

Mortality and Premature Mortality in Herefordshire

Version 1.02
Herefordshire Council Intelligence Unit

October 2018

CONTENTS

SUMMARY – KEY MESSAGES	1
INTRODUCTION	2
ALL AGE MORTALITY	2
RECENT PATTERNS	6
AGE DIFFERENCES	8
UNDERLYING CAUSES OF MORTALITY	9
TEMPORAL TRENDS OF CAUSE SPECIFIC MORTALITY RATES	18
PREMATURE MORTALITY	21
INFANT MORTALITY.....	27
YEARS LOST TO LIFE	28
PREVENTABLE MORTALITY.....	31
PLACE OF DEATH	35

SUMMARY – KEY MESSAGES

In 2017 there were 2,085 deaths in Herefordshire residents with a directly standardised all age mortality rate of 910 per 100,000 population.

Since 1995 the mortality rate in Herefordshire has shown a general downward trend mirroring the pattern for England as a whole and has been consistently lower than the national figure.

The Herefordshire all age mortality rate is higher for males compared to that for females.

In 2017 the most common underlying causes of death in Herefordshire were cancer, diseases of the circulatory system and diseases of the respiratory system which accounted for 70 per cent of deaths between them.

In 2017 there were 588 premature deaths (i.e. under 75 years) in Herefordshire, corresponding to an all age standardised rate of 292 per 100,000, a figure significantly lower than that recorded for England.

The most common underlying cause of premature deaths (i.e. in Herefordshire are cancer and diseases of the circulatory system (particularly coronary heart disease and strokes) which between them contributed to over two thirds of all premature deaths in the county between 2008 and 2017.

The premature mortality rate in Herefordshire is significantly higher in the most deprived areas of the county compared to less deprived areas.

In 2012-14 the number of years of life lost (YLL) in Herefordshire was 19,691 which corresponded to a directly standardised rate of 385 per 10,000 population, a figure significantly lower than that recorded nationally.

In 2014-16 there were 1,038 preventable deaths¹ in Herefordshire with a corresponding directly standardised preventable mortality rate of 165 per 100,000, a figure significantly lower than that recorded nationally.

Between 2007 and 2016 the proportion of all deaths accounted for by DiUPR in Herefordshire has shown a steady increase, rising from 40.5 to 48.7 per cent and since 2014 has been higher than the proportion of deaths occurring in hospital.

Between 2007 and 2016 the highest proportion of deaths in Herefordshire occurred in hospital, although there has been a downward trend in the proportion of deaths recorded in hospital over this period with the all age figure falling from 48.0 to 42.7 per cent.

In 2017 there were 1,259 deaths (all patients) recorded in Wye Valley NHS Trust (WVT) compared to an expected number of 1,079, which equates to 180 deaths more than expected. The resulting Summary Hospital-level Mortality Indicator (SHMI) value of 1.17 was the fifth highest across 134 non-specialist acute NHS trust in England and was considered as being higher than expected.

¹ According to the Office for National Statistics (ONS) "A death is preventable if, in the light of understanding of the determinants of health at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided by public health interventions in the broadest sense".

INTRODUCTION

This report presents data describing mortality in Herefordshire, including information on premature and preventable mortality. The report describes recent patterns and provides comparisons with national, regional and comparative areas, while some temporal trend data describing annual patterns since 1995 are also discussed.

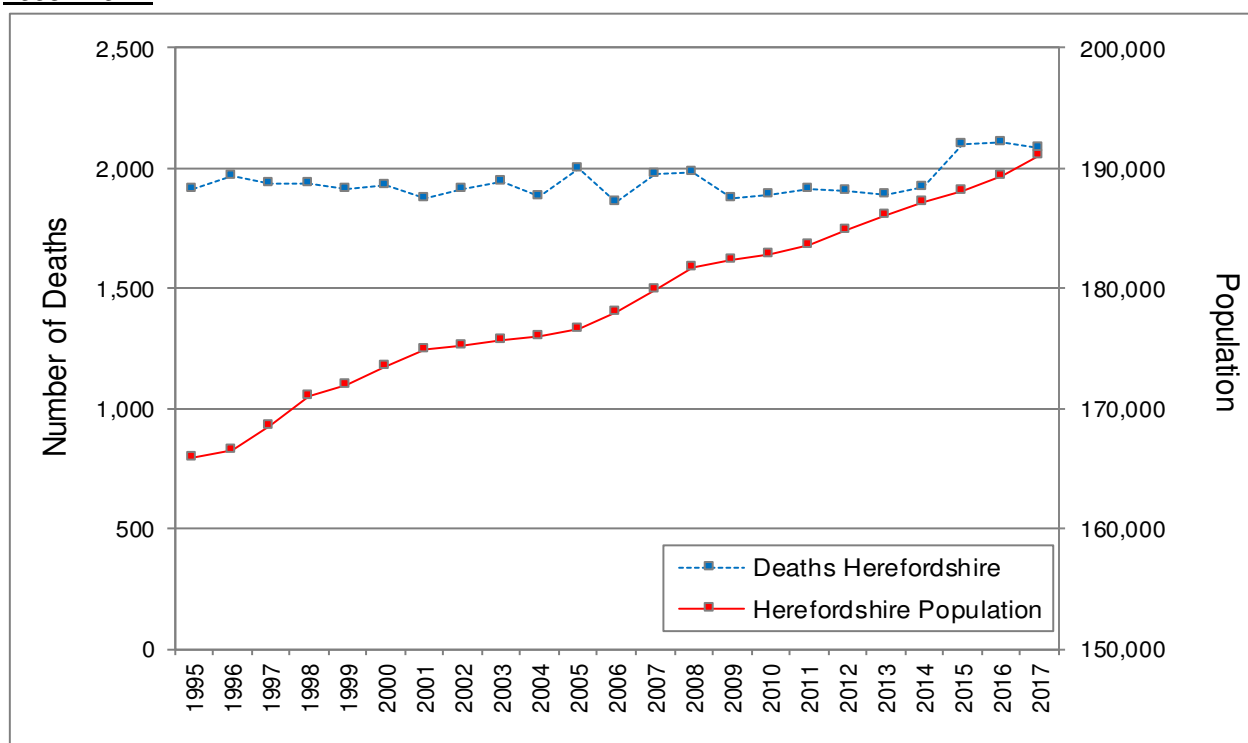
The report is based primarily on data provided by the NHS Primary Care Mortality Database (PCMD), NHS Clinical Indicators and Office for National Statistics (ONS).

ALL AGE MORTALITY

TEMPORAL TRENDS

Between 1995 and 2017 the number of deaths recorded annually in Herefordshire remained relatively constant ranging between 1,860 and 2,010 per year in 2005 and 2006 respectively (Figure 1). However, the number of deaths showed a relatively sharp rise between 2014 and 2015 from 1,920 to 2,100, a proportional increase of 9.4 per cent; the number of deaths have remained at this level in subsequent years. This local pattern reflects both the national and regional figures which showed proportional rises of 5.6 and 5.5 per cent respectively between 2014 and 2015. These increases in the number of deaths observed across the country took place in the first three months of 2015 and coincided with the peak in flu activity for the 2014/15 season². In 2017 the number of deaths in Herefordshire was 2,085.

Figure 1: Number of deaths (primary axis) and total population (secondary axis) in Herefordshire, 1995 - 2017.



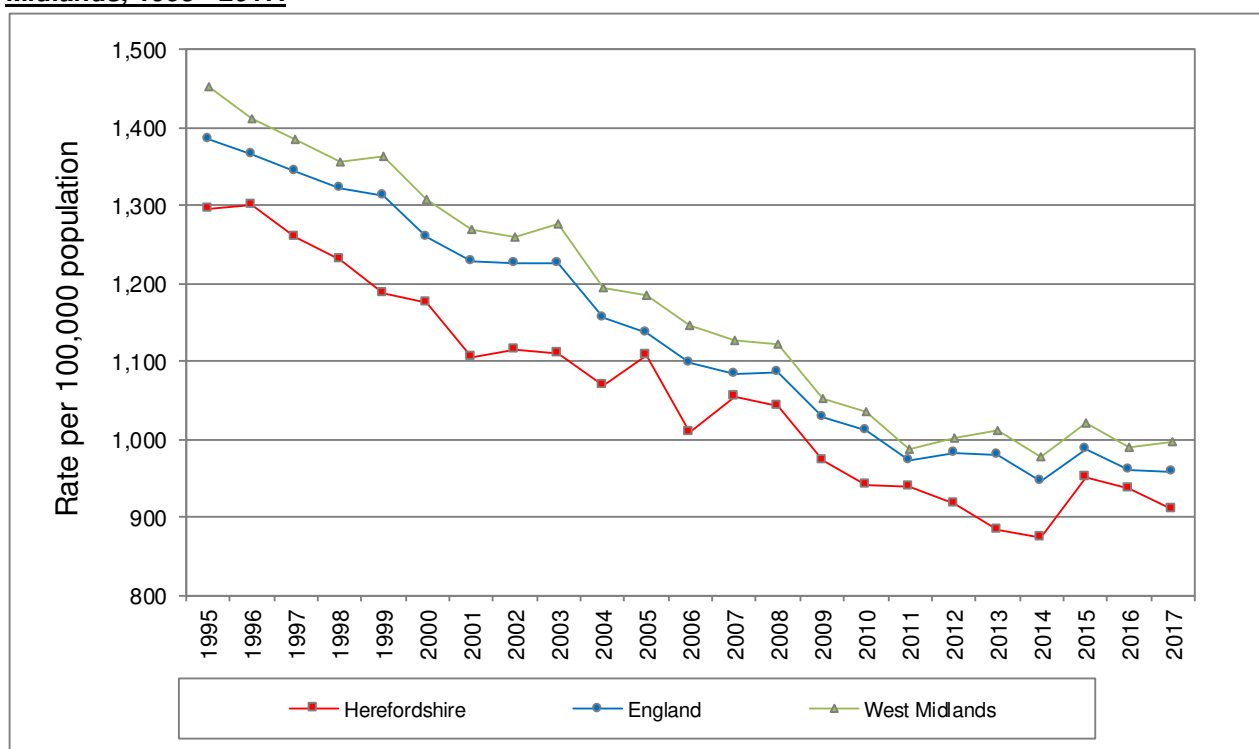
Source: NHS Clinical Indicators / ONS

² ONS: Provisional analysis of death registrations: 2015. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/provisionalanalysisofdeathregistrations/2015>

As the population in Herefordshire is aging³ it is likely that the number of deaths will increase, the simple enumeration of deaths may not provide an accurate indication of mortality patterns across the population as a whole. Age-standardised mortality rates are a more appropriate measure of the level of mortality compared to the number of deaths as they take into account the population size, its age structure and the age distribution of deaths thus providing an integrated measure of mortality across the population.

Since 1995 the Herefordshire population has increased by 15 per cent from 165,800 to 191,000 (Figure 1), which, allied with the relatively stable number of deaths recorded annually, has resulted in a steady downward temporal trend in the directly standardised all age, all-cause mortality rate. Between 1995 and 2014 the local figure fell from 1,300 to 870 per 100,000 population, although there was a rise in 2015 reflecting the increased number of deaths discussed above; in 2017 the rate for Herefordshire was 910 per 100,000 (Figure 2). Throughout this period the local mortality rate has been consistently lower than both the national and regional rates with the average differences being 6.3 and 9.3 per cent respectively.

Figure 2: Directly age-standardised all age mortality rates for Herefordshire, England and the West Midlands, 1995 - 2017.



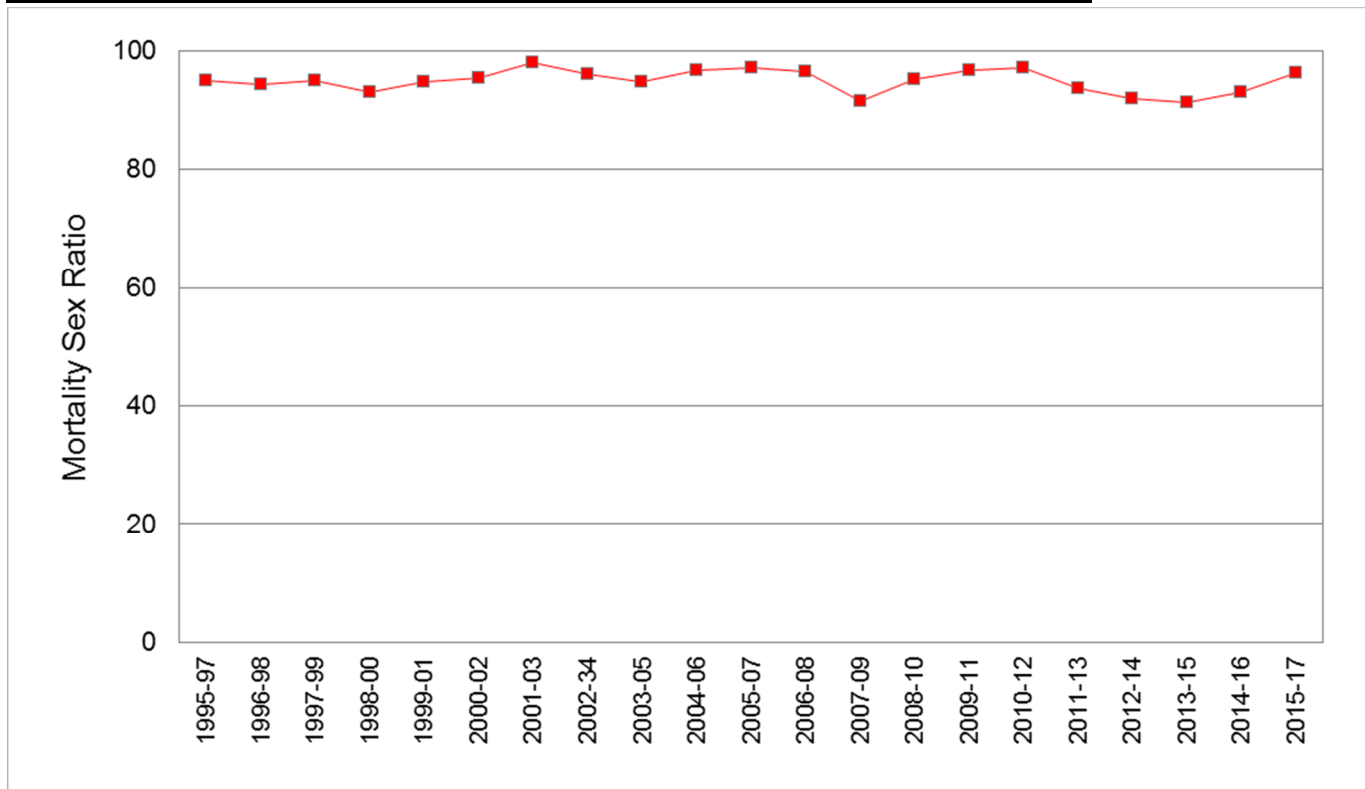
Source: NHS Clinical Indicators / ONS

Between 1995 and 2017 the proportion of deaths (expressed as a three year rolling mean) in Herefordshire represented by each gender has remained relatively consistent with the number of female deaths being consistently higher than that for males; over this period males representing on average 48.6 per cent and females 51.4 per cent of recorded deaths. This pattern is reflected in the mortality sex ratio (i.e. the number of male deaths per 100 female deaths) since 1995 which varies between 91.2 and 98.1, although no temporal pattern is evident (Figure 3).

³ The Population of Herefordshire 2018 – Facts and Figures about Herefordshire.

Available at: <https://factsandfigures.herefordshire.gov.uk/media/60636/population-of-herefordshire-2018-v10.pdf>

Figure 3: Three year rolling average mortality sex ratio for Herefordshire, 1995 – 2017.

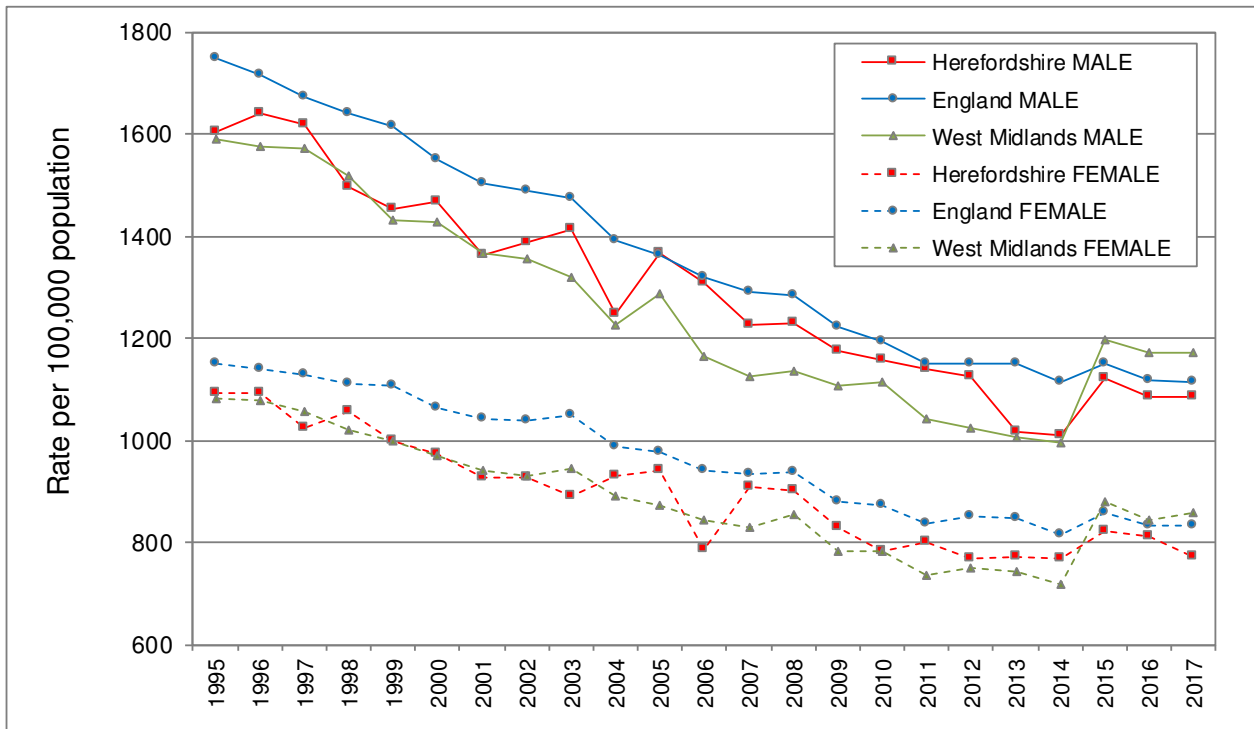


Source: PCMD / Intelligence Unit, Herefordshire Council

Between 1995 and 2017 the male mortality rate for Herefordshire was on average 44 per cent higher than that for female; similar patterns were evident both nationally and regionally with the average difference for both being 42 per cent. When looking at temporal patterns in the male and female mortality rates similar patterns to those discussed above are evident with the rates for both males and females showing relatively consistent patterns between 1995 and 2014 falling by 32 per cent and 26 per cent respectively (Figure 4); for males the national rate fell by 36 per cent and the West Midlands rate fell by 26 per cent, while for females the falls were 28 per cent nationally and 22 per cent in the comparator group. In 2015 the rates for both genders locally, national and regionally increased mirroring the patterns in the number of deaths discussed above.

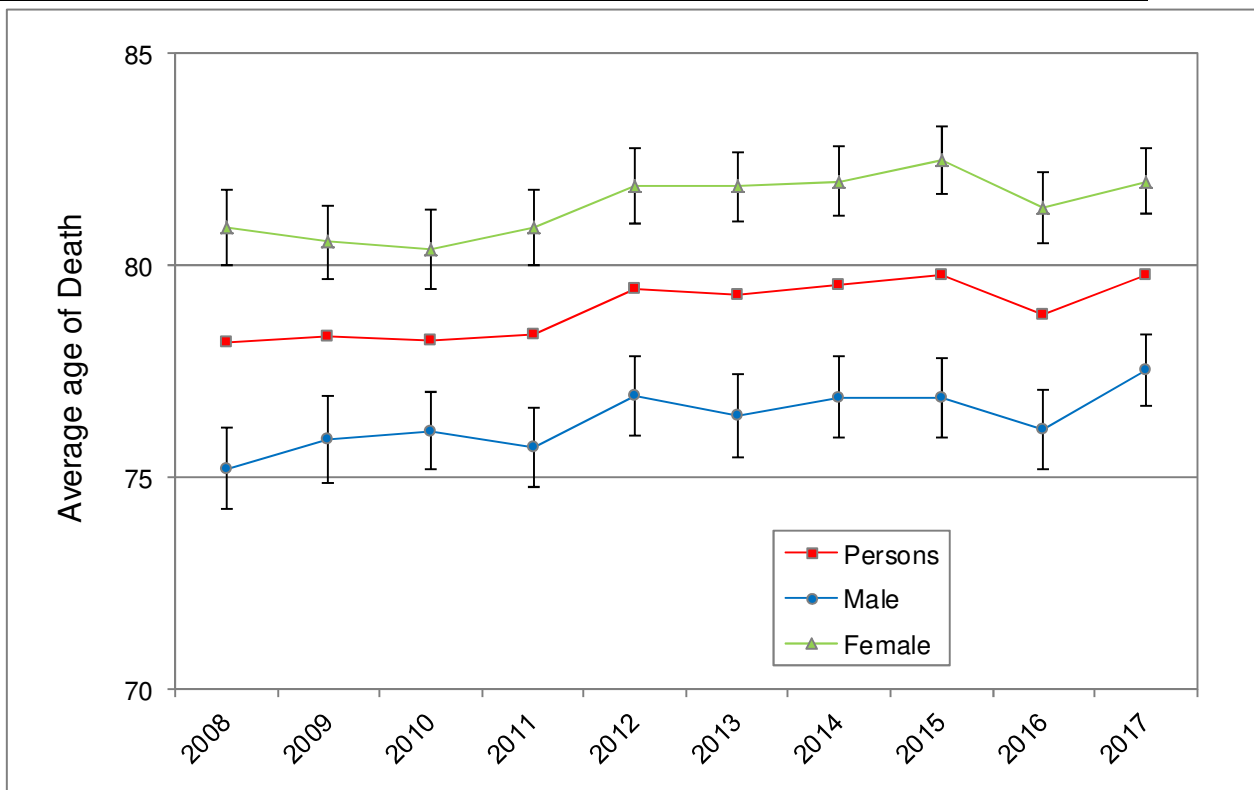
Over the ten year period between 2008 and 2017 the average age of death in the Herefordshire population has shown a general increase rising from 78.2 to years 79.8 years, a proportional rise of 2.0 per cent (Figure 5). The average age of death for males showed a more marked increase over this period compared to the female figure with a proportional increase of 3.1 per cent for males compared to 1.3 per cent for females.

Figure 4: Male and female all age directly age-standardised mortality rates for Herefordshire, England and the West Midlands, 1995 – 2017.



Source: NHS Clinical Indicators / ONS

Figure 5: Average age of death in persons, males and females in Herefordshire, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

RECENT PATTERNS

In 2017 there were 2,085 deaths in Herefordshire which corresponds to a directly standardised (DSR) all age mortality rate of 910 per 100,000 population (Table 1). The Herefordshire DSR was 5 per cent lower than that for England and 10 per cent lower than that for the West Midlands. For males the local rate was 3 per cent lower than the national figure and 8 per cent lower than that reported regionally; for females the Herefordshire rate was 8 percent lower than that for England and 11 per cent lower than that for the West Midlands.

The Herefordshire mortality sex ratio was close to 100 reflecting the almost identical number of male and female deaths recorded in 2017, although the local figure was slightly higher than both the national and regional ratios (it should be noted that this is a single years data rather than three year rolling mean illustrated in Figure 3).

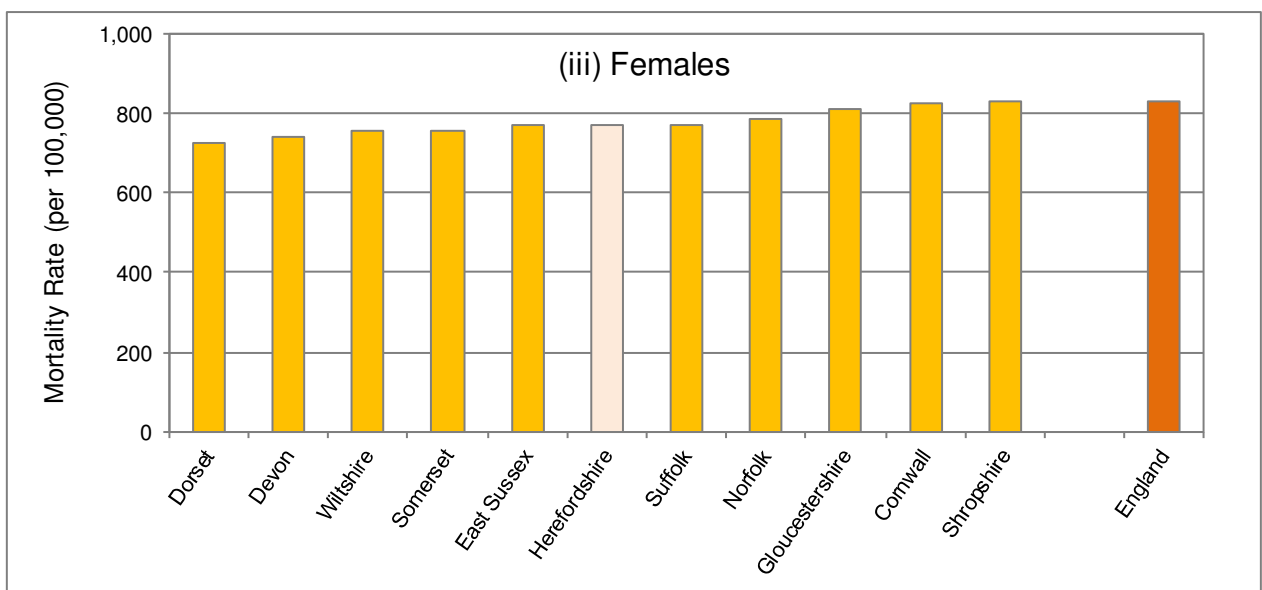
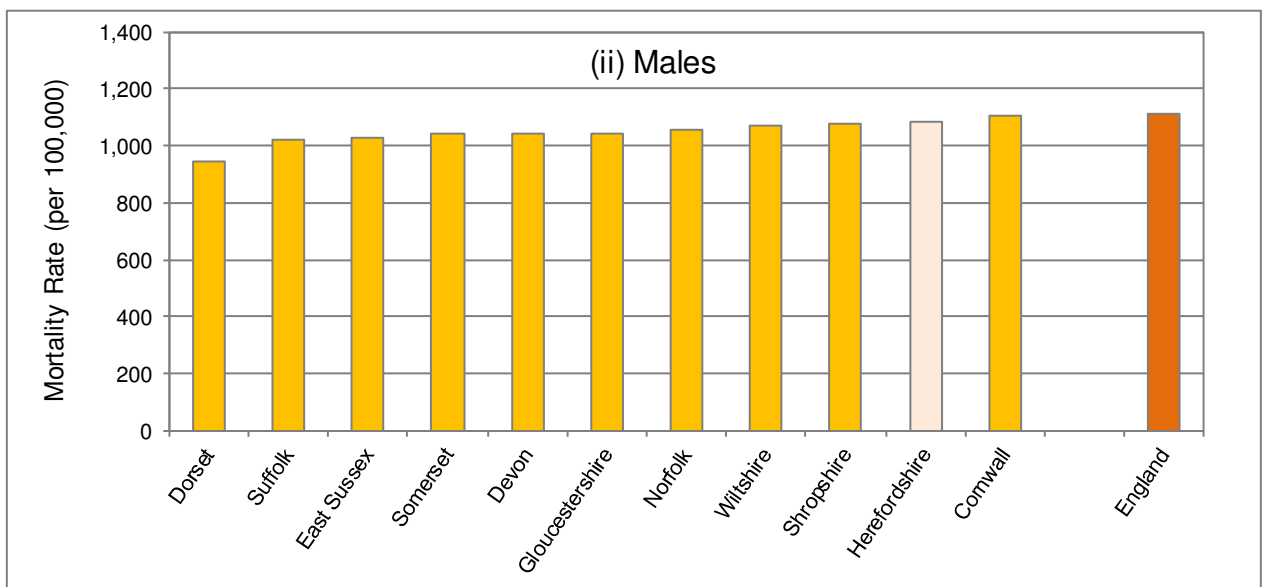
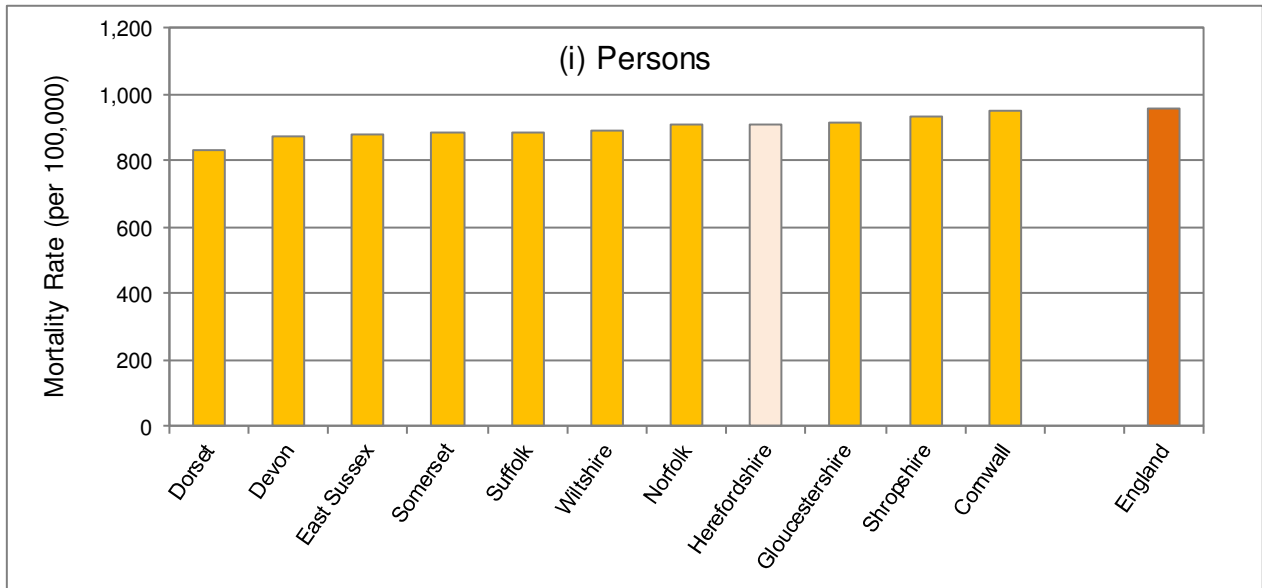
When examining the 2017 mortality rates recorded in the ten most similar Unitary Authorities to Herefordshire as determined by The Chartered Institute of Public Finance and Accountancy (CIPFA), it is evident that the local figure is broadly similar to those recorded in all of the comparators authorities (Figure 6).

Table 1: Directly age-standardised all age mortality rates (per 100,000 population), observed number of deaths and mortality sex ratio in Herefordshire, England and the West Midlands, 2017.

		Herefordshire	England	West Midlands
Male	Rate (DSR)	1,085	1,116	1,170
	Number of Deaths	1,043	245,464	27,409
Female	Rate (DSR)	771	832	859
	Number of Deaths	1,042	253,418	27,817
Persons	Rate (DSR)	910	959	998
	Number of Deaths	2,085	490,791	55,226
	Sex Ratio	100.1	96.9	98.5

Source: ONS

Figure 6: Directly age-standardised all age mortality rates for Herefordshire and comparators, 2017.

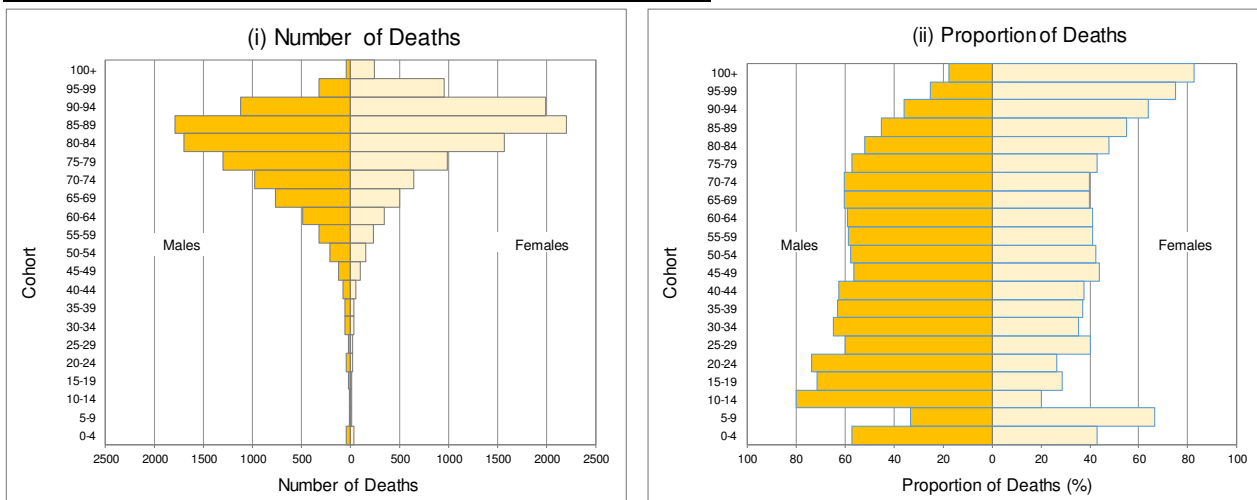


Source: ONS

AGE DIFFERENCES

Between 2008 and 2017 the number of deaths in Herefordshire increased with age up to 90 years of age, after which numbers fell with age, a pattern reflected across the country. There were a higher proportion of male deaths under the age of 80 compared to females, although at older age groups female deaths accounted for a higher proportion than males (Figure 7).

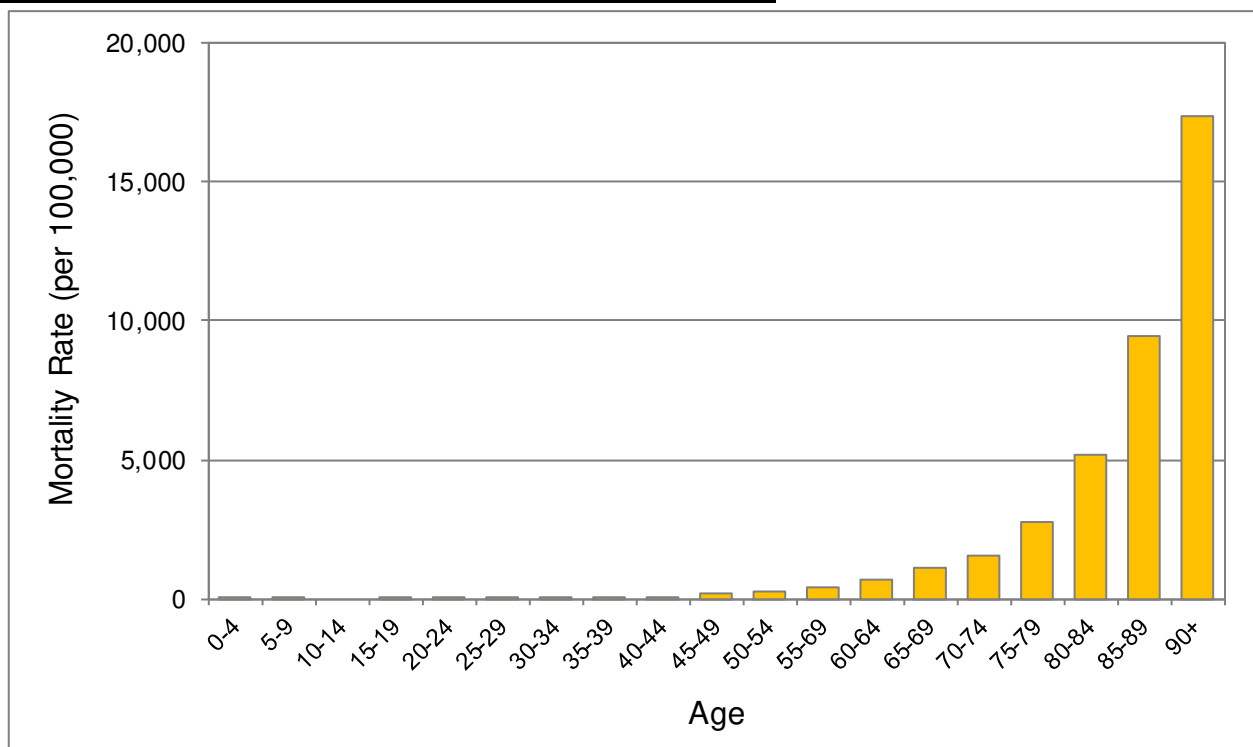
Figure 7: Deaths by gender in Herefordshire, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

When the population is broken down into five year age groups the pattern of the increasing mortality rate with age can be seen. From the 15 – 19 age group up to 70 - 74 a relatively consistent increase is observed, which is followed by an exponential increase reaching 17,400 per 100,000 in the 90+ age group (Figure 8).

Figure 8: Age specific mortality rates for Herefordshire, 2017.



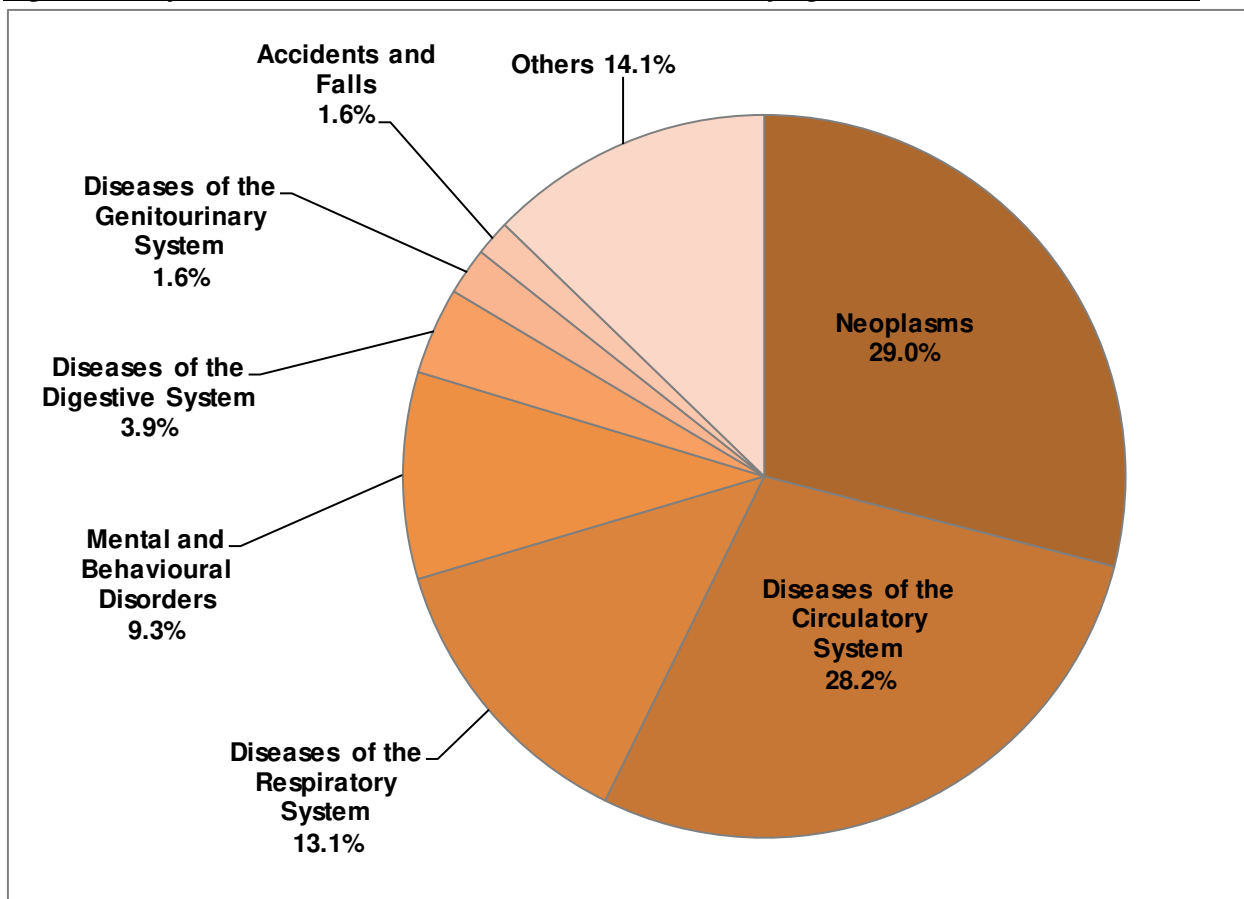
Source: PCMD / Intelligence Unit, Herefordshire Council

In the ten year period between 2008 and 2017 individuals aged 75 and over contributed 72 per cent of all deaths in Herefordshire. However, in 2015 where there was a marked increase in mortality, the 75+ cohort accounted for 73.4 per cent of all deaths locally. In 2015 there were 127 more deaths across all ages compared to the average for 2008 to 2017, which represents a 6.5 per cent increase on the ten year average. However, there were 134 extra deaths in the 75+ cohort indicating that the increased mortality observed in 2015 was driven primarily by mortality in the older age group, a pattern similar that described nationally.

UNDERLYING CAUSES OF MORTALITY

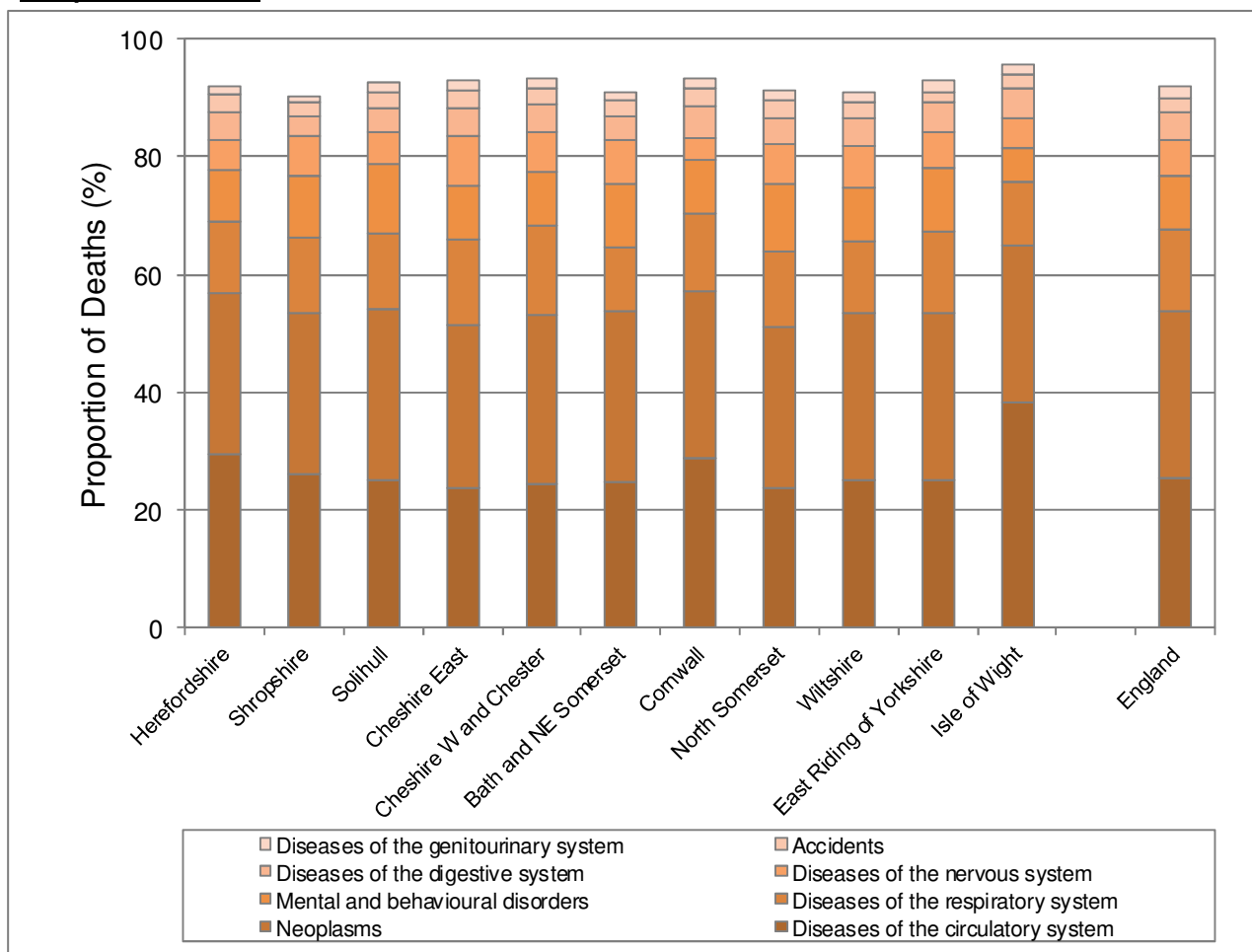
In 2017 of the 2,085 deaths recorded in Herefordshire the most common underlying causes were cancer and diseases of the circulatory system, which each accounted for 29.0 and 28.2 per cent of all mortality in the county respectively (Figure 9). Other causes of note were diseases of the respiratory system (13.1 per cent – 274 deaths) and mental and behavioural disorders (9.3 per cent – 193 deaths). In 2017 the local proportion of deaths associated with underlying causes were similar to those recorded nationally and in ten most similar Unitary Authorities to Herefordshire (Figure 10).

Figure 9: Proportion of all mortalities associated with underlying cause in Herefordshire, 2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

Figure 10: Proportion of all mortalities associated with underlying cause in Herefordshire and comparators, 2016.



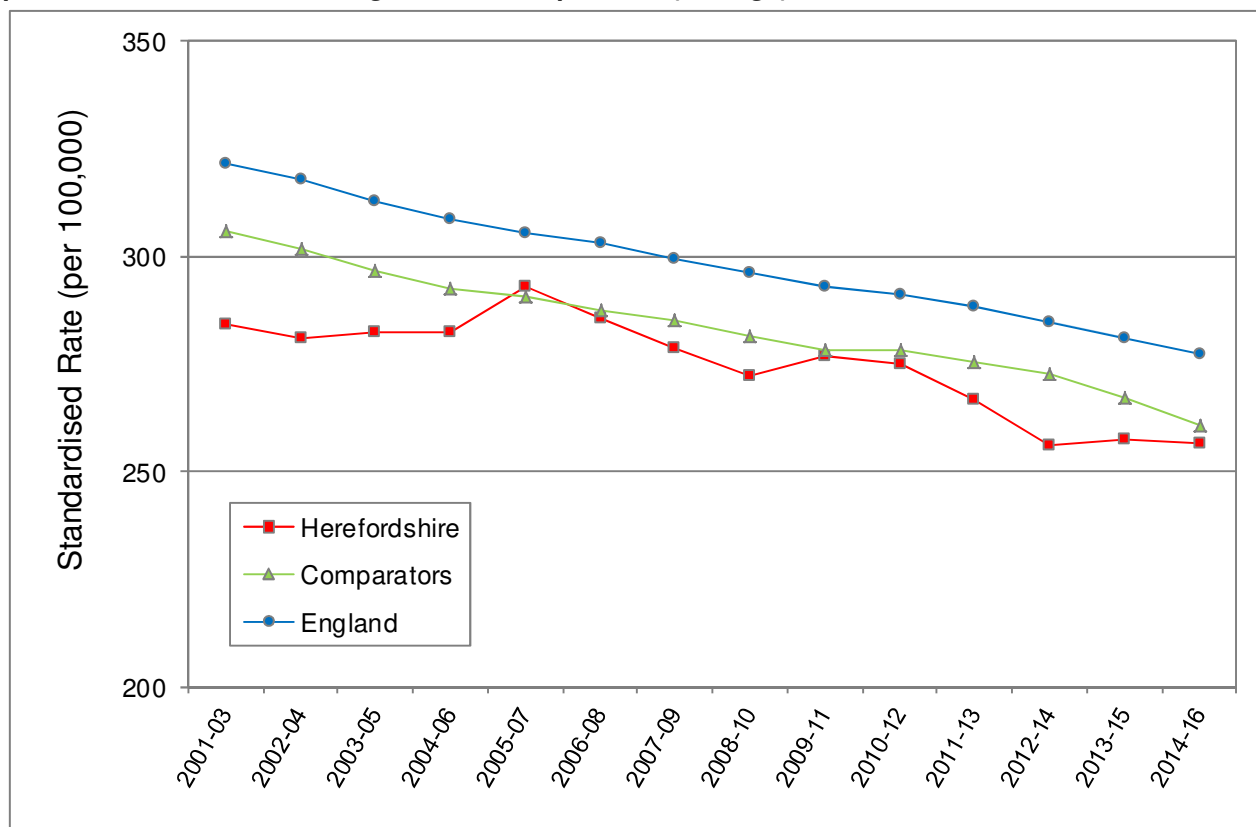
Source: Nomis / Intelligence Unit, Herefordshire Council

Cancer

In 2017 there were 605 deaths from cancer in Herefordshire, which corresponds to a directly standardised cancer specific mortality rate of 263.5 per 100,000. The local rate was not significantly different from that for England of 271.9 per 100,000.

Between 2001 and 2016 the three year rolling average directly standardised cancer specific mortality rate in Herefordshire showed some variability, although a general downward trend was evident with the rate falling from 284 per 100,000 population to 257 per 100,000 population, a proportional drop of 9.8 per cent (Figure 11). Similar temporal patterns were evident nationally and in the comparator group which showed proportional falls of 13.8 and 14.8 per cent respectively. Throughout this period the Herefordshire rate was below the national figure while being broadly similar to the average for the comparator group.

Figure 11: Three year rolling average all age directly age-standardised cancer mortality rates for persons in Herefordshire, England and comparators (average), 2001-03 to 2014-16.

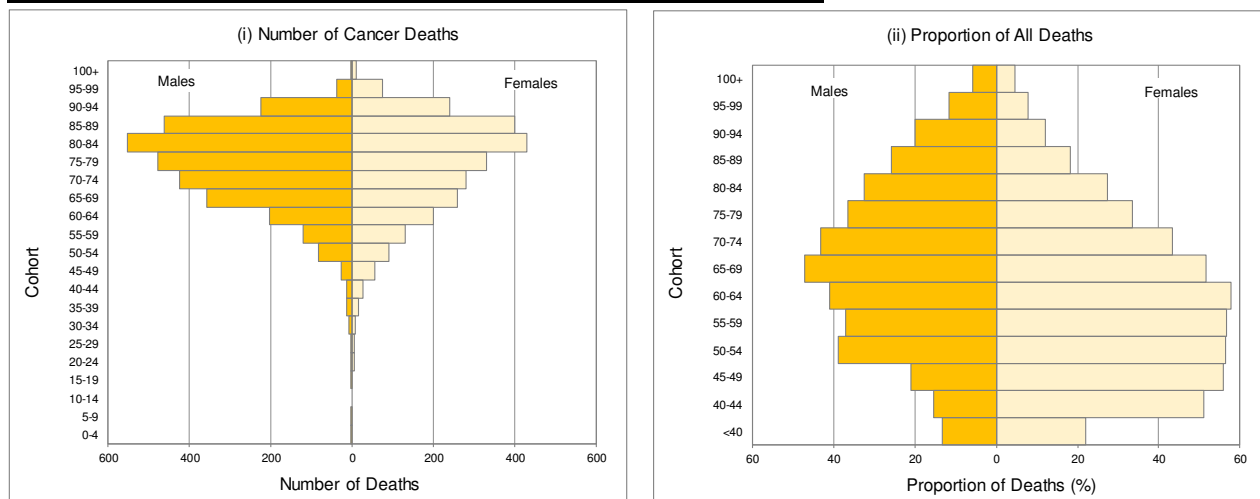


Source: CancerStats / Intelligence Unit, Herefordshire Council

Between 2008 and 2017 there were 5,576 cancer deaths in Herefordshire with males accounting for 54 per cent and females 46 per cent of deaths. Over this period cancer deaths represented 28.4 per cent of all deaths in the county, 31.6 per cent of all male deaths and 25.3 per cent of all female deaths.

By age, the number of cancer deaths increased with age in both genders, particularly after the age of 40, with highest numbers in both genders observed in 80 to 84 year cohort (Figure 12). The proportion of all deaths which were by cancer deaths showed some variation with age between the genders. For males more than 35 per cent of deaths were in the 50 and 79 years range, whilst for females the highest proportions (>50 per cent) occurred between the ages of 35 and 69 years (Figure 12).

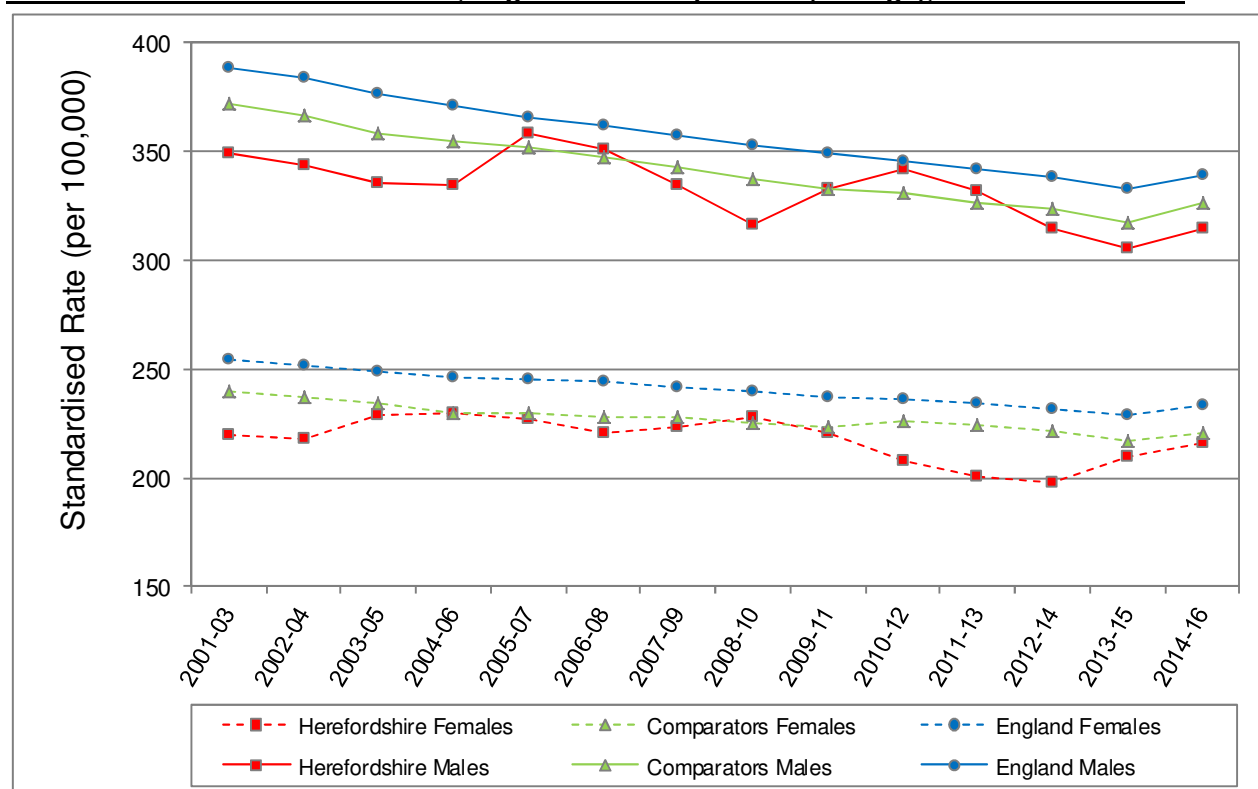
Figure 12: Cancer deaths by gender in Herefordshire, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

Cancer mortality rates for both males and females in Herefordshire showed some variability between 2001 and 2016, although the male rate showed a general downward trend while no clear trend was evident in the female rate (Figure 13). Similar patterns were evident for both genders nationally and in the comparator group; for males the national rate fell proportionally by 12.8 per cent while in the comparator group the fall was 12.1 per cent, while for females the falls were 8.3 per cent nationally and 8.1 per cent in the comparator group. Throughout this period the male cancer mortality rates were consistently higher than those for females in Herefordshire, nationally and in the comparator group.

Figure 13: Three year rolling average all age directly age-standardised cancer mortality rates for males and females in Herefordshire, England and comparators (average), 2001-03 to 2014-16.



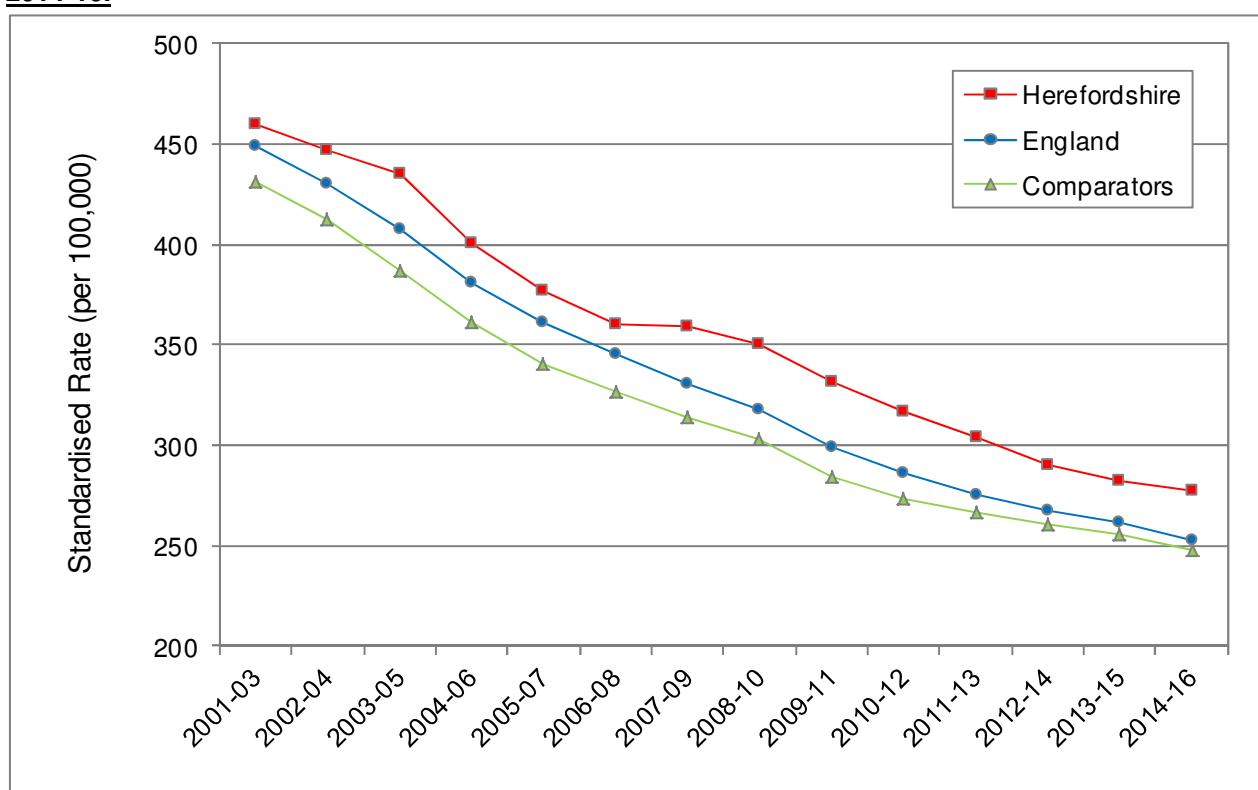
Source: CancerStats / Nomis / Intelligence Unit, Herefordshire Council

Diseases of the Circulatory System

In 2017 there were 589 circulatory disease specific deaths in Herefordshire, which corresponds to a directly standardised mortality rate of 251.7 per 100,000. The local rate was not significantly different from that for England of 241.8 per 100,000.

Between 2001 and 2016 the three year rolling average directly standardised circulatory disease specific mortality rate in Herefordshire fell from 449 per 100,000 population to 248 per 100,000 population, a proportional drop of 39.8 per cent (Figure 14). Over this period similar patterns were evident nationally and in the comparator group which showed proportional falls of 43.7 and 42.5 per cent respectively. Throughout this ten year period the Herefordshire rolling average rate has been higher than both the national and comparator.

Figure 14: Three year rolling average all age directly age-standardised diseases of the circulatory system mortality rates for persons in Herefordshire, England and comparators (average), 2001-03 to 2014-16.

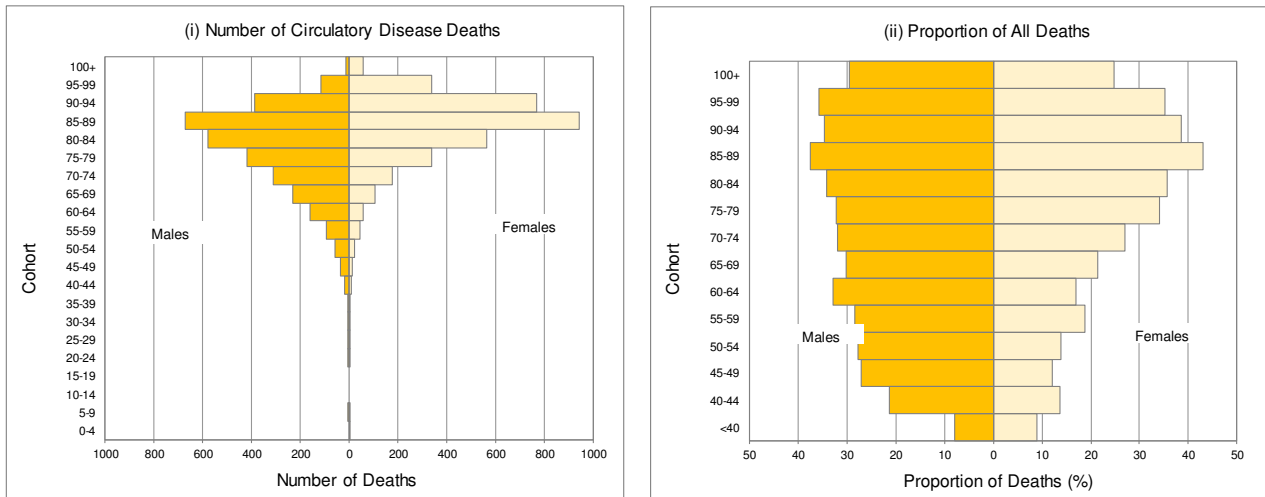


Source: NHS Clinical Indicators / Intelligence Unit, Herefordshire Council

Between 2008 and 2017 there were 6,566 circulatory disease specific deaths in Herefordshire with males accounting for 47.5 per cent and females 52.5 per cent of deaths. Over this period circulatory disease specific deaths represented 33.4 per cent of all deaths in the county, 32.7 per cent of all male deaths and 34.1 per cent of all female deaths.

By age, the number of circulatory disease specific deaths increased with age in both genders, with highest numbers in both genders observed in 85 to 89 year cohort (Figure 15). The proportion of all deaths represented by circulatory disease specific mortality showed some variation with age between the genders with the proportion of male deaths being greater than the proportion of female deaths up to the age of 74 with the pattern reversed in older cohorts. (Figure 15).

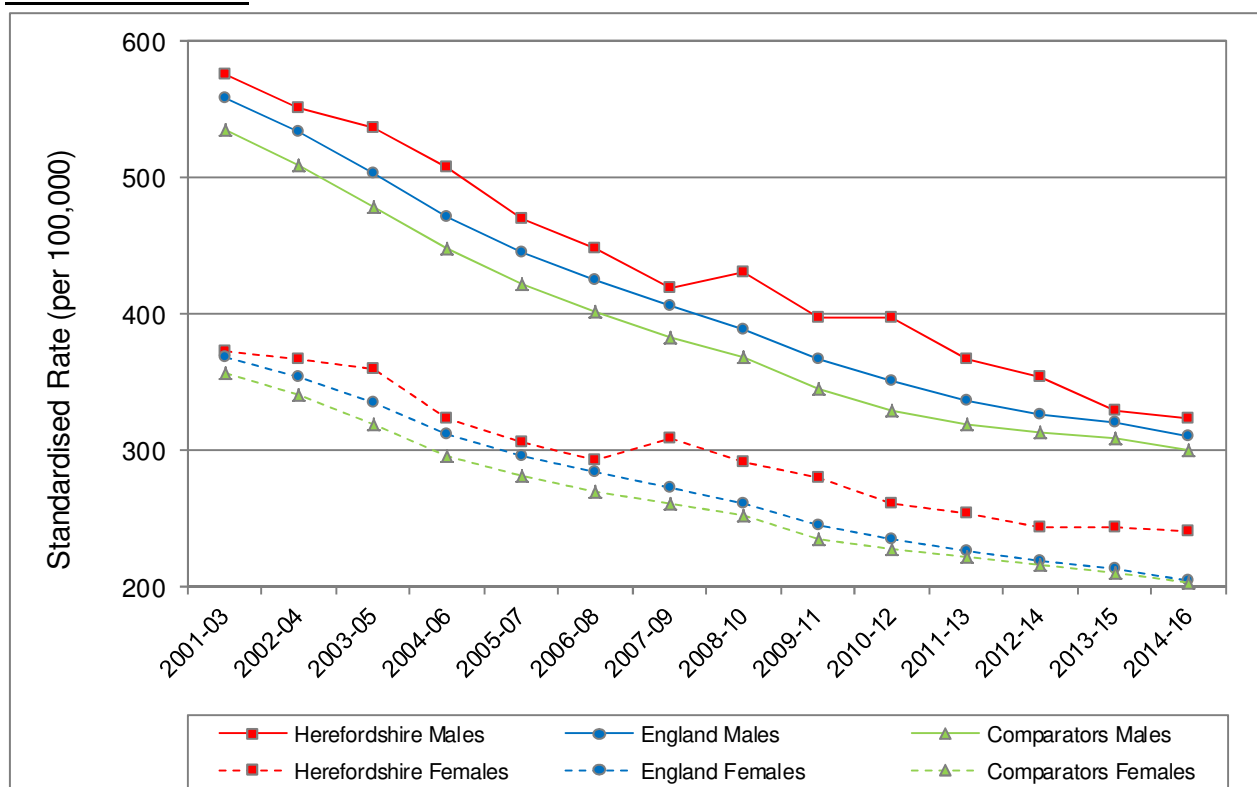
Figure 15: Circulatory disease specific deaths by gender in Herefordshire, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

Circulatory system disease mortality rates for both males and females in Herefordshire showed a general downward trend between 2001 and 2016 with the proportional falls being 43.8 per cent for males and 35.3 per cent for females (Figure 16). Similar patterns were evident for both genders nationally and in the comparator group; for males the national rate fell proportionally by 44.3 per cent while in the comparator group the fall was 44.2 per cent, while for females the falls were 43.8 per cent nationally and 42.8 per cent in the comparator group. Throughout this period the male circulatory system disease mortality rates were consistently higher than those for females in Herefordshire, nationally and in the comparator group.

Figure 16: Three year rolling average all age directly age-standardised diseases of the circulatory system mortality rates for males and females in Herefordshire, England and comparators (average), 2001-03 to 2014-16.



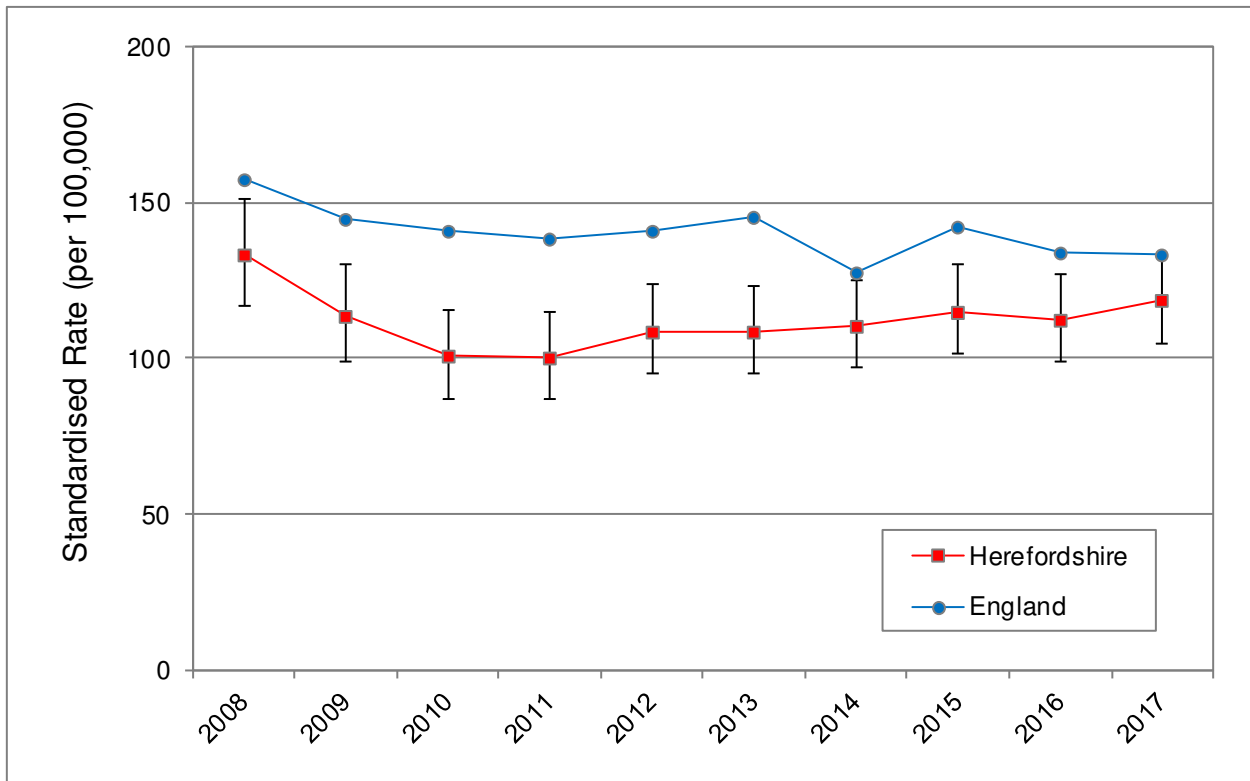
Source: NHS Clinical Indicators / Intelligence Unit, Herefordshire Council

Diseases of the Respiratory System

In 2017 there were 274 respiratory disease specific deaths in Herefordshire, which corresponds to a directly standardised specific mortality rate of 118.5 per 100,000. The local rate was not significantly different from that for England of 133.6 per 100,000.

Between 2008 and 2017 the directly standardised respiratory disease specific mortality rate in Herefordshire has shown some variability, ranging between 100 per 100,000 and 133 per 100,000 (2011), although no significant statistical differences were evident between the rates throughout this period (Figure 17).

Figure 17: Directly age-standardised respiratory disease specific mortality rates for Herefordshire and England, 2008-2017.

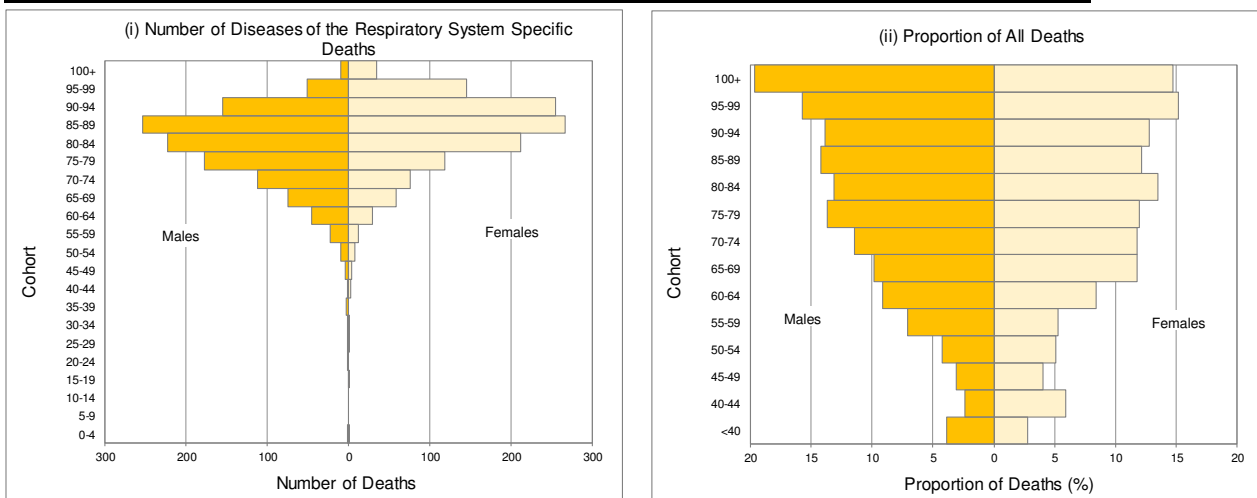


Source: PCMD / Intelligence Unit, Herefordshire Council

Between 2008 and 2017 there were 2,376 respiratory disease specific deaths in Herefordshire with males accounting for 48 per cent and females 52 per cent of deaths. Over this period respiratory disease specific deaths represented 12.1 per cent of all deaths in the county, with the same figure recorded for both genders.

By age, the number of respiratory disease specific deaths increased with age in both genders, particularly after the age of 45, with highest numbers in both genders observed in 84 to 89 year cohort (Figure 18). The proportion of all deaths represented by respiratory disease specific deaths showed a general increase in both males and females reaching maxima in those aged 95 and over, although generally the proportions of male deaths were higher than for females in the majority of cohorts (Figure 18).

Figure 18: Respiratory disease specific deaths by gender in Herefordshire, 2008-2017.

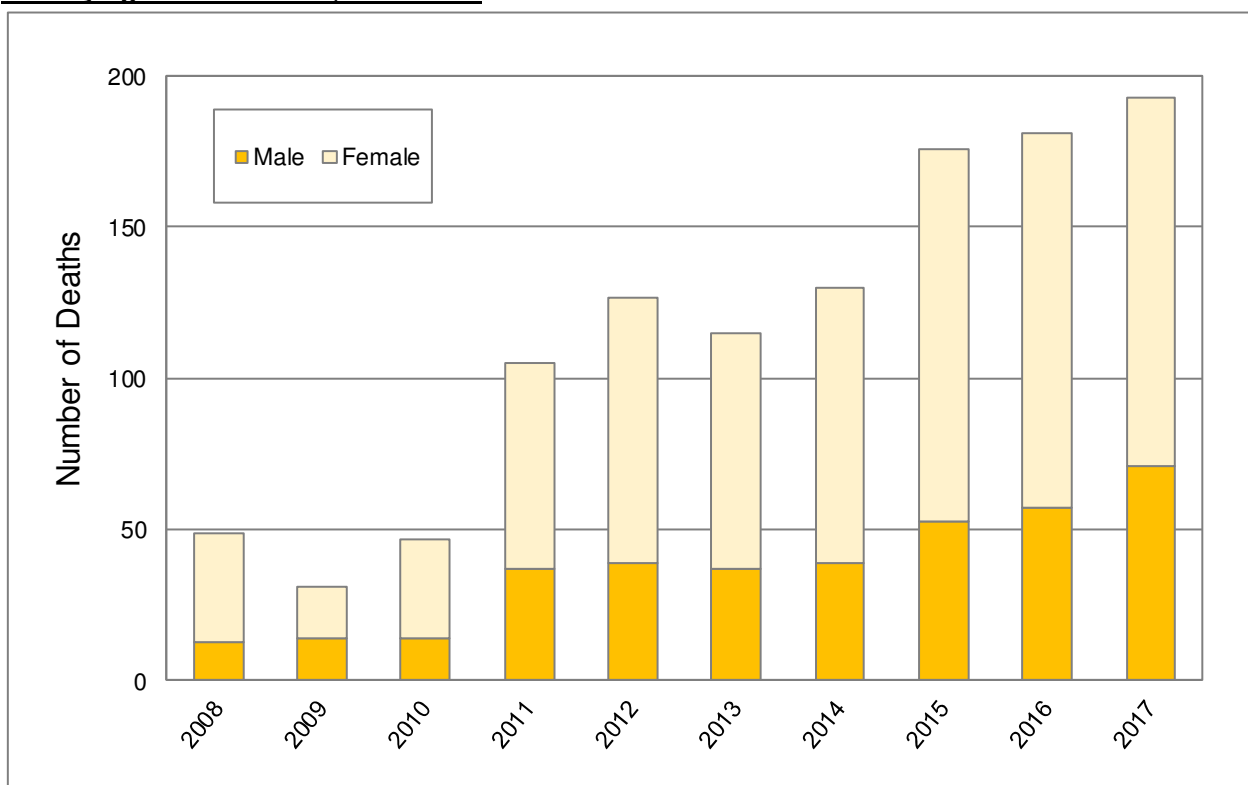


Source: PCMD / Intelligence Unit, Herefordshire Council

Mental and Behavioural Disorders

Between 2008 and 2017 there were 1,154 deaths where mental and behavioural disorders were the underlying cause of death. However, over this ten year period the annual numbers of deaths has increased steadily from 49 to 193, an almost fourfold increase (Figure 19). In all years the number of female deaths were higher than that for males, and over the period females accounted for two thirds of deaths.

Figure 19: Number of deaths in Herefordshire where mental and behavioural disorders were the underlying cause of death, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

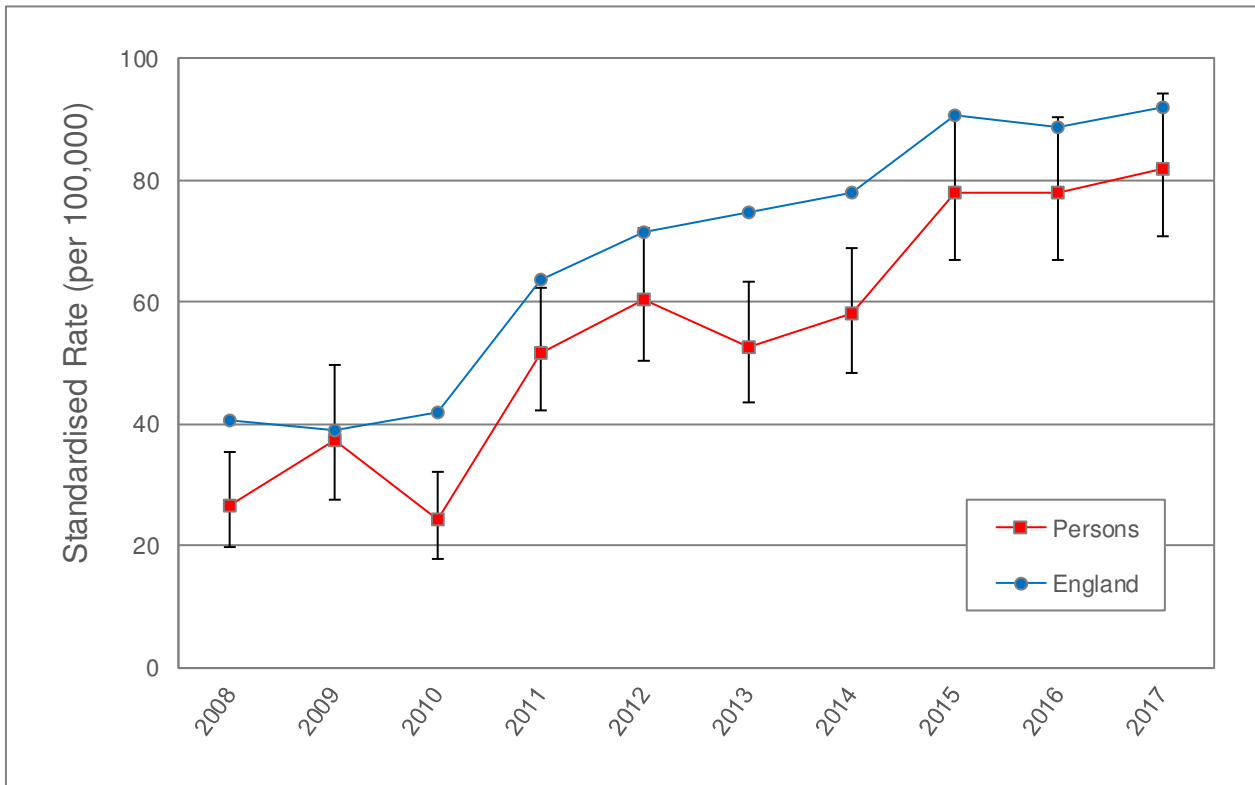
Over the same ten year period the standardised mortality rate has shown a general increase with a figure of 82 per 100,000 recorded in 2017 compared to 27 per 100,000 recorded in 2008 (Figure 20). Throughout this period the Herefordshire rate has mirrored that for England, although the local figure has been consistently lower of the two.

Between 2008 and 2017 there were 1,154 mental and behavioural disorders specific deaths in Herefordshire with males accounting for 32 per cent and females 68 per cent of deaths. Over this period mental health deaths represented 5.9 per cent of all deaths in the county, 3.97 per cent of all male deaths and 7.7 per cent of all female deaths.

By age, there were no mental and behavioural disorders specific deaths recorded in those aged below 40 while number remained low up to the 65-69 years cohort. Subsequently, numbers rose rapidly with age with numbers of female deaths be appreciably higher than that for males in cohorts older than 79 years (Figure 21). A similar pattern was evident for the proportions of all deaths represented by mental and behavioural disorders specific deaths for both genders although in all cohorts above 60 years the proportions of all deaths represented by mental and behavioural disorders were higher in females compared to males (Figure 21).

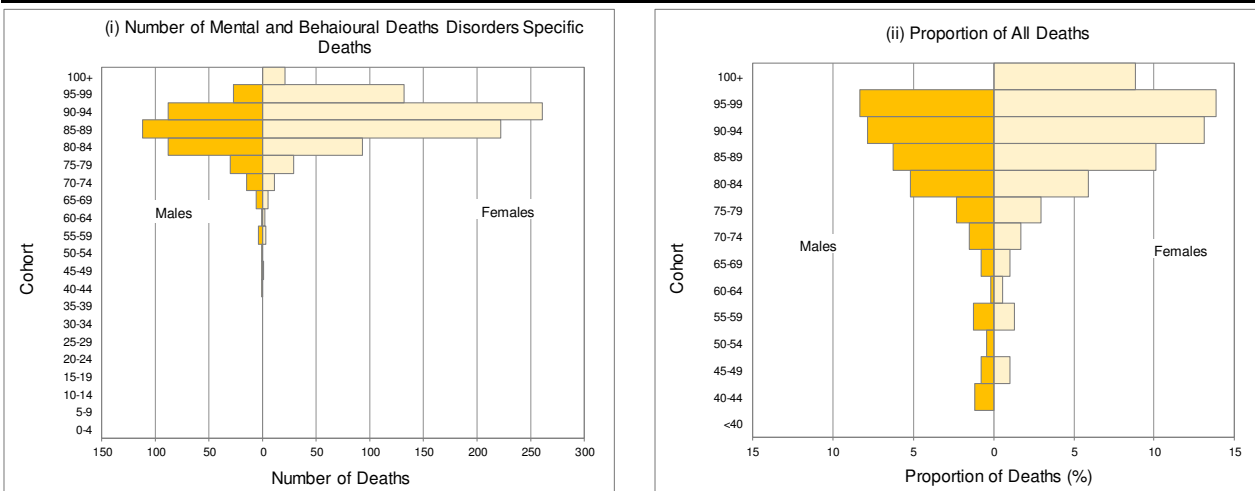
Between 2014 and 2016 there were 56 individual suicides in Herefordshire in those aged 10 and over, which corresponds to a directly standardised suicide rate of 11.0 per 100,000 population, a figure broadly similar to those recorded for England, the West Midlands and the ten most similar Unitary Authorities.

Figure 20: Directly age-standardised mental and behavioural disorders mortality rates in Herefordshire and England, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

Figure 21: Mental and behavioural disorders specific deaths by gender in Herefordshire, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

Temporal Trends of Cause Specific Mortality Rates

Between 1995 and 2016 the rates of other causes of mortality have shown some variability both in relation to actual rates but also in relation to national rates and trends some of which are illustrated

in Figure 22. Disease specific mortality rates in Herefordshire which have shown decreasing trends over this period include those for lung and breast cancer, coronary heart disease, stroke and influenza and pneumonia.

Throughout this period the local lung cancer specific mortality rate has been consistently lower than the national figure. Over this period the local rate fell by 18 per cent compared to 23 per cent nationally.

The downward trend for the Herefordshire breast cancer mortality rate was less consistent than those observed nationally, although over the 20 year period the local rate fell by 45 per cent compared with 36 per cent for the national rate.

Coronary heart disease (CHD) specific mortality has shown a considerable decline since 1995 with consistent downward trends observed locally and nationally with both rates being similar throughout this period and all falling approximately by two thirds.

The stroke related mortality rate has also shown a decline in Herefordshire since 1995. A decline is also evident for England, although the national trend is more consistent than that observed in Herefordshire. While the local rate was generally higher than the national rate throughout much the period between 1995 and 2016, the overall decline in the Herefordshire rate of 57 per cent was broadly similar to the decline of 60 per cent observed across England.

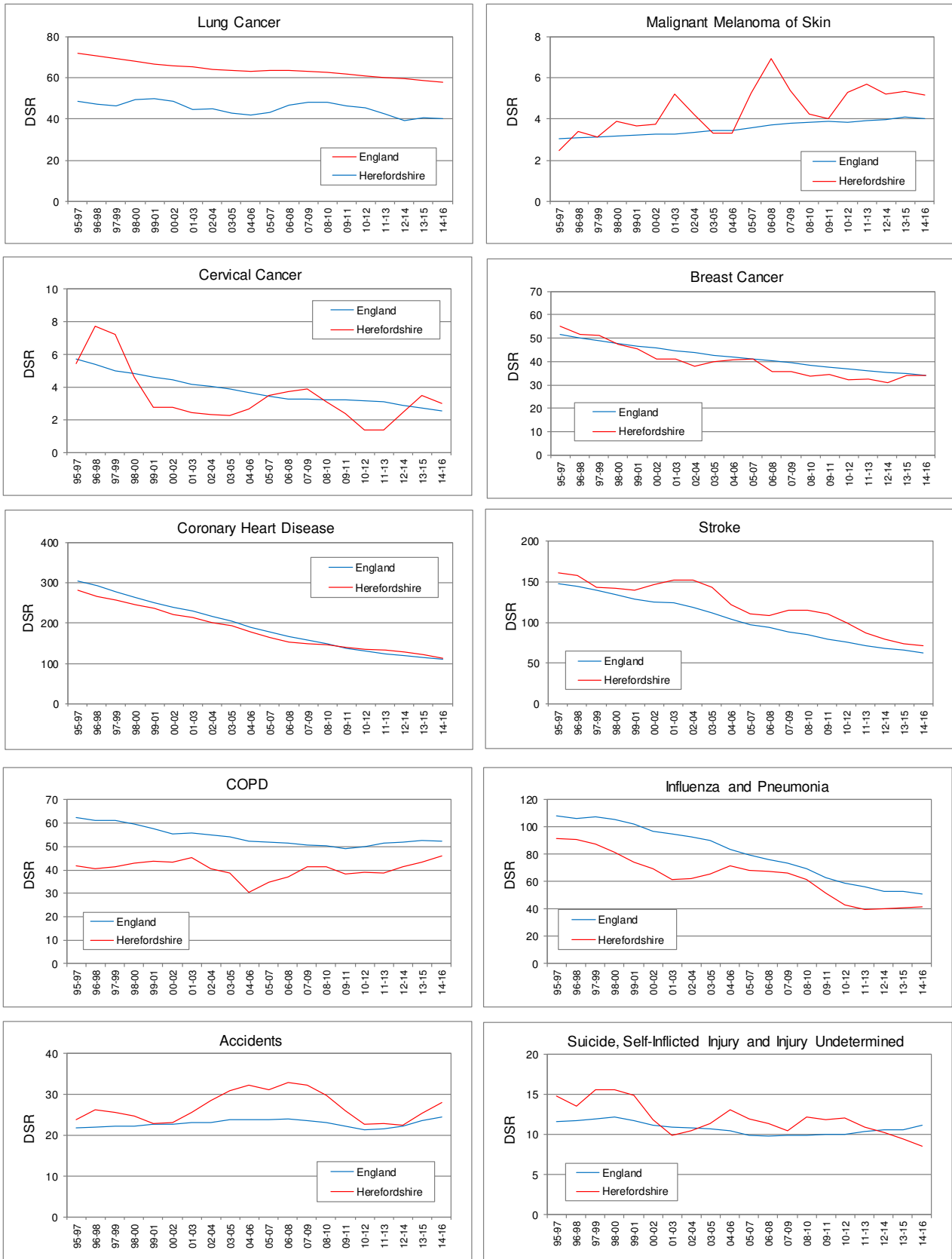
The Herefordshire influenza and pneumonia specific mortality rate has shown a general downward trend since 1995 with the three year rolling average falling proportionally by 57 per cent compared to a national fall of 54 per cent. Over this period the local rate was consistently lower than that recorded nationally.

Other local disease specific mortality rates, such as those associated with COPD and cervical cancer have shown considerable temporal variation. While the national rate for cervical cancer has shown a consistent fall since 1995 the local rate has fluctuated around the national figure with no consistent temporal pattern evident. Similarly, the local mortality rate for COPD has shown no discernible temporal pattern since 1995, although the rate has been consistently lower than the national rate.

The Herefordshire mortality rate associated with general accidents has fluctuated around the national figure, with no consistent local temporal pattern is evident, while the national mortality rate has remained relatively stable.

Between 1995 and 2016 the overall annual suicide rate in Herefordshire has shown considerable variation although there has been a general downward trend. Over this 22 year period the national rate has remained relatively constant.

Figure 22: Three year rolling average all age directly age-standardised specific mortality rates for Herefordshire and England, 1995-07 to 2014-16.



Source: NHS Clinical Indicators / Nomis

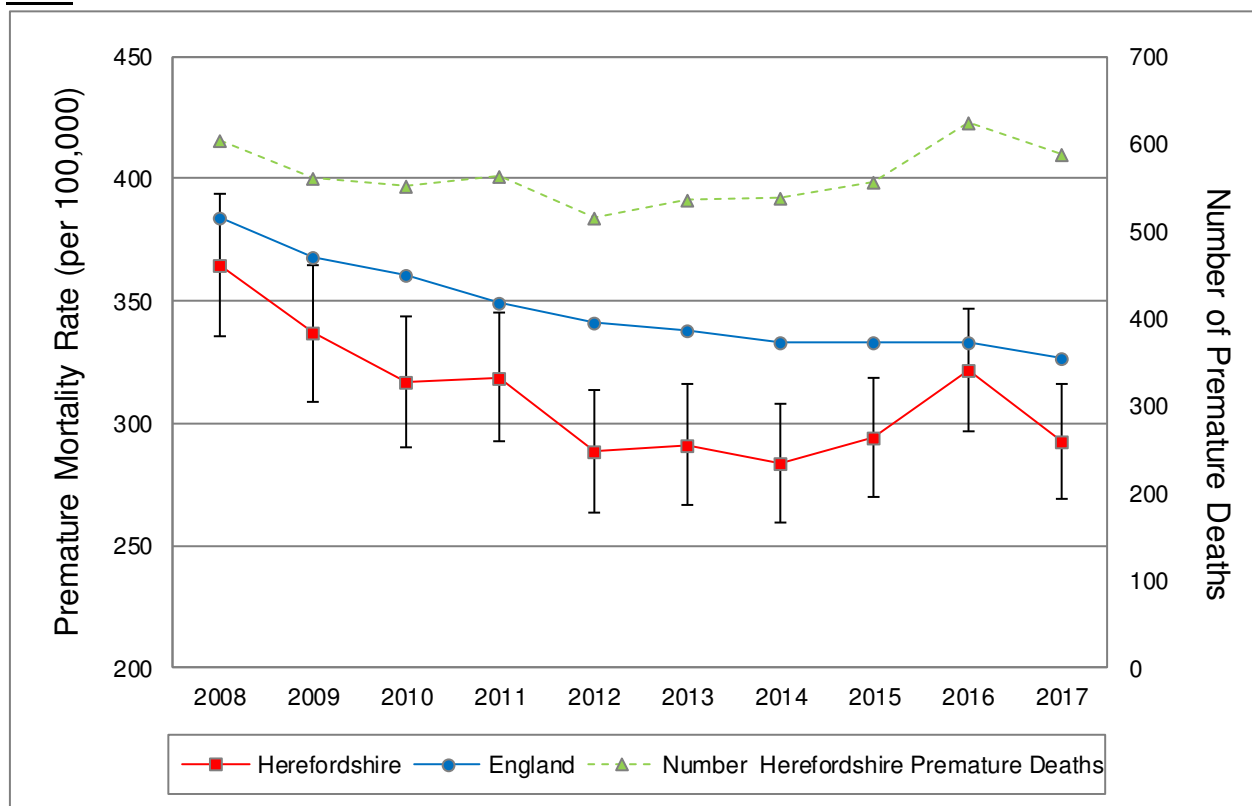
PREMATURE MORTALITY

Individuals living today can expect to live a longer, healthier life than ever before. However, nationally, there are more than 150,000 premature deaths⁴ each year⁵. The most common causes of premature mortality are cancer, heart disease, stroke, lung disease and liver disease which between them account for 79 per cent of all premature deaths in England. Of these deaths it is estimated that two thirds could be avoided either through prevention, earlier diagnosis and access to the highest quality treatment and care.

TEMPORAL TRENDS

Between 2008 and 2017 the directly standardised premature mortality rate in Herefordshire showed a steady downward trend, although increases were recorded in 2015 and 2016, although this was followed by a subsequent fall (Figure 23). In 2017 there were 588 premature deaths in Herefordshire, corresponding to an age standardised rate of 292 per 100,000, a figure significantly lower than that recorded in 2008 (365 per 100,000) and representing a proportional fall of 20 per cent over this period. Over this ten year period the rate for England fell consistently, although the local rate has been consistently lower and the proportional fall in the Herefordshire rate is greater than that observed nationally (15 per cent).

Figure 23: All cause directly age-standardised premature mortality rates (primary axis) for Herefordshire and England and number of premature deaths in Herefordshire (secondary axis), 2008-2017.



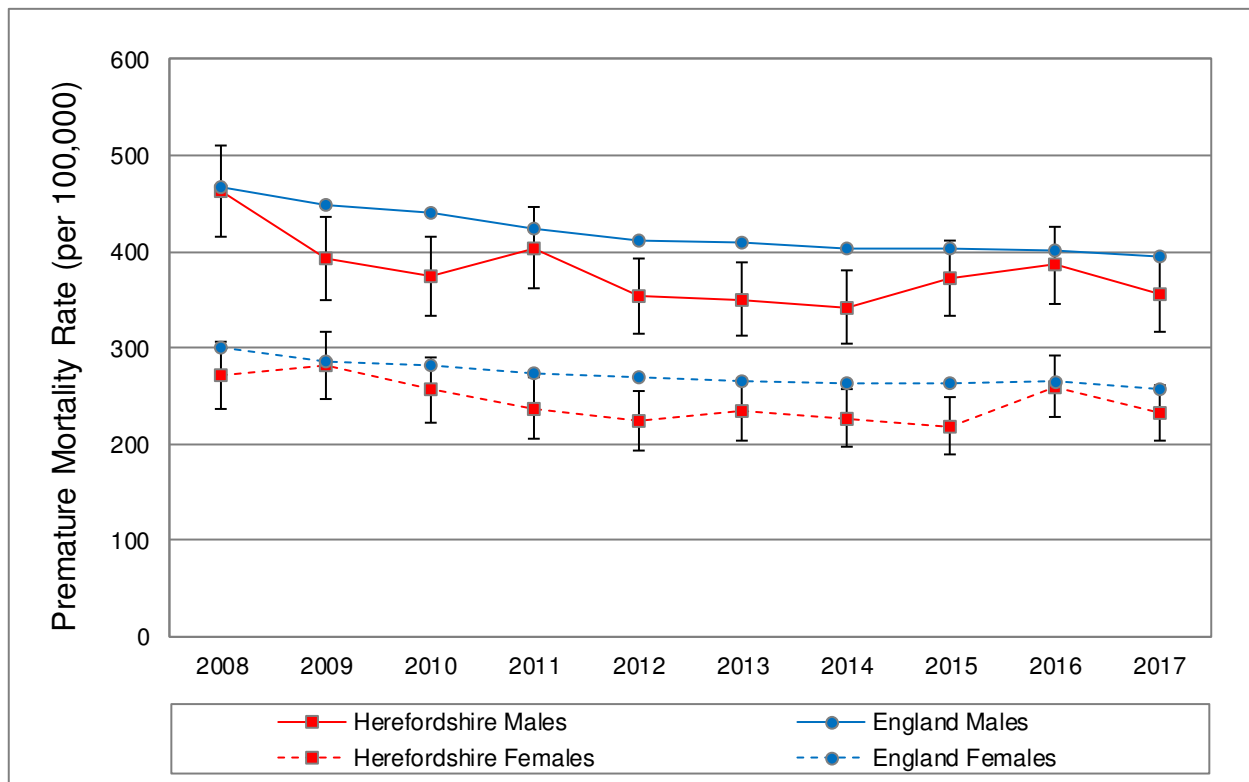
Source: PCMD / ONS / Intelligence Unit, Herefordshire Council

⁴ Premature mortality is defined as death occurring in individuals aged less than 75 years.

⁵ 'Living Well for Longer: National Support for Local Action to Reduce Premature Avoidable Mortality'. Department of Health. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307703/LW4L.pdf

The Herefordshire male premature mortality rate has been significantly higher than that for females, being on average over 50 per cent higher than the female rate between 2008 and 2017, a pattern mirroring that observed across England as a whole (Figure 24). However, throughout this period both the male and female rates have been consistently lower than the corresponding national rates.

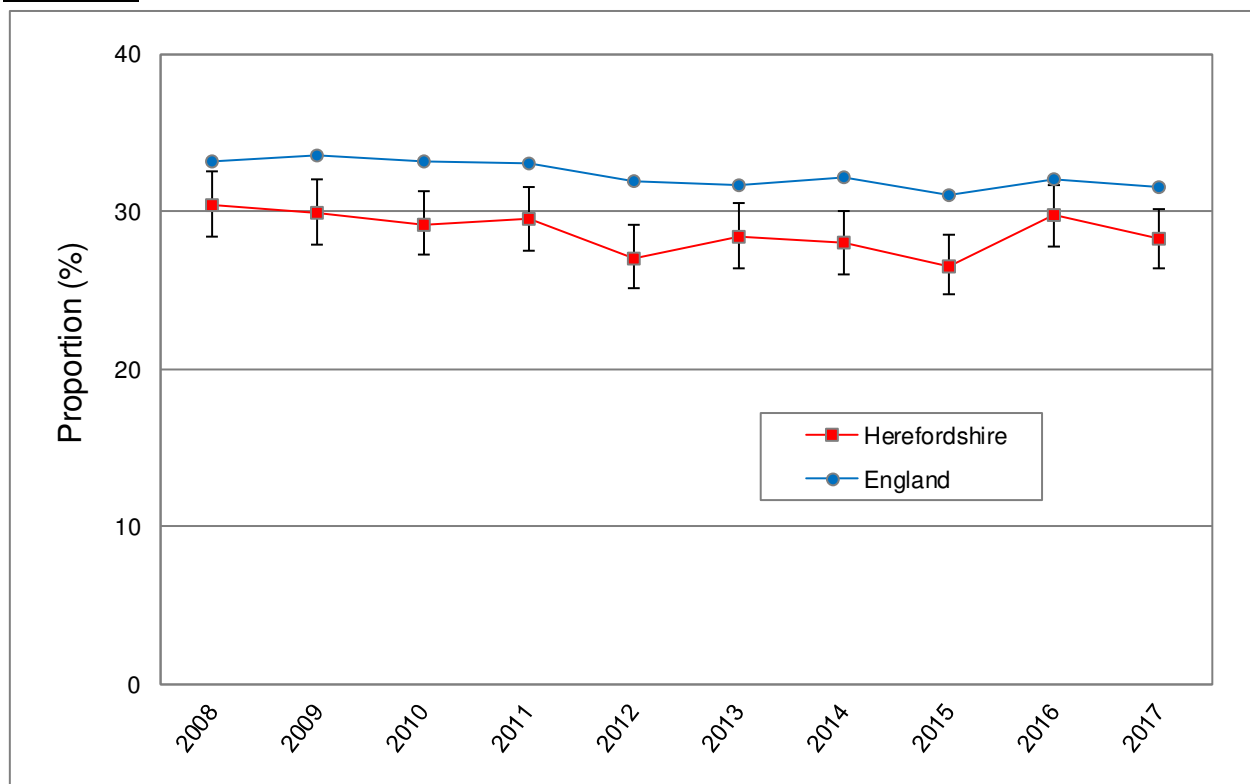
Figure 24: Male and female all cause directly age-standardised premature mortality rates (<75 years) for Herefordshire and England, 2008-2017.



Source: PCMD / ONS / Intelligence Unit, Herefordshire Council

Between 2008 and 2017 the proportion of all deaths in Herefordshire represented by premature deaths has shown little variation ranging between varied between 26.5 and 30.4 per cent, with no distinct trend evident (Figure 25). Similarly, no distinct pattern was evident for England as a whole, although throughout this period the local figure was significantly lower than that recorded nationally.

Figure 25: Proportion of all deaths represented by premature deaths for Herefordshire and England, 2008-2017.



Source: PCMD / ONS / Intelligence Unit, Herefordshire Council

Between 2010 and 2016 across Herefordshire's 116 LSOAs the crude premature mortality rate across Herefordshire's 116 LSOAs ranged between 159 and 713 per 100,000. There were 28 LSOAs which returned a rate higher than 450 per 100,000 which included ten in Hereford, seven of which were located south of the River Wye, the four in Leominster, two in Ross-on-Wye and one each in Ledbury and Bromyard (Figure 26). Of the 21 LSOAs with crude premature mortality rates below 330 per 100,000 the majority were in predominantly rural areas, with seven LSOAs being in Hereford (five north of the river) and two in Ledbury.

When looking at the level of deprivation and premature mortality in Herefordshire LSOAs it is evident that the mortality rate is significantly higher in the most deprived quintile compared to less deprived areas (Figure 27).

Figure 26: Crude premature mortality rate in Herefordshire LSOAs, 2010-2016.

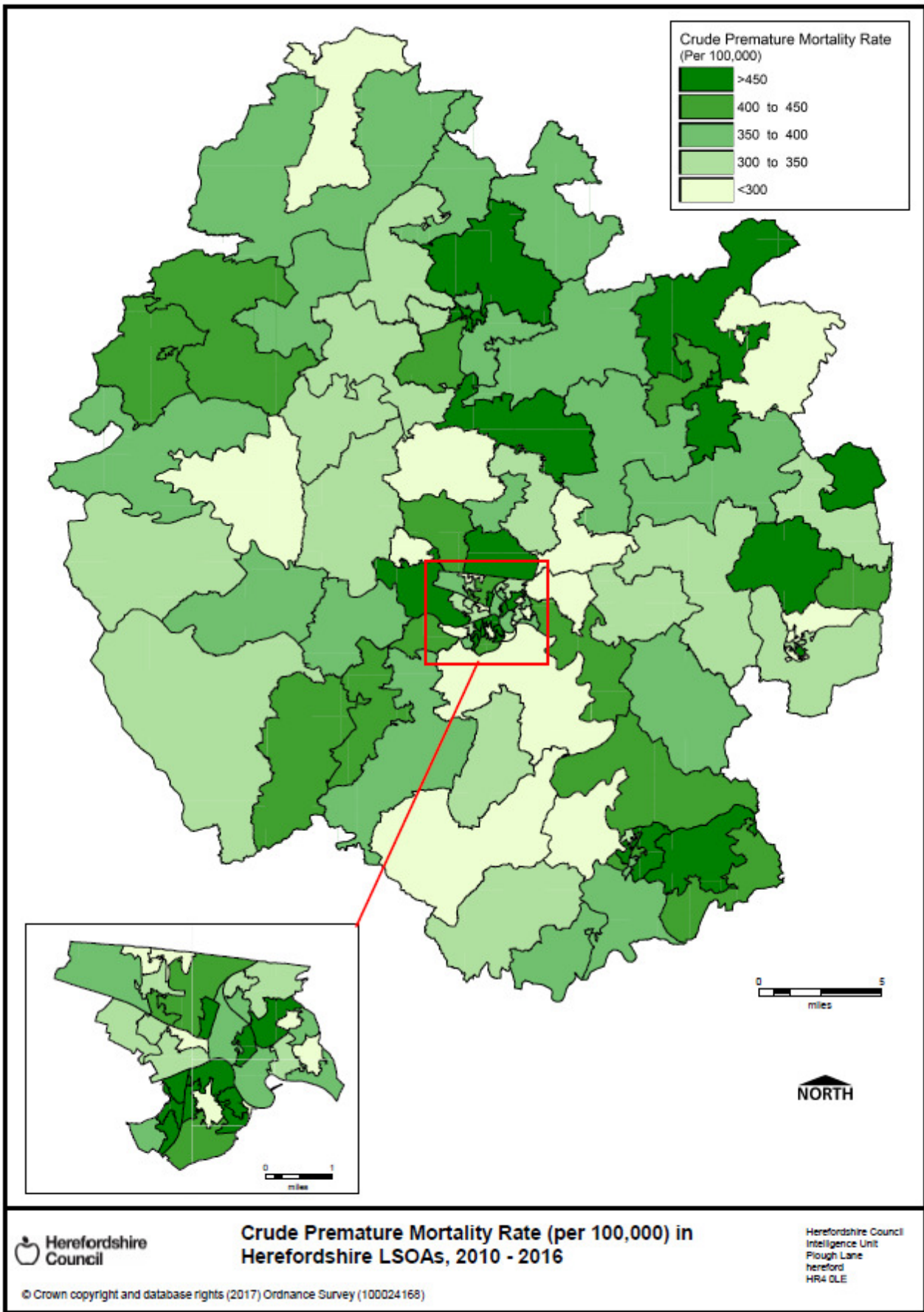
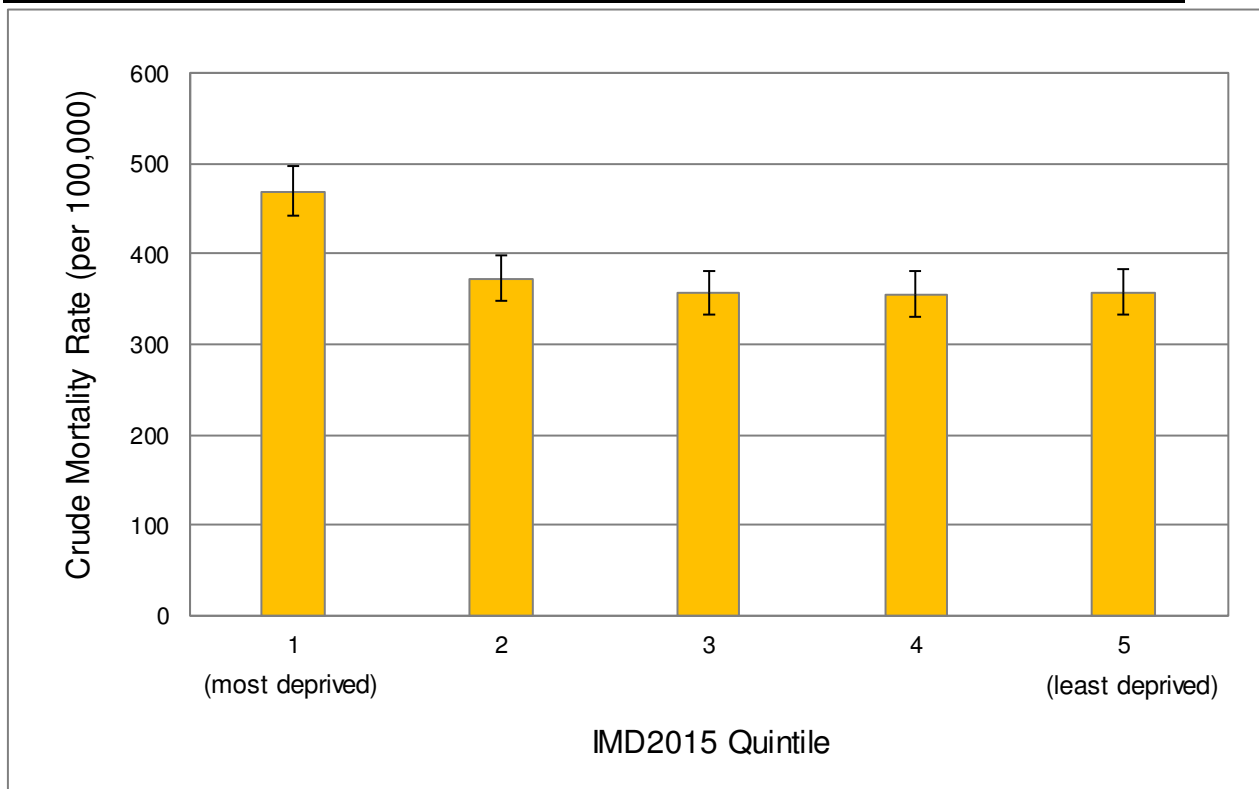


Figure 27: Crude premature mortality rate by deprivation quintile in Herefordshire, 2010-2016.



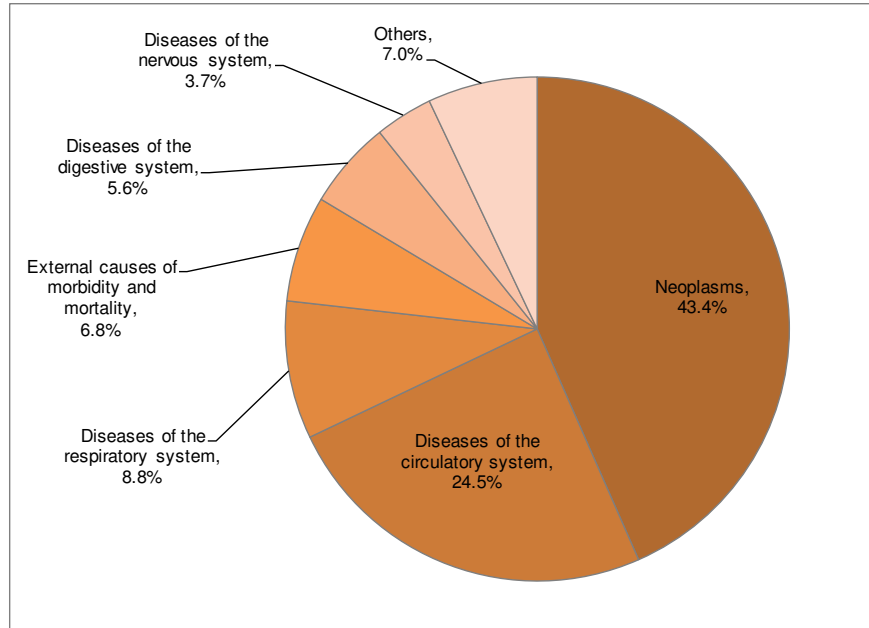
Source: PCMD / ONS / Intelligence Unit, Herefordshire Council

UNDERLYING CAUSES OF PREMATURE MORTALITY

Of the 5,636 premature deaths in Herefordshire between 2008 and 2017 the most common underlying cause was cancer which accounted for 2,424 deaths (44.3 per cent – Figure 28). Over this ten year period diseases of the circulatory system were related to 1,369 premature deaths which corresponded to 24.5 per cent of premature deaths across the county; the most common specific underlying causes were coronary heart disease which accounted for 12.4 per cent of premature deaths and strokes which accounted for 4.4 per cent. Diseases of the respiratory system and external causes (i.e. accidents) accounted for 8.8 and 6.8 per cent respectively.

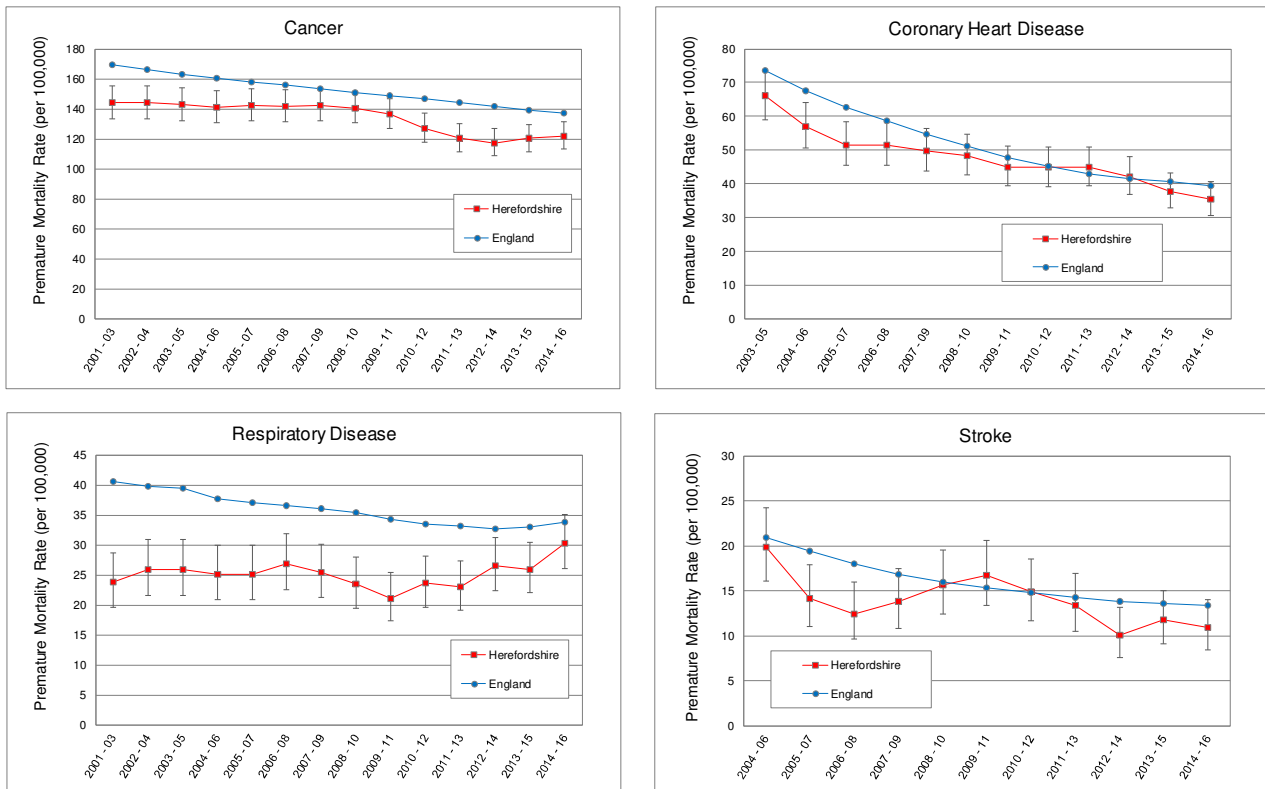
Since 2001-03 the cancer related premature mortality rate in Herefordshire has been consistently lower than the corresponding figure for England as a whole; the local figure has also shown a general downward trend over time, as has the national rate (Figure 29). While the Herefordshire respiratory disease premature mortality rate has remained below the England figure over this period since 2009-11 an increase in the local rate is evident compared to a consistently falling rate evident nationally. Both the local and national coronary heart disease premature mortality rates have generally fallen between 2001-03 and 2014-16 with both values being similar over this period. Over the same period the stroke related premature rate in Herefordshire has shown some variability over time while the national figure has again shown a consistent fall, although throughout much of this time there has been no significant difference between the two rates.

Figure 28: Proportion of all premature mortalities associated with underlying cause in Herefordshire, 2008-2017.



Source: PCMD / Intelligence Unit, Herefordshire Council

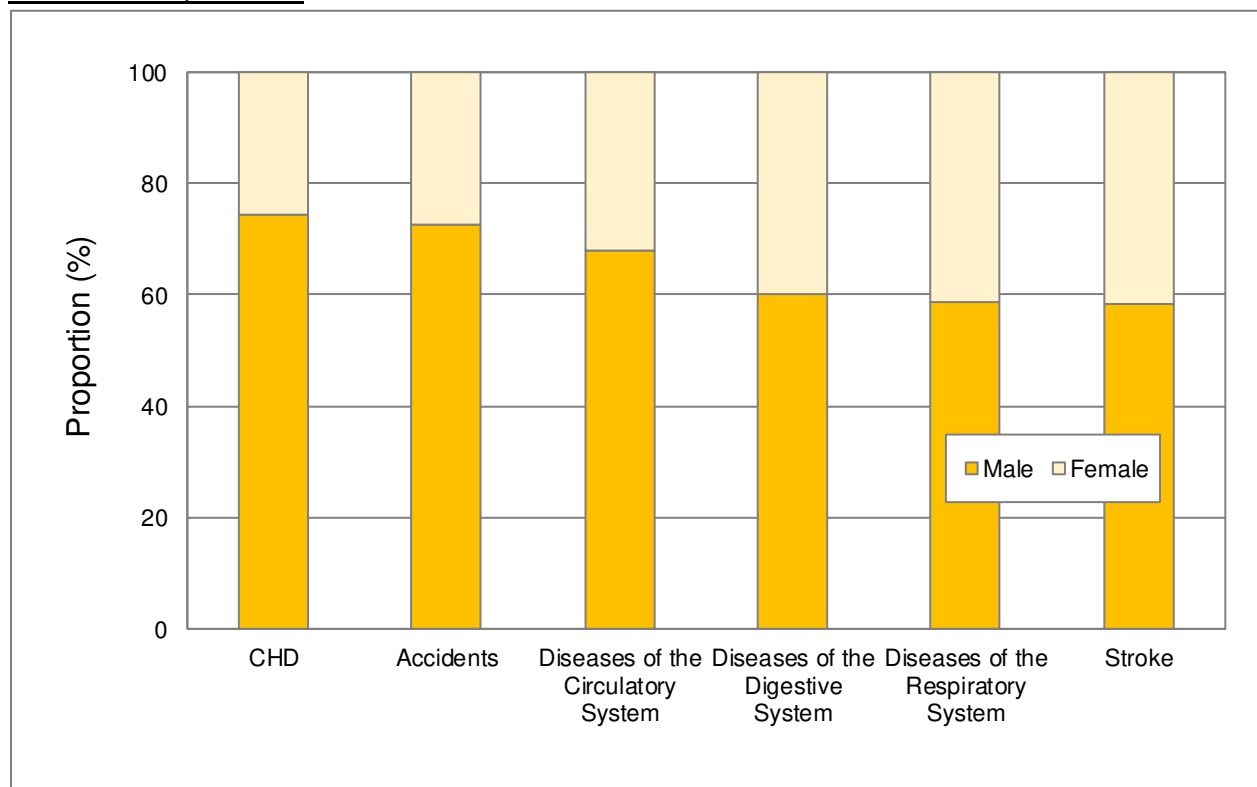
Figure 29: Premature mortality rates associated with major underlying cause in Herefordshire and England, 2001-03 to 2014-16.



Source: PHE Fingertips – Cardiovascular Disease Profiles

It is evident that premature mortality is far more prevalent among males than females with male premature deaths representing 60% of all cause premature deaths between 2008 and 2017. For specific causes a similar pattern is evident, although the proportions represented by male premature deaths vary from 55 per cent for lung cancer to 74 per cent for coronary heart disease (Figure 30).

Figure 30: Proportion of premature deaths related to major underlying causes by gender in Herefordshire, 2008-17.



Source: PCMD / Intelligence Unit, Herefordshire Council

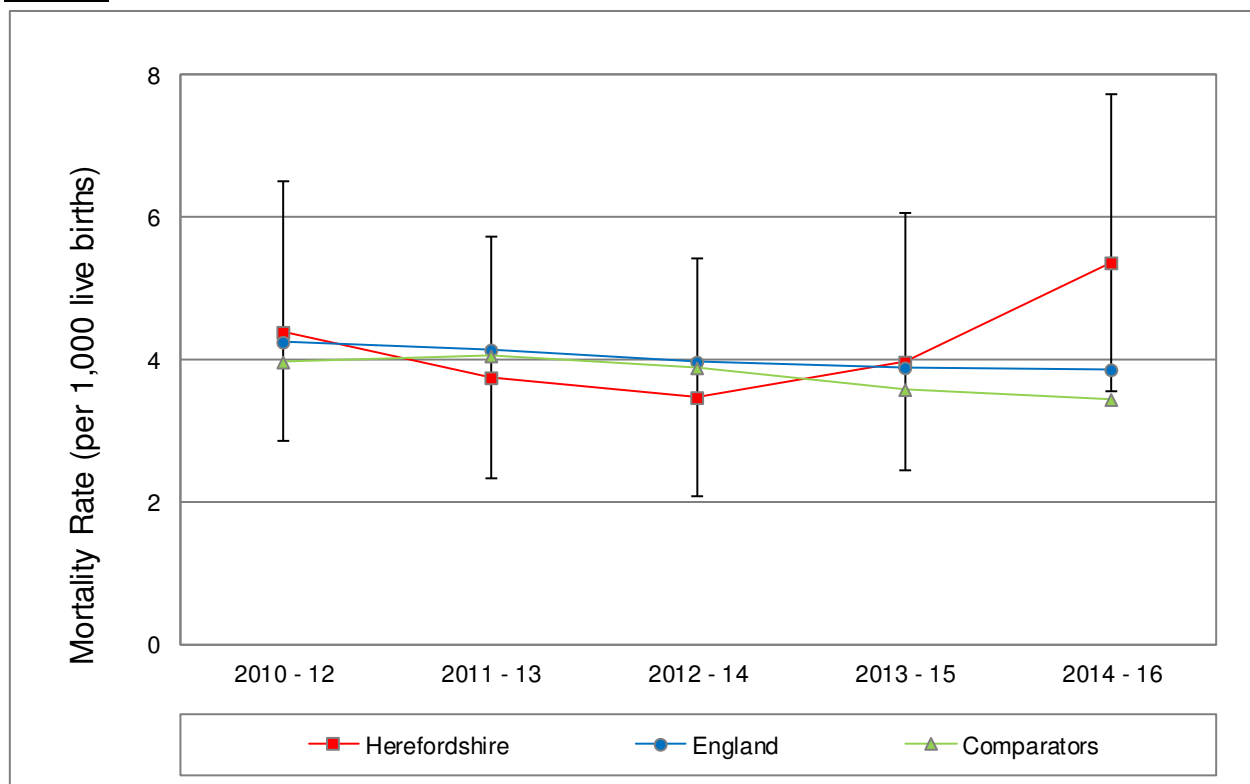
INFANT MORTALITY

Between 2010-12 and 2014-16 the infant mortality rate in Herefordshire showed a marginal fall which was followed a subsequent increase with a figure of 5.4 per 1,000 live births recorded in 2014-16, although this was not significantly higher than the rates recorded previously (Figure 30). Throughout this period the local rate was not significantly different from the national rate or the average rate for the 10 nearest neighbour comparators.

Between 2008 and 2017 there were 74 infant deaths of which 52 were neonatal deaths and 22 were post-neonatal deaths. The most common underlying cause of death⁶ was extreme immaturity (ICD10 P07.2) which accounted for 21 deaths, while 13 deaths were related specifically to respiratory and cardiovascular disorders specific to the perinatal period (ICD10 P20-P29).

⁶ As recorded in PCMD as Cause of Death ICD Code 1

Figure 30: Infant crude mortality rate for Herefordshire, England and nearest neighbours, 2010-12 to 2014-16.



Source: PHE Fingertips - Overview of Child Health

YEARS OF LIFE

Years of life lost (YLL) is a measure of premature mortality. Its primary purpose is to compare the relative importance of different causes of premature death within a particular population and it can therefore be used by health planners to define priorities for the prevention of such deaths. It can also be used to compare the premature mortality experience of different populations for a particular cause of death. The concept of years of life lost is to estimate the length of time a person would have lived had they not died prematurely which incorporates a notional average life expectancy of 75 years. By inherently including the age at which the death occurs, rather than just the fact of its occurrence, the calculation is an attempt to better quantify the burden, or impact, on society from the specified cause of mortality.

In 2012-14 the number of YLL in Herefordshire was 19,691 which corresponded to a directly standardised rate of 385 per 10,000 population (Table 2). This local standardised rate is significantly lower than those reported both nationally and regionally. Similarly, the local rates for Herefordshire for cancer and stroke were lower than the regional and national rates while the Herefordshire rate for liver disease was lower than the figure for the West Midlands but was similar to the rate for England.

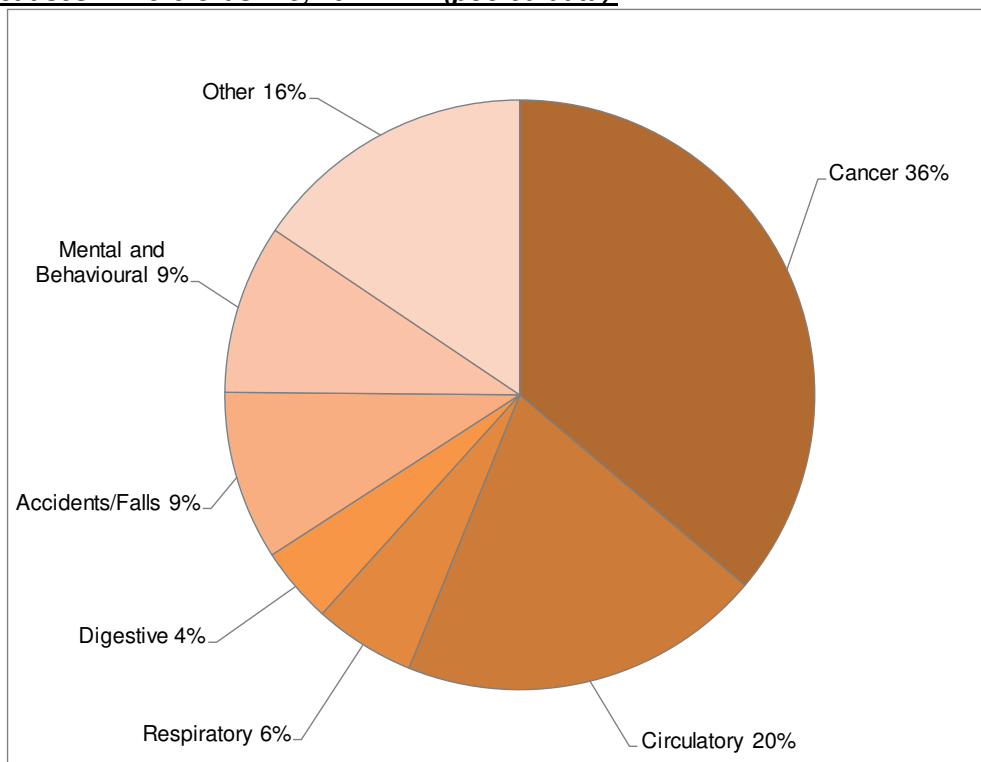
No appreciable differences were evident between the local, national and regional respiratory disease YLL rates. Similarly, within the respiratory specific data the COPD related YLL standardised rate for Herefordshire is broadly similar to those reported nationally. There was no significant difference in the CHD rates recorded across Herefordshire, regionally, or nationally.

Table 2: Total years of life lost (YLL) and directly standardised rate (per 10,000 population) due to mortality from major underlying causes, 2012-2014 (pooled data).

		Herefordshire	West Midlands	England
Total	Years Lost to Life (DSR) 95% CI (LL – UL)	385.2 357.1 – 413.4	454.8 449.5 – 460.0	424.8 423.2 – 426.5
	Total YLL	19,691	661,399	5,894,071
Cancer	Years Lost to Life (DSR) 95% CI (LL – UL)	134.5 120.2 – 148.8	163.8 160.9 – 166.6	157.0 156.1 – 157.9
	Total YLL	7,122	234,432	2,133,640
Coronary Heart Disease	Years Lost to Life (DSR) 95% CI (LL – UL)	44.8 37.0 – 52.5	47.9 46.4 – 49.4	43.8 43.3 – 44.3
	Total YLL	2,364	67,797	589,813
Respiratory Disease	Years Lost to Life (DSR) 95% CI (LL – UL)	20.2 -	23.8 -	23.2 -
	Total YLL	1,091	33,847	309,929
Liver Disease	Years Lost to Life (DSR) 95% CI (LL – UL)	9.0 6.8 – 11.8	13.0 12.4 – 13.5	11.5 11.3 – 11.6
	Total YLL	810	33,902	284,583
Stroke	Years Lost to Life (DSR) 95% CI (LL – UL)	9.6 5.4 – 13.8	15.3 14.4 – 163.2	14.8 14.5 – 15.0
	Total YLL	484	21,690	199,427

When examining all cause YLL in Herefordshire between 2012 and 2014 the greatest proportion was associated with cancer (36.2 per cent), while circulatory disease accounted for 20.0 per cent and mental/behavioural causes and accidents both accounted for 9.3% (Figure 31).

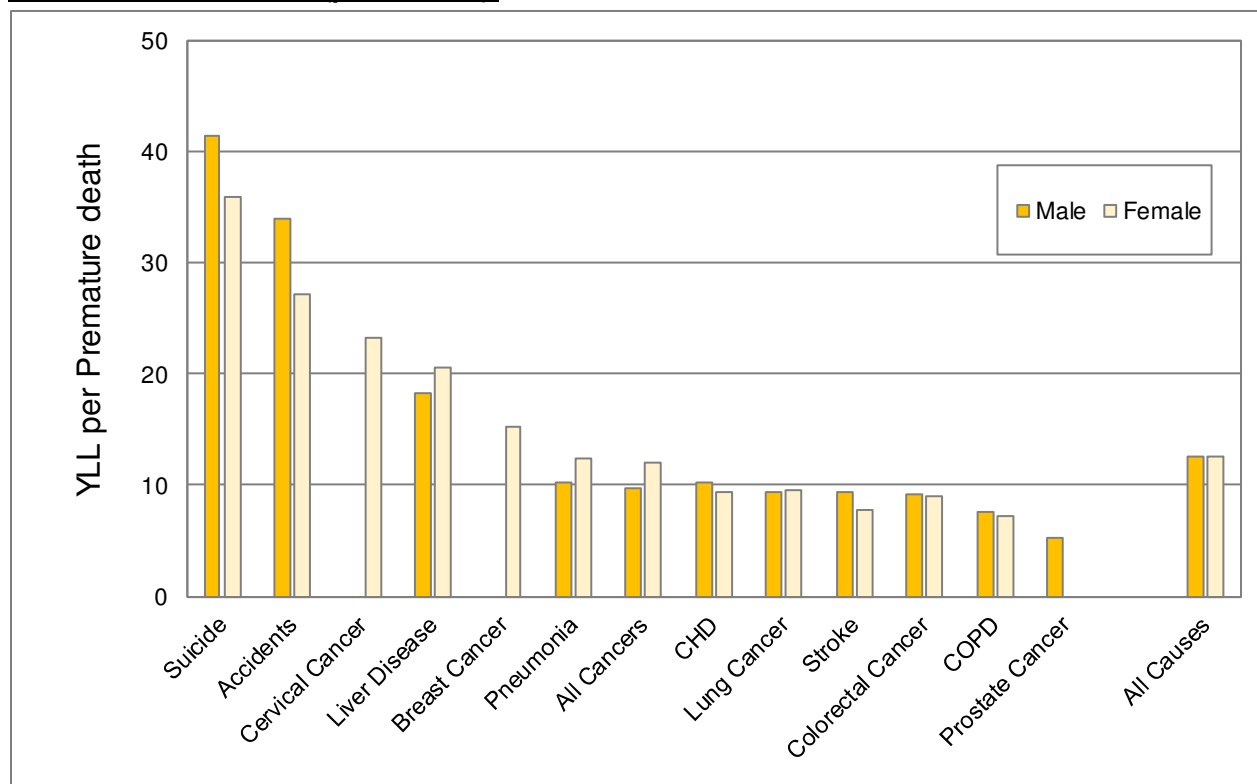
Figure 31: Proportion of total years of life lost (YLL) associated with underlying causes in Herefordshire, 2012 – 14 (pooled data).



Source: NHS Digital Indicator Portal

There were on average 12.6 YLL per death for all causes of premature mortality in Herefordshire between 2012 and 2014. Although there was little difference between the male and female all cause figures of 12.7 and 12.5 respectively, there was some variability between the genders for specific causes, although the pattern for both genders in relation to each cause were similar (Figure 32). The highest number of YLL per premature death was evident for suicides where the male rate was 41.4 and the female 35.9; the rates for accidents were also relatively high for both males and females at 33.9 and 27.2 respectively. For gender specific causes the figures for cervical and breast cancer were 23.2 and 15.3 respectively, while for prostate cancer figure was 5.3 YLL per death. Where all cancers were concerned the female figure was 24 per cent higher than that for males at 12.0 compared to 9.7.

Figure 32: Years of life lost (YLL) per premature death associated with underlying causes in Herefordshire, 2012 – 14 (pooled data).



Source: NHS Digital Indicator Portal

PREVENTABLE MORTALITY

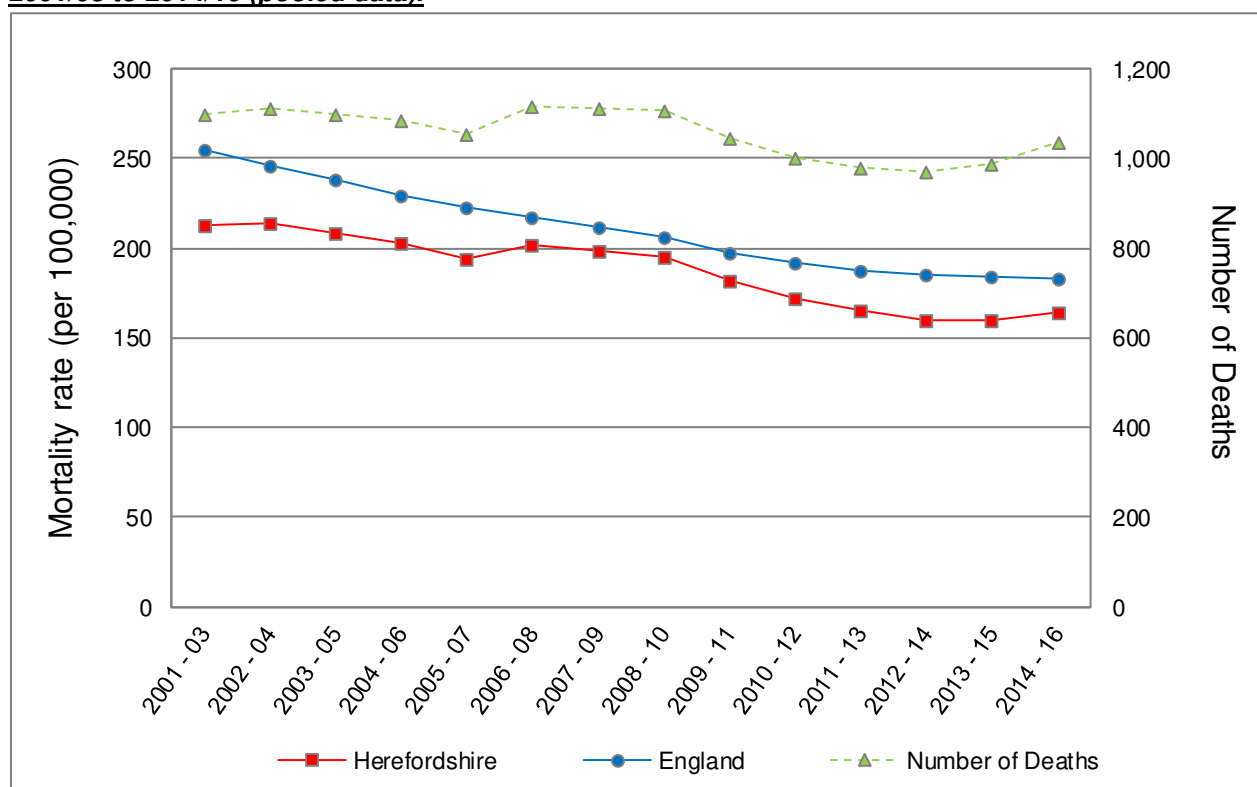
According to the Office for National Statistics (ONS) “A death is preventable if, in the light of understanding of the determinants of health at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided by public health interventions in the broadest sense”⁷.

In Herefordshire the total number of preventable deaths showed some variability between 2001-03 and 2006-07, with a maximum of 2,000 deaths recorded for the period 2006-07. Subsequently, the number of preventable deaths fell year on year to a low of 950 in 2012-14 (Figure 33). Over this 12 year period the number of preventable deaths fell by 11.2 per cent. However, there has been a slow rise in the number of preventable deaths in recent years.

In 2014-16 there were 1,038 preventable deaths in Herefordshire with a corresponding directly standardised preventable mortality rate of 165 per 100,000, a figure significantly lower than that recorded nationally. Since 2001-03 the directly standardised preventable mortality rate in Herefordshire has shown a steady decline with a proportional fall of 24.5 per cent, although this decline has steadied in most recent years. A similar temporal pattern was evident nationally where a proportional fall 26.9 per cent was observed. However, throughout this period the local rate was significantly lower the national figure.

⁷ Definition of avoidable mortality – Office of National Statistics. Available at: <http://www.ons.gov.uk/ons/about-ONS/get-involved/consultations/archived-consultations/2011/definitions-of-avoidable-mortality/definition-of-avoidable-mortality.pdf>

Figure 33: All cause directly age-standardised preventable mortality rates for Herefordshire and England (primary axis), and number of preventable deaths for Herefordshire (secondary axis), 2001/03 to 2014/16 (pooled data).



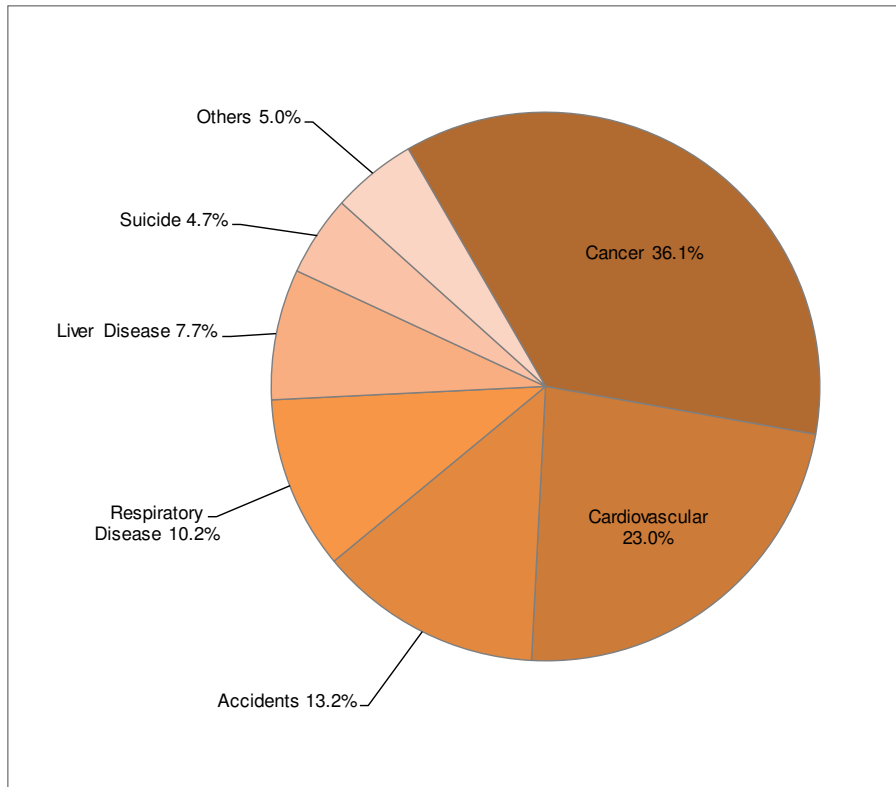
Source: PHE Fingertips - PHOF

Between 2014 and 2016 the most common underlying causes of preventable deaths in Herefordshire were cancer and cardiovascular disease which account for 36.1 and 23.0 per cent of all preventable deaths; 10.2 per cent of all preventable deaths were associated with respiratory disease (Figure 34). Liver disease accounted for 7.7 per cent with the majority of deaths being alcohol related. Between them accidents and suicide accounted for almost 10 per cent of preventable deaths.

Since 2001-03 the preventable mortality rate for cardiovascular disease in Herefordshire has shown a steady decline from 88 per 100,000 population to 41 per 100,000 in 2014-16, a proportional fall of 53 per cent (Figure 35). The national and regional rates have also fallen steadily throughout this period both also showing proportional falls of 53 per cent respectively. Throughout much of this period the Herefordshire rate has shown little difference from either the national or regional figures.

Over the same period the temporal pattern for cancer related preventable mortality is not so clear, although there has been a steady fall since a peak in 2007-09 to a minimum rate of 63 per 100,000 in 2012-14; since 2012-14 the rate has remained relatively stable. The Herefordshire rate in 2014-16 was 64 per 100,000, a figure significantly lower than both the those for both England and the West Midlands, a pattern which has been evident since 2001-03. Over this twelve year period the local rate has fallen by 15 per cent compared to 19 per cent nationally and 17 per cent regionally.

Figure 34: Proportion of all preventable mortalities associated with underlying cause in Herefordshire, 2014 – 16.

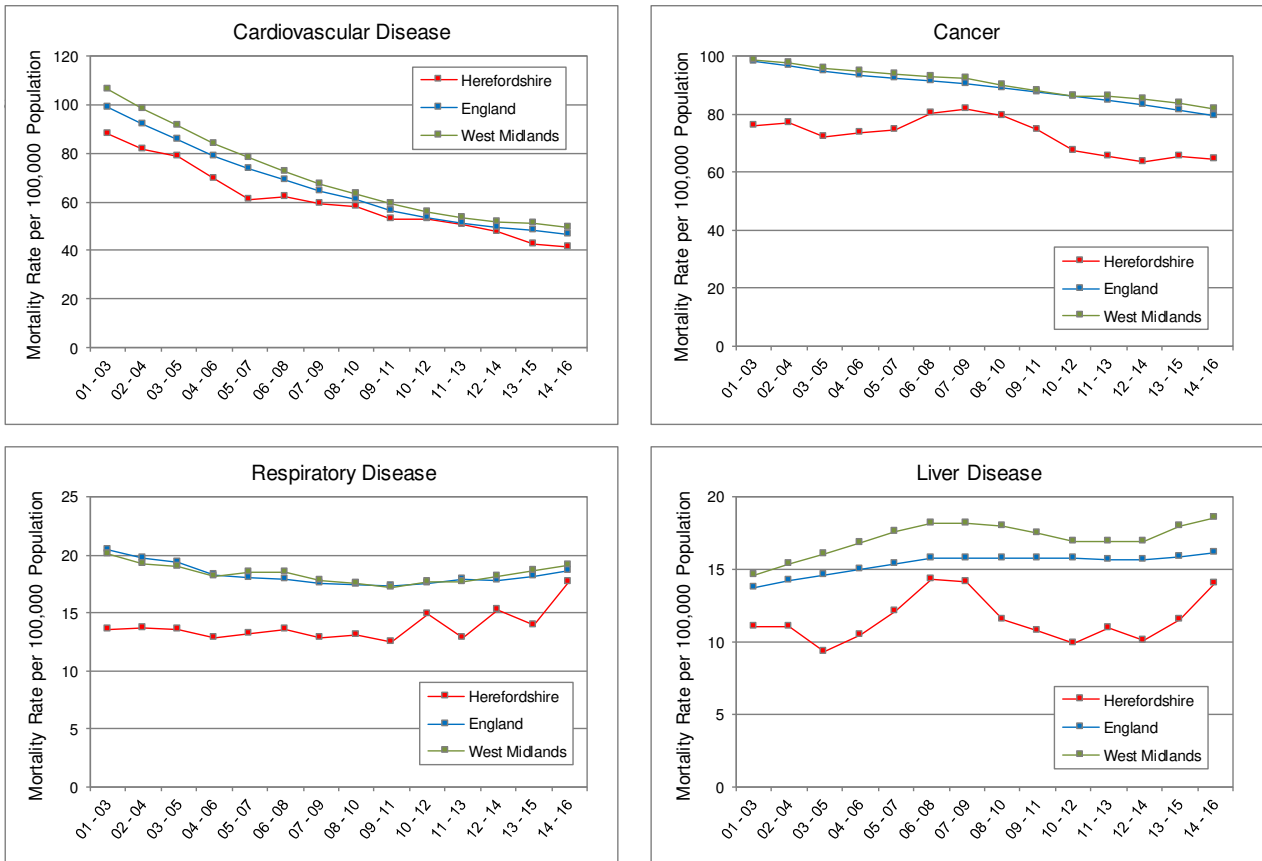


Source: PHE Fingertips - PHOF

Over the same 12 year period the Herefordshire respiratory disease preventable mortality rate has shown some variability with no clear pattern evident, particularly in recent years. The local figure has predominantly remained below both the national and regional figures which have also shown some variability over time. The 2014-16 rate for Herefordshire was 30 per cent higher than that recorded in 2001-03 while proportional falls of 9 and 5 per cent were observed across England and the West Midlands respectively.

National and regional liver disease specific preventable deaths have both shown gradual increases since 2001-03. Over this period the Herefordshire rate has fluctuated appreciably, although between 2007-09 and 2012-14 it has shown a general decline, although subsequent increases have resulted in the 2014-16 figure (14 per 100,000) being similar to the highest rate recorded in this period in 2006-08. However, the Herefordshire rate has been consistently lower than both the national and regional rates which have both shown a general increasing trend since 2001-03.

Figure 35: Age-standardised rate of mortality from causes considered preventable (per 100,000 population) for Herefordshire, West Midlands and England, 2001/03 – 2014/16.



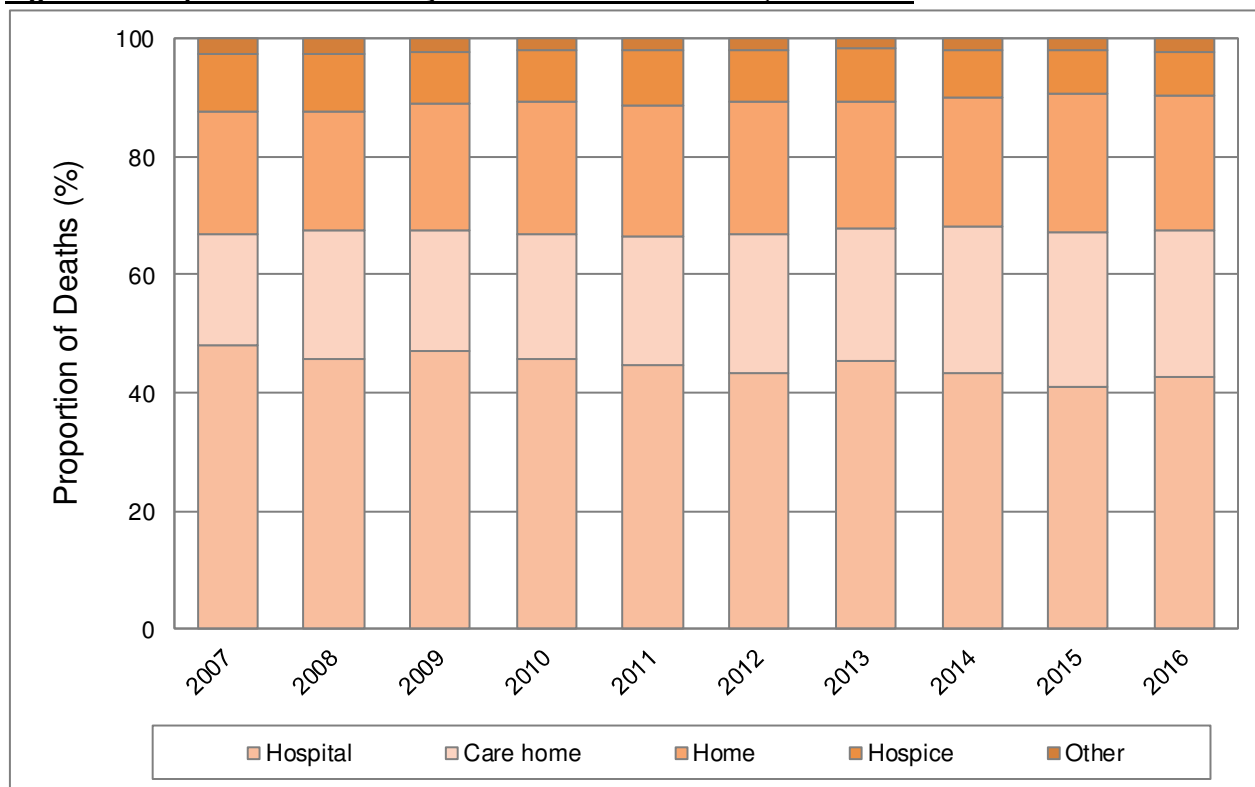
Source: PHE Fingertips - PHOF

PLACE OF DEATH

TEMPORAL TRENDS

Between 2007 and 2016 the highest proportion of deaths occurred in hospital with an average of 44.6 per cent of all deaths recorded as being in a hospital setting over this ten year period (Figure 36). However, there has been a downward trend in the proportion of deaths recorded in hospital over this period with the all age figure falling from 48.0 to 42.7 per cent, a proportional fall of 11 per cent (Figure 37). Similarly, the proportion of hospice deaths has fallen over this time from 9.6 to 7.4 per cent, a proportional fall of 22.4 per cent. Care home deaths and deaths in the deceased's own home each accounted for on average 22 per cent of deaths between 2007 and 2016, although over this period the figures have increased proportionally by 22.4 and 8.0 per cent respectively.

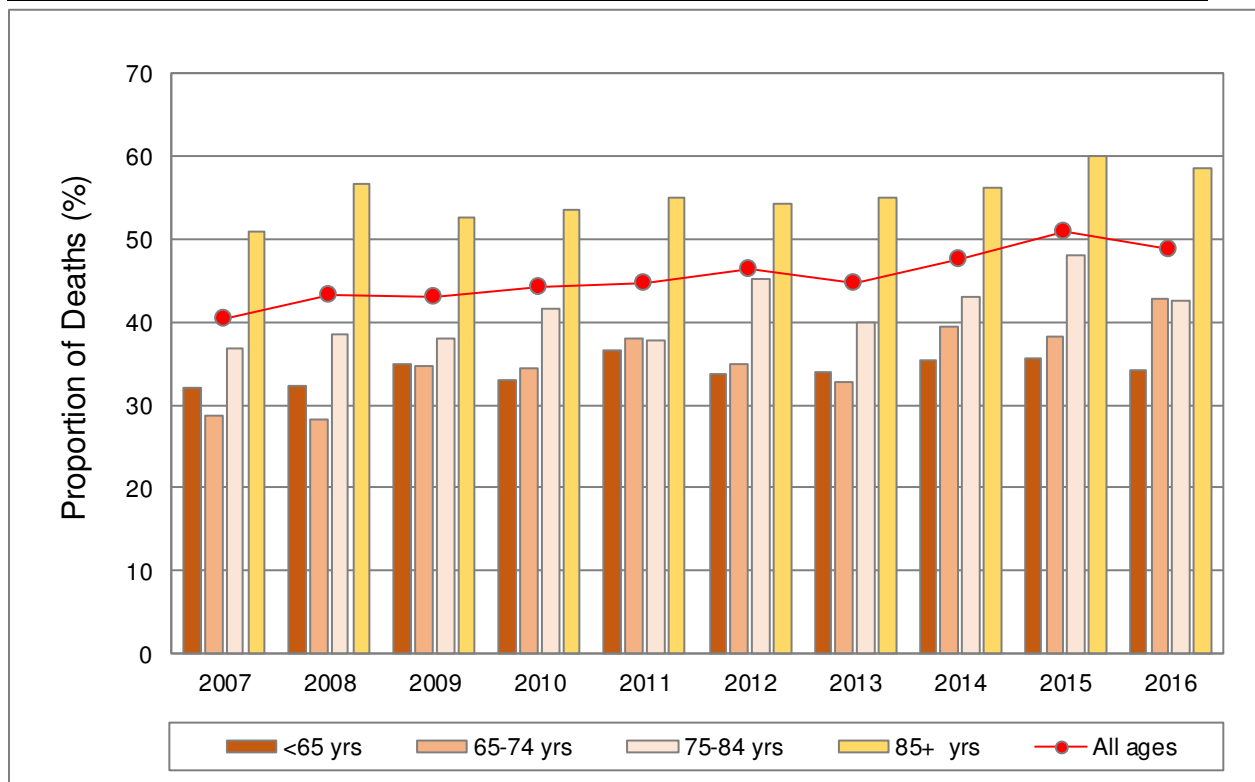
Figure 36: Proportion of deaths by location in Herefordshire, 2007-2016.



Source: PHE Fingertips – End of Life Profiles

Deaths registered in each area where the place of death is recorded as home, care home or religious establishment are termed as deaths in usual place of residence (DiUPR). Between 2007 and 2016 the proportion of all deaths accounted for by DiUPR in Herefordshire has shown a steady increase, rising from 40.5 to 48.7 per cent, a proportional increase of over one fifth (Figure 37). Since 2014 the proportion of deaths accounted for by DiUPR has been higher than those occurring in hospital.

Figure 37: Proportion of deaths in usual place of residence by age in Herefordshire, 2007-2016.



Source: PHE Fingertips – End of Life Profiles

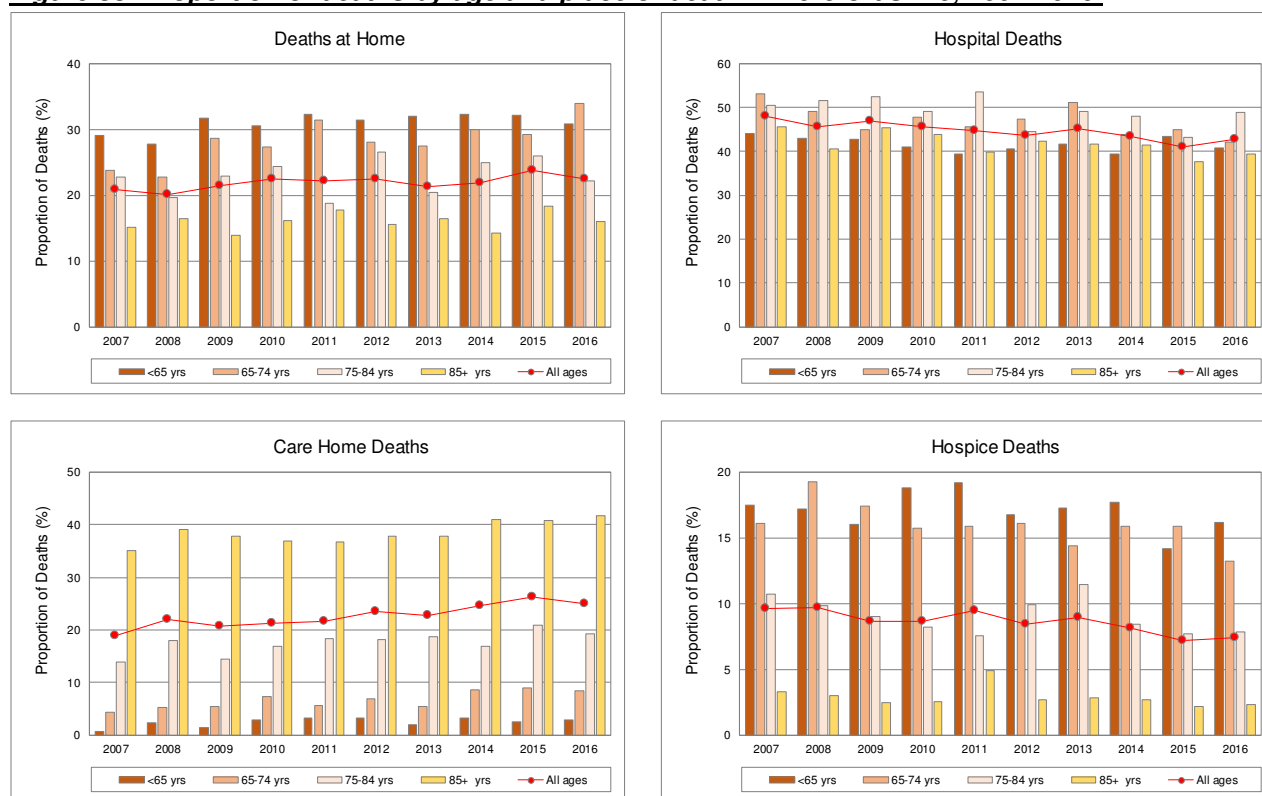
AGE DIFFERENCES

It is evident that the location of where death occurs can vary with age and observed patterns tend to show little variation over time. Between 2007 and 2016 the highest proportions of deaths at all ages tend to occur in a hospital setting with the average figure ranging between 41.6 per cent for both the <65 and 85+ cohorts and 49.1 for the 75 – 84 cohort (Figure 38).

In relation to hospice deaths the proportion decreases with age with an average 17 per cent of deaths occurring in young and working age people falling to 3 per cent in those age 85+. A similar pattern is evident in deaths at home with an average of 31 per cent of deaths occurring in young and working age people falling to 16 per cent in those age 85+.

However, the opposite is true for care home deaths with the highest average proportion of 39 per cent of deaths evident in the 85+ cohort compared to a figure of 2 per cent observed in the less than 65 years cohort.

Figure 38: Proportion of deaths by age and place of death in Herefordshire, 2007-2016.



Source: PHE Fingertips – End of Life Profiles

SUMMARY HOSPITAL-LEVEL MORTALITY INDICATOR (SHMI)

The Summary Hospital-level Mortality Indicator is the ratio between the actual number of patients dying following hospitalisation at an NHS Trust and the number that would be expected to die on the basis of average England figures, given the characteristics of the patients treated at the Trust. It covers patients admitted to hospitals who died either while in hospital or within 30 days of being discharged. The indicator is composed of 140 different diagnosis groups the data for which are aggregated to calculate the overall SHMI value for the trust. A SHMI ratio of 1 would indicate that the number of deaths was the same as the expected number.

In 2017 there were 1,259 deaths recorded in (WVT) compared to an expected number of 1,079, which equates to 180 deaths more than expected. The resulting SHMI value of 1.17 was the fifth highest across 134 non-specialist acute NHS trust in England and was considered as being higher than expected.

Pneumonia was the most commonly recorded diagnosis group in relation to deaths in WVT accounting for 190 deaths which represents 26 more deaths than expected. When considering the number of deaths and the number of spells⁸ for the *pneumonia* diagnosis group the number of deaths recorded in WVT represent 19.7 per cent of spells a figure significantly higher than the figure for England of 17.0 per cent (Table 3). Of the other five most commonly recorded diagnosis groups the proportion of spells resulting in deaths in WVT for *septicaemia* and *congestive heart failure (non-hypertensive)* were significantly higher than corresponding figures for England; while the local proportions for *acute cerebrovascular disease* and *chronic obstructive pulmonary disease* and

⁸ A provider spell is a continuous period of time spent as a patient within a single trust (provider). A spell may be composed of more than one episode (a single period of care under one consultant). A spell is finished when the spell ends i.e. the patient is discharged or dies.

bronchiectasis were higher than the national figure the differences were not statistically significant. Between them these five diagnosis groups account for 84 extra deaths recorded at WVT in 2017.

Table 3: Deaths by the five most commonly recorded diagnosis groups by number of spells, WVT 2017.

Diagnosis Group	HEREFORDSHIRE				ENGLAND
	Number of Spells	Number of Deaths	Extra Deaths	Deaths/Spells (%)	Deaths/Spells (%)
Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	965	190	26.1	19.7	17.0
Septicaemia (except in labour), Shock	523	146	39.0	27.9	19.3
Acute cerebrovascular disease	558	96	0.7	17.2	16.4
Congestive heart failure; nonhypertensive	278	54	13.7	19.4	14.0
Chronic obstructive pulmonary disease and bronchiectasis	546	40	5.1	7.3	6.2

Source: SHMI / Intelligence Unit, Herefordshire Council

Pneumonia, septicaemia and congestive heart failure (non-hypertensive), along with acute bronchitis and skin and subcutaneous tissue infections comprised the top five contributors to overall deaths in 2017 (Table 4). All five groups returned SHMI ratios greater than one and between them accounted for 102 extra deaths which represented 57 per cent of all extra deaths in WVT in 2017.

Table 4: Deaths by the five most commonly recorded diagnosis group by total number of deaths, WVT 2017.

Diagnosis Group	Expected Number of Deaths	Number of Deaths	Extra Deaths	SHMI
Septicaemia (except in labour), Shock	107.0	146	39.0	1.36
Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	163.9	190	26.1	1.16
Congestive heart failure; nonhypertensive	40.3	54	13.7	1.34
Acute bronchitis	24.5	37	12.5	1.51
Skin and subcutaneous tissue infections	9.4	20	10.6	2.13

In 2017 the highest SHMI ratio for an individual diagnosis group at WVT was returned by *thyroid disorders, other endocrine disorders* with almost three times as many deaths recorded than expected resulting in five extra deaths over the year (Table 5). This and other diagnosis groups which returned individual SHMI ratios close to or above two accounted for 28 extras deaths above the number expected.

Table 5: Highest SHMI ratios by individual diagnosis group, WVT 2017.

Diagnosis Group	Expected Number of Deaths	Number of Deaths	Extra Deaths	SHMI
Thyroid disorders, other endocrine disorders	2.6	8	5.4	3.10
Calculus of urinary tract, other diseases of kidneys and ureters, other diseases of bladder and urethra	2.6	7	4.4	2.71
Open wounds of head; neck; and trunk	3.1	8	4.9	2.55
Skin and subcutaneous tissue infections	9.4	20	10.6	2.13
Peripheral and visceral atherosclerosis	3.1	6	2.9	1.96

Source: SHMI / Intelligence Unit, Herefordshire Council