs (forensic or police) is insufficient or lacking in some countries, which may compromise the completeness of the information.

The difference in the national practices of coding the causes of deaths implies that direct comparisons between countries in the numbers or rates of DRDs should be made with caution. However, the trends observed can give valuable insight if methods are maintained consistently within a country, especially when interpreted together with other drug indicators.

It follows that figures for different countries must be used cautiously.

- G3. It has been suggested that better identification and recording of such deaths may be a reason for the drug-death rate appearing to be higher in the UK (and, hence, Scotland) than in several other countries. For example:
- NRS normally allocates a 'T' code for every substance that was reported as being present in the deceased's body - so there should be very little (if any) under-estimation in the figures for Scotland. NRS understands that the UK's other GMRs also make good use of 'T' codes, so the UK's figures should not be underestimates;
 - Scotland has a good exchange of information, as forensic pathologists provide NRS with details of many drug-deaths (using the form which is shown at the end of Annex C) - so the data for Scotland should be more-or-less complete. NRS understands that the UK's other GMRs are usually told, by coroners, which drugs caused each death, so (again) the UK's figures should not be underestimates.
- G4. Table EMCDDA gives the number of 'drug-induced' deaths aged 15 to 64 inclusive, and the resulting rate per million population of that age, for various countries. These numbers were copied from Table A6, in the Annexes of the ['European Drug Report 2021'](#), which is available on the EMCDDA website. On page 5 of that publication, the 'Introductory note' starts thus:
- This report is based on information provided to the EMCDDA by the EU Member States, Turkey and Norway, in an annual reporting process.
- and later states that:
- The United Kingdom left the European Union as of 1 February 2020 and is not included in the analysis presented in this report. UK data ... can be found in the country data tables annex.
- 'Drug-induced deaths' is the EMCDDA's term for deaths directly caused by illegal drugs, which it defines in terms of particular codes for the underlying causes of death, in some cases in combination with certain codes for the types of substance involved. Its definition appears in the EMCDDA 'methods and definitions' page that was referred to earlier. The EU countries are listed in order of the native language versions of their names - for example, Germany appears between Denmark and Estonia; and Austria is between Netherlands and Poland. The EMCDDA's Table A6 indicates that 2019 is the latest year for which drug-death statistics are available, but some countries' data are for earlier years. Because the UK is not among what the EMCDDA report's introductory note describes as
- the countries participating in the European information system in 2020 (the EU Member States, Turkey and Norway)
- the 'UK' row in the EMCDDA's Table A6 gives the '2017' figures that appeared in the previous edition (['European Drug Report 2020'](#)).

- G5. Public Health England (PHE) collects and collates drug-related deaths statistics using a consistent methodology based on that used by the EMCDDA for the purpose of reporting figures on behalf of the UK (using the broadest available coverage within the UK) to international agencies. PHE also publishes these figures in its annual [United Kingdom Drug Situation Report](#). In 2020, PHE (which supplied the EMCDDA with the statistics for the UK) confirmed that the UK's figure in Table A6 of 'European Drug Report 2020' was (broadly speaking) the number of such deaths which occurred in 2017. (The Scottish component of the UK figure is the number of such deaths that were registered in Scotland in that year. Because deaths in Scotland are normally registered within a few days, the number that were registered in Scotland in any given year will be similar to the number that occurred in Scotland in that year.) In both editions, the EMCDDA's table has a footnote saying that, for the UK figure, "drug-induced deaths data do not include Northern Ireland". In 2020, PHE confirmed that that was the case: the 'UK' figures for 2017 covered only Great Britain rather than the UK as a whole. In 2021, PHE provided NRS with the corresponding figures for 2018 (again for GB, not the UK as a whole), and allowed NRS to publish them here ahead of their expected publication by PHE later in 2021.
- G6. The corresponding figures for Scotland for 2017 have been added at the foot of the table. They were produced as follows:
- 813 drug-induced deaths (using the EMCDDA definition) aged 15 to 64 inclusive were registered in that year – extracted from NRS's drug-related deaths database. This is slightly fewer than the 828 deaths on the basis of the EMCDDA 'general mortality register' definition (shown in Table X), because the latter figure includes deaths at ages 0-14 and 65+;
 - the drug-induced death rate (aged 15-64) per million population was then calculated by dividing the 813 drug-induced deaths aged 15-64 by the corresponding mid-year population estimate, of 3,548,079.
- The resulting drug-induced death rate (aged 15-64) for Scotland is 229 per million population. This appears to be higher than for any of the countries shown in the EMCDDA table. The next highest rates are for Sweden (77 per million) and Norway (also 77 per million). Scotland's drug-induced death rate is much higher than the "UK" one (76 per million) – so, for 2017, the Scottish figure was about three times that of the UK as a whole. (However, it should be noted that the Scottish drug-death rate is over 3½ times that of the UK as a whole, when calculated from more up-to-date data which are on a different basis [the numbers of drug-related / 'drug misuse' deaths, of all ages, that were registered in 2019], as is shown in paragraph G9, below.)
- G7. The same approach has been used to produce the equivalent figures for Scotland for three further years, which also appear in the table:
- 2018, the latest year for which figures on the EMCDDA's basis are available for GB (supplied to NRS by PHE, and appearing below the 'Scotland' part of the table)
 - 2019, the year for which there are figures for most of the other countries that are shown in the EMCDDA's table; and
 - 2020, the most recent year for which figures for Scotland can be produced (which are more up-to-date than the EMCDDA's data for any country).
- G8. It must be remembered that the figures for some countries may not be truly comparable with those for Scotland (or the UK as a whole), for reasons like those given in paragraphs G2 to G3. Page 79 of the EMCDDA's ['European Drug Report 2019'](#) included the following statement:
- Overdose data ... must be interpreted with caution. Among the reasons for this are systematic under-reporting in some countries, differences in the ways

toxicological examinations are conducted and registration processes that can result in reporting delays.

Because some countries' figures may be affected by (say) under-reporting, one cannot say that Scotland has a drug-induced death rate (aged 15-64) which is definitely 'X' times the level for the EU as a whole, or higher than that of exactly 'Y' European countries. However, it appears certain that Scotland's rate is well above the level of most (if not all) of the European countries for which figures are available from the EMCDDA report.

- G9. Scotland's drug-related death rate is also seen to be much higher than that of the UK as a whole when the comparison uses the kind of drug-death figures that are normally published for Scotland, England and Wales, and Northern Ireland. As an example, in terms of the definition that is used for most of the statistics in this report (that introduced in 2001 for the 'baseline' figures for the UK Drugs Strategy), the numbers of drug-related deaths (of all ages – not just of 15-64 year olds) that were registered in 2019 are set out below. Figures for 2019 are used because, at the time of writing (6 July 2021), that is the latest year for which figures have also been published for England and Wales and for Northern Ireland (for example, the ONS website indicates that figures for England and Wales for 2020 are provisionally scheduled for publication in August 2021). Therefore, at the time of writing, 2019 is the latest year for which one can produce a total for the UK as a whole.

The relevant numbers of deaths registered in 2019 were:

- 1,280 in Scotland – the 'standard definition' figure in Table 1;
- 2,883 in England and Wales – 'drug misuse' deaths (that being ONS's term for the number of deaths based on the 'Drug Strategy' definition) – more information can be found via the [deaths related to drug poisoning in England and Wales statistical bulletins](#) page of the ONS website; and
- 165 in Northern Ireland – also referred to as 'drug misuse' deaths – more information can be found in the [Drug Related and Drug Misuse Deaths 2009-2019](#) section of the NISRA website.

So, the UK had a total of 4,328 drug-related/'misuse' deaths (of all ages) registered in 2019.

Scotland's so-called 'crude' drug-death rate (per head of population) was 3.6 times that of the UK as a whole. The calculations (using those figures for all ages) are:

- Scotland:
 - 1,280 drug-related deaths registered in 2019;
 - population of 5,463,300 at mid-2019;
 - hence 234 drug-related deaths per million population in 2019 (or, to two decimal places, 234.29 per million);
- UK as a whole:
 - 4,328 drug-related/'misuse' deaths registered in 2019;
 - population of 66,796,807 at mid-2019;
 - hence 65 drug-related/'misuse' deaths per million population in 2019 (or, to two decimal places, 64.79 per million);
- so the Scottish figure of 234 per million is 3.6 times the figure for the UK as a whole of 65 per million (as 234.29 is 3.62 times 64.79).

These figures (and the corresponding ones for the regions of England, for Wales and for Northern Ireland) are illustrated in Figure 9 in the publication (as will be seen, Scotland has a much higher rates than the English regions, Wales and Northern Ireland).

In due course, a similar calculation could be performed for 2020, after ONS has published its figures for England and Wales for 2020. At that time, if figures for Northern Ireland for 2020 had not yet been published, one could assume that they will be the same as they were in 2019 in order to estimate the number and rate for the UK as a whole for 2020. Such estimates should have, at worst, only very small percentage

margins of error, because Northern Ireland accounted for only 3-4% of drug-deaths in the UK in each year from 2016 to 2019.

G10. One can also compare the age-standardised drug-death rates of Scotland, Wales, England, and the regions of England. The relevant figures for 2019 (as explained above, at the time of writing, the latest year for which they are available for England and Wales) are as given below (they are not available for Northern Ireland, or for the UK as a whole). They are all expressed per million population, for consistency with the age-standardised drug misuse death rates that appear in Table 6 of the ONS publication referred to above.

- Scotland - 244 drug-related deaths per million population (ten times the rate per 100,000 shown in Table 1);
- Wales – 56.2 drug misuse deaths per million population;
- England – 49.5 drug misuse deaths per million population;
 - North East - 95.0 drug misuse deaths per million population;
 - North West - 71.2 ... ;
 - Yorkshire and the Humber - 68.0 ;
 - East Midlands - 36.7 ;
 - West Midlands - 49.7 ;
 - East - 33.6 ;
 - London - 37.2 ;
 - South East - 39.9 ;
 - South West - 52.7 ;

So the rate for Scotland (244 per million) was over 2½ times that of the region of England which had its highest rate (North East England – 95.0 per million), almost 5 times the rate for England as a whole (49.5 per million), and over 4 times the rate for Wales (56.2 per million).

G11. It should be noted that how information about drug-related/‘misuse’ deaths is collected differs between Scotland and other parts of the UK. In particular:

- in England and Wales, almost all drug-related deaths are certified by a coroner following an inquest, and cannot be registered until that is completed. As a result, about half of their drug-related deaths registered in (say) 2015 occurred in a previous year – more information can be found in the sections of the ONS publications on the effect of registration delays on the statistics. Very crudely, the England and Wales figures for (say) 2015 can be thought of as representing the deaths which occurred between (say) mid-2014 and mid-2015, so are less ‘up to date’ than Scottish figures for 2015, which can be thought of as representing the deaths which occurred in the whole of that year (as almost all Scottish deaths are registered within a few days of occurring);
- there is no English equivalent of the form (shown at the end of Annex C) which is used by forensic pathologists in Scotland to provide details of deaths to NRS.
 - The UK’s other GMRs are usually told, by coroners, which drugs caused each death, but not about all the substances that were found in the body. It follows that some deaths could (in theory) be counted differently in, say, Scotland and England. For example, a death from intentional self-poisoning by an uncontrolled substance would be counted in Scotland (but not in England) if a controlled substance was present in the body but was not believed to have contributed to the death (because the presence of the controlled substance would not be recorded in the data for England)
 - NRS is more likely than ONS to be told which drugs caused a death. In Spring 2017, ONS said that:
 - in around 1 in 8 cases, it receives only a very generic description of the death, such as ‘drug overdose’ or ‘drug-related death’. In contrast,

Scotland had only about 8 drug-deaths per year (on average, from 2008 to 2015) for which NRS was not told which drugs caused them.

- in around 10% of opiate deaths, ONS is not told which opiate was involved. In contrast, Scotland had an average of only about 4 drug-deaths per year caused by opiates (possibly in combination with other substances) for which NRS was not told which particular opiates were involved.

Such differences may affect the comparability of drug-death rates for Scotland and the UK as a whole, but are unlikely to account for the majority of the difference between those rates. For example:

- if the numbers of drug-related deaths were rising at 10% per year, their being registered (on average) six months earlier in Scotland than in England would increase the Scottish drug-death rate by only 5% (relative to the English one), all else being equal (because one would be comparing the Scottish number of deaths which occurred, broadly speaking, in [say] 2015 with the English number of deaths which occurred, broadly speaking, between [say] mid-2014 and mid-2015 – a period when drug-death rates were lower).
- on average, Scotland had only around 3 deaths per year from intentional self-poisoning by an uncontrolled substance for which a controlled substance was present in the body but was not believed to have contributed to the death. Such deaths are included in the drug-related death figures for Scotland, but not England – but are too few to have much effect on the comparability of drug-death rates.
- ‘drug overdose’ and ‘opiate’ deaths in England are counted as drug-related/‘misuse’ deaths, so the lack of information about which drugs were involved does not affect the comparability of the overall drug-death rates. (However, it could have a noticeable effect on any comparison of figures for deaths which were caused by particular drugs, of course.)

It follows that the Scottish rate could be well over three times that of the UK as a whole even if there were no methodological differences.

Annex H: 'Prescribable' and 'street' benzodiazepines

- H1. In 2019, when preparing statistics for the Chief Medical Officer's Annual Report, the Information Services Division (ISD) of NHS National Services Scotland, which is now part of Public Health Scotland (PHS), proposed a distinction between 'prescribable' and 'street' benzodiazepines. The two categories are defined as follows:
- 'Prescribable benzodiazepines' are benzodiazepines (or metabolites thereof) which are licensed for prescription in the UK and widely prescribed in Scotland (but which may not actually have been prescribed to the person who died after taking them); and
 - 'Street benzodiazepines' are benzodiazepines (or metabolites thereof) which are:
 - a) not licensed for prescription in the UK; or
 - b) thought to have originated from an illicit source (due to their having very low overall levels of prescribing in Scotland).
- H2. In this publication, the distinction between 'prescribable' and 'street' benzodiazepines is as specified annually by PHS, taking into account expert advice from pharmacists and toxicologists. National Records of Scotland (NRS) and PHS have agreed that, for the purposes of NRS's statistics of drug-related deaths, NRS will count each benzodiazepine on the basis of how PHS would categorise it for the purpose of statistics for the latest year. So a drug's categorisation could change: it might be counted as 'street' in the figures that NRS produces in one year, and as 'prescribable' in another year. To avoid confusion, specific drugs will not be counted in one category up to a certain date, and in another category thereafter. Any substances which have been recategorised will be identified in future editions of this publication, and users of the statistics will be able to see the effect of any such recategorisations by comparing the original figures for the earlier years and the revised figures for those years that are published later.
- H3. PHS was happy to classify most benzodiazepines as 'prescribable' or 'street' on the basis of information from its Prescribing Information System database. However, lorazepam was an exception. It is both a prescription drug and a metabolite of diclazepam (that is, lorazepam may be produced by the body metabolising diclazepam). Delorazepam and lormetazepam are also metabolites of diclazepam. Therefore, NRS was advised that:
- if none of diclazepam, delorazepam or lormetazepam was present in the body, NRS should assume that the lorazepam had been taken as a drug in its own right (or had been administered as an emergency treatment for an MDMA overdose) - so it should be counted as 'prescribable'; and
 - if one or more of diclazepam, delorazepam and lormetazepam was also present in the body, NRS should assume that the lorazepam had been produced by the body metabolising diclazepam (rather than being taken as a drug in its own right) - so it should be counted as 'street'.
- H4. The following points should be noted about the lists which appear below:
- they cover only the benzodiazepines (and metabolites thereof) which were reported as being present in the body for deaths which were registered in Scotland up to the end of the latest year for which figures appear in this publication;
 - the lists do not include brand names (such as valium), as pathologists should use generic names (such as diazepam) when reporting which substances were found in the body;
 - a few of the substances which are listed under 'street' benzodiazepines (for example, alprazolam) are available on private prescription (or to relatively few people on NHS prescription) – PHS has counted such substances as 'street' benzodiazepines

because it seems likely that the people who died after taking them would have obtained them illicitly;

- if pathologists report that benzodiazepines were present (without giving the names of any specific substances, such as diazepam or etizolam), NRS assumes that 'prescribable' benzodiazepines were present;

H5. 'Prescribable' benzodiazepines (and metabolites): as classified by PHS in June 2021

Chlordiazepoxide
Clobazam
Clonazepam
Desmethyldiazepam
Diazepam
Loprazolam
Midazolam
Nitrazepam
Nordiazepam
Oxazepam
Temazepam
7-aminoclonazepam
7-aminonitrazepam

H6. 'Street' benzodiazepines (and metabolites): as classified by PHS in June 2021

Adinazolam
Alprazolam
Bromazepam
Clonazolam
Cloxazolam
Delorazepam
Diclazepam
Etizolam
Flualprazolam
Flubromazepam
Flubromazolam
Flunitrazepam
Lormetazepam
Phenazepam
Pyrazolam
8 aminoclonazolam

H7. Benzodiazepine (or metabolite) which has not been classified

Lorazepam – see paragraph H3. This does not appear in either of the above lists because it is counted as 'prescribable' if it is assumed to have been taken (or administered) as a drug in its own right, and as 'street' if it is assumed to have been produced by the body metabolising diclazepam.

© **Crown Copyright**

You may use or re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. Further information is available within the [Copyright & Disclaimer](#) section of the National Records of Scotland website.