Office for National Statistics

Statistical bulletin

Unexplained deaths in infancy, England and Wales: 2022

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

Contact:
Child and Lifetime Health Monitoring team
health.data@ons.gov.uk
+44 1329 444110

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Notice

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Following the Health and Social Care Statistical Outputs consultation commissioned by the Health and Social Care Statistics Leadership Forum, we are improving some of our statistical products, so they are more coherent and efficient. Additionally, we are ensuring that our resources are deployed in producing statistics for maximum possible benefit.

Full details of changes to this product, and our other health and social care products, are available in the Health and Social Care Statistical Outputs Consultation Response. We welcome user feedback on our releases. Please use the contact details on individual publication web pages to share feedback.

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1 . Main points

In 2022:

- There were 171 unexplained deaths of infants (aged under one year) in England and Wales, accounting for 7.3% of all infant deaths.
- The provisional unexplained infant mortality rate was 0.28 deaths per 1,000 live births, which is consistent with the stabilised trend over the last 10 years.
- Sudden infant deaths accounted for 53% of unexplained infant deaths.
- Unexplained infant deaths remained more likely to occur in males, before the age of four months, in low birthweight infants, and where the mother had at least two previous children.
- Unexplained mortality was highest for infants born to mothers aged under 20 years (0.81 deaths per 1,000 live births), and lowest for infants born to mothers aged 35 to 39 years (0.16 deaths per 1,000 live births).

2 . Trends in unexplained infant deaths

In 2022, there were 171 unexplained infant deaths in England and Wales. The unexplained infant mortality rate decreased markedly from 0.50 deaths per 1,000 live births in 2005 to 0.32 deaths per 1,000 live births in 2012 (Figure 1). However, it has since slowed its decline. The unexplained infant mortality rate was 0.28 deaths per 1,000 live births in 2022.

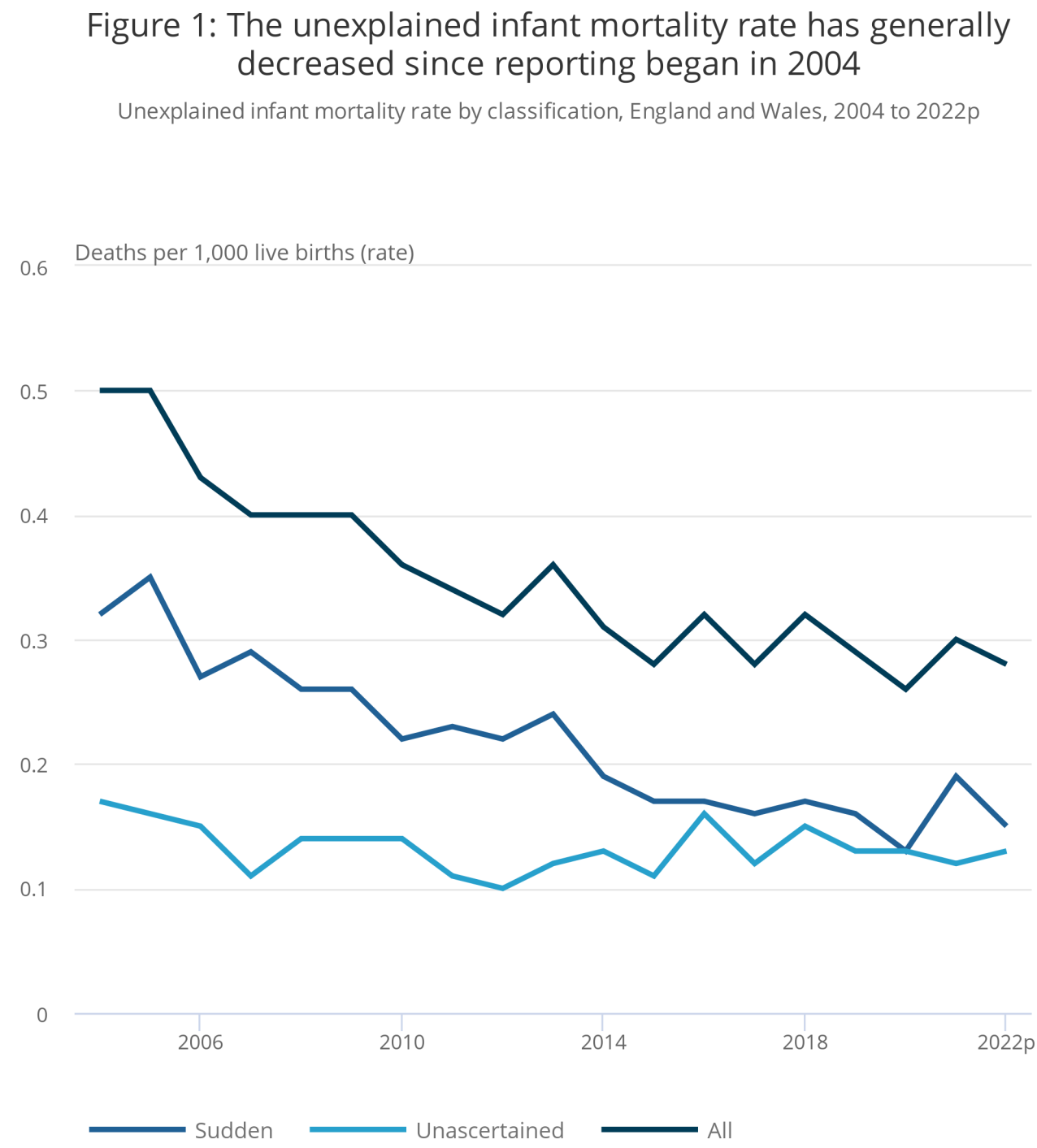
There is also a general declining trend for the overall infant mortality rate in England and Wales, as shown in Table 1 of our Child mortality tables in England and Wales: 2022 dataset).

An unexplained infant death can be recorded as either a sudden infant death, or as an unascertained death. Sudden infant deaths have generally declined at a faster rate than unascertained deaths since 2004.

Sudden infant deaths accounted for approximately half (53%) of unexplained infant deaths in 2022 (Table 1). The rate of sudden infant deaths decreased from 0.19 deaths per 1,000 live births in 2021 to 0.15 deaths per 1,000 live births in 2022. The decrease in the unexplained infant death rate is therefore caused by sudden infant deaths. The rate of unascertained infant deaths increased from 0.12 deaths per 1,000 live births to 0.13 deaths per 1,000 live births.

Figure 1: The unexplained infant mortality rate has generally decreased since reporting began in 2004

Unexplained infant mortality rate by classification, England and Wales, 2004 to 2022p



Source: Deaths in England and Wales from the Office for National Statistics

Because of the small number of unexplained infant deaths recorded each year, the data tend to fluctuate over time. Year on year changes in rates should therefore be interpreted with caution.

Registration delays

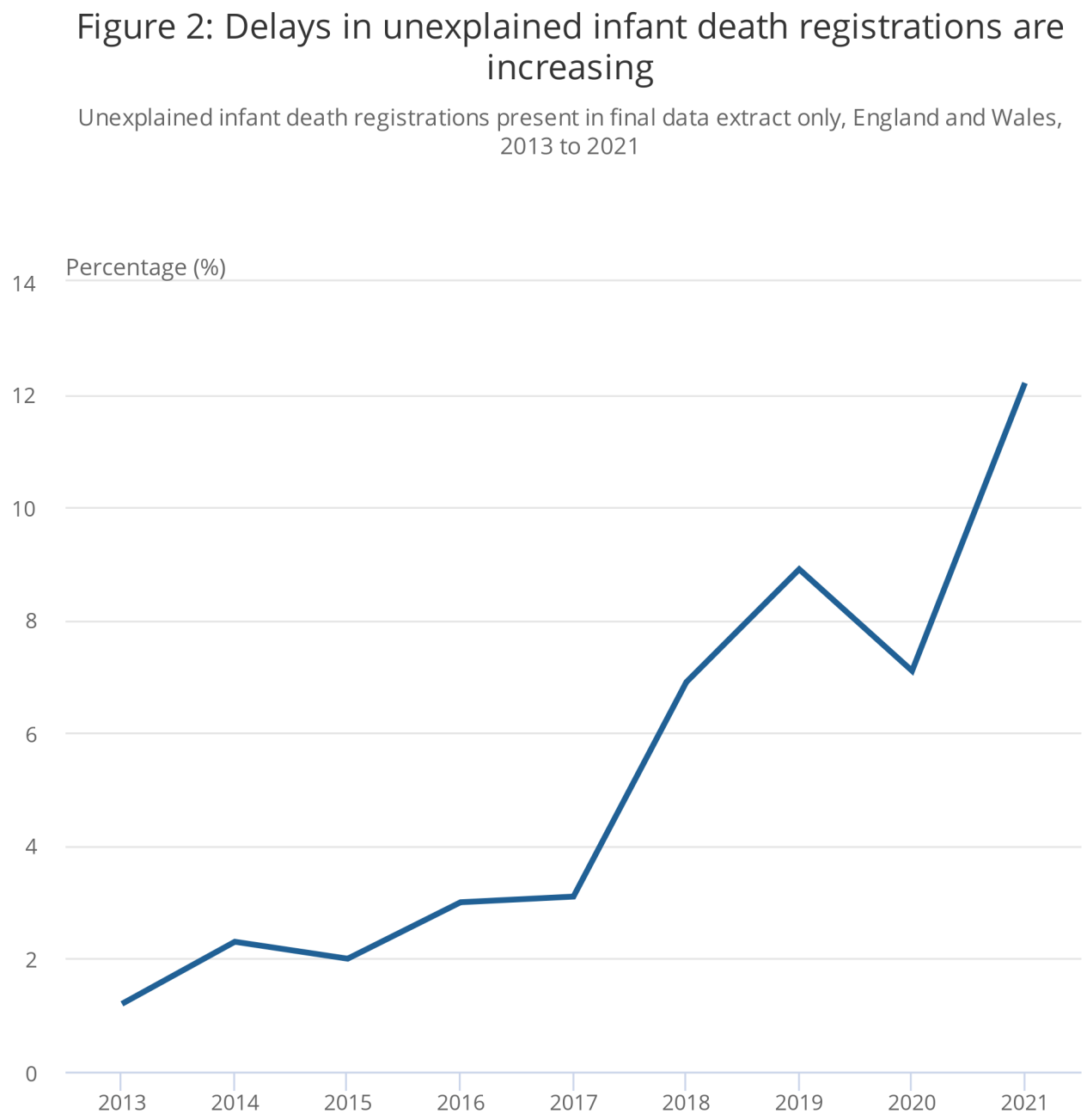
The unexplained nature of these infant deaths means there can be long delays before investigations are completed and registration can occur. Numbers and rates for 2022 are therefore provisional (marked as “2022p”) and will be finalised when we publish the 2023 provisional information. Each year, most registrations are received within 18 months of the end of the calendar year and are therefore included in the provisional analysis. However, a small number (referred to as late registrations) arrive within an additional 12 months.

For 2021, 23 late registrations were received in the year after the data extract was taken for the provisional analysis. This means that the 2021 unexplained infant mortality rate has been revised from 0.27 deaths per 1,000 live births to 0.30 deaths per 1,000 live births.

Between 2013 and 2017, late registrations represented less than 4% of the unexplained infant death registrations received until that point. Late registrations have become more prevalent recently. In 2021, 12.2% of published unexplained infant deaths were not available for inclusion in our provisional analysis (Figure 2).

Figure 2: Delays in unexplained infant death registrations are increasing

Unexplained infant death registrations present in final data extract only, England and Wales, 2013 to 2021



Source: Deaths in England and Wales from the Office for National Statistics

For 2020 data, there was a decrease in the percentage of the final published number of unexplained infant deaths that were not received in time for the provisional publication, contrary to the overall trend. This was matched by a corresponding increase in deaths that took place in 2020 but were not registered until after the final extract was taken in June 2023 for the publication of 2020 data. It is therefore likely that the 2020 anomaly was a result of disruption to registration services caused by the coronavirus (COVID-19) pandemic.

3 . Infant characteristics

Sex

The unexplained mortality rate for male infants was 0.36 deaths per 1,000 live births in 2022, compared with 0.20 deaths per 1,000 live births for female infants. Historically, male infants tend to experience higher risk of unexplained infant death than female infants, while the rate is more variable for females (Figure 3). The difference between males and females narrowed from 2004 until 2016, then began to widen again.

Figure 3: Male infants have a greater risk of an unexplained death than female infants

Unexplained infant mortality rate by sex, England and Wales, 2004 to 2022p

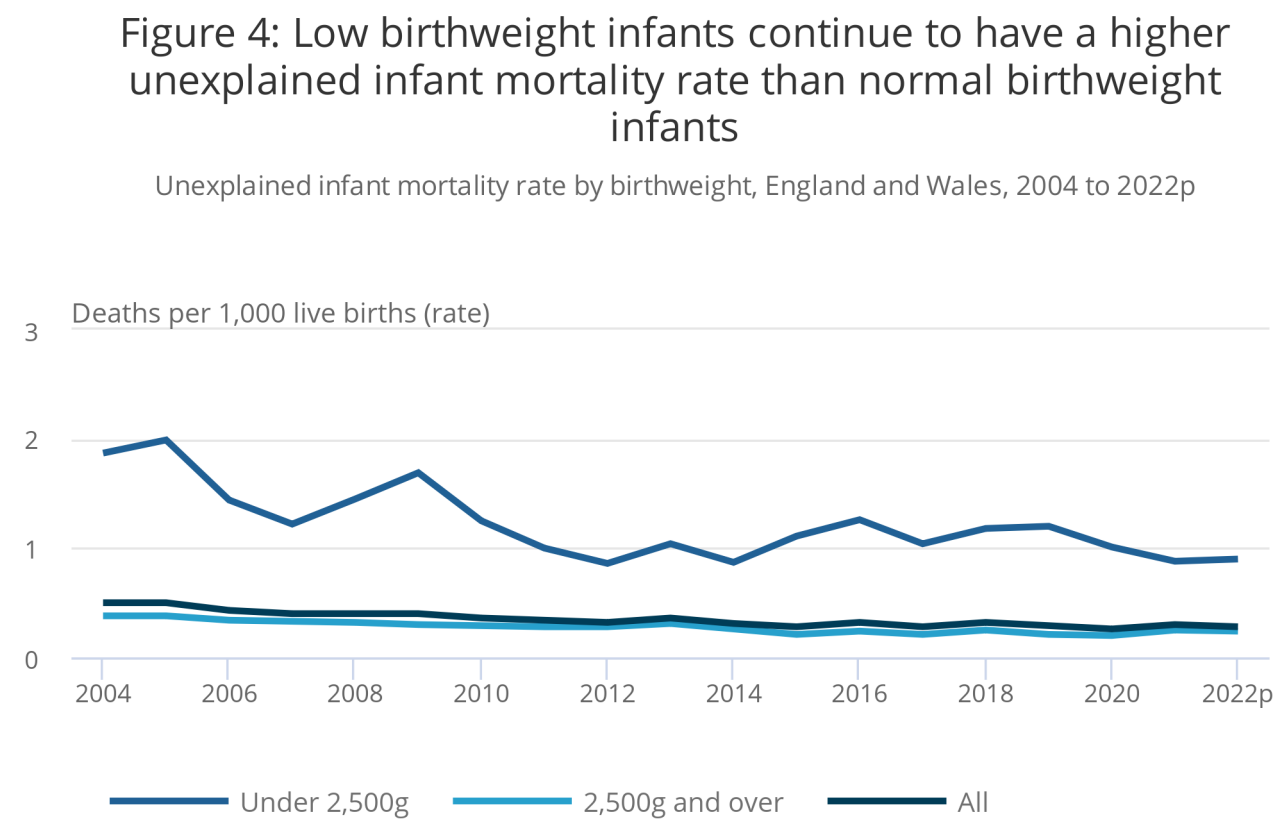
Source: Deaths in England and Wales from the Office for National Statistics

Birthweight

The World Health Organisation defines a low birthweight infant as weighing under 2,500g at birth. Overall, the unexplained mortality rate for low birthweight infants has reduced more quickly than for normal birthweight infants since 2004 (Figure 4). However, in 2022, low birthweight infants were still 3.8 times more likely to die from an unexplained cause than normal birthweight infants.

Figure 4: Low birthweight infants continue to have a higher unexplained infant mortality rate than normal birthweight infants

Unexplained infant mortality rate by birthweight, England and Wales, 2004 to 2022p



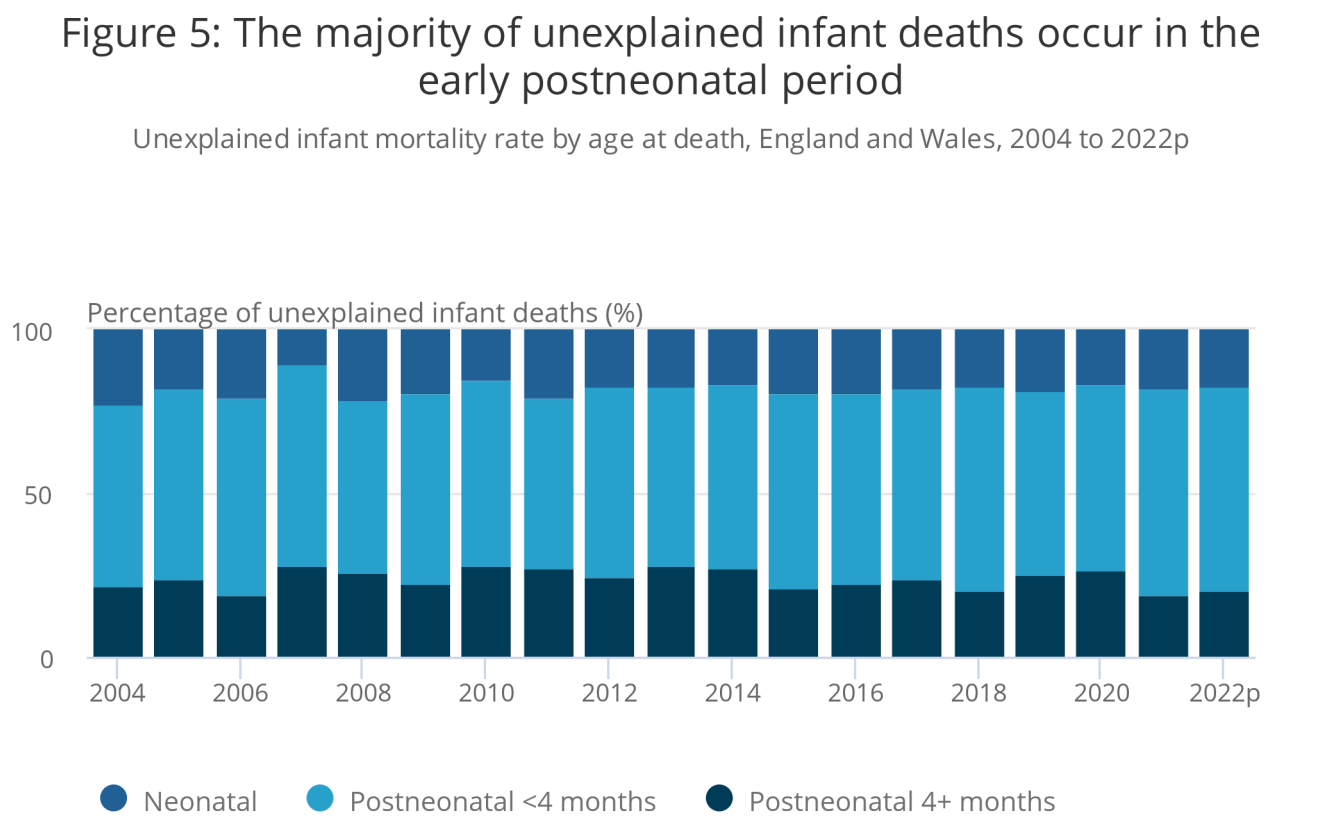
Source: Deaths in England and Wales from the Office for National Statistics

Age

Infant deaths of any cause are more likely to occur in the neonatal period. In contrast, unexplained infant deaths are more likely to occur among postneonatal infants. The majority (83%) of all unexplained infant deaths in 2022 occurred in the postneonatal period. Almost two-thirds (63%) of all unexplained infant deaths were of postneonatal infants under the age of four months. These percentages have remained consistent over time (Figure 5). For definitions of these terms, see Section 6: Glossary.

Figure 5: The majority of unexplained infant deaths occur in the early postneonatal period

Unexplained infant mortality rate by age at death, England and Wales, 2004 to 2022p



Source: Deaths in England and Wales from the Office for National Statistics

Notes:

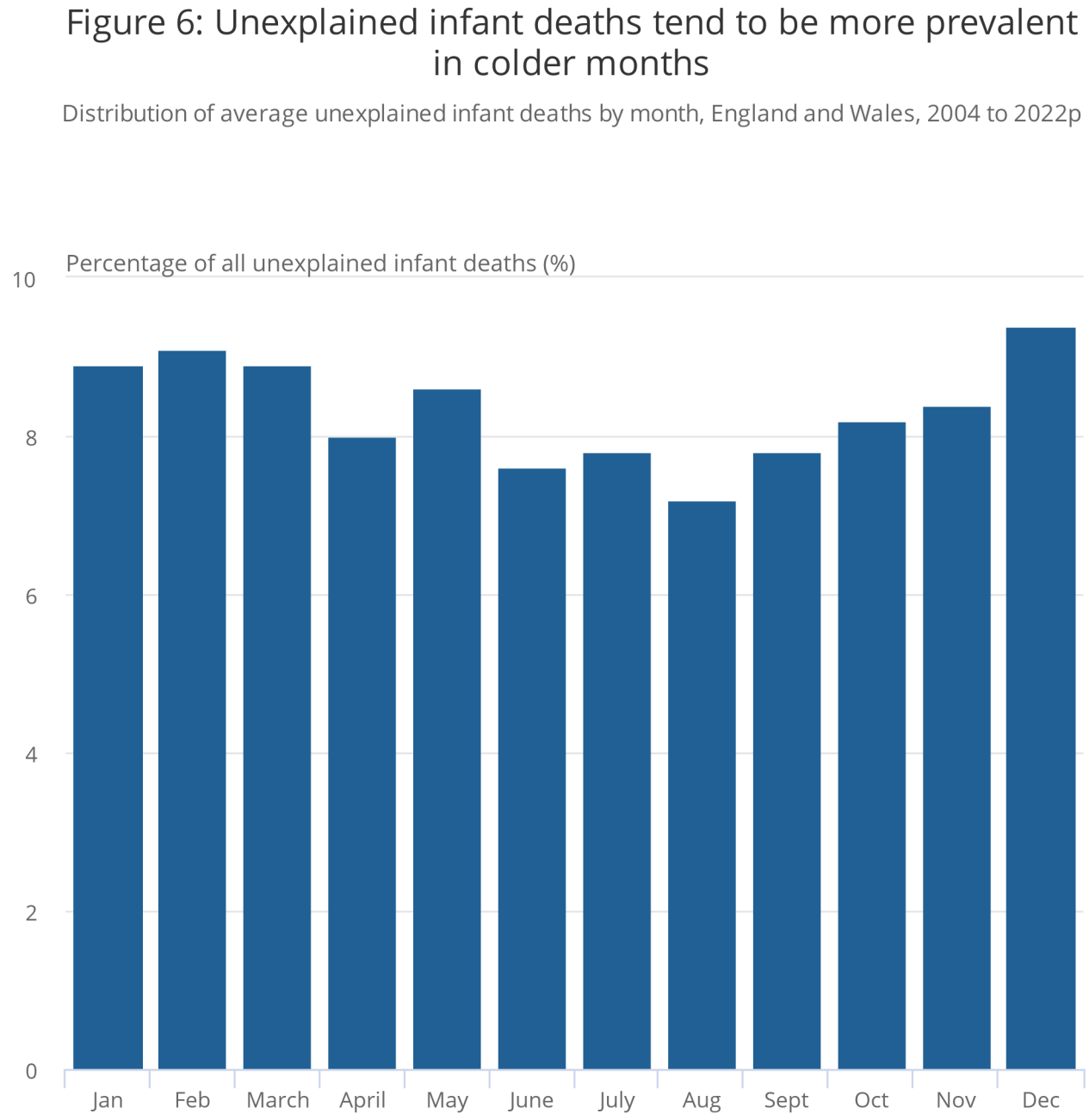
1. Percentages may not sum to 100% due to rounding.

Month of death

Combined data from 2004 to 2022p show that there is a tendency for more unexplained infant deaths to occur in the colder months of the year than in the warmer months (Figure 6).

Figure 6: Unexplained infant deaths tend to be more prevalent in colder months

Distribution of average unexplained infant deaths by month, England and Wales, 2004 to 2022p



Source: Deaths in England and Wales from the Office for National Statistics

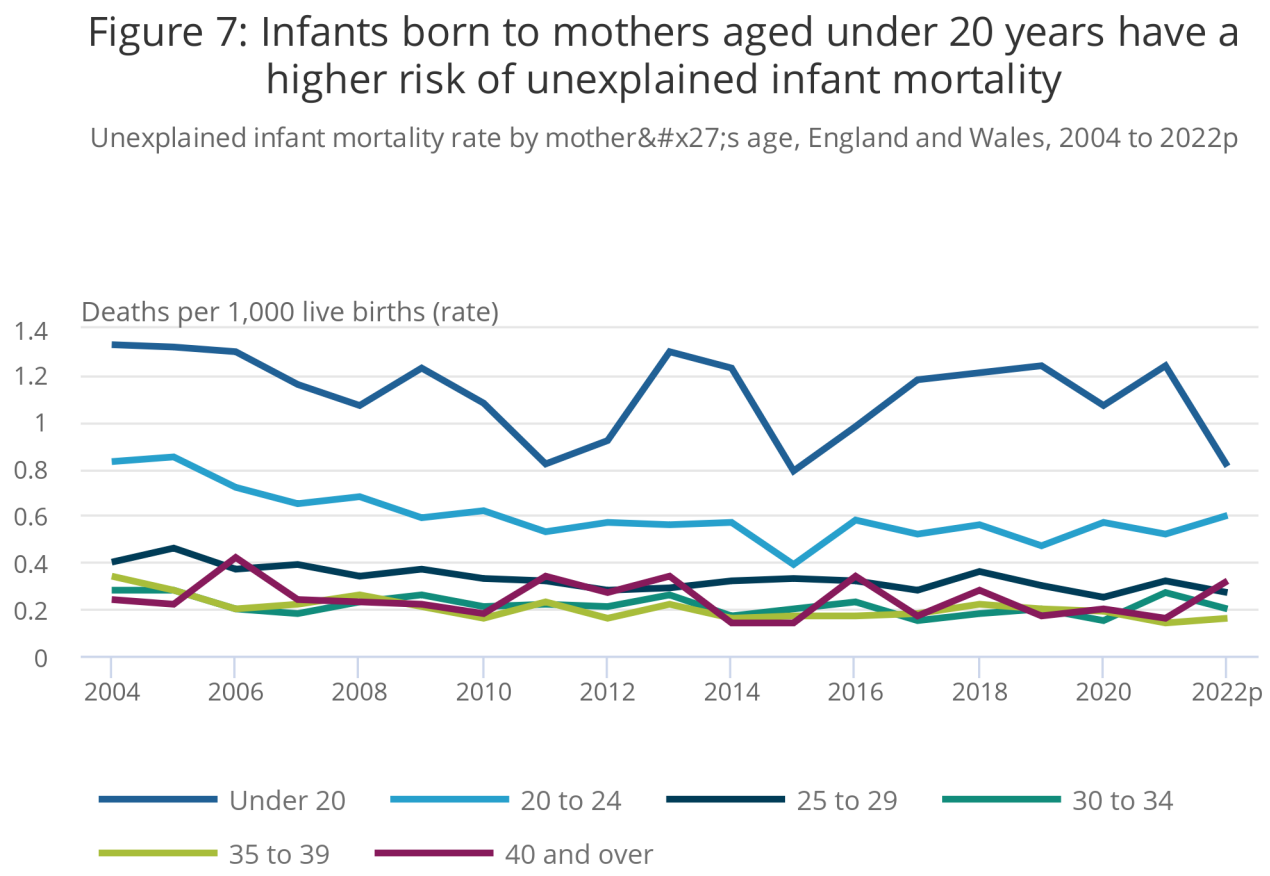
4 . Parent characteristics

Mother’s age

The unexplained infant mortality rate continued to be higher among younger maternal ages in 2022. It was highest among infants of mothers aged under 20 years, at 0.81 deaths per 1,000 live births. It was lowest for mothers aged 35 to 39 years, at 0.16 deaths per 1,000 live births (Figure 7).

Figure 7: Infants born to mothers aged under 20 years have a higher risk of unexplained infant mortality

Unexplained infant mortality rate by mother's age, England and Wales, 2004 to 2022p



Source: Deaths in England and Wales from the Office for National Statistics

Mother’s country of birth

The infant mortality rate is generally higher in infants of mothers born outside of the UK, as shown in Table 11 of our Child mortality tables in England and Wales: 2022 dataset).

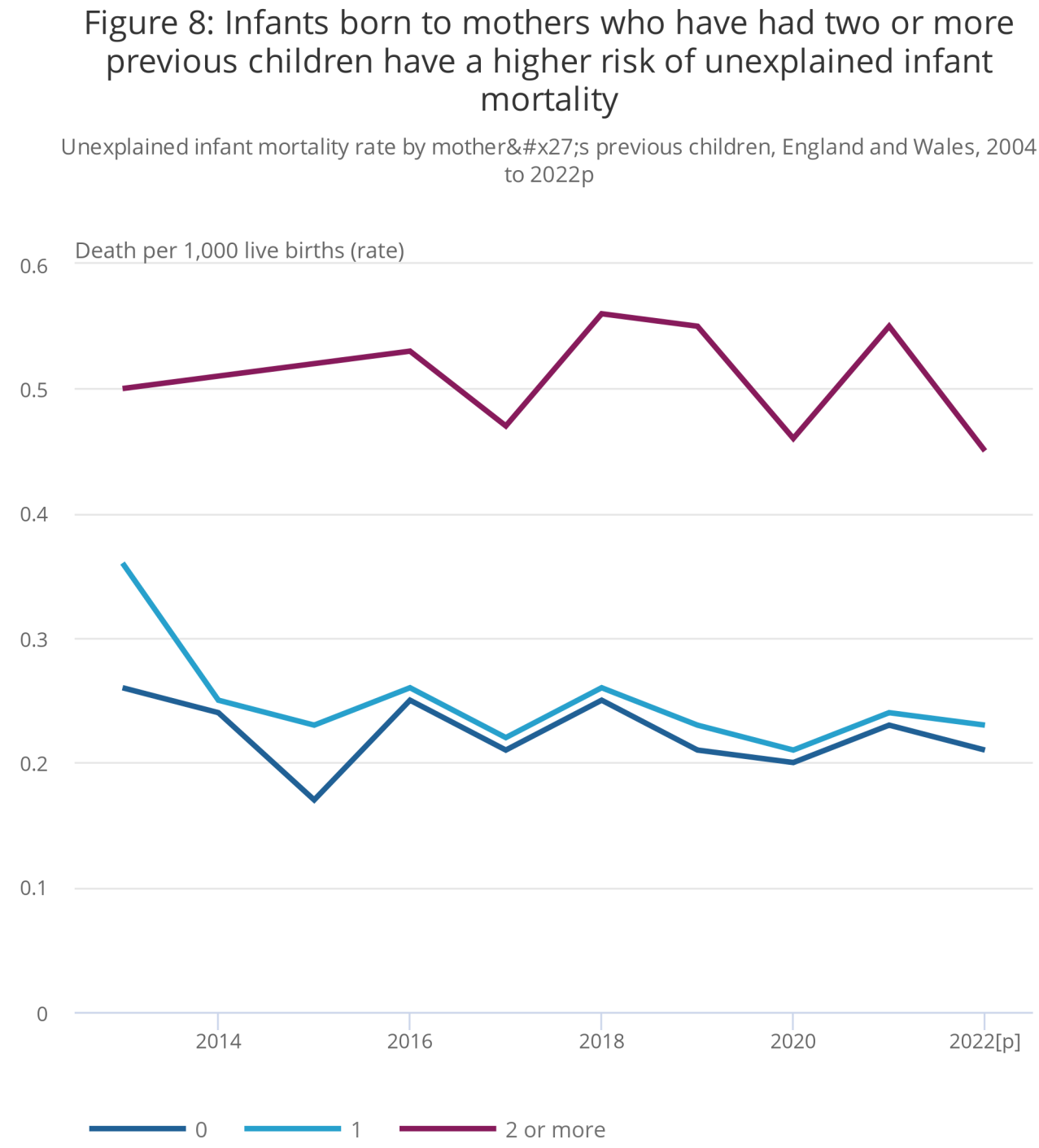
Conversely, the unexplained infant mortality rate for infants of mothers born in the UK (0.34 deaths per 1,000 live births) was more than double the rate for infants of mothers born outside the UK (0.15 deaths per 1,000 live births) in 2022.

Previous children

In 2022, there were 0.21 unexplained infant deaths per 1,000 live births for infants whose mother had no previous children. This was a similar rate to infants whose mother already had one child, at 0.23 deaths per 1,000 live births. However, the rate for infants whose mother had at least two previous children was approximately double that of those with one or no children, at 0.45 deaths per 1,000 live births. See Table 8 in our Main tables: Unexplained deaths in infancy, England and Wales dataset. This pattern has remained constant in recent years (Figure 8).

Figure 8: Infants born to mothers who have had two or more previous children have a higher risk of unexplained infant mortality

Unexplained infant mortality rate by mother's previous children, England and Wales, 2004 to 2022p



Source: Deaths in England and Wales from the Office for National Statistics

Socioeconomic classification

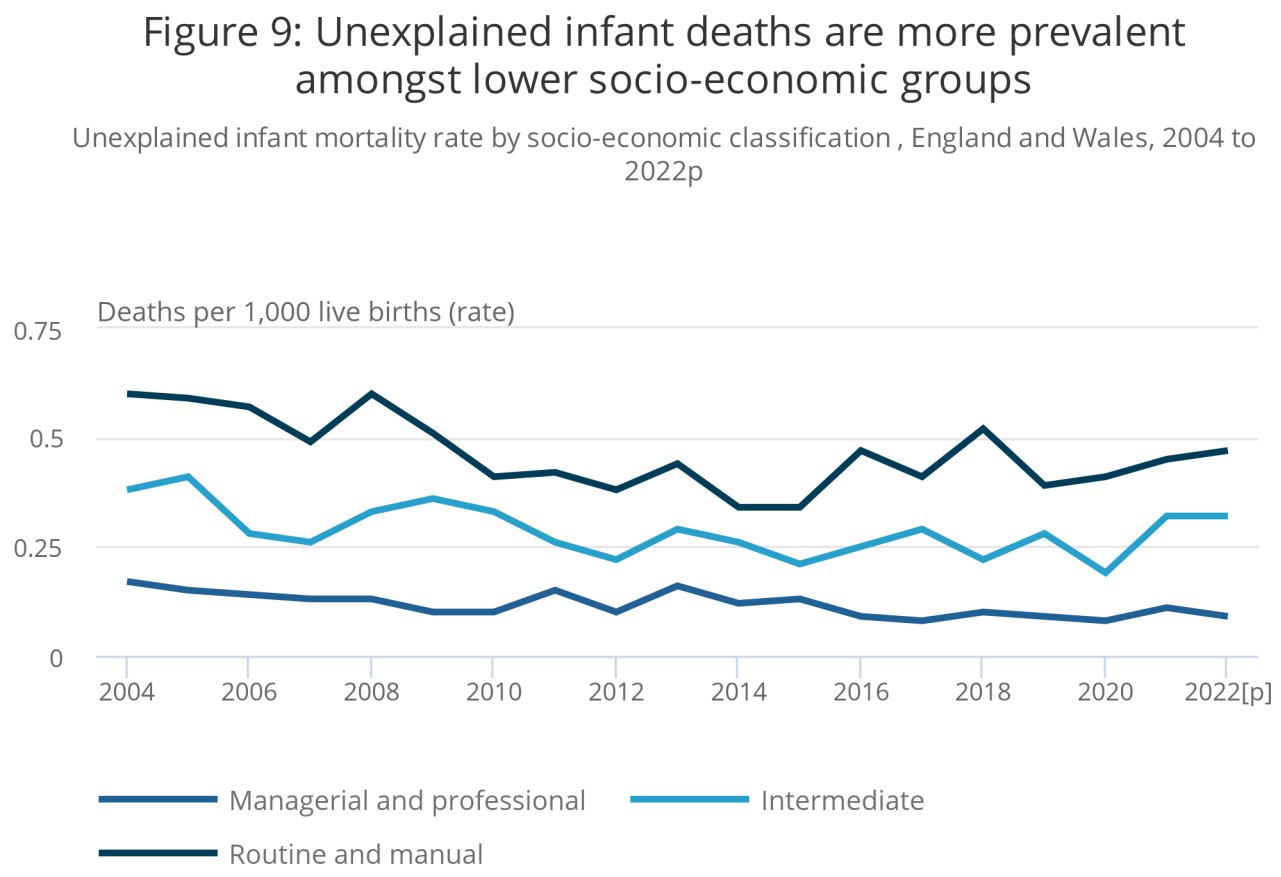
Our National Statistics Socio-economic classification provides a framework to assign people to one of three broad employment categories. Where employment information is provided for both parents, the infant is allocated to the higher of the parents' two categories.

Of the infants that could be categorised to this framework in 2022, the managerial and professional category represented the largest share of births (54.0%) and the smallest share of unexplained deaths (20.6%). Infants in the routine and manual category represented less than half the number of births of the managerial and professional category (23.5% of the total births), but more than twice the number of unexplained infant deaths (48.1% of the total deaths). See Table 10 in our Main tables: Unexplained deaths in infancy, England and Wales dataset. Infants in the routine and manual category therefore had a rate of unexplained deaths more than five times higher than infants in the managerial and professional category.

Figure 9 shows that the relative position of the rate of unexplained infant deaths across socioeconomic groups has remained consistent since the beginning of the dataset in 2004, although it narrowed between 2010 and 2015.

Figure 9: Unexplained infant deaths are more prevalent amongst lower socio-economic groups

Unexplained infant mortality rate by socio-economic classification , England and Wales, 2004 to 2022p



Source: Deaths in England and Wales from the Office for National Statistics

Data on infant deaths that were referred to a coroner for investigation, regardless of the cause of death, are not commented on in this bulletin. These can be found in our Unexpected deaths in infancy, England and Wales dataset.

Further data on unexplained infant deaths by region and marital status can be found in our Main tables: Unexplained deaths in infancy, England and Wales dataset.

5 . Data on unexplained infant mortality

Main tables: Unexplained deaths in infancy, England and Wales
Dataset | Released 29 November 2024
Annual data on sudden infant deaths in England and Wales and deaths for which the cause remained unascertained after a full investigation.

Unexpected deaths in infancy in England and Wales
Dataset | Released 29 November 2024
Annual data on unexpected deaths (certified by a coroner) and infant deaths by selected causes in England and Wales.

Unexplained deaths in infancy, England and Wales: 2006 to 2013
Dataset | Last updated 19 August 2015
Historical reports on unexplained infant deaths in England and Wales from the Office for National Statistics (ONS) National Archives, which includes sudden infant deaths and deaths for which the cause remained unknown or unascertained.

Unexpected deaths in infancy, England and Wales: historical data
Dataset | Released 19 August 2015
Historical annual data on unexpected deaths (certified by a coroner) and infant deaths by selected causes in England and Wales for the period 2004 to 2013.

6 . Glossary

2022p

2022 provisional unexplained infant mortality data.

Infant death

The death of those aged under one year.

Infant mortality rate

The number of infant deaths per 1,000 live births.

Neonatal

The death of an infant aged under 28 days.

Postneonatal death

The death of an infant aged between 28 days and one 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.

Unexplained infant deaths

Unexplained infant death includes both sudden infant death (ICD-10 code R95) and unascertained (ICD-10 code R99) deaths. Figures are based on death that occurred during the year of interest.

7 . Data sources and quality

Our unexplained infant mortality release is compiled from information supplied when births and deaths are certified and registered as part of civil registration.

Live birth data are supplied to us by the General Register Office. Births in England and Wales are required to be registered within 42 days of the birth, along with information on characteristics of both the mother and the infant.

Figures in our Unexplained deaths in infancy tables are based on deaths that occurred between 2004 and 2022. For more information, see Section 3: Occurrences, registrations and the standard dataset of our User guide to mortality statistics. Data for 2021 and 2022 include death registrations we received by 26 June 2024. These figures will not match those in our Child and Infant mortality in England and Wales: 2022 bulletin, as this was published on 31 May 2024.

Unexplained infant deaths are referred to a coroner who may order a post-mortem or full inquest to ascertain the reasons for the death. This investigation often results in a delay in the coroner registering the death. Therefore, we publish provisional figures to allow for late death registrations. Figures for 2021 have been finalised. Figures for 2022 are provisional and will be finalised in our next annual release.

Important information for interpreting unexplained deaths in infancy statistics

Figures in this bulletin represent infant deaths 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 International Classification of Diseases Tenth Revision (ICD-10) code R95, and unascertained deaths (ICD-10 code R99). Unascertained deaths are infant deaths where no medical cause was recorded. Further information can be found in our User guide to child and infant mortality statistics.

Infant deaths are linked to birth registrations by NHS number, name, and date of birth. This enables analysis by various risk factors and demographic characteristics.

Strengths and limitations

Our User guide to child and infant mortality statistics provides further information on data quality, legislation and procedures. Our Unexplained deaths in infancy, England and Wales Quality and Methodology Information (QMI) provides relevant information about the strengths and limitations of the data, methods used, and data uses and users.

Coronavirus and infant mortality statistics

Some unexplained infant death registrations in the final dataset are not received in time for inclusion in the provisional dataset. The most recent year for which both provisional and final data are available is 2021. For deaths in 2021, 23 additional registrations were included in the final data that were not in the provisional data. They represent 12.2% of the deaths that were included in the finalised figures, the highest in recent years.

The percentage of the final dataset accounted for by these late registrations has been increasing and has accelerated after 2017. It is likely that some of the later additional delays are caused by backlogs created or exacerbated by the coronavirus (COVID-19) pandemic. Other issues also contribute to determining the timeliness of death registration, and we will continue to monitor the situation.

Accredited official statistics status for infant mortality

These accredited official statistics were independently reviewed by the Office for Statistics Regulation in February 2013. They comply with the standards of trustworthiness, quality and value in the Code of Practice for Statistics and should be labelled “accredited official statistics”.

8 . Related links

Vital Events Reference Tables for Scotland
Publication | Released 30 July 2024
Data for Scotland from the National Records of Scotland on stillbirths and infant deaths based on registrations.

Deaths registered in England and Wales: 2023
Bulletin | Released 10 October 2024
Registered deaths by age, sex, selected underlying causes of death and the leading causes of death. Contains mortality rates and death registrations by area of residence and single year of age.

Child and infant mortality in England and Wales: 2022
Bulletin | Released 31 May 2024
Stillbirths, infant and childhood deaths occurring annually in England and Wales, and associated risk factors.

Registrar General Annual Report 2023 Stillbirths and Infant Deaths
Publication | Released 26 October 2023
Data for Northern Ireland from the Northern Ireland Statistics and Research Agency (NISRA) on stillbirths and infant deaths based on registrations.

Births in England and Wales: 2023
Bulletin | Released 28 October 2024
Live births, stillbirths and the intensity of childbearing, measured by the total fertility rate.

9 . Cite this statistical bulletin

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