

Maternal, Newborn and  
Infant Clinical Outcome  
Review Programme



# MBRRACE-UK Perinatal Mortality Surveillance

UK Perinatal Deaths for Births from  
January to December 2021

## State of the Nation Report



September 2023



## Funding

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, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes. 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. 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 programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and Crown Dependencies.

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](#).

**Design by:** Ian Gallimore

### **This report should be cited as:**

Draper ES, Gallimore ID, Smith LK, Matthews RJ, Fenton AC, Kurinczuk JJ, Smith PW, Manktelow BN, on behalf of the MBRRACE-UK Collaboration. MBRRACE-UK Perinatal Mortality Surveillance, UK Perinatal Deaths for Births from January to December 2021: State of the Nation Report. Leicester: The Infant Mortality and Morbidity Studies, Department of Population Health Sciences, University of Leicester. 2023.

**ISBN:** 978-1-8383784-0-0

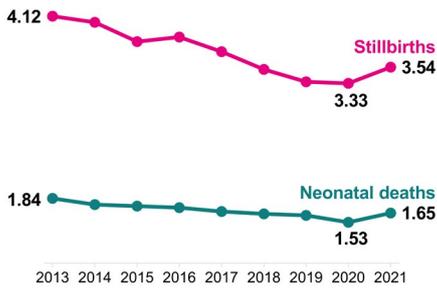
**Published by:** The Infant Mortality and Morbidity Studies  
Department of Population Health Sciences  
University of Leicester  
George Davies Centre  
University Road  
Leicester LE1 7RH

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# State of the Nation Report

UK Perinatal Deaths for Births from January to December 2021

## 1. Perinatal mortality rates increased across the UK in 2021



Stillbirths per 1,000 total births

Country	2020	2021
UK	3.33	3.54
England	3.29	3.52
Scotland	3.72	3.27
Wales	3.48	3.88
Northern Ireland	3.38	4.09

Neonatal deaths per 1,000 live births

Country	2020	2021
UK	1.53	1.65
England	1.50	1.60
Scotland	1.47	1.91
Wales	1.64	1.70
Northern Ireland	2.37	2.46

## 2. There was wide variation in stillbirth and neonatal mortality rates

Percentage of organisations with mortality rates within 5% of the group average

Comparator group	Stillbirths		Neonatal deaths	
	All deaths	Excluding deaths due to congenital anomalies	All deaths	Excluding deaths due to congenital anomalies
Level 3 NICU with surgery	54%	69%	15%	35%
Level 3 NICU	50%	58%	27%	39%
4,000 or more births (No Level 3 NICU)	57%	73%	29%	32%
2,000 to 3,999 births (No Level 3 NICU)	72%	86%	51%	63%
Fewer than 2,000 births (No Level 3 NICU)	75%	100%	70%	85%

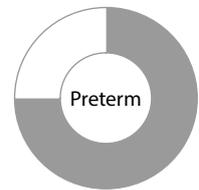
## 3. Stillbirth and neonatal mortality rates increased in almost all gestational age groups

Stillbirths per 1,000 total births

Gestational age	Rate	Change since 2020
22 to 23 weeks	472.7	4% increase
24 to 27 weeks	212.1	7% increase
28 to 31 weeks	81.7	12% increase
32 to 36 weeks	16.4	6% increase
37 to 41 weeks	1.19	3% decrease

Neonatal deaths per 1,000 live births

Gestational age	Rate	Change since 2020
22 to 23 weeks	660.5	2% increase
24 to 27 weeks	160.0	18% increase
28 to 31 weeks	34.0	11% increase
32 to 36 weeks	5.35	No change
37 to 41 weeks	0.66	2% increase



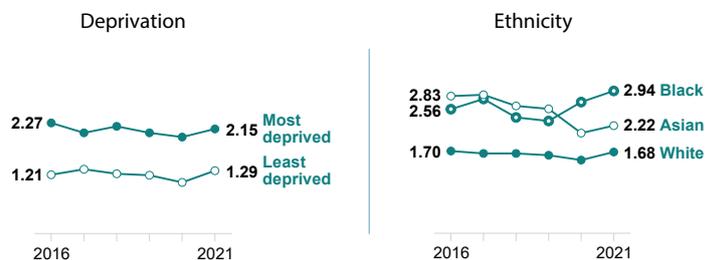
Births before 37 completed weeks' gestational age accounted for 75% of stillbirths and late fetal losses and 73% of neonatal deaths

## 4. Inequalities in mortality rates by deprivation and ethnicity remain

Stillbirths per 1,000 total births

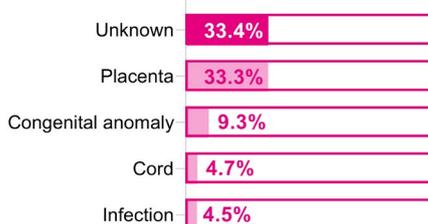


Neonatal deaths per 1,000 live births

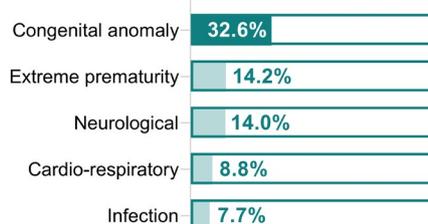


## 5. The most common causes of stillbirth and neonatal death are unchanged

Most common causes of stillbirth



Most common causes of neonatal death



Congenital anomalies continue to contribute to a significant proportion of perinatal deaths

## Recommendations and supporting data

Recommendation	Target audience	Supporting data in 2021
<p>1. 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.</p>	<p>UK Governments, Royal Colleges, Commissioners</p>	<p>Perinatal mortality rates increased across the UK in 2021 after 7 years of year-on-year reduction.</p> <p>Stillbirth rates per 1,000 total births in 2021 for the UK were 3.54 and varied between the devolved nations; 3.52 (England); 3.27 (Scotland); 3.88 (Wales); and 4.09 (Northern Ireland).</p> <p>Neonatal mortality rates per 1,000 live births in 2021 for the UK were 1.65 and rose across all of the devolved nations; 1.60 (England); 1.91 (Scotland); 1.70 (Wales); and 2.46 (Northern Ireland).</p> <p><b>See Section 2.3.</b></p> <p>Stabilised &amp; adjusted stillbirth rates in 2021 continued to show greater variation than in the years 2013 to 2019, with only 61.8% of Trusts and Health Boards having a stabilised &amp; adjusted stillbirth rate within 5% of their comparator group average.</p> <p>Stabilised &amp; adjusted neonatal mortality rates continued to show wide variation, with just 38.2% of Trusts and Health Boards falling within 5% of their comparator group average.</p> <p>After the exclusion of deaths due to congenital anomalies, 49.3% of Trusts and Health Boards had a stabilised &amp; adjusted neonatal mortality rate within 5% of their comparator group average.</p> <p><b>See Section 3.2.</b></p>
<p>2. Ensure healthcare providers adopt and use the BAPM Perinatal Optimisation Pathway, to improve preterm outcomes.</p>	<p>Royal Colleges, Commissioners</p>	<p>Preterm births (before 37 completed weeks' gestational age) account for 75% of stillbirths and late fetal losses and 73% of neonatal deaths.</p> <p>The greatest increase in stillbirth rates was in the 28 to 31 completed weeks' gestational age group. The greatest increase in neonatal mortality rates was in the 24 to 27 completed weeks' gestational age group.</p> <p><b>See Sections 4.2 and 4.3.</b></p>
<p>3. Continue to develop and implement targeted action, at national and organisational levels, to support the reduction of direct and indirect health inequalities.</p>	<p>UK Governments, Royal Colleges, Commissioners</p>	<p>In 2021, there were notable increases in stillbirth rates for babies born to mothers from the most deprived areas (from 4.29 per 1,000 total births in 2020 to 4.69 per 1,000 total births in 2021), and for babies of Black ethnicity (from 6.42 per 1,000 total births in 2020 to 7.52 per 1,000 total births in 2021), leading to widening inequalities.</p> <p>In 2021, there were also increases in neonatal mortality rates for babies born to mothers from the most and least deprived areas, and for babies of Black, Asian and White ethnicity, leading to sustained inequalities by both deprivation and ethnicity.</p> <p><b>See Sections 5.3 and 5.4.</b></p>
<p>4. Review perinatal pathology services as a national priority, and ensure equity of access to all modalities of post-mortem examination.</p>	<p>UK Governments, Royal Colleges, Commissioners</p>	<p>There remains a high proportion of stillbirths with an unknown cause of death (33.3%).</p> <p><b>See Section 6.3.</b></p>

# MBRRACE-UK Perinatal Mortality Surveillance

## UK perinatal deaths for births from January to December 2021

### State of the Nation Report

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## 1. Introduction

### 1.1. Report overview

This is the ninth MBRRACE-UK Perinatal Mortality Surveillance Report and the first presented as a concise “State of the Nation” 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 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 [HTML version of this report](#) is also available.

### 1.2. Terminology

In this report 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: 2021

### 2.1. Introduction

Rates of stillbirth, neonatal mortality and extended perinatal mortality are presented for the UK and for each devolved nation for the period 2013 to 2021. 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,

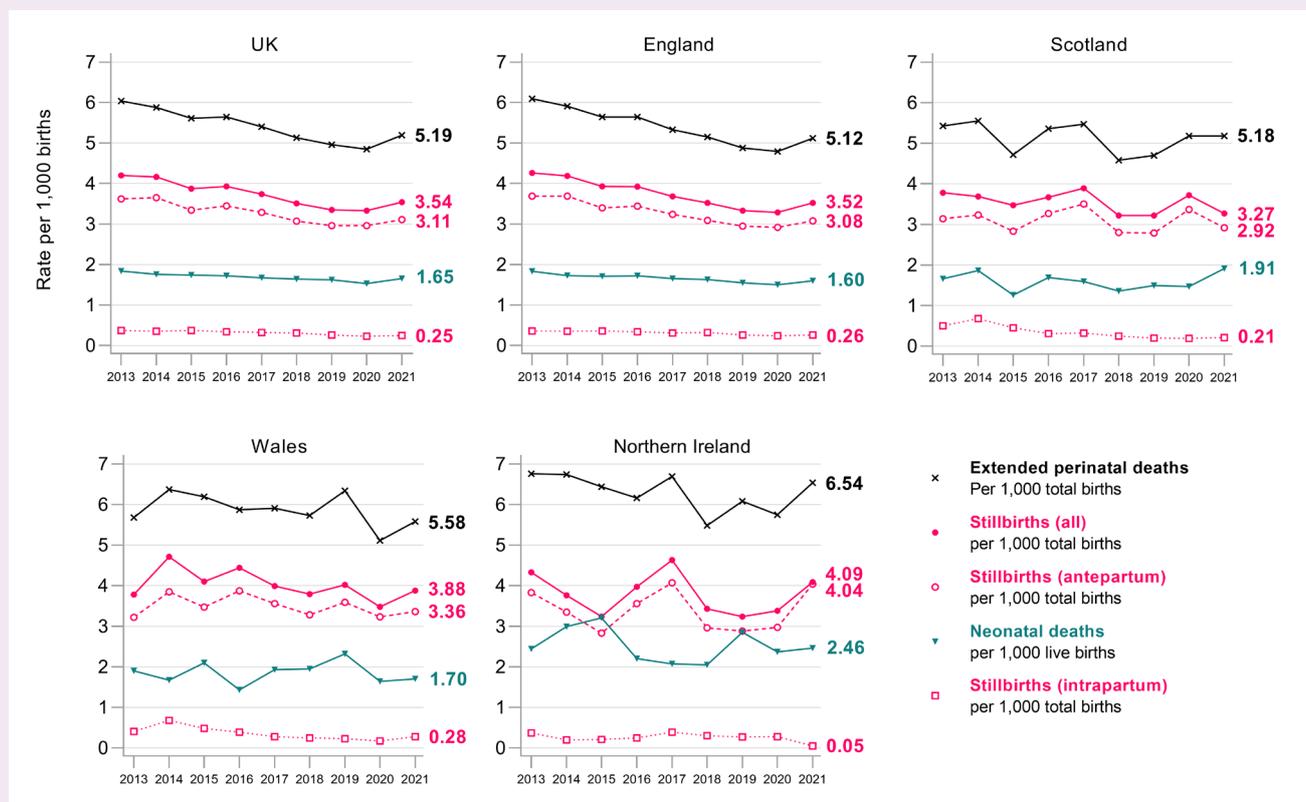
### 2.2. Key messages

- Perinatal mortality rates increased across the UK in 2021 after 7 years of year-on-year reduction.
- Stillbirth rates per 1,000 total births in 2021 for the UK were 3.54 and varied between the devolved nations; 3.52 (England); 3.27 (Scotland); 3.88 (Wales); and 4.09 (Northern Ireland).
- Neonatal mortality rates per 1,000 live births in 2021 for the UK were 1.65 and rose across all of the devolved nations; 1.60 (England); 1.91 (Scotland); 1.70 (Wales); and 2.46 (Northern Ireland).

## 2.3. Perinatal mortality rates across the UK

### ① Perinatal mortality rates increased across the UK in 2021

**Figure 1: Stillbirth, neonatal, and extended perinatal mortality rates by country of residence: United Kingdom, for births from 2013 to 2021**



Description of Figure 1: Line charts showing stillbirth (all, ante-partum and intrapartum), neonatal death and extended perinatal mortality rates for the UK, England, Scotland, Wales and Northern Ireland, from 2013 to 2021. 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. Terminations of pregnancy and births at less than 24 completed weeks' gestational age 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](#).

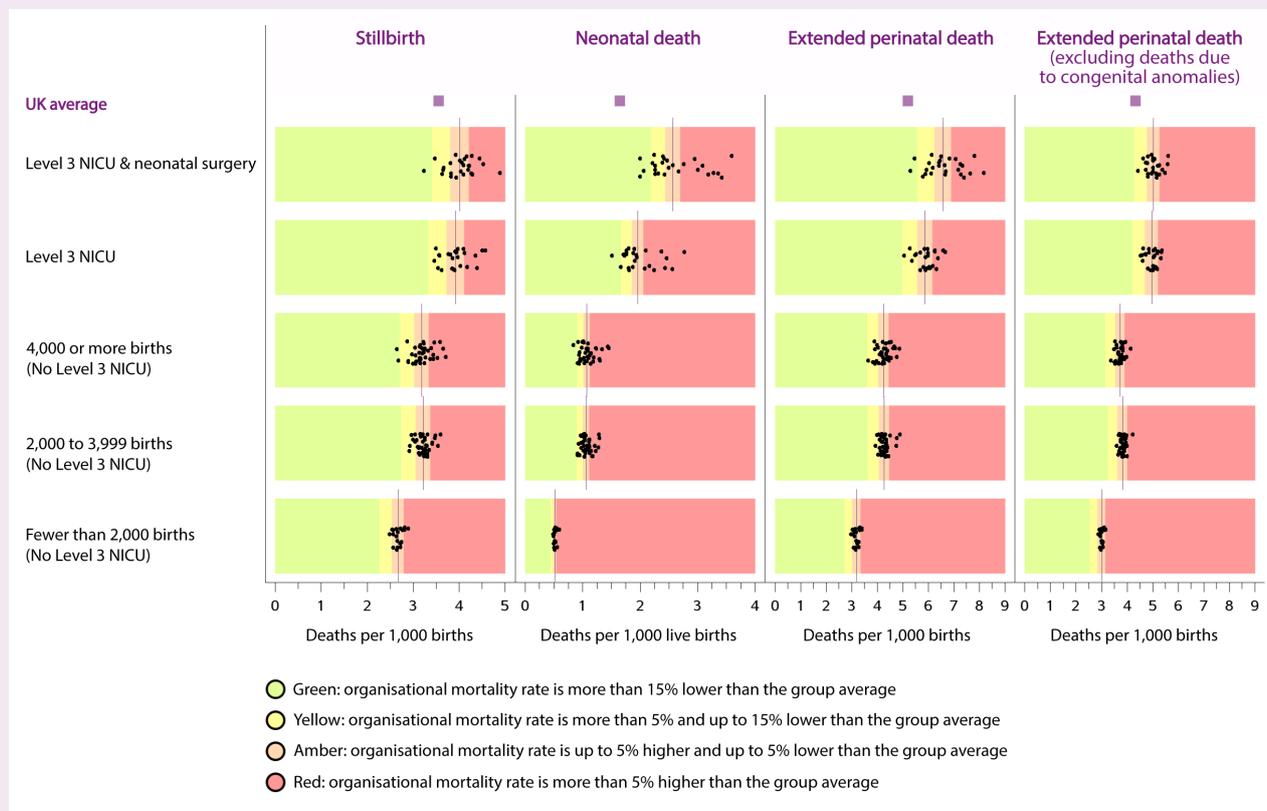
### 3.2. Key messages

- As in 2020, stabilised & adjusted stillbirth rates in 2021 continued to show greater variation than in the years 2013 to 2019, with only 61.8% of Trusts and Health Boards having a stabilised & adjusted stillbirth rate within 5% of their comparator group average.
- Stabilised & adjusted neonatal mortality rates continued to show wide variation, with just 38.2% of Trusts and Health Boards falling within 5% of their comparator group average
- After the exclusion of deaths due to congenital anomalies, 49.3% 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

① There was wide variation in stillbirth and 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 2021**



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 2021. 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. Terminations of pregnancy and births at less than 24 completed weeks' gestational age 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](#).

## 4. Mortality rates by gestational age

### 4.1. Introduction

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

### 4.2. Key messages

- Preterm births (before 37 completed weeks' gestational age) account for 75% of stillbirths and late fetal losses and 73% of neonatal deaths.
- Late fetal loss and stillbirth rates increased in 2021 compared with 2020 for all gestational age groups, except for babies born between 37 and 41 completed weeks' gestational age.
- Neonatal mortality increased in 2021 across all gestational age groups.
- The greatest increase in stillbirth rates was in the 28 to 31 completed weeks' gestational age group. The greatest increase in neonatal mortality rates was in the 24 to 27 completed weeks' gestational age group.

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

① Late fetal loss, stillbirth and neonatal mortality rates increased in almost all gestational age groups between 2020 and 2021.

**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 2016 to 2021**



Description of Figure 3: Combined line and bar charts showing rates and proportions of stillbirths and neonatal deaths for babies born in the UK, 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. Y-axis scales are different for each chart.

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

## 5. Mortality rates by 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.

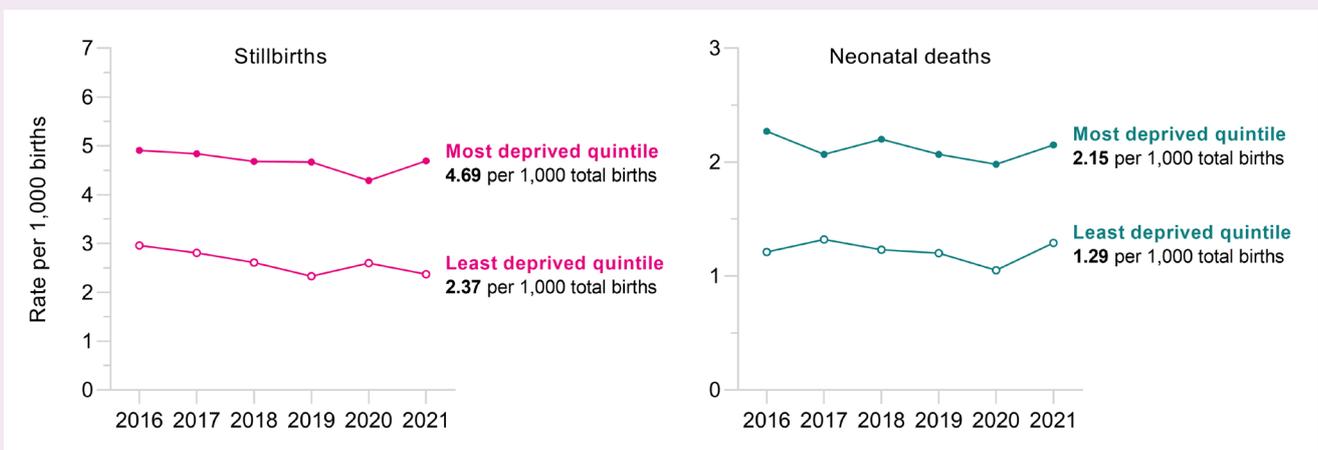
### 5.2. Key messages

- In 2021, there were notable increases in stillbirth rates for babies born to mothers from the most deprived areas (from 4.29 per 1,000 total births in 2020 to 4.69 per 1,000 total births in 2021), and for babies of Black ethnicity (from 6.42 per 1,000 total births in 2020 to 7.52 per 1,000 total births in 2021), leading to widening inequalities.
- In 2021, there were also increases in neonatal mortality rates for babies born to mothers from the most and least deprived areas, and for babies of Black, Asian and White ethnicity, leading to sustained inequalities by both deprivation and ethnicity.

### 5.3. Socio-economic deprivation

① There was a widening of inequalities in stillbirth rates by deprivation between 2020 and 2021.

**Figure 4: Stillbirth and neonatal mortality rates by mothers' socio-economic deprivation quintile of residence: United Kingdom, for births in 2016 to 2021**



Description of Figure 4: Line charts showing stillbirth and neonatal mortality rates by level of socio-economic deprivation. Deprivation is shown by quintile, and the most deprived quintile is compared to the least deprived quintile. Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Terminations of pregnancy and births at less than 24 completed weeks' gestational age are excluded.

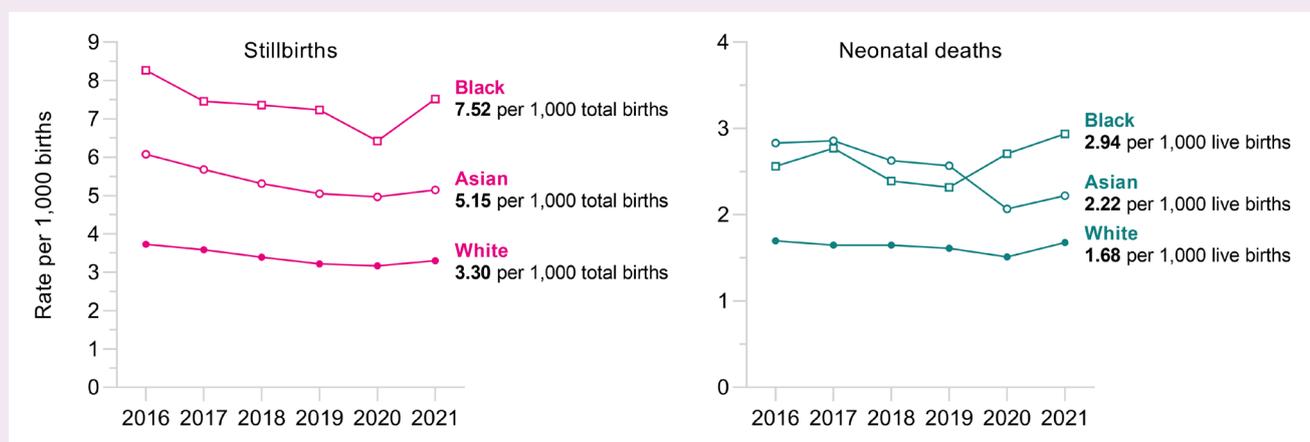
Data sources: MBRRACE-UK, PDS, ONS, NRS, PHS, NIMATS, States of Guernsey, States of Jersey

Socio-economic deprivation is measured using the [Children in Low-Income Families Local Measure](#) based on the mother's postcode of residence at the time of birth.

## 5.4. Ethnicity

① **Wide ethnic inequalities in perinatal mortality continue, but stillbirth and neonatal mortality rates for babies of Black ethnicity increased at a higher rate than for babies of Asian and White ethnicity. Babies of Black ethnicity now have the highest rates of both stillbirth and neonatal death.**

**Figure 5: Stillbirth and neonatal mortality rates by babies' ethnicity: United Kingdom and Crown Dependencies, for births in 2016 to 2021**



Description of Figure 5: Line charts showing stillbirth and neonatal mortality rates by babies' ethnicity. Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Terminations of pregnancy and births at less than 24 completed weeks' gestational age 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](#).

## 5.5. The combined effect of deprivation and ethnicity

Due to considerably higher proportions of babies of Black African, Black Caribbean, Pakistani and Bangladeshi ethnicity being from more deprived areas, they are disproportionately affected by the higher rates of stillbirth and neonatal death associated with deprivation. However, mortality rates for babies of Black and Asian ethnicity remain higher than for babies of White ethnicity across all five deprivation quintiles. A more detailed examination of the relationship between these two factors can be found in the [MBRRACE-UK Perinatal Mortality Surveillance Report for Births in 2020](#).

## 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. The CODAC level 1 and level 2 classification for all stillbirths and neonatal deaths is available in the accompanying [reference tables](#).

### 6.2. Key messages

- The most common causes of stillbirth were placental, congenital anomalies, cord problems, and infection. There remains a high proportion of stillbirths with an unknown cause of death (33.3%).
- The most common causes of neonatal death were congenital anomalies, extreme prematurity, neurological, cardio-respiratory and infection.
- Congenital anomalies continue to contribute significantly to mortality rates, comprising 9.3% of stillbirths and 32.6% of neonatal deaths.

### 6.3. Stillbirth and neonatal mortality rates by cause of death

① The most common causes of stillbirth were placental, congenital anomalies, cord and infection. The most common causes of neonatal death were congenital anomalies, extreme prematurity, neurological, cardio-respiratory and infection.

Figure 6: Highest stillbirth and neonatal mortality rates by CODAC cause of death: United Kingdom and Crown Dependencies, for births in 2016 to 2021



Description of Figure 6: Combined line and bar charts showing the five highest stillbirth and neonatal mortality rates by cause of death, between 2016 and 2021. Cause of death is shown by CODAC level 1. Stillbirths are shown as rates per 1,000 total births. Neonatal deaths are shown as rates per 1,000 live births. Terminations of pregnancy and births at less than 24 completed weeks' gestational age are excluded.

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