

Statistical bulletin

# Child mortality in England and Wales: 2016

Stillbirths, infant and childhood deaths occurring annually in England and Wales, and associated risk factors.



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# 1 . Main points

- There were 2,651 infant deaths (deaths of those aged under 1 year) that occurred in England and Wales in 2016, compared with 2,578 in 2015 and 6,313 in 1986.
- In 2016, the infant mortality rate increased to 3.8 deaths per 1,000 live births, compared with 3.7 in 2015.
- Cancers remain the most common cause of death for children aged 1 to 15 years, accounting for 20.6% of deaths in 2016.
- For babies born in 2015 with a known gestation, the lowest infant mortality rate was to babies in the White Other ethnic group at 2.2 deaths per 1,000 live births.

## 2 . Statistician's comment

"In 2016, there were small increases in both the infant (3.8 deaths per 1,000 live births) and neonatal (2.7 deaths per 1,000 live births) mortality rates in England and Wales from 2015 but these rates remain low in historical terms (based on death occurrences). These increases can be attributed to many risk factors, such as the mother's country of birth, mother's age at birth of child, birthweight and the parents' socioeconomic status."

Vasita Patel, Vital Statistics Outputs Branch, Office for National Statistics Follow Vital Statistics Outputs Branch on Twitter [@Statsliz](#)

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

Important information for interpreting these birth and child mortality statistics:

- birth and death statistics are compiled from information supplied when deaths are certified and both births and deaths are registered as part of civil registration, a legal requirement
- figures represent births and deaths that occurred in England and Wales, these include the births and deaths of individuals whose usual residence is outside England and Wales
- figures in the [child mortality tables](#) (death cohort) contain figures on deaths that occurred in the calendar year 2016, linked to their corresponding birth record (sections 4 to 9)
- figures in [infant mortality \(birth cohort\) tables](#) represent the number of births that occurred in the calendar year 2015 where the baby died before their first birthday, either in the same reference year or the following year, which are then linked to their corresponding birth notification and death registration (sections 10 and 11)
- for babies born in 2015, 99.8% were successfully linked to their birth notification (sections 10 and 11)
- the infant death numbers and rates published in [child mortality](#) and [infant mortality \(birth cohort\) tables](#) will not match due to the differences in the timings of the extracts used for the birth and death cohorts
- the definitions for main terms used in this release can be found in the Quality and methodology section
- we also publish infant mortality statistics according to the year in which the death was registered ( [death registrations summary tables](#) and [deaths registered by area of usual residence](#) ), which may differ to those based on the year the death occurred; figures based on date of registration provide more timely infant mortality statistics

## 4 . Infant mortality rates increase in England and Wales in 2016

There were 2,651 infant deaths that occurred in England and Wales in 2016. The infant mortality rate was 3.8 deaths per 1,000 live births, an increase from 3.7 deaths per 1,000 live births in 2015. The increased infant mortality rate can be attributed to the 2.8% increase in the number of infant deaths in 2016 compared with 2015, along with the 0.2% decrease in the number of live births over this period.

The infant mortality rate has been following a downward trend since the 1990s, until 2015, where the rate began to increase.

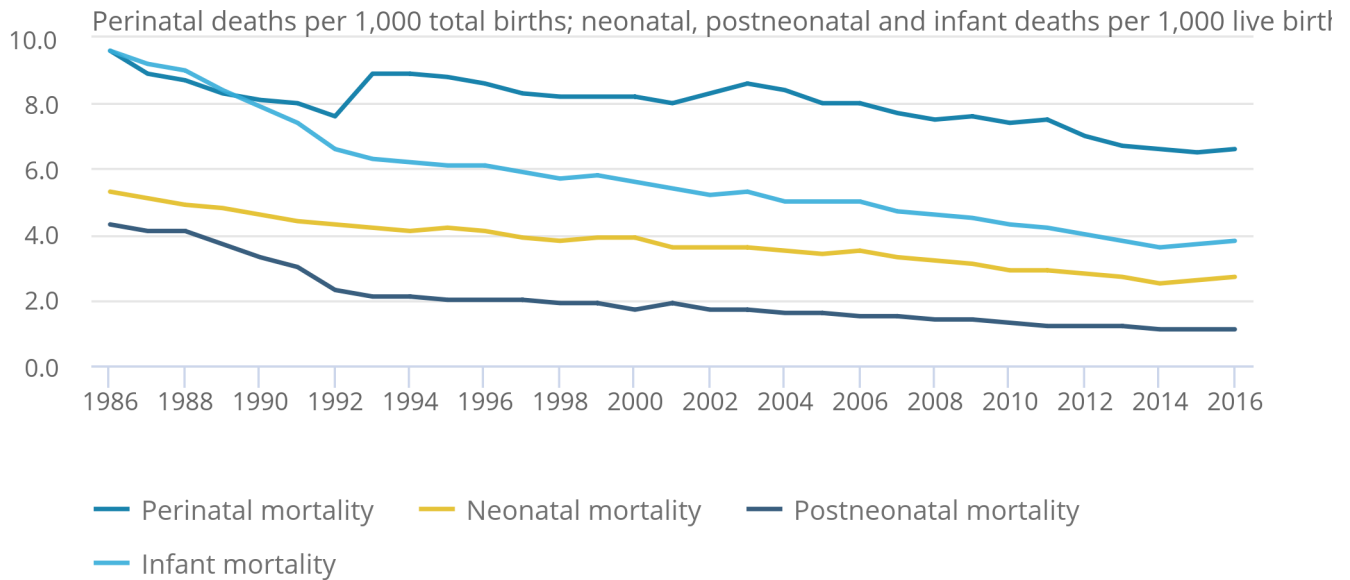
However, over the past 30 years, the rate of decline of the infant mortality rate has varied, with the decrease between 1996 and 2006 being half as much as was recorded between 1986 and 1996. In contrast, the decrease in the past 10 years was higher than that of the decade before (Figure 1). Since 1986, when the rate was 9.6 deaths per 1,000 live births, there has been a 60.4% fall in the infant mortality rate in England and Wales.

**Figure 1: Infant, neonatal, postneonatal and perinatal mortality rates, 1986 to 2016**

England and Wales

Figure 1: Infant, neonatal, postneonatal and perinatal mortality rates, 1986 to 2016

England and Wales



Source: Office for National Statistics

Notes:

1. Deaths occurring in a calendar year.
2. Perinatal – stillbirths and early neonatal deaths.
3. Neonatal – deaths of those aged under 28 days.
4. Postneonatal – deaths of those aged between 28 days and 1 year.
5. Infant – deaths of those aged under 1 year.
6. Rates – perinatal deaths per 1,000 total births. Neonatal, postneonatal and infant deaths per 1,000 live births.
7. Stillbirth – the Stillbirth Definition Act 1992 changed the definition of a stillbirth from a baby being born after 28 weeks completed gestation to a baby being born after 24 weeks (which did not breathe or show any other signs of life). This means that data for 1993 onwards are not directly comparable with data for stillbirths before the introduction of the Act.

Several different factors are associated with increased risk of infant death and these vary according to age at death. Evidence in the [Marmot Review: Fair Society, Healthy Lives](#) (PDF, 16.2MB) noted that factors, including births outside marriage, maternal age under 20 years and deprivation, were independently associated with an increased risk of infant mortality. The review went on to say that, “low birthweight in particular, is associated with poorer long-term health outcomes and the evidence also suggests that maternal health is related to socioeconomic status.”

Over the last three decades, the neonatal mortality rate (deaths of those aged under 28 days) has been declining, until 2015, when the rate started to increase. There has also been a fall in the postneonatal mortality rate (deaths of those aged between 28 days and 1 year) since 1986 but the rate has remained at 1.1 deaths per 1,000 live births since 2014. The neonatal and postneonatal mortality rates have fallen by 49.1% and 74.4% respectively since 1986.

In 2016, there were 3,112 stillbirths and 1,515 deaths at age under 7 days, resulting in a perinatal mortality rate of 6.6 deaths per 1,000 total births, compared with 6.5 deaths per 1,000 in the previous year. The number of stillbirths decreased from 3,147 in 2015 but deaths at age under 7 days increased from 1,436 in 2015. Since 1993, following the change to the stillbirth definition, the perinatal mortality rate has fallen by just over one-quarter.

## **5 . Immaturity-related conditions continue to be the most common cause of infant deaths in 2016**

Office for National Statistics (ONS) cause groups showed that immaturity-related conditions, such as respiratory and cardiovascular disorders, were the most common cause of infant deaths and neonatal deaths in 2016 (Figure 2).

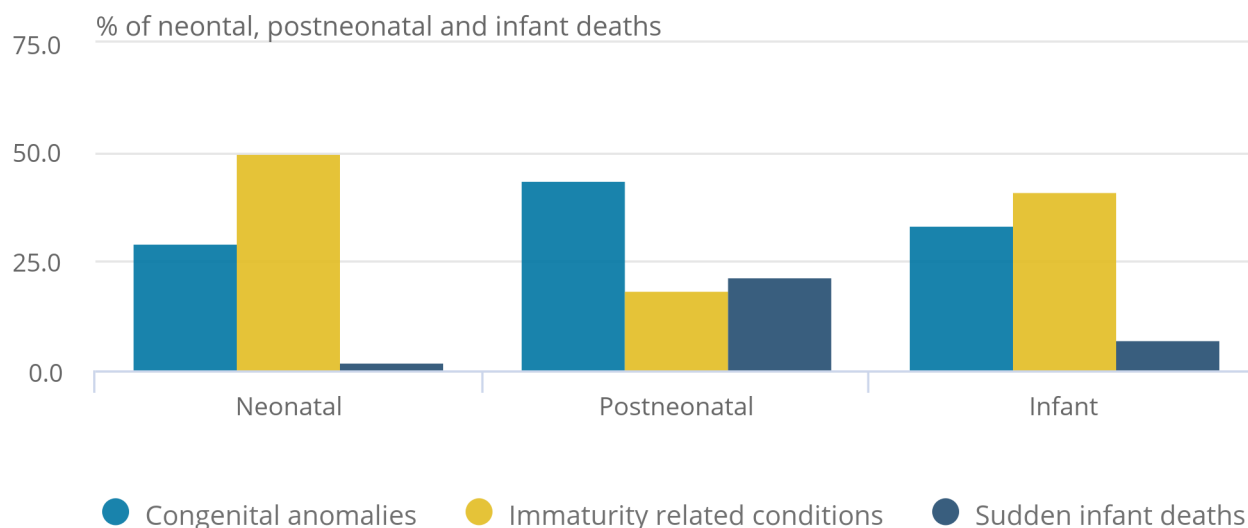
Congenital anomalies were another major cause group for infant deaths and neonatal deaths. They also continued to account for the largest percentage of postneonatal deaths, followed by sudden infant deaths, making them the second most common cause.

**Figure 2: Percentage of neonatal, postneonatal and infant deaths caused by immaturity-related conditions, congenital anomalies and sudden infant deaths, 2016**

England and Wales

Figure 2: Percentage of neonatal, postneonatal and infant deaths caused by immaturity-related conditions, congenital anomalies and sudden infant deaths, 2016

England and Wales



Source: Office for National Statistics

Notes:

1. Deaths occurring in a calendar year.
2. Neonatal – deaths of those aged under 28 days.
3. Postneonatal – deaths of those aged between 28 days and 1 year.
4. Infant – deaths of those aged under 1 year.

More information about the ONS cause groups can be found in the [User guide to child mortality statistics](#).

## 6 . Cancers remain the most common cause of death for children aged 1 to 15 years

In 2016, cancers, followed by external causes of morbidity and mortality, were the most common causes of death for children aged 1 to 15 years (Table 1). The child mortality rate from diseases of the nervous system decreased by 28.6% in 2016. Moreover, child mortality rates from respiratory and circulatory diseases in England and Wales have been falling over the last 30 years, as they have for the whole population. This reflects advances in medical care and preventative measures, as well as the [reduction in the emission of air pollutants](#).

**Table 1: Percentage of childhood deaths by underlying cause, England and Wales, 2016**

ICD-10 code	Underlying cause group	%
C00-D48	Neoplasms (cancers)	20.6
U509, V01-Y89	External causes of morbidity and mortality	16.4
J00-J99	Diseases of the respiratory system	10.8
G00-G99	Diseases of the nervous system	10.3
Q00-Q99	Congenital malformations, deformations and chromosomal abnormalities	10.0

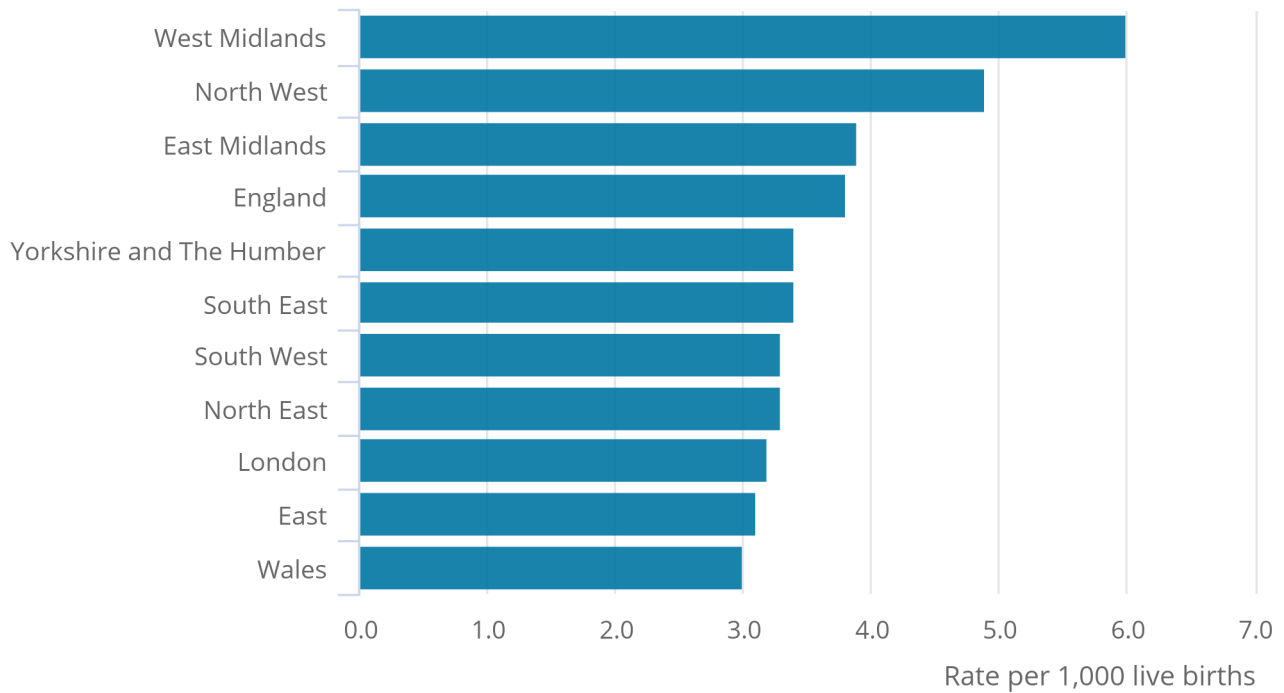
Source: Office for National Statistics

## **7 . Infant mortality rates remain highest in the West Midlands region of England in 2016**

Infant mortality rates vary by region and can fluctuate over time. In 2016, the infant mortality rate remained highest in the West Midlands region of England, with 6.0 deaths per 1,000 live births, and remained lowest in the East, with 3.1 deaths per 1,000 live births. The infant mortality rate for Wales was 3.0 deaths per 1,000 live births, a 16.7% decrease from 2015.

**Figure 3: Infant mortality rates by regions in England, and Wales, 2016**

Figure 3: Infant mortality rates by regions in England, and Wales, 2016



**Source: Office for National Statistics**

**Notes:**

1. Deaths occurring in a calendar year.
2. Infant – deaths of those aged under 1 year.

Infant mortality rates for some local authorities are based on a relatively small number of live births. Therefore, rates are often subject to random fluctuations and are consequently less robust. At local authority level, the highest infant mortality rate in 2016 was in West Dorset (11.8 deaths per 1,000 live births) in England and Isle of Anglesey (11.2 deaths per 1,000 live births) in Wales.



## 8 . Infant mortality rates continue to increase for low birthweight babies with mothers aged 40 and over

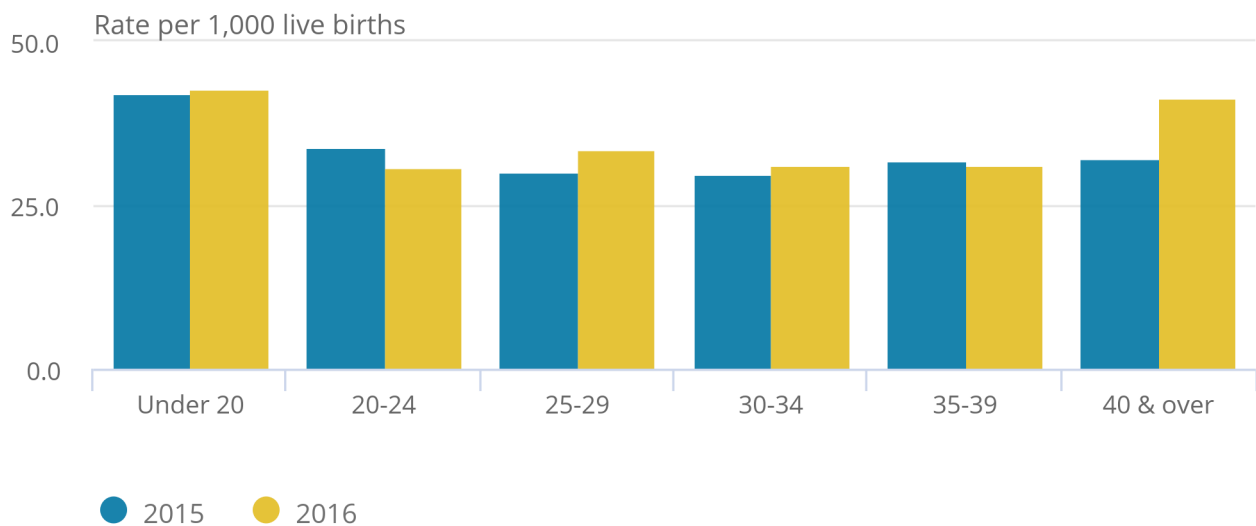
For babies of low birthweight (less than 2,500 grams), the infant mortality rate increased for mothers of all ages, except for those aged 20 to 24 and 35 to 39 years, where the infant mortality rates decreased (Figure 4). The most noticeable increase of 29.2% was seen in mothers aged 40 and over.

**Figure 4: Infant mortality rates for low birthweight babies by age of mother, 2015 and 2016**

England and Wales

Figure 4: Infant mortality rates for low birthweight babies by age of mother, 2015 and 2016

England and Wales



Source: Office for National Statistics

Notes:

1. Deaths occurring in a calendar year
2. Infant – deaths of those aged under 1 year.
3. Low birthweight babies - those born weighing less than 2,500 grams.

## 9 . Most deprived areas have the highest infant mortality rates in both England and Wales in 2016

The infant mortality rates were higher in the most deprived areas compared with the least deprived areas in both England and Wales in 2016 (Figure 5). The infant mortality rate in the most deprived areas was 5.9 per 1,000 live births in England, whereas the infant mortality rate in the least deprived areas was 2.6 per 1,000 live births.

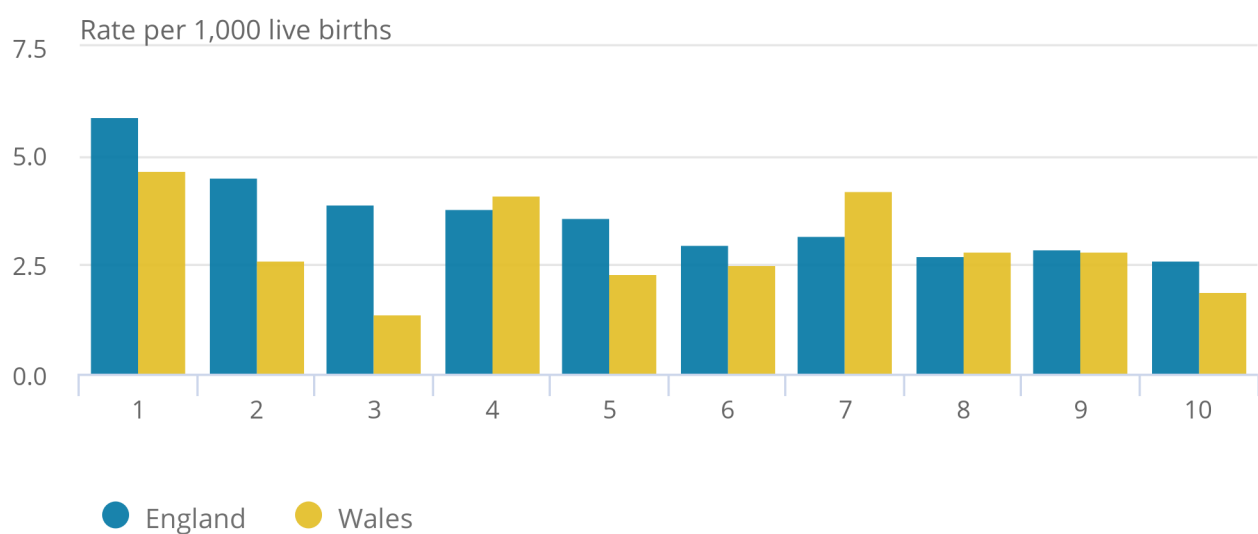
This trend was not as clear for Wales, where the most deprived areas had the highest infant mortality rate at 4.7 deaths per 1,000 live births, but the lowest rate was in one of the less deprived areas, at 1.4 deaths per 1,000 live births. Moreover, the number of infant deaths in Wales is relatively small, making the infant mortality rates less robust.

**Figure 5: Infant mortality rate by Index of Multiple Deprivation, 2016**

England, and Wales

Figure 5: Infant mortality rate by Index of Multiple Deprivation, 2016

England, and Wales



**Source:** Office for National Statistics

**Notes:**

1. Infant – deaths of those aged under 1 year.
2. Index of Multiple Deprivation (IMD) decile range from 1 to 10, with 1 being the most deprived and 10 being the least deprived.
3. Deprivation deciles have been calculated separately for lower super output areas (LSOAs) in England and for LSOAs in Wales as their IMDs are not comparable.

Differences in infant mortality rates by Index of Multiple Deprivation can be due to factors including income, employment, education, health, living environment, crime and barriers to housing and services.

## 10 . Decline in the infant mortality rate for multiple births from the 2015 birth cohort

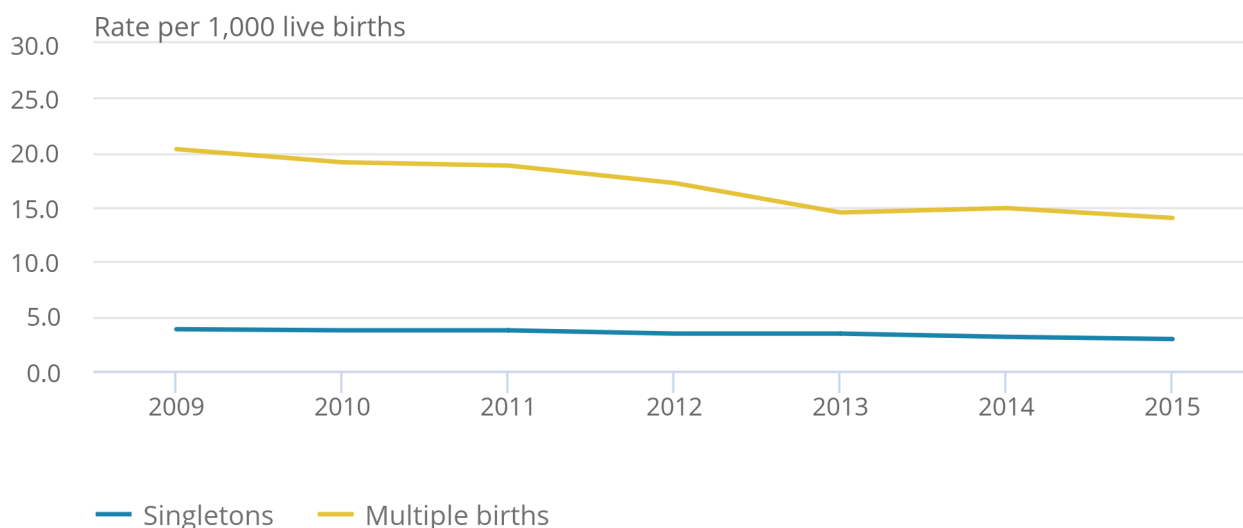
Infant mortality rates for singletons born in 2015 have continued to decrease. Similarly, infant mortality rates for multiple births taking place in 2015 have decreased for the first time since 2013. Despite the decrease in infant mortality rates for multiple births in 2015, it was still nearly five times higher than singletons (Figure 6).

**Figure 6: Infant mortality rates for singleton and multiple births, 2009 to 2015**

England and Wales

Figure 6: Infant mortality rates for singleton and multiple births, 2009 to 2015

England and Wales



Source: Office for National Statistics

Notes:

1. Infant – deaths of those aged under 1 year.

# 11 . Babies born in the White Other ethnic group have the lowest infant mortality rate in 2015

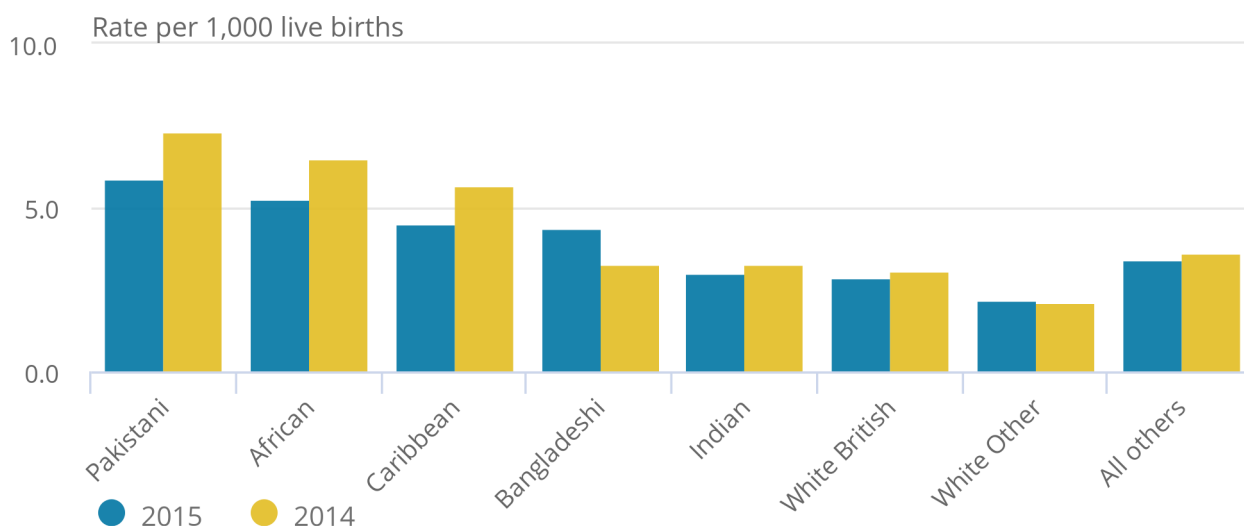
In 2015, of babies with known gestational age, babies born in the White Other ethnic group (White Irish and any other White background) continued to have the lowest infant mortality rate at 2.2 deaths per 1,000 live births (Figure 7); however, this rate has increased from 2.1 deaths per 1,000 live births in 2014. In contrast, Pakistani and Black African babies had the highest infant mortality rates in 2015 (Figure 7).

**Figure 7: Infant mortality rates by ethnicity for babies born in 2014 and 2015**

England and Wales

Figure 7: Infant mortality rates by ethnicity for babies born in 2014 and 2015

England and Wales



Source: Office for National Statistics

Notes:

1. Known gestation only.
2. Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated
3. Infant – deaths of those aged under 1 year.
4. All others - Chinese, Other Asian, Other black, Other and all Mixed groups

## 12 . What's changed in this release?

Following the results of the infant mortality user consultation, carried out in spring to summer 2017, we will continue to produce Child mortality statistics and have combined [Birth cohort tables for infant deaths](#) and [Pregnancy and ethnic factors influencing births and infant mortality](#) into one publication called [Infant mortality \(birth cohort\) tables](#). There have been revisions to both sets of tables to improve presentation and to meet our user needs, details of which are available in the [response to the consultation](#).

## 13 . Links to related statistics

More data on [Child mortality in England and Wales: 2016](#) and on [Infant mortality \(birth cohort\) tables 2015 are available](#).

[Unexplained deaths in infancy](#) includes both sudden infant deaths and deaths for which the cause remained unknown or unascertained.

More data on [births](#) and [deaths](#) (based on deaths registered in a calendar year) in England and Wales in 2016 are available

For infant mortality data for other UK countries (based on registrations), please see the [latest infant death statistics for Northern Ireland](#) and the [latest infant death statistics for Scotland](#).

The number of infant deaths and rates (based on deaths registered in a calendar year) for the UK and constituent countries can be found in the [Vital statistics: population and health reference tables](#).

Special extracts and tabulations of deaths data for England and Wales are available to order (subject to legal frameworks, disclosure control, resources and the [ONS charging policy](#), where appropriate). Enquiries should be made to Vital Statistics Outputs Branch by email to [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk) or by telephone on +44 (0)1329 444110. [User requested data](#) will be published.

## 14 . Quality and methodology

### Definitions used in child mortality statistics

Stillbirth – born after 24 or more weeks completed gestation and which did not, at any time, breathe or show signs of life.

Early neonatal – deaths of those aged under 7 days.

Perinatal – stillbirths and early neonatal deaths.

Neonatal – deaths of those aged under 28 days.

Postneonatal – deaths of those aged between 28 days and 1 year.

Infant – deaths of those aged under 1 year.

Childhood – deaths of those aged between 1 and 15 years.

## **Child mortality Quality and Methodology Information**

The [Child 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

Our [User guide to child mortality statistics](#) provides further information on data quality, legislation and procedures relating to mortality and includes a glossary of terms.

## **Linkage of births and deaths**

Linking infant deaths to their corresponding birth registration improves our understanding of the main characteristics of the baby and the baby's parents (these include the baby's birthweight; mother's age; mother's country of birth; parents' socioeconomic classification; and the number of previous children).

In 2016, 98.2% of infant deaths in England and Wales were successfully linked to their birth registration record. The linkage rate has remained consistent since the linking exercise began. The main reasons for an infant death not being linked are either; a birth registration record cannot be found, or the birth was registered outside England and Wales.

## **Coding the underlying cause of death**

Deaths are cause coded using the World Health Organization (WHO) International Classification of Diseases (ICD). Deaths are coded to ICD-10 using IRIS software (version 2013). Cause of death reported here represents the final underlying cause of death for ages 28 days and over. This takes account of additional information received from medical practitioners or coroners after the death has been registered.

In England and Wales, stillbirths and neonatal deaths are registered using a special death certificate, which enables reporting of relevant diseases or conditions in both the infant and the mother. Office for National Statistics (ONS) has developed a hierarchical classification system in ICD-10 to produce broad cause groups that enable direct comparison of neonatal and postneonatal deaths. More information on neonatal cause of death certificates can be found in the [User guide to child mortality statistics](#).