Healthier Together
Improving health and care in Bristol, North Somerset and South Gloucestershire

BRISTOL, NORTH SOMERSET AND SOUTH GLOUCESTERSHIRE (BNSSG) MATERNITY HEALTH EQUITY AUDIT (HEA), NOVEMBER 2021

EXECUTIVE SUMMARY

PURPOSE - The aim of this Health Equity Audit (HEA) is to identify mothers and babies living in Bristol, North Somerset and South Gloucestershire (BNSSG) with the poorest pregnancy and birth outcomes, in order to target resources to best meet their needs and reduce health inequalities.

METHODOLOGY - Data related to the demographic characteristics of mothers and babies, maternal risk factors and birth outcomes are analysed, over time, by local authority area and across BNSSG. This is followed by an analysis of the distribution of risk factors and birth outcomes by demographic characteristics to identify groups at greatest risk of poor outcomes.

MAIN FINDINGS

Demographic characteristics

- There has been a general downward trend in the number of livebirths and maternities (mothers giving birth) across BNSSG since 2013 and a gradual increase in maternal age (the average age in 2020 was 31.4 years).
- Over a quarter (25.5%) of all maternities across BNSSG are to women living in the most deprived areas.
- Bristol is the most ethnically diverse in terms of maternities, with 21.5% of maternities being to BAME women.
- Across BNSSG the numbers of teenage pregnancies in 2020 is less than half those seen in 2013 and is slightly below the national average.

Maternal risk factors:

- Late booking for antenatal care, smoking and drinking in pregnancy have reduced across BNSSG since 2013.
- There has been a recent rise in demand for perinatal mental health support across BNSSG, with 17% of maternities referred to a specialist mental health midwife in 2019/20, to 20% in 2020/21. Maternal obesity has also increased across BNSSG.
- Most maternal risk factors (late booking, smoking and drinking) are highest in Bristol and lowest in South Gloucestershire.
- Across BNSSG, the rates of women smoking at the time of booking antenatal care, and at the time of delivery, compare favourably with the national and South West averages.
- The percentage of women with a BMI of 30 or more at booking has gradually increased across BNSSG since 2013, with the greatest increase in South Gloucestershire (from 20.2% in 2013 to 25% in 2020).

Groups most likely to experience maternal risk factors:

- Groups with the highest prevalence of maternal risk factors include women aged between 20-24 years (smoking and late booking), Black women (late booking and BMI ≥ 30), Mixed Ethnicity women (smoking, BMI ≥ 30 and alcohol consumption), White women (smoking and BMI ≥ 30) and women living in deprived areas (all except alcohol consumption).
- Smoking rates are highest amongst women aged under 20, and only show a very modest decrease from time of booking (34.1%) to delivery (31.8%). Women under 20 are also most likely to book late for antenatal care.
- Across BNSSG the percentage of women reporting a weekly intake of one or more units of alcohol is low (1.8%). The highest rates are among women aged 40 years and over (3%), Mixed Ethnicity women (2.4%) and in those living in less deprived areas in Bristol and South Gloucestershire, and in more deprived areas in North Somerset.

Birth outcomes:

- Across BNSSG, caesarean section rates, stillbirths and low birth weight compare favourably to national averages.
- There is a mixed picture regarding birth outcomes over time and by area. Some outcomes have improved over time; stillbirth rates (in Bristol and South Gloucestershire), breastfeeding initiation within 48 hours of birth across BNSSG but particularly in Bristol and South Gloucestershire and infant mortality across BNSSG.

- However, other birth outcomes appear to have worsened; the stillbirth rate in North Somerset has increased but the numbers are small so should be interpreted with caution. Caesarean sections have increased across BNSSG.
- While there has been a slight increase in low birth weight term babies across BNSSG since 2013 and the rates are slightly above the South West average (6.9% compared to 6.5%), they remain below the national average (7.4%).

Groups most likely to experience poor birth outcomes:

- Those most likely to experience poor birth outcomes are women aged under 20 and over 40, Black, Asian and Mixed Ethnicity (BAME) women and women living in deprived areas.
- In terms of age, women in the lower and upper age ranges are most at risk, with women aged under 20 most at risk of premature births, stillbirth and having a low birth weight baby (for all births and term births) and are least likely to initiate breastfeeding. Whereas women over 40 are most at risk of having a caesarean section, a baby with a low APGAR score at birth and admissions to a Neonatal Intensive Care Unit (NICU).
- Black women experience the highest prevalence of poor outcomes relative to women from all other ethnicity groups (most at risk of having a premature baby, low birth weight baby [all births], a baby with a low APGAR score and admissions to NICU). Asian women are the most likely to have a caesarean section and a low birth weight baby (full term births only).
- Women living in the most deprived areas, experience the highest prevalence of poor birth outcomes overall.
- There are some exceptions; breastfeeding initiation rates are significantly higher amongst BAME women compared to White British women (although of these, it is young women in deprived areas who have the lowest rates). Rates of caesarean section births are high amongst women living in some of the least deprived areas (Bristol and South Gloucestershire). The low birth weight rate is also high amongst some of the least deprived areas in South Gloucestershire.

CONCLUSIONS AND NEXT STEPS – Generally exposure to maternal risk factors has reduced across BNSSG over time. However, there is a strong deprivation gradient to maternal risk factors and poor birth outcomes, and significant inequalities exist between different groups. The table below shows risk factors and outcomes that occurred at a higher prevalence for certain demographic groups:

Demographic group	Higher prevalence risk factors	Higher prevalence poor outcomes
Those living in deprived areas	All risk factors[1]	All outcomes except caesarean section
Under 20-year-olds	Smoking, late booking antenatal care	Premature births, stillbirths, low birth weight, low breastfeeding initiation
Over 40-year-old	Alcohol consumption, maternal weight	Caesarean sections, low APGAR score, NICU admission, premature births and low birth weight (all births)
Black women	Late booking antenatal care, maternal weight	Premature births, low birth weight (all births), stillbirths, low APGAR score, NICU admission
Mixed Ethnicity	Smoking, maternal weight, alcohol consumption	Premature births, admissions to NICU
Asian women	None specifically	Caesarean section, low birth weight (term), stillbirths
White British women	Smoking	Low breastfeeding initiation

Next steps will include the development of recommendations to reduce inequalities in risk factors and birth outcomes. This will include more detailed analysis, where required, to fully understand the issues in scope. In addition, efforts will be made to obtain additional data on indicators outside the scope of this HEA[2] and strengthen the quality of existing data, where needed.

[1] Although alcohol consumption is higher in some of the less deprived areas in Bristol and South Gloucestershire. Ethnicity may be a confounding factor here; to be explored further.

[2] These are outlined in the conclusion section

1. MATERNITY HEALTH EQUITY AUDIT

Equity in maternity services means that *all* mothers and babies achieve health outcomes that are as good as the groups with the best outcomes[3]. A Health Equity Audit (HEA) can be used to identify inequalities in health outcomes and the distribution of resources, in order to devise actions to improve health equity.

Maternity services contribute to the health, wellbeing and socioeconomic development of the nation. Good health in pregnancy significantly influences a baby's development in the womb which, in turn, influences long-term health, educational and social outcomes[4].

However, there are persistent inequalities in maternal and infant outcomes between different groups. The aim of this HEA is to identify those women and babies living in Bristol, North Somerset and South Gloucestershire (BNSSG) with the poorest outcomes, in order to target resources to best meet their needs and reduce inequalities.

1.2 NATIONAL CONTEXT

Recent NHS guidance[5] has highlighted the need for Local Maternity Systems (LMS) to refresh their understanding of their local maternal and neonatal population, as part of their local Equality and Equality Action Plan. A maternity needs assessment was last undertaken in BNSSG in 2017 as part of the Local Maternity Transformation Plan[6].

Recent MBRRACE-UK reports[7] on maternal and perinatal mortality show worse outcomes for those from Black, Asian and Mixed Ethnic (BAME) groups and those living in the most deprived areas. This has been exacerbated by COVID-19, with Black women eight times more likely to be admitted to hospital with COVID-19 during pregnancy than White women, and Asian women, four times more likely[8]. As a result, the NHS has set out a key aim to improve equity, in particular, for mothers and babies from BAME groups and those living in the most deprived areas[9].

1.3 LOCAL CONTEXT

The BNSSG region is a large, complex area with both urban and rural populations. Healthier Together[10] is the Integrated Care System (ICS) serving BNSSG and is divided into six Integrated Care Partnerships (ICP). In Bristol, there are three ICPs (Inner City and East, North and West and South); in North Somerset, there are two (Weston and Worle, and Woodspring) and South Gloucestershire is a single ICP area. The total population is 969,256 (465,866 in Bristol, 215,574 in North Somerset and 287,816 in South Gloucestershire)[11].

The BNSSG LMS is comprised of multiple providers and commissioners across the six ICPs. The two maternity providers, North Bristol NHS Trust (NBT) and University Hospitals Bristol and Weston NHS Foundation Trust (UHBW), offer choice, geographical access and a range of birth options. All women in the BNSSG area can access at least one midwife-led setting (either stand-alone or alongside), an obstetric unit, or can request a home birth.
In 2020, there were 5,270 live births reported by NBT (52% of registered births that year) and 4,215 for UHBW (41% of registered births). Of the 10,182 live births registered across BNSSG in 2020, 5,270 (52%) live births were to mothers in Bristol, 1,910 (19%) to mothers in North Somerset and 3,002 (29%) to mothers in South Gloucestershire. The majority of mothers were registered with GP practices in the BNSSG area. However, as a regional centre

[3] NHS England » Equity and equality: Guidance for local maternity systems
[4] NHSE and NHSI (2021). NHS pledges to improve equity for mothers and babies and race equality for staff
[5] NHS England » Equity and equality: Guidance for local maternity systems
[6] NHS England » Maternity Transformation Programme
[7] Nuffield Perinatal Epidemiology Unit (2021). MBBRACE-UK Maternal Report June 2021
[8] M Knight et al (BMJ 2020). Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK: national population-based cohort study
[9] NHS pledges to improve equity for mothers and babies and race equality for staff (england.nhs.uk)
[10] Home - Healthier Together (bnssghealthiertogether.org.uk)
[11] Office NS (2021). Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland

for fetal medicine, specialist obstetrics, neonatal intensive care and inpatient perinatal mental health, the services also provide care for women from further afield.

BNSSG maternity services support women with a wide range of social, cultural and clinical needs. 16% of BNSSG residents live in areas that are amongst the 10% most deprived in England, with the majority of these in Bristol. Bristol also has an ethnically diverse population, with 16% of residents from BAME groups, whereas South Gloucestershire and North Somerset are less diverse, with 5% and 2.7% of residents from BAME groups[12].

1.4 METHODOLOGY

Data was collated from a wide range of sources including the local maternity dataset, birth and death registration data, referral data and service activity dashboards. These are described in more detail in the appendix, along with a fuller explanation of the method of analysis. The choice of demographic characteristics and maternal risk factors was based on those known to have the greatest impact on birth outcomes, as well as the quality and availability of data on these indicators.

Section one outlines the key demographic characteristics of women having babies in BNSSG. Where possible, this is analysed over time (going back to 2013) and by local authority of residence. The characteristics included are births, maternities[13] and the general fertility rate[14], maternal age, multiple births, ethnicity, deprivation and ward of residence.

Section two analyses some of the main maternal risk factors known to potentially influence pregnancy and birth outcomes: late booking for antenatal care (defined as booking after 12 weeks gestation); smoking (at time of booking and delivery); having a BMI of 30 or over at booking; drinking at least one unit of alcohol per week at time of booking and poor mental health. This is followed by an analysis of risk factors by key demographic characteristics (listed above) to identify groups with the highest prevalence of risk factors.

Section three analyses a range of key outcomes at birth: gestation at delivery; low birth weight; type of birth; low APGAR score at birth; admissions to NICU; stillbirths, infant mortality (under 28 days and under one year of age) and breastfeeding initiated at 48 hours. Again, this is followed by an analysis of these outcomes by key demographic characteristics to identify those most at risk of poor outcomes.

Where possible, comparisons are made throughout to national and regional averages[15]. Finally, some conclusions are drawn about particular groups, risk factors and outcomes that may be a priority in terms of reducing inequalities, with recommendations made for next steps and areas for development.

[12] NHS BNSSG CCG (2021), Annual Report 2020/21

[13] 'Maternities' = the specific period of pregnancy and the immediate postnatal phase, related to an individual mother

[14] General fertility rate = No. of livebirths per 1,000

[15] The latest regional and national data available is from 2019, so comparisons have been made against local data from 2019 rather than 2020 (the latest local data available) for a more accurate comparison.

2. SECTION ONE: DEMOGRAPHICS

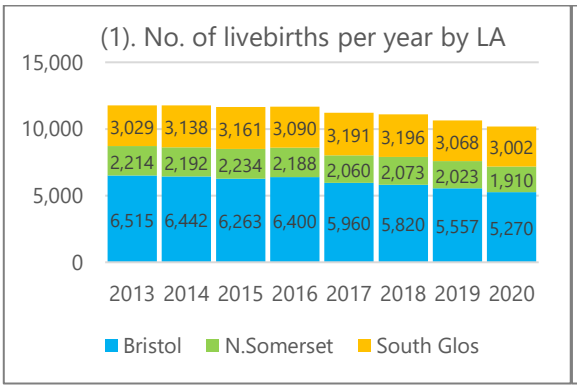
This section outlines the key demographic characteristics of women having babies within BNSSG. Where possible, this is analysed over time (going back to 2013) and by local authority (LA) of residence. The characteristics included are birth, maternity and fertility rates, maternal age, multiple births, ethnicity, deprivation and ward of residence.

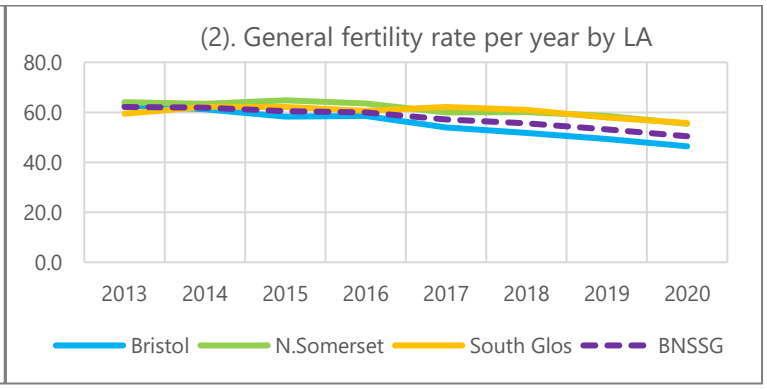
2.1 BIRTH, MATERNITIES AND GENERAL FERTILITY RATE

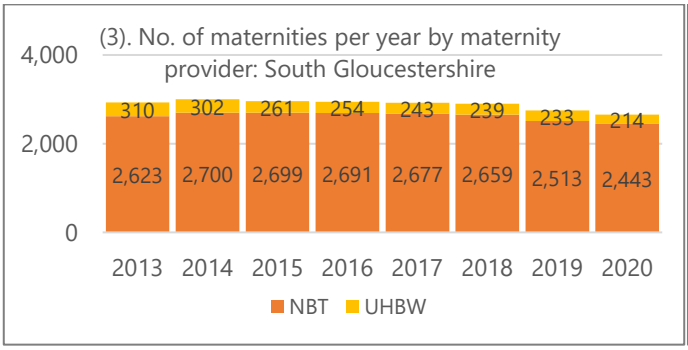
Key findings

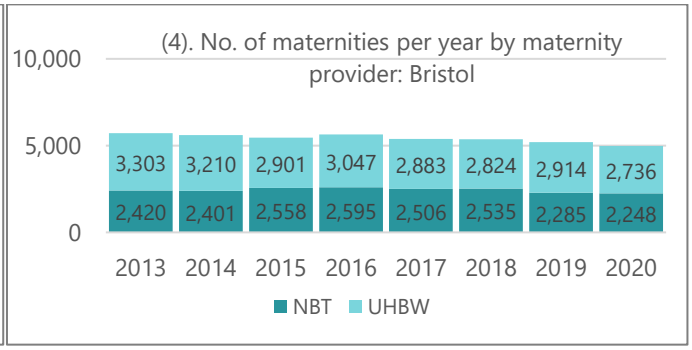
There has been a general downward trend in the number of livebirths, maternities and fertility rates across BNSSG since 2013. The rate of decrease has been steepest in Bristol and North Somerset, since 2016, with the most significant drop in 2020. Of the three areas, Bristol has seen the greatest decrease in the live birth rate, with 19% fewer live births in 2020 compared to 2013.

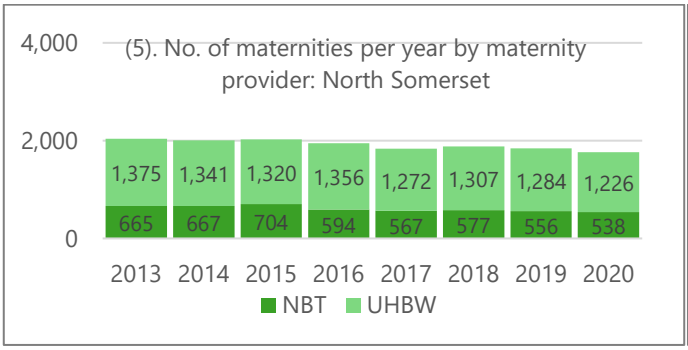
In 2019, the fertility rate across BNSSG (53.2%) was lower than the South West average (54.7%) and significantly lower than the national average (57.7%). In 2020, the BNSSG rate came down even further to 50.4%.

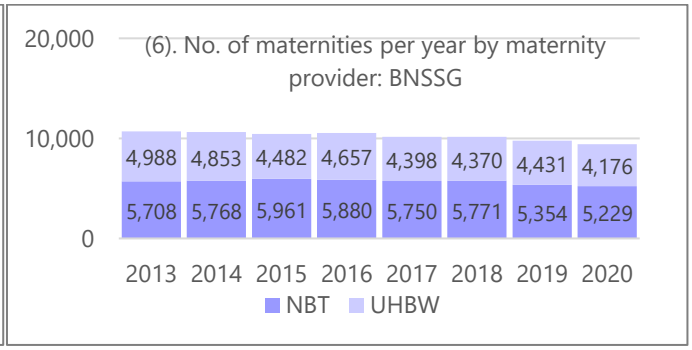












2.2 MATERNAL AGE

Why is this important?

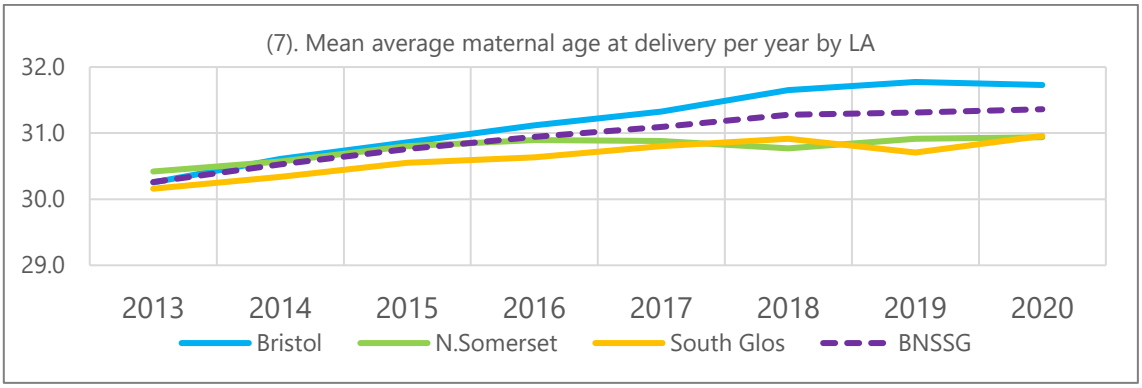
Maternal age plays an important role in a healthy pregnancy and birth, with women at the younger and older ends of the age range generally being at greater risk of complications.

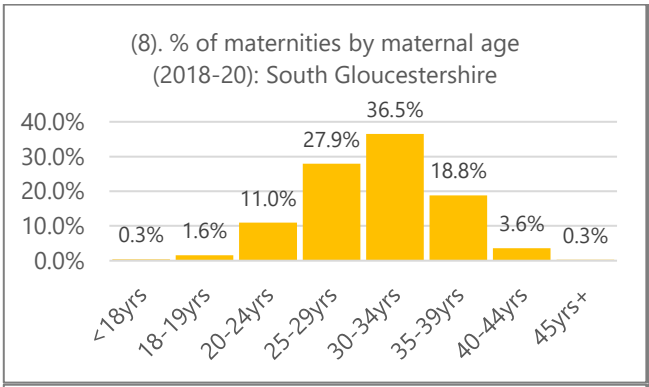
Key findings

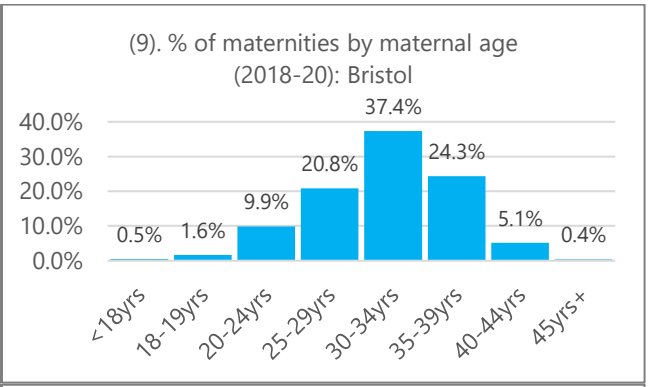
There has been a gradual increase in the average maternal age across BNSSG since 2013, from 30.3 years in 2013 to 31.4 in 2020. The greatest increase has been in Bristol, from 30.3 years in 2013 to 31.7 years in 2020.

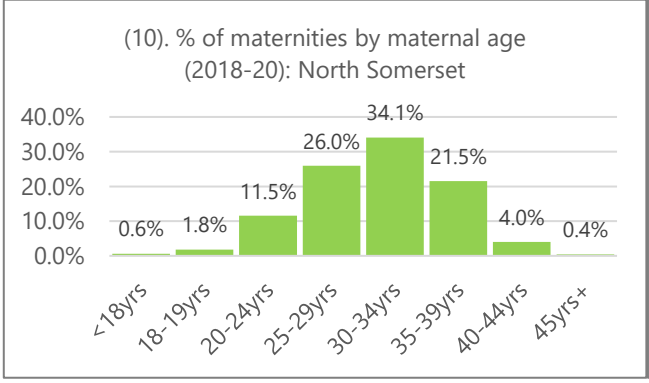
In 2020, the average maternal age was highest in Bristol (31.7 years) followed by South Gloucestershire (31 years) and North Somerset (30.9 years).

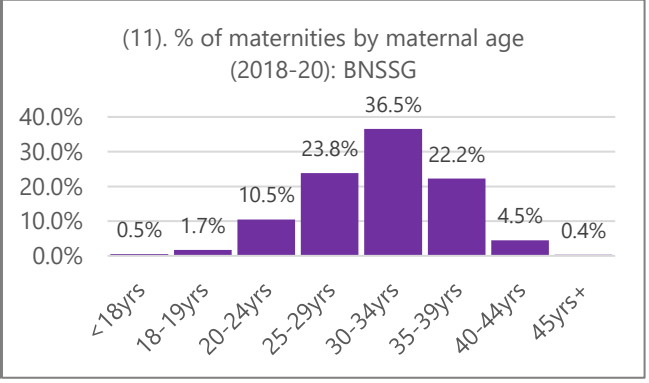
For the period 2018-20, the majority of deliveries in BNSSG were to women aged 30-34-years-old (36.5%), followed by 25-29-year-olds (23.8%) and 35-39-year-olds (22.2%). In total, 82.5% of deliveries were to women aged 25 to 39-years-old, with only 0.5% and 0.4% respectively to women aged below 18 or above 45.











2.3 TEENAGE PREGNANCY[16] [17]

Why is this important?

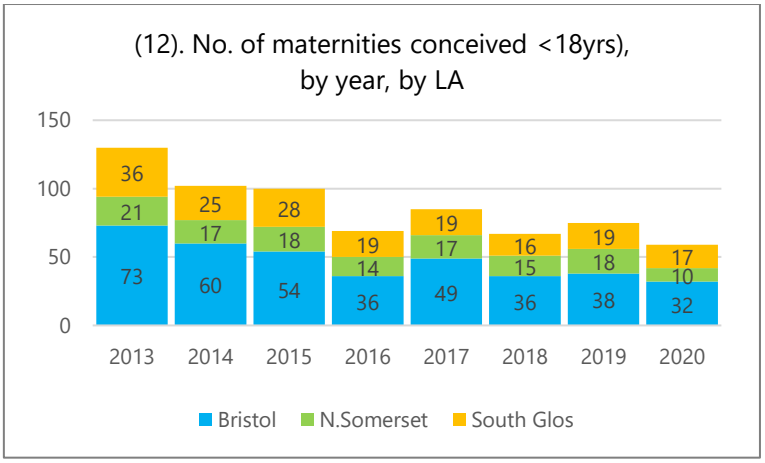
Teenage pregnancy (maternities conceived at under 18-years-old) can be both a cause and a symptom of disadvantage, helping to embed and perpetuate poor health and socio-economic outcomes.

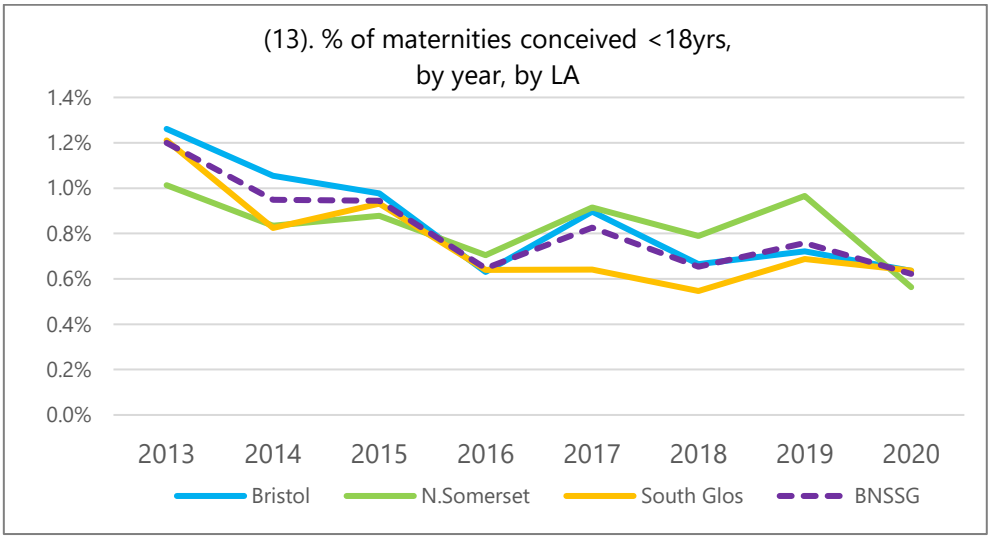
Key findings

There has been a significant decrease in the number and percentage of teenage pregnancies across BNSSG since 2013. The decrease has been greatest in Bristol, from 1.3% in 2013 to 0.6% in 2020.

The numbers of maternities conceived at <18yrs in 2020 are less than half of those seen in 2013 in both Bristol (32 in 2020 vs. 73 in 2013) and BNSSG (59 in 2020 vs. 130 in 2013).

In 2019, the BNSSG rate (0.8%) was slightly higher than the national average (0.6%) and the South West average (0.7%), however the BNSSG rate has since fallen to 0.6% (2020). National and regional rates for 2020 are not yet available for comparison.





[16] JSNA 2020.21 - Teenage Pregnancy (bristol.gov.uk)

[17] The definition used here is 'maternities estimated to have been conceived at under 18-years-old'

2.4 MULTIPLE BIRTHS

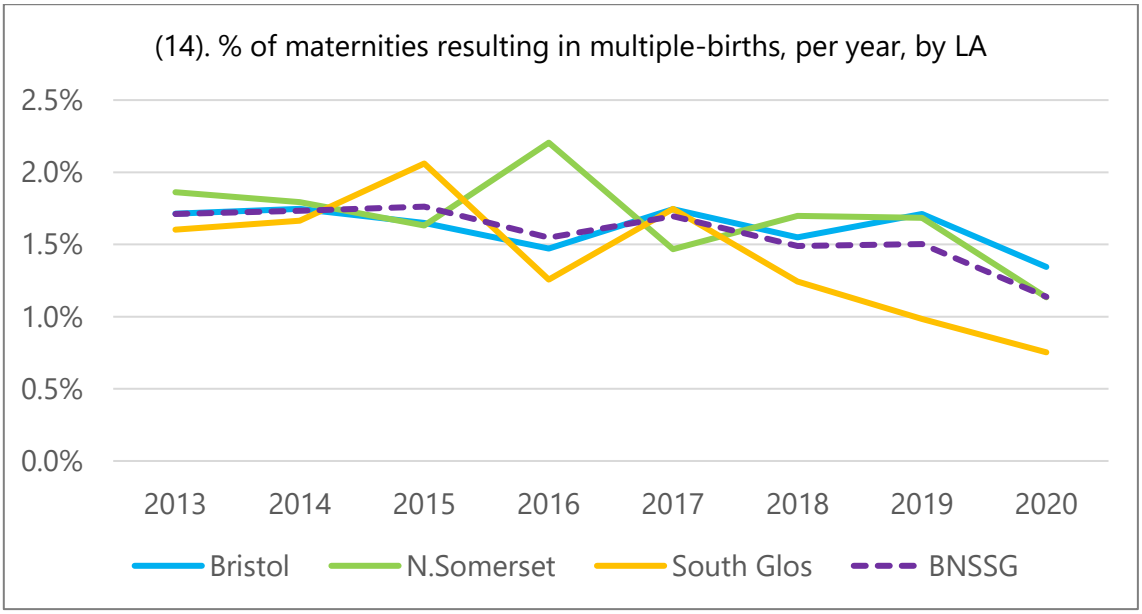
Why is this important?

Having more than one baby increases the risk of pregnancy and birth complications for mother and baby, including miscarriage, pregnancy related high blood pressure, gestational diabetes, caesarean section, premature delivery, low birth weight and longer-term complications.

Key findings

The percentage of maternities resulting in multiple births has declined across BNSSG since 2013, from 1.7% in 2013 to 1.1% in 2020.

North Somerset and South Gloucestershire have seen the biggest decrease in multiple births since 2013 (0.8% compared to Bristol's 0.4%).



2.5 ETHNICITY

Why is this important?

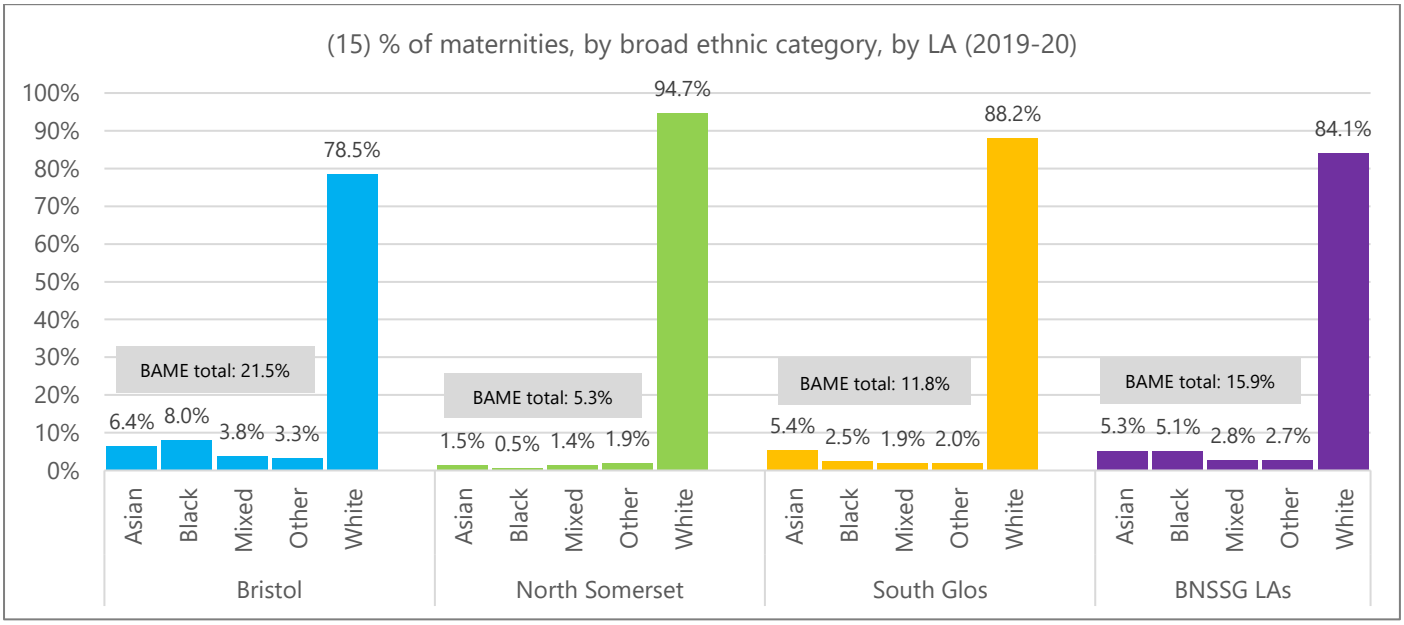
Different ethnic groups experience different pregnancy and birth outcomes, for a wide range of reasons, including physical and genetic factors, cultural practices and beliefs regarding health, and wider socio-economic determinants. There are many studies that document poorer health outcomes associated with being from BAME groups.

Key findings

The vast majority of births across BNSSG are to women from the White ethnic category (78.5% in Bristol, 94.7% in North Somerset, 88.2% in South Gloucestershire and 84.1% across BNSSG in 2020).

Bristol is the most ethnically diverse area in terms of maternities, with 21.5% of maternities being to BAME women. This reflects Bristol's greater ethnic diversity, with 16% of all residents from a BAME group.

North Somerset is the least ethnically diverse in terms of maternities (and overall), with 5.3% of maternities from a BAME group.



2.6 DEPRIVATION[18] [19]

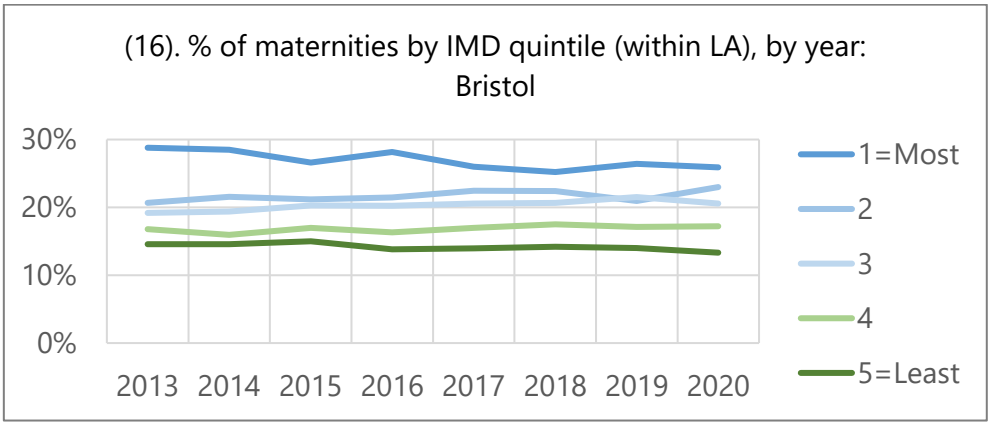
Why is this important?

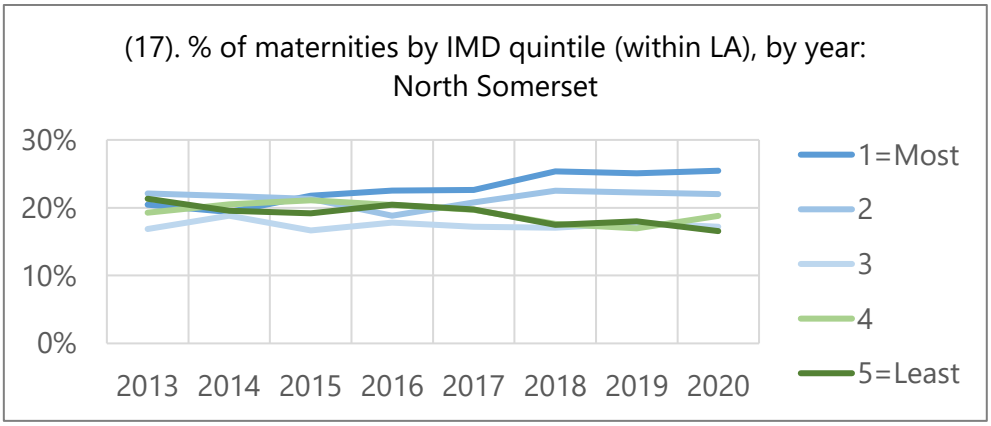
There is a strong association between deprivation and poor pregnancy and birth outcomes, both short and long-term. This indicator is based on the postcode of residence of pregnant woman at the time of delivery, which is allocated an Index of Multiple Deprivation (IMD) score. These scores are then divided into 'quintiles' which are ranked 1-5 (1 = most deprived and 5 = less deprived).

Key findings

Over a quarter of maternities (25.5%) across BNSSG are in the most deprived areas within each local authority, whereas the least deprived areas have the fewest maternities generally.

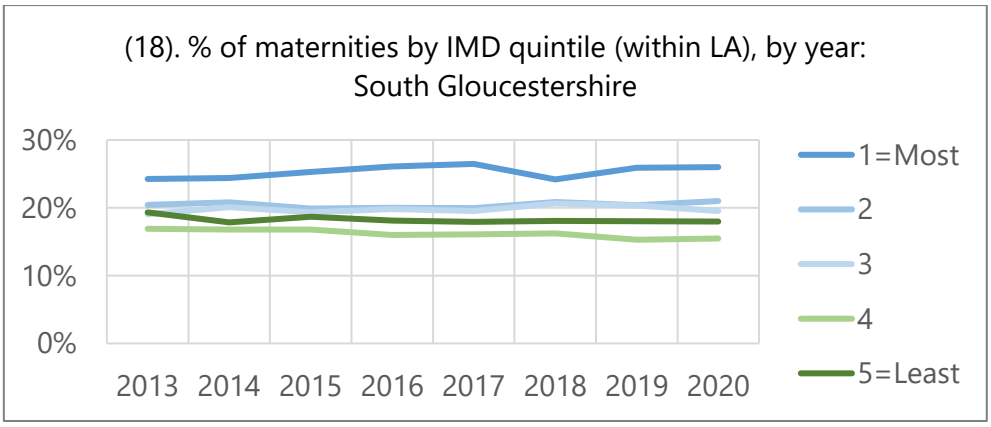
The rates of maternities by deprivation quintile have been very stable over the last eight years across BNSSG. Bristol has seen a slight fall in the percentage of maternities from the most deprived areas, whereas South Gloucestershire has seen a very slight rise. In North Somerset, the gap in the percentage of maternities from the most and least deprived areas has widened over the period, but the numbers are small and should be interpreted with caution.

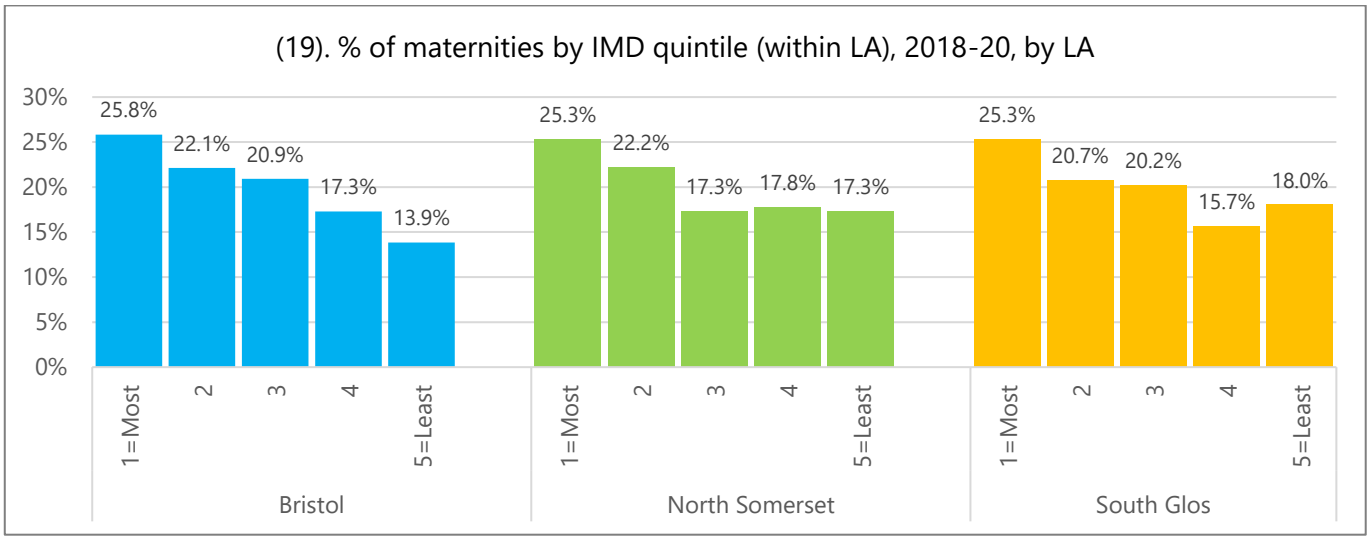




[18] English indices of deprivation 2019 - GOV.UK (www.gov.uk)

[19] The deprivation quintiles are calculated relative to each local authority, and therefore the quintiles are not directly comparable between the different local authorities.


(18). % of maternities by IMD quintile (within LA), by year:
South Gloucestershire
30%
20%
10%
0%
2013
2014
2015
2016
2017
2018
2019
2020
1=Most
2
3
4
5=Least


(19). % of maternities by IMD quintile (within LA), 2018-20, by LA
30%
25%
20%
15%
10%
5%
0%
25.8%
22.1%
20.9%
17.3%
13.9%
25.3%
22.2%
17.3%
17.8%
17.3%
25.3%
20.7%
20.2%
15.7%
18.0%
1=Most
2
3
4
5=Least
Bristol
North Somerset
South Glos

2.7 WARD OF RESIDENCE

Why is this important?

It is helpful to analyse maternities by ward of residence to ensure that there is equity of provision and access on a geographical basis, and where needed, resources can be targeted to areas of greatest need.

Key findings:

In Bristol:

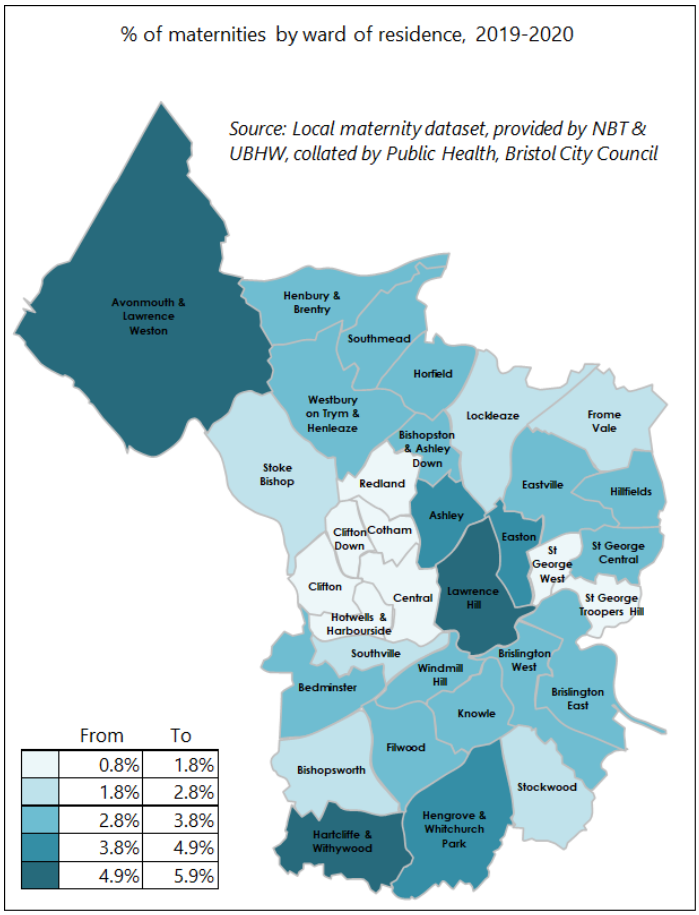
- Lawrence Hill has the highest proportion of maternities amongst the general population (5.9%), followed by Hartcliffe and Withywood (5.6%) and Avonmouth and Lawrence Weston (5.4%). These correspond with areas of higher deprivation and, in the case of Lawrence Hill, greater ethnic diversity.
- Hotwells and Harbourside has the lowest proportion of maternities (0.8%).

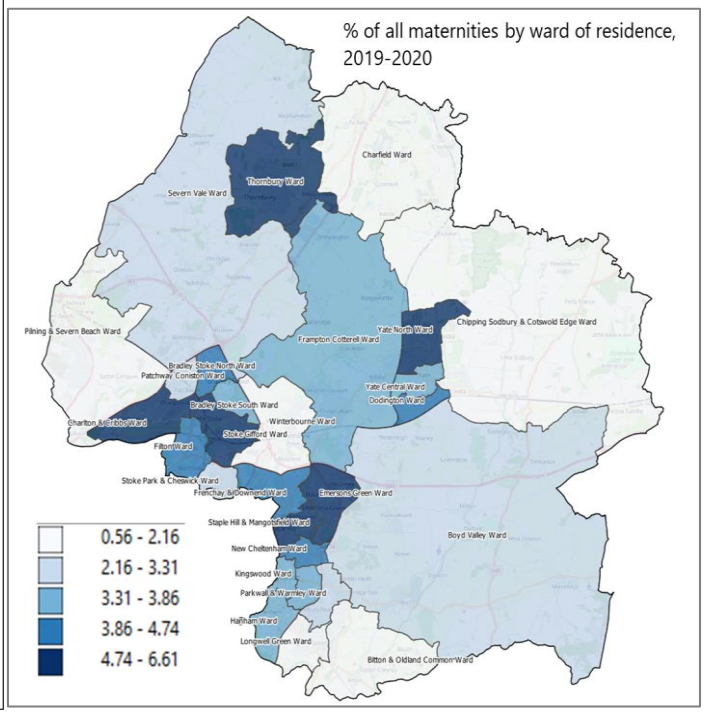
North Somerset:

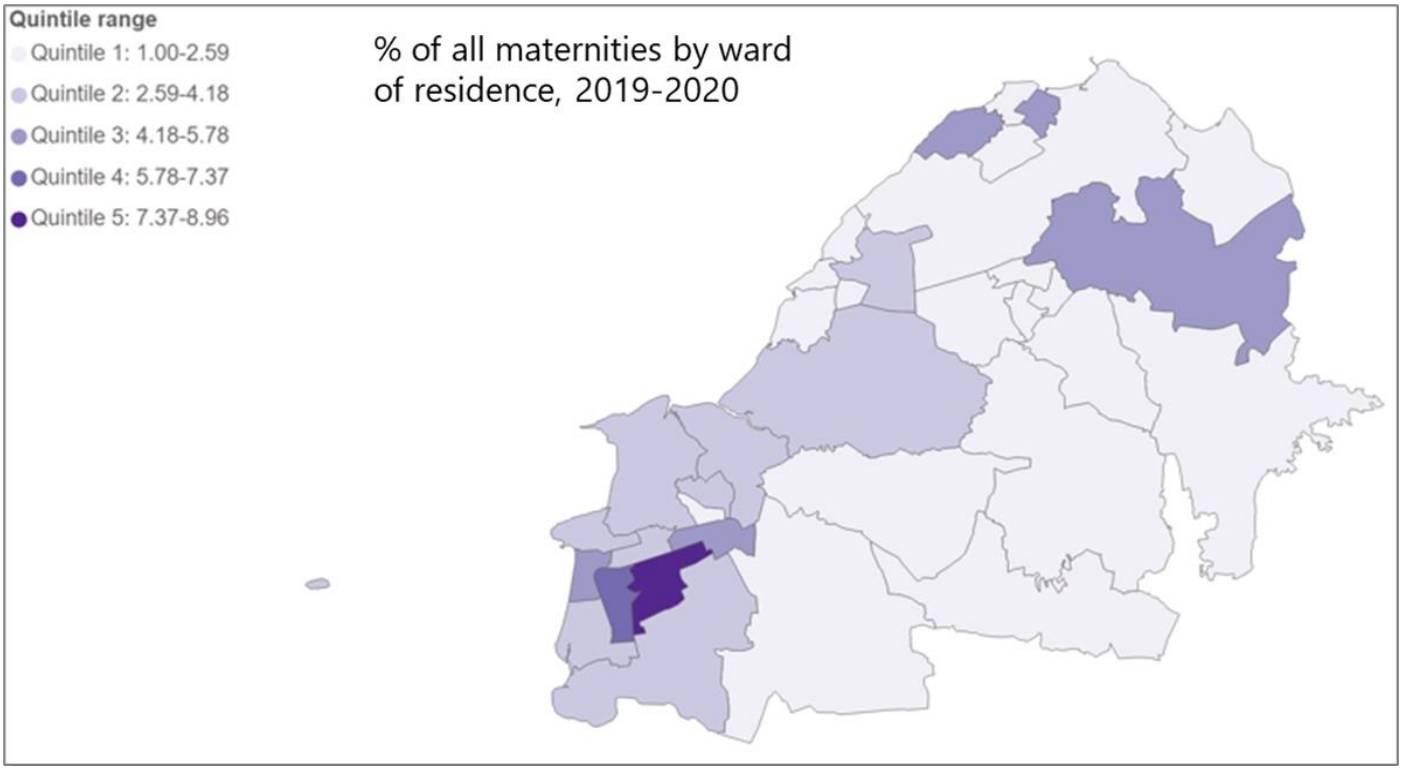
- Weston Super Mare Winterstoke has the highest proportion of maternities (9%) followed by Weston Super Mare South (6.4%) and then jointly, Weston Super Mare South Worle and Portishead East at 5.1%. These areas of Weston-Super-Mare include areas of high deprivation, with a maternal age profile younger than the average for the local authority. Portishead East is a less deprived area, where mothers are typically older than the average for the local authority.
- Nailsea West End has the lowest proportion of maternities (1%).

South Gloucestershire:

- Staple Hill and Mangotsfield (6.6%) has the highest proportion of maternities, followed by Emersons Green (6.3%) and Charlton and Cribbs (5.6%). Staple Hill and Mangotsfield, and Charlton and Cribbs contain some of the most deprived areas in the local authority.
- Charfield has the lowest proportion of maternities (0.6%).







(20-22). Percentage of all maternities by ward of residence (2-year total, 2019 – 2020): Bristol (left), South Gloucestershire (right) and North Somerset (below)

3. SECTION TWO: MATERNAL RISK FACTORS

This section analyses some of the main maternal risk factors known to potentially influence pregnancy and birth outcomes:

1. Late booking for antenatal care (defined as booking after 12 weeks gestation)
2. Smoking (at time of booking and at time of delivery)
3. Having a BMI of 30 or above at time of booking
4. Drinking at least one unit of alcohol per week at time of booking
5. Poor mental health

This is followed by a breakdown of risk factors by key demographic characteristics to identify groups with the highest prevalence of risk factors.

3.1 LATE BOOKING FOR ANTENATAL CARE[20]

Why is this important?

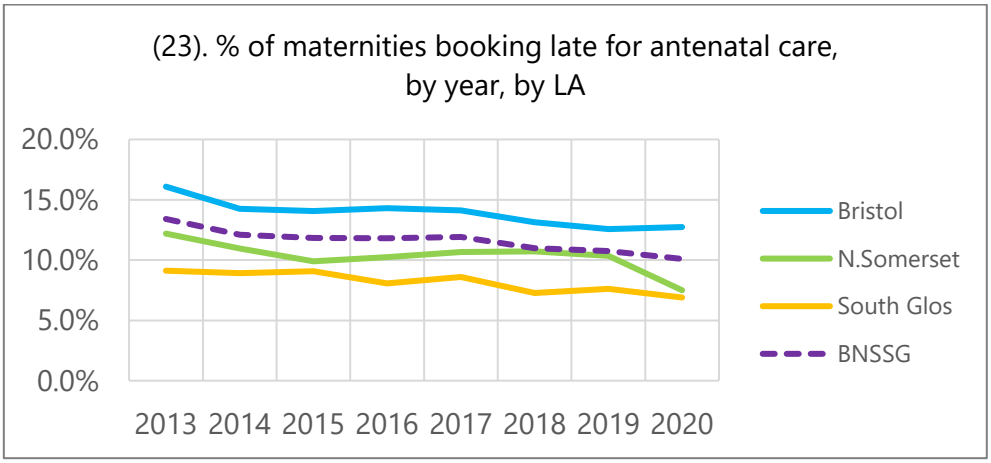
Early booking for antenatal care enables health promotion to commence at the earliest possible opportunity, including swift detection of factors that may have an adverse outcome on pregnancy. Late booking is associated with poor pregnancy and birth outcomes.

Key findings

Bristol has the highest percentage of women booking late for pregnancy (12.7%) and South Gloucestershire the lowest (6.9%). The BNSSG average is 10.1%.

Across BNSSG, the percentage of women booking late for pregnancy (after 12 weeks gestation) has declined gradually over the last eight years, with 3.3% fewer women booking late for pregnancy in 2020 than in 2013.

North Somerset has seen the greatest overall decline, with the percentage of women booking late for pregnancy almost halving over this period, from 12.2% in 2013 to 6.9% in 2020. The sharpest decline was from 2019 to 2020, when the rate fell from 10.7% to 6.9%, after a 5-year period of slightly increasing rates.



[20] Understanding delayed access to antenatal care: a qualitative interview study | BMC Pregnancy and Childbirth | Full Text (biomedcentral.com)

3.2 SMOKING AT TIME OF BOOKING AND DELIVERY[21] [22]

Why is this important?

Smoking is the single biggest modifiable risk factor for poor birth outcomes and a major cause of inequality in child and maternal health outcomes.

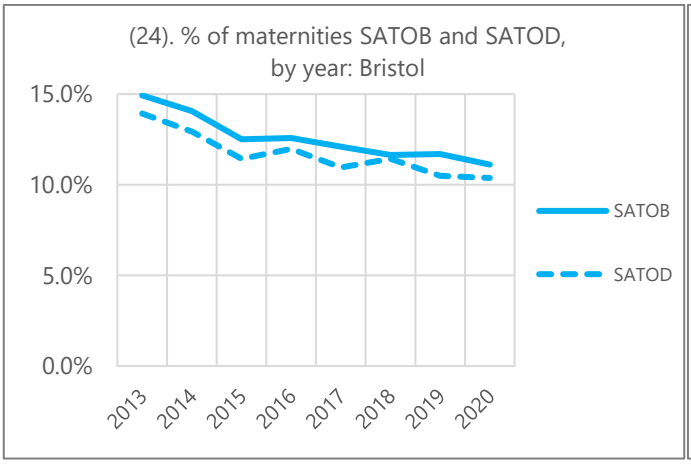
Key findings

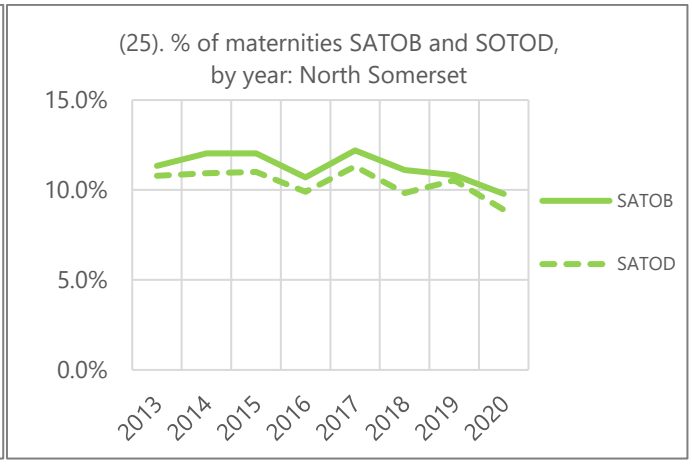
Of the three areas, Bristol has the highest rates of women smoking at the time of booking (SATOB) and delivery (SATOD), at 11.1% and 10.4%. South Gloucestershire has the lowest, at 9.1% and 7.9% (2020).

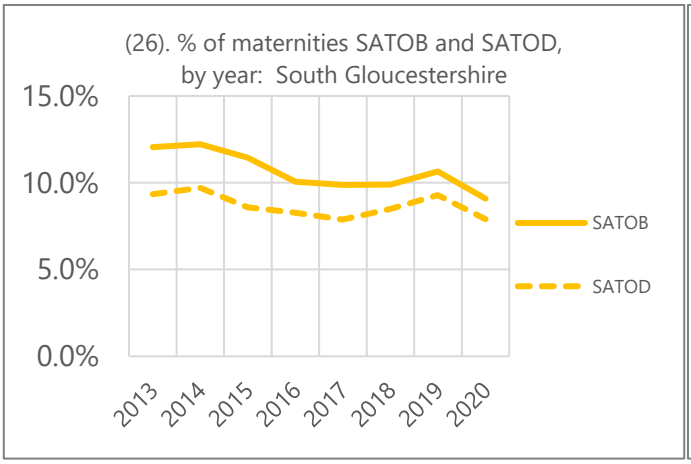
However, the rates across BNSSG have declined steadily since 2013. Bristol has seen the greatest rate of change, beginning the period with 14.9% of women SATOB and 13.9% SATOD and ending with 11.1% SATOB and 10.4% SATOD.

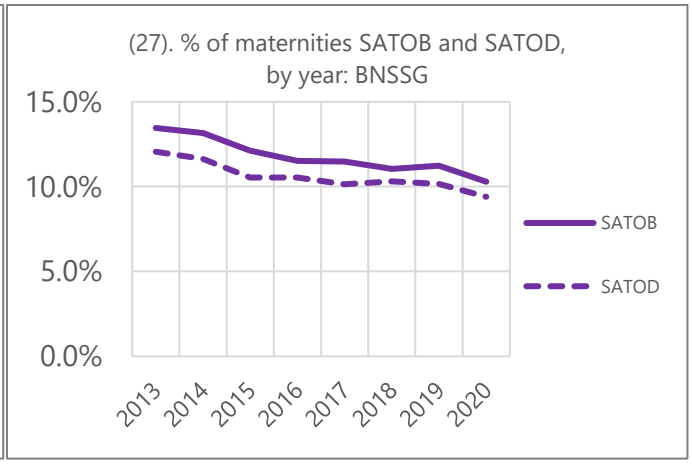
North Somerset has seen the least change, from 11.3% of women SATOB and 10.8% SATOD in 2013 to 9.8% SATOB and 8.9% SATOD in 2020.

The BNSSG rate for SATOB compares favourably with regional and national averages, which were 13.3% (South West) and 12.8% (England) in 2018/19, compared to a BNSSG rate of 11.2% for the same year.









[21] JSNA 2020.21 - Smoking during pregnancy (bristol.gov.uk)
[22] national-maternity-review-report.pdf (england.nhs.uk)

3.3 BODY MASS INDEX (BMI) AT BOOKING[23] [24]

Why is this important?

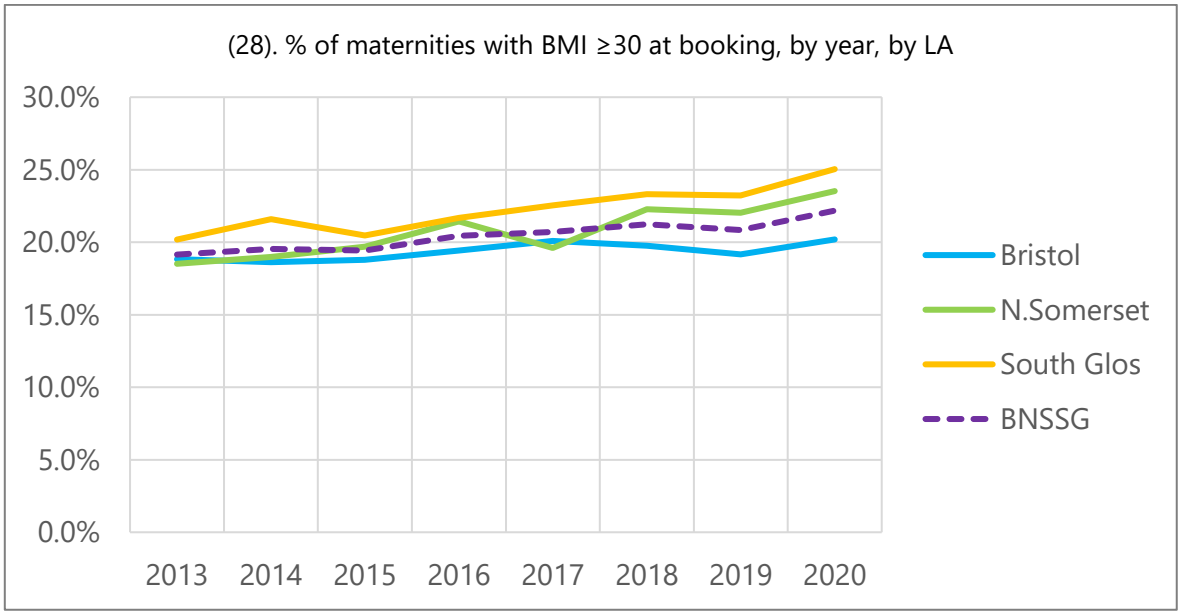
Mothers who are overweight or obese have increased risk of complications during pregnancy and birth including diabetes, thromboembolism, miscarriage and maternal death. Babies born to obese women have a higher risk of foetal death, stillbirth, congenital abnormality, shoulder dystocia, macrosomia and subsequent obesity.

Key findings

The percentage of women booking for maternity care with a BMI of 30 or more has gradually increased across BNSSG since 2013. South Gloucestershire has seen the greatest increase (20.2% to 25%) and Bristol, the least (18.8% to 20.2%).

The national and South West averages were 22.1% and 21% respectively in 2018-19. In the same year, the BNSSG average was 20.8%, however this rate has since increased to 22.2% (2020).

The rate in South Gloucestershire was above the national and regional average for this time period (23.3% in 2019) and has now increased to 25% (2020).



[23] Public Health Outcomes Framework - Data - PHE
[24] Overweight and pregnant - NHS (www.nhs.uk)

3.4 ALCOHOL INTAKE AT BOOKING[25] [26]

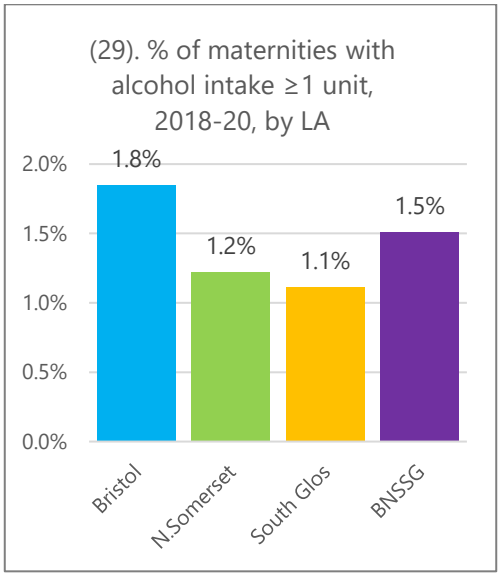
Why is this important?

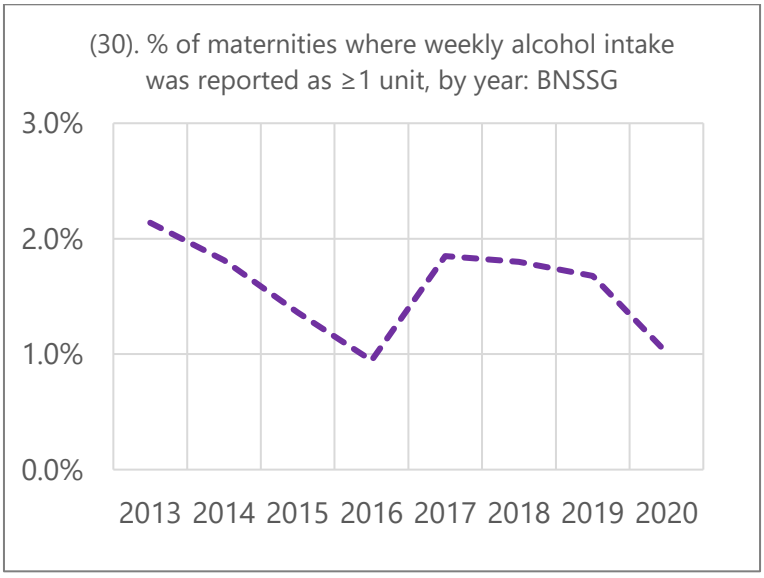
Drinking in pregnancy can affect foetal development and cause birth defects and pregnancy complications, as well as poor long-term outcomes for the baby. The greater the alcohol intake in pregnancy, the higher the risk.

Key findings

Bristol has the highest percentage of maternities reporting alcohol intake of at least 1 unit per week, at 1.8%, and South Gloucestershire has the lowest, at 1.1%. The average across BNSSG is 1.5%. This is for the period 2018-20.

The last eight years has seen an uneven rate of alcohol consumption in pregnancy across BNSSG. The current rate is 1.1% compared to 2.1% in 2013.





[25] Public Health Outcomes Framework - Data - PHE
[26] Drinking alcohol while pregnant - NHS (www.nhs.uk)

3.5 MATERNAL MENTAL HEALTH[27] [28]

Why is this important?

Mental wellbeing of women, babies and families during the perinatal period, is as important as physical health. Up to 20% of women will experience a mental health problem during pregnancy or within the first year after having a baby.

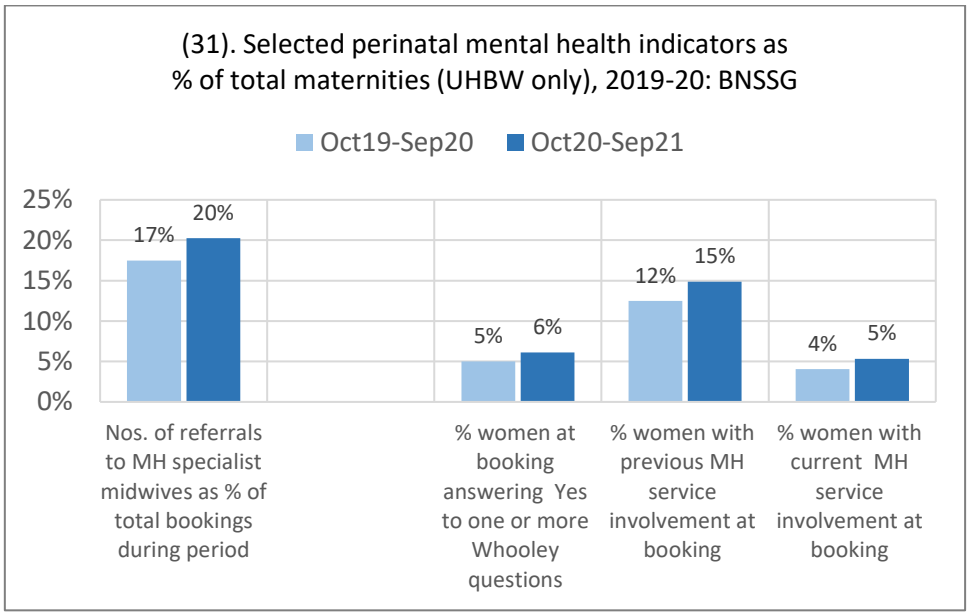
Key findings

Across BNSSG (UHBW only), there has been a recent rise in demand for input from specialist perinatal mental health midwives, with a rise in referrals from 17% of all maternities in 2019/20 to 20% in 2020/21.

In 2020/21, 6% of women answered 'yes' to one or more of the 'Whooley' screening questions for depression compared to 5% in 2019/20.

There has also been a rise in the number of women reporting previous mental health service involvement, from 12% in 2019/20 to 15% in 2020/21, as well as for current mental health service involvement.

However, more data is needed (from NBT and for previous years and other indicators) to understand this indicator better and make firmer conclusions.



[27] national-maternity-review-report.pdf (england.nhs.uk)
[28] Home | Whooley Questions (ucsf.edu)

4. MATERNAL RISK FACTORS ANALYSED BY DEMOGRAPHICS[29] [30]

4.1 MATERNAL RISK FACTORS BY MATERNAL AGE

Key findings

Across BNSSG:

- 30-34 years is the most common age to have a baby (36.5%).
- Under 20-year-olds are most likely to book late for antenatal care (21.8%).
- Under 20-year-olds are most likely to smoke at booking and delivery (34% and 31.8%).
- 20-24-year-olds are most likely to have a BMI of 30 or above (26.6%), closely followed by 25-29-year-olds (25.3%) and over 40-year-olds (25.1%).
- Over 40-year-olds are most likely to drink one or more units of alcohol per week (3%), more than double that of the lowest risk group (under 20-year-olds at 0.7%).

BNSSG	% of all maternities	% of maternities = late bookings	% of maternities = SATOB	% of maternities = SATOD	% of maternities = BMI>30	% of maternities = alc units>1pw
<20yrs	2.1%	21.8%	34.0%	31.8%	17.8%	0.7%
20-24yrs	10.5%	15.7%	26.1%	24.2%	26.6%	0.9%
25-29yrs	23.8%	10.2%	13.9%	12.5%	25.3%	0.9%
30-34yrs	36.5%	9.2%	7.0%	6.3%	18.4%	1.5%
35-39yrs	22.2%	9.7%	5.8%	5.4%	19.3%	2.3%
40yrs+	4.8%	12.2%	5.7%	5.4%	25.1%	3.0%

(32). Maternal risk factors by maternal age, 2018-2020 (grouped): BNSSG

[29] The maternal risk factor and demographic data used in this section is from 2018-20 (grouped).
[30] The tables in this section are colour coded from dark blue (high) to light blue (low).

4.2 MATERNAL RISK FACTORS BY ETHNIC GROUP

Key findings

Across BNSSG:

- Black women are most likely to book late for antenatal care (28%).
- Women of Mixed Ethnicity and White women are most likely to smoke at time of booking (SATOB) and delivery (SATOD) (Mixed Ethnicity: 15.5% SATOB and 14.6% SATOD and White women: 12.4% SATOB and 11.5% SATOD).
- Black women are most likely to have a BMI of 30 or above (34.1%).
- Women of Mixed Ethnicity are most likely to drink at least one unit of alcohol per week (2.4%), followed by White women (1.6%).

BNSSG	% of all maternities	% of maternities = late bookings	% of maternities = SATOB	% of maternities = SATOD	% of maternities = BMI>30	% of maternities = alc units>1pw
Asian	5.2%	14.0%	1.0%	0.8%	17.1%	0.3%
Black	5.1%	28.0%	3.7%	3.3%	34.1%	0.9%
Mixed	2.7%	15.0%	15.5%	14.6%	24.6%	2.4%
Other	2.9%	19.3%	4.4%	3.8%	13.3%	0.7%
White	84.1%	8.3%	12.4%	11.5%	21.6%	1.6%

(33). Maternal risk factors by ethnic group, 2018-2020 (grouped): BNSSG

4.3 MATERNAL RISK FACTORS BY DEPRIVATION

Key findings

In Bristol:

- Women living in the most deprived areas make up the largest group of maternities (25.8%).
- Women living in the most deprived areas are also the most likely to book late for antenatal care (17.9%), smoke at booking (SATOB) and delivery (SATOD) (20.9% and 20%) and have a BMI of 30 or above (29.3%).
- The only indicator where this differs is alcohol intake in pregnancy, which is most common amongst women living in the 3rd most deprived areas (2.3%), closely followed by those living in the least deprived (2.1%).

In North Somerset:

- The picture is the same in North Somerset; women living in the most deprived areas make up the largest group of maternities (25.3%) and are most likely to book late for antenatal care (13.4%), SATOB (22.1%), SATOD (21.5%) and have a BMI of 30 or above (27.9%).
- The only difference with Bristol is alcohol intake in pregnancy, which is most common in the least deprived areas in North Somerset (1.7%).

In South Gloucestershire:

- As with Bristol and North Somerset, women living in the most deprived areas make up the majority of maternities (25.3%) and are most likely to book late for antenatal care (8.8%), SATOB (16.1%), SATOD (14.3%) and have a BMI of 30 or above (29.9%).
- However, in contrast to Bristol and North Somerset, alcohol intake in pregnancy is most common amongst women living in the most deprived areas (1.5%).

Bristol	% of all maternities	% of maternities = late bookings	% of maternities = SATOB	% of maternities = SATOD	% of maternities = BMI>30	% of maternities = alc units>1pw
1=Most deprived	25.8%	17.9%	20.9%	20%	29.3%	1.4%
2	22.1%	12.7%	14.2%	13.5%	22.1%	1.8%
3	20.9%	11.0%	8.9%	8.2%	18.3%	2.3%
4	17.3%	10.5%	4.5%	4.0%	12.3%	1.8%
5=Least deprived	13.9%	9.5%	2.2%	1.6%	9.3%	2.1%

North Somerset	% of all maternities	% of maternities = late bookings	% of maternities = SATOB	% of maternities = SATOD	% of maternities = BMI>30	% of maternities = alc units>1pw
1=Most deprived	25.3%	13.4%	22.1%	21.5%	27.9%	0.8%
2	22.2%	9.3%	9.5%	8.4%	25.5%	1.0%
3	17.3%	8.2%	6.4%	5.4%	19.4%	1.3%
4	17.8%	7.7%	6.8%	5.8%	20.1%	1.5%
5=Least deprived	17.3%	7.6%	3.3%	2.8%	16.8%	1.7%

South Gloucestershire	% of all maternities	% of maternities = late bookings	% of maternities = SATOB	% of maternities = SATOD	% of maternities = BMI>30	% of maternities = alc units>1pw
1=Most deprived	25.3%	8.8%	16.1%	14.3%	29.9%	1.5%
2	20.7%	7.0%	11.5%	10.4%	24.3%	1.2%
3	20.2%	7.8%	7.9%	6.3%	23.5%	0.9%
4	15.7%	6.1%	5.8%	4.4%	19.1%	1.0%
5=Least deprived	18.0%	5.9%	5.0%	4.6%	19.4%	0.8%

(34-36). Maternal risk factors by deprivation quintile, 2018-2020 (grouped): Bristol, North Somerset and South Gloucestershire

4.4 MATERNAL RISK FACTORS BY WARD[31]

Key findings

In Bristol:

- The ward with the highest percentage of late bookings is Central (24.7%) and the ward with lowest percentage is Westbury-on-Trym and Henleaze (5.4%).
- The ward with the highest percentage of maternities smoking at time of booking (SATOB) is Hartcliffe and Withywood (36.1%) and the ward with the lowest percentage is Clifton Down (0%).
- The ward with the highest percentage of smoking at time of delivery (SATOD) is Hartcliffe and Withywood (34.4%) and the wards with lowest percentages are Clifton Down, Hotwells and Harbourside and Redland (all 0%).
- The ward with the highest percentage of maternities with a BMI of 30 or above is Hartcliffe and Withywood (36.6%) and the ward with the lowest percentage is Clifton (3.9%).

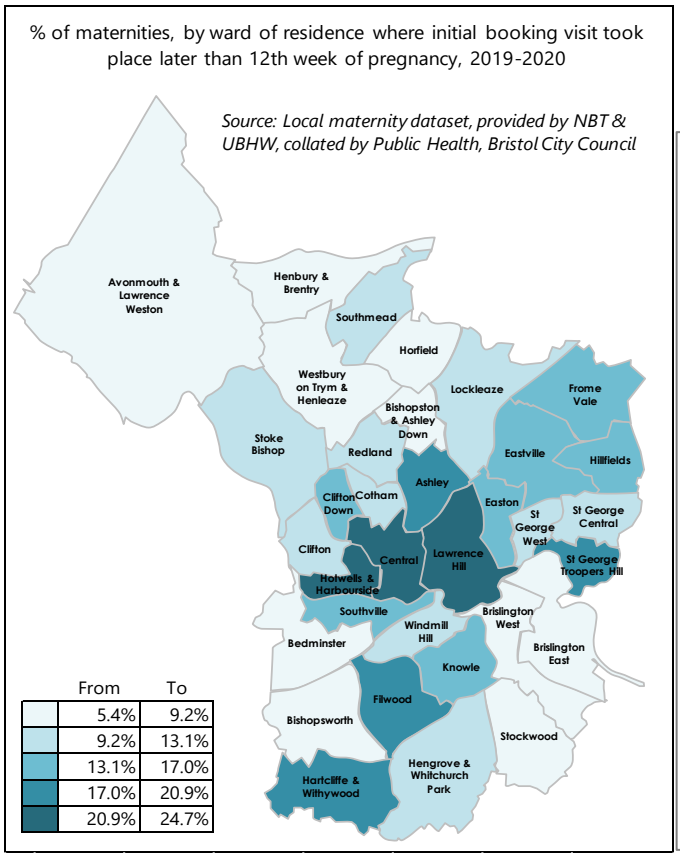
In North Somerset:

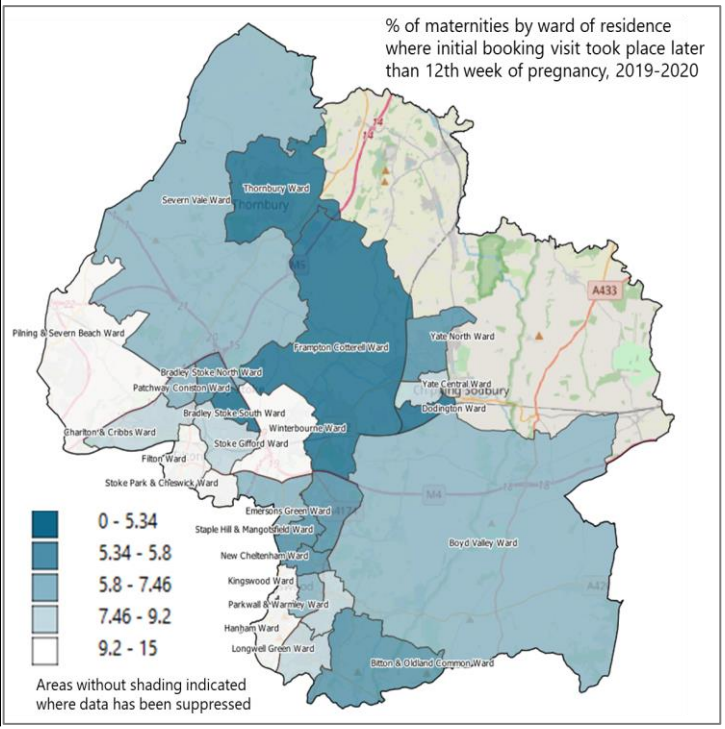
- The ward with the highest percentage of late bookings is Weston-Super-Mare Uphill (17.2%) and the wards with lowest percentages are Clevedon Yeo, Clevedon South, Blagdon and Churchill, Gordano Valley and Nailsea Golden Valley (<5%; data suppressed).
- The ward with the highest percentage of maternities SATOB is Weston-Super-Mare South (32%) and the wards with the lowest percentages are Clevedon Walton and Nailsea Golden Valley (0%).
- The ward with the highest percentage of SATOD is also Weston-Super-Mare South (34.1%) and again, the wards with the lowest percentages are Clevedon Walton and Nailsea Golden Valley (0%).
- The ward with the highest percentage of maternities with a BMI of 30 or above is Weston-Super-Mare South (32%) and the ward with the lowest percentage is Long Ashton (6.6%).

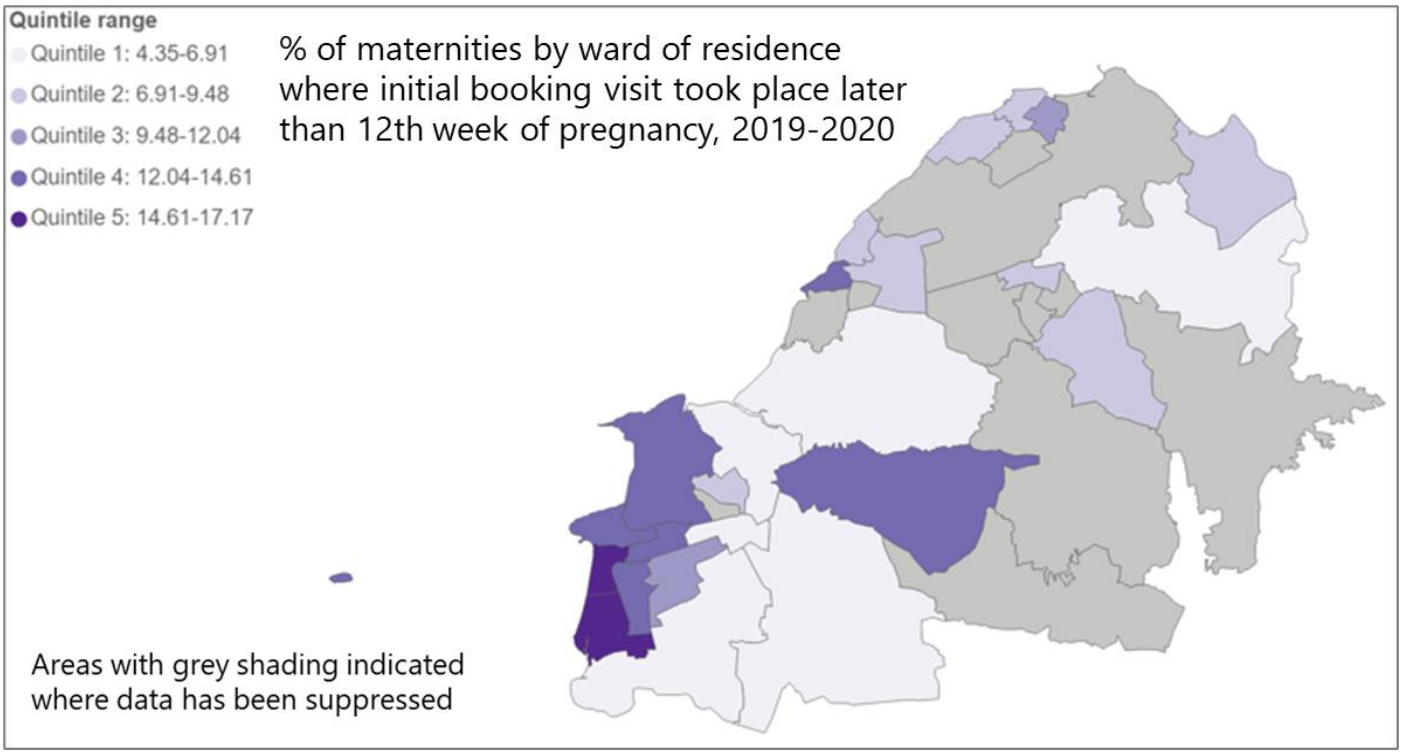
In South Gloucestershire (2020):

- The ward with the highest percentage of late bookings is Winterbourne (15%) and the ward with the lowest percentage is Chipping Sodbury and Cotswold Edge (<5%; data supressed).
- The ward with the highest percentage of late bookings is Winterbourne (15%) and the wards with the lowest percentages are Charfield, and Chipping Sodbury and Cotswold Edge (<5%; data suppressed).
- The ward with the highest percentage of maternities SATOB is Pilning and Severn Beach (18.3%) and the ward with the lowest percentage is Charfield (<5%; data suppressed).
- The ward with the highest percentage of SATOD is New Cheltenham (14.7%) and the ward with the lowest percentage is Charfield and Winterbourne (<5%; data suppressed).
- The ward with the highest percentage of maternities with BMI of 30 or above is New Cheltenham (34.4%) and the ward with the lowest percentage is Severn Vale (14.5%).

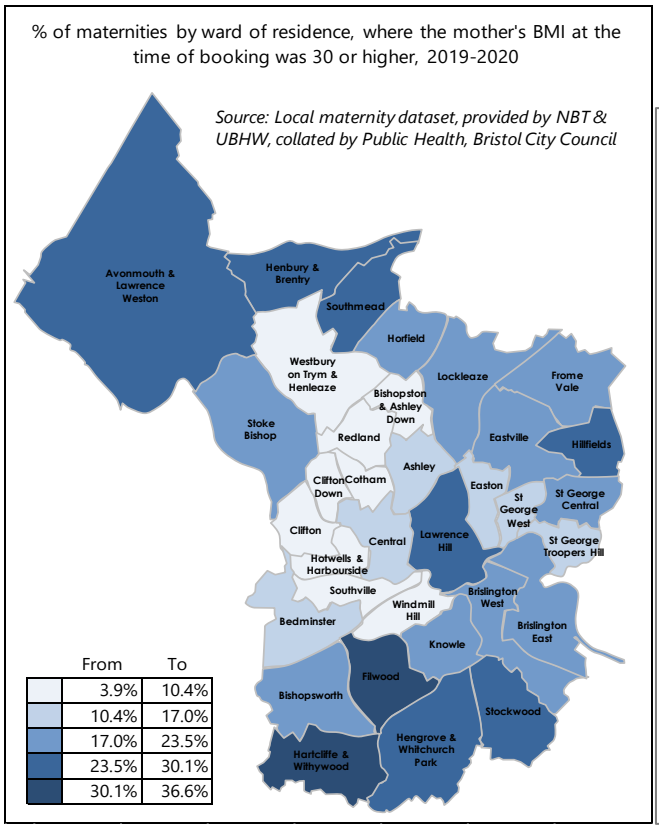
[31] <5%; data supressed = where data has been supressed due to very small numbers to prevent disclosure.

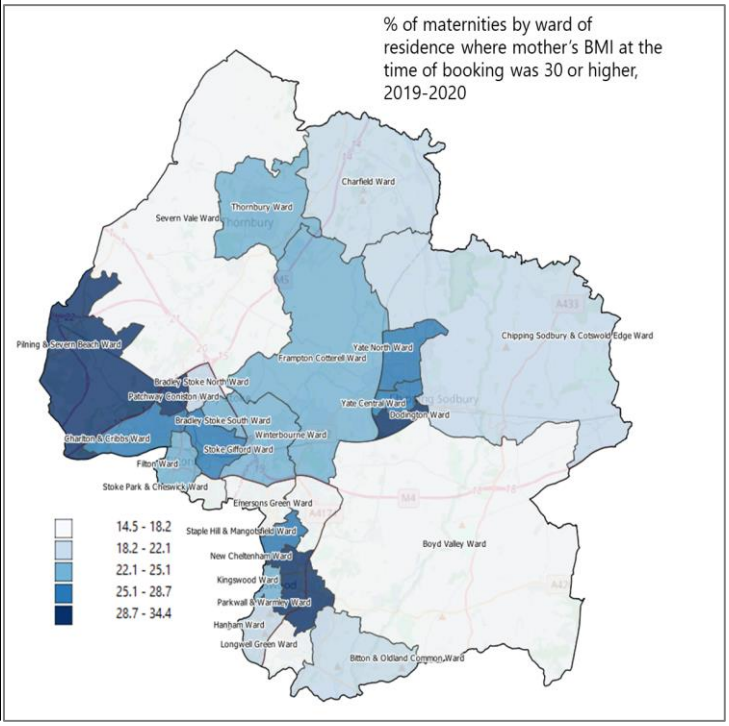


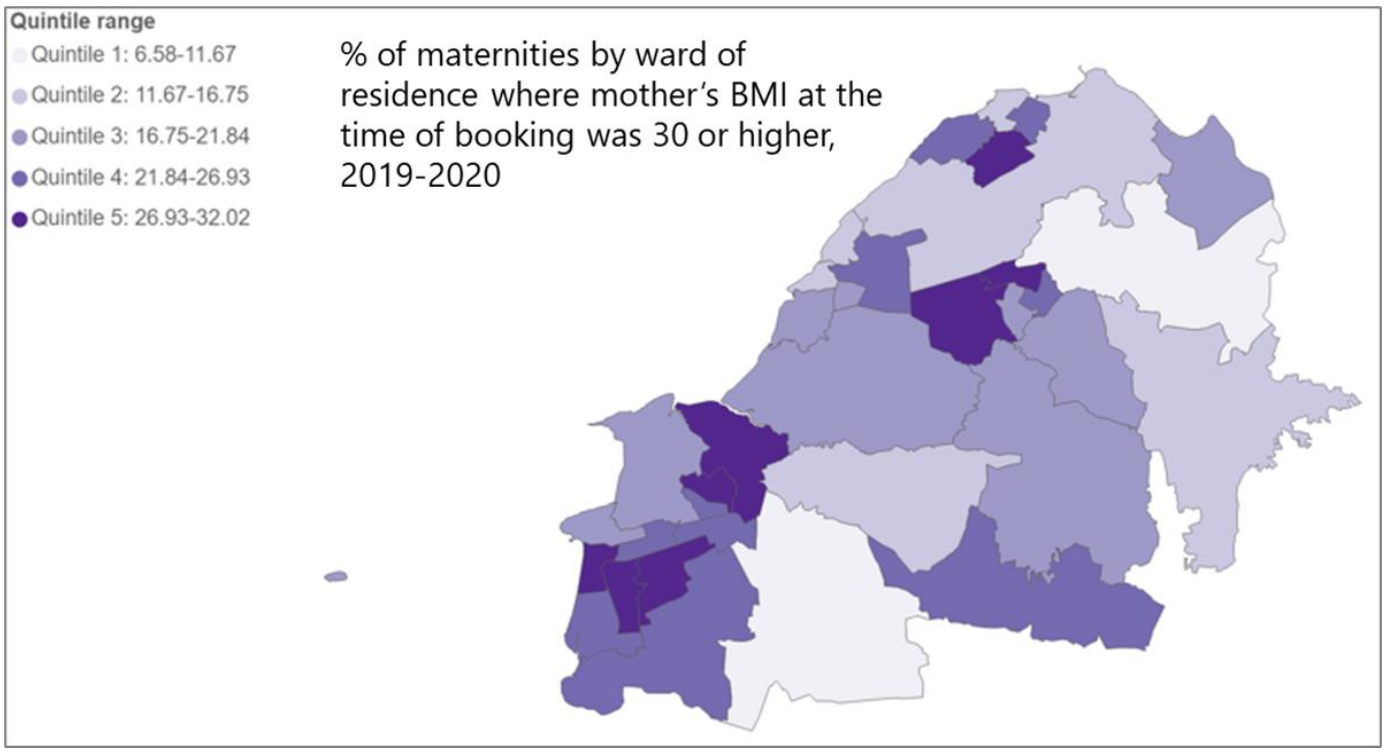




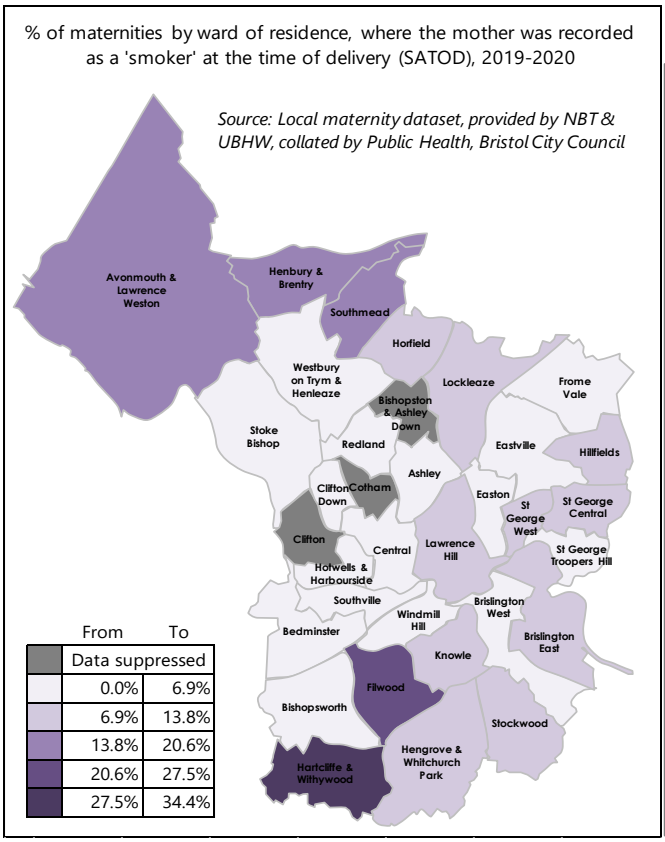
(37-39). Percentage of maternities by ward of residence where booking visit took place later than 12th week of pregnancy (2019/20): Bristol (left), South Gloucestershire (right), North Somerset (below)

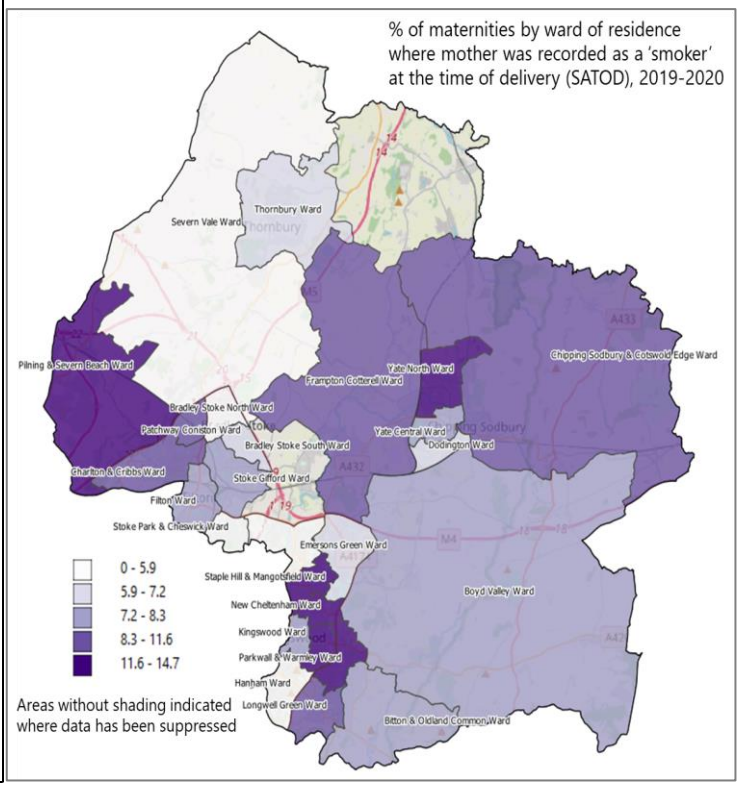


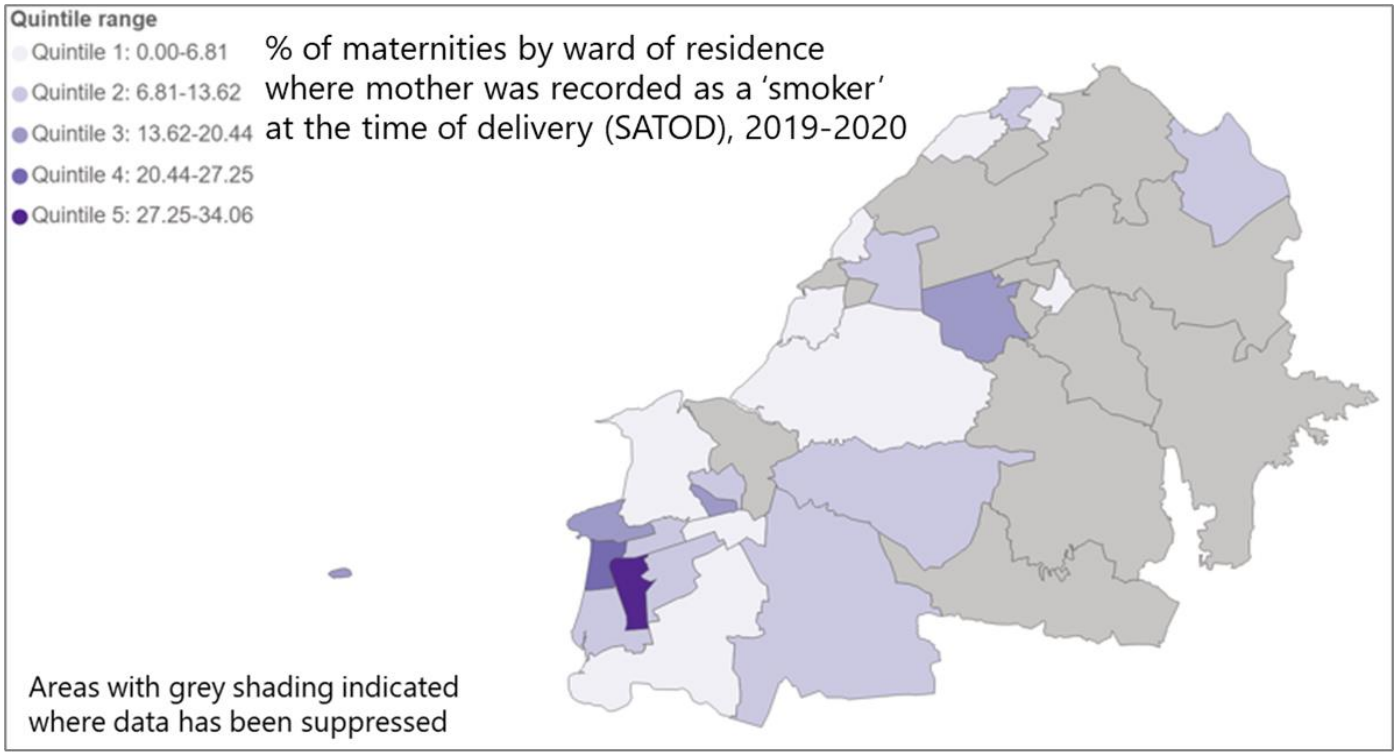




(40-42). Percentage of maternities by ward of residence where mother's BMI was 30 or higher at time of booking (2019/20): Bristol (left), South Gloucestershire (right), North Somerset (below)







(43-45). Percentage of maternities by ward of residence where mother was recorded as a 'smoker' at time of delivery (2019/20): Bristol (left), South Gloucestershire (right), North Somerset (below)

5. SECTION THREE: BIRTH OUTCOMES

This section analyses a range of key outcomes at birth:

1. Gestation at delivery
2. Low birth weight
3. Type of birth
4. Low APGAR score
5. Admissions to Neonatal Intensive Care Unit (NICU)
6. Stillbirths
7. Infant mortality (under 28 days and under one year of age)
8. Breastfeeding initiated at 48 hours

This is followed by a breakdown of these outcomes by key demographic characteristics to identify mothers and babies at greatest risk of poor outcomes.

5.1 GESTATION AT DELIVERY [32]

Why is this important?

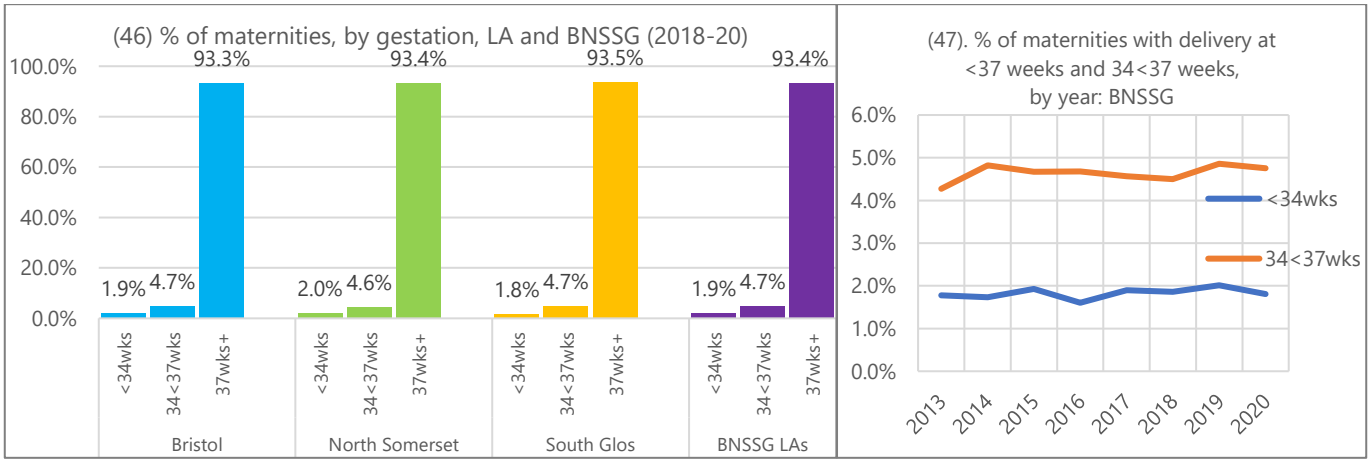
Preterm birth is the single biggest cause of neonatal mortality and morbidity in the UK. Babies born preterm have high rates of neonatal and infant mortality, while babies who survive preterm birth have increased rates of disability. The major long-term consequence of prematurity is neurodevelopmental disability. Generally, the earlier a baby is born, the higher the risk of mortality and morbidity.

Key findings

Across BNSSG in 2020, 93.4% of births are full term, 4.8% occur at 34-37 weeks gestation and 1.8% occur at less than 34 weeks. There is little variation between the local authorities.

The percentage of deliveries at less than 34 weeks was the same in 2020 as in 2013 (1.8%), while the percentage of deliveries at 34-37 weeks has increased slightly from 4.3% in 2013 to 4.8% in 2020.

The greatest increase in deliveries at less than 34 weeks has been in North Somerset (1.4%, 2013 to 1.9%, 2020). The greatest increase in deliveries at 34-37 weeks has been in South Gloucestershire (3.4%, 2013 to 5%, 2020). However, the numbers are small and should be interpreted with caution.



[32] Context | Preterm labour and birth | Guidance | NICE

5.2 LOW BIRTH WEIGHT [33]

Why is this important?

Low birth weight is a major cause of infant mortality and morbidity. It is also associated with health problems in adulthood such as neuro-cognitive and pulmonary morbidity and other long-term health difficulties, including deficits in growth, cognitive development, diabetes and heart disease.

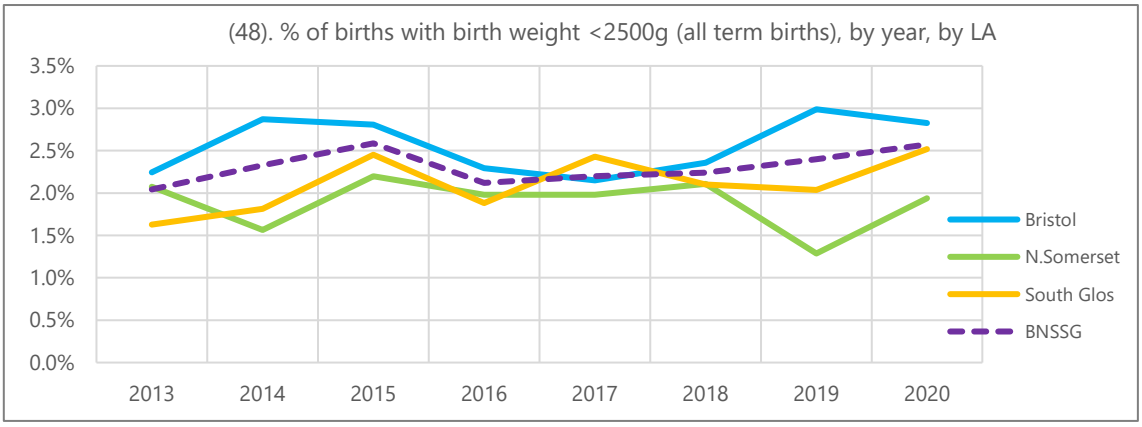
Key findings

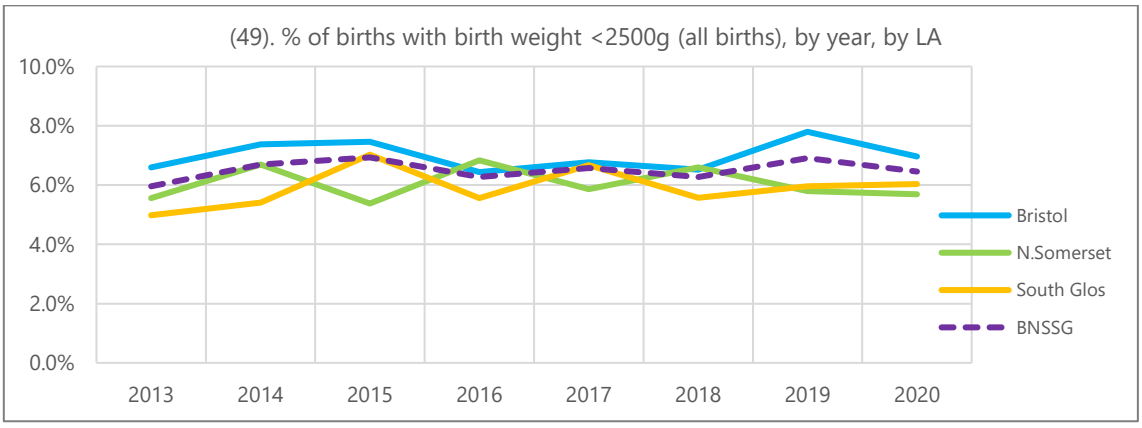
2.6% of all babies born at term had a low birth weight across BNSSG in 2020. The highest percentage was in Bristol (2.8%), followed by South Gloucestershire (2.5%) and North Somerset (1.9%).

In 2019, the percentage of low birth weight term babies in BNSSG (2.4%) was lower than the regional (2.6%) and national (2.9%) averages.

6.5% of *all* babies, including those born prematurely, had a low birth weight across BNSSG in 2020. The highest percentage was in Bristol (7%) followed by South Gloucestershire (6%) and North Somerset (5.7%).

In 2019, the BNSSG rate (6.9%) was slightly higher than the regional average for the same period (6.5%) but below the national average (7.4%).





[33] JSNA 2020.21 - Low birth weight (bristol.gov.uk)

5.3 TYPE OF BIRTH[34]

Why is this important?

A 'normal delivery' is defined as 'birth without surgical intervention, use of instruments, induction, epidural or general anaesthetic'. Nationally, there is an aim to 'promote the normality of childbirth' as a 'normal' delivery does not expose the woman or baby to the risks of general anaesthesia, surgery and other interventions.

Key findings

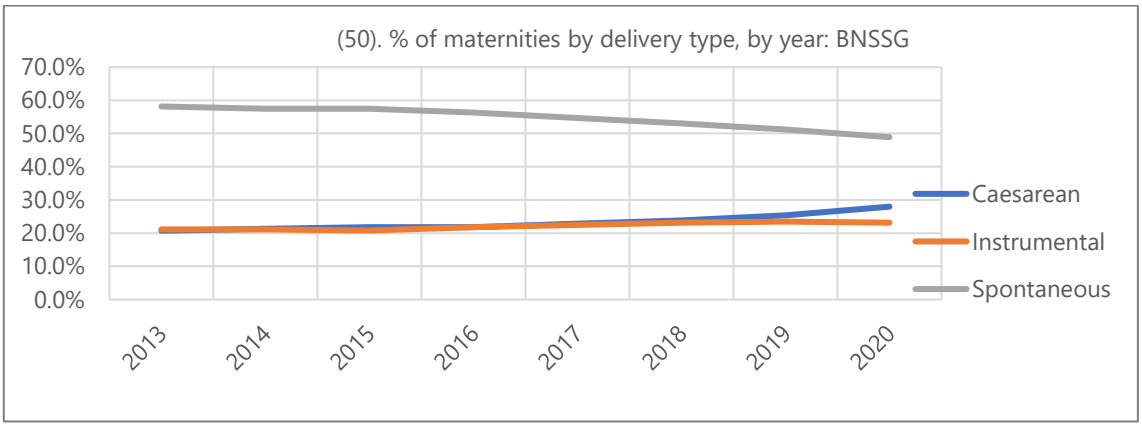
Across BNSSG, caesarean section births have increased from 20.7% in 2013 to 28% in 2020. The greatest rate of increase was from 2019 to 2020. The greatest increase in caesarean sections has been in South Gloucestershire, which saw a 10.9% increase from 2013 to 2020, followed by Bristol (6.6%) and North Somerset (3.4%).

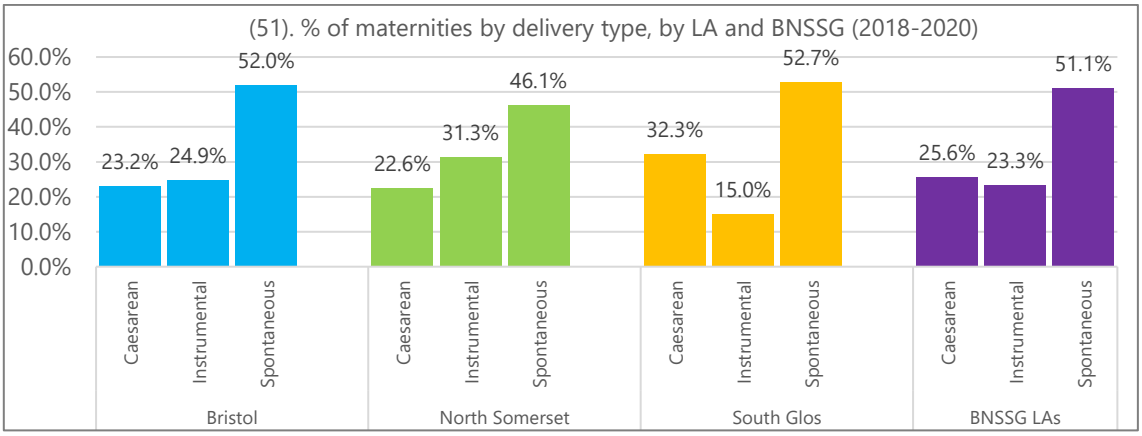
In 2019, caesarean section rates in BNSSG (25.3%) were lower the national (30.1%) and South West (28.9%) average.

There was a small increase (2%) in instrumental deliveries across BNSSG from 2013 to 2020, while spontaneous births fell from 58.1% (2013) to 48.9% (2020).

Current rates for instrumental deliveries are 30.3% in North Somerset, compared to 25.2% in Bristol and 14.5% in South Gloucestershire (2020).

Spontaneous births have decreased across BNSSG since 2013, with the biggest decrease in South Gloucestershire (of 9.6%), followed by Bristol (9.5%) and North Somerset (8.1%).





[34] Intrapartum Care - NCBI Bookshelf (nih.gov)

5.4 LOW APGAR SCORE[35]

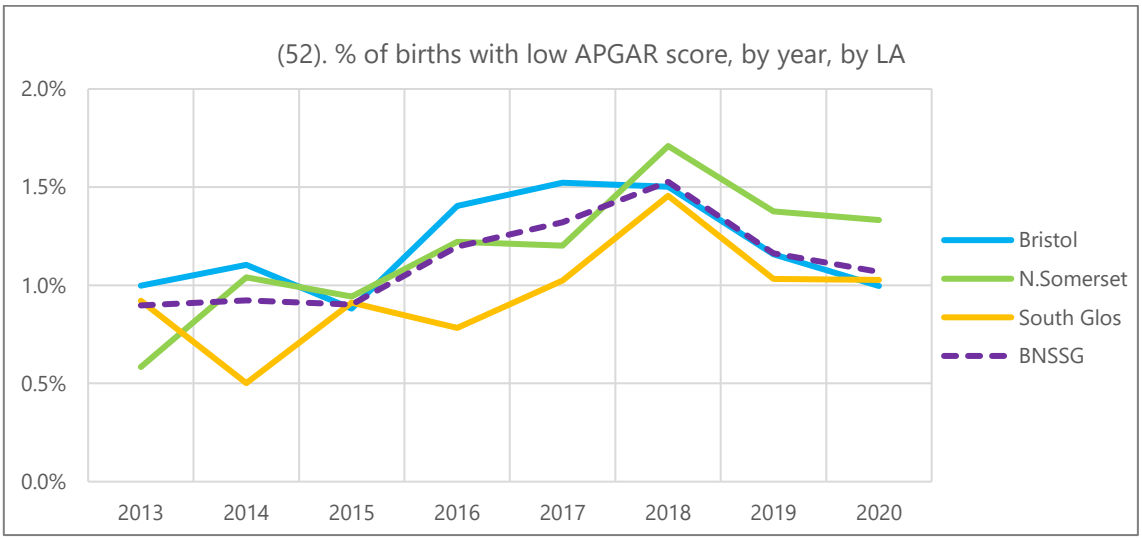
Why is this important?

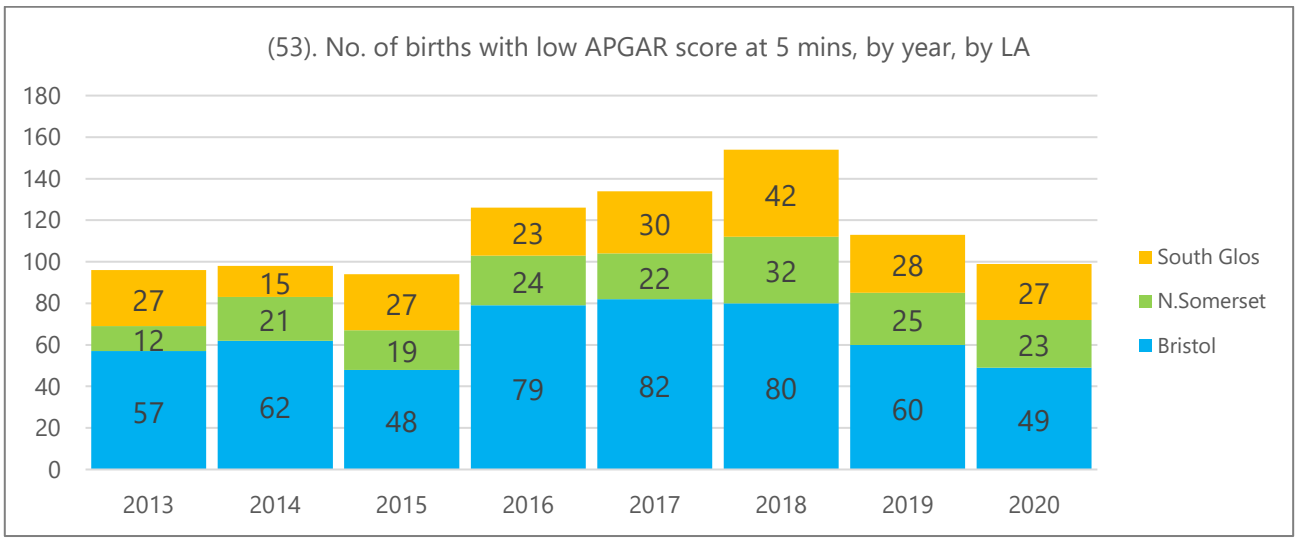
A low APGAR score (below 7) at 5 minutes old can be an indicator of poor outcomes, both short and long-term.

Key findings

In 2020, 1.1% of babies were born with an APGAR score of less than 7 across BNSSG. This equates to 99 babies in total (49 in Bristol, 23 in North Somerset and 27 in South Gloucestershire).

The numbers of babies with a low APGAR score born each year are relatively small for analysis, but there are indications in the data of a slight rise between 2013 and 2018 (0.9% to 1.5% across BNSSG) before a decline again in 2020. This was observed for all three local authorities.





[35] APGAR Score - StatPearls - NCBI Bookshelf (nih.gov)

5.5 ADMISSION TO NEONATAL INTENSIVE CARE UNIT (NICU)[36]

Why is this important?

Babies are admitted to Neonatal Intensive Care Units (NICU) for a range of reasons, including premature birth, difficult delivery, breathing problems, infections and birth defects. They are at greater risk of poor short and long-term outcomes.

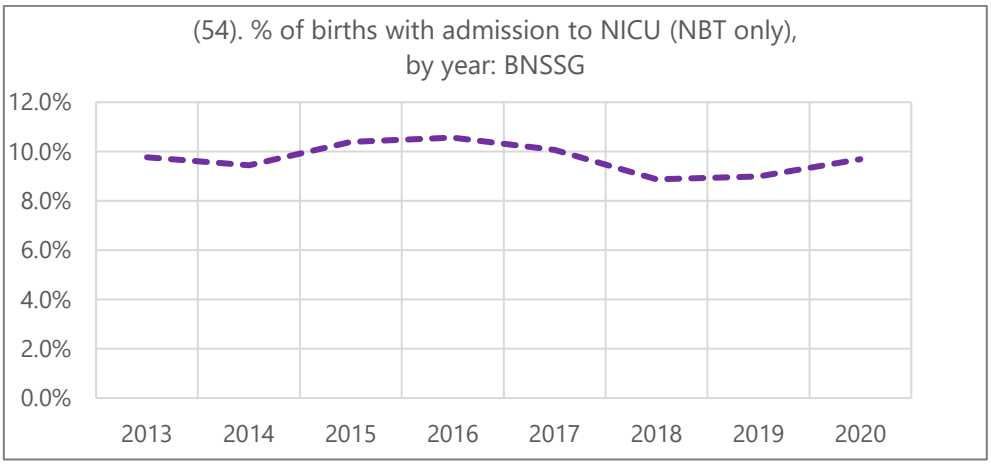
Key findings

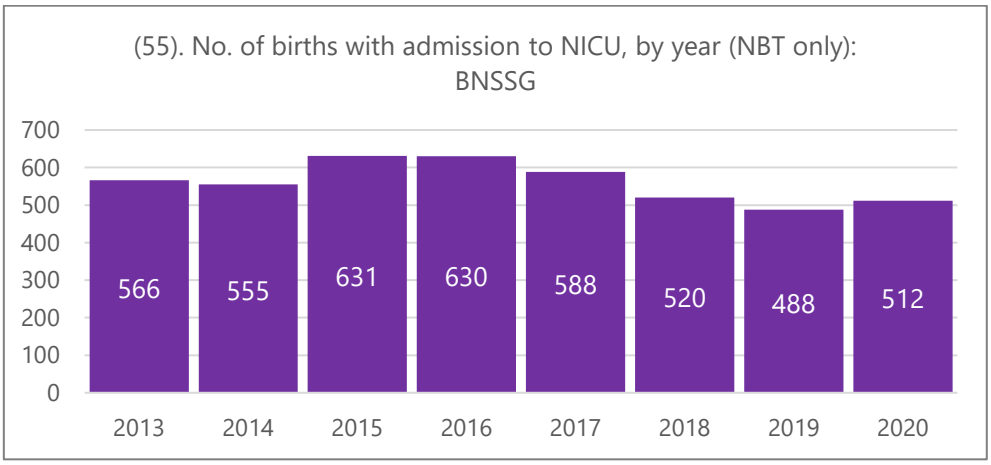
Based on data from NBT only, the rates of admission to NICU have been very stable over the period 2013 to 2020, across BNSSG. The 2020 rate is 0.1% lower than it was in 2013, and 0.9% lower than it was in 2016 when it was at its highest for the time period (10.4%). The average rate for the period is 9.7%.

The total numbers have also changed very little; with 54 fewer babies admitted to NICU in 2020 than in 2013. The highest number of admissions were in 2015 (631).

However, while there has been little change over time, there is variation in the demographic groups most likely to experience this outcome (see section 6).

While this data is for NBT maternities only, NBT maternities represent 55% of all maternities (2018-20) across BNSSG (45% in Bristol, 30% in North Somerset and 92% in South Gloucestershire).





[36] This data is from NBT only and for BNSSG local authorities combined

5.6 STILLBIRTHS[37]

Why is this important?

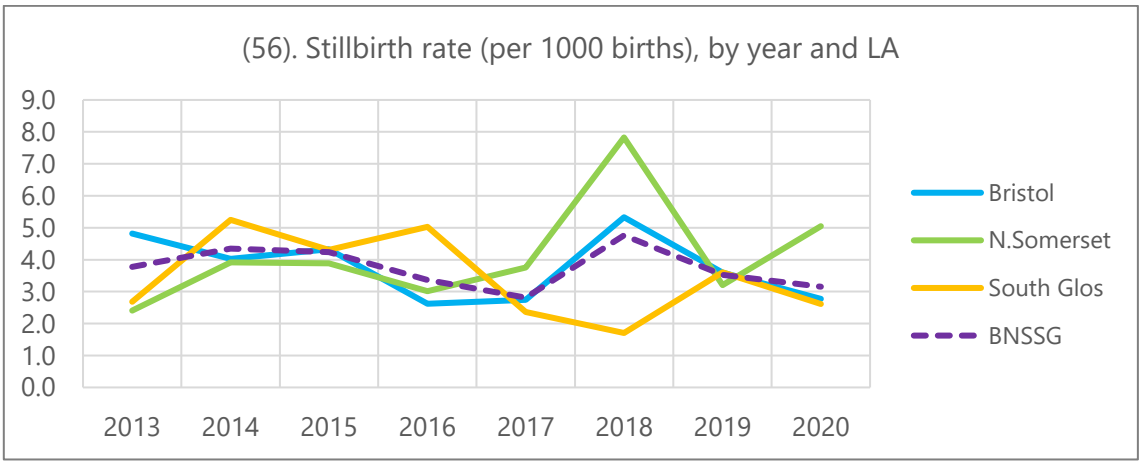
A stillbirth is the death of a baby after 24 weeks of pregnancy. In England, around 1 in 250 births is a stillbirth. Not all the causes of stillbirth are known but there are factors which put some women are greater risk, including smoking, alcohol and drug use and socio-economic deprivation.

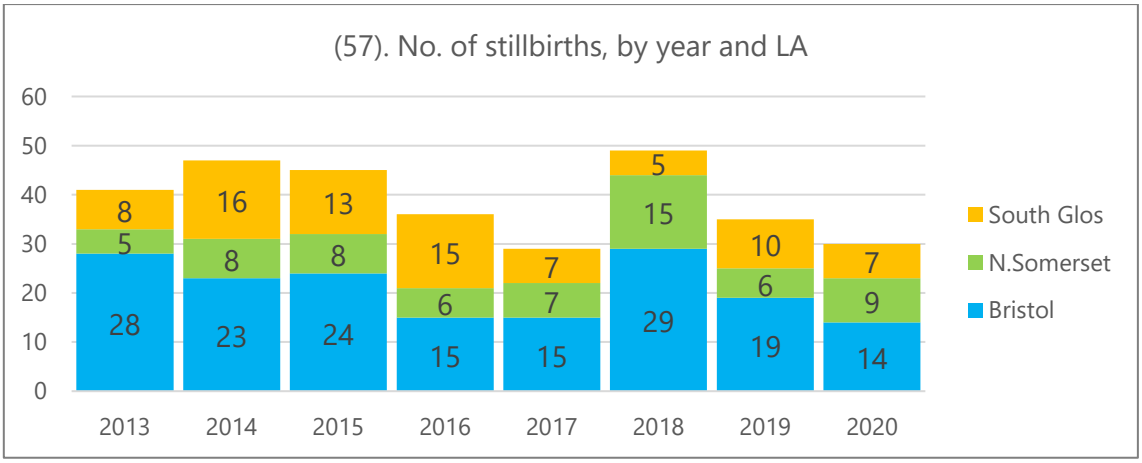
Key findings

In 2020, BNSSG had 3.2 stillbirths per 1000 births (30 babies). North Somerset had the highest rate at 5 per 1000 (9 babies), followed by 2.8 per 1000 in Bristol (14 babies) and 2.6 in South Gloucestershire (7 babies).

Across BNSSG, 2018 saw the highest rate of stillbirths at 4.8 per 1000 (49 babies).

The BNSSG rate (3.5 per 1000) was below the regional (3.6 per 1000) and national (4 per 1000) rates for the same year (2019).





[37] Stillbirth - NHS (www.nhs.uk)

5.7 INFANT MORTALITY UNDER 28 DAYS OF AGE AND UNDER ONE YEAR OF AGE[38] [39] [40]

Why is this important?

While the causes of infant mortality are wide-ranging, the rates are higher amongst those living in deprived areas, teenage mothers, and mothers with other risk factors, including low uptake of antenatal care, smoking, alcohol and drug use.

Key findings

Under 28 days of age:

For the period 2018-20, there were 67 deaths of babies under 28 days of age across BNSSG (32 in Bristol, 13 in North Somerset and 22 in South Gloucestershire).

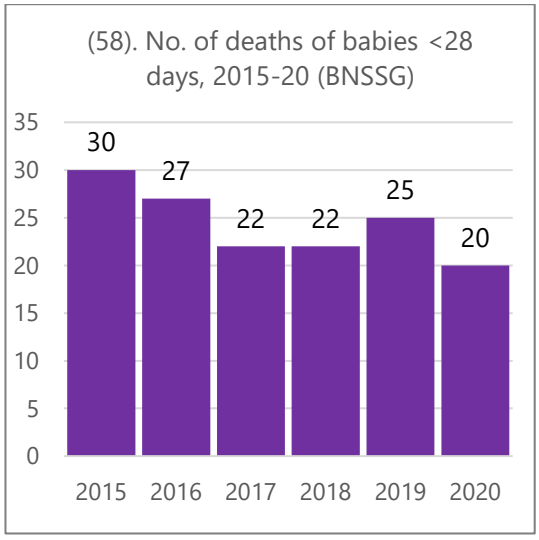
Across BNSSG, the mortality rate (per 1000 live births) for babies under 28 days of age has fallen gradually over the last five years, from 2.8 deaths per 1000 live births (30 deaths) in 2015 to 2.1 per 1000 (20 deaths) in 2020, with a slight rise in 2019 to 2.5 per 1000 (25 deaths).

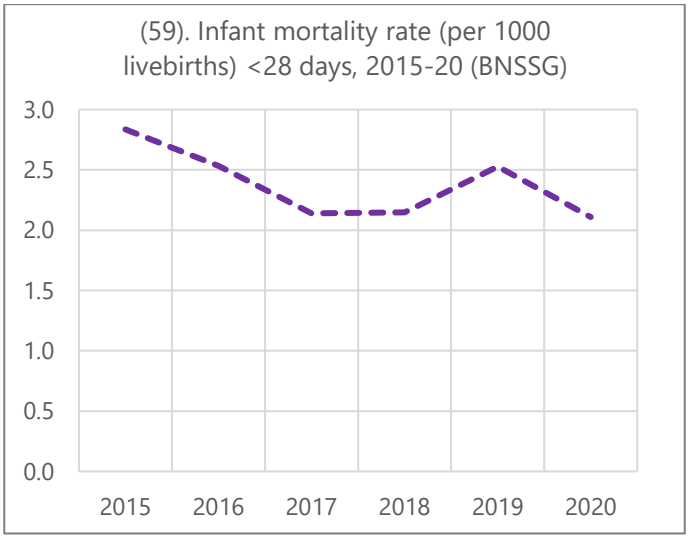
The two main causes were recorded as: 'Certain conditions originating in the perinatal period' and 'Congenital malformations, deformations and chromosomal abnormalities'.

Under one year of age:

For the period 2018-20, there were 97 deaths of babies under the age of one across BNSSG (50 in Bristol, 19 in North Somerset and 28 in South Gloucestershire).

The mortality rate for under one-year-olds has also fallen gradually across BNSSG over the last five years, from 4.3 deaths per 1000 live births (46 deaths) in 2015 to 3.1 per 1000 (29 deaths) in 2020, with a slight increase in 2018 (3.7 per 1000 – 38 deaths).

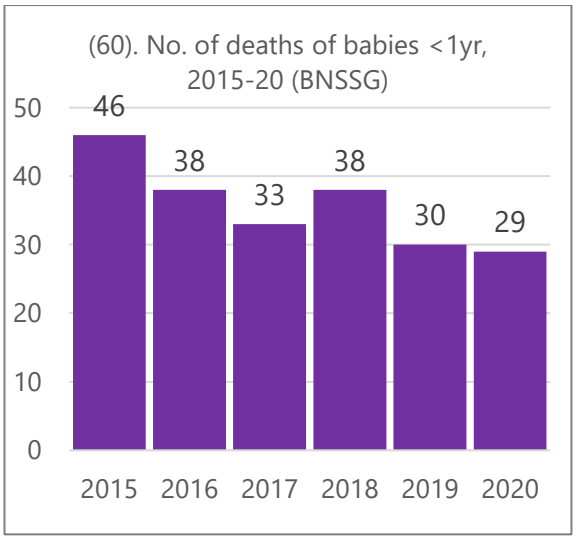


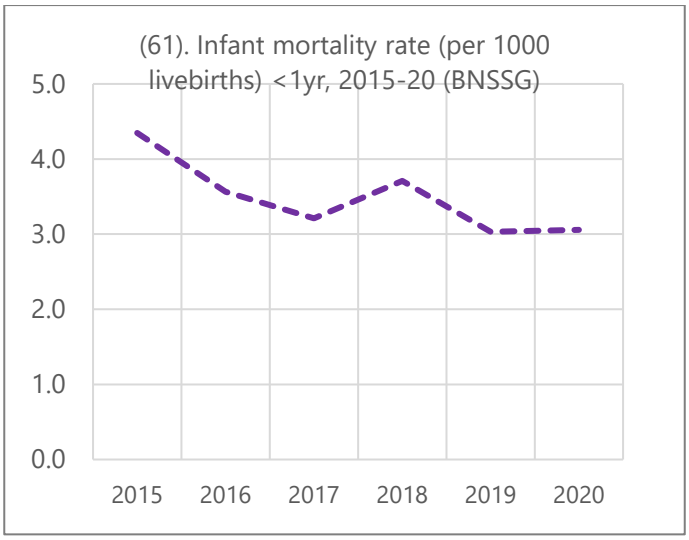


[38] Assessing the impact of rising child poverty on the unprecedented rise in infant mortality in England, 2000–2017: time trend analysis | BMJ Open

[39] JSNA 2020.21 - Infant Mortality (bristol.gov.uk)

[40] The figures involved in this indicator are very small so should be interpreted with caution.


(60). No. of deaths of babies <1yr, 2015-20 (BNSSG)
50
40
30
20
10
0
46
38
33
38
30
29
2015
2016
2017
2018
2019
2020


(61). Infant mortality rate (per 1000 livebirths) <1yr, 2015-20 (BNSSG)
5.0
4.0
3.0
2.0
1.0
0.0
2015
2016
2017
2018
2019
2020

5.8 BREASTFEEDING INITIATED WITHIN 48 HOURS[41] [42]

Why is this important?

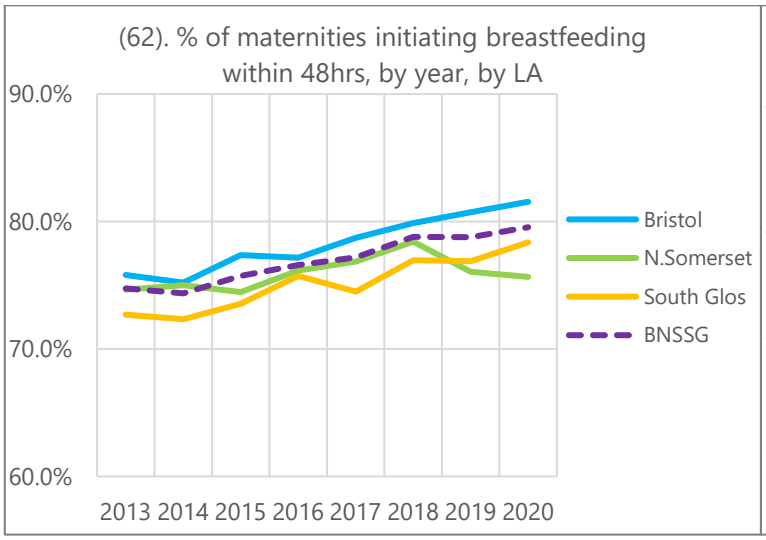
Breastfeeding improves children's physical health by reducing infections, obesity, diabetes, allergic diseases, and sudden infant death; but it can also improve educational achievements and reduce social inequalities. The mother's health will also benefit from reduced incidences of breast and ovarian cancers, diabetes, osteoporosis and coronary artery disease.

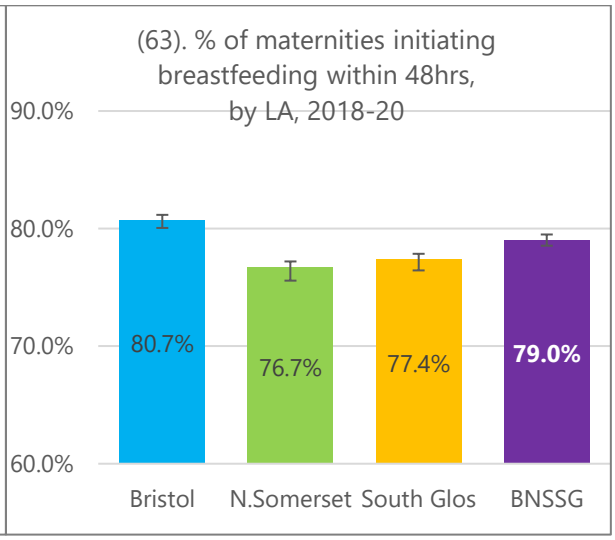
Key findings

Breastfeeding was initiated within 48 hours of birth in 79.5% of births across BNSSG in 2020. This figure has been increasing consistently since 2013 when it was 74.7%.

The rise has been most consistent in Bristol, with the other two areas seeing more fluctuation. Both Bristol and South Gloucestershire have seen an increase of 5.7% since 2013.

In North Somerset, the percentage of births where breastfeeding was initiated was highest in 2018 (78.4%), but has since come down, and is now only 1.1% higher than it was in 2013.





[41] JSNA 2020.21 - Breastfeeding (bristol.gov.uk)
[42] national-maternity-review-report.pdf (england.nhs.uk)

6. BIRTH OUTCOMES ANALYSED BY DEMOGRAPHICS

6.1 BIRTH OUTCOMES BY MATERNAL AGE

Key findings

Across BNSSG:

- Under 20-year-olds are the age group most likely to have a premature baby (11.8%) followed by over 40-year-olds (8.8%).
- Under 20-year-olds are least likely to have a caesarean section (11.9%). The likelihood of having a caesarean section then increases steadily through the ages, with the biggest between 35-39 and 40+.
- The stillbirth rate is highest amongst under 20-year-olds; 8 per 1000, which is double the rate of the next age bracket (20-24-year-olds), at 4.2 per 1000. The next highest rate is amongst over 40-year-olds. The lowest rate is amongst 30-34-year-olds (2.9 per 1000).
- Under 20-year-olds are most likely to have a baby with a low birth weight, both premature and full term (12.4% and 4.8%). 30-34-year-olds are the least likely (5.5% for all births, including premature births and 2.1% for term babies).
- Over 40-year-olds, closely followed by 20-24-year-olds, are most likely to have a baby with a low APGAR score at birth (1.6% and 1.5%).
- Breastfeeding is most likely to be initiated in the 48 hours after birth by 35-39-year-olds (87.9%) and least likely amongst under 20-year-olds (45.9%).

BNSSG	% of maternities	% of births	% maternities = premature (<37wks)	% maternities = c/section	Stillbirth rate (per 1,000 births)	% births = LBW (all births)	% births = LBW (term births)	% births = low APGAR score	% maternities = BF initiated	% births = admission to NICU (NBT only)
<20yrs	2.1%	2.1%	11.8%	11.9%	8.0	12.4%	4.8%	0.8%	45.9%	9.7%
20-24yrs	10.5%	10.4%	7.3%	17.0%	4.2	7.6%	3.3%	1.5%	57.5%	9.9%
25-29yrs	23.8%	23.7%	6.7%	23.2%	3.4	6.5%	2.3%	1.2%	72.8%	8.7%
30-34yrs	36.5%	36.5%	5.6%	25.2%	2.9	5.5%	2.1%	1.2%	84.7%	8.3%
35-39yrs	22.2%	22.4%	6.8%	31.1%	4.7	6.7%	2.3%	1.3%	87.9%	10.1%
40yrs+	4.8%	4.9%	8.8%	41.0%	6.2	9.0%	2.5%	1.6%	87.4%	12.3%

(64). Birth outcomes by maternal age, BNSSG, 2018-2020 (grouped)

6.2 BIRTH OUTCOMES BY ETHNIC GROUP

Key findings

Across BNSSG:

- Black women are most likely to have a premature baby (8.5%).
- Asian women are most likely to have a caesarean section (30.3%).
- Women from 'Other' ethnic categories have the highest stillbirth rate (7.8 per 1000).
- Black women are most likely to have a low birth weight baby (including premature babies) at 10.7%.
- Asian women are most likely to have a low birth weight full term baby (5.4%).
- Black women are most likely to have a baby with a low APGAR score at birth (2.2%); more than double that of Asian women (0.7%), who are at lowest risk.
- White women are the least likely to initiate breastfeeding within the first 48 hours (76.2%), while Black women are the most likely (92.4%).
- Black women are most likely to have a baby admitted to NICU (12.9%), while women from 'Other' ethnic categories are the least likely to (5.3%).

BNSSG	% of maternities	% of births	% maternities = premature (<37wks)	% maternities = c/section	Stillbirth rate (per 1,000 births)	% births = LBW (all births)	% births = LBW (term births)	% births = low APGAR score	% maternities = BF initiated	% births = admission to NICU (NBT only)
Asian	5.2%	5.2%	7.7%	30.3%	5.8	9.7%	5.4%	0.7%	90.7%	8.9%
Black	5.1%	5.1%	8.5%	26.9%	5.2	10.7%	3.6%	2.2%	92.4%	12.9%
Mixed	2.7%	2.7%	8.0%	22.7%	1.4	8.3%	3.9%	1.4%	86.5%	11.2%
Other	2.9%	2.9%	5.4%	27.1%	7.8	5.6%	1.8%	1.6%	91.6%	5.3%
White	84.1%	84.0%	6.7%	25.7%	3.5	6.4%	2.2%	1.2%	76.2%	9.2%
BAME	15.9%	16.0%	7.6%	27.4%	5.2	9.0%	3.9%	1.5%	90.7%	9.5%

(65). Birth outcomes by ethnic group, BNSSG, 2018-2020 (grouped)

6.3 BIRTH OUTCOMES BY DEPRIVATION

Key findings

In Bristol:

- Women living in the most deprived areas are almost twice as likely to give birth prematurely (8%), compared to those living in the least deprived areas (4.3%).
- Women in the second most deprived areas are the most likely to have a caesarean section (26.8%), followed by those in the least deprived areas (25.3%).
- The stillbirth rate is highest in the second most deprived areas (5.7 per 1000), and lowest in the second and least deprived wards (data supressed).
- Women living in the most deprived areas are most likely to have a baby with a low birth weight (of all births and term births; 9.7% and 3.4%). They are also most likely to have a baby with a low APGAR score at birth (1.6%).
- Breastfeeding is most likely to be initiated by those living in the least deprived areas (93.7%) and least likely amongst those from the most deprived areas (65.5%).

In North Somerset:

- Like Bristol, premature birth is most common amongst women living in the most deprived areas (7.9%).
- In contrast to Bristol, the caesarean section rate is highest amongst those from the least deprived areas (27.8%).
- The stillbirth rate is highest in the most deprived areas (7.1 per 1000), as are the rates for low birth weight babies (7.9% of all births and 2.6% of term births).
- Low APGAR scores are most common amongst babies in the second most deprived areas (2.1%).
- Like in Bristol, breastfeeding initiation is most likely in the least deprived areas (87.8%) and least likely in the most deprived (65.9%).

In South Gloucestershire:

- Premature births are most common in the most deprived areas (7.3%), closely followed by the least deprived (6.8%).
- Caesarean sections are most common in the second least deprived areas (34.2%), closely followed by the most deprived (33.3%).
- The stillbirth rate is highest in the most deprived areas (3.8 per 1000).
- Low birth weight (all births) is most common in the most deprived areas (7%), closely followed by the least deprived (6.3%).
- Of term births, low birth weight is most common in the least deprived areas (2.7%).
- A low APGAR score at birth is most common in the most deprived areas (1.6%).
- Breastfeeding initiation is most common in the least deprived areas (82.7%).

Bristol	% of maternities	% of births	% maternities = premature (<37wks)	% maternities = c/section	Stillbirth rate (per 1,000 births)	% births = LBW (all births)	% births = LBW (term births)
1=Most	25.8%	25.9%	8.0%	20.8%	4.4	9.7%	3.4%
2	22.1%	22.1%	7.8%	26.8%	5.7	8.2%	3.1%
3	20.9%	20.9%	6.1%	22.4%	5.2	6.2%	3.2%
4	17.3%	17.3%	5.8%	21.2%	**	5.2%	1.8%
5=Least	13.9%	13.9%	4.3%	25.3%	**	4.1%	1.3%

Bristol	% births = low APGAR score	% maternities = BF initiated	Mortality <1yr (per 1,000 live births) 2016-2020
1=Most	1.6%	65.5%	3.0
2	1.3%	79.4%	5.7
3	1.2%	85.7%	2.9
4	0.8%	88.3%	3.7
5=Least	1.2%	93.7%	0.8

(66-67). Birth outcomes by deprivation quintile, Bristol, 2018-2020 (grouped)

North Somerset	% of maternities	% of births	% maternities = premature (<37wks)	% maternities = c/section	Stillbirth rate (per 1,000 births)	% births = LBW (all births)	% births = LBW (term births)
1=Most	25.3%	25.2%	7.9%	18.2%	7.1	7.9%	2.6%
2	22.2%	22.2%	6.3%	23.8%	4.8	5.8%	1.8%
3	17.3%	17.3%	5.9%	20.7%	**	5.4%	1.1%
4	17.8%	17.8%	6.1%	24.1%	**	5.6%	2.0%
5=Least	17.3%	17.5%	6.4%	27.8%	5.1	4.7%	1.0%

North Somerset	% births = low APGAR score	% maternities = BF initiated	Mortality <1yr (per 1,000 live births) 2016-2020
1=Most	1.9%	65.9%	3.5
2	2.1%	75.9%	4.0
3	0.7%	79.8%	2.5
4	0.8%	79.7%	2.3
5=Least	1.5%	87.8%	1.1

(68-69). Birth outcomes by deprivation quintile, North Somerset, 2018-2020 (grouped)

South Glos	% of maternities	% of births	% maternities = premature (<37wks)	% maternities = c/section	Stillbirth rate (per 1,000 births)	% births = LBW (all births)	% births = LBW (term births)
1=Most	25.3%	25.4%	7.3%	33.3%	3.8	7.0%	2.3%
2	20.7%	20.7%	6.1%	29.8%	**	5.6%	2.1%
3	20.2%	20.1%	5.4%	32.1%	1.2	4.3%	1.6%
4	15.7%	15.7%	6.7%	34.2%	**	5.9%	2.6%
5=Least	18.0%	18.1%	6.8%	32.5%	**	6.3%	2.7%

South Glos	% births = low APGAR score	% maternities = BF initiated	Mortality <1yr (per 1,000 live births) 2016-2020
1=Most	1.6%	70.6%	4.4
2	0.8%	76.5%	4.4
3	1.2%	77.7%	3.5
4	1.4%	82.8%	3.1
5=Least	0.9%	82.7%	1.9

(70-71). Birth outcomes by deprivation quintile, South Gloucestershire, 2018-2020 (grouped)

6.4 BIRTH OUTCOMES BY WARD OF RESIDENCE

Key findings

In Bristol:

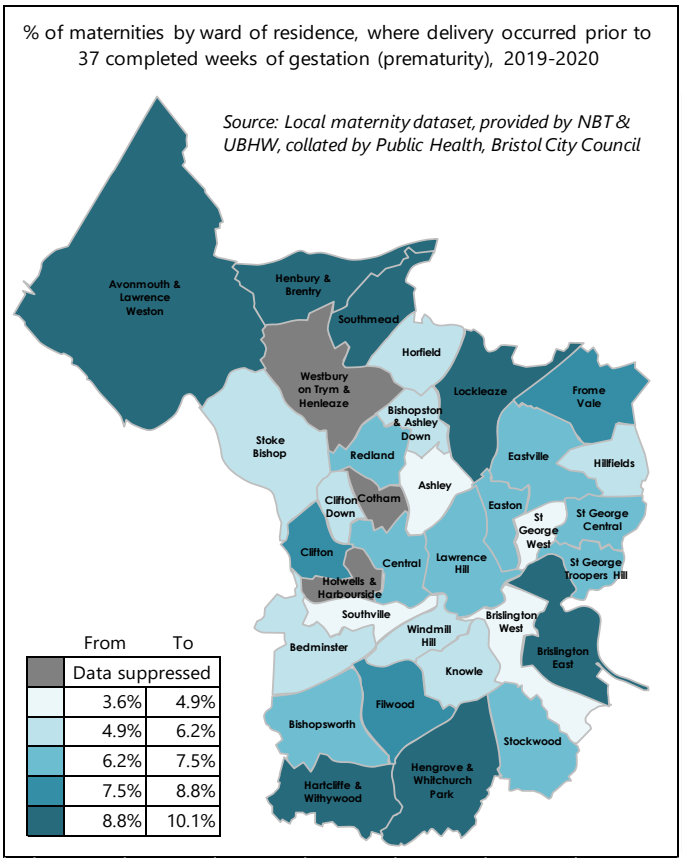
- The ward with the highest percentage of premature births is Hengrove and Whitchurch Park (10.1%) and the wards with the lowest percentages are Cotham, Hotwells and Harbourside, and Westbury-on-Trym and Henleaze (<5%: data suppressed).
- The ward with the highest percentage of caesarean section births is Henbury and Brentry (36.9%) and the ward with the lowest percentage is Hotwells and Harbourside (<10%: data suppressed).
- The ward with the highest percentage of low birth weight babies (of all births) is Lockleaze (12.3%) and the wards with lowest percentages are Cotham, Hotwells and Harbourside, and Westbury-on-Trym and Henleaze (<5%: data suppressed).
- The ward with the highest percentage of low birth weight babies (of term births) is Lockleaze (6.5%) and the ward with the lowest percentage is Cotham (0%).
- The ward with the highest percentage of maternities with breastfeeding initiated within 48 hours is Bishopston and Ashley Down (98.3%) and the ward with the lowest percentage is Hartcliffe and Withywood (42.1%).

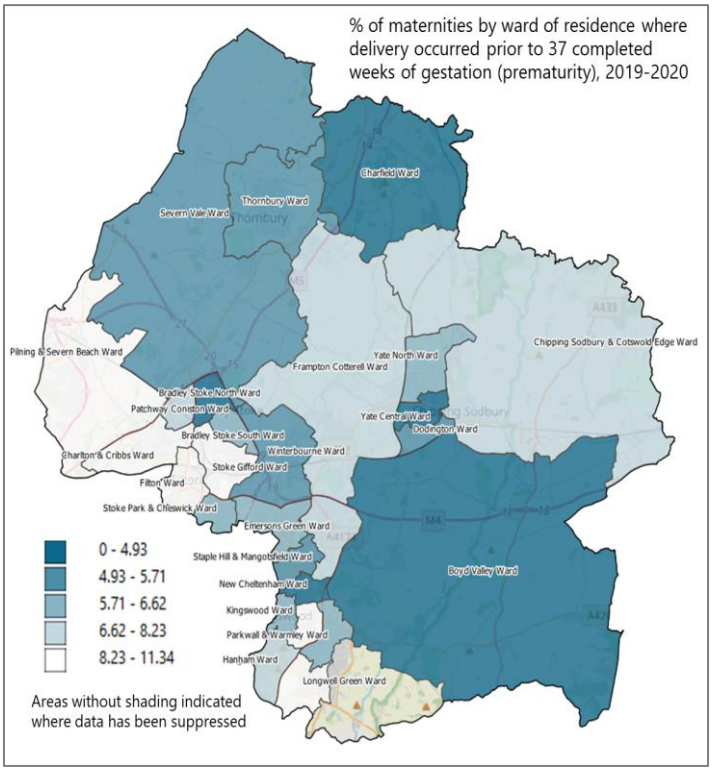
In North Somerset:

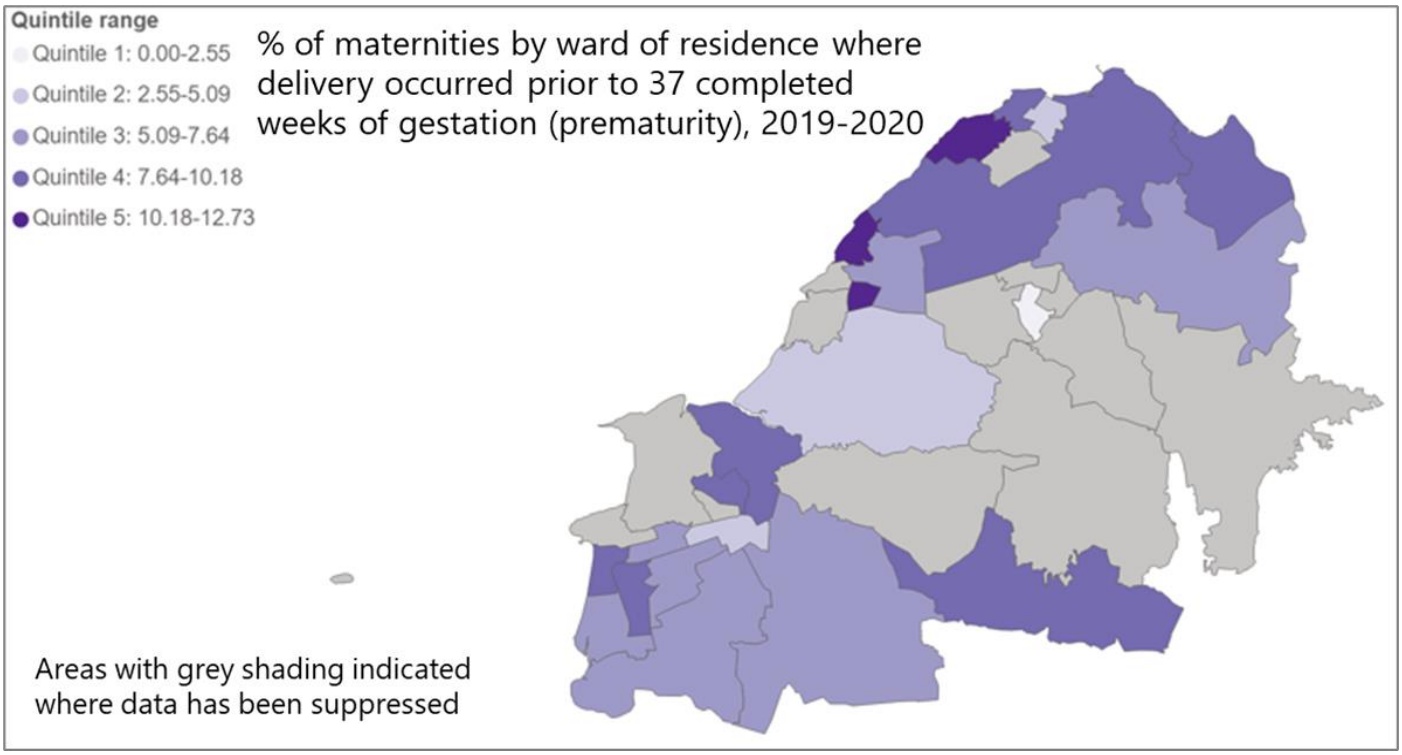
- The ward with the highest percentage of premature births is Clevedon Walton (12.7%) and the ward with the lowest percentage is Nailsea Youngwood (0%).
- The ward with the highest percentage of caesarean section births is Clevedon Walton (45.5%) and the ward with the lowest percentage is Backwell (9.4%).
- The ward with the highest percentage of low birth weight babies (of all births) is Blagdon and Churchill (16.4%) and the wards with the lowest percentages are Wrington, Weston-Super-Mare Mid Worle, Nailsea Youngwood and Clevedon Yeo (all 0%).
- The ward with the highest percentage of maternities with breastfeeding initiated within 48 hours is Long Ashton (92.7%) and the ward with the lowest percentage is Weston-super-Mare South (50.9%)

In South Gloucestershire:

- The ward with the highest percentage of premature births is Longwell Green (11.3%) and the ward with the lowest percentage is Charfield (0%).
- The ward with the highest percentage of caesarean section births is Stoke Park and Cheswick (40.3%) and the ward with the lowest percentage is Winterbourne (23%).
- The ward with the highest percentage of low birth weight babies (of all births) is Longwell Green (13.0%) and the ward with the lowest percentage is Charfield (0%).
- The ward with the highest percentage of low birth weight babies (of term births) is Kingswood (4%) and the wards with the lowest percentages are Boyd Valley, Bitton and Oldland Common and Charfield (all 0%).
- The ward with the highest percentage of maternities with breastfeeding initiated within 48 hours is Frenchay and Downend (89%) and the ward with the lowest percentage is Dodington (64.2%).

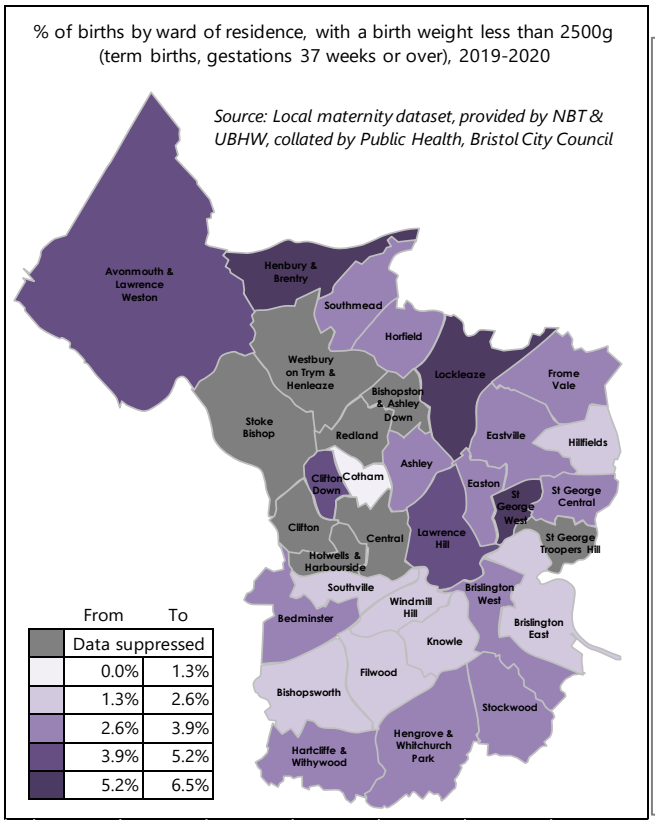


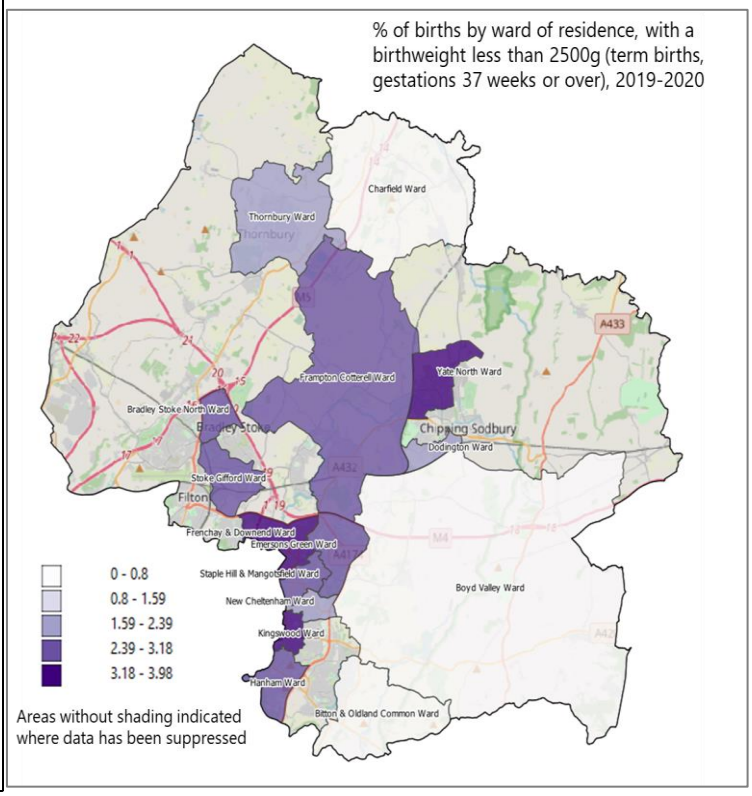


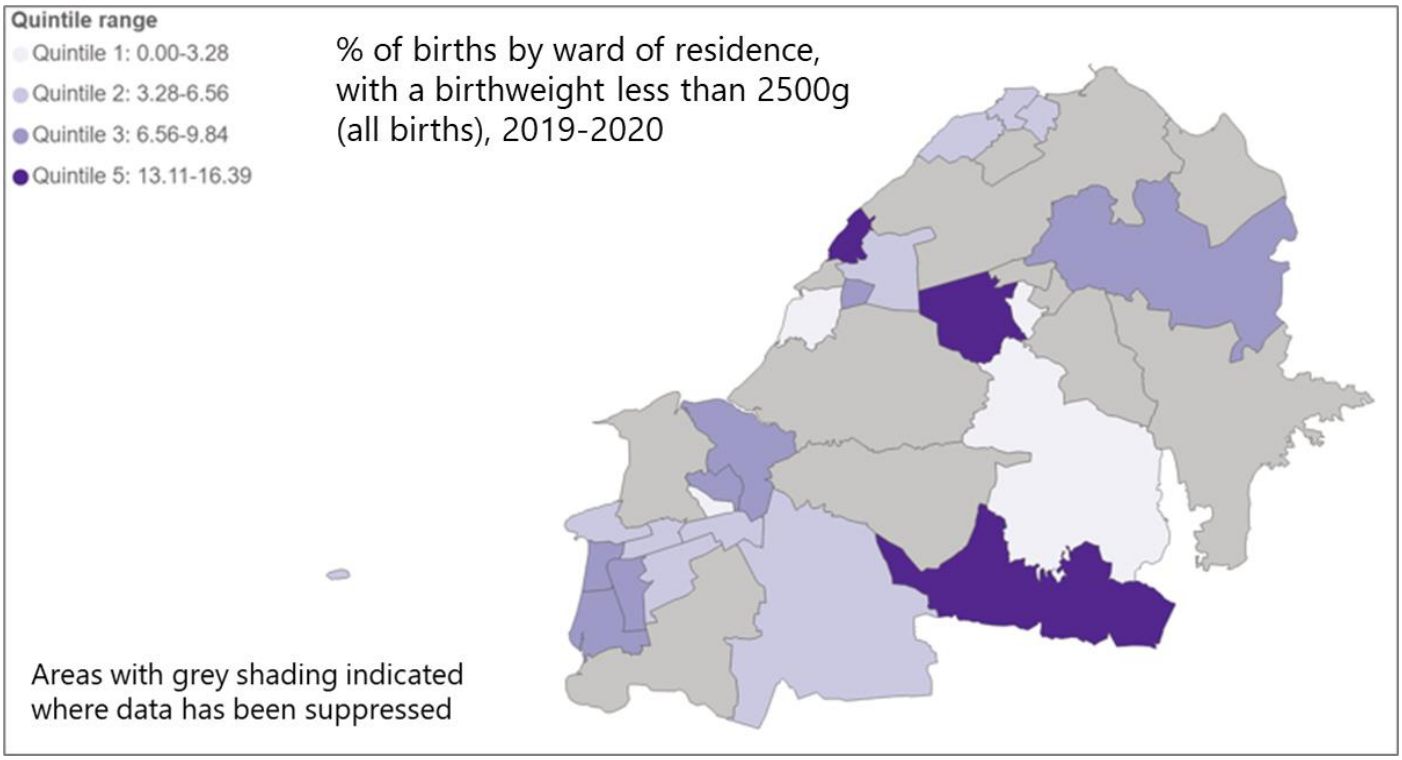


(72-74). Percentage of births by ward of residence where delivery occurred at <37 weeks gestation (prematurity), 2019-20: Bristol (left), South Gloucestershire (right), North Somerset (below) [43]

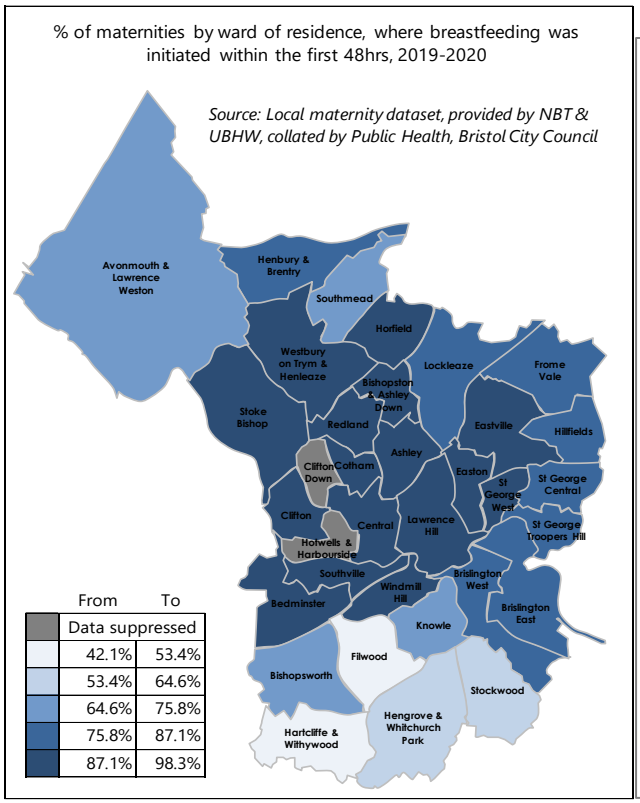
[43] Local authority ward maps are included here only for a small number of key indicators, other maps are available on request

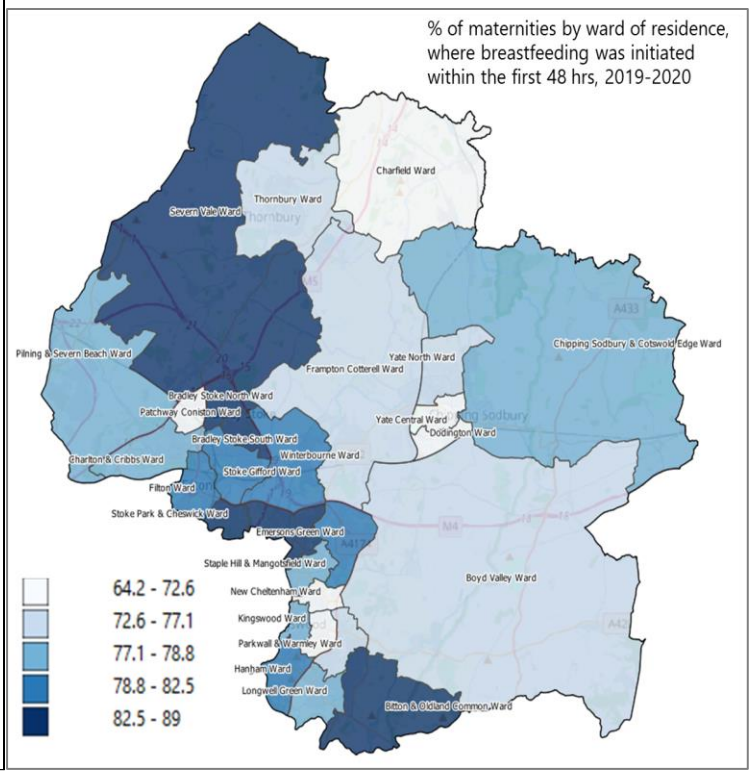


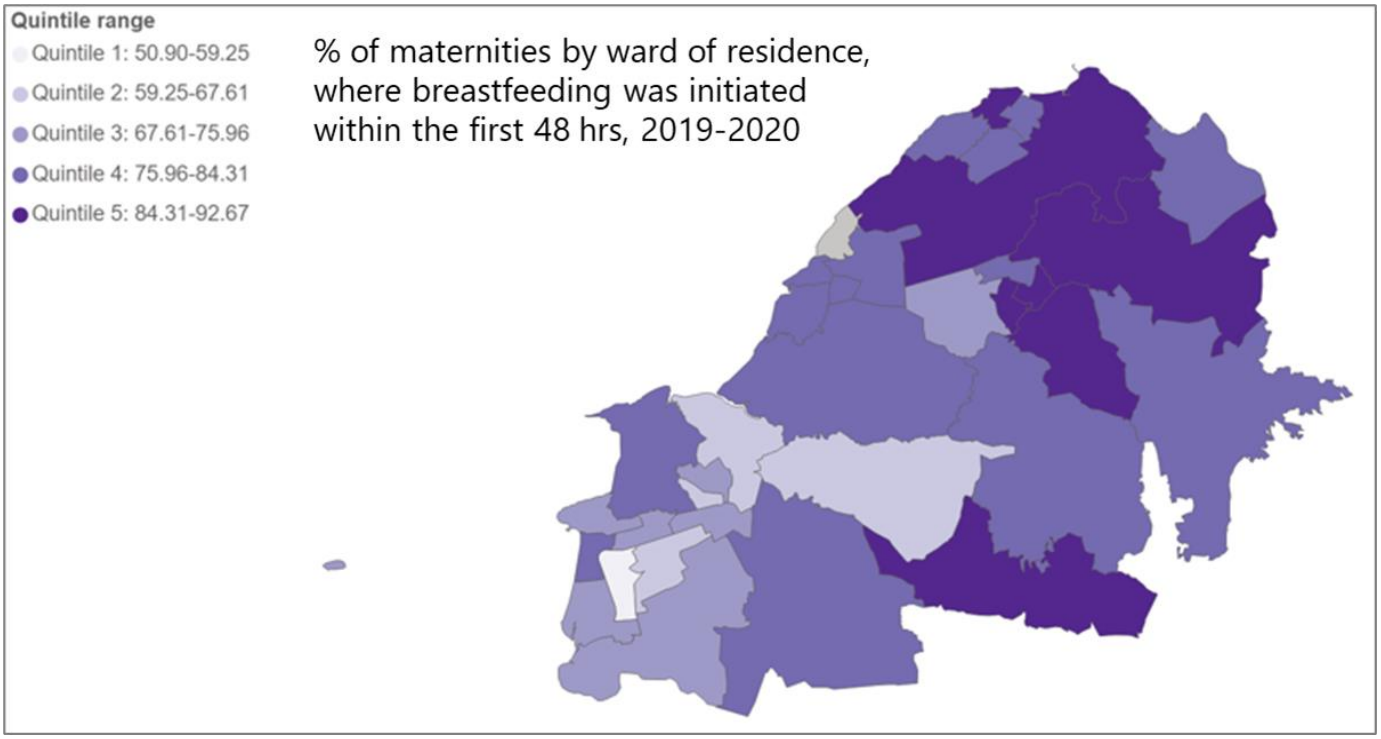




(75-77). Percentage of births by ward of residence with a birthweight <2500g (all births), 2019-20: Bristol (left), South Gloucestershire (right), North Somerset (below)







(78-79). Percentage of births by ward of residence where breastfeeding was initiated within 48 hours, 2019-20: Bristol (left), South Gloucestershire (right), North Somerset (below)

7. CONCLUSION

Several of the maternal risk factors considered in this HEA (late booking of antenatal care, smoking and drinking) have reduced across BNSSG since 2013, and where national data is available (smoking and obesity), the rates in BNSSG compare favourably.

Obesity is an exception to this, where rates are not only increasing (across BNSSG) but are also highest, and above the national average, in South Gloucestershire. Mental health indicators for pregnant women across BNSSG have also worsened slightly since 2019, however the data is limited and should be interpreted with caution.

While maternal risk factors are generally decreasing across BNSSG, in 2020, 20.8% of women had a BMI of 30 or above at the time of booking antenatal care, 10.2% of women were smoking at the time of delivery and 20% of women were referred to a specialist mental health midwife for support.

Bristol has the highest prevalence of maternal risk factors (late booking for antenatal care, smoking and drinking) and South Gloucestershire generally has the lowest. This is in line with the deprivation profile of each area. Bristol has much higher levels of deprivation than South Gloucestershire and North Somerset, which are both amongst the most affluent local authorities in England[31,32]. However, on the whole, birth outcomes are not noticeably worse in Bristol compared to South Gloucestershire or North Somerset, which may suggest that access to, and quality of care, is good.

The stillbirth rate in North Somerset may warrant particular attention because it has almost doubled since 2013. However, the numbers are very small and should be interpreted with caution. Caesarean section rates have also increased across BNSSG, especially in South Gloucestershire.

The differences in maternal risk factors and birth outcomes are most stark when analysed by demographic group. While improving birth outcomes is important for all women and babies, significant inequalities exist and focusing on the following groups, risk factors and outcomes may be a priority in terms of reducing inequalities, as these are the groups with a higher prevalence of risk factors and poor outcomes:

Demographic group	Higher prevalence risk factors	Higher prevalence poor outcomes
Those living in deprived areas	All risk factors[44]	All outcomes except caesarean section
Under 20-year-olds	Smoking, late booking for antenatal care	Premature births, stillbirths, low birth weight, low breastfeeding initiation
Over 40-year-olds	Alcohol consumption, maternal weight	Caesarean sections, low APGAR score, NICU admissions, premature births, low birth weight (all births)
Black women	Late booking antenatal care, maternal weight	Premature births, low birth weight (all births), stillbirths, low APGAR score, NICU admissions
Women of Mixed Ethnicity	Smoking, maternal weight, alcohol consumption	Premature births, NICU admissions
Asian women	None specifically	Caesarean sections, low birth weight (full term), stillbirths
White British women	Smoking	Low breastfeeding initiation

[44] Although alcohol consumption is higher in some of the less deprived areas in Bristol and South Gloucestershire. Ethnicity may be a confounding factor here; to be explored further.

There is a strong deprivation gradient to maternal risk factors and poor birth outcomes. Relative to all other demographic groups (age and ethnicity), women living in the most deprived areas experience the greatest prevalence of risk factors and poor outcomes, and it is vital that attention is focused on narrowing this gap. Women who are over 40, under 20, and BAME women (especially Black women), also experience a higher prevalence of poor birth outcomes, although particularly for the latter, this is often correlated with deprivation.

There are several important demographic groups, maternal risk factors and birth outcomes that have not been included in this HEA, due to time constraints, lack of available data and/or poor data quality. However, an HEA is the first stage in a continual cycle of needs assessment and this HEA will be built upon as more data becomes available. Other demographic groups/ characteristics, risk factors and outcomes that warrant further investigation include (but are not limited to) the following:

<u>Demographic groups/ characteristics</u>

- Ethnicity (a more detailed breakdown of ethnic groups is needed[45])
- Disability
- Asylum seekers and refugees
- Traveller and gypsy communities
- Family size and birth order

<u>Risk factors and outcomes</u>

- Substance misuse
- Domestic abuse
- Antenatal and newborn screening and vaccinations in pregnancy
- Sexual and reproductive health (STIs, contraceptive use, unplanned pregnancies, pregnancy terminations)
- Safeguarding concerns (social care involvement, current or previous children in care, concealed pregnancies)
- Emergency admissions to hospital post birth (of mother and baby)

Efforts will be made to address these gaps, as well as improving the quality of existing data where needed (for example, on maternal mental health and admissions to NICU, both of which have limitations at present). More detailed analysis will also be undertaken, where required, in order to fully understand the issues in scope.

Finally, specific recommendations will be made based on the findings of this HEA, forming an LMS action plan to reduce inequalities in maternal risk factors and birth outcomes across BNSSG. This will be regularly monitored and refreshed as part of ongoing efforts across the system to understand our local population and ensure our services are equitable for all.

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[45] This should include a breakdown of White ethnic groups to include non-British White women

APPENDIX 1

METHODOLOGY

A health equity audit (HEA) requires a range of data to describe:

1. The demographics of the population in scope
2. The presence of risk factors known to potentially influence health and wellbeing outcomes
3. Health and wellbeing outcomes

Wherever possible, the HEA should seek to present the variation in risk factors and health and wellbeing outcomes (2 and 3) in relation to the demographics of the population in scope (1), so ideally the data sources used will contain data for an individual case or event with all these aspects included. This is true of the 'local maternity dataset' described below. Where this is not the case, and the data source provides little demographic detail, the data may still be useful to describe overall trends and the magnitude of particular issues of interest where more detailed data is not available.

DATA SOURCES USED

This HEA makes use of a variety of data sources, some purpose built for the task (local maternity dataset), and others for more pragmatic and partial analyses to add some understanding where there is less detailed data available, usually making use of pre-existing routine data sources, such as birth and death registrations.

Local maternity dataset[46] - This is an annually refreshed dataset which offers good coverage of the local population[47]. The majority of analysis in this HEA has been derived from this source as it covers a range of detailed information on births, maternal demographics, risk factors, delivery type and maternity outcomes. Not all the data fields for this dataset have been provided completely as yet, for instance, admission to neonatal intensive care is recorded in the dataset only by one of the two providers. There remain risk factors and outcomes we would like to include in future in this dataset, such as indicators of poor maternal mental health. This dataset remains a work in progress, which will be improved over time, with each annual refresh, and in response to exercises such as this HEA where the data has been used and gaps identified. Where gaps have been identified, alternative sources have been sought. This applies to several of those listed below.

Birth registrations data[48] - Birth registrations are the definitive national data source for births in the UK. This data has been used to identify the total numbers of births to local residents and fertility rates.

Death registrations data[49] - Death certification is the most definitive data source on deaths nationally. This data has been used to report on deaths within the first 28 days and the first year of life.

Referral data[50] - Referral data to local services is a useful general measure of perceived need for services. For this HEA, the CCG provided data on the number of perinatal referrals to the local mental health provider trust.

Service activity dashboard for specialist mental health midwives[51] - This dashboard is used by UHBW to capture the overall workflow and referrals for maternal mental health support, including a range of measures for service need, outcomes and universal indicators. There was no additional demographic data available from this source, however, it

[46] Data provided by NBT and UHBW, compiled by Public Health, Bristol City Council
[47] More than 90% of maternities for residents of the three local authority areas in scope for this HEA take place in the care of the two large NHS providers that share data for this dataset so, while not offering complete coverage, it does offer very good coverage of the local population.
[48] Compiled by Office for National Statistics and obtained via NOMIS (www.nomisweb.co.uk)
[49] Compiled by Office for National Statistics and obtained via NHS Digital
[50] Provided by NHS BNSSG Clinical Commissioning Group
[51] UHBW only

does offer a reasonable indication of the proportion of mothers receiving and in need of mental health support, for around half of local maternities (those accessing UHBW services).

METHOD OF ANALYSIS

No specialised statistical software was used in the compilation of the data for this HEA. The analysis was mainly achieved through collation, re-coding into categories where necessary, aggregation and cross-tabulation using MS Excel. Deprivation scores and quintiles were added to the local maternity dataset records based on the lower super output area (LSOA) of residence, based on overall IMD2019[52] scores for those LSOAs.

In most instances, and where the data available permits, the analysis in this HEA takes the form of an assessment in the overall numbers and trends over time, by local authority of residence, plus a breakdown of selected measures and indicators by various demographic characteristics (maternal age, ethnicity, deprivation quintile and ward of residence by local authority).

Many of the demographic characteristics and risk factors presented will be associated with one another to varying degrees and influence the outcomes presented in complicated and confounded ways. By and large, this HEA has only sought to present relatively simple analysis; typically, a single outcome in relation to a single demographic factor, and/or local authority of residence.

A more sophisticated multivariate combination of variables and outcomes was felt to be beyond the scope of this exercise and, while it might add more understanding to the precise causation of health outcomes, the interpretation would be more complicated to communicate and share. More detailed multi-variate analysis is an option where it is felt that it would add further understanding in future. Arguably, the primary purpose of a HEA is the variation in risks and outcomes more than that appreciation of causation, and the analysis has been designed with that in mind.

[52] www.gov.uk/government/statistics/english-indices-of-deprivation-2019