

Statistical bulletin

# Ischaemic heart diseases deaths including comorbidities, England and Wales: 2019 registrations

Deaths registered in 2019 in England and Wales due to ischaemic heart diseases, by sex, age group and region. Includes analysis of comorbidities.

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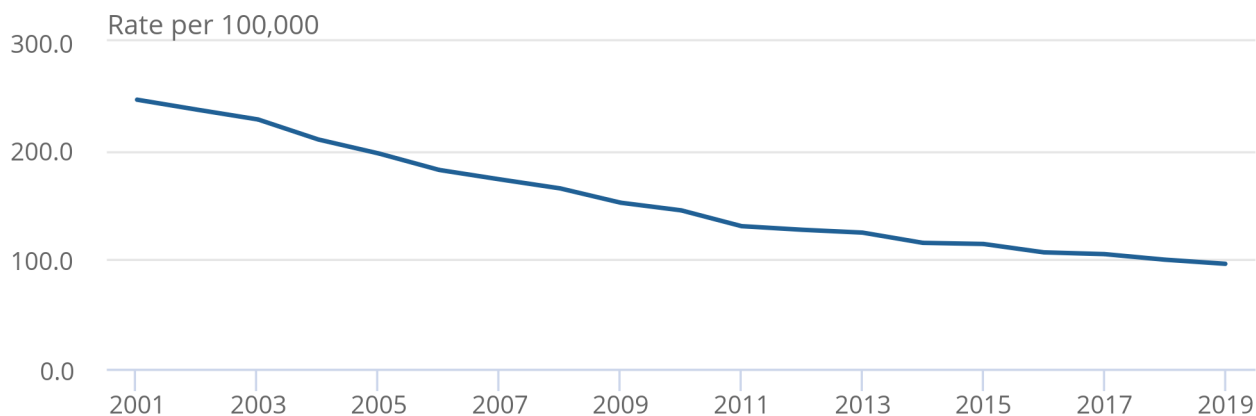
# 1 . Main points

- Of all deaths registered in 2019 in England and Wales, 55,064 (10.4%) were due to ischaemic heart diseases (IHDs); this was the second leading cause of death in 2019.
- The number of deaths and age-standardised mortality rates (ASMRs) have been decreasing yearly since 2001; from 246.5 to 96.1 deaths per 100,000 people by 2019.
- The ASMR due to IHDs in 2019 was significantly lower in England than Wales (94.7 and 109.3 deaths per 100,000 people respectively).
- The ASMR due to IHDs was significantly higher in males than females (139.6 and 60.7 deaths per 100,000 males and females respectively).
- The most common underlying cause of death where IHDs were mentioned on the death certificate was chronic lower respiratory diseases for males (2,758 deaths) and dementia and Alzheimer's disease for females (2,671 deaths).
- The most common contributing cause of death where IHDs was the underlying cause of death was diabetes (9,591 mentions).

## 2 . Deaths due to ischaemic heart diseases

Figure 1: Age-standardised mortality rates due to ischaemic heart diseases, England and Wales, deaths registered 2001 to 2019

Figure 1: Age-standardised mortality rates due to ischaemic heart diseases, England and Wales, deaths registered 2001 to 2019



Source: Office for National Statistics

Notes:

1. Includes deaths of non-residents.
2. See [Section 8: Measuring the data](#) for methodological information.
3. Deaths registered in each year.

In 2019 there were 530,841 deaths registered in England and Wales. Of these, 55,064 (10.4%) were due to ischaemic heart diseases (IHDs); often referred to as coronary heart diseases. This was the second leading cause of death in England and Wales, after dementia and Alzheimer's Disease (see [Dementia and Alzheimer's disease deaths including comorbidities, England and Wales: 2019 registrations](#)). The age-standardised mortality rate (ASMR) for deaths due to IHDs in 2019 was 96.1 deaths per 100,000 people. The ASMR was significantly lower in England than Wales (94.7 and 109.3 deaths per 100,000 people respectively).

ASMRs are used as they account for population size and age structure, allowing for easier comparison over time than number of deaths. For more information see [Section 7: Glossary](#).

Deaths due to IHDs in England and Wales have generally been decreasing yearly, with an overall decrease of 48.1% from 2001 to 2019 (106,177 to 55,064 deaths respectively). ASMRs have also been decreasing since 2001, from 246.5 to 96.1 deaths per 100,000 people in 2019 (Figure 1). There was a statistically significant decrease year-on-year in ASMRs, except between 2014 to 2015 and 2016 to 2017, where the decrease was not statistically significant.

In England, the number of deaths due to IHDs have decreased since 2001 (98,710 to 51,141 deaths in 2019). ASMRs have statistically significantly decreased since 2001 (243.8 to 94.7 deaths per 100,000 in 2019), with the exceptions of 2014 to 2015 and 2016 to 2017. Similarly, deaths due to IHDs in Wales decreased since 2001 (7,118 to 3,648 deaths in 2019); ASMRs also decreased annually since 2001 (275.5 to 109.3 deaths per 100,000 people in 2019), but not all year-on-year decreases were statistically significant.

Out of the nine English regions, the South East had the lowest proportion of deaths due to IHDs; 9.3% of deaths within the region (7,532 of 81,234 deaths). The South East also had the lowest ASMR for deaths due to IHDs (78.6 deaths per 100,000 people). Yorkshire and the Humber had the highest proportion of deaths due to IHDs; 11.4% of deaths within the region (5,984 of 52,547 deaths). Yorkshire and the Humber also had the highest ASMR for deaths due to IHDs (113.3 deaths per 100,000 people).

Deaths due to IHDs in Wales accounted for 11.0% of deaths within the country (3,648 of 33,183 deaths); this was higher than eight of the nine English regions. A full breakdown of deaths due to IHDs by region and place of occurrence is available in the [accompanying dataset](#).

Deaths due to IHDs have been declining yearly worldwide in high-income countries, including England and Wales. The main reasons for this according to the World Health Organisation are:

- greater treatment focused on improving survival in the first four-weeks after a cardiac event
- population-wide primary prevention, such as a reduction in tobacco, alcohol and/or salt intake, improved diet, and increased physical activity
- investment in prevention measures

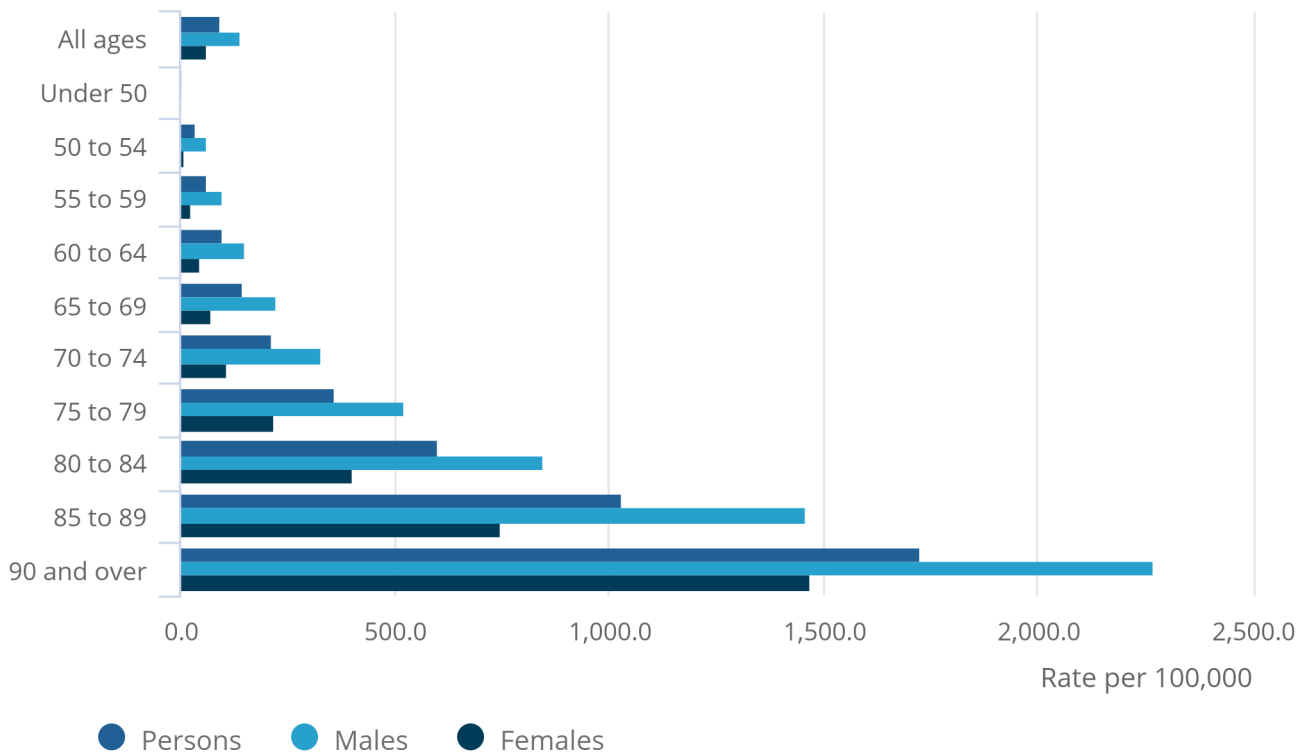
More information can be found in the [World Health Organisations Global Atlas on cardiovascular disease prevention and control \(PDF, 11.8MB\)](#).

The analysis of ischaemic heart diseases in this bulletin focuses primarily on deaths where this condition was the underlying cause of death (deaths "due to"), rather than deaths where they were either the underlying cause or mentioned as a contributing factor (deaths "involving").

### 3 . Deaths registered by sex and age

Figure 2: Age-standardised and age-specific mortality rates due to ischaemic heart diseases, England and Wales, deaths registered in 2019

Figure 2: Age-standardised and age-specific mortality rates due to ischaemic heart diseases, England and Wales, deaths registered in 2019



Source: Office for National Statistics

Notes:

1. Includes deaths of non-residents.
2. [See Section 8: Measuring the data](#) for methodological information.
3. Deaths registered rather than occurred.

Of the 55,064 deaths registered in 2019 due to ischaemic heart diseases (IHDs), 34,841 were males (139.6 deaths per 100,000 males) and 20,223 females (60.7 deaths per 100,000 females). Male mortality rates due to IHDs were significantly higher than females in England and Wales (Figure 2); males accounted for 63.3% of IHDs deaths in 2019.

The significant sex differences in mortality rates can be seen in England and Wales separately. In 2019, the age-standardised mortality rate (ASMR) in England was 137.6 deaths per 100,000 males and 60.0 deaths per 100,000 females. In Wales, the ASMR was 158.6 deaths per 100,000 males and 68.7 deaths per 100,000 females.

Mortality rates increased significantly throughout the five-year age groups in England and Wales. The ASMR for those aged under 50 years was 4.1 deaths per 100,000 people (1,384 deaths), whereas the age-specific mortality rate in those aged 90 years and over was 1,727.3 deaths per 100,000 people (9,462 deaths).

The ASMR for those aged 50 years and under was significantly lower in England than Wales (3.9 and 6.0 deaths per 100,000 people respectively). Age-specific mortality rates in England were lower than Wales for all age groups, but not all were statistically significant.

The ASMRs and age-specific mortality rates in England and Wales were significantly higher in males than females for all age groups. A full breakdown of mortality rates by sex and age are available in the [accompanying dataset](#).

Sex disparity in deaths due to IHDs can be attributed to premature mortality (deaths occurring aged 75 years and under). IHDs is the most common cause of premature death within the United Kingdom, affecting men at a much greater rate than women (see [The British Heart Foundation: UK Factsheet January 2021 \(PDF, 4.18 MB\)](#)).

## 4 . Deaths where ischaemic heart diseases were a contributory factor

The analysis in this section focuses on deaths where ischaemic heart diseases (IHDs) were not the underlying cause of death, but were mentioned on the death certificate as a contributory factor.

This has been carried out in line with the [leading causes of death groupings](#), based on a list developed by the World Health Organization (WHO). For more information, see [Section 8: Measuring the data](#).

The number of deaths registered due to IHDs in England and Wales in 2019 was 55,064. When we consider the number of deaths involving IHDs (mentioned anywhere on the death certificate), this number increases to 96,629 deaths. In England, 39,255 deaths had IHDs mentioned on the death certificate but not as the underlying cause of death; in Wales there were 2,214 deaths.

In England and Wales, the most common underlying cause of death for males where IHDs were a contributory factor on the death certificate was chronic lower respiratory diseases (2,758 deaths) (Table 1a).

For females, the most common underlying cause where IHDs were mentioned on the death certificate was dementia and Alzheimer's disease (2,671 deaths) (Table 1b).

Table 1a: Number of deaths by cause of death for males where ischaemic heart diseases was mentioned on the death certificate as a contributory factor, England and Wales, registered in 2019

<b>Cause of death</b>	<b>Number of deaths</b>
Chronic lower respiratory diseases	2,758
Dementia and Alzheimer's disease	2,638
Influenza and pneumonia	2,387
Cerebrovascular diseases	1,713
Malignant neoplasm of trachea, bronchus and lung	1,370
Diabetes	981
Malignant neoplasm of prostate	847
Nonrheumatic valve disorders	748
Pulmonary oedema and other intestinal pulmonary diseases	737
Diseases of the urinary system	647

Source: Office for National Statistics

#### Notes

1. Includes deaths of non-residents.
2. Deaths registered rather than occurred.
3. Leading causes groupings produced by the World Health Organization (WHO) have been used.
4. Collectively, all "other causes" of death were the most common cause of death in males where IHDs were mentioned but not the underlying cause of death on the death certificate.

Table 1b: Number of deaths by cause of death for females where ischaemic heart diseases was mentioned on the death certificate, England and Wales, registered in 2019

Cause of death	Number of deaths
Dementia and Alzheimer's disease	2,671
Chronic lower respiratory diseases	1,846
Influenza and pneumonia	1,738
Cerebrovascular diseases	1,363
Diabetes	639
Malignant neoplasm of trachea, bronchus and lung	590
Nonrheumatic valve disorders	500
Diseases of the urinary system	464
Accidental falls	380
Malignant neoplasms of breast	259

Source: Office for National Statistics

#### Notes

1. Includes deaths of non-residents.
2. Deaths registered rather than occurred.,
3. Leading causes groupings produced by the World Health Organization (WHO) have been used.
4. Collectively, all "other causes" of death were the second most common cause of death for females where IHDs were mentioned but not the underlying cause of death on the death certificate.

## 5 . Comorbidities of deaths due to ischaemic heart diseases

This section looks at comorbidities where ischaemic heart diseases (IHDs) was the underlying cause of death. The [leading causes of death](#) groupings have been used in this comorbidities section.

When looking at the number of conditions mentioned on a death certificate, most deaths due to IHDs had three mentions (26.2% of deaths). In addition, IHDs had the highest average number of mentions compared to any other cause of death (3.4 mentions).

### Pre-existing conditions

We define a pre-existing condition here as any condition mentioned after IHDs on the death certificate. This can also be described as the condition that was most likely to cause death in the absence of IHDs. Information on how a pre-existing condition is derived can be found in [Measuring pre-existing health conditions in death certification -- deaths involving COVID-19](#).



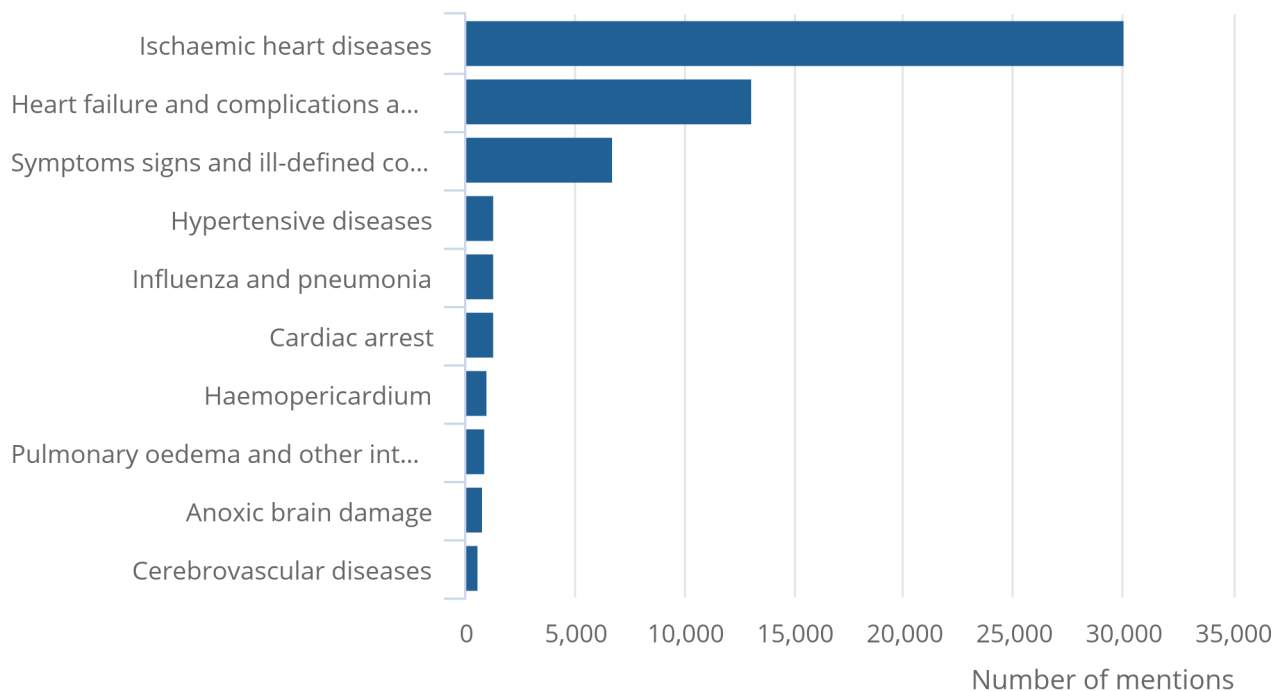
In England in 2019, 18,269 (35.7%) death certificates had no other health conditions mentioned when IHDs were the underlying cause of death. Where IHDs were the underlying cause of death and at least one pre-existing condition was mentioned on the death certificate, the most prevalent condition was diabetes for males (5,968 deaths) and hypertensive diseases for females (3,553 deaths).

In Wales, 1,608 (44.1%) death certificates had no other conditions mentioned when IHDs were the underlying cause of death. Where IHDs were the underlying cause of death and at least one pre-existing condition was mentioned, the most common was diabetes for both males and females (336 and 172 deaths respectively).

## Immediate cause of death

**Figure 3: Number of mentions in Part I, Line A of the death certificate, by leading cause, England and Wales, 2019**

Figure 3: Number of mentions in Part I, Line A of the death certificate, by leading cause, England and Wales, 2019



**Source: Office for National Statistics**

**Notes:**

1. Includes deaths of non-residents.
2. Deaths registered rather than occurred.
3. Haemopericardium and anoxic brain damage have been included; these are not leading causes. See [Section 8: Measuring the data](#) for information.

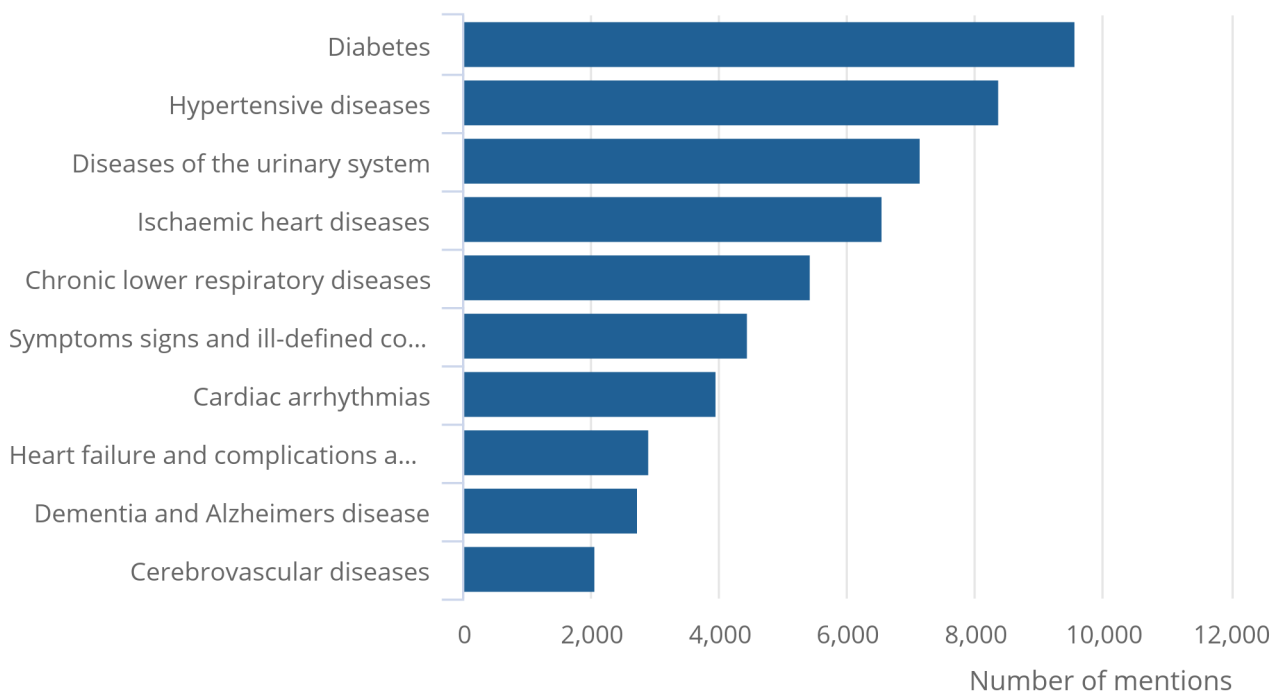
For this section, Part I (a) of the death certificate has been analysed in relation to comorbidities. This outlines the immediate cause(s) of death that led directly to the death.

In England and Wales in 2019, there were 222 different conditions mentioned on Part 1 (a) of death certificates where death was due to IHDs. Of these, IHDs were the most common mention, accounting for 49.0% of immediate causes of death. The top 10 causes account for 93.5% of conditions mentioned as the immediate cause of death, of which 80.0% were directly related to the heart (Figure 3).

## Contributory factors of death

**Figure 4: Number of mentions in Part II of the death certificate, by leading cause, England and Wales, registered in 2019**

Figure 4: Number of mentions in Part II of the death certificate, by leading cause, England and Wales, registered in 2019



Source: Office for National Statistics

Notes:

1. Includes deaths of non-residents.
2. Deaths registered rather than occurred.

In 2019, there were 175 different conditions mentioned on Part II of death certificates where the death was due to IHDs. Of these, diabetes was the most common mention, accounting for 13.1% of conditions. The top 10 causes account for 72.6% of conditions mentioned as contributing towards the death (Figure 4).

## 6 . Deaths data

[Ischaemic heart diseases deaths including comorbidities, England and Wales](#)

Dataset | Released 4 May 2021

Deaths registered in England and Wales due to ischaemic heart diseases, by sex, age group, region and place of occurrence. Includes analysis of comorbidities.

## 7 . Glossary

### Age-specific mortality rates

Age-specific mortality rates are used to allow comparisons between specified age groups.

### Age-standardised mortality rates

Age-standardised mortality rates (ASMRs) are used to allow comparisons between populations that may contain different proportions of people of different ages. The 2013 European Standard Population is used to standardise rates. ASMRs for 2019 are calculated using the [2019 mid-year population estimates](#).

### Registration delay

Mortality statistics are compiled from information supplied when deaths are certified and registered as part of civil registration, a legal requirement. According to the Births and Deaths Registration Act 1953, a death should be registered within five days unless it is referred to a coroner for investigation. Mortality statistics for a given time period can be based on occurrence (death date) or registration (registration date); registration delay is the difference between date of occurrence and date of registration. See [Impact of registration delays on mortality statistics in England and Wales: 2019](#).

### Statistical significance

The term "significant" refers to statistically significant changes or differences. Significance has been determined using the 95% confidence intervals, where instances of non-overlapping confidence intervals between estimates indicate the difference is unlikely to have arisen from random fluctuation. In some circumstances, significance has also been tested using z scores. More information about this z test is available in Appendix 1 of the [Sullivan guide \(PDF, 1.19MB\)](#).

### 95% confidence intervals

A confidence interval is a measure of the uncertainty around a specific estimate. If a confidence interval is 95%, it is expected that the interval will contain the true value on 95 occasions if repeated 100 times. As intervals around estimates widen, the level of uncertainty about where the true value lies increases. The size of the interval around the estimate is strongly related to the number of deaths, prevalence of health states and the size of the underlying population. At a national level, the overall level of error will be small compared with the error associated with a local area or a specific age and sex breakdown. More information is available on our [uncertainty page](#).

## 8 . Measuring the data

The Office for National Statistics (ONS) is publishing more data and analysis than ever before. We are constantly reviewing our publications based on your feedback to make sure that we continue to meet the needs of our users. As a result, future editions of this publication may focus more strongly on headline indicators and main messages. Thank you for your continued support.

More quality and methodology information is available in the [Mortality statistics in England and Wales QMI](#) and [User guide to mortality statistics](#).

Additional data are provided in the accompanying dataset.

This bulletin is based on date of registration, not date of death, because of [the time taken for a death to be registered](#).

Boundaries in November 2020 have been used to calculate geographical breakdowns.

The International Classification of Diseases, tenth edition (ICD-10) definitions for ischaemic heart diseases (IHDs) are I20 to I25.

We use comparisons of IHDs with other [leading causes of death](#). This is based on a list developed by the World Health Organisation (WHO). This categorises causes using the International Classification of Diseases version 10 (ICD-10), specially designed for determining the leading causes of death.

In Figure 3, haemopericardium and anoxic brain damage have been included; these are not leading causes. The ICD-10 definition is as follows: I31.2 Haemopericardium, not elsewhere classified; and G93.1 Anoxic brain damage, not elsewhere classified.

## Acknowledgement

We would like to thank Charlee Humphries, Georgia Brett, and Sarah Caul for their valued contribution to this bulletin.

## 9 . Strengths and limitations

### Data coverage, timeliness and registration delays

Figures in this release represent the number of deaths registered in 2019: this includes some deaths that occurred in the years prior to this year, while a proportion of deaths occurring in 2019 would not be registered until subsequent years.

Data for England and Wales combined include deaths of non-residents. Deaths for England and Wales separately covers deaths of usual residents of each country. In 2019 there were 1,288 deaths of non-residents registered in England and Wales.

More quality and methodology information on strengths and limitations is available in the [Mortality statistics in England and Wales QMI](#) and [User guide to mortality statistics](#).

## 10 . Related links

[Deaths registered in England and Wales: 2019](#)

Bulletin | 01 July 2020

Registered deaths by age, sex, selected underlying causes of death and the leading causes of death. Contains death rates and death registrations by area of residence and single year of age.

[Leading causes of death, UK: 2001 to 2018](#)

Article | 27 March 2020

Registered leading causes of death by age, sex and country.