Live Births, Stillbirths and Infant Deaths, Babies Born in 2009 in England and Wales

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Theme: Health and Social Care

Key Findings

• Of the 706,248 live births in 2009, a total of 3,180 infants had died before their first birthday, resulting in an infant mortality rate of 4.5 deaths per 1,000 live births.

• The infant mortality rate for all multiple births was five times higher than for singletons (20.4 deaths per 1,000 live births compared with 4.0 deaths per 1,000 live births).

• The highest infant mortality rates were for the extremely low birthweight babies (less than 1,000 grams) for singletons (319.2 deaths per 1,000 live births); and multiples (391.5 deaths per 1,000 live births).

Summary

Infant death figures reported in this statistical bulletin represent babies born in 2009 who died before their first birthday: the 2009 birth cohort for infant deaths. This includes babies who died either in 2009, or in 2010, and were under one year of age. It also contains additional analyses by some of the key risk factors affecting infant deaths, including age of mother and birthweight. These characteristics are derived from linking the death to the corresponding birth registration record. Linking the infant death to their corresponding birth registration record allows further information to be obtained about the baby and the parents as recorded at birth registration.

As part of a larger release of annual mortality data, the Office for National Statistics (ONS) also publishes infant mortality statistics for England and Wales according to the year in which the death was registered. Mortality data based on death registrations can include deaths that occurred in previous years, meaning that the total of infant deaths based on death registrations may differ from the total number of infant deaths used in this statistical bulletin. Any infant deaths figures for 2009
which have been previously published in child mortality statistics will also differ as these only include statistics for the year in which the death occurred.

This is the first time that figures for the 2009 birth cohort of infant deaths have been published by ONS.

**Infant and Perinatal Mortality Rates**

Of the 706,248 live births in 2009, a total of 3,180 infants had died before their first birthday, resulting in an infant mortality rate of 4.5 deaths per 1,000 live births. There were 3,688 stillbirths and 1,694 deaths at age under seven days in the same time period, giving a perinatal mortality rate of 7.6 deaths per 1,000 total births (live births and stillbirths).

This continues the overall decline in infant mortality rates in England and Wales over the past 30 years (ONS 2012). There were no marked seasonal patterns for live births, stillbirths or infant deaths.

**Singleton and Multiple Births**

The infant mortality rate for multiple births in 2009 was five times higher than for singletons (20.4 deaths per 1,000 live births compared with 4.0 deaths per 1,000 live births). This was most marked in the first 28 days of life (neonatal deaths) when the mortality rate for multiple births was six times higher than for singletons (16.1 deaths per 1,000 live births compared with 2.7 deaths per 1,000 live births).

For those who survived beyond their first month but died before their first birthday (postneonatal deaths), the mortality rate was more than three times higher for multiple births (4.3 per 1,000 live births) compared with singleton births (1.3 deaths per 1,000 live births).
On average, multiple births tend to have a lower birthweight than singletons, which is one reason why the infant mortality rate is higher for this group. Just over half of multiple birth babies (55 per cent of those with a known birthweight) were low birthweight (less than 2,500 grams) and 9.3 per cent of those with a known birthweight were very low birthweight (less than 1,500 grams).
Live births: birthweight (grams) for singleton and multiple births, 2009

In contrast, 5.6 per cent of singletons were born with a low birthweight and 0.9 per cent were very low birthweight. The main reason why multiple birth babies tend to have lower birthweight than singleton babies is because multiple births rarely go to term.

The highest infant mortality rates were for the extremely low birthweight babies (less than 1,000 grams): for singletons the rate was 319.2 deaths per 1,000 live births and for multiples the rate was 391.5 deaths per 1,000 live births.

Age of Mother at Birth of Baby

In 2009 nearly two-thirds (63 per cent) of all multiple births were to women aged 30 years or over compared with 47 per cent of all singleton babies. Multiple births have been increasing over the last decade, particularly to women aged 45 and over.

This increase can probably be attributed to a rise in the use of fertility treatments (HFEA 2007) which is a consequence of women postponing childbearing to later years. The delay in childbearing can also be associated with wider social change, including the general expansion of women in the labour force, together with the postponement of marriage and partnership formation to later years (Jefferies 2008 (297 Kb Pdf)).
Younger mothers (under 20 years) have the highest infant mortality rate for both singletons and multiple births (6.0 deaths per 1,000 live births for singletons and 41.0 deaths per 1,000 live births for multiples).

The age at which women have children has been shown to be related to their socio-economic status (Cooper 2001). Differences in infant mortality rates by socio-economic group persist in England and Wales, where a pattern of increased mortality among births to more socially disadvantaged mothers has also been observed (Oakley et al. 2009).

**Marital Status and Registration Type**

The infant mortality rate for babies born inside marriage was lower than for those born outside marriage. For singletons, there were 3.6 deaths per 1,000 live births inside marriage and 4.4 deaths per 1,000 live births outside marriage. For multiple births there were 17.0 deaths per 1,000 live births inside marriage and 25.9 deaths per 1,000 live births outside marriage.

The infant mortality rate for singletons was highest for those registered solely by their mother, or registered jointly by parents living at different addresses (5.6 and 5.4 deaths per 1,000 live births respectively). For multiple births the infant mortality rate was highest for those jointly registered by both parents living at different addresses (33.6 deaths per 1,000 live births) compared with 19.6 deaths per 1,000 live births for those registered solely by the mother.

When interpreting these multiple birth figures it is important to note the very small numbers in these groups which affects the robustness of estimated mortality rates. Furthermore, differences in mortality rates by marital status and birth registration type reflect complex underlying factors including mother’s age and social circumstances (Messer 2011).

For married women, the infant mortality rate for singleton births was higher for women who have previously had three or more children (5.1 deaths per 1,000 live births) compared with women who have had no previous children (4.0 deaths per 1,000 live births). Other factors may be relevant here, especially the mother’s age. The pattern was similar for multiple births but, again, the numbers were much smaller.

**Socio-economic Status**

One measure of social circumstances is that of father’s occupational status. This is collected at birth for married women and, if the birth was outside marriage, where the father jointly registered the birth.

For singleton births, the highest infant mortality rate was found for the National Statistics Socio-economic Classification (NS-SEC) group describing semi-routine occupations (Group 6) with a mortality rate of 5.0 deaths per 1,000 live births compared with the managerial and professional occupations (Groups 1.1 and 1.2) which had 2.4 and 2.7 deaths per 1,000 live births respectively. The pattern was less clear for multiple births where there are smaller numbers. Studies have shown that infant mortality rates are comparatively higher for low income families (Duncan and Brooks-
Infants born into low-income households are less likely to be breastfed (Mayhew and Bradshaw 2005) which can result in poorer immunity and poorer digestive health for the baby.

**Mother’s Country of Birth**

The infant mortality rate for mothers born outside the UK was 5.1 deaths per 1,000 live births compared with 4.3 deaths per 1,000 live births for mothers born inside the UK. The highest infant mortality rates were for babies of mothers born in the Caribbean (8.8 deaths per 1,000 live births) and mothers born in Central Africa (8.6 deaths per 1,000 live births).

Babies of mothers born in the Irish Republic and Western Africa had the highest stillbirth rate (both 8.7 deaths per 1,000 total births). Again, differences in infant mortality rates by mother’s country of birth are likely to reflect underlying factors including mother’s age, together with a range of other socio-demographic characteristics mentioned earlier in this bulletin.

**Cause of Death**

The broad ONS cause groups showed that immaturity-related conditions, for example, respiratory and cardiovascular disorders, were the most common cause of infant deaths, with 44 per cent due to this cause. Congenital anomalies were another major cause group, accounting for 31 per cent of all infant deaths. Congenital anomalies accounted for 38 per cent of all postneonatal deaths and 28 per cent of all neonatal deaths.

**Users and Uses of Infant Mortality Statistics**

Infant mortality is seen as a key measure among health outcomes and there is a long established link between social and health inequalities, and infant mortality. The Department of Health (DH) is a key user of infant mortality statistics.

Previously, the department has used infant mortality data in conjunction with other analyses performed by the Office for National Statistics to monitor the Public Service Agreement (PSA) target on infant mortality for England and Wales. Currently, infant mortality continues to take a central role in DH’s work on tackling health inequalities within the NHS Outcomes Framework 2011/12.

There are also two specific users of the birth cohort data; the Department of Midwifery and Child Health, City University London; and the Public Health Observatories (PHOs) in England. PHOs produce information, data and intelligence on people’s health at a local level.

Other users of infant mortality data include academics, independent researchers, charities and media.

**Further Information**

All data for the birth cohort tables for infant deaths in England and Wales in 2009 are available on the ONS website.
A [Quality and Methodology Information (218.6 Kb Pdf)](https://www.ons.gov.uk) document for the birth cohort tables for infant deaths is available on the ONS website.

Further information on data quality, legislation and procedures relating to childhood, infant and perinatal mortality is available on the ONS website in [Child mortality statistics metadata (163.2 Kb Pdf)](https://www.ons.gov.uk).

[Child mortality statistics](https://www.ons.gov.uk) presents statistics on infant deaths and childhood deaths occurring annually in England and Wales. [Gestation specific mortality](https://www.ons.gov.uk) presents data on live births and infant deaths by gestational age, while [Infant and perinatal mortality by social and biological factors](https://www.ons.gov.uk) provides statistics on infant and perinatal mortality by father's occupation; mother's country of birth; birthweight; and mother's age. [Unexplained deaths in infancy](https://www.ons.gov.uk) includes both sudden infant deaths and deaths for which the cause remained unknown or unascertained.

For infant mortality data for other UK countries please see the latest [infant death statistics for Northern Ireland](https://www.ons.gov.uk) and the latest [infant death statistics for Scotland](https://www.ons.gov.uk).

The [Births summary tables](https://www.ons.gov.uk), England and Wales provide key summary statistics for live births in England and Wales.

More general information on the collection, production and quality of mortality data is available in [Mortality metadata (2.46 Mb Pdf)](https://www.ons.gov.uk).

A user consultation to review infant mortality statistics produced by ONS took place between 5 July and 16 August 2011 and the [ONS response to the review (147.9 Kb Pdf)](https://www.ons.gov.uk) is available on the ONS website.

**References**


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Background notes

1. 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. The infant death figures are based babies born in 2009 who died before their first birthday: the 2009 birth cohort for infant deaths. This includes babies who died either in 2009, or in 2010, and were under 1 year age.

2. The linkage of infant death records to their corresponding birth registration record has been conducted since 1975 to obtain information on social and biological factors of the baby and parents collected at birth registration. These include the baby’s birthweight; mother’s age; mother’s country of birth; father’s socio-economic status (based on his occupation); and for those born within marriage/civil partnership, the number of previous children born.

In 2010, of the 3,076 infant deaths that occurred, 3,022 were successfully linked to their corresponding birth records. Around two per cent of infant deaths cannot be linked to a birth record. The main reasons for this are either; a birth registration record cannot be found, or the birth was registered outside England and Wales.

3. A time series covering linked infant deaths occurring annually in England and Wales, from 1980 onwards, is available in Child mortality statistics. For this reason there are no specific time series data for the birth cohort tables which accompany this bulletin as these specifically focus on a single birth cohort.

4. Definitions used in the birth cohort tables for infant deaths*:
   - 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.
   - Postneonatal – deaths between 28 days and 1 year.
   - Infant – deaths under 1 year.

* Stillbirths and perinatal mortality rates are reported per 1,000 total births (live and stillbirths).

Early neonatal, neonatal, postneonatal and infant mortality rates are reported per 1,000 live births.

5. The National Statistics Socio-economic Classification (NS-SEC) has eight analytic classes, the first of which can be subdivided:
1: Higher managerial and professional occupations.

1.1: Large employers and higher managerial occupations.

1.2: Higher professional occupations.

2: Lower managerial and professional occupations.

3: Intermediate occupations.

4: Small employers and own-account workers.

5: Lower supervisory and technical occupations.

6: Semi-routine occupations.

7: Routine occupations.

8: Never worked and long-term unemployed.

Students, occupations not stated or inadequately described, and occupations not classifiable for other reasons are added as ‘Not classified’.

6. The Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD–10) has been used to classify cause of death at age 28 days and above.

7. A hierarchical classification in ICD–10 has also been developed by ONS for statistics relating to stillbirths and neonatal deaths. These are derived from a special death certificate (instead of the standard death certificate), introduced by ONS in 1986. More information on neonatal and stillbirth cause of death certificates can be found in section 2.9 of Child mortality statistics metadata (163.2 Kb Pdf).

8. Special extracts and tabulations of infant mortality data for England and Wales are available to order for a charge (subject to legal frameworks, disclosure control, resources and agreements of costs, where appropriate). Such enquiries should be made to:

Vital Statistics Outputs Branch
Health and Life Events Division
Office for National Statistics
Segensworth Road
Titchfield
Fareham
Hampshire
PO15 5RR
9. We welcome feedback from users on the content, format and relevance of this release. User Engagement in the Health and Life Events Division is available to download from the ONS website. Please send feedback to the postal or e-mail address above.

10. ONS has recently published commentary, analysis and policy on 'Special Events' which may affect statistical outputs. For full details go to the Special Events page on the ONS website.

11. Follow ONS on Twitter and Facebook.


13. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

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This document is also available on our website at www.ons.gov.uk.

Statistical contacts

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