

Winter Mortality in Scotland 2017/18

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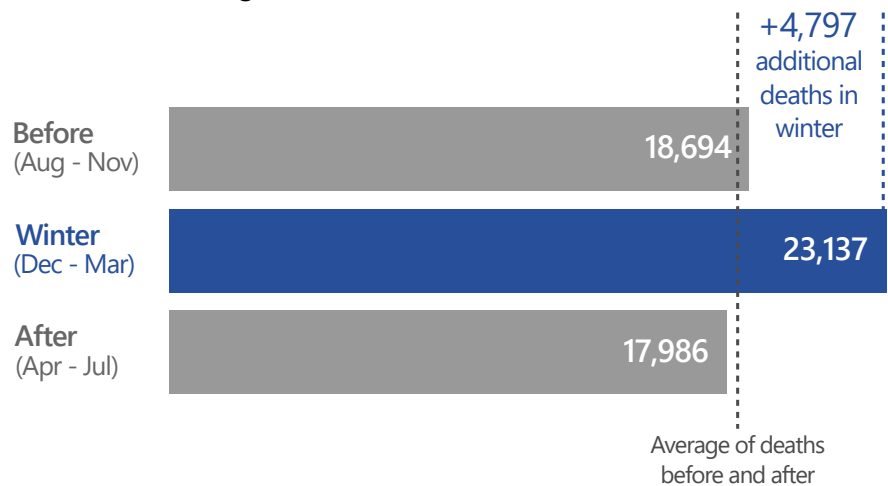
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Mortality increases during the winter

The winter months see a higher number of deaths than other times of the year.

We measure the size of this effect by looking at the difference between deaths over four months in winter and the average number of deaths in the two periods before and after.

Deaths before, during and after winter 2017/18

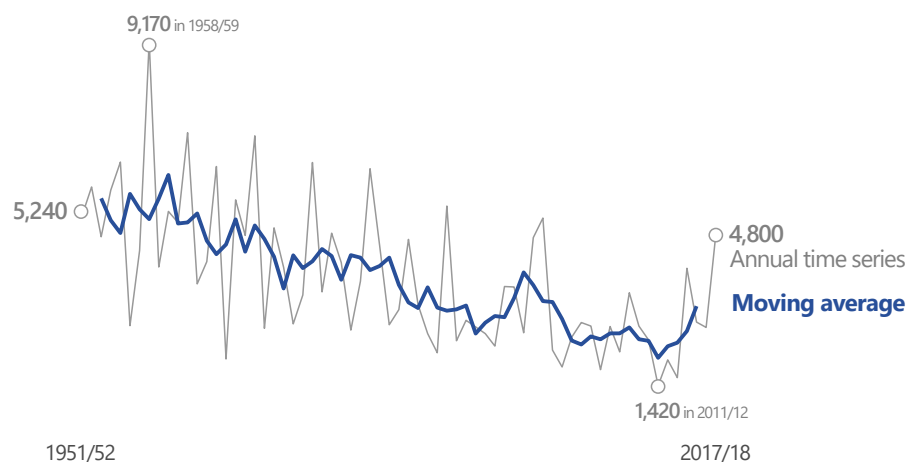


Winter mortality trend generally downwards

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

This difference has fluctuated, with an increase in recent years, but the 5-year moving average shows an overall downward trend over the long term.

Additional deaths in winter (Dec-Mar)

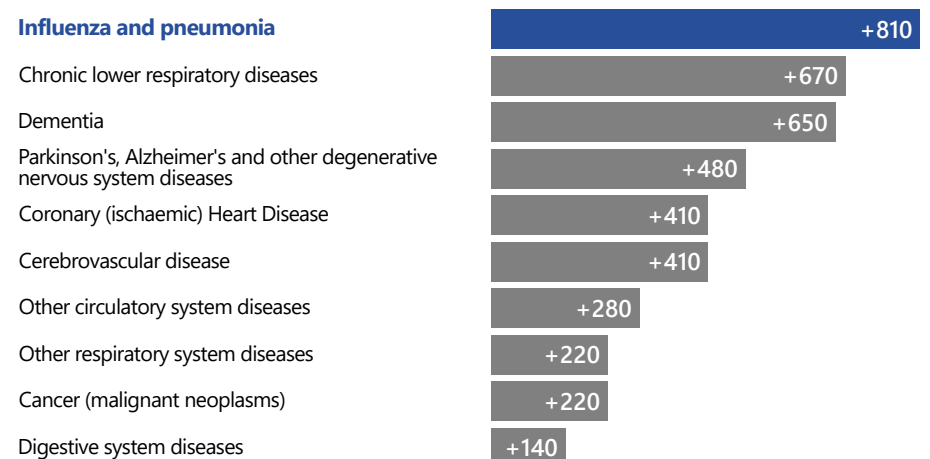


Respiratory system diseases main cause of additional deaths in 2017/18

35% of the additional deaths in 2017/18 were caused by respiratory system diseases, including influenza and pneumonia.

* Other causes not shown here account for smaller numbers of additional deaths.

Additional deaths in winter 2017/18 (Dec-Mar) by underlying cause



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Main points

The main points in this report are:

- There were 23,137 deaths registered in Scotland in the four months of winter 2017/18 (December to March), compared with 20,946 in winter 2016/17. It was the largest number since the 23,379 deaths registered in winter 1999/2000.
- Comparing the number of deaths in the four winter months with the average for the two adjacent four-month periods, the seasonal increase in mortality in winter 2017/18 was 4,800. This was 2,070 more than the corresponding value of 2,730 for the previous winter, and the largest value since winter 1999/2000, when the seasonal increase in mortality was 5,190.
- The seasonal increase in mortality has been calculated for every winter from 1951/52. The seasonal increase of 4,800 in winter 2017/18 was larger than in most of the previous 66 winters, and exceeded the level seen in all of the previous ten winters, and in 19 of the previous 20 winters.
- The long-term trend in the seasonal increase in mortality in the winter has clearly been downward, but it can fluctuate greatly from winter to winter. There have been unusually large figures in some years (including, latterly, 4,060 for winter 2014/15 and 4,800 for winter 2017/18, which had the largest value since winter 1999/2000). However, the height of the peaks has generally been falling.
- The five year moving average, which smooths out much of the year to year fluctuation, had tended to decline, but has risen recently (due, for example, to winters 2014/15 and 2017/18 entering the calculation). While the latest value (3,208) is the twenty third lowest ever, it is greater than all of the previous ten values, greater than 15 of the previous 20 values, and clearly above the level that had applied since the early 2000s. However, it is too early to say whether there has been a change in the long-term trend: the recent rise in the 5 year moving average could just be a short-term one, like that which was seen around the middle of the 1990s, after which the 5-year moving average fell for several years.
- The latest 18 winters have had 7 out of the 10 lowest seasonal increases in mortality ever recorded. Over the 67 years covered by these statistics, the lowest seasonal increase in mortality was for winter 2011/12 (1,420), the second lowest was for winter 2013/14 (1,600), the third lowest was for winter 2005/06 (1,780), the fourth lowest was for winter 2001/02 (1,840), and the fifth lowest was for winter 2012/13 (2,000). The eighth and ninth lowest seasonal increases in mortality were for winter 2007/08 (2,180) and winter 2000/01 (2,220).

1. Introduction

- 1.1 This release presents provisional data for the seasonal increase in mortality in Scotland in winter 2017/18. The Tables and Figures provide overall data for Scotland for 67 years, breakdowns by age-group for Scotland as a whole for 28 years and for each NHS Board and Local Authority area for 10 years, and the numbers of 'additional' deaths by age-group and cause for 11 years. They also give recent years' numbers of deaths registered for Scotland and for NHS Board and Local Authority areas.
- 1.2 The seasonal increase in mortality in the winter is defined as the difference between the number of deaths in the four month 'winter' period (December to March, inclusive) and the average number of deaths in the two, four month periods which precede winter (August to November, inclusive) and follow winter (April to July, inclusive).
- 1.3 There is no single cause of 'additional' deaths in winter. Health Protection Scotland (HPS) has noted (in its [National Influenza Reports](#)) that they are often attributed in part to cold weather directly (for instance deaths due 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 Parkinson's, Alzheimer's and other degenerative nervous system diseases. Influenza is recorded as the underlying cause in only a minority of deaths.
- 1.4 One improvement has been made for this edition: adding an extra indicator of the level of influenza activity, calculated from the General Practitioner consultation rates for influenza-like illnesses for the weeks which (broadly speaking) cover the period from the start of December to the end of March. The extra indicator has been included in [Table 2](#) and in a new chart in [Figure 3](#).

2. Commentary

- 2.1 [Table 1](#) shows recent trends in the seasonal increase in mortality in the winter for Scotland as a whole. It is estimated that there were about 4,800 'additional' deaths in Scotland during winter 2017/18. This was 2,070 more than the corresponding figure of 2,730 for the previous winter, and the largest value since winter 1999/2000, when the seasonal increase in mortality was 5,190. The series starts with winter 1951/52. The seasonal increase of 4,800 in winter 2017/18 was larger than in 48 of the previous 66 winters, and larger than the average for those 66 winters (which was roughly 3,840). The figure for winter 2017/18 exceeded the level seen in all of the previous ten winters, and in 19 of the previous 20 winters.
- 2.2 [Table 1](#) also shows the extent to which the seasonal increase in mortality in the winter affects the elderly, particularly those aged 75 and over. In the past ten winters, the percentage of the additional deaths accounted for by people aged 75 to 84 ranged between 28% (in 2017/18) and 33% (in 2008/09 and 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 31% 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 in mortality is greatest for those aged 85 and over. For example, winter 2014/15 had almost 17 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 mortality 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).

2.3 [Figure 1](#) shows the seasonal increase in mortality for each winter from 1951/52 individually (the bars) and as a 5 year moving average (the 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-or-so years. It also shows that there have been unusually large figures in some years (including, in recent years, 4,060 in winter 2014/15, and 4,800 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 had 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 has risen recently (due, for example, to winters 2014/15 and 2017/18 entering the calculation): while its latest value (3,208) is the twenty-third lowest ever, it is greater than all of the previous ten values, and 15 of the previous 20 values. Until its latest five values were calculated, the 5-year moving average appeared to have more-or-less 'levelled off' since the early 2000s: the average of the nine values (before the latest five) was 2,509, and seven of those nine values had been within 100 of 2,500. However, its latest value (3,208) is well above the top of that range. Although the 5-year moving average is now clearly above the level that had applied since the early 2000s, it is too soon to say whether there has been a change in the long-term trend: the recent rise in the 5-year moving average could just be a short-term one, like that which was seen around the middle of the 1990s, after which the 5-year moving average fell for several years.

2.4 [Table 2](#) gives the figures for the 67 winters for which these statistics are available. The 1,420 'additional' deaths in winter 2011/12 is the lowest figure in the whole series. Winter 2013/14 had the second lowest seasonal increase in mortality (1,600) recorded since the series started in 1951/52. Winter 2005/06 had the third lowest number (1,780), winter 2001/02 had the fourth lowest (1,840), and winter 2012/13 had the fifth lowest (2,000). The winters of 2007/08 and 2000/01 had the eighth and ninth lowest figures (2,180 and 2,220, respectively). As a result, the

latest 18 winters have had 7 of the 10 lowest seasonal increases in mortality in the 67 years for which these statistics are available. In addition, as the twelfth and thirteenth lowest figures were 2,450 in winter 2010/11 and 2,510 in winter 2002/03, the latest 18 winters have had 9 of the 13 lowest seasonal increases in mortality. The other winters which had seasonal increases in mortality which were among the 13 lowest such figures were 1966/67 (2,020 - sixth lowest), 1988/89 (2,160 - seventh lowest), 1994/95 (2,310 - tenth lowest) and 1990/91 (2,430 - eleventh lowest). However, the seasonal increase of 4,800 in winter 2017/18 was (jointly with winter 1968/69) the eighteenth highest of the 67 winters.

2.5 [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 in mortality in the winter 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.

2.6 [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 (per cent) for a particular cause of death / age-group 'cell' if it had two 'additional' deaths and there was, on average, only one death per four month non-winter period. The figures for the latest winter are provisional, and therefore subject to revision, because NRS has yet to receive final information about the causes of some of the deaths which were registered between January and July of the latest year. However, based on a comparison of 'provisional' and 'final' figures for winter 2014/15, it seems likely that only a small percentage of the (rounded) numbers of additional deaths will change by more than 10. 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 apparently large percentage changes, between their provisional and final versions, due to small revisions to the unrounded numbers from which they are calculated.)

2.7 The underlying causes of most of the 4,800 'additional' deaths in winter 2017/18 were circulatory system diseases (410 additional deaths from coronary heart disease, 410 from cerebrovascular disease, and 280 from other circulatory system diseases), respiratory system diseases (810 additional deaths from influenza and pneumonia, 670 deaths from chronic lower respiratory diseases, such as chronic obstructive pulmonary disease, and 220 from other respiratory system diseases), dementia (650 additional deaths) and Parkinson's, Alzheimer's and other degenerative nervous system diseases (480 additional deaths). Taken together, those medical conditions caused 82% of the additional deaths in winter 2017/18

(and between 73% and 95% in each of the other winters shown in the table) even though they are responsible for only about half of all deaths registered in Scotland.

2.8 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 4.8 and 4.9). 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.

2.9 The other tables provide the numbers of deaths registered each winter, and in the adjacent four-month periods, for Scotland, NHS Board areas and Local Authority areas. 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

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 4.15°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 the whole period. (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 fifth coldest in the 60 years from 1951/52 to 2010/11, inclusive: it had a mean winter temperature of 1.28°C. Only four of the 59 preceding winters had a lower mean temperature (1962/63: 0.16°C; 1976/77: 1.02°C; 1978/79: 0.45°C; and 2009/10: 0.39°C) and the average of the mean temperatures for those 59 winters was 2.57°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 3.56°C. Eight of the preceding 60 winters had higher mean temperatures (ranging from 3.61°C in winter 2007/08 to 5.12°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.

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 HPS. 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. (However, HPS advises that a software provider issue [for INPS-Vision practices] meant that during the 2017/18 season data was only available from around 50% of 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, HPS advises that the correlation is stronger when influenza A (H3N2) is the dominant strain.). 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 HPS's regular [Influenza Updates](#) (available on their website) which include a chart comparing the latest and the previous influenza seasons' GP consultation rates for flu. For example, the updates 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. HPS 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, the last winter with an apparently extremely high level of influenza incidence (with an indicator value which was many times greater than

the indicator values of all the subsequent winters – for example, 5-6 times those of the two later winters which had the next highest indicator values) was winter 1999/2000, when the seasonal increase in mortality 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 4,800 in winter 2017/18). However, HPS 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.

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. Information about the numbers of deaths from different causes is given in the [Vital Events Reference Tables](#) on the NRS website. There, Table 6.01 shows that, in most calendar years, relatively few deaths are registered for which the underlying cause is recorded as influenza (ICD-10 codes J09-J11): for example, 10 in 2008, 12 in 2010, 19 in 2012 and 23 in 2014. In recent calendar years, the largest such figures have been:

- first, 136 deaths registered in 2017 (which is small in relation to the seasonal increase in mortality of 2,730 in winter 2016/17 – refer to [Table 1](#));
- second, 94 deaths registered in 2015 (again, small in relation to the seasonal increase in mortality of 4,060 in winter 2014/15);
- third, 79 in 2016 (also small relative to the seasonal increase of 2,850 in winter 2015/16); and
- fourth, 62 in 2009 (small in relation to the seasonal increase in mortality of 3,510 in winter 2008/09).

That figure of 62 includes all the deaths for which the underlying cause was H1N1/‘swine’ flu that were registered in 2009. H1N1/‘swine’ flu accounted for only a small proportion of winter 2009/10’s seasonal increase in mortality. The HPS [Influenza Update](#) dated 15 April 2010 stated that ‘the total number of reports received of deaths among those with confirmed Influenza A H1N1v in Scotland remains at 69’, a figure which covers the period since H1N1/‘swine’ flu started in Scotland in Spring 2009, so the number of H1N1/‘swine’ flu deaths included in the figure for the seasonal increase in mortality in winter 2009/10 will be less than that.

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

4.1 The seasonal increase in mortality in the winter is defined as the difference between the number of deaths in the four-month ‘winter’ period (December to March, inclusive) and the average number of deaths in the two four-month periods which precede winter (August to November) and follow winter (April to July). This is a standard definition which is used by the Office for National Statistics, the World Health Organisation and others (who may describe it as – for example - ‘excess winter deaths’ or ‘excess winter mortality’).

- 4.2 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).
- 4.3 The numbers of deaths registered each winter, and in the adjacent four-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.
- 4.4 [Table 4](#) shows that 23,137 deaths were registered in Scotland in the four months of winter 2017/18 (December 2017 to March 2018). This was more than in the preceding 4-month period (August 2017 to November 2017: 18,694 deaths) and in the following 4-month period (April 2018 to July 2018: 17,986 deaths). The average of the figures for the 4-month periods before and after the winter is 18,340. Taking the difference between that average and the total for the four winter months (23,137 deaths), gives a seasonal increase in mortality of 4,800 for winter 2017/18 (after rounding the result to the nearest ten). The figures for the seasonal increase in mortality for all the other winters were calculated using the same method.
- 4.5 [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 Authority area.
- 4.6 The figures in [Table 4](#) may be used to compare winters in terms of their actual numbers of deaths as well as on the basis of their seasonal increases in mortality. In terms of the numbers of deaths registered in Scotland, winter 2017/18 was unusually bad for recent years. The total of 23,137 deaths registered in the four months of winter 2017/18 was 2,191 more than the corresponding figure for winter 2016/17 (20,946) 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 (22,013), and only two other winters had more than 21,000 deaths: winter 2002/03 (21,058 deaths) and winter 2003/04 (21,024 deaths).
- 4.7 In contrast, the 18,675 deaths registered in Scotland in winter 2013/14 was the lowest number for any of the 28 winters that are shown in [Table 4](#). It was also the lowest value for any of the 67 winters for which those values have been calculated, which start with winter 1951/52. This is because, of the winters from 1951/52 to 1989/90 (which are not shown in [Table 4](#)), the one with the fewest deaths was winter 1966/67, when 21,431 deaths were registered.
- 4.8 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 which were made with effect from the start of 2011 and 2017. They broke the

continuity of the seasonal increase in mortality 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).

4.9 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 clear 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:
 - influenza and pneumonia – reduction in numbers due to the change;
 - other respiratory system diseases – reduction;
 - dementia – increase;
 - other mental and behavioural disorders – reduction;
 - Parkinson's, Alzheimer's and other degenerative nervous system diseases – increase;
 - genitourinary system diseases – reduction;
 - other external causes of death – increase;
- 2017 changes:
 - other respiratory system diseases – reduction;
 - dementia – increase;
 - Parkinson's, Alzheimer's and other degenerative nervous system diseases – 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).

5. Background: about these statistics

- 5.1 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.
- 5.2 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.

- 5.3 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 28 August 2018, which included data for deaths which had been registered by the weekend of Sunday 26 August 2018. Therefore, records for all the deaths which were registered in the winter (December to March), or in the subsequent four 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. Also (as mentioned in paragraph 2.6), 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. Finally, it should be noted that, by law, a death which occurs in Scotland must be registered within eight days - so figures which 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.
- 5.4 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.
- 5.5 A separate document, [Increased Winter Mortality - Background Note](#) (PDF 39 Kb), published in October 2010 (available on the NRS website), 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 a comparison of the figures for a number of European countries, mentions previous publications on this topic, and provides references to the sources of the material. The main points to note are:
- high cold-related mortality is associated with low indoor temperatures, and with people not wearing appropriate clothing when outdoors in cold weather;
 - increased winter mortality was at the same level in Scotland as the overall mean for the 14 European countries covered by a comparative study; and
 - the seasonal increase in mortality in the winter is 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.
- 5.6 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.
- 5.7 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.
- 5.8 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 2017/18

	Seasonal increase in mortality ^{1, 2} by age at death					Seasonal increase per 1,000 population at the mid-year before the winter ³				
	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	910	970	2,850	0.10	0.97	2.83	8.38	0.53
2016/17	200	280	820	1,440	2,730	0.05	0.50	2.54	12.10	0.51
2017/18 provisional	330	610	1,360	2,500	4,800	0.07	1.08	4.17	20.52	0.88

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 from them.

Table 2: Seasonal Increase in Mortality in the Winter, mean winter temperature and indicators of level of influenza activity, Scotland, 1951/52 to 2017/18

Year	Seasonal increase in mortality in the winter ¹		Mean winter temperature ² (deg. C.)	Indicators of influenza activity ³ (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		1.89			
1952/53	5,890		2.94			
1953/54	4,770	5,634	2.70			
1954/55	5,820	5,140	1.41			
1955/56	6,450	4,854	1.52			
1956/57	2,770	5,734	3.47			
1957/58	4,460	5,388	2.06			
1958/59	9,170	5,166	1.66			
1959/60	4,090	5,630	2.12			
1960/61	5,340	6,160	2.56			
1961/62	5,090	5,068	2.13			
1962/63	7,110	5,092	0.16			
1963/64	3,710	5,294	3.09			
1964/65	4,210	4,680	1.87			
1965/66	6,350	4,378	1.60			
1966/67	2,020	4,596	3.00			
1967/68	5,600	5,162	1.91			
1968/69	4,800	4,434	1.55			
1969/70	7,040	5,024	1.52			
1970/71	2,710	4,720	3.41			
1971/72	4,970	4,322	3.56	3,412		
1972/73	4,080	3,606	3.23	1,286		
1973/74	2,810	4,352	3.50	2,081		
1974/75	3,460	4,064	3.88	1,144		
1975/76	6,440	4,218	3.72	2,951		
1976/77	3,530	4,494	1.02	656		
1977/78	4,850	4,336	1.77	2,214		
1978/79	4,190	3,802	0.45	951		
1979/80	2,670	4,356	2.47	967		
1980/81	3,770	4,300	2.97	800		
1981/82	6,300	4,020	1.36	1,542		
1982/83	4,570	4,112	2.49	1,309		
1983/84	2,790	4,300	2.53	1,698		
1984/85	3,130	3,688	2.12	705		
1985/86	4,710	3,292	1.28	1,107		
1986/87	3,240	3,166	2.00	847		
1987/88	2,590	3,632	3.14	337		
1988/89	2,160	3,176	5.12	819		
1989/90	5,460	3,106	3.34	2,753		
1990/91	2,430	3,136	1.99	319		
1991/92	2,890	3,222	3.94	928		
1992/93	2,740	2,592	3.42	979		
1993/94	2,590	2,836	1.77	2,053		
1994/95	2,310	2,986	2.89	219		
1995/96	3,650	2,960	1.76	907		

Table 2, continued

Year	Seasonal increase in mortality in the winter ¹		Mean winter temperature ² (deg. C.)	Indicators of influenza activity ³ (Index: 2004/05 = 100)		
	Additional deaths (Dec-Mar)	5-year moving average		'Fluspotter' (season peak)	SISRS 'season peak'	SISRS 'weeks 49 to 13 total'
1996/97	3,640	3,392	2.48	1,763		
1997/98	2,610	3,968	4.51	272		
1998/99	4,750	3,682	3.26	718		
1999/00	5,190	3,322	3.03	1,973		
2000/01	2,220	3,302	2.16	144		
2001/02	1,840	2,920	3.39	95		
2002/03	2,510	2,434	2.96	98		
2003/04	2,840	2,346	3.20	321	107	66
2004/05	2,760	2,528	3.94	100	100	100
2005/06	1,780	2,462	3.35	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	2.60		230	114
2009/10	2,760	2,464	0.39		159	50
2010/11	2,450	2,428	1.28		184	98
2011/12	1,420	2,046	3.56		14	21
2012/13	2,000	2,306	2.49		41	51
2013/14	1,600	2,386	4.15		15	20
2014/15	4,060	2,648	2.87		32	34
2015/16	2,850	3,208	3.62		21	29
2016/17.	2,730		4.42		17	25
2017/18 prov.	4,800		2.26		80	73

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: Weather - UK Climate - Climate Summaries - Download regional values, and then select the link for 'Scotland Mean Temp' which appears under the 'Year ordered statistics' heading).

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

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 HPS website on seasonal influenza surveillance.

In 2018, HPS provided NRS with revised SISRS figures for some of the previous flu seasons. As a result, the 'SISRS season peak' index values for 2009/10 and some of the later winters were revised for the publication of 'Winter Mortality in Scotland 2017/18'.

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, 2008/09 to 2017/18

Scotland

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	3,510	370	590	1,170	1,370	21	10	18	22	28
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	910	970	16	13	16	17	17
2016/17	2,730	200	280	820	1,440	15	6	8	15	24
2017/18 (P)	4,800	330	610	1,360	2,500	26	9	18	25	43

Ayrshire and Arran

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	380	30	50	160	140	29	11	19	42	35
2009/10	190	10	10	90	70	14	4	5	23	19
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	27	29
2015/16	180	0	60	90	30	13	0	20	23	7
2016/17	240	0	30	40	180	17	1	12	8	40
2017/18 (P)	340	0	50	140	160	23	0	15	29	34

Borders

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	100	10	20	40	30	24	15	23	34	21
2009/10	50	-10	10	20	30	12	.	9	18	25
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 (P)	140	0	10	40	90	31	0	15	26	59

Dumfries and Galloway

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	140	20	30	40	40	25	23	29	25	24
2009/10	100	10	10	30	50	18	12	12	17	27
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 (P)	190	10	40	30	110	31	9	41	17	46

Table 3, continued

Fife

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	280	10	60	80	130	23	6	25	21	36
2009/10	190	30	40	60	60	16	14	17	16	16
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 (P)	370	40	70	100	170	30	16	30	26	41

Forth Valley

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	280	40	40	90	110	32	21	23	32	45
2009/10	100	20	20	-10	70	11	14	10	.	25
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	6	14
2017/18 (P)	270	-10	60	90	130	27	.	31	29	44

Grampian

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	270	20	50	60	150	16	5	16	11	30
2009/10	210	40	30	50	100	13	12	10	9	18
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	11	24
2016/17	280	20	-30	110	180	16	6	.	21	30
2017/18 (P)	490	60	50	120	260	28	18	15	25	43

Greater Glasgow and Clyde

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	740	100	140	180	320	19	11	18	15	31
2009/10	540	120	60	200	160	14	14	8	17	15
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	290	13	4	6	15	24
2017/18 (P)	1,070	130	140	260	540	27	15	18	22	47

Table 3, continued

Highland

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	150	0	40	30	70	13	1	18	10	23
2009/10	200	40	30	50	80	19	20	13	15	25
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 (P)	220	-10	0	70	160	19	.	2	19	41

Lanarkshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	520	90	100	200	140	26	19	23	33	27
2009/10	460	110	60	170	120	22	24	14	26	24
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	15	21
2016/17	340	70	30	110	140	15	15	6	15	21
2017/18 (P)	570	50	130	140	260	25	10	29	18	41

Lothian

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	420	30	70	170	150	18	5	17	24	20
2009/10	380	40	60	110	170	17	9	14	15	25
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 (P)	580	50	10	180	340	23	9	3	25	39

Orkney

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	10	0	10	-10	10	14	9	42	.	51
2009/10	0	0	0	0	0	.	9	.	8	.
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 (P)	20	0	10	0	0	21	20	50	12	17

Table 3, continued

Shetland

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	0	-10	0	0	10	2	.	29	.	28
2009/10	10	0	0	0	10	17	29	.	12	28
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 (P)	20	10	0	0	10	28	50	.	7	57

Tayside

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	220	40	0	90	100	16	15	.	20	22
2009/10	300	30	50	100	130	22	11	20	23	28
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 (P)	480	20	40	160	260	32	7	15	39	49

Western Isles

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008/09	10	-10	0	20	-10	8	.	12	61	.
2009/10	40	10	10	20	0	35	53	29	84	.
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 (P)	30	0	10	20	10	31	.	59	71	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 - 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, Scotland, 1990/91 to 2017/18

Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
	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
1991/92	22,217	19,305	19,352	2,889	2,890
1992/93	22,416	19,417	19,929	2,743	2,740
1993/94	22,504	21,104	18,732	2,586	2,590
1994/95	21,510	19,103	19,301	2,308	2,310
1995/96	22,821	19,074	19,260	3,654	3,650
1996/97	22,438	18,585	19,005	3,643	3,640
1997/98	21,320	18,311	19,105	2,612	2,610
1998/99	23,163	18,856	17,973	4,749	4,750
1999/2000	23,379	18,407	17,974	5,189	5,190
2000/01	20,388	18,061	18,281	2,217	2,220
2001/02	20,366	18,239	18,815	1,839	1,840
2002/03	21,058	18,599	18,499	2,509	2,510
2003/04	21,024	18,616	17,749	2,842	2,840
2004/05	20,658	18,064	17,736	2,758	2,760
2005/06	19,651	17,619	18,127	1,778	1,780
2006/07	20,384	17,526	17,739	2,752	2,750
2007/08	19,900	17,600	17,850	2,175	2,180
2008/09	20,532	17,075	16,969	3,510	3,510
2009/10	19,688	17,059	16,789	2,764	2,760
2010/11	19,626	17,397	16,958	2,449	2,450
2011/12	19,119	17,269	18,127	1,421	1,420
2012/13	19,908	17,773	18,045	1,999	2,000
2013/14	18,675	16,848	17,297	1,603	1,600
2014/15	22,013	17,493	18,410	4,062	4,060
2015/16	20,509	17,625	17,686	2,854	2,850
2016/17	20,946	18,335	18,096	2,731	2,730
2017/18 provisional	23,137	18,694	17,986	4,797	4,800

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.

Table 5: Seasonal Increase in Mortality in the Winter - underlying numbers of registrations of deaths, by NHS Board area of usual residence, 2014/15 to 2017/18

NHS Board area	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
Ayrshire and Arran						
	2014/15	1,752	1,398	1,508	299	300
	2015/16	1,587	1,436	1,377	181	180
	2016/17	1,661	1,460	1,374	244	240
	2017/18 provisional	1,864	1,505	1,535	344	340
Borders						
	2014/15	569	439	451	124	120
	2015/16	467	382	405	74	70
	2016/17	476	420	416	58	60
	2017/18 provisional	570	404	465	136	140
Dumfries and Galloway						
	2014/15	746	579	602	156	160
	2015/16	701	556	587	130	130
	2016/17	723	567	617	131	130
	2017/18 provisional	803	623	605	189	190
Fife						
	2014/15	1,493	1,186	1,295	253	250
	2015/16	1,477	1,208	1,285	231	230
	2016/17	1,501	1,293	1,384	163	160
	2017/18 provisional	1,622	1,312	1,187	373	370
Forth Valley						
	2014/15	1,177	916	974	232	230
	2015/16	1,134	980	992	148	150
	2016/17	1,077	1,053	960	71	70
	2017/18 provisional	1,254	984	991	267	270
Grampian						
	2014/15	2,192	1,721	1,809	427	430
	2015/16	2,016	1,786	1,707	270	270
	2016/17	2,030	1,774	1,726	280	280
	2017/18 provisional	2,272	1,803	1,752	495	490
Greater Glasgow and Clyde						
	2014/15	4,881	3,855	4,002	953	950
	2015/16	4,430	3,792	3,950	559	560
	2016/17	4,565	4,020	4,027	542	540
	2017/18 provisional	5,038	4,103	3,831	1,071	1,070

Table 5, continued

NHS Board area	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
Highland						
	2014/15	1,322	1,111	1,268	133	130
	2015/16	1,352	1,137	993	287	290
	2016/17	1,346	1,191	1,116	193	190
	2017/18 provisional	1,406	1,187	1,178	224	220
Lanarkshire						
	2014/15	2,751	2,176	2,304	511	510
	2015/16	2,549	2,205	2,168	363	360
	2016/17	2,613	2,294	2,251	341	340
	2017/18 provisional	2,873	2,353	2,249	572	570
Lothian						
	2014/15	2,929	2,437	2,460	481	480
	2015/16	2,773	2,426	2,478	321	320
	2016/17	2,803	2,518	2,444	322	320
	2017/18 provisional	3,139	2,614	2,509	578	580
Orkney						
	2014/15	78	57	76	12	10
	2015/16	75	67	75	4	0
	2016/17	82	77	91	-2	0
	2017/18 provisional	95	86	71	17	20
Shetland						
	2014/15	96	74	82	18	20
	2015/16	84	87	68	7	10
	2016/17	85	78	67	13	10
	2017/18 provisional	90	60	81	20	20
Tayside						
	2014/15	1,882	1,439	1,462	432	430
	2015/16	1,726	1,472	1,492	244	240
	2016/17	1,843	1,479	1,519	344	340
	2017/18 provisional	1,972	1,552	1,428	482	480
Western Isles						
	2014/15	145	105	117	34	30
	2015/16	138	91	109	38	40
	2016/17	141	111	104	34	30
	2017/18 provisional	139	108	104	33	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, 2008/09 to 2017/18

Aberdeen City

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	130	40	10	20	60	20	28	8	9	34
2009-10	30	20	10	-10	0	4	15	9	.	1
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	100	20	0	30	40	14	15	1	19	17
2016/17	60	0	-20	40	30	8	1	.	21	13
2017/18 (P)	250	50	30	60	110	37	35	24	37	45

Aberdeenshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	90	-20	20	30	50	13	.	16	16	24
2009-10	120	20	0	40	60	17	13	1	16	28
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	170	20	-10	50	100	22	18	.	22	39
2017/18 (P)	170	0	0	50	120	22	3	2	20	44

Angus

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	70	10	0	30	20	17	19	7	20	18
2009-10	100	0	20	30	50	25	.	31	28	38
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 (P)	140	10	10	50	80	34	12	10	41	49

Argyll and Bute

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	40	10	0	-10	40	13	24	.	.	36
2009-10	60	10	10	30	20	17	13	10	27	14
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 (P)	60	-10	10	20	50	18	.	8	22	38

Table 6, continued

City of Edinburgh

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	210	-20	20	80	120	15	.	10	20	28
2009-10	210	30	20	40	120	16	11	11	10	28
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	110	13	9	16	4	21
2017/18 (P)	340	50	0	110	180	25	18	1	31	34

Clackmannanshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	80	10	10	30	30	50	26	27	66	67
2009-10	10	0	10	-10	10	9	10	57	.	21
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 (P)	40	0	10	10	20	22	.	51	10	45

Dumfries and Galloway

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	140	20	30	40	40	25	23	29	25	24
2009-10	100	10	10	30	50	18	12	12	17	27
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 (P)	190	10	40	30	110	31	9	41	17	46

Dundee

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	90	10	0	50	20	17	10	4	32	16
2009-10	110	20	20	30	40	20	16	17	18	28
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 (P)	180	10	30	50	90	34	9	29	36	55

Table 6, continued

East Ayrshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	110	10	20	40	40	27	13	24	31	38
2009-10	40	20	-10	30	10	10	19	.	21	8
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	29	59
2015/16	40	0	20	20	10	8	.	20	12	4
2016/17	90	20	20	10	40	19	19	24	6	33
2017/18 (P)	100	-10	10	40	50	22	.	10	30	39

East Dunbartonshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	70	10	0	20	30	23	20	8	21	36
2009-10	30	0	-10	20	10	8	1	.	20	13
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	18	37
2016/17	50	0	-10	20	40	15	7	.	15	28
2017/18 (P)	40	0	0	10	30	11	.	.	11	21

East Lothian

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	60	10	20	20	10	19	18	30	22	11
2009-10	80	10	10	20	40	26	27	16	23	35
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	21	10	31	5	34
2017/18 (P)	80	0	10	30	40	22	5	9	24	33

East Renfrewshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	30	10	0	10	20	11	11	4	6	18
2009-10	40	10	-10	20	20	14	19	.	21	20
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 (P)	100	10	10	20	50	33	28	26	27	43

Table 6, continued

Falkirk

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	90	10	20	10	50	19	14	18	6	43
2009-10	60	10	10	10	30	12	15	12	5	18
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 (P)	160	-10	50	70	50	30	.	43	40	34

Fife

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	280	10	60	80	130	23	6	25	21	36
2009-10	190	30	40	60	60	16	14	17	16	16
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 (P)	370	40	70	100	170	30	16	30	26	41

Glasgow

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	460	40	110	140	160	22	8	27	22	33
2009-10	300	80	30	100	90	15	16	6	17	19
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	30
2017/18 (P)	550	80	100	130	240	27	14	25	23	47

Highland

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	100	-10	40	40	30	14	.	29	18	17
2009-10	140	30	20	20	70	20	25	14	10	31
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 (P)	160	0	0	40	110	19	2	.	18	41

Table 6, continued

Inverclyde

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	50	10	0	10	30	16	15	.	9	41
2009-10	30	10	10	0	0	8	17	23	1	.
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	30	20	12	.	.	28	15
2017/18 (P)	90	0	10	20	60	29	5	7	21	70

Midlothian

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	30	10	10	10	0	10	10	15	15	3
2009-10	-10	-10	-10	20	-10	.	.	.	24	.
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 (P)	30	-10	-10	10	40	10	.	.	10	44

Moray

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	50	0	20	10	30	17	.	31	6	34
2009-10	70	0	20	20	30	24	5	32	19	38
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 (P)	80	10	20	20	30	23	15	28	14	34

Na h-Eileanan Siar

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	10	-10	0	20	-10	8	.	12	61	.
2009-10	40	10	10	20	0	35	53	29	84	.
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 (P)	30	0	10	20	10	31	.	59	71	10

Table 6, continued

North Ayrshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	130	0	40	60	30	25	.	37	43	22
2009-10	60	-20	20	30	20	12	.	22	19	18
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 (P)	110	0	10	50	50	18	.	5	25	32

North Lanarkshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	230	40	50	110	30	22	17	21	33	13
2009-10	280	80	50	120	40	27	32	22	37	15
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	8	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 (P)	350	60	100	50	130	30	25	47	13	43

Orkney

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	10	0	10	-10	10	14	9	42	.	51
2009-10	0	0	0	0	0	.	9	.	8	.
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 (P)	20	0	10	0	0	21	20	50	12	17

Perth and Kinross

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	70	10	-10	10	50	14	19	.	8	29
2009-10	100	20	10	40	40	21	22	14	26	21
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 (P)	160	0	10	60	90	29	2	6	42	43

Table 6, continued

Renfrewshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	90	20	10	10	50	15	17	10	4	32
2009-10	80	10	20	40	10	12	9	13	18	8
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	.	20	23
2017/18 (P)	180	10	20	60	90	28	11	12	27	51

Scottish Borders

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	100	10	20	40	30	24	15	23	34	21
2009-10	50	-10	10	20	30	12	.	9	18	25
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 (P)	140	0	10	40	90	31	0	15	26	59

Shetland

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	0	-10	0	0	10	2	.	29	.	28
2009-10	10	0	0	0	10	17	29	.	12	28
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 (P)	20	10	0	0	10	28	50	.	7	57

South Ayrshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	140	20	-10	70	60	34	26	.	52	49
2009-10	90	10	0	40	40	21	21	1	29	27
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 (P)	140	10	30	50	50	29	12	32	32	31

Table 6, continued

South Lanarkshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	290	40	50	100	100	31	21	25	32	40
2009-10	180	30	20	50	90	18	15	7	15	32
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 (P)	220	-20	30	90	130	20	.	12	24	38

Stirling

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	110	20	10	50	30	46	33	34	73	36
2009-10	30	10	-10	0	30	11	16	.	.	37
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 (P)	70	-10	0	20	60	24	.	.	19	61

West Dunbartonshire

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	50	10	10	0	20	13	18	12	1	22
2009-10	70	0	20	20	20	22	6	36	22	30
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 (P)	110	30	10	20	60	34	44	13	17	60

Table 6, continued

West Lothian

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2008-09	120	30	20	60	10	28	27	26	42	12
2009-10	90	10	40	20	30	22	7	37	18	29
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 (P)	130	0	20	30	80	25	1	14	20	63

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, 2014/15 to 2017/18

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
Aberdeen City						
	2014/15	858	685	710	161	160
	2015/16	763	670	666	95	100
	2016/17	747	712	670	56	60
	2017/18 provisional	918	679	661	248	250
Aberdeenshire						
	2014/15	935	738	781	176	180
	2015/16	866	774	743	108	110
	2016/17	915	750	750	165	170
	2017/18 provisional	954	809	756	172	170
Angus						
	2014/15	539	420	422	118	120
	2015/16	500	405	483	56	60
	2016/17	538	439	421	108	110
	2017/18 provisional	569	462	387	145	140
Argyll and Bute						
	2014/15	435	355	381	67	70
	2015/16	406	363	314	68	70
	2016/17	411	376	299	74	70
	2017/18 provisional	422	370	346	64	60
City of Edinburgh						
	2014/15	1,664	1,352	1,348	314	310
	2015/16	1,572	1,354	1,414	188	190
	2016/17	1,529	1,380	1,320	179	180
	2017/18 provisional	1,720	1,406	1,355	340	340
Clackmannanshire						
	2014/15	203	164	158	42	40
	2015/16	200	176	179	23	20
	2016/17	194	175	172	21	20
	2017/18 provisional	211	190	155	39	40
Dumfries and Galloway						
	2014/15	746	579	602	156	160
	2015/16	701	556	587	130	130
	2016/17	723	567	617	131	130
	2017/18 provisional	803	623	605	189	190

Table 7, continued

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
Dundee						
	2014/15	688	526	549	151	150
	2015/16	626	541	528	92	90
	2016/17	690	516	556	154	150
	2017/18 provisional	709	553	502	182	180
East Ayrshire						
	2014/15	571	425	462	128	130
	2015/16	465	416	443	36	40
	2016/17	552	495	430	90	90
	2017/18 provisional	574	471	472	103	100
East Dunbartonshire						
	2014/15	405	362	326	61	60
	2015/16	435	321	354	98	100
	2016/17	401	339	360	52	50
	2017/18 provisional	412	382	361	41	40
East Lothian						
	2014/15	405	318	328	82	80
	2015/16	364	338	316	37	40
	2016/17	398	330	330	68	70
	2017/18 provisional	446	397	337	79	80
East Renfrewshire						
	2014/15	373	284	276	93	90
	2015/16	311	263	272	44	40
	2016/17	312	286	319	10	10
	2017/18 provisional	382	290	283	96	100
Falkirk						
	2014/15	625	481	513	128	130
	2015/16	612	517	526	91	90
	2016/17	601	605	530	34	30
	2017/18 provisional	689	509	550	160	160
Fife						
	2014/15	1,493	1,186	1,295	253	250
	2015/16	1,477	1,208	1,285	231	230
	2016/17	1,501	1,293	1,384	163	160
	2017/18 provisional	1,622	1,312	1,187	373	370

Table 7, continued

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
Glasgow						
	2014/15	2,462	1,964	2,132	414	410
	2015/16	2,261	1,955	2,040	264	260
	2016/17	2,355	2,006	2,028	338	340
	2017/18 provisional	2,543	2,096	1,895	548	550
Highland						
	2014/15	887	756	887	66	70
	2015/16	946	774	679	220	220
	2016/17	935	815	817	119	120
	2017/18 provisional	984	817	832	160	160
Inverclyde						
	2014/15	402	296	308	100	100
	2015/16	363	300	315	56	60
	2016/17	393	339	365	41	40
	2017/18 provisional	414	342	300	93	90
Midlothian						
	2014/15	325	272	295	42	40
	2015/16	303	261	264	41	40
	2016/17	303	289	306	6	10
	2017/18 provisional	324	275	312	31	30
Moray						
	2014/15	399	298	318	91	90
	2015/16	387	342	298	67	70
	2016/17	368	312	306	59	60
	2017/18 provisional	400	315	335	75	80
Na h-Eileanan Siar						
	2014/15	145	105	117	34	30
	2015/16	138	91	109	38	40
	2016/17	141	111	104	34	30
	2017/18 provisional	139	108	104	33	30
North Ayrshire						
	2014/15	638	509	564	102	100
	2015/16	573	543	497	53	50
	2016/17	582	520	500	72	70
	2017/18 provisional	677	569	575	105	110

Table 7, continued

Local authority	Period	Number of deaths registered			Seasonal increase in mortality in the winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
North Lanarkshire						
	2014/15	1,379	1,119	1,170	235	230
	2015/16	1,292	1,151	1,036	199	200
	2016/17	1,355	1,170	1,111	215	210
	2017/18 provisional	1,511	1,219	1,106	349	350
Orkney						
	2014/15	78	57	76	12	10
	2015/16	75	67	75	4	0
	2016/17	82	77	91	-2	0
	2017/18 provisional	95	86	71	17	20
Perth and Kinross						
	2014/15	655	493	491	163	160
	2015/16	600	526	481	97	100
	2016/17	615	524	542	82	80
	2017/18 provisional	694	537	539	156	160
Renfrewshire						
	2014/15	775	612	620	159	160
	2015/16	699	633	657	54	50
	2016/17	741	689	630	82	80
	2017/18 provisional	831	660	642	180	180
Scottish Borders						
	2014/15	569	439	451	124	120
	2015/16	467	382	405	74	70
	2016/17	476	420	416	58	60
	2017/18 provisional	570	404	465	136	140
Shetland						
	2014/15	96	74	82	18	20
	2015/16	84	87	68	7	10
	2016/17	85	78	67	13	10
	2017/18 provisional	90	60	81	20	20
South Ayrshire						
	2014/15	543	464	482	70	70
	2015/16	549	477	437	92	90
	2016/17	527	445	444	83	80
	2017/18 provisional	613	465	488	137	140

Table 7, continued

Local Authority	Period	Number of deaths registered			Seasonal Increase in Mortality in the Winter (or seasonal difference) ¹	
		Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
South Lanarkshire						
	2014/15	1,372	1,057	1,134	277	280
	2015/16	1,257	1,054	1,132	164	160
	2016/17	1,258	1,124	1,140	126	130
	2017/18 provisional	1,362	1,134	1,143	224	220
Stirling						
	2014/15	349	271	303	62	60
	2015/16	322	287	287	35	40
	2016/17	282	273	258	17	20
	2017/18 provisional	354	285	286	69	70
West Dunbartonshire						
	2014/15	464	337	340	126	130
	2015/16	361	320	312	45	50
	2016/17	363	361	325	20	20
	2017/18 provisional	456	333	350	115	110
West Lothian						
	2014/15	535	495	489	43	40
	2015/16	534	473	484	56	60
	2016/17	573	519	488	70	70
	2017/18 provisional	649	536	505	129	130

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, 2007/08 to 2017/18

Underlying cause of death⁵ Period

All causes of death

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	2,180	130	320	880	850	12	3	9	16	17
2008/09	3,510	370	590	1,170	1,370	21	10	18	22	28
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	910	970	16	13	16	17	17
2016/17	2,730	200	280	820	1,440	15	6	8	15	24
2017/18 (P)	4,800	330	610	1,360	2,500	26	9	18	25	43

Coronary (ischaemic) Heart Disease (I20-I25)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	290	0	100	140	50	10	.	16	14	7
2008/09	500	70	120	140	170	19	16	23	15	21
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 (P)	410	20	40	190	160	19	6	8	29	25

Cerebrovascular disease (I60-I69)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	280	10	30	110	140	17	6	11	19	20
2008/09	350	0	20	130	200	22	1	8	24	29
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 (P)	410	10	60	120	220	34	5	38	31	41

Other circulatory system diseases (other I00-I99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	130	-10	20	70	40	11	.	10	19	10
2008/09	210	30	50	50	80	19	20	28	13	19
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	19
2017/18 (P)	280	50	40	80	110	20	27	16	19	19

Table 8, continued

Cancer (malignant neoplasms) (C00-C97)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	50	30	-10	30	10	1	2	.	2	1
2008/09	290	10	60	170	50	6	1	5	11	6
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	120	20	20	10	70	2	2	1	0	7
2017/18 (P)	220	50	60	30	80	4	5	4	1	8

Influenza and pneumonia (J09-J18)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	350	20	30	100	210	53	33	46	47	60
2008/09	490	50	20	140	280	76	98	37	76	80
2009/10	280	20	20	60	180	41	28	35	30	51
2010/11	210	60	30	20	110	32	130	45	8	30
2011/12	180	10	20	50	100	28	16	38	30	27
2012/13	330	30	30	90	180	54	79	47	54	52
2013/14	130	20	20	30	60	24	54	39	19	20
2014/15	480	30	50	120	280	90	84	106	87	89
2015/16	320	60	40	100	130	65	134	77	88	44
2016/17	310	20	40	70	190	59	41	76	53	62
2017/18 (P)	810	60	80	200	470	176	157	245	171	172

Chronic lower respiratory diseases (J40-J47)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	310	40	50	150	70	35	40	24	39	39
2008/09	520	60	140	190	120	61	65	66	56	63
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	38	43	25	34	53
2017/18 (P)	670	40	180	260	190	68	36	73	70	76

Other respiratory system diseases (other J00-J99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	190	20	10	90	60	33	53	12	45	28
2008/09	230	20	20	70	120	43	40	35	37	53
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	11	17
2016/17	140	0	10	30	100	27	.	9	21	44
2017/18 (P)	220	10	10	40	160	47	41	23	26	70

Table 8, continued

Dementia (F00-F03)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	220	10	10	100	110	29	118	20	38	24
2008/09	370	20	20	120	220	50	300	37	52	48
2009/10	270	10	10	80	180	35	86	19	34	36
2010/11	210	0	10	60	140	24	.	31	22	26
2011/12	190	-10	10	40	150	18	.	16	13	21
2012/13	350	0	20	90	230	32	20	44	28	33
2013/14	230	0	10	90	130	21	.	16	29	19
2014/15	500	0	20	180	300	42	.	47	51	38
2015/16	320	0	20	100	200	30	25	38	35	27
2016/17	460	0	10	130	310	39	0	24	41	39
2017/18 (P)	650	0	20	120	510	54	27	37	31	66

Other mental and behavioural disorders (F04-F99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	10	-10	0	10	0	3	.	23	58	75
2008/09	60	60	0	10	0	26	26	10	85	.
2009/10	50	50	10	0	0	25	29	29	.	.
2010/11	-10	-10	0	10	0	.	.	.	88	17
2011/12	0	-10	20	-10	10	3	.	135	.	150
2012/13	10	0	10	0	0	8	.	45	16	57
2013/14	30	30	0	0	0	35	56	14	.	27
2014/15	20	10	10	0	0	11	5	22	23	13
2015/16	10	10	-10	0	10	6	8	.	.	118
2016/17	-10	-10	-10	10	0	.	.	.	40	6
2017/18 (P)	70	30	20	20	10	56	34	105	95	44

Parkinson's, Alzheimer's and other degenerative nervous system diseases (G20-G32)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	90	10	20	60	10	30	90	46	49	6
2008/09	90	0	10	40	30	28	24	33	37	21
2009/10	80	0	20	30	30	23	0	64	20	19
2010/11	90	0	10	30	40	23	4	36	21	23
2011/12	80	0	0	30	50	16	23	.	16	20
2012/13	180	-10	20	60	100	33	.	37	29	38
2013/14	90	0	0	30	60	17	.	7	18	20
2014/15	260	10	20	90	140	39	42	41	37	40
2015/16	150	0	20	60	70	20	0	22	23	18
2016/17	240	0	0	110	140	27	.	4	34	27
2017/18 (P)	480	10	40	120	310	51	93	51	35	60

Other nervous system diseases (other G00-G99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	50	20	20	0	0	23	20	43	7	26
2008/09	20	0	10	10	0	11	2	32	17	0
2009/10	40	20	20	0	0	19	15	48	2	.
2010/11	40	10	0	20	10	17	6	8	36	91
2011/12	30	30	-10	0	0	13	33	.	4	0
2012/13	20	0	10	10	0	8	.	9	26	17
2013/14	40	0	30	20	-10	20	4	58	38	.
2014/15	60	20	10	10	10	22	22	16	21	53
2015/16	10	10	0	0	0	4	11	.	.	13
2016/17	60	20	20	20	0	24	15	38	36	11
2017/18 (P)	80	30	30	20	20	34	22	44	33	63

Table 8, continued

Certain infectious and parasitic diseases (A00-B99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	30	0	10	0	20	11	3	14	3	21
2008/09	40	10	10	20	-10	13	12	33	26	.
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 (P)	90	20	10	20	30	39	55	30	31	40

Endocrine, nutritional and metabolic diseases (E00-E90)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	30	0	20	10	0	10	1	27	11	5
2008/09	40	10	20	0	10	13	12	42	.	12
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	29	35	31	26	26
2016/17	40	0	10	10	10	10	3	16	12	9
2017/18 (P)	90	20	10	40	20	21	21	11	28	22

Digestive system diseases (K00-K93)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	80	10	10	50	20	8	1	6	19	9
2008/09	130	40	30	10	50	13	11	17	4	26
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	10	23	.	15	10
2016/17	60	-30	20	30	50	6	.	7	11	18
2017/18 (P)	140	50	-10	40	60	14	19	.	14	23

Genitourinary system diseases (N00-N99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	0	0	0	-10	20	1	4	.	.	10
2008/09	70	10	0	30	30	17	64	.	18	16
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 (P)	60	10	0	10	30	20	69	3	15	20

Table 8, continued

Accidental falls (W00-W19)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	30	0	0	0	30	14	.	.	6	30
2008/09	20	0	10	10	10	8	.	50	11	5
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 (P)	100	0	0	40	60	34	21	13	45	33

Other external causes of death (other V01-Y98)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	0	-10	10	0	10	0	.	17	.	38
2008/09	0	-30	0	10	20	.	.	7	32	69
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 (P)	40	10	0	20	10	5	1	7	43	28

III-defined and unknown causes (R95-R99)

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	0	0	0	0	0	5	.	14	33	180
2008/09	20	10	0	0	0	36	31	56	33	100
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 (P)	-110	-100	-10	0	0	.	.	.	.	.

All other underlying causes of death

	Seasonal increase in mortality in the winter ^{1, 2}					Increased Winter Mortality Index ^{3, 4}				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	30	0	10	-10	30	6	1	15	.	17
2008/09	70	20	10	30	20	16	13	23	25	11
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 (P)	100	10	30	0	60	17	8	43	.	25

Table 8, continued

Circulatory system diseases (I00-I99), Respiratory system diseases (J00-J99), Dementia (F00-F03) and Parkinson's, Alzheimer's and other degenerative diseases (G20-G32)

	Seasonal increase in mortality in the winter ^{1, 2}					Percentage of total seasonal increase may exceed 100% due to negative 'increases' for some of the other causes				
	total of the rounded values for these causes of death									
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2007/08	1,860	100	270	820	690	85%	77%	84%	93%	81%
2008/09	2,760	250	400	880	1,220	79%	68%	68%	75%	89%
2009/10	2,190	230	340	750	900	79%	50%	92%	84%	87%
2010/11	1,800	230	270	610	680	73%	56%	63%	85%	76%
2011/12	1,150	70	120	450	510	81%	30%	109%	102%	78%
2012/13	1,900	70	210	610	980	95%	78%	111%	102%	88%
2013/14	1,250	90	180	430	570	78%	64%	86%	81%	78%
2014/15	3,220	150	400	1,020	1,660	79%	56%	66%	82%	86%
2015/16	2,120	300	410	670	760	74%	67%	77%	74%	78%
2016/17	2,360	220	210	710	1,240	86%	110%	75%	87%	86%
2017/18 (P)	3,930	200	470	1,130	2,130	82%	61%	77%	83%	85%

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 2.8, 4.8 and 4.9.

(P) Data for the latest year are provisional.

Figure 1: Seasonal Increase in Mortality in the Winter, Scotland, 1951/52 to 2017/18

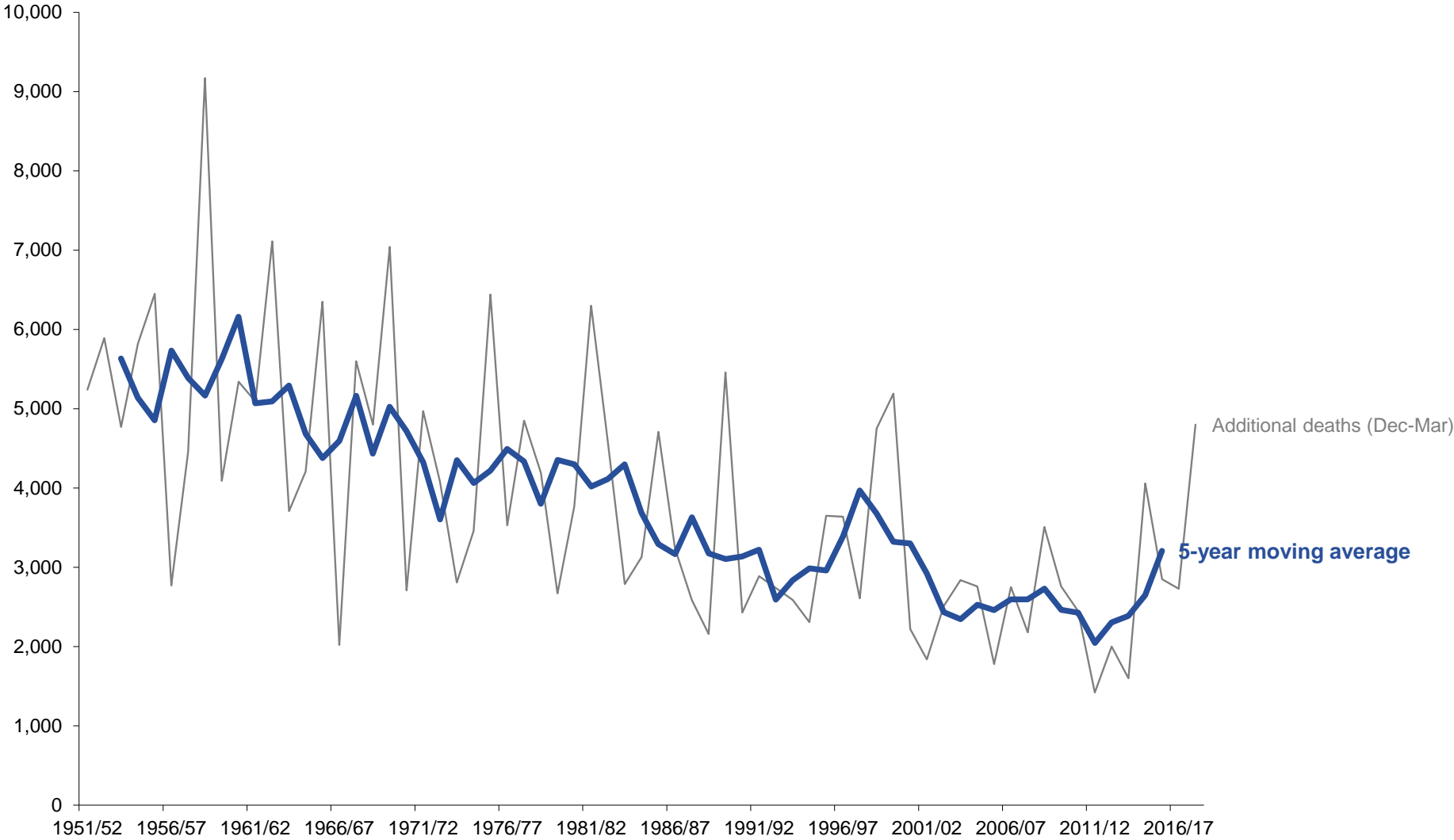
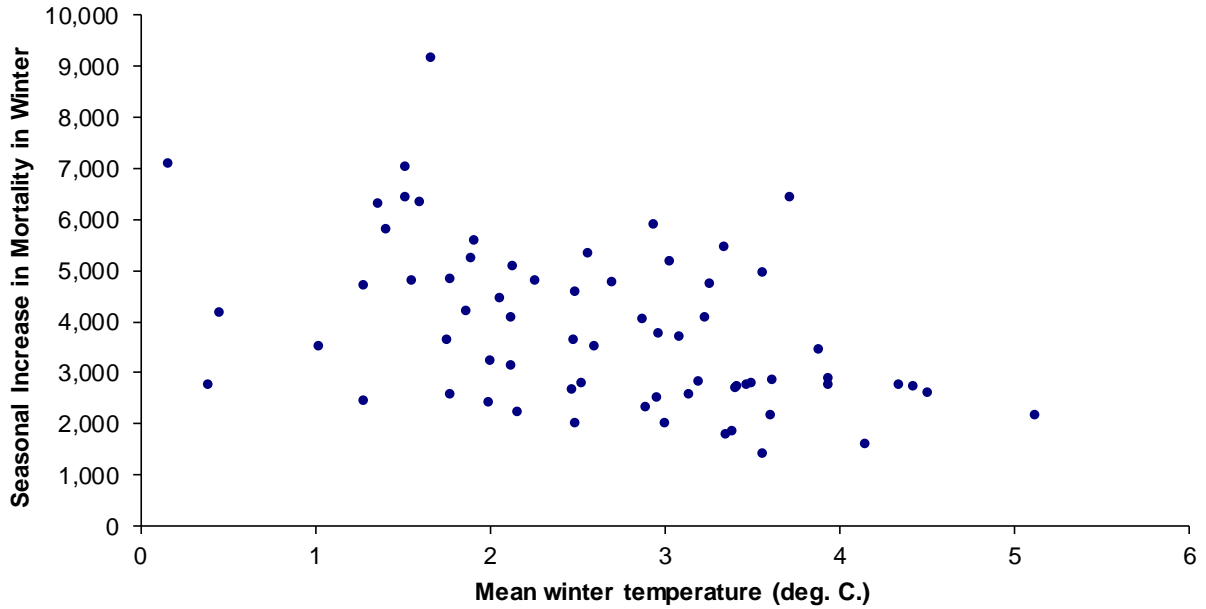


Figure 2: Seasonal Increase in Mortality in the Winter and mean winter temperature (deg.C.), Scotland: (a) winter 1951/52 to winter 2017/18; and (b) winter 1998/99 to winter 2017/18

(a) winter 1951/52 to winter 2017/18



(b) winter 1998/99 to winter 2017/18

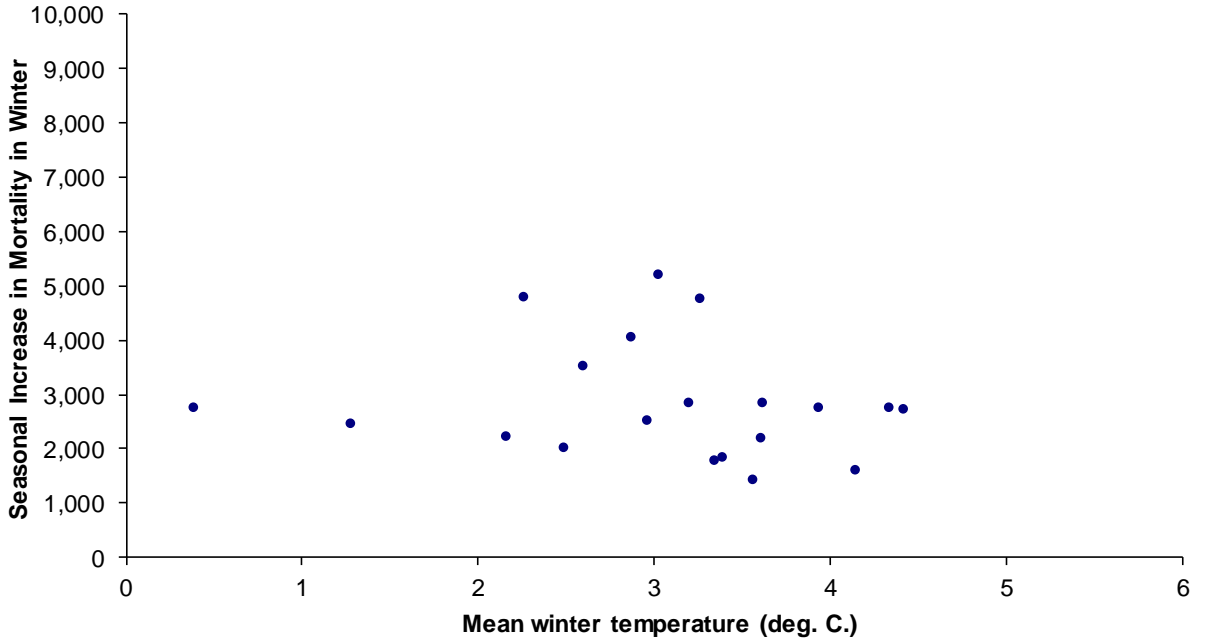
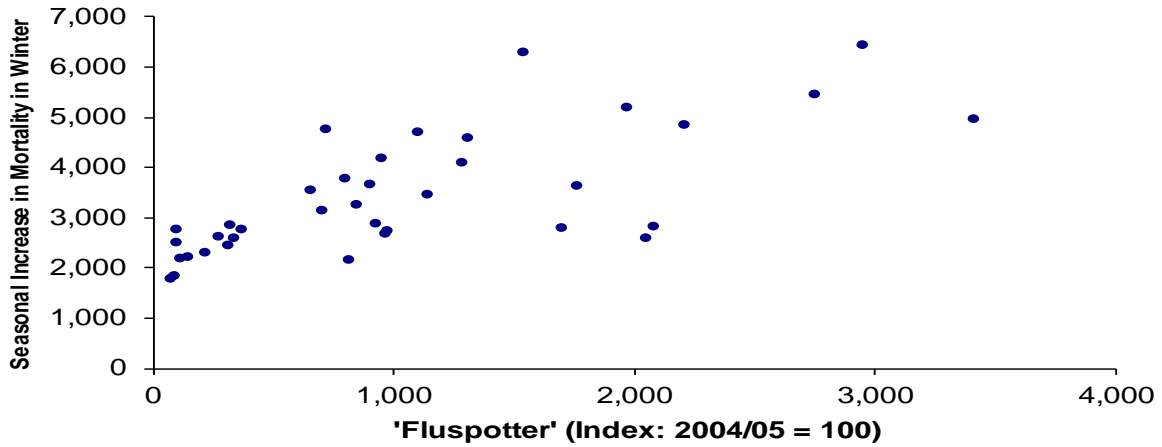


Figure 3: Seasonal Increase in Mortality in the Winter and indicators of influenza activity, Scotland: (a) winters and 'flu seasons' - 1971/72 to 2007/08, inclusive; and (b) and (c) winters - 2003/04 to 2017/18, inclusive.

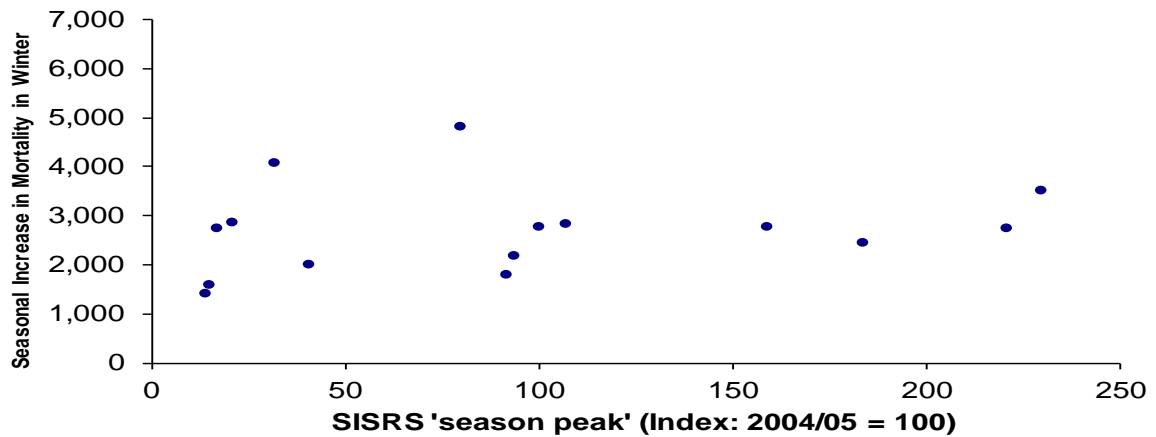
(a) winters and 'flu seasons' - 1971/72 to 2007/08, inclusive

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



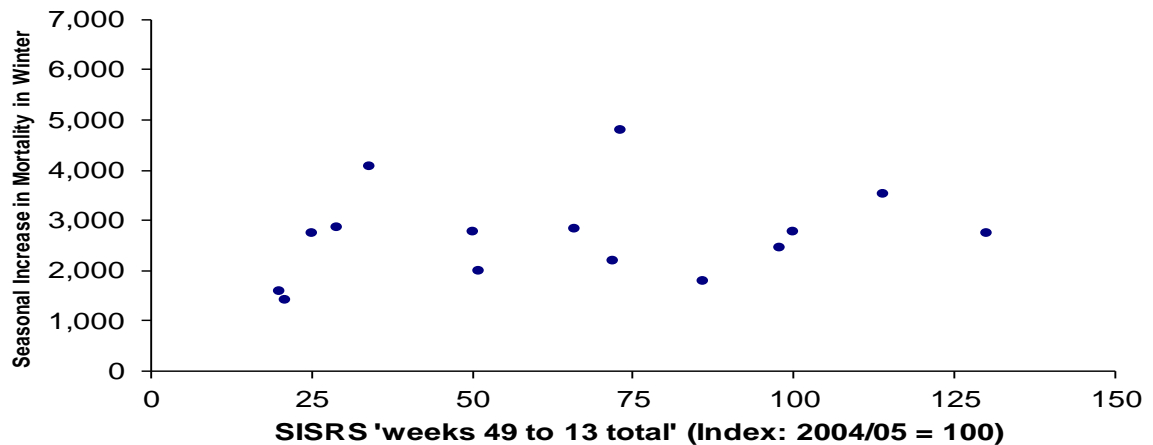
(b) winters - 2003/04 to 2017/18, inclusive - using SISRS 'season peak' index value

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 2017/18, 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)



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