Office for National Statistics

Statistical bulletin

Excess winter mortality in England and Wales: 2013 to 2014 (provisional) and 2012 to 2013 (final)

Excess winter mortality in England and Wales, by region, sex, age group and local authority.

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Release date:
28 November 2014

Next release:
25 November 2015

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1 . Main findings

- An estimated 18,200 excess winter deaths occurred in England and Wales in 2013/14 – the lowest number of excess winter deaths since records began in 1950/51
- 11.6% more people died in the winter months compared with the non-winter months in 2013/14
- There were more excess winter deaths in females than in males in 2013/14 as in previous years
- Male excess winter deaths decreased from 13,040 to 7,900, and female deaths from 18,240 to 10,300 between 2012/13 and 2013/14
- The majority of deaths occurred among those aged 75 and over; there were an estimated 14,000 excess winter deaths in this age group in 2013/14 compared with 4,000 in people aged under 75
- The excess winter mortality index was highest in the West Midlands and lowest in the North East in 2013 /14

2 . Summary

In common with other countries, in England and Wales more people die in the winter than in the summer. This statistical bulletin presents provisional figures of excess winter deaths (EWD, also referred to as excess winter mortality – EWM) in England and Wales for the winter period 2013/14 and final figures for the winter period 2012 /13. Historical trends from 1950/51 onwards are also presented for comparison. Figures are presented by sex, age, region and cause of death. Figures on temperature and influenza are also provided to add context to the mortality figures.

In 2013/14 11.6% more people died in the winter months compared with the non-winter months. There were 18,200 excess winter deaths in 2013/14, this is a decrease of 42% from the 31,280 excess winter deaths in 2012 /13 and is the lowest number of EWD since records began in 1950/51.

As in previous years, there were more EWDs in females than in males in 2013/14 (10,300 compared with 7,900), and the majority of deaths occurred among those aged 75 and over. There were an estimated 14,000 excess winter deaths in this older age group in 2013/14 compared with just 4,000 in people aged under 75.

Winter 2013/14 was characterised by a slightly colder than average temperature in November followed by a sustained period of milder than average weather. Temperatures in December and January remained over 2 degrees higher than the five year average. The peak in mortality for 2013/14 was much less pronounced than in previous years with 8% fewer mean daily deaths during December and January compared to the five year average.

3 . Method for calculating excess winter mortality

Excess deaths

Our standard method defines the winter period as December to March, and compares the number of deaths that occurred in this winter period with the average number of deaths occurring in the preceding August to November and the following April to July:

EWM = winter deaths - average non-winter deaths

This produces the number of excess winter deaths (EWDs), which is then rounded to the nearest 10 for final data and to the nearest 100 for provisional data.

Excess winter mortality index

Johnson and Griffiths (2003) (97.4 Kb Pdf) investigated seasonal mortality and reported that historically, above average mortality is typically seen between December and March. Therefore the standard ONS method for calculating excess winter mortality (EWM) defines the winter period as December to March. This calculation method uses the difference between non winter and winter months to calculate the difference between the two and produce a figure for EWD.

The EWM index is calculated so that comparisons can be made between sexes, age groups and regions, and is calculated as the number of excess winter deaths divided by the average non-winter deaths:

EWM Index = (EWM / average non-winter deaths) x 100

The EWM index is presented with 95% confidence intervals, which are calculated as:

EWM index ± 1.96 x (EWM Index / EWM)

The EWM index is expressed as a percentage and reported to 1 decimal place.

More details about how EWM is calculated are available in Background notes 2 and 3.

4 . Excess Winter Mortality (EWM) trends in England and Wales

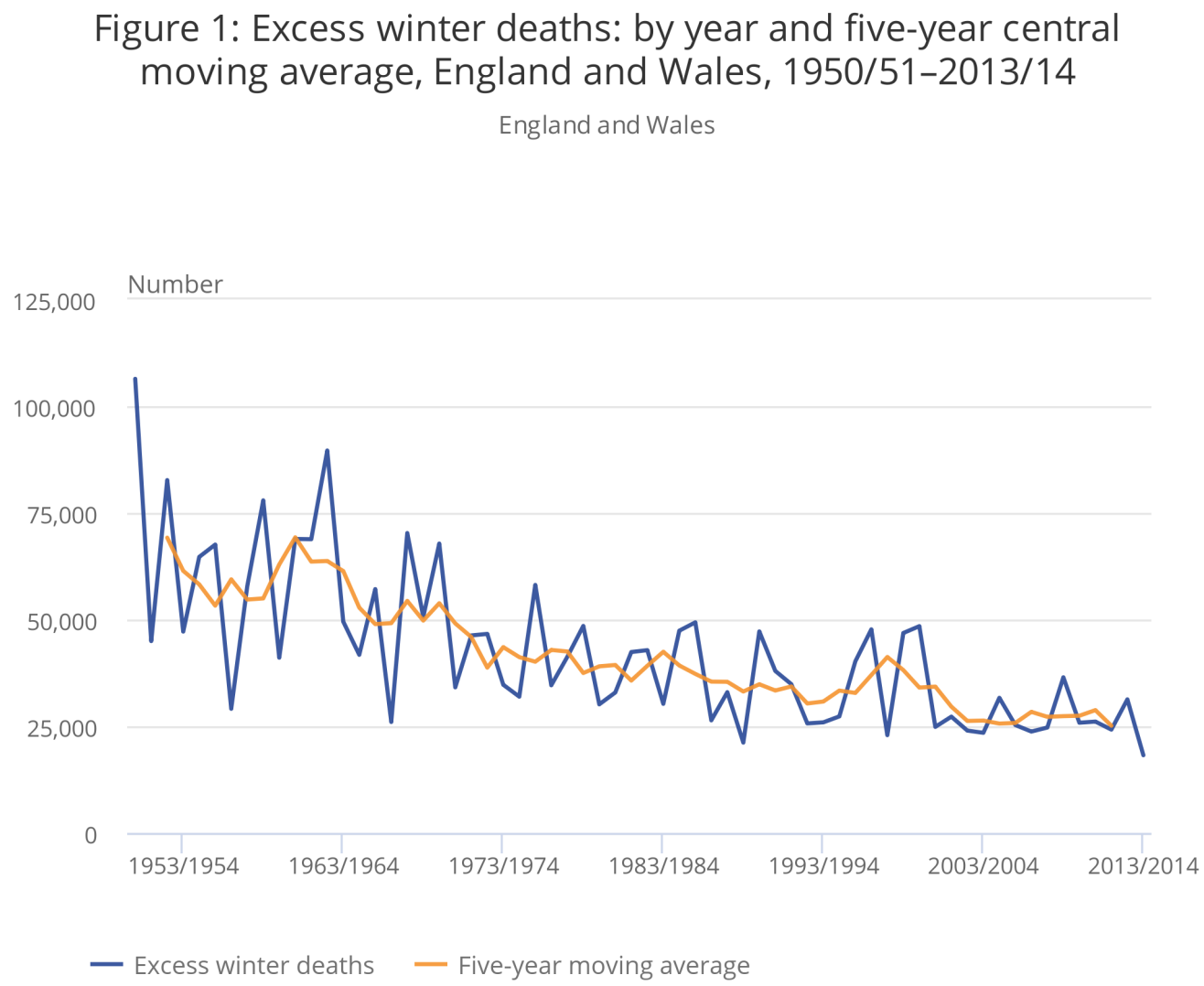
In England and Wales there were 18,200 estimated excess winter deaths (EWDs) in 2013/14 representing 11.6% more deaths in the winter period, compared with the non-winter period. This is the lowest estimate of excess winter deaths since 1950/51, 14% lower than the previous lowest estimate of 21,160 in 1988/89.

The estimated EWDs in 2013/14 are 42% lower than the 31,280 deaths in 2012/13.This change is a result of a higher than average number of winter deaths in 2012/13 and a lower than average number of winter deaths this year (2013/14). Fluctuations of this magnitude are not uncommon, for example recently between the winters of 2007/08 and 2008/09 and also in the late 1990’s between 1997/98 and 1998/99.

Historical trends in excess winter mortality (EWM) in England and Wales are presented in Figure 1 showing deaths occurring between 1950/51 and 2012/13. A five-year moving average is also presented to smooth out any short-term fluctuations. This shows that a sharp drop in EWM occurred between 1960/61 and 1965/66, followed by a slight increase and another sharp drop between 1969/70 and 1972/73. The EWM levels then followed a gradual decrease, albeit with some fluctuations from 1973/74 up until 1996/97. There were relatively high numbers of deaths in the winters of 1998/99 and 1999/2000, but deaths dropped sharply the following winter. This decreasing trend in EWM continued until 2005/06, after which the smoothed trend line demonstrates there has been a gradual rise in EWM. It is too early to say if the sharp decrease in EWM in 2013/14 is the start of another downward trend.

Figure 1: Excess winter deaths: by year and five-year central moving average, England and Wales, 1950 /51–2013/14

England and Wales



Source: Office for National Statistics

Notes:

1. Excess Winter Mortality figures are based on deaths occurring in each period.
2. Data include non-residents who died in England or Wales.
3. Figures for 2013/14 are based on provisional figures.

5 . Excess Winter Mortality (EWM) and temperature

Mean number of daily deaths each month and mean monthly temperatures

When mortality data for 2013/14 were compared with the five-year average of deaths occurring between 2008/09 and 2012/13 in the relevant months (Figure 2), the number of deaths were lower than average for all winter months.

After a cold winter in 2012/13, the winter of 2013/14 was mild, with the average temperature of the winter months being 6.2 degrees. This was the highest since 1997/98 when it was also 6.2 degrees, and 1989/90 when it was 6.5 degrees. Additionally in 2013/14, the average 'non-winter' month temperature was 12.8 degrees, which is the highest since 2006/07 when it was 13.1 degrees.

The mean monthly temperature was slightly lower than average in September and November but remained above average throughout all other months, with temperatures in December, January and February at least 2 degrees higher than average for that time of year. Interestingly, the usual seasonal peak in mortality over December and January was not as pronounced in 2013/14, with mortality levels 8% lower than average and closer to the average mortality usually seen after the peak in February.

Consistent with the 5 year average, the peak monthly mortality occurred in January in 2014 with an average daily number of deaths of 1,473, although this was lower than average for this time of year. The month with the second highest mean daily number of deaths was February with 1,467 deaths. Mean daily deaths were lowest in August, September and June (1,190, 1,238 and 1,267 deaths respectively).

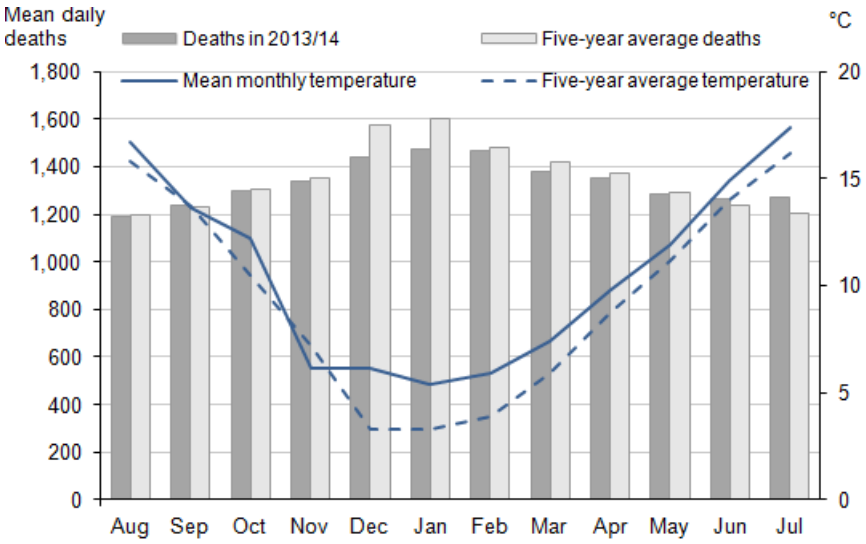
The spread in mortality from August 2013 to July 2014 was more evenly distributed than in previous years with lower than average monthly mortality over the winter months and higher than average mortality for September, June and July. In July 2014 for example, mortality was 5% higher than the five year average.

Looking at the method used to derive excess winter mortality (EWM), it is clear that the higher than average non-winter deaths estimate, combined with a lower than average winter deaths estimate, has resulted in a low number of excess winter deaths in 2013/14 (as described in Background note 2).The numbers of deaths by month, sex and age group for regions of England and Wales in 2013 (644.5 Kb Excel sheet) are available to download from the ONS website.

Although comparisons between 2013/14 and the 5 year average appear to show a relationship between temperature and mortality, it is not the only factor affecting levels of mortality. For example, there was a sudden change in average temperature between October and November 2013, from 12.2 degrees to 6.1 degrees, although the change in mortality remained similar to the 5 year average (1,295 deaths in October 2013 compared to 1,341 deaths in November 2013).

Figure 2: Mean number of daily deaths each month and mean monthly temperatures, England and Wales, August 2013 to July 2014

England and Wales



Source: Office for National Statistics and The Met Office

Notes:

1. The mean number of daily deaths is based on deaths occurring in each month. Numbers of deaths from January to July 2014 are provisional, and have been adjusted to take account of late registrations, see methods section.

2. Five-year averages for each month are calculated using data from the previous five years, excluding the current year.

3. Data include non-residents who died in England or Wales.

Excess winter mortality (EWM) and average winter temperature

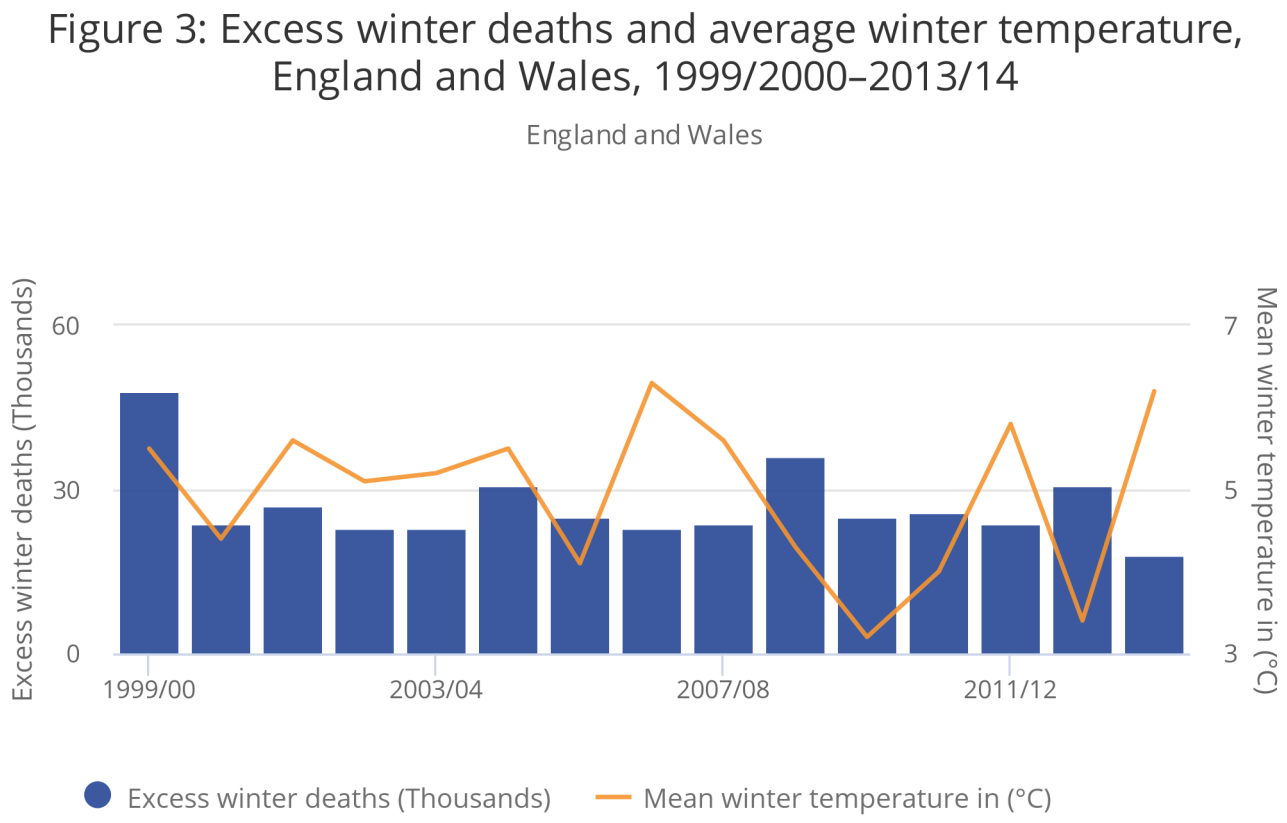
Excess winter deaths (EWDs) in 2013/14 were the lowest on record and coincided with an increase in average winter temperature. However, the link between average winter temperature and EWDs is much less clear in some years. For example, winter 2009/10 was exceptionally cold, but excess winter mortality (EWM) was similar to years with mild winters.

EWDs in 2013/14 were less than 40% of the EWDs in 1999/2000, which coincided with the last flu epidemic.

A greater proportion of homes in England now have measures to improve energy efficiency such as cavity wall insulation, modern central heating and double-glazing compared with 2001. In 2012, approximately 66% of dwellings with cavity walls had insulation, up from 5.8 million in 2001.This means homes are becoming more energy efficient (Department for Communities and Local Government, 2014). There have been a number of schemes aimed at reducing fuel poverty (there is more information in Policy Context). With these home improvements, homes are easier to heat and keep warm which may have altered the relationship between the weather and winter mortality.

Figure 3: Excess winter deaths and average winter temperature, England and Wales, 1999/2000–2013/14

England and Wales



Source: Office for National Statistics and The Met Office

Notes:

1. Excess winter mortality figures are based on deaths occurring in each period.
2. Mortality data include non-residents who died in England or Wales.
3. Mean winter temperature is calculated using average monthly temperatures from December to March.
4. Figures for 2013/14 are based on provisional data.

6 . Excess winter mortality (EWM) and influenza rates

The last influenza epidemic occurred in 1999/2000 and was associated with a high level of excess winter mortality (EWM), as illustrated in Figure 4.

In previous years, deaths from all causes have tended to display a sharp peak often in late December or early January. As in the previous winter, the weekly peak in mortality for 2013/14 occurred in the first week of January 2014, however it was notably lower than in previous years. As a result, the seasonal peak in weekly mortality in 2013/14 was much flatter than seen in previous years.

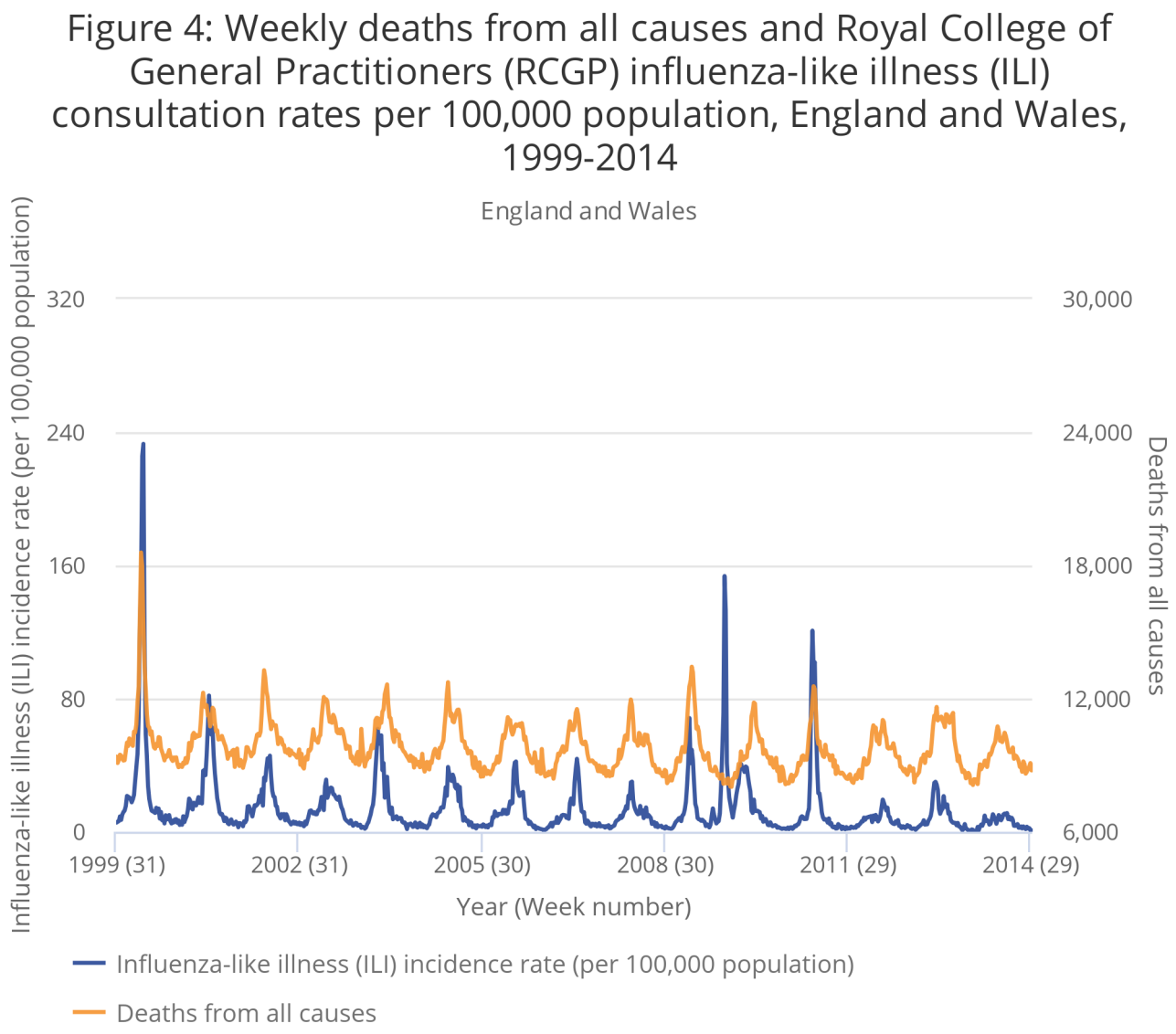
According to PHE, influenza virological activity occurred late in the 2013/14 season with a peak in week 9 (Public Health England, 2014a). This did not coincide with a rise in mortality.

Influenza is classified as a respiratory disease (World health Organisation, 2008), caused by a viral infection affecting the lungs and airways. Influenza infection is associated with potentially life threatening complications such as bacterial pneumonia. The elderly and those with underlying health conditions are particularly at risk of developing complications (Public Health England, 2014b) which can result in hospitalisation and death (Public Health England, 2014c).

Respiratory disease is known to be one of the main causes of excess winter deaths (EWDs); for example in 2012 /13, respiratory diseases accounted for 37% of all excess winter deaths with the majority of these deaths occurring in the 75 and over age group. The predominant influenza virus in winter 2013/14 was A (H1N1). This is subtype of influenza virus known to have the largest impact on young adults rather than the elderly (Public Health England, 2014a). The combination of mild winter temperatures and circulation of a subtype of influenza virus which predominantly impacts on young adults rather than the elderly may partly explain the low levels of EWM in 2013/14 (Public Health England, 2014a).

Figure 4: Weekly deaths from all causes and Royal College of General Practitioners (RCGP) influenza-like illness (ILI) consultation rates per 100,000 population, England and Wales, 1999-2014

England and Wales



Source: Office for National Statistics and The Royal College of General Practitioners Research and Surveillance Centre

Notes:

1. ILI rate data provided by RCGP is based on fluctuating population data.
2. Mortality data are based on deaths occurring each week. Numbers of deaths from January to July 2014 are provisional, and have been adjusted to take account of late registrations (see methods section).
3. Mortality data include non-residents who died in England or Wales.

7 . Excess winter mortality (EWM) by sex and age

In 2013/14 there were 18,200 excess winter deaths (EWDs). Males comprised 43% of the total, (7,900 EWDs) and females 57% of the total (10,300 EWDs).

Figure 5 compares the excess winter mortality (EWM) index for males and females grouped by age for the previous three winters. The EWM index is used to show how many more people died in winter than in the non-winter months, expressed as a percentage.

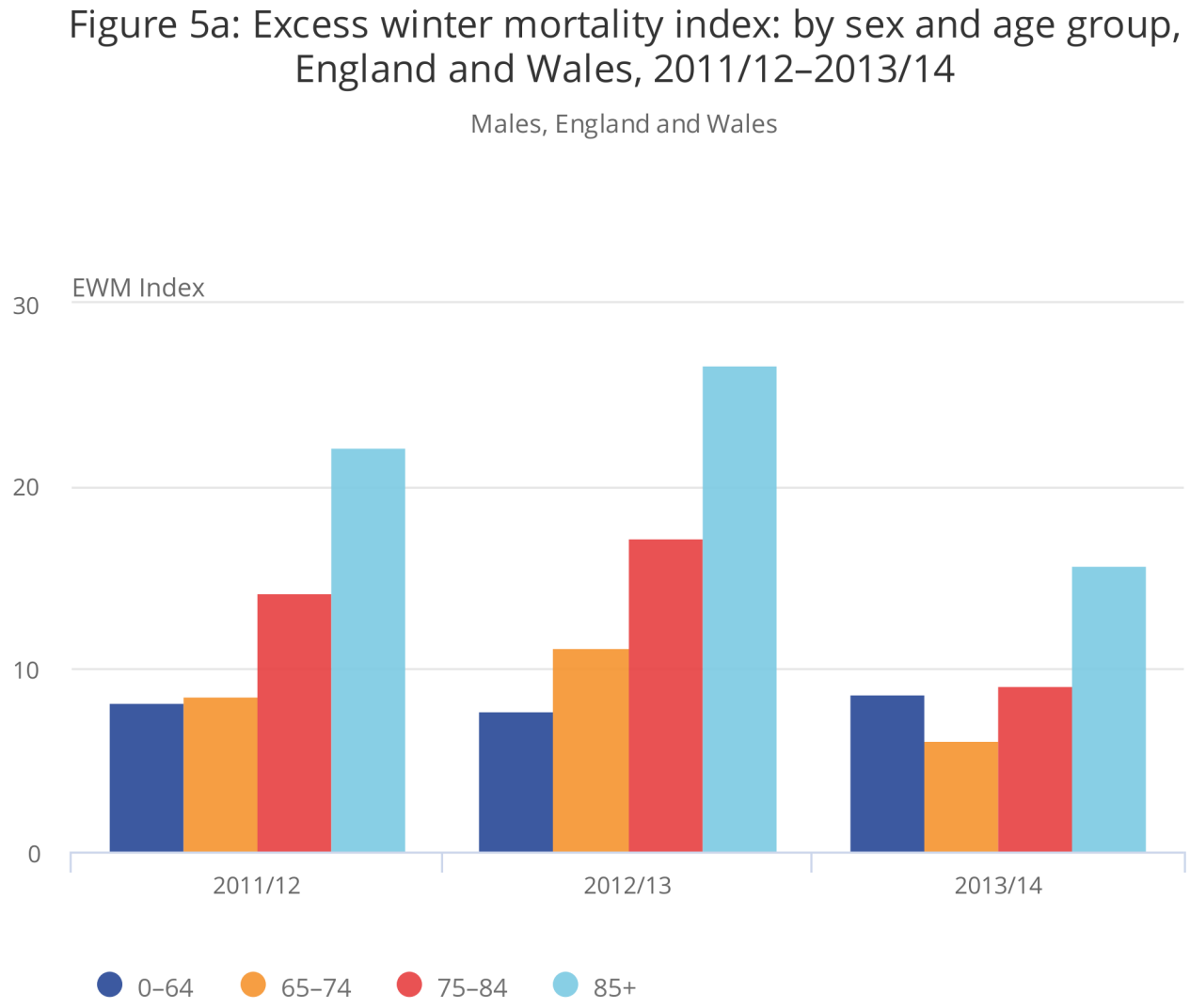
The majority of these deaths for both sexes occurred amongst those aged 75 and over, with females aged 85 and over having the greatest number of excess winter deaths. Female EWDs have generally been higher than males, especially in older age groups. A higher proportion of the female population are aged 75 and over (9%, compared with 7% of males, in 2013), additionally, women outnumber men two to one for people aged over 85 (ONS, 2014a) This may wholly, or partially, explain the higher number of EWDs in women.

In 2013/14 EWM decreased significantly in all age groups apart from the under 65 males, when compared with 2012/13. Overall, the EWM index for males decreased, from 16.9% in 2012/13, to 10.4% in 2013/14. There was a greater decrease seen in the EWM index for females, falling from 22.3% in 2012/13 to 12.8% in 2013/14.

When comparing 2012/13 against 2013/14, the greatest decrease in EWM was seen in females aged 85 and over: the EWM index almost halved, from 29% in 2012/13, to 15.0% in 2013/14. As a result in 2013/14 males aged 85 and over showed a higher EWM than their female counterparts (15.0% compared to 15.7% respectively).

Figure 5a: Excess winter mortality index: by sex and age group, England and Wales, 2011/12–2013/14

Males, England and Wales



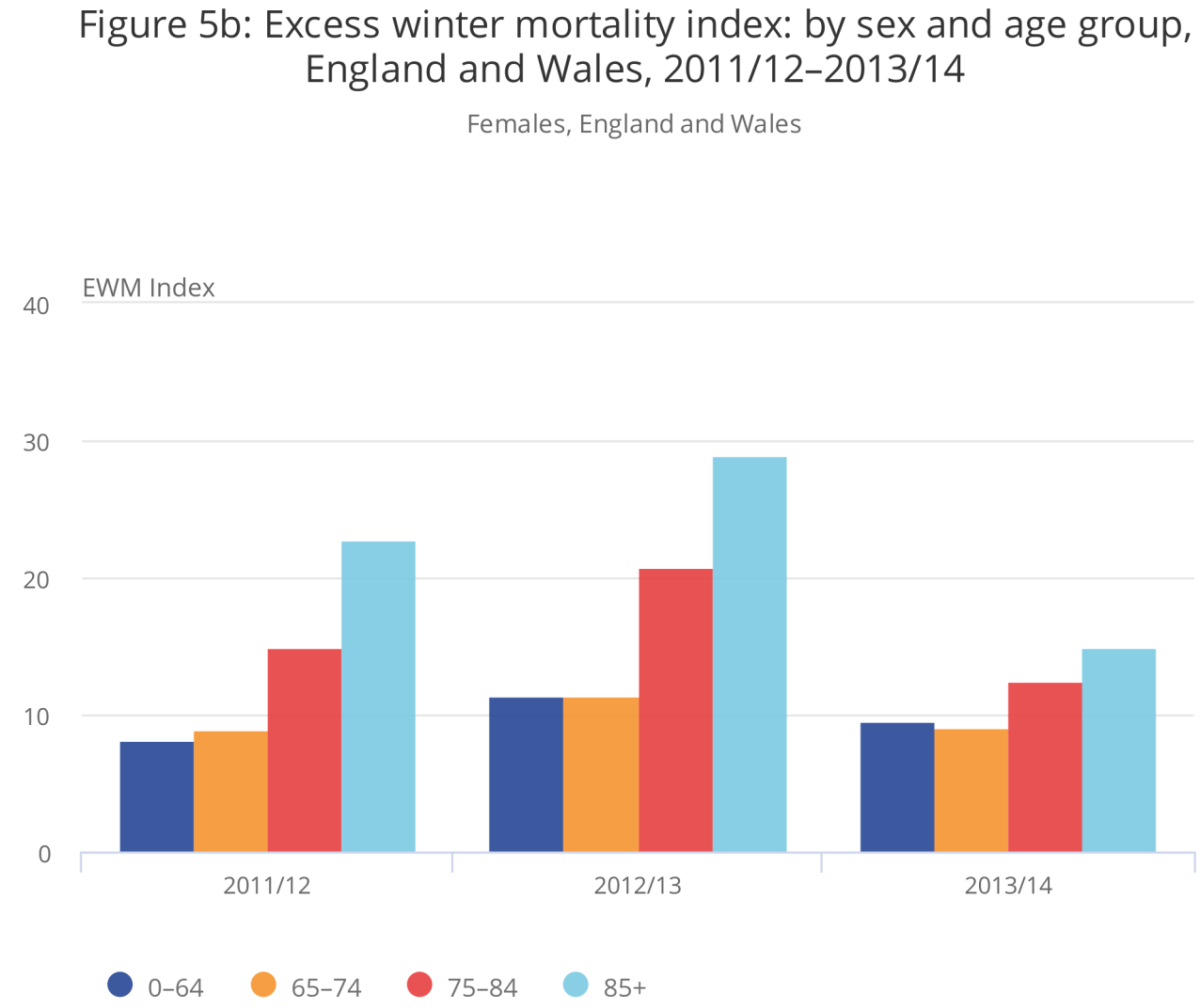
Source: Office for National Statistics

Notes:

1. Figures are based on deaths occurring in each period.
2. Data include non-residents who died in England or Wales.
3. Figures for 2013/14 are based on provisional data.

Figure 5b: Excess winter mortality index: by sex and age group, England and Wales, 2011/12–2013/14

Females, England and Wales



Source: Office for National Statistics

Notes:

1. Figures are based on deaths occurring in each period.
2. Data include non-residents who died in England or Wales.
3. Figures for 2013/14 are based on provisional data.

8 . Excess winter mortality (EWM) by geography

Excess winter mortality (EWM) in 2012/13 by region

Figure 6 presents the excess winter mortality (EWM) index and confidence limits for English regions and Wales, for the last three winters. More detailed data showing the number of excess winter deaths (EWDs) and the EWM index, broken down by age for regions of England and Wales, from 1991/92 to 2013/14, are available in Reference Table 2.

EWM decreased significantly in every English region and Wales in 2013/14, although the size of this decrease varied. Unlike with other mortality-related datasets, such as sub-national life expectancy, EWM shows no north /south divide pattern. Typically regional data for EWM is variable with no consistent trends across time, with regions such as the North East ranking low in EWM compared to other regions in 2013/14 that previously ranked higher in 2011/12.

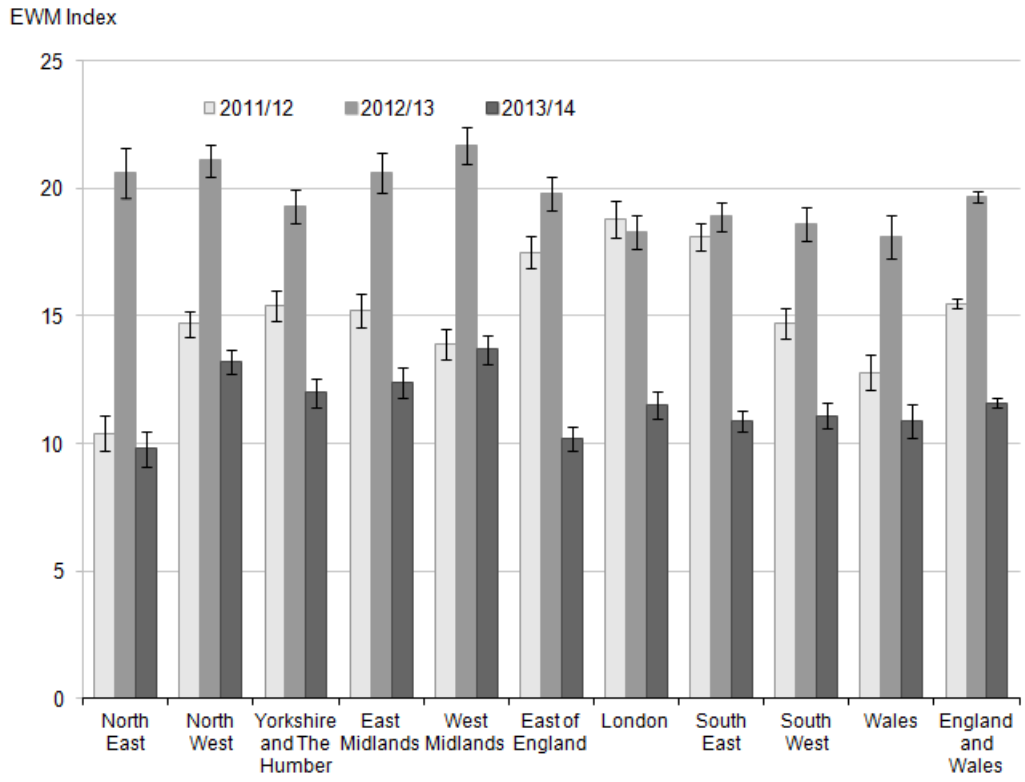
The regions with highest EWM index in 2013/14 were West Midlands 13.7%, and North West 13.2% more deaths in winter compared with the non-winter period, significantly higher than the England and Wales average of 11.6%. Interestingly this is the second year these regions have ranked highest.

The largest decrease in EWM index between 2012/13 and 2013/14 was seen in the North East, where the EWM index more than halved from 20.6% in 2012/13 to 9.8%. This sharp decrease resulted in the North East having the lowest EWM index of all English regions in 2013/14. The EWM index for London changed the least since 2012 /13 from 18.3% to 11.5%.

In common with the decreasing trends seen across the other regions, the EWM index in Wales fell from 18.1% in 2012/13 to 10.9% in 2013/14 with EWM levels similar to those seen in the South East and South West.

Figure 6: Excess winter mortality for regions of England and Wales, 2011/12–2013/14

England and Wales



Source: Office for National Statistics

Notes:

1. Figures are based on deaths occurring in each period.
2. Figures for English regions and Wales include deaths of persons usually resident in each area, based on boundaries as of August 2014.
3. Figures for England and Wales combined include deaths of non-residents.
4. Figures for 2013/14 are based on provisional data.

Excess winter mortality (EWM) in 2012/13 by local authority

Information presented earlier in this bulletin refers to provisional excess winter mortality (EWM) figures for 2013 /14; this section refers to final 2012/13 EWM figures for local authorities. Figures showing excess winter deaths (EWDs), the EWM index and confidence limits for local authorities in England and Wales from 1991/92 to 2012 /13 are available in reference table 3. Local area EWM data are not available for the most recent winter (2013 /14), as these data are provisional. The estimation methods used to produce national and regional figures are not reliable for small geographic areas.

As with the regional EWM figures, there is no consistent pattern in EWM trends across local authorities in England and Wales over time. The majority of local authorities that had the 10 lowest EWM indices in 2012/13 have previously been ranked towards the middle of the table: it is a similar story for the 10 areas that currently have the highest EWM indices. For example, Newport in Wales went from having the highest EWM index in Wales for 2011/12 to the lowest in 2012/13.

The local authorities with the lowest EWM index in 2012/13 were Hart in England and Newport in Wales. In fact, no EWM occurred in Hart; there were more deaths in the non-winter months than there were in the winter.

The local authority with the highest EWM index in England in 2012/13 was Lincoln, where 45.9% more deaths occurred in the winter, than in the non-winter period. In Wales, Monmouthshire had the highest level of EWM, with 33.3% more deaths in winter compared with the non-winter period. The City of London and Isles of Scilly have been excluded, as numbers were too small (because of small population sizes) to allow meaningful comparisons.

9 . Final excess winter mortality (EWM) in 2012/13 by underlying cause of death

This section refers to final 2012/13 EWM figures by underlying cause of death. Table 1 shows the number of excess winter deaths (EWDs) and the excess winter mortality (EWM) index in England and Wales for the winters of 2010/11 to 2012/13, by age group for circulatory diseases, respiratory diseases, injury and poisoning, dementia and Alzheimer's disease. Three years of data are presented for comparison purposes.

Respiratory diseases caused the largest number of excess winter deaths in 2012/13, accounting for 37% of all EWDs. Moreover, respiratory disease had the largest seasonal effect of all of the causes included in Table 1, with the highest EWM index for all three winters analysed. In 2012/13, 54.1% more people died from respiratory diseases in the winter, compared with the non-winter period. This is significantly higher than in 2011/12, where there were 39.7% more respiratory disease deaths in the winter compared with the non-winter period. Out of the 11,560 EWDs from respiratory disease in winter 2012/13, 83% of the deaths were for the 75 and over age group.

Circulatory diseases caused the second highest number of EWDs between 2010/11 and 2012/13, contributing to 26% of the total number of excess winter deaths in 2012/13. In 2012/13 18.4% more people died from circulatory diseases in the winter than in the non-winter months, up from 16.2% in 2011/12. Circulatory diseases were one of the main causes of mortality in 2013 (ONS, 2014b). However, the number of circulatory disease deaths remains high throughout the year, and the seasonal effects on mortality are not as high as seen with either respiratory diseases or dementia and Alzheimer's disease.

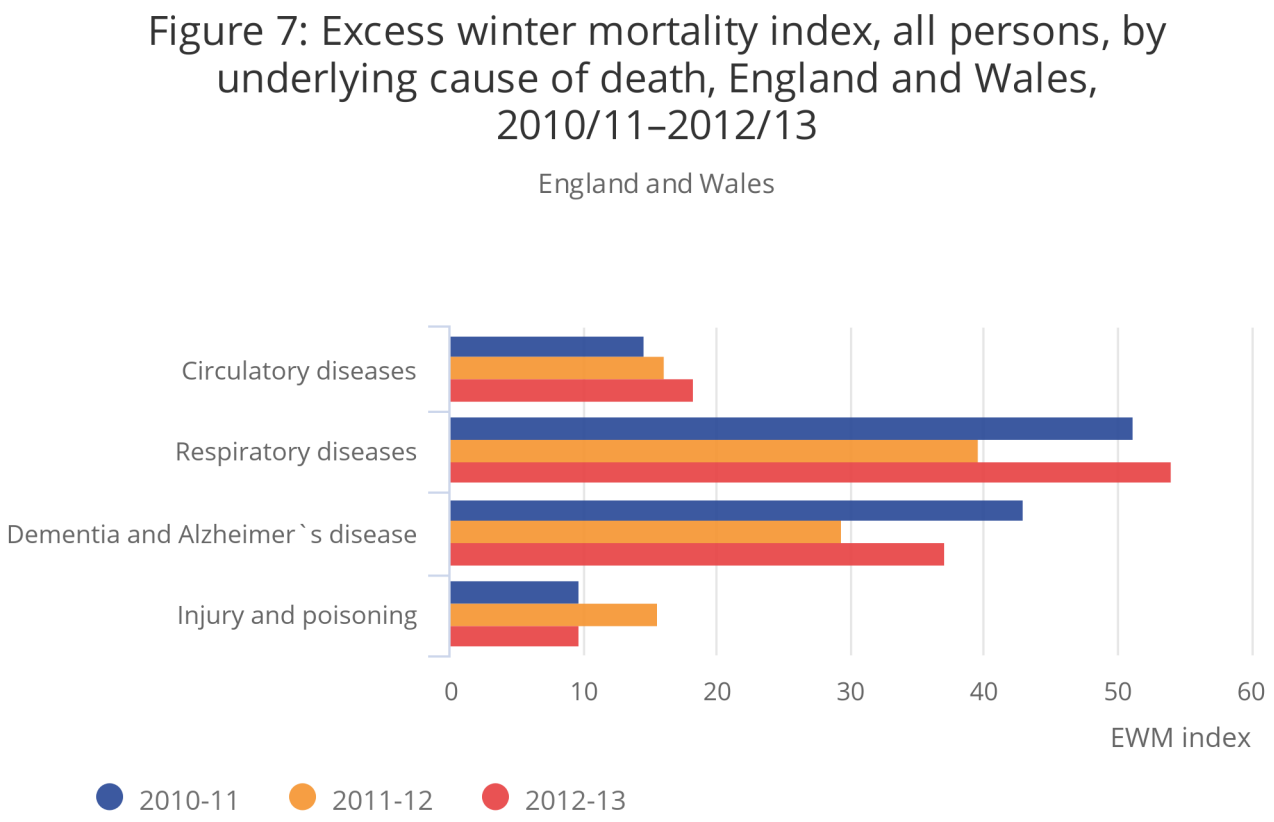
The winter increase in mortality from dementia and Alzheimer's disease in 2012/13 was more than double that seen for circulatory diseases, with 37.1% more people dying in the winter than in the non-winter months. This seasonal effect for dementia and Alzheimer's disease increased from 2011/12, where we saw 29.4% more deaths in winter compared with non-winter months. Typically the number of excess winter deaths from dementia and Alzheimer's disease are much higher in people aged 75 and over, since these are conditions associated with old age. This was evident in 2012/13 where there were 22 times as many excess winter deaths in the 75 and over age-group, than for those aged under 75.

Injury and poisoning deaths include accidental falls which can be affected by wintry conditions, for example, icy pavements. There was a significant decrease in EWM for deaths from injury and poisoning, with 9.7% more winter deaths than non-winter deaths in 2012/13, down from 15.6% in 2010/11. However, external causes usually only account for a small proportion of all excess winter deaths (2% of the total EWM for winter 2012/13).

The same relationships between underlying cause and EWM index can be seen for both males and females. A more detailed version of Figure 7 by sex and age group is available in reference table 1 (644.5 Kb Excel sheet) .

Figure 7: Excess winter mortality index, all persons, by underlying cause of death, England and Wales, 2010/11–2012/13

England and Wales



Source: Office for National Statistics

Notes:

1. Underlying cause of death is defined using the International Classification of Diseases, Tenth Revision (ICD 10). From January 2011 ONS has used an updated version of ICD 10, which will affect the assignment of underlying cause of death for deaths registered after this date. More details about the impact of this change are available on the ONS website.

2. Figures are based on deaths occurring in each period.

3. Figures for England and Wales include deaths of non-residents.

10 . Causes of excess winter mortality

A study by Healy (2003) showed that excess winter mortality (EWM) varied widely within Europe. The results show that countries with low winter temperatures in Scandinavia and Northern Europe, such as Finland and Germany, had very low rates of EWM. Conversely, countries with very mild winter temperatures in Southern Europe such as Portugal and Spain, had very high rates of EWM. England and Wales both have higher than average EWM and exhibit high variation in seasonal mortality.

There are many reasons why countries with milder winter climates have such a high level of winter mortality. For example, people who live in countries with warmer winters tend to take fewer precautions against the cold. The Eurowinter group (1997) reported that compared with people living in countries with cold winters, those from warmer countries were less likely to wear warm protective clothing in cold weather.

Countries with milder winters also tend to have homes with poorer thermal efficiency (for example, fewer homes have cavity wall insulation and double glazing), which makes it harder to keep homes warm during the winter (Healy, 2003). It has been shown that low indoor temperature is associated with higher EWM from cardiovascular disease in England (Wilkinson et al., 2001).

Although EWM is associated with low temperatures, conditions directly relating to cold, such as hypothermia, are not the main cause of EWM. The majority of additional winter deaths are caused by cerebrovascular diseases, ischaemic heart disease and respiratory diseases (The Eurowinter group, 1997 and ONS, 2013). Although cancer causes more than a quarter of all deaths annually, previous research (Johnson and Griffiths, 2003) (97.4 Kb Pdf) found that there was no clear seasonal pattern for these deaths.

The cold can have various physiological effects, which may lead to death in vulnerable people. Woodhouse et al (1993) reported that colder home temperature was associated with increased blood pressure in older people. The Eurowinter group (1997) noted that cold causes haemoconcentration, which leads to thrombosis, and that cold can also lower the immune system's resistance to respiratory infections. Additionally, the level of influenza circulating in the population increases in winter. In vulnerable groups, for example in the elderly or those with pre-existing health problems, influenza can lead to life-threatening complications, such as bronchitis or secondary bacterial pneumonia (Public health England, 2014b).

Previous research has shown that although mortality does increase as it gets colder, temperature only explains a small amount of the variance in winter mortality, and high levels of EWM can occur during relatively mild winters (Brown et al., 2010) (293 Kb Pdf) Curwen and Devis (1988) showed that both temperature and levels of influenza were important predictors of excess winter mortality. Therefore the relationship between temperature, influenza and winter mortality is complex.

11 . Policy context

In the 2009 annual report from the Chief Medical Officer (CMO) for England, it was noted that, although excess winter deaths (EWDs) have declined over the last 50 years, the number was still too high (Donaldson, 2010). The CMO argued that many of these deaths were preventable and that more needed to be done to protect vulnerable people during cold winter months.

This prompted the Government to develop an annual Cold Weather Plan for England, which has been published yearly since November 2011. Public Health England (PHE) published the 2014 edition in October 2014 in partnership with NHS England, the Local Government Association and the Met Office. The Cold Weather Plan aims to prevent avoidable harm to health by alerting people to the negative health effects of cold weather. This should enable them to prepare and respond appropriately, and help to reduce the number of excess winter deaths. The plan sets out a series of actions to be taken by the NHS, social care and other agencies throughout the year, and in response to forecast or actual severe winter weather. It also encourages local communities to support the most vulnerable in their area, such as checking on them during severe weather and offering other support. The Met Office issues Cold Weather Alerts from 1 November 2014 to 31 March 2015 to support the Cold Weather Plan (Public Health England, 2014d). The Keep Warm Keep Well booklet provides advice on staying well during cold weather, for example healthy lifestyle, heating, flu vaccinations, and making sure that people know about all the benefits and services to which they are entitled (Public Health England, 2014e)

The UK government has introduced the ‘green deal’ project, whereby householders can have improvement work carried out on heating and home insulation, paid back through savings in energy bills. This is aimed to benefit around 230,000 low income families per year (Department of Energy and Climate Change, 2014a). In January 2013 The Energy Companies Obligation was introduced to reduce the UK’s energy consumption and support people living in fuel poverty. It will fund energy efficiency improvements worth around £1.3 billion every year for low-income households and areas, and in properties that are harder to treat (Department of Energy and Climate Change, 2014b).

Another policy aimed at helping the most vulnerable heat their homes is the Warm Home Discount scheme (Department of Energy and Climate Change, 2013c).

In addition, there are a number of other policies aimed at tackling excess winter mortality, such as winter fuel payments (Directgov, 2014) and the seasonal flu vaccination programme: nasal spray flu vaccines are now available for all children aged two, three and four (NHS Choices, 2014).

The Welsh Government also have schemes to reduce fuel poverty, such as the Nest, which is a means eligibility tested scheme that offers an advisory service, as well as home improvements, for those on the lowest incomes to make homes warmer during the winter (Welsh government, 2014a). This scheme is run alongside ‘Arbed’ which seeks to make improvements to Welsh homes, such as boiler upgrades, wall insulation and window upgrades (Welsh government, 2014b).

12 . Uses of excess winter mortality (EWM) data

Excess winter mortality (EWM) figures are widely used to inform policy, planning and research in the public sector, in particular to measure the effectiveness of cold weather planning. Local authorities and public health organisations across England and Wales use ONS data to assess levels of excess winter mortality in their area. In addition, charities use excess winter mortality statistics to support a variety of campaigns.

13 . Comparisons with the rest of the UK

UK figures are not available as we only hold mortality data for England and Wales. National Records of Scotland (NRS) produce an annual winter mortality report.

Northern Ireland Statistics and Research Agency (NISRA) produced figures on excess winter mortality which are available on their website.

Winter mortality figures for Scotland and Northern Ireland are both based on death registrations, whereas England and Wales figures are based on occurrences. In Scotland a death must be registered within eight days, and fact of death can be registered (with a cause given as unascertained, pending investigations) before the Procurator Fiscal has completed their investigations. Therefore, Scottish mortality data are not subject to the same registration delays as mortality data for England and Wales. Almost all deaths that occurred in the relevant period will be included in the Scottish figures, meaning winter mortality figures from Scotland are comparable with ONS figures for England and Wales.

For Northern Ireland mortality data, there can be a significant delay between when the death occurred and when it was registered for some causes of death. NISRA have compared EWM figures based on occurrences, and registrations and the difference is quite large in some years. Therefore, EWM figures from Northern Ireland and England and Wales are not directly comparable.

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15. Background notes

1. **Mortality metadata**

   Excess winter mortality figures are derived from the data collected when deaths are certified and registered. Information about the underlying mortality data, including details on how the data is collected and coded are available in the mortality metadata (2.7 Mb Pdf).

2. **Calculation of excess winter mortality figures**

   Previous analysis compared methods of calculating EWM using different winter and non-winter periods, and found that the different methods produced fairly similar results. However, because the current ONS method includes autumn and spring in the non-winter period, if mortality is high in any of these months, the ONS estimate of EWM is decreased (Johnson and Griffiths, 2003) (97.4 Kb Pdf).

3. **The excess winter mortality extract and calculation of provisional figures**

   Mortality data come from the information collected when a death is registered. Most deaths (almost 95%) are registered within one month of the date of occurrence, although violent or unexpected deaths, which need further investigation from a coroner, can take much longer. So that timely EWM figures can be produced, ONS generates a special extract of mortality data in September for deaths that were registered by this month, but which occurred up to the end of July. These figures are then adjusted using the provisional number of deaths from the previous year’s extract, compared with the final number of deaths. This produces a provisional estimated number of deaths for January to July in the current year so that EWM can be calculated for the previous winter. As these figures are provisional they are rounded to the nearest 100 and are only produced at a regional level. Final figures are provided in the following year’s annual excess winter mortality statistical bulletin. Cause of death figures and figures for local authority have been produced using final figures (2010/11 to 2012/13) and are rounded to the nearest 10.

4. **Confidence intervals**

   Excel workbooks containing the data used to produce Figures 1 to 6 are available to download from the ONS website. Where appropriate, tables contain the number of excess winter deaths, the excess winter mortality index and the upper and lower confidence limits. These limits form a confidence interval around the index, which is a measure of the statistical precision of an estimate and shows the range of uncertainty around the estimated figure. Calculations based on small numbers of events are often subject to random fluctuations. As a general rule, if the confidence interval around one figure overlaps with the interval around another, we cannot say with certainty that there is more than a chance difference between the two figures. Within this statistical bulletin, a difference which is described as ‘significant’ means ‘statistically significant’, assessed by examining the confidence intervals.

5. **Leap years**

   The years 1992, 1996, 2000, 2004, 2008 and 2012 were leap years, and so the month of February contained 29 days instead of 28. The extra day in February has been taken into account in the calculation of the mean number of daily deaths, and the corresponding five-year average in Figure 2. However, the extra day is not taken into account in the overall calculation of excess winter deaths. This means that in leap years the winter period (December to March) will contain deaths for one extra day. It is estimated that between 1,300 and 1,700 deaths occur on 29 February, therefore in leap years (for example, the winter of

2011/12) there will be around an extra 1,500 excess winter deaths compared with non-leap years. However, other factors such as very cold winters, and high levels of influenza activity have a far greater impact on the overall level of excess winter mortality than leap years.

6. **Special extracts of data**

   Special extracts and tabulations of excess winter mortality data are available to order for a charge (subject to legal frameworks, disclosure control and agreement of costs, where appropriate). Such requests or enquiries should be made to:

   Mortality Analysis Team, Life Events and Population Sources Division Office for National Statistics Government Buildings Cardiff Road Newport NP10 8XG

   Tel: +44 (0) 1633 651639

   Email: mortality@ons.gsi.gov.uk

7. **Revisions**

   The ONS revisions policy is available on our website.

8. **Pre-release access**

   A list of the names of those given pre-publication access to the statistics and written commentary is available in this pre-release access list for Excess winter mortality in England and Wales 2012/13 (Provisional) and 2011/12 (Final). The rules and principles which govern pre-release access are featured within the Pre-release Access to Official Statistics Order 2008.

9. **National Statistics**

   The UK Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 (393.8 Kb Pdf) (393.8 Kb Pdf) and signifying compliance with the Code of Practice for Official Statistics.

   Designation can be broadly interpreted to mean that the statistics:

   1. meet identified user needs
   2. are well explained and readily accessible
   3. are produced according to sound methods
   4. are managed impartially and objectively in the public interest

   Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

10. **Feedback**

    As a valued user of our statistics, we would welcome feedback on this release. In particular, the content, format and structure. Please send feedback to the postal or email address in note 6.

11. **Social media**

    Follow ONS on Facebook and Twitter.

12. **Terms and conditions**

13. Next publication: November 2015 Issued by:

    Office for National Statistics Government Buildings Cardiff Road Newport NP10 8XG

14. **Media contact:**

    Tel Media Relations Office 0845 6041858 Emergency on-call 07867 906553 E-mail press.office@ons.gsi.gov.uk

15. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk