

# NRS Weekly and Monthly mortality analysis Methodology Guide

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## 1. General

The information in this section applies to both 'Deaths registered weekly in Scotland' and 'Monthly Mortality Analysis, Scotland', as well as other NRS mortality reports more generally.

### 1.1. Date of registration and date of death

Most data tables are based on the date a death was registered rather than the date the death occurred in the weekly publication. Table 10 is the only one that contains any data by date of occurrence. In the monthly publication, data is available by both date of occurrence and registration.

When someone dies, their family (or a representative) have to make an appointment with a registrar to register the death. Legally this must be done within 8 days, although in practice there is, on average, a 3 day gap between a death occurring and being registered. This gap can be greater at certain times of the year such as Easter and Christmas when registration offices are closed for public holidays.

Date of death is less timely but gives a more accurate idea of trends, particularly at times of year where there are many public holidays (such as at the turn of the year, or in the spring).

### 1.2. Geographical area

For council area and health board statistics, NRS use the place of usual residence for allocating the death to a particular geography. If the time spent at this address was less than 12 months, the previous address is used. If the deceased had not spent time at the previous address for a period of 12 months or more, the address where the most time had been spent is used. Deaths where an address cannot be ascertained will be allocated to the place of death in most instances. More information can be found at: <https://www.nrscotland.gov.uk/files/statistics/vital-events/ve-general-geographical-basis.pdf>

### 1.3. Cause of death

The underlying cause of death is the disease or injury which initiated the chain of morbid events leading directly to death, or the accident or act which produced the fatal injury. Every death has only one underlying cause. More information is on the [NRS website](#).

Other causes listed on the death certificate are recorded as contributory causes of death. More information about what is recorded on the Medical Certificate of the Cause of Death (MCCD) can be found on the [NRS website](#).

### 1.4. Definition of a death involving COVID-19

Deaths involving COVID-19 are defined as any death where COVID-19 is mentioned on the death certificate; this can be as the underlying cause of death or as a contributory factor.

Deaths involving the novel coronavirus [COVID-19 \(SARS-CoV-2\)](#) are defined as those where COVID-19 is mentioned by the certifying doctor on the death certificate, either as the underlying cause of death or as a contributory cause. Cause of death is coded according to the [International Statistical Classification of Diseases and Related Health Conditions 10<sup>th</sup> Revision \(ICD-10\)](#). The relevant codes are:

**U07.1 – COVID-19 virus identified**

Deaths where COVID-19 has been confirmed by laboratory testing.

**U07.2 – COVID-19 virus not identified**

Deaths where COVID-19 has been diagnosed clinically or epidemiologically but laboratory testing is inconclusive or not available. This includes deaths where the death certificate includes mentions ‘suspected’ or ‘probable’ COVID-19.

**U09.9 – Post COVID-19 condition, unspecified**

Deaths where a link has been established to a previous COVID-19 infection. COVID-19 not present in the system at the time of death.

**U10.9 – Multisystem inflammatory syndrome associated with COVID-19, unspecified**

Deaths where a Cytokine storm or Kawasaki-like syndrome occurs and is temporally associated with a COVID-19 infection.

Prior to 22 March 2021 only codes U07.1 and U07.2 were used to identify deaths involving COVID-19. From the week beginning 22 March 2021, U09.9 and U10.9 were also included. Data prior to this point were recoded to include these new codes to ensure consistency of the time series.

### 1.5. Location of death

Public Health Scotland maintains a [list of institutions](#) across Scotland. These are mainly health-related institutions but the list also includes prisons and schools etc. NRS use this list to assign an institution code to the place of death on each death record. The institution codes are set up in such a way that the last letter of the code designates the type of institution.

For the purposes of NRS death statistics, hospitals are counted as codes ending in H, care homes as codes ending in J, K, R, S, T, U or V, home / non-institution codes ending in N and other institution is everything else.

The codes used for care homes are not an exact match. V contains some non-NHS hospitals, J and K contain some hospitals but mainly care homes. This grouping of codes is the closest we can get with the institution code structure which PHS has and, importantly, it’s consistent with previous practice.

It should also be noted that there is no separate category for hospices. In some cases hospices have a code which means they are counted in the care home

category, but in other cases hospices have a code which is counted in the hospital category.

It is not possible to separate hospices out into a category of their own under the current coding structure used by PHS.

## **2. Deaths registered weekly in Scotland**

This report is the successor to 'Deaths involving coronavirus (COVID-19) in Scotland'. The name has been changed to better reflect the fact that the dataset has always included deaths from many causes of death, including COVID-19

### **2.1. Week numbers**

Figures are allocated to weeks based on the ISO8601 standard. Weeks begin on a Monday and end on a Sunday. Often weeks at the beginning and end of a year will overlap the preceding and following years so the weekly figures may not sum to any annual totals which are subsequently produced.

### **2.2. Timing**

Weekly statistics are released four days after the end of the reporting week on a Thursday. As these statistics are extremely timely, the data can be revised as detailed below.

### **2.3. Revisions**

Data are provisional and subject to change in future weekly publications. The data for each calendar year will be finalised the following summer. Reasons why the data might be revised later include late registration data being received once the week's figure have been produced or more information being provided by a certifying doctor or The Crown Office and Procurator Fiscal Service (COPFS) on the cause of death.

## **3. Expected and excess deaths**

The methodology used to calculate excess deaths changed in February 2024. Excess deaths is the difference between the observed number of deaths in a particular period and the number of deaths that would have been expected in that period, based on historical data. The expected number of deaths is estimated from age-specific mortality rates rather than death counts, so trends in population size and age structure are taken into account.

Individual weeks and months that were substantially affected by the immediate mortality impact of the coronavirus (COVID-19) pandemic are removed from the data when estimating expected deaths in subsequent periods.

This method for calculating excess deaths has been adopted by statistical agencies across the UK. More information on these changes, including figures comparing the old and new methods, can be found on the [ONS website](#).

We will regularly review estimates produced by the new excess deaths methodology, with further refinements to the approach being undertaken if necessary. As such, estimates of excess deaths produced by the new methodology will be labelled as Official Statistics in Development while further review, testing and development work is undertaken.

## 4. Monthly mortality tables which are no longer being published

### 4.1. Monthly mortality rates

**This data is no longer being published, however this data is still available in the monthly mortality archive section for the period up to December 2023.**

Age-standardised mortality rates are presented per 100,000 people and standardised to the 2013 European Standard Population. Age-standardised mortality rates allow for differences in the age structure of populations and therefore allow valid comparisons to be made between geographical areas, the sexes and over time.

The lower and upper 95% confidence limits have been provided. These form a confidence interval, which is a measure of the statistical precision of an estimate and shows the range of uncertainty around the estimated figure. Calculations based on small numbers of events are often subject to random fluctuations. As a general rule, if the confidence interval around one figure overlaps with the interval around another, we cannot say with certainty that there is more than a chance difference between the two figures.

Monthly populations have been calculated by interpolating between mid-year population estimates and population projections. Mid year estimates for the relevant year are used up to 2021 and 2020 based projections are used for years 2022 onwards. Rates are not calculated when numbers of deaths are below 10.

### 4.2. Monthly mortality rates for SIMD quintiles

**This data is no longer being published, however this data is still available in the monthly mortality archive section for the period up to December 2023**

For the SIMD quintile rates, no National Statistics population projections are available for datazones, which are used to build up populations for SIMD quintile areas.

Rates have been calculated using 2021 mid-year population estimates, the most up-to-date estimates for quintiles/urban rural areas that were available when this table was published. Populations have been adjusted proportionately to account for the fact that the period of deaths being measured is only one month. As 2021 is the latest year that population estimates at datazone level are available for, data for 2022 and 2023 is also using the 2021 population estimates as a denominator. This data will be revised in the future once populations are available for the relevant years. Different SIMD lookups are being used for different years, this is in line with guidance [from Public Health Scotland](#).

Deprivation quintiles are based on the Scottish Index of Multiple Deprivation, version 2020 (SIMD 2020) which is the official measure of relative deprivation for small areas in Scotland. It is designed to identify those small areas where there are the highest concentrations of several different types of deprivation. SIMD quintiles range from 1 to 5, with 1 being the most deprived and 5 being the least deprived.

### 4.3. Leading causes

**This data is no longer being published, however this data is still available in the monthly mortality archive section for the period up to December 2023.**

To compare causes of death we use leading cause groupings based on a list developed by the World Health Organization (WHO). This categorises causes of death using the [International Classification of Diseases, tenth edition \(ICD-10\)](#) into groups that are epidemiologically more meaningful than single ICD-10 codes, for the purpose of comparing the most common causes of death in the population. These groupings are listed below.

ICD-10 codes	Cause of death groups
A00–A09	Intestinal infectious diseases
A15–A19, B90	Tuberculosis
A20, A44, A75–A79, A82–A84, A85.2, A90–A98, B50–B57	Vector–borne diseases and rabies
A33–A37, A49.2, A80, B01, B02, B05, B06, B15, B16, B17.0, B18.0, B18.1, B26, B91, G14	Vaccine-preventable diseases
A39, A87, G00–G03	Meningitis and meningococcal infection
A40–A41	Septicaemia
B20–B24	Human immunodeficiency virus (HIV) disease
C15	Malignant neoplasm of oesophagus
C16	Malignant neoplasm of stomach
C18–C21	Malignant neoplasm of colon, sigmoid, rectum and anus
C22	Malignant neoplasm of liver and intrahepatic bile ducts
C23–C24	Malignant neoplasm of gallbladder and other parts of biliary tract
C25	Malignant neoplasm of pancreas
C32	Malignant neoplasm of larynx
C33–C34	Malignant neoplasm of trachea, bronchus and lung
C40–C41	Malignant neoplasms of bone and articular cartilage
C43–C44	Melanoma and other malignant neoplasms of skin

C50	Malignant neoplasm of breast
C53–C55	Malignant neoplasm of uterus
C56	Malignant neoplasm of ovary
C61	Malignant neoplasm of prostate
C64	Malignant neoplasm of kidney, except renal pelvis
C67	Malignant neoplasm of bladder
C71	Malignant neoplasm of brain
C81–C96	Malignant neoplasms, stated or presumed to be primary of lymphoid, haematopoietic and related tissue
D00–D48	In situ and benign neoplasms, and neoplasms of uncertain or unknown behaviour
E10–E14	Diabetes
D50–D53, E40–E64	Malnutrition, nutritional anaemias and other nutritional deficiencies
E86–E87	Disorders of fluid, electrolyte and acid–base balance (incl. dehydration)
F01, F03, G30	Dementia and Alzheimer disease
F10–F19	Mental and behavioural disorders due to psychoactive substance use
G10–G12	Systemic atrophies primarily affecting the central nervous system
G20	Parkinson disease
G40–G41	Epilepsy and status epilepticus
G80–G83	Cerebral palsy and other paralytic syndromes
I05–I09	Chronic rheumatic heart diseases
I10–I15	Hypertensive diseases
I20–I25	Ischaemic heart diseases
I26–I28	Pulmonary heart disease and diseases of pulmonary circulation
I34–I38	Nonrheumatic valve disorders and endocarditis
I42	Cardiomyopathy
I46	Cardiac arrest
I47–I49	Cardiac arrhythmias
I50–I51	Heart failure and complications and ill–defined heart disease
I60–I69	Cerebrovascular diseases
I70	Atherosclerosis
I71	Aortic aneurysm and dissection
J00–J06, J20–J22	Acute respiratory infections other than influenza and pneumonia
J09–J18	Influenza and pneumonia
J40–J47	Chronic lower respiratory diseases



J80–J84	Pulmonary oedema and other interstitial pulmonary diseases
J96	Respiratory failure
K35–K46, K56	Appendicitis, hernia and intestinal obstruction
K70–K76	Cirrhosis and other diseases of liver
M00–M99	Diseases of the musculoskeletal system and connective tissue
N00–N39	Diseases of the urinary system
O00–O99	Pregnancy, childbirth and the puerperium
P00–P96	Certain conditions originating in the perinatal period
Q00–Q99	Congenital malformations, deformations and chromosomal abnormalities
V01–X59	Accidents
V01–V89	Land transport accidents
W00–W19	Accidental falls
W32–W34	Non-intentional firearm discharge
W65–W74	Accidental drowning and submersion
W75–W84	Accidental threats to breathing
X40–X49	Accidental poisoning
X60–X84, Y10–Y34	Suicide and injury/poisoning of undetermined intent
U50.9, X85–Y09, Y87.1	Homicide and probable homicide
R00–R99	Symptoms, signs and ill-defined conditions