

Statistical bulletin

Unexplained deaths in infancy, England and Wales: 2016

Annual data on sudden infant deaths in England and Wales and infant deaths for which the cause remained unascertained after a full investigation, with associated risk factors.

Contact:
Health Statistics and Research
health.data@ons.gov.uk
+44 (0)1329 444110

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1 . Main points

- There were 219 unexplained infant deaths in England and Wales in 2016, an increase compared with 2015 (195), but still lower than in 2006 (285).
- In 2016, the unexplained infant mortality rate rose to 0.31 deaths per 1,000 live births, however, the rate was not significantly higher than the 2015 rate (0.28) but was significantly lower than in 2006 (0.43).
- Unexplained infant deaths accounted for 8.3% of all infant deaths occurring in 2016, compared with 7.6% in 2015.
- In 2016, the unexplained infant mortality rate remained the highest among mothers aged less than 20 years, at 0.98 deaths per 1,000 live births, an increase from 0.79 in 2015.
- In 2016, the unexplained infant mortality rate among very low birthweight (under 1,500 grams) babies increased to 2.13 deaths per 1,000 live births, compared with 1.24 in 2015, however, this increase was not statistically significant.

2 . Statistician's comment

“While unexplained infant deaths increased in 2016 for the first time in three years the total remains low in historical terms. The increase was driven by a rise in unascertained deaths among infant girls. However, due to the low numbers involved the overall increase in unexplained infant deaths is not statistically significant.”

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

3 . Things you need to know about this release

Important information for interpreting these unexplained deaths in infancy statistics:

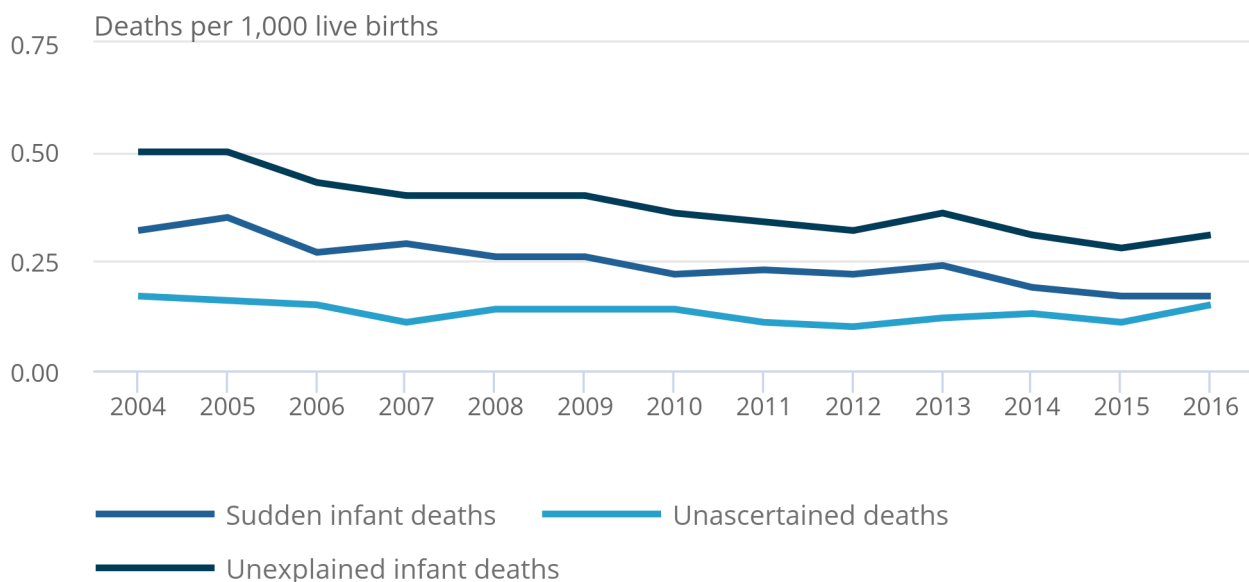
- birth and death statistics are compiled from information supplied when births and deaths are certified and registered as part of civil registration, a legal requirement
- figures represent infant deaths (deaths under one year of age) that occurred in England and Wales in the calendar year shown; these include infant deaths whose mother's usual residence was outside England and Wales
- unexplained infant deaths include sudden infant deaths (“cot deaths”) coded to the International Classification of Diseases Tenth Revision (ICD-10) code R95 and unascertained deaths (ICD-10 code R99); the latter are infant deaths where no medical cause was recorded
- infant deaths are linked to their corresponding birth registration to enable analysis of risk factors and demographic characteristics

4 . Unexplained infant mortality rate increased in England and Wales in 2016

There were 219 unexplained infant deaths that occurred in England and Wales in 2016. The unexplained infant mortality rate rose to 0.31 deaths per 1,000 live births, a non-statistically significant increase from 0.28 deaths per 1,000 live births in 2015 (Figure 1). This increase was driven largely by the 35.5% rise in unascertained infant deaths from 76 in 2015 to 103 in 2016. The rise in unascertained deaths could be due to changing in practice among coroners in certifying the cause of death. Deaths are assigned with the underlying cause as unascertained where there is no clear evidence of sudden infant death syndrome.

Figure 1: Unexplained infant mortality rate in England and Wales, 2004 to 2015 and provisional data for 2016

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Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences.
2. Data for 2016 are provisional.
3. Sudden infant deaths are coded to ICD-10 code R95 and unascertained deaths are coded to ICD-10 code R99.
4. Unexplained infant deaths include both sudden infant deaths and unascertained deaths.

It is not possible to say with any degree of certainty what has caused the change in numbers of unexplained infant deaths. However, there are various factors that put babies at higher risk.

[Maternal smoking during pregnancy](#) and [postnatal exposure to tobacco smoke](#) have been associated with unexplained infant deaths. Research shows that babies whose mothers smoke have an increased risk of sudden infant death syndrome, compared with babies whose mothers do not smoke and that the level of risk is greater with increasing levels of maternal smoking. Other risk factors include [low birthweight](#) and maternal age.

Overheating and an unsafe sleeping environment, such as the baby's head being covered have also been linked with unexplained infant deaths. These situations may be more likely to occur during winter, through the use of extra clothing or blankets and central heating at night. [Further risk factors](#) include sleeping position, not breastfeeding, temperature and sleep environments including unplanned bed-sharing and sleeping with a baby on a sofa.

Over the last 10 years, the number of unexplained infant deaths declined by 23.2% in England and Wales. This decrease could be driven by the advice and guidance that is available for parents from the [NHS](#), [Welsh Government \(PDF, 296KB\)](#) and [The Lullaby Trust](#). Since 2015, The Lullaby Trust has held an annual awareness [Safer Sleep Week Campaign](#) promoting [safer sleep advice](#), where a number of health authorities participated, further driving public awareness. The Lullaby Trust has also trained health professionals working with new and expectant parents in safer sleep practices and advice they can pass onto parents.

The majority of infant deaths occur in the first four weeks after birth (neonatal period) but unexplained infant deaths are more likely to happen later in infancy. In 2016, of all unexplained infant deaths, 81.3% occurred in the postneonatal period (at least 28 days but less than 1 year after birth), an increase of 1.0% from 2015.

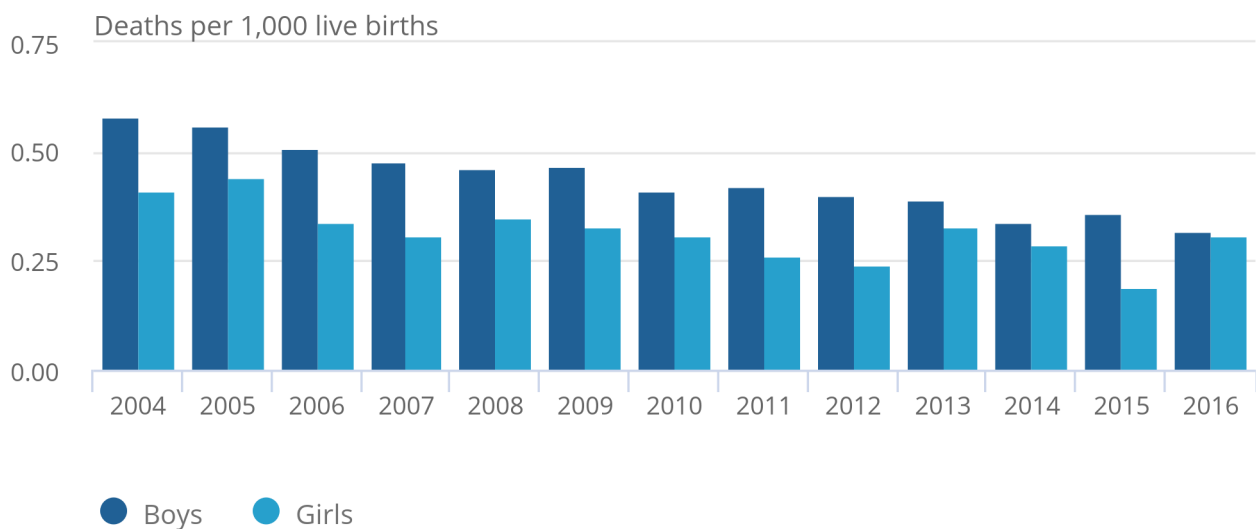
5 . Unexplained infant mortality rate among girls increased in England and Wales in 2016

The proportion of boys who accounted for unexplained infant deaths decreased from 66.7% in 2015 to 51.6% in 2016, whereas the proportion of girls who accounted for unexplained infant deaths increased to 48.4% in 2016 from 33.3% in 2015.

The unexplained infant mortality rate for boys was slightly higher (0.32 deaths per 1,000 live births) than girls (0.31 deaths per 1,000 live births) in 2016 (Figure 2). However, when compared with 2015, there was a larger increase in the unexplained infant mortality rate among girls as it increased by 63.2%, whilst the rate for boys fell by 11.1%.

Figure 2: Unexplained infant mortality rate by sex in England and Wales, 2004 to 2015 and provisional data for 2016

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Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences.
2. Data for 2016 are provisional.

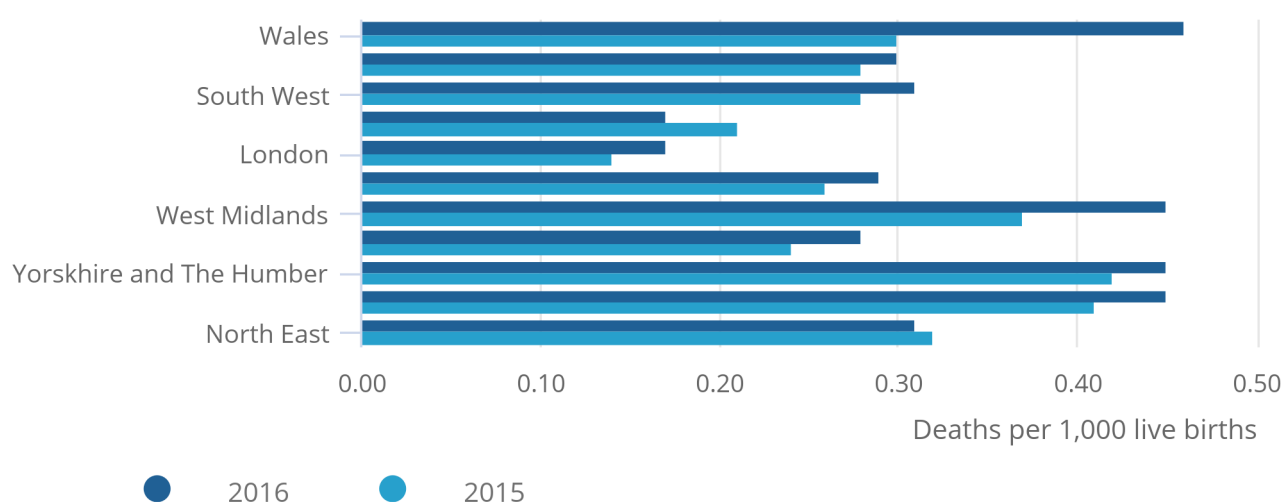
6 . Highest increase in unexplained infant mortality rate in the West Midlands region of England in 2016

Unexplained infant mortality rates vary by region and can fluctuate over time. In 2016, the unexplained infant mortality rate was highest in the West Midlands, Yorkshire and The Humber, and North West regions of England, each with 0.45 deaths per 1,000 live births; however, the largest increase was seen in the West Midlands as the unexplained infant mortality rate rose by 21.6% from 2015. The rate in the West Midlands, Yorkshire and The Humber, and North West was statistically significantly higher than London and the South East in 2016.

Moreover, the lowest unexplained infant mortality rate was in London and the South East region of England, with 0.17 deaths per 1,000 live births in 2016, but the largest decrease was seen in the South East as the rate dropped by 19.0% (Figure 3). Unexplained infant mortality rates for some regions are based on a relatively small number of deaths. Therefore, rates are often subject to random fluctuations and are consequently less robust.

Figure 3: Unexplained infant mortality rate for regions in England, and Wales, 2015 and provisional data for 2016

Figure 3: Unexplained infant mortality rate for regions in England, and Wales, 2015 and provisional data for 2016



Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences.
2. Data for 2016 are provisional.
3. Figures for regions exclude deaths of non-residents.

Both England and Wales saw a rise from the rate in 2015 to 0.30 and 0.46 deaths per 1,000 live births, respectively, however neither of these increases were significant.

7 . Unexplained infant deaths to mothers aged 25 to 29 years decreased in 2016

In 2016, the number of unexplained infant deaths increased for mothers of all age groups, with the exception of mothers aged 25 to 29 years, which decreased by 7.7% from 2015 and mothers aged 35 to 39 years, which has remained the same (Figure 4).

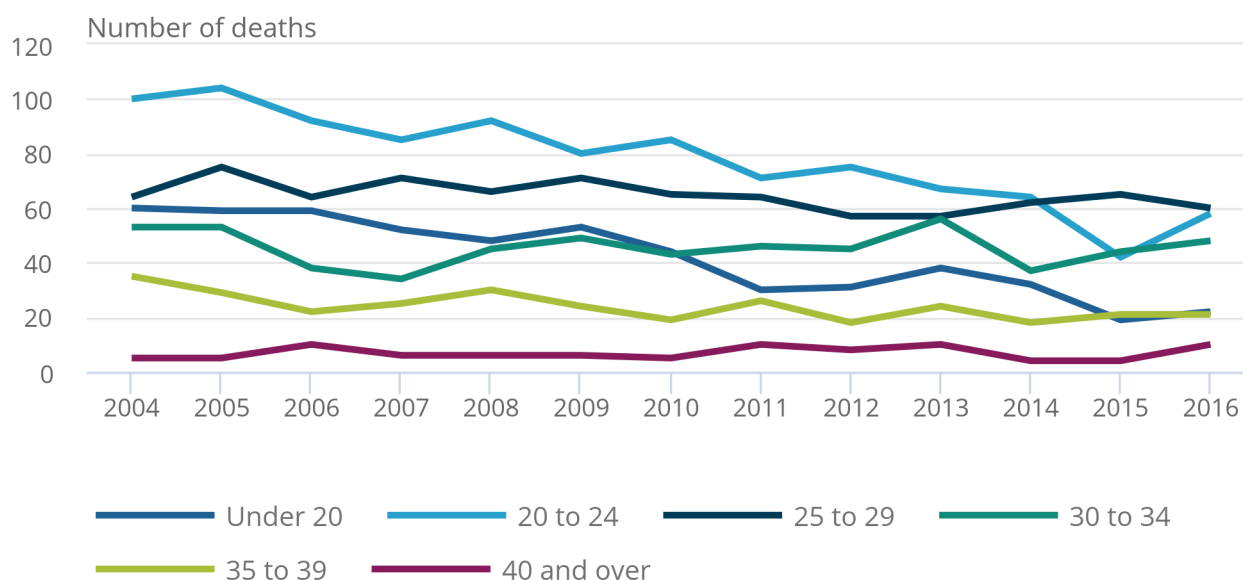
When comparing 2006 with 2016, the number of unexplained infant deaths decreased for all age groups except for mothers aged 30 to 34 years, which increased by 26.3% and mothers aged 40 years and over, which has remained the same (Figure 4). Over the last decade, the largest reduction in the number of unexplained infant deaths was seen in those aged under 20 years, at 62.7%.

Figure 4: Number of unexplained infant deaths by mother's age, 2004 to 2015 and provisional data for 2016

England and Wales

Figure 4: Number of unexplained infant deaths by mother's age, 2004 to 2015 and provisional data for 2016

England and Wales



Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences.
2. Data for 2016 are provisional.

However, in 2016, the unexplained infant mortality rate remained the highest among mothers aged less than 20 years, at 0.98 deaths per 1,000 live births, an increase from 0.79 in 2015. The lowest rate was for mothers aged 35 to 39 years at 0.17 deaths per 1,000 live births.

8 . Increased unexplained infant mortality rate for very low and low birthweight babies in 2016

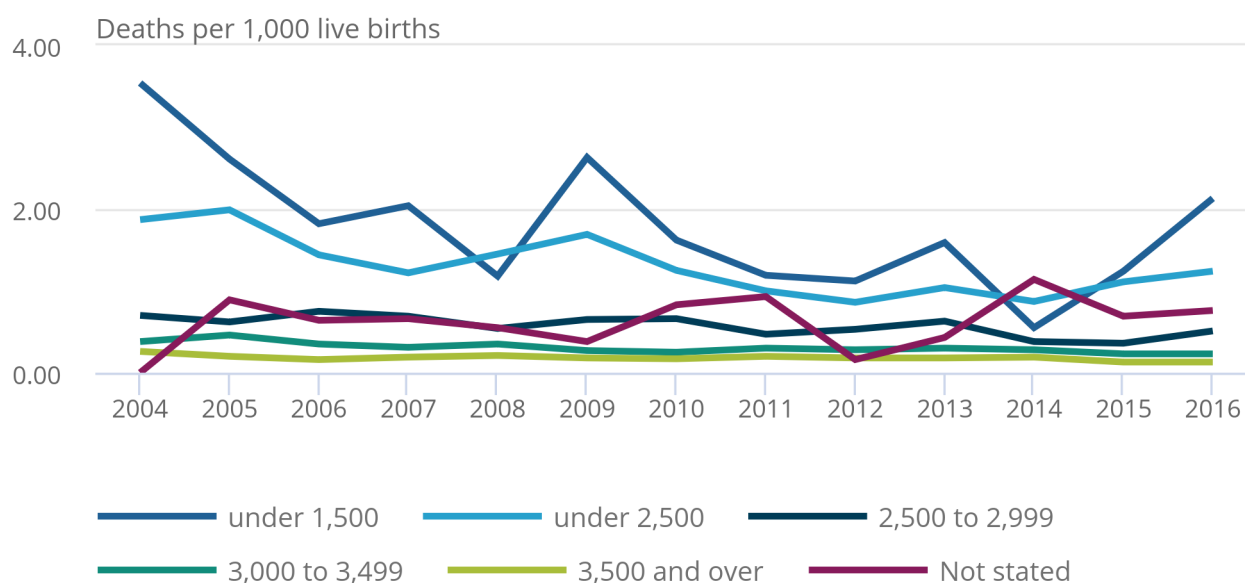
In 2016, the unexplained infant mortality rate was highest among very low birthweight (under 1,500 grams) babies, with 2.13 deaths per 1,000 live births, followed by low birthweight (under 2,500 grams) babies, with 1.24 deaths per 1,000 live births (Figure 5). The rates for very low and low birthweight babies are statistically significantly higher than each of the other birthweight groups (as shown in Figure 5). However, these rates are based on a relatively small number of deaths and are therefore less robust.

Since 2015, the lowest unexplained infant mortality rate was among babies born weighing 3,500 grams and over, with 0.13 deaths per 1,000 live births and this rate is significantly lower than each of the other birthweight groups except birthweight group 3,000 to 3,499 grams.

Over the past 10 years, the largest increase in the unexplained infant mortality rate was among babies born with not stated birthweight, at 18.8%, followed by very low birthweight (under 1,500 grams), at 17.0% although based on small numbers. In contrast, the largest decrease in the unexplained infant mortality rate was among babies born weighing 3,000 to 3,499 grams, at 34.3% over this period.

Figure 5: Unexplained infant mortality rate by birthweight in England and Wales, 2004 to 2015 and provisional data for 2016

Figure 5: Unexplained infant mortality rate by birthweight in England and Wales, 2004 to 2015 and provisional data for 2016



Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences.
2. Data for 2016 are provisional.

9 . Links to related statistics

Earlier data on unexplained deaths in infancy for [2006 to 2012](#) and [2013 to 2015](#) are available.

Earlier reports for unexplained deaths in infancy for before 2006 were published annually in the autumn edition of [Health Statistics Quarterly](#).

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

Infant mortality statistics for Scotland and Northern Ireland are the responsibility of [National Records of Scotland](#) (NRS) and the [Northern Ireland Statistics and Research Agency](#) (NISRA) respectively.

More data on [births](#) and [deaths](#) (based on deaths registered in a calendar year) in England and Wales in 2017 are available.

10 . Quality and methodology

The [Unexplained deaths in infancy Quality and Methodology Information report](#) and 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
- 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 child mortality and includes a glossary of terms.

Deaths are cause-coded using the World Health Organization's (WHO) International Classification of Diseases Tenth Revision (ICD-10). 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.

Figures in the [unexplained deaths in infancy tables](#) contain figures on deaths that occurred in the calendar year. Figures are available from 2004 onwards. Figures in the [unexplained deaths in infancy tables](#) include both sudden infant deaths and unascertained deaths.

Figures are based on occurrences data available up to 28 June 2018 and will not match those published in the [child mortality in England and Wales](#) release because of the time at which the extract was taken. Figures for 2015 have been finalised and figures for 2016 are provisional and will be finalised in the next annual release.

Unexplained infant deaths are referred to a coroner who may order a post-mortem or full inquest to ascertain the reasons for the death. The coroner can only register the death once any investigation is concluded and they are satisfied that the death has been thoroughly investigated with a correctly certified cause of death. The time taken to investigate the circumstances of the death can often result in a delay in death registration. While registration delays are commonly only a few days, they can occasionally extend into years. Therefore, we publish provisional figures to allow for late death registrations.

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 under 7 days
- perinatal – stillbirths and early neonatal deaths
- neonatal – deaths under 28 days
- late neonatal – deaths after 7 days and under 28 days
- postneonatal – deaths between 28 days and 1 year
- postperinatal – late neonatal and postneonatal deaths
- infant – deaths under 1 year
- sudden infant deaths – coded to the International Classification of Diseases tenth revision (ICD-10) code R95 “sudden infant death syndrome (SIDS)” which includes any mention of “sudden infant death”, “cot death”, “SIDS”, “crib death”, or another similar term anywhere on the death certificate
- unascertained deaths – coded to the ICD-10 code R99 “other ill-defined and unspecified causes of mortality” which includes cases where the only mention on the death certificate is unascertained death

The live birth and stillbirth numbers are based on all births that occurred in the reference year, plus any late birth registrations from the previous year.

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’ socio-economic classification; and the number of previous children).