

Statistical bulletin

# Alcohol-specific deaths in the UK: registered in 2016

Deaths in the UK which are known to be direct consequences of alcohol misuse.



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# 1 . Main points

- In 2016 there were 7,327 alcohol-specific deaths in the UK, an age-standardised rate of 11.7 deaths per 100,000 population.
- For the UK, the 2016 alcohol-specific deaths rate continues to remain unchanged since 2013, but is still higher than that observed 15 years ago.
- Since 2001 rates of alcohol-specific deaths among males have been an average of 55% higher than those observed among females.
- For both sexes, rates of alcohol-specific deaths were highest among those aged 55 to 64 years in 2016.
- Scotland remains the constituent country with the highest rate of alcohol-specific deaths in 2016; yet Scotland has also seen the largest decrease in its rates since they peaked in the early 2000s.
- In England, and for both sexes, alcohol-specific death rates in 2016 were significantly higher in the most deprived local areas when compared with the least deprived local areas.

## 2 . Things you need to know about this release

### New definition of alcohol-specific deaths

Since our previous statistical release, we ran a [consultation to get people's views on which causes of death are appropriate to include in a definition of deaths related to the misuse of alcohol](#). The outcome of the consultation was to adopt a definition of alcohol-specific deaths, to be used across government and the devolved administrations. The new definition includes conditions where each death is a direct consequence of alcohol misuse (that is, wholly-attributable deaths; see Table 1). The definition is primarily based on chronic (longer-term) conditions associated with continued misuse of alcohol and, to a lesser extent, acute (immediate) conditions. The conditions included in the definition are defined using the International Classification of Diseases (10th Revision; ICD-10); as such, the time series of this release begins in 2001, when ONS started coding deaths using ICD-10. For information on how the new definition differs to that previously used, we recently published an [article on the definition change and how it impacts the previously published time series](#).

**Table 1: Definition of alcohol-specific deaths**

ICD-10 code	Description of condition
E24.4	Alcohol-induced pseudo-Cushing's syndrome
F10	Mental and behavioural disorders due to use of alcohol
G31.2	Degeneration of nervous system due to alcohol
G62.1	Alcoholic polyneuropathy
G72.1	Alcoholic myopathy
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K70	Alcoholic liver disease
K85.2	Alcohol-induced acute pancreatitis
K86.0	Alcohol induced chronic pancreatitis
Q86.0	Fetal induced alcohol syndrome (dysmorphic)
R78.0	Excess alcohol blood levels
X45	Accidental poisoning by and exposure to alcohol
X65	Intentional self-poisoning by and exposure to alcohol
Y15	Poisoning by and exposure to alcohol, undetermined intent

Source: Office for National Statistics

The misuse of alcohol is associated with a wide range of diseases, more than those included in the definition of alcohol-specific deaths (see [Rehm et al., 2017](#) for examples). The definition of alcohol-specific deaths does not include diseases where there is evidence showing that only a proportion of the deaths, for a given cause, are caused by alcohol (that is, partially-attributable deaths), such as cancers of the mouth, oesophagus and liver. Public health agencies, such as Public Health England, have developed separate measures that take into account these additional causes and will use these in addition to the alcohol-specific deaths measure.

The definition of alcohol-specific deaths is a more conservative estimate on the harms related to alcohol misuse. However, the definition benefits from a consistent methodology across the UK, making it useful for robust and comparable estimates of trends in alcohol mortality. Please see "[Different sources of data to understand the impact of alcohol consumption on mortality](#)" for further information on the different approaches to measurement, including uses of each measure.

### 3 . Alcohol-specific death rates by sex

## **Despite being stable since 2013, UK alcohol-specific death rates in 2016 are still higher than those observed 15 years ago**

In 2016, a total of 7,327 people died from alcohol-specific causes in the UK, which equates to a rate of 11.7 deaths per 100,000 population. In the UK, age-standardised rates of alcohol-specific deaths have remained at similar levels in recent years, with no statistical differences in the all person rate since 2013. Despite this, the rate observed in 2016 is significantly higher than that observed in 2001, when there were 10.6 deaths per 100,000 population. The period of relative stability that has been observed since 2013 was preceded by a period of steady increase between 2001 and 2008. Since the peak in 2008, the rates have generally decreased despite a small number of fluctuations. Figure 1 shows the trend in alcohol-specific rates over a 16-year period for males, females and persons in the UK.

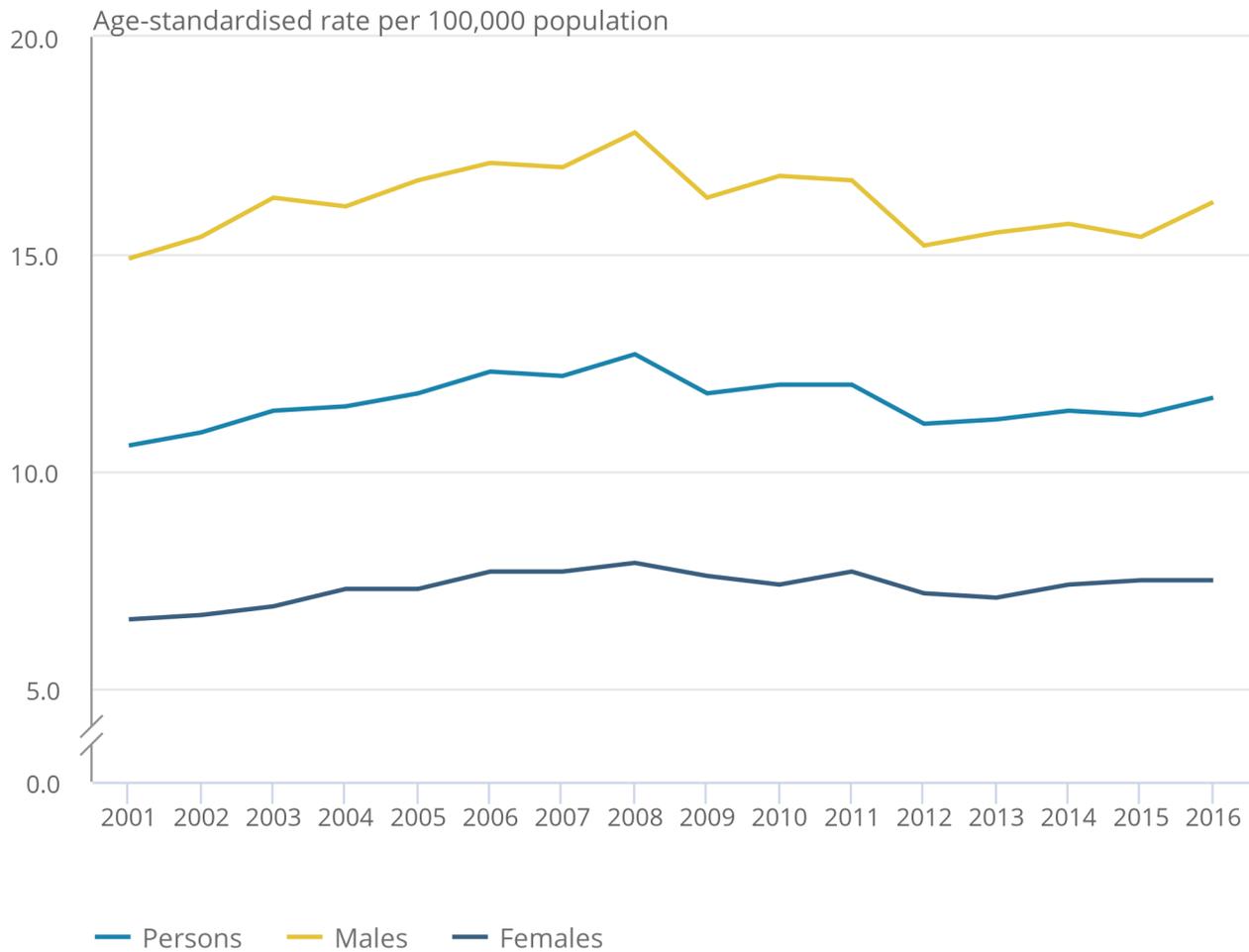
Since 2001, rates of alcohol-specific deaths among males have been an average of 55% higher than those observed among females. In 2016, there were 16.2 alcohol-specific deaths per 100,000 males and 7.5 alcohol-specific deaths per 100,000 females.

## Figure 1: Age-standardised alcohol-specific death rates per 100,000 population

UK, 2001 to 2016

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UK, 2001 to 2016



Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and

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#### Notes:

1. Rates are expressed per 100,000 population and standardised to the 2013 European Standard Population.
2. Deaths of non-residents are included in figures for the UK.
3. Figures are for deaths registered in each calendar year.

## **Alcohol-specific death rates in the UK highest among 55- to 64-year-olds in 2016**

To show how alcohol-specific death rates have changed over time by age, Figure 2 shows UK age-specific rates for males and females in 2001 and 2016.

For males, in 2016, the highest age-specific rate was observed among those aged 60 to 64 years, with 40.3 deaths per 100,000 males. In 2001, the age group with the highest rate was males aged 55 to 59 years, with 34.3 deaths per 100,000. Between 2001 and 2016, alcohol-specific death rates among males aged 60 to 74 years have increased significantly. Most notably, the rate among males aged 70 to 74 years has increased by around 50% between the two time points.

For females, in 2016, the highest age-specific rate was observed among those aged 55 to 59 years, with 19.1 deaths per 100,000 females. In 2001, the highest rate was observed among those aged 50 to 54 years, with 16.3 deaths per 100,000. Between 2001 and 2016, the most notable increase has been observed among females aged 60 to 64 years, where the rate has increased by around 35%.

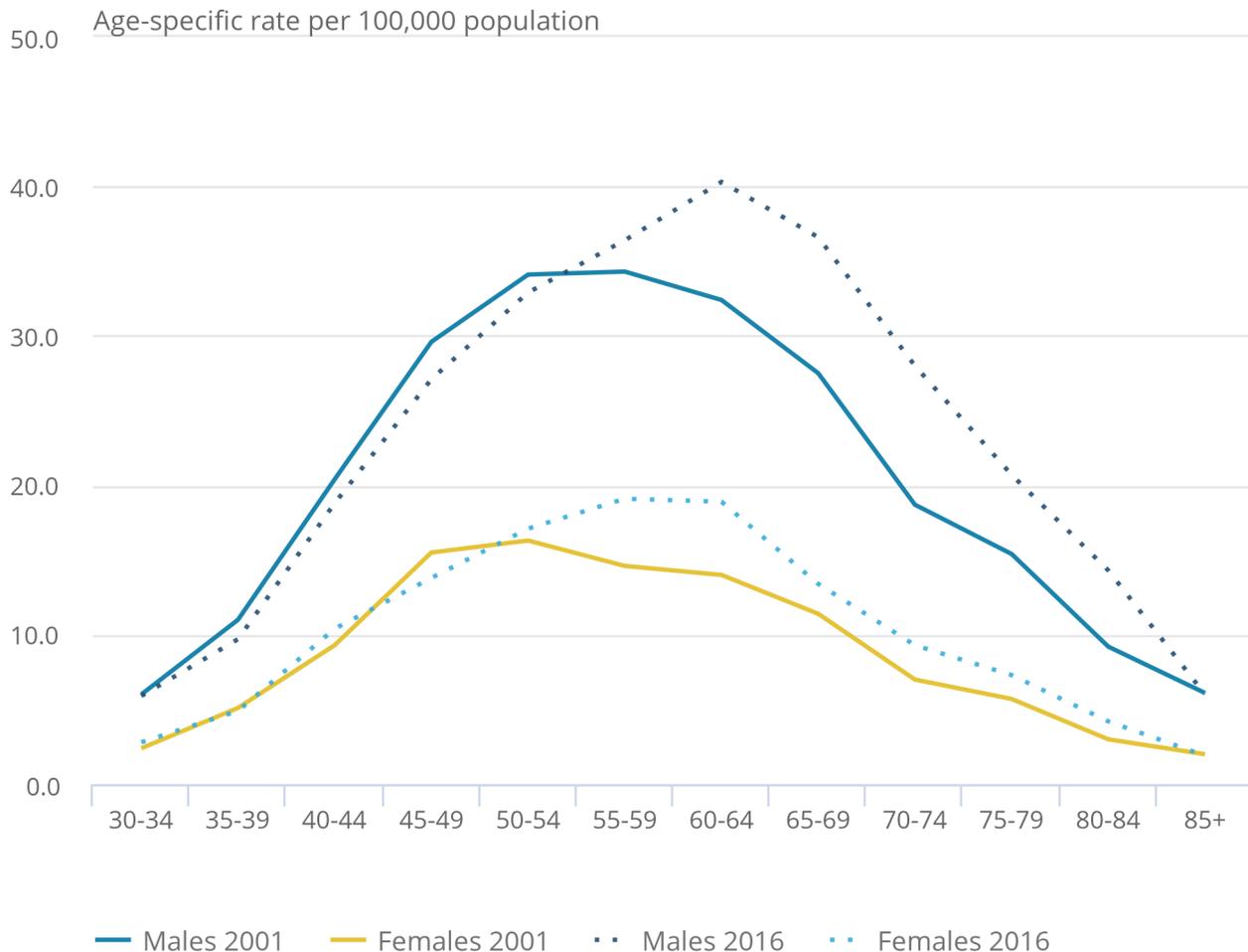
Given that the definition of alcohol-specific deaths is heavily influenced by chronic conditions, such as alcoholic liver disease, broadly speaking, the increases in the stated age groups may be a consequence of the misuse of alcohol that began several years, or even decades, previously.

**Figure 2: Age-specific alcohol-specific death rates per 100,000 population**

UK, 2001 and 2016

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**Notes:**

1. Rates are expressed per 100,000 population.
2. Deaths of non-residents are included in figures for the UK.
3. Figures are for deaths registered in each calendar year.
4. Figures are for those aged 30 and above, due to small numbers of deaths in the younger age groups producing more statistical uncertainty.

## 4 . Comparisons between the four countries of the UK by sex

Since 2001, alcohol-specific death rates in Scotland have been higher for both sexes compared with the other constituent countries; however, Scotland has also seen the largest decrease in its rates in this time period. Alcohol-specific death rates in the other countries have, broadly speaking, been similar to each other over the period between 2001 and 2016, however, more recently female rates in Northern Ireland have become similar to those observed in Scotland.

### **Alcohol-specific death rates in 2016 are highest among males in Scotland**

For males, since peaking in the early 2000s, there has been a marked decrease in rates of alcohol-specific deaths in Scotland. In particular, the rate in Scotland was 21% lower in 2016 (30.9 deaths per 100,000 males) than that observed in 2001 (39.0 deaths per 100,000 males). Despite the decrease, in 2016 the alcohol-specific deaths rate in Scotland was significantly higher than those observed in England (14.5 deaths per 100,000 males), Wales (17.4 deaths per 100,000 males) and Northern Ireland (22.2 deaths per 100,000 males).

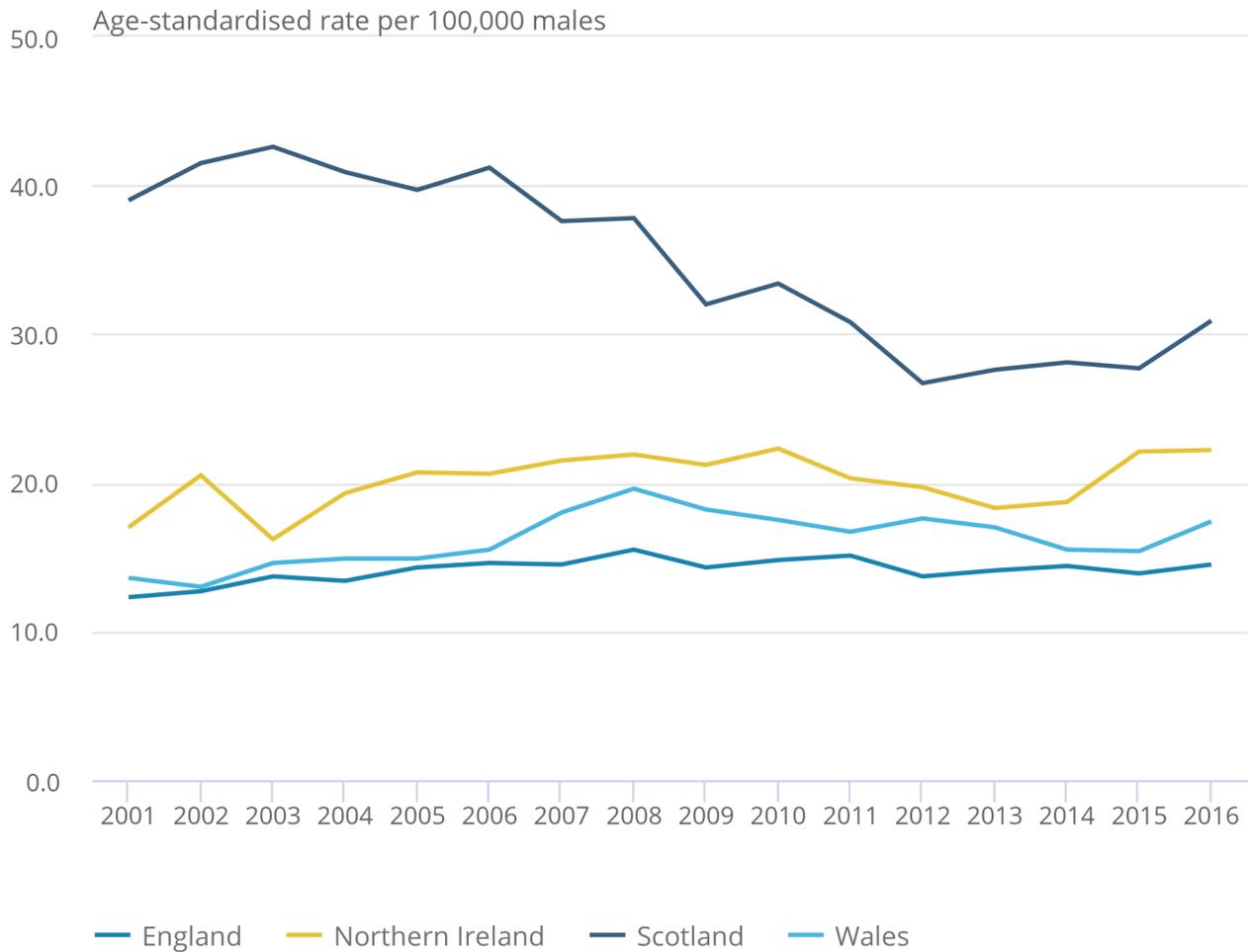
With the exception of Scotland, male alcohol-specific death rates across the UK countries in 2016 tended to be higher than those observed in 2001 (see Figure 3). However, due to relatively smaller numbers of deaths creating more statistical uncertainty, significant increases between these two time points have only been seen in England; in 2016, the rate among males in England was 17.9% higher than that observed in 2001 when there were 12.3 deaths per 100,000 males.

**Figure 3: Age-standardised alcohol-specific death rates per 100,000 males**

UK constituent countries, 2001 to 2016

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UK constituent countries, 2001 to 2016



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3. Figures are for deaths registered in each calendar year.

## **Alcohol-specific death rates have increased among females in Northern Ireland since 2013**

While female rates in Northern Ireland, since 2001, have often been volatile, since 2013 the rate has increased by around 84%. In particular, the rate among females in Northern Ireland increased significantly from 6.4 to 11.8 deaths per 100,000 females between 2013 and 2016, respectively. The latest increase in Northern Ireland for females has produced comparable rates to those observed in Scotland, where there were 12.1 deaths per 100,000 females in 2016.

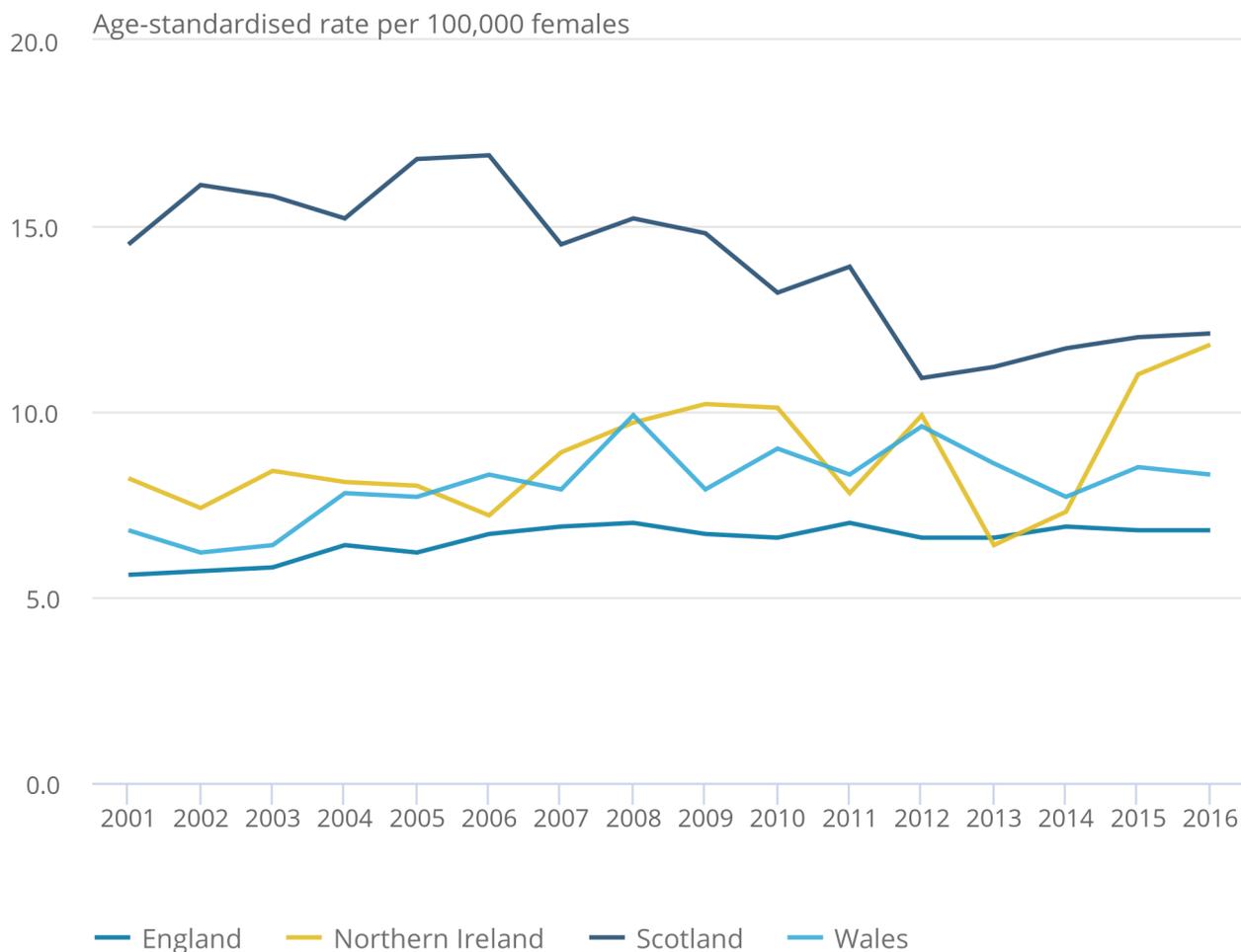
As with males, England was the only country to see a significant increase in the female rate of alcohol-specific deaths since 2001; in 2016, the rate among females in England was around 21% higher (6.8 deaths per 100,000 females) than that observed in 2001, when there were 5.6 deaths per 100,000 females. In recent years, there have been minimal changes in the rates observed in Wales; in 2016, there were 8.3 deaths per 100,000 females in Wales.

**Figure 4: Age-standardised alcohol-specific death rates per 100,000 females**

UK constituent countries, 2001 to 2016

### Figure 4: Age-standardised alcohol-specific death rates per 100,000 females

UK constituent countries, 2001 to 2016



Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and

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**Notes:**

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3. Figures are for deaths registered in each calendar year.

## 5 . Regions of England

### Alcohol-specific death rates remain highest in regions of north England in 2016

For both sexes, rates of alcohol-specific deaths were highest in regions of the north of England in 2016. For males, with 21.9 deaths per 100,000 males, the highest rate was observed in the North East. For females, the highest rates were observed in the North East and the North West; in both of these regions, the rate was 10.4 deaths per 100,000 females. Conversely, the lowest alcohol-specific deaths rate for males was observed in the East of England (9.9 deaths per 100,000 males), and for females it was in London (4.6 alcohol-specific deaths per 100,000 females).

In comparison with alcohol-specific death rates in 2001, all regions with the exception of London have increased. In recent years, there has been very little change in alcohol-specific death rates and their pattern across the regions of England.

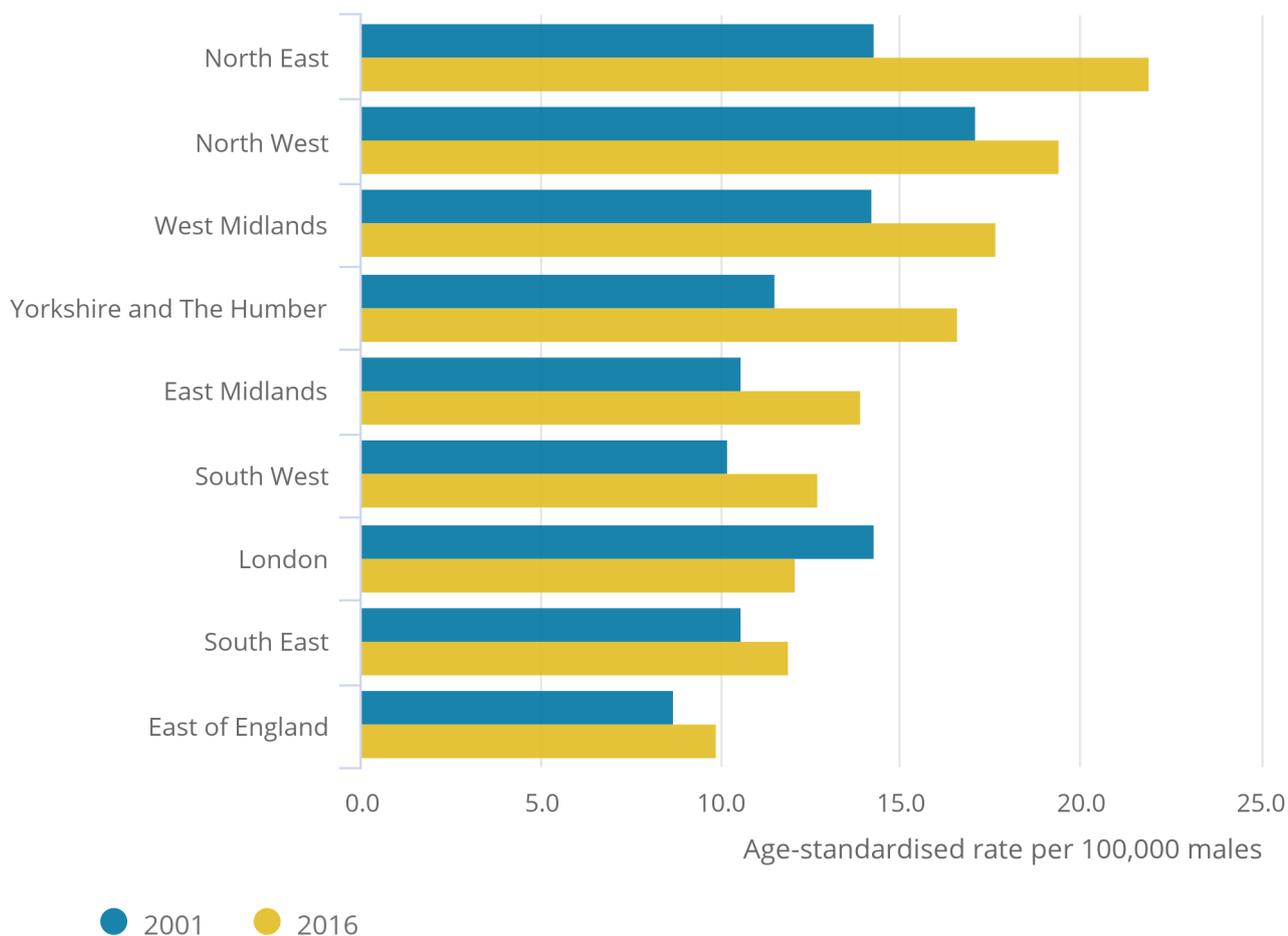
A possible explanation for regional differences in alcohol-specific deaths could be that those in deprived areas are differentially affected by the alcohol they consume. Specifically, the alcohol consumption harm paradox shows that consumption in more deprived areas can often be the same or even less than that in less deprived areas, but harm is elevated in the more deprived areas. This could be due to the existence of other health problems, differences in drinking habits and access to healthcare ([Jones et al. 2015](#)).

## Figure 5: Age-standardised rates of alcohol-specific deaths for males by region

England, 2001 and 2016

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England, 2001 and 2016



Source: Office for National Statistics

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#### Notes:

1. Rates are expressed per 100,000 population and standardised to the 2013 European Standard Population.
2. Deaths of non-residents are excluded.
3. Figures are for deaths registered in each calendar year.

## Figure 6: Age-standardised rates of alcohol-specific deaths for females by region

England, 2001 and 2016

### Figure 6: Age-standardised rates of alcohol-specific deaths for females by region

England, 2001 and 2016



Source: Office for National Statistics

Source: Office for National Statistics

#### Notes:

1. Rates are expressed per 100,000 population and standardised to the 2013 European Standard Population.
2. Deaths of non-residents are excluded.
3. Figures are for deaths registered in each calendar year.

## 6 . Relationship between alcohol-specific deaths and socioeconomic deprivation

To further explore the link between alcohol-specific rates of death and deprivation, in this section we report rates of death in England that take into account Indices of Multiple Deprivation (IMD). The analyses reported in this section are based on the [English IMD: 2015](#); this provides an overall relative measure of deprivation for each lower layer super output area (LSOA), which takes into account the characteristics of each area such as levels of income and education. We ranked LSOAs in England based on their overall IMD score, and grouped these into five groups (quintiles), where quintile one represents the most deprived LSOAs and quintile five represents the least deprived LSOAs.

### **In England, alcohol-specific death rates are significantly higher in the most deprived areas**

When looking at alcohol-specific death rates split by IMD quintiles, males and females living in the most deprived areas (quintile one) have significantly higher alcohol-specific death rates compared with those living in the least deprived areas (quintile five). In 2016, the rate of alcohol-specific deaths among males in the most deprived areas was 29.5 deaths per 100,000 males, a rate that was 4.5 times higher than that observed in the least deprived areas, where there were 6.6 deaths per 100,000 males. For females, the rate of alcohol-specific deaths in the most deprived areas was 12.5 deaths per 100,000 females, a rate that was 3.3 times higher than that in the least deprived areas, where there were 3.8 deaths per 100,000 females.

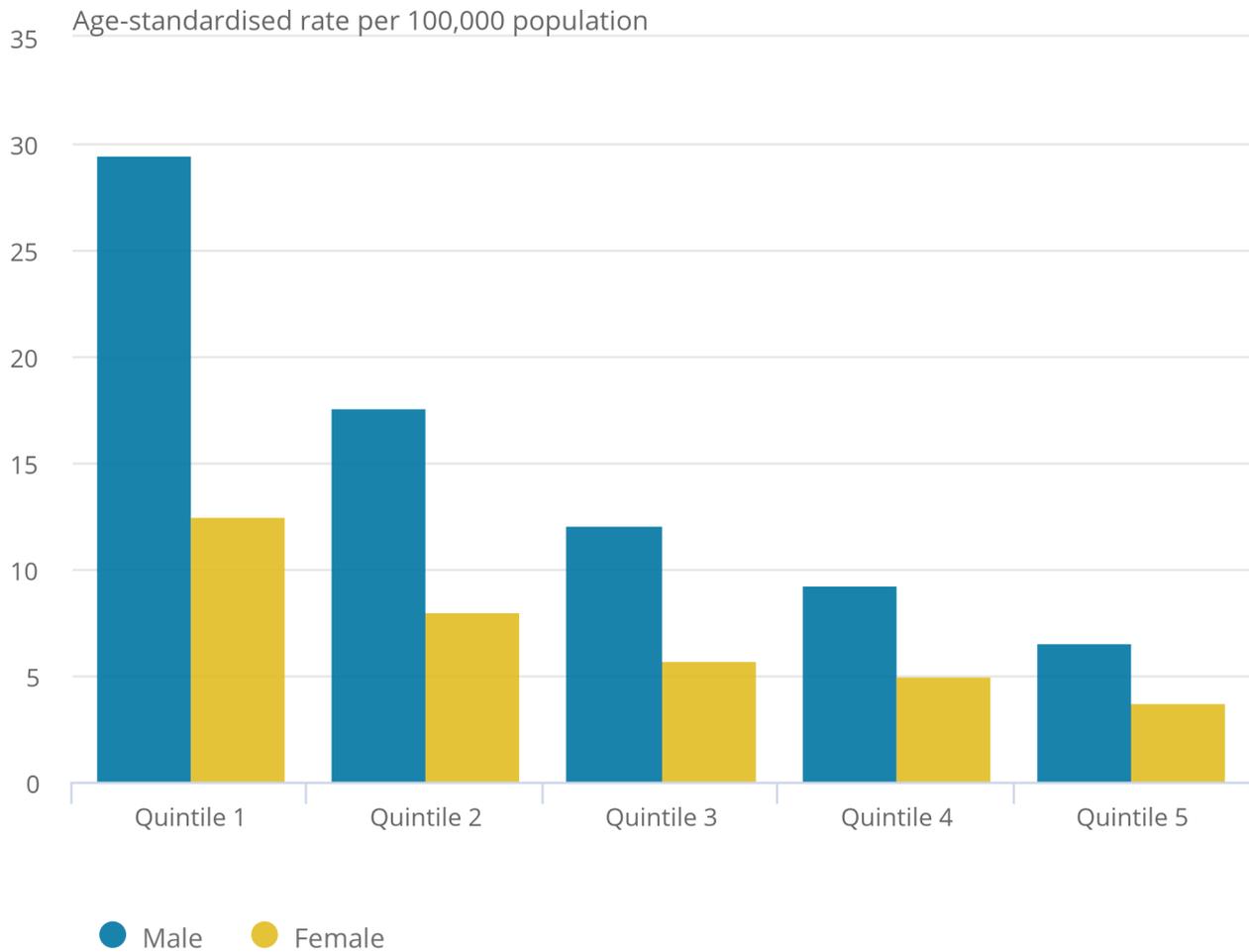
For additional analyses on how deprivation impacts alcohol-specific death rates, in their local alcohol profiles, Public Health England present [alcohol-specific death rates for local authorities that take into account levels of deprivation in each local authority](#).

## Figure 7: Age-standardised rates of alcohol-specific deaths by deprivation quintile

England, 2016

### Figure 7: Age-standardised rates of alcohol-specific deaths by deprivation quintile

England, 2016



Source: Office for National Statistics

Source: Office for National Statistics

#### Notes:

1. Quintiles 1 (most deprived) to 5 (least deprived).
2. Rates are expressed per 100,000 population and standardised to the 2013 European Standard Population.
3. Deaths of non-residents are excluded.
4. Figures are for deaths registered in each calendar year.

## 7 . Deaths caused by unspecified hepatitis (K73) and fibrosis and cirrhosis of the liver (K74)

The definition that was used in previous releases to estimate deaths due to alcohol misuse included unspecified hepatitis (K73) and fibrosis and cirrhosis of the liver (K74, excluding biliary cirrhosis). Following our recent consultation, support for a consistent definition of alcohol-specific deaths means that these conditions where death is only partially attributable to alcohol are excluded.

However, the consultation also highlighted support for continued publication of deaths relating to these two conditions. We will therefore continue to provide the number of deaths caused by these conditions in the UK, separate to the number of alcohol-specific deaths, in recognition of this need (please see accompanying datasets for a further breakdown by age-group).

Please note, deaths from these two conditions are still counted in separate measures of alcohol-related harm produced by public health agencies across the UK (see [“Different sources of data to understand the impact of alcohol consumption on mortality”](#) for more information).

**Table 2: Deaths caused by unspecified hepatitis and fibrosis and cirrhosis of the liver, UK, 2012 to 2016**  
1,2,3

Sex	Number of deaths				
	2012	2013	2014	2015	2016
Males	1,075	1,022	1,082	1,120	1,212
Females	672	669	720	721	770
Persons	1,747	1,691	1,802	1,841	1,982

Source: Office for National Statistics

Notes:

1. Deaths of non-residents are included in figures for the UK.
2. Figures are for deaths registered in each calendar year.
3. Deaths are defined using the International Classification of Diseases, 10th Revision (ICD-10) codes: K73 (chronic hepatitis, not elsewhere specified) and K740-K742, K746 (fibrosis and cirrhosis of the liver, excluding biliary cirrhosis).

## 8 . Different sources of data to understand the impact of alcohol consumption on mortality

When trying to ascertain the impact of alcohol consumption on mortality, there tend to be two main approaches, each with its own advantages and disadvantages. The first counts deaths from diseases that are a direct consequence of alcohol misuse (that is, wholly attributable deaths), such as the definition of alcohol-specific deaths reported in this release. One benefit of the definition of alcohol-specific deaths, is that it provides a consistent methodology for the whole of the UK, meaning that robust and comparable estimates of trends in alcohol mortality can be made.

The definition of alcohol-specific deaths, however, underestimates the burden of alcohol consumption on mortality as it excludes diseases where there is evidence showing that only a proportion of the deaths, for a given cause, are caused by alcohol (that is, partially attributable deaths; see [Rehm et al., 2017](#)). Public health agencies across the UK including [Public Health England](#) (PHE), the [Scottish Public Health Observatory](#), and [Public Health Wales](#) also have definitions that aim to capture the wider burden of alcohol consumption on population health and health service use (please note, a separate definition is not available for Northern Ireland). These definitions work by counting the number of wholly-attributable deaths in addition to a proportion of deaths from partially attributable conditions; partially attributable estimates are derived by combining academic research about the impact of alcohol consumption on different conditions with data on alcohol consumption in a given population. These definitions benefit from providing a more realistic estimate of deaths caused by alcohol, however, the estimates tend to be less comparable, particularly across time due to changes in drinking behaviour, and between countries due to different data sources being used to measure the amount of alcohol consumed (for example).

When using and interpreting the data it is, therefore, important to bear in mind the caveats, and to use the measure that best suits your needs. The measure of alcohol-specific deaths provides comparable estimates of alcohol mortality in the UK and its countries across time, whereas the estimates produced by the public health agencies allow us to understand the wider burden of alcohol consumption on population health and health service use.

Our consultation exercise supported the view that public health agencies should continue to take the lead with reporting measures that take into account both wholly- and partially-attributable deaths, whereas Office for National Statistics should lead with the reporting of wholly attributable deaths. When looking at the data from the public health agencies:

- PHE estimated that almost [24,000 deaths in 2016 were caused by alcohol consumption](#) in England
- in their release based on deaths registered in 2003, the Scottish Public Health Observatory estimated that around [1 in 20 \(5%\) of all deaths in Scotland are caused by alcohol](#)
- in Wales, it is estimated that approximately [1,500 deaths were caused by alcohol between 2010 to 2012](#)

## 9 . Finding the other sources of data to understand the wider burden of alcohol consumption

The devolved countries of the UK each produce their own statistics on the impact of alcohol consumption on mortality. These statistics are compiled by the [Scottish Public Health Observatory](#), [Public Health Wales](#), and the [Northern Ireland Statistics and Research Agency](#).

Public Health England (PHE), via their [Local Alcohol Profiles](#), provide data on a wide range of indicators related to the misuse of alcohol including mortality, hospital admissions, wider impacts (for example, alcohol-related traffic accidents), and patients using alcohol misuse services. Due to being more concerned with local authorities, for their alcohol-specific indicator, PHE aggregate three years' worth of deaths registrations data to improve statistical robustness.

With a focus on England particularly, NHS digital produce an [annual compendium](#), bringing together an array of data related to alcohol consumption, the misuse of alcohol, and the effects of alcohol misuse on health and health service use.

## 10 . Data on the previous National Statistics definition of “alcohol-related deaths”

Prior to our [recent consultation](#), this statistical release was produced using the National Statistics definition of alcohol-related deaths. In response to the consultation, we said that we would include [figures on the previous definition](#) for one final time.

## 11 . Registration delays

The information used to produce mortality statistics is based on the details collected when deaths are certified and registered. In England and Wales, deaths should be registered within five days of the death occurring, but there are some situations that result in the registration of the death being delayed. Deaths considered unexpected, accidental or suspicious will be referred to a coroner who may order a post mortem or carry out a full inquest to ascertain the reasons for the death.

In 2016, the average (median) time taken for a death to be registered in England and Wales was six days. The majority of alcohol-specific deaths registered in 2016 also occurred in that year (91%). The average registration periods for alcohol-specific deaths in Scotland and Northern Ireland were three days and six days respectively.

## 12 . User-requested data

Special extracts and tabulations of alcohol-related death (and other causes of mortality) data for England and Wales are available to order for a charge (subject to legal frameworks, disclosure control, resources and agreement of costs, where appropriate). Such requests or enquiries should be made to the Mortality Analysis Team via email to [mortality@ons.gsi.gov.uk](mailto:mortality@ons.gsi.gov.uk) or by telephone on +44 (0)1633 456736.

Our [charging policy](#) is also available.

## 13 . Quality and Methodology

The alcohol mortality [Quality and Methodology Information](#) report contains important information on:

- the strengths and limitations of the data and how it compares with related data
- uses and users of the data
- how the output was created
- the quality of the output including the accuracy of the data

Please note, this information will be updated to reflect the alcohol-specific definition in due course; all other information reported within the Quality and Methodology Information report remains unchanged.

Statistics on mortality are derived from the information provided when deaths are certified and registered. Further information about the methods and quality of these statistics can be found in the [Quality and Methodology Information report](#). ONS holds mortality data for England and Wales. Figures for the UK include data kindly provided by [National Records of Scotland](#) and the [Northern Ireland Statistics and Research Agency](#).

Differences referred to in this bulletin are based on unrounded figures. A difference that is described as “statistically significant” has been assessed using 95% confidence intervals. If a difference is said to be statistically significant, it is unlikely that it could have occurred by chance alone. Confidence intervals give a measure of the statistical precision of an estimate and show the range of uncertainty around the estimated figure. As a general rule, if the confidence interval around an estimate overlaps with the interval around another, there is no significant difference between the two estimates. When the number of deaths is less than 100, the method used to calculate confidence intervals is different (for more information see [Dobson et al., 1991](#)).