

Statistical bulletin

Unexplained deaths in infancy, England and Wales: 2014

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:
Rosie Amery
cim@ons.gsi.gov.uk
+44 (0)1329 444110

Release date:
10 August 2016

Next release:
August 2017

Table of contents

1. [Main points](#)
2. [Statistician's quote](#)
3. [Things you need to know](#)
4. [Drop in sudden infant deaths drives decrease in 2014](#)
5. [What's behind the decrease in 2014?](#)
6. [How do the 2014 figures vary by sex, birthweight and other characteristics?](#)
7. [What are the main risk factors for unexplained infant deaths?](#)
8. [Further information](#)
9. [Quality and methodology](#)
10. [References](#)

1 . Main points

There were 212 unexplained infant deaths in England and Wales in 2014, a rate of 0.3 deaths per 1,000 live births. This follows the decreasing trend that has generally been seen over the last decade.

Unexplained infant deaths accounted for 8% of all infant deaths occurring in 2014.

60% of these deaths were recorded as sudden infant deaths with the remaining 40% recorded as unascertained (where no other cause of death is recorded).

Just over half (55%) of all unexplained infant deaths were boys in 2014 (117 deaths).

The rate of infant deaths rose for mothers aged 20 to 24 and 25 to 29 in 2014 while the rate fell for all other age groups.

2 . Statistician's quote

"Unexplained infant deaths in 2014 were the lowest on record, driven by a decrease in sudden infant deaths. A number of factors may have contributed to the fall including warmer than average temperatures throughout the year, fewer women smoking at the time of delivery and greater awareness of safer sleeping practices."

Rosie Amery, Health Analysis and Life Events, Office for National Statistics

3 . Things you need to know

This report on unexplained infant deaths (deaths under 1 year of age) includes both sudden infant deaths, often called "cot deaths" and deaths for which the cause remained unascertained after a full investigation.

Sudden infant death, which was first recognised in the early 1960s, is defined as, "the sudden unexpected death of any infant or young child which is unexpected by medical history and in which a thorough post-mortem examination fails to demonstrate an adequate cause of death" (Beckwith, 1970).

"Unascertained" is used by pathologists when the death does not fulfil the criteria used for sudden infant deaths and there is still doubt about its cause.

There is evidence to suggest that these terms are used interchangeably by coroners (Limerick and Bacon, 2004) and research has shown that [the characteristics of babies dying of these 2 causes are very similar](#) (Corbin, 2005). Based on this, it is appropriate to include both groups in any analysis of unexplained infant deaths.

The figures in this report are based on death occurrences rather than death registrations.

The majority of unexplained deaths are certified by a coroner, either with or without an inquest and therefore there can be some delay between death and registration. In 2014, the median registration delay for an unexplained infant death was 165 days.

This report is based on data available up to 7 June 2016 and figures for 2014 are provisional. Figures for 2014 will be finalised in next year's bulletin. The provisional number of deaths in 2013 of 249 was revised upward by 3 deaths to a total of 252.

The increase in 2013 makes the decrease in 2014 look larger when compared with the continuing downward trend in 2009 to 2012. The data suggests that the increase seen in 2013 was an anomaly rather than the beginning of an upward trend.

4 . Drop in sudden infant deaths drives decrease in 2014

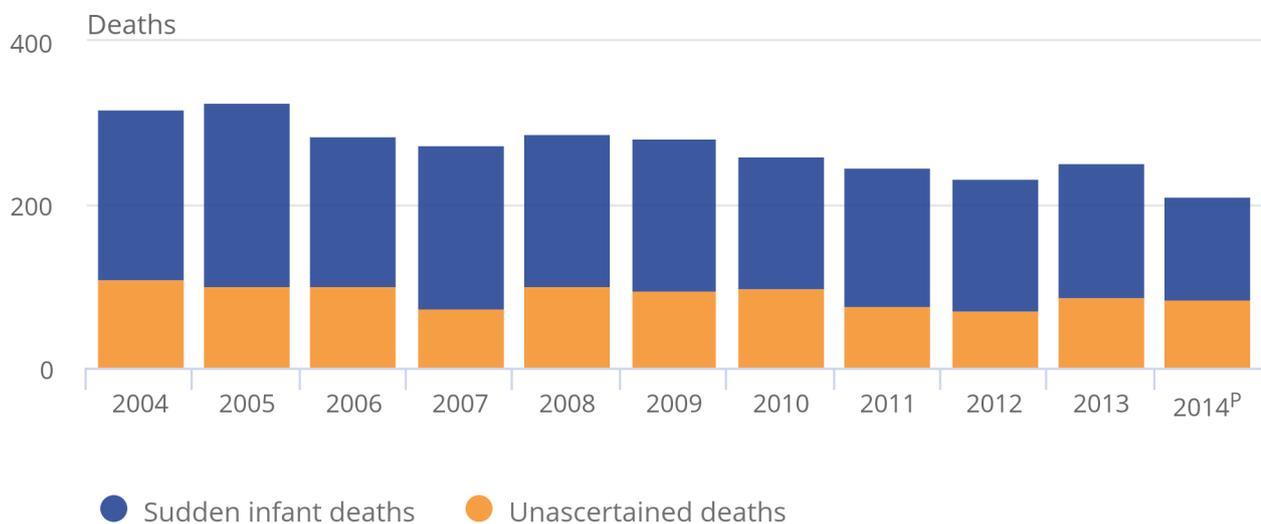
Following an unexpected rise in 2013, unexplained infant deaths decreased in 2014 from 252 (a rate of 0.36 deaths per 1,000 live births) to 212 (0.30 deaths per 1,000 live births), equivalent to a 17% decrease in the rate. The record low seen in 2014 was driven largely by a decrease in sudden infant deaths, which decreased from 165 to 128 deaths. It is important to note that there have been no statistically significant year-on-year changes since records began in 2004, though the rate in 2014 was significantly lower than the rate in each year between 2004 and 2009.

Figure 1: Unexplained infant deaths, 2004 to 2014 occurrences

England and Wales

Figure 1: Unexplained infant deaths, 2004 to 2014 occurrences

England and Wales



Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences rather than death registrations
2. Data for 2014 are provisional

The majority of infant deaths are likely to occur in the first 4 weeks after birth (neonatal period) but unexplained infant deaths are more likely to happen after the first 4 weeks. In 2014, 84% of unexplained infant deaths occurred in the post-neonatal period (at least 28 days but less than 1 year after birth). Almost a third (30%) of unexplained infant deaths in the post-neonatal period occurred after 28 completed days but before 2 completed months.

5 . What's behind the decrease in 2014?

As these deaths are those which cannot be explained by medical history, it is not possible to say with any degree of certainty what has caused the change in numbers. However, there are a number of factors which are thought to have an impact.

Two risk factors for unexplained infant death are overheating and an unsafe sleeping environment, such as the baby's head being covered. These situations may be more likely to occur during winter, through the use of extra clothing or blankets, and central heating at night.

[Figures from the Met Office](#) show that 2014 was the warmest year on record; this may have contributed to the decrease in unexplained infant deaths seen that year. Similarly, the increase in 2013 was seen during particularly cold weather.

In addition to this, the [number of mothers smoking during pregnancy](#), another known risk factor, continued to decrease in 2014 (HSCIC, 2016). Further information about risk factors can be found in the background information section.

6 . How do the 2014 figures vary by sex, birthweight and other characteristics?

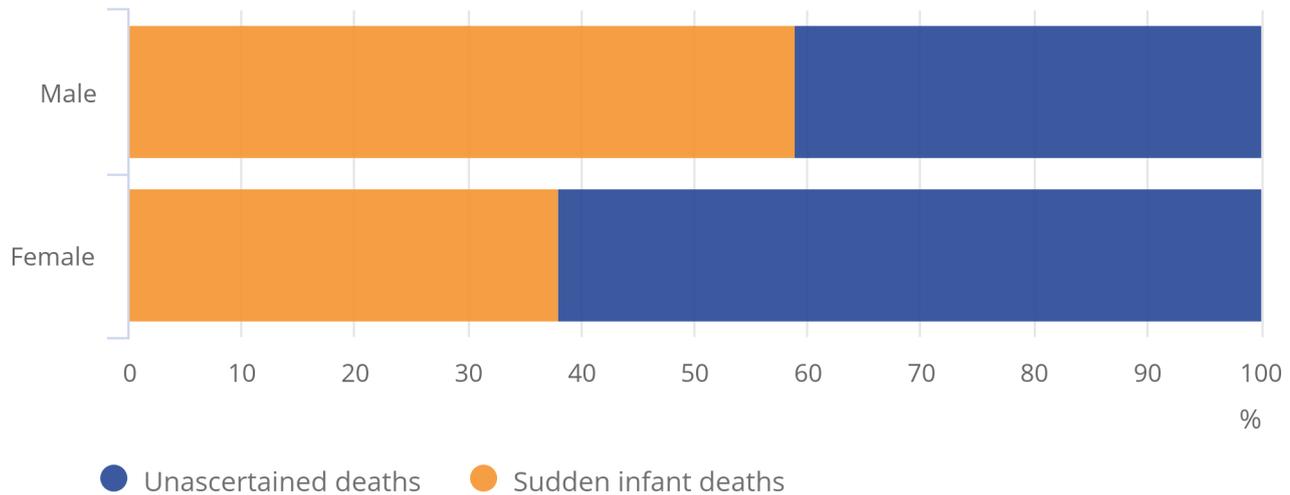
Boys saw a larger decrease than girls, with the male rate decreasing from 0.39 deaths per 1,000 live births in 2013 to 0.33 deaths in 2014, while the female rate decreased from 0.33 to 0.28 deaths per 1,000 live births. A greater proportion of male unexplained infant deaths are sudden infant deaths.

Figure 2: Proportion of unexplained deaths by type and sex, 2014 occurrences

England and Wales

Figure 2: Proportion of unexplained deaths by type and sex, 2014 occurrences

England and Wales



Source: Office for National Statistics

Notes:

1. Figures are based on death occurrences rather than death registrations
2. Data for 2014 are provisional

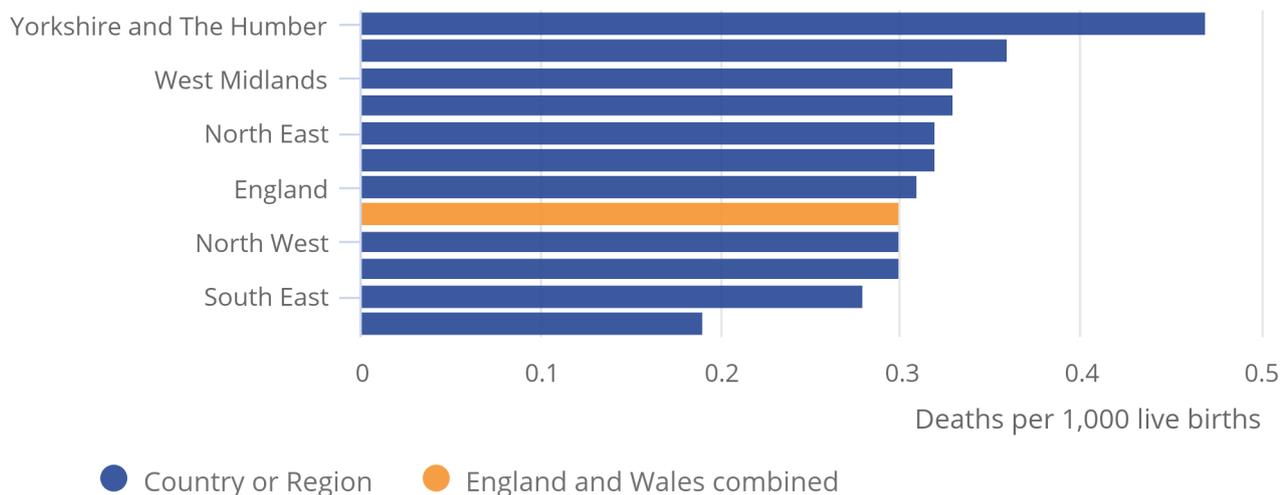
The north-south divide that is visible in most mortality statistics is not clearly defined for unexplained infant deaths. Yorkshire and The Humber had the highest infant mortality rate for unexplained deaths in 2014, at 0.47 deaths per 1,000 live births, whilst the North West had the third lowest infant mortality rate in England and Wales.

Figure 3: Unexplained infant mortality rates by region, 2014 occurrences

England and Wales

Figure 3: Unexplained infant mortality rates by region, 2014 occurrences

England and Wales



Source: Office for National Statistics

Notes:

1. Figures for regions exclude deaths of non-residents; figures for England and Wales combined include deaths of non-residents.
2. Rates per 1,000 live births.
3. Figures are based on death occurrences rather than death registrations
4. Data for 2014 are provisional

Unexplained infant deaths of babies that weigh less than 1,500 grams at birth (considered to be a low birthweight) decreased in 2014, while the number of deaths of babies that did not have a weight stated increased. The reasons for this are unclear.

Infant mortality rates for babies whose mothers were aged between 20 and 29 years old increased marginally in 2014, but dropped for all other age groups. The biggest change was for mothers aged 40 and over. The number of unexplained infant deaths in this age group decreased from 10 in 2013 to 3 in 2014 (0.34 and 0.10 deaths per 1,000 live births respectively). Mothers aged under 20 continue to have the highest infant mortality rate despite a decrease in 2014 from 1.30 to 1.23 deaths per 1,000 live births.

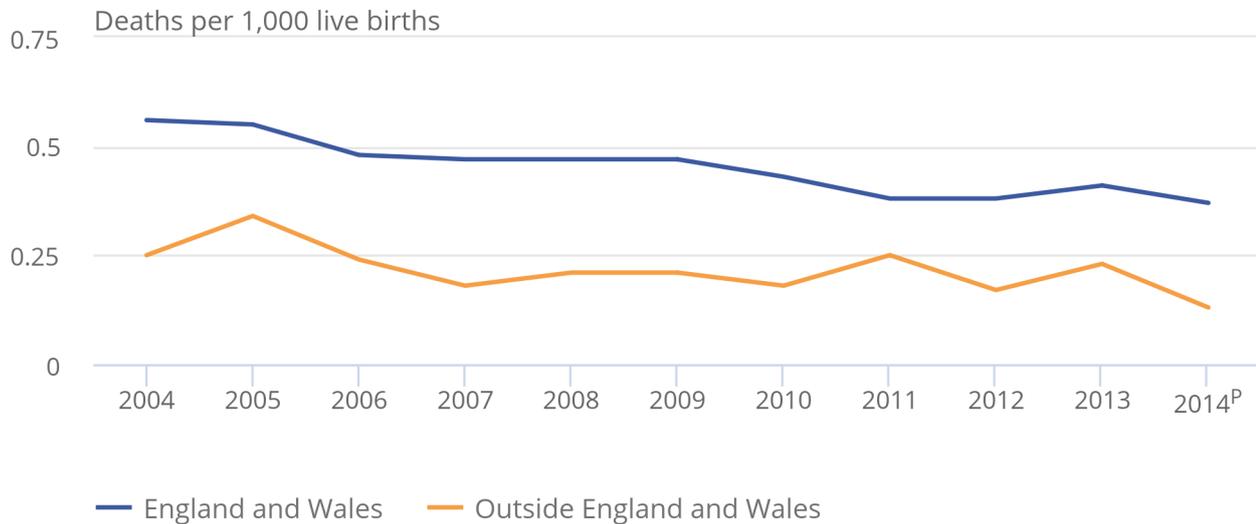
The unexplained death rate for babies for mothers born in England and Wales was almost 3 times higher than those for babies with mothers born in other countries in 2014. This is the greatest disparity seen on record.

Figure 4: Unexplained infant death rate by mother's country of birth, 2004 to 2014 occurrences

England and Wales

Figure 4: Unexplained infant death rate by mother's country of birth, 2004 to 2014 occurrences

England and Wales



Source: Office for National Statistics

Notes:

1. Rates per 1,000 live births.
2. Figures are based on death occurrences rather than death registrations
3. Based on postcode boundaries as of May 2016
4. Data for 2014 are provisional

The data that we hold relating to the number of previous children was impacted on by a slight change to one of the registrar's questions which resulted in a change to the quality of data. This was resolved in January 2016. As a result, it is difficult to draw any reliable results relating to unexplained infant deaths and parity.

The unexplained infant mortality rate for babies jointly registered by both parents decreased more between 2013 and 2014 than the equivalent rate for babies registered by only 1 parent. The rate for babies born inside marriage remains lower than the rate for babies born outside of marriage, however, the latter saw a greater decrease in 2014 from 0.60 to 0.50 deaths per 1,000 live births.

Unexplained infant deaths decreased the most for babies whose parents work in routine and manual jobs, with the infant mortality rate decreasing from 0.46 to 0.33 deaths per 1,000 live births in 2014. Despite this decrease, this group continues to have the highest mortality rate across all 3 broad occupational groups.

7 . What are the main risk factors for unexplained infant deaths?

Risk factors for unexplained infant deaths include the baby's sex, birthweight, maternal age, parents' marital status and socio-economic classification. These factors are looked at in the unexplained deaths in infancy summary and supporting data are included in the datasets (available as a download to accompany the summary). [Other risk factors](#) include sleeping position, sleep environments including unplanned bed-sharing and sleeping with a baby on a sofa, not breastfeeding, temperature and exposure to tobacco smoke (Ostfeld et al, 2010).

Two main risks associated with unexplained infant deaths are maternal smoking during pregnancy and postnatal exposure to tobacco smoke (Mitchell et al, 1993; MacDorman et al, 1997). 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. A more recent study in the USA found a statistical association between the decline in cases of sudden infant death between 1995 and 2006 and the increasing prevalence of smoke-free homes among homes with infants, even after controlling for sleeping position (Behm et al, 2012).

Boys are more at risk than girls

Research shows that [girls are less vulnerable to some perinatal conditions, congenital abnormalities and certain infectious diseases](#), giving them a biological advantage in terms of survival (United Nations, 2011).

Temperature can increase the risk of unexplained death

Two risk factors for unexplained infant death are overheating and an unsafe sleeping environment, such as the baby's head being covered. These situations may be more likely to occur during winter, through the use of extra clothing or blankets, and central heating at night.

8 . Further information

The Office for National Statistics (ONS) is the only producer of National Statistics on unexplained deaths in infancy for England and Wales. 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.

Earlier reports for unexplained deaths in infancy for 2003 to 2007 were published annually in the autumn edition of [Health Statistics Quarterly](#).

The NHS and Welsh government have worked with The Lullaby Trust, formerly the Foundation for the Study of Infant Deaths (FSID), to publish advice and guidance for parents that aims to reduce the risk of cot death. This information is available at:

[NHS Choices](#)

[National Assembly for Wales](#)

[The Lullaby Trust](#)

9 . Quality and methodology

The [Unexplained deaths in infancy Quality and Methodology Information document](#) contains important information on:

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

10. References

1. Beckwith JB. 'Discussion of terminology and definition of the sudden infant death syndrome'. In: Bergman AB, Beckwith JB, Ray CG, eds. Sudden infant death syndrome: proceedings of the Second International Conference on the Causes of Sudden Death in Infants. Seattle, WA: University of Washington Press; 1970: pp 14–22
2. Behm I, Kabir Z, Connolly GN, Alpert HR (2012) 'Increasing prevalence of smoke-free homes and decreasing rates of sudden infant death syndrome in the United States: an ecological association study', *Tobacco Control*, 21; pp 6–11
3. Corbin T (2005) 'Investigation into sudden infant deaths and unascertained deaths in England and Wales 1995–2003', [Health Statistics Quarterly, 27](#), accessed 30 July 2015
4. Health and Social Care Information Centre, (2016) [Statistics on women's smoking status at time of delivery: England, Quarter 1, 2015/16](#), accessed 12 July 2016
5. Limerick SR and Bacon CJ (2004) 'Terminology used by pathologists in reporting on SIDS', *Journal of Clinical Pathology*, 57, pp 309–311
6. [The Lullaby Trust](#), accessed 30 July 2015
7. MacDorman, MF, Cnattingius, S, Hoffman, HJ, Kramer, MS, and Haglund, B (1997) 'Sudden infant death syndrome and smoking in the United States and Sweden'. *American Journal of Epidemiology*, 146: pp 249–257
8. [Met Office](#), accessed 12 July 2016
9. Mitchell, EA, Ford, RP, Stewart, AW, Taylor, BJ, Becroft, DM, Thompson, JM, Scragg, R, Hassall, IB, Barry, DM, Allen, EM, et al, (1993) 'Smoking and the sudden infant death syndrome', *Pediatrics*, May; 91 (5) pp 893–896
10. Office for National Statistics (2013) [A combined approach to National Statistics Socio-economic Classification](#) accessed 30 July 2015
11. Office for National Statistics (2015) [Excess Winter Mortality in England and Wales, 2014/15](#), accessed 12 August 2015
12. Office for National Statistics (2016) [Child Mortality in England and Wales](#), accessed 2 August 2016
13. Ostfeld, BM, Esposito, L, Perl, H, et al (2010) [Concurrent risks in sudden infant death syndrome](#), accessed 30 July 2015
14. [National Records of Scotland](#), accessed on 3 August 2015

15. [Northern Ireland Statistics and Research Agency](#), accessed 2 August 2016
16. United Nations, Department of Economic and Social Affairs, Population Division (2011). [Sex differentials in childhood mortality](#), accessed 2 August 2016