You & your Baby

A national survey of health and care during the 2020 Covid-19 pandemic

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A national survey of health and care during the 2020 Covid-19 pandemic

Siân Harrison

Fiona Alderdice*

Jenny McLeish

Maria A Quigley*

*Co-principal investigator

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National Perinatal Epidemiology Unit
Nuffield Department of Population Health
University of Oxford
Old Road Campus
Headington
Oxford
OX3 7LF

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Executive Summary

Population-based National Maternity Surveys (NMS) have been carried out by the National Perinatal Epidemiology Unit (NPEU) periodically since 1995. The NMS document the views of women with recent experience of maternity care in England and provide important information regarding changes in maternity services over time. A further NMS was commissioned in 2020 to explore the experiences of women who were pregnant and who gave birth during the first wave of the Covid-19 pandemic.

Women in the NMS are identified from birth registration records by the Office for National Statistics (ONS) and are representative of all women giving birth in England. However, response rates to the NMS have declined over recent years, which increases the risk of non-response bias whereby respondents differ to non-respondents on key variables of interest. Alternative approaches for collecting representative maternity survey data therefore need to be explored. The current study included a survey of women recruited through ONS (the 2020 NMS) and also a parallel survey of women recruited through social media.

The 2020 NMS was carried out using similar methods to those used in previous NMS. A random sample of 16,050 women who gave birth in England over a two-week period during May 2020 was selected from birth registration records. Unlike in previous NMS, women were randomised to receive either a postal questionnaire or a postal invitation to complete the questionnaire online. The social media survey was carried out by identifying women through adverts on popular social media platforms. It included a convenience sample of women who gave birth in the UK between March and August 2020, and who completed the questionnaire online. Women whose baby had died and mothers aged younger than 16 years were not included in either survey.

The questionnaire asked women about their experiences of maternity care during pregnancy, labour and birth, and the postnatal period. Women were also asked about infant feeding, their own physical and mental health, and lifestyle factors including smoking and vaping around the time of pregnancy and childbirth.

In total, 4,611 women were recruited through the 2020 NMS, a response rate of 28.9%, and 1,622 women were recruited through the social media survey. Response was lower in particular groups of women (e.g. younger women, women born outside of the UK, women living in less advantaged areas in the UK, and women who had given birth before), particularly in the social media survey.

This report includes the findings from all women who took part in the 2020 NMS and the social media survey but, due to the differences in the characteristics of respondents, the findings from the two surveys are reported in parallel. To help reduce the effect of non-response bias, population-based survey weights were calculated separately for each survey and were applied to the findings. Where appropriate, results from the 2020 NMS are compared with those from previous NMS or other similar surveys, such as the maternity surveys carried out by the Care Quality Commission (CQC).

The survey findings suggest that some aspects of women's experiences of maternity care remained consistent or even improved during the first wave of the Covid-19 pandemic, compared with findings from pre-pandemic maternity surveys. However, the findings also indicate that giving birth during the pandemic brought additional stresses at what can already be a challenging time. Overall, women received less information, guidance and support throughout their maternity journey compared with women who gave birth pre-pandemic. Women and their partners faced many changes and restrictions around appointments, scans and the birth itself, which many women found stressful and upsetting. During the postnatal period, women received fewer visits and check-ups and less support with infant feeding and managing mental health. Although infant feeding outcomes were not adversely affected, the prevalence of anxiety and depression increased significantly compared with pre-pandemic rates. Overall, the findings suggest that women's health suffered and experiences of maternity care were negatively impacted by giving birth during the Covid-19 pandemic. The study underlines the importance and value to women of high quality care throughout the maternity journey.

Taken together, the findings provide a picture of women's experiences of being pregnant and giving birth in England (2020 NMS) or in the UK (social media survey) during the first wave of the Covid-19 pandemic, and they also provide a further point of comparison with the past and for the future.

Key Findings

The 2020 NMS employed similar methods to previous NMS; therefore, comparisons can be made with findings from pre-pandemic NMS to provide insight into the potential impact of the Covid-19 pandemic on women's health and experiences of maternity care in England. The following key findings are based on comparisons with previous NMS in 2014 and 2018 and on women's responses to specific questions about how Covid-19 affected their pregnancy, labour and birth, and postnatal experiences.

Pregnancy

For the women who took part in the 2020 NMS, early antenatal care was mostly pre-pandemic (Autumn 2019) whereas later antenatal care was during the first wave of Covid-19 and around the time of the first national lockdowns in England (Spring 2020).

Findings suggesting no changes or positive changes compared with pre-pandemic NMS:

- There was no change in the proportion of women who attended their pregnancy booking appointment within ten weeks of pregnancy (71% versus 70% in the 2018 NMS).
- More women reported that they had a named midwife or clinical team they could contact during their pregnancy (86% versus 68% in the 2014 NMS).
- There was no change in the average number of antenatal appointments women attended (median=9 versus 9 in the 2014 NMS).
- More women were asked about their mental health at their pregnancy booking appointment (83% versus 78% in the 2018 NMS).
- There was no change in the prevalence of self-identified depression during pregnancy (8% versus 7% in the 2018 NMS).
- Fewer women were smoking tobacco during their pregnancy (8% versus 10% in the 2018 NMS).
- There was no change in the prevalence of vaping during pregnancy (4% versus 4% in the 2018 NMS).

Findings suggesting negative changes compared with pre-pandemic NMS:

- Fewer women always felt involved in decisions about their antenatal care (54% versus 70% in the 2014 NMS).
- Fewer women attended NHS antenatal classes (8% versus 30% in the 2014 NMS) and many classes were held online rather than face-to-face.
- The prevalence of self-identified anxiety during pregnancy was higher (22% versus 13% in the 2018 NMS).

- Fewer women felt that they had a health professional whom they could talk to about sensitive issues during pregnancy (80% versus 83% in the 2018 NMS).
- There was a slight decline in the proportion of women who were satisfied with their care during pregnancy, although the overall level of satisfaction was still high (84% versus 88% in the 2014 NMS).

Findings from Covid-19 specific questions:

- Only a small minority of women did not seek the help they needed during pregnancy due to concerns about Covid-19 (3%).
- Over half of women indicated that there had been changes to their pregnancy care because of Covid-19 (53%) and over a third of these women did not feel fully informed about the changes (36%).
- Over a third of women had antenatal appointments cancelled (36%) and some women chose not to attend antenatal appointments due to Covid-19 (13%).
- Many women's birth partners were unable to attend at least one appointment (81%) or scan (60%) due to Covid-19 restrictions.
- Most women felt well informed about pregnancy and childbirth (82%), yet fewer women felt informed about how Covid-19 would affect their pregnancy (44%) or maternity care (52%).
- Over a third of women indicated that they did not exercise during their pregnancy because they did not feel safe due to Covid-19 or because they were shielding or self-isolating (35%).

Labour and birth

All women who took part in the 2020 NMS gave birth during May 2020, which was during the first wave of Covid-19 and during the first national lockdown in England.

Findings suggesting no changes or positive changes compared with pre-pandemic NMS:

- The proportions of women giving birth in different locations were consistent with pre-pandemic findings (88% in hospital, 9% in a birth centre separate from hospital, and 2% at home versus 88% in hospital, 9% in a birth centre separate from hospital, and 3% at home in the 2018 NMS).
- The proportions of women holding their baby (94% versus 93% in the 2018 NMS) and having skin-to-skin contact (92% versus 91% in the 2018 NMS) soon after birth remained high.

Findings suggesting negative changes compared with pre-pandemic NMS:

- More women were cared for by a greater number of different midwives during labour and birth (33% received care from four or more midwives versus 26% in the 2014 NMS).

- There was a slight decline in the proportion of women who were satisfied with their care during labour and birth, although the overall level of satisfaction was still high (85% versus 88% in the 2014 NMS).

Findings from Covid-19 specific questions:

- One in ten women indicated that there had been a change to their planned place of birth due to Covid-19 (10%).
- A third of women experienced other changes to their plans for birth (32%) and only half of these women felt fully informed about the changes (49%).
- Almost three quarters of women's birth partners faced restrictions around attending births (73%).

Postnatal period

The survey focused on the first six months of the postnatal period, which was from May to November 2020 for all women who took part in the 2020 NMS. There were various lockdowns and restrictions in place both nationally and locally during this time.

Findings suggesting no changes or positive changes compared with pre-pandemic NMS:

- More women reported that they had a named midwife or clinical team they could contact after giving birth (82% versus 77% in the 2014 NMS).
- There was no change in the breastfeeding initiation rate, which remained high (85% versus 85% in the 2018 NMS).
- More women were still breastfeeding their baby at six months of age (48% versus 45% in the 2018 NMS).
- More women introduced solid food to their baby when they were at least six months old (50% versus 44% in 2018).
- The prevalence of various physical health problems during the postnatal period was very similar in the 2018 and 2020 NMS.

Findings suggesting negative changes compared with pre-pandemic NMS:

- On average, women had fewer postnatal home visits from a midwife (median=1 versus 3 in the 2018 NMS).
- More women indicated that they wanted or needed more midwifery contact in the postnatal period (50% versus 24% in the 2014 NMS).
- Fewer women had a postnatal check-up of their own health at their GP surgery (84% versus 91% in the 2018 NMS) and, of those who did, not all were carried out face-to-face (83%).
- More women expressed a need for additional professional breastfeeding support (46% versus 30% in the 2018 NMS).

- More women reported that they were feeling fatigued six months after giving birth (32% versus 26% in the 2018 NMS).
- Fewer women reported that they were asked about their mental health during the postnatal period (74% versus 78% in the 2018 NMS).
- The prevalence of self-identified postnatal anxiety (39% versus 29% in the 2018 NMS) and postnatal depression (22% versus 16% in the 2018 NMS) was higher.
- There was a decline in the proportion of women who were satisfied with their care during the postnatal period (53% versus 77% in the 2014 NMS).

Findings from Covid-19 specific questions:

- The majority of women reported that there were changes to the visiting hours or policies at their hospital or birth centre due to Covid-19 (92%).
- Most babies received their first routine vaccination on time (87%), although 11% were delayed. A minority of babies were not taken for their vaccination due to concerns about Covid-19 (1%).
- Of the women who were receiving mental health support or treatment during the postnatal period, over a quarter indicated that there had been changes to these services (28%).
- Almost two-thirds of women indicated that they were able to access less general support due to Covid-19 (63%).
- A quarter of women did not exercise as much as they wanted to during the postnatal period either because they did not feel safe due to Covid-19 or because they were shielding or self-isolating (25%).

Figures and Tables

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1. Background

Population-based National Maternity Surveys (NMS) were carried out by the National Perinatal Epidemiology Unit (NPEU) in 1995 (with the Audit Commission),[1] 2006[2], 2010[3], 2014[4] and 2018[5]. The NMS document the views of women who have recent experience of maternity care and provide important information regarding changes in maternity services over time. As part of a programme of work by the Department of Health and Social Care (DHSC), funded through the National Institute for Health Research (NIHR) Policy Research Unit for Maternal and Neonatal Health and Care (PRU-MNHC), a further NMS was commissioned in 2020.

Like all areas of NHS care, maternity services were affected by the Covid-19 pandemic in 2020. Contacts with maternity services throughout the perinatal period were reduced or carried out remotely, clinicians were required to wear personal protective equipment during face-to-face contacts, and restrictions were imposed on birth partners attending appointments, scans and births. In addition to changes to maternity services, the UK Government placed pregnant women into the group of people who were considered 'vulnerable' to the severe effects of Covid-19 and recommended that they 'stringently apply social distancing measures'.[6] Being pregnant and giving birth during the Covid-19 pandemic may therefore have brought additional stresses for women and their families at what can already be a challenging time. Carrying out a NMS in 2020 was particularly important to capture the experiences of women who gave birth in England at an unprecedented time and also to provide another benchmark for maternity care. In contrast to other maternity surveys conducted in the UK during the Covid-19 pandemic[7-14] the 2020 NMS was nationally-

[1] Audit Commission. First Class Delivery: Improving Maternity Services in England and Wales. London: Audit Commission, 1997.
[2] Redshaw M, Rowe R, Hockley C, et al. Recorded Delivery: a national survey of women's experience of maternity care 2006. Oxford: National Perinatal Epidemiology Unit, 2007.
[3] Redshaw M, Heikkila K. Delivered with care: a national survey of women's experience of maternity care 2010. Oxford: National Perinatal Epidemiology Unit, 2010.
[4] Redshaw M, Henderson J. Safely delivered: a national survey of women's experience of maternity care 2014. Oxford: National Perinatal Epidemiology Unit, 2014.
[5] Harrison S, Alderdice F, Henderson J, Quigley MA. You and Your Baby: A national survey of health and care. Oxford: National Perinatal Epidemiology Unit, University of Oxford, 2020.
[6] Jardine J, Relph S, Magee LA, von Dadelszen P, Morris E, Ross-Davie M, Draycott T, Khalil A. Maternity services in the UK during the coronavirus disease 2019 pandemic: a national survey of modifications to standard care. BJOG 2021;128:880–889.
[7] Karavadra B, Stockl A, Proser-Snelling E, Simpson P, Morris E. Women's perceptions of COVID-19 and their healthcare experiences: a qualitative thematic analysis of a national survey of pregnant women in the United Kingdom. BMC Pregnancy and Childbirth 2020;20(1):600.
[8] Brown A, Shenker N. Experiences of breastfeeding during COVID-19: Lessons for future practical and emotional support. Maternal & Child Nutrition 2021;17(1):e13088.
[9] Sanders J, Blaylock R. "Anxious and traumatised": Users' experiences of maternity care in the UK during the COVID-19 pandemic. Midwifery 2021;102:103069.
[10] Fallon V, Davies SM, Silverio SA, Jackson L, De Pascalis L, Harrold JA. Psychosocial experiences of postnatal women during the COVID-19 pandemic. A UK-wide study of prevalence rates and risk factors for clinically relevant depression and anxiety. Journal of Psychiatric Research 2021;136:157-166.
[11] Chatwin J, Butler D, Jones J, James L, Choucri L, McCarthy R. Experiences of pregnant mothers using a social media based antenatal support service during the COVID-19 lockdown in the UK: findings from a user survey. BMJ Open 2021;11:e040649.
[12] Rhodes A, Kheireddine S, Smith AD. Experiences, Attitudes, and Needs of Users of a Pregnancy and Parenting App (Baby Buddy) During the COVID-19 Pandemic: Mixed Methods Study. Journal of Medical Internet Research Mhealth Uhealth. 2020;8(12):e23157.
[13] Costantini C, Joyce A, Britez Y. Breastfeeding Experiences During the COVID-19 Lockdown in the United Kingdom: An Exploratory Study Into Maternal Opinions and Emotional States. Journal of Human Lactation 2021:8903344211026565.
[14] Vazquez-Vazquez A, Dib S, Rougeaux E, Wells JC, Fewtrell MS. The impact of the Covid-19 lockdown on the experiences and feeding practices of new mothers in the UK: Preliminary data from the COVID-19 New Mum Study. Appetite 2021;156:104985.

representative and, because similar methods to previous NMS were employed, comparisons can be made across the NMS, providing data on ongoing trends and also insight into the potential impact of the Covid-19 pandemic on women's health and maternity care in England.

Women in the NMS are identified from birth registrations through the Office for National Statistics (ONS) and are representative of all women giving birth in England. However, response rates to the NMS have declined over recent years, which increases the risk of non-response bias whereby respondents differ to non-respondents on key variables of interest. Alternative approaches for recruiting women and collecting NMS data might therefore be needed to ensure that findings are generalisable to the wider population of women who have recently given birth. Social media is emerging as a promising way to identify and recruit potential research participants. When compared with traditional recruitment methods, potential benefits include a wider reach, reduced costs and shorter recruitment periods.[15] However, as with traditional recruitment methods, social media recruitment can be limited by the over-representation of respondents with particular demographics and also by inequity in internet access.[16] Further work is needed to evaluate whether recruiting through social media could provide an additional method for collecting representative NMS data.

2. Aims

The primary aim of the study was to collect population-based data on women's experiences of being pregnant and giving birth in England (2020 NMS) or in the UK (social media survey) during the first wave of the Covid-19 pandemic. Specifically, the study aimed to: describe women's health and experiences of maternity care during pregnancy, labour and birth, and the postnatal period; describe infant feeding practices; estimate the prevalence of anxiety and depression in women during pregnancy and the postnatal period; and estimate the prevalence of smoking and vaping in women around the time of pregnancy and childbirth. The secondary aims of the study were to examine whether women's health and experiences of care vary according to different demographic characteristics, and to assess the impact of different survey methods on response rate, representativeness, acceptability and cost.

The purpose of this report is to describe women's experiences of being pregnant and giving birth in England (2020 NMS) or in the UK (social media survey) during the Covid-19 pandemic (primary aim). Analysis of the key outcomes for women with different sociodemographic characteristics will be the focus of future publications, and a full analysis and comparison of the different survey methods used in the study will also be published separately (secondary aims).

[15] Whitaker C, Stevelink S, Fear N. The Use of Facebook in Recruiting Participants for Health Research Purposes: A Systematic Review. Journal of Medical Internet Reserach 2017;19(8):e290

[16] Ali SH, Foreman J, Capasso A. Jones AM, Toza Y, DiClemente RJ. Social media as a recruitment platform for a nationwide online survey of COVID-19 knowledge, beliefs, and practices in the United States: methodology and feasibility analysis. BMC Medical Research Methodology 2020;20:116.

3. Methods

Ethical approval for the study was obtained from the North West - Greater Manchester East Research Ethics Committee (REC reference 20/NW/0426) on 22 October 2020.

3.1 Study design and sample

The study included two parallel surveys, the 2020 NMS and a social media survey, which employed different methods of recruitment and data collection (**Figure 1**).

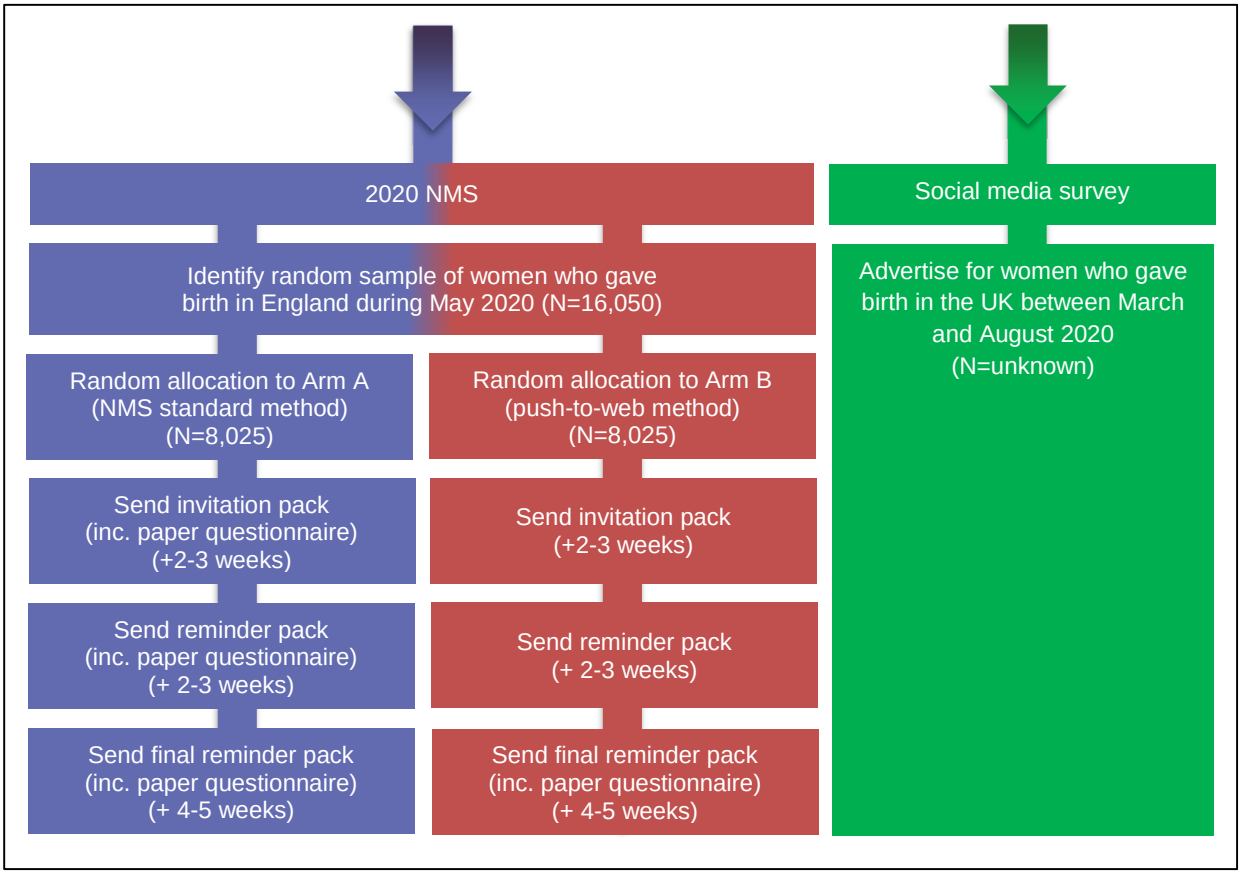

Figure 1: Study recruitment and data collection methods

The 2020 NMS was a cross-sectional postal and online survey. A random population-based sample of 16,050 women was identified by ONS using birth registration records (see **Appendix A** for sample size calculation). The women were aged 16 years or older, living in England at the time the birth was registered, and had given birth to their baby in England during a two-week period from 11th to 24th May 2020. At the time the sample was drawn (in November 2020), 95% of all birth notifications in May 2020 had a corresponding birth registration record. A randomised study was embedded in the 2020 NMS to compare two different methods of data collection. Arm A involved sending a paper questionnaire via post with online and telephone options (as used in previous NMS) and Arm B involved sending an invitation to the online questionnaire via post (a 'push-to-

web' method). Full details of the randomised study will be published separately. All women in the 2020 NMS were first contacted six months after they had given birth. Prior to each mailing, ONS completed checks for infant deaths and any women whose baby had died were excluded.

The social media survey was a cross-sectional online only survey. A convenience sample of women was identified by advertising on social media platforms and pregnancy and childbirth websites (see **Appendix A** for further details about the sample). Women were eligible if they were aged 16 years or older, living in the UK, and had given birth to their baby in the UK between March and August 2020. Women were required to self-screen to confirm their eligibility and were then asked to complete the questionnaire online. Eligible women whose baby had died were redirected to organisations where information and support services could be accessed.

3.2 Data collection

Figure 2 on page 23 shows the key study time points, specifically the periods of eligible births in the 2020 NMS and the social media survey, the timing of the mailings in the 2020 NMS, and the study end point. These are shown against the timeline of UK Government Covid-19 lockdowns and restrictions from March 2020 to March 2021 in order to highlight the restrictions that were in place when the women who took part were pregnant, giving birth and invited to participate in the study.[17]

The initial mailing of study invitation packs in the 2020 NMS took place in November 2020, six months after women had given birth. The first reminder packs were sent out in December 2020, two to three weeks after the initial invitation packs, and the final reminder packs were sent out in January 2021, after a further four to five weeks. The social media survey was open from 27th November 2020 until 26th February 2021. Further details about the data collection methods are included in **Appendix A**. The questionnaire was identical for women who took part in the 2020 NMS or the social media survey and for women who took part by post or online. Women were guided through questions about their pregnancy, labour and birth, and the postnatal period, and were asked to share their views and experiences. Women who had experienced a multiple birth were asked to complete the questionnaire for their first-born baby only. Full details of the questionnaire content are shown in **Appendix B**.

[17] https://www.instituteforgovernment.org.uk/charts/uk-government-coronavirus-lockdowns. Accessed 2nd August 2021.

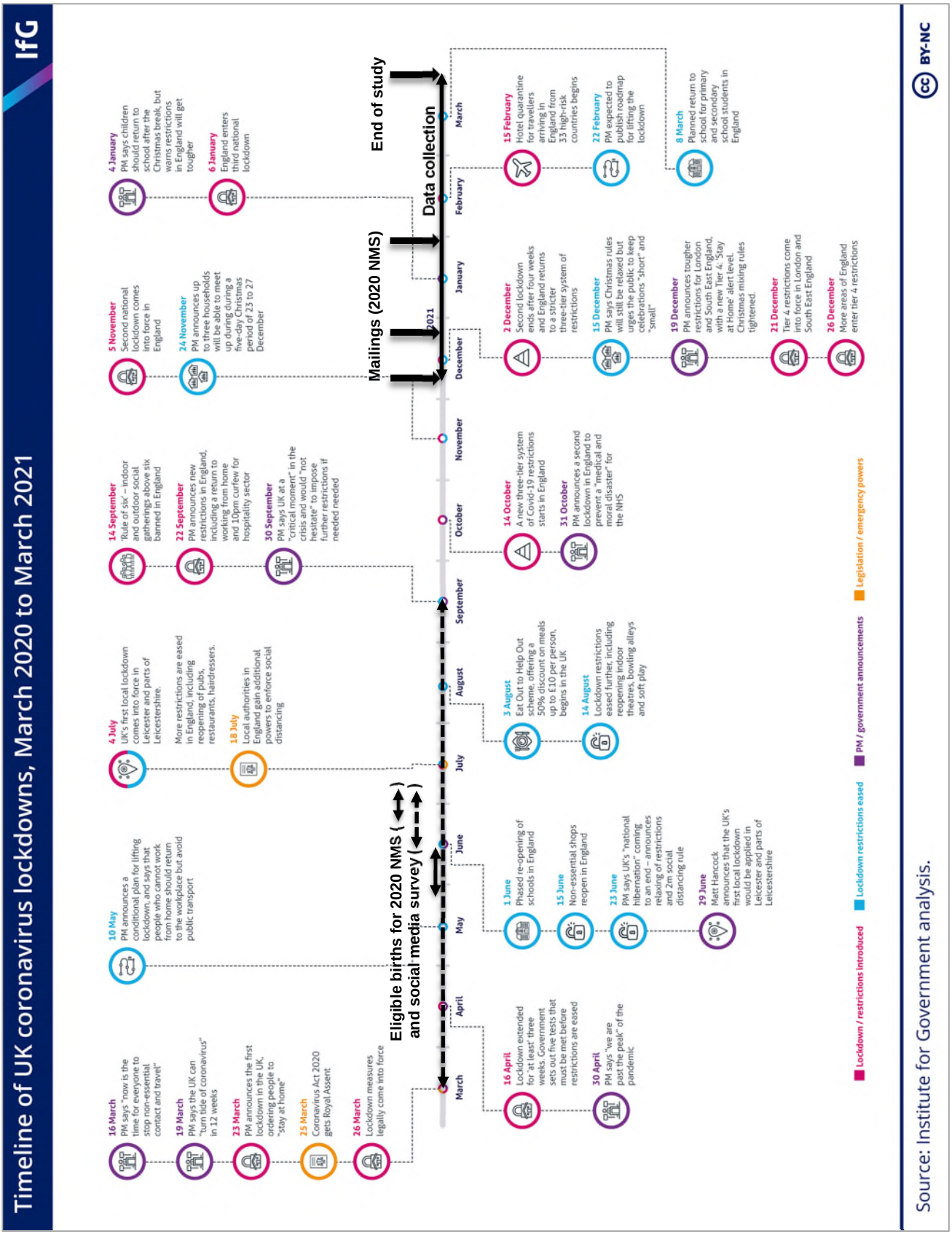

Figure 2: Key study time points and timeline of UK Government Covid-19 restrictions

3.3 Data analysis

For our initial analysis, we described the response rates to the 2020 NMS. We compared the response rate in Arm A (the standard method used in previous NMS) to the response rates across the previous NMS. To assess the representativeness of the respondents, we compared the sociodemographic characteristics of the women who responded to the 2020 NMS with the women who were selected but who did not respond, and the sociodemographic characteristics of the women who responded to the social media survey with all women giving birth in the UK during 2019. We then compared the 2020 NMS respondents to the social media survey respondents and, finally, the 2020 NMS respondents with respondents to previous NMS. Differences between groups (e.g. respondents versus non-respondents, 2020 NMS respondents versus social media survey respondents) were compared using Chi-Square tests and the significance level was set at $p<0.05$ for all analyses.

For our main analysis, survey-weighted descriptive statistics (e.g. proportions and medians) were estimated for survey respondents. The analysis of data from the 2020 NMS and the social media survey was conducted separately and the results are presented in parallel throughout the report. Where appropriate, results from the 2020 NMS are compared with those from previous NMS or other similar surveys, such as the maternity surveys carried out by the Care Quality Commission (CQC), which explore quality of care provision. Differences between proportions (e.g. in the 2020 NMS and the most recent comparable NMS) are reported with 95% confidence intervals (CI). Where available, results are also compared with estimates from national routine data pertaining to the same period of births or with the most recently published data available (e.g. data published by ONS). It is important to note that the most recent routine data may be from before the first wave of the Covid-19 pandemic in the UK.

The questionnaire included a number of open text questions on care during pregnancy, labour and birth, and the postnatal period and responses to these questions by women in the 2020 NMS were analysed thematically. Further details about the analysis are included in **Appendix A**.

3.4 Parent, Patient and Public Involvement and Engagement

The study was undertaken by the Policy Research Unit in Maternal and Neonatal Health and Care (PRU-MNHC) in the NPEU. The PRU-MNHC includes two Parent, Patient and Public Involvement and Engagement (PPPIE) co-leads as part of the core team. The PPPIE co-leads were involved in the design of the study from the outset and drew on their vast PPPIE network to gain additional input to the study. Input from the PPPIE network was sought for the design of study materials including the topics and questions included in the questionnaire, and the language used in the invitation letter, participant information sheet, study advert and online material. As a result of

feedback from PPPIE, changes were made to the language across these materials to improve clarity and sensitivity. PPPIE was also sought in the interpretation of survey results, drafting of an infographic summary report, and planning the dissemination strategy for the survey findings. In addition to the PPPIE strategy which we devised specifically for the 2020 NMS and social media survey, the surveys were based closely on earlier NMS, which have all relied on extensive PPPIE and user input. Cognitive interviews were undertaken prior to the 2018 NMS to check on the content and face validity of the questionnaire, most of which was carried forward into the 2020 questionnaire. In addition to the publication of this report on the PRU-MNHC website, the infographic summary report, designed in collaboration with our PPPIE co-leads, will be published on the website to highlight the key findings for the women who took part in the study and other lay audiences.

4. The women who took part in the study

4.1 Response to the study

The flow of recruitment, the number of questionnaires returned in the 2020 NMS, and a breakdown of returns according to survey arm are shown in **Appendix C**. Of the 16,049 eligible women who were sent a survey invitation pack, 4,611 women returned questionnaires which were used in the data analysis; 11,361 women either did not respond to the survey or returned blank questionnaires. A small number of packs (n=77) were returned undelivered. The overall response rate to the 2020 NMS was 28.9% (4,611 out of 15,972). The response rate in Arm A was 30.6% (2,446 out of 7,992) and the response rate in Arm B was 27.1% (2,165 out of 7,980). **Figure 3** shows the overall response rates across the NMS (Arm A only in 2020 due to the methods being comparable).

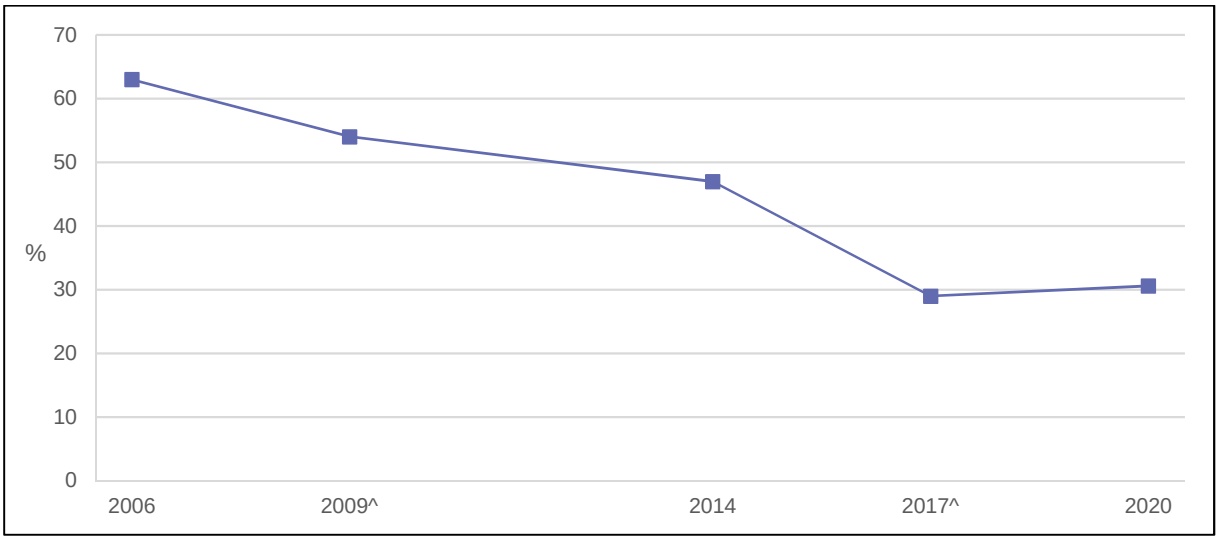

Figure 3: Response rates to the NMS from 2006-2020

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The 2018 NMS and 2020 NMS were distributed to women when their baby was six months old whereas the previous NMS were distributed to women when their baby was three months old.

The number of usable online questionnaires returned in the social media survey was 1,622, which is comparable to three other recent maternity surveys conducted through social media,[7-8,14] and much larger than most other recent social media maternity surveys which have yielded sample sizes below 700.[9-12] One notable recent online survey recruited over 4,000 women to explore the impact of Covid-19 on breastfeeding.[13] There was no sampling frame for the social media survey in the current study, hence there is no denominator to enable calculation of a response rate.

4.2 Respondent characteristics

Summary data describing the characteristics of: 1) the 2020 NMS respondents (Arms A and B combined); 2) the 2020 NMS non-respondents; and 3) the social media survey respondents are presented in **Appendix D** and summarised below. Summary data describing the characteristics of respondents across the previous NMS are presented in **Appendix E**.

4.2.1 Representativeness of respondents

The 4,611 women who responded to the 2020 NMS were more likely to be older, married when they registered the birth of their baby, born in the UK, living in more advantaged areas of England, and primiparous compared to the 11,361 women who were invited to take part but who did not respond ($p<0.001$) (**Appendix D**, **Table A2**).

The 1,622 women who responded to the social media survey were more likely to be older, born in the UK, living in more advantaged areas in the UK, and primiparous when compared to the 712,680 women who gave birth in the UK during 2019 (**Appendix F**, **Table A5**). In addition, women from England and Northern Ireland were slightly underrepresented and women from Scotland and Wales were slightly overrepresented in the social media survey (see **Appendix F, Table A5**).[18]

Due to the differences between the respondents and non-respondents in the 2020 NMS, and the differences between the respondents in the social media survey and all women giving birth in the UK during 2019, survey weights were derived for each of the surveys and these weights were applied to all analyses to reduce the effect of non-response bias (see **Appendix F** for further details on the calculation and application of survey weights).

4.2.2 Comparison of respondents to the 2020 NMS and the social media survey

There were differences between the sociodemographic characteristics of the respondents to the 2020 NMS and the respondents to the social media survey. Compared to the 4,611 women who took part in the 2020 NMS, the 1,622 women who took part in the social media survey were more

[18] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/birthcharacteristicsinenglandandwales. Accessed 22 June 2021.

likely to be older, born in the UK, living in more advantaged areas in the UK, primiparous, and to have had a multiple birth (p<0.05) (**Appendix D, Table A2**).

It is important to note that, due to the differing periods for eligible births between the 2020 NMS (two week period in May 2020) and the social media survey (six month period from March to August 2020), the ages of the babies at the time women took part in the two surveys differed. The babies of the women who took part in the 2020 NMS had ages ranging from 24-44 weeks, with a median age of 28 weeks (interquartile range (IQR)=27 to 32 weeks). The babies of the women who took part in the social media survey had ages ranging from 12-48 weeks, with a median age of 26 weeks (IQR=21 to 33 weeks).

5. Results

The results are presented under the following six headings: 1) pregnancy; 2) labour and birth; 3) postnatal period; 4) infant feeding; 5) maternal health; and 6) maternal lifestyle. Covid-19 related findings are presented within the relevant sections. Where trends over time are shown using data from across the NMS, data from the social media survey are not included.

5.1 Pregnancy

Summary pregnancy data for the respondents to the 2020 NMS and the social media survey are presented in **Table 1** in section 5.1.10 on pages 37-39.

5.1.1 Pregnancy planning and booking appointment

Three-quarters of women in the study reported that their pregnancy was planned (74.1% to 74.7% in both surveys), which was similar to the proportions of planned pregnancies reported in previous NMS (71% to 76% in the NMS from 2010-2018).

The booking appointment at which women have their history taken and are given their pregnancy notes, usually by a midwife, is an important marker in planning care. According to the National Institute for Health and Care Excellence (NICE), pregnancy booking should ideally be carried out by 10 weeks' gestation.[19] The women in the 2020 NMS gave birth during May 2020 and so most of these women would have been due to attend their booking appointment during Autumn 2019 (pre-pandemic). **Figure 4** shows the proportions of women who attended their booking appointment by 10 weeks' gestation across the NMS. The proportion was 50.4% in the 2006 NMS, 62.7% in the 2010 NMS, 69.9% in the 2014 NMS, 70.2% in the 2018 NMS and 71.2% (95% CI: 69.8 to 72.5) in

[19] https://www.nice.org.uk/guidance/qs22/chapter/quality-statement-1-services-access-to-antenatal-care. Accessed 23 June 2021.

the 2020 NMS. These figures suggest there was a small increase between the 2018 NMS and the 2020 NMS but the difference was not statistically significant (1.0%, 95%CI: -0.9 to 2.9). In the social media survey, 72.5% (95% CI: 70.3 to 74.7) of women had attended their booking appointment within the first 10 weeks of pregnancy.

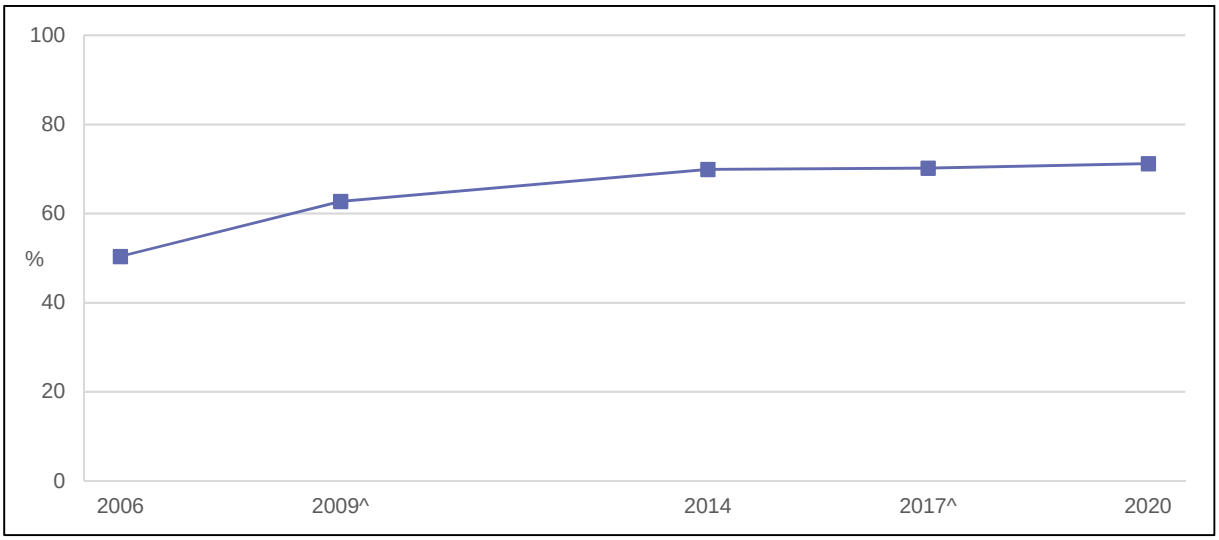

Figure 4: Proportion of women attending booking appointments by 10 weeks' gestation across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 71.3%; the unweighted proportion in the 2018 NMS was 72.3%; the unweighted proportion in the 2020 NMS was 72.7%

The figures for both the 2020 NMS and the social media survey are higher than the national routine data for England in 2019-2020 which shows that 63.2% of women had their booking appointment within the first 10 weeks of pregnancy (NHS Digital Maternity Services Dataset (MSDS)).[20]

5.1.2 Complex pregnancies and help seeking for health concerns

The care of women with more complex pregnancies may be managed in different ways, with specialist clinics, day assessment units and admissions to hospital. Women were asked whether they had any long-term health problems which made their pregnancy difficult or any pregnancy-specific problems which affected them or their baby. In the 2020 NMS, 11.9% of women had a long-term health problem which complicated their pregnancy, such as diabetes or high blood pressure, and 30.7% of women reported that they had experienced a pregnancy-specific problem, such as gestational diabetes or pre-eclampsia. The figures in the social media survey were slightly higher than in the 2020 NMS (12.7% and 40.6% respectively).

Women were asked whether they sought help during their pregnancy if they had any health concerns. In both surveys, over half of women reported that they did seek help if they needed it

[20] https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20. Accessed 23 June 2021.

(54.1% in the 2020 NMS and 59.2% in the social media survey). A large proportion of women did not feel that they needed to seek help (41.4% in the 2020 NMS and 36.4% in the social media survey) and only a minority of women did not seek the help they needed either due to Covid-19 (3.3% to 3.7% in both surveys) or because of other reasons (0.8% to 1.2% in both surveys).

5.1.3 Care during pregnancy

The term 'continuity of carer' describes consistency in the midwife or clinical team that provides care for a woman and her baby throughout the three phases of her maternity journey: pregnancy, labour and birth, and the postnatal period.[21] Women who receive midwifery-led continuity of carer report significantly improved experience of care across a range of outcomes.[22] **Figure 5** shows the proportion of women who had a named midwife or clinical team whom they could get in touch with during their pregnancy across the NMS. The proportion was higher in the 2006 NMS and the 2010 NMS (91% to 92%), although the question wording was slightly different in these earlier surveys (see footnote to **Figure 5**). The proportion of women who had a named midwife decreased in the 2014 NMS (68.0%) and then increased by 18.0% (95%CI: 16.3 to 19.7) in the 2020 NMS (86.0%, 95%CI: 85.0 to 87.0). In the social media survey, 87.5% of women reported that they had a named midwife or clinical team during their pregnancy.

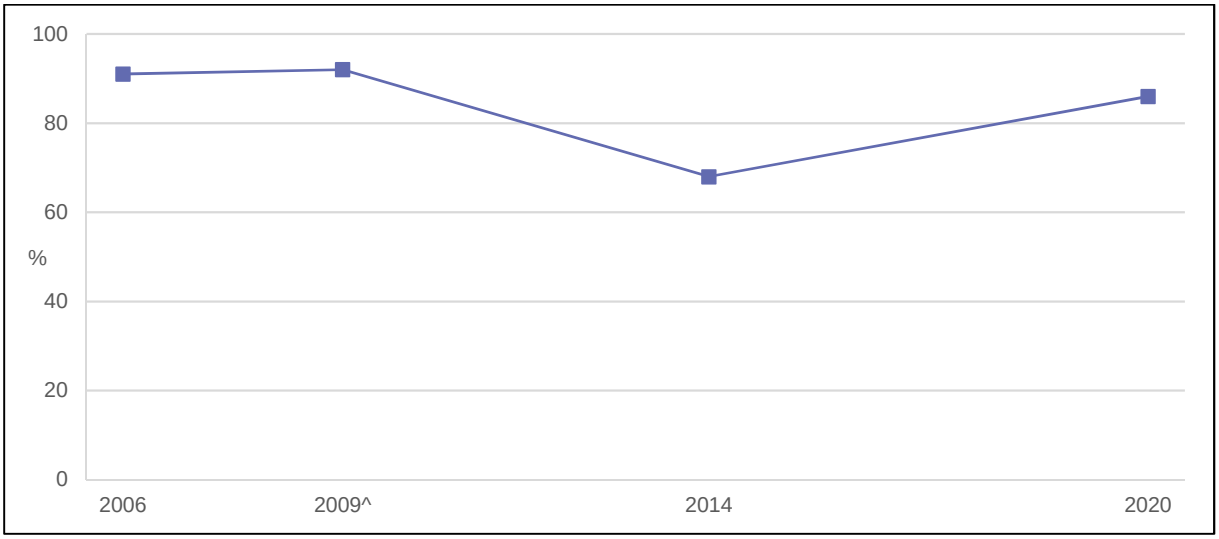

Figure 5: Proportion of women who had a named midwife during pregnancy across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010
Note: In the 2006 and 2010 NMS, women were asked whether they had the name and contact details of a midwife they could contact if they were worried during their pregnancy. In the 2014 and 2020 NMS, women were asked whether they had a named midwife (2014) or named midwife/midwifery team (2020) with contact details so they could get in touch. The question was not included in the 2018 NMS. The unweighted proportion in the 2014 NMS was 68.1%; the unweighted proportion in the 2020 NMS was 87.9%.

Almost half (48.1%) of the women who took part in the 2020 NMS saw only one or two midwives during the course of their pregnancy, one in five (21.1%, 95%CI: 20.0 to 22.4) women saw five or

[21] https://www.england.nhs.uk/ltphimenu/maternity/targeted-and-enhanced-midwifery-led-continuity-of-carer/. Accessed 7 October 2021.
[22] Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. Cochrane Database of Systematic Reviews 2016; Issue 4. Art. No.:CD004667.

more different midwives. In the 2014 NMS, 44.5% of women saw only one or two midwives and 19.0% saw five or more different midwives. There was a small but statistically significant increase (2.1%, 95%CI: 0.5 to 3.8) in the proportion of women seeing five or more different midwives in the 2020 NMS compared to the 2014 NMS. The figures for the social media survey were similar to the 2020 NMS with slightly fewer (43.5%) women seeing one or two midwives and slightly more (27.2%) women seeing five or more midwives.

5.1.4 Antenatal appointments

The women in the 2020 NMS would have been attending antenatal appointments from Autumn 2019 through to Spring 2020 meaning earlier appointments were pre-pandemic and later appointments were during the first wave of the Covid-19 pandemic and the first national lockdowns across the UK. The median number of antenatal appointments attended by women in the 2020 NMS was 9 (IQR=6 to 12), which is the same as in the 2010 NMS and the 2014 NMS. Antenatal care takes place in different locations and with members of different health professional groups. Hospital clinics, GP surgeries, children's centres, local clinics and at home are the most common places for women to have check-ups during their pregnancy. In the 2020 NMS, almost two-thirds of women attended at least one antenatal appointment at a hospital clinic (72.4%) and over half attended at least one appointment at their GP surgery (57.8%). Fewer women had at least one appointment either at a children's centre (23.3%) or local clinic (20.2%) and fewer women still had at least one face-to-face appointment at home (16.5%). A substantial proportion of women had at least one antenatal appointment by telephone (30.2%) or video call (4.2 %).

In both the 2020 NMS and the social media survey, the majority (91.5% to 92.6%) of women indicated a preference for face-to-face antenatal appointments. In the 2020 NMS, 15.2% of women reported that they had been offered a choice about having their appointment face-to-face or by telephone compared to 9.9% of women in the social media survey. In both surveys, the majority (96.6% to 97.4%) of women most often saw a midwife for their antenatal appointments, with over a third seeing an obstetrician and less than one in ten women seeing a GP or other health professional. These figures are similar to in the 2014 NMS in which 94.2% of women saw a midwife, 30.0% saw an obstetrician and 14.2% saw a GP for their antenatal appointments. Some women saw multiple health professionals for their antenatal appointments.

Women were asked whether their birth partner was able to attend all of their antenatal appointments and scans. In both surveys, four out of five (80.7% to 80.8%) women indicated that their birth partner was prevented from attending at least one appointment and approximately three out of five (59.8% in the 2020 NMS and 62.1% in the social media survey) women indicated that their birth partner was prevented from attending at least one scan due to Covid-19 restrictions.

Over half of the women in the study reported that there had been changes to their pregnancy care because of Covid-19 (53.3% in the 2020 NMS and 51.6% in the social media survey) and a substantial number of these women indicated that they had not been fully informed of the changes (35.5% in the 2020 NMS and 39.5% in the social media survey). Over a third of women (35.7% to 35.9% in both surveys) had antenatal appointments cancelled due to Covid-19 and, although the majority were informed about the cancellation, mostly by letter, email or by multiple modes of communication, a minority were not informed at all (7.6% in the 2020 NMS and 13.0% in the social media survey). Antenatal appointments were missed by approximately 12.5% of women in the 2020 NMS and 14.5% of women in the social media survey due to Covid-19 concerns or restrictions.

5.1.5 Access to information and involvement in care during pregnancy

Women were asked where and how they had accessed information during their pregnancy. A variety of sources of information were utilised. The most commonly cited source of general information about pregnancy and childbirth was health professionals (84.4% in the 2020 NMS and 91.0% in the social media survey) and 75.9% to 76.2% of women in both surveys cited family and friends as additional sources of information. Websites, social media and pregnancy-specific apps were also used for general information about pregnancy and childbirth and these were used by a slightly higher proportion of women in the social media survey (80.7% for websites, 69.4% for social media, 61.2% for apps) compared to women in the 2020 NMS (71.8% for websites, 54.8% for social media, 55.9% for apps).

For Covid-19 related information about pregnancy and childbirth, health professionals were again cited as the primary source of information by women in both surveys (58.4% in the 2020 NMS and 60.1% in the social media survey). Websites and social media were also used by many women and again the proportions were slightly higher in the social media survey (56.8% for websites, 43.2% for social media) compared to in the 2020 NMS (50.9% for websites, 33.3% for social media). Family and friends and pregnancy-specific apps were used much less commonly for Covid-19 related information than they were for general information by women in both surveys. Over three-quarters of women indicated that they could go online to access general and Covid-19 related information about pregnancy and childbirth as often as they needed to (76.5% in the 2020 NMS and 78.6% in the social media survey). A minority of women reported that they did not have access to online information at all (7.2% to 7.8% in both surveys).

Women were asked whether they felt they had received enough information about different aspects of pregnancy and Covid-19. The majority of women in the 2020 NMS felt sufficiently informed about pregnancy in general (82.1%), whereas fewer women felt they were sufficiently informed about the pregnancy risks from Covid-19 (44.3%) or about changes to their maternity care because of Covid-19 (52.3%). The corresponding proportions were slightly lower for women in the social media survey: 78.3%, 32.3% and 44.1% respectively.

Involving women in decisions about their antenatal care is essential to providing personalised, women-centred care, as described in Better Births.[23] **Figure 6** shows the proportion of women who felt that they were always involved in decisions about their antenatal care across the NMS. The proportion was 61.9% in the 2010 NMS, 70.2% in the 2014 NMS and 53.6% (95%CI: 52.1 to 55.1) in the 2020 NMS. There was a decrease of 16.6% (95%CI: 14.6 to 18.5) in the proportion of women who felt they were always involved in decisions about their antenatal care between the 2014 NMS and the 2020 NMS. As we did not ask this question in the 2018 NMS, we sought comparable data from the CQC maternity surveys. The figure in the 2020 NMS is considerably lower than the CQC reported in their 2019 maternity survey (82%) although the CQC figure excluded those women who reported that they were unsure about their involvement in decisions. Around a third (30.7%) of women in the 2020 NMS reported that they were sometimes involved in decisions about their antenatal care but a substantial minority of women were either unsure or were not involved enough (15.7%). In the social media survey, 49.0% (95%CI: 46.6 to 51.5) of women were always involved, 34.3% were sometimes involved and 16.7% were either unsure or were not involved enough in decisions about their antenatal care.

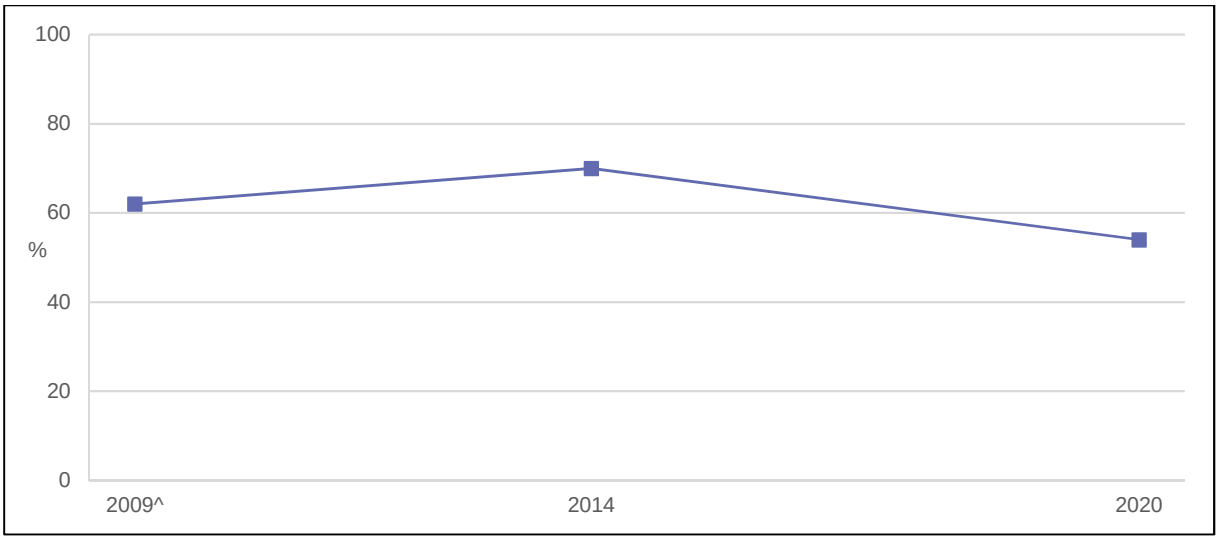

Figure 6: Proportion of women who were always involved in decisions about their antenatal care across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010
Note: The 2010 NMS asked about involvement with decisions about overall maternity care, whereas the 2014 NMS and 2020 NMS asked women specifically about involvement with decisions about their antenatal care.The unweighted proportion in the 2014 NMS was 71.7%; the unweighted proportion in the 2020 NMS was 52.9%.

5.1.6 Antenatal classes

Antenatal classes can help women to prepare for their baby's birth and provide an important source of information and support. Free NHS classes and private classes are available and it is possible for women to attend more than one type of class. **Figure 7** shows attendance at NHS and private

[23] Healthcare Commission. Towards Better Births: a review of maternity services in England. London: Healthcare Commission, 2008.

antenatal classes for women across the NMS. Overall attendance at NHS antenatal classes has declined in recent years from 40.2% in the 2010 NMS to 29.5% in the 2014 NMS, but the decline was more marked in the 2020 NMS with only 7.9% (95% CI: 7.2 to 8.7) of women attending NHS classes. Therefore, there was a 21.6% (95%CI: 20.0 to 23.1) decrease between the 2014 NMS and the 2020 NMS which was statistically significant. Again, as we did not ask this question in the 2018 NMS, we sought comparable data from the CQC maternity surveys. The CQC asked about attendance at antenatal classes in their maternity survey for the first time in 2019 and they found that 30% of women attended classes provided by the NHS.[24] Overall attendance at private classes increased from 5.5% in the 2006 NMS to 11.6% in the 2010 NMS and 11.2% in the 2014 NMS. There was a further small but statistically significant increase (1.4%, 95%CI: 0.1 to 2.7) between the 2014 NMS and the 2020 NMS to 12.6% (95%CI: 11.6 to 13.6). Private class attendance was higher than NHS class attendance for the first time in the 2020 NMS. Furthermore, approximately equal numbers of women attended classes (NHS or private) in person and online.

The figures in the social media survey were slightly higher than in the 2020 NMS with 10.8% (95%CI: 9.3 to 12.4) and 17.5% of women attending NHS and private classes respectively. Again, approximately equal numbers of women attended classes (NHS or private) in person and online.

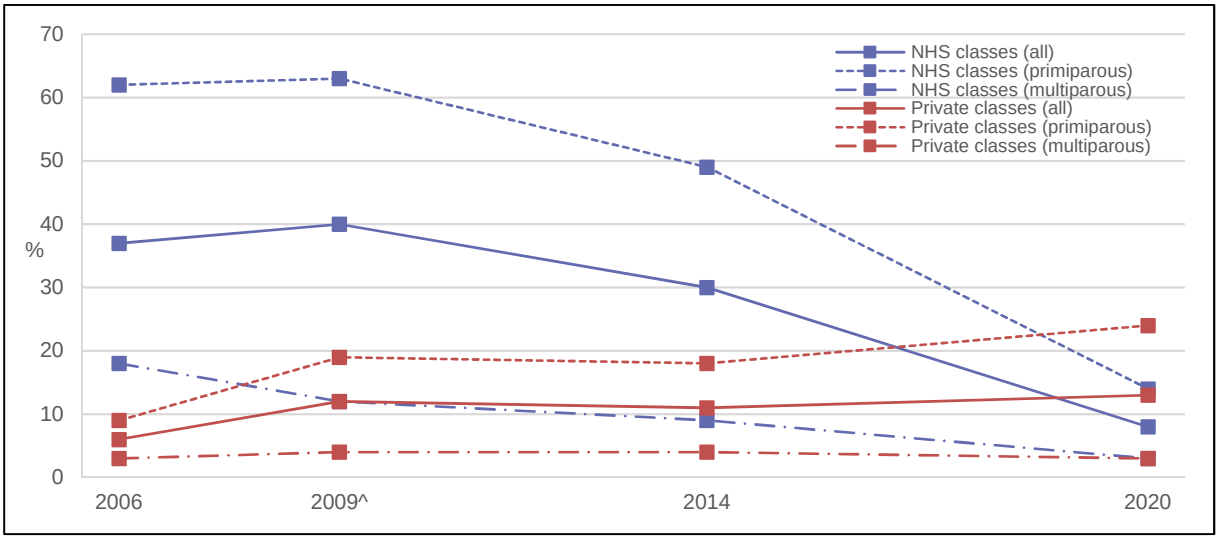

Figure 7: Proportion of women attending NHS and private antenatal classes across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010
Note: The unweighted proportions in the 2014 NMS were 30.6% for NHS classes (all women) and 13.5% for private classes (all women); the unweighted proportions in the 2020 NMS were 9.0% for NHS classes (all women) and 17.9% for private classes (all women).

Figure 7 also shows attendance at antenatal classes according to parity for women across the NMS. In line with previous NMS, the proportion of primiparous women attending NHS (13.5%) or private (24.1%) antenatal classes was considerably higher than the proportion of multiparous women attending NHS (3.3%) or private (3.0%) classes in the 2020 NMS. The figures were higher

[24] https://www.cqc.org.uk/sites/default/files/20200128_mat19_statisticalrelease.pdf. Accessed 7 October 2021.

in the social media survey but the pattern was the same: 19.1% and 33.2% of primiparous women attended NHS or private classes respectively compared to 4.6% and 5.5% of multiparous women. The lower attendance by multiparous women is unsurprising given that more experienced mothers may feel less need for information and support and, furthermore, NHS classes are often only offered to first-time mothers.

In the 2020 NMS, almost half of women (44.5% in the 2020 NMS and 49.4% in the social media survey) indicated that they had not attended antenatal classes because they were cancelled due to Covid-19, with the remaining women indicating they had not attended for other reasons, including personal choice.

5.1.7 Satisfaction with care during pregnancy

Women were asked how satisfied they felt with the overall care they had received during their pregnancy, labour and birth, and the postnatal period. The proportions of women who reported satisfaction with care during these three maternity phases across the NMS are shown in **Figure 8**. Overall satisfaction with pregnancy care was high and relatively stable in the NMS from 2006 to 2014 (86% to 88%). There was a decrease of 3.7% (95%CI: 2.2 to 5.1) in overall satisfaction with pregnancy care between the 2014 NMS (87.8%) and the 2020 NMS (84.2%, 95%CI: 83.1 to 85.2), although satisfaction was still relatively high. In the social media survey, 77.6% of women were satisfied with their care during pregnancy. Satisfaction with care during labour and birth is discussed in section 5.2.9 on page 46 and satisfaction with postnatal care is discussed in section 5.3.9 on page 57.

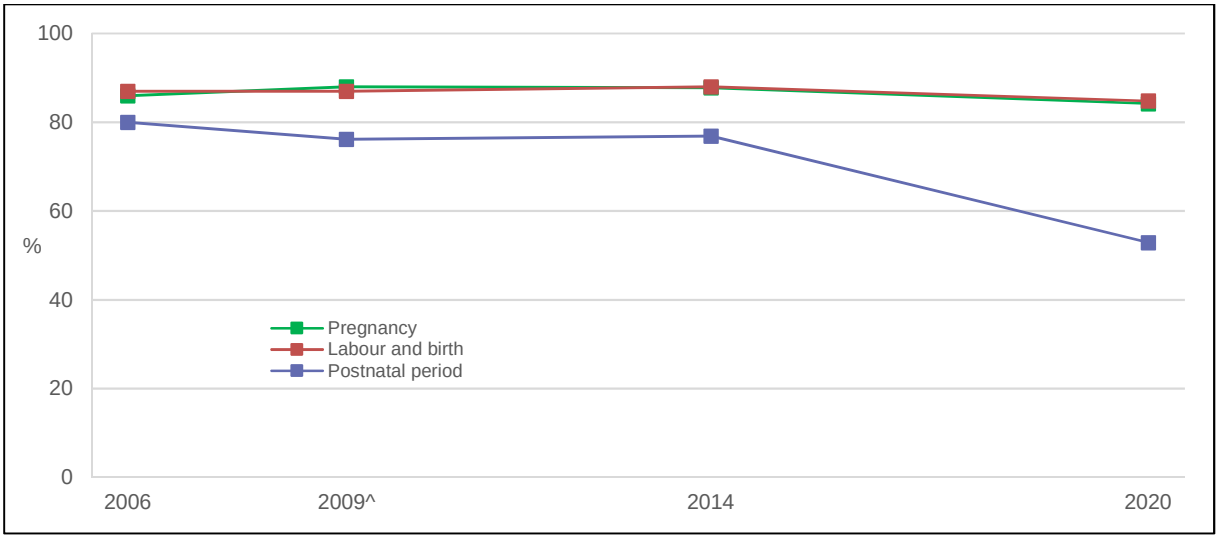

Figure 8: Proportion of women who were satisfied with their care during the perinatal period across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010
Note: The unweighted proportions in the 2014 NMS were 88.1% (pregnancy), 88.6% (labour and birth) and 77.3% (postnatal period); the unweighted proportions in the 2020 NMS were 84.1% (pregnancy), 84.6% (labour and birth) and 49.8% (postnatal period)

5.1.8 Women's experiences of changes to care during pregnancy

The survey included two open text questions about pregnancy and the impact of the pandemic: "Are you aware of any changes to the care you received during your pregnancy because of Covid-19? … Yes, please tell us more", and "Is there anything else you would like to tell us about your pregnancy or the care you received?" In their responses, women repeatedly highlighted two key aspects of the changes to their care during pregnancy: the exclusion of partners from face-to-face appointments, and a shift to remote consultations by telephone. Some women commented positively on how maternity staff had tried to mitigate the impact of Covid-19 by continuing to offer pregnant women personalised care and reassurance, or by finding creative solutions to the loss of face-to-face contact.

"My midwife was outstanding and didn't let covid stop her checking her mothers-to-be and their babies were ok."

"Midwives are angels, they really are. They did everything possible to make me feel reassured in this hard time."

"I found the 'Ask the Midwives' online question times on the Maternity Voices Partnership Facebook extremely helpful and reassuring during a very worrying time."

However, most of the comments described anxiety and distress caused by the changes to pregnancy care and the sense of chaos that surrounded these changes.

"I have no doubt that all of the midwives involved in my care were doing their very best to do a good job during a very difficult time. However due to the inconsistency of care (several different midwives) and regular changes in rules, plans etc relating to the covid pandemic, I generally found my check-ups quite anxiety provoking, rather than reassuring as I had done in my first pregnancy. I remember leaving most of my appointments in tears."

Many mothers said that the exclusion of partners from face-to-face antenatal appointments, and particularly scans, meant that their partners had lost out on an important part of becoming a parent, and mothers themselves had lost out on their partners' support and advocacy. This was particularly distressing for mothers when there was 'bad news':

"Husband unable to attend appointments when you're told something is "wrong". At times like this, a pregnant woman needs her partner more than anything."

"I fainted the first time I had a growth scan without my husband, due to the anxiety and upset of being told at the door by a security guard that he couldn't come in with me. I also got told my baby had stopped growing and that my baby had fluid in her tummy, on my own and with no signal on my phone. As you can imagine, it was very traumatic for me."

"Not able to have my partner with me at crucial appointments discussing need for medication and induction, resulting in me taking medication as advised but not aware of impact this had on my unborn baby. Felt pressurised into just accepting what the consultant said, as alone in the appointments".

"I had to go through being told my baby was coming 12 weeks early alone…I got rushed into hospital as I had high blood pressure and protein in my urine, this was only found at my 28 week check up because that was the first one we were allowed face to face. My partner was not allowed to be with me, and I had to be told I was very ill and my baby was also ill, by myself."

This stress was particularly acute for mothers with complex pregnancies or histories of previous pregnancy loss, for whom 'bad news' felt like a real possibility each time.

"My pregnancy was a high risk pregnancy and I did not know when I was going to go into labour or even if my baby was going to survive. I had weekly appointments which my partner couldn't attend due to COVID, and each week was nerve wracking as we were having scans to check for a heart beat, so this was very distressing having to go alone"

"There was a few times when I needed to go in and have the baby's heart rate checked, as I hadn't felt him move. I also needed growth scans and lots of blood appointments, all on my own. It was so scary walking into the appointments not knowing what was going to happen, to then have the added pressure of covid."

Women pointed out that telephone appointments meant they had missed out on important and reassuring aspects of antenatal monitoring such as blood and urine tests, and checks on the baby's heartbeat, position and growth. This had led in some cases to serious maternal health conditions remaining undiagnosed, or emergency caesarean following undiagnosed breech position:

"I wish all appointments were face to face as you can't have your blood pressure or baby's heart rate checked over the phone. My pre-eclampsia wasn't picked up until I went into labour at 36 weeks, as my last couple of appointments had been via phone."

Other aspects of the organisation of pregnancy care that had caused women stress were the cancellation of appointments at short (or no) notice, appointments being moved out of the community to hospitals which were more difficult to reach, appointments lasting only a few minutes with no opportunity to ask questions, the loss of continuity of care, and the lack of clear information about changes.

"The midwife appointments were cancelled. I was made to feel unimportant and irrelevant."

"It was abysmal. I feel like we were left in the dark and there was very little compassion or empathy among those I had contact with. I was on the 'continuity pathway' which was anything but. I had a different midwife every appointment and had to travel to miserable clinics, miles from home and inaccessible by public transport."

"When we went into lockdown I couldn't get hold of the midwife, all my appointments and training was cancelled, the hospital didn't have any information, and everybody was panicking. It took about 4 weeks for information to get to me. I didn't see my midwife from week 24 and had different ones every time because of COVID."

"Very short hurried meetings, didn't answer all queries, less attention given, midwives were unreachable on phone."

5.1.9 Pregnancy: key findings

The findings suggest that some aspects of pregnancy care were consistent with or better for women who were pregnant in England during the first wave of the Covid-19 pandemic, compared to women who were pregnant before the pandemic. Most women who took part in the study attended their booking appointment within ten weeks of pregnancy. More women reported that they had a named midwife or clinical team during their pregnancy and only a small minority of women did not seek

the help they needed during pregnancy due to concerns about Covid-19. Furthermore, the average number of antenatal appointments women received was the same as was found in pre-pandemic surveys. However, over half of women indicated that there had been changes to their pregnancy care because of Covid-19 and over a third of these women did not feel fully informed about the changes. A third of women had appointments cancelled and some women chose not to attend appointments due to Covid-19. One significant change was that women's birth partners were often unable to attend all appointments and scans, which was upsetting for many women and their partners, as indicated in the free text responses. In general, women felt well informed about pregnancy and childbirth but less informed about how Covid-19 would affect their pregnancy or their maternity care. In addition, women felt less involved in decisions about their antenatal care compared to women who took part in pre-pandemic surveys. Attendance at NHS antenatal classes was also considerably lower, largely because classes were cancelled due to Covid-19. Furthermore, many classes that did go ahead were held online rather than face-to-face. Despite the various changes to pregnancy care that women experienced, satisfaction with care during pregnancy was relatively high, albeit slightly lower than in pre-pandemic surveys.

5.1.10 Pregnancy: summary data

Table 1: Summary of pregnancy data

	2020 NMS (N=4611)		Social media survey (N=1622)	
	n*	%^	n*	%^
Pregnancy planning	(N=4560)		(N=1612)	
Planned	3675	74.1	1335	74.7
Unplanned	885	25.9	277	25.3
Timing of booking appointment	(N=4470)		(N=1614)	
Within 10 weeks	3248	71.2	1237	72.5
Between 11-12 weeks	799	17.8	260	19.1
Between 13-18 weeks	332	7.9	108	8.0
Later than 18 weeks	91	3.1	9	0.4
Complex pregnancy				
Health condition which affected pregnancy	(N=4591)		(N=1618)	
Yes	507	11.9	198	12.7
Pregnancy-related problem	(N=4590)		(N=1622)	
Yes	1448	30.7	584	40.6
Help seeking for health concerns during pregnancy	(N=4562)		(N=1617)	
Yes	2490	54.1	940	59.2
No help needed	1909	41.4	621	36.4
No, due to Covid-19	127	3.3	40	3.7
No, due to other reason(s)	36	1.2	16	0.8
Named midwife / clinical team	(N=4593)		(N=1622)	
Yes	4037	86.0	1453	87.5
No / unsure	556	13.9	169	12.5
Number of midwives during pregnancy	(N=4577)		(N=1622)	
One	888	20.2	287	17.8
Two	1221	27.8	394	25.7
Three	940	19.7	313	19.0
Four	513	11.1	187	10.3
Five or more	1015	21.1	441	27.2
Median number of antenatal appointments (IQR) [P]	(N=2315)			
	9 (6-12)		NA	

Location of at least one antenatal appointment…[+ P]	(N=2315)			
Hospital clinic	1719	72.4	NA	NA
GP surgery	1427	57.8	NA	NA
Children's centre	520	23.3	NA	NA
Local clinic	502	20.2	NA	NA
Home (face-to-face)	367	16.5	NA	NA
By telephone	708	30.2	NA	NA
By video call	99	4.2	NA	NA
Preferred mode of antenatal appointments	(N=4559)		(N=1618)	
Face-to-face	4235	91.5	1536	92.6
Telephone	60	1.7	14	1.5
Video call	43	1.1	18	1.6
No preference	221	5.7	50	4.3
Choice about mode of antenatal appointments	(N=4580)		(N=1615)	
No	4006	84.8	1483	90.2
Yes	574	15.2	132	9.9
Who women saw for antenatal appointments[+]	(N=4611)		(N=1622)	
Midwife	4478	96.6	1591	97.4
GP	415	9.4	106	6.0
Obstetrician	1616	34.9	576	39.8
Other	198	4.2	81	5.1
Birth partner able to attend all antenatal appointments	(N=4542)		(N=1620)	
Yes	378	9.7	234	12.6
No, through choice	120	2.9	18	0.7
No, due to Covid-19	3811	80.8	1286	80.7
No, due to other reasons	205	5.4	79	5.8
No (birth) partner	28	1.3	3	0.2
Birth partner able to attend all antenatal scans	(N=4575)		(N=1622)	
Yes	1607	33.6	609	33.8
No, through choice	27	1.0	10	0.5
No, due to Covid-19	2772	59.8	960	62.1
No, due to other reasons	140	4.2	41	3.5
No (birth) partner	29	1.4	2	0.2
Changes to pregnancy care due to Covid-19	(N=4569)		(N=1619)	
No	2261	53.3	775	51.6
Yes	2308	46.7	844	48.4
Informed of changes to care	(N=2218)		(N=842)	
No	797	35.5	362	39.5
Yes	1421	64.5	480	60.5
Cancelled appointments due to Covid-19	(N=4589)		(N=1621)	
No	2973	64.3	1069	64.1
Yes	1616	35.7	552	35.9
Informed of cancellation	(N=1502)		(N=516)	
No	105	7.6	48	13.0
Yes	1397	92.4	468	87.0
Missed appointments due to Covid-19	(N=4577)		(N=1620)	
No	4070	87.5	1433	85.5
Yes	507	12.5	187	14.5
Sources of general information about pregnancy and childbirth[+]	(N=4611)		(N=1622)	
Health professionals	3942	84.4	1486	91.0
Family and friends	3567	75.9	1320	76.2
Websites	3458	71.8	1390	80.7
Social media	2580	54.8	1168	69.4
Pregnancy-specific apps	2548	55.9	1021	61.2
Sources of Covid-19 information about pregnancy and childbirth[+]	(N=4611)		(N=1622)	
Health professionals	2801	58.4	951	60.1
Family and friends	803	17.9	258	16.9
Websites	2501	50.9	942	56.8
Social media	1583	33.3	680	43.2
Pregnancy-specific apps	501	11.7	208	15.4

Access to online information	(N=4584)		(N=1613)	
Yes all the time	3634	76.5	1279	78.6
Yes sometimes	649	15.7	241	14.2
No	301	7.8	93	7.2
Sufficient information about…				
Pregnancy in general	(N=4581)		(N=1618)	
Yes	3791	82.1	1248	78.3
Pregnancy risks from Covid-19	(N=4557)		(N=1617)	
Yes	1938	44.3	512	32.3
Changes to maternity care due to Covid-19	(N=4550)		(N=1617)	
Yes	2329	52.3	673	44.1
Involvement in decisions	(N=4545)		(N=1610)	
Always	2430	53.6	808	49.0
Sometimes	1414	30.7	546	34.3
No / Don't know	701	15.7	256	16.7
Attendance at antenatal classes[+]	(N=4611)		(N=1622)	
NHS classes	416	7.9	254	10.8
Private classes	826	12.6	438	17.5
No classes	3487	81.3	999	74.7
Mode of antenatal classes[+]	(N=4611)		(N=1622)	
NHS classes in person	335	6.5	198	7.6
Private classes in person	395	5.9	151	5.7
NHS classes online	110	1.9	59	3.7
Private classes online	631	9.5	316	13.3
Reasons for non-attendance at antenatal classes[+]	(N=4611)		(N=1622)	
Classes unavailable / booked up	131	3.5	51	3.4
Classes cancelled due to Covid-19	2046	44.5	741	49.4
Chose not to attend due to Covid-19	353	10.0	51	5.3
Chose not to attend due to an(other) reason(s)	1263	29.6	266	23.5
Satisfaction with maternity care during pregnancy	(N=4586)		(N=1622)	
Very satisfied	1941	43.4	686	39.3
Satisfied	1918	40.8	636	38.3
Neither satisfied nor dissatisfied	394	8.6	129	11.3
Dissatisfied	263	5.6	138	8.8
Very dissatisfied	70	1.7	33	2.3

* Unweighted totals ^ Weighted prevalence [+] Multiple options could be selected [P] Based on postal responses only

5.2 Labour and birth

Summary data on labour and birth for the respondents to the 2020 NMS and the social media survey are presented in **Table 2** in section 5.2.11 on pages 47-48.

5.2.1 Place of birth

The majority of women in the 2020 NMS gave birth in hospital (88.0%), 8.7% gave birth in a midwife-led unit or birth centre separate from hospital, and 2.4% (95%CI: 2.0 to 2.9) gave birth at home. Despite changes to some maternity services during the first wave of the Covid-19 pandemic, including scaling back of home births, closure of some midwife-led units, and care being centralised in hospital settings[25], the proportions of women giving birth in different settings were very similar to in the 2018 NMS (87.6% in hospital, 8.7% in a midwife-led or birth centre separate from hospital, and 3.1% at home). In the social media survey, slightly more women gave birth in a midwife-led

[25] Morelli A, Rowe R. Impact of COVID-19 on UK midwifery-led service provision during the first wave of the pandemic. MIDIRS Midwifery Digest, RCM Research Conference Special Issue Supplement 2021;31:2.

unit or birth centre separate from hospital (10.8%) and almost three times more women gave birth at home (6.7%, 95%CI: 5.5 to 8.0) compared to the women in the 2020 NMS.

The proportion of women who gave birth at home in the 2020 NMS is consistent with the most recent national routine data, which indicates that 2.1% of women had home births in England and Wales during 2019.[18] The proportion of home births in the social media survey is higher than in the routine data. It is important to note, however, that the most recent routine data are pre-pandemic.

5.2.2 Changes to plans for birth and restrictions around birth

Women in the study were asked about any changes to their plans for birth due to Covid-19. In both surveys, one in ten women indicated that there had been a change to the place where they had planned to give birth. Given the proportions of women giving birth in hospital, birth centres separate from hospital, and at home were similar in the 2018 NMS and the 2020 NMS, the changes to place of birth are likely to have been multi-directional. For example, some women may have had their home births cancelled and gave birth in hospital or a birth centre instead, whereas other women may have opted for a home birth if it was offered, when they had originally planned to give birth in hospital or a birth centre. Almost a third of women (32.1% in the 2020 NMS and 28.6% in the social media survey) reported that there had been other changes to their plans for birth due to Covid-19. Over half of the women whose plans for birth had to be changed did not feel fully informed about the changes (50.8% in the 2020 NMS and 58.3% in the social media survey).

Due to the Covid-19 pandemic, some hospitals placed restrictions on birth partners attending births. Women were asked whether they or their birth partners had faced any restrictions and almost three-quarters of women indicated that they had (72.5% to 72.7% in both surveys).

5.2.3 Women's experiences of changes to care during labour and birth

The survey included three open text questions about birth and the impact of the pandemic: "Please use this space to tell us about any changes to your plans for birth and how well informed you felt about them"; "Some hospitals placed restrictions on partners/birth partners attending births … Please briefly describe the impact of any restrictions"; "Is there anything else you would like to tell us about your labour or the birth of your baby?" In their responses, many women expressed their appreciation and thanks for the care, reassurance and kindness they had received from staff during labour and birth, despite Covid-19 changes and restrictions.

"The midwives and nurses were beyond amazing! Even though there was pandemic, one of the midwives held my hand and stroked my hair and kept talking to me the entire time up until my partner got there."

"The midwife looking after us during labour and birth was exceptional … She completely respected everything within our birth plan, left me feeling totally in control, and I didn't feel like the pandemic affected the birth experience in any way."

However, many women described how their pregnancies had been overshadowed by anxiety about whether their partner would be allowed to be present and whether they would be able to give birth at the place and in the manner they had chosen. Their stress was increased by uncertainty: policies changed over time and were inconsistent between different providers.

"My biggest fear that caused me a lot of anxiety and depression was whether I would have to give birth alone … I didn't even know until the day whether my partner was allowed in."

"Because I have a history of quick births, the midwife advised I should consider a home birth. After the pandemic started I was informed my local hospital's maternity services were closed and I couldn't have a home birth, and that I had to go to a hospital 40 minutes drive away (I don't own a car). This made my pregnancy very difficult with the worrying how I'd get there, what if baby came too fast again (he did), would my partner get to be with me. As I suffer from an anxiety disorder and OCD [obsessive compulsive disorder] I really struggled with the change to my plans and the not knowing what to expect."

Women described how their plans for birth had been affected by Covid-19 in different ways. Many women who had wanted to give birth at home or in a birth centre were disappointed when home births were withdrawn and local midwifery units were closed or their use restricted. Some said that the use of birth pools had also been withdrawn. When home births were reinstated, some mothers said they were motivated to choose this option because of Covid-19. Covid-19 had also affected women's choices about elective caesarean section. Some chose an elective caesarean to avoid having to undergo induction of labour and early labour without the support of a birth partner, whereas Covid-19 had prompted others to cancel a planned elective caesarean. The small number of women who had Covid-19 at the time of birth described a confused response that had exacerbated their anxiety.

"We chose to try for a home birth to avoid going into hospital and to ensure my partner would be present for the whole birth process."

"Due to Covid my husband was unable to be with me in the induction ward, so I decided to go ahead with a c-section to get the baby out and go home with him."

"I was originally booked for an elective section due to a trauma from a previous birth. I changed this due to concerns over the NHS and Covid."

"Tested positive for Covid-19 two days before labour, so had to give birth in isolation. I had a panic attack during labour because my birthing partner could not be there. Midwives did not have a clue of how to look after a covid positive woman in labour."

Many women reported Covid-19 hospital policies where their birth partner was only permitted to be with them when the mother was in active labour, defined by the hospitals as at least 4cm dilation of the cervix. They described distressing experiences of labouring alone in a setting they had not chosen, with staff too busy to give adequate support, while their partners waited many hours outside to avoid the risk of missing the birth. A few women had not been permitted any birth partner at all.

"Not having my partner there. Did not enjoy crying on my own in a dark room whilst contracting."

"My husband could not be with me while I was being induced, we were scared he might miss the birth so he sat in the car in the hospital car park for 11 hours."

"Partner not allowed in until I & baby were unwell and needed emergency c-section … I had complications during labour, these in themselves were scary, but doing it alone and my concerns being completely dismissed by one midwife was awful. My husband was there for less than an hour total. I was traumatised, alone and frightened."

"I had to have my child alone, no birthing partner was allowed. This is tough for a first time mum. Very scary giving birth alone."

Some women reported that when they had described their contractions and asked to be examined to establish whether they were in active labour, midwives had disbelieved them, and continued to exclude the birth partners. This had resulted in some partners missing the birth of their child.

"I was ignored when I told them I was in lots of pain and further along that they thought. They wouldn't examine me until I demanded it (condition of moving to delivery suite). I was 8cm [dilated]!!! … Devastating, I felt abandoned, unsupported, alone like I was fighting a war alone. Ongoing hurt, enraged."

"Partner missed the birth as midwife kept telling me I wasn't in labour…I kept asking her for help to be told it was not my time. I ended up having my daughter almost down the toilet."

Some women had tried to avoid being alone during labour by staying at home for as long as they could bear it, and some reported that they had been 'turned away' by the hospital in early labour because of Covid-19. This had led to some babies being born at home without a health professional present, or very shortly after arriving at the hospital. Women who arrived at hospital in advanced labour described the pain and humiliation of having to find their way alone from the door of the hospital to the labour ward, where the progress of their labour was assessed before their partner was admitted.

"I was told that my husband would not be allowed into ward and therefore we waited at home during labour for too long. My daughter was born in the bath."

"I was continually rejected from maternity triage on the grounds that they did not want people constantly coming and going from triage due to COVID-19 …I was finally 'let in' to hospital when I had reached 8cm dilation, with just a fading dose of paracetamol for this extremely progressed labour… I think I am probably a little traumatised by going into labour for the first time and feeling as though I will not reach the hospital in time."

"I was very dilated and had to walk through hospital alone, contractions on floor in reception and in lift. Very degrading."

5.2.4 Mode of birth

NICE recommends that pregnant women should be offered evidence-based information and support to enable them to make informed decisions about childbirth.[26] Data from previous NMS indicates that the caesarean section rate is gradually rising among NMS respondents: 22.8% in 2006, 24.7% in 2010, 25.9% in 2014 and 27.3% in 2018. In the 2020 NMS, the caesarean section

[26] https://www.nice.org.uk/guidance/ng201. Accessed 7 October 2021.

rate increased again to 29.9% (95%CI: 28.6 to 31.3) with 57.9% of women having spontaneous vaginal births and 12.2% of women having births involving instrumental assistance (forceps or ventouse). There was a 2.7% (95%CI: 0.8 to 4.5) increase in the caesarean section rate between the 2018 NMS and the 2020 NMS. The figures in the social media survey were similar to the 2020 NMS with 28.0% (95%CI: 25.8 to 30.3) of women giving birth via caesarean section, 59.2% having a spontaneous vaginal birth, and 12.8% having instrumental assistance.

The data from the 2020 NMS are consistent with national routine data for all women giving birth in England during 2019-2020, which shows that 31.2% of births were caesarean sections, 56.4% were spontaneous vaginal births, and 12.4% had instrumental assistance (NHS Digital MSDS).[20] The proportion of women having a caesarean section in the social media survey is slightly lower than in the routine data. It is important to note, however, that the most recent routine data are pre-pandemic.

Figure 9 shows the mode of birth for all women who took part in the 2020 NMS and a breakdown of mode of birth according to parity. First-time mothers were more likely to have an instrumental birth (forceps or ventouse) (20.6%) or a caesarean section (33.1%) compared to women who had given birth before (5.3% for instrumental birth and 27.2% for caesarean section).

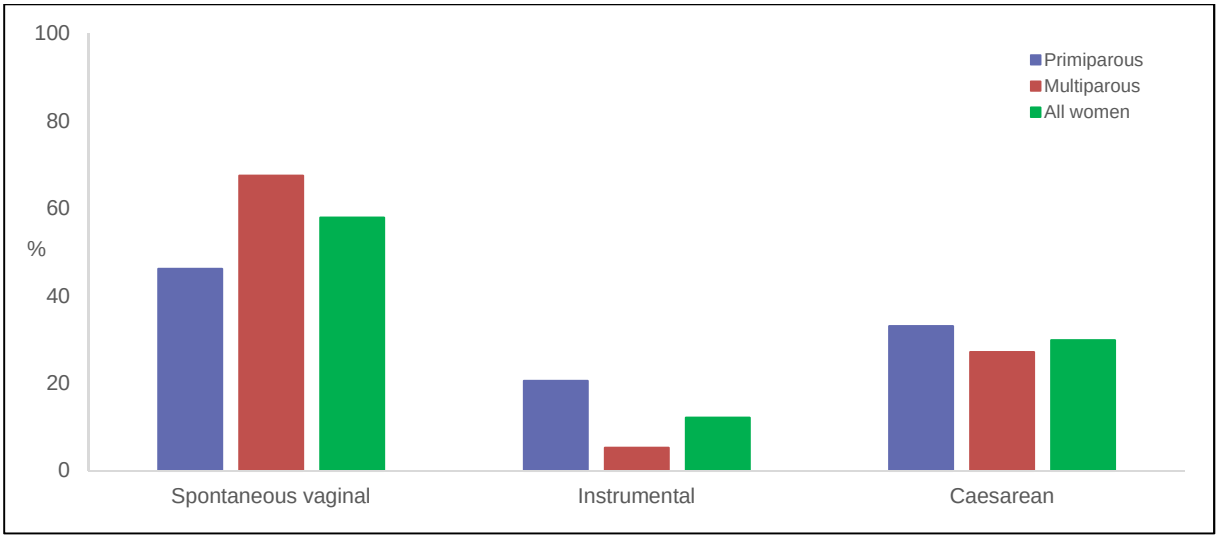

Figure 9: Proportion of primiparous and multiparous women giving birth by different modes

For those women in the study who had a caesarean section, approximately half were unplanned (46.1% in the 2020 NMS and 50.8% in the social media survey). Similar proportions were planned and carried out before labour had started (45.9% in the 2020 NMS and 43.5% in the social media survey) and a small proportion were planned but carried out after labour had started (8.0% in the 2020 NMS and 5.7% in the social media survey). In the 2018 NMS, 49.9% of caesarean sections were unplanned, 42.2% were planned and carried out before labour had started and 7.9% were planned but carried out after labour had started.

5.2.5 Multiple births

In the 2020 NMS, 1.5% (95%CI: 1.1 to 1.8) of women had a multiple birth and the proportion was slightly higher in the social media survey (2.4%, 95%CI: 1.7 to 3.2). The 2020 NMS data are consistent with national routine data, which indicate a multiple birth rate of 1.5% in England and Wales during 2019 (ONS).[18] The social media data are marginally higher than the routine data.

5.2.6 Gestational age and birth weight

The median gestational age of the babies was 39 weeks (IQR=38 to 40 weeks) for those born to women in the 2020 NMS, and 40 weeks (IQR=38 to 40 weeks) for those born to women in the social media survey. In both surveys, there was a small proportion of preterm babies, born before 37 weeks' gestation (7.5% (95%CI: 6.8 to 8.4) in the 2020 NMS and 7.9% (95%CI: 6.6 to 9.3) in the social media survey). The data on gestational age from both surveys are consistent with the 2018 NMS (7.6%) and also with national routine data, which shows that 7.8% of the babies born in England and Wales during 2019 were preterm (ONS).[18]

The median birth weight of the babies born to women in the 2020 NMS (3,400 grams (IQR=3,050 to 3,740 grams)) and the social media survey (3,459 (IQR=3,100 to 3,770 grams)) were very similar. The proportion of babies who were low birth weight (weighing less than 2,500 grams) was 6.7% (95%CI: 6.0 to 7.5) in the 2020 NMS and 5.9% (95%CI: 4.9 to 7.3) in the social media survey. The data on birth weight from both surveys are consistent with the 2018 NMS (7.1%) and also with national routine data, which shows that 6.8% of the babies born in England and Wales during 2019 were low birth weight (ONS).[18] It is important to note that the most recent routine data on rates of preterm birth and low birth weight babies are pre-pandemic.

5.2.7 Holding the baby and skin-to-skin contact

Skin-to-skin contact between mother and baby straight after birth helps the baby to regulate temperature and breathing, reduces stress, and supports bonding and successful breastfeeding.[27] For babies born during the Covid-19 pandemic, the recommendation was that mothers and babies should be enabled to stay together as much as possible and to have skin-to-skin contact.[28] The large majority (94.2%, 95%CI: 93.5 to 94.9) of women in the 2020 NMS held their baby immediately or within the first hour after birth and most (92.0%, 95%CI: 91.1 to 92.8) women also had skin-to-skin contact with their baby immediately or within the first hour. In the 2018 NMS, 93.4% of women held their baby and 91.3% had skin-to-skin contact immediately or within the first hour after birth. This represents a marginal increase in the proportion of women holding their baby (0.8%, 95%CI: -0.2 to 1.8) and having skin-to-skin contact (0.7%, 95%CI: -0.5 to 1.9) soon after birth between the

[27] https://digital.nhs.uk/data-and-information/publications/statistical/infant-feeding-survey/infant-feeding-survey-uk-2010. Accessed 1 July 2021.
[28] https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2020/04/Unicef-UK-Baby-Friendly-Initiative-statement-on-infant-feeding-during-the-Covid-19-outbreak.pdf. Accessed 7 October 2021.

2018 NMS and the 2020 NMS, but the differences were not statistically significant. In the social media survey, 92.4% of women held their baby and 89.5% had skin-to-skin contact immediately or within the first hour after birth.

For the women who gave birth at 37 weeks' gestation or later (term), 95.9% held their baby within the first hour (94.5% in the social media survey) and 93.8% (95%CI: 93.1 to 94.6) had skin-to-skin contact within the first hour (91.8% (95%CI: 90.3 to 93.9) in the social media survey). National routine data from 2019-2020 indicates that, among women who gave birth at 37 weeks' gestation or later, 73.4% had skin-to-skin contact within one hour of birth (NHS Digital MSDS).[20] Therefore, a higher proportion of women in the 2020 NMS and the social media survey reported skin-to-skin contact with their baby within an hour of birth compared to national published data. This may be due to non-response bias in the surveys; however, it is also important to note that there are completeness and quality issues with NHS Digital MSDS data (see **Appendix F** for further details).

5.2.8 Care during labour and birth

The majority of women in the study reported that they gave birth to their baby with a midwife and/or doctor present and the figures were very similar in both the 2020 NMS and the social media survey (57.8% to 58.2% with a midwife and 43.2% to 43.3% with a doctor). The figures were also similar to in the 2014 NMS in which 60.7% and 41.2% of women reported that they gave birth to their baby with a midwife and/or doctor present respectively.

Figure 10 shows the proportion of women cared for by different numbers of midwives during labour and/or birth across the NMS. Overall, the proportion of women being cared for by a greater number of different midwives has increased over time; in the 2006 NMS less than a quarter of women (21.8%) were cared for by four or more midwives whereas, in the 2014 NMS, it was 26.2% and, in the 2020 NMS, it was a third of women (33.1%, 95%CI: 31.8 to 34.5). The difference between the proportion of women being cared for by four or more midwives increased significantly (7.0%, 95%CI: 5.0 to 8.9) between the 2014 NMS and the 2020 NMS. The figure was 33.4% in the social media survey. The large majority (82.2%) of women in both the 2020 NMS and the social media survey had never met any of the midwives who cared for them during their labour and/or birth.

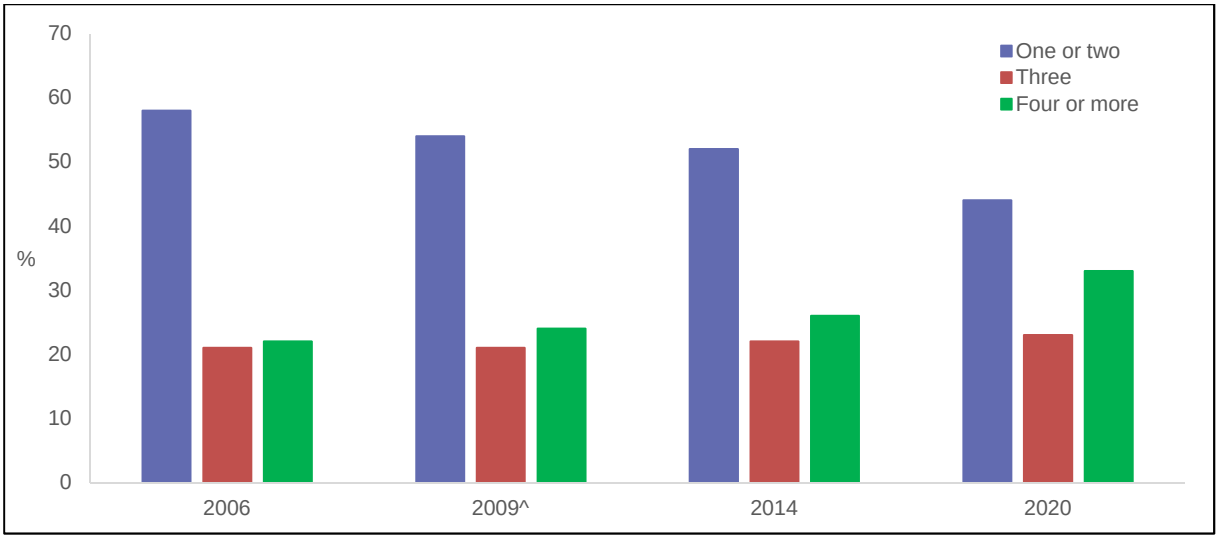

Figure 10: Proportion of women cared for by different numbers of midwives during labour and/or birth across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010
Note: the unweighted proportion in the 2014 NMS was 25.7% (four or more midwives); the unweighted proportion in the 2020 NMS was 34.8% (four or more midwives)

5.2.9 Satisfaction with care during labour and birth

Women were asked about how their experiences of labour and birth met with their expectations. In the 2020 NMS, more women reported that their labour and/or birth had been better than they had expected (40.5%) as opposed to being in line with their expectations (31.1%) or worse than they had expected (28.4%). However, first-time mothers who took part in the 2020 NMS were almost twice as likely to experience the labour and/or birth as worse than they were expecting (38.6%) compared to women who had given birth before (19.8%). The proportions of primiparous, multiparous and all women who found the birth worse than they were expecting were slightly higher than in the 2018 NMS (34.9% of primiparous women, 18.2% of multiparous women, and 25.3% of all women). The figures were similar in the social media survey to in the 2020 NMS, with 42.8%, 24.2% and 33.0% of women reporting that their labour and/or birth was better than, in line with, or worse than they had expected respectively.

Women were also asked how satisfied they felt with the overall care they had received during their pregnancy, labour and birth, and the postnatal period. The proportions of women who reported satisfaction with care during these three maternity phases across the NMS are shown in **Figure 8** on page 34. Overall satisfaction with care during labour and birth was high and relatively stable in the NMS from 2006 to 2014 (87% to 88%). There was a small but statistically significant decrease of 3.3% (95%CI: 1.9 to 4.7) in overall satisfaction with care during labour and birth between the 2014 NMS (88.0%) and the 2020 NMS (84.7%, 95%CI: 83.7 to 85.8), although satisfaction was still relatively high. In the social media survey, 80.9% of women were satisfied with their care during labour and birth. Satisfaction with pregnancy care is discussed in section 5.1.7 on page 34 and satisfaction with postnatal care is discussed in section 5.3.9 on page 57.

5.2.10 Labour and birth: key findings

The findings on labour and birth suggest that many women who gave birth in England during the first wave of the Covid-19 pandemic experienced changes to their plans around birth. Although the overall proportions of women giving birth in different locations were consistent with pre-pandemic findings, one in ten women indicated that there had been a change to their planned place of birth. A third of women experienced other changes to their plans for birth and fewer than half of these women felt fully informed about the changes. Almost three quarters of birth partners faced restrictions around attending births, which caused distress to many women, as illustrated in free text responses. More women were cared for by a greater number of different midwives during labour and birth, compared to women who took part in pre-pandemic surveys. The findings also suggest that some aspects of care around labour and birth were not affected by giving birth during the pandemic. For example, despite Covid-19 concerns and restrictions, the proportions of women holding their baby and having skin-to-skin contact soon after birth remained high. Although many women experienced changes to their plans around birth, overall satisfaction with care during labour and birth was relatively high, albeit slightly lower than in pre-pandemic surveys.

5.2.11 Labour and birth: summary data

Table 2: Summary of labour and birth data

	2020 NMS (N=4611)		Social media survey (N=1622)	
	n*	%^	n*	%^
Place of birth	(n=4589)		(N=1620)	
Home	124	2.4	66	6.7
Birth centre separate to hospital	427	8.7	189	10.8
Hospital	4001	88.0	1350	81.9
Other	37	0.9	15	0.6
Change to place of birth due to Covid-19	(N=4590)		(N=1613)	
No	4112	89.9	1433	90.6
Yes	478	10.1	180	9.4
Other change(s) to plan(s) for birth due to Covid-19	(N=4539)		(N=1612)	
No	3016	67.9	1142	71.4
Yes	1523	32.1	470	28.6
Fully informed about changes to plans for birth	(N=1592)		(N=523)	
No	793	50.8	305	58.3
Yes	799	49.2	218	41.7
Restrictions on birth partners attending births	(N=4538)		(N=1617)	
No	1122	27.3	412	27.5
Yes	3416	72.7	1205	72.5
Mode of birth	(N=4563)		(N=1621)	
Spontaneous vaginal	2508	57.9	838	59.2
Forceps	408	7.6	185	8.5
Ventouse	233	4.6	100	4.3
Caesarean section	1414	29.9	498	28.0
Type of caesarean section	(N=1410)		(N=498)	
Planned and carried out before labour started	630	45.9	172	43.5
Planned but carried out after labour started	123	8.0	28	5.7
Unplanned	657	46.1	298	50.8
Single or multiple birth	(N=4588)		(N=1619)	
Single baby	4519	98.5	1584	97.6

Twins or more	69	1.5	35	2.4
Sex of baby	(N=4550)		(1599)	
Male	2318	50.5	817	56.0
Female	2232	49.5	782	44.0
Gestational age in weeks	(N=4544)		(N=1614)	
<32 weeks	69	1.5	25	1.3
32-36 weeks	246	6.0	80	6.6
37+ weeks	4229	92.5	1509	92.1
Median gestational age in weeks (IQR)		(N=4544)		(N=1614)
		39 (38-40)		40 (38-40)
Birth weight in grams	(N=4467)		(N=1606)	
<1500 grams	39	1.0	14	0.9
1500- 2499 grams	238	5.7	85	5.0
2500+ grams	4190	93.3	1507	94.0
Median birth weight in grams (IQR)		(N=4467)		(N=1606)
		3400 (3050-3740)		3459 (3100-3770)
When the mother first held the baby	(N=4406)		(N=1532)	
Immediately	3121	71.9	1038	73.5
Not immediately but within an hour	1038	22.3	370	18.8
More than one hour later	247	5.8	124	7.7
When mother and baby first had skin-to-skin contact	(N=4269)		(N=1477)	
Immediately	2851	68.3	934	71.1
Not immediately but within an hour	1065	23.7	356	18.3
More than one hour later	353	8.0	187	10.6
Health professionals present during birth	(N=4611)		(N=1622)	
Midwife	2551	57.8	852	58.2
Doctor	2114	43.3	782	43.2
Other	294	6.5	139	8.8
Number of midwives during labour and birth	(N=4555)		(N=1618)	
One	530	12.0	162	12.6
Two	1442	32.3	504	32.9
Three	1039	22.6	345	21.0
Four	574	12.3	213	14.1
Five or more	970	20.9	394	19.3
Midwives known	(N=4567)		(N=1618)	
All	142	3.4	58	4.4
Some	597	14.4	193	13.4
None	3828	82.2	1367	82.2
Experience of labour and birth	(N=4563)		(N=1618)	
Better than expected	1775	40.5	616	42.8
More or less as expected	1400	31.1	390	24.2
Worse than expected	1388	28.4	612	33.0
Satisfaction with care during labour and birth	(N=4569)		(N=1616)	
Very satisfied	2475	54.8	840	52.2
Satisfied	1389	30.0	460	28.7
Neither satisfied nor dissatisfied	284	6.1	112	6.6
Dissatisfied	270	5.6	125	7.5
Very dissatisfied	151	3.5	79	5.0

* Unweighted totals ^ Weighted prevalence + Multiple options could be selected

5.3 Postnatal period

Summary data on the postnatal period for the respondents to the 2020 NMS and the social media survey are presented in **Table 3** in section 5.3.11 on pages 58-59.

5.3.1 Care in hospital after birth

Depending on the type of birth and whether or not there are complications, the length of time women stay in hospital after giving birth can vary from a few hours to several weeks or, for some women, even longer. In the 2018 NMS, 49.6% of women who gave birth in hospital or a birth centre separate from hospital were discharged within 24 hours and 72.1% were discharged within 2 days. In the 2020 NMS, over half of the women who gave birth in hospital or in a birth centre separate from hospital were discharged within 24 hours (56.4%) and over three-quarters (76.2%, 95%CI: 74.7 to 77.5) were discharged within 2 days. There was a small but statistically significant increase (4.1%, 95%CI: 2.3 to 6.0) in the proportion of women who were discharged within 2 days of giving birth in the 2020 NMS compared to the 2018 NMS. However, the median length of stay was almost the same for women in the 2018 NMS (1.1 day, IQR=0.9 to 3.0 days) and the 2020 NMS (median=1.0 day, IQR=0.7 to 2.0 days). In the social media survey, 54.2% of women were discharged within 24 hours and 75.7% were discharged within 2 days.

Women were asked how they felt about the length of time they stayed in hospital after giving birth. In previous NMS from 2006 to 2014, 66% to 70% of women felt their length of stay was about right. In the 2020 NMS, 58.3% (95%CI: 56.8 to 59.8) of women felt that the length of their hospital stay was about right, 13.3% of women felt that their stay had been too short, and 21.9% of women felt that their stay was longer than they would have liked. In the 2014 NMS, 65.8% of women felt their length of stay was about right, 11.9% felt it was too short, and 15.8% felt it was too long. Therefore, there was a decrease of 7.5% (95%CI: 5.4 to 9.6) in the proportion of women who felt they stayed in hospital the right amount of time after giving birth between the 2014 NMS and the 2020 NMS. In the social media survey, 54.7% of women felt their postnatal stay was the right length of time. Women were asked whether they were aware of any changes to visiting hours or polices at their hospital or birth centre. In both the 2020 NMS and the social media survey, 91.8% to 92.3% of women reported that there had been changes.

5.3.2 Women's experiences of postnatal care in hospital

The survey included one general open text question about postnatal care: "Is there anything else you would like to tell us about your own or your baby's postnatal care?" Most of the open text responses about care in hospital after birth were focused on women's experiences of spending time on a postnatal ward where all visitors were banned because of Covid-19, including the mother's partner. A few women said that they had received excellent care on the postnatal ward or that they liked being on the postnatal ward without other mothers' visitors.

"At the hospital couldn't ask for a better care. The staff was amazingly supportive."

"I received great care in hospital and it was nice to have no partners walking about the maternity ward. It was good to wear knickers and no bra and not be embarrassed about males being present. The midwives focused just on us women and babies and no one else."

However, many more women described the intense loneliness, anxiety and emotional strain of being separated from their partner shortly after birth (often within an hour), and the sadness this had caused their partners who missed out on their child's earliest days. Many women said they had found it hard to cope physically without the support of their partner and other visitors, particularly if they were recovering from a difficult birth or a caesarean section. They described the staff on postnatal wards as too busy to give practical help with baby care or to assist post-operative mothers with personal care such as showering. Some first-time mothers whose antenatal classes had been cancelled were disappointed that staff were not willing to educate them about baby care and breastfeeding.

"It was horrendous. I have never felt so alone and vulnerable in my life. I understand it is a busy time for everyone and stressful due to covid, but we weren't treated with care or kindness afterwards - almost like the midwives were forgetting we'd given birth in a pandemic. I was offered no breastfeeding help, which led to damage to one of my nipples and poor milk supply … I was talked down to, scared, alone, sleep deprived, and offered none to very little help. I could not wait to leave the hospital. I firmly believe the aftercare plays a part in my postnatal depression. It was traumatic, and I do not use that word lightly."

"Found ward after delivery very difficult with no partner/help. Hadn't slept in 4 days, bleeding profusely, hadn't eaten in 30 hours. Really struggled with baby on own without shower, toilet, food, water. Needed help!"

"Maternity ward not enough emotional and physical support and understanding, considering women are without support of partner, friends and family at this time with Covid restrictions. Mothers get no respite whatsoever from the care of their newborns, creating exhaustion and anxiety beyond the norm. Physical support is also lacking, such as help in dressing etc., for mums recovering from stitches or caesareans. Midwives seemed unaware of the full true impact of partners being missing from the ward."

"There was no privacy for us to bond with the baby as a couple before my husband had to go. He was asked to leave an hour after baby was born, and I was left alone, completely numb from the chest down and unable to even lift my baby out of the cot or change his nappy or do anything for him."

"On the ward during lockdown was hell. I was starved, dehydrated, lonely, sleep deprived and it wasn't related to my baby. It was like I was in isolation in prison. No music, no tv, no daylight or fresh air. Just me and baby... curtains closed due to covid. Baby who was slightly unwell. Lots of different people touching my baby when they've been in contact with covid positive mums. No communication. No explanation. No daddy."

"I was completely clueless on so many things that I was heavily relying to learn about in my classes. When it came time for breastfeeding, I had no idea what to do or any challenges that could come. There were so, so, so many questions and I felt so confused during everything."

Negative experiences of postnatal care in hospital had led some mothers to discharge themselves early, particularly in order to be reunited with their partners. Other mothers had been discharged by the hospital sooner than they expected. In both situations this had led to some cases of new mothers feeling unable to cope, or to re-admission for medical complications in mother or baby.

"I was actually a little shocked to be discharged so soon as both babies' jaundice levels had only just come down. We actually ended up in A+E the day after, and back in hospital for 3 days the following day, which was distressing."

"The midwives on the Postnatal Ward were so unkind that I ended up discharging myself. Two days later I was so unwell, I had to go to A+E and stay in hospital for 3 days with my baby. Had my birth partner been allowed to stay this wouldn't have happened."

5.3.3 Neonatal care

In the 2020 NMS, 11.3% of babies were admitted to neonatal care and 70.0% were discharged within 7 days. In the social media survey, 13.3% of babies had a neonatal care admission and 64.9% were discharged within 7 days. More than one in ten babies admitted to neonatal care stayed for longer than 28 days (12.1% in the 2020 NMS and 10.4% in the social media survey). The median length of stay was 4.0 days (IQR=1.0 to 12.0 days) in the 2020 NMS and 6.0 days (IQR=3.0 to 14.0 days) in the social media survey. In the 2018 NMS, 11.9% of babies were admitted to neonatal care and 71.9% of these were discharged within 7 days. **Figure 11** shows a breakdown of neonatal care admissions by mode of birth, gestational age and birth weight. In both surveys, babies born by caesarean section, preterm or low birth weight were more likely to be admitted to neonatal care.

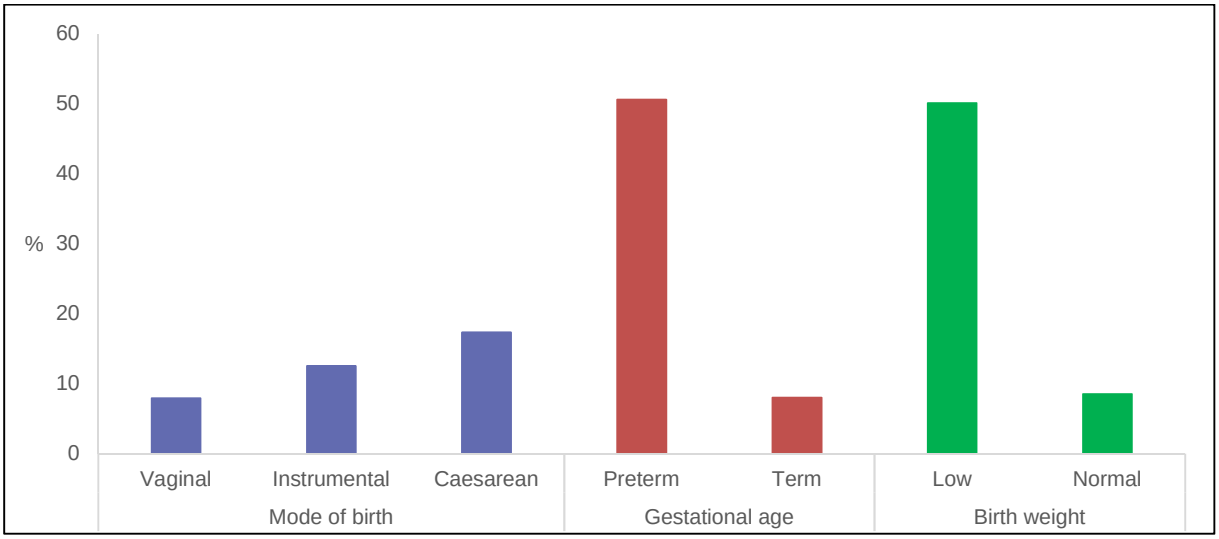

Figure 11: Proportion of neonatal care admissions by mode of birth, gestational age and birth weight

5.3.4 Care at home after birth

The amount of contact postpartum women have with healthcare professionals in the postnatal period varies by region, available resources and by the needs of individual families. **Figure 12** shows the proportion of women who had a named midwife or clinical team during the postnatal period across the NMS. In the 2006 NMS and the 2010 NMS, the majority (95% to 96%) of women had the name and contact details for a midwife following the birth of their baby. The figure decreased in the 2014 NMS (77.1%) and increased in the 2020 NMS (81.7%, 95%CI: 80.6 to 82.8). Therefore, the proportion of women who had a named midwife increased by 4.7% (95%CI: 3.0 to 6.3) between the 2014 NMS and the 2020 NMS. However, the specific question wording varied slightly across the NMS, with the NMS from 2006 to 2014 asking about midwives *and* health visitors,

as opposed to midwives only (see footnote to **Figure 12**). In the social media survey, 83.0% of women reported that they had a named midwife or clinical team during the postnatal period.

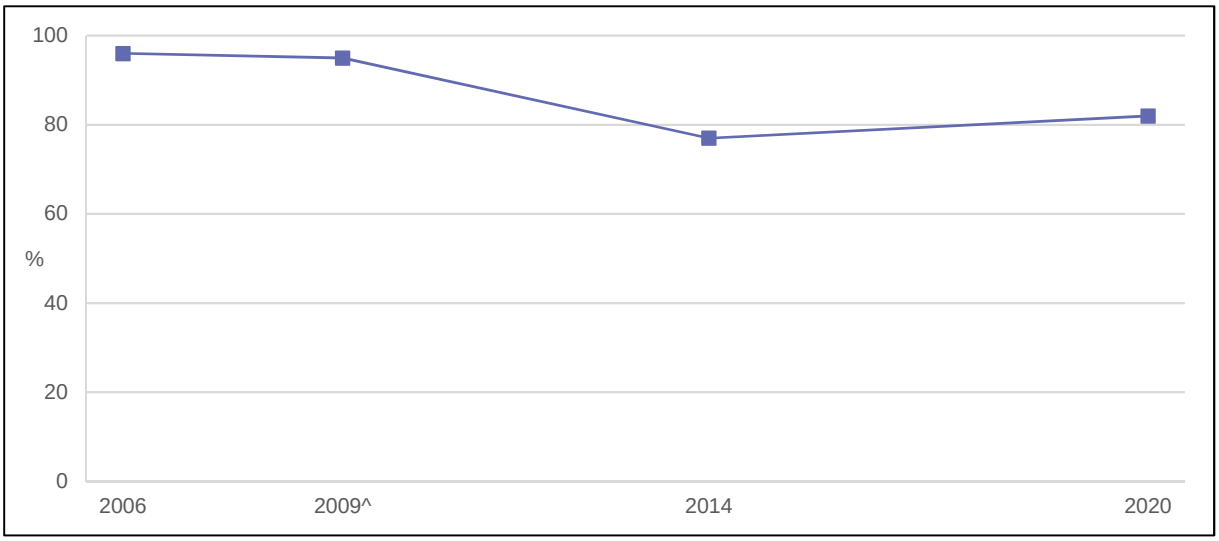

Figure 12: Proportion of women who had a named midwife during the postnatal period across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010
Note: In the 2006 NMS, women were asked whether they had the name and contact details of a midwife or health visitor they could contact if they were worried. In the 2010 NMS, women were asked whether they had the name and telephone number of a midwife or health visitor they could contact. In the 2014 NMS, women were asked whether they had a named midwife or health visitor with contact details so they could get in touch. In the 2020 NMS, women were asked if they had the name and telephone number for a named midwife/midwifery team who they could contact. The unweighted proportion in the 2014 NMS was 76.9%; the unweighted proportion in the 2020 NMS was 81.8%.

According to the NICE guidance, the first postnatal visit by a midwife should be face-to-face and usually at the woman's home, depending on her circumstances and preferences.[29] **Figure 13** shows the proportions of women who had at least one home visit from a midwife after the birth of their baby across the NMS. In all NMS from 2006 to 2018, the large majority (95% to 98%) of women had at least one home visit from a midwife during the postnatal period. In the 2020 NMS, just over half (53.7%, 95%CI: 51.7 to 55.7) of women reported that they saw a midwife at home after the birth of their baby. This is a decrease of 41.6% (95%CI: 39.5 to 43.7) between the 2018 NMS (95.3%) and the 2020 NMS.

[29] https://www.nice.org.uk/guidance/ng194/resources/postnatal-care-pdf-66142082148037. Accessed 7 October 2021.

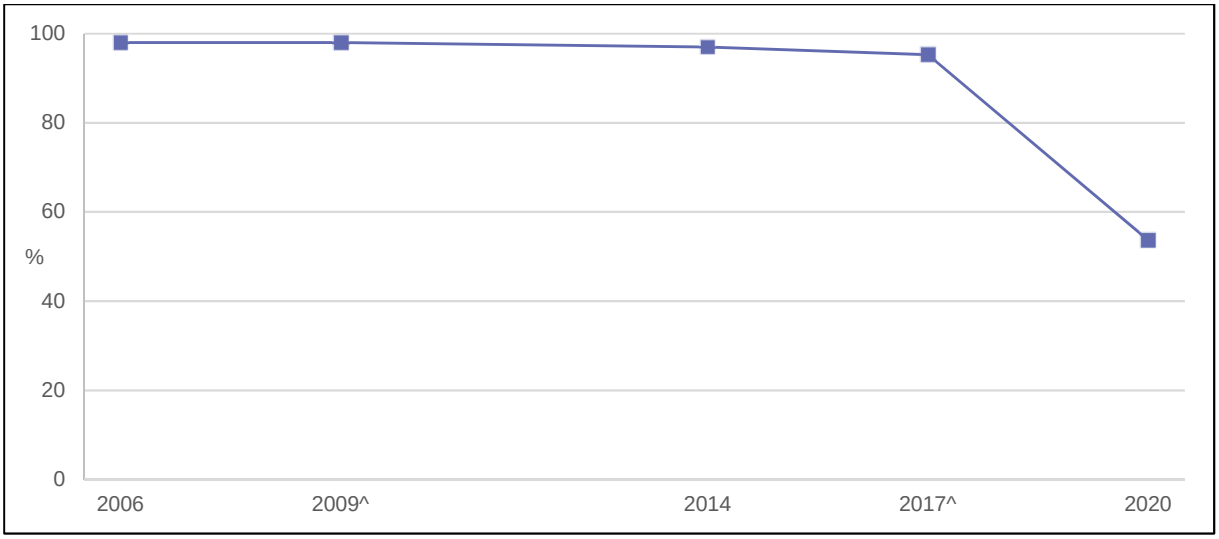

Figure 13: Proportion of women who had at least one postnatal home visit from a midwife across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 97.2%; the unweighted proportion in the 2018 NMS was 96.0%; the unweighted proportion in the 2020 NMS was 54.3%. In the 2020 NMS, data were available for postal respondents only.

Figure 14 shows the median number of home visits women received from a midwife across the NMS. On average, women in the 2020 NMS had one face-to-face home visit (median=1, IQR=0 to 2). Most women did not have any face-to-face clinic visits (median=0, IQR=0 to 2), telephone contacts (median=0, IQR=0 to 1) or video calls (median=0, IQR=0 to 0). By comparison, women in the 2018 NMS had an average of three home visits (median=3, IQR=2 to 4) and one clinic visit (median=1, IQR=0 to 2); most women in the 2018 NMS did not have any telephone contacts (median=0, IQR=0 to 2). **Figure 14** also shows the proportion of women who wanted more postnatal midwifery contact across the NMS. This was 18.3% in the 2006 NMS, 23.9% in the 2010 NMS, and 23.5% in the 2014 NMS. In the 2020 NMS, half (49.8%, 95%CI: 48.3 to 51.2) of women wanted more postnatal midwifery contact. This represents an increase of 26.3% (95%CI: 24.4 to 28.2) between the 2014 NMS and the 2020 NMS. It is likely that the increase in the proportion of women wanting more contact in the 2020 NMS reflects the decrease in the median number of home visits women received. In the social media survey, the figure was the same as in the 2020 NMS (49.8%). The proportions of women who reported that they wanted more midwifery contact in the CQC maternity surveys between 2013 and 2019 are also shown in **Figure 14** due to the availability of more recent data.

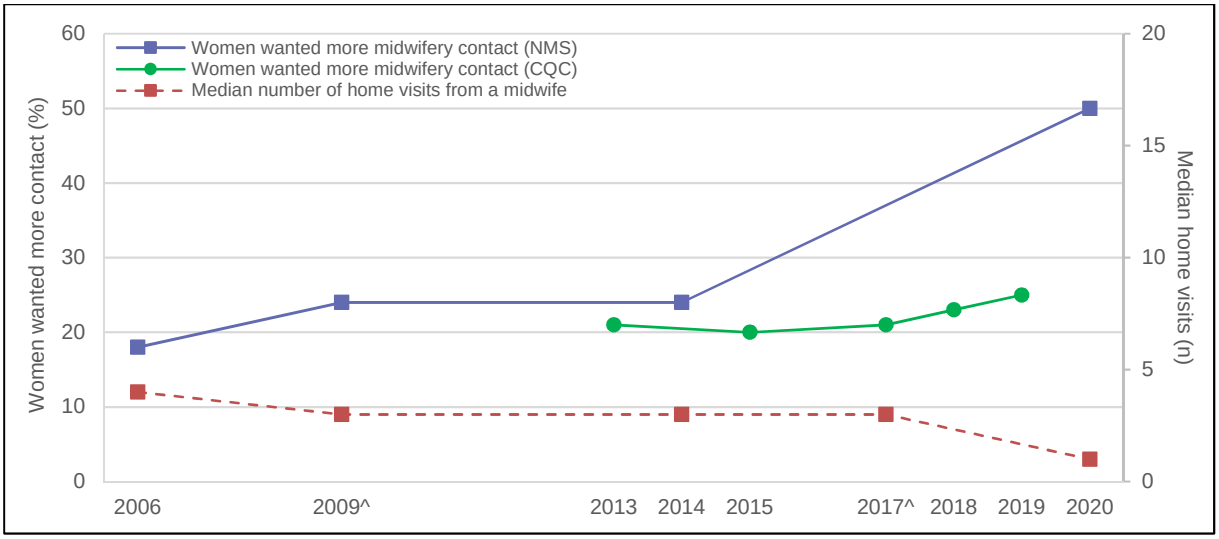

Figure 14: Median number of home visits from a midwife and proportion of women who wanted more postnatal midwifery contact across the NMS and CQC maternity surveys

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion of women who wanted more midwifery contact in the 2014 NMS was 23.5%; the unweighted proportion of women who wanted more midwifery contact in the 2020 NMS was 51.7%. In the 2018 NMS, midwives and maternity support workers were combined in the question asking about the number of home visits.

In the 2020 NMS, 28.3% of women had contact with a single midwife, 37.4% had contact with two midwives, and 29.6% had contact with three or more midwives during the postnatal period. Approximately half (50.4%, 95%CI: 48.9 to 51.9) of the women had not previously met any of the midwives they had contact with after the birth of their baby. The proportions of women being cared for by different numbers of midwives during the postnatal period were similar in the 2014 NMS, although fewer (40.3%) women had midwives who were all unknown to them. Therefore, the proportion of women who had contact with midwives who they did not know increased between the 2014 NMS and the 2020 NMS (10.1%, 95%CI: 8.0 to 12.2). In the social media survey, the figures were similar to in the 2020 NMS (23.4% had contact with one midwife, 38.7% with two, and 34.9% with three or more; 45.2% had not met any of their midwives before).

5.3.5 Postnatal check-up

Following an announcement in February 2020, a standardised postnatal check-up for women six to eight weeks after childbirth was included as an essential service in the GP contract.[30] The postnatal check-up is important to ensure women are feeling well both physically and mentally and that they are recovering from pregnancy and childbirth.[31] **Figure 15** shows the proportion of women who reported that they had a postnatal check-up of their own health at their GP surgery across the NMS. This was 90.1% in the 2006 NMS, 85.1% in the 2010 NMS, 89.0% in the 2014 NMS, and 90.6% in the 2018 NMS. In the 2020 NMS, 84.1% (95%CI: 83.0 to 85.2) of women had a postnatal check-up at their GP surgery. Despite the change to the GP contract, there was a decrease of 6.5%

[30] https://www.bma.org.uk/media/2024/gp-contract-agreement-feb-2020.pdf. Accessed 7 October 2021.
[31] https://www.nhs.uk/conditions/pregnancy-and-baby/postnatal-check/. Accessed 7 Oct 2021.

(95%CI: 5.2 to 7.9) between the 2018 NMS and the 2020 NMS and so fewer women who gave birth during the first wave of the Covid-19 pandemic were followed-up at their GP surgery, compared to women who gave birth pre-pandemic. In the social media survey, 77.9% of women reported that they had a postnatal check-up of their own health at their GP surgery.

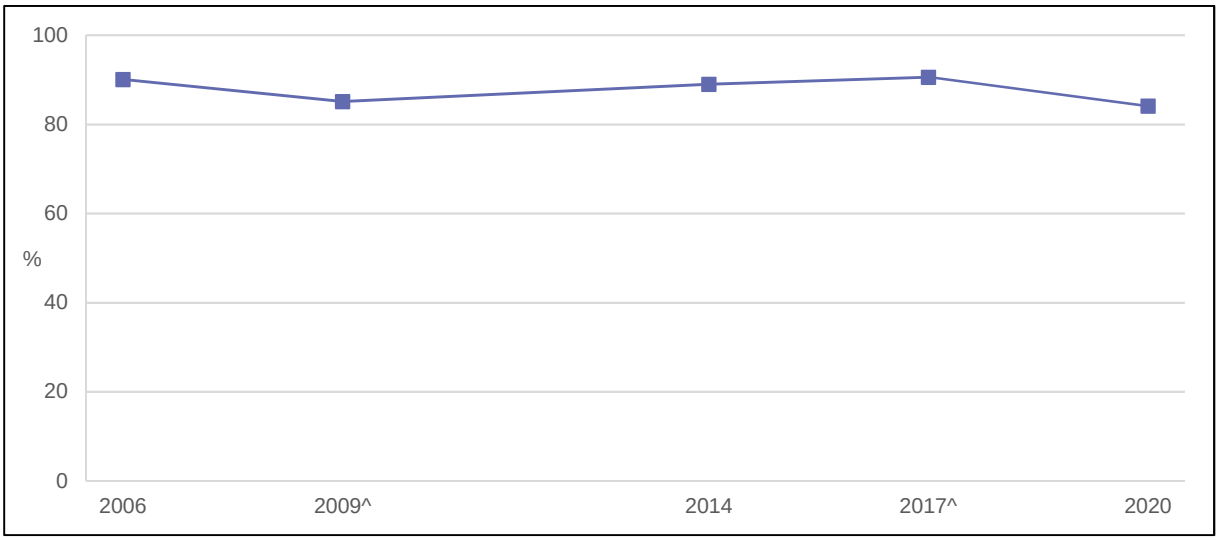

Figure 15: Proportion of women having a postnatal check-up across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 89.8%; the unweighted proportion in the 2018 NMS was 92.1%; the unweighted proportion in the 2020 NMS was 85.2%. In the 2020 NMS, women were asked whether they had a postnatal check-up at their GP surgery. In previous NMS, women were asked whether they had a postnatal check-up with their GP.

Women who had a postnatal check-up were asked how their check-up was carried out. The majority of women had a face-to-face postnatal check-up (82.9% in the 2020 NMS and 81.2% in the social media survey) but a substantial proportion of women had a postnatal check-up over the telephone (19.3% in the 2020 NMS and 20.7% in the social media survey). A minority of women reported that they had postnatal check-up via video call (0.7% in both surveys) and a small number of women indicated that they had their postnatal check-up via multiple modes.

A recent cohort study using primary care records of 34,337 women who gave birth in England between 2015 and 2018 found that 89% of women had a face-to-face consultation with a GP in the 12 weeks after they gave birth, yet only 62% of women had a consultation that could be clearly defined as a postnatal check-up.[32]

5.3.6 Routine vaccinations

Women were asked whether their baby had received their first routine vaccination approximately eight weeks after birth, which would have been in July 2020 for the NMS respondents. The majority

[32] Li Y, Kurinczuk JJ, Gale C, Siassakos D, Carson C. Evidence of disparities in the provision of the maternal postpartum six week check in primary care in England, 2015-2018: an observational study using the Clinical Practice Research Datalink (CPRD). JECH, in process.

of women in both surveys reported that their baby had received their vaccination on time (87.1% in the 2020 NMS and 83.1% in the social media survey). A delay was reported by 10.9% of the women in the 2020 NMS and by 14.1% of the women in the social media survey. Very few women chose not to take their baby to be vaccinated due to Covid-19 (0.6% in both surveys) or for other reasons (1.3% to 1.9% in both surveys).

5.3.7 Women's experiences of postnatal care in the community

In response to the general open text question about postnatal care (see section 5.3.2), some women praised the responsive, reassuring, personalised postnatal care they had received in the community from different healthcare professionals.

"Although we were in full lockdown the community midwife I spoke to on the phone on my first full day at home recognised that I was not coping and came to see me at home. Most of the midwife appointments that were meant to be over the phone were done face to face which was very reassuring, and the midwives always made me feel that regardless of what was going on with Covid they were still there for me any time of day or night."

"I do feel that my health visitor has been a lifeline, and I can call her anytime and she will do her best to help with any concerns."

"GP rang me for a postnatal check-up which I was happier doing than visiting the practice in person. The practitioner was extremely thorough and spent a good 10-15 minutes asking about my health. I was very satisfied with this care."

By contrast, many women summarised their experience of postnatal care in the community as feeling *"forgotten"* or *"abandoned",* and described the reduction of professional support as increasing their stress as new parents. They drew particular attention to midwives and health visitors replacing face-to-face visits with telephone calls and reducing the number of visits or offering no postnatal contacts at all; the difficulty of contacting health professionals when their advice was needed; the closure of health visitors' clinics where babies could be weighed and checked; reduced access to other services such as breastfeeding support; and GPs cancelling the postnatal check-ups for mother and baby or replacing face-to-face checks with remote consultations. This had left some new mothers worried that their own physical recovery and mental health had been neglected, unable to access contraception, stopping breastfeeding sooner than they wanted, and unclear about whether they were caring for their baby appropriately. Some had experienced serious health consequences with undiagnosed infections in their caesarean wound, perineal tear or episiotomy site. The advice and reassurance from health professionals was particularly missed by first-time mothers and those who were cut off from family support by distance or legal restrictions on contact with other households because of Covid-19.

"As a new mum (first time) in the middle of a pandemic I think my care after birth was awful. I never knew if my stitches healed properly, still have no birth control and no emotional support at all."

"Complete lack of care, baby wasn't weighed ... Could never speak to a midwife, always voicemail. No support re: breastfeeding. Health visitors did not comply with covid requirements when visiting our home, didn't give accurate advice, failed to turn up for

appointments and would turn up unannounced. Too quick to sign baby off and never heard from them since."

"I had a health visitor schedule to come and see me at home 14 days after my baby was born. She did not turn up for the appointment and no explanation was given. I received a letter when my baby was 27 weeks old to arrange a visit from the same health visitor."

"I would have liked more help breastfeeding. I did have calls but it was hard to understand over the phone. I needed my latch to be looked into and I was unable to describe this over the phone … Being a first-time mam and not having my own mam around to ask questions, it was hard looking after a baby."

"I have not had a postnatal check-up - I phoned re: this and was told they weren't doing this 'unless there was a problem... was there a problem?' Given that I am not a healthcare professional I couldn't tell you if my uterus was in the right place, if my stomach muscles had knitted together again, or if my mental health was in the right place. This was frustrating."

"Baby did not have check-up as GP did not provide this service. Had a 3rd degree tear- GP wasn't really helpful when I need support. GP has almost closed doors and passes the buck."

"My family is all in [another country], I feel so alone, no one to help me out, I'm a young first time mum and anywhere professionally I have seeked help I have been either told to go elsewhere or been ignored entirely."

5.3.8 Sources of support during the postnatal period

The period after birth can be challenging and parents may need extra support for many reasons. Women were asked who they felt confident they could get help from during the postnatal period. In both surveys, four out of five women felt that they could get help from family and/or friends (81.3% in the 2020 NMS and 78.6% in the social media survey). Only between a quarter and a third of women felt confident that they could contact their GP (30.5% in the 2020 NMS and 24.6% in the social media survey), midwife or maternity support worker (32.5% to 33.0% in both surveys) for help and a slightly higher proportion of women felt that they could get help from a health visitor (37.6% to 37.7% in both surveys). Women felt less confident about other sources of help including online support, NHS 111, charity helplines and local support groups.

5.3.9 Satisfaction with postnatal care

Women were asked how satisfied they felt with the overall care they had received during their pregnancy, labour and birth, and the postnatal period. The proportions of women who reported satisfaction with care during these three maternity phases across the NMS are shown in **Figure 8** on page 34. Overall satisfaction with care during the postnatal period was relatively stable in previous NMS: 79.8% in the 2006 NMS, 76.2% in the 2010 NMS, and 76.9% in the 2014 NMS. In the 2020 NMS, 52.9% (95%CI: 51.4 to 54.3) of women reported that they were satisfied with the care they received after the birth of their baby. Therefore, the proportion of women who was satisfied with their postnatal care decreased by 24.0% (95%CI: 22.1 to 25.9) between the 2014 NMS and the 2020 NMS. In the social media survey, 49.6% of women reported that they were satisfied with their care during the postnatal period. Across all NMS, more women were satisfied

with their care during pregnancy, labour and birth than with their care during the postnatal period. Satisfaction with pregnancy care is discussed in section 5.1.7 on page 34 and satisfaction with care during labour and birth is discussed in section 5.2.10 on page 46.

5.3.10 Postnatal period: key findings

Previous surveys have indicated that postnatal care is the part of the maternity journey with which women are often the least satisfied. Findings from the current study suggest that women who gave birth during the first wave of the Covid-19 pandemic received less support after giving birth, compared to women who gave birth before the pandemic. The majority of women reported that there were changes to the visiting hours or policies at their hospital or birth centre due to Covid-19 and, in the early days after giving birth, some women were unable to have their partners or significant others with them. After returning home women had, on average, fewer postnatal home visits from a midwife, and half of women indicated that they wanted or needed more midwifery contact in the postnatal period - double the proportion in pre-pandemic surveys. Fewer women had a postnatal check-up of their own health at their GP surgery and, of those who did, around one in five were carried out remotely rather than face-to-face. Most babies received their first routine vaccination on time, although there was a delay in some cases. Only a minority of babies were not taken for their vaccination due to concerns about Covid-19. Overall, satisfaction with care during the postnatal period was lower compared to satisfaction with care during pregnancy, labour and birth. Satisfaction with postnatal care was also lower than in all pre-pandemic surveys.

5.3.11 Postnatal period: summary data

Table 3: Summary of postnatal data

	2020 NMS (N=4611)		Social media survey (N=1622)	
	n*	%^	n*	%^
Mother's length of hospital admission	(N=4297)		(N=1508)	
≤ 1 day (24 hours)	2433	56.4	734	54.2
> 1 day to 2 days	885	19.8	377	21.5
> 2 days to 3 days	413	9.8	135	8.1
> 3 days to 5 days	366	8.7	151	8.8
> 5 days to 7 days	147	3.9	74	5.2
> 7 days	53	1.3	37	2.2
Median length of hospital admission in days (IQR)	(N=4297)		(N=1508)	
	1.0 (0.7-2.0)		1.0 (0.8-2.0)	
Perception of length of hospital admission	(N=4040)		(N=1359)	
Too short	574	13.3	214	13.8
Too long	863	21.9	346	24.6
About right	2362	58.3	704	54.7
Unsure	241	6.5	95	6.9
Change to visiting hours or policies due to Covid-19	(N=4403)		(N=1537)	
Yes	4094	91.8	1420	92.3
No	125	3.6	72	5.2
Don't know	184	4.7	45	2.6
Baby stayed in neonatal care	(N=4588)		(N=1621)	
No	4115	88.8	1401	86.7

Yes	473	11.3	220	13.3
Length of neonatal stay	(N=413)		(N=179)	
≤ 1 day (24 hours)	99	25.1	22	10.9
> 1 day to 7 days	187	44.9	105	54.0
> 7 days to 28 days	77	17.8	35	24.8
> 28 days	50	12.1	17	10.4
Median length of neonatal stay in days (IQR)		(N=412)		(N=177)
	4.0 (1.0-12.0)		6.0 (3.0-14.0)	
Named midwife / clinical team		(N=4591)		(N=1621)
Yes	3755	81.7	1333	83.0
No / unsure	836	18.3	288	17.0
Median postnatal home visits by a midwife[P]	(N=2315)			
	1.0 (0.0-2.0)			NA
At least one… [+ P]	(N=2315)			
Face-to-face home visit by a midwife	1256	53.7	NA	NA
Face-to-face clinic visit with a midwife	1091	43.6	NA	NA
Telephone call with a midwife	1151	48.5	NA	NA
Video call with a midwife	53	2.5	NA	NA
Preference for contact with a midwife	(N=4547)		(N=1611)	
More often	2349	49.8	843	49.8
Less often	181	6.2	34	3.5
Saw them the right amount	2017	44.1	734	46.8
Number of midwives in the postnatal period	(N=4590)		(N=1621)	
None	189	4.7	41	3.0
One	1234	28.3	337	23.4
Two	1703	37.4	618	38.7
Three or more	1464	29.6	625	34.9
Midwives known	(N=4394)		(N=1579)	
All	743	16.5	281	19.2
Some	1468	33.1	600	35.6
None	2183	50.5	698	45.2
Maternal postnatal check-up at GP surgery	(N=4576)		(N=1621)	
Yes	3901	84.1	1264	77.9
No	675	15.9	357	22.1
Mode of postnatal check-up appointment[+]	(N=3901)		(N=1264)	
Face-to-face	3206	82.9	1023	81.2
Telephone	792	19.3	272	20.7
Video call	26	0.7	7	0.7
Baby received first vaccination on time	(N=4591)		(N=1619)	
Yes	4026	87.1	1399	83.1
No, there was a delay	494	10.9	185	14.1
No, the appointment was cancelled	10	0.2	6	0.4
No, baby not taken for vaccination due to COVID-19	15	0.6	3	0.6
No, baby not taken for vaccination for (an)other reason(s)	46	1.3	26	1.9
Sources of postnatal support[+]	(N=4611)		(N=1622)	
Family or friends	3757	81.3	1239	78.6
GP	1453	30.5	433	24.6
Midwife / Maternity support worker	1540	32.5	556	33.0
Health visitor	1785	37.7	638	37.6
Local support group	307	5.8	120	6.6
NHS 111	611	12.6	173	9.3
Charity helpline	185	3.6	89	5.6
Online support	744	14.5	296	16.2
Satisfaction with postnatal care	(N=4576)		(N=1622)	
Very satisfied	891	22.5	267	18.0
Satisfied	1387	30.4	472	31.6
Neither satisfied nor dissatisfied	798	17.6	251	16.7
Dissatisfied	938	18.6	375	20.4
Very dissatisfied	562	11.0	254	13.3

* Unweighted totals ^ Weighted prevalence [+] Multiple options could be selected [P] Based on postal responses only

5.4 Infant feeding

Summary data on infant feeding for the respondents to the 2020 NMS and the social media survey are presented in **Table 4** in section 5.4.7 on pages 66-67.

5.4.1 Breastfeeding

Current national and international guidance recommends exclusive breastfeeding for the first six months of infancy.[33] Six months exclusive breastfeeding is also recommended within the DHSC Healthy Child Programme.[34] **Figure 16** shows the breastfeeding initiation rates across the NMS from 2006 to 2020. The figures include all babies who were put to the breast at all, even if it was on one occasion only, and also includes those babies who were given expressed breast milk. The rates were 80.2% in the 2006 NMS, 83.7% in the 2010 NMS, 84.5% in the 2014 NMS, and 85.3% in the 2018 NMS. In the 2020 NMS, 84.8% (95%CI: 83.7 to 85.8) of women had initiated breastfeeding. This represents a marginal decrease in the rate of breastfeeding initiation between the 2018 NMS and the 2020 NMS but the difference was not statistically significant (0.6%, 95%CI: -0.9 to 2.0). In the social media survey, the breastfeeding initiation rate was 87.6% (95%CI: 85.9 to 89.2).

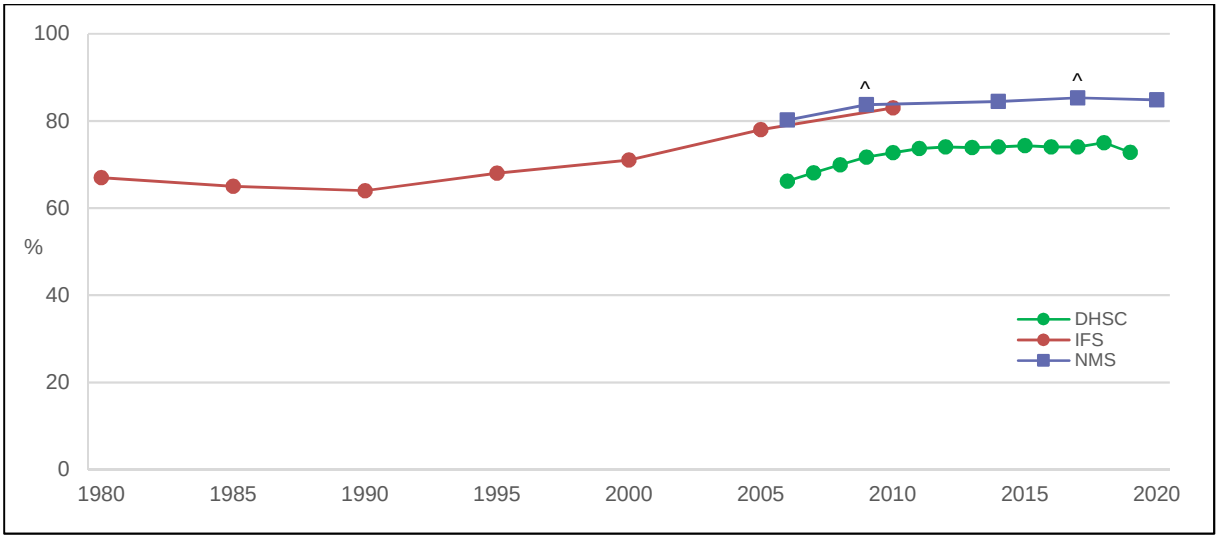

Figure 16: Rates of breastfeeding initiation by year of birth across the NMS, IFS and DHSC

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 86.7%; the unweighted proportion in the 2018 NMS was 88.9%; the unweighted proportion in the 2020 NMS was 87.0%

Figure 16 also shows the breastfeeding initiation rates reported in the Infant Feeding Survey (IFS) from 1980 to 2010 (for England and Wales up until 2000 and then for England only), and the rates reported by DHSC for England from 2005-6 to 2019-20. The figure is an updated and modified

[33] https://www.who.int/westernpacific/health-topics/breastfeeding. Accessed 7 October 2021.
[34] https://www.gov.uk/government/publications/healthy-child-programme-pregnancy-and-the-first-5-years-of-life. Accessed 30 June 2021.

version of a graph published by Oakley (2016).[35] Overall the trend across all data sources shows an increase in the rate of breastfeeding initiation from 67% for babies born in 1980 to 84.8% for babies born in 2020, although the rates have stabilised in recent years. Consistent with previous NMS, the breastfeeding initiation rate for women in the 2020 NMS (and for women in the social media survey) was considerably higher than in national routine data, which shows that the proportion of babies who received breast milk as their first feed in 2019-2020 was 72.8% (DHSC, currently NHS Digital MSDS).[20] The rate may be higher in the 2020 NMS due to non-response bias; however, due to data completeness and/or quality issues, MSDS data may also not be nationally representative (see **Appendix F**).[20] It is noteworthy that the 2020 NMS figure is only slightly higher than the initial breastfeeding rate of 83% for England reported in the last IFS in 2010.[27]

Figure 17 shows the proportions of women who were giving their baby any breast milk at birth, six weeks and six months in the 2018 NMS and the 2020 NMS. In the 2018 NMS, the proportion of women breastfeeding at six weeks was 64.0% and the proportion breastfeeding at six months was 45.3%. In the 2020 NMS, 64.6% (95%CI: 63.2 to 66.0) of women were breastfeeding when their baby was six weeks old and 48.2% (95%CI: 46.7 to 49.6) were breastfeeding when their baby was six months old. Therefore, there was a marginal increase (0.7%, 95%CI: -1.2 to 2.6) in the breastfeeding rate at six weeks and a small but statistically significant increase (2.8%, 95%CI: 0.8 to 4.9) in the breastfeeding rate at six months between the 2018 NMS and the 2020 NMS. **Figure 17** also shows the proportions of women who were giving their baby any breast milk at birth, six weeks and six months as reported in the IFS from 1995 to 2010. The overall trend shows that the proportion of women breastfeeding at each of these time points has increased over time with more women initiating breastfeeding and continuing to breastfeed for longer.

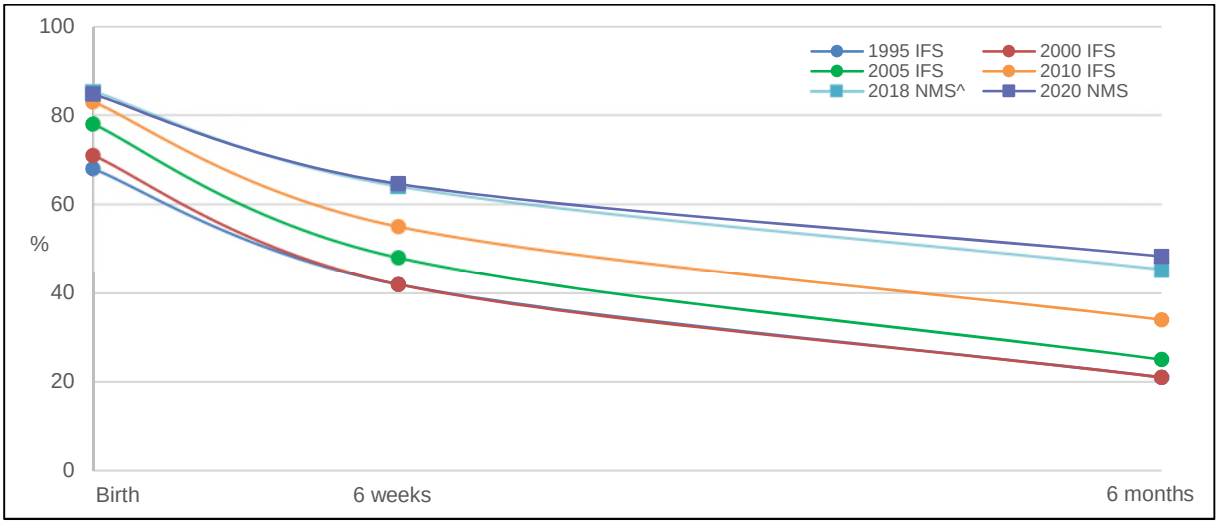

Figure 17: Breastfeeding rates at birth, 6 weeks and 6 months across the NMS and IFS

^ Women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportions in the 2018 NMS were 88.9% (birth), 66.6% (6 weeks) and 49.6% (6 months); the unweighted proportions in the 2020 NMS were 87.0% (birth), 67.7% (6 weeks) and 51.3% (6 months)

[35] Oakley LL, Kurinczuk JJ, Renfrew MJ, and Quigley MA. Breastfeeding in England: Time Trends 2005-2006 to 2012-2013 and Inequalities by Area Profile. Maternal and Child Nutrition 2016;12:440-451.

Many women in the social media survey were less than six months postpartum when they took part in the study. Hence, the rates of breastfeeding at six weeks and 14 weeks (as opposed to six months) are reported and the analysis is restricted to those women whose baby was at least 14 weeks old at the time of survey completion. Overall, 68.7% (95%CI: 66.4 to 71.0) of women were still breastfeeding when their baby was six weeks old and 60.5% of women were still breastfeeding when their baby was 14 weeks old.

Consistent with previous NMS, the breastfeeding rates at six weeks reported by women in the 2020 NMS (and by women in the social media survey) are considerably higher than in national routine data for 2019-2020, which shows that 48.0% of babies were breastfeeding at six to eight weeks (DHSC, currently Public Health England (PHE)).[36] The rates in the 2020 NMS may be higher due to non-response bias; however, as with NHS Digital, PHE may have issues with data quality (see **Appendix F**).[37]

5.4.2 Breastfeeding support

Women were asked about a range of possible sources of help and support regarding breastfeeding and could give multiple responses to the question. The main source of breastfeeding support cited by women in both surveys was midwives (64.5% (95%CI: 63.0 to 66.0) in the 2020 NMS and 58.8% in the social media survey), followed by breastfeeding specialists (24.3% in the 2020 NMS and 30.2% in the social media survey), and family and friends (26.5% to 26.8% in both surveys). Websites were also cited as a source of support by women in both surveys but by a higher proportion of women in the social media survey (27.8%) compared to women in the 2020 NMS (19.9%). Fewer women cited breastfeeding support groups as a source of support (9.7% (95%CI: 8.9 to 10.7) in the 2020 NMS and 15.0% in the social media survey). In the 2018 NMS, midwives were cited as a source of breastfeeding support by 69.9% of women, which was 5.4% (95%CI: 3.3 to 7.5) higher than in the 2020 NMS. Furthermore, in the 2018 NMS, breastfeeding support groups were cited as a source of support by 22.9% of women which was 13.2% (95%CI: 11.6 to 14.9) higher than in the 2020 NMS. Approximately one in five women did not receive any help from a professional with breastfeeding their baby (19.0% in the 2020 NMS and 21.6% in the social media survey), although some women did not feel they needed help or advice (10.8% in the 2020 NMS and 13.1% in the social media survey).

NICE recommends that breastfeeding care is tailored to the woman's individual needs and provides face-to-face support and written, digital or telephone information to supplement (but not replace) face-to-face support.[38] Women were asked about how their breastfeeding support was delivered

[36] https://www.gov.uk/government/statistics/breastfeeding-at-6-to-8-weeks-after-birth-annual-data. Accessed 29 June 2021.
[37] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957253/OFF_SEN_Annual_Breastfeeding_Statistical_Commentary_2019_2020.pdf. Accessed 7 October 2021.
[38] https://www.nice.org.uk/guidance/ng194/chapter/Recommendations#planning-and-supporting-babies-feeding. Accessed 30 June 2021.

and the question allowed multiple responses. Over half of women in both surveys received professional breastfeeding support face-to-face (58.1% to 58.7% in both surveys) with over a quarter of women (also) receiving support over the telephone (26.7% to 27.8% in both surveys). Women also received support by video calls (10.1% in the 2020 NMS and 13.9% in the social media survey), text messages (4.4% in the 2020 NMS and 7.9% in the social media survey) and via an app (1.5% to 1.7% in both surveys).

Figure 18 shows the proportion of women who indicated that they would have liked more help with breastfeeding their baby across the NMS. The proportion increased from 29.7% in the 2014 NMS to 30.4% in the 2018 NMS, and to 46.2% (95%CI: 44.6 to 47.7) in the 2020 NMS. This represents a 15.7% (95%CI: 13.6 to 17.9) increase between the 2018 NMS and the 2020 NMS. The figure was even higher in the social media survey (52.4%).

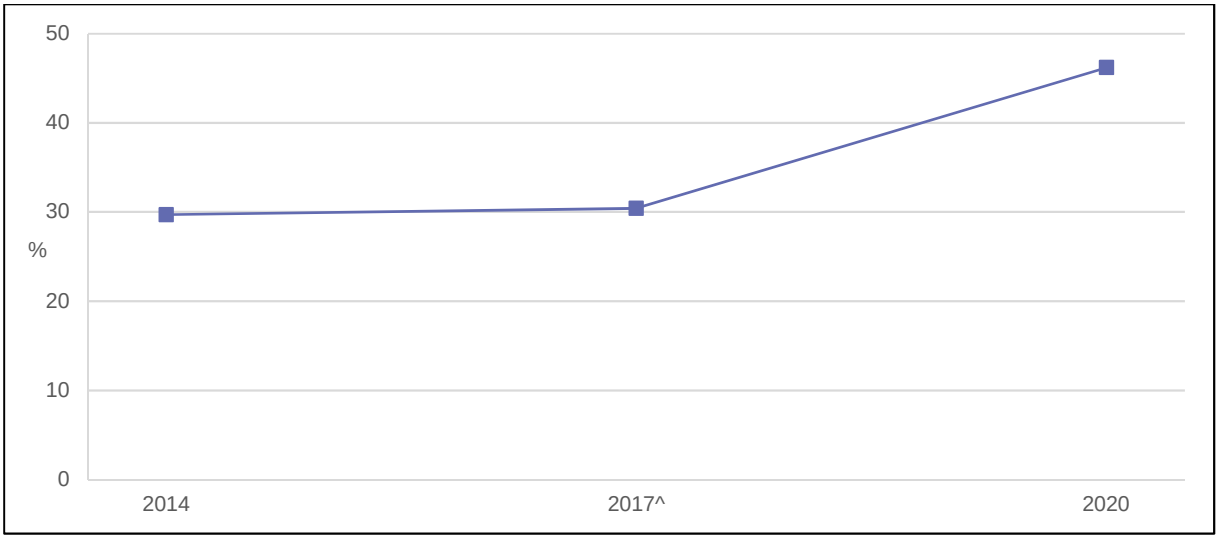

Figure 18: Proportion of women wanting more help with breastfeeding across the NMS

^ Women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 29.7%; the unweighted proportion in the 2018 NMS was 31.0%; the unweighted proportion in the 2020 NMS was 48.1%

5.4.3 Formula feeding

Four out of five women in the 2020 NMS had given formula milk to their baby at the time they took part in the survey (81.7%). Almost two-thirds of the women had given formula milk to their baby either from birth (34.3%) or within the first eight weeks after birth (28.2%). Fewer women in the social media survey had given formula milk to their baby (70.1%), partly because many of these women had younger babies at the time they took part in the survey (median age 26 weeks (IQR: 21 to 33 weeks) compared with a median age of 28 weeks (IQR: 27 to 32 weeks) in the 2020 NMS). Almost a third (29.2%) of the women had given formula milk to their baby from birth and, for 26.4% of women, it was not from birth but within the first eight weeks after birth.

5.4.4 Formula feeding support

Women were asked about a range of possible sources of help and advice regarding formula feeding and could give multiple responses to the question. The main source of support cited by women in both surveys was midwives (30.0% to 30.3% in both surveys), followed by family and friends (21.9% in the 2020 NMS and 15.7% in the social media survey), and other health professionals (13.9% to 14.9% in both surveys). Fewer women cited sources of support for formula feeding compared to breastfeeding but over a quarter of women in both surveys (26.2% to 27.0%) felt that they did not require any help with formula feeding their baby.

5.4.5 Introduction of solids

The UK health departments recommend that solid foods should be introduced to babies when they are around six months old.[39] **Figure 19** shows the proportion of mothers who had introduced solid food to their baby by age four, five and six months in the 2018 NMS and the 2020 NMS. In the 2018 NMS, 17.4% of women had introduced solid food by four months, 45.3% by five months, and 91.8% by the time their baby was six months old. In the 2020 NMS, 14.4% (95%CI: 13.4 to 15.4) of women had introduced solid food by four months, 40.0% (95%CI: 38.5 to 41.4) by five months, and 93.7% (95%CI: 92.9 to 94.4) by six months. The differences between the proportions of women who had introduced solid food by 4 months (3.1%, 95%CI: 1.5 to 4.6) and 5 months (5.3%, 95%CI: 3.3 to 7.4) between the 2018 NMS and the 2020 NMS indicate that more women who took part in the 2020 NMS waited until their baby was older before introducing solid food. In the social media survey, the analysis was restricted to women who took part in the survey when their baby was at least four months old and 11.3% (95%CI: 9.7 to 13.0) of these women had introduced solid food to their baby by the time they were four months old.

[39] https://www.nhs.uk/conditions/pregnancy-and-baby/solid-foods-weaning. Accessed 30 June 2021.

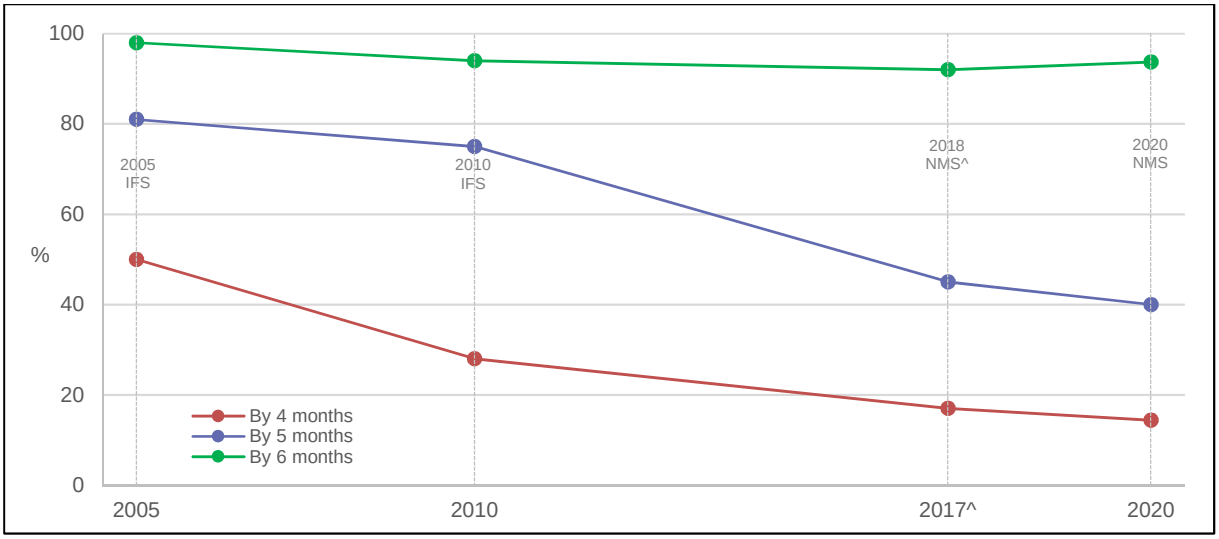

Figure 19: Proportion of women introducing solid food to their baby by 4, 5 and 6 months of age across the NMS and IFS

^ Women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportions in the 2018 NMS were 14.6% (by 4 months), 43.1% (by 5 months) and 83.3% (by 6 months); the unweighted proportions in the 2020 NMS were 12.4% (by 4 months), 39.0% (by 5 months) and 94.8% (by 6 months)

Figure 19 also shows the proportion of mothers who had introduced solid food to their baby by age four, five and six months in the IFS in 2005 and 2010. The IFS found that, in 2010, 28% of mothers had introduced solid food to their baby by four months, 75% of mothers had introduced solid food by five months, and the majority of mothers (94%) had introduced solid food by the time their baby was six months old.[27] These figures are higher than in the NMS.

A minority of women in the 2020 NMS introduced solid food to their baby when they were older than six months or had not yet introduced solid food to their baby at the time they took part in the survey (6.3%). Furthermore, a large proportion of women introduced solid food to their baby when they were exactly six months of age (43.6%). Combining these proportions indicates that half (49.9%, 95%CI: 48.5 to 51.4) of all women in the 2020 NMS introduced solid food to their baby when they were aged at least six months. In the 2018 NMS, the figure was 43.6%* and so there was a statistically significant increase (6.3%, 95%CI: 4.2 to 8.4) between the 2018 NMS and the 2020 NMS.

5.4.6 Infant feeding: key findings

The findings on infant feeding suggest that women who gave birth in England during the first wave of the Covid-19 pandemic received less help and support with breastfeeding their baby, compared to women who gave birth before the pandemic. More women expressed a need for more professional breastfeeding support, compared to in pre-pandemic surveys. Despite this, there was no change in the breastfeeding initiation rate, which remained high. Furthermore, compared to in previous surveys, more women were still breastfeeding their baby at six months of age and more women waited until their baby was at least six months old before introducing solid food.

*Calculated differently in the 2018 NMS report [5]

5.4.7 Infant feeding: summary data

Table 4: Summary of infant feeding data

	2020 NMS (N=4611)		Social media survey (N=1622)	
	n*	%^	n*	%^
Mother initiated breastfeeding	**(N=4606)**		**(N=1622)**	
No	597	15.3	178	12.4
Yes	4009	84.8	1444	87.6
Duration of breastfeeding	**(N=4577)**		(N=1602)	
Never breastfed	597	15.4	178	12.6
Less than 6 weeks	897	20.0	277	18.7
6-8 weeks	161	3.4	64	3.6
9-13 weeks	289	6.8	88	4.7
14-25 weeks (14 weeks or longer for social media survey)	299	6.4	995	60.5
26 weeks or longer	2334	48.2	-	-
Sources of breastfeeding help and advice+	**(N=4009)**		**(N=1444)**	
Midwife	2650	64.5	951	58.8
Other health professional	601	14.3	263	15.6
Breastfeeding specialist	1076	24.3	459	30.2
Partner	556	13.1	215	12.9
Family or friend	1116	26.8	442	26.5
Breastfeeding support group	413	9.7	253	15.0
Peer supporter	171	3.6	109	5.8
Telephone support	430	9.3	204	12.6
Websites	919	19.9	432	27.8
No help or advice	314	8.2	150	10.7
No help or advice needed	393	10.8	95	13.1
Mode of professional help/support+	**(N=4009)**		**(N=1444)**	
Face-to-face	2432	58.7	894	58.1
Telephone	1161	27.8	390	26.7
Video call	477	10.1	226	13.9
Text messages	201	4.4	120	7.9
App	64	1.5	31	1.7
No professional help or advice	673	19.0	260	21.6
Satisfaction with breastfeeding support	**(N=3956)**		**(N=1438)**	
Wanted/needed more support	1904	46.2	838	52.4
Did not want/need more support	2052	53.9	600	47.6
Mother initiated formula feeding	**(N=4591)**		**(N=1617)**	
No	897	18.3	440	29.9
Yes	3694	81.7	1177	70.1
Timing of initiation of formula feeding	**(N=4489)**		**(N=1585)**	
Formula feeding not initiated	897	18.8	440	31.0
From birth	1398	34.3	442	29.2
Not from birth but ≤8 weeks	1341	28.2	485	26.4
9-13 weeks	271	5.9	54	2.9
14-25 weeks (14 weeks or later for social media survey)	281	6.3	164	10.7
26 weeks or later	301	6.6	-	-
Sources of formula feeding help and advice+	**(N=3694)**		**(N=1177)**	
Midwife	1091	30.0	367	30.3
Other health professional	530	13.9	189	14.9
Partner	392	11.1	107	8.3
Family or friend	816	21.9	210	15.7
Breastfeeding support group	43	1.3	19	1.1
Peer supporter	25	0.6	8	0.6
Telephone support	50	1.2	9	1.3
Websites	272	6.5	107	6.4
No help or advice	715	17.7	289	22.8
No help or advice needed	897	26.2	231	27.0

Mother introduced solid food to baby	**(N=4596)**		**(N=1618)**	
No	147	3.7	535	31.9
Yes	4449	96.3	1083	68.1
Timing of introduction of solid food	**(N=4504)**		**(N=1481)**	
≤ 4 months (0-17 weeks)	559	14.4	124	11.3
> 4 months up to 5 months (18-22 weeks) or not at time of survey for social media survey	1196	25.6	1357	88.7
> 5 months up to 6 months (23-26 weeks)	2514	53.7	-	-
> 6 months or not at time of survey (>26 weeks)	235	6.3	-	-

* Unweighted totals ^ Weighted prevalence + Multiple options could be selected - Not calculated due to ages of babies at time of survey participation

5.5 Maternal health

Summary data on maternal health for the respondents to the 2020 NMS and the social media survey are presented in **Table 5** in section 5.5.6 on page 74-75.

5.5.1 Physical health

A woman's body undergoes many transformations during pregnancy and childbirth and it can take time for women to fully recover. Women in the study were asked how they had been feeling physically since they had given birth. **Figure 20** shows the proportion of women in the 2018 NMS and in the 2020 NMS who were feeling unwell or fatigued during the postnatal period. In the 2018 NMS, the proportion of women who reported feeling unwell in the first few days following childbirth was 32.0%. In the days prior to taking part in the survey, 7.2% of women described feeling unwell and 25.6% reported that they were either very tired or exhausted all the time. In the 2020 NMS, 34.2% (95%CI: 32.8 to 35.6) of women reported feeling unwell in the first few days after childbirth. In the days prior to taking part in the survey, 8.9% (95%CI: 8.1 to 9.8) of women reported feeling unwell and 31.7% (95%CI: 30.3 to 33.1) reported that they were either feeling very tired or exhausted all the time. Therefore, there was a small but statistically significant increase in the proportions of women who were feeling unwell shortly after birth (2.1%, 95%CI: 0.2 to 4.1) and during the postnatal period (1.7%, 95%CI: 0.6 to 2.8) in the 2020 NMS compared to the 2018 NMS. More women (6.1%, 95%CI: 4.3 to 8.0) were also feeling fatigued during the postnatal period in the 2020 NMS compared to in the 2018 NMS. In the social media survey, the proportions of women feeling unwell after childbirth, or unwell or fatigued at the time of the survey were 39.4%, 10.1% and 42.1% respectively.

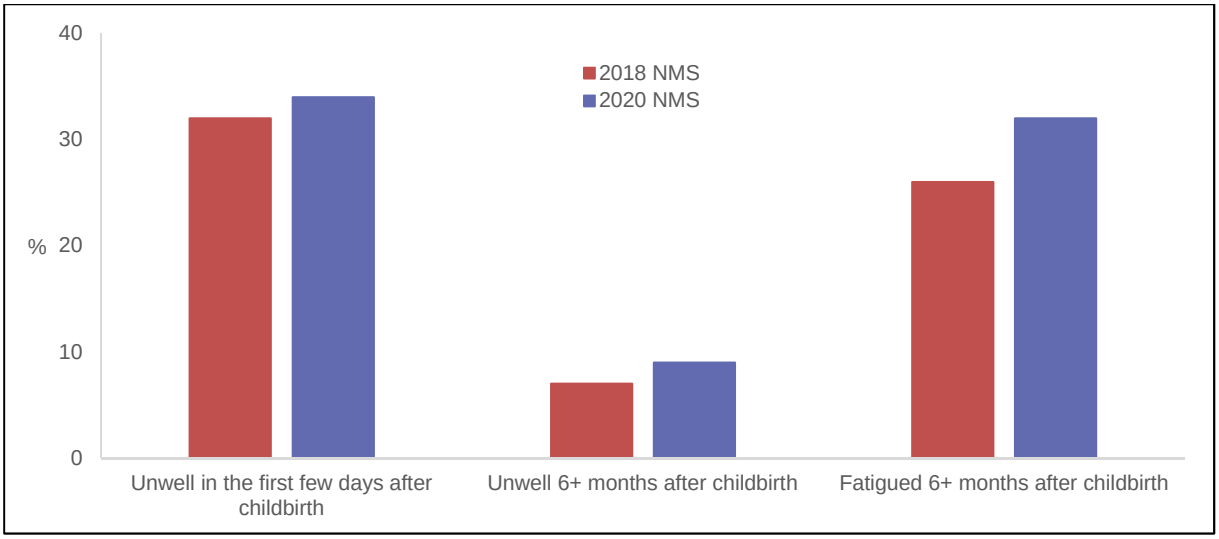

Figure 20: Proportion of women feeling unwell or fatigued in the postnatal period in the 2018 and 2020 NMS

Figure 21 shows the physical health problems reported by the women in the 2020 NMS at three different time-points during the postnatal period: one month, three months and six months after the birth. The most commonly reported health problems one month after the birth were painful breasts (50.9%), a painful wound (41.9%) and fatigue (38.7%). Three months after the birth, fatigue (26.0%) was the most commonly reported physical health problem followed by painful sexual intercourse (15.0%) and painful breasts (14.8%). Six months after the birth, fatigue was still the most commonly reported problem (19.3%) followed by sleep problems (not related to the baby) (12.3%) and painful sexual intercourse (8.0%). Almost all health problems were most prevalent one month after the birth and tended to decrease by three months and decrease further by six months. The prevalence of physical health problems reported by women in the 2020 NMS was consistent with the findings in the 2018 NMS.

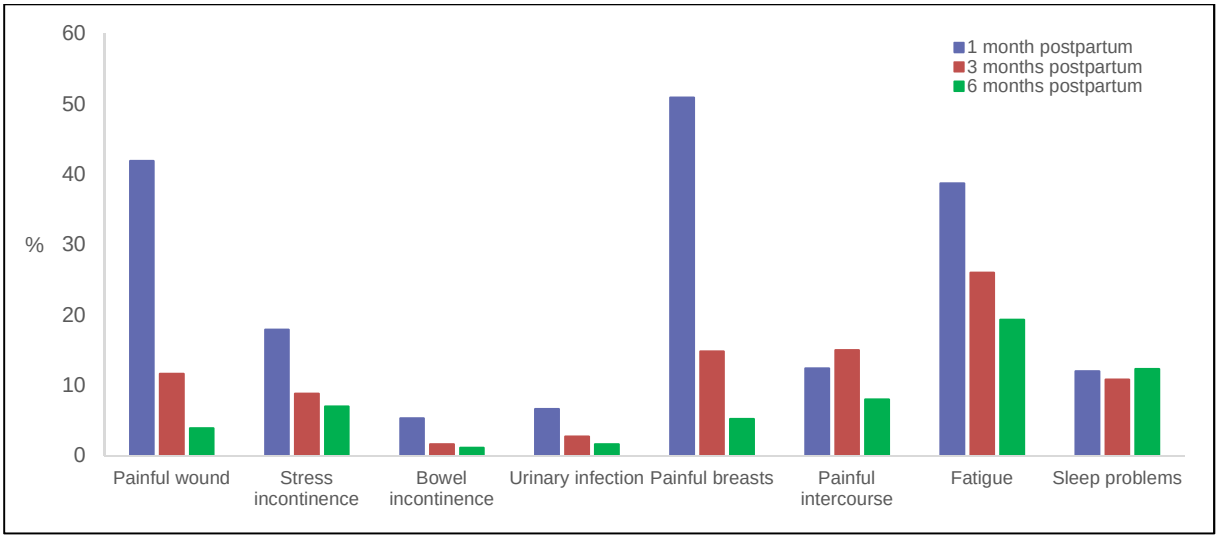

Figure 21: Prevalence of physical health problems at three time-points during the postnatal period in the 2020 NMS

Health problems reported by women in the social media survey were only analysed at one month and three months after the birth because a large number of women who took part in the survey were less than six months postpartum. The prevalence of different health problems one and three months after giving birth was very similar for the women in the social media survey as for the women in the 2020 NMS. The most commonly reported health problems one month after the birth were painful breasts (53.0%), fatigue (45.2%) and a painful wound (38.9%). Three months after the birth, fatigue (32.2%) was the most commonly reported physical health problem followed by painful sexual intercourse (19.2%) and painful breasts (19.0%). Like in the 2020 NMS, all health problems were more prevalent one month after childbirth.

5.5.2 Covid-19 and self-isolation

Women were asked whether they had ever had a positive test for Covid-19. A minority of women indicated that they had tested positive for Covid-19 (6.0% in the 2020 NMS and 4.2% in the social media survey) and a similar number of women suspected they had been infected with Covid-19 although this had not been confirmed with a positive test (3.1% to 4.4% in both surveys). Women who had confirmed or suspected Covid-19 reported whether this was during their pregnancy (41.5% in both surveys) or after giving birth (44.5% in the 2020 NMS and 33.8% in the social media survey).

Women were also asked whether they had been required to self-isolate due to being in contact with somebody who had either tested positive for Covid-19 or was displaying symptoms. Approximately one in five women indicated that they had self-isolated (17.2% in the 2020 NMS and 21.1% in the social media survey). More women had self-isolated since giving birth (11.0% in the 2020 NMS and 14.6% in the social media survey) than during pregnancy (2.9% to 3.7% in both surveys), although a minority of women had self-isolated both before and after giving birth. The numbers of women reporting positive cases and/or self-isolation were quite low in both the surveys, which is possibly due to the study being conducted relatively early on in the pandemic.

5.5.3 Mental health

The perinatal period is an extremely vulnerable time for women and it is critical that mental health is assessed and those women with mental health needs are identified and supported.[40] Women were asked whether they had experienced anxiety or depression during their pregnancy and / or during the postnatal period. **Figure 22** shows the prevalence of anxiety and depression reported by the women in the 2020 NMS during pregnancy and at three different time-points during the postnatal period: one month, three months and six months after the birth. During pregnancy, 21.9% of women reported suffering from anxiety, 7.7% reported suffering from depression and 5.6% reported suffering from both anxiety and depression. In the postnatal period, 39.0% of women

[40] https://www.nice.org.uk/guidance/cg192/chapter/introduction. Accessed 11 August 2021.

reported suffering from anxiety, 22.2% reported suffering from depression, and 17.5% reported suffering from both anxiety and depression at some point (one, three and/or six months after the birth). Anxiety and depression were most prevalent one month after the birth (27.0% (95%CI: 25.7 to 28.3) and 13.5% (95%CI: 12.6 to 14.6) respectively). Both anxiety and depression declined by three months (19.5% (95%CI: 18.4 to 20.7) and 11.4% (95%CI: 10.5 to 12.3) respectively) and declined further by six months (16.9% (95%CI: 15.8 to 18.0) and 10.1% (95%CI: 9.3 to 11.0) respectively). Some women reported experiencing both anxiety and depression during the postnatal period: 11.3% (95%CI: 10.4 to 12.3) one month after the birth, 8.9% (95%CI: 8.1 to 9.8) three months after the birth, and 7.8% (95%CI: 7.1 to 8.6) six months after the birth.

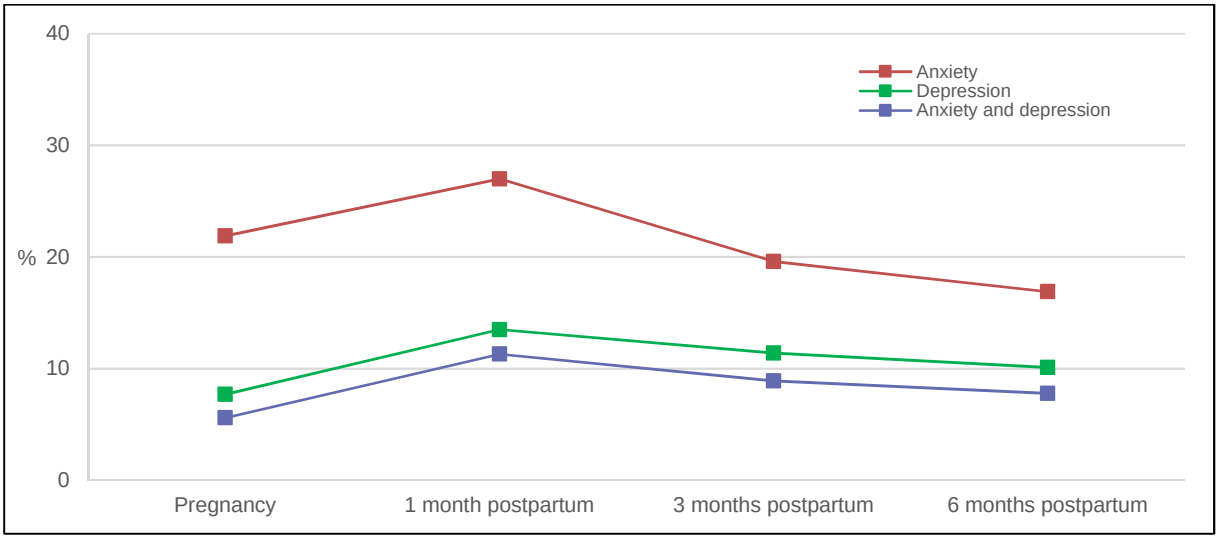

Figure 22: Prevalence of anxiety and depression during the perinatal period in the 2020 NMS

Figure 23 shows the prevalence of anxiety and depression during the perinatal period reported across the NMS. The prevalence of anxiety and depression during pregnancy was relatively stable in the NMS from 2006 to 2018 (from 2010 for anxiety). There was a statistically significant increase (8.4%, 95%CI: 6.9 to 10.0) in the prevalence of anxiety during pregnancy between the 2018 NMS (13.4%) and the 2020 NMS (21.9%, 95%CI: 20.7 to 23.1). There was also a marginal increase in the prevalence of depression during pregnancy between the 2018 NMS (6.9%) and the 2020 NMS (7.7%, 95%CI: 6.9 to 8.5), which was not statistically significant (0.8%, 95%CI: -0.3 to 1.9). The prevalence of anxiety during the postnatal period increased with each successive survey with a steeper rise (10.1%, 95%CI: 8.2 to 12.0) between the 2018 NMS (28.9%) and the 2020 NMS (39.0%, 95%CI: 37.6 to 40.4). The prevalence of postnatal depression decreased marginally between the 2006 NMS and the 2014 NMS and then increased steadily between the 2014 NMS and the 2020 NMS; the increase between the 2018 NMS (16.4%) and the 2020 NMS (22.2%, 95%CI: 21.1 to 23.5) was statistically significant (5.9%, 95%CI: 4.2 to 7.5). Anxiety was more prevalent than depression during pregnancy and during the postnatal period across all NMS.

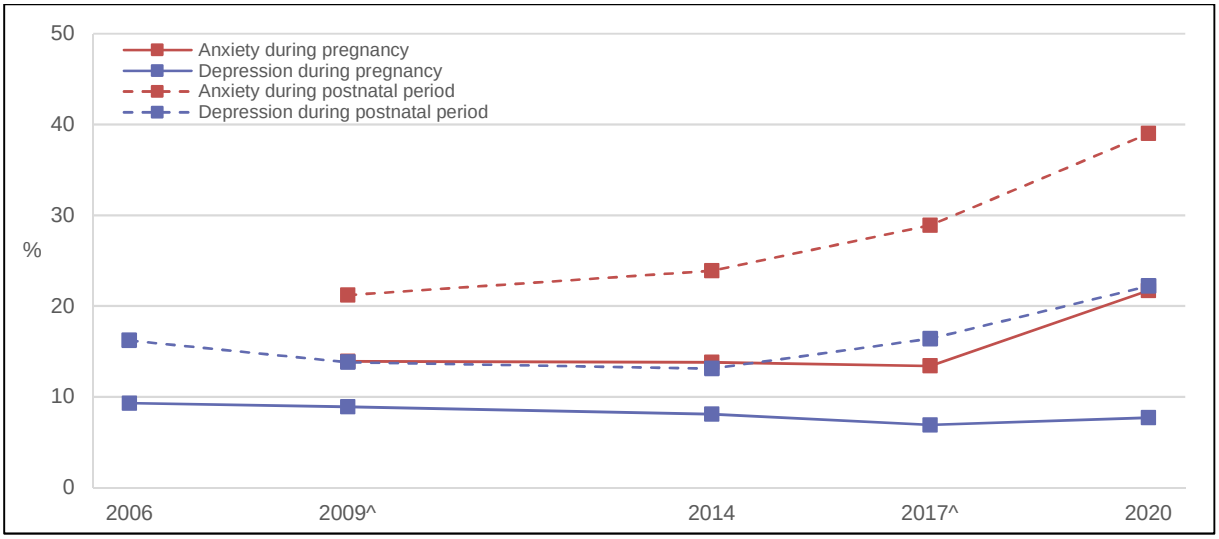

Figure 23: Prevalence of anxiety and depression during the perinatal period across the NMS

^ Women gave birth in 2009 and the NMS was conducted in 2010; women gave birth in 2017 and the NMS was conducted in 2018
Note: The NMS in 2006, 2010 and 2014 asked women about their mental health up to 3 months after giving birth whereas the NMS in 2018 and 2020 asked women about their mental health up to 6 months after giving birth. Data on anxiety are available from 2010 and data on depression are available from 2006. The unweighted prevalence in the 2014 NMS was 13.8% for anxiety and 8.1% for depression during pregnancy, and 23.9% for anxiety and 13.1% for depression during the postnatal period; the unweighted prevalence in the 2018 NMS was 12.8% for anxiety and 5.7% for depression during pregnancy, and 29.0% for anxiety and 14.2% for depression during the postnatal period; the unweighted prevalence in the 2020 NMS was 21.8% for anxiety and 6.5% for depression during pregnancy, and 39.6% for anxiety and 20.8% for depression during the postnatal period.

The prevalence of anxiety and depression among the women who took part in the social media survey was higher than in the 2020 NMS. Overall, 32.9% (95%CI: 30.6 to 35.2) of women reported suffering from anxiety, 10.3% (95%CI: 8.8 to 11.8) from depression, and 8.9% (95%CI: 7.6 to 10.4) from both anxiety and depression during pregnancy. Analysis of postnatal mental health problems reported by women in the social media survey was restricted to one and three months after the birth because a large number of women who took part in the survey were less than six months postpartum. Overall, 45.8% of women reported suffering from anxiety, 24.5% from depression, and 20.4% from both anxiety and depression either one or three months after giving birth. Anxiety was most prevalent one month after the birth (35.1%, 95%CI: 32.8 to 37.5) and declined slightly by three months (33.5%, 95%CI: 31.2 to 35.8). Depression increased slightly from 17.9% (95%CI: 16.0 to 19.8) one month after the birth to 19.5% (95%CI: 17.6 to 21.5) after three months. Some women reported experiencing both anxiety and depression during the postnatal period: 15.6% one month after the birth (95%CI: 13.9 to 17.5) and 16.2% three months after the birth (95%CI: 14.5 to 18.1).

There are no national routine data available on the prevalence of anxiety and depression in women during pregnancy and the postnatal period. A systematic review published in 2017 reported an overall prevalence of 22.9% for self-reported anxiety during pregnancy,[41] which is consistent with the findings of the 2020 NMS but lower than the social media survey. However, the prevalence of self-reported anxiety during the postnatal period was higher in the 2020 NMS and the social media

[41] Dennis C-L, Falah-Hassani K, Shiri R. Prevalence of antenatal and postnatal anxiety: systematic review and meta-analysis. British Journal of Psychiatry 2017;210(5):315–23.

survey compared to the review findings (15.0%). Another systematic review published in 2017 reported an overall prevalence of 6.3% for comorbid anxiety and (moderate to severe) depression during pregnancy [42] which is in line with the 2020 NMS and the social media survey. However, as with anxiety, the prevalence of self-reported comorbid anxiety and depression during the postnatal period was higher in the 2020 NMS and the social media survey compared to the review findings (5.7%). Variation in prevalence may be due to differences in how anxiety and depression are defined and measured across studies.

5.5.4 Mental health support

There is considerable concern about women's mental health around the time of pregnancy and recent guidance makes recommendations for the effective identification and treatment of women with perinatal mental health problems.[40] **Figure 24** shows the proportion of women who were asked about their mental health at their booking appointment across the NMS. This was 80.3% in the 2014 NMS, 77.5% in the 2018 NMS, and 83.4% (95%CI: 82.3 to 84.5) in the 2020 NMS. This represents a statistically significant increase (5.9%, 95%CI: 4.3 to 7.5) in the proportion of women who were asked about their mental health around the time of booking for their pregnancy care in the 2020 NMS, compared to in the 2018 NMS. Women also reported whether they were asked specifically about their past and family history of mental health problems and over three-quarters of women indicated that they were (77.1%). In the social media survey, 84.0% of women were asked about their mental health and 79.2% were asked about their past and family history of mental health problems at their booking appointment. It is important to note that the pregnancy booking appointment would have been pre-pandemic for the majority of women who took part in the study.

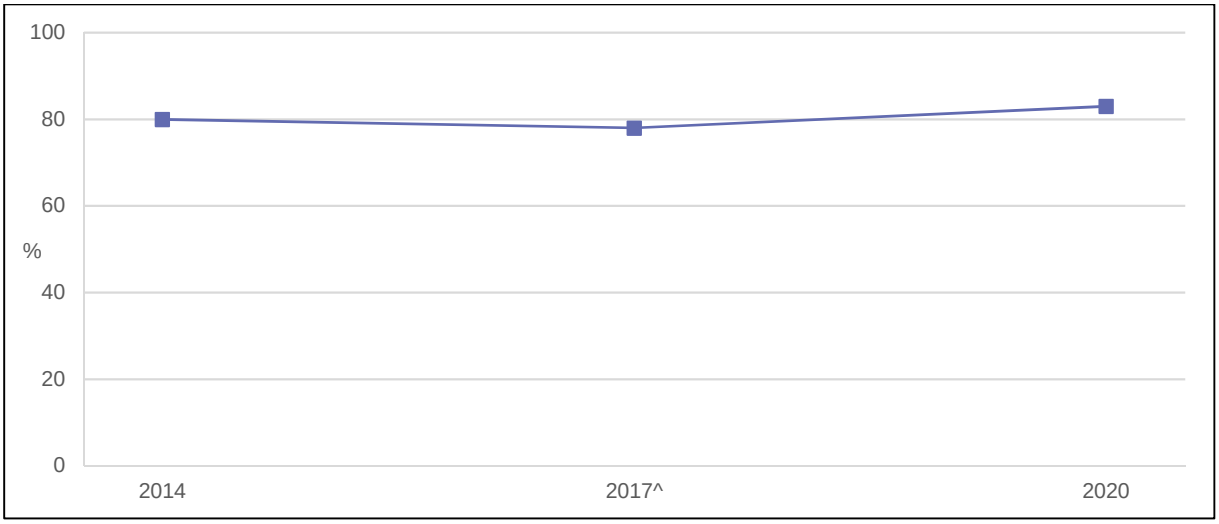

Figure 24: Proportion of women who were asked about their mental health at their booking appointment across the NMS

^ Women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 80.7%; the unweighted proportion in the 2018 NMS was 80.3%;the unweighted prevalence in the 2020 NMS was 84.7%

[42] Falah-Hassani K, Shiri R, Dennis C-L. The prevalence of antenatal and postnatal co-morbid anxiety and depression: a meta-analysis. Psychological Medicine 2017;47(12):2041–53.

Women were also asked whether they had a health professional whom they could talk to about personal or sensitive issues during their pregnancy and four out of five women in the 2020 NMS reported that they had, at least to some extent (79.4%, 95:CI: 78.2 to 80.6). This was a small but statistically significant decline (3.3%, 95%CI: 1.7 to 4.9) compared to women in the 2018 NMS (82.7%). In the social media survey, the figure was almost the same as in the 2020 NMS (80.1%).

Figure 25 shows the proportion of women who were asked about their mental health during the postnatal period across the NMS. This was 88.2% in the 2014 NMS, 78.3% in the 2018 NMS, and 73.7% (95%CI: 72.4 to 75.0) in the 2020 NMS. Therefore, there was a small but statistically significant decrease (4.7%, 95%CI: 2.9 to 6.4) in the 2020 NMS compared to in the 2018 NMS. More than a quarter of women who took part in the 2020 NMS were either not asked about their mental health (22.1%) or could not recall being asked about their mental health (4.2%) during the postnatal period. In the social media survey, 73.0% were asked about their mental health, 24.6% were not asked, and 2.4% could not recall being asked during the postnatal period.

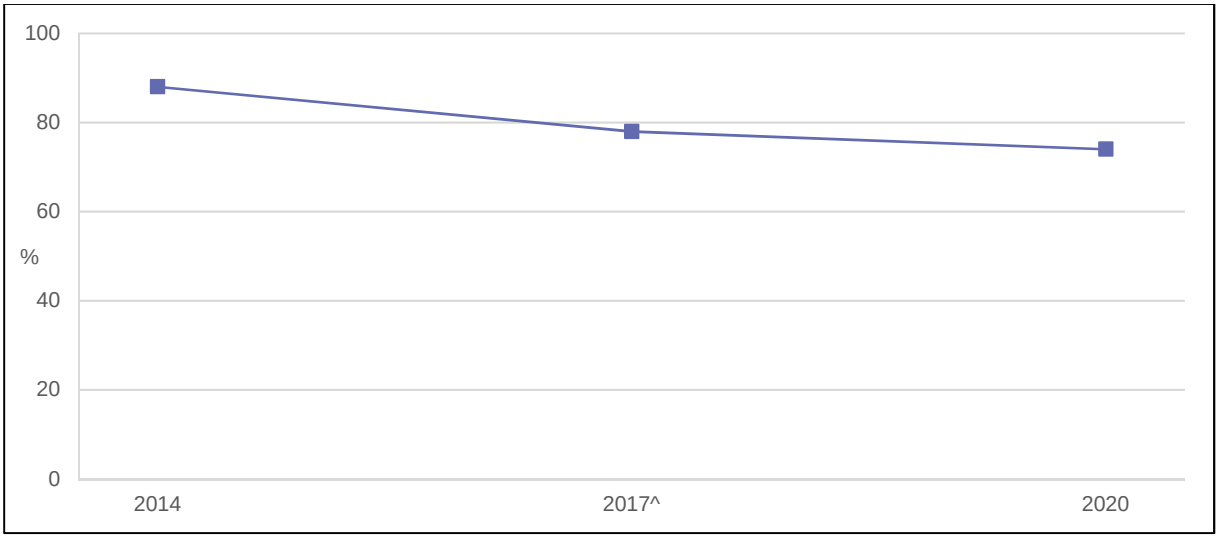

Figure 25: Proportion of women who were asked about their mental health during the postnatal period across the NMS

^ Women gave birth in 2017 and the NMS was conducted in 2018
Note: The unweighted proportion in the 2014 NMS was 89.8%; the unweighted proportion in the 2018 NMS was 81.6%; the unweighted prevalence in the 2020 NMS was 74.8%

Women who were receiving treatment or support for their mental health during the postnatal period were asked whether there had been any changes to this support due to Covid-19. Between a quarter and a third of women across both surveys indicated that there had been changes (28.1% in the 2020 NMS and 32.7% in the social media survey).

The women in the study were also asked about their sources of general support. The most commonly identified sources of support were partners (77.5% in the 2020 NMS and 85.1% in the social media survey), family (72.6% in the 2020 NMS and 68.8% in the social media survey) and

friends (47.9% to 48.4% in both surveys). Colleagues, health professionals and social media were identified as sources of support by a minority of women in both surveys. Women were also asked whether there were changes to the amount of support they could access because of Covid-19. In both surveys, most women indicated that they had received less support (62.7% in the 2020 NMS and 71.3% in the social media survey) with very few women reporting that they had received more support due to Covid-19 (1.5% in both surveys).

5.5.5 Maternal health: key findings

The findings on maternal health indicate that the prevalence of physical health problems among women who gave birth in England during the first wave of the Covid-19 pandemic was comparable to women who gave birth pre-pandemic, although more women reported that they were feeling unwell and/or fatigued six months after childbirth. The prevalence of mental health problems was higher during pregnancy and the postnatal period for women who gave birth during the pandemic compared to pre-pandemic rates. Although the prevalence of depression during pregnancy was in line with previous surveys, the prevalence of anxiety during pregnancy was significantly higher. The prevalence of both anxiety and depression during the postnatal period also increased significantly. In terms of support for mental health problems, more women were asked about their mental health during their pregnancy, compared to women who took part in previous surveys, yet fewer women felt that they had a health professional whom they could talk to about sensitive issues. In the postnatal period, fewer women reported that they were asked about their mental health compared to in previous surveys and also compared to during pregnancy. Of the women who were receiving support or treatment for mental health problems, a third indicated that there had been changes to these services. Furthermore, two-thirds of all women indicated that they were able to access less general support due to Covid-19.

5.5.6 Maternal health: summary data

Table 5: Summary of maternal health data

	2020 NMS (N=4611)		Social media survey (N=1622)	
	n*	%^	n*	%^
Physical health after childbirth	(N=4571)		(N=1622)	
Very well	887	20.4	272	19.8
Quite well	2091	45.4	668	40.8
Quite unwell	1046	22.6	450	26.2
Very unwell	547	11.6	232	13.2
Physical health at time of survey	(N=4594)		(N=1618)	
Very well	1956	41.9	598	37.3
Quite well	2296	49.2	879	52.7
Quite unwell	306	7.7	128	8.8
Very unwell	36	1.2	13	1.2
Fatigue at time of survey	(N=4587)		(N=1620)	
Not very tired	924	21.7	215	14.7
Quite tired	2208	46.6	741	43.3
Very tired	1071	23.0	443	27.9

Exhausted all the time	384	8.7	221	14.2
Covid-19 status	(N=4596)		(N=1622)	
Positive test result	245	6.0	55	4.2
No positive test result	4195	90.5	1504	91.1
Inconclusive or awaiting test result	18	0.3	8	0.4
No test but suspected Covid-19	138	3.1	55	4.4
Self-isolation due to Covid-19	(N=4579)		(N=1618)	
Yes	747	17.2	266	21.1
No	3832	82.8	1352	78.9
Asked about mental health at booking appointment	(N=4595)		(N=1618)	
Yes	3891	83.4	1388	84.0
No	315	7.7	116	7.8
Don't know	389	8.9	114	8.2
Asked about mental health history at booking	(N=4574)		(N=1616)	
Yes	3637	77.1	1326	79.3
No	540	14.3	168	13.7
Don't know	397	8.6	122	7.0
Anxiety and/or depression during pregnancy	(N=4590)		(N=1620)	
Anxiety	1002	21.9	480	32.9
Depression	300	7.7	137	10.3
Comorbid anxiety and depression	218	5.6	112	8.9
Had a health professional to talk to during pregnancy	(N=4582)		(N=1619)	
Always	1825	39.6	581	36.6
To some extent	1974	39.9	750	43.5
No	783	20.6	288	19.9
Asked about mental health during the postnatal period	(N=4594)		(N=1618)	
Yes	3438	73.7	1222	73.0
No	965	22.1	355	24.6
Don't know	191	4.2	41	2.4
Anxiety and/or depression during the postnatal period	(N=4611)		(N=1622)	
Anxiety	1824	39.0	747	45.8
Depression	961	22.2	366	24.5
Comorbid anxiety and depression	767	17.5	309	20.4
Change in mental health support due to Covid-19	(N=1183)		(N=648)	
No	830	72.0	434	67.3
Yes	353	28.1	214	32.7
Sources of support[+]	(N=4611)		(N=1622)	
Partner	3794	77.5	1405	85.1
Family	3363	72.6	1166	68.8
Friends	2335	47.9	866	48.4
Colleagues	277	5.8	114	5.8
Health professionals	273	7.0	114	5.8
Social media	324	7.2	142	8.1
Changes to amount of support due to Covid-19	(N=4506)		(N=1607)	
No	1384	35.8	366	27.2
Yes, less support received	3063	62.7	1225	71.3
Yes, more support received	59	1.5	16	1.5

* Unweighted totals ^ Weighted prevalence [+] Multiple options could be selected

5.6 Maternal lifestyle

Summary data on maternal lifestyle for the respondents to the 2020 NMS and the social media survey are presented in **Table 6** in section 5.6.7 on pages 78-79.

5.6.1 Tobacco use

Reducing smoking during pregnancy is one of the three national ambitions in the Tobacco Control Plan published in July 2017.[43] Just under a third (32.4%) of the women in the 2020 NMS and just over a third (36.0%) of the women in the social media survey reported that they had ever smoked tobacco cigarettes. In the 2020 NMS, approximately one in thirteen women reported smoking at any point during their pregnancy (7.9%, 95%CI: 7.2 to 8.8). This is lower (2.0%, 95%CI: 0.8 to 3.2) than in the 2018 NMS, in which one in ten women reported smoking at any point during their pregnancy (9.9%). In the social media survey, 7.7% (95%CI: 6.4 to 9.1) of women smoked tobacco during their pregnancy. The prevalence of smoking during the postnatal period was 10.3% and 9.3% in the 2020 NMS and the social media survey respectively. Therefore, the overall number of women who smoked at all around the time of their pregnancy was relatively small in both surveys.

National routine data indicates that 9.5% of women who gave birth in England in 2020-21 were smoking tobacco at the time they gave birth, which was a decrease compared with previous years (NHS Digital Smoking at Time of Delivery (SATOD) data collection).[44] The prevalence in the routine data is still higher than in the 2020 NMS and social media survey, which may be due to the different methods and timing of data collection, non-response bias or reporting bias in the current study.

5.6.2 Electronic cigarette use

The women were also asked about their use of electronic cigarettes or vaping devices. In the 2020 NMS, 15.0% (95%CI: 13.9 to 16.0) of women reported that they had ever used an electronic cigarette or vaping device and, in the social media survey, the proportion was slightly higher (19.0%, 95%CI: 17.1 to 21.0). A small number of women in the 2020 NMS reported using an electronic cigarette or vaping device during their pregnancy (3.6%, 95%CI: 3.1 to 4.2) with 3.3% using such a device after they were aware of their pregnancy. The prevalence of vaping in the 2020 NMS was consistent (0.1%, 95%CI: -0.6 to 0.9) with the prevalence in the 2018 NMS (3.5%). The proportions of women who reported vaping were slightly higher in the social media survey with 5.7% (95%CI: 4.6 to 6.9) of women using an electronic cigarette or vaping device during their pregnancy and 5.4% after they were aware of their pregnancy. Of the women who reported ever using an electronic cigarette or vaping device, the majority contained nicotine, at least some of the time (77.9% to 78.8% in both surveys).

There are no routine data available on the prevalence of vaping in women specifically during pregnancy but there are data on vaping in women generally. Data from 2019 show that 12.0% (95%CI: 9.9 to 14.1) of women aged 16 years and over (so not specifically around pregnancy)

[43] https://www.gov.uk/government/publications/towards-a-smoke-free-generation-tobacco-control-plan-for-england. Accessed 1 July 2021.
[44] https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-women-s-smoking-status-at-time-of-delivery-england/statistics-on-womens-smoking-status-at-time-of-delivery-england---quarter-4-2020-21/part-2. Accessed 11 Aug 2021.

surveyed in England reported ever having used a vaping device and 5.0% (95%CI: 3.7 to 6.3) identified as current users (ONS).[45] Therefore, the prevalence of vaping during pregnancy in the women who responded to the 2020 NMS and the social media survey is largely consistent with the published estimates for the general population of women, although these data sources are not directly comparable and the estimates from the current study may be prone to non-response bias or reporting bias.

A study published in 2019 used nationally representative data from the National Health Interview Survey (NHIS) in the United States to estimate the prevalence of electronic cigarette use among pregnant women and non-pregnant women aged 18 to 44 years.[46] The weighted prevalence of current electronic cigarette use was 3.6% for pregnant women, which is consistent with the findings from the 2020 NMS.

5.6.3 Passive smoking

In terms of passive smoking, 16.8% (95%CI: 15.7 to 18.0) of the women in the 2020 NMS lived with somebody who smoked tobacco during their pregnancy, which was a marginal decrease (1.5%, 95%CI: -0.6 to 3.1) compared to in the 2018 NMS (18.3%). There was also a marginal decrease (0.9%, 95%CI: -0.5 to 2.4) in the proportion of women who were living with somebody who smoked tobacco at the time that they took part in the survey between 2018 (15.5%) and 2020 (14.7%, 95%CI: 13.6 to 15.7). In the social media survey, 17.7% of women lived with somebody who smoked tobacco during their pregnancy and 14.2% were living with somebody who smoked tobacco at the time they took part in the survey.

5.6.4 Exercise

Women were asked whether they felt able to exercise as much as they wanted to during their pregnancy and after giving birth. Between a quarter and a third of women across both surveys felt that they could (during pregnancy: 31.6% in the 2020 NMS and 26.6% in the social media survey; after giving birth: 28.7% to 28.9% in both surveys). If women could not exercise as much as they wished to, they were asked to indicate the reason(s). Over a third of women did not exercise during their pregnancy because they did not feel safe due to Covid-19 or because they were shielding or self-isolating (35.4% in the 2020 NMS and 38.4% in the social media survey). Other reasons for not exercising during pregnancy were being too tired (32.3% in the 2020 NMS and 34.4% in the social media survey), too busy (14.0% to 14.5% in both surveys) or not feeling well enough (18.0% in the 2020 NMS and 25.4% in the social media survey). After giving birth, the main reasons women gave for not exercising as much as they would have liked to were being too tired (34.2% in the

[45] https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/ecigaretteuseinengland. Accessed 1 July 2021.
[46] Liu B, Xu G, Rong S, Santillan DA, Santillan MK, Snetselaar LG. National Estimates of e-Cigarette Use Among Pregnant and Nonpregnant Women of Reproductive Age in the United States, 2014-2017. JAMA Pediatrics 2019;173(6):600–602.

2020 NMS and 42.8% in the social media survey) or too busy (37.8% in the 2020 NMS and 41.6% in the social media survey). Over a quarter of women did not exercise due to safety concerns over Covid-19 or due to the requirement to shield or self-isolate (25.1% in the 2020 NMS and 28.1% in the social media survey). In both surveys, concerns and restrictions around Covid-19 were given as reasons for not exercising by fewer women in the postnatal period compared to during pregnancy.

5.6.5 Future pregnancy planning

Less than half of the women in the 2020 NMS and the social media survey reported that they were planning another pregnancy (42.9% to 43.7% in both surveys). Of these women, almost two-thirds were intending to become pregnant again either in the next 12-24 months or in more than 24 months (64.5% in the 2020 NMS and 60.9% in the social media survey). In the 2018 NMS, 43.5% of women were planning another pregnancy.

5.6.6 Maternal lifestyle: key findings

The findings on maternal lifestyle suggest that fewer women who gave birth in England during the first wave of the Covid-19 pandemic were smoking tobacco during their pregnancy, compared to women who gave birth before the pandemic, and this is consistent with routine data on smoking in pregnancy. There was no change in the prevalence of vaping or passive smoking. Over a third of women indicated that they did not exercise during their pregnancy because they did not feel safe due to Covid-19 or because they were shielding or self-isolating. During the postnatal period, over a quarter of women did not exercise due to Covid-19.

5.6.7 Maternal lifestyle: summary data

Table 6: Summary of maternal lifestyle data

			2020 NMS (N=4611)			Social media survey (N=1622)
	n*	%^ (ever smoked / used)[#]	%^ (overall)	n*	%^ (ever smoked / used)[#]	%^ (overall)
Tobacco use						
Ever smoked tobacco			(N=4545)			(N=1618)
No	3149	-	67.7	1126	-	64.0
Yes	1396	-	32.4	492	-	36.0
Smoked tobacco during pregnancy		(N=1384)	(N=4536)		(N=491)	(N=1617)
No	1131	75.2	92.1	403	78.5	92.3
Yes	253	24.8	7.9	88	21.5	7.7
Smoked tobacco after aware of pregnancy		(N=1381)	(N=4533)		(N=489)	(N=1615)
No	1185	80.4	93.7	407	79.2	92.6
Yes	196	19.6	6.3	82	20.8	7.4
Smoked tobacco since the birth		(N=1382)	(N=4534)		(N=492)	(N=1618)
No	1030	67.9	89.7	383	74.1	90.7
Yes	352	32.1	10.3	109	25.9	9.3

E-cigarette use / vaping						
Ever used e-cigarettes / vaping device			(N=4521)			(N=1612)
No	3917	-	85.0	1366	-	81.0
Yes	604	-	15.0	246	-	19.0
Used e-cigarette / vaping device during pregnancy		(N=597)	(N=4520)		(N=246)	(N=1612)
No	466	75.6	96.4	180	70.2	94.3
Yes	131	24.4	3.6	66	29.8	5.7
Used e-cigarette / vaping device after aware of pregnancy		(N=599)	(N=4524)		(N=246)	(N=1612)
No	482	78.0	96.8	184	71.6	94.6
Yes	117	22.0	3.3	62	28.4	5.4
Used e-cigarette / vaping device since the birth		(N=597)	(N=4523)		(N=246)	(N=1612)
No	440	71.2	95.8	200	85.2	97.2
Yes	157	28.8	4.2	46	14.8	2.8
E-cigarettes / vaping device contained nicotine		(N=582)			(N=245)	
Always	275	46.8	-	115	41.9	-
Sometimes	180	32.0	-	74	36.0	-
No, never	64	11.4	-	38	17.1	-
I don't know	63	9.9	-	18	5.0	-
Passive smoking						
Lived with smoker during pregnancy	(N=4449)			(N=1607)		
No	3865	-	83.2	1397	-	82.4
Partner	492	-	13.3	185	-	15.0
Somebody else	92	-	3.6	25	-	2.7
Live with smoker currently	(N=4451)			(N=1614)		
No	3950	-	85.4	1439	-	85.9
Partner	438	-	12.1	160	-	12.4
Somebody else	63	-	2.6	15	-	1.8
Exercise						
Exercise during pregnancy	(N=4611)			(N=1622)		
Yes	1510	-	31.6	477	-	26.6
No, due to Covid-19	822	-	20.0	318	-	20.0
No, I was self-isolating / shielding	683	-	15.4	280	-	18.4
No, not well enough	820	-	18.0	393	-	25.4
No, too tired	1476	-	32.3	545	-	34.4
No, too busy	611	-	14.0	185	-	14.5
Exercise in the postnatal period	(N=4611)			(N=1622)		
Yes	1331	-	28.9	414	-	28.7
No, due to Covid-19	832	-	19.3	372	-	22.4
No, I was self-isolating / shielding	234	-	5.8	92	-	5.7
No, not well enough	512	-	11.4	302	-	17.1
No, too tired	1627	-	34.2	730	-	42.8
No, too busy	1767	-	37.8	698	-	41.6
Pregnancy planning						
Planning a future pregnancy	(N=4487)			(N=1609)		
No	2398	-	56.3	753	-	57.1
Yes	2089	-	43.7	856	-	42.9
Timescale	(N=2056)			(N=856)		
Currently pregnant	49	-	3.8	18	-	4.2
Within 6 months	116	-	5.1	52	-	7.3
In 6-12 months	239	-	9.9	142	-	18.2
In 12-24 months	748	-	32.1	338	-	34.1
In more than 24 months	610	-	32.4	246	-	26.8
Unsure	294	-	16.7	60	-	9.4

* Unweighted totals ^ Weighted prevalence + Multiple options could be selected # For data on smoking and vaping, the prevalence is reported for the respondents overall and for the women who indicated they had ever smoked tobacco / used an electronic cigarette or vaping device

6. Conclusion

This report is based on a large national study of the views and experiences of women who gave birth in the UK during the first wave of the 2020 Covid-19 pandemic. The 2020 NMS recruited 4,611 women from birth registration records held by ONS and is the largest nationally representative survey of postpartum women who gave birth in England during the pandemic. The social media survey recruited 1,622 women and, to our knowledge, is the largest social media survey of postpartum women who gave birth in the UK during the pandemic.

The pattern of response and the representativeness of the respondents to the 2020 NMS and the social media survey were similar to that of other surveys of women after childbirth, with more women who were older, married, born in the UK, and living in more advantaged areas taking part. The respondent characteristics were compared with those of the non-respondents (in the 2020 NMS) or with those of all women giving birth in the UK (in the social media survey). This enabled us to identify non-response bias associated with key sociodemographic characteristics (including maternal age, country of birth, region of residence, index of multiple deprivation based on area of residence, and parity) and use survey weights to increase the generalisability of the findings to the wider population of women giving birth in the UK. However, it is possible that non-response was associated with other characteristics which we have not been able to adjust for and this should be taken into account when interpreting the study findings.

The key findings on women's experiences during pregnancy, labour and birth, and the postnatal period are highlighted at the beginning of the report and are also described in summary sections throughout the report. Overall, the findings suggest that women who gave birth during the first wave of the pandemic faced uncertainty and additional stresses at what can already be a challenging time. As has been shown in other surveys,[7 9 12] women experienced many changes to their care around pregnancy, labour and birth, including cancelled antenatal appointments and antenatal classes, alterations to birth plans, and the exclusion of birth partners from appointments, scans and, in some cases, even from the early stages of labour and childbirth. Women did not feel well-informed about the changes or how Covid-19 would affect their pregnancy and childbirth and felt less involved in decisions about their care, compared to women who took part in pre-pandemic surveys. Generally, women felt that there was less information and support available and, unsurprisingly, this left many women feeling stressed and concerned about their pregnancy and childbirth.

It is important to highlight that some aspects of care were consistent with or even better for women in the study, who were pregnant and gave birth during the pandemic, compared to women who took part in pre-pandemic surveys. For example, although women received care from a greater number of different midwives during pregnancy, labour and birth, more women reported that they

had a named midwife whom they could contact during their pregnancy and after giving birth, which is consistent with continuity of carer targets.[23] In addition, the proportions of women holding their baby and having skin-to-skin contact soon after birth remained high, in line with Covid-19 related recommendations.[28] Furthermore, although slightly lower than in previous surveys, women's overall levels of satisfaction during pregnancy, labour and birth were high (84-85% were satisfied or very satisfied) and free text comments in the survey suggest this may have been influenced, at least in part, by a sense that maternity services and staff were doing their best in unprecedented circumstances.

As with earlier surveys, satisfaction with care was higher during pregnancy, labour and birth compared with postnatally. Postnatal levels of satisfaction were considerably lower (53% compared with 77% in the 2014 NMS), which may be linked to the more substantial withdrawal of professional support. Women received fewer postnatal home visits compared to women who took part in pre-pandemic surveys and, contrary to the NICE postnatal care guideline[38], fewer women were asked about their mental health after giving birth. In addition, despite recent changes in the GP contract[30], fewer women had a postnatal check-up of their own health and, of those who did, some consultations were carried out remotely. Although satisfaction with maternity care is generally found to be lower in the postnatal period when compared with earlier stages of the maternity journey, for women who gave birth during the pandemic, satisfaction with postnatal care was particularly low. This may be due to postnatal maternity services already being under-resourced and the fragility of the system being exposed by the additional pressures caused by Covid-19.

More women expressed a need for additional midwifery contact during the postnatal period and more women wanted support with infant feeding compared with pre-pandemic surveys, although encouragingly, breastfeeding initiation and duration did not appear to be adversely affected for the women in the study, and there was even a small increase in breastfeeding at six months. These paradoxical findings are consistent with those from another survey conducted during the pandemic which highlighted two very different breastfeeding experiences - some women struggled to get breastfeeding support whereas others felt that breastfeeding was 'protected' due to the lockdown.[8]

It was not only professional support that was reduced for women who gave birth during the pandemic, two-thirds of women also felt that they received less general support due to Covid-19. Given the uncertainty and changes around pregnancy, labour and birth, and the reduction in formal and informal support, particularly during the postnatal period, it is perhaps unsurprising that the prevalence of perinatal mental health problems increased. The prevalence of anxiety, both antenatally and postnatally was high in our survey, and notably higher than for women who took part in pre-pandemic surveys. The prevalence of antenatal depression was not higher in our survey compared with pre-pandemic surveys but there was an increase in depression postnatally. Findings from other recent surveys have also identified high levels of anxiety and depression throughout the

perinatal period.[10 12] These findings emphasise the importance of assessing women's mental health more broadly to identify women who are experiencing anxiety and/or depression during pregnancy or following childbirth.[38]

In summary, the findings underline the importance and value to women of high quality care throughout the maternity journey. The postnatal period is an extremely vulnerable time for women, during which they may require additional help, guidance and support formally from healthcare professionals and informally from family, friends, and support groups. Many women need specific support with infant feeding and with managing mental health. Covid-19 and the related restrictions increased the challenges for women who were pregnant and gave birth during the pandemic and, at the same time, reduced the availability of professional and general support. Overall the findings from this study suggest that women's health suffered and experiences of maternity care were negatively affected by giving birth in the UK during the first wave of the Covid-19 pandemic. However, there were also positive outcomes for some women and examples of good practice, as illustrated in open text comments by women who took part in the study and also from other studies.[12] The disparity between the best and worst experiences of care and the impact on women's health suggests that there is much to be learnt from the women who gave birth during the Covid-19 pandemic.

There are a number of strengths to the study, in particular the large sample sizes in both the 2020 NMS and the social media survey, the application of survey weights to increase the generalisability of the survey findings to the wider population of women giving birth in the UK, and the consistency of the methods in the 2020 NMS with previous NMS, enabling comparisons across time and also with pre-Covid-19 times. The main limitation to the study is the response rate to the 2020 NMS, which was relatively low, albeit marginally higher than in the 2018 NMS and in line with other recent surveys into maternal and infant health. In addition, the period of eligible births selected for the 2020 NMS was May 2020, hence women's early pregnancy experiences were prior to the first wave of the pandemic. An additional limitation is that subgroup analyses have not yet been performed to explore the health, care and experiences of women with different sociodemographic characteristics. These analyses are planned to examine health inequalities across key outcomes including experiences of maternity care, infant feeding, and maternal mental health and will be the focus of subsequent publications. Further analyses of data from the 2020 NMS and the social media survey are also planned to compare the methods and costs used in the current study.

Appendix A: Methods

A1 Sample size

Based on the response rate to the previous NMS in 2018, we calculated that we needed to invite 16,050 women to participate in the 2020 NMS (8,025 in Arm A and 8,025 in Arm B). This would generate a projected sample size of 4,655 women (across Arms A and B) if we achieved the same response rate as in the 2018 NMS (29%). Taking a more conservative approach, we calculated that a sample size of 4,000 women (~25%) would be sufficient to estimate the prevalence of most outcomes with reasonable precision and to compare all key outcomes in different groups of women, such as different age groups, ethnic groups or socioeconomic groups. For example, for a more common outcome, such as prevalence of breastfeeding at 6-8 weeks, we would have approximately 90% power to detect a difference between 60% and 55%. For more rare outcomes such as the prevalence of postnatal depression or vaping during pregnancy, we would have approximately 90% power to detect a difference between 10% and 7% (postnatal depression) or 4.5% and 2.8% (vaping during pregnancy).

For the social media survey, we developed an advertising strategy to promote the survey advertisements as widely as possible on popular social media platforms and pregnancy and childbirth websites. Given this was a novel approach for collecting maternity survey data, we were unable to estimate the response and there was no formal sample size calculation.

A2 Data collection

The 2020 NMS mailings were managed by ONS to ensure women's anonymity and to protect their personal details. The survey invitation packs were posted to women by ONS and the women returned the paper questionnaires directly to the research team at the NPEU, or completed the questionnaire online. The survey invitation pack included a letter of invitation, a participant information leaflet, a Freephone contact number sheet with information in 19 different languages, a questionnaire (Arm A only), an incentive form (Arm A only) and a Freepost return envelope. The initial mailing of survey invitation packs took place in November 2020, six months after the women had given birth. Reminder invitation packs were posted to non-respondents in December 2020, two to three weeks after the initial invitation packs, and final reminder packs were sent out in January 2021, after a further four to five weeks. Women in Arm A received a paper questionnaire with all three mailings whereas women in Arm B received a paper questionnaire with the final reminder mailing only.

Women in the 2020 NMS could take part in the following ways: 1) complete the questionnaire on paper (paper questionnaires could be requested by women in Arm B at any time by contacting the

research team) and post it to the NPEU; 2) complete and submit the questionnaire online using a link on the NPEU website or a QR code printed on the invitation letter, a unique ID number and an individual password; or 3) complete the questionnaire over the telephone with an interviewer from the NPEU and a Language Line interpreter, if required. Women who returned a completed questionnaire and a valid email address either on paper or online were sent a £5 electronic shopping voucher.

Advertisements for the social media survey were distributed and promoted through a comprehensive media campaign, developed in collaboration with the Communications Team in the Nuffield Department of Population Health at the University of Oxford, and also through the extensive NPEU parent, patient and public involvement and engagement (PPPIE) network. The main websites that women in the target population are likely to frequent were identified and used to advertise the social media survey. These included Facebook, Instagram, Twitter and Pinterest, in addition to pregnancy and childbirth specific websites, such as Mumsnet and Netmums. Women who clicked on the survey advertisement were taken to the eligibility screening questions and to further information about the survey (participant information sheet) and then on to the online questionnaire. The social media survey was open from 27th November 2020 until 26th February 2021. Women who submitted a completed questionnaire and a valid email address were entered into a prize draw for one of five £100 electronic shopping vouchers.

The questionnaire was identical for women who took part in the 2020 NMS or the social media survey and for women who took part on paper or online. The questionnaire had a similar format to the questionnaires used in previous NMS. However, some questions were added or removed, and adjustments were made to other questions to ensure the questionnaire reflected current issues of interest, in particular, women's experiences of the Covid-19 pandemic. The paper questionnaire was 24 pages in length, an increase of 8 pages compared to the 2018 NMS. Women were guided through questions about their pregnancy, labour and birth, and the postnatal period, and were asked to share their views and experiences. Women who had experienced a multiple birth were asked to complete the questionnaire for their first-born baby only.

A3 Analysis

For our initial analysis, we described the response rates to the 2020 NMS. We compared the response rate in Arm A (the standard method used in previous NMS) to the response rates across the previous NMS. To assess the representativeness of the respondents, we compared the sociodemographic characteristics of the women who responded to the 2020 NMS with the women who were selected but who did not respond, and the sociodemographic characteristics of the women who responded to the social media survey with all women giving birth in the UK during 2019. We then compared the 2020 NMS respondents to the social media survey respondents and, finally, the 2020 NMS respondents with respondents to previous NMS. Differences between groups

(e.g. respondents versus non-respondents, 2020 NMS respondents versus social media survey respondents) were compared using Chi-Square tests and the significance level was set at $p<0.05$ for all analyses.

The sociodemographic data were: age group (16-19, 20-24, 25-29, 30-34, 35-39 or 40+ years); marital status at birth registration (married, joint registration by both parents living at the same address, joint registration by both parents living at different addresses, or sole registration); mother's country of birth; index of multiple deprivation (IMD) for mother's address (grouped into quintiles); region of residence (grouped into nine regions in England); parity (primiparous (first-time mother) or multiparous (previous live birth)); sex of baby; and whether it was a singleton or multiple birth. These data were provided by ONS for the 2020 NMS respondents and non-respondents, and by the women themselves in the social media survey.

For our main analysis, survey-weighted descriptive statistics, such as medians and proportions, were estimated for survey respondents. For the majority of variables, the proportion of missing data was small (less than 5%) and therefore most results are based on a complete-case analysis. The analysis of data from the 2020 NMS and the social media survey was conducted separately and the findings are presented in parallel throughout the report. For most analyses, descriptive data are presented for the whole group of respondents to each survey. For some analyses, descriptive data are presented separately across subgroups, for example, by parity, mode of birth or gestational age.

Where appropriate, results from the 2020 NMS are compared with those from similar surveys undertaken in other studies, for example, previous NMS. Although similar topics have been included across the NMS, adjustments to questions have been made to reflect current issues of interest and, therefore, the results from the 2020 NMS are compared with the most recent NMS with comparable data (estimating the difference between two proportions with a 95%CI). For some data, trends over multiple NMS are presented. When comparing to previous NMS data, it is important to note that only the data for the 2020 NMS (and not the social media survey) are presented to ensure like-for-like comparisons. It is also important to note that the findings presented from NMS carried out prior to 2014 are unweighted. Therefore, when comparisons are made with earlier surveys, unweighted data are reported for the 2014, 2018 and 2020 NMS, in addition to weighted data. The NMS conducted in 2010 and 2018 recruited women who had given birth during the previous year, hence the dates shown in trend analysis figures correspond to dates of birth, as opposed to dates of survey completion.

Where available, results from the 2020 NMS and the social media survey (with 95% confidence intervals (CI)) are also compared with estimates from national routine data pertaining to the same period of births or with the most recent data available. For example, data published by ONS or

public bodies sponsored by the DHSC (e.g. NHS Digital, Public Health England) are used as a point of comparison. Although the social media survey included women from all countries within the UK, the majority of respondents were living in England, hence routine data for England (sometimes England and Wales combined) are used for comparison where routine data are not available for the whole UK. It is important to note that the most recent routine data may be from before the first wave of the Covid-19 pandemic in the UK.

Most of the data analysis was undertaken using SPSS version 26.0 and STATA version 17.0. The open text responses to the questions on care during pregnancy, labour and birth, and the postnatal period by women in the 2020 NMS were analysed thematically. Responses to the questions relating to each time period were analysed together. Because of the very large volume of qualitative data, subsets of the respondents were included in the analysis as follows: comments from the first thousand respondents about antenatal care, comments from the second thousand respondents about care during labour and birth, and comments from the third thousand respondents about postnatal care. Illustrative quotations were selected to represent the experiences described.

Appendix B: Questionnaire content

Table A1: Questionnaire content

Section	Topics
Your pregnancy	Singleton or multiple pregnancy Sex of baby Gestational age and birth weight Pregnancy planning Timing of booking appointment Mental health assessment at booking appointment Health professional contact for personal or sensitive issues Mental health problems during pregnancy Long-term health problems affecting pregnancy Specific pregnancy-related problems Help-seeking during pregnancy Location of antenatal appointments Choice about mode of antenatal appointments Preferred mode of antenatal appointments Health professional carrying out antenatal appointments Birth partner attendance at antenatal appointments / scans Cancellation of antenatal appointments Missed antenatal appointments Changes to antenatal care due to Covid-19 Care during pregnancy Attendance at antenatal classes Access to information online Sources of information Involvement in decisions about antenatal care Satisfaction with care during pregnancy
Your labour and the birth of your baby	Place of birth Change to place of birth due to Covid-19 Other changes to birth plans due to Covid-19 Informed about changes to birth plans Restrictions on birth partner attending births Mode of birth Care during labour and birth Health professionals present during labour and birth Holding the baby and skin-to-skin contact Care from staff during labour and birth Labour and birth expectations Satisfaction with care during labour and birth
After the birth of your baby	Maternal length of hospital stay after the birth Views about length of stay Changes to visiting hours or policies due to Covid-19 Admission for neonatal care Care after the birth Contact with health care professionals after the birth Routine vaccination Maternal postnatal check-up Sources of support after the birth Satisfaction with care after the birth
Feeding your baby	Initiation of breastfeeding Duration of breastfeeding Sources of breastfeeding support Mode of breastfeeding support Initiation of formula feeding Sources of infant feeding support Introduction of solid food
Your health and wellbeing	Maternal physical health and fatigue Covid-19 and self-isolation Maternal mental health Mental health assessment and support Sources of support
Your lifestyle	Tobacco use during and after pregnancy Electronic cigarette / vaping device use during and after pregnancy Passive smoking during and after pregnancy Exercise during and after pregnancy Future pregnancy planning
You and your household	Age Education Previous pregnancy Previous birth Household composition Long-term physical health problems / disabilities Long-term mental health problems Country of birth Length of time living in the UK Ethnicity

Appendix C: Recruitment to the 2020 NMS

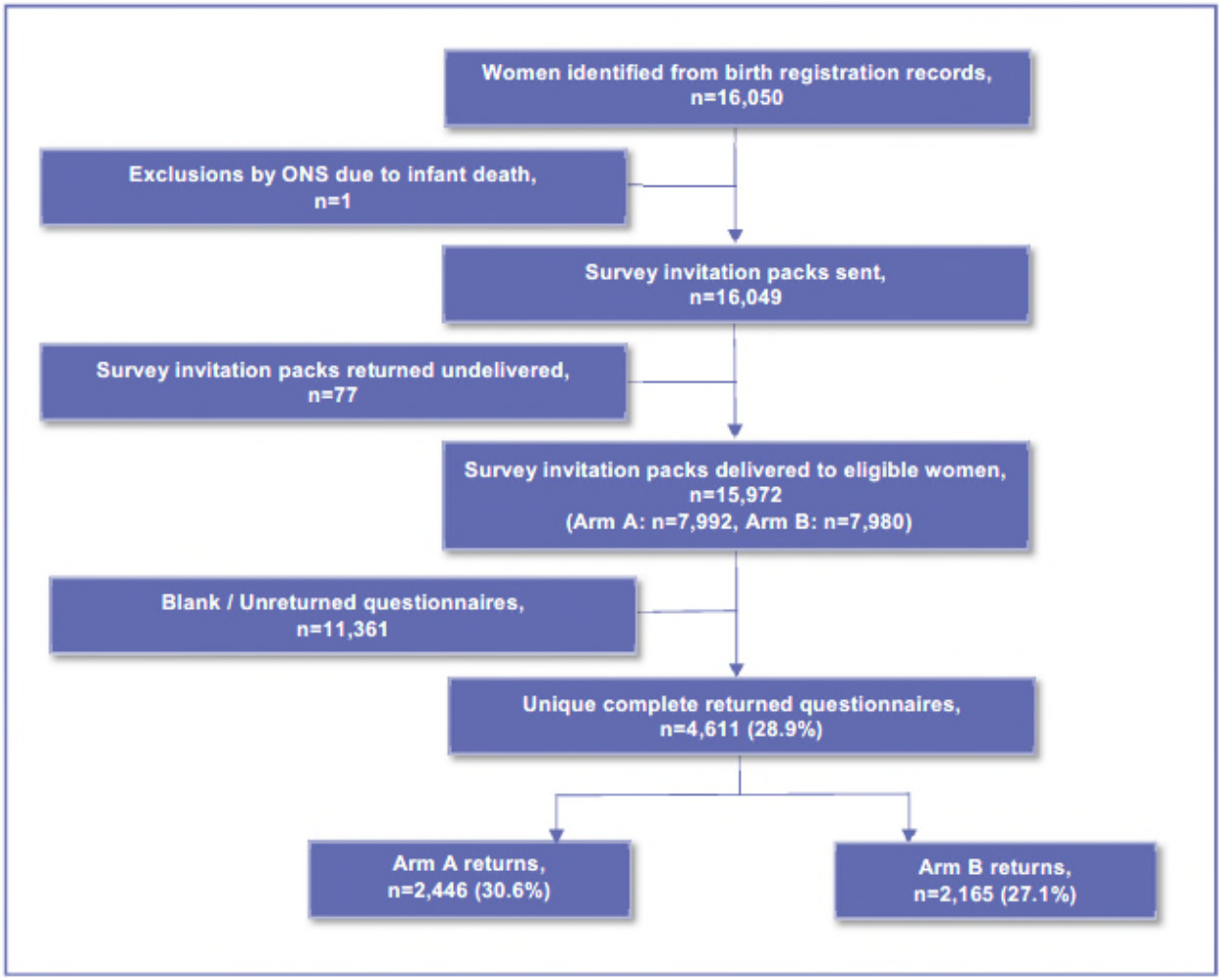

Figure A1: Flowchart of recruitment to the 2020 NMS

Appendix D: Respondent and non-respondent characteristics

Comparison of respondents and non-respondents to the 2020 NMS

Summary data describing the characteristics of the respondents (N=4,611) and the non-respondents (N=11,361) to the 2020 NMS are shown in **Table A2**. The respondents and non-respondents were compared using Chi-Square tests and the p-values are shown. The 4,611 women who responded to the 2020 NMS were more likely to be older, married when they registered the birth of their baby, born in the UK, living in more advantaged areas of England, and primiparous compared to the 11,361 women who were invited to take part in the survey but who did not respond ($p<0.001$). Due to the differences between the respondents and non-respondents to the 2020 NMS, survey weights were applied to all analyses to reduce the effect of non-response bias (see **Appendix F**).

Comparison of respondents in the social media survey with UK population-based data

Data on the characteristics of non-respondents were not available in the social media survey. Instead, the characteristics of the respondents were compared to summary population-based data on the characteristics of all women who gave birth in the UK in 2019 (see **Table A5** in **Appendix F**). The 1,622 women who took part in the social media survey were more likely to be older, born in the UK, living in more advantaged areas, and primiparous compared to the 712,680 women who gave birth in the UK in 2019. In addition, comparing the distributions of social media survey respondents and all women giving birth in the UK in 2019 across the constituent countries of the UK indicated that women from England and Northern Ireland were slightly underrepresented and women from Scotland and Wales were slightly overrepresented in the social media survey.[18] Due to the differences between the respondents to the social media survey and all women giving birth in the UK in 2019, survey weights were applied to all analyses to reduce the effect of non-response bias (see **Appendix F**).

Comparison of respondents to the 2020 NMS and the social media survey

Summary data describing the characteristics of the respondents to the 2020 NMS (N=4,611) and the social media survey (N=1,622) are presented in **Table A2**. The median age of the women in both surveys was 32 years (IQR=29-36 years in the 2020 NMS and IQR=29-35 years in the social media survey). Four out of five women who responded to the 2020 NMS were born in the UK (79.7%) compared to 92.7% in the social media survey. The women in the 2020 NMS who were born outside the UK came from many parts of the world, principally Romania (2.7%), Pakistan (2.7%), India (2.4%), Poland (2.4%) and Bangladesh (1.1%). The women in the social media survey who were born outside the UK also came from many parts of the world, yet less than 1% of

responses were from women born in any single country outside the UK. Just under half of the respondents in both surveys were living in areas in the two most advantaged quintiles on the IMD (45.1% in the 2020 NMS and 46.3% in the social media survey). Unlike in the 2020 NMS, which sampled women living in England only, there were responses from women living in each of the countries within the UK in the social media survey.

Half of the respondents in the 2020 NMS were primiparous (50.7%) compared to two-thirds of the respondents in the social media survey (66.0%). A slightly lower proportion of women in the 2020 NMS had a multiple birth (1.4%) compared to the women in the social media survey (2.2%). The median age of their babies at the time women took part in the 2020 NMS was 28 weeks (IQR: 27-32 weeks). The time period for eligible births in the social media survey was broader than for the 2020 NMS (6 months compared to 2 weeks), hence there was a wider range in the ages of their babies at the time women took part in the survey. Nevertheless, the median age of the babies was only two weeks younger than in the 2020 NMS (median: 26 weeks, IQR: 21-33 weeks).

Chi-square tests were used to compare the sociodemographic characteristics of the 4,611 women who took part in the 2020 NMS with the 1,622 women who took part in the social media survey; the p-values for the Chi-square tests are shown in **Table A2**. The women who responded to the social media survey were more likely to be older, born in the UK, living in more advantaged areas in the UK, primiparous, and to have had a multiple birth compared to those women who responded to the 2020 NMS ($p<0.05$). Due to the sociodemographic differences between the women who were recruited through ONS and the women who were recruited through social media, the analysis of data was carried out separately for the two surveys and the results are presented in parallel throughout the report.

Table A2: Characteristics of respondents and non-respondents in the study

	2020 NMS respondents		2020 NMS non-respondents		p-value[1]	Social media survey respondents		p-value[2]
	N=4611		N=11361			N=1622		
Maternal data	**n**	**%**	**n**	**%**		**n**	**%**	
Age group					<0.001			<0.001
16-19 years	44	1.0	346	3.0		8	0.5	
20-24 years	355	7.7	1645	14.5		70	4.3	
25-29 years	1117	24.2	3177	28.0		399	24.6	
30-34 years	1785	38.7	3642	32.1		713	44.0	
35-39 years	1089	23.6	2061	18.1		349	21.5	
40+ years	221	4.8	490	4.3		82	5.1	
Marital status at birth registration					<0.001			NA
Married	2886	62.6	5566	49.0		NA	NA	
Joint registration (same address)	1392	30.2	3770	33.2		NA	NA	
Joint registration (different address)	220	4.8	1323	11.6		NA	NA	
Sole registration	113	2.5	702	6.2		NA	NA	
Country of birth					<0.001			<0.001
UK	3674	79.7	7449	65.6		1502	92.6	
Outside UK	937	20.3	3912	34.4		120	7.4	
Index of multiple deprivation (IMD)[+]					<0.001	**N^=1561**		<0.001
1st (most deprived)	698	15.1	3313	29.2		203	13.0	
2nd	876	19.0	2670	23.5		261	16.7	
3rd	957	20.8	2146	18.9		375	24.0	
4th	1070	23.2	1767	15.6		384	24.6	
5th (least deprived)	1010	21.9	1465	12.9		338	21.7	
Region of residence					<0.001	**N^=1612**		<0.001
North East	207	4.5	505	4.4		55	3.4	(4.2)*
North West	514	11.1	1589	14.0		133	8.3	(10.2)*
Yorkshire & the Humber	416	9.0	1044	9.2		118	7.3	(9.0)*
East Midlands	364	7.9	883	7.8		90	5.6	(6.9)*
West Midlands	473	10.3	1226	10.8		158	9.8	(12.1)*
East of England	541	11.7	1239	10.9		158	9.8	(12.1)*
London	768	16.7	2308	20.3		147	9.1	(11.3)*
South East	824	17.9	1698	14.9		236	14.6	(18.1)*
South West	504	10.9	869	7.6		211	13.1	(16.2)*
Northern Ireland	NA	NA	NA	NA		35	2.2	
Scotland	NA	NA	NA	NA		153	9.5	
Wales	NA	NA	NA	NA		118	7.3	
Parity	**N^=4596**		**N^=11320**		<0.001	**N^=1620**		<0.001
Primiparous	2329	50.7	4603	40.7		1067	65.9	
Multiparous	2267	49.3	6717	59.3		553	34.1	
Single or multiple birth					0.384	**N^=1621**		0.046
Single	4545	98.6	11218	98.7		1586	97.8	
Multiple	66	1.4	143	1.3		35	2.2	
Sex of baby					0.734	**N^=1580**		0.965
Male	2361	51.2	5851	51.5		808	51.1	
Female	2250	48.8	5510	48.5		772	48.9	

[1] Significance level for Chi-square test comparing respondents and non-respondents to the 2020 NMS
[2] Significance level for Chi-square test comparing respondents to the 2020 NMS and respondents to the social media survey
* % excluding Northern Ireland, Scotland and Wales from the denominator
^ N excluding missing data
[+] IMD data unavailable for Northern Ireland

Appendix E: Comparison of respondents across the NMS

Table A3 shows a breakdown of the respondents recruited through ONS to each of the NMS according to key sociodemographic characteristics. Across all NMS, there were more responses from older, married women who were born in the UK and who were living in more advantaged areas. The majority of respondents across all NMS self-identified as being from White backgrounds (85.7% in 2020), had left full-time education at 19 years of age or over (61.9% in 2020), and were living with their partners at the time they participated in the surveys (89.9% in 2020). In the 2006 NMS, there were more responses from multiparous women but, in more recent NMS, similar numbers of primiparous and multiparous women have responded. There were some changes in the characteristics of respondents over time, for example, small decreases in younger mothers, sole registrations, and women living in less advantaged areas. There were more marked increases in mothers born outside the UK and mothers leaving full-time education at 19 years of age or over, although the proportions of both of these groups of mothers decreased slightly between the 2018 and 2020 NMS. The changes over time reflect the shifting sociodemographic characteristics of women who give birth and the characteristics of those who respond to surveys.

Table A3: Comparison of respondent characteristics across the NMS

Year of survey	2006		2010		2014		2018		2020	
(Year mother gave birth)	(2006)		(2009)		(2014)		(2017)		(2020)	
	n	%	n	%	n	%	n	%	n	%
Age group	N=2934		N=5332		N=4569		N=4509		N=4611	
16-19 years	115	3.9	179	3.4	101	2.2	59	1.3	44	1.0
20-24 years	452	15.4	729	13.7	538	11.8	359	8.0	355	7.7
25-29 years	702	23.9	1376	25.8	1228	26.9	1055	23.4	1117	24.2
30-34 years	959	32.7	1740	32.6	1587	34.7	1713	38.0	1785	38.7
35-39 years	601	20.5	1068	20.0	874	19.1	1054	23.4	1089	23.6
40+ years	105	3.6	240	4.5	241	5.3	269	6.0	221	4.8
Marital status at birth registration			N=5332		N=4569		N=4509		N=4611	
Married	N/A	62.5	3278	61.5	2744	60.1	2865	63.5	2886	62.6
Joint registration (same address)	N/A	27.7	1550	29.1	1395	30.5	1322	29.3	1392	30.2
Joint registration (different address)	N/A	5.8	311	5.8	291	6.4	216	4.8	220	4.8
Sole registration	N/A	3.9	193	3.6	139	3.0	106	2.4	113	2.5
Index of multiple deprivation	N=2954		N=5331		N=4570		N=4509		N=4611	
1st (most deprived)	601	20.3	1091	20.5	894	19.6	706	15.7	698	15.1
2nd	576	19.5	1013	19.0	977	21.4	869	19.3	876	19.0
3rd	624	21.1	1131	21.2	935	20.5	945	21.0	957	20.8
4th	551	18.7	1041	19.5	865	18.9	1006	22.3	1070	23.2
5th (least deprived)	602	20.4	1055	19.8	899	19.7	983	21.8	1010	21.9
Country of birth	N=2882		N=5332		N=4569		N=4509		N=4611	
UK	2402	83.3	4180	78.4	3485	76.3	3479	77.2	3674	79.7
Outside UK	480	16.7	1152	21.6	1084	23.7	1030	22.8	937	20.3
Region of residence			N=5332		N=4561		N=4509		N=4611	
North East	N/A	4.9	230	4.3	191	4.2	161	3.6	207	4.5
North West	N/A	13.5	642	12.0	589	12.9	505	11.2	514	11.1
Yorkshire and Humber	N/A	10.3	509	9.5	434	9.5	420	9.3	416	9.0
East Midlands	N/A	9.1	407	7.6	383	8.4	368	8.2	364	7.9
West Midlands	N/A	11.0	501	9.4	426	9.3	424	9.4	473	10.3
East of England	N/A	10.9	643	12.1	524	11.5	549	12.2	541	11.7
London	N/A	12.5	915	17.2	780	17.1	782	17.3	768	16.7
South East	N/A	17.8	952	17.9	793	17.4	869	19.3	824	17.9
South West	N/A	10.0	533	10.0	441	9.7	431	9.6	504	10.9
Ethnicity	N=2919		N=5237		N=4421		N=4357		N=4548	
White British	2353	80.6	4487	85.7*	3710	83.9*	3299	75.7	3465	75.9
White Other	199	6.8					480	11.0	446	9.8
Mixed	40	1.4	99	1.9	87	2.0	101	2.3	104	2.3
Asian	201	6.9	386	7.4	442	10.0	274	6.3	349	7.6
Black	105	3.6	202	3.9	159	3.6	102	2.3	126	2.8
Chinese / Other	21	0.7	63	1.2	23	0.5	101	2.3	58	1.3
Age when leaving education	N=2892		N=5165		N=4474		N=4460		N=4563	
16 years or less	828	28.6	1150	22.3	756	16.9	493	11.1	514	11.3
17 or 18 years	869	30.0	1398	27.1	1209	27.0	1045	23.4	1226	26.9
19 years or over	1195	41.3	2617	50.7	2509	56.1	2883	65.5	2823	61.9
Living with partner	N=2944		N=5293		N=4571		N=4509		N=4611	
Yes	2592	88.0	4654	87.9	3980	87.1	4045	89.7	4144	89.9
No / not stated	352	12.0	639	12.1	591	12.9	464	10.3	467	10.1
Parity	N=2844		N=5213		N=4423		N=4509		N=4596	
Primiparous	1165	41.0	2610	50.1	2206	49.9	2320	51.5	2329	50.7
Multiparous	1679	59.0	2603	49.9	2217	50.1	2189	48.5	2267	49.3

* White British and White Other were combined in 2010 and 2014 NMS

Appendix F: Survey weights and external validity of data

Calculation of survey weights

For the 2020 NMS, the sociodemographic variables provided by ONS for all respondents and non-respondents were fitted in a logistic regression model with response / non-response (to the 2020 NMS) as the outcome. The resulting coefficients (adjusted log odds ratios) were used to derive survey weights, which were assigned to each 2020 NMS respondent so that the weighted sociodemographic distribution of the sample closely matched the sociodemographic distribution of all eligible women in the sampling frame, which in turn was representative of all women giving birth in England during the same period. **Table A4** shows the distribution of the variables that were used to create the survey weights for the 2020 NMS.

Table A4: Distribution of variables used to create the 2020 NMS weights

	ONS Sample (N=15,972) %	Respondents (N=4,611) unweighted %	Respondents (N=4,611) weighted %
Age			
<25 years	15.0	8.7	15.3
25-29 years	26.9	24.2	26.5
30-34 years	34.0	38.7	33.7
35+ years	24.2	28.4	24.5
Marital status			
Married	52.9	62.6	51.7
Joint names, same address	32.3	30.2	32.7
Joint names, different address	9.7	4.8	10.5
Sole registration	5.1	2.5	5.2
Country / region of birth			
UK	69.6	79.7	69.1
Outside UK	30.4	20.3	30.9
Index of Multiple Deprivation (IMD)			
1st – most deprived	25.1	15.1	25.6
2nd	22.2	19.0	21.9
3rd	19.4	20.8	19.3
4th	17.8	23.2	17.9
5th – least deprived	15.5	21.9	15.4
Region of residence			
North East	4.5	4.5	4.4
North West	13.2	11.1	13.0
Yorkshire and the Humber	9.1	9.0	9.5
East Midlands	7.8	7.9	7.8
West Midlands	10.6	10.3	10.6
East of England	11.1	11.7	10.8
London	19.3	16.7	19.2
South East	15.8	17.9	15.8
South West	8.6	10.9	8.7
Parity			
Primiparous	43.6	50.7	44.3
Multiparous	56.4	49.3	55.7

For the social media survey, there was no sampling frame. Therefore, national routine data on all women giving birth in England, Northern Ireland, Scotland and Wales during 2019 (the most recent data available) were combined to produce UK-based data for the key socio-demographic variables. A statistical technique called 'raking' was then used to assign a weight to each social media survey respondent so that the weighted sociodemographic distribution of the sample closely matched the sociodemographic distribution of all women giving birth in the UK in 2019. **Table A5** shows the distribution of the variables that were used to create the survey weights for the social media survey.

Table A5: Distribution of variables used to create the social media survey weights

	UK population-based sample (N=712,680) %	Respondents (N=1,622) unweighted %	Respondents (N=1,622) weighted %
Age			
<25 years	16.3	4.8	16.3
25-34 years	60.0	68.6	60.0
35+ years	23.7	26.6	23.7
Country / region of birth			
UK	72.5	92.6	72.5
Outside UK	27.5	7.4	27.5
Index of Multiple Deprivation (IMD)			
1st – most deprived	24.9	12.5	24.9
2nd	21.5	16.1	21.5
3rd	18.8	24.6	18.8
4th	16.8	23.8	16.8
5th – least deprived	14.8	20.8	14.8
Northern Ireland	3.1	2.2	3.1
Country of residence			
England	85.7	81.1	85.7
Scotland	7.0	9.4	7.0
Wales	4.2	7.3	4.2
Northern Ireland	3.1	2.2	3.1
Parity			
Primiparous	43.1	65.9	43.1
Multiparous	56.9	34.1	56.9

External validity of survey weights

Estimates of selected maternity indicators based on national routine data are available from published reports, and these estimates are used to assess the external validity of the survey data. **Table A6** shows how the unweighted and weighted survey data from the 2020 NMS and the social media survey compare with estimates based on routine data. For some indicators, the weighted estimates from survey data are close to estimates from routine data, particularly where we are able to compare the survey data to ONS data, which is the gold standard in terms of completeness and quality. Where there are discrepancies, the sources of the published data (NHS Digital, Public Health England) may be subject to completeness and/or quality issues.[37] [47]

[47] https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20/data-quality-statement-msds. Accessed 7 October 2021.

Table A6: External validity of unweighted and weighted survey data

	Published data		2020 NMS data		Social media survey	
	Source		Respondents unweighted	Respondents weighted	Respondents unweighted	Respondents weighted
		%	%	%	%	%
Multiple birth	ONS[1]	1.5	1.5	1.4	2.2	2.3
Home birth	ONS[1]	2.1	2.7	2.4	4.1	6.7
Gestational age	ONS[2]					
<32 wks		1.3	1.5	1.5	1.5	1.3
32-36 wks		6.5	5.4	6.0	5.0	6.6
37+ wks		92.2	93.1	92.5	93.5	92.1
Birth weight	ONS[2]					
<1500 grams		0.9	0.9	1.0	0.9	0.9
1500-2499 grams		5.9	5.3	5.7	5.3	5.0
2500+ grams		93.2	93.8	93.3	93.8	94.0
Caesarean section	NHS Digital MSDS[3]	31.2	31.0	29.9	30.7	28.0
Ethnicity[#]	ONS[1]					
White British		58.4	75.1	66.3	90.0	73.1
White Other		12.2	9.7	13.3	6.0	19.1
Bangladeshi		1.5	0.9	1.2	0.1	0.2
Indian		3.2	3.1	3.1	0.7	1.7
Pakistani		4.3	2.2	2.9	0.1	0.4
Black African		3.4	2.2	4.5	0.4	0.7
Black Caribbean		0.9	0.5	0.7	0.1	0.0
Other		12.1	5.0	6.3	2.6	4.3
Not stated / Unknown		4.0	1.3	1.7	0.2	0.5
Skin-to-skin within 1 hr (37+ wks gestation only)	NHS Digital MSDS[4]	73.4	93.9	93.8	89.3	91.9
Booking appointment	NHS Digital					
Within 10 weeks	MSDS[5]	63.2	72.7	71.2	76.6	72.5
Within 12 weeks		81.3	90.5	89.0	92.8	91.6
Breastfeeding initiation	NHS Digital MSDS[6]	72.8	87.0	84.8	89.0	87.6
Breastfeeding at 6-8 wks	PHE[7]	48.0	67.7	65.1	71.6	68.7
Smoking at birth	NHS Digital SATOD[8]	10.6	5.6	7.9	5.4	7.7
Vaping (all women aged 16+ years)	ONS[9]					
Ever		12.0	13.4	15.0	15.3	19.0
Current		5.0	2.9	3.6	4.1	5.7

All published data are for live births.

[1] ONS Birth characteristics 2019 (England and Wales, not stated excluded except for ethnicity). https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthcharacteristicsinenglandandwales/2019 Accessed 9 July 2021.

[2] ONS Birth characteristics 2019 (England, not stated excluded). https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthcharacteristicsinenglandandwales/2019 Accessed 9 July 2021.

[3] NHS Maternity Statistics, England 2019-20 (based on 181,050/580,603 babies with recorded mode of birth). https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20. Accessed 9 July 2021.

[4] NHS Maternity Statistics, England 2019-20 (based on 231,130/314,850 women with recorded skin-to-skin contact). https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20. Accessed 9 July 2021.

[5] NHS Maternity Statistics, England 2019-20 (based on 239,836/379,609 (10 weeks) and 308,570/379,609 (12 weeks) deliveries with recorded gestational age at booking appointment). https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20 Accessed 9 July 2021.

[6] NHS Maternity Statistics, England 2019-20 (based on 214,735/294,925 babies with recorded first feed type). https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20. Accessed 9 July 2021.

[7] Public Health England, 2019-2020 (based on 282,436/588,673 babies due a 6-8 week review with recorded or unrecorded breastfeeding status at 6-8 weeks; if those with unrecorded status are excluded from the denominator, the rate increases to 53.8% (282,436/525,445). https://www.gov.uk/government/statistics/breastfeeding-at-6-to-8-weeks-after-birth-annual-data. Accessed 9 July 2021.

[8] NHS Digital statistics on women's smoking status at time of delivery: England, 2019-20 (based on 61,399/579,995 women with recorded smoking status). https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-women-s-smoking-status-at-time-of-delivery-england/statistics-on-womens-smoking-status-at-time-of-delivery-england-quarter-4-2019-20/data-tables. Accessed 9 July 2021.

[9] ONS E-cigarette use in England 2019 (women only but not specific to women during pregnancy). https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/ecigaretteuseinengland. Accessed 9 July 2021.

[#] ONS publish baby's ethnicity as stated by the mother, survey reports mother's self-identified ethnicity