Maternal, Newborn and Infant Clinical Outcome Review Programme

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

MBRRACE-UK
Perinatal mortality surveillance

UK perinatal deaths of babies born in 2023

State of the nation report

May 2025

HQIP Healthcare Quality Improvement Partnership
University of Leicester
University of Birmingham
The Newcastle upon Tyne Hospitals NHS Foundation Trust
TIMMS
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Chelsea and Westminster Hospital NHS Foundation Trust
University of Oxford
Oxford Population Health
NPEU

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The Maternal, Newborn and Infant Clinical Outcome Review Programme, delivered by MBRRACE-UK, is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). HQIP is led by a consortium of the Academy of Medical Royal Colleges and the Royal College of Nursing. Its aim is to promote quality improvement in patient outcomes. HQIP holds the contract to commission, manage, and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The Clinical Outcome Review Programmes, which encompass confidential enquiries, are designed to help assess the quality of healthcare, and stimulate improvement in safety and effectiveness by systematically enabling clinicians, managers, and policy makers to learn from adverse events and other relevant data. The Maternal, Newborn and Infant Clinical Outcome Review Programme is funded by NHS England and the Governments of Scotland, Wales, Northern Ireland, Jersey, Guernsey and the Isle of Man.

More details can be found on the HQIP website.

Stakeholder involvement

Organisations representing parents and families are involved in the MBRRACE-UK programme as part of the 'Third Sector' stakeholder group, identifying possible areas for future research and helping to communicate key findings and messages from the programme to parents, families, the public and policy makers, including through the development of lay summary reports. A full list of organisations can be found in the acknowledgements.

Cohort

Deaths reported are of babies born in England, Wales, Scotland, Northern Ireland, and the Crown Dependencies, for the period 1 January 2023 to 31 December 2023 inclusive.

Data extraction date

The data in this report was extracted from the MBRRACE-UK database on 25 November 2024. Any changes to the database made after this date are not reflected in the report or accompanying reference tables.

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State of the nation report

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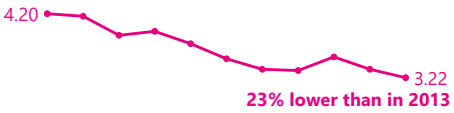
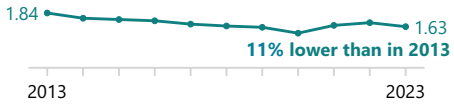
1. Perinatal mortality rates continued to decrease in 2023, driven by a reduction in stillbirths.

Stillbirths
per 1,000 total births



23% lower than in 2013

Neonatal deaths
per 1,000 live births



11% lower than in 2013

2013 2023

Stillbirths per 1,000 total births

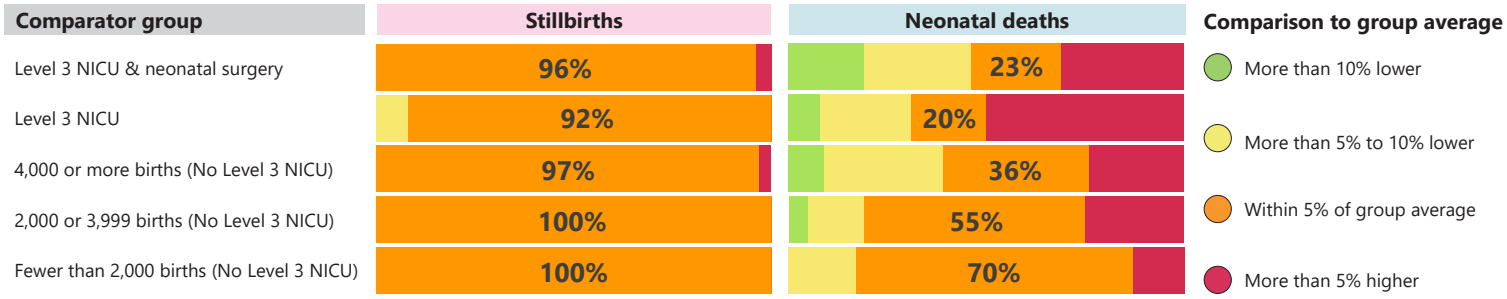
Country	2022	2023
UK & Crown Dependencies	**3.35**	**3.22** ▼
England	3.33	3.27 ▼
Scotland	3.31	2.95 ▼
Wales	3.63	3.32 ▼
Northern Ireland	3.49	2.51 ▼

Neonatal deaths per 1,000 live births

Country	2022	2023
UK & Crown Dependencies	**1.69**	**1.63** ▼
England	1.67	1.62 ▼
Scotland	1.59	1.61 ▲
Wales	1.91	1.79 ▼
Northern Ireland	2.29	1.66 ▼

2. There was wide variation in neonatal mortality rates

Comparison of Trust & Health Board mortality rates against their comparator group average



Almost all organisations had a stillbirth rate within 5% of their group average

Fewer organisations had a neonatal mortality rate within 5% of their group average

3. Neonatal mortality rates increased for the most preterm babies

Stillbirths per 1,000 total births

Gestational age	2022	2023
22 to 23 weeks	405.5	403.0 ▼
24 to 27 weeks	216.0	207.8 ▼
28 to 31 weeks	74.4	69.9 ▼
32 to 36 weeks	12.7	12.5 ▼
37 to 41 weeks	1.09	0.99 ▼

Neonatal deaths per 1,000 live births

Gestational age	2022	2023
22 to 23 weeks	625.2	641.1 ▲
24 to 27 weeks	139.6	146.1 ▲
28 to 31 weeks	29.5	31.1 ▲
32 to 36 weeks	6.58	5.05 ▼
37 to 41 weeks	0.62	0.60 ▼

What is a stillbirth or neonatal death?

A **stillbirth** is the death of a baby before or during birth once a pregnancy has reached 24 completed weeks.

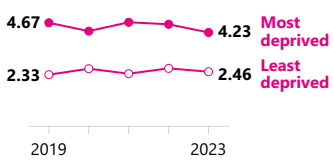
A **neonatal death** is a baby born at any gestation who lives, even briefly, but dies within 28 days of birth.

All rates in this report are for babies born from 24 completed weeks and include deaths due to congenital anomalies, unless otherwise stated.

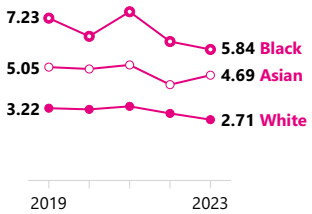
4. Neonatal mortality rates for babies from the most deprived areas increased for the third year

Stillbirths per 1,000 total births

Deprivation

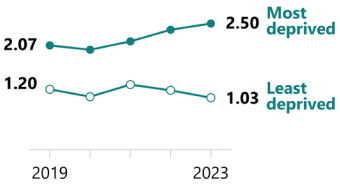


Ethnicity

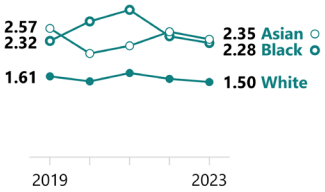


Neonatal deaths per 1,000 live births

Deprivation

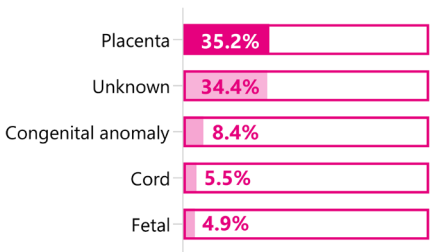


Ethnicity

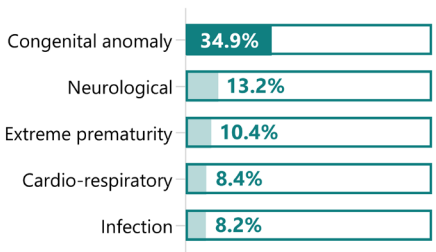


5. The most common causes of stillbirth and neonatal death were unchanged

Most common causes of stillbirth



Most common causes of neonatal death



When stillbirths and neonatal deaths are combined, congenital anomalies contributed to 17% of deaths

Executive summary

In 2023, extended perinatal mortality rates across the UK continued to decline, reaching 4.84 per 1,000 total births, primarily driven by a reduction in stillbirths. Compared to 2022, stillbirth rates fell across all UK nations, while neonatal mortality rates also declined in England, Wales, and Northern Ireland.

Stabilised and adjusted stillbirth rates showed limited variation, with 97% of Trusts and Health Boards having rates within 5% of their comparator group average. However, neonatal mortality rates demonstrated greater variation, with only 42% of Trusts and Health Boards within the same threshold. When excluding deaths due to congenital anomalies, this figure increased to 52%.

Late fetal loss and stillbirth rates decreased across all gestational ages, with the largest reduction seen in term births (37 to 41 weeks). However, neonatal mortality increased for preterm babies born between 24 and 31 weeks, while it declined for those born at 32 weeks or later. Notably, babies born at 22 to 23 weeks accounted for an increasing proportion (25%) of all neonatal deaths. Preterm births remained a significant factor, with 76% of stillbirths and 75% of neonatal deaths occurring in babies born before 37 weeks.

Socioeconomic disparities continued to be a major concern, with stillbirth rates for babies born to mothers from the most deprived areas remaining significantly higher than those from the least deprived areas, despite an 8% decline. Neonatal mortality disparities also widened, with rates increasing for the most deprived populations and decreasing for the least deprived.

Ethnic disparities in perinatal outcomes persisted. Stillbirth rates declined for Black and White babies but increased by 10% for Asian babies. Black babies remained more than twice as likely to be stillborn as White babies. Neonatal mortality rates decreased across all ethnicities but remained highest for Asian and Black babies.

The leading causes of stillbirth were placental issues, congenital anomalies, umbilical cord complications, and fetal conditions, but 34% of stillbirths had an unknown cause. Neonatal deaths were most commonly attributed to congenital anomalies, neurological issues, extreme prematurity, cardio-respiratory complications, and infections. Congenital anomalies remained a significant contributor, accounting for 8% of stillbirths and 35% of neonatal deaths.

These findings highlight continued progress in reducing perinatal mortality but underscore the need for targeted interventions to address disparities by socioeconomic status, ethnicity, and gestational age. Recent MBRRACE-UK reports have made national level recommendations in support of these aims, but focused work at local provider, network and commissioner level may be required to understand and tackle these issues in an effective manner.

Previous recommendations with continued relevance	
P1.	Ensure neonatal intensive care capacity and resources reflect the increase in the numbers of babies born before 24 completed weeks' gestational age receiving survival-focused care. (MBRRACE-UK 2024)
P2.	Support external clinical input into the rigorous review of all stillbirths and neonatal deaths across the UK, to identify learning and common themes related to clinical care and service provision, delivery and organisation. (MBRRACE-UK 2023)
P3.	Ensure healthcare providers adopt and use the BAPM Perinatal Optimisation Pathway, to improve preterm outcomes. (MBRRACE-UK 2023)
P4.	Continue to develop and implement targeted action, at national and organisational levels, to support the reduction of direct and indirect health inequalities. (MBRRACE-UK 2023)

MBRRACE-UK perinatal mortality surveillance

UK perinatal deaths of babies born in 2023

State of the Nation Report

1. Introduction

1.1. Report overview

This is the eleventh MBRRACE-UK perinatal mortality surveillance report. The report is divided into five sections: perinatal mortality rates in the UK; mortality rates for Trusts and Health Boards; mortality rates by gestational age; mortality rates by ethnicity and socioeconomic deprivation; and a description of the causes of perinatal death

This report focuses on **births from 24 completed weeks' gestational age,** with the exception of the section on mortality rates by gestational age, which also includes information on births at 22 to 23 completed weeks' gestational age. This avoids the influence of the wide disparity in the classification of babies born before 24 completed weeks' gestational age as a neonatal death or a late fetal loss. **Terminations of pregnancy have been excluded from the mortality rates reported**.

Additional supporting materials to accompany this report include:

- a set of reference tables;
- a data viewer with interactive mapping, which presents mortality rates for individual organisations, including Trusts and Health Boards; and
- a technical manual containing full details of the MBRRACE-UK methodology, including definitions, case ascertainment and statistical methods.

An online version of this report is also available.

1.2. Definitions and terminology

For definitions of the deaths reported to MBRRACE-UK and an explanation of the different types of mortality rates reported, see the MBRRACE-UK Technical Manual.

In this report and the supporting materials we use the terms 'women' and 'mothers'. However, we acknowledge that not all people who access perinatal services identify as women or mothers, and that our recommendations apply to all people who are pregnant or have given birth. Likewise, use of the word 'parents' includes anyone who has the main responsibility of caring for a baby.

2. Perinatal mortality rates in the UK: 2023

2.1. Introduction

Rates of stillbirth, neonatal mortality and extended perinatal mortality by country of residence are presented for the UK and for each devolved nation for the period 2013 to 2023. This is to show trends in mortality rates over time and to enable individual nations to monitor the progress of initiatives to reduce perinatal mortality.

2.2. Key messages

- Extended perinatal mortality rates decreased across the UK in 2023 (UK extended perinatal mortality rate: 4.84 per 1,000 total births). The long-term reduction in perinatal mortality is driven largely by a reduction in stillbirths.
- Compared with rates in 2022, stillbirth rates per 1,000 total births in 2023 were lower across the UK: 3.22 (UK); 3.27 (England); 2.95 (Scotland); 3.32 (Wales); and 2.51 (Northern Ireland).
- There were decreases in the neonatal mortality rate per 1,000 live births in England, Wales and Northern Ireland compared with 2022: 1.63 (UK); 1.62 (England); 1.61 (Scotland); 1.79 (Wales); and 1.66 (Northern Ireland).

2.3. Perinatal mortality rates across the UK

ⓘ Perinatal mortality rates decreased across the UK in 2023, driven largely by a reduction in stillbirths. A reduction in stillbirths and neonatal deaths in Northern Ireland is particularly evident.

Figure 1: Stillbirth, neonatal, and extended perinatal mortality rates by country of residence: United Kingdom, for births from 2013 to 2023

Description of Figure 1: Line charts showing stillbirth (all, antepartum and intrapartum), neonatal death and extended perinatal mortality rates for the UK, England, Scotland, Wales and Northern Ireland, from 2013 to 2023. Stillbirths and extended perinatal deaths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Births at less than 24 completed weeks' gestational age and terminations of pregnancy are excluded.

Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey

3. Perinatal mortality rates for Trusts and Health Boards

3.1. Introduction

To account for the wide variation in case-mix, Trusts and Health Boards were classified hierarchically into five mutually exclusive comparator groups, based on their level of service provision. In order to compare Trusts and Health Boards more fairly, stabilised & adjusted mortality rates were calculated and colour-coded according to the variation from their respective comparator group average. A complete explanation of the MBRRACE-UK methodology, including statistical methods, can be found in the Technical Manual.

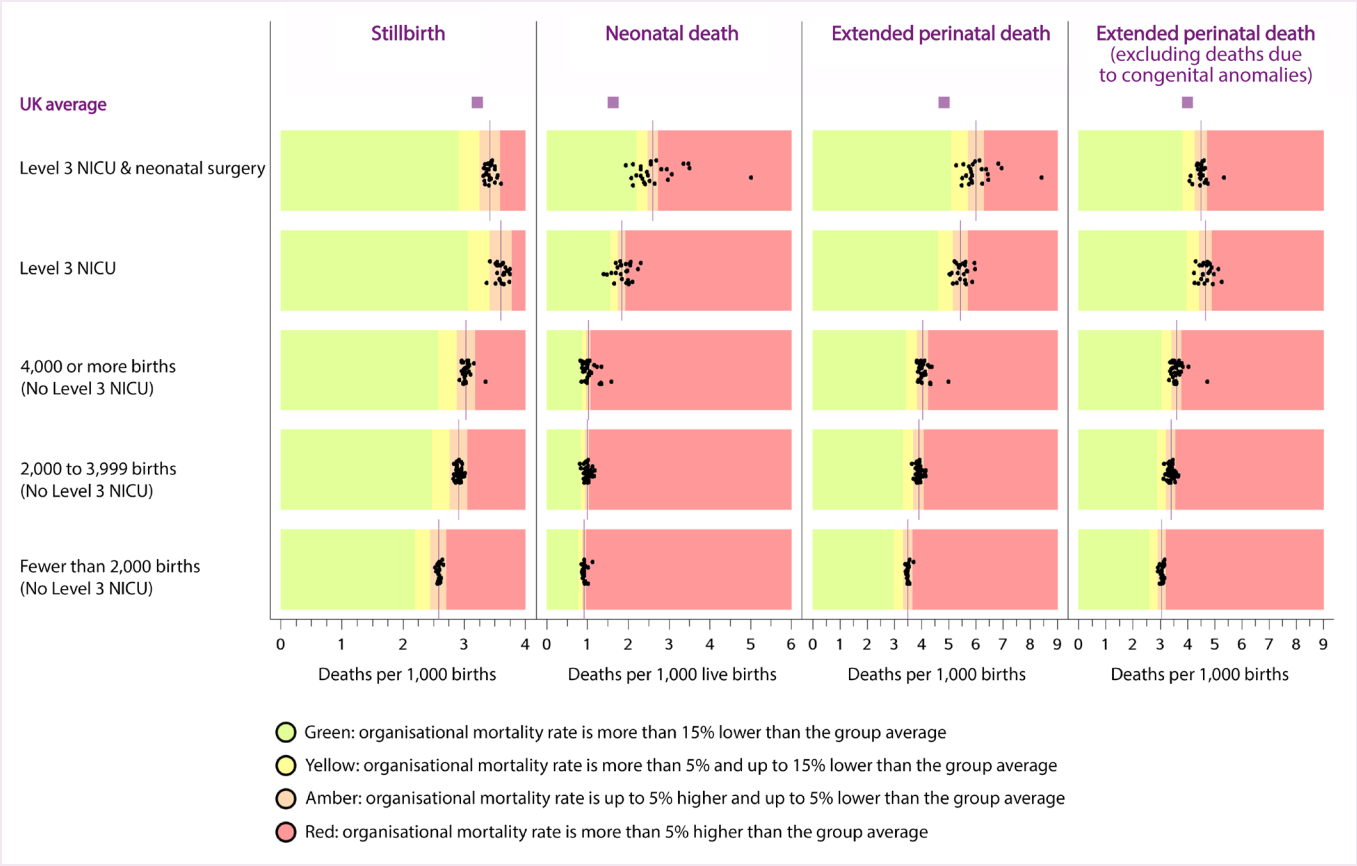
3.2. Key messages

- Stabilised & adjusted stillbirth rates in 2023 continued to show limited variation, with 97.4% of Trusts and Health Boards having a stabilised & adjusted stillbirth rate within 5% of their comparator group average.
- For stabilised & adjusted neonatal mortality, rates showed wider variation, with 41.7% of Trusts and Health Boards being within 5% of their comparator group average.
- After the exclusion of deaths due to congenital anomalies, 52.3% of Trusts and Health Boards had a stabilised & adjusted neonatal mortality rate within 5% of their comparator group average.

3.3. Variation in perinatal mortality rates within Trust and Health Board comparator groups

ⓘ There was wide variation in neonatal mortality rates, even when deaths due to congenital anomalies were excluded.

Figure 2: Stabilised & adjusted stillbirth, neonatal and extended perinatal mortality rates for Trusts and Health Boards by comparator group: United Kingdom and Crown Dependencies, for births in 2023



Description of Figure 2: Scatter chart showing the variation in stabilised & adjusted stillbirth, neonatal death and extended perinatal mortality rates within Trust and Health Board comparator groups in 2023. Trusts and Health Boards are grouped according to their level of service provision, with dots representing individual Trusts and Health Boards and a vertical line representing the comparator group average. Extended perinatal deaths are also shown without deaths due to congenital anomalies. Stillbirths and extended perinatal mortality rates are shown as rates per 1,000 total births. Neonatal mortality rates are shown as rates per 1,000 live births. Births at less than 24 completed weeks' gestational age and terminations of pregnancy are excluded.

Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey.

Mortality rates for individual Trusts and Health Boards, including comparison to their respective comparator group average, can be found in the data viewer. The viewer also contains details of mortality rates for other organisations responsible for providing or commissioning perinatal services.

4. Mortality rates by gestational age

4.1. Introduction

Mortality rates by gestational age group in completed weeks are presented to monitor the progress of national initiatives to reduce preterm births.

4.2. Key messages

- Late fetal loss and stillbirth rates decreased in 2023 across all gestational age groups compared to 2022, with the largest reduction being for babies born at 37 to 41 completed weeks.
- Neonatal mortality increased in 2023 for babies born between 24 and 31 completed weeks compared to 2022. For babies born at 32 weeks or later, neonatal mortality decreased compared to 2022.
- The proportion of neonatal deaths among babies born at 22 to 23 completed weeks continued to rise, accounting for 25.1% of all neonatal deaths.
- 76.1% of stillbirths and late fetal losses and 74.5% of neonatal deaths were born preterm (before 37 completed weeks).

4.3. Late fetal loss, stillbirth and neonatal mortality rates by gestational age

ⓘ Late fetal loss and stillbirth rates decreased for all gestational ages. Neonatal mortality increased for the most preterm babies but decreased for those born at 32 weeks or later.

Figure 3: Late fetal loss, stillbirth and neonatal mortality rates and proportions by gestational age at birth: United Kingdom and Crown Dependencies, for births from 2019 to 2023

Description of Figure 3: Combined line and bar charts showing rates and proportions of stillbirths and neonatal deaths for babies born in the UK from 2019 to 2023, by gestational age group in completed weeks: 22 to 23, 24 to 27, 28 to 31, 32 to 36, 37 to 41. Deaths of babies born at 42 weeks and above are not shown due to the small numbers of births at this gestation. Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Terminations of pregnancy are excluded. **The left Y-axis scales are different for each group.**

Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey.

5. Mortality rates by socioeconomic deprivation and ethnicity

5.1. Introduction

To explore inequalities in perinatal outcomes, rates of stillbirth and neonatal death are compared for area level socioeconomic deprivation based on the mother's postcode of residence at the time of the birth, and the baby's ethnic group.

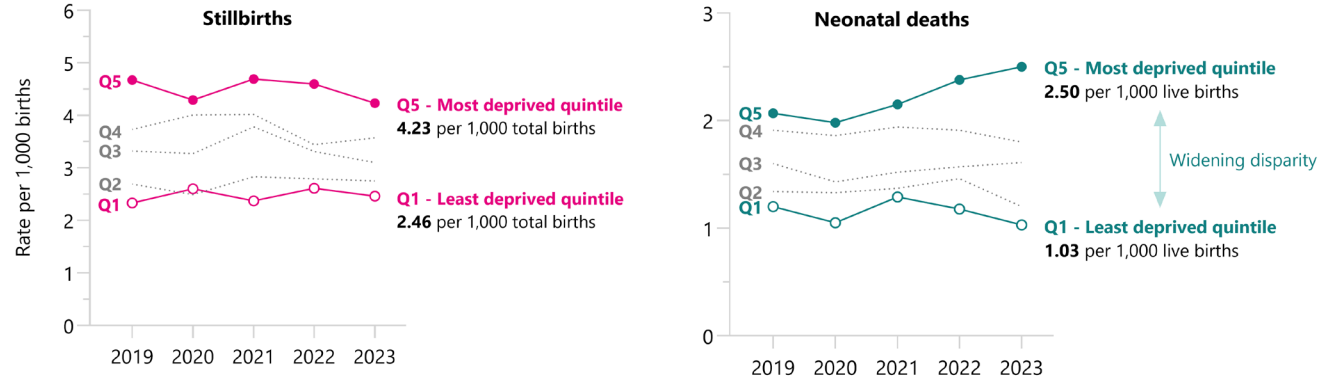
5.2. Key messages

- Despite an 8% decrease in stillbirth rates for babies born to mothers from the most deprived areas (from 4.60 per 1,000 total births in 2022 to 4.23 per 1,000 total births in 2023), the rates remain much higher than those for babies born to mothers from the least deprived areas (2.46 per 1,000 total births).
- Disparities in neonatal mortality rates by socioeconomic deprivation widened further in 2023. Rates increased for babies born to mothers from the most deprived areas (from 2.38 per 1,000 live births in 2022 to 2.50 in 2023), a rate now more than double that of babies born to mothers in the least deprived areas, where the rate decreased from 1.18 per 1,000 live births in 2022 to 1.03 in 2023.
- Stillbirth rates by ethnicity decreased in 2023 for babies of Black and White ethnicity, but increased by 9.8% for babies of Asian ethnicity compared to 2022. Babies of Black ethnicity remain more than twice as likely to be stillborn than babies of White ethnicity (Black: 5.84 per 1,000 total births; White: 2.71 per 1,000 total births).
- Neonatal mortality rates decreased in 2023 for babies of all ethnicities compared to 2022. However, babies of both Asian and Black ethnicity continue to have much higher rates of neonatal mortality than babies of White ethnicity (Asian: 2.35 per 1,000 live births; Black: 2.28 per 1,000 live births; White: 1.50 per 1,000 live births).

5.3. Socio-economic deprivation

ⓘ Neonatal mortality rates for babies born to mothers from the most deprived areas increased for the third year, further widening the disparity by socioeconomic deprivation.

Figure 4: Stillbirth and neonatal mortality rates by mothers' socioeconomic deprivation quintile of residence: United Kingdom, for births in 2019 to 2023



Description of Figure 4: Line charts showing stillbirth and neonatal mortality rates by level of socioeconomic deprivation, between 2019 and 2023. Deprivation is shown by quintiles numbered 1 to 5, and the most deprived quintile (Q5) is compared to the least deprived quintile (Q1). Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Births at less than 24 completed weeks' gestational age and terminations of pregnancy are excluded.

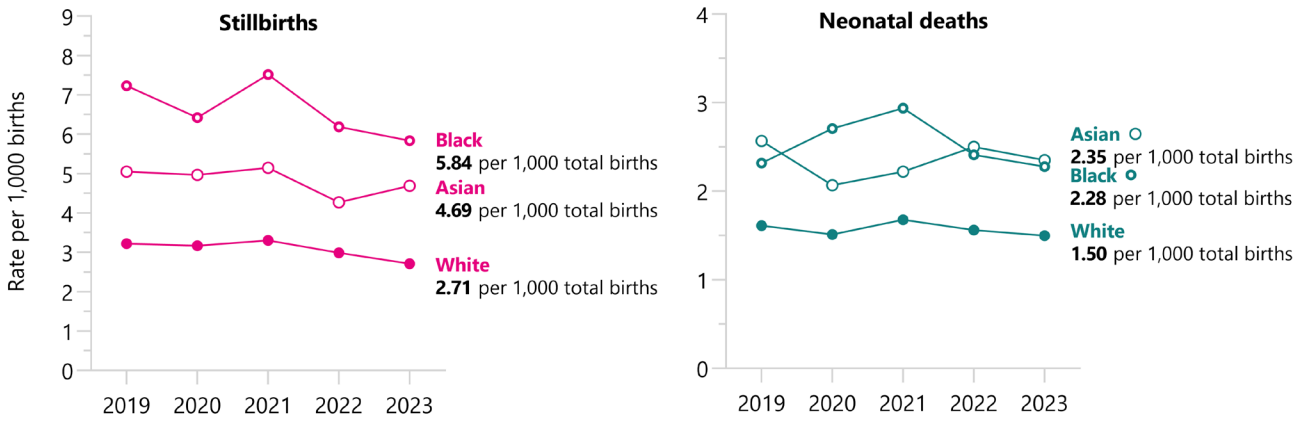
Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey.

Socioeconomic deprivation was measured using the Children in low-income families local measure (for births until 2022) and the Children in low income families: local area statistics (for births in 2023), based on the mother's postcode of residence at the time of birth.

5.4. Ethnicity

ⓘ Stillbirth rates decreased for babies of Black and White ethnicity but increased for Asian babies, while neonatal mortality rates decreased for all ethnicities. Babies of Asian and Black ethnicity continue to have much higher mortality rates than babies of White ethnicity.

Figure 5: Stillbirth and neonatal mortality rates by babies' ethnicity: United Kingdom and Crown Dependencies, for births in 2019 to 2023



Description of Figure 5: Line charts showing stillbirth and neonatal mortality rates by babies' ethnicity, between 2019 and 2023. Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Births at less than 24 completed weeks' gestational age and terminations of pregnancy are excluded.

Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey.

Mortality rates using more refined ethnic categories can be found in the accompanying reference tables. As the mortality rates for some groups are based on small numbers they are not presented here, and may be suppressed in the reference tables.

6. Causes of perinatal death

6.1. Introduction

Causes of death are reported to MBRRACE-UK using the Cause of Death & Associated Conditions (CODAC) classification system. The CODAC system has a three level hierarchical tree for the coding of both the primary cause of death and any associated conditions.

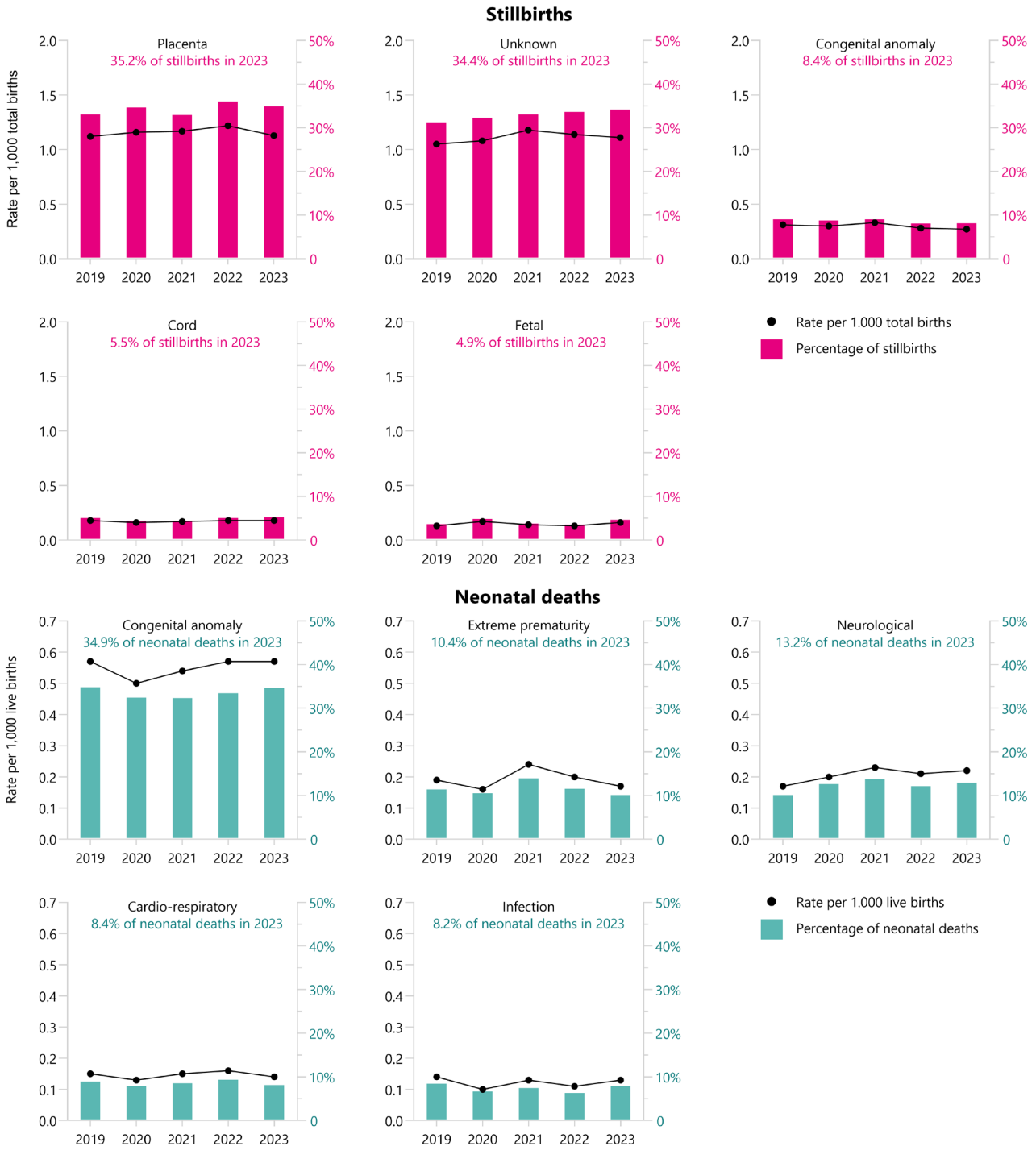
6.2. Key messages

- The most common causes of stillbirth were in the placenta, congenital anomaly, cord and fetal categories. There remains a high proportion of stillbirths with an unknown cause of death (34.4%).
- The most common causes of neonatal death were in the congenital anomaly, neurological, extreme prematurity, cardio-respiratory and infection categories.
- Congenital anomalies continue to contribute significantly to mortality rates, comprising 8.4% of stillbirths and 34.9% of neonatal deaths.

6.3. Stillbirth and neonatal mortality rates by cause of death

ⓘ The most common causes of stillbirth were in the placenta, congenital anomaly, cord and fetal categories. The most common causes of neonatal death were in the congenital anomaly, neurological, extreme prematurity, cardio-respiratory and infection categories.

Figure 6: Highest stillbirth and neonatal mortality rates by CODAC cause of death: United Kingdom and Crown Dependencies, for births in 2019 to 2023



Description of Figure 6: Combined line and bar charts showing the five highest stillbirth and neonatal mortality rates by cause of death, between 2019 and 2023. Cause of death is shown by CODAC level 1 category for stillbirths and levels 1 and 2 for neonatal deaths. Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Births at less than 24 completed weeks' gestational age and terminations of pregnancy are excluded.

Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey.