

Winter Mortality in Scotland 2022/23



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Statistics on the seasonal increase in mortality in winter in Scotland, broken down by age-group, sex, cause of death, Scottish Index of Multiple Deprivation quintile, NHS Board and Local Authority area.

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Main Points

- There were 24,427 deaths registered in Scotland in the four months of winter 2022/23 (December 2022 to March 2023). This is 11 per cent higher than the previous winter and is the highest number in over thirty years. Winter 1989/90 had 25,497 deaths.
- The seasonal increase in mortality of 4,137 for winter 2022/23 is considerably higher than the previous winter but lower than the recent winters of 2017/18 (4,813) and 2020/21 (4,329).
- The causes of death with the largest seasonal increases in winter 2022/23 were dementia and Alzheimer's disease (640 additional deaths), coronary (ischaemic) heart disease (490 additional deaths), chronic lower respiratory disease (400 additional deaths), influenza (340 additional deaths), coronavirus (COVID-19) (310 additional deaths) and, other circulatory system diseases and (270 additional deaths). Very few deaths are directly due to cold weather (e.g. hypothermia); in each full calendar year since 2019 there have been fewer than ten deaths from 'exposure to extreme natural cold'.
- Older age groups are consistently affected most by the seasonal increase in mortality in winter. In winter 2022/23, for people aged 85 and over there were 29 per cent more deaths compared to the months before and after winter. In the under 65 age group there were 12 per cent more deaths in winter.

1. Introduction

This publication provides statistics on mortality in Scotland during winter 2022/23. This includes trends since 1951/52, as well as breakdowns by age, sex, cause of death, areas of Scotland and other factors.

Winter months generally see more deaths than other times of the year. This report examines the seasonal increase in mortality in winter - the difference between deaths registered over winter (December to March) and the average number of deaths in the adjacent four-month periods (before and after). This definition is also used by other organisations like the Office for National Statistics (ONS) and the World Health Organisation (WHO) to measure winter mortality. For more information on this definition, see the box below.

The seasonal increase in mortality is calculated using data from death registration records. The latest year's figures are provisional until the 2023 mortality data are finalised in summer 2024, but any revisions are usually small.

2. Winter mortality in Scotland

There were 24,427 deaths registered in Scotland in the four months of winter 2022/23 (December 2022 to March 2023). This is 11 per cent higher than the previous winter and is the highest total in over thirty years. Winter 1989/90 had 25,497 deaths.

It is generally expected that more deaths will be registered in the four winter months (December to March), than in either the four months before (August to November) or the four months after (April to July). There has been only one exception in 70 years: because of the coronavirus (COVID-19) pandemic, more deaths were registered from April 2020 to July 2020 than were registered in winter 2019/20 (December 2019 to March 2020).

What is Winter Mortality?

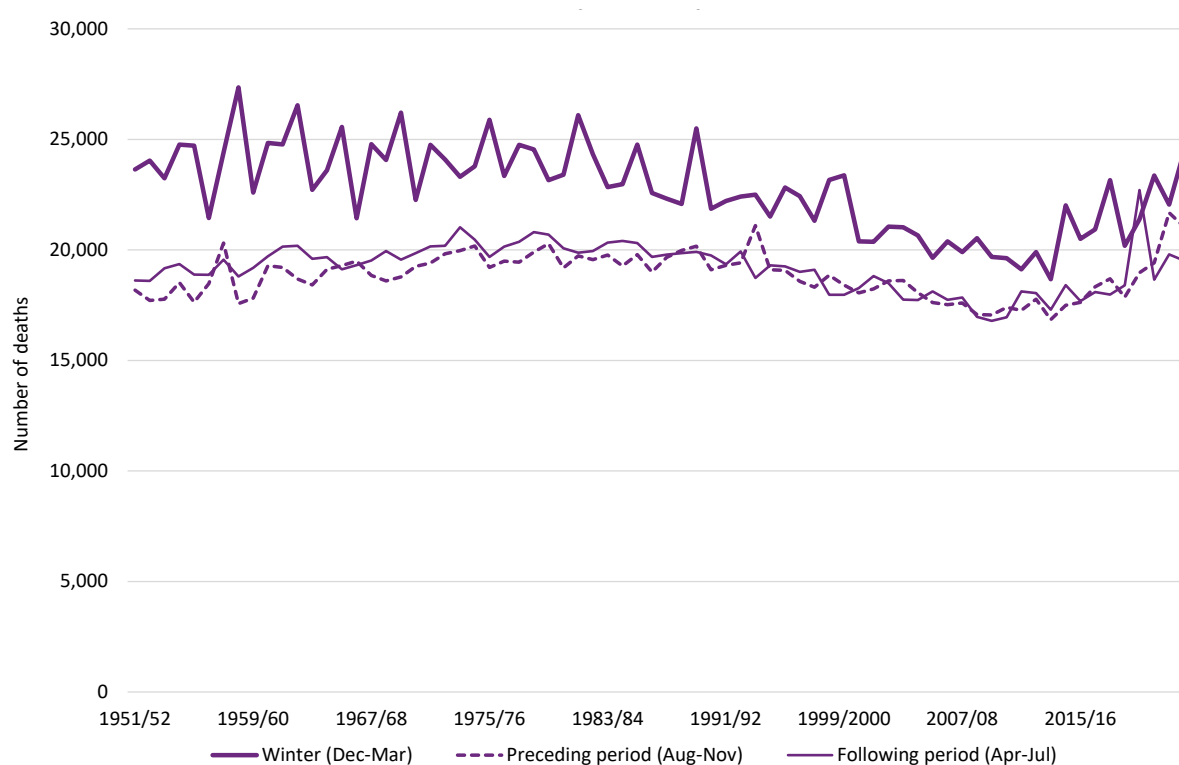
The seasonal increase in mortality in the winter is defined as the difference between the number of deaths registered in the four-month winter period (December to March, inclusive) and the average number of deaths in the two four-month periods which precede winter (August to November) and follow winter (April to July).

The seasonal increase represents the number of additional deaths in winter.

To account for differences in population size, seasonal increases for different areas of Scotland are better compared using the Increased Winter Mortality Index (IWMI). This is defined as the number of additional winter deaths divided by the average number of deaths in a four month non-winter period, expressed as a percentage.

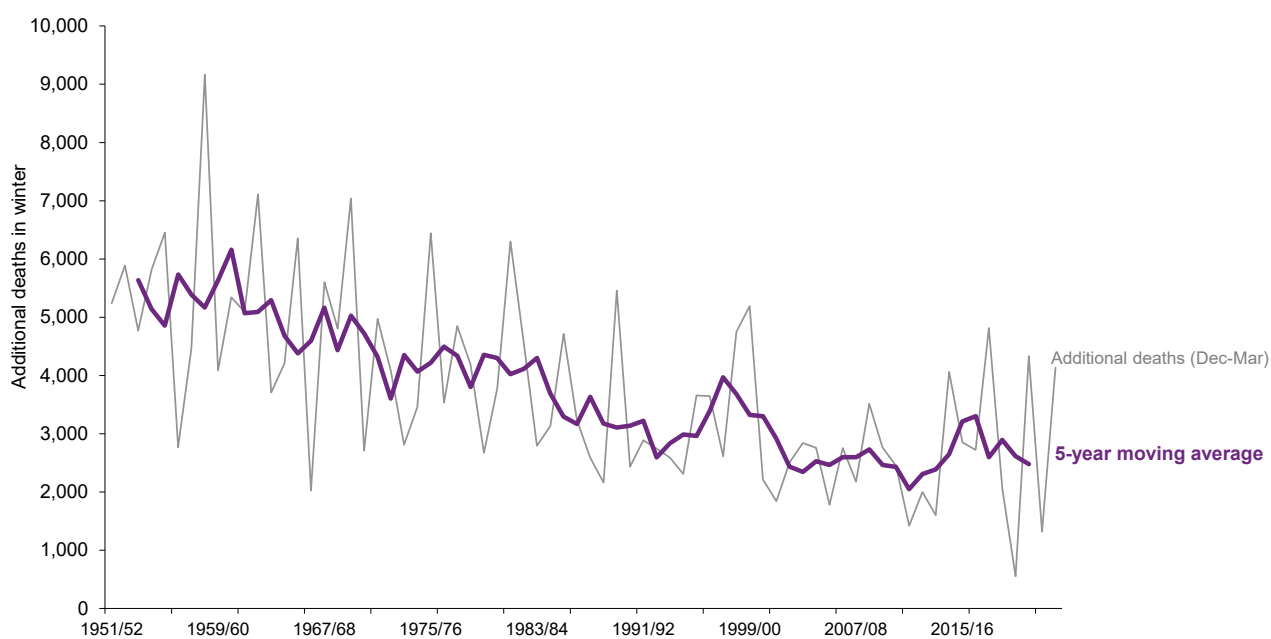
- The seasonal increase in mortality of 4,137 for winter 2022/23 is considerably higher than the previous winter but lower than the recent winters of 2017/18 (4,813) and 2020/21 (4,329).
- The four month periods before and after winter 2022/23 (Aug-Nov 2022 and Apr-Jul 2023) both had similar numbers of deaths to the previous year, but were high compared to the general trend.
- Figures for the most recent years suggest a departure from the long-term downward trend in the number of deaths.

Figure 1: Deaths registered in the Winter and in the Preceding and Following periods, Scotland, 1951/52 to 2022/23



Comparing the number of deaths in winter with the surrounding non-winter periods shows that the number of additional winter deaths can change from winter to winter and over time. In the 1950s and 60s, there was an average seasonal increase in winter of over 5,200 deaths, whereas over the most recent decade it has averaged around 2,800. The increased winter mortality index has also fallen over time – from an average winter increase of 27% in the 1950s and 60s to an average of 15% over the last decade.

Figure 2: Seasonal Increase in Mortality in the Winter, Scotland, 1951/52 to 2022/23



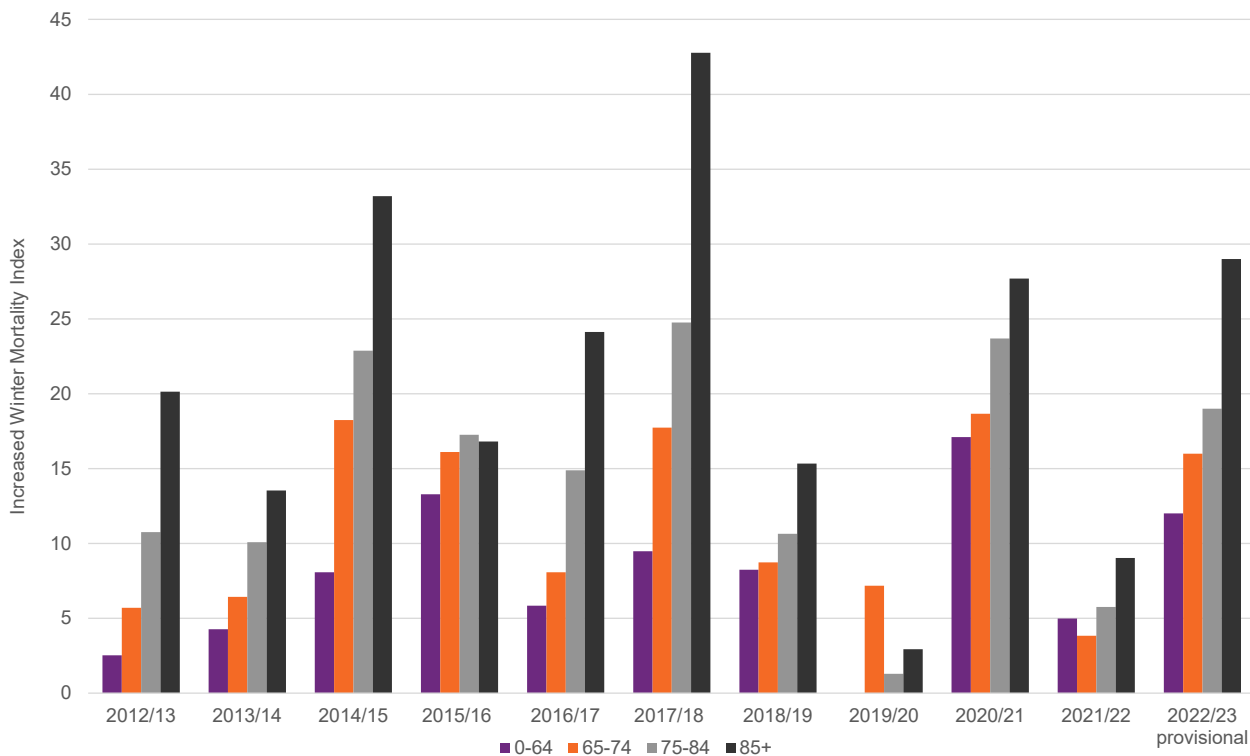
3. The seasonal increase in mortality in the winter by age-group

Older age groups are affected most by the seasonal increase in mortality in winter.

In winter 2022/23, for people aged 85 and over there were 29 per cent more deaths, compared to 12 per cent more for those aged under 65.

The figures fluctuate from year to year, but on the whole, the oldest age groups tend to have a greater seasonal increase in winter than the younger age groups.

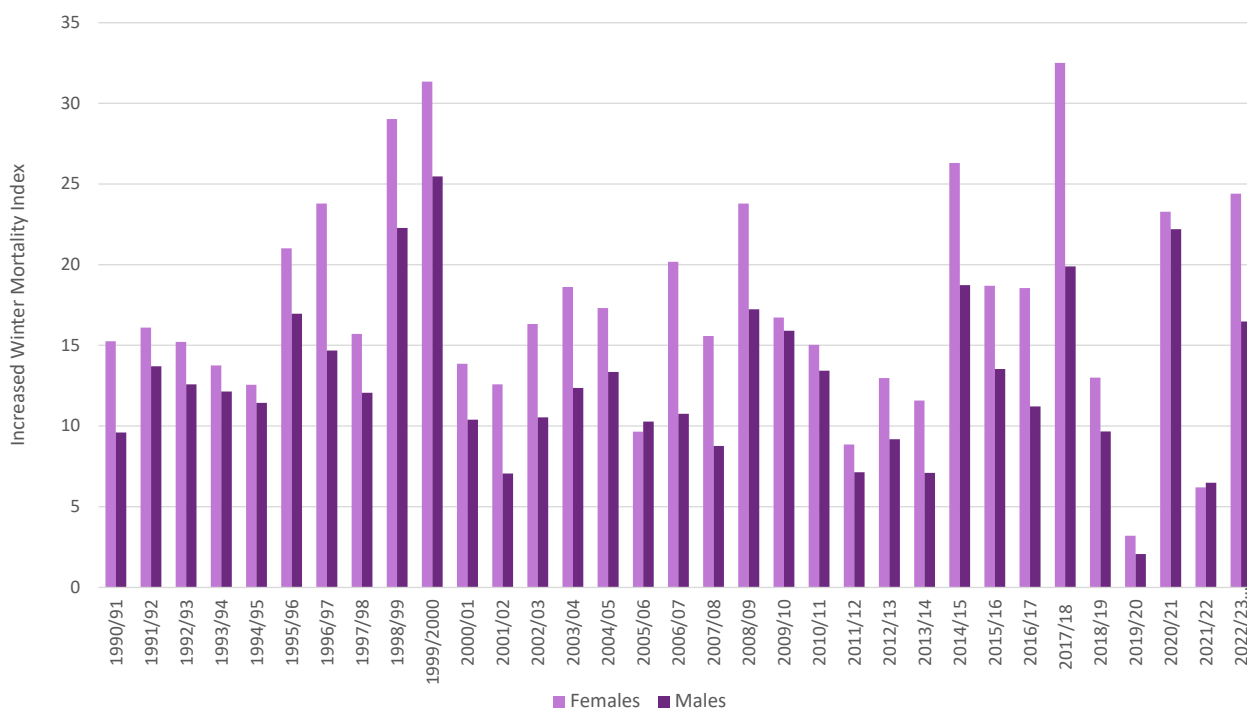
Figure 3: Increased Winter Mortality Index, by age-group. Scotland, 1990/91 to 2022/23



4. The seasonal increase in mortality in the winter by sex

For most of the past 30 years, the number of additional deaths in winter – and the increased winter mortality index - has been greater for females than for males. This is largely explained by the fact that females live longer than males, and therefore account for a larger proportion of the population in older age groups.

Figure 4: Increased Winter Mortality Index by sex, Scotland, 1990/91 to 2022/23



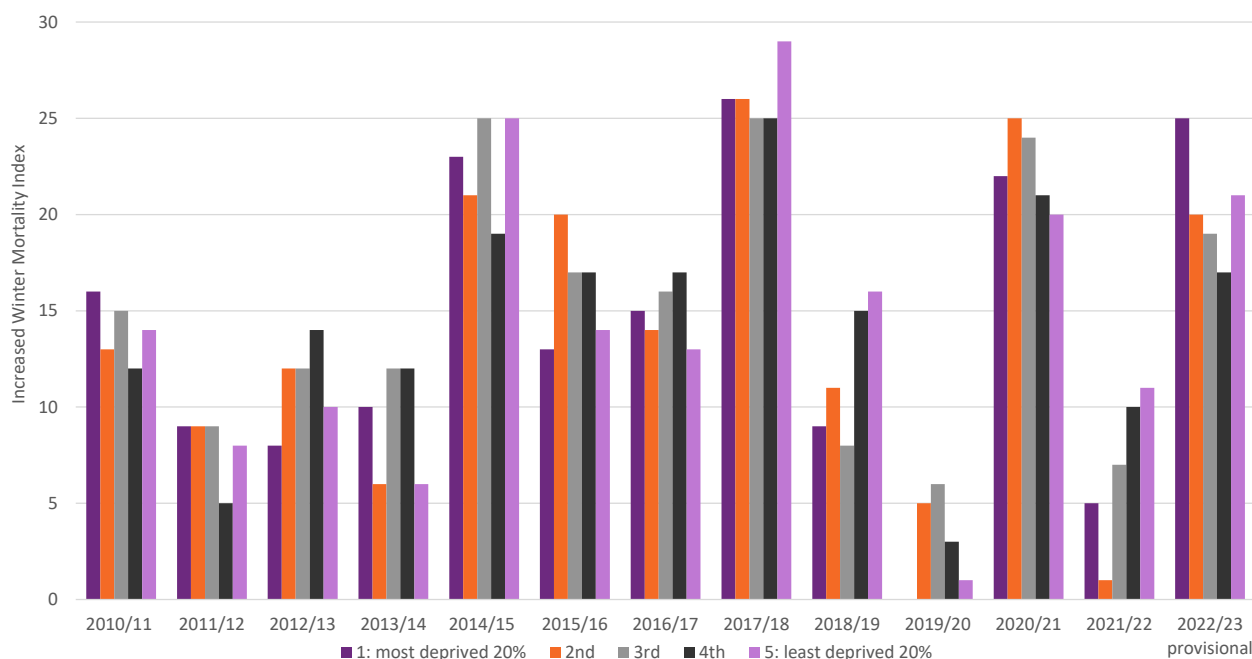
5. The seasonal increase in mortality in the winter by deprivation

There is no clear evidence of any consistent difference in the seasonal increase in mortality in winter between the most deprived and least deprived parts of Scotland.

In winter 2022/23 the increased winter mortality index was greater in the most deprived quintile (25%) than in the most deprived quintile (21%) but as Figure 5 shows, this pattern has not been consistent over time.

Deprivation quintiles are based on the Scottish Index of Multiple Deprivation (SIMD). This is an area-based measure of deprivation. Quintiles are allocated according to the deceased's usual place of residence.

Figure 5: Increased Winter Mortality Index by SIMD quintile 2010/11 to 2022/23



6. The seasonal increase in mortality in the winter across areas in Scotland

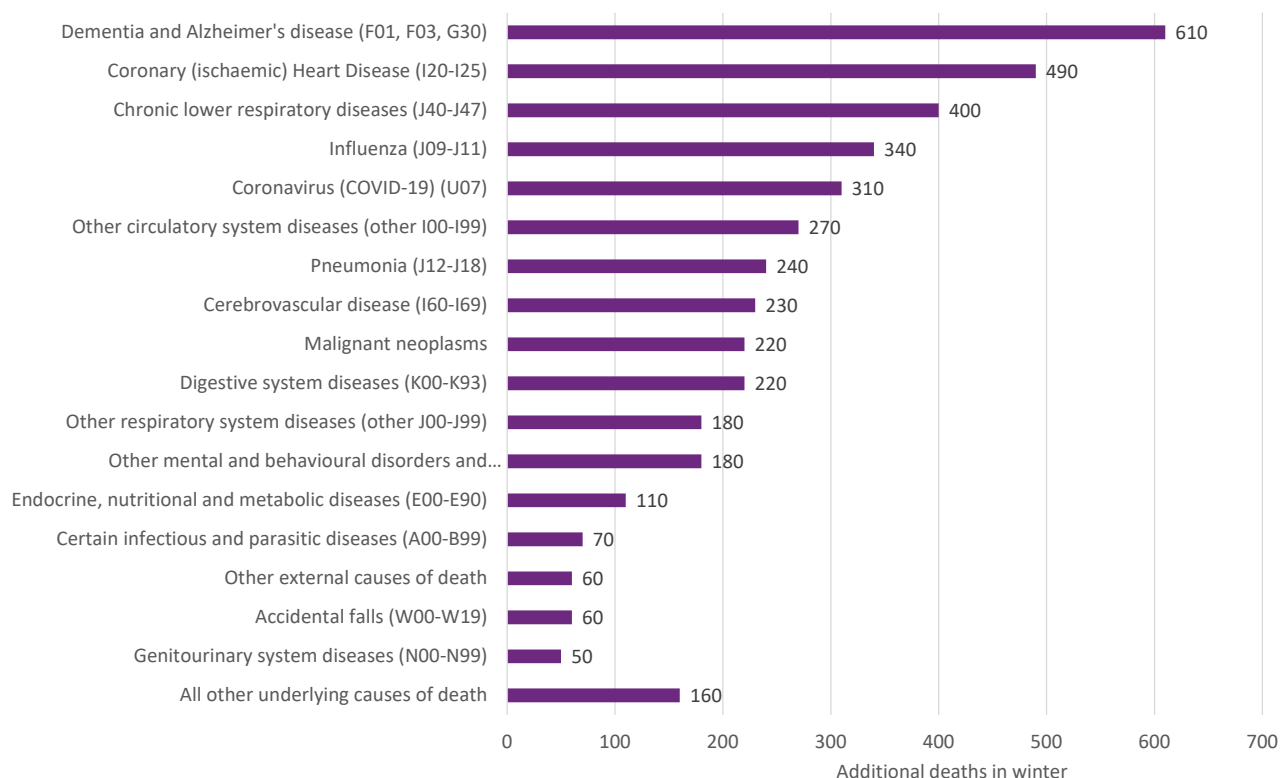
There is no clear evidence of any consistent difference in the seasonal increase in mortality in winter across areas of Scotland. The Health Boards and Local Authority areas with the highest and lowest increased winter mortality indexes tend to fluctuate from year to year.

[Tables 5 and 6](#) show the number of deaths in winter in each Local Authority and NHS Board area, along with the seasonal increases in each area.

7. The seasonal increase in mortality in the winter by cause of death

The causes of death with the largest seasonal increase in winter 2022/23 were dementia and Alzheimer’s disease (640 additional deaths), coronary (ischaemic) heart disease (490 additional deaths), chronic lower respiratory disease (400 additional deaths), influenza (340 additional deaths), coronavirus (COVID-19) (310 additional deaths) and other circulatory system diseases (270 additional deaths). Very few deaths are directly due to cold weather (e.g. hypothermia); in each full year since 2019 there have been fewer than ten deaths from ‘exposure to extreme natural cold’.

Figure 6: Seasonal Increase in Mortality in Winter 2022/23 (rounded) : main underlying causes



The underlying cause of death is defined as the disease or injury which initiated the chain of morbid events leading directly to death, or the accident/act which produced the fatal injury. Statistics are normally produced on this basis because every death has just one underlying cause, and so will be counted only once.

For additional information on this research and an explanation on some of the causes of increased mortality in winter, see the [background note](#).

8. Links to related statistics

- [Excess Winter Mortality in England and Wales](#) is published annually by the Office for National Statistics
- [Excess Winter Mortality in Northern Ireland](#) is published annually by the Northern Ireland Statistics and Research Agency

- [Deaths registered weekly in Scotland](#) is published by NRS and provide weekly, monthly and annual statistics on such deaths.
- [Monthly mortality analysis, Scotland](#) is published by NRS and provide weekly, monthly and annual statistics on such deaths.
- [Vital Events Reference Tables](#) are published by NRS and contain annual statistics on deaths.
- [Births, Deaths and Other Vital Events, Quarterly Figures](#) are published by NRS and contain statistics on deaths for the most recent quarter (with a limited breakdown by cause of death).

9. Notes on statistical publications

National Statistics

The United Kingdom Statistics Authority (UKSA) has designated these statistics as National Statistics, in line with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics (available on the [UKSA](#) website).

National Statistics status means that official statistics meet the highest standards of trustworthiness, quality and public value.

All official statistics should comply with all aspects of the Code of Practice for Official Statistics. They are awarded National Statistics status following an assessment by the Authority's regulatory arm. The Authority considers whether the statistics meet the highest standards of Code compliance, including the value they add to public decisions and debate.

It is National Records of Scotland's responsibility to maintain compliance with the standards expected of National Statistics. If we become concerned about whether these statistics are still meeting the appropriate standards, we will discuss any concerns with the Authority promptly. National Statistics status can be removed at any point when the highest standards are not maintained, and reinstated when standards are restored.

Information on background and source data

Further details on data source(s), timeframe of data and timeliness, continuity of data, accuracy, etc can be found in the About this Publication document that is published alongside this publication on the NRS website.

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Lead Statistician: Daniel Burns

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