

# Winter Mortality in Scotland 2019/20

Published on 13 October 2020



A National Statistics publication for Scotland

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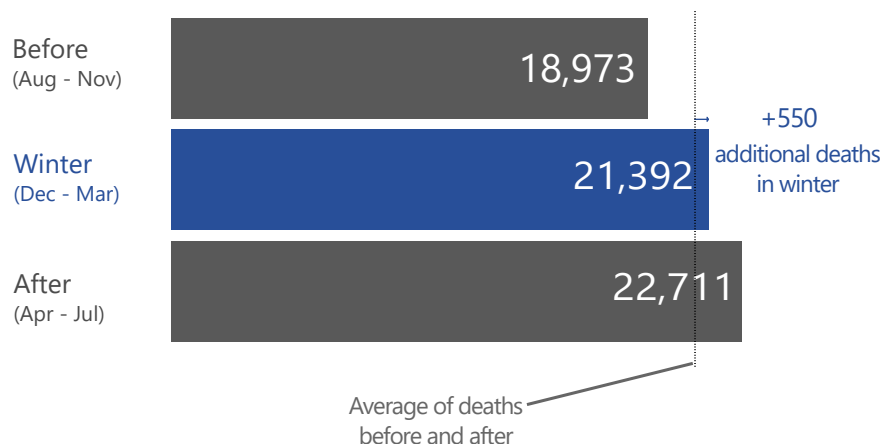
## Low seasonal increase in winter 2019/20

Winter months see more deaths than other times of the year. We measure the size of this effect by looking at the difference between deaths registered over winter and the average number of deaths in the adjacent periods (before and after).

The 21,392 winter deaths in 2019/20 is the third highest number of winter deaths in 20 years but the seasonal increase is lower than usual because of the high number of COVID-19 deaths in April - July 2020.

This is the first time more deaths have been registered in April - July than in December - March.

Deaths before, during and after winter 2019/20



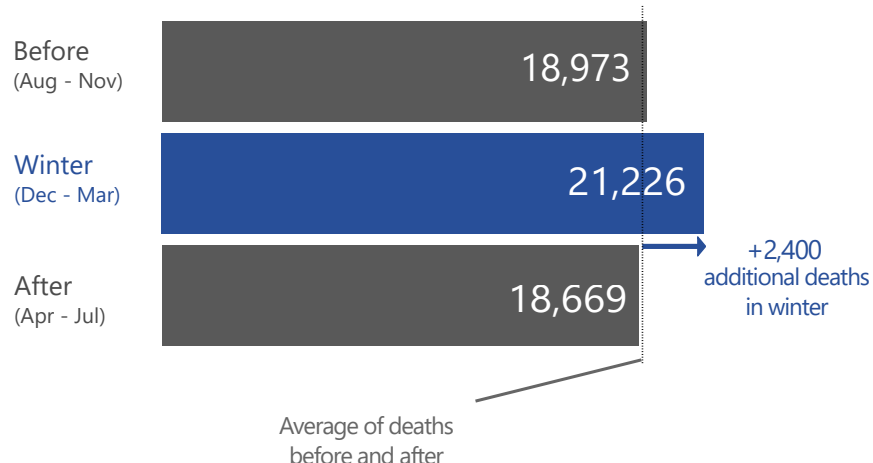
## Impact of COVID-19 on winter mortality

We can't be sure what the increase in winter mortality would be if the pandemic had not happened, but there are various ways of estimating it. One is to remove all deaths involving COVID-19 from the calculation.

If we do so, the estimate of the increase in winter mortality for 2019/20 would be more in line with estimates for previous years.

Other methods of estimating what the winter increase would have been if the pandemic had not happened produce estimates ranging between 2,200 and 3,000.

Deaths (excluding COVID-19 deaths) before, during and after winter 2019/20

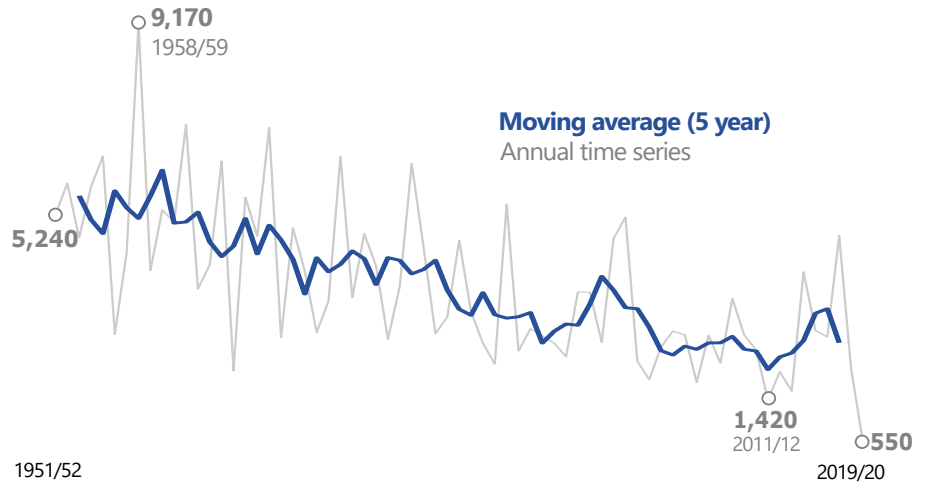


## Winter mortality has decreased since 1951/52

Mortality in winter has been higher than in the seasons before and after for each winter since records began in 1951/52.

The scale of this difference has fluctuated year on year. The 5-year moving average shows a long-term downward trend, but has increased in recent years.

Additional deaths in winter (Dec-Mar)



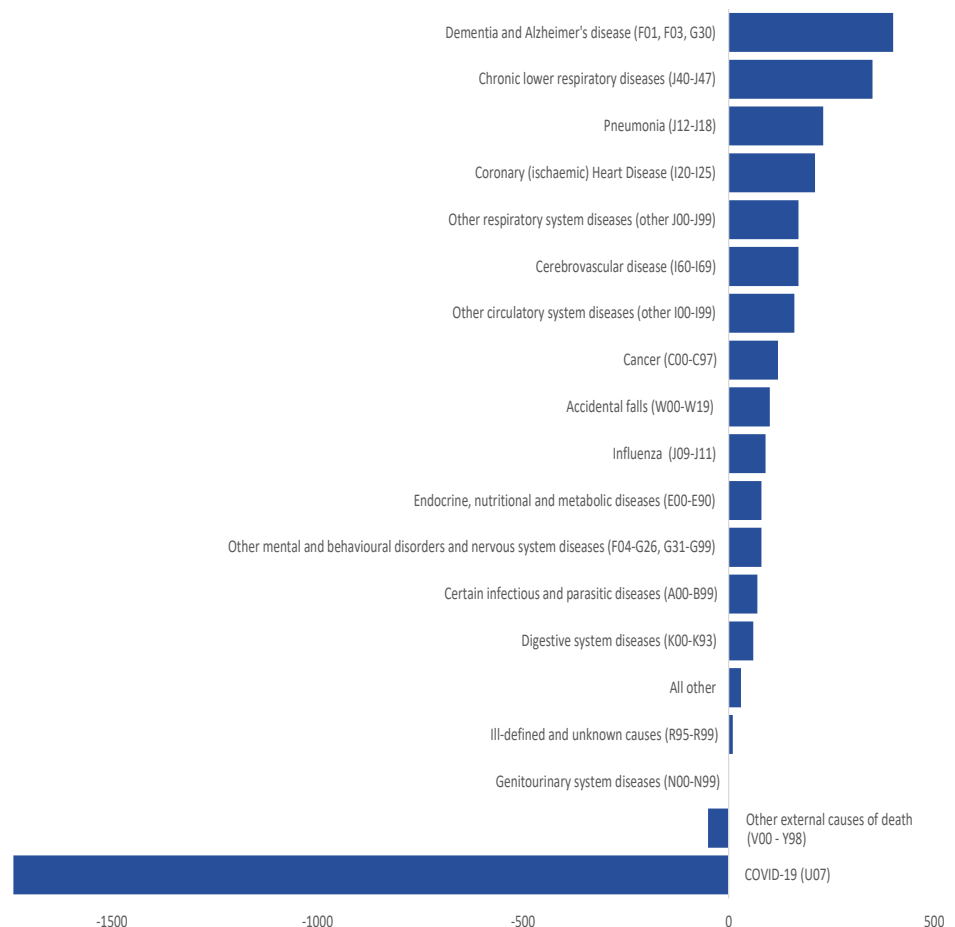
## Dementia and Alzheimer's biggest cause of increased winter mortality

COVID-19 had a huge negative impact on the estimate of increased winter mortality in 2019/20 due to the large number of deaths in April-July 2020.

Most other causes of death had an increase in deaths over the winter period.

Dementia and Alzheimer's deaths were the single biggest cause of increased winter mortality, with 400 additional deaths. Chronic lower respiratory diseases (350) and pneumonia (230) had the next biggest impact.

Increase in winter mortality by underlying cause, 2019/20



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## Main points

The main points in this report are:

- There were 21,392 deaths registered in Scotland in the four months of winter 2019/20 (December 2019 to March 2020) - the third highest total in the last 20 years.
- Comparing this with the average for the two adjacent 4-month periods, the seasonal increase in mortality in winter 2019/20 would be 550 - the lowest on record. However, this is mostly explained by an unusually large number of deaths being registered in spring 2020, due to the COVID-19 pandemic. It is the first time ever that a winter period has had fewer deaths registered than a 4 month period before or after, in this case April to July 2020 (when 22,711 deaths were registered).
- Without the impact of the COVID-19 pandemic, the seasonal increase in mortality in winter 2019/20 is estimated to have been between 2,200 and 3,000, which is much more in line with previous winters.
- The seasonal increase in mortality can fluctuate greatly from winter to winter, but the long-term trend has clearly been downward. In the 1950s and 60s, there was an average seasonal increase of around 5,200 deaths in winter, whereas over the most recent decade it has averaged around 2,500.
- The causes of death with the largest seasonal increases in winter 2019/20 were dementia and Alzheimer's disease (400 'additional' deaths), chronic lower respiratory diseases (350), pneumonia (230) and coronary (ischaemic) heart disease (210). Only a few deaths are directly due to cold weather (e.g. hypothermia).
- Data up to 2018/19 show that winter mortality in Scotland is generally lower than in England and in Wales. In recent years, it has also tended to be lower in Scotland than in Northern Ireland.

## 1. Introduction

- 1.1 The seasonal increase in mortality in the winter is defined as the difference between the number of deaths in the 4-month 'winter' period (December to March, inclusive) and the average number of deaths in the two 4-month periods which precede winter (August to November, inclusive) and follow winter (April to July, inclusive).
- 1.2 This release presents provisional data for the seasonal increase in mortality in Scotland in winter 2019/20. The Tables provide overall numbers for Scotland for 69 years, breakdowns by age-group for Scotland as a whole for 30 years and for each NHS Board and Local Council area for 10 years, and 'additional' deaths by age-group and cause of death for Scotland for 11 years. They also give the number of deaths registered in each 4-month period for Scotland for 69 years, and for NHS Board and Local Council areas for four years.
- 1.3 There is no single cause of 'additional' deaths in winter. Public Health Scotland (PHS), which includes the former Health Protection Scotland (HPS), has noted (in its reports on influenza, which are available via the ['Influenza' part of its website](#)) that they are often attributed in part to cold weather directly (for instance deaths following falls, fractures, and road traffic accidents), in part to cold weather worsening chronic medical conditions (for example, heart and respiratory complaints), and in part to respiratory infections including influenza. National Records of Scotland (NRS) data show that very few deaths are caused by hypothermia. The underlying causes of most of the 'additional' deaths are circulatory system diseases (such as coronary heart disease and stroke), respiratory system diseases (such as pneumonia and chronic obstructive pulmonary disease), dementia and Alzheimer's disease. Influenza is recorded as the underlying cause in only a minority of deaths. A separate document, 'Increased Winter Mortality - Background Note', which is available from [the 'home' page for NRS statistics of winter mortality](#), gives information about some of the medical causes of the seasonal increase in mortality in the winter, describes some research studies' findings on factors that influence it, reports on comparisons of the figures for a number of European countries, mentions previous publications on this topic, and provides references to the sources of the material.
- 1.4 The following improvements have been made for this edition:
  - Table 4 has been extended to provide the number of deaths registered in each winter, and in the preceding and following periods, and the seasonal increase in mortality in the winter, for all winters back to 1951/52;
  - Table 8 has been expanded to provide figures for coronavirus (COVID-19) as the underlying cause of death;
  - Table 9 has been expanded to provide separate figures for England and for Wales;
  - Figure 4 has been expanded. It now has two parts (one shows the number of deaths that occurred on each day from 1 August to 31 July around the previous winter; another shows the 12 month period that includes the latest winter) because the latter's pattern is most unusual due to the many coronavirus-related deaths in April and May 2020.



## 2. Commentary

### Latest years

- 2.1 [Table 1](#) shows the trends since winter 1990/91 in the seasonal increase in mortality in the winter for Scotland as a whole. It is estimated that there were about 550 'additional' deaths in Scotland during winter 2019/20. This was 1,510 fewer than the corresponding figure of 2,060 for the previous winter. A longer time-series is provided in [Table 2](#), which sets out the seasonal increases for all the winters from 1951/52. It will be seen that winter 2019/20 had by far the lowest seasonal increase of all 69 of those winters. This was because the number of deaths in spring 2020 was unusually large, due to the coronavirus (COVID-19) pandemic, not because winter 2019/20 was a 'good' one. In fact, of the 20 most recent winters (2000/01 onwards), winter 2019/20 had the third highest number of death registrations ((December 2019 to March 2020: 21,392). However, even more deaths were registered in the four months that followed (April to July 2020: 22,711) than in winter 2019/20. Because so many deaths were registered in April to July 2020, the winter 2019/20 figure was only 550 more than the average of the numbers registered in August to November 2019 and in April to July 2020. That is the unusually low result of the calculation of the seasonal increase in mortality for winter 2019/20. The latest figures are most unusual. Of all the winters back to 1951/52, winter 2019/20 was the first to have fewer deaths registered in its four months than in one of its adjacent four month periods. Also, the total number of deaths registered in the four months from April to July was far greater in 2020 than in any other year for which these statistics are available. (They go back to 1952. Before 2020, the year with the most deaths registered in April to July was 1974, with 21,022.) More information about this is given in [Section 4](#).
- 2.2 The size of the seasonal increase in mortality can vary markedly from one winter to the next. For example, the seasonal increase of 2,060 in the previous winter (2018/19) was the eighth lowest figure in all the 69 winters for which such statistics are now available, and below the levels seen in seven of the previous ten winters, and 15 of the previous 20 winters. This is in marked contrast to the seasonal increase of 4,810 in the winter before that (2017/18), which was the largest value since winter 1999/2000, when the seasonal increase was 5,190. Winter 2017/18 had a seasonal increase which was larger than in 49 of the 66 winters before it, larger than the average for those 66 winters (which was roughly 3,840), and above the level seen in all of the ten, and in 19 of the 20, winters before it.

### Age-groups

- 2.3 [Table 1](#) also shows the extent to which the seasonal increase in mortality in the winter usually affects the elderly, particularly those aged 75 and over. As noted above, the seasonal increase for winter 2019/20 is unusually low, due to the subsequent effect of the coronavirus (COVID-19) pandemic; for the same reason, its breakdown by age group (almost half of the 'additional' deaths were of people aged 65-74, only 15% were 75-84 and under two-fifths were 85 or over) was not typical. Therefore, the analysis that follows does not include winter 2019/20. In the previous ten winters (i.e. 2009/10 to 2018/19, inclusive), the percentage of the additional deaths accounted for by people aged 75 to 84 ranged between 28% (in 2017/18 and 2018/19) and 33% (in 2013/14), and people aged 85 and over accounted for between 34% (in 2015/16) and 56% (in 2012/13) of the additional

deaths. Overall, taking the average of the ten winters' percentages, around 30% of the additional deaths were of people who were aged 75 to 84, and 45% were of people aged 85 and over. The right-hand part of the table shows the number of additional deaths per 1,000 population in each age-group. It is clear that the seasonal increase is greatest for those aged 85 and over. For example, winter 2014/15 had almost 17 additional deaths of people who were aged 85 and over (when they died) per 1,000 people who were aged 85 and over (at mid-2014). On this basis, the worst winters (of those shown in the table) were 1998/99, 1999/2000 and 2017/18, which all had over 20 additional deaths aged 85 and over per 1,000 population aged 85 and over at mid-year. Over the period covered by the table, increases in the size of the population in the older age-groups mean that lower 'additional death' rates for each age-group will lead to a particular number of additional deaths. For example, the seasonal increases in winter 1991/92 and winter 2015/16 were almost the same (2,890 and 2,850, respectively), even though winter 2015/16 had much lower 'additional death' rates per 1,000 population in the older age-groups (for example, for those aged 85 and over, 8.38 for winter 2015/16 compared with 13.52 for winter 1991/92).

### Long-term trends

- 2.4 [Figure 1](#) shows the seasonal increase in mortality for each winter from 1951/52 individually (the thin grey line, which often rises and falls rapidly) and as a 5 year moving average (the thick black line) - the latter should give a better guide to the overall trend, as it 'smooths out' most (but not all) of the effect of what are, sometimes, very large percentage year-to-year fluctuations in the figures. The chart shows that there has been an overall downward trend in the number of 'additional' winter deaths over the past 65-plus years. It also shows that there have been unusually large figures in some years (including, recently, 4,060 in winter 2014/15, and 4,810 in winter 2017/18, the latter being the largest seasonal increase since the 5,190 in winter 1999/2000). However, the height of the peaks has generally appeared to be falling, and the 5-year moving average has tended to decline, albeit with fluctuations around the overall long-term downward trend, such as the short-term rise in the moving average around the middle of the 1990s. The 5-year moving average had also been rising recently (due, for example, to winters 2014/15 and 2017/18 entering the calculation): while its previous value (3,300, centred on winter 2016/17 and calculated from the figures for winter 2014/15 to 2018/19) was, at that time, the twenty-sixth lowest ever, it was greater than all of the previous 15 values.
- 2.5 In the early 2000s, the 5-year moving average had appeared to have more-or-less 'levelled off', with an average of 2,509 for the nine values from that centred on winter 2002/03 to that centred on winter 2010/11, and seven of those nine values being within 100 of 2,500. However, it subsequently rose, and the 5-year moving average of 3,300 for the period centred on winter 2016/17 was well above the top of that range. At that stage, one could not be sure whether there had been a change in the long-term trend: the rise in the 5-year moving average could have just been a short-term one (like that seen in the mid-1990s, after which it fell for several years). Indeed, the most recent increase in the 5-year moving average had been due to the winter with the second lowest seasonal increase in mortality (2013/14, with a seasonal increase of 1,600) dropping out of the calculation and being replaced by winter 2018/19, with a seasonal increase (2,060) that was larger, even though it was, at that time, the seventh lowest ever recorded.

Identifying any changes in trend has now been complicated further by the 5-year moving average dropping to 2,598 for the period centred on winter 2017/18. There were two reasons for this large fall: first, the seasonal increase for winter 2019/20 was unusually low (550), due to the subsequent effect of the coronavirus (COVID-19) pandemic; second, winter 2014/15 (which had a seasonal increase of 4,060, the second largest value since that of winter 1999/2000) dropped out of the calculation. Over the next few years, interpreting the value of the 5-year moving average may be complicated as, at first, it will be affected by the coronavirus (COVID-19) and, eventually, by the unusually low value for winter 2019/20 dropping out of the calculation.

2.6 [Table 2](#) gives the figures for the 69 winters for which these statistics are available. Winter 2019/20 had the lowest seasonal increase in mortality ever seen (550), due to the effect of coronavirus (COVID-19) in Spring 2020. The 1,420 'additional' deaths in winter 2011/12 is the second lowest figure in the whole series. Winter 2013/14 had the third lowest seasonal increase (1,600) recorded since the series started in 1951/52. Winter 2005/06 had the fourth lowest number (1,780), winter 2001/02 had the fifth lowest (1,840), and winter 2012/13 had the sixth lowest (2,000). The winters of 2018/19 and 2007/08 had the eighth and tenth lowest figures (2,060 and 2,180, respectively). As a result, the latest 19 winters have had eight of the ten lowest seasonal increases in the 69 years for which these statistics are available. In addition, as the eleventh, fourteenth and fifteenth lowest figures were 2,220 in winter 2000/01, 2,450 in winter 2010/11 and 2,510 in winter 2002/03, the latest 20 winters have had 11 of the 15 lowest seasonal increases. The other winters with seasonal increases which are among the 15 lowest such figures are 1966/67 (2,020 - seventh lowest), 1988/89 (2,160 - ninth lowest), 1994/95 (2,310 - twelfth lowest) and 1990/91 (2,430 - thirteenth lowest). However, recent years have also seen some large seasonal increases: in particular, 4,810 in winter 2017/18 was the eighteenth highest of the 69 winters.

### **NHS Board and Local Authority areas**

2.7 [Table 3](#) gives a more detailed breakdown of the seasonal increase in mortality in the winter by age and NHS Board area. There are some negative figures: these are cases where a particular age-group had fewer deaths in the winter period than the average of the two adjacent non-winter periods. This happens sometimes because the number of deaths may fluctuate 'randomly' during the year. The 'all ages' figures for the seasonal increase take account of any negative values for individual age-groups. In this publication, the statistics for each NHS Board area 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. [Table 6](#) provides the same kinds of figures, but for each Local Authority area.

### **Causes of death**

2.8 [Table 8](#) shows the numbers of 'additional' deaths for various categories of underlying causes of death. They are defined using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10). There may be some apparently very large Increased Winter Mortality Index values, which are based on small unrounded numbers of deaths. For example, a certain winter would have an Index value of 200 (percent) for a particular cause of death /

age-group 'cell' if it had two 'additional' deaths and there was, on average, only one death per 4-month non-winter period. One will see particularly high index values for influenza, as it is the underlying cause of very few deaths at other times of the year.

- 2.9 The figures for the latest winter are always provisional, and therefore subject to revision, because, when it produces the figures in August every year, NRS has still to receive final information about the causes of some of the deaths which were registered between January and July of the latest year. In the case of winter 2019/20, there is further uncertainty because, in August 2020, NRS had also still to receive final information about the causes of some of the deaths which were registered in the later months of 2019. This was because of delays in the production of the results of toxicology tests. At the time, more on this was available from the [NRS website](#). Usually, it is likely that only a small percentage of the (rounded) numbers of additional deaths will change by more than 10 (based on a comparison of 'provisional' and 'final' figures for winter 2014/15). The categories for which the numbers are most likely to change by more than 10 are 'other external causes of death' and 'ill-defined and unknown causes': categories for which NRS is more likely to receive further information which changes the classification of the cause of death. (The Index values may have more changes, including some apparently large percentage ones, between their provisional and final versions, due to small revisions to the unrounded numbers from which they are calculated.)
- 2.10 The table shows that winter 2019/20 had a 'seasonal increase' of -1,740 for deaths caused by the coronavirus (COVID-19) – i.e. it had a large 'seasonal decrease'. This is because relatively few deaths for which the underlying cause was the coronavirus (COVID-19) were registered in winter 2019/20 (December 2019 to March 2020) compared with the number registered in the following four months (April to July 2020). As a result, the number registered in winter 2019/20 was much less than the average of the numbers registered in the previous and subsequent four-month periods, and so winter 2019/20's 'seasonal increase' for deaths caused by the coronavirus (COVID-19) was calculated to be -1,740. It is not possible to use that figure to estimate exactly what the overall seasonal increase for winter 2019/20 would have been had there been no coronavirus (COVID-19). More about this appears in [Section 4](#) (paragraph 4.12 onwards).
- 2.11 The underlying causes of the largest numbers of 'additional' deaths in winter 2019/20 were dementia and Alzheimer's disease (400 additional deaths), chronic lower respiratory diseases (350), pneumonia (230), and coronary heart disease (210). Between 72% and 93% of the additional deaths in each winter from 2009/10 to 2018/19 are caused by circulatory system diseases, respiratory system diseases and dementia and Alzheimer's disease, even though they are responsible for only about half of all deaths registered in Scotland. (The corresponding percentage for winter 2019/20 is uninformative because the denominator, the overall seasonal increase, was unusually low due to the large negative 'seasonal increase' for deaths from coronavirus.)
- 2.12 As the seasonal increase in mortality may fluctuate greatly from winter to winter, the number of 'additional' deaths from a particular cause could vary even more (in percentage terms) between one year and the next. In addition, changes in the software that is used for coding the causes of death have broken the continuity of

the figures for certain causes of death. More information about this is available from [Section 4](#) (paragraphs 4.10 and 4.11). So, great caution is required when interpreting apparent changes or trends in the figures for individual causes of death, especially those that are mentioned in Section 4.

### Numbers of deaths registered

2.13 [Table 4](#), [Table 5](#) and [Table 7](#) provide the numbers of deaths registered each winter, and in the adjacent 4-month periods, for Scotland, NHS Board areas and Local council areas, respectively. They also show the seasonal increase in mortality in the winter (which is sometimes referred to as the 'seasonal difference') that is calculated from those numbers of deaths: [Section 4](#) explains how it is done.

## 3. Relationship with Overall Mean Winter Temperature and the Level of Influenza Activity

### Temperature

3.1 In general, there are more deaths in colder months, and mortality tends to rise as temperatures fall. As well as figures for the seasonal increase in mortality, [Table 2](#) also gives the Met Office's overall mean winter temperature for Scotland for each of the years (based on data for December to February, rather than December to March). Part (a) of [Figure 2](#) shows that (taken over all the winters for which figures are available) there may be a very slight tendency for the seasonal increase in mortality in the winter to be higher when the overall mean winter temperature is lower, but there is not a clear relationship. Part (b) shows that there is no clear relationship for the latest 20 winters alone. Here are a couple of examples of winters for which the expected relationship did (more-or-less) apply:

- Winter 2013/14 was the fourth warmest of the 63 winters for which (at that time) these figures were available, with a mean temperature of 4.14°C, and had the second lowest seasonal increase in mortality (1,600);
- Winter 2014/15 was, perhaps, a fairly 'typical' winter (in terms of its average temperature): it was the 35th coldest out of the 64 winters for which figures were available at that time, and had the 28th largest seasonal increase in mortality in those winters. (However, the relationship is less clear if one looks only at what were, at that time, the latest twenty winters: in that period, winter 2014/15 was only the eighth coldest but it had had the third largest seasonal increase in mortality.)

On the other hand, there are also examples of winters for which the expected relationship did not apply:

- In terms of its average temperature, winter 2010/11 was the seventh coldest in the 60 years from 1951/52 to 2010/11, inclusive: it had a mean winter temperature of 1.31°C. Only six of the 59 preceding winters had a lower mean temperature (1962/63: -0.02°C; 1976/77: 0.93°C; 1978/79: 0.43°C; 1981/82: 1.12°C; 1985/86: 1.30°C; and 2009/10: 0.39°C) and the average of the mean temperatures for those 59 winters was 2.53°C. Therefore, one might have expected a relatively high seasonal increase in mortality in winter 2010/11. However, the seasonal increase in mortality in winter 2010/11 was (at that time) the ninth lowest figure recorded since the series started in 1951/52;
- Winter 2011/12 was quite mild, with a mean temperature of 3.53°C. Nine of the preceding 60 winters had higher mean temperatures (ranging from

3.61°C in winter 2007/08 to 5.10°C in winter 1988/89), yet winter 2011/12 had by far the lowest seasonal increase in mortality.

3.2 There may be a number of reasons for the lack of a clear association, for example, over the years, improvements in home insulation and the spread of central heating will have altered the relationship between the weather outdoors and temperatures indoors. In addition, the overall mean winter temperature may not be a good indicator of the severity of a winter because it is an average over three months: it could therefore suggest that a winter with some extremely cold weeks (in, say, January) was 'mild' if the average for the three months were raised by unusually warm weather in, say, December or February. And, as mentioned earlier, the unusually low seasonal increase in winter 2019/20 is due far more to there being 'coronavirus' deaths in April and May 2020 than to the temperature during winter 2019/20.

### **Influenza activity**

3.3 [Table 2](#) also includes indicators of the level of influenza activity, which NRS has calculated from figures for the weekly rate (per 100,000 population) for General Practitioner (GP) consultations for influenza-like illnesses (ILI) which were supplied by PHS. The 'fluspotter' surveillance scheme ran from 1971 to 2008. Since 2009/10 the Scottish Influenza Surveillance Reporting Scheme (SISRS) has provided aggregate level data on GP consultation for ILI, based on automated software extracts from 99% of Scottish GP practices. These data are now used for routine surveillance of ILI in Scotland. (Data from the Pandemic Influenza Primary Care Reporting (PIPeR) sentinel scheme, which started in 2004, have been used retrospectively to calculate comparable historical rates for SISRS for the period 2003/04 to 2008/09.) The first two indicators are based on the peak weekly rate for GP consultations for ILI over the relevant influenza season. The third indicator was calculated from the total of the rates for the weeks which (broadly speaking) cover the period from the start of December to the end of March. NRS has expressed each indicator in the form of an index, with the 2004/05 value being 100 in each case. 2004/05 is one of only five years for which both 'fluspotter' and SISRS/PIPeR data are available, any of which could have been chosen as the 'base' year for the indices. One might expect differences between the three series' index values for the other years which they have in common, because different measuring systems and different types of data may produce different results.

3.4 The seasonal increase in mortality in the winter may have a slight tendency to be a little higher when the peak weekly rate for GP consultations for ILI is higher. A tentative suggestion of this is given by part (a) of [Figure 3](#), which uses the 'fluspotter' data; part (b) provides an even fainter suggestion using the 'SISRS' data. However, it will be seen that any relationship between the two numbers is a very weak one (although, as mentioned later, PHS advises that the correlation is stronger when influenza A (H3N2) is the dominant strain), and winter 2019/20 is, of course, a complete outlier with its unusually low seasonal increase in mortality. There are some winters which had apparently similar levels of influenza activity (measured in terms of the peak weekly rate for GP consultations for ILI) but which had markedly different seasonal increases in mortality. This may be because the peak weekly rate may sometimes be a poor indicator of the total volume of influenza activity. One reason for this is that an 'influenza season' with a below-average peak weekly rate could have more cases than a 'normal' season if it

lasted much longer than usual. Another reason is that the time of the year when influenza is at its highest may not be within the four winter months (as defined for the purpose of these statistics), which may reduce the statistical correlation between influenza activity and the seasonal increase in mortality. This can be seen from PHS reports (refer to [Section 1](#)) which have included a chart comparing the latest and the previous influenza seasons' GP consultation rates for flu. For example, reports by the then HPS, which were produced in April 2010, show that influenza in the 2009/10 season peaked in early November 2009 - which was before the start of what is defined as 'winter 2009/10' for the statistics of the seasonal increase in mortality in the winter. The third indicator, being based on the 'SISRS' total for the relevant weeks, should be a better indicator of the total volume of influenza activity in the winter, as it is not affected by either of those problems. However, there is also very little (if any) relationship between the seasonal increase in mortality and the value of the third indicator, as can be seen in part (c) of Figure 3. PHS advises that stratification of the data by influenza subtype reveals that the strongest correlation is evident for seasons in which influenza A (H3N2) was the dominant strain. That strain is one which particularly affects the most elderly, and for which the seasonal vaccine has been demonstrated in UK data to be poorly protective over recent influenza seasons, as shown in an article published on 27 September 2018 in "[Eurosurveillance](#)" (a journal on infectious disease surveillance, epidemiology, prevention and control). This finding prompted a change in vaccine policy across Scotland and the rest of the UK for the 2018/19 influenza season.

3.5 Some of the winters which had particularly high seasonal increases in mortality were in periods with apparently unusually high levels of influenza activity (for example 1975/76 and 1989/90), but there have also been occasions when the relationship was less clear. Examples of the latter are winter 1971/72, which had a very high level of influenza activity, but its seasonal increase in mortality did not differ greatly from the 5-year moving average; and winter 2014/15, which had a relatively low level of influenza activity (when measured in terms of both the 'SISRS' indicators for GP consultations), but a seasonal increase in mortality that was unusually high for the 21st century. The large seasonal increase in mortality in winter 2014/15 is believed to be due to the impact of the main influenza strain that was circulating at that time (influenza A H3N2), for three reasons. First, older people have demonstrated increased susceptibility to this strain and are more vulnerable to increased winter mortality. Second, the 2014/15 'influenza season' (as determined by the results of laboratory testing of swabs from sentinel general practices) was much longer than normal (around 20 weeks, rather than the usual 6-8 weeks). Third, while the vaccine which the World Health Organisation recommended (in February 2014) for use in Northern hemisphere countries over winter 2014/15 provided protection against a number of influenza strains, it was less successful in protecting against H3N2. The vaccine was less effective than anticipated because the majority of the influenza A H3N2 viruses that were found to have circulated in Europe during the 2014/15 'influenza season' had 'drifted' from the vaccine strain. The mismatch between the vaccine and what turned out to be the dominant influenza strain was revealed by early and sustained pressure on elderly residential care settings with high uptake of seasonal influenza vaccine due to outbreaks of influenza H3N2. The patterns of influenza rates and changes in mortality rates seen in Scotland in winter 2014/15 were similar to those of a number of other EU countries.

- 3.6 At the time of writing, 1999/2000 was the most recent winter with an extremely high level of influenza incidence (the fluspotter index value for that year was many times greater than the indicator values of all the subsequent winters) The seasonal increase in mortality in this year was 5,190. Since then, the number of ‘additional’ deaths in winter had tended to fluctuate around about half of that level (this has, very broadly, been between roughly 2,000 and 3,000), with some exceptions (such as the values of 3,510 in winter 2008/09, 1,420 in winter 2011/12, 1,600 in winter 2013/14, 4,060 in winter 2014/15 and 4,810 in winter 2017/18). However, PHS advises that there are other measures of the level of influenza activity, such as the number and proportion of people who were found to have influenza following tests conducted by GPs and hospitals – and that, on the basis of hospital test results, winter 2017/18 had an unusually high level of influenza. The poor effectiveness of the vaccine in the elderly used in the 2017/18 season was demonstrated in a more recent publication in Eurosurveillance. There was a strong correlation between this data and the influenza surveillance indicators suggesting influenza illness significantly contributed to the high number of deaths seen that winter. This was a consistent finding across the UK ([PHE Annual Flu Report](#)) and Europe ([European Mortality and Morbidity Eurosurveillance paper](#)).
- 3.7 Influenza may increase the mortality rate for vulnerable people, such as the elderly and those with long-term health conditions, like cancer and chronic obstructive pulmonary disease (COPD), by making them more vulnerable to the effects of existing health problems. Influenza and other respiratory system diseases may affect the circulatory system and trigger coronary heart disease or cerebrovascular disease. In such cases, the medical condition (for example COPD or heart disease) may be recorded as the cause of death, as influenza itself is mentioned on relatively few death certificates. It will be seen from the figures in [Table 8](#) that, in most winters, influenza as the underlying cause of death accounted for only a small fraction of the seasonal increase in mortality in the winter (for example, only 70 out of a total seasonal increase of 2,720 in winter 2016/17; and usually under one hundred out of a total which was in the thousands). Of the winters shown, 2017/18 was the one with influenza’s largest contribution (as the underlying cause of death) to the seasonal increase in mortality, when it accounted for 370 out of the overall seasonal increase of 4,810.

## 4. How the Seasonal Increase in Mortality in the Winter is Calculated

### Definition

- 4.1 The seasonal increase in mortality in the winter is defined as the difference between the number of deaths in the 4-month ‘winter’ period (December to March, inclusive) and the average number of deaths in the two 4-month periods which precede winter (August to November) and follow winter (April to July). This is a standard definition which is used by the Office for National Statistics (ONS), the World Health Organisation and others (who may describe it as – for example - ‘excess winter deaths’ or ‘excess winter mortality’). Some of the previous editions of this publication were called ‘Increased Winter Mortality’ and ‘Excess Winter Mortality’. The title was changed to reduce the likelihood of misunderstandings (because someone seeing, say, ‘Increased Winter Mortality in Scotland, 2009/10’ might wrongly infer that there had been an increase in winter mortality in that year)



## Daily deaths

- 4.2 Because of the effect of the coronavirus (COVID-19), there were many more deaths than normal in Spring 2020. Therefore, the statistics for the previous year illustrate better the 'normal' seasonal pattern. Figure 4(a) shows, using thin vertical lines, the number of deaths that occurred on each day in winter 2018/19, and in the 4-month periods that preceded and followed that winter. The thick black line is a 7-day moving average of the daily numbers of deaths, which smooths out most of the random fluctuations from one day to the next. The broken grey lines above and below the moving average show the likely range of random statistical variation around that 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 events (deaths) occur at any given time of year is given by the 7-day moving average, then random day to day variation would result in only about one day 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). For example, if (at a particular time of the year) deaths occur at an underlying rate of 150 per day, statistical theory suggests that, on average, 19 out of 20 days would have between 126 deaths and 174 deaths, and so only one day in 20, on average, would have a number of deaths that was outwith that range. As will be seen from the chart, there are some large percentage day-to-day fluctuations in the number of deaths, almost all of which are within the likely range of values that, statistical theory suggests, would arise due to random variation. Finally, the horizontal black lines show the average daily number of deaths for each of the three 4-month periods (August to November, December to March, and April to July). It is clear from Figure 4(a) that, in normal circumstances, the daily number of deaths tends to be highest in the months that are counted as 'winter' for the purpose of these statistics (December to March). However, it is also clear that some of the days in the 'non-winter' months had more deaths than some of the days in the 'winter' months, and that there were times in the 'non-winter' months when the 7-day moving average was higher than at some of the times in the 'winter' months.
- 4.3 Figure 4(b) provides the equivalent information for winter 2019/20 and the 4-month periods that preceded it and followed it. It shows that, due to the effects of the coronavirus (COVID-19) pandemic, the daily number of deaths was highest in the period from 30 March 2020 to 27 April 2020: on each of those 29 days, there were at least 223 deaths (including a peak of 305 on 6 April, and several other days with over 270 deaths each). There were more deaths on each of those 29 days than on any day from 1 December 2019 to 29 March 2020 (i.e. more deaths than on any day in winter 2019/20 apart from its last two days – in that period, the highest daily number of deaths was 213, on 29 December). That was also the case for eight of the next eleven days, with at least 216 deaths per day from 29 April to 4 May, and also on 6 and 8 May - so there were more deaths on each of those days than on any day in winter 2019/20 apart from its last two days.
- 4.4 Although Scotland's statistics of winter mortality are calculated using the numbers of deaths which were registered in each 4-month period, Figures 4(a) and (b) show the number of deaths which occurred on each day. A chart of the number of deaths which were registered on each day would be less informative, because it would have many days on which no deaths were registered (because registration

offices were closed at weekends and on public holidays) and, therefore, other days with much higher peaks than those shown in the Figures (because the deaths which occur on the 365 days of a normal year must be registered on the smaller number of days when the offices are open). However, despite the greater day-to-day fluctuation in the number registered per day, statistics for Scotland which are produced using the total number of deaths that were registered in 4-month periods should be almost as reliable as any that would be produced using the numbers of deaths which occurred in 4-month periods. By law, a death which occurs in Scotland must be registered within eight days. Chart 2 in the [Births and Deaths: Days until Registration](#) section of the NRS website shows that, for deaths that were registered in Scotland in 2017, 53% were registered within two days, 81% within four days, 90% within six days, 94% within eight days, 96% within ten days and 99% within 17 days. It follows that statistics which are based on when each death occurred would not differ greatly from those given here, which are based on the date of registration of each death. The total number of deaths registered in the 4-month 'winter' period should be so large as to be only slightly affected by any year-to-year variation in the number of days in the 'winter' months which had no deaths registered because offices were closed at weekends or on public holidays.

### Calculation

- 4.5 The total number of deaths registered in each winter, and in the adjacent 4-month periods, are provided in [Table 4](#), along with figures for the seasonal increase in mortality in the winter (sometimes referred to as the 'seasonal difference') which have been calculated from those numbers of deaths.
- 4.6 Because of the effect of the coronavirus (COVID-19), there were many more deaths than normal in Spring 2020. Therefore, the statistics for the previous year are better for illustrating how the seasonal increase in mortality is calculated. [Table 4](#) shows that 20,188 deaths were registered in Scotland in the four months of winter 2018/19 (December 2018 to March 2019). This was more than in the preceding 4-month period (August 2018 to November 2018: 17,864 deaths) and in the following 4-month period (April 2019 to July 2019: 18,398 deaths). The average of the figures for the 4-month periods before and after the winter is 18,131. Taking the difference between that average and the total for the four winter months (20,188 deaths), gives a seasonal increase in mortality of 2,060 for winter 2018/19 (after rounding the result to the nearest ten). The figures for the seasonal increase for all the other winters were calculated using the same method. The unusually low seasonal increase for winter 2019/20 was calculated by subtracting from the 21,392 deaths registered in Scotland in the four months of winter 2019/20 (December 2019 to March 2020) the average of 20,842 deaths registered for the preceding 4-month period (August 2019 to November 2019: 18,973 deaths) and in the following 4-month period (April 2020 to July 2020: 22,711 deaths), and rounding the result.
- 4.7 [Table 5](#) provides the same kind of information as [Table 4](#) but for each NHS Board area for the latest four years, in order to provide examples of the calculation of the seasonal increase in mortality for NHS Board areas; [Table 7](#) does the same for each Local Council area.

## Comparing winters' death registrations

4.8 The figures in [Table 4](#) may be used to compare winters in terms of their actual numbers of deaths that were registered as well as on the basis of their seasonal increases in mortality. In terms of the number of deaths registered in Scotland, winter 2019/20 (21,392 deaths) had the nineteenth lowest figure among the 69 winters for which statistics are available. However, it had the third highest figure of the latest 10 winters, and also the third highest figure in the latest 20. Of the 20 winters which start with winter 2000/01, only winters 2014/15 (22,011 deaths) and 2017/18 (23,153 deaths) had larger figures than winter 2019/20. In recent years, winter 2017/18 was unusually bad. The total of 23,153 deaths registered in the four months of winter 2017/18 was 2,218 more than the corresponding figure for winter 2016/17 (20,935), 2,965 more than in winter 2018/19 (20,188), and was the highest number that had been recorded since winter 1999/2000 (when 23,379 deaths were registered). In the intervening period, winter 2014/15 had the largest number of deaths (22,011), and only two other winters had more than 21,000 deaths: winter 2002/03 (21,058 deaths) and winter 2003/04 (21,024 deaths). In contrast, the 18,675 deaths registered in Scotland in winter 2013/14 was the lowest number for any of the 69 winters that are shown in [Table 4](#), which start with winter 1951/52.

## April to July death registrations

4.9 From the table, one can also see how the number of deaths registered in April-July 2020 (22,711) compares with previous years' totals for the same months. It was by far the largest figure among the 69 years for which such statistics are available (which start with 1952). It was therefore also the largest figure in the latest 20 years, and also the largest in the latest 10 years. Prior to 2020, the year with the largest numbers of deaths registered in April to July had been 1974, with 21,022 deaths; among the latest 20 years (i.e. 2001 onwards), 2002 had the second largest figure (18,815 deaths); among the latest 10 years (i.e. 2011 onwards), 2015 had the second largest figure (18,410 deaths). So the coronavirus (COVID-19) pandemic clearly increased greatly the number of April to July deaths. In contrast, the 16,789 deaths registered in Scotland from April to July 2010 was the lowest number in those months for any of the 69 years that are shown in [Table 4](#). That was the lowest number in the latest 20 years (i.e. 2001 onwards); the 16,958 deaths registered in Scotland from April to July 2011 was the lowest number in those months in the latest 10 years (i.e. 2011 onwards).

## Causes of death

4.10 The seasonal increase in deaths from a particular cause is calculated as described in paragraph 4.1, but using only figures for deaths with that underlying cause. However, from time to time, changes in the automatic cause of death coding software used by NRS have caused breaks in the continuity of the statistics for some causes of death. The figures in [Table 8](#) are affected by coding changes with effect from the start of 2011 and 2017. They broke the continuity of the seasonal increase for some causes of death around winter 2010/11 and around winter 2016/17, because the seasonal increases for (for example)

- winter 2009/10 were calculated wholly from data coded by the 'old' software (that used for deaths that were registered up to the end of 2010);

- winter 2010/11 were calculated from some data coded by the 'old' software (for deaths registered from August 2010 to December 2010) and some coded by the 'new' software (for deaths registered from January 2011 to July 2011);
- winter 2011/12 were calculated wholly from data coded by the 'new' software (that used for deaths that were registered from the start of 2011).

4.11 Papers on the software changes (available from the [Death Certificates and Coding the Causes of Death](#) page of the NRS website) describe the causes of death most affected by the changes in the coding software. From such information, it is likely that (of the causes of death shown in Table 8) the ones most affected by, and the effect on their numbers from, the changes in the software are as follows:

- 2011 changes:
  - pneumonia – reduction in numbers due to the change;
  - other respiratory system diseases – reduction;
  - dementia and Alzheimer's disease – increase;
  - other mental and behavioural disorders and nervous system diseases – reduction;
  - genitourinary system diseases – reduction;
  - other external causes of death – increase;
- 2017 changes:
  - other respiratory system diseases – reduction;
  - dementia and Alzheimer's disease – increase.

The above causes are listed in the order in which they appear in Table 8. It is not possible to quantify the effect on their figures because (in general) the papers' estimates of such effects are for different causes (or groups thereof). From the papers, one can determine which of Table 8's categories would be affected markedly by the software changes, and whether their numbers would have increased or decreased as a result, but not by how much their seasonal increases might have changed (which, in any case, could well be small relative to some of the year-to-year fluctuations in the seasonal increase in mortality).

### **What if there had been no coronavirus (COVID-19) pandemic**

4.12 One might ask what the seasonal increase in winter 2019/20 would have been, had there been no coronavirus (COVID-19) pandemic. One could estimate this simply by excluding any deaths where COVID-19 was mentioned on the death certificate from the calculation, to represent what the seasonal increase might have been, had there been no coronavirus pandemic. There were 166 deaths involving COVID-19 registered in December 2019 to March 2020 and 4,042 registered in April to July 2020. Removing them from the calculation would give a seasonal increase of about 2,400. Or, one could estimate it by removing any deaths where COVID-19 was determined to be the underlying cause of death. There were 145 such deaths in December to March and 3,760 in April to July. This would give an estimate of the seasonal increase of 2,290 had there been no coronavirus pandemic (and is equivalent to subtracting the large negative 'seasonal increase' for deaths caused by COVID-19 from the overall seasonal increase). However, it is not certain that the result of either estimate is reliable because, for example, some of the people who died from COVID-19 might have died later in the same period from other medical conditions which they already had. Therefore, their deaths could still have been included in the calculation of the seasonal increase, even if there had been no coronavirus. On the other hand, some deaths from other causes might not have occurred, in those periods, had

there been no pandemic. A Public Health Scotland report ( [“Non-COVID-19 excess deaths by cause”](#) , published on 26 August 2020) said that, for example, reduced use of hospitals or primary care services might explain the excess mortality from cancer, circulatory causes, and diabetes; and measures to control the spread of COVID-19 may also have had negative economic and social consequences in the wider population. As NRS does not know how many deaths would still have occurred in each period had there been no pandemic, and how many would not have occurred, it does not know whether the calculations described above produce reliable estimates.

- 4.13 One can also estimate what the seasonal increase in mortality in winter 2019/20 might have been, had there been no coronavirus (COVID-19) pandemic, using other estimates of how many deaths might then have been registered in two periods: first, winter 2019/20 (December 2019 to March 2020); second, April to July 2020. There are a number of ways that this may be done, some of which are described in the paragraphs that follow. Depending upon the method of estimation, the result could be between about 2,200 and around 3,000. As paragraph 4.17 concludes, given the range of the different methods’ results, NRS does not know whether or not the seasonal increase in winter 2019/20 would have been a ‘typical’ one, had there been no COVID-19..
- 4.14 The first number is the easier to estimate because COVID-19 had relatively little effect on the number of deaths registered in Scotland in winter 2019/20. The first deaths involving coronavirus were registered in the week commencing 16 March 2020, and a total of 145 deaths for which it was the underlying cause had been registered by the end of March 2020. NRS’s publication [“Deaths involving coronavirus \(COVID-19\) in Scotland”](#) shows that, up to week 13 (23 to 29 March), the number of deaths registered in Scotland in each week of 2020 was broadly in line with the average for that week over the previous five years – so it seems likely that relatively few of the deaths registered up to the end of March 2020 were consequences of the pandemic (apart from those for which COVID-19 was the underlying cause, of course). Therefore, one can assume that, had there been no pandemic, the number of deaths registered between December 2019 and March 2020 would have been up to 145 fewer than the 21,392 that were actually registered. On this basis, NRS estimates that between 21,247 and 21,392 deaths would have been registered in winter 2019/20, had there been no coronavirus.
- 4.15 The second number is more difficult to estimate because of the much greater effect of the pandemic on the number of deaths registered from April to July 2020. In total, 3,760 deaths for which COVID-19 was the underlying cause were registered in Scotland in those four months. NRS’s publication shows a clear divergence from the 5-year average for weeks 14 (30 March to 5 April) to 22 (25 to 31 May). There are several possible ways to estimate what the number of deaths for April to July 2020 might have been, had there been no coronavirus, and calculate a seasonal increase based on that estimate, the actual number for August to November 2019, and the range for winter 2019/20 had there been no COVID-19 (which was estimated in the previous paragraph). For example, when the number of deaths in a “pandemic-free” April to July 2020 is estimated by:
- using the previous five years’ average number of deaths registered from April to July, the seasonal increase (without coronavirus) is estimated to be between 2,700 and 2,850;

- using the previous ten years' average number of deaths registered from April to July, the seasonal increase (without coronavirus) is estimated to be between 2,870 and 3,020;
- applying the previous five years' average relationship between the August to November registrations and the following April to July registrations to the August to November 2019 registrations, the seasonal increase (without coronavirus) is estimated to be between 2,210 and 2,350;
- applying the previous ten years' average relationship between the August to November registrations and the following April to July registrations to the August to November 2019 registrations, the seasonal increase (without coronavirus) is estimated to be between 2,190 and 2,340.

4.16 More sophisticated estimation methods are possible. For example, one could calculate the previous five (or ten) years' death rates in April to July, by age-group and sex (based on the estimated size of the population at the previous mid-year), assume what the corresponding death rates for April to July 2020 might have been, perhaps taking account of any trends seen over the previous five (or ten) years, and apply those to the estimated population at mid-2020. However, that would require much more work, and perhaps questionable assumptions about trends in death rates, and would not guarantee a more accurate result.

4.17 There are clear differences between the results of some of the methods of estimation that were described above. For the six different approaches, the result is a seasonal increase in mortality of between around 2,200 and 3,000. This includes the two estimation methods which remove from the calculation the numbers of deaths for which COVID-19 was (a) mentioned or (b) the underlying cause. Given such differences, all that one can say is that it is likely that the seasonal increase would have been between 2,200 and 3,000, had there been no coronavirus. The lowest estimate could be described as being around the middle of the range for recent winters, as a seasonal increase of 2,200 would have been the fifth lowest in the latest 10 winters (2010/11 onwards) and the eighth lowest in the latest 20 winters (2000/01 onwards). It would also have been the tenth lowest of the 69 winters for which figures are available. However, the highest estimate is above the 'typical' level for recent winters: a seasonal increase of 3,000 would have been the third highest in the latest 10 winters (only exceeded by the 4,810 for winter 2017/18 and the 4,060 for winter 2014/15) and the fourth highest in the latest 20 winters (only exceeded by them and the 3,510 for winter 2008/09). On the other hand, it would have been lower than in most of the earlier winters, and the 31st lowest of the 69 winters for which figures are available. So, given the range of the results of the different methods of estimation, NRS does not know whether or not the seasonal increase in winter 2019/20 would have been a 'typical' one, had there been no COVID-19.

## 5. Comparisons with other countries

5.1 NRS's Increased Winter Mortality background note (which was mentioned in [Section 1](#)) includes material on comparisons with other European countries. On the basis of information for other countries that was given in two papers that were published in journals, it appears that the Increased Winter Mortality Index for Scotland is, at most, a little above the overall European value. The researchers found that increased winter mortality tended to be higher in countries with a warmer winter climate, probably because their homes tend to be poorly insulated

and their populations tend not to dress well for cold weather. More of the results of those studies are given in the background note.

- 5.2 The background note refers to the results of two studies because, as far as NRS is aware, there are no comprehensive routinely-published statistics of winter mortality for a range of countries. However, one can compare the figures for Scotland with those that are published annually for England and Wales by ONS and for Northern Ireland by the Northern Ireland Statistics and Research Agency (NISRA). This is done in [Table 9](#), using the values of the Increased Winter Mortality Index for Scotland and of the Excess Winter Mortality Indexes for England, Wales and Northern Ireland. Although the indexes have different names, they are defined in the same way (the number of 'additional' deaths in December to March divided by the average number of deaths in a 4-month 'non-winter' period), so their values can be compared without any reservations.
- 5.3 As will be seen, the value of the index for England was greater than the value of the index for Scotland for 24 of the 28 winters (from 1991/92 onwards) for which the index values for England and Wales were available when this publication was being prepared. So, using this measure, winter mortality is lower in Scotland than in England, which is consistent with the findings of the studies referred to in the background note. Similarly, as the value of the index for Wales was greater than the value of the index for Scotland for 22 of the 28 winters, using this measure, winter mortality is lower in Scotland than in Wales.
- 5.4 However, the value of the index for Northern Ireland was greater than the value of the index for Scotland for only 12 of the 27 winters for which figures for Northern Ireland were available at the time of writing: for the other 15 winters, Scotland had the higher value. On that basis, there is not much difference between winter mortality in Scotland and Northern Ireland. However, Northern Ireland has had a higher index value than Scotland for eight of the latest ten winters for which comparable figures are available at the time of writing, so latterly there has been a tendency for winter mortality to be lower in Scotland than in Northern Ireland.

## 6. Background: about these statistics

- 6.1 This is an annual publication. NRS collects the underlying data on a daily basis, as and when each event is registered. The statistics for the latest winter are all new. The figures for the previous winter may have been revised very slightly.
- 6.2 Information about (for example) the sources, methods, definitions and reliability of these statistics is available from the following NRS web site pages [general background information on Vital Events statistics](#) and [background information on points which are specific to statistics about deaths](#). These figures are directly comparable with those for other parts of the UK, there are no significant differences across the UK in how Vital Events data are collected and processed.
- 6.3 The figures for the latest winter, and the subsequent four month period, given here are provisional. They were produced from the statistical information that NRS had on Tuesday 18 August 2020, which included data for deaths which had been registered by Saturday 15 August 2020. Therefore, records for all the deaths which were registered in the winter (December to March), or in the subsequent 4-month period (April to July), should have been added to NRS's statistical database

before the tables for this release were produced. However, the overall figures could change slightly, because occasionally, due to unusual circumstances, it may be a long time before a particular registration record is added to NRS's statistical database. In addition, in the '2018/19' edition, some of the figures back to winter 2014/15 were revised slightly (see paragraph 6.3 of that edition). There may also be changes in the breakdown by the cause of death (as mentioned in paragraph 2.9) because NRS does not 'freeze' its statistical data for a given year until it starts to prepare the final statistics for the calendar year as a whole (which are published in the following summer), by which time it will have received final information about the causes of some of the deaths.

- 6.4 Statistics of the seasonal increase in mortality in the winter inform public debate and the development of government policy on matters such as the health of the elderly population, fuel poverty and whether there is a need to improve the housing stock in terms of central heating and thermal insulation.
- 6.5 The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.
- 6.6 Designation can be broadly interpreted to mean that the statistics:
- meet identified user needs;
  - are well explained and readily accessible;
  - are produced according to sound methods, and
  - are managed impartially and objectively in the public interest.
- 6.7 Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.



**Table 1: Seasonal Increase in Mortality in the Winter by age group, Scotland, 1990/91 to 2019/20**

	Seasonal increase in mortality <sup>1, 2</sup> by age at death					Seasonal increase per 1,000 population at the mid-year before the winter <sup>3</sup>				
	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+	All ages
1990/91	230	580	750	880	2,430	0.05	1.33	2.88	13.06	0.48
1991/92	350	560	1,020	950	2,890	0.08	1.27	3.94	13.52	0.57
1992/93	280	550	950	960	2,740	0.06	1.23	3.71	13.24	0.54
1993/94	350	440	990	800	2,590	0.08	0.97	3.97	10.71	0.51
1994/95	240	380	930	760	2,310	0.06	0.83	3.82	9.91	0.45
1995/96	250	860	1,420	1,120	3,650	0.06	1.91	5.65	14.09	0.72
1996/97	320	630	1,350	1,350	3,640	0.07	1.41	5.27	16.65	0.71
1997/98	170	730	950	760	2,610	0.04	1.64	3.65	9.19	0.51
1998/99	380	790	1,660	1,920	4,750	0.09	1.77	6.33	22.65	0.94
1999/2000	650	970	1,820	1,750	5,190	0.15	2.18	6.88	20.32	1.02
2000/01	260	370	820	760	2,220	0.06	0.83	3.08	8.67	0.44
2001/02	80	230	820	710	1,840	0.02	0.51	3.02	8.00	0.36
2002/03	350	300	940	920	2,510	0.08	0.67	3.40	10.49	0.50
2003/04	320	510	840	1,170	2,840	0.08	1.13	2.99	13.72	0.56
2004/05	200	430	1,030	1,090	2,760	0.05	0.94	3.60	12.95	0.54
2005/06	330	280	550	610	1,780	0.08	0.61	1.93	6.83	0.35
2006/07	190	410	980	1,180	2,750	0.04	0.90	3.42	12.57	0.54
2007/08	130	320	880	850	2,180	0.03	0.70	3.04	8.79	0.42
2008/09	370	590	1,170	1,370	3,510	0.09	1.27	4.00	13.88	0.67
2009/10	460	370	890	1,040	2,760	0.11	0.78	3.01	10.27	0.53
2010/11	410	430	720	890	2,450	0.09	0.90	2.40	8.57	0.47
2011/12	230	110	440	650	1,420	0.05	0.23	1.44	6.07	0.27
2012/13	90	190	600	1,120	2,000	0.02	0.37	1.94	10.25	0.38
2013/14	140	210	530	730	1,600	0.03	0.40	1.69	6.59	0.30
2014/15	270	610	1,240	1,940	4,060	0.06	1.14	3.89	16.96	0.76
2015/16	450	530	900	970	2,850	0.10	0.97	2.80	8.38	0.53
2016/17	200	280	810	1,440	2,720	0.05	0.50	2.51	12.10	0.50
2017/18	330	610	1,370	2,500	4,810	0.07	1.08	4.20	20.52	0.89
2018/19	290	300	570	900	2,060	0.07	0.53	1.72	7.29	0.38
2019/20 provisional	0	260	80	210	550	0.00	0.45	0.24	1.65	0.10

**Footnotes**

- 1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December to March) and the average of the numbers of deaths in the preceding (August to November) and following (April to July) non-winter four-month periods.
- 2) Because of the approximate nature of this measure, numbers have been rounded independently to the nearest 10. The sum of the age group figures may, therefore, differ from the 'all ages' total.
- 3) For example the (rounded) seasonal increase in mortality for those who died aged 85+ in winter 1990/91, expressed per 1,000 population aged 85+ in mid-1990. There is a minor discrepancy between the numerator and the denominator, because they cover slightly different populations. For example, some of the people who died aged 85+ in winter 1990/91, or in the preceding and subsequent four-month non-winter periods, would have been aged only 84 at mid-1990, and so would have been counted in the '75-84 at mid-1990' age-group (rather than in the '85+ at mid-1990' age-group). However, this should not affect greatly the rates per 1,000 population, and so should not alter significantly the main patterns shown by the figures or the conclusions that may be drawn.

**Table 2: Seasonal Increase in Mortality in the Winter, mean winter temperature and indicators of level of influenza activity, Scotland, 1951/52 to 2019/20**

Year	Seasonal increase in mortality in the winter <sup>1</sup>		Mean winter temperature <sup>2</sup> (deg. C.)	Indicators of influenza activity <sup>3</sup> (Index: 2004/05 = 100)		
	Additional deaths (Dec-Mar)	5-year moving average		Fluspotter' (season peak)	SISRS 'season peak'	SISRS 'weeks 49 to 13 total'
1951/52	5,240		1.88			
1952/53	5,890		2.95			
1953/54	4,770	5,634	2.69			
1954/55	5,820	5,140	1.40			
1955/56	6,450	4,854	1.52			
1956/57	2,770	5,734	3.45			
1957/58	4,460	5,388	2.04			
1958/59	9,170	5,166	1.65			
1959/60	4,090	5,630	2.15			
1960/61	5,340	6,160	2.54			
1961/62	5,090	5,068	2.00			
1962/63	7,110	5,092	-0.02			
1963/64	3,710	5,294	2.93			
1964/65	4,210	4,680	1.83			
1965/66	6,350	4,378	1.56			
1966/67	2,020	4,596	3.08			
1967/68	5,600	5,162	1.89			
1968/69	4,800	4,434	1.60			
1969/70	7,040	5,024	1.45			
1970/71	2,710	4,720	3.33			
1971/72	4,970	4,322	3.58	3,412		
1972/73	4,080	3,606	3.14	1,286		
1973/74	2,810	4,352	3.49	2,081		
1974/75	3,460	4,064	3.89	1,144		
1975/76	6,440	4,218	3.74	2,951		
1976/77	3,530	4,494	0.93	656		
1977/78	4,850	4,336	1.72	2,214		
1978/79	4,190	3,802	0.43	951		
1979/80	2,670	4,356	2.33	967		
1980/81	3,770	4,300	2.89	800		
1981/82	6,300	4,020	1.12	1,542		
1982/83	4,570	4,112	2.40	1,309		
1983/84	2,790	4,300	2.46	1,698		
1984/85	3,130	3,688	1.94	705		
1985/86	4,710	3,292	1.30	1,107		
1986/87	3,240	3,166	1.86	847		
1987/88	2,590	3,632	3.03	337		
1988/89	2,160	3,176	5.10	819		
1989/90	5,460	3,106	3.24	2,753		
1990/91	2,430	3,136	1.93	319		
1991/92	2,890	3,222	3.68	928		
1992/93	2,740	2,592	3.36	979		
1993/94	2,590	2,836	1.82	2,053		
1994/95	2,310	2,986	2.94	219		
1995/96	3,650	2,960	1.85	907		
1996/97	3,640	3,392	2.48	1,763		
1997/98	2,610	3,968	4.55	272		
1998/99	4,750	3,682	3.34	718		

**Table 2, continued**

Year	Seasonal increase in mortality in the winter <sup>1</sup>		Mean winter temperature <sup>2</sup> (deg. C.)	Indicators of influenza activity <sup>3</sup> (Index: 2004/05 = 100)		
	Additional deaths (Dec-Mar)	5-year moving average		'Fluspotter' (season peak)	SISRS 'season peak'	SISRS 'weeks 49 to 13 total'
1999/00	5,190	3,322	3.11	1,973		
2000/01	2,220	3,302	2.16	144		
2001/02	1,840	2,920	3.36	95		
2002/03	2,510	2,434	2.94	98		
2003/04	2,840	2,346	3.19	321	107	66
2004/05	2,760	2,528	3.93	100	100	100
2005/06	1,780	2,462	3.34	77	92	86
2006/07	2,750	2,596	4.34	367	221	130
2007/08	2,180	2,596	3.61	116	94	72
2008/09	3,510	2,730	2.58		230	114
2009/10	2,760	2,464	0.39		159	50
2010/11	2,450	2,428	1.31		184	98
2011/12	1,420	2,046	3.53		14	21
2012/13	2,000	2,306	2.48		41	51
2013/14	1,600	2,386	4.14		15	20
2014/15	4,060	2,646	2.87		32	34
2015/16	2,850	3,208	3.59		21	29
2016/17	2,720	3,300	4.39		17	25
2017/18	4,810	2,598	2.24		71	60
2018/19	2,060		3.88		22	25
2019/20 prov.	550		4.02		27	25

**Footnotes**

1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods.

2) The mean winter temperature for Scotland (for December to February), as obtained from the Met Office website. From the "Home" page, click on the links for: 'Research programmes' then 'Climate science' then 'UK climate maps and data' then 'UK and regional series' (NB: this is over half way down the page). Then use the buttons and menus to select 'Year ordered statistics', 'Scotland', 'Mean temp' and click on 'Download'. At the time that the 2019/20 figure was obtained (14 July 2020), that page of the Met Office website stated that "The regional series were updated in January 2020 to make use of the HadUK-Grid dataset at 1km resolution". That updating appears to have revised slightly the values for many (if not all) of the previous winters.

3) Indicators of the numbers of General Practitioner (GP) consultations for influenza-like illness, calculated from figures which were supplied by Public Health Scotland (PHS).

The first two index values have been calculated from the maximum rate (per 100,000 population) in each flu season. The third index value has been calculated from the total of the rates for week 49 to week 13, because (broadly speaking) they cover the period from the start of December to the end of March. For example, the third index value for winter 2003/04 was calculated from the sum of the rates for weeks 49-52 of 2003 and weeks 1-13 of 2004.

The 'fluspotter' surveillance scheme, which ran from 1971 to 2008, was superseded by the Pandemic Influenza Primary Care Reporting (PIPeR) sentinel scheme, which started in 2004. However, due to a change in the software used by GP practices, it was not possible to use PiPeR for the surveillance of GP consultation rates for influenza-like illnesses (ILI) with effect from winter 2011/12.

Since 2009/10 the **Scottish Influenza Surveillance Reporting Scheme (SISRS)** has provided aggregate level data on GP consultation for ILI, based on automated software extracts from 99% of Scottish GP practices. These data are now used for routine surveillance of ILI in Scotland, and data from the PiPeR sentinel scheme have been used retrospectively to calculate comparable historical rates for SISRS for the period 2003/04 to 2008/09. A technical guide providing more details on SISRS data is available from the PHS website on seasonal influenza surveillance.

In 2019, the then Health Protection Scotland (HPS) provided NRS with revised SISRS figures for the 2017/18 flu season. As a result, the 'SISRS season peak' and 'SISRS weeks 49 to 13 total' index values for 2017/18 were revised for the publication of 'Winter Mortality in Scotland 2018/19'. In 2020, PHS provided further slight revisions, to the figures for 2017/18 and 2018/19, leading to further changes to the table in this edition. It should also be noted that some of the 'SISRS' figures that are given here for earlier winters may have been revised from those that appeared in the '2016/17' or earlier editions of this publication, again following revisions by PHS or the then HPS. Please note that since the 'fluspotter' and 'SISRS' systems measure activity using different methods and definitions, their results are not directly comparable.

**Table 3: Seasonal Increase in Mortality in the Winter and Increased Winter Mortality Index, by age group and NHS Board area of usual residence, 2010/11 to 2019/20**

**Scotland**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	2,450	410	430	720	890	14	12	13	14	17
2011/12	1,420	230	110	440	650	8	7	3	8	12
2012/13	2,000	90	190	600	1,120	11	3	6	11	20
2013/14	1,600	140	210	530	730	9	4	6	10	14
2014/15	4,060	270	610	1,240	1,940	23	8	18	23	33
2015/16	2,850	450	530	900	970	16	13	16	17	17
2016/17	2,720	200	280	810	1,440	15	6	8	15	24
2017/18	4,810	330	610	1,370	2,500	26	9	18	25	43
2018/19	2,060	290	300	570	900	11	8	9	11	15
2019/20 (P)	550	0	260	80	210	3	.	7	1	3

**Ayrshire and Arran**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	200	20	30	70	90	15	6	13	15	22
2011/12	70	-10	20	60	-10	5	.	9	16	.
2012/13	150	-30	10	80	90	10	.	4	17	21
2013/14	160	50	10	20	80	11	19	3	5	19
2014/15	300	10	30	120	130	21	6	10	26	29
2015/16	180	0	60	100	30	13	0	20	24	7
2016/17	240	0	30	40	170	17	1	12	8	40
2017/18	350	0	50	140	160	23	0	15	29	34
2018/19	140	40	70	10	20	10	14	25	3	5
2019/20 (P)	90	-20	30	-10	90	5	.	9	.	17

**Borders**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	70	10	20	10	30	19	21	39	6	22
2011/12	40	-10	20	20	10	9	.	26	19	4
2012/13	70	0	-10	40	40	16	.	.	31	24
2013/14	10	-10	-10	10	20	3	.	.	11	11
2014/15	120	10	20	30	60	28	23	30	19	36
2015/16	70	0	20	20	30	19	5	31	19	19
2016/17	60	10	20	0	20	14	21	28	3	14
2017/18	140	0	10	40	90	31	0	15	26	59
2018/19	40	-10	0	20	30	8	.	.	17	16
2019/20 (P)	50	10	0	20	10	10	16	.	17	8

**Dumfries and Galloway**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	50	20	10	10	20	8	17	7	4	9
2011/12	20	-20	-20	10	40	3	.	.	6	19
2012/13	40	0	-10	20	40	7	.	.	10	18
2013/14	110	20	30	20	40	19	24	28	10	21
2014/15	160	10	30	50	60	26	18	23	28	29
2015/16	130	20	30	20	50	23	30	28	13	27
2016/17	130	-10	30	60	50	22	.	29	34	21
2017/18	190	10	40	30	110	31	9	41	17	46
2018/19	60	0	10	10	30	9	5	14	6	12
2019/20 (P)	80	0	20	30	20	12	1	22	17	8

**Table 3, continued**

**Fife**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	90	30	-10	50	20	7	13	.	12	6
2011/12	120	20	50	-10	60	10	8	23	.	15
2012/13	140	-10	60	30	70	11	.	27	7	16
2013/14	40	0	-10	0	50	3	2	.	1	13
2014/15	250	0	30	90	130	20	2	14	24	31
2015/16	230	30	40	110	50	18	15	17	30	12
2016/17	160	0	30	60	70	12	.	11	16	16
2017/18	370	40	70	100	170	30	16	30	26	41
2018/19	190	40	30	60	60	14	16	11	16	14
2019/20 (P)	100	-10	10	50	40	7	.	4	12	9

**Forth Valley**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	140	30	30	30	40	15	16	18	11	17
2011/12	60	0	-10	40	30	6	.	.	13	10
2012/13	90	10	-20	30	60	9	7	.	11	22
2013/14	70	-10	10	30	50	8	.	4	11	16
2014/15	230	30	20	60	130	25	15	10	18	46
2015/16	150	40	-10	100	30	15	19	.	33	10
2016/17	70	10	0	20	40	7	4	1	5	14
2017/18	270	-10	60	90	130	27	.	31	29	44
2018/19	100	20	-10	40	50	10	8	.	13	16
2019/20 (P)	30	-10	30	30	-10	3	.	12	7	.

**Grampian**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	250	20	40	80	120	15	6	15	15	22
2011/12	180	40	10	70	70	11	14	2	13	12
2012/13	170	30	30	-10	120	10	9	10	.	22
2013/14	230	20	50	60	110	14	6	18	10	20
2014/15	430	10	60	100	260	24	4	19	18	44
2015/16	270	30	40	50	140	15	9	14	10	23
2016/17	280	20	-30	110	180	16	7	.	21	30
2017/18	500	60	50	130	260	28	18	15	25	43
2018/19	270	40	70	50	120	15	12	22	9	19
2019/20 (P)	210	20	20	70	100	11	6	6	13	14

**Greater Glasgow and Clyde**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	560	130	90	140	210	14	14	12	12	20
2011/12	250	40	30	60	120	6	4	4	5	10
2012/13	410	40	20	100	250	10	4	2	8	22
2013/14	300	0	100	110	90	8	.	14	9	8
2014/15	950	110	170	290	390	24	13	24	24	33
2015/16	560	120	70	180	190	14	15	9	15	17
2016/17	540	30	40	180	280	13	4	6	15	24
2017/18	1,080	130	140	270	540	27	15	18	23	47
2018/19	480	100	50	140	200	12	11	6	12	18
2019/20 (P)	-130	40	30	-100	-100	.	4	4	.	.

**Table 3, continued**

**Highland**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	110	10	40	20	40	10	3	22	6	12
2011/12	90	20	-10	40	40	8	10	.	11	11
2012/13	140	20	10	60	60	13	9	4	19	15
2013/14	100	0	30	40	40	10	0	15	13	11
2014/15	130	-40	30	50	90	11	.	12	14	22
2015/16	290	60	60	60	110	27	30	29	20	30
2016/17	190	10	10	70	100	17	3	6	21	26
2017/18	220	-10	0	70	160	19	.	2	19	41
2018/19	70	-30	0	20	80	6	.	.	6	20
2019/20 (P)	70	30	10	-10	40	6	15	4	.	9

**Lanarkshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	330	50	70	90	120	16	12	16	14	23
2011/12	210	50	-20	60	110	10	12	.	10	18
2012/13	300	30	60	110	110	14	6	14	15	18
2013/14	210	20	0	80	110	10	5	0	12	18
2014/15	510	20	120	170	210	23	4	27	23	33
2015/16	360	30	100	100	130	17	7	24	14	21
2016/17	340	70	30	110	140	15	15	6	15	21
2017/18	570	50	130	140	260	25	10	29	19	41
2018/19	220	20	50	70	80	10	4	11	10	12
2019/20 (P)	-50	-70	50	0	-40	.	.	10	0	.

**Lothian**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	390	90	50	150	100	17	19	11	22	14
2011/12	210	80	10	30	90	8	16	2	4	11
2012/13	290	-10	50	100	140	12	.	12	14	17
2013/14	280	40	0	110	130	12	10	.	16	17
2014/15	480	30	50	160	240	20	7	12	22	28
2015/16	320	50	120	80	80	13	10	27	11	10
2016/17	320	30	60	60	170	13	7	15	8	20
2017/18	580	50	10	180	340	23	9	3	25	39
2018/19	210	20	30	60	100	8	5	6	9	12
2019/20 (P)	50	-30	50	-10	40	2	.	10	.	4

**Orkney**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	10	0	10	0	19	58	.	37	11
2011/12	-10	0	0	-10	0	.	5	4	.	19
2012/13	10	0	0	0	0	9	8	.	13	15
2013/14	10	10	0	0	-10	11	100	14	10	.
2014/15	10	0	0	10	10	17	27	.	33	24
2015/16	0	0	0	10	0	6	4	8	41	.
2016/17	0	0	10	-10	0	.	4	46	.	.
2017/18	20	0	10	0	0	21	20	50	12	17
2018/19	10	0	0	10	0	12	47	.	44	.
2019/20 (P)	0	0	0	0	0	5	6	12	18	.

**Table 3, continued****Shetland**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	0	0	10	0	17	36	25	43	.
2011/12	-10	0	0	0	0	.	.	.	.	.
2012/13	0	-10	0	10	0	.	.	13	44	.
2013/14	0	0	0	0	10	6	3	.	.	54
2014/15	20	0	0	10	10	23	10	.	32	45
2015/16	10	0	0	10	0	8	36	.	26	.
2016/17	10	0	0	0	10	17	38	26	.	37
2017/18	20	10	0	0	10	28	50	.	7	57
2018/19	20	0	0	0	10	31	30	54	13	38
2019/20 (P)	-10	-10	0	-10	10	.	.	10	.	24

**Tayside**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	220	0	40	70	110	16	0	17	16	24
2011/12	180	10	20	70	80	12	4	8	16	16
2012/13	190	20	-10	40	140	13	7	.	8	28
2013/14	80	0	10	40	20	6	1	6	10	5
2014/15	430	40	50	130	210	30	17	20	30	41
2015/16	240	60	10	70	110	16	22	2	16	22
2016/17	340	30	30	110	180	23	11	10	25	34
2017/18	480	20	40	160	260	32	7	15	39	49
2018/19	250	50	10	80	110	17	18	4	20	20
2019/20 (P)	30	30	10	-10	10	2	10	3	.	1

**Western Isles**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	0	0	0	0	-10	.	.	24	3	.
2011/12	30	10	10	0	10	20	53	22	.	29
2012/13	20	10	10	0	10	15	52	37	.	15
2013/14	-10	0	-10	10	0	.	.	.	21	.
2014/15	30	20	0	10	10	31	94	17	30	14
2015/16	40	10	10	10	10	38	44	59	27	32
2016/17	30	0	10	10	10	31	24	35	29	34
2017/18	30	0	10	20	10	31	.	59	71	10
2018/19	20	0	0	0	20	14	.	.	.	64
2019/20 (P)	30	0	10	10	10	24	.	33	29	27

**Footnotes**

- 1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods. A negative figure occurs when there were fewer deaths during the winter period than the average of the two 'non-winter' periods.
- 2) Because of the approximate nature of this measure, numbers have been rounded independently to the nearest 10. The sum of the age group figures may therefore appear to differ from the 'all ages' total.
- 3) The Increased Winter Mortality (IWM) Index is the (unrounded) number of 'additional' winter deaths divided by the (unrounded) average number of deaths in a four month 'non-winter' period, expressed as a percentage.
- 4) The IWM Index has not been calculated when the number of 'additional' winter deaths was negative.
- 5) The statistics for each board's area are based on the boundaries that apply with effect from 1 April 2014. Figures for earlier years show what the numbers would have been had the new boundaries applied in those years (and up to 2012-13 have been revised, where appropriate, from what was published up until Autumn 2013).

(P) Data for the latest year are provisional.

**Table 4: Seasonal Increase in Mortality in the Winter – underlying numbers of registrations of deaths and Increased Winter Mortality Index, Scotland, 1951/52 to 2019/20**

Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>		Increased Winter Mortality Index <sup>2</sup>
	Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)	
1951/52	23,641	18,180	18,622	5,240	5,240	28.5
1952/53	24,043	17,715	18,599	5,886	5,890	32.4
1953/54	23,244	17,774	19,169	4,773	4,770	25.8
1954/55	24,762	18,524	19,365	5,818	5,820	30.7
1955/56	24,718	17,643	18,884	6,455	6,450	35.3
1956/57	21,445	18,479	18,876	2,768	2,770	14.8
1957/58	24,399	20,315	19,561	4,461	4,460	22.4
1958/59	27,353	17,577	18,798	9,166	9,170	50.4
1959/60	22,594	17,815	19,194	4,090	4,090	22.1
1960/61	24,840	19,288	19,711	5,341	5,340	27.4
1961/62	24,771	19,210	20,150	5,091	5,090	25.9
1962/63	26,547	18,687	20,188	7,110	7,110	36.6
1963/64	22,715	18,417	19,600	3,707	3,710	19.5
1964/65	23,608	19,127	19,674	4,208	4,210	21.7
1965/66	25,563	19,296	19,123	6,354	6,350	33.1
1966/67	21,431	19,498	19,318	2,023	2,020	10.4
1967/68	24,787	18,848	19,524	5,601	5,600	29.2
1968/69	24,075	18,596	19,947	4,804	4,800	24.9
1969/70	26,212	18,785	19,563	7,038	7,040	36.7
1970/71	22,261	19,257	19,854	2,706	2,710	13.8
1971/72	24,752	19,404	20,158	4,971	4,970	25.1
1972/73	24,090	19,832	20,190	4,079	4,080	20.4
1973/74	23,309	19,972	21,022	2,812	2,810	13.7
1974/75	23,781	20,182	20,469	3,456	3,460	17.0
1975/76	25,887	19,211	19,680	6,442	6,440	33.1
1976/77	23,352	19,490	20,146	3,534	3,530	17.8
1977/78	24,760	19,451	20,372	4,849	4,850	24.4
1978/79	24,545	19,904	20,806	4,190	4,190	20.6
1979/80	23,154	20,281	20,690	2,669	2,670	13.0
1980/81	23,406	19,192	20,072	3,774	3,770	19.2
1981/82	26,098	19,729	19,874	6,297	6,300	31.8
1982/83	24,327	19,565	19,951	4,569	4,570	23.1
1983/84	22,848	19,772	20,335	2,795	2,790	13.9
1984/85	22,976	19,275	20,410	3,134	3,130	15.8
1985/86	24,762	19,785	20,316	4,712	4,710	23.5
1986/87	22,577	18,999	19,683	3,236	3,240	16.7
1987/88	22,317	19,666	19,788	2,590	2,590	13.1
1988/89	22,079	19,984	19,854	2,160	2,160	10.8
1989/90	25,497	20,172	19,910	5,456	5,460	27.2



**Table 4, continued**

Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>		Increased Winter Mortality Index <sup>2</sup>
	Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)	
1990/91	21,859	19,103	19,752	2,432	2,430	12.5
1991/92	22,217	19,305	19,352	2,889	2,890	14.9
1992/93	22,416	19,417	19,929	2,743	2,740	13.9
1993/94	22,504	21,104	18,732	2,586	2,590	13.0
1994/95	21,510	19,103	19,301	2,308	2,310	12.0
1995/96	22,821	19,074	19,260	3,654	3,650	19.1
1996/97	22,438	18,585	19,005	3,643	3,640	19.4
1997/98	21,320	18,311	19,105	2,612	2,610	14.0
1998/99	23,163	18,856	17,973	4,749	4,750	25.8
1999/2000	23,379	18,407	17,974	5,189	5,190	28.5
2000/01	20,388	18,061	18,281	2,217	2,220	12.2
2001/02	20,366	18,239	18,815	1,839	1,840	9.9
2002/03	21,058	18,599	18,499	2,509	2,510	13.5
2003/04	21,024	18,616	17,749	2,842	2,840	15.6
2004/05	20,658	18,064	17,736	2,758	2,760	15.4
2005/06	19,651	17,619	18,127	1,778	1,780	9.9
2006/07	20,384	17,526	17,739	2,752	2,750	15.6
2007/08	19,900	17,600	17,850	2,175	2,180	12.3
2008/09	20,532	17,075	16,969	3,510	3,510	20.6
2009/10	19,688	17,059	16,789	2,764	2,760	16.3
2010/11	19,626	17,397	16,958	2,449	2,450	14.3
2011/12	19,119	17,269	18,127	1,421	1,420	8.0
2012/13	19,908	17,773	18,045	1,999	2,000	11.2
2013/14	18,675	16,848	17,297	1,603	1,600	9.4
2014/15	22,011	17,493	18,410	4,060	4,060	22.6
2015/16	20,506	17,625	17,686	2,851	2,850	16.1
2016/17	20,935	18,335	18,096	2,720	2,720	14.9
2017/18	23,153	18,694	17,986	4,813	4,810	26.2
2018/19	20,188	17,864	18,398	2,057	2,060	11.3
2019/20 provisional	21,392	18,973	22,711	550	550	2.6

**Footnote**

1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods.

2) The Increased Winter Mortality (IWM) Index is the (unrounded) number of 'additional' winter deaths divided by the (unrounded) average number of deaths in a four month 'non-winter' period, expressed as a percentage.

**Table 5: Seasonal Increase in Mortality in the Winter - underlying numbers of registrations of deaths, by NHS Board area of usual residence, 2016/17 to 2019/20**

NHS Board area	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>Ayrshire and Arran</b>						
	2016/17	1,660	1,460	1,374	243	240
	2017/18	1,865	1,505	1,535	345	350
	2018/19	1,603	1,404	1,517	143	140
	2019/20 provisional	1,757	1,569	1,766	90	90
<b>Borders</b>						
	2016/17	476	420	416	58	60
	2017/18	570	404	465	136	140
	2018/19	455	436	404	35	40
	2019/20 provisional	509	437	491	45	50
<b>Dumfries and Galloway</b>						
	2016/17	723	567	617	131	130
	2017/18	803	623	605	189	190
	2018/19	647	582	601	56	60
	2019/20 provisional	742	654	673	79	80
<b>Fife</b>						
	2016/17	1,501	1,293	1,384	163	160
	2017/18	1,622	1,312	1,187	373	370
	2018/19	1,475	1,267	1,311	186	190
	2019/20 provisional	1,470	1,315	1,434	96	100
<b>Forth Valley</b>						
	2016/17	1,076	1,053	960	70	70
	2017/18	1,255	984	991	268	270
	2018/19	1,139	1,001	1,073	102	100
	2019/20 provisional	1,218	1,086	1,283	34	30
<b>Grampian</b>						
	2016/17	2,031	1,774	1,726	281	280
	2017/18	2,274	1,803	1,752	497	500
	2018/19	2,024	1,693	1,818	269	270
	2019/20 provisional	2,139	1,857	2,004	209	210
<b>Greater Glasgow and Clyde</b>						
	2016/17	4,559	4,020	4,027	536	540
	2017/18	5,045	4,103	3,831	1,078	1,080
	2018/19	4,415	3,860	4,003	484	480
	2019/20 provisional	4,586	4,023	5,403	-127	-130

**Table 5, continued**

NHS Board area	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>Highland</b>						
	2016/17	1,346	1,191	1,116	193	190
	2017/18	1,406	1,187	1,178	224	220
	2018/19	1,274	1,211	1,202	68	70
	2019/20 provisional	1,345	1,219	1,322	75	70
<b>Lanarkshire</b>						
	2016/17	2,612	2,294	2,251	340	340
	2017/18	2,875	2,353	2,249	574	570
	2018/19	2,452	2,174	2,299	216	220
	2019/20 provisional	2,626	2,432	2,929	-55	-50
<b>Lothian</b>						
	2016/17	2,800	2,518	2,444	319	320
	2017/18	3,142	2,614	2,509	581	580
	2018/19	2,718	2,523	2,488	213	210
	2019/20 provisional	2,942	2,553	3,234	49	50
<b>Orkney</b>						
	2016/17	82	77	91	-2	0
	2017/18	95	86	71	17	20
	2018/19	87	70	86	9	10
	2019/20 provisional	77	63	83	4	0
<b>Shetland</b>						
	2016/17	85	78	67	13	10
	2017/18	90	60	81	20	20
	2018/19	67	52	50	16	20
	2019/20 provisional	71	81	76	-8	-10
<b>Tayside</b>						
	2016/17	1,843	1,479	1,519	344	340
	2017/18	1,972	1,552	1,428	482	480
	2018/19	1,709	1,481	1,441	248	250
	2019/20 provisional	1,766	1,561	1,904	34	30
<b>Western Isles</b>						
	2016/17	141	111	104	34	30
	2017/18	139	108	104	33	30
	2018/19	123	110	105	16	20
	2019/20 provisional	144	123	109	28	30

**Footnotes**

1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods. A negative figure occurs when there were fewer deaths during the winter period than the average of the two 'non-winter' periods.

**Table 6: Seasonal Increase in Mortality in the Winter and Increased Winter Mortality Index, by age group and Local Council area of usual residence, 2010/11 to 2019/20**

**Aberdeen City**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	120	10	10	40	60	19	7	9	18	32
2011/12	90	40	0	10	40	14	33	1	7	17
2012/13	80	20	20	-20	60	12	12	16	.	31
2013/14	110	0	30	30	50	17	0	25	16	25
2014/15	160	20	20	30	90	23	13	18	17	37
2015/16	90	20	0	30	40	14	14	1	18	17
2016/17	60	0	-20	40	30	8	1	.	21	13
2017/18	250	50	30	60	110	37	35	24	37	46
2018/19	110	40	20	20	40	17	30	16	8	18
2019/20 (P)	80	-10	40	20	30	10	.	29	7	11

**Aberdeenshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	90	0	20	30	40	13	.	18	14	17
2011/12	70	-10	10	50	20	10	.	8	24	7
2012/13	80	10	10	20	50	11	4	5	7	20
2013/14	60	10	20	0	30	8	8	15	.	13
2014/15	180	-10	20	40	130	23	.	14	16	49
2015/16	110	10	30	0	60	14	8	24	1	24
2016/17	160	20	-10	50	100	22	18	.	22	39
2017/18	170	0	0	50	120	22	3	2	21	44
2018/19	80	10	30	10	40	11	5	22	3	14
2019/20 (P)	100	20	-10	60	40	12	13	.	25	12

**Angus**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	30	-10	0	0	40	8	.	2	.	37
2011/12	40	10	-10	20	20	10	10	.	15	15
2012/13	70	0	10	0	60	16	7	12	.	42
2013/14	20	0	0	0	10	5	4	5	2	9
2014/15	120	10	10	20	80	28	14	8	15	55
2015/16	60	10	0	30	20	13	7	2	26	10
2016/17	110	0	10	40	60	25	.	10	33	41
2017/18	140	10	10	50	80	34	12	10	41	49
2018/19	80	20	0	30	30	19	39	.	25	18
2019/20 (P)	-30	0	0	10	-30	.	1	.	6	.

**Argyll and Bute**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	-10	10	0	10	3	.	21	.	9
2011/12	30	10	0	10	10	9	16	.	12	10
2012/13	50	10	0	20	20	15	33	0	18	15
2013/14	40	10	10	20	0	11	13	19	20	.
2014/15	70	0	10	20	30	18	6	22	17	22
2015/16	70	10	10	20	20	20	27	16	19	20
2016/17	70	10	-10	30	40	22	16	.	36	31
2017/18	60	-10	10	20	50	18	.	8	22	38
2018/19	20	-10	0	10	20	5	.	6	5	17
2019/20 (P)	10	10	0	0	10	3	9	.	3	3

**Table 6, continued**

**City of Edinburgh**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	190	50	30	80	30	14	19	15	19	7
2011/12	80	20	10	10	40	6	6	5	2	8
2012/13	160	0	20	30	120	11	.	7	6	24
2013/14	150	10	-10	70	90	11	3	.	18	19
2014/15	310	10	40	130	140	23	6	17	33	28
2015/16	190	20	70	60	40	14	8	30	17	7
2016/17	180	20	30	20	100	13	9	16	4	20
2017/18	340	50	0	110	180	25	18	1	31	35
2018/19	50	10	-10	10	40	4	3	.	4	7
2019/20 (P)	30	-10	0	-20	60	2	.	1	.	9

**Clackmannanshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	0	0	0	10	5	.	3	.	24
2011/12	0	0	0	0	0	1	.	.	2	5
2012/13	20	0	0	20	0	8	2	.	31	.
2013/14	-10	-10	-10	0	0	.	.	.	.	5
2014/15	40	0	0	20	30	26	2	.	38	66
2015/16	20	10	0	10	0	13	34	0	12	8
2016/17	20	0	10	-10	20	12	4	23	.	35
2017/18	40	0	10	10	20	22	.	51	10	45
2018/19	40	10	-10	30	10	26	39	.	57	23
2019/20 (P)	10	0	10	10	0	2	.	13	11	.

**Dumfries and Galloway**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	50	20	10	10	20	8	17	7	4	9
2011/12	20	-20	-20	10	40	3	.	.	6	19
2012/13	40	0	-10	20	40	7	.	.	10	18
2013/14	110	20	30	20	40	19	24	28	10	21
2014/15	160	10	30	50	60	26	18	23	28	29
2015/16	130	20	30	20	50	23	30	28	13	27
2016/17	130	-10	30	60	50	22	.	29	34	21
2017/18	190	10	40	30	110	31	9	41	17	46
2018/19	60	0	10	10	30	9	5	14	6	12
2019/20 (P)	80	0	20	30	20	12	1	22	17	8

**Dundee**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	50	0	10	20	30	8	.	5	11	17
2011/12	70	-10	10	40	20	12	.	12	23	15
2012/13	80	10	0	30	50	16	11	.	18	29
2013/14	40	10	20	10	0	8	10	20	7	2
2014/15	150	20	20	70	40	28	17	23	44	23
2015/16	90	30	10	20	30	17	23	11	15	19
2016/17	150	20	10	60	70	29	14	15	37	39
2017/18	180	10	30	50	90	34	9	29	36	55
2018/19	80	20	10	20	40	15	13	9	13	24
2019/20 (P)	-10	-10	10	0	-10	.	.	8	.	.

**Table 6, continued**

**East Ayrshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	80	10	20	20	20	18	12	26	17	18
2011/12	20	0	0	20	-10	5	4	3	16	.
2012/13	20	-50	0	40	30	5	.	.	32	23
2013/14	60	30	20	10	0	14	32	20	9	2
2014/15	130	10	10	40	70	29	13	7	28	59
2015/16	40	0	20	20	10	8	.	20	13	4
2016/17	90	20	20	10	40	19	19	24	6	32
2017/18	100	-10	10	40	60	22	.	10	30	40
2018/19	30	20	20	-10	10	7	20	24	.	5
2019/20 (P)	60	10	20	10	30	13	9	17	8	16

**East Dunbartonshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	70	10	10	30	20	23	19	15	34	20
2011/12	-10	0	-20	10	0	.	.	.	12	.
2012/13	80	0	0	30	50	24	6	.	30	46
2013/14	30	0	10	10	10	9	.	11	9	13
2014/15	60	0	10	20	40	18	.	10	15	33
2015/16	100	20	10	20	50	29	40	21	17	37
2016/17	50	0	-10	20	40	15	7	.	16	28
2017/18	40	0	0	10	30	11	.	.	11	21
2018/19	70	10	10	20	30	19	23	24	17	18
2019/20 (P)	10	0	20	0	-10	3	.	33	3	.

**East Lothian**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	60	10	0	30	30	21	9	.	35	30
2011/12	50	10	10	20	20	15	18	9	17	14
2012/13	30	0	0	20	20	9	.	1	18	12
2013/14	50	20	0	10	20	16	44	2	14	14
2014/15	80	10	0	30	50	25	14	.	28	41
2015/16	40	0	20	0	20	11	1	39	.	14
2016/17	70	10	20	0	40	20	10	31	5	33
2017/18	80	0	10	30	40	22	5	9	24	33
2018/19	60	0	10	10	40	21	4	23	13	33
2019/20 (P)	10	-10	20	0	0	3	.	27	3	2

**East Renfrewshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	50	0	10	0	40	19	.	18	3	50
2011/12	-10	0	0	10	-10	.	.	.	9	.
2012/13	30	0	0	10	20	11	.	0	8	23
2013/14	20	-10	10	10	0	6	.	26	17	1
2014/15	90	20	10	30	30	33	47	20	38	30
2015/16	40	10	0	10	20	16	41	7	13	14
2016/17	10	-10	10	-10	20	3	.	19	.	15
2017/18	100	10	10	20	50	33	28	26	27	43
2018/19	60	20	10	10	20	21	65	22	6	19
2019/20 (P)	-10	0	0	-20	0	.	9	4	.	0

**Table 6, continued**

**Falkirk**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	100	30	20	20	20	19	34	21	14	15
2011/12	60	10	-10	20	30	13	11	.	14	24
2012/13	40	10	-10	20	30	8	7	.	9	18
2013/14	40	10	0	0	30	9	10	2	.	24
2014/15	130	0	20	40	70	26	2	22	22	48
2015/16	90	20	-10	60	20	17	18	.	41	14
2016/17	30	0	-10	20	20	6	3	.	10	11
2017/18	160	-10	50	70	50	30	.	43	41	34
2018/19	20	0	-10	30	10	4	.	.	15	9
2019/20 (P)	40	-10	10	30	0	6	.	13	14	0

**Fife**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	90	30	-10	50	20	7	13	.	12	6
2011/12	120	20	50	-10	60	10	8	23	.	15
2012/13	140	-10	60	30	70	11	.	27	7	16
2013/14	40	0	-10	0	50	3	2	.	1	13
2014/15	250	0	30	90	130	20	2	14	24	31
2015/16	230	30	40	110	50	18	15	17	30	12
2016/17	160	0	30	60	70	12	.	11	16	16
2017/18	370	40	70	100	170	30	16	30	26	41
2018/19	190	40	30	60	60	14	16	11	16	14
2019/20 (P)	100	-10	10	50	40	7	.	4	12	9

**Glasgow**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	280	100	0	80	100	14	19	0	13	20
2011/12	220	50	40	50	80	11	11	11	7	14
2012/13	240	30	30	80	90	12	6	8	13	18
2013/14	180	-10	40	70	80	9	.	11	12	15
2014/15	410	70	90	130	120	20	15	23	23	20
2015/16	260	30	50	90	100	13	6	13	15	18
2016/17	340	40	40	100	150	17	8	11	17	29
2017/18	550	80	100	130	240	28	14	25	24	47
2018/19	200	40	0	70	80	10	8	0	13	16
2019/20 (P)	-60	20	0	-30	-50	.	3	.	.	.

**Highland**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	100	20	30	20	30	13	10	22	10	13
2011/12	50	10	-10	20	30	7	8	.	10	12
2012/13	90	0	10	40	40	12	2	5	19	15
2013/14	70	-10	20	20	40	10	.	12	9	17
2014/15	70	-40	10	30	60	8	.	8	12	22
2015/16	220	40	50	40	90	30	31	36	21	35
2016/17	120	0	20	40	70	15	.	14	15	23
2017/18	160	0	0	40	110	19	2	.	18	41
2018/19	50	-20	-10	10	60	6	.	.	6	21
2019/20 (P)	60	30	10	-10	30	7	18	8	.	11

**Table 6, continued**

**Inverclyde**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	50	0	20	10	20	16	.	33	10	26
2011/12	0	0	-10	-10	10	.	4	.	.	9
2012/13	40	20	-10	0	30	15	56	.	4	29
2013/14	20	20	10	-10	0	7	22	23	.	.
2014/15	100	0	30	40	40	33	4	50	37	39
2015/16	60	20	10	10	10	18	40	24	9	10
2016/17	40	0	0	20	20	11	.	.	26	15
2017/18	100	0	10	20	60	30	5	7	23	70
2018/19	30	-10	10	10	20	9	.	15	7	19
2019/20 (P)	-20	0	0	-20	0	.	.	1	.	.

**Midlothian**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	0	0	0	10	5	1	.	4	16
2011/12	40	20	0	0	10	16	52	5	1	18
2012/13	20	0	10	20	-10	7	.	22	29	.
2013/14	30	0	10	10	0	10	7	16	18	2
2014/15	40	10	0	0	30	15	26	.	2	35
2015/16	40	10	20	0	10	15	18	47	1	10
2016/17	10	-10	0	10	10	2	.	3	13	5
2017/18	30	-10	-10	10	40	10	.	.	10	44
2018/19	50	10	20	10	20	17	10	39	7	19
2019/20 (P)	-20	10	10	-10	-20	.	14	8	.	.

**Moray**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	50	10	10	10	10	15	23	19	10	13
2011/12	20	10	-10	0	10	7	28	.	0	13
2012/13	10	10	0	-10	10	4	12	8	.	10
2013/14	70	10	10	30	20	23	18	11	29	25
2014/15	90	0	20	20	50	30	4	32	23	44
2015/16	70	0	10	20	40	21	.	18	18	37
2016/17	60	0	0	20	50	19	.	.	22	44
2017/18	80	10	20	20	30	23	15	28	14	34
2018/19	80	-10	20	20	40	23	.	34	23	35
2019/20 (P)	30	10	-10	0	30	8	16	.	.	26

**Na h-Eileanan Siar**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	0	0	0	0	-10	.	.	24	3	.
2011/12	30	10	10	0	10	20	53	22	.	29
2012/13	20	10	10	0	10	15	52	37	.	15
2013/14	-10	0	-10	10	0	.	.	.	21	.
2014/15	30	20	0	10	10	31	94	17	30	14
2015/16	40	10	10	10	10	38	44	59	27	32
2016/17	30	0	10	10	10	31	24	35	29	34
2017/18	30	0	10	20	10	31	.	59	71	10
2018/19	20	0	0	0	20	14	.	.	.	64
2019/20 (P)	30	0	10	10	10	24	.	33	29	27



**Table 6, continued**

**North Ayrshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	60	20	10	20	20	13	20	12	9	12
2011/12	20	-10	0	30	0	4	.	3	20	0
2012/13	80	0	20	30	20	15	2	21	20	15
2013/14	10	0	-10	0	30	2	.	.	2	19
2014/15	100	-20	10	70	30	19	.	9	45	20
2015/16	50	0	20	40	0	10	0	14	24	1
2016/17	70	-10	10	10	60	14	.	14	8	36
2017/18	110	0	10	50	50	18	.	5	25	32
2018/19	50	10	20	10	10	10	13	18	4	9
2019/20 (P)	10	-30	10	-20	50	2	.	11	.	28

**North Lanarkshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	180	50	50	30	50	17	20	21	9	20
2011/12	120	40	-10	40	50	11	15	.	12	19
2012/13	190	20	40	70	60	17	10	16	21	22
2013/14	70	-10	20	40	30	7	.	7	12	11
2014/15	230	20	70	70	80	20	7	29	19	27
2015/16	200	10	60	60	60	18	5	28	18	22
2016/17	210	50	40	50	80	19	19	15	13	28
2017/18	350	60	100	50	130	30	25	47	13	43
2018/19	130	0	30	40	60	12	1	15	11	20
2019/20 (P)	20	-30	40	10	0	2	.	16	2	.

**Orkney**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	10	0	10	0	19	58	.	37	11
2011/12	-10	0	0	-10	0	.	5	4	.	19
2012/13	10	0	0	0	0	9	8	.	13	15
2013/14	10	10	0	0	-10	11	100	14	10	.
2014/15	10	0	0	10	10	17	27	.	33	24
2015/16	0	0	0	10	0	6	4	8	41	.
2016/17	0	0	10	-10	0	.	4	46	.	.
2017/18	20	0	10	0	0	21	20	50	12	17
2018/19	10	0	0	10	0	12	47	.	44	.
2019/20 (P)	0	0	0	0	0	5	6	12	18	.

**Perth and Kinross**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	150	10	40	50	40	32	19	54	42	23
2011/12	70	10	20	20	30	15	12	20	11	17
2012/13	40	0	-10	20	30	7	2	.	9	17
2013/14	20	-10	-10	30	10	3	.	.	20	3
2014/15	160	20	20	40	90	33	20	29	26	46
2015/16	100	30	-10	10	60	19	36	.	9	35
2016/17	80	20	10	10	50	15	22	6	8	23
2017/18	160	0	10	60	90	29	2	6	42	43
2018/19	90	10	10	30	40	17	10	7	24	20
2019/20 (P)	70	30	0	-20	50	12	45	4	.	22

**Table 6, continued**

**Renfrewshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	20	-10	30	20	-10	4	.	23	9	.
2011/12	30	0	0	0	30	5	2	0	.	15
2012/13	0	-10	0	-20	30	0	.	1	.	16
2013/14	50	10	20	10	-10	8	14	21	7	.
2014/15	160	0	30	30	100	26	1	23	14	57
2015/16	50	40	-10	10	10	8	38	.	5	6
2016/17	80	0	0	40	50	12	0	.	19	23
2017/18	180	10	20	60	90	28	11	12	27	51
2018/19	90	30	0	20	40	14	24	1	9	23
2019/20 (P)	-40	20	0	-30	-20	.	12	.	.	.

**Scottish Borders**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	70	10	20	10	30	19	21	39	6	22
2011/12	40	-10	20	20	10	9	.	26	19	4
2012/13	70	0	-10	40	40	16	.	.	31	24
2013/14	10	-10	-10	10	20	3	.	.	11	11
2014/15	120	10	20	30	60	28	23	30	19	36
2015/16	70	0	20	20	30	19	5	31	19	19
2016/17	60	10	20	0	20	14	21	28	3	14
2017/18	140	0	10	40	90	31	0	15	26	59
2018/19	40	-10	0	20	30	8	.	.	17	16
2019/20 (P)	50	10	0	20	10	10	16	.	17	8

**Shetland**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	10	0	0	10	0	17	36	25	43	.
2011/12	-10	0	0	0	0	.	.	.	.	.
2012/13	0	-10	0	10	0	.	.	13	44	.
2013/14	0	0	0	0	10	6	3	.	.	54
2014/15	20	0	0	10	10	23	10	.	32	45
2015/16	10	0	0	10	0	8	36	.	26	.
2016/17	10	0	0	0	10	17	38	26	.	37
2017/18	20	10	0	0	10	28	50	.	7	57
2018/19	20	0	0	0	10	31	30	54	13	38
2019/20 (P)	-10	-10	0	-10	10	.	.	10	.	24

**South Ayrshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	60	-10	0	30	50	14	.	.	18	37
2011/12	30	-10	20	20	0	6	.	25	12	.
2012/13	50	10	-10	0	40	10	14	.	1	25
2013/14	80	20	0	10	50	19	40	5	6	34
2014/15	70	20	10	10	30	15	31	17	3	17
2015/16	90	0	20	40	20	20	5	26	34	13
2016/17	80	0	0	10	80	19	.	.	8	52
2017/18	140	10	30	50	50	29	12	32	32	31
2018/19	60	0	30	20	0	12	7	35	14	2
2019/20 (P)	20	10	0	0	10	3	8	.	.	6

**Table 6, continued**

**South Lanarkshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	160	10	20	60	70	16	3	11	18	26
2011/12	100	20	0	20	60	9	8	.	7	18
2012/13	110	0	30	40	50	10	1	12	10	15
2013/14	140	40	-20	40	80	13	20	.	12	24
2014/15	280	0	50	100	130	25	.	25	28	39
2015/16	160	20	40	40	70	15	9	19	11	20
2016/17	130	20	-10	60	60	11	11	.	17	16
2017/18	220	-20	30	90	130	20	.	12	24	38
2018/19	80	20	10	30	20	8	9	6	9	6
2019/20 (P)	-80	-40	10	0	-40	.	.	4	.	.

**Stirling**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	30	0	10	10	10	13	.	22	12	17
2011/12	0	-10	0	10	-10	.	.	1	17	.
2012/13	30	0	-10	0	40	11	11	.	1	43
2013/14	40	-10	10	30	10	15	.	22	40	10
2014/15	60	20	0	0	30	22	56	4	4	35
2015/16	40	0	0	30	0	12	9	.	33	4
2016/17	20	0	0	0	10	6	5	6	6	8
2017/18	70	-10	0	20	60	24	.	.	19	61
2018/19	30	10	20	-10	20	11	9	35	.	25
2019/20 (P)	-10	0	10	-10	-10	.	8	11	.	.

**West Dunbartonshire**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	80	30	30	0	30	26	53	45	.	30
2011/12	20	-10	10	10	20	5	.	12	7	18
2012/13	10	-10	0	-10	30	3	.	.	.	33
2013/14	10	-10	10	10	10	4	.	8	5	7
2014/15	130	20	20	40	50	37	19	25	42	57
2015/16	50	-10	0	40	10	14	.	.	52	15
2016/17	20	0	0	10	10	6	0	2	7	12
2017/18	110	30	10	20	60	34	44	13	17	60
2018/19	40	0	10	10	10	12	3	18	14	12
2019/20 (P)	0	10	20	0	-30	.	13	25	.	.

**West Lothian**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2010/11	120	40	20	40	30	29	33	19	33	28
2011/12	40	30	-10	10	20	9	30	.	3	15
2012/13	80	0	20	40	20	17	1	22	25	18
2013/14	50	10	0	20	20	12	13	2	11	19
2014/15	40	0	20	0	20	9	0	20	3	13
2015/16	60	20	0	10	20	12	17	4	9	16
2016/17	70	10	10	20	20	14	15	11	14	15
2017/18	130	0	20	30	80	25	1	14	20	63
2018/19	50	10	0	30	10	9	6	2	18	7
2019/20 (P)	30	-10	30	10	0	5	.	25	8	.

## Table 6, continued

### Footnotes

- 1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods. A negative figure occurs when there were fewer deaths during the winter period than the average of the two 'non-winter' periods.
  - 2) Because of the approximate nature of this measure, numbers have been rounded independently to the nearest 10. The sum of the age group figures may therefore appear to differ from the 'all ages' total.
  - 3) The Increased Winter Mortality (IWM) Index is the (unrounded) number of 'additional' winter deaths divided by the (unrounded) average number of deaths in a four month 'non-winter' period, expressed as a percentage.
  - 4) The IWM Index has not been calculated when the number of 'additional' winter deaths was negative.
- (P) Data for the latest year are provisional.

**Table 7: Seasonal Increase in Mortality in the Winter - underlying numbers of registrations of deaths, by Local Council area of usual residence, 2016/17 to 2019/20**

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>Aberdeen City</b>						
	2016/17	749	712	670	58	60
	2017/18	919	679	661	249	250
	2018/19	749	608	671	110	110
	2019/20 provisional	817	731	753	75	80
<b>Aberdeenshire</b>						
	2016/17	914	750	750	164	160
	2017/18	955	809	756	173	170
	2018/19	876	749	836	84	80
	2019/20 provisional	946	782	901	105	100
<b>Angus</b>						
	2016/17	538	439	421	108	110
	2017/18	569	462	387	145	140
	2018/19	497	421	416	79	80
	2019/20 provisional	480	487	530	-29	-30
<b>Argyll and Bute</b>						
	2016/17	411	376	299	74	70
	2017/18	422	370	346	64	60
	2018/19	370	360	343	19	20
	2019/20 provisional	401	372	409	11	10
<b>City of Edinburgh</b>						
	2016/17	1,527	1,380	1,320	177	180
	2017/18	1,722	1,406	1,355	342	340
	2018/19	1,455	1,428	1,379	52	50
	2019/20 provisional	1,620	1,407	1,769	32	30
<b>Clackmannanshire</b>						
	2016/17	194	175	172	21	20
	2017/18	211	190	155	39	40
	2018/19	212	158	178	44	40
	2019/20 provisional	219	218	210	5	10
<b>Dumfries and Galloway</b>						
	2016/17	723	567	617	131	130
	2017/18	803	623	605	189	190
	2018/19	647	582	601	56	60
	2019/20 provisional	742	654	673	79	80

**Table 7, continued**

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>Dundee</b>						
	2016/17	690	516	556	154	150
	2017/18	709	553	502	182	180
	2018/19	616	544	524	82	80
	2019/20 provisional	624	528	743	-12	-10
<b>East Ayrshire</b>						
	2016/17	551	495	430	89	90
	2017/18	575	471	472	104	100
	2018/19	508	483	466	34	30
	2019/20 provisional	569	477	534	64	60
<b>East Dunbartonshire</b>						
	2016/17	402	339	360	53	50
	2017/18	412	382	361	41	40
	2018/19	401	314	358	65	70
	2019/20 provisional	429	367	470	11	10
<b>East Lothian</b>						
	2016/17	397	330	330	67	70
	2017/18	447	397	337	80	80
	2018/19	372	309	306	65	60
	2019/20 provisional	388	332	424	10	10
<b>East Renfrewshire</b>						
	2016/17	312	286	319	10	10
	2017/18	382	290	283	96	100
	2018/19	328	256	285	58	60
	2019/20 provisional	336	302	390	-10	-10
<b>Falkirk</b>						
	2016/17	600	605	530	33	30
	2017/18	690	509	550	161	160
	2018/19	584	543	577	24	20
	2019/20 provisional	679	568	719	36	40
<b>Fife</b>						
	2016/17	1,501	1,293	1,384	163	160
	2017/18	1,622	1,312	1,187	373	370
	2018/19	1,475	1,267	1,311	186	190
	2019/20 provisional	1,470	1,315	1,434	96	100

**Table 7, continued**

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>Glasgow</b>						
	2016/17	2,352	2,006	2,028	335	340
	2017/18	2,546	2,096	1,895	551	550
	2018/19	2,221	1,996	2,042	202	200
	2019/20 provisional	2,288	2,021	2,683	-64	-60
<b>Highland</b>						
	2016/17	935	815	817	119	120
	2017/18	984	817	832	160	160
	2018/19	904	851	859	49	50
	2019/20 provisional	944	847	913	64	60
<b>Inverclyde</b>						
	2016/17	391	339	365	39	40
	2017/18	416	342	300	95	100
	2018/19	384	363	343	31	30
	2019/20 provisional	404	340	516	-24	-20
<b>Midlothian</b>						
	2016/17	303	289	306	6	10
	2017/18	324	275	312	31	30
	2018/19	327	262	296	48	50
	2019/20 provisional	316	289	385	-21	-20
<b>Moray</b>						
	2016/17	368	312	306	59	60
	2017/18	400	315	335	75	80
	2018/19	399	336	311	76	80
	2019/20 provisional	376	344	350	29	30
<b>Na h-Eileanan Siar</b>						
	2016/17	141	111	104	34	30
	2017/18	139	108	104	33	30
	2018/19	123	110	105	16	20
	2019/20 provisional	144	123	109	28	30
<b>North Ayrshire</b>						
	2016/17	582	520	500	72	70
	2017/18	677	569	575	105	110
	2018/19	589	493	577	54	50
	2019/20 provisional	625	565	664	11	10

**Table 7, continued**

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>North Lanarkshire</b>						
	2016/17	1,354	1,170	1,111	214	210
	2017/18	1,512	1,219	1,106	350	350
	2018/19	1,255	1,066	1,181	132	130
	2019/20 provisional	1,349	1,225	1,431	21	20
<b>Orkney</b>						
	2016/17	82	77	91	-2	0
	2017/18	95	86	71	17	20
	2018/19	87	70	86	9	10
	2019/20 provisional	77	63	83	4	0
<b>Perth and Kinross</b>						
	2016/17	615	524	542	82	80
	2017/18	694	537	539	156	160
	2018/19	596	516	501	88	90
	2019/20 provisional	662	546	631	74	70
<b>Renfrewshire</b>						
	2016/17	739	689	630	80	80
	2017/18	833	660	642	182	180
	2018/19	702	580	648	88	90
	2019/20 provisional	729	642	889	-37	-40
<b>Scottish Borders</b>						
	2016/17	476	420	416	58	60
	2017/18	570	404	465	136	140
	2018/19	455	436	404	35	40
	2019/20 provisional	509	437	491	45	50
<b>Shetland</b>						
	2016/17	85	78	67	13	10
	2017/18	90	60	81	20	20
	2018/19	67	52	50	16	20
	2019/20 provisional	71	81	76	-8	-10
<b>South Ayrshire</b>						
	2016/17	527	445	444	83	80
	2017/18	613	465	488	137	140
	2018/19	506	428	474	55	60
	2019/20 provisional	563	527	568	16	20



**Table 7, continued**

Local Authority	Period	Number of deaths registered			Seasonal Increase in Mortality in the Winter (or seasonal difference) <sup>1</sup>	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
<b>South Lanarkshire</b>						
	2016/17	1,258	1,124	1,140	126	130
	2017/18	1,363	1,134	1,143	225	220
	2018/19	1,197	1,108	1,118	84	80
	2019/20 provisional	1,277	1,207	1,498	-76	-80
<b>Stirling</b>						
	2016/17	282	273	258	17	20
	2017/18	354	285	286	69	70
	2018/19	343	300	318	34	30
	2019/20 provisional	320	300	354	-7	-10
<b>West Dunbartonshire</b>						
	2016/17	363	361	325	20	20
	2017/18	456	333	350	115	110
	2018/19	379	351	327	40	40
	2019/20 provisional	400	351	455	-3	0
<b>West Lothian</b>						
	2016/17	573	519	488	70	70
	2017/18	649	536	505	129	130
	2018/19	564	524	507	49	50
	2019/20 provisional	618	525	656	28	30

**Footnotes**

1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods. A negative figure occurs when there were fewer deaths during the winter period than the average of the two 'non-winter' periods.

**Table 8: Seasonal Increase in Mortality in the Winter and Increased Winter Mortality Index, by age-group and underlying cause of death, Scotland, 2009/10 to 2019/20**

Underlying Period  
cause of  
death<sup>5</sup>

**All causes of death**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	2,760	460	370	890	1,040	16	13	11	17	21
2010/11	2,450	410	430	720	890	14	12	13	14	17
2011/12	1,420	230	110	440	650	8	7	3	8	12
2012/13	2,000	90	190	600	1,120	11	3	6	11	20
2013/14	1,600	140	210	530	730	9	4	6	10	14
2014/15	4,060	270	610	1,240	1,940	23	8	18	23	33
2015/16	2,850	450	530	900	970	16	13	16	17	17
2016/17	2,720	200	280	810	1,440	15	6	8	15	24
2017/18	4,810	330	610	1,370	2,500	26	9	18	25	43
2018/19	2,060	290	300	570	900	11	8	9	11	15
2019/20 (P)	550	0	260	80	210	3	.	7	1	3

**Coronavirus (COVID-19) (U07)** - did not exist before winter 2019/20, and so could not affect the figures for the previous winters

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2019/20 (P)	-1,740	-140	-230	-560	-810	.	.	.	.	.

**Coronary (ischaemic) Heart Disease (I20-I25)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	550	90	130	190	140	22	22	25	22	18
2010/11	270	30	40	150	50	11	7	8	18	6
2011/12	180	40	40	90	20	7	9	7	11	3
2012/13	190	0	30	60	90	8	1	6	8	12
2013/14	220	20	60	90	60	10	6	14	12	8
2014/15	460	20	90	190	170	21	5	19	26	23
2015/16	340	60	70	90	120	16	16	16	14	17
2016/17	330	80	40	80	130	16	22	9	12	21
2017/18	410	20	40	190	160	19	4	8	29	26
2018/19	300	30	40	110	120	15	9	9	17	19
2019/20 (P)	210	0	80	50	90	10	.	17	7	14

**Cerebrovascular disease (I60-I69)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	290	20	40	110	130	19	13	20	21	19
2010/11	360	20	70	100	170	25	15	42	20	26
2011/12	90	0	0	70	30	7	.	.	14	5
2012/13	190	-10	-10	80	130	13	.	.	15	20
2013/14	140	10	0	50	90	10	6	.	10	15
2014/15	400	20	10	120	240	30	23	8	27	39
2015/16	210	20	50	60	80	17	16	30	15	14
2016/17	230	30	10	70	120	18	26	6	17	20
2017/18	410	0	60	120	220	35	4	38	32	42
2018/19	160	20	20	70	50	13	25	10	18	9
2019/20 (P)	170	10	30	30	100	13	10	16	7	18

**Table 8, continued**

**Other circulatory system diseases (other I00-I99)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	190	30	30	70	60	17	20	14	20	14
2010/11	170	10	20	90	50	15	6	10	24	12
2011/12	80	10	0	40	30	6	6	0	10	6
2012/13	120	0	20	40	60	9	.	10	11	12
2013/14	150	10	10	30	110	12	3	5	8	23
2014/15	260	-10	50	80	140	19	.	23	18	25
2015/16	220	40	40	80	60	16	26	18	18	10
2016/17	270	40	40	90	110	20	19	18	23	18
2017/18	270	40	40	90	110	19	24	16	20	19
2018/19	140	20	20	20	80	10	15	10	5	13
2019/20 (P)	160	10	40	20	90	11	5	18	5	15

**Cancer (malignant neoplasms) (C00-C97)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	120	40	-20	50	50	2	4	.	3	6
2010/11	80	-20	60	10	20	2	.	4	1	3
2011/12	20	40	-40	-10	30	0	3	.	.	3
2012/13	-120	-20	-40	-30	-30	.	.	.	.	.
2013/14	50	10	20	20	0	1	1	1	1	0
2014/15	260	-20	110	90	70	5	.	7	5	7
2015/16	290	40	110	80	60	6	4	8	5	6
2016/17	110	20	20	0	70	2	2	1	0	7
2017/18	230	50	70	30	90	4	4	5	2	9
2018/19	-70	-80	20	-20	10	.	.	2	.	1
2019/20 (P)	120	-50	50	80	30	2	.	4	5	3

**Influenza (J09-J11)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	0	0	0	0	0	8	10	100	.	.
2010/11	60	40	10	10	0	.	.	.	.	.
2011/12	-10	0	0	0	0	.	.	.	0	.
2012/13	50	10	0	10	20	1250	2700	.	1100	900
2013/14	10	10	0	0	.	329	233	.	500	.
2014/15	60	10	10	20	30	595	186	340	1800	843
2015/16	50	30	10	10	0	1189	6300	900	1300	0
2016/17	70	10	10	20	40	774	367	.	529	811
2017/18	370	40	50	110	170	3557	1200	5100	3800	4929
2018/19	100	40	20	20	20	1864	.	4100	900	620
2019/20 (P)	90	20	10	30	30	1820	1600	.	2033	1220

**Pneumonia (J12-J18)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	280	20	20	70	180	42	34	33	31	51
2010/11	150	20	20	10	110	23	36	31	5	29
2011/12	180	10	20	50	100	29	19	39	30	28
2012/13	280	20	30	70	160	46	45	42	47	46
2013/14	120	10	20	30	60	22	38	35	18	20
2014/15	410	20	40	100	250	79	73	93	74	80
2015/16	270	30	30	80	130	54	63	60	76	44
2016/17	230	10	20	60	150	45	27	49	41	49
2017/18	440	20	30	90	300	97	60	88	75	113
2018/19	170	30	10	40	90	40	104	25	36	38
2019/20 (P)	230	20	20	40	150	58	69	56	45	63

**Table 8, continued**

**Chronic lower respiratory diseases (J40-J47)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	360	70	70	140	90	44	74	31	42	46
2010/11	350	90	90	130	30	39	81	42	37	17
2011/12	240	20	40	90	80	25	22	17	24	37
2012/13	350	30	90	140	90	35	30	35	34	39
2013/14	200	20	60	70	40	21	18	25	21	19
2014/15	580	70	150	190	180	60	67	67	49	69
2015/16	410	90	120	160	50	42	83	48	42	18
2016/17	380	50	60	130	140	37	43	25	34	53
2017/18	660	40	180	260	190	67	32	71	70	77
2018/19	340	40	100	120	80	36	40	42	32	33
2019/20 (P)	350	40	110	140	60	38	42	48	42	23

**Other respiratory system diseases (other J00-J99)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	170	-10	20	70	90	33	.	20	44	42
2010/11	140	20	0	30	90	28	45	2	17	43
2011/12	110	0	10	40	50	19	.	17	23	22
2012/13	190	30	10	50	100	35	69	13	27	42
2013/14	90	10	20	40	20	16	15	32	21	8
2014/15	280	10	10	50	210	45	10	15	22	82
2015/16	150	30	50	20	50	25	86	63	12	17
2016/17	140	0	10	30	100	26	.	9	20	44
2017/18	220	10	10	40	150	46	36	21	26	68
2018/19	130	20	10	30	60	28	69	19	22	29
2019/20 (P)	170	20	10	60	90	38	44	18	44	41

**Dementia and Alzheimer's disease (F01, F03, G30)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	310	10	20	100	190	32	60	29	31	32
2010/11	270	-10	20	90	160	24	.	36	25	23
2011/12	270	0	0	60	200	19	.	2	15	23
2012/13	490	0	30	130	320	33	4	43	30	34
2013/14	300	0	10	110	180	21	.	15	26	20
2014/15	690	0	30	240	420	41	.	44	48	38
2015/16	450	0	40	150	260	28	6	48	33	25
2016/17	650	0	10	200	430	35	.	15	38	36
2017/18	1,010	10	40	180	780	53	71	43	30	65
2018/19	300	0	30	90	180	15	.	33	15	15
2019/20 (P)	400	0	20	80	310	19	.	16	12	23

**Other mental and behavioural disorders and nervous system diseases (F04-G26, G31-G99)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	130	70	40	10	10	23	24	49	9	12
2010/11	60	0	10	30	30	12	.	10	21	58
2011/12	30	20	10	10	0	7	10	13	4	.
2012/13	60	-10	20	30	20	12	.	20	22	29
2013/14	90	40	30	30	0	20	21	33	19	3
2014/15	140	30	30	40	40	25	16	23	27	48
2015/16	40	20	-20	10	30	6	10	.	4	26
2016/17	110	10	20	60	20	17	5	15	35	15
2017/18	260	50	60	90	50	40	22	51	50	47
2018/19	110	10	20	40	40	17	4	18	22	36
2019/20 (P)	80	0	30	30	10	13	2	27	15	9

**Table 8, continued**

**Certain infectious and parasitic diseases (A00-B99)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	40	0	10	0	30	15	3	24	.	37
2010/11	40	0	10	10	20	16	9	14	18	20
2011/12	10	10	-10	0	20	6	20	.	.	19
2012/13	20	10	-10	-10	30	6	10	.	.	38
2013/14	30	0	0	0	30	15	6	.	.	49
2014/15	80	20	10	20	30	31	33	26	29	35
2015/16	50	10	20	10	0	21	33	66	16	.
2016/17	30	10	0	0	10	13	24	10	0	19
2017/18	90	20	10	20	30	40	50	39	32	42
2018/19	50	20	0	10	20	25	57	0	18	29
2019/20 (P)	70	20	0	20	20	32	68	8	34	26

**Endocrine, nutritional and metabolic diseases (E00-E90)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	30	10	10	0	0	10	16	21	4	3
2010/11	70	10	0	20	40	22	17	3	20	57
2011/12	40	10	0	0	20	13	15	6	5	26
2012/13	70	20	10	10	20	22	32	18	14	27
2013/14	60	10	-10	20	40	19	11	.	19	56
2014/15	80	0	20	40	20	25	6	28	32	27
2015/16	100	30	20	30	20	28	33	31	25	26
2016/17	40	0	10	20	10	11	4	16	13	9
2017/18	90	20	10	40	20	20	16	11	29	21
2018/19	50	20	10	20	0	11	21	6	13	4
2019/20 (P)	80	20	20	30	10	19	29	28	20	7

**Digestive system diseases (K00-K93)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	140	90	0	10	30	14	28	1	6	15
2010/11	110	100	10	-20	20	12	32	6	.	8
2011/12	50	30	10	0	10	5	9	6	0	3
2012/13	50	40	10	0	0	5	14	6	.	1
2013/14	30	-10	0	0	40	3	.	0	0	18
2014/15	100	20	20	30	30	10	8	9	11	13
2015/16	100	60	-20	40	20	11	23	.	15	10
2016/17	60	-30	20	30	50	6	.	7	11	18
2017/18	130	50	-20	30	60	12	17	.	12	22
2018/19	20	0	-20	-20	50	2	1	.	.	19
2019/20 (P)	60	20	40	-10	10	5	8	17	.	4

**Genitourinary system diseases (N00-N99)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	30	0	0	10	20	8	14	6	5	10
2010/11	30	0	10	0	20	7	.	17	.	11
2011/12	20	0	0	0	20	6	6	.	4	11
2012/13	40	10	10	10	10	11	71	14	7	7
2013/14	50	0	0	10	30	13	.	9	12	17
2014/15	100	0	30	20	50	26	7	68	23	22
2015/16	70	0	10	20	40	19	12	25	18	20
2016/17	30	0	-10	10	20	10	5	.	14	14
2017/18	60	10	0	20	30	20	70	3	17	19
2018/19	40	-10	-10	20	30	12	.	.	28	16
2019/20 (P)	0	0	0	10	-10	0	17	10	6	.

**Table 8, continued**

**Accidental falls (W00-W19)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	50	10	0	30	10	25	46	20	54	6
2010/11	30	-10	20	20	-10	15	.	175	39	.
2011/12	10	-10	10	0	10	6	.	50	3	7
2012/13	50	0	0	20	30	23	11	.	27	32
2013/14	10	0	-10	10	10	5	.	.	17	7
2014/15	20	0	20	0	10	9	.	114	.	6
2015/16	20	-10	10	10	20	9	.	27	8	13
2016/17	20	0	10	-10	10	6	.	44	.	9
2017/18	100	0	0	40	60	33	7	0	46	33
2018/19	70	0	0	10	50	22	4	9	11	32
2019/20 (P)	100	10	10	10	70	36	29	77	15	43

**Other external causes of death (other V01-Y98)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	20	10	0	10	0	3	1	.	33	16
2010/11	120	70	20	10	10	22	16	54	37	71
2011/12	60	50	10	0	0	10	9	24	10	.
2012/13	-40	-40	0	-10	10	.	.	.	.	54
2013/14	40	20	10	10	10	7	4	15	21	38
2014/15	40	40	0	0	0	7	8	5	1	.
2015/16	-10	-20	0	0	10	.	.	.	5	43
2016/17	-50	-50	-10	-10	20	.	.	.	.	94
2017/18	-20	-50	0	20	10	.	.	5	45	34
2018/19	110	100	0	0	10	13	14	6	.	39
2019/20 (P)	-50	-50	10	10	-10	.	.	10	16	.

**Ill-defined and unknown causes (R95-R99)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	0	10	-10	0	0	6	26	.	0	.
2010/11	10	10	0	0	0	24	16	60	100	33
2011/12	0	0	0	0	0	5	4	.	0	300
2012/13	10	10	0	0	0	28	25	8	400	.
2013/14	-10	-10	0	0	0	.	.	.	50	100
2014/15	-10	-10	-10	0	0	.	.	.	45	.
2015/16	0	-20	0	10	0	.	.	.	550	100
2016/17	10	0	0	0	0	11	7	.	71	.
2017/18	0	0	0	0	0	.	.	17	25	.
2018/19	-30	-20	-10	0	0	.	.	.	.	60
2019/20 (P)	10	20	-10	0	0	3	6	.	3	.

**All other underlying causes of death**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Increased Winter Mortality Index <sup>3, 4</sup>				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	50	0	10	20	20	10	.	19	22	10
2010/11	130	30	10	20	80	29	20	12	17	46
2011/12	30	10	0	0	30	7	4	.	2	14
2012/13	20	-20	0	-10	40	3	.	4	.	21
2013/14	20	10	-10	10	10	5	8	.	14	5
2014/15	120	40	-10	20	70	25	30	.	16	38
2015/16	100	30	10	40	20	21	23	8	41	13
2016/17	50	20	0	20	10	10	20	2	20	4
2017/18	90	10	20	0	60	17	10	36	.	25
2018/19	80	30	20	20	20	15	25	22	15	8
2019/20 (P)	30	20	20	10	-20	5	17	26	9	.

**Table 8, continued**

**Circulatory system diseases (I00-I99), Respiratory system diseases (J00-J99), Dementia (F01, F03) and Alzheimer's disease (G30)**

	Seasonal increase in mortality in the winter <sup>1, 2</sup>					Percentage of total seasonal increase				
	total for the specified causes of death					may exceed 100% due to negative 'increases' for some of the other causes				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2009/10	2,150	220	320	740	870	78%	48%	86%	83%	84%
2010/11	1,760	220	280	610	660	72%	54%	65%	85%	74%
2011/12	1,140	70	110	430	520	80%	30%	100%	98%	80%
2012/13	1,850	90	200	590	970	93%	100%	105%	98%	87%
2013/14	1,230	80	180	410	560	77%	57%	86%	77%	77%
2014/15	3,140	140	400	990	1,620	77%	52%	66%	80%	84%
2015/16	2,100	290	400	660	750	74%	64%	75%	73%	77%
2016/17	2,310	210	210	680	1,210	85%	105%	75%	84%	84%
2017/18	3,790	170	440	1,090	2,090	79%	52%	72%	80%	84%
2018/19	1,640	210	250	500	670	80%	72%	83%	88%	74%
2019/20 (P)	1,780	110	310	450	910	324%	.	119%	563%	433%

**Footnotes**

1) The 'Seasonal Increase in Mortality in the Winter' has been defined as the difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods. A negative figure occurs when there were fewer deaths during the winter period than the average of the two 'non-winter' periods.

2) Because of the approximate nature of this measure, numbers have been rounded independently to the nearest 10. The sum of the age group figures may therefore appear to differ from the 'all ages' total.

3) The Increased Winter Mortality (IWM) Index is the (unrounded) number of 'additional' winter deaths divided by the (unrounded) average number of deaths in a four month 'non-winter' period, expressed as a percentage.

4) The IWM Index has not been calculated when the number of 'additional' winter deaths was negative.

5) Showing the relevant codes from the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10).

Changes in the cause of death coding software have caused breaks in the continuity of the figures for some causes of death between (a) 2009/10, 2010/11 and 2011/12, and (b) 2015/16, 2016/17 and 2017/18. More information about this is available from paragraphs 2.12, 4.10 and 4.11.

(P) Data for the latest year are provisional.

**Table 9: Increased Winter Mortality Index or Excess Winter Mortality Index, Scotland, England, Wales and Northern Ireland, 1991/92 to 2019/20**

Equivalent measures of winter mortality<sup>1 2</sup>

Winter	Scotland	England	Wales	Northern Ireland	differences		
	Increased Winter Mortality Index	Excess Winter Mortality Index <sup>3</sup>	Excess Winter Mortality Index <sup>3</sup>	Excess Winter Mortality Index <sup>4</sup>	England minus Scotland	Wales minus Scotland	Northern Ireland minus Scotland
	1991/92	14.9	20.1	18.8	20.8	5.2	3.9
1992/93	13.9	14.6	14.8	8.5	0.7	0.9	-5.4
1993/94	13.0	14.6	8.7	12.7	1.6	-4.3	-0.2
1994/95	12.0	15.6	15.0	13.7	3.6	3.0	1.7
1995/96	19.1	22.9	22.2	19.0	3.8	3.1	0.0
1996/97	19.4	27.9	26.8	14.2	8.5	7.4	-5.1
1997/98	14.0	13.3	12.1	12.4	-0.7	-1.9	-1.5
1998/99	25.8	27.6	27.2	25.0	1.8	1.4	-0.7
1999/2000	28.5	29.0	27.4	30.5	0.5	-1.1	1.9
2000/01	12.2	14.8	15.5	9.8	2.6	3.3	-2.4
2001/02	9.9	16.4	14.3	4.7	6.5	4.4	-5.2
2002/03	13.5	14.3	12.9	8.1	0.8	-0.6	-5.4
2003/04	15.6	13.8	14.7	7.2	-1.8	-0.9	-8.5
2004/05	15.4	19.5	18.6	3.9	4.1	3.2	-11.5
2005/06	9.9	15.7	15.6	10.2	5.8	5.7	0.2
2006/07	15.6	15.0	13.9	10.9	-0.6	-1.7	-4.7
2007/08	12.3	15.5	14.2	11.9	3.2	1.9	-0.3
2008/09	20.6	23.4	25.1	23.0	2.8	4.5	2.3
2009/10	16.3	16.7	17.3	21.4	0.4	1.0	5.0
2010/11	14.3	16.5	20.4	16.2	2.2	6.1	2.0
2011/12	8.0	15.6	12.7	10.6	7.6	4.7	2.5
2012/13	11.2	19.6	18.0	11.6	8.4	6.8	0.4
2013/14	9.4	11.1	10.2	13.0	1.7	0.8	3.6
2014/15	22.6	27.0	24.9	17.8	4.4	2.3	-4.8
2015/16	16.1	14.6	17.4	13.1	-1.5	1.3	-3.0
2016/17	14.9	21.1	17.6	19.2	6.2	2.7	4.3
2017/18	26.2	29.6	32.3	30.5	3.4	6.1	4.3
2018/19	11.3	14.2	13.1	n-a	2.9	1.8	n-a
2019/20 (P)	2.6	n-a	n-a	n-a	n-a	n-a	n-a

**Footnotes**

1) The difference between the number of deaths in the four 'winter' months (December - March) and the average of the numbers of deaths in the preceding (August - November) and following (April - July) non-winter four-month periods is called 'the Seasonal Increase In Mortality' by National Records of Scotland (NRS), and 'Excess Winter Deaths' by the Office for National Statistics (ONS) and by the Northern Ireland Statistics and Research Agency (NISRA).

2) The number of 'additional' winter deaths divided by the average number of deaths in a four month 'non-winter' period, expressed as a percentage, is called the 'Increased Winter Mortality Index' by NRS and the 'Excess Winter Mortality Index' by ONS and NISRA.

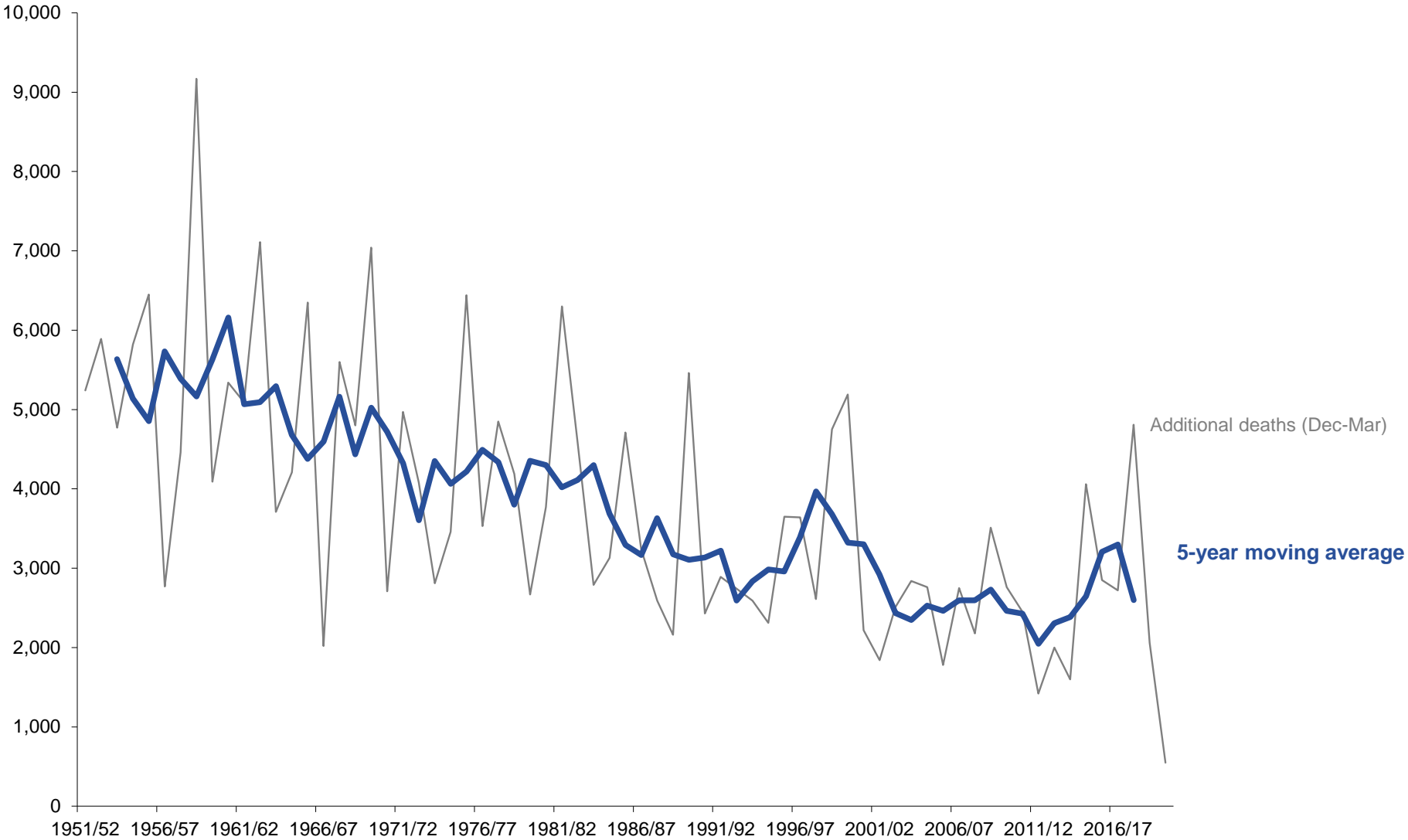
3) Figures for England and for Wales were taken from the reference tables for the ONS publication 'Excess Winter Mortality in England and Wales', which are available from

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/excesswintermortalityinenglandandwalesreferencetables>. Such figures were not available for the latest winter shown in this publication when it was produced, as they were not due to be released until November (and this publication, with the Scottish figures, was published in October)

4) Figures for Northern Ireland were calculated from the numbers given in NISRA's 'Excess Winter Mortality' tables, which are available from the NISRA website. At the time this publication was being finalised, they were not available for the latest two winters shown above. However, updated figures for Northern Ireland (including revisions for some earlier years) were due to be published on the same day as this edition. Therefore, they were not available in time for inclusion here, but should now be found on the NISRA website <https://www.nisra.gov.uk/statistics/cause-death/excess-winter-mortality>.

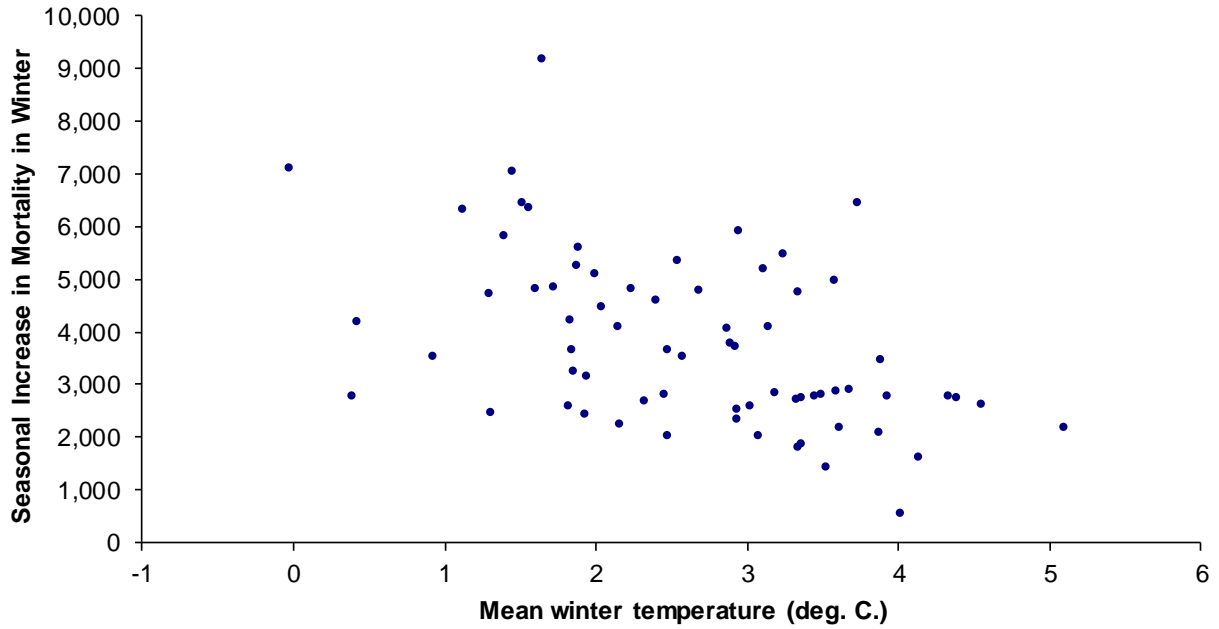


**Figure 1: Seasonal Increase in Mortality in the Winter, Scotland, 1951/52 to 2019/20**

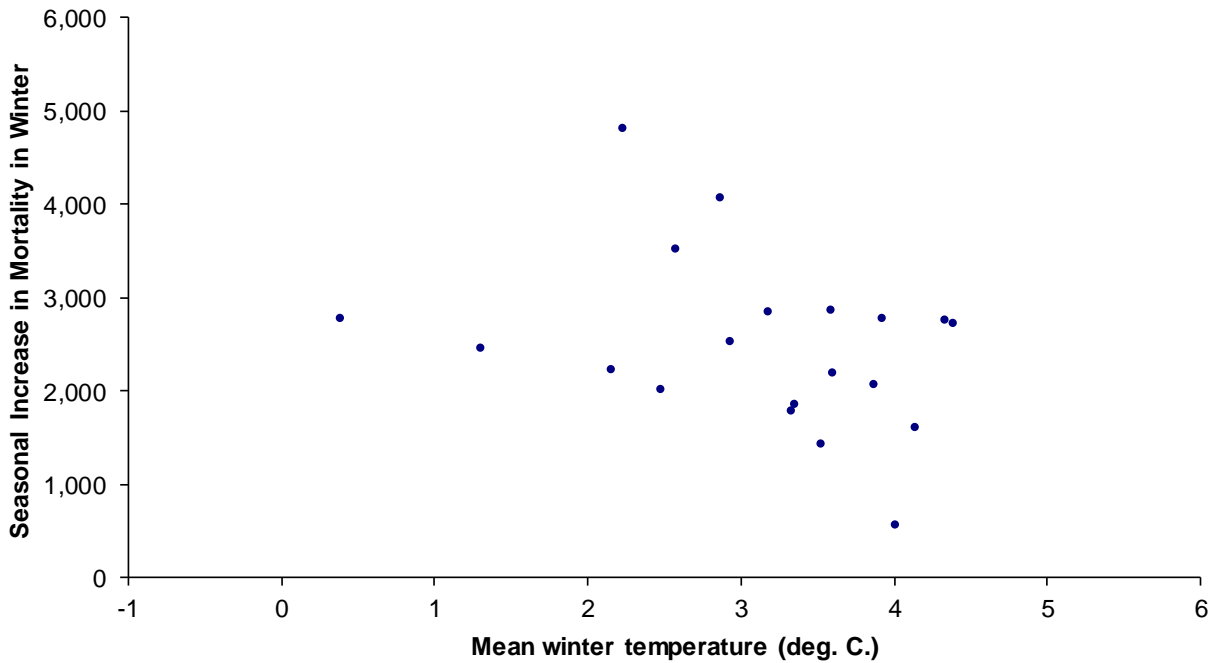


**Figure 2: Seasonal Increase in Mortality in the Winter and mean winter temperature (deg. C.), Scotland: (a) winter 1951/52 to winter 2019/20; and (b) winter 2000/01 to winter 2019/20**

**(a) winter 1951/52 to winter 2019/20**



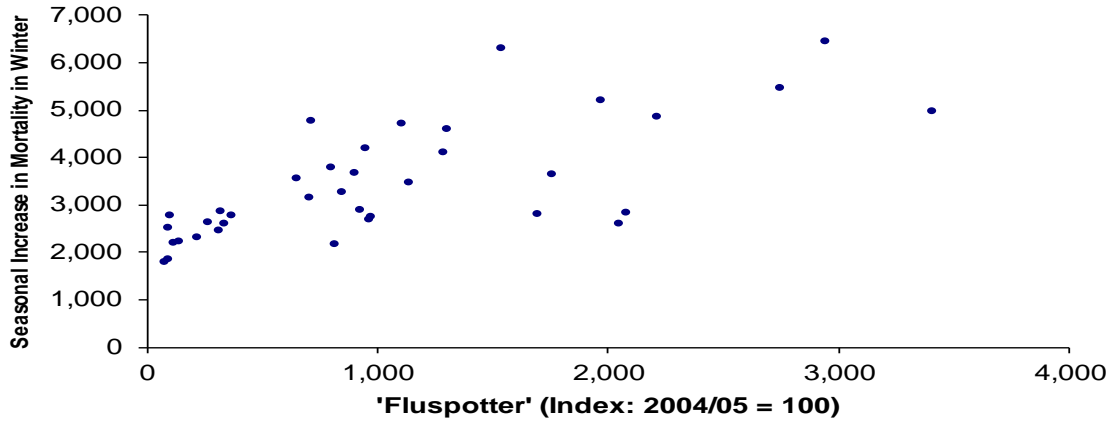
**(b) winter 2000/2001 to winter 2019/20**



**Figure 3: Seasonal Increase in Mortality in the Winter and indicators of influenza activity, Scotland: (a) winters and 'flu seasons' - 1971/72 to 2007/08, inclusive; and (b) and (c) winters - 2003/04 to 2019/20, inclusive.**

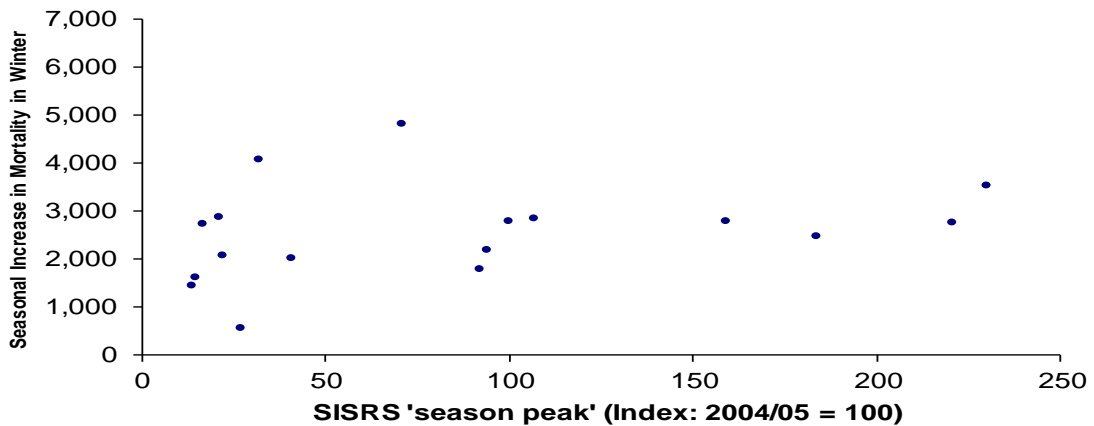
**(a) winters and 'flu seasons' - 1971/72 to 2007/08, inclusive**

**Note** in that period, the maximum 'fluspotter' index value was 3,412 for winter 1971/72 (refer to Table 2)



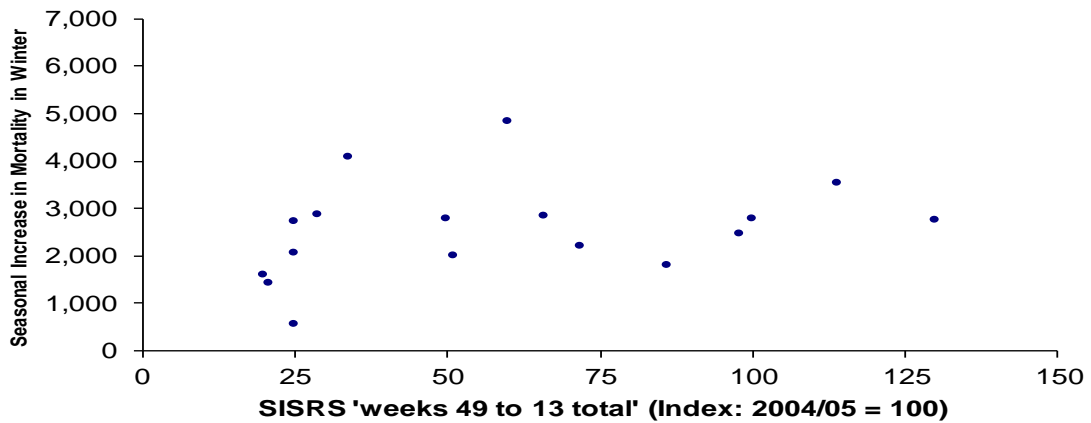
**(b) winters - 2003/04 to 2019/20, inclusive - using SISRS 'season peak' index value**

**Note** in that period, the maximum SISRS 'season peak' index value was 230 for winter 2008/09 (refer to Table 2)

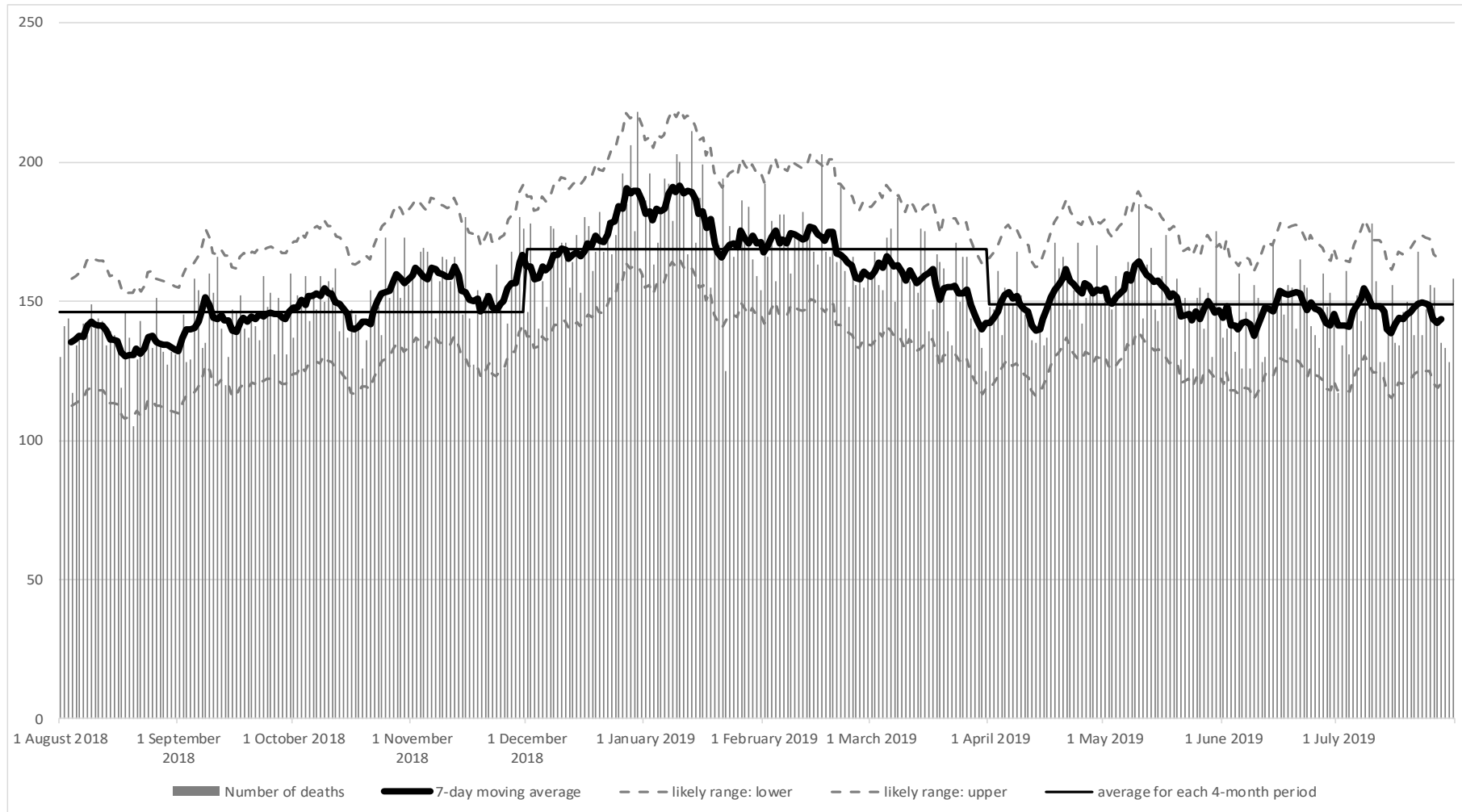


**(c) winters - 2003/04 to 2019/20, inclusive - using SISRS 'weeks 49 to 13 total' index value**

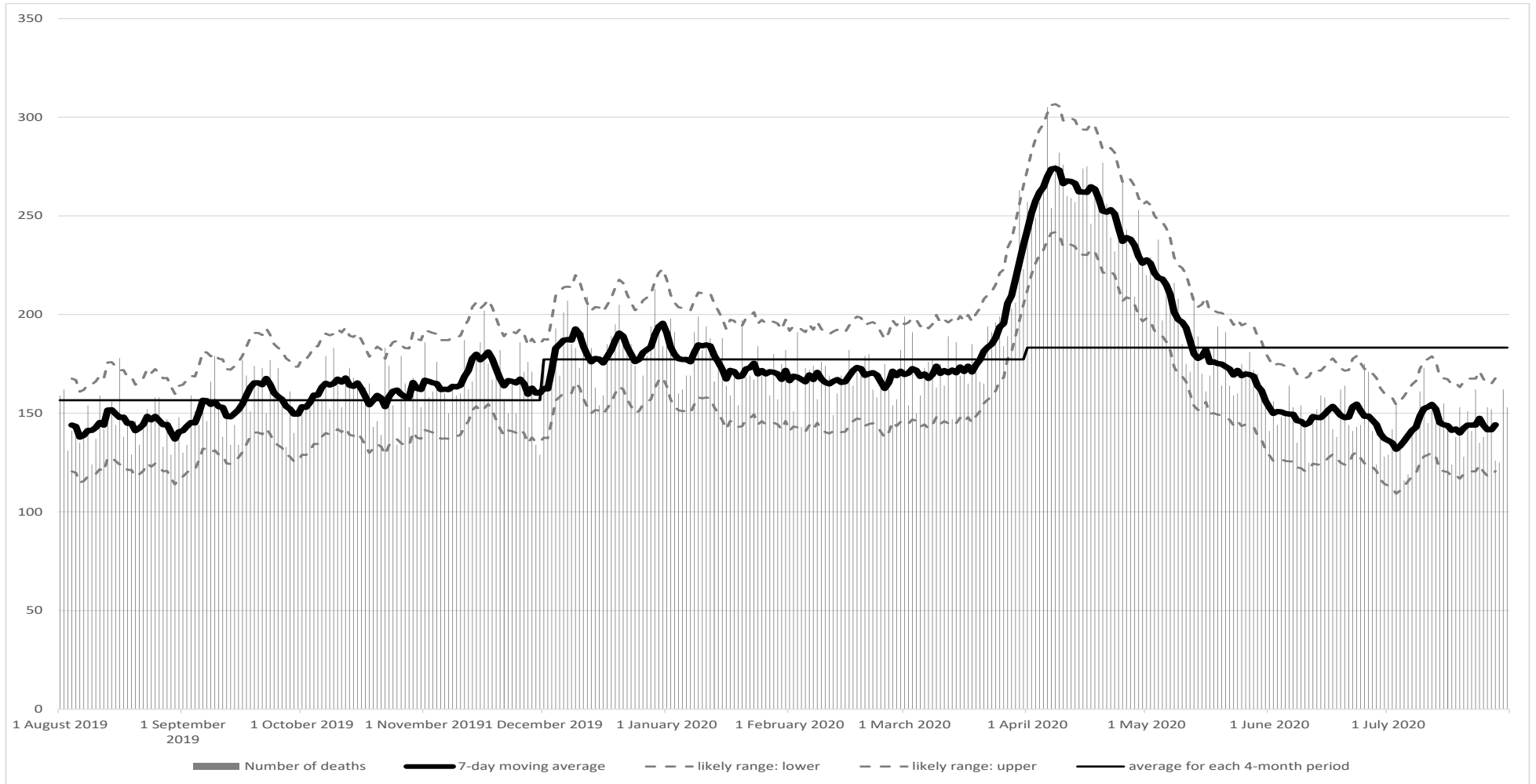
**Note** in that period, the maximum SISRS 'weeks 49 to 13 total' index value was 130 for winter 2006/07 (refer to Table 2)



**Figure 4(a): Deaths by day, 1 August 2018 to 31 July 2019, showing the 7-day moving average, the likely range of values around the moving average (if that represents the underlying rate of deaths occurring at that time) and the daily average for each 4-month period.**



**Figure 4(b): Deaths by day, 1 August 2019 to 31 July 2020, showing the 7-day moving average, the likely range of values around the moving average (if that represents the underlying rate of deaths occurring at that time) and the daily average for each 4-month period.**



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Alan Ferrier  
Senior Statistician  
National Records of Scotland  
Room 1/2/12  
Ladywell House  
Ladywell Road  
Edinburgh  
EH12 7TF

Phone: 0131 314 4530

Email: [alan.ferrier@nrscotland.gov.uk](mailto:alan.ferrier@nrscotland.gov.uk)

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