

Explaining the trends in breastfeeding behaviours
in Great Britain:
Findings from the Infant Feeding Surveys, 1985 to 2010



Deon A Simpson

Brasenose College

**A thesis submitted in fulfilment of the Degree of Doctor of Philosophy in
Population Health**

Michaelmas 2017

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Abstract

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Available data from the quinquennial Infant Feeding Surveys (IFS) show that breastfeeding rates in Great Britain (GB) rose steadily between 1985 and 2010. However, the rates of breastfeeding continuation and exclusivity remain relatively low, and there is evidence that breastfeeding in public may still be considered unacceptable by many in GB. To date, no study has examined the reasons behind the increase in breastfeeding rates between 1985 and 2010, and the factors which influence women's practice of breastfeeding in public in GB remain under-researched. Therefore, this DPhil research aimed to investigate whether the increase in breastfeeding rates in the first six weeks after childbirth in GB between 1985 and 2010 were driven by changes in the distribution of population characteristics, or changes in the differences in breastfeeding

behaviours between subgroups of women. It also aimed to investigate the factors which influenced the practice of breastfeeding in public in GB in 1995 to 2010.

Data from the IFS surveys in 1985 to 2010 were analysed to, firstly, describe and summarise the distribution of selected explanatory factors among the childbearing population of GB from 1985 to 2010. This was followed by an estimation of the independent effects of these explanatory factors on breastfeeding initiation, breastfeeding continuation at one week and at six weeks, and breastfeeding in public, in each survey year. There was an assessment of the changes over time in the effects of each factor on breastfeeding initiation, and on breastfeeding continuation at one week and at six weeks. This was followed by an examination of the extent to which changes in the distribution of factors among the childbearing population contributed to the increase in breastfeeding rates in the first six weeks in GB between 1985 and 2010.

This DPhil research found no evidence of changes in the effects of factors on breastfeeding in the first six weeks between 1985 and 2010. This suggests that breastfeeding behaviours had not improved over time. At the same time, there were increases in the distribution of those factors which positively influence breastfeeding, suggesting that the increase in breastfeeding rates in the first six weeks between 1985 and 2010 were indeed attributable to population changes rather than improved breastfeeding behaviours. Additionally, breastfeeding in public was seemingly most influenced by women's perceptions of the normality and acceptability of breastfeeding in GB. There is a clear need for more equitable interventions to target the needs and perceptions of those women in GB who remain characteristically less likely to breastfeed.

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1 Introduction

1.1 Trends in breastfeeding behaviours in Great Britain from 1985 to 2010

From 1975 to 2010, breastfeeding rates in Great Britain (GB) were monitored using the quinquennial Infant Feeding Survey (IFS). The IFS is a national survey of how women in GB feed their baby in the first 8-10 months after the baby is born. Available data from the 1985 to 2010 IFS show that breastfeeding rates have risen steadily over the past 20 years (Figure 1.1). Specifically, initiation rates increased from 64% in 1985 to 81% in 2010. In the same period, continuation rates at six months among all mothers increased from 21% to 34% (McAndrew et al., 2012). The reasons behind these increases are not well understood. Moreover, there is concern that the breastfeeding continuation rates have not increased at a similar pace as the initiation rates, and the sharpest declines in breastfeeding continuation appear to have occurred within the first week following initiation. Even in 2010, fewer than 1% of mothers who initiated breastfeeding had continued to breastfeed exclusively to six months as recommended by the World Health Organisation (WHO), and 11% of mothers reported that they were stopped or made to feel uncomfortable while they were breastfeeding in a public space (McAndrew et al., 2012). It is equally concerning that current societal attitudes towards women who breastfeed in public are still mixed, with many adults considering the practice to be unnatural or inappropriate (Morris et al., 2016). Seemingly, breastfeeding in GB is the exception rather than the social norm.

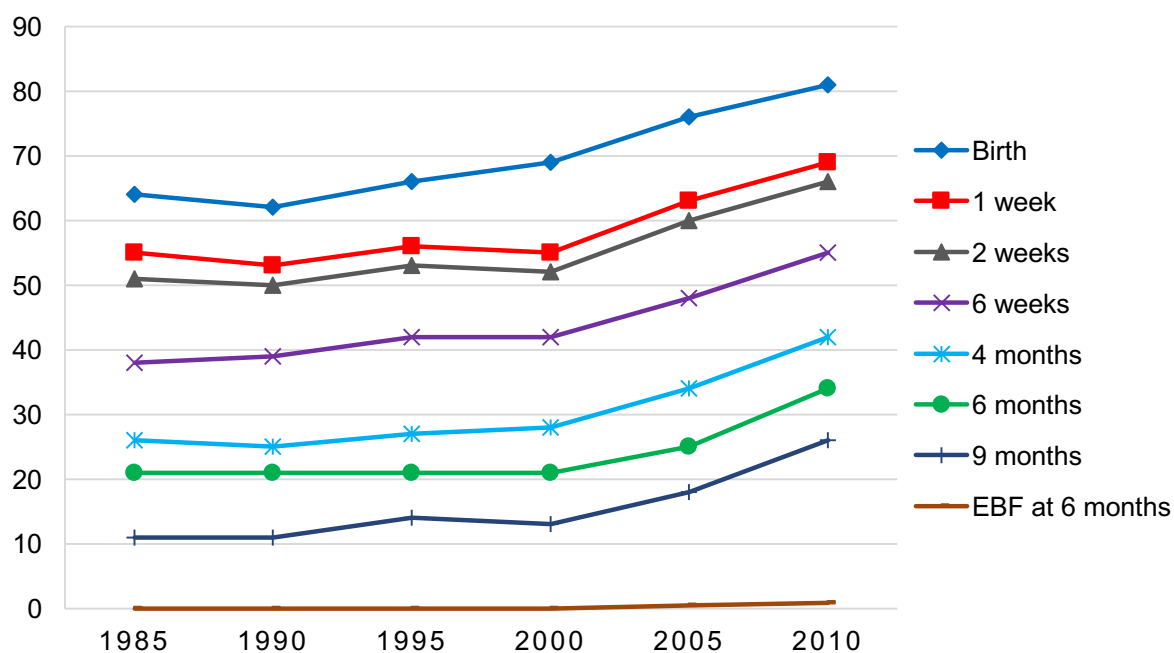


Figure 1.1 Prevalence of any breastfeeding in the first nine months after birth in GB, 1985 to 2010.

Data source: IFS, 1985-2010. EBF: exclusive breastfeeding.

Population-based breastfeeding rates often mask disparities in breastfeeding behaviours between subgroups of women (Law, 2009). For example, it is well established that mothers in GB are more likely to initiate and continue breastfeeding if they are older, married, more highly educated, from higher socioeconomic groups, or from black and minority ethnic (BME) groups (Kelly et al., 2006; Wright et al., 2006; Hawkins et al., 2007b; Skafida, 2009; Oakley et al., 2013; Oakley et al., 2016). Therefore, in a given survey year, the breastfeeding rates were likely higher in some subgroups than others. Furthermore, the magnitude of the difference in breastfeeding between subgroups may have changed over the 25-year period due to changes in the characteristics of the women who gave birth in each survey year. Such changes may have included an increase in the relative size of subgroups in the population that had

higher breastfeeding rates (Hendershot, 1984). These changes may have been influenced by key changes in the wider social, cultural and policy context of GB over time.

1.2 Breastfeeding behaviours in the 20th century

Previous studies show that breastfeeding rates have also increased in other high-income countries (HICs) since the 1970s. These countries include the United States of America (US), Spain and Norway (Hendershot, 1984; Liestol et al., 1988; Ryan, 1997; Colodro-Conde et al., 2011). It has been postulated that this period of increased breastfeeding in HICs represents a resurgence in breastfeeding that began in the late 1970s following a period of declining rates between the 1920s and the 1960s (Hendershot, 1984). This period of decline has been attributed in part to the widespread marketing of infant formula, which began in HICs and later expanded throughout low- and middle-income countries (LMICs) (Trussell et al., 1992).

Several societal factors may have spurred the normalisation of infant formula feeding among mothers and their communities. For example, mothers were increasingly encouraged to feed their babies infant formula instead of breast milk by the distribution of free infant formula in hospitals. The declining visibility of breastfeeding also may have been fuelled by women's use of formula feeding as a means of spending more time outside the home, whether to participate in the workforce or socialise in public spaces, and to suggest to others that they were from higher socioeconomic groups (Van Esterik and Greiner, 1981; Meldrum, 1982; Wright and Schanler, 2001; Stevens et al., 2009). At the nadir of breastfeeding in GB, infant mortality rates were declining and formula milk was being promoted by health professionals as science-based, safe and equivalent to

breast milk (Fomon, 2001; Wright and Schanler, 2001; Weaver, 2009). In contrast, poverty and the lack of access to clean water in LMICs resulted in unsafe formula feeding, which dramatically increased infant deaths from diarrhoeal disease (Cunningham et al., 1991). These deaths received global attention and sparked several public health policy responses, beginning in 1981 (Weaver, 2009).

Such responses may have contributed to current trends in breastfeeding behaviours, although they likely post-dated the dramatic rise in breastfeeding rates in HICs including GB. Another contributing factor to the reversal in breastfeeding behaviours may have been the increasing campaigns for the ‘naturalisation’ of childbirth in the 1970s, which included calls for fewer medical interventions and more autonomy for women during labour and childbirth (Wright, 2001). Evidence from US and European studies suggest that mothers who were older, more highly educated, and in higher socioeconomic groups were among the first to embrace these campaigns (Liestol et al., 1988; O'Connor, 1993). The period of return to breastfeeding also coincided with a period of unprecedented increase in women’s education and socioeconomic position in these countries. Existing studies on the influences of breastfeeding behaviours in HICs including GB suggest that these women remain among the population subgroups most likely to breastfeed (Dennis, 2002; Forster et al., 2006).

1.3 Changes in the policy context of GB

Since the 1970s, several policies have been implemented to address inequalities that have historically affected women in GB (Figure 1.2). These include the enactment of legislation to provide women with equal pay, paid maternity leave and protection from discrimination on the grounds of pregnancy, childbirth and breastfeeding. In addition,

advances in women's reproductive health and rights, including the introduction of oral contraceptives to the UK in 1961 and the passing of the Abortion Act in 1967, may have contributed to the remarkable influx of women into the workforce and higher education (Mills et al., 2011). These changes undoubtedly altered the characteristics of the childbearing population in GB, and reshaped the social and cultural context in which women practise breastfeeding.

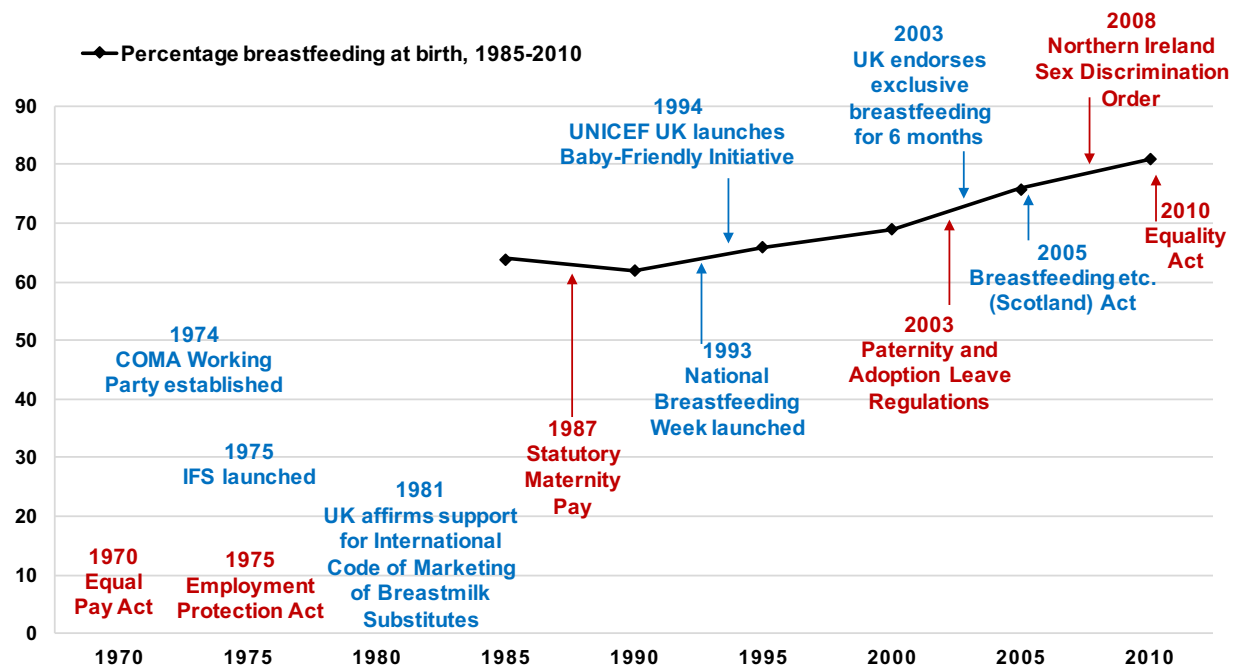


Figure 1.2. National policies and initiatives implemented in the United Kingdom (UK) in 1970 to 2010.

Note: Blue denotes breastfeeding-specific implementations. COMA: Committee on Medical Aspects of Food and Nutrition Policy. Adapted from: Grummer-Strawn and Shealy, 2009.

Several infant feeding policies and strategies have also been adopted since the 1980s to address the global persistence of low breastfeeding continuation rates and low exclusive breastfeeding rates. For instance, the International Code of Marketing of

Breast-milk Substitutes ('The Code') was introduced in 1981 to encourage breastfeeding and restrict the promotion of formula milk and other artificial forms of feeding. The Baby-Friendly Hospital Initiative was launched in 1991 to promote 10 best practices for the support of breastfeeding in maternity services. The Innocenti Declaration (1990) and Global Strategy on Infant and Young Child Feeding (2003) affirmed that breastfeeding is the optimal form of infant feeding. In 2003, WHO recommended that all infants should be exclusively breastfed for the first six months after birth and thereafter, should receive appropriate complementary foods while continuing to breastfeed for up to two years of age or more (WHO, 2003). Since 2003, the health departments within GB have endorsed this recommendation, and breastfeeding is increasingly being acknowledged as a priority for the reduction of health inequalities in GB (Marmot and Bell, 2012; Public Health England, PHE, 2016). In addition, national infant feeding policies such as the landmark Breastfeeding etc. (Scotland) Act (2005) make it unlawful to prohibit a woman from breastfeeding a child under the age of two years in a public place (McAndrew et al., 2012).

1.4 The public health significance of breastfeeding

The significance of breastfeeding to public health and development is supported by extensive biological and epidemiological evidence (Victora et al., 2016). Compelling evidence indicates that breastfeeding, whether exclusively or partially, significantly reduces the infant's risk of developing and being hospitalised for common childhood infectious illnesses such as diarrhoea and lower respiratory tract infections (Quigley et al., 2007; Horta and Victora, 2013b; Payne and Quigley, 2016). These benefits are observed even after controlling for potential confounding by mother's socioeconomic

status, and reverse causation where breastfeeding may have been discontinued due to illness (Horta and Victora, 2013b). There is also strong evidence that breastfeeding is associated with a lower risk of infant mortality due to sudden infant death syndrome and necrotising enterocolitis (Ip et al., 2007).

Evidence also supports the long-term benefits of breastfeeding for infants. A recent meta-analysis of 16 studies from mostly HICs including GB found that children and adolescents who had been breastfed for long periods performed better in intelligence tests than those who either were never breastfed, or were breastfed for shorter periods (Horta et al., 2015). Moreover, several reviews have shown that this association remains even after adjusting for socioeconomic status, maternal intelligence, and the extent of mother-infant bonding and intellectual stimulation within the home, particularly in HICs (Victora et al., 2015). Other evidence suggests that breastfeeding may also confer protection to children against the long-term development of obesity and type 2 diabetes (Victora et al., 2016).

There are several putative mechanisms for the beneficial effects of breastfeeding on infant health outcomes. For instance, breast milk contains a host of anti-infective factors which protect the infant against infection: secretory immunoglobulin A antibodies are specific to antigens in the mother and infant's immediate environment; leukocytes and whey protein help to destroy micro-organisms; and oligosaccharides and glycoproteins prevent the attachment of pathogens to the infant's respiratory and intestinal mucosal surfaces (Stuebe, 2009; WHO, 2009). Breast milk also contains long-chain polyunsaturated fatty acids and taurine which promote the infant's neurological development (WHO, 2009). Mother-infant emotional bonding

during breastfeeding may also confer long-term psychosocial benefits to the infant (Horta and Victora, 2013a).

Among the long-term health benefits of breastfeeding for mothers is a reduced risk of breast cancer. A case-control analysis including over 50,000 women with breast cancer from 47 studies in 30 countries found that the risk of breast cancer decreased by 4% for every 12 additional months that a woman had breastfed (Collaborative Group on Hormonal Factors in Breast Cancer, 2002). There is also consistent evidence of improved birth spacing among mothers who practice exclusive and predominant breastfeeding in the first six months, and suggestive evidence of reductions in the risks of type 2 diabetes and ovarian cancer (Victora et al., 2016). Additionally, a recent longitudinal analysis of over 740,000 post-menopausal women in the UK found a 1% reduction in mean body mass index for every six months that a woman had breastfed (Bobrow et al., 2013). Similar to the evidence for infants, most of this current evidence is derived from observational studies and so may be prone to residual confounding by maternal sociodemographic and biological factors. Nevertheless, it is biologically plausible that these potential benefits are mediated by the presence of lactation hormones.

A 2016 global analysis of the associations between breastfeeding and maternal and child health outcomes estimated that if the adherence to international recommendations for breastfeeding behaviours was increased to almost universal levels, globally 13.8% of all deaths in children younger than two years and 20,000 deaths from breast cancer could be averted each year (Victora et al., 2016). The authors further assert that breastfeeding may be the only health behaviour to have such far-reaching impacts on the health of children and mothers.

Evidence of the potential economic impact from increasing breastfeeding behaviours is also compelling. A recent UK cost analysis estimated that increasing the proportion of women who breastfeed to four months from 7% to 45% could save the National Health Service (NHS) £11 million per year in treatment costs (at 2009 to 2010 value) due to lower incidences of diarrhoea, respiratory infections and otitis media (Pokhrel et al., 2015). Doubling the proportion of mothers who breastfeed for 7-18 months in their lifetime could save an additional £31 million (at 2009 to 2010 value) (Pokhrel et al., 2015). Similarly, a 2001 US review estimated that increasing breastfeeding rates to recommended levels could save \$3.6 billion (at 1995-1997 value) in direct costs associated with the medical treatment of infectious illnesses, and indirect costs associated with lost wages and work absenteeism experienced by parents caring for a sick child (Weimer, 2001).

Breastfeeding also has considerable environmental benefits given that it is the most natural and ecological form of infant feeding. In comparison, artificial feeding methods such as infant formula feeding are non-renewable and require clean water and electricity or fuel to prepare. During formula feeding, containers made of glass, plastic or metal are used and these require extra water to clean both before and after feeding. Infant formula and other artificial feeds are also often packaged and shipped using non-recyclable materials, which are then disposed of in landfills. These costs, although not yet quantified, undoubtedly constitute a considerable environmental and economic burden, especially given the widespread promotion of infant formula and other breastmilk substitutes worldwide (Rollins et al., 2016).

1.5 Rationale for conducting this research

The trends in breastfeeding rates in GB in 1985 to 2010, particularly the relatively low continuation and exclusive rates, suggest that the temporal effects of social, cultural and policy changes were different for breastfeeding initiation compared with continuation and exclusivity. Moreover, progressive changes at the population level may not have benefitted all subgroups of women equally. In GB, most women discontinue breastfeeding earlier than they desire, and lower rates of breastfeeding continuation and exclusivity may in turn be influenced by women's perceptions about their ability to breastfeed in public spaces (Dennis, 2002). To date, no population-based study has examined women's practice of breastfeeding in public in GB, including whether breastfeeding in public may have been influenced by the changing context of GB between 1985 and 2010.

Most studies of the underlying causes of changing trends in breastfeeding rates have been conducted in either LMICs (Trussell et al., 1992; Grummer-Strawn, 1996; Lutter et al., 2011) or the US (Hendershot, 1984; Ryan, 1997). Findings from these studies have suggested that the changing trends were due to either one or a combination of changes in the characteristics of the population and changes in breastfeeding behaviours between subgroups. To date, no study has examined the extent to which changes in population characteristics, or changes in the differences in breastfeeding behaviours between subgroups, may have contributed to the increased trends in breastfeeding initiation and continuation in GB in 1985 to 2010.

To observe longer-term temporal trends, some of these previous studies used data from various sources such as fertility and health surveys, market research surveys

and administrative records. These data sources varied considerably by sampling methods; definition of the target population; assessment of breastfeeding; length of the recall period between feeding behaviour and assessment; and the ability to control for confounding. Such differences may limit the interpretation of the findings of these previous studies (Hendershot, 1984; Grummer-Strawn and Shealy, 2009).

Analyses based on data from the IFS in GB are well placed to improve upon the current evidence, and investigate both long-term changes in population characteristics and differential breastfeeding behaviours among population subgroups. Findings from such an investigation have the potential to provide new evidence on whether the progress achieved in breastfeeding rates in GB was universal across all population subgroups of mothers or was limited to specific groups. It also has the potential to highlight how key changes in the childbearing population of GB may have influenced breastfeeding behaviours over a 25-year period. Such evidence would provide a valuable contribution to the improvement of breastfeeding rates by informing the scale up and evaluation of targeted interventions that address the needs of mothers and infants across all population subgroups.

1.6 Research aims

The first aim of this DPhil research was to investigate whether the increase in breastfeeding rates in GB between 1985 and 2010 were driven by changes in population characteristics or changes in the differences in breastfeeding behaviours between subgroups. The second aim was to investigate the factors which influenced the practice of breastfeeding in public in GB over time.

1.7 Research objectives

The research aims were addressed through the following objectives:

1. To describe changes in the distribution of potential explanatory factors among the childbearing population of GB between 1985 to 2010.
2. To estimate the independent effects of each of these factors on the following:
 - a. Breastfeeding initiation, breastfeeding continuation at one week and breastfeeding continuation at six weeks, in each survey year in 1985, 1990, 1995, 2000, 2005 and 2010.
 - b. Breastfeeding in public in each survey year from 1995 to 2010.
3. To assess changes in the effects of each factor on breastfeeding initiation, and breastfeeding continuation at one week and six weeks, over the period from 1985 to 2010.
4. To estimate the proportions of population-based breastfeeding initiation, and breastfeeding continuation at one week and six weeks in each survey year in 1985 to 2010 that may have been attributable to the prevalence of factors in the childbearing population.

2 Literature review

2.1 Chapter introduction

Few studies have investigated the changes in the trends in breastfeeding rates in HICs and LMICs. The studies that have done so vary widely in their methods, although similar reasons were found for the changes in breastfeeding rates over time (Hendershot, 1984; Liestol et al., 1988; Grummer-Strawn, 1996; Ryan, 1997; Colodro-Conde et al., 2011; Lutter et al., 2011). To date, no such studies have been conducted in GB. Section 2.2 below presents a summary of previous trend studies.

Liestol et al. (1988) and others found that, while the declines in breastfeeding rates during the first half of the 20th century were universal across all subgroups of mothers, the resurgence in breastfeeding rates from the late 1970s onwards was more rapid among some subgroups than others. These subgroups of mothers who showed the most improvement in their breastfeeding behaviours were also those who benefitted the most from the social, cultural and policy changes that occurred over the past 30 years, and are among the subgroups who remain characteristically most likely to breastfeed today. Section 2.3 reviews the evidence on the associations between the practice of breastfeeding and potential explanatory factors among such subgroups of mothers. The chapter concludes with a description of the construction of the conceptual model that was used in this DPhil research to inform the analyses of associations between breastfeeding behaviours and explanatory factors.

2.2 Changing trends in breastfeeding behaviours in the 20th century

2.2.1 Summary of the findings of previous trend studies

Liestol et al. (1988) examined the breastfeeding behaviours of women who gave birth in three maternity hospitals in Norway from 1860 to 1984, one of the longest periods of time that a study of breastfeeding trends has ever covered. Hospital birth records were used to obtain data on women's retrospective reports of how long they breastfed all their previous children. The number of birth records ranged from 190-1,800 over the 120-year period (Liestol et al., 1988). Liestol et al. (1988) found that between 1860 and 1920, the breastfeeding rate at six months increased to 70%, with mostly married women from lower socioeconomic groups practising breastfeeding. From the 1920s to 1960s, breastfeeding rates declined similarly across all socioeconomic subgroups of women, with less than 10% of women breastfeeding at six months. By 1984, the breastfeeding rates at six months had increased to 60%, driven largely by a more rapid improvement in breastfeeding behaviours among women in higher socioeconomic groups (Liestol et al., 1988).

Another European-based study, by Colodro-Conde et al. (2011), reported similar declines in breastfeeding rates in Spain between the 1950s and 1970s. This study included 666 women from a national birth registry of female-female twins born between 1940 and 1966, and interviewed them by telephone in 2007 about how long they breastfed their first child who was born between 1958 and 2002. Breastfeeding continuation rates were estimated according to women's self-reported educational level at the time of being interviewed in 2007 (Colodro-Conde et al., 2011). The authors found that the declines were more pronounced among women with secondary

education compared to those with primary education only. By the 1990s when breastfeeding rates began to increase, women with secondary education showed higher rates of breastfeeding continuation than women with primary education only (Colodro-Conde et al., 2011).

Two studies examined changes in the trends in breastfeeding behaviours in Latin American, Caribbean and African countries between the 1970s and 2005 (Grummer-Strawn, 1996; Lutter et al., 2011). These are the only recent cross-national studies on breastfeeding trends, and they used regression modelling techniques to estimate the mean duration of breastfeeding according to a range of maternal and infant factors. The earlier of the two studies, by Grummer-Strawn (1996), compared data on 15 LMICs, which were obtained from the population-based World Fertility Survey (WFS, [1975-1980]) and Demographic Health Surveys (DHS, [1986-1989]). Grummer-Strawn (1996) concluded that the increases in breastfeeding rates in the LMICs between the 1970s and 1980s were less likely to have resulted from changing population characteristics and more likely to have resulted from changes in breastfeeding behaviours within subgroups, given that the subgroups that showed the highest increase in prevalence (for example women with higher education) had been historically less likely to breastfeed prior to the increase in rates. The second study, by Lutter et al. (2011), compared data on 8 LMICs from the DHS (1986-2005), and arrived at similar conclusions to Grummer-Strawn (1996). For example, in most of the LMICs, subgroups of women with higher education experienced the largest gains in mean duration of breastfeeding between 1986 and 2005 (Lutter et al., 2011).

US-based studies on changing trends in breastfeeding behaviours have mostly used data from the Ross Laboratories Mothers' Survey (RLMS), a nationally representative postal infant feeding survey, which is developed and administered by the healthcare company Abbott Laboratories. From 1955 to 2007, the RLMS questionnaire was mailed annually to women with babies who were six months or younger. Using this data, Ryan (1997) and Ryan et al. (2002) found that breastfeeding initiation rates increased steadily from the late 1980s, rising from 60% in 1989 to 70% in 2001. Ryan (1997) noted that the increases were observed across all sociodemographic subgroups of women, but were more pronounced among subgroups who, historically, have been less likely to practise breastfeeding in the US, for example non-Hispanic black women, women with little or no education, and women in the lowest socioeconomic group. Despite the increases, these subgroups remain less likely to breastfeed in the US today (Hendricks et al., 2006). Several years earlier, Hendershot (1984) summarised the findings from several US-based studies on changing trends in breastfeeding behaviours since the 1940s. Hendershot (1984) concluded that the findings, which were based on mainly national fertility surveys and the RLMS, indicated a reversal in the breastfeeding behaviours between some subgroups (such as white and non-Hispanic black women), following a universal decline in rates across all sociodemographic subgroups between the 1940s and late 1970s.

The findings of these previous studies suggest that there was an improvement in the breastfeeding behaviours of some subgroups of women relative to others, especially between women with higher education and those with lower education. Moreover, the findings from the European-based studies suggest that these changes occurred by the late 20th century, and further increases in population-based

breastfeeding rates were driven by increases in the prevalence of the subgroups who became most likely to breastfeed. The US-based studies showed similar reversals by the 1980s, and while these subgroups continue to be most likely to breastfeed today, there is evidence of a narrowing in the gap in breastfeeding between some 'most likely' and 'least likely' subgroups (Ryan, 1997; Kelly et al., 2006).

2.2.2 Methodological limitations of previous trend studies

A major limitation of these previous studies is the source of the data used. The European-based study by Liestol et al. (1988) used hospital birth records, the quality of which varied over the period of observation, from being handwritten by midwives to being printed on forms by the 1980s. Additionally, the populations of women were obtained from three hospitals only, therefore, this was not a national study. Moreover, the number of births were not representative of the number of births in Norway as most births occurred at home rather than in hospital during much of the study period. There was also an overrepresentation of unmarried women in lower socioeconomic groups, who were more likely to give birth in a hospital (Liestol et al., 1988).

The population from the study by Colodro-Conde et al. (2011) was equally limited as women were identified from a twin registry and the (breastfeeding) experiences of women who have a twin sister, especially one with similarly-aged children, differ from those of women without a twin sister. Additionally, the estimates of breastfeeding rates in this study may have been affected by a long length of recall of breastfeeding, which may have been almost 50 years for some women (from 1958 to 2007).

The populations from the US-based studies may also have been unrepresentative of the general population of mothers, given that the RLMS and national fertility surveys often excluded women who were unmarried and those from lower educational and socioeconomic groups (Hendershot, 1984). Samples in the WFS and DHS were representative and comparable in many respects; however, data on breastfeeding was collected in a different way in each survey (Trussell et al., 1992), which may have limited the comparability of the estimates of breastfeeding trends across both surveys.

With the exception of Grummer-Strawn (1996) and Lutter et al. (2011), these previous studies on breastfeeding trends were largely descriptive, with no adjustments for potential confounding effects. Furthermore, these studies did not test whether the changes in population characteristics or changes in breastfeeding behaviours were statistically significant. While Colodro-Conde et al. (2011) addressed the latter methodological issue in their study, the findings of their study may have been limited by the use of maternal education at the time of interview in 2007 as an approximation of maternal education at the time of breastfeeding between 1958 and 2002. The assumption that women did not pursue education after the birth of their first child may not be valid for all women.

2.3 Factors associated with the practice of breastfeeding

2.3.1 Sociodemographic factors

In HICs including GB, it is well documented that breastfeeding rates are higher among women who are older, married, more highly educated and from higher socioeconomic groups (Scott et al., 2001; Dennis, 2002; Forster et al., 2006; Hendricks et al., 2006;

Skafida, 2009; Thulier and Mercer, 2009; Flacking et al., 2010; Meedya et al., 2010; Jones et al., 2011; Oakley et al., 2013). Women's employment status has also been shown to influence breastfeeding. For example, a recent systematic review found that maternity leave policies were effective at increasing exclusive breastfeeding (risk ratio [RR]: 1.52, 95% CI: 1.03-2.23) (Rollins et al., 2016). Several observational studies also found that longer maternity leave was positively associated with breastfeeding continuation for three months or more (Hawkins et al., 2007a; Hawkins et al., 2007b; Skafida, 2012; Steurer, 2017a). At the same time, several studies found that returning to paid employment was negatively associated with breastfeeding continuation. For example, a US-based study of 2,466 low-income women found that, after adjusting for socioeconomic differences, the odds of discontinuing breastfeeding in the same month when women returned to work was 2.18 (95% CI: 1.74-2.74) (Kimbrow, 2006). The effect of return to work also varied by women's occupation. Compared to women who did not return to work, women who returned to administrative (aOR: 1.34, 95% CI: 1.12-1.60) or manual jobs (aOR: 1.35, 95% CI: 1.04-1.75) were more likely to discontinue breastfeeding, while professional women were as likely to continue breastfeeding (Kimbrow, 2006). This may speak to the differences in women's autonomy at work and their access to family-friendly workplace policies, including flexible hours, breastfeeding breaks, and adequate time and space to express and store breast milk (Roe et al., 1999). While these employment factors may influence breastfeeding, there is no evidence that breastfeeding and employment outside the home are incompatible (Van Esterik and Greiner, 1981).

In GB, the practice of breastfeeding also tends to be higher among women of BME origin than white women. For example, Kelly et al. (2006) found that, compared to

white women, black (African and Caribbean) women were 6-8 times more likely to initiate breastfeeding and 5-6 times more likely to continue breastfeeding at 3 months, even after accounting for confounders such as income and occupational socioeconomic status, which tend to be higher for white women. Findings from qualitative studies suggest that the ethnic differences in breastfeeding may be related to differences in cultural standards, where women of BME origin may hold a more normative view of breastfeeding. This view may be influenced by women's own native experiences, as well as the cultural beliefs and attitudes of their partner, relatives and community (Griffiths et al., 2005; Oakley et al., 2013).

Women who smoke during and after pregnancy may be less likely to breastfeed than those who discontinue smoking or have never smoked (Kiernan and Pickett, 2006). A meta-analysis based on 12 studies from HICs found that, compared to women who were non-smokers, women who smoked showed higher odds of discontinuing breastfeeding before three months (pooled OR, random-effects analysis: 1.50, 95% CI: 1.34-1.68). This was after accounting for heterogeneity between studies that may have been due to differences in maternal age, ethnicity, socioeconomic status and loss to follow up (Horta et al., 2001). Previous studies, conducted mainly in the 1980s using animal models, posit that nicotine may suppress the levels of lactation hormones, thereby decreasing breast milk production (Napierala et al., 2016). Newborn babies of smokers may also experience delays in the development of neonatal reflexes, including rooting, sucking and swallowing, which normally facilitate the newborn's attachment to the mother's breast for breastfeeding initiation (Napierala et al., 2016). Other studies suggest alternative pathways for the effects of smoking on breastfeeding, including physical barriers such as poor breastfeeding technique, sociodemographic differences

and psychological factors, which were not fully accounted for in studies based on animal models (Amir, 2001).

2.3.2 Prior experiences of breastfeeding

A qualitative study of 259 rural Scottish mothers who had no direct previous experience of breastfeeding found that mothers who had a positive attitude toward seeing other women breastfeeding were over six times more likely to intend to breastfeed their own baby than mothers who had a negative attitude (Hoddinott et al., 2010b). However, seeing other women breastfeeding did not significantly influence actual breastfeeding initiation (Hoddinott et al., 2010b). The findings of this study may have been affected by its small selective population, and other confounding effects. Marshall et al. (2007) and Bartle and Harvey (2017) suggested that sharing in the breastfeeding experiences of other female family members and peers, whether positive or negative, is likely to influence the perceptions of (inexperienced) mothers about the normality of breastfeeding and their own ability to manage breastfeeding.

Having direct previous breastfeeding experience has also been shown to be highly predictive of subsequent breastfeeding. For instance, a US-based national study found that, compared to women who never breastfed previously, women who had exclusively breastfed their first child for at least four months were considerably more likely to exclusively breastfeed their subsequent child (aOR: 90.7, 95% CI: 45.4-181.4) (Phillips et al., 2011). The high effect size may reflect the near certainty that women who breastfeed previously will breastfeed again, especially as 70% of women in the study by Phillips et al. (2011) also breastfed their second child for at least four months.

2.3.3 Breastfeeding support

Among the many global responses to the declining trends in breastfeeding was the adoption of the Baby-friendly Hospital Initiation (BFHI) by WHO and UNICEF in 1991. The BFHI outlines 10 best practices (Ten Steps) for the promotion and support of breastfeeding in hospitals and maternity centres (Box. 2.1).

The ten steps to successful breastfeeding

1. Have a written breastfeeding policy that is routinely communicated to all healthcare staff.
2. Train all healthcare staff in the skills necessary to implement the breastfeeding policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their babies.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated.
7. Practice rooming-in, allowing mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or dummies to breastfeeding infants.
10. Identify sources of national and local support for breastfeeding and ensure that mothers know how to access these prior to discharge from hospital.

Box 2.1 Baby-friendly Hospital Initiative: Ten steps to successful breastfeeding

A 2016 systematic review, which included three randomised controlled trials (RCTs) and 19 cross-sectional studies, examined the impact of the BFHI on breastfeeding and child outcomes in 19 countries (Pérez-Escamilla et al., 2016). The authors concluded

that adherence to the BFHI positively influenced breastfeeding initiation and continuation, showing a dose-response relationship between the number of steps women experienced and the likelihood of improved breastfeeding behaviours (Pérez-Escamilla et al., 2016). Another 2016 review of 16 US-based studies also concluded that the BFHI positively influenced breastfeeding behaviours (Munn et al., 2016). Both reviews included studies based largely on women's self-reports of having experienced the 'Ten Steps' and as such, were not able to examine the effect of steps that women could not have experienced directly, such as whether the maternity centre had a written breastfeeding policy. The findings may also be limited if women were more likely to recall some experiences than others. The evidence on BFHI stems largely from observational studies, therefore no causal mechanism for its effects on breastfeeding has been established (Munn et al., 2016).

Evidence of the effects of individual steps on breastfeeding behaviours is also inconsistent. For example, a recent Cochrane review including 20 studies from mostly HICs found that antenatal education (step 3), including peer and professional counselling, did not significantly influence breastfeeding initiation and continuation (Lumbiganon et al., 2016). Another Cochrane review on the effect of skin-to-skin contact (related to step 4) found a positive association with breastfeeding initiation and continuation up to four months, although having skin-to-skin contact within one hour of birth had no significantly different effect than having skin-to-skin contact after one hour (Moore et al., 2016). The effect of the early initiation of breastfeeding itself is unclear as previous studies have examined this practice as an outcome of other interventions rather than as a determinant of breastfeeding. (Esteves et al., 2014; Balogun et al., 2015). The most recent Cochrane review on the effect of rooming-in after

birth (step 7) included a single RCT of 176 Russian women and found no evidence of an association with any breastfeeding at six months (RR: 0.84, 95% CI: 0.51-1.39) (Jaafar et al., 2016). An earlier literature review by Forster and McLachlan (2007) concluded that the evidence on rooming-in and other stand-alone BFHI-related strategies was inconsistent. However, in their review of the practices which influence breastfeeding, Renfrew and Hall (2008) highlighted the importance of such individual strategies as part of a model of maternity care.

Other maternity care practices may also influence breastfeeding. For example, a meta-analysis by Prior et al. (2012), which included 53 studies from 33 countries, found that women who had a Caesarean section, whether planned or emergency, were less likely to initiate breastfeeding than women who had a vaginal birth (pooled OR, random-effects analysis: 0.61, 95% CI: 0.50-0.75), although there was no association between Caesarean delivery and breastfeeding at six months. In contrast, a Canadian-based prospective study (n=3,021) found that mothers who had a Caesarean delivery were more likely than those who had a vaginal delivery to discontinue breastfeeding before 12 months ($P=0.014$) (Hobbs et al., 2016). Although this latter study adjusted for sociodemographic differences and early differences in maternal physical and mental health, the findings may be limited by residual confounding and unaccounted-for changes in maternal physical and mental health throughout the duration of breastfeeding (Hobbs et al., 2016).

Evidence on the effects of other maternity practices such as the length of stay (LOS) in hospital postpartum are also inconclusive, due to the variability in the definition of LOS (James et al., 2017). For example, a Swedish cohort study explored six categories

of LOS in hours and found no significant association with breastfeeding continuation, after adjusting for a range of maternal sociodemographic and biological factors (Waldenstrom and Aarts, 2004). A national study of women's maternity care experiences in England defined four categories of LOS in days and found that increasing stay of up to four days increased the likelihood of breastfeeding discontinuation at 10 days postpartum (Oakley et al., 2014). A US cross-sectional survey that measured LOS in number of nights and by type of delivery concluded that the risk for early breastfeeding discontinuation was significantly greater with stays that were both shorter and longer than the standard recommended for the type of delivery (Heck et al., 2003). LOS may increase for mothers who have a low birth weight (LBW) infant (<2.5 kg) who is admitted to a neonatal intensive care unit (NICU). While there is limited evidence of the association between LBW and breastfeeding, a Cochrane review of 21 studies, including over 3,000 infants, found that LBW infants who received kangaroo mother care (KMC) while in NICU were more likely to be breastfeeding at hospital discharge and three months postpartum (Conde-Agudelo and Díaz-Rossello, 2016). This association may have been mediated by the skin-to-skin contact component of KMC, and other parent-newborn interactions while in the NICU.

Recent systematic reviews suggest that both professional and peer support (related to step 10) may improve breastfeeding continuation when offered in combination with other supportive practices (Sinha et al., 2015; McFadden et al., 2017). Although UK-based RCTS on the effect of peer support have not found a significant association with breastfeeding continuation (Hoddinott et al., 2010a; Jolly et al., 2012), a national study by Oakley et al. (2014) found that women who received help from a parent or peer support group were more likely to continue breastfeeding at 10 days

(aOR for breastfeeding discontinuation by 10 days: 1.67, 95% CI: 1.14-2.46). Oakley et al. (2014) noted, however, that this positive effect may be influenced in part by mothers' willingness to seek breastfeeding support.

2.3.4 Societal influences of breastfeeding

Breastfeeding, whether in the home or in public spaces, may also be influenced by wider societal attitudes and policy that help to define the enabling environment within which women practise infant feeding (Rollins et al., 2016). Aside from the BFHI, another global strategy that seeks to foster an enabling environment for breastfeeding is the International Code of Marketing of Breast-milk Substitutes ('The Code'), which prohibits the promotion of infant formula directly to mothers. However, an observational study by Berry et al. (2012) found that in the UK, where the marketing of infant formula is prohibited, the risk of seeing advertisements for follow-on (after six months) formula in parenting magazines was high, suggesting that the infant formula industry may be circumventing 'The Code'. An Italian-based qualitative study found that most women who saw advertisements for follow-on formula in magazines thought they were similar to infant (first-stage) formula and could be fed to their babies from birth (Cattaneo et al., 2015). The marketing of infant formula and other breast-milk substitutes may not only influence mothers' breastfeeding decisions but may also influence societal perceptions of the normality of breastfeeding compared to formula feeding (Piwoz and Huffman, 2015; Rollins et al., 2016)

GB has taken considerable steps to protect the right of women to breastfeed in public spaces. In 2005, Scotland implemented the Breastfeeding etc. (Scotland) Act, which makes it unlawful to prohibit a woman from breastfeeding a child younger than

age two in public places such as restaurants and on public transportation. In 2010, the Equality Act was passed in GB, offering similar protection but without any age restrictions. At the same time, there is no legal protection of the right to breastfeed in the workplace in GB; however, protection may be afforded by the Employment Protection Act (1975), which makes it unlawful to discriminate against a woman on the grounds of pregnancy or maternity (National Archives, UK, 1975).

While previous studies have focused on breastfeeding in public in GB, to date, no study has examined the effects of protective legislation on breastfeeding in public in GB, and no national study has explored the factors which influence the practice of breastfeeding in public in GB. Among previous studies, a qualitative study of 805 online responses to a UK-based news report of a woman breastfeeding in public found that many respondents were uncomfortable with seeing women breastfeeding in public, although they were supportive of women who do so 'discreetly' (Morris et al., 2016). McAndrew et al. (2012) found that 11% of UK mothers reported that they were stopped or made to feel embarrassed while breastfeeding in public in 2010. A small-scale selective study of 389 women from four European countries, including 82 women from Glasgow, found that Scottish women were significantly less likely to have ever breastfed in public compared to Swedish women (aOR: 0.25, 95% CI: 0.12-0.50) (Scott et al., 2015).

2.4 A conceptual model for breastfeeding behaviours

The effects of an enabling context that supports breastfeeding may operate simultaneously and at multiple levels of influence, and its effects may change over time. As such, this DPhil research applied a breastfeeding behaviours conceptual model (Figure 2.1) to help to understand whether and how contextual factors interrelated to

determine women's breastfeeding behaviours in 1985 to 2010 (Bueno-Gutierrez and Chantry, 2015; WHO, 2017). This model is underpinned by the ecological systems theory developed by Bronfenbrenner and Ceci (1994), and was adapted for breastfeeding based on similar frameworks proposed by Tiedje et al. (2002) and Hector et al. (2005). These frameworks suggested four nested levels of influence: (1) the individual level, which includes factors directly related to the mother–infant dyad; (2) the family and social support level, which includes mothers' interpersonal networks; (3) the local community level, which addresses the support in mothers' immediate community; and (4) the societal level, which considers wider social attitudes towards breastfeeding in private and public spaces, and policies regarding the practice of breastfeeding.

To develop the conceptual model for this DPhil research, a list of the factors identified from the literature was created first. This list was then used to identify corresponding variables that were available in each IFS dataset. These variables were used to derive factors in each IFS dataset. Newly derived factors were then categorised into related groups. For example, maternal age and education were categorised as sociodemographic factors. Each group of factors was then placed in the most appropriate of the four levels of influence mentioned above. For example, the sociodemographic group was placed in the individual level. The conceptual model (Figure 2.1) summarises the levels and groups of factors that were available in the IFS datasets and analysed in this DPhil research. This model provides a meaningful way to fit logistic regression models and aides in disentangling the complex associations between breastfeeding behaviours and potential explanatory factors (Victora et al., 1997). The next chapter, Chapter 3, provides a list of the factors analysed, and describes how each factor was derived from available variables.

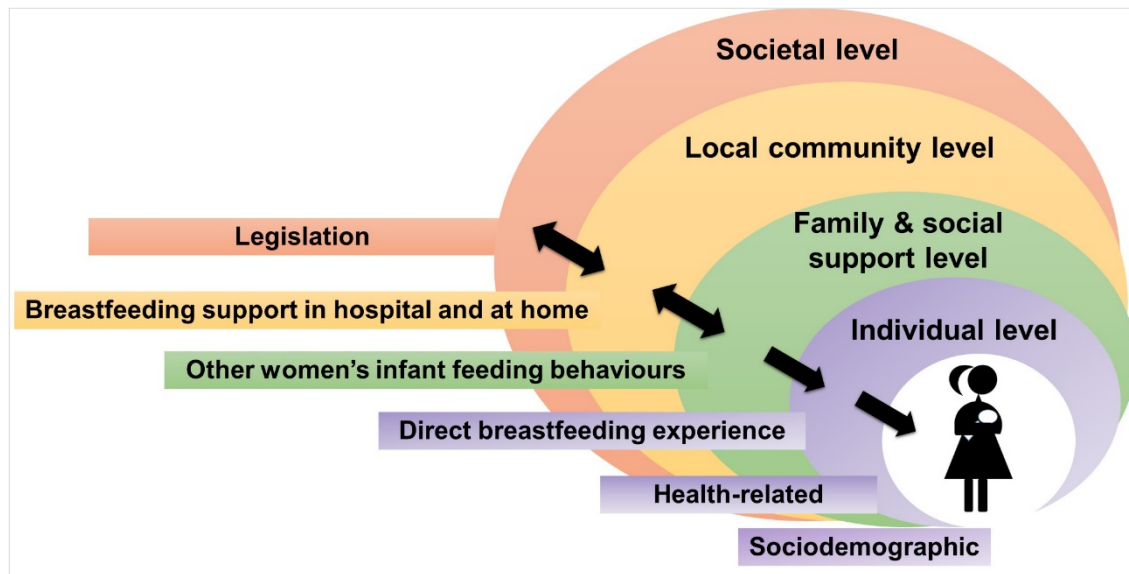


Figure 2.1. The breastfeeding behaviours conceptual model.

(Adapted from: (Tiedje et al., 2002; Hector et al., 2005).

3 Methods

3.1 The Infant Feeding Survey

3.1.1 Overview

This DPhil research used data from the Infant Feeding Survey (IFS). The IFS is a national, cross-sectional survey of mothers in the UK, which was conducted every five years from 1975 to 2010 on behalf of the Department of Health. The survey provides a wide range of information on maternal and infant health, infant feeding practices including breastfeeding, and contextual factors that influence infant feeding intentions and decisions (McAndrew et al., 2012). The IFS is the only survey of its kind in the UK that provides the opportunity to monitor breastfeeding practices for the first 10 months of infancy across the UK and over several years.

The other major strength of the IFS is the consistency in its design and methods. For instance, over the period 1985 to 2010, similar cohorts of mothers were surveyed for comparable factors and outcomes. Moreover, the survey was implemented within the same postnatal period using similar sampling and administrative procedures. This limited the substantive differences between cohorts of women, making the IFS highly suitable to examine the impact of changing population characteristics on temporal trends in breastfeeding behaviours.

3.1.2 Sample design

3.1.2.1 England and Wales

In 1975 to 2000, a combined sample for England and Wales was designed to be representative of all births occurring in England and Wales over a five-week period. The sampling frame consisted of all birth registrations that were compiled by the designated registration office. Stillbirths, neonatal deaths and births registered after eight weeks from delivery were excluded. A sample of 100 registration sub-districts was drawn at random from the sampling frame. As far as possible, the same sub-districts were used at each survey year with some modifications to reflect changes in the birth rates and geographical boundaries in each year. Within the selected sub-districts, births were coded based on the mothers' socioeconomic classification. Mothers were classified into socioeconomic groups based on either their partner's occupation (in the 1985 to 1995 IFS) or their own occupation (in the 2005 and 2010 IFS), as reported at the time of birth registration. Mothers were assigned to the lowest socioeconomic group if their partner was in Social Class V (IFS 1975-2000); they had not registered a partner (IFS 1975-2005); or they were living in an area in the lowest quintile of deprivation based on the Indices of Multiple Deprivation (IMD) (IFS 2010). In order to achieve a large enough sample of mothers from the lowest socioeconomic group, all births that were in the lowest socioeconomic group were selected for the survey. Additionally, one out of two births from all other socioeconomic groups was selected.

In 2005 and 2010, separate samples were drawn for England and Wales. The sample for England included all births that were in the lowest socioeconomic group and one out of two births from all other socioeconomic groups. The sample for Wales

included all eligible births occurring within the sampling period. This achieved a sample with sufficient numbers for analysis given that Wales had a smaller number of births than England and Scotland. In each country, the sampling of births occurred over a three-month period, usually between August and October (Table 3.1) (McAndrew et al., 2012).

3.1.2.2 Scotland

The sampling frame for Scotland consisted of all live birth registrations that were received by the General Register Office, excluding births registered after eight weeks from delivery. Upon receipt, births were coded based on the mothers' socioeconomic status. For every survey year, the sample selected for Scotland over a three-month period included all births that were in the lowest socioeconomic group and one out of two births from all other socioeconomic groups (Table 3.1) (McAndrew et al., 2012).

3.1.2.3 Northern Ireland

The IFS first included Northern Ireland in 1990. The sampling frame consisted of all live birth registrations that were received by the General Register Office for Northern Ireland, excluding births registered after eight weeks from delivery. Prior to 2005, all births that were in the lowest socioeconomic group, and one out of two births from all other socioeconomic groups, were selected for the survey during a three-month sampling period. In 2005 and 2010, the sample for Northern Ireland included all eligible births occurring within a three-month sampling period. This achieved a sample with sufficient numbers for analysis given that Northern Ireland has a smaller number of births than England and Scotland (Table 3.1) (McAndrew et al., 2012).

Table 3.1. Comparison of the IFS sample design, UK, 1985-2010

Survey year	Countries	Sampling	Survey sample	Socioeconomic classification of births
1985	England, Wales and Scotland (Great Britain)	• England and Wales drawn as a single sample from 100 registration sub-districts • Scotland drawn as a separate sample from all eligible live birth registrations	• England and Wales sample included all births in the lowest socioeconomic group and one in two of all other births • Scotland sample included all births in the lowest socioeconomic group and one in two of all other births	Coded based on information about the birth father's (or mother's partner's) occupation as recorded on the birth registration
1990	England, Wales, Scotland and Northern Ireland (UK)	• England and Wales drawn as a single sample from 100 registration sub-districts • Scotland drawn as a separate sample from all eligible live birth registrations • Northern Ireland drawn as a separate sample from all eligible live birth registrations	• England and Wales sample included all births in the lowest socioeconomic group and one in two of all other births • Scotland and Northern Ireland samples included all births in the lowest socioeconomic group and one in two of all other births	same as 1985
1995	same as 1990	same as 1990	same as 1990	
2000				
2005		• Separate samples drawn for all 4 countries from all eligible live birth registrations	• England and Scotland samples included all births in the lowest socioeconomic group and one in two of all other births • Wales and Northern Ireland samples included all eligible births	No measure used. Births were classified based on whether a father/partner was recorded
2010		same as 2005	same as 2005	Coded based on mother's IMD

Source: IFS, 1985-2010. Note: Sampling of births in each country occurred over a three-month period, usually between August and October.

3.1.3 Survey procedure

In each year, the IFS was administered in three stages. At stage 1, the first questionnaire was sent to all mothers who were included in the initial sample with an aim to reach mothers when their babies were between four and ten weeks old. Mothers who failed to respond to the first questionnaire were sent reminder letters and contacted by fieldworkers via telephone. Only those mothers who completed the stage 1 questionnaire were sent a second stage questionnaire when their babies were between four and six months old. Following reminders, only mothers who completed stage 2 were sent the third and final stage questionnaire when their babies were between eight and ten months (McAndrew et al., 2012).

3.1.4 Response and weighting

At each stage, a few respondents requested not to be contacted again and were removed from the subsequent survey stage. Other reasons for the attrition at each stage included a refusal to participate, returned or undelivered questionnaires, loss of contact with participants and separation of mother and infant. Table 3.2 summarises the change in response rates to the IFS over the period 1985-2010.

Weights were designed by the IFS team and applied to the data at each stage. At stage 1, weights corrected for the differences in the probability of selection for mothers in different countries. In particular, births in Scotland, Northern Ireland, and Wales were given a greater probability of selection than those in England to ensure sufficiently large samples of mothers for separate country-level analysis. In addition, data at this stage were also weighted to compensate for differential non-response to the stage 1 questionnaire by mothers' socioeconomic status and age, and in the 2010

survey, by mothers' deprivation status. Information on these maternal factors was obtained from birth registration data for the full samples of mothers who were initially sent a stage 1 questionnaire, including non-respondents. Stage 1 weights further corrected for the oversampling of births in the lowest socioeconomic group.

Additional weights were created by the IFS team to be used for the analysis of data at stage 2 and stage 3. These weights accounted for all of the previous stage 1 sampling differences, as well as other maternal factors that have been shown to differ significantly between survey responders and non-responders to stage 2 or 3. These additional factors (and the survey years in which they were accounted for) include the following: infant feeding method at stage 1 (1995-2010); and age, ethnicity, smoking and drinking behaviours during pregnancy (2005-2010) (McAndrew et al., 2012).

Table 3.2. Response at each stage of the IFS, UK, 1985-2010

Survey stages	1985	1990	1995	2000	2005	2010
Initial sample	8,154	11,105	12,314	13,112	19,848	30,760
Stage 1 (4-10 weeks after birth)						
Response at stage 1 (<i>n</i>)	7,396	9,778	9,130	9,492	12,290	15,724
Response (%)	91	88	74	72	62	51
Stage 2 (4-6 months after birth)						
Response at stage 2 (<i>n</i>)	5,969	8,798	7,941	8,299	10,814	12,565
Response (%)	73	79	64	63	54	41
Stage 3 (8-10 months after birth)						
Response at stage 3 (<i>n</i>)	4,946	7,083	7,198	7,267	9,416	10,768
Response (%)	61	64	58	55	47	35

3.2 Research populations

3.2.1 Defining the main research populations

Data from the 1985, 1990, 1995, 2000, 2005 and 2010 IFS are accessible to researchers through the UK Data Archive. However, data on mothers from Northern Ireland was first collected by the IFS team in 1990. To use all the accessible data and maintain consistent research populations for comparison, this DPhil research included data from England, Wales and Scotland (GB) in 1985, 1990, 1995, 2000, 2005 and 2010, and excluded all data collected from Northern Ireland in 1990 to 2010.

The six survey populations were restricted further to mothers of singleton births delivered in hospital, given the low numbers of multiples and non-hospital births in each survey. For example, there were 131 mothers of multiples and 62 mothers of non-hospital births at stage 1 of the 1985 IFS (Table 3.3). Such low numbers were unlikely to have the power to detect significant associations with breastfeeding, especially when included in multivariable regression models. Following these restrictions, the number of mothers included in this DPhil research ranged from 7,262 to 12,315 mothers who gave birth to singletons in hospital in GB in one of the survey years in 1985 to 2010 (Table 3.3). These research populations were used for the statistical analyses that included mothers who responded to the stage 1 questionnaire. Further restrictions were applied during data analysis where examination required a subset of these main research populations. These subsets are discussed in section 3.5.

3.2.2 Validating the research populations

To assess the representativeness of the six research populations, the weighted proportions of mothers from stage 1 of each survey population were compared with the

proportions of mothers from the general population by mothers' age at delivery, partnership status and socioeconomic status. Data on the general population were sourced from birth summary tables published by the Office of National Statistics (ONS), which reports on all live births occurring annually in England and Wales (Office for National Statistics, ONS, 2014). For this comparison, the survey populations were limited to mothers who gave birth in England and Wales in either of the survey years in 1985, 1990, 1995, 2000, 2005 and 2010. These survey populations were highly representative of the general population of mothers in each year (Appendix I: Validating the research populations, page 318).

Table 3.3. Defining the main research populations

Survey populations	1985	1990	1995	2000	2005	2010
Numbers initially surveyed	8,154	11,105	12,314	13,112	19,848	30,760
Numbers responding at stage 1	7,455	9,777	9,130	9,492	12,290	15,724
Numbers excluded from analysis: Northern Ireland	0	1,823	1,753	1,778	1,886	2,648
Numbers excluded from analysis: multiple births	131	362	158	154	317	163
Numbers excluded from analysis: non-hospital births	62	8	172	192	310	598
Numbers included in main research populations	7,262	7,584	7,047	7,368	9,777	12,315

3.3 Research outcomes

3.3.1 Section introduction

This DPhil research investigated four breastfeeding outcomes: breastfeeding initiation, breastfeeding continuation at one week, breastfeeding continuation at six weeks and breastfeeding in public. These outcomes represent critical stages in the postnatal period when breastfeeding markedly declined in the IFS samples (Figure 1.1, section 1.1).

Furthermore, breastfeeding initiation and continuation at 6-8 weeks are currently identified as key public health indicators for GB (Information Services Division Scotland, ISD, 2011; Public Health England, PHE, 2016; PHE, 2017). Evidence also suggests that breastfeeding continuation may be influenced by the practice of breastfeeding in public, particularly where a perceived inability to breastfeed in public causes mothers to view breastfeeding as restrictive or isolating, leading to early discontinuation (Dennis, 2002).

In this DPhil research, the analyses of breastfeeding continuation at one week and six weeks were restricted to the population of mothers who successfully practised the previous breastfeeding behaviour. For example, the analysis of breastfeeding continuation at one week included only the population of mothers who had initiated breastfeeding, and that of breastfeeding at six weeks was restricted to mothers who continued breastfeeding at one week. This approach allowed for the isolation of the effects of factors on breastfeeding continuation at different time points. Few previous studies have employed a similar approach when investigating breastfeeding continuation (Wright et al., 2006; Baxter et al., 2009; Agboado et al., 2010; Oakley et al., 2014; Whipps, 2017).

3.3.2 Breastfeeding initiation

Breastfeeding initiation was assessed at stage 1 when babies were 4-10 weeks old. Mothers were asked whether they had ever given their baby breast milk or put their baby to the breast, even if just once.

3.3.3 Breastfeeding continuation at one week

Breastfeeding at one week was also assessed at stage 1 using the question, "Thinking about the milk that your baby has received over the last 7 days, has he or she had only

breast milk, only infant formula or breast milk and infant formula?” Mothers were counted as still breastfeeding if they responded with either ‘only breast milk’ or ‘breast milk and infant formula’.

Mothers who responded ‘only infant formula’ were then asked whether they had ever given breast milk or breastfed at least once. If they responded ‘yes’, they were then asked, “How old was your baby when he/she was last given breast milk or you put them to your breast?” The responses were grouped as age in weeks. Breastfeeding at one week was derived by counting all mothers who were still breastfeeding and mothers who had last given breast milk or breastfed when their baby was one week or older.

3.3.4 Breastfeeding continuation at six weeks

Breastfeeding at six weeks was assessed at stage 1 using the same questions that were used to assess breastfeeding at one week. It was derived by counting all mothers who were still breastfeeding and mothers who had last given breast milk or breastfed when their baby was six weeks or older.

3.3.5 Breastfeeding in public

Breastfeeding in public was assessed at stage 2 only, when babies were 4-6 months old. Mothers were asked whether they had ever fed their baby in a public place since giving birth to him or her. Mothers were able to select either one or a combination of the following answers: ‘yes, breastfed in a public place’; ‘yes, bottle-fed in a public place’; ‘no, never fed in a public place’. Mothers were counted as having ever breastfed in public if they gave the first answer, and were counted as having never breastfed in public if they gave the second and third answers.

3.4 Explanatory factors

3.4.1 Section introduction

In the previous chapter, potential explanatory factors that have been consistently associated with breastfeeding were identified from the literature and grouped based on the breastfeeding conceptual model (Figure 2.1). This section describes how these factors were derived from the IFS questionnaires and data for each survey year. The factors are presented below in order of the levels and groups of the conceptual model, and are summarised in Table 3.4 (page 48). This table also indicates where a factor was not present in a survey year because it was not assessed by the IFS. Except when stated otherwise, these factors were assessed using the stage 1 questionnaire.

3.4.2 Individual level: Sociodemographic factors

3.4.2.1 Maternal age at delivery

In the 1985 and 1990 IFS datasets, mothers' age was already coded as 'under 20', '20-24', '25-29', and '30 or over'. Subsequent surveys subdivided those '30 or over' as '35-39' and '40 or over'. For consistency, this DPhil research used an upper age group of '30 or over' for all surveys.

3.4.2.2 Education

Mothers' education was assessed based on the question, "How old were you when you finished full-time education?" Responses were recoded as '16 or under', '17 or 18' and 'over 18', based on comparable responses across the samples.

3.4.2.3 Socioeconomic status

In the 1985 to 1995 IFS, mothers' socioeconomic status was assessed using their husband or partner's occupation under the Registrar General's Social Classes and the Standard Occupational Classification (SOC). From 2000 onwards, maternal socioeconomic status was based on mothers' own occupation type and conditions under the National Statistics Socioeconomic Classification (NS-SEC). For either measure, occupation was assigned to one of the groups within the socioeconomic measure. Mothers were then assigned to the socioeconomic group corresponding to their occupation. This DPhil research used both socioeconomic measures where available. The categories used for SOC are 'managerial and professional', 'intermediate', 'skilled, non-manual', 'skilled, manual', 'semi-skilled', 'unskilled', and 'unclassified'. Those used for NS-SEC are 'managerial and professional', 'intermediate', 'routine and manual', 'never worked', and 'unclassified'.

3.4.2.4 Maternal employment status

Mothers were asked to indicate their employment status at the time of completing the stage 1 questionnaire. The responses were 'on paid maternity leave', 'on unpaid maternity leave', 'doing paid work', and 'not working'.

3.4.2.5 Partnership status

The IFS assessed marital status as 'married', 'living together', 'single', and 'widowed, divorced or separated'. This DPhil research combined 'single' and 'widowed, divorced or separated', as none of these categories was easily distinguishable from the other. Therefore, partnership status was created to classify mothers as 'married', 'cohabiting' or 'single'.

3.4.2.6 Ethnicity

From 2000, the IFS questionnaire asked mothers to self-identify within one of the five ethnic groups used in the 2001 UK Census: 'white', 'mixed', 'Asian or Asian British', 'black or black British', and 'Chinese or other ethnic group'. However, this DPhil research distinguished between two ethnic groups, 'white' and 'black or minority ethnic' (BME), because the disaggregation of the non-white groups resulted in small population sizes that were unlikely to have the power to detect significant associations with breastfeeding, especially when included in multivariable regression.

3.4.2.7 Country of residence

Country of residence was recoded as two categories instead of three, given that England and Wales were drawn as one sample from 1985 to 2000, rather than separately as in 2005 and 2010. Therefore, country of residence was measured as 'England and Wales' and 'Scotland'.

3.4.3 Individual level: Health-related factors

3.4.3.1 Birthweight, parity and type of delivery

Mothers' reports of their baby's birthweight were recoded in kilograms as 'less than 2.5', '2.5-2.99', '3.0-3.39', and '3.5 or over'. Parity was disaggregated into '1', '2', and '3 or more'. For mode of delivery, this DPhil research renamed 'normal (vaginal) birth' to 'vaginal spontaneous'; combined 'delivery using forceps' and 'delivery using vacuum cap' into 'vaginal assisted'; and maintained the category 'Caesarean section'.

3.4.3.2 Length of stay in hospital (or other maternity centres) and Special Care

Length of stay was assessed based on mothers' responses to the question, "How long after the baby was born did you stay in the hospital, birth centre or unit?" Responses were recoded as days into the following categories: 'less than 2 days', '3-5 days', and '6 days or more'.

Special care was assessed based on mothers' ('yes' or 'no') responses to the question, "Was your baby put into special care at all, or put under a lamp for jaundice?"

3.4.3.3 Smoking during pregnancy and postnatally

Smoking during pregnancy was recoded as 'yes', 'no', and 'non-smokers' (Figure 3.1). The category 'yes' included mothers who either were smoking at the time of the stage 1 questionnaire and had smoked during pregnancy, or smoked within the last two years before the month of the stage 1 questionnaire and stopped very late during pregnancy or after giving birth.

The category 'no' represented women who smoked at some point but not during pregnancy, and included mothers who either were smoking at the time of the stage 1 questionnaire but did not smoke during pregnancy, or smoked within the last two years before the month of the stage 1 questionnaire but stopped before or once they became aware of their pregnancy.

'Non-smokers' were those mothers who either never smoked, or stopped smoking within the last two years before the month of the stage 1 questionnaire. Smoking postnatally was grouped as 'yes' for all mothers who were smoking at the time of the stage 1 questionnaire and 'no' for those who were not smoking, including non-smokers (Figure 3.1).

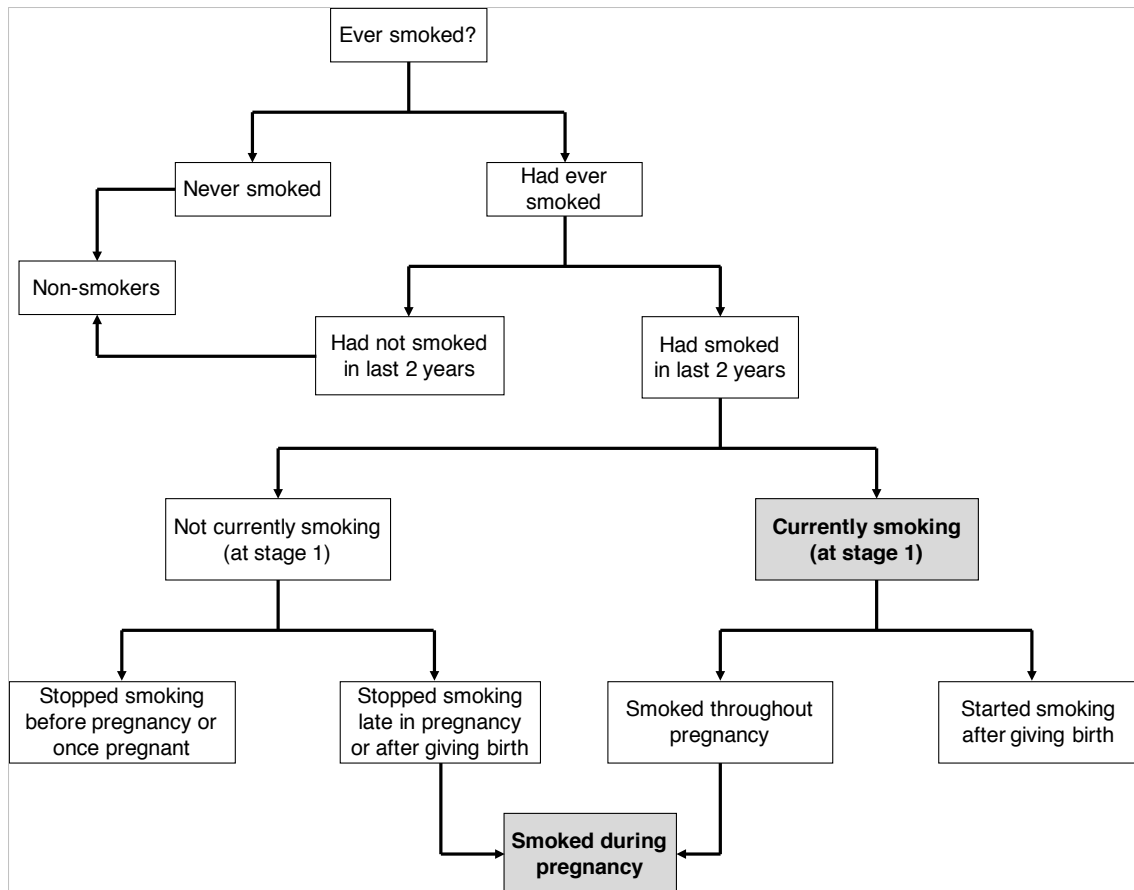


Figure. 3.1 Defining maternal smoking status

3.4.4 Individual Level: Knowledge and direct previous experience of breastfeeding

3.4.4.1 Awareness of the health benefits of breastfeeding

Awareness of the benefits of breastfeeding was assessed based on mothers' ('yes' or 'no') response to the question, "Are you aware of any health benefits in breastfeeding, either for the mother or the baby?"

3.4.4.2 Direct previous breastfeeding experience

To assess direct previous breastfeeding experience, the questionnaire first asked mothers whether the present baby was their first child. If not, they were then asked

whether they breastfed their most recent child and for how long. This DPhil research categorised their responses as follows: 'breastfed most recent child for 6 weeks or more', 'breastfed most recent child for less than 6 weeks', 'never breastfed most recent child', and 'no previous children'.

3.4.5 Family and social support level: Indirect experiences of breastfeeding

3.4.5.1 Knowing other women who breastfed their own babies

Mothers were asked whether they knew other mothers with young babies prior to giving birth to their own baby. Mothers who responded 'yes' were asked to choose one of the following responses: 'most of the other mothers they knew fed their own babies infant formula only', 'most breastfed only', 'most mixed fed their own babies', or 'unaware of how other mothers fed their own babies or does not know other mothers who breastfed their own babies'.

3.4.5.2 How mothers themselves were fed when they were babies

How mothers in this DPhil research were fed when they were babies was assessed based on their responses to the question, "Do you know whether you were breastfed or fed with infant formula when you were a baby?" Mothers were asked to choose one of the following: 'breastfed only', 'fed infant formula only', 'both breastfed and fed infant formula', or 'do not know'.

3.4.6 Local community level: Support with breastfeeding in hospital

Based on mothers' responses, the following factors were used to assess the nature of the support mothers received **while they were still in hospital**:

- Whether mothers had discussed feeding their babies during antenatal check-ups ('yes', 'no' or 'had no antenatal check-ups')
- Whether mothers felt that they received enough support in hospital to either breastfeed or feed their babies something else ('yes' or 'no')
- Whether mothers and their babies stayed beside each other all the time while in hospital ('yes' or 'no')
- Whether mothers were taught how to position their babies for breastfeeding ('yes' or 'no')
- Whether and how long after giving birth mothers received skin-to-skin contact with their babies ('yes, in the first hour', 'yes, after the first hour', or 'no')
- Whether mothers initiated breastfeeding in the first hour after delivery ('yes' or 'no')
- Whether mothers received help to initiate breastfeeding ('yes' or 'no')

3.4.7 Local community level: Support with breastfeeding at home

Based on mothers' responses, the following factors were used to assess the nature of the support mothers received **since the time they left hospital**:

- Whether mothers sought help from a voluntary organisation or community group that helps recent mothers with breastfeeding ('yes' or 'no')
- Whether mothers received help with infant feeding problems from a midwife or health visitor ('yes', 'no' or 'no feeding problems')

In the 1985-2000 stage 1 questionnaires, mothers were asked whether they were given free or reduced-price baby milks in hospital, or received a Bounty Bag of free baby products including milk while they were in hospital or at home. In the 2005 and 2010 questionnaires, mothers were asked instead whether they had ever seen or heard an advertisement for infant formula on television, on radio, in a magazine, or in a newspaper. This DPhil research used their ('yes' or 'no') responses to these questions to assess their exposure to the promotion of breast-milk substitutes.

3.4.8 Societal level: Legislation that protects the right to breastfeed in public

Mothers' awareness of legislation that protects their right to breastfeed in public places was assessed at stage 2 in 2005 and 2010 based on the question, "Are you aware of legislation protecting your right to breastfeed in public?" In 2005, this question was asked of mothers residing in Scotland only given that this was the only country in GB with any such legislation at that time. In 2010, the question was asked of mothers residing in all three GB countries. Therefore, mothers' responses were recoded as follows:

- Awareness of legislation in 2005 ('yes, living in Scotland, 'no, living in Scotland', or 'not living in Scotland')
- Awareness of legislation in 2010 ('yes' or 'no').

Additionally, mothers were assessed at stage 2 in 2010 for whether they had noticed signs in public places in their area that welcomed breastfeeding.

Table 3.4. Explanatory factors that were included in this DPhil research.

Level	Factors	1985	1990	1995	2000	2005	2010
Individual level	Sociodemographic						
	Age at delivery						
	Education						
	Mothers' socioeconomic status based on partner's occupation (SOC)						
	Mothers' socioeconomic status based on mother's occupation (NS-SEC)						
	Maternal employment status						
	Ethnicity						
	Partnership status						
	Country of residence						
	Health-related						
	Birthweight						
	Parity						
	Type of delivery						
	Length of stay in hospital or maternity centre						
	Baby was treated in a special care unit or with phototherapy						
	Smoked during pregnancy						
	Smoked postnatally						
	Awareness of health benefits of breastfeeding						
	Direct previous experience of breastfeeding						
	Whether breastfed most recent baby						

Key: Individual level Family & social support level Local community level Societal level Factor present Factor not present

Table 3.4 continued

Level	Factors	1985	1990	1995	2000	2005	2010
	Indirect breastfeeding experiences						
	Knowing how other women fed their own babies						
	Knowing how one was fed as a baby						
	Support in hospital						
	Discussed infant feeding during antenatal visit						
	Received enough support with infant feeding						
	Baby stayed beside mother while in hospital (rooming in)						
	Taught to position and attach the baby at the breast for breastfeeding						
	Had skin-to-skin contact with baby						
	Early initiation of breastfeeding						
	Received help to initiate breastfeeding						
	Support at home						
	Received help from voluntary organisation or community group						
	Received professional help with infant feeding problems at home						
	Received free or reduced-price milk in hospital or at home						
	Exposed to an advertisement for infant formula						
	Legislation protecting breastfeeding in public						
	Aware of legislation protecting the right to breastfeed in public						
	Noticed signs welcoming breastfeeding in public places						

Key: Individual level Family & social support level Local community level Societal level Factor present Factor not present

3.5 Statistical Analyses

3.5.1 Section introduction

The statistical analyses are presented in order of the research objectives that they address. To address objective 1, the six main research populations and all the included explanatory factors were analysed. Details of this analysis, including explanations of the population, factors and the statistics methods used, are presented first in section 3.5.2.

To address objectives 2, 3 and 4, the associations between explanatory factors and each of the four breastfeeding outcomes were analysed. Therefore, when presenting the analyses of objectives 2, 3 and 4, the explanations focus on breastfeeding initiation first, detailing the research populations, explanatory factors and statistical methods used. The explanations then focus on the analyses of breastfeeding continuation at one week, detailing any methodological differences with the analyses of breastfeeding initiation. An explanation of the analyses of breastfeeding continuation at six weeks follows, similarly detailing any methodological differences with the analyses of the previous breastfeeding outcomes. Finally, the analyses of breastfeeding in public are explained, highlighting any methodological differences with the previous breastfeeding outcomes. Figure 3.2 below shows an example of this analysis plan for breastfeeding initiation and continuation at one week.

All analyses were conducted using survey commands in Stata version 13 (StataCorp, 2013). Appropriate survey weights, as designed by and included with the data by the IFS team, were applied during analyses based on whether the research populations and factors were assessed at stage 1 or stage 2.

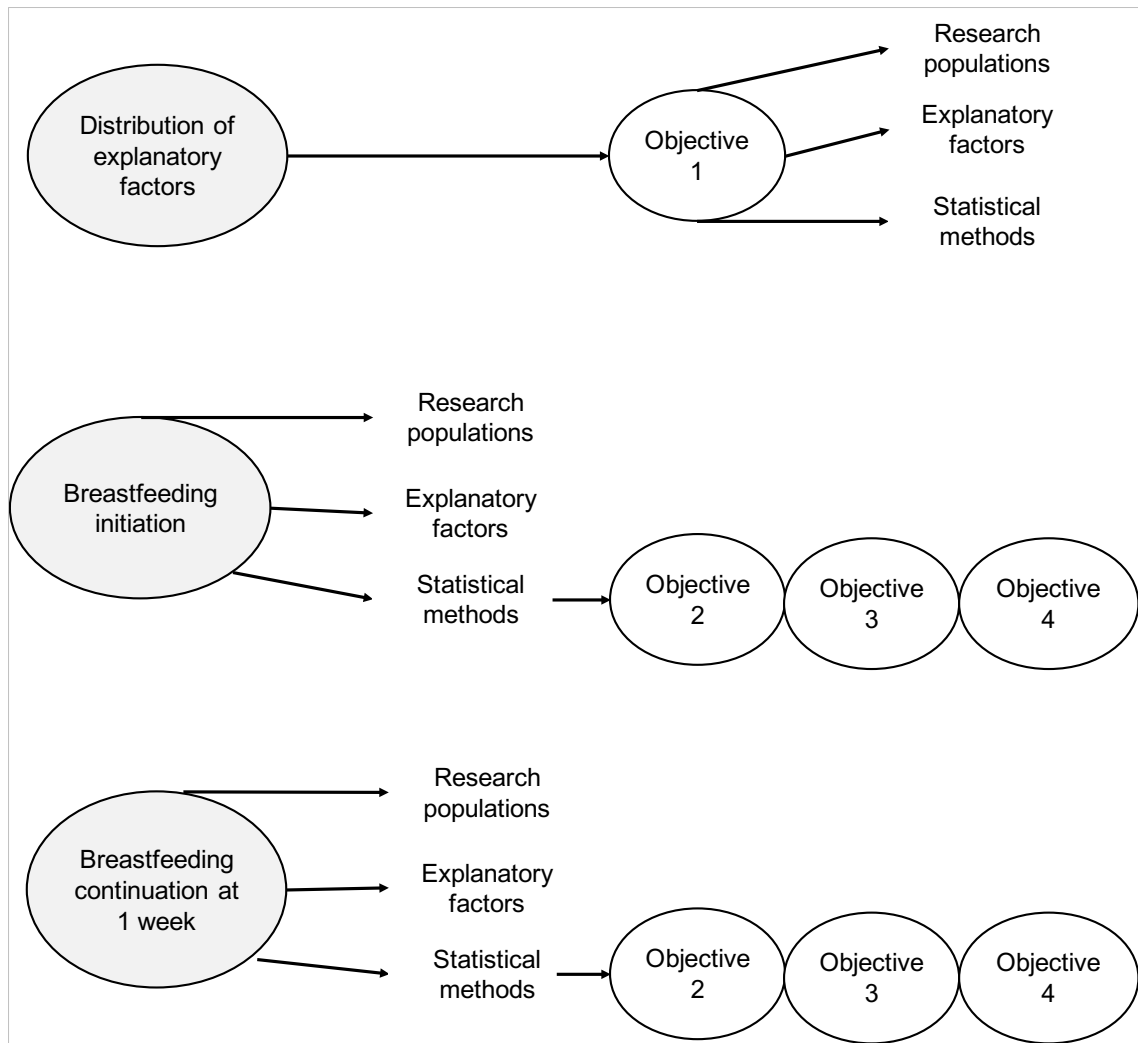


Figure. 3.2 Example of the presentation of the statistical analyses

3.5.2 Changes in the distribution of explanatory factors (Objective 1)

3.5.2.1 Research population and factors used

The first step in the statistical analyses was to describe and summarise the changes in the distribution of explanatory factors over the research period. This analysis used the main research populations (7,262-12,315 mothers), as well as all the explanatory factors listed in Table 3.4.

3.5.2.2 Summary analysis

Weighted proportions of mothers were calculated for each category of an explanatory factor, beginning with the sociodemographic factors in 1985. This was repeated using the health-related factors and subsequent groups of factors in 1985. The analysis was then repeated using the 1990 to 2010 surveys.

3.5.2.3 Test for linear trends

A test for linear trend was used to estimate whether the proportions of mothers in each category of the factors showed a statistically significant change at the 5% level ($P < 0.05$) from 1985 to 2010.

3.5.3 Analysis of breastfeeding initiation (Objectives 2, 3 and 4)

3.5.3.1 Research population and factors used

The main research populations were also used in the analysis of breastfeeding initiation. Some explanatory factors were excluded from this analysis.

- Whether mothers were taught to position and attach their babies for breastfeeding, had initiated breastfeeding in the first hour after birth, and received help to initiate breastfeeding were excluded because these factors were dependent on mothers' having already decided to initiate breastfeeding.
- Smoking postnatally, maternal employment status, support with breastfeeding at home and protective legislation were also excluded. These factors assessed mothers' experiences in the period since leaving hospital. These experiences could have happened at any point between then and when mothers received the stage 1 questionnaire when their babies were 4-10 weeks old. Therefore, it

would be difficult to establish whether these factors had a causal effect on mothers' having ever breastfed even once by the time of receiving the stage 1 questionnaire.

3.5.3.2 Univariable analysis (Objective 2)

The chi-square test and logistic regression were used to estimate the unadjusted associations between the included factors and breastfeeding initiation. For instance, in 1985, maternal age at delivery was tested on its own for an association with breastfeeding initiation using the chi-square test, and then logistic regression was used to estimate unadjusted odds ratios (ORs) and 95% confidence intervals (CIs). The category with the highest frequency of mothers across most survey years, for example 'age 30 or over', was used as the reference category for logistic regression. The 10% significance level was used in the univariable analysis to limit the risk of omitting factors that were significantly associated with breastfeeding initiation.

The chi-square test and logistic regression were repeated using the remaining factors in the sociodemographic group. Then, factors in the health-related and breastfeeding experience groups were tested, followed by factors in the 'support in hospital' group. The entire analysis was repeated using the 1990 to 2010 surveys.

3.5.3.3 Multivariable Analysis (Objective 2)

For each survey year, multivariable logistic regression was used to estimate the independent effect of each factor on breastfeeding initiation after adjusting for the effects of other factors. Factors that were associated with breastfeeding initiation in the univariable analysis ($P < 0.10$) were included in multivariable models. Given the large number of factors, multivariable models were fitted in stages according to level and

group, beginning with the individual level and sociodemographic factors. A more conservative P value of < 0.05 , estimated based on a Wald test, was used to determine which factors were removed from the multivariable models at each stage.

Individual level

Sociodemographic factors = model 1: All sociodemographic factors were simultaneously added and adjusted for in a single model. Using a series of Wald tests, factors that were not statistically significant ($P > 0.05$) were removed from this model, removing the factor with the largest P value first. The Wald test was repeated following the removal of each factor until only factors that were significantly associated with breastfeeding initiation ($P < 0.05$) remained in the model.

Health-related factors and previous breastfeeding experience + model 1 = model 2:

This model was simultaneously adjusted for significant factors in model 1, as well as health-related factors, and the previous breastfeeding experience factor. Similar to model 1, a series of Wald tests was used to successively remove factors that were not statistically significant ($P > 0.05$) until all remaining factors were significantly associated with breastfeeding initiation ($P < 0.05$).

Family and social support level

Knowing other women who breastfed, and how one was breastfed oneself as a baby

+ model 2 = model 3: This model was simultaneously adjusted for significant factors in model 2, as well as knowing other women who breastfed, and knowing how one was breastfed oneself as a baby. As above, factors that were not statistically significant ($P > 0.05$) were removed from this model successively until all remaining factors were significantly associated with breastfeeding initiation ($P < 0.05$).

Local community level

Support in hospital + model 3 = model 4 (final fully-adjusted model): This model was simultaneously adjusted for the significant factors in model 3, and factors related to support in hospital. Similar to the previous models, Wald tests were used to successively remove factors that were not statistically significant ($P > 0.05$) until only factors that were significantly associated with breastfeeding initiation ($P < 0.05$) remained in the model.

This modelling strategy was repeated for each survey year, resulting in six fully-adjusted final models (model 4). The aORs and 95% CIs were examined for the magnitude and direction of effects in each year.

3.5.3.4 Changes in the effects of factors on breastfeeding initiation from 1985 to 2010 (Objective 3)

In this DPhil research, the analyses of objective 3 (the assessment of changes in the effects factors on breastfeeding over time) and objective 4 (the estimation of population attributable fractions breastfeeding) were viewed as an opportunity to observe whether population changes that represented a generational shift, such as women's increasing participation in higher education, contributed to the changes in population-based breastfeeding rates. Therefore, the analyses of these objectives included the sociodemographic factors (excluding country of residence), smoking status and indirect breastfeeding experiences. Additionally, some factors were recoded in order to avoid comparing extreme categories. For example, partnership status was recoded as 'partnered' (whether married or cohabiting) and 'single', using 'single' as the new reference group. The aORs for recoded factors were obtained by refitting the final models for each survey year with the recoded factors included.

This DPhil research used a meta-analysis approach to examine whether the effects of factors on breastfeeding initiation had changed over the research period (objective 3). This approach addressed the challenge of combining data from multiple surveys with differing weights and confounding factors. A random-effects meta-analysis model was used under the assumption that there was some variability between the survey years (Johns et al., 2013). A further test for statistical heterogeneity was performed to ascertain whether any variability in the effects of factors over the research period was greater than can be expected by chance alone.

Random effects models were fitted using the factors specified above. For example, the aORs and 95% CIs for each of the recoded sociodemographic factors were obtained from model 4 of each of the six surveys. The resulting forest plot was inspected for substantial differences in effect size and direction of the sociodemographic factors over the six surveys. Following the same steps, a forest plot was produced for each smoking factor, and then each factor representing indirect breastfeeding experience.

Beyond the visual inspection of the forest plots, a formal test for statistical heterogeneity between the surveys was performed in the random-effects models. Firstly, the Cochran X^2 was estimated and a P value less than 0.10 suggested the presence of variability between the survey estimates beyond that due to chance (Higgins and Green, 2011)). Secondly, the I^2 was computed, which quantified the proportion of heterogeneity that was due to true variability in effects between surveys rather than chance. In deciding on the impact of heterogeneity on the meta-analysis, consideration was given the degree of overlap among confidence intervals from the forest plots and the extent of the P value and I^2 (Mulready-Ward and Hackett, 2014).

3.5.3.5 *Contribution of the prevalence of explanatory factors to breastfeeding initiation at the population level in 1985 to 2010 (Objective 4)*

Population attributable fractions (PAFs) were estimated to examine the extent to which breastfeeding initiation in each survey year was attributable to the presence of selected factors in the childbearing population. The PAF was calculated as (Rockhill et al., 1998):

$$\left[\frac{OR-1}{OR} \right] \times P$$

In this case, OR referred to the (unadjusted or adjusted) odds ratio for initiating breastfeeding, and P referred to the prevalence of an explanatory factor among those who initiated breastfeeding. When estimating the PAFs, there was an assumption of a causal relationship between breastfeeding initiation and the explanatory factors under examination (Rockhill et al., 1998).

The ORs for each sociodemographic, smoking and breastfeeding experience factor were obtained from model 4 of each of the six surveys. For each factor, the category with the lowest aOR, which might represent the OR when the factor is absent in those who initiated, was used as the reference category. Using the formula shown above, PAFs were estimated using the ORs and the weighted proportions of mothers (prevalence) in each category who initiated breastfeeding.

3.5.4 Analysis of breastfeeding continuation at one week

To address objectives 2-4, the statistical methods used to analyse breastfeeding initiation were repeated for breastfeeding continuation at one week. However, the research population and explanatory factors analysed differed, as described below.

3.5.4.1 Research populations used

The previous analyses of the effects of factors on breastfeeding initiation identified factors associated with the likelihood of initiating breastfeeding. It is important to be able to isolate the effects of factors on the likelihood of maintaining breastfeeding to one week given successful initiation. Therefore, the main research populations were restricted to those mothers who had successfully initiated breastfeeding. The restricted population sizes ranged from 4,201-9,821 mothers who gave birth to singletons in hospital in GB in one of the survey years in 1985 to 2010.

3.5.4.2 Explanatory factors used

Only factors that had a clear occurrence prior to breastfeeding continuation at one week were included in this analysis. These included whether mothers were taught to position and attach their babies for breastfeeding, had initiated breastfeeding in the first hour after birth and received help to initiate breastfeeding. As a result, smoking postnatally, maternal employment status, support in hospital and protective legislation (asked at stage 2) were excluded.

3.5.5 Analysis of breastfeeding continuation at six weeks

The statistical methods used to analyse breastfeeding continuation at one week were repeated for breastfeeding continuation at six weeks. However, the research population and explanatory factors analysed differed, as described below.

3.5.5.1 Research populations used

The previous analyses of breastfeeding continuation at one week identified factors associated with the likelihood of maintaining breastfeeding to one week. The analysis of breastfeeding continuation at six weeks sought to isolate the effects of factors on the likelihood of maintaining breastfeeding to six weeks, given that mothers had successfully breastfed at one week. Therefore, the research populations analysed for breastfeeding continuation at six weeks were first restricted to mothers who were still breastfeeding at one week.

Recall that babies needed to be aged six weeks or older at the time they were last fed breast milk to be counted as still breastfeeding at six weeks. Given that the stage 1 questionnaire was sent out when babies were 4-10 weeks, some babies were younger than six weeks when their mothers responded. Consequently, the research populations were further restricted to mothers of babies who were at least six weeks old by the time their mothers received the stage 1 questionnaire. This prevented the misclassification of babies younger than six weeks as not breastfeeding at six weeks. The final research populations analysed for breastfeeding continuation at six weeks ranged in size from 3,552-7,396 mothers who gave birth to singletons in hospital in GB in one of the survey years in 1985-2010, and whose babies were at least six weeks old at stage 1.

3.5.5.2 Explanatory factors used

The analysis of breastfeeding continuation at six weeks included all the factors included in the individual level to the local community support level. Factors related to the protection of breastfeeding in public were excluded as they were first assessed by the stage 2 questionnaire at 4-6 months after birth.

3.5.6 Analysis of breastfeeding in public

The analysis of breastfeeding in public differed from the previous analyses, largely because it was assessed at stage 2 of the IFS when the index babies were 4-6 months old. This resulted in the use of research populations that were smaller and more selective than the main research populations. Additionally, breastfeeding in public was not assessed in the 1985 survey, and no data were available in the 1990 dataset despite the presence of a question about breastfeeding in public in the stage 2 questionnaire for this survey year. Therefore, the 1985 and 1990 surveys were excluded from the analysis of breastfeeding in public.

3.5.6.1 Research population and explanatory factors used

Recall that breastfeeding in public was assessed based on the question, “Since your baby was born have you ever fed him or her in a public place?” This means that mothers may have breastfed in public at any point leading up to the time when they received the stage 2 questionnaire at 4-6 months. It was assumed that mothers would have had to be breastfeeding during this period to have breastfed in public. To identify mothers who were breastfeeding up to the time of stage 2, the main research populations were first restricted to mothers who were present at stage 2 and still breastfeeding.

Firstly, breastfeeding at stage 2 (at least 4 months) was assessed using the question, “Thinking about the milk that your baby has received over the last 7 days, has he or she had only breast milk, only infant formula or breast milk and infant formula?” Mothers were counted as still breastfeeding if they responded with either ‘only breast milk’ or ‘breast milk and infant formula’. Mothers who responded ‘only infant formula’ were then asked whether they had ever given breast milk or breastfed at least once. If they responded ‘yes’, they were then asked, “How old was your baby when he/she was last given breast milk or you put them to your breast?” The responses were grouped as age in weeks. Breastfeeding for at least four months was derived by counting all mothers who were still breastfeeding and mothers who had last given breast milk or breastfed when their baby was aged 17 weeks or older.

Secondly, not all babies had reached four months of age by the time their mothers received the stage 2 questionnaire. Consequently, the research populations were restricted further to mothers of babies who were at least four months old by the time their mothers received the stage 2 questionnaire. This prevented the misclassification of babies younger than four months as not breastfeeding at four months.

Based on the above restrictions, and the exclusion of data from the 1985 and 1990 surveys, the research populations analysed for breastfeeding in public ranged from 1,679-4,275 mothers who gave birth to singletons in hospital in GB in one of the survey years in 1995 to 2010, and who were still breastfeeding their babies at four months. All factors were included in this analysis.

3.5.6.2 Statistical methods used

Breastfeeding in public was analysed using the same statistical methods as the previous outcomes, with the exception that only objective 2 (the estimation of the independent effects of each factor on breastfeeding in public in 1995 to 2010) was addressed.

4 Changes in the distribution of explanatory factors among the childbearing population in GB: 1985 to 2010

4.1 Chapter introduction

This chapter is the first of five results chapters. It presents the results of the statistical analyses that addressed objective 1, which was to describe the changes in the distribution of explanatory factors over the research period. This analysis used the main research populations of mothers who responded to the stage 1 questionnaire. The number of mothers ranged from 7,262 in 1985 to 12,315 in 2010 (see Table 3.3, section 3.2). The results are presented according to the order of the breastfeeding behaviours conceptual model (Figure 2.1, section 2.4), beginning with the sociodemographic factors. The chapter concludes with a summary in section 4.7. Tables 4.1.A to 4.1.E, which follow section 4.7 (pages 80-88), show the weighted proportions of each factor in each survey year.

4.2 Sociodemographic factors

Figure 4.1 shows the proportion of mothers in each of the four categories of age at delivery from 1985 to 2010. The proportion of mothers who were 30 or over at delivery increased markedly over time from 26.7% in 1985 to 47.7% in 2010, while the proportion of mothers who were younger than 30 declined (linear trend $P < 0.001$). Given that the proportions are weighted to account for non-response, this trend indicates a considerable increase in the average age of childbearing over the research period.

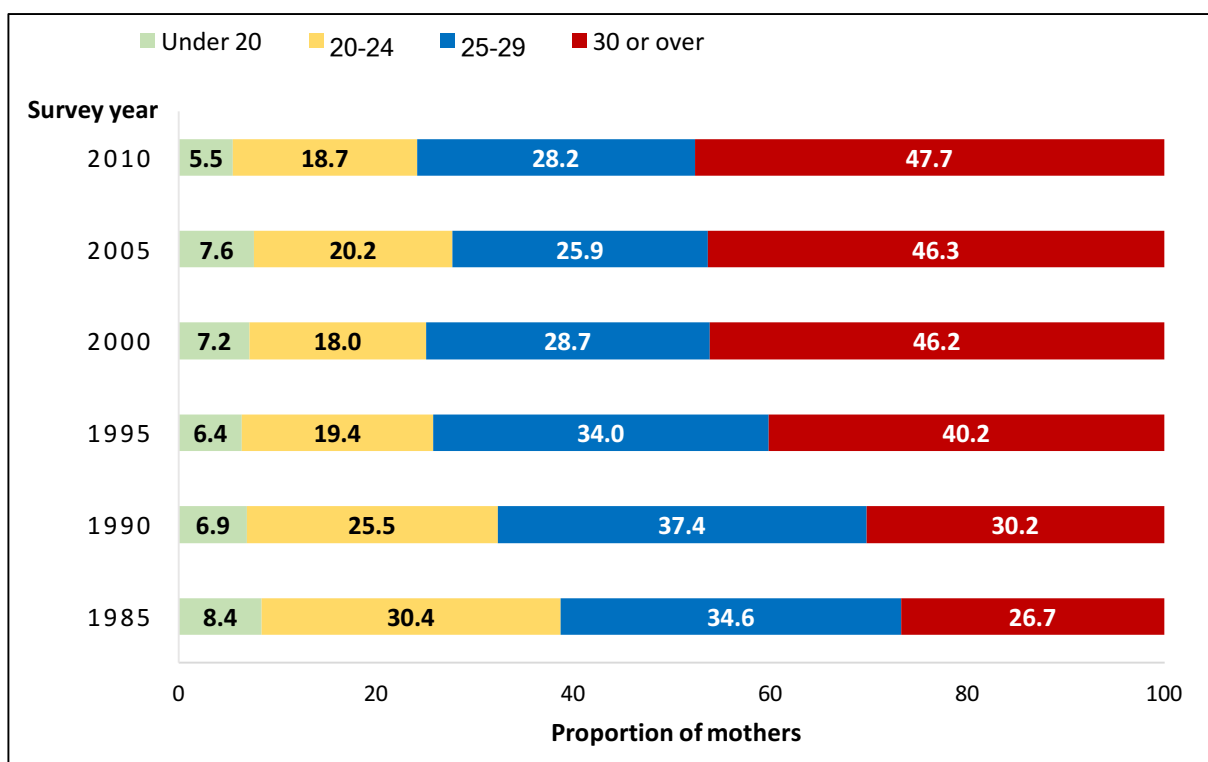


Figure 4.1 Proportion of mothers by age at delivery, GB, 1985 to 2010

Figure 4.2 shows the changes in the proportion of mothers according to their level of education from 1985 to 2010. The proportion of mothers who completed full-time education over age 18 increased from 13.8% in 1985 to 50.8% in 2010, while the proportion of mothers who completed at 18 or younger declined (linear trend $P < 0.001$).

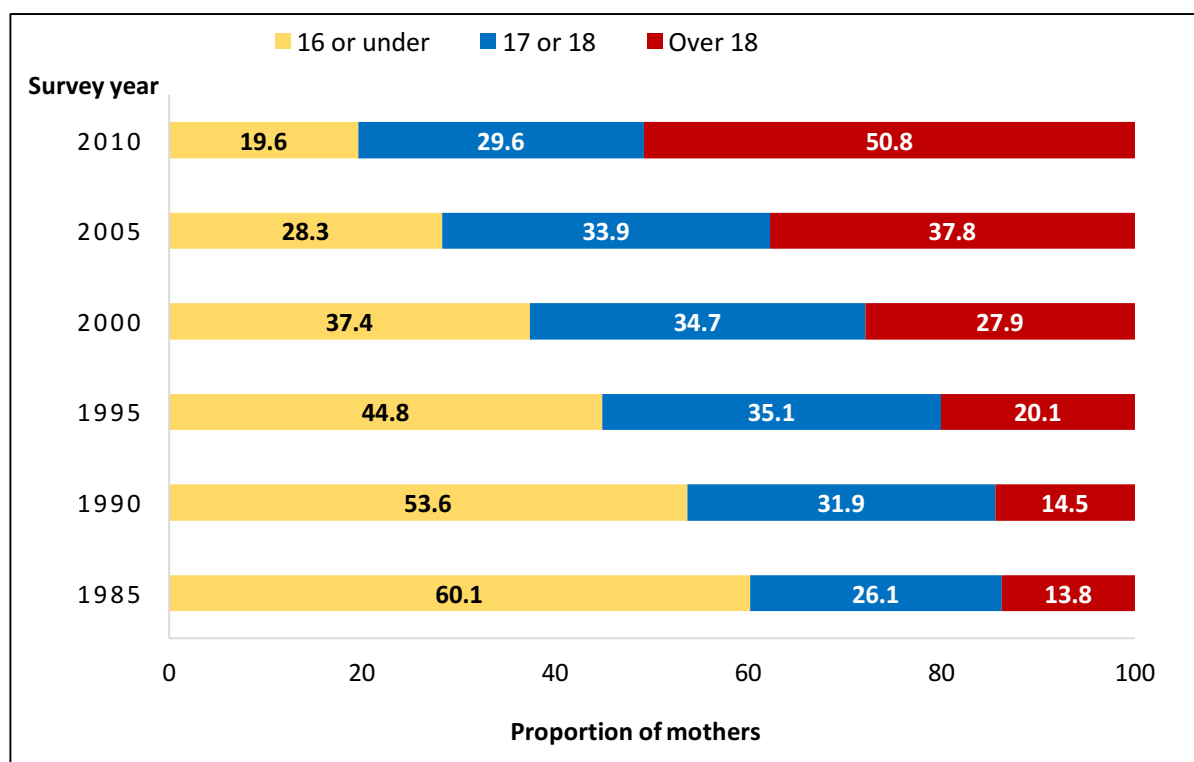


Figure 4.2 Proportion of mothers by education level, GB, 1985 to 2010

Table 4.1.A (page 80) shows that, compared to other socioeconomic groups, there was an increase in the proportion of mothers in the managerial and professional socioeconomic group from 5.8 % in 1985 to 6.7% in 1995 (SOC; linear trend $P=0.08$), and from 29.2% in 2000 to 34.6% in 2010 (NS-SEC; linear trend $P<0.001$). About 20% to 30% of mothers were assigned to the skilled-manual group in 1985 to 1995 based on their husband's occupation; although by 1995, a similar proportion of mothers were also assigned to the intermediate group, which includes clerical, service and technical occupations. A disproportionately higher percentage of mothers were unclassified in 1985 to 1995 compared to 2000 to 2010, which may be due to the inclusion of single mothers and those who did not register a partner in the 'unclassified' socioeconomic group in 1985 to 1995.

Figure 4.3 shows the changes in the proportion of mothers by their employment status at stage 1 (4-10 weeks) in each survey year. In 1985, most mothers (82.4%) had stopped doing paid work after giving birth to their baby. At the same time, few mothers were on maternity leave, whether paid (5.7%) or unpaid (6.6%). By 1990, the proportion of mothers on paid maternity leave almost quadrupled to 21.1% and considerably fewer mothers had stopped doing paid work (65.7%). By 2010, 57.1% of mothers were on paid maternity leave.

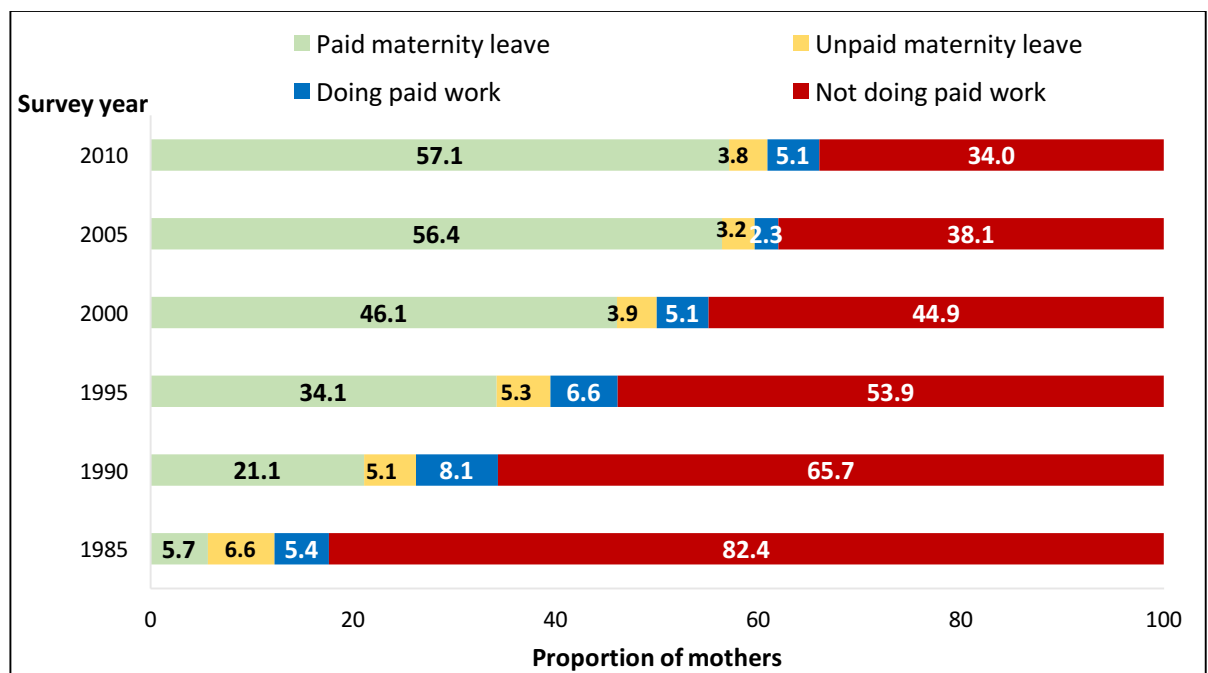


Figure 4.3 Proportion of mothers by employment status at stage 1, GB, 1985 to 2010

Figure 4.4 shows the changes in the proportion of mothers according to their partnership status from 1985 to 2010. In 1985, about eight out of ten mothers (80.7%) were married while the remainder were either cohabiting with a partner (11.1%) or single (8.2%). By 2010, marriages declined to 56.4% as the proportion of mothers who

were cohabiting more than trebled to 28.7%, and the proportion who were single rose to 15%. There was also a significant increasing trend over time for single status as compared to married or cohabiting status (linear trend $P < 0.001$).

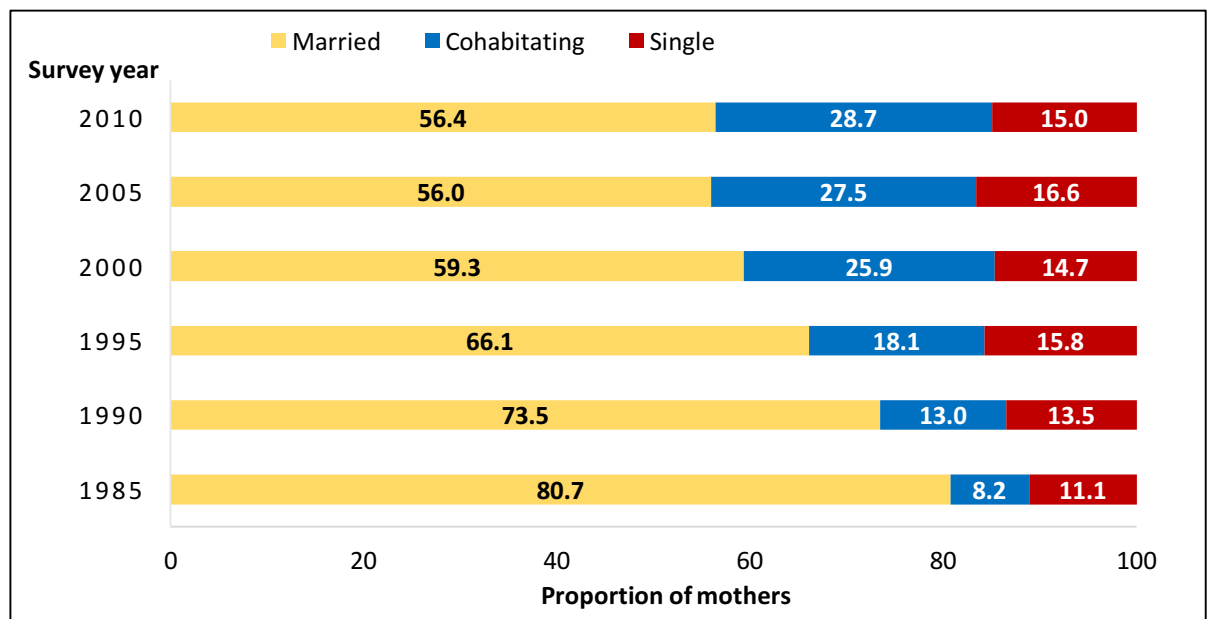


Figure 4.4 Proportion of mothers by partnership status, GB, 1985 to 2010

Figure 4.5 shows the changes in the proportion of mothers according to their ethnicity from 2000 to 2010. Over the 10-year period, there was an increase in the proportion of mothers who were of BME origin compared to white mothers, rising from 6.9% in 2000 to 14.1% in 2010 (linear trend $P < 0.001$).

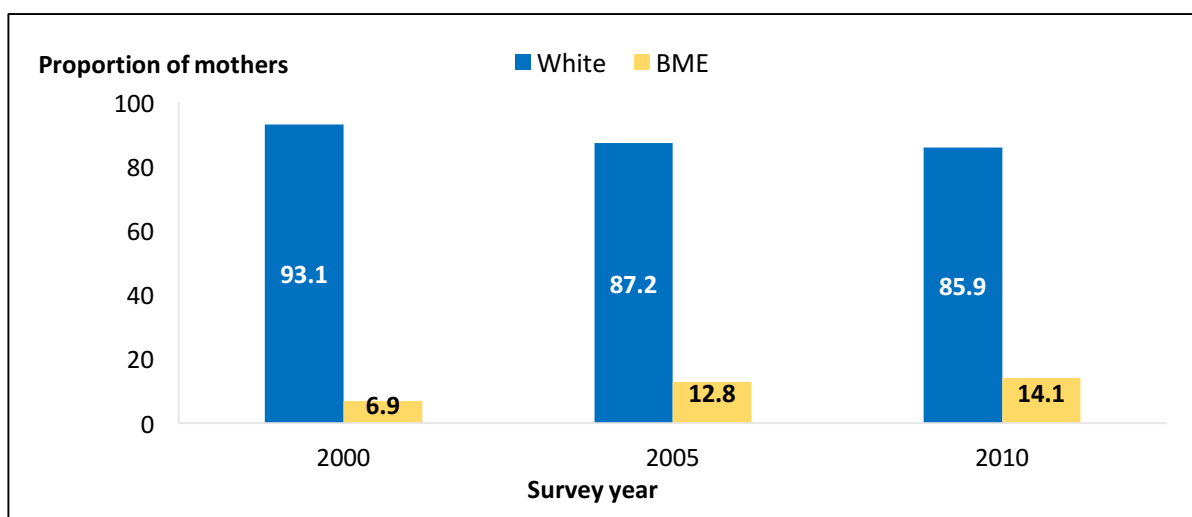


Figure 4.5 Proportion of mothers by ethnicity, GB, 2000 to 2010.

Note: Ethnicity was not assessed in the 1985 to 1995 surveys.

4.3 Health-related factors

Figure 4.6 shows the changes in the distribution of 'baby's birthweight' from 1985 to 2010. The prevalence of low birthweight remained relatively unchanged from 5.3% in 1985 to 5.0% in 2010. At the same time, there was some evidence of an increase in the prevalence of average birthweight. For instance, the proportion of mothers who gave birth to a baby weighing 3.5 kg or more increased from 37.7% in 1985 to 44.1% in 2010 (linear trend $P < 0.001$).

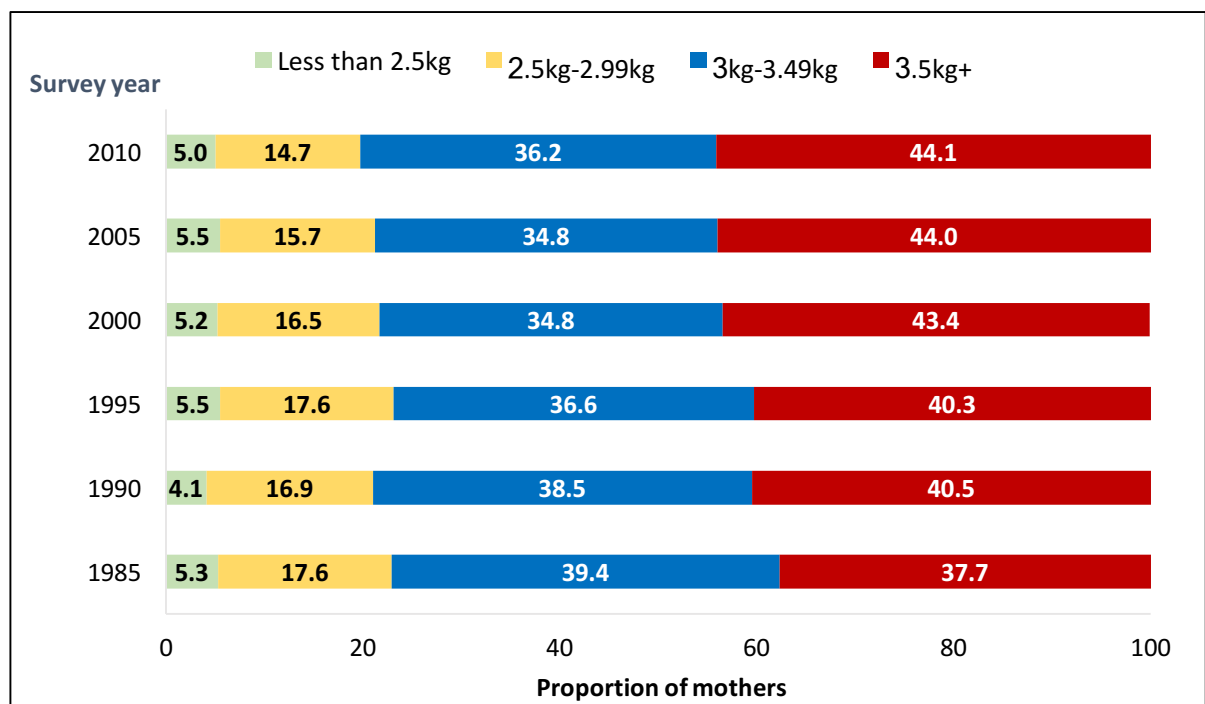


Figure 4.6 Distribution of baby's birthweight, GB, 1985 to 2010.

Figure 4.7 shows the changes in the proportion of mothers within each parity group from 1985 to 2010. The proportion of mothers who had given birth to their first baby increased from 45.7% in 1985 to 52.9% in 2010 (linear trend $P < 0.001$). At the same time, there was a considerable decline in the proportion of mothers who had three or more children (from 21.3% in 1985 to 14.2% in 2010), and there was no real change in the proportions with two children (33% in 1985 and 32.9% in 2010).

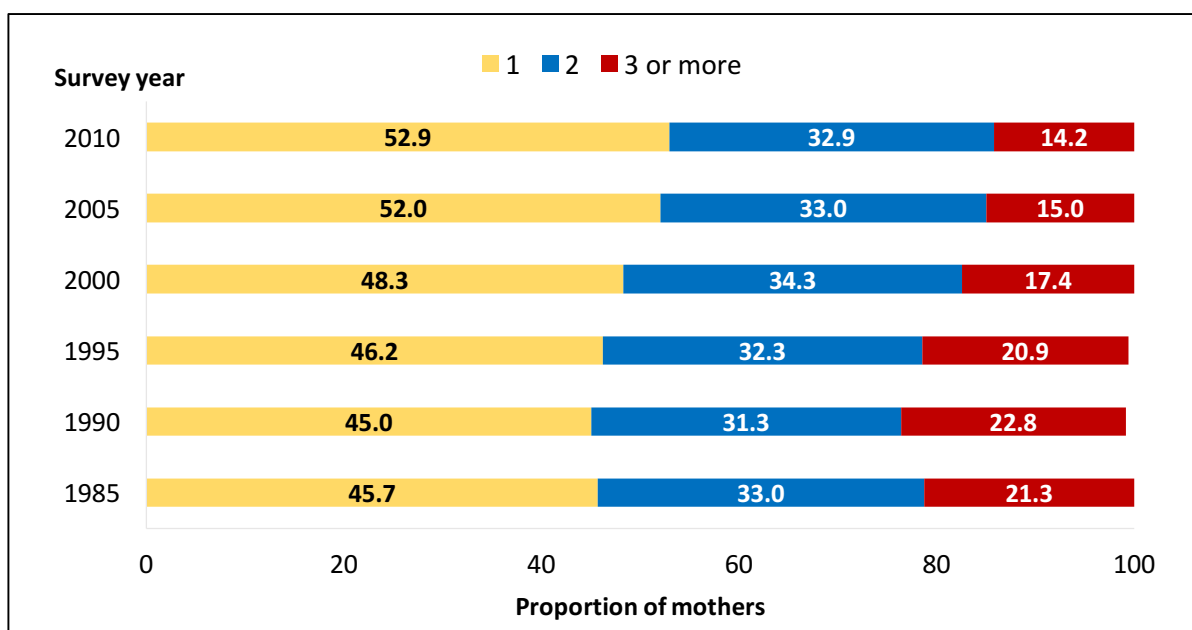


Figure 4.7 Proportion of mothers by number of children, GB, 1985 to 2010.

Figure 4.8 shows the changes in the proportion of mothers according to the type of delivery they had. Collectively, most mothers in each survey year had a vaginal birth; however, there was a considerable increase over time in the proportion of mothers who had a Caesarean section, doubling from 10.9% in 1985 to 23.3% in 2010 (linear trend $P < 0.001$).

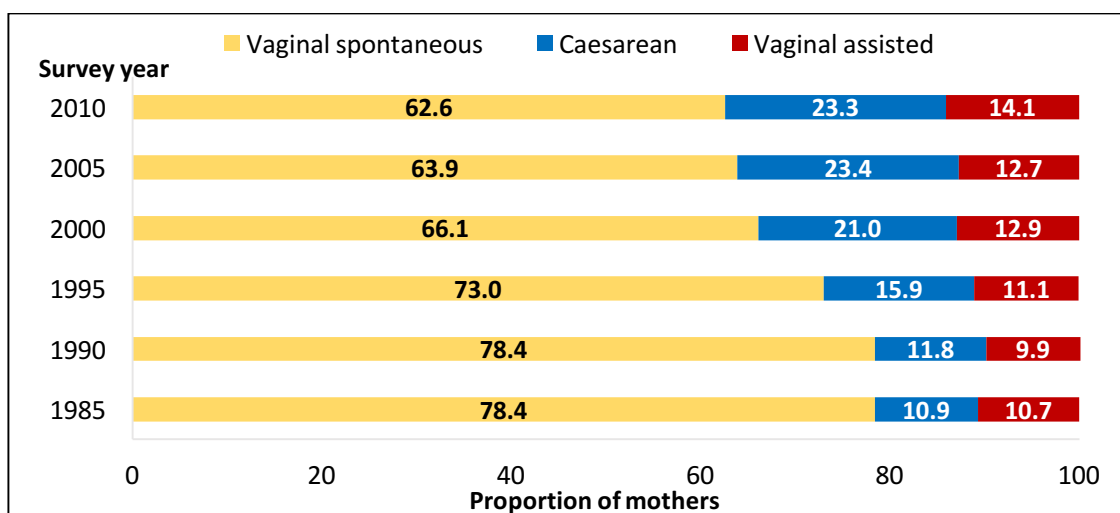


Figure 4.8 Proportion of mothers by type of delivery, GB, 1985 to 2010

Figure 4.9 below shows the changes in the proportion of mothers according to their length of stay (LOS) in a hospital, midwife-led unit or birth centre following the birth of their baby. The findings indicate a steady decline in the duration of length of stay over the research period such that by 2010, 70% of mothers had stayed for two days or less compared to 33.5% in 1985 (linear trend $P < 0.001$).

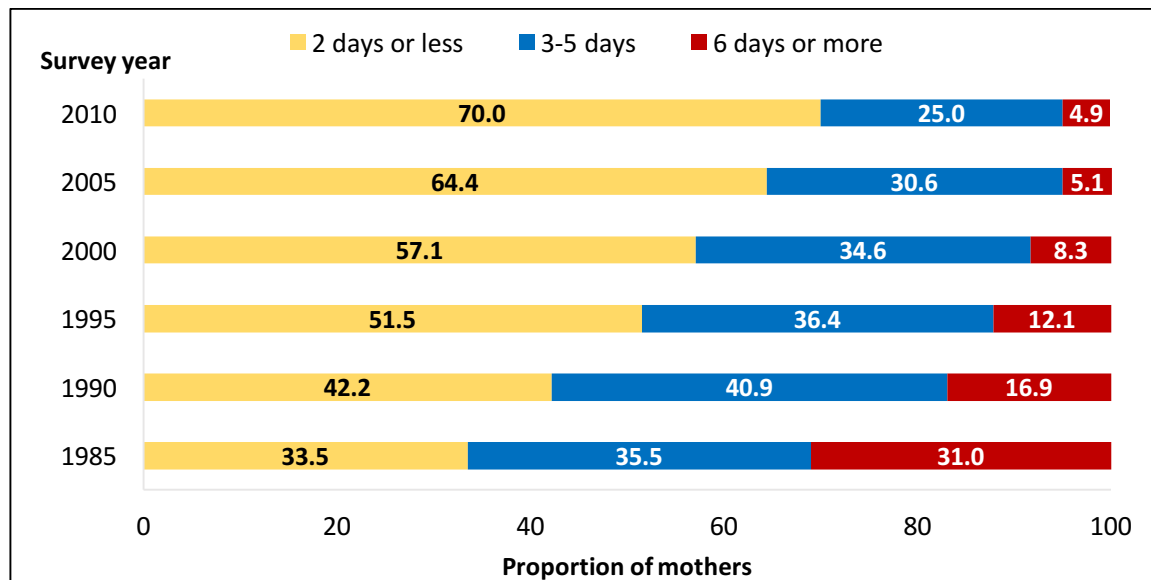


Figure 4.9 Proportion of mothers by LOS, GB, 1985 to 2010

Figure 4.10 shows the changes in the distribution of mothers according to whether they smoked during pregnancy. It indicates that over time, considerably fewer mothers had smoked during pregnancy: 13.2% of mothers reported smoking during pregnancy in 2010 compared to 30.2% in 1985. It also shows an increase in the proportion of mothers who had not smoked in the two years preceding each survey year (non-smokers), rising from 58.7% in 1985 to 83.9% in 2010.

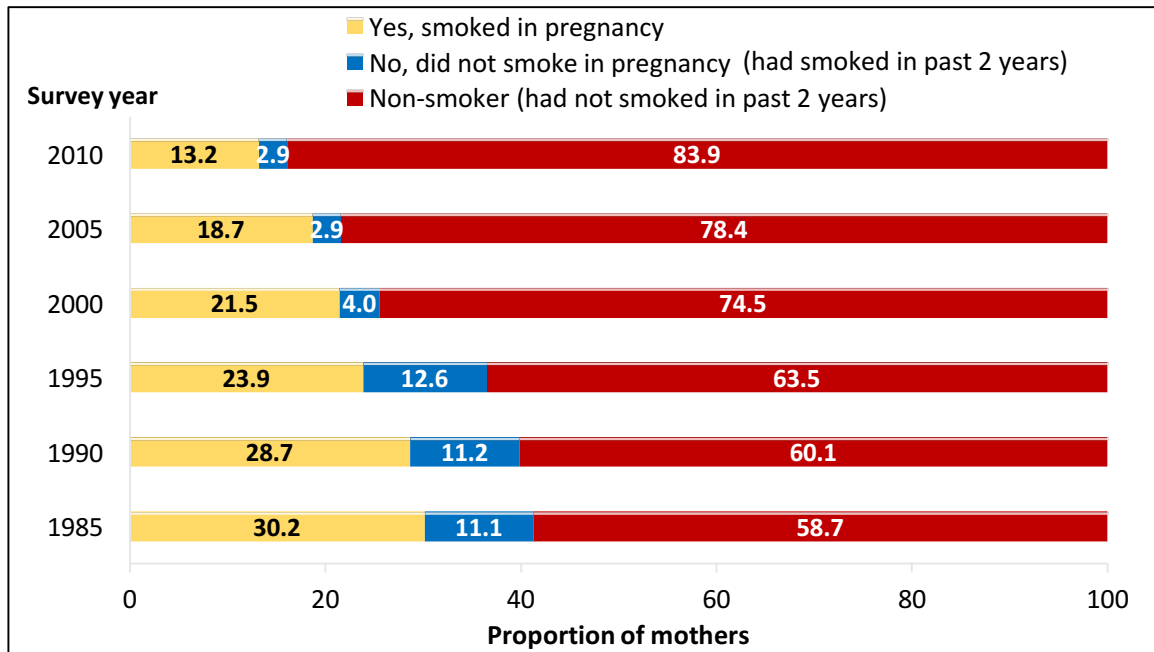


Figure 4.10 Proportion of mothers by smoking status during pregnancy, GB, 1985 to 2010

Figure 4.11 below shows that from 1985 to 2010, the proportion of mothers who either started or continued to smoke in the six weeks following the birth of their baby decreased steadily from 33.4% to 14.4%, respectively (linear trend $P < 0.001$).

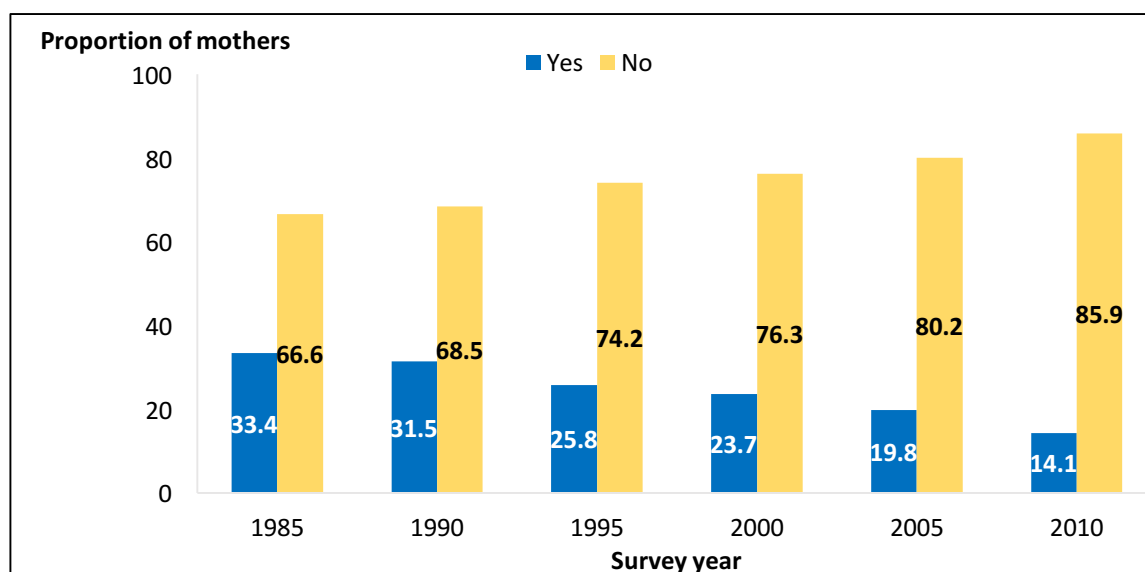


Figure 4.11 Proportion of mothers by smoking status postnatally, GB, 1985 to 2010

Table 4.1.B (pages 82-83) shows that the proportion of mothers whose baby was treated in special care or with phototherapy initially declined from 21.3% in 1985 to 12.4% in 1990. Thereafter, the proportion of these mothers remained largely constant over time at around 11%-12% (linear trend $P < 0.001$).

4.4 Direct previous experience of breastfeeding

Over the research period, there was an increase in the proportion of mothers for whom the index baby was their first child (linear trend $P < 0.001$), reflecting the changes in parity shown previously in Figure 4.7. Figure 4.12 below shows that, among mothers who had more than one child, the proportion who did not breastfeed their most recent child increased from 32.6% in 1985 to 44.1% in 1990, before declining to 27.8% by 2010. There was also a general decline in the proportions of mothers who breastfed their most recent child for less than six weeks (21.5% in 1985 to 14.4% by 2010), and a general

increase in those who breastfed their most recent child for six weeks or more (46% in 1985 to 57.8% by 2010).

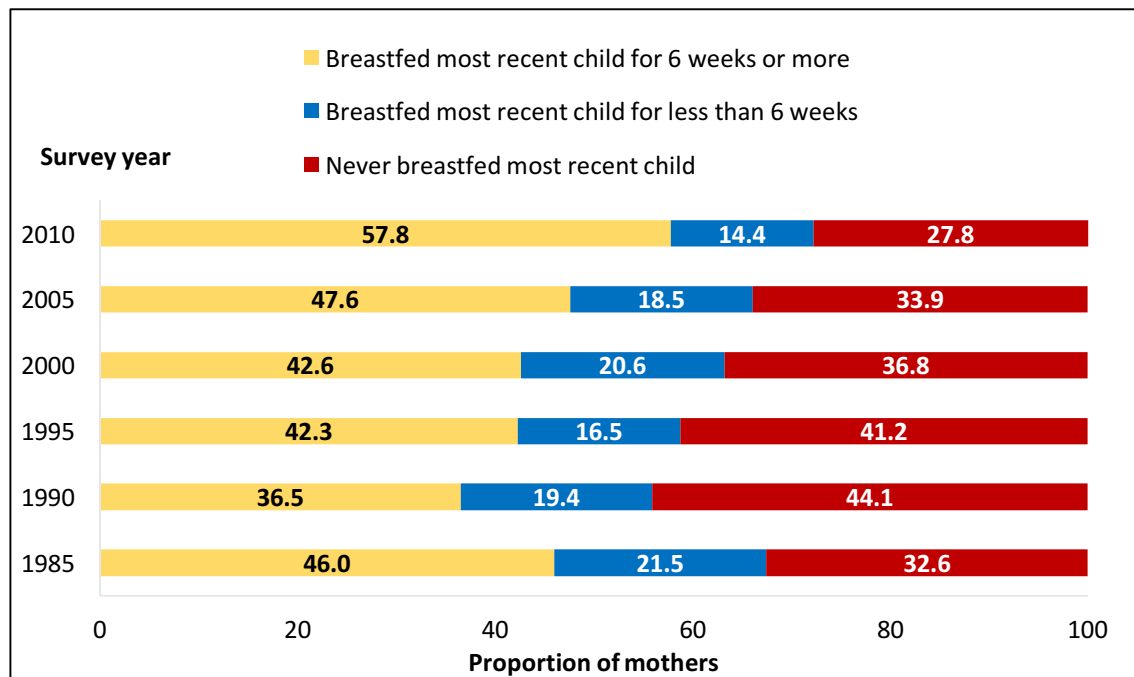


Figure 4.12 Proportion of mothers according to whether they breastfed their most recent child, GB, 1985 to 2010

4.5 Indirect experiences of breastfeeding

Figure 4.13 below shows the changes over time in the proportion of mothers according to their knowledge of other women's infant feeding behaviours. It indicates that from 1990 to 2005, most mothers (46.9%) reported knowing mostly women who formula fed their own babies. By 2010, most mothers (41%) reported knowing mostly women who mixed fed their own babies.

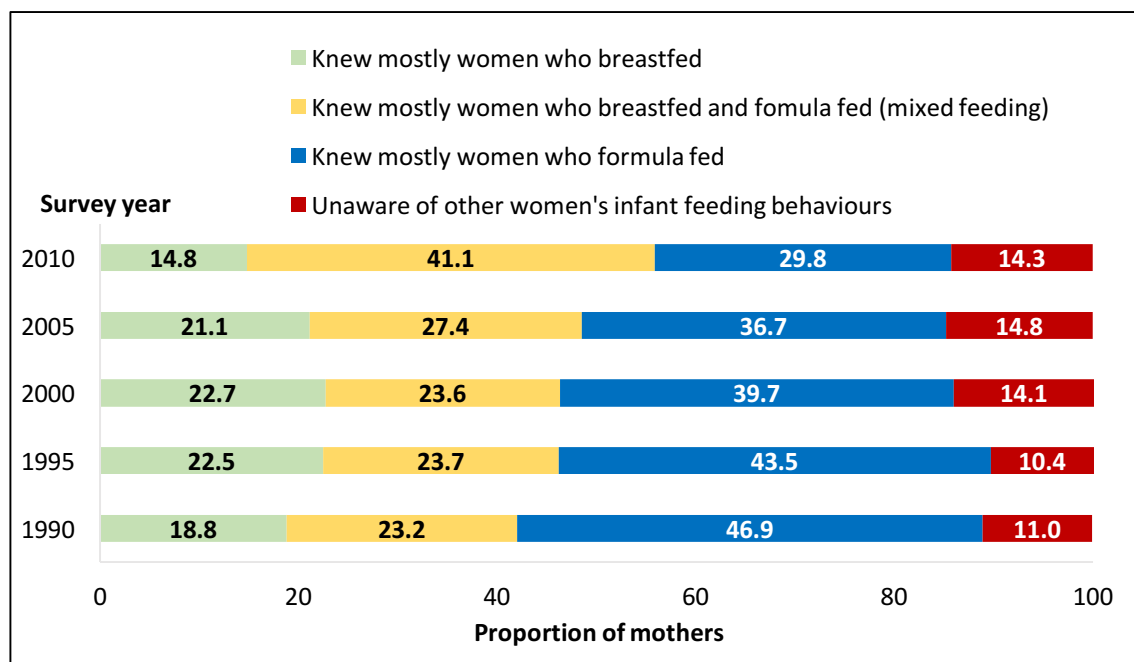


Figure 4.13 Proportion of mothers according to their knowledge of other women's infant feeding behaviours, GB, 1990 to 2010

Note: This factor was not assessed by the IFS in the 1985 survey.

Figure 4.14 shows the changes in the proportion of mothers according to how they themselves were fed as a baby. In 1985, most mothers (43.3%) had been exclusively formula fed when they were a baby. This proportion rose to 52.4% in 2000 before declining to 37.7% in 2010. Collectively, by 2010, most mothers had been fed some breast milk when they were a baby: 31% were exclusively breastfed and 21.8% were mixed fed.

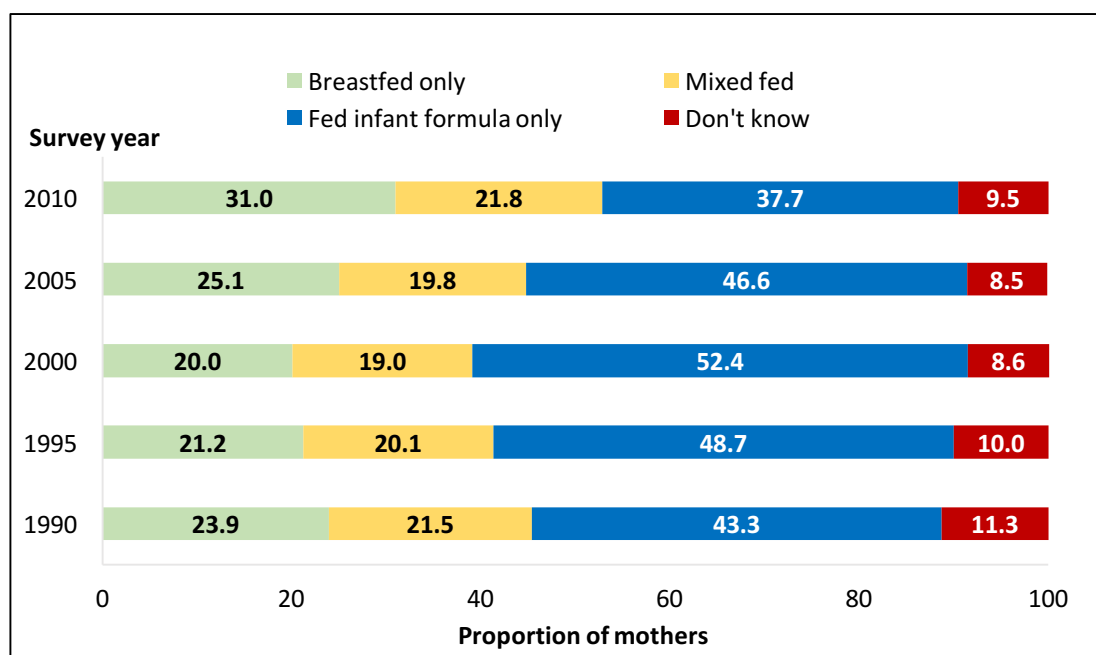


Figure 4.14 Proportion of mothers by how they themselves were fed as a baby, GB, 1990-2010

Note: This factor was not assessed by the IFS in the 1985 survey.

4.6 Support with breastfeeding in hospital and at home

Table 4.1.D (pages 85-86) shows that from 1985 to 2000, almost all mothers (95.8% to 94.6%) reported feeling that they received enough help with feeding their baby while in hospital. In 2005 and 2010, the proportion of these mothers fell to 76.8% and 75.7%. The proportion of mothers who discussed feeding their baby during antenatal check-ups also increased from 41.5% in 1985 to 76% in 2010 (linear trend: $p < 0.001$). The proportion of mothers who stayed in the same room with their baby throughout their hospital stay (also known as 'rooming-in') rose considerably from 48.2% in 1985 to 90.3% in 2010 (linear trend: $p < 0.001$). In 2005 and 2010, most mothers (75.6% and 57.5%) reported being taught how to position and attach their baby at the breast for breastfeeding while they were in hospital. In the same survey years, 72.2 % and 81.2%

of mothers reported having skin-to-skin contact with their baby within the first hour after giving birth (linear trend value: $p < 0.001$). Over time, there was a considerable increase in the proportion of mothers who initiated breastfeeding within the first hour after delivery (from 59% in 1985 to 77% in 2010), and a marginal rise in the proportion who received help to do so (from 50.5% in 2000 to 56.8% in 2010) (linear trend: $p < 0.001$).

Table 4.1.D also summarises the changes in the proportion of mothers based on the support they may have received since leaving the hospital. In each survey year, few mothers reported receiving help from a voluntary organisation or community group that helps recent mothers, although the proportion reporting such help increased steadily over the study period from 4.5% in 1985 to 17.2% in 2010 (linear trend: $p < 0.001$). Additionally, in each survey year most mothers reported not having any problems with feeding their baby at home. Among those who experienced problems, most reported receiving help from a health visitor or midwife, although the proportion remained constant over time.

In 1985 and 2000, 43% of mothers reported receiving free or reduced-price milks after they had given birth in hospital; this proportion fell to 11.5% by 2000. In 2005 62.2% of mothers reported being exposed to an advertisement for infant formula. This proportion increased to 89.2% by 2010. These trends were also statistically significant (linear trend: $P < 0.001$). There are no results for the survey years 1990 and 1995: there is no data available in the 1990 survey database, although mothers were asked whether they received free or reduced-price in hospital; and data in the 1995 survey database was first collected at stage 2 when babies were four to six months old.

4.7 Support for breastfeeding in public

Table 4.1.E (page 88) also shows the proportion of mothers according to their awareness of legislation protecting their right to breastfeed in public. Recall from previous chapters that the Breastfeeding etc. (Scotland) Act, which protects the right to breastfeed a child younger than two years in public, was introduced in Scotland in 2005 ahead of the introduction of the Equality Act in England and Wales in 2010. Therefore, awareness was assessed in 2005 among mothers residing in Scotland only. Among these mothers, about twice as many (6.3%) were aware of the existence of the Breastfeeding etc. (Scotland) Act as those who were unaware (3.6%). In 2010, 48.6% of mothers in GB were aware of either the Breastfeeding etc. (Scotland) Act or the Equality Act compared to 47.4% who were unaware. A brief analysis of the 2010 data by country of residence showed that 76.3% of mothers from Scotland were aware of either protective legislation as compared to 49.1% of mothers from England and Wales. Also in 2010, 66% of mothers in GB reported noticing a sticker or leaflet in a public place welcoming breastfeeding.

4.8 Chapter summary

The results presented in this chapter show marked changes in the distribution of explanatory factors among the research populations from 1985 to 2010. Specifically, there were statistically significant increases in the proportion of mothers with the following characteristics: aged 30 or over; full-time education beyond age 18; being on paid maternity leave in the first six weeks after giving birth; being in the highest socioeconomic groups; being of BME origin; and cohabiting with a partner. Additionally, there was considerable progress in the support that mothers received during the

perinatal and early postnatal periods. For instance, more mothers were taught to position and attach their babies at their breast for breastfeeding, and more mothers initiated breastfeeding within the first hour after giving birth. These changes may be indicative of a generational shift in the childbearing population of GB, especially in terms of women's engagement with society (outside the home) and their decisions about infant feeding. Such changes are likely to have influenced breastfeeding behaviours over the research period, and are discussed in detail in chapter 9. The next chapter, chapter 5, considers the associations between these population changes and women's practice of breastfeeding initiation over time.

Table 4.1.A Changes in the distribution of sociodemographic factors among the main research populations, GB, 1985 to 2010

<i>Research populations (n)</i>	1985		1990		1995		2000		2005		2010	
	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n	%	n	%	n	%
Age at delivery												
Under 20	767	(8.4)	634	(6.9)	516	(6.4)	582	(7.2)	635	(7.6)	493	(5.5)
20-24	2,289	(30.4)	2,024	(25.5)	1,415	(19.4)	1,344	(18.0)	1,749	(20.2)	1,884	(18.7)
25-29	2,400	(34.6)	2,762	(37.4)	2,358	(34.0)	2,067	(28.7)	2,405	(25.9)	3,422	(28.2)
30 or over	1,787	(26.7)	2,146	(30.2)	2,743	(40.2)	3,359	(46.2)	4,947	(46.3)	6,468	(47.7)
Missing	19	0.3	18	0.2	15	0.2	16	0.2	41	0.4	48	0.4
Education level												
16 or under	4,544	(60.1)	4,174	(53.6)	3,173	(44.8)	2,790	(37.4)	2,690	(28.3)	2,246	(19.6)
17 or 18	1,758	(26.1)	2,288	(31.9)	2,397	(35.1)	2,476	(34.7)	3,200	(33.9)	3,460	(29.6)
Over 18	908	(13.8)	1,062	(14.5)	1,419	(20.1)	2,047	(27.9)	3,792	(37.8)	6,485	(50.8)
Missing	52	0.7	60	0.8	58	0.8	55	0.7	95	1.0	124	1.0
SOC												
Managerial & professional*	371	(5.8)	491	(7.4)	481	(6.7)	-	-	-	-	-	-
Intermediate	1,226	(19.8)	1,299	(19.6)	1,563	(24.6)	-	-	-	-	-	-
Skilled-Non-manual	554	(8.3)	542	(8.0)	490	(7.8)	-	-	-	-	-	-
Skilled-Manual	2,146	(32.2)	2,053	(29.9)	1,563	(24.3)	-	-	-	-	-	-
Semi-skilled	959	(14.1)	1,030	(13.8)	726	(10.8)	-	-	-	-	-	-
Unskilled	569	(4.7)	244	(2.1)	331	(3.7)	-	-	-	-	-	-
Unclassified	1,410	(15.1)	1,880	(19.2)	1,846	(22.1)	-	-	-	-	-	-
Missing	27	0.4	45	0.6	47	0.7	-	-	-	-	-	-

Abbreviations: SOC, socioeconomic status based on partner's occupation

Notes: *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year. *Prevalence of managerial and professional mothers in 1985 to 1995, linear trend p value = 0.08

Table 4.1.A continued

<i>Research populations (n)</i>	1985		1990		1995		2000		2005		2010	
	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n		n	%	n	%
NS-SEC												
Managerial and professional	-	-	-	-	-	-	2,108	(29.2)	3,635	(35.9)	4,688	(34.6)
Intermediate	-	-	-	-	-	-	1,452	(20.3)	2,051	(20.6)	2,457	(19.7)
Routine and manual	-	-	-	-	-	-	2,076	(27.8)	3,188	(33.1)	3,206	(27.1)
Never worked	-	-	-	-	-	-	1,032	(13.4)	611	(7.2)	983	(10.2)
Unclassified	-	-	-	-	-	-	700	(9.3)	292	(3.1)	981	(8.5)
Employment status at stage 1												
Paid maternity leave	362	(5.7)	1448	(21.1)	2299	(34.1)	3320	(46.1)	5596	(56.4)	7,345	(57.1)
Unpaid maternity leave	454	(6.6)	392	(5.1)	396	(5.3)	307	(3.9)	316	(3.2)	466	(3.8)
Doing paid work	361	(5.4)	595	(8.1)	496	(6.6)	385	(5.1)	265	(2.3)	675	(5.1)
Not doing paid work	6,055	(82.4)	5134	(65.7)	3835	(53.9)	3332	(44.9)	3545	(38.1)	3,712	(34.0)
Missing	30	0.4	15	0.2	21	0.3	24	0.3	55	0.6	117	1.0
Ethnicity												
White	-	-	-	-	-	-	6,747	(93.1)	8,658	(87.2)	10,571	(85.9)
BME	-	-	-	-	-	-	415	(6.9)	1,043	(12.8)	1,342	(14.1)
Missing	-	-	-	-	-	-	206	2.8	76	0.8	402	3.3

Abbreviations: NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity.

Notes: *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 4.1.A continued

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n		n	%	n	%
Partnership status												
Married	5,531	(80.7)	5,228	(73.5)	4,462	(66.1)	4,154	(59.3)	5,360	(56.0)	7,159	(56.4)
Cohabiting	618	(8.2)	977	(13.0)	1,224	(18.1)	1,859	(25.9)	2,562	(27.5)	3,393	(28.7)
Single	1,080	(11.1)	1,334	(13.5)	1,314	(15.8)	1,296	(14.7)	1,730	(16.6)	1,635	(15.0)
Missing	33	0.5	45	0.6	47	0.7	59	0.8	125	1.3	128	1.0
Country of residence												
England & Wales	5,181	(89.3)	5,447	(91.2)	4,982	(91.5)	5,174	(92.6)	7,682	(90.0)	9,352	(92.6)
Scotland	2,081	(10.7)	2,137	(8.8)	2,065	(8.5)	2,194	(7.4)	2,095	(10.0)	2,963	(7.4)

Notes: *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 4.1.B Changes in the distribution of health-related factors and factors representing direct previous breastfeeding experience among the main research populations, GB, 1985 to 2010

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n	%	n	%	n	%
Birth weight in kg												
Less than 2.5kg	395	(5.3)	344	(4.1)	406	(5.5)	391	(5.2)	524	(5.5)	575	(5.0)
2.5kg-2.99kg	1,280	(17.6)	1,276	(16.9)	1,218	(17.6)	1,185	(16.5)	1,520	(15.7)	1,682	(14.7)
3kg-3.49kg	2,868	(39.4)	2,872	(38.5)	2,578	(36.6)	2,493	(34.8)	3,319	(34.8)	4,361	(36.2)
3.5kg+	2,691	(37.7)	2,995	(40.5)	2,824	(40.3)	3,244	(43.4)	4,362	(44.0)	5,571	(44.1)
Missing	28	0.4	97	1.3	21	0.3	55	0.7	52	0.5	126	1.0
Parity												
1	3372	(45.7)	3,500	(45.0)	3,304	(46.2)	3,617	(48.3)	4,906	(52.0)	6,249	(52.9)
2	2318	(33.0)	2,323	(31.3)	2,228	(32.3)	2,466	(34.3)	3,291	(33.0)	4,140	(32.9)
3 or more	1531	(21.3)	1,701	(22.8)	1,467	(20.9)	1,285	(17.5)	1,580	(15.0)	1,833	(14.2)
Missing	41	0.6	60	0.8	48	0.7	0		0		93	0.8
Type of delivery												
Vaginal spontaneous	5597	(78.4)	5,775	(78.4)	5,119	(73.0)	4,816	(66.1)	6,111	(63.9)	7,419	(62.6)
Caesarean	803	(10.9)	924	(11.8)	1,117	(15.9)	1,559	(21.0)	2,388	(23.4)	3,092	(23.3)
Vaginal assisted	776	(10.7)	777	(9.9)	782	(11.1)	984	(12.9)	1,252	(12.7)	1,775	(14.1)
Missing	86	1.2	108	1.4	29	0.4	9	0.1	26	0.3	29	0.2
Length of stay in hospital or maternity centre												
2 days or less	2104	(33.5)	2,749	(42.2)	3,345	(51.5)	3,937	(57.1)	6,085	(64.4)	8,008	(70.0)
3-5 days	2701	(35.5)	3,237	(40.9)	2,771	(36.4)	2,720	(34.6)	3,085	(30.6)	3,159	(25.0)
6 days or more	2370	(31.0)	1,353	(16.9)	931	(12.1)	671	(8.3)	506	(5.1)	622	(4.9)
Missing	87	1.2	245	3.2	0		40	0.5	101	1.0	526	4.3

Table 4.1.B continued

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n	%	n	%	n	%
Baby was treated in a special care unit or with phototherapy												
Yes	1499	(21.3)	1,075	(12.4)	1,026	(13.5)	959	(12.0)	1,104	(11.0)	1,277	(10.5)
No	5505	(78.7)	6,445	(87.6)	5,988	(86.5)	6,353	(88.0)	8,651	(89.0)	11,004	(89.5)
Missing	258	3.6	64	0.8	33	0.5	56	0.8	22	0.2	34	0.3
Smoking status during pregnancy												
Yes	2436	(30.2)	2,414	(28.7)	1,834	(23.9)	1,686	(21.5)	1,832	(18.7)	1,512	(13.2)
No	753	(11.1)	784	(11.2)	868	(12.6)	279	(4.0)	264	(2.9)	349	(2.9)
Non-smoker	4003	(58.7)	4,263	(60.1)	4,289	(63.5)	5,160	(74.5)	7,427	(78.4)	10,162	(83.9)
Missing	70	1.0	123	1.6	56	0.8	243	3.3	254	2.6	292	2.4
Smoking status postnatally												
Yes	2630	(33.4)	2,591	(31.5)	1955	(25.8)	1814	(23.7)	1929	(19.8)	1633	(14.1)
No	4511	(66.6)	4,803	(68.5)	5010	(74.2)	5311	(76.3)	7594	(80.2)	10384	(85.9)
Missing	121	1.7	190	2.5	82	1.2	243	3.3	254	2.6	298	2.4
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	6,309	(87.4)	8,231	(85.0)	10,432	(84.5)
No	-	-	-	-	-	-	919	(12.6)	1,351	(15.0)	1,595	(15.5)
Missing	-	-	-	-	-	-	140	1.9	195	2.0	288	2.3
Whether breastfed most recent child												
Breastfed for 6 weeks or more	1542	(24.3)	1,329	(19.8)	1,448	(22.5)	1,498	(21.6)	2,264	(22.7)	3,207	(26.3)
Breastfed for less than 6 weeks	713	(11.4)	707	(10.5)	581	(8.8)	721	(10.5)	890	(8.8)	833	(6.6)
Never breastfed most recent child	1393	(17.2)	1,920	(23.9)	1,630	(21.9)	1,400	(18.7)	1,648	(16.2)	1,587	(12.7)
Had no previous children	3372	(47.1)	3,500	(45.8)	3,304	(46.8)	3,617	(49.2)	4,906	(52.4)	6,249	(54.5)
Missing	242	3.3	128	1.7	84	1.2	132	1.8	69	0.7	439	3.6

Table 4.1.C Changes in the distribution of factors representing indirect breastfeeding experience among the main research populations, GB, 1990 to 2010

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n	%	n	%	n	%
Other women's infant feeding behaviours												
Knew mostly women who breastfed	-	-	1,291	(18.8)	1,450	(22.5)	1,582	(22.7)	2,058	(21.1)	1,777	(14.8)
Knew mostly women who mixed fed	-	-	1,645	(23.2)	1,582	(23.7)	1,646	(23.6)	2,669	(27.4)	5,108	(41.1)
Knew mostly women who formula fed	-	-	3,836	(46.9)	3,242	(43.5)	3,004	(39.7)	3,598	(36.7)	3,734	(29.8)
Unaware of other women's behaviours	-	-	772	(11.0)	729	(10.4)	975	(14.1)	1,404	(14.8)	1,670	(14.3)
Missing	-	-	40	0.5	259	3.7	377	5.1	48	0.5	26	0.2
How mothers themselves were fed as babies												
Breastfed only	-	-	1,648	(23.9)	1,386	(21.2)	1,383	(20.1)	2,264	(25.1)	3,584	(31.0)
Mixed fed	-	-	1,493	(21.5)	1,301	(20.0)	1,262	(19.0)	1,780	(19.8)	2,527	(21.8)
Fed infant formula only	-	-	3,561	(43.3)	3,687	(48.7)	4,076	(52.4)	4,861	(46.6)	5,103	(37.7)
Don't know	-	-	840	(11.3)	673	(10.0)	607	(8.6)	811	(8.5)	1,032	(9.5)
Missing	-	-	42	0.6	215	3.1	256	3.5	61	0.6	69	0.6

Notes: *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 4.1.D Changes in the distribution of factors representing the support mothers received in hospital and at home, GB, 1985 to 2010

<i>Research populations (n)</i>	1985		1990		1995		2000		2005		2010	
	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n	%	n	%	n	%
Received enough support with infant feeding while in hospital												
Yes	6,922	(95.8)	7,006	(94.9)	6,625	(95.0)	6,951	(94.6)	7,530	(76.8)	9,253	(75.7)
No	288	(4.2)	375	(5.1)	330	(5.0)	376	(5.4)	2,162	(23.2)	2,926	(24.3)
Missing	52	0.7	203	2.7	92	1.3	41	0.6	85	0.9	136	1.1
Discussed infant feeding during antenatal visits												
Yes	3,164	(41.5)	3,483	(45.4)	4,246	(58.5)	5,159	(68.7)	6,768	(68.9)	9,581	(76.0)
No	4,021	(58.5)	3,946	(54.6)	2,717	(41.5)	2,066	(31.3)	2,808	(31.1)	2,697	(24.0)
Missing	77	1.1	155	2.0	84	1.2	143	1.9	201	2.1	37	0.3
Baby stayed beside mother while in hospital (rooming in)												
Yes	3,437	(48.2)	4,424	(62.5)	5,015	(74.9)	5,832	(80.3)	8,200	(85.0)	11,015	(90.3)
No	3,760	(51.8)	3,042	(37.5)	1,926	(25.1)	1,480	(19.7)	1,515	(15.0)	1,210	(9.7)
Missing	65	0.9	118	1.6	106	1.5	56	0.8	62	0.6	90	0.7
Taught to position and attach the baby at the breast for breastfeeding												
Yes	-	-	-	-	-	-	-	-	2,342	(24.4)	5,084	(42.5)
No	-	-	-	-	-	-	-	-	7,394	(75.6)	7,114	(57.5)
Missing	-	-	-	-	-	-	-	-	41	0.4	117	1.0
Had skin-to-skin contact with baby												
Yes, within the first hour	-	-	-	-	-	-	-	-	7,091	(72.2)	10,009	(81.2)
Yes, after the first hour	-	-	-	-	-	-	-	-	862	(8.8)	906	(7.6)
No	-	-	-	-	-	-	-	-	1,783	(19.0)	1,359	(11.3)
Missing	-	-	-	-	-	-	-	-	41	0.4	41	0.3

Notes: *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 4.1.D continued

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
	n	%	n	%	n	%	n	%	n	%	n	%
Initiated breastfeeding in the first hour after birth (among mothers who initiated only)												
Yes	2,338	(59.0)	2,586	(62.6)	2,864	(67.0)	3,569	(73.5)	5,261	(74.0)	7,311	(77.0)
No	1,762	(41.0)	1,741	(37.4)	1,482	(33.0)	1,304	(26.5)	1,874	(26.0)	2,217	(23.0)
Missing	101	1.4	116	1.5	78	1.1	80	1.1	196	2.0	293	2.4
Received help to initiate breastfeeding												
Yes	-	-	-	-	-	-	3,459	(50.5)	5,409	(56.1)	6,932	(56.8)
No	-	-	-	-	-	-	3,486	(49.5)	4,313	(43.9)	5,320	(43.2)
Missing	-	-	-	-	-	-	423	5.7	55	0.6	63	0.5
Received help from a voluntary organisation or community group												
Yes	267	(4.5)	346	(5.2)	457	(7.0)	499	(7.8)	1,544	(17.7)	1,984	(17.8)
No	6,952	(95.5)	7,078	(94.8)	6,469	(93.0)	6,802	(92.2)	8,156	(82.3)	10,066	(82.2)
Missing	43	0.6	160	2.1	121	1.7	67	0.9	77	0.8	265	2.2
Received professional help with infant feeding problems at home												
Yes	1,711	(25.2)	1,730	(23.8)	1,647	(24.5)	1,735	(23.9)	2,499	(25.4)	3,139	(24.7)
No	149	(2.1)	165	(2.3)	123	(1.8)	134	(2.0)	310	(3.3)	653	(5.5)
Had no feeding problems	5,328	(72.7)	5,609	(73.9)	5,202	(73.7)	5,424	(74.1)	6,889	(71.3)	8,512	(69.8)
Missing	74	1.0	80	1.1	75	1.1	75	1.0	79	0.8	11	0.1
Received free or reduced-price milk, or exposed to an advertisement for infant formula												
Yes	3,309	(43.0)	-	-	-	-	938	(11.5)	5,981	(62.2)	11,111	(89.2)
No	3,901	(57.0)	-	-	-	-	6,379	(88.5)	3,714	(37.8)	1,149	(10.8)
Missing	52	0.7	-	-	-	-	51	0.7	82	0.8	55	0.4

Notes: *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 4.1.E Changes in the implementation of legislation and strategies that support breastfeeding in public, GB, 2005 and 2010

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
	n	% ^b	n	%	n	%	n	%	n	%	n	%
Aware of legislation protecting the right to breastfeed in public in Scotland												
Yes									1,165	(6.3)	-	-
No	-	-	-	-	-	-	-	-	646	(3.6)	-	-
Not living in Scotland	-	-	-	-	-	-	-	-	6,696	(90.4)	-	-
Aware of legislation protecting the right to breastfeed in public in GB												
Yes									-	-	5,294	(51.4)
No									-	-	4,117	(48.6)
Missing									-	-	326	3.3
Noticed signs welcoming breastfeeding in public places												
Yes	-	-	-	-	-	-	-	-	-	-	6,226	(66.6)
No	-	-	-	-	-	-	-	-	-	-	3,469	(33.4)
Missing	-	-	-	-	-	-	-	-	-	-	102	1.0

Notes: These factors were assessed by the IFS at stage 2 only; *n* = unweighted population of mothers in each survey; % = weighted proportion of mothers; Linear trend P value

5 Trends in breastfeeding initiation in GB: 1985 to 2010

5.1 Chapter introduction

This chapter presents the results of the statistical analyses of the associations between breastfeeding initiation and the explanatory factors. The statistical analyses addressed objectives 2, 3 and 4, which were as follows: to estimate the independent effects of each of factor on breastfeeding initiation in each survey year (objective 2); to assess changes in the effects of each factor on breastfeeding initiation over the period 1985 to 2010 (objective 3); and to estimate the extent to which the prevalence of explanatory factors contributed to breastfeeding initiation at the population level in each survey year (objective 4). These analyses also used the main research populations of mothers who responded to the stage 1 questionnaire (Table 5.1). The results are presented according to the order of the breastfeeding behaviours conceptual model (Figure 2.1, section 2.4), beginning with the sociodemographic factors in section 5.2. The chapter concludes with a summary in section 5.6.

Table 5.1 Summary of the research populations used in the analysis of breastfeeding initiation

Survey populations	1985	1990	1995	2000	2005	2010
Numbers initially surveyed	8,154	11,105	12,314	13,112	19,848	30,760
Numbers responding at stage 1	7,455	9,777	9,130	9,492	12,290	15,724
Numbers excluded from analysis: Northern Ireland	0	1,823	1,753	1,778	1,886	2,648
Numbers excluded from analysis: multiple births	131	362	158	154	317	163
Numbers excluded from analysis: non-hospital births	62	8	172	192	310	598
Numbers included in main research populations and used in the analysis of breastfeeding initiation	7,262	7,584	7,047	7,368	9,777	12,315

5.2 The effects of sociodemographic factors

5.2.1 Univariable analysis

Table 5.2.A (page 109) shows the weighted proportions and unadjusted ORs for the association between breastfeeding initiation and sociodemographic factors in each survey year. These associations were observed prior to adjustments for other factors, and associations were considered statistically significant if they had P values of less than 0.10.

The results indicate that in each survey year, breastfeeding initiation was associated with mothers' age at delivery, education level and socioeconomic status. Specifically, mothers who were more likely to initiate breastfeeding were those who were aged 30 or over; those who had completed full-time education over 18; and those who were in the managerial and professional socioeconomic group ($P < 0.10$). In addition, mothers who were married and those in the BME group showed higher odds of initiating breastfeeding than mothers who were cohabiting and single and those who

were white, respectively. Mothers living in England and Wales were also more likely to initiate breastfeeding than mothers in Scotland ($P<0.10$) (Table 5.2.A).

5.2.2 Multivariable analysis

Adjustments for potential confounders attenuated the associations between sociodemographic factors and breastfeeding initiation (Table 5.3.A, page 115). For instance, mothers aged 30 or over remained more likely to initiate breastfeeding than mothers who were younger than 30; however, this disparity narrowed in favour of younger mothers, particularly in 1990 and 1995. Moreover, after adjustments, age was no longer associated with breastfeeding initiation by 2010. Likewise, there was an attenuation of the effect of education in each survey year. Most notably, mothers who completed full-time education at 16 or under were no longer less likely to initiate breastfeeding in 2005-2010 than mothers who completed at 17 or 18. At the same time, mothers who completed full-time education after age 18 remained most likely to initiate breastfeeding in each year ($P<0.05$).

Mothers who were of BME origin remained three times more likely to initiate breastfeeding than white mothers, with an adjusted OR of 3.17 (95% CI: 2.10-4.78) in 2010, for example. Married mothers also remained more likely to initiate breastfeeding than single mothers in each year except 1995, and more likely than cohabiting mothers in 2010 only (aOR: 0.70, 95% CI: 0.58-0.84). This indicates that from 1985-2005, there was no significant difference in the odds of initiating breastfeeding between mothers who were married to their partner and mothers who were cohabiting with their partner.

Socioeconomic status remained significantly associated with breastfeeding initiation in each survey year except 2000 and 2005, with mothers in the managerial,

professional and intermediate groups having significantly higher odds of initiating than mothers in the skilled-manual group. Finally, mothers in England and Wales continued to show about twice the odds of initiating breastfeeding than mothers in Scotland, even after accounting for other factors ($P < 0.05$) (Table 5.3.A).

5.2.3 Changes in the effects of sociodemographic factors on breastfeeding initiation from 1985 to 2010

The following sociodemographic factors were included in the analysis of whether there was variation over time in the practice of breastfeeding initiation between subgroups: age, education, ethnicity, partnership status and socioeconomic status.

Figure 5.1 shows the adjusted ORs and 95% CIs for the association between age and breastfeeding initiation from 1985 to 2010. Specifically, it illustrates that mothers over 30 had higher odds of initiating breastfeeding than mothers under 25, with ORs ranging between 1.3 and 2.0 and no significant heterogeneity in this effect over time ($I^2 = 44.9\%$; $P = 0.11$).

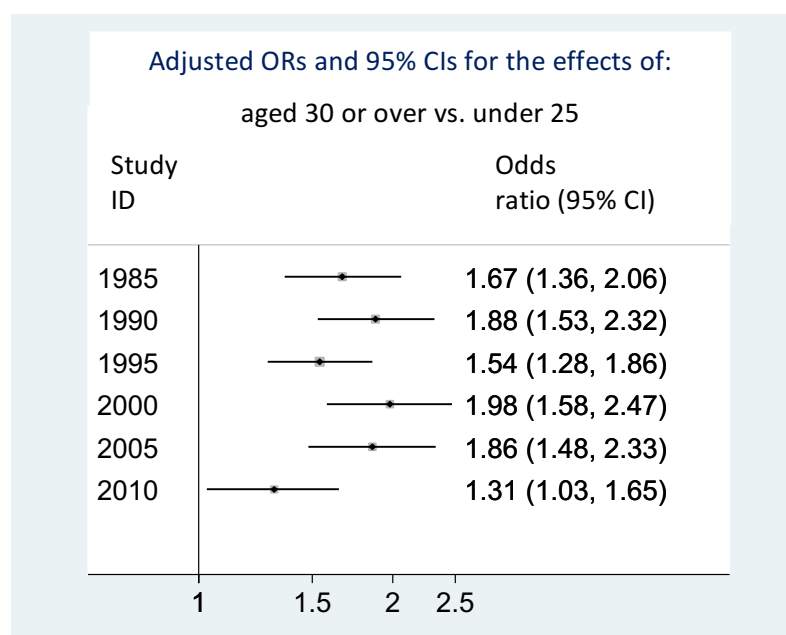


Figure 5.1 Change in the effect of age on breastfeeding initiation, GB, 1985 to 2010.

Notes: To estimate these effects, age was recoded as 'under 25', '25-29' and '30 or over', using 'under 25' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding initiation in each year from 1985 to 2010 using the recoded age variable. When recoded, age was significantly associated with initiation in 2010.

Figure 5.2 shows the adjusted OR and 95% CIs for the association between education and breastfeeding initiation from 1985 to 2010. It shows that mothers who completed full-time education beyond age 18 were more likely to initiate than mothers who completed education at age 18 or under, with ORs ranging between 1.6 and 2.7. It further indicates that there was heterogeneity in this effect over time ($I^2=58.5\%$; $P=0.03$), largely due to the widening disparity in favour of mothers with higher education in 1990.

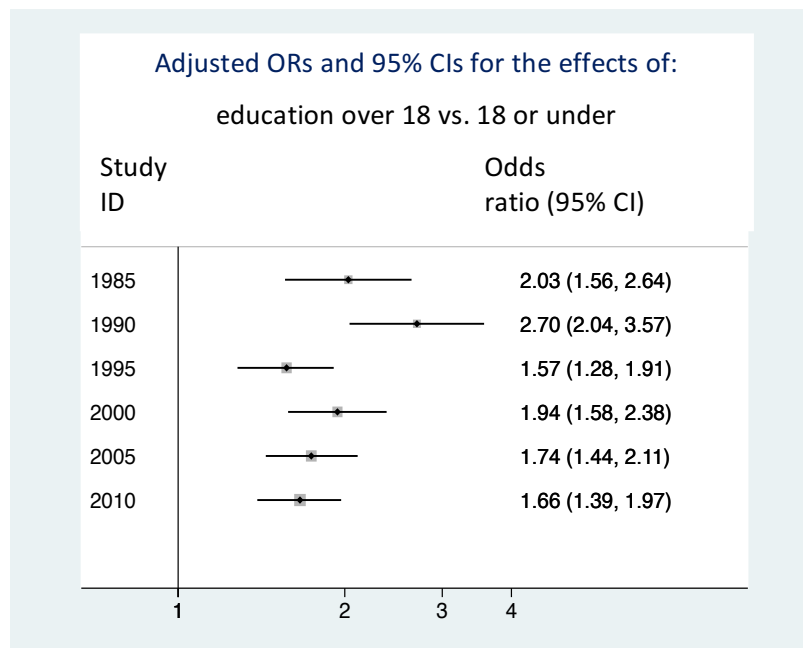


Figure 5.2 Change in the effect of education on breastfeeding initiation, GB, 1985 to 2010.

Note: To estimate these effects, education was recoded as '18 or under' and 'over 18', using '18 or under' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding initiation in each year from 1985 to 2010 using the recoded education variable.

Figure 5.3 shows the adjusted ORs and 95% CIs for the association between ethnicity and breastfeeding initiation from 2000 to 2010. In each survey year, mothers who were of BME origin were three times more likely to initiate breastfeeding than white mothers, with no change in effect over time ($I^2=0\%$; $P=0.85$).

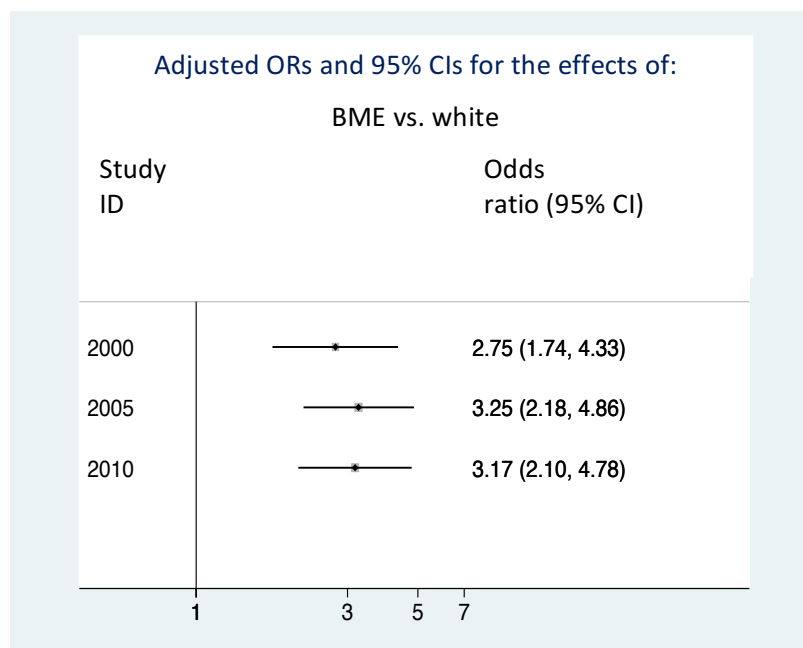


Figure 5.3 Change in the effect of ethnicity on breastfeeding initiation, GB, 2000 to 2010.

Note: Ethnicity was not assessed in the 1985-1995 surveys.

Figure 5.4 shows the adjusted ORs and 95% CIs for the association between partnership status and breastfeeding initiation from 1985 to 2010. It shows that, after adjusting for other factors, mothers who had a partner (whether married or cohabiting) were more likely to initiate breastfeeding than single mothers. Over time, this disparity showed a decrease from 1990 to 2000, followed by an increase from 2005 to (I²=48.7%; P=0.08).

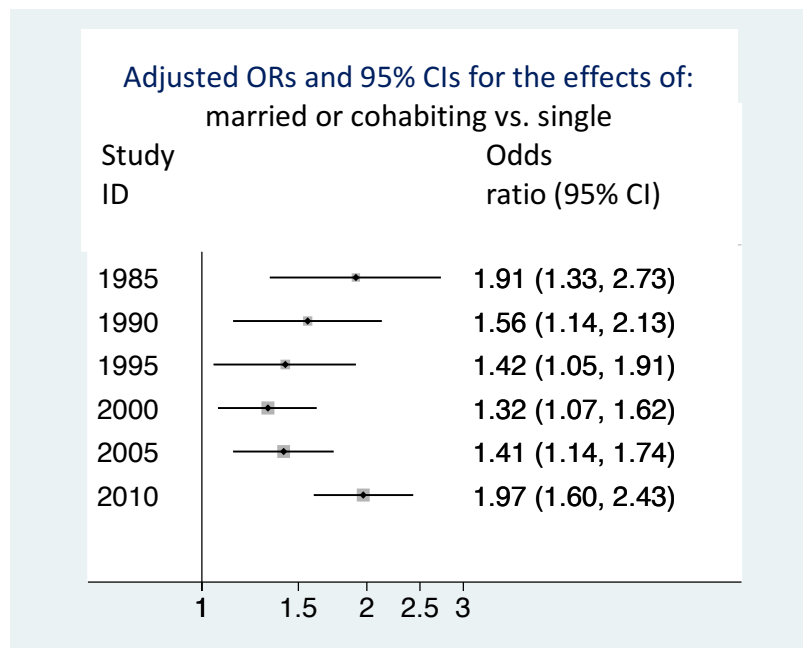


Figure 5.4 Change in the effect of partnership status on breastfeeding initiation, GB, 1985 to 2010.

Note: To estimate these effects, partnership status was recoded as 'partnered (married or cohabiting)' and 'single', using 'single' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding initiation in each year from 1985 to 2010 using the recoded partnership status variable.

Figure 5.5 shows the adjusted ORs and 95% CIs for the association between socioeconomic status and breastfeeding initiation from 1985 to 2010. It shows that mothers who were in the managerial and professional group were more likely to initiate breastfeeding than mothers in the routine and manual groups, with considerable heterogeneity in this effect over time ($I^2=68\%$; $P<0.01$).

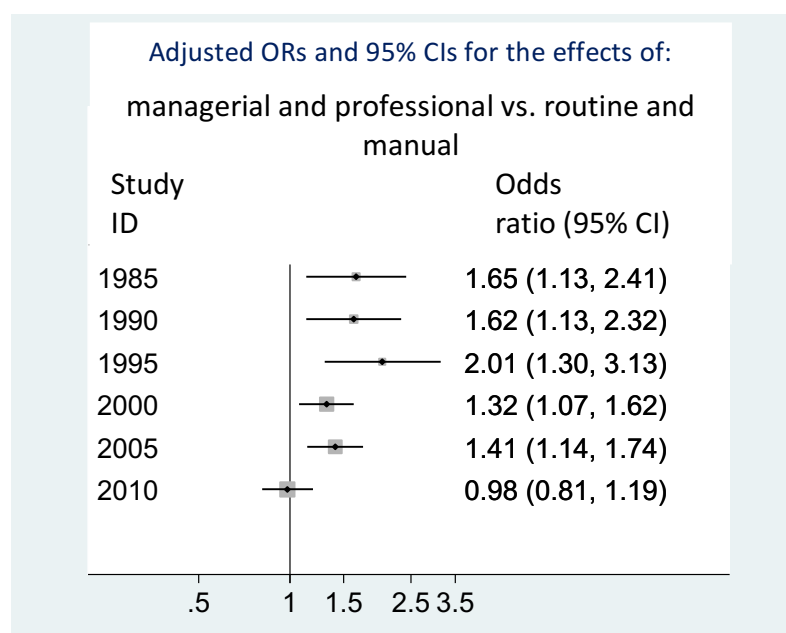


Figure 5.5 Change in the effect of socioeconomic status on breastfeeding initiation, GB, 1985 to 2010.

Note: The adjusted ORs for 2000 to 2010 were obtained by refitting the final model for breastfeeding initiation in each year from 1985 to 2010 using the NS-SEC variable.

5.2.4 Contribution of sociodemographic factors to overall breastfeeding initiation in 1985 to 2010

Population attributable fraction (PAF) estimates for breastfeeding initiation were calculated based on the adjusted ORs from the above models and the prevalence for age, education, ethnicity, partnership status and socioeconomic status. However, PAF estimates were calculated only for those survey years in which these factors were significantly associated with breastfeeding initiation ($P < 0.05$). Table 5.4 (page 121) summarises the PAF estimates, showing the proportion of breastfeeding initiation in each survey year that was attributable to the prevalence of age, education, ethnicity, partnership status and socioeconomic status in each year.

Assuming a causal relationship between these explanatory factors and breastfeeding, the proportion of breastfeeding initiation that was attributable to mothers in the population who were age 30 or over at delivery was 12.1% in 1985. This proportion doubled over the research period to 23.6% by 2005, before declining to 12% in 2010. The proportion of initiation that was attributable to mothers who completed full-time education over age 18 increased from 9.8% in 1985 to 22.6% in 2010. The proportion of initiation that was attributable to mothers who were of BME origin also doubled from 5.6% in 2000 to 11.8% in 2010. The results also show that the proportion of initiation that was attributable to mothers who had a partner (whether married or cohabiting) initially declined from 44.4% in 1985 to 21.6% in 2000, before increasing to 43.6% by 2010. Lastly, the proportion of initiation that was attributable to mothers who were in the managerial and professional socioeconomic group fluctuated over time from 36.6% in 1985 to 25.6% in 2005 (Table 5.4).

5.3 The effects of health-related factors and direct previous experience of breastfeeding

5.3.1 Univariable analysis

Table 5.2.B (page 111) shows that only a few of the health-related factors included in this DPhil research were associated with breastfeeding initiation at the 10% significance level. Among the more notable associations was the strong positive effect of having previous breastfeeding experience on the odds of initiating in each survey year. Compared to mothers who never breastfed their most recent child, mothers who breastfed their most recent child were more likely to initiate breastfeeding, especially if they breastfed previously for six weeks or more. Additionally, mothers for whom the

index baby was their first child were more likely to initiate breastfeeding in each year than mothers who never breastfed their most recent child ($P<0.10$). Other notable associations include the following: the lower odds of initiating breastfeeding in each year among mothers who smoked during pregnancy relative to non-smokers; and the higher odds of initiating breastfeeding from 2000 to 2010 among mothers who were aware of the health benefits of breastfeeding ($P<0.10$).

5.3.2 Multivariable analysis

The effects of health-related factors on breastfeeding initiation were attenuated after adjusting for the potential effects of other factors, including sociodemographic differences and having received support with breastfeeding in hospital and at home (Table 5.3.B, page 117). For instance, in nearly every survey year, breastfeeding initiation showed no significant association with birthweight, type of delivery and whether the baby was treated in special care or with phototherapy. Length of stay in hospital or other maternity centres, although attenuated, was strongly associated with breastfeeding initiation, where mothers who stayed for more than two days had significantly higher odds of initiating breastfeeding in 1985, 1990, 2000 and 2005, than mothers who stayed for two days or less ($P<0.05$).

Compared to mothers who were non-smokers, those who continued to smoke during pregnancy remained significantly less likely to initiate breastfeeding in 1985 (aOR: 0.66, 95% CI: 0.57-0.77), 1995 (aOR: 0.70, 95% CI: 0.59-0.83) and 2005 (aOR: 0.71, 95% CI: 0.58-0.87), even after adjustments for confounders. Adjustments also attenuated the effects of previous breastfeeding experience; however, this factor continued to show a strong positive influence on breastfeeding initiation. For instance,

the adjusted odds of initiation among mothers who breastfed their most recent child for six weeks or more ranged from 25.01 (95% CI: 19.45-32.17) in 1985 to 44.44 (95% CI: 29.68-66.54) in 2005. As shown in Table 5.2.B, around nine out of ten mothers who breastfed their most recent child for at least six weeks subsequently initiated breastfeeding with the index baby. In comparison to mothers who never breastfed their most recent child, mothers for whom this was their first child continued to show about 7-9 times higher odds of initiating breastfeeding, and mothers who breastfed their most recent child for less than six weeks showed about 4-6 times higher odds of initiating breastfeeding ($P<0.05$). Finally, mothers who were aware of the health benefits of breastfeeding continued to have more than twice the odds of initiating breastfeeding from 2000 to 2010 compared to mothers who were unaware of the health benefits ($P<0.05$) (Table 5.3.B).

5.3.3 Changes in the effects of maternal smoking status during pregnancy on breastfeeding initiation from 1985 to 2010

Maternal smoking status during pregnancy was considered of interest to this DPhil research as it may give some indication of mothers' health beliefs around the time of giving birth. It also may reflect wider societal health beliefs that differed between survey cohorts. Figure 5.6 shows the adjusted ORs and 95% CIs for the association between smoking during pregnancy and breastfeeding initiation from 1985 to 2010. Specifically, it illustrates that mothers who did not smoke during pregnancy had higher odds of initiating breastfeeding in every survey year than mothers who smoked during pregnancy; however, only in 1985, 1995 and 2005 was this association statistically

significant ($P < 0.05$). It also shows that there was considerable heterogeneity in this effect over time ($I^2 = 56.8\%$; $P = 0.04$).

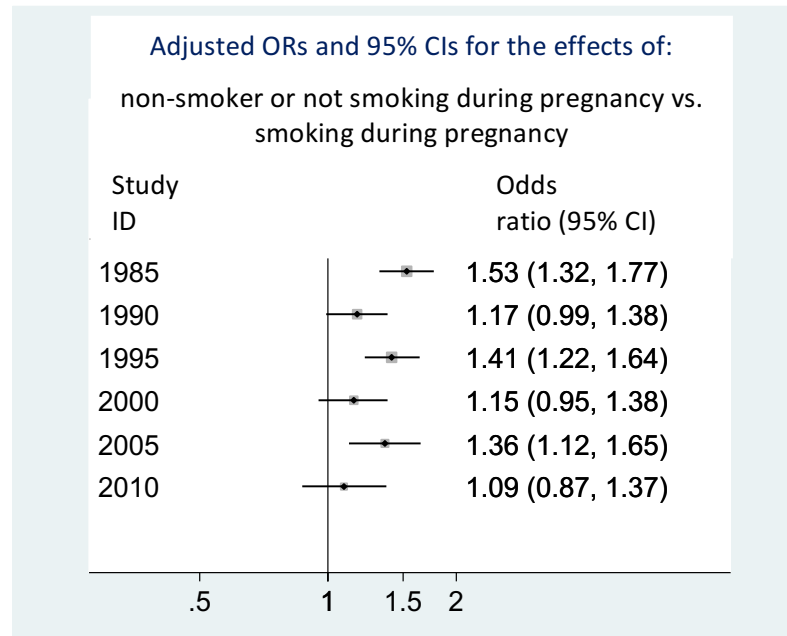


Figure 5.6 Change in the effect of smoking during pregnancy on breastfeeding initiation, GB, 1985 to 2010.

Note: To estimate these effects, smoking status during pregnancy was recoded as ‘non-smoker or did not smoke during pregnancy’ and ‘smoked during pregnancy’, using ‘smoked during pregnancy’ as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding initiation in each year from 1985 to 2010 using the recoded smoking status variable.

5.3.4 Contribution of maternal smoking status during pregnancy to overall breastfeeding initiation in 1985 to 2010

Assuming a causal relationship between smoking status during pregnancy and breastfeeding, the proportion of breastfeeding initiation that was attributable to

mothers in the population who did not smoke during pregnancy declined from 26.8% in 1985 to 24% in 1995 to 23% in 2005 (Table 5.4).

5.4 The influence of other women's infant feeding behaviours

5.4.1 Univariable analysis

Other women's infant feeding behaviours was assessed by the IFS from 1990 to 2010. Table 5.2.C (page 113) shows that mothers who knew mostly women who breastfed their own babies were significantly more likely to initiate breastfeeding in each survey year from 1990 to 2010 ($P < 0.10$). In contrast, the odds of initiation were significantly lower among the following mothers: those who knew mostly women who mixed fed their own babies; those who knew mostly women who formula fed their own babies; and those who either did not know other women who breastfeed or were otherwise unaware of how other women had fed their own babies ($P < 0.10$). Likewise, mothers who were exclusively breastfed when they themselves were babies were most likely to initiate breastfeeding in each year compared to mothers who were either mixed fed, exclusively formula fed or unaware of how they were fed when they themselves were babies ($P < 0.10$).

5.4.2 Multivariable analysis

After adjustments for potential confounders, including sociodemographic differences, the influence of other women's infant feeding behaviours on breastfeeding initiation remained significant and largely similar in most survey years (Table 5.3.C, page 119). For example, mothers who knew mostly women who formula fed their own babies remained least likely to initiate breastfeeding in each year, with adjusted ORs ranging from 0.28 (95% CI: 0.22-0.36) in 1990 to 0.26 (95% CI: 0.18-0.37) in 2010. In contrast,

mothers who knew mostly women who breastfed their own babies remained most likely to initiate breastfeeding in each year. The influence of how mothers were fed when they themselves were babies also remained significant and largely similar in most survey years. Specifically, mothers were most likely to initiate breastfeeding in each survey year if they themselves were exclusively breastfed as babies ($P < 0.05$) (Table 5.3.C).

5.4.3 Changes in the influence of other women's infant feeding behaviours on breastfeeding initiation from 1990 to 2010

Figure 5.7 and Figure 5.8 show the adjusted ORs and 95% CIs for the associations between other women's infant feeding behaviours and breastfeeding initiation from 1990 to 2010. Figure 5.7 shows that mothers who knew other women who breastfed their own babies, even if in combination with formula feeding, were almost twice as likely to initiate breastfeeding as those who knew mostly women who formula fed their own babies. There was no change in this effect over time ($I^2 = 0\%$; $P = 0.90$).

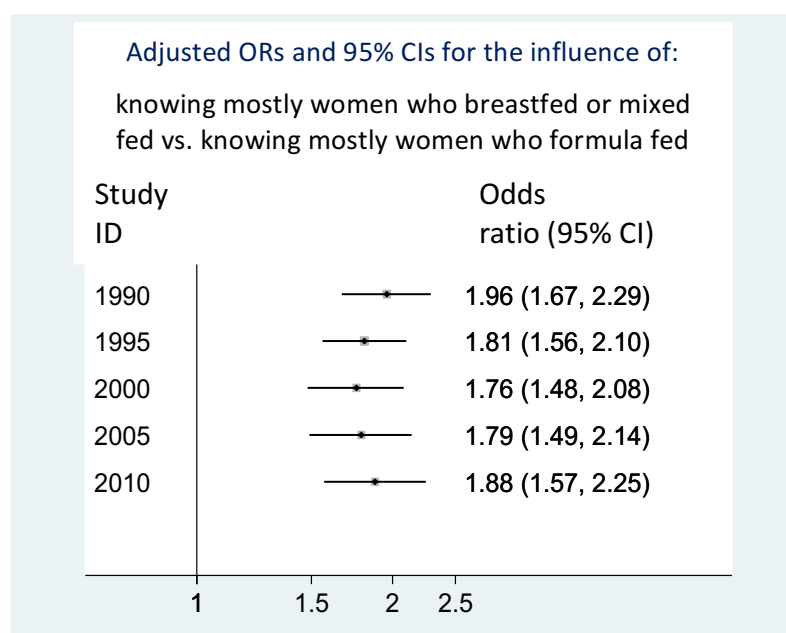


Figure 5.7 Change in the influence of how other women fed their own babies on breastfeeding initiation, GB, 1990 to 2010.

Note: To estimate these effects, knowing other women's infant feeding behaviours was recoded as 'knowing mostly women who breastfed or mixed fed', 'knowing mostly women who formula fed' and 'don't know', using 'knowing mostly women who formula fed' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding initiation in each year from 1990 to 2010 using this recoded variable. This factor was not assessed by the IFS in 1985.

Figure 5.8 shows that mothers who were breastfed when they themselves were babies, whether exclusively or in combination with infant formula, were more likely to initiate breastfeeding than mothers who were entirely formula fed when they themselves were babies. There was also some heterogeneity in this effect over time ($I^2=61.5\%$; $P=0.03$), with the ORs ranging from 2.0 in 1990 to 2.8 in 2010.

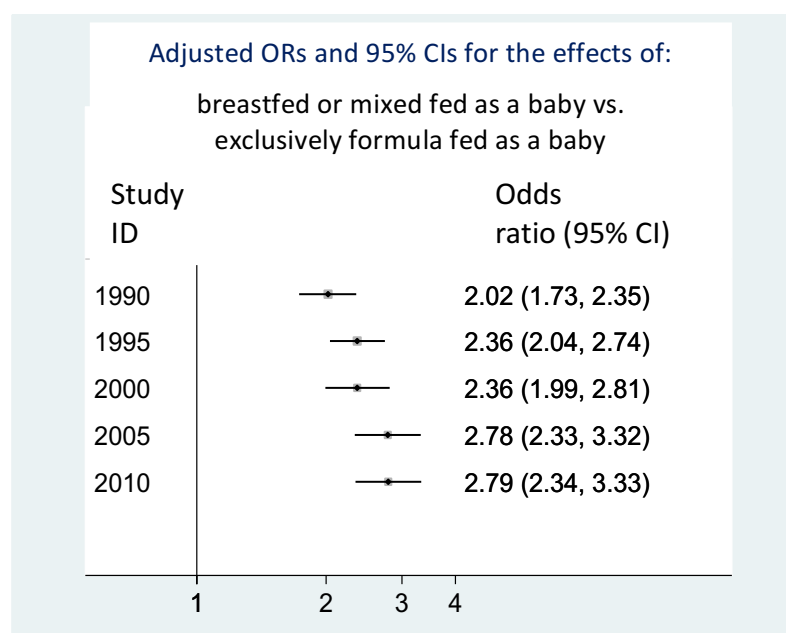


Figure 5.8 Change in the effect of how mothers themselves were fed as infants on breastfeeding initiation, GB, 1990 to 2010.

Note: To estimate these effects, this variable was recoded as 'breastfed or mixed fed as a baby', 'exclusively formula fed as a baby' and 'don't know', using 'exclusively formula fed as a baby' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding initiation in each year from 1990 to 2010 using this recoded variable. This factor was not assessed by the IFS in 1985.

5.4.4 Contribution of the influence of other women's infant feeding behaviours to overall breastfeeding initiation in 1990 to 2010

Table 5.4 (page 121) shows that, assuming causality, the proportion of breastfeeding initiation that was attributable to mothers who knew other women who breastfed their own babies declined from 25.6% in 1990 to 23.3% in 2000, before increasing to 28.5% by 2010. Similarly, the proportion of breastfeeding initiation that was attributable to mothers who were breastfed when they themselves were babies declined from 28% in 1990 to 26.9% 2000, before increasing to 38.2% by 2010.

5.5 The effects of receiving support with breastfeeding in hospital and at home

5.5.1 Univariable analysis

Prior to adjustments for confounders, mothers who stayed in the same room with their baby throughout their hospital stay were more likely to initiate breastfeeding from 1990 to 2000 ($P<0.10$). Mothers who received skin-to-skin contact also showed significantly higher odds of initiating breastfeeding than those who received no such contact; however, there was no significant difference between having skin-to-skin contact within the first hour of delivery and after the first hour. Conversely, mothers who felt that they received enough help with feeding their baby in hospital had significantly lower odds of initiating breastfeeding in each survey year except 1995 ($P<0.10$) (Table 5.2.D, page 114)

5.5.2 Multivariable analysis

Following adjustments, mothers who stayed in the same room with their baby continued to show higher odds of initiating breastfeeding from 1990 to 2000 than mothers who were separated from their baby; however, there was a reversal in this effect in 2010 (aOR: 0.64, 95% CI: 0.43-0.94). Mothers who received skin-to-skin contact within the first hour after delivery had significantly higher odds of initiating breastfeeding than mothers who received skin-to-skin contact after the first hour (2005) and mothers who received no such contact (2005-2010) ($P<0.05$). Finally, mothers who felt that they received enough help with feeding their baby in hospital were still less likely to initiate breastfeeding in 1990 and from 2000 to 2010, as were mothers who discussed infant feeding during antenatal check-ups in 2010 ($P<0.05$) (Table 5.3.D, page 120).

5.6 Chapter summary

This chapter showed that there was a substantial increase in the proportion of mothers in GB who initiated breastfeeding, from 63.6% in 1985 to 81.4% in 2010. At the same time, the findings indicated that in each survey year there were considerable disparities in the practice of breastfeeding initiation between subgroups of mothers. Specifically, independent positive associations were observed between breastfeeding initiation and the following factors: older maternal age; higher education (beyond age 18); being married; BME origin; managerial and professional socioeconomic status; length of hospital stay of three or more days after giving birth; having breastfed one's most recent baby for at least six weeks; having an awareness of the health benefits of breastfeeding; knowing mostly women who breastfed their own babies; being exclusively breastfed oneself as a baby; and staying in the same hospital room with one's baby. In contrast, independent negative associations were observed between breastfeeding initiation and smoking during pregnancy, and receiving enough help with infant feeding in hospital (Table 5.5, page 123). The previous chapter, chapter 3, showed that from 1985 to 2010, there were substantial changes in the prevalence of most of these factors in the research populations.

The results indicated that, over the research period, there was no significant heterogeneity in the effects of age and ethnicity, and in the influence of other women's infant feeding behaviours, that might account for the upward trend in breastfeeding initiation at the population level. At the same time, assuming causality, the PAF estimates indicated that there were important changes in the contribution of these

factors to overall breastfeeding initiation, especially a doubling in the contributions of age and ethnicity.

Conversely, education, partnership status, socioeconomic status, smoking status during pregnancy, and how mothers were fed when they were babies showed significant variation in their association with breastfeeding initiation over the research period. The contributions of these factors to overall breastfeeding initiation, although considerable, were less consistent over time. The next chapter, chapter 6, considers the potential influences of these and other factors on breastfeeding continuation at one week among mothers who successfully initiated breastfeeding.

Table 5.2.A Associations between breastfeeding initiation and sociodemographic factors, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations (n)</i>	7,262			7,584			7,047			7,368			9,777			12,315		
<i>Numbers initiated</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>% initiated</i>	63.6			63.4			66.5			69.8			76.1			81.4		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Age at delivery																		
Under 20	41.4	0.28	(0.23-0.34)	37.5	0.19	(0.16-0.23)	43.8	0.26	(0.21-0.32)	47.2	0.25	(0.20-0.30)	51.1	0.20	(0.16-0.24)	58.2	0.20	(0.15-0.2)
20-24	56.4	0.51	(0.44-0.59)	52.9	0.36	(0.32-0.40)	55.6	0.42	(0.36-0.49)	59.2	0.40	(0.34-0.47)	67.0	0.39	(0.33-0.45)	68.9	0.31	(0.27-0.3)
25-29	69.1	0.88	(0.77-1.02)	65.2	0.60	(0.53-0.67)	66.9	0.67	(0.59-0.77)	68.2	0.59	(0.51-0.68)	76.6	0.62	(0.54-0.72)	83.8	0.73	(0.64-0.8)
30 or over	71.6	1.00		75.8	1.00		75.0	1.00		78.4	1.00		84.0	1.00		87.6	1.00	
Education level																		
16 or under	52.9	0.37	(0.32-0.42)	50.8	0.40	(0.36-0.46)	51.7	0.40	(0.35-0.45)	53.8	0.46	(0.41-0.53)	59.5	0.54	(0.47-0.61)	63.5	0.55	(0.48-0.6)
17 or 18	75.2	1.00		71.8	1.00		72.9	1.00		71.6	1.00		73.3	1.00		75.8	1.00	
Over 18	89.0	2.66	(2.07-3.43)	91.3	4.11	(3.21-5.27)	88.5	2.85	(2.32-3.50)	89.2	3.28	(2.73-3.94)	91.2	3.75	(3.18-4.42)	91.6	3.47	(3.01-4.0)
SOC																		
Managerial & professional	86.8	4.23	(3.03-5.91)	87.6	4.73	(3.47-6.44)	90.0	5.10	(3.61-7.22)	-	-	-	-	-	-	-	-	-
Intermediate	80.7	2.69	(2.25-3.21)	79.5	2.60	(2.18-3.10)	81.6	2.52	(2.11-3.01)	-	-	-	-	-	-	-	-	-
Skilled-Non-manual	75.9	2.03	(1.61-2.55)	73.8	1.89	(1.50-2.37)	71.4	1.41	(1.11-1.80)	-	-	-	-	-	-	-	-	-
Skilled-Manual	60.9	1.00		59.9	1.00		63.8	1.00		-	-	-	-	-	-	-	-	-
Semi-skilled	57.8	0.88	(0.74-1.04)	53.4	0.77	(0.65-0.91)	57.6	0.77	(0.63-0.94)	-	-	-	-	-	-	-	-	-
Unskilled	44.2	0.51	(0.41-0.63)	41.2	0.47	(0.34-0.64)	50.5	0.58	(0.44-0.76)	-	-	-	-	-	-	-	-	-
Unclassified	42.6	0.48	(0.41-0.56)	48.3	0.63	(0.54-0.72)	50.5	0.58	(0.50-0.67)	-	-	-	-	-	-	-	-	-

Abbreviations: OR, odds ratio; CI, confidence interval; SOC, socioeconomic status based on partner's occupation. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.2.A continued

	1985			1990			1995			2000			2005			2010		
Populations (n)	7,262			7,584			7,047			7,368			9,777			12,315		
Numbers initiated	4,201			4,443			4,424			4,953			7,331			9,821		
% initiated	63.6			63.4			66.5			69.8			76.1			81.4		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95%
NS-SEC																		
Managerial & professional	-	-	-	-	-	-	-	-	-	85.2	3.92	(3.32-4.64)	88.0	3.92	(3.38-4.56)	90.7	3.37	(2.89-
Intermediate	-	-	-	-	-	-	-	-	-	74.4	1.97	(1.67-2.32)	77.7	1.86	(1.60-2.17)	80.3	1.41	(1.20-
Routine and manual	-	-	-	-	-	-	-	-	-	59.5	1.00		65.1	1.00		74.4	1.00	
Never worked	-	-	-	-	-	-	-	-	-	52.6	0.75	(0.64-0.89)	65.9	1.03	(0.83-1.28)	71.5	0.87	(0.71-
Unclassified	-	-	-	-	-	-	-	-	-	67.1	1.39	(1.13-1.70)	69.8	1.23	(0.90-1.68)	80.5	1.43	(1.15-
Ethnicity																		
White	-	-	-	-	-	-	-	-	-	67.9	1.00		73.6	1.00		78.8	1.00	
BME	-	-	-	-	-	-	-	-	-	89.5	4.02	(2.88-5.60)	93.1	4.84	(3.66-6.41)	94.5	4.65	(3.54-
Partnership status																		
Married	68.0	1.00		69.1	1.00		72.8	1.00		77.7	1.00		84.9	1.00		88.8	1.00	
Cohabiting	54.6	0.57	(0.47-0.68)	53.1	0.51	(0.43-0.59)	61.2	0.59	(0.51-0.68)	62.5	0.48	(0.42-0.55)	70.5	0.42	(0.38-0.48)	77.2	0.43	(0.37-
Single	38.5	0.29	(0.25-0.34)	42.4	0.33	(0.29-0.38)	46.0	0.32	(0.28-0.37)	50.5	0.29	(0.25-0.34)	56.0	0.23	(0.20-0.26)	61.9	0.20	(0.18-
Country of residence																		
England & Wales	65.4	1.00		64.6	1.00		67.5	1.00		70.4	1.00		76.9	1.00		82.0	1.00	
Scotland	48.6	0.50	(0.45-0.56)	50.7	0.56	(0.51-0.63)	55.2	0.59	(0.53-0.66)	62.8	0.71	(0.64-0.79)	69.3	0.68	(0.60-0.76)	73.9	0.62	(0.56-

Abbreviations: OR, odds ratio; CI, confidence interval; NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.2.B Associations between breastfeeding initiation and health-related factors, and previous breastfeeding experience, GB, 1985 to 2010:

Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations (n)</i>	7,262			7,584			7,047			7,368			9,777			12,315		
<i>Numbers initiated</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>% initiated</i>	63.6			63.4			66.5			69.8			76.1			81.4		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Birthweight (kg)																		
Less than 2.5	55.0	0.63	(0.49-0.79)	49.4	0.53	(0.41-0.69)	62.8	0.78	(0.62-1.00)	73.5	1.14	(0.88-1.49)	77.3	1.03	(0.80-1.33)	81.6	0.93	(0.71-1.2)
2.5 - 2.99	60.6	0.79	(0.68-0.92)	66.2	1.07	(0.92-1.25)	62.5	0.77	(0.66-0.90)	66.6	0.82	(0.70-0.97)	73.0	0.82	(0.70-0.96)	79.0	0.79	(0.67-0.9)
3 - 3.49	63.8	0.91	(0.80-1.02)	62.5	0.91	(0.81-1.03)	66.9	0.94	(0.82-1.06)	69.3	0.93	(0.82-1.06)	76.4	0.98	(0.86-1.12)	80.8	0.89	(0.78-1.0)
3.5 or more	66.1	1.00		64.6	1.00		68.3	1.00		70.8	1.00		76.8	1.00		82.6	1.00	
Type of delivery																		
Vaginal spontaneous	63.0	1.00		62.7	1.00		65.2	1.00		68.2	1.00		75.0	1.00		80.1	1.00	
Caesarean	61.3	0.93	(0.79-1.10)	62.5	0.99	(0.84-1.17)	65.5	1.01	(0.87-1.18)	71.7	1.19	(1.03-1.37)	77.0	1.12	(0.97-1.28)	83.5	1.26	(1.10-1.4)
Vaginal assisted	70.9	1.43	(1.20-1.71)	70.8	1.44	(1.20-1.73)	76.4	1.72	(1.42-2.08)	75.3	1.42	(1.19-1.70)	80.0	1.33	(1.11-1.59)	83.8	1.29	(1.08-1.5)
Length of stay in hospital or other maternity centres																		
2 days or less	58.2	1.00		58.5	1.00		63.7	1.00		66.5	1.00		74.5	1.00		79.7	1.00	
3-5 days	65.1	1.34	(1.18-1.52)	66.8	1.43	(1.27-1.61)	70.3	1.35	(1.18-1.55)	73.6	1.40	(1.24-1.59)	78.7	1.27	(1.12-1.44)	85.5	1.50	(1.31-1.7)
6 days or more	68.0	1.53	(1.34-1.74)	67.9	1.51	(1.29-1.75)	64.7	1.05	(0.91-1.20)	77.5	1.74	(1.39-2.17)	82.2	1.58	(1.18-2.11)	86.6	1.65	(1.23-2.2)
Baby was treated in a special care unit or with phototherapy																		
Yes	62.3	0.91	(0.80-1.03)	59.0	0.81	(0.69-0.94)	64.0	0.88	(0.75-1.03)	70.7	1.05	(0.88-1.24)	78.0	1.13	(0.94-1.35)	84.3	1.25	(1.03-1.5)
No	64.6	1.00		64.1	1.00		66.9	1.00		69.7	1.00		75.9	1.00		81.1	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.2.B continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
<i>Numbers initiated</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>% initiated</i>	63.6		63.4		66.5		69.8		76.1		81.4	
	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)
Smoking status during pregnancy												
Yes	47.6	0.36 (0.32-0.41)	47.5	0.38 (0.34-0.43)	47.1	0.33 (0.29-0.37)	49.7	0.31 (0.27-0.36)	53.6	0.25 (0.23-0.28)	59.5	0.25 (0.22-0.29)
No	68.2	0.86 (0.72-1.03)	66.3	0.82 (0.69-0.98)	69.4	0.83 (0.70-0.99)	62.8	0.54 (0.40-0.71)	60.2	0.33 (0.24-0.45)	63.2	0.29 (0.22-0.39)
Non-smoker	71.4	1.00	70.5	1.00	73.2	1.00	76.0	1.00	82.1	1.00	85.5	1.00
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	74.3	4.09 (3.47-4.81)	80.8	4.00 (3.46-4.62)	84.9	3.03 (2.63-3.48)
No	-	-	-	-	-	-	41.4	1.00	51.2	1.00	65.1	1.00
Whether breastfed most recent child												
BF for 6 wks+	88.6	33.22 (26.38-41.82)	94.5	55.72 (42.23-73.51)	95.5	70.89 (52.38-95.95)	96.2	69.19 (50.23-95.30)	98.0	97.67 (67.55-141.23)	97.4	66.98 (50.22-89.35)
BF for <6 wks	50.7	4.39 (3.51-5.49)	67.2	6.66 (5.40-8.22)	66.5	6.64 (5.26-8.39)	67.9	5.82 (4.66-7.27)	79.0	7.37 (5.84-9.30)	79.7	7.09 (5.56-9.03)
Never BF recent	19.0	1.00	23.5	1.00	23.0	1.00	26.6	1.00	33.8	1.00	35.7	1.00
No previous child	69.7	9.81 (8.22-11.71)	69.8	7.52 (6.49-8.70)	73.3	9.17 (7.82-10.75)	74.8	8.19 (6.97-9.61)	79.4	7.54 (6.49-8.77)	84.0	9.43 (8.06-11.02)

Abbreviations: BF, breastfed; wks, weeks. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.2.C Associations between breastfeeding initiation and indirect breastfeeding experience, GB, 1990 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations (n)</i>	7,262			7,584			7,047			7,368			9,777			12,315		
<i>Numbers initiated</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>% initiated</i>	63.6			63.4			66.5			69.8			76.1			81.4		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Other women's infant feeding behaviours																		
Knew mostly women who BF	-	-	-	89.0	1.00		89.5	1.00		90.4	1.00		94.4	1.00		95.8	1.00	
Knew mostly women who mixed fed	-	-	-	70.8	0.30	(0.24-0.38)	69.7	0.27	(0.22-0.34)	73.7	0.30	(0.24-0.37)	80.1	0.24	(0.20-0.30)	86.5	0.28	(0.21-0.38)
Knew mostly women who FF	-	-	-	48.8	0.12	(0.10-0.15)	52.5	0.13	(0.11-0.16)	55.7	0.13	(0.11-0.17)	62.2	0.10	(0.08-0.12)	67.0	0.09	(0.07-0.12)
Unaware	-	-	-	65.5	0.24	(0.18-0.30)	67.3	0.24	(0.19-0.31)	70.0	0.25	(0.20-0.31)	78.1	0.21	(0.17-0.27)	82.2	0.20	(0.15-0.28)
How mothers themselves were fed as babies																		
BF only	-	-	-	79.2	1.00		82.5	1.00		85.9	1.00		89.2	1.00		93.2	1.00	
Mixed fed	-	-	-	75.1	0.79	(0.66-0.95)	80.3	0.87	(0.70-1.07)	80.5	0.68	(0.54-0.85)	87.1	0.81	(0.64-1.02)	89.5	0.62	(0.49-0.77)
FF only	-	-	-	51.3	0.28	(0.24-0.32)	55.3	0.26	(0.22-0.31)	60.4	0.25	(0.21-0.30)	65.5	0.23	(0.20-0.27)	67.3	0.15	(0.13-0.18)
Don't know	-	-	-	53.2	0.30	(0.24-0.36)	59.2	0.31	(0.25-0.39)	65.5	0.31	(0.24-0.40)	71.3	0.30	(0.24-0.37)	79.9	0.29	(0.23-0.36)

Abbreviations: BF, breastfed; FF, formula fed. Notes: Categories for other women's breastfeeding behaviours shortened due to limited space; *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.2.D Associations between breastfeeding initiation and support received in hospital, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations (n)</i>	7,262			7,584			7,047			7,368			9,777			12,315		
<i>Numbers initiated</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>% initiated</i>	63.6			63.4			66.5			69.8			76.1			81.4		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Received enough support with infant feeding																		
Yes	63.4	0.75	(0.60-0.94)	63.1	0.72	(0.56-0.92)	66.3	0.80	(0.62-1.05)	69.4	0.64	(0.49-0.84)	74.8	0.72	(0.63-0.83)	79.4	0.52	(0.44-0.61)
No	69.8	1.00		70.4	1.00		71.0	1.00		77.9	1.00		80.4	1.00		88.2	1.00	
Discussed infant feeding during antenatal visits																		
Yes	64.1	1.02	(0.92-1.14)	63.8	1.02	(0.92-1.13)	66.8	1.01	(0.90-1.13)	70.2	1.06	(0.94-1.19)	75.7	0.89	(0.79-1.01)	80.3	0.72	(0.62-0.84)
No	63.6	1.00		63.35	1.00		66.58	1.00		69.1	1.00		77.7	1.00		85.0	1.00	
Baby stayed beside mother while in hospital (rooming in)																		
Yes	64.2	1.04	(0.94-1.16)	65.1	1.22	(1.09-1.35)	68.1	1.28	(1.13-1.45)	71.32	1.38	(1.21-1.59)	76.2	1.04	(0.89-1.22)	81.3	0.82	(0.67-1.00)
No	63.3	1.00		60.5	1.00		62.4	1.00		64.25	1.00		75.5	1.00		84.1	1.00	
Had skin-to-skin contact with baby																		
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	-	-	-	-	80.96	1.00		84.0	1.00	
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	-	-	-	-	77.85	0.83	(0.67-1.02)	84.4	1.03	(0.82-1.29)
No	-	-	-	-	-	-	-	-	-	-	-	-	56.79	0.31	(0.27-0.35)	60.7	0.29	(0.25-0.33)

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.3.A Associations between breastfeeding initiation and sociodemographic factors, GB, 1985 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
<i>Numbers initiated</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>% initiated</i>	63.6		63.4		66.5		69.8		76.1		81.4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age at delivery												
Under 20	0.36	(0.27-0.49)	0.34	(0.25-0.46)	0.43	(0.32-0.58)	0.40	(0.29-0.54)	0.38	(0.28-0.52)	ns	ns
20-24	0.64	(0.52-0.79)	0.57	(0.46-0.70)	0.74	(0.59-0.92)	0.54	(0.43-0.68)	0.59	(0.47-0.75)	ns	ns
25-29	0.85	(0.70-1.04)	0.74	(0.61-0.90)	1.05	(0.87-1.26)	0.75	(0.62-0.90)	0.65	(0.53-0.79)	ns	ns
30 or over	1.00		1.00		1.00		1.00		1.00		ns	ns
Education level												
16 or under	0.57	(0.49-0.67)	0.67	(0.57-0.78)	0.66	(0.56-0.78)	0.72	(0.61-0.85)	0.93	(0.77-1.12)	1.00	(0.81-1.23)
17 or 18	1.00		1.00		1.00		1.00		1.00		1.00	
Over 18	1.43	(1.08-1.90)	2.13	(1.59-2.86)	1.28	(1.01-1.64)	1.65	(1.32-2.05)	1.69	(1.38-2.08)	1.66	(1.37-2.00)
SOC												
Managerial & professional	1.65	(1.13-2.41)	1.62	(1.13-2.32)	2.01	(1.30-3.13)	-	-	-	-	-	-
Intermediate	1.50	(1.21-1.87)	1.32	(1.06-1.64)	1.42	(1.13-1.79)	-	-	-	-	-	-
Skilled-Non-manual	1.50	(1.16-1.95)	1.06	(0.78-1.44)	0.95	(0.71-1.28)	-	-	-	-	-	-
Skilled-Manual	1.00		1.00		1.00		-	-	-	-	-	-
Semi-skilled	1.02	(0.82-1.25)	0.91	(0.73-1.13)	0.89	(0.68-1.16)	-	-	-	-	-	-
Unskilled	0.67	(0.51-0.90)	0.62	(0.40-0.94)	0.84	(0.60-1.17)	-	-	-	-	-	-
Unclassified	0.94	(0.67-1.33)	1.06	(0.80-1.41)	0.77	(0.63-0.95)	-	-	-	-	-	-

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; SOC, socioeconomic status based on partner's occupation

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.3.A continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
<i>Numbers initiated</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>% initiated</i>	63.6		63.4		66.5		69.8		76.1		81.4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
NS-SEC												
Managerial & professional	-	-	-	-	-	-	ns	ns	ns	ns	1.13	(0.91-1.41)
Intermediate	-	-	-	-	-	-	ns	ns	ns	ns	0.87	(0.69-1.08)
Routine and manual	-	-	-	-	-	-	ns	ns	ns	ns	1.00	
Never worked	-	-	-	-	-	-	ns	ns	ns	ns	0.70	(0.50-0.96)
Unclassified	-	-	-	-	-	-	ns	ns	ns	ns	0.99	(0.73-1.34)
Ethnicity												
White	-	-	-	-	-	-	1.00		1.00		1.00	
BME	-	-	-	-	-	-	2.75	(1.74-4.33)	3.25	(2.18-4.86)	3.17	(2.10-4.78)
Partnership status												
Married	1.00		1.00		ns	ns	1.00		1.00		1.00	
Cohabiting	0.92	(0.72-1.18)	0.89	(0.72-1.10)	ns	ns	0.89	(0.73-1.07)	0.92	(0.75-1.12)	0.70	(0.58-0.84)
Single	0.51	(0.35-0.74)	0.62	(0.45-0.85)	ns	ns	0.71	(0.56-0.90)	0.67	(0.53-0.86)	0.42	(0.33-0.53)
Country of residence												
England & Wales			1.00		1.00		1.00		1.00		1.00	
Scotland	0.45	(0.39-0.52)	0.55	(0.47-0.64)	0.65	(0.56-0.75)	0.66	(0.57-0.77)	0.75	(0.64-0.88)	0.64	(0.55-0.75)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.3.B Associations between breastfeeding initiation and health-related factors, and previous breastfeeding experience, GB, 1985 to 2010:
Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
Populations (n)	7,262		7,584		7,047		7,368		9,777		12,315	
Numbers initiated	4,201		4,443		4,424		4,953		7,331		9,821	
% initiated	63.6		63.4		66.5		69.8		76.1		81.4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Birthweight (kg)												
Less than 2.5	ns	ns	0.74	(0.52-1.06)	ns	ns	ns	ns	ns	ns	ns	ns
2.5 - 2.99	ns	ns	1.24	(1.01-1.53)	ns	ns	ns	ns	ns	ns	ns	ns
3 - 3.49	ns	ns	0.93	(0.79-1.08)	ns	ns	ns	ns	ns	ns	ns	ns
3.5 or more	ns	ns	1.00		ns	ns	ns	ns	ns	ns	ns	ns
Type of delivery												
Vaginal spontaneous	1.00		1.00		ns	ns	ns	ns	ns	ns	ns	ns
Caesarean	0.63	(0.50-0.80)	0.57	(0.43-0.76)	ns	ns	ns	ns	ns	ns	ns	ns
Vaginal assisted	0.94	(0.76-1.17)	0.86	(0.69-1.08)	ns	ns	ns	ns	ns	ns	ns	ns
Length of stay in hospital or other maternity centres												
2 days or less	1.00		1.00		ns	ns	1.00		1.00		1.00	
3-5 days	1.48	(1.23-1.79)	1.39	(1.16-1.67)	ns	ns	1.30	(1.10-1.54)	1.22	(1.03-1.46)	1.65	(1.34-2.02)
6 days or more	1.76	(1.42-2.20)	2.02	(1.53-2.67)	ns	ns	1.51	(1.09-2.08)	2.38	(1.54-3.70)	1.26	(0.82-1.96)
Baby was treated in a special care unit or with phototherapy												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.73	(1.19-2.51)
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.00	

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.3.B continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
<i>Numbers initiated</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>% initiated</i>	63.6		63.4		66.5		69.8		76.1		81.4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Smoking status during pregnancy												
Yes	0.66	(0.57-0.77)	ns	ns	0.70	(0.59-0.83)	ns	ns	0.71	(0.58-0.87)	ns	ns
No	1.09	(0.87-1.36)	ns	ns	1.06	(0.85-1.32)	ns	ns	0.66	(0.44-1.00)	ns	ns
Non-smoker	1.00		ns	ns	1.00		ns	ns	1.00		ns	ns
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	2.81	(2.25-3.50)	2.53	(2.04-3.12)	2.41	(1.93-3.00)
No	-	-	-	-	-	-	1.00		1.00		1.00	
Whether breastfed most recent child												
BF for 6 wks+	25.01	(19.45-32.17)	31.81	(23.61-42.86)	35.83	(25.98-49.41)	36.12	(25.49-51.19)	44.44	(29.68-66.54)	34.31	(24.44-48.17)
BF for <6 wks	3.77	(2.93-4.86)	5.30	(4.12-6.83)	5.00	(3.82-6.55)	4.31	(3.32-5.59)	5.98	(4.52-7.90)	5.41	(3.96-7.39)
Never BF recent	1.00		1.00		1.00		1.00		1.00		1.00	
No previous child	9.33	(7.45-11.68)	7.09	(5.74-8.76)	8.39	(6.90-10.20)	7.34	(5.98-9.02)	7.43	(6.03-9.15)	6.72	(5.47-8.26)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; wks, weeks

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.3.C Associations between breastfeeding initiation and indirect breastfeeding experience, GB, 1990 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
<i>Numbers initiated</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>% initiated</i>	63.6		63.4		66.5		69.8		76.1		81.4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Other women's infant feeding behaviours												
Knew mostly women who BF	-	-	1.00		1.00		1.00		1.00		1.00	
Knew mostly women who mixed fed	-	-	0.41	(0.32-0.54)	0.45	(0.35-0.59)	0.44	(0.34-0.58)	0.37	(0.27-0.50)	0.43	(0.30-0.61)
Knew mostly women who FF	-	-	0.28	(0.22-0.36)	0.35	(0.28-0.45)	0.34	(0.26-0.44)	0.27	(0.20-0.37)	0.26	(0.18-0.37)
Unaware	-	-	0.39	(0.29-0.53)	0.51	(0.38-0.69)	0.48	(0.36-0.65)	0.49	(0.35-0.68)	0.43	(0.29-0.64)
How mothers themselves were fed as babies												
BF only	-	-	1.00		1.00		1.00		1.00		1.00	
Mixed fed	-	-	0.99	(0.79-1.25)	0.90	(0.69-1.17)	0.72	(0.54-0.95)	0.87	(0.65-1.15)	0.67	(0.51-0.89)
FF only	-	-	0.49	(0.41-0.60)	0.39	(0.31-0.48)	0.36	(0.28-0.45)	0.34	(0.27-0.42)	0.30	(0.24-0.37)
Don't know	-	-	0.52	(0.40-0.67)	0.50	(0.37-0.68)	0.50	(0.36-0.69)	0.49	(0.35-0.67)	0.54	(0.39-0.74)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.3.D Associations between breastfeeding initiation and support received in hospital, GB, 1985 to 2010: Multivariable analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	7,262		7,584		7,047		7,368		9,777		12,315	
<i>Numbers initiated</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>% initiated</i>	63.6		63.4		66.5		69.8		76.1		81.4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Received enough support with infant feeding												
Yes	ns	ns	0.67	(0.48-0.93)	ns	ns	0.60	(0.42-0.86)	0.76	(0.62-0.92)	0.46	(0.38-0.56)
No	ns	ns	1.00		ns	ns	1.00		1.00		1.00	
Discussed infant feeding during antenatal visits												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	0.72	(0.58-0.89)
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.00	
Baby stayed beside mother while in hospital (rooming in)												
Yes	ns	ns	1.36	(1.17-1.58)	1.29	(1.10-1.52)	1.53	(1.26-1.87)	ns	ns	0.64	(0.43-0.94)
No	ns	ns	1.00		1.00		1.00		ns	ns	1.00	
Had skin-to-skin contact with baby												
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	1.00		1.00	
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	0.74	(0.55-0.98)	0.82	(0.61-1.12)
No	-	-	-	-	-	-	-	-	0.30	(0.25-0.36)	0.25	(0.20-0.32)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.4 Contribution of explanatory factors to breastfeeding initiation at the population level, GB, 1985 to 2010: PAF estimates

	1985	1990	1995	2000	2005	2010
Populations (n)	7,262	7,584	7,047	7,368	9,777	12,315
Numbers initiated	4,201	4,443	4,424	4,953	7,331	9,821
% initiated	63.6	63.4	66.5	69.8	76.1	81.4
PAF (%)						
Age at delivery						
Under 25				Reference		
25-29	11.6	11.2	12.2	9.2	4.6	7.2
30 or over	12.1	17.0	16.0	25.6	23.6	12.0
Education level						
18 or under				Reference		
Over 18	9.8	13.1	10.1	17.3	19.3	22.6
Socioeconomic status						
Routine & manual				Reference		
Managerial & professional	36.6	34.9	44.8	21.6	25.6	ns
Ethnicity						
White				Reference		
BME	-	-	-	5.6	10.8	11.8

Abbreviations: OR, odds ratio; PAFs, population attributable fractions; ns, OR not statistically significant; BME, black and minority ethnicity

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; PAF estimates based on prevalence of factor and statistically significant ORs ($P < 0.05$). Some ORs obtained from refitting final models with recoded variables. ORs were adjusted for other factors; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.4 continued

	1985	1990	1995	2000	2005	2010
Populations (n)	7,262	7,584	7,047	7,368	9,777	12,315
Numbers initiated	4,201	4,443	4,424	4,953	7,331	9,821
% initiated	63.6	63.4	66.5	69.8	76.1	81.4
PAF (%)						
Partnership status						
Single				Reference		
Married or cohabiting	44.4	32.7	26.3	21.6	25.6	43.6
Smoking status during pregnancy						
Yes				Reference		
Not during pregnancy or non-smoker	26.8	ns	24.0	ns	23.0	ns
Other women's infant feeding behaviours						
Knew mostly women who FF				Reference		
Knew women who BF or mixed fed	-	25.6	24.5	23.3	24.1	28.5
How mothers themselves were fed as babies						
FF only				Reference		
BF or mixed fed	-	28.0	28.0	26.9	33.3	38.2

Abbreviations: OR, odds ratio; PAFs, population attributable fractions; ns, OR not statistically significant; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; PAF estimates based on prevalence of factor and statistically significant ORs ($P < 0.05$). Some ORs obtained from refitting final models with recoded variables. ORs were adjusted for other factors; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 5.5 Summary of the associations between breastfeeding initiation and explanatory factors, GB, 1985 to 2010

Level	Explanatory factors	1985	1990	1995	2000	2005	2010
	Sociodemographic						
	30 or over at birth of index baby	●	●	●	●	●	ns
	Completed full-time education over age 18	●	●	●	●	●	●
	SOC: managerial and professional socioeconomic group	●	●	●	-	-	-
	NS-SEC	-	-	-	ns	ns	ns
	BME origin	-	-	-	●	●	●
	Married	●	●	ns	●	●	●
	Residing in Scotland	●	●	●	●	●	●
	Health-related						
	Normal birthweight	ns	●	ns	ns	ns	ns
	Caesarean delivery	●	●	ns	ns	ns	ns
	Length of hospital stay of 3 days or more	●	●	ns	●	●	●
	Baby was treated in a special care unit or with phototherapy	ns	ns	ns	ns	ns	●
	Smoked during pregnancy	●	ns	●	ns	●	ns
	Aware of health benefits of breastfeeding	-	-	-	●	●	●
	Direct previous breastfeeding experience						
	Breastfed most recent child for 6 weeks or more	●	●	●	●	●	●

Key:
 Individual
 Family and social support
 Local community
 Societal
 ● Positive association
 ● Negative association
 ns = Not significant
 - Not assessed by IFS

Table 5.5 continued

Level	Explanatory factors	1985	1990	1995	2000	2005	2010
	Indirect breastfeeding experience						
	Knew mostly women who breastfed their own babies	-	●	●	●	●	●
	Mother was exclusively breastfed as a baby	-	●	●	●	●	●
	Support in hospital						
	Discussed infant feeding during antenatal visits	ns	ns	ns	ns	ns	●
	Received enough support with infant feeding	ns	●	ns	●	●	●
	Baby stayed beside mother while in hospital (rooming in)	ns	●	●	●	ns	●
	Had skin-to-skin contact with baby	-	-	-	-	●	●

Key:
 Individual
 Family and social support
 Local community
 Societal
 ● Positive association
 ● Negative association
 ns = Not significant
 – Not assessed by IFS

6 Trends in breastfeeding continuation at one week in GB: 1985 to 2010

6.1 Chapter introduction

This chapter presents the results of the statistical analyses of the associations between breastfeeding continuation at one week and the explanatory factors. The statistical analyses addressed objectives 2, 3 and 4, which were as follows: to estimate the independent effects of each of factor on breastfeeding continuation at one week in each survey year (objective 2); to assess changes in the effects of each factor on breastfeeding continuation at one week over the period 1985 to 2010 (objective 3); and to estimate the extent to which the prevalence of explanatory factors contributed to breastfeeding continuation at one week at the population level in each survey year (objective 4). For these analyses, the main research populations were restricted to mothers who initiated breastfeeding; this is described in Table 6.1 below. Table 6.2 (pages 139-144) summarises the distribution of factors among these mothers in each survey year. Of these mothers, the proportion who continued to breastfeed at one week ranged from 83.8% in 2000 to 87% in 2010. The results are presented according to the order of the breastfeeding behaviours conceptual model, beginning with the sociodemographic factors in section 6.2. The chapter concludes with a summary in section 6.6.

Table 6.1 Summary of the research populations used in the analysis of breastfeeding continuation at one week

Survey populations	1985	1990	1995	2000	2005	2010
Numbers initially surveyed	8,154	11,105	12,314	13,112	19,848	30,760
Numbers responding at stage 1	7,455	9,777	9,130	9,492	12,290	15,724
Numbers excluded from analysis: Northern Ireland	0	1,823	1,753	1,778	1,886	2,648
Numbers excluded from analysis: multiple births	131	362	158	154	317	163
Numbers excluded from analysis: non-hospital births	62	8	172	192	310	598
Numbers included in main research populations and used in the analysis of breastfeeding initiation	7,262	7,584	7,047	7,368	9,777	12,315
Numbers excluded from analysis of breastfeeding continuation at one week: did not initiate breastfeeding	3,061	3,141	2,623	2,415	2,446	2,494
Numbers initiated and therefore used in the analysis of breastfeeding continuation at one week	4,201	4,443	4,424	4,953	7,331	9,821

6.2 The effects of sociodemographic factors

6.2.1 Univariable analysis

Table 6.3.A (page 146) shows the weighted proportions and unadjusted ORs for mothers who continued breastfeeding at one week according to the sociodemographic factors in each survey year. These associations were observed prior to adjustments for other factors. Associations were considered statistically significant if they showed P values of less than 0.10.

Similarly to breastfeeding initiation, breastfeeding continuation at one week was positively associated with being 30 or over, having completed full-time education over

18 and being in higher socioeconomic groups ($P<0.10$). Married and cohabiting mothers, and mothers of BME origin also continued to show higher odds of breastfeeding at one week than single and white mothers, respectively in each survey year. Mothers living in Scotland were less likely to breastfeed at one week than mothers in England and Wales; however, this association was statistically significant in 2005 and 2010 only ($P<0.10$) (Table 6.3.A).

6.2.2 Multivariable analysis

Adjustments for potential confounders attenuated the associations between sociodemographic factors and breastfeeding continuation at one week in each survey year (Table 6.4.A, page 153). For example, mothers aged 30 or over remained more likely to continue breastfeeding at one week than mothers who were younger than 30; however, this disparity narrowed from 1995 to 2010, particularly in favour of mothers who were younger than 25 years ($P<0.05$). Moreover, after adjustments, age was no longer associated with breastfeeding continuation at one week in 1985 and 1990. The effects of education and ethnicity were also attenuated in each survey year. Nevertheless, mothers who completed full-time education over 18 (OR: 1.73, 95% CI: 1.42-2.12 in 2010) and those of BME origin (OR: 2.29, 95% CI: 1.71-3.08 in 2010) remained more likely to continue breastfeeding at one week than mothers with lower education and those of white ethnicity, respectively.

In 2010, married mothers were still more likely to continue breastfeeding at one week than cohabiting and single mothers, as were mothers in the managerial and professional socioeconomic groups relative to routine and manual mothers. Mothers residing in England and Wales remained significantly more likely to continue

breastfeeding than those in Scotland, with the latter showing lower adjusted ORs of 0.73 (95% CI: 0.60-0.89) and 0.70 (95% CI: 0.60-0.83) in 2005 and 2010, respectively. For the remaining survey years, there were no significant associations between breastfeeding continuation at one week and partnership status, socioeconomic status, and country of residence, after adjusting for other factors. Of note, these sociodemographic disparities were observed among subgroups of women who had successfully initiated breastfeeding (Table 6.4.A).

6.2.3 Changes in the effects of sociodemographic factors on breastfeeding continuation at one week from 1985 to 2010

Figure 6.1 shows the adjusted ORs and 95% CIs for the association between age and breastfeeding continuation at one week from 1985 to 2010. Specifically, it illustrates that mothers over 30 had higher odds of continuing to breastfeed at one week than mothers under 25, although indicates there was evidence of heterogeneity in this effect over time ($I^2=69.1\%$; $P<0.10$), particularly in 1990.

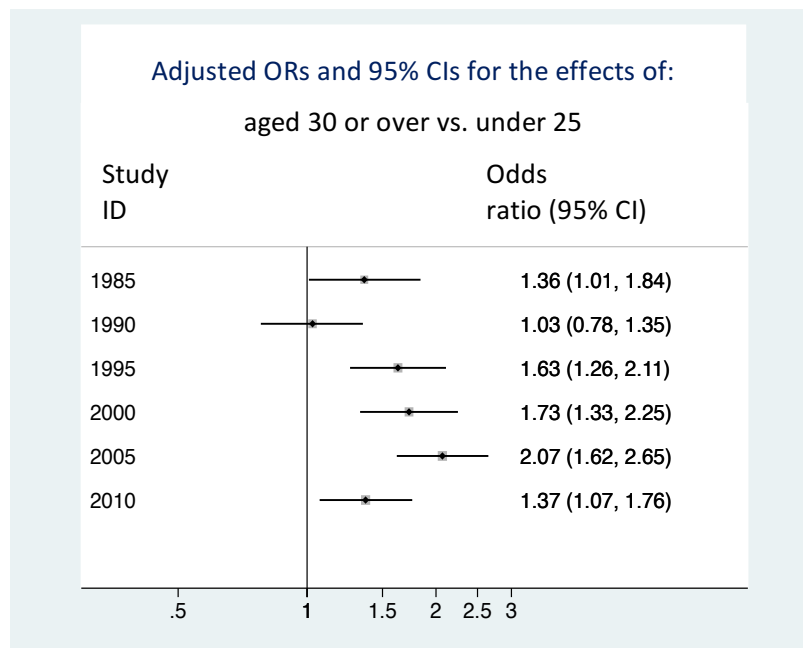


Figure 6.1 Change in the effect of age on breastfeeding continuation at one week, GB, 1985 to 2010.

Note: To estimate these effects, age was recoded as 'under 25', '25-29' and '30 or over', using 'under 25' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at one week in each year from 1985 to 2010 using this recoded variable.

Figure 6.2 shows the adjusted OR and 95% CIs for the association between education and breastfeeding at one week from 1985 to 2010. It shows that mothers who completed full-time education beyond age 18 were consistently more likely to continue breastfeeding at one week than mothers who completed at age 18 or under, with adjusted ORs ranging from 1.69 to 2.51. However, there was no significant heterogeneity in this effect over time ($I^2=22.1\%$; $P=0.27$).

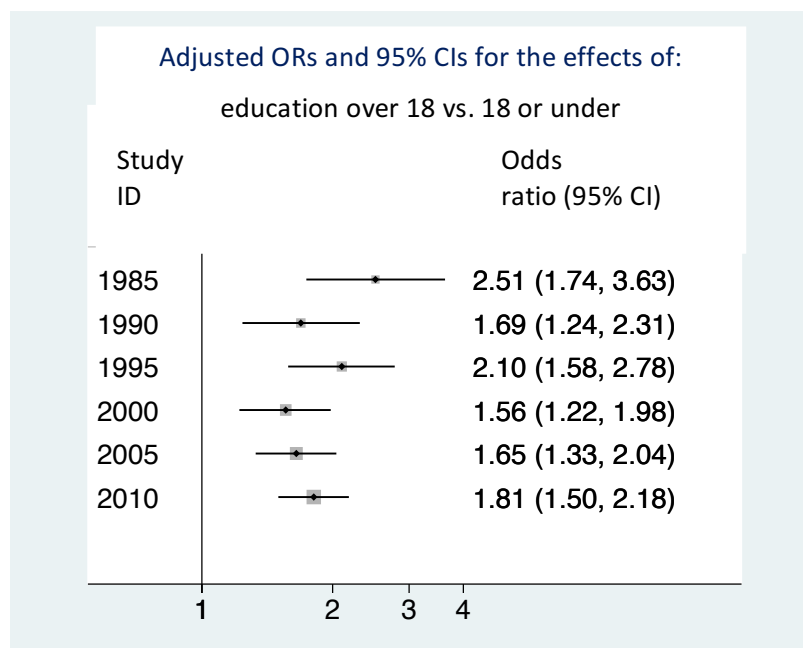


Figure 6.2 Change in the effect of education on breastfeeding continuation at one week, GB, 1985 to 2010.

Note: To estimate these effects, education was recoded as '18 or under' and 'over 18', using '18 or under' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at one week in each year from 1985 to 2010 using this recoded variable.

Figure 6.3 shows the adjusted ORs and 95% CIs for the association between ethnicity and breastfeeding at one week from 2000 to 2010. In each survey year, mothers who were of BME origin were about twice as likely as white mothers to continue breastfeeding at one week, with no significant variation in effect over time ($I^2=0\%$; $P=0.89$).

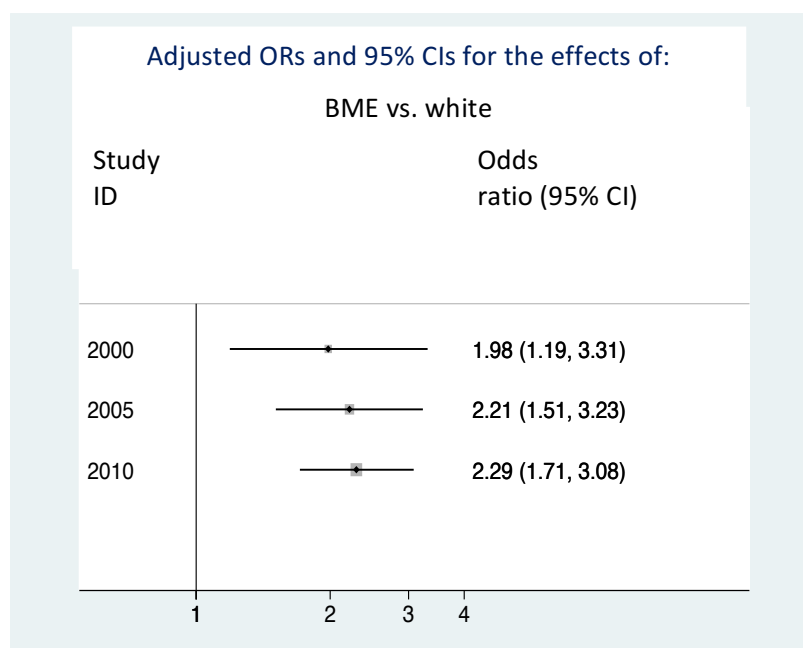


Figure 6.3 Change in the effect of ethnicity on breastfeeding continuation at one week, GB, 2000-2010.

Note: Ethnicity was not assessed in the 1985-1995 surveys.

6.2.4 Contribution of sociodemographic factors to overall breastfeeding continuation at one week in 1985 to 2010

As with breastfeeding initiation, PAF estimates for breastfeeding continuation at one week were calculated based on the adjusted ORs from the previous models and the prevalence of age, education and ethnicity. PAF estimates were calculated only for those survey years in which the above-named factors were significantly associated with breastfeeding continuation at one week ($P < 0.05$).

Assuming causality, the proportion of breastfeeding continuation at one week that was attributable to mothers aged 30 or over at delivery rose from 18.8% in 1995 to 28% in 2005, before falling to 14.6% in 2010. The trend for education was less consistent, with the proportion of breastfeeding continuation at one week attributable

to mothers with higher education over age 18 fluctuating from 12.9% in 1985 to 27.2% by 2010. Lastly, the proportion of breastfeeding continuation at one week that was attributable to mothers of BME origin more than doubled from 4.8% in 2000 to 10.6% in 2010. These trends were largely similar to those observed for the PAF estimates for breastfeeding initiation (Table 6.5, page 160).

6.3 The effects of health-related factors and direct previous experience of breastfeeding

6.3.1 Univariable analysis

Table 6.3.B (page 148) shows that, in contrast to breastfeeding initiation, breastfeeding continuation at one week showed associations with birthweight, type of delivery, and whether the baby was treated in special care or with phototherapy, in fewer survey years. It also shows that unlike breastfeeding initiation, breastfeeding continuation at one week had an inverse association with increasing length of stay in hospital or other maternity centres ($P < 0.10$). Similarly to initiation, breastfeeding continuation at one week showed a negative association with smoking during pregnancy in every survey year, with significantly lower odds of 0.47 (95% CI: 0.38-0.58) and 0.40 (95% CI: 0.32-0.49) in 1985 and 2010, respectively.

As with breastfeeding initiation, direct previous breastfeeding experience continued to show a strong association with breastfeeding continuation at one week. Mothers who breastfed their most recent child for at least six weeks were considerably more likely to continue breastfeeding at one week than mothers who never breastfed their most recent child ($P < 0.10$). Furthermore, mothers for whom this was their first baby were over twice as likely to continue breastfeeding at one week than multiparous

mothers who never breastfed their most recent child ($P<0.10$). Likewise, mothers who were aware of the health benefits of breastfeeding were significantly more likely to continue breastfeeding at one week from 2000 to 2010 than those who were unaware, with unadjusted ORs of 1.95 (95% CI: 1.47-2.57) in 2000 and 1.49 (95% CI: 1.21-1.84) in 2010. These associations were observed prior to adjustments for potential confounders, such as sociodemographic and support factors (Table 6.3.B).

6.3.2 Multivariable analysis

The effects of health-related factors on breastfeeding continuation at one week were attenuated after adjusting for the potential effects other factors (Table 6.4.B, page 155). For instance, smoking during pregnancy remained negatively associated with breastfeeding continuation at one week in 1985 only. Birthweight remained significant in 1995 and 2005 only, where the odds of still breastfeeding at one week were 2.09 (95% CI: 1.16-3.75) and 2.43 (95% CI: 1.45-4.07), respectively among mothers who gave birth to a baby of low birthweight. Following adjustments, the effects of the type of delivery and whether the baby was treated in special care or with phototherapy were non-significant in every survey year; and length of stay remained significant in 1995 only ($P<0.05$).

In 2000 and 2005, mothers who were aware of the health benefits of breastfeeding were still more than twice as likely to continue breastfeeding at one week as those who were unaware ($P<0.05$). In addition, direct previous breastfeeding experience continued to show a very strong positive association with breastfeeding continuation at one week ($P<0.05$). For instance, among mothers who breastfed their most recent child for six weeks or more, the adjusted odds of continuing to breastfeed

at one week ranged from 4.31 (95% CI: 2.95-6.31) in 1985 to 11.58 (95% CI: 5.32-18.34) in 2010. Furthermore, mothers for whom this was their first baby remained about twice as likely as mothers who never breastfed their most recent child to continue to breastfeed at one week in 1990 to 2010 ($P<0.05$) (Table 6.4.B).

6.4 The influence of other women's infant feeding behaviours

6.4.1 Univariable analysis

Table 6.3.C (page 150) shows that, as with breastfeeding initiation, mothers who knew mostly women who breastfed their own babies were significantly more likely to continue breastfeeding at one week in each survey year ($P<0.10$). Conversely, the odds of continuing to breastfeed at one week were significantly lower among the following mothers: those who knew mostly women who mixed fed their own babies; those who knew mostly women who formula fed their own babies; and those who either did not know other women who breastfeed or were otherwise unaware of how other women had fed their own babies ($P<0.10$). Likewise, mothers who were exclusively breastfed when they themselves were babies were most likely to continue breastfeeding at one week in each year compared to mothers who were either mixed fed, exclusively formula fed or unaware of how they were fed when they themselves were babies ($P<0.10$).

6.4.2 Multivariable analysis

After adjustments for potential confounders including sociodemographic differences, mothers who knew mostly women who breastfed their own babies remained most likely to continue breastfeeding at one week in each survey year, while mothers who knew mostly women who formula fed their own babies remained least likely to continue breastfeeding in 1990 (aOR: 0.37, 95% CI: 0.27-0.51) to 2010 (aOR: 0.39, 95% CI: 0.28-

0.54). Mothers were also more likely to continue breastfeeding at one week in each year if they themselves were exclusively breastfed as babies ($P<0.05$) (Table 6.4.C, page 157).

6.4.3 Changes in the influence of other women's infant feeding behaviours on breastfeeding continuation at one week from 1990 to 2010

Figure 6.4 shows that mothers who knew other women who breastfed their own babies, even if in combination with formula feeding, were more likely to continue breastfeeding at one week than those who knew mostly women who formula fed their own babies. There was no marked change in this effect over time ($I^2=0\%$; $P=0.63$).

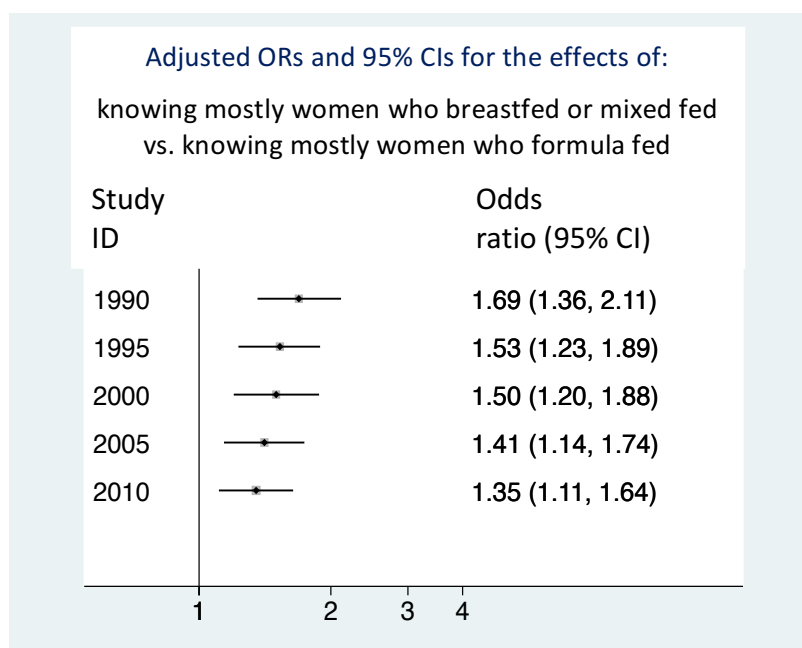


Figure 6.4 Change in the influence of how other women fed their own babies on breastfeeding continuation at one week, GB, 1990 to 2010.

Note: To estimate these effects, knowing other women's infant feeding behaviours was recoded as 'knowing mostly women who breastfed or mixed fed', 'knowing mostly women who formula fed' and 'don't know', using 'knowing mostly women who formula fed' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at one week in each year from 1990 to 2010 using this recoded variable. . This factor was not assessed by the IFS in 1985.

Figure 6.5 shows that mothers who were breastfed when they themselves were babies, whether exclusively or in combination with infant formula, were more likely to continue breastfeeding at one week than mothers who were entirely formula fed when they themselves were babies. There was evidence of heterogeneity in this effect ($I^2=55.2\%$; $P=0.06$), particularly due to the reduced effect in 2000.

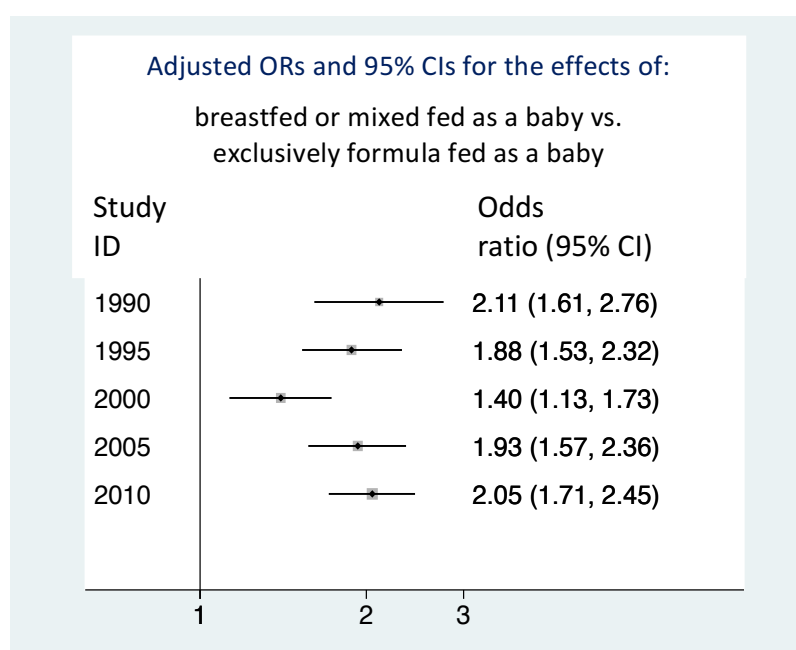


Figure 6.5 Change in the effect of how mothers themselves were fed as infants on breastfeeding at one week, GB, 1990 to 2010.

Note: To estimate these effects, this variable was recoded as 'breastfed or mixed fed as a baby', 'exclusively formula fed as a baby' and 'don't know', using 'exclusively formula fed as a baby' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at one week in each year from 1990 to 2010 using this recoded variable. This factor was not assessed by the IFS in 1985.

6.4.4 Contribution of the influence of other women's infant feeding behaviours to overall breastfeeding continuation at one week in 1990 to 2010

Table 6.5 (page 160) shows that, assuming causality, the proportion of breastfeeding continuation at one week that was attributable to mothers who knew other women

who breastfed their own babies declined steadily from 22.9% in 1990 to 16.4% in 2010. The proportion of breastfeeding continuation at one week attributable to mothers who were breastfed when they themselves were babies declined substantially from 30.8% in 1990 to 13.9% 2000, before increasing to 32.1% by 2010.

6.5 The effects of receiving support with breastfeeding in hospital and at home

6.5.1 Univariable analysis

Prior to adjustments for confounders, breastfeeding continuation at one week was positively associated with having skin-to-skin contact, especially within one of hour of giving birth; and rooming-in, although this effect was statistically significant in fewer survey years. Positive associations were also observed with being taught how to position and attach the baby at the breast for breastfeeding, and initiating breastfeeding within one hour of birth ($P<0.10$).

While initiating breastfeeding early showed a statistically significant positive effect, receiving help to initiate breastfeeding showed a negative effect on breastfeeding continuation at one week from 2000 to 2010. However, unlike breastfeeding initiation, breastfeeding continuation at one week was positively associated with receiving enough help with infant feeding in hospital in each survey year ($P<0.10$) (Table 6.3.D, page 151).

6.5.2 Multivariable analysis

Following adjustments, breastfeeding continuation at one week remained positively associated with being taught to position and attach the baby for breastfeeding in 2005

(aOR: 1.58, 95% CI: 1.25-1.99) and 2010 (aOR: 1.22, 95% CI: 1.02-1.47). Mothers who initiated breastfeeding early also remained statistically significantly more likely to continue breastfeeding at one week from 1985 to 2005 ($P < 0.05$). Those who felt that they received enough help with infant feeding in hospital also remained more likely to continue breastfeeding at one week in each survey year, showing higher adjusted ORs of 2.34 (95% CI: 1.65-3.33) in 1985 and 1.56 (95% CI: 1.31-1.87) in 2010. Mothers who received help to initiate breastfeeding remained less likely to continue breastfeeding at one week from 2000 to 2010, showing an adjusted OR of 0.62 (0.47-0.81) in 2000 for example (Table 6.4.D, page 158).

6.6 Chapter summary

Among mothers who initiated breastfeeding, over 80% of mothers continued to breastfeed at one week in each survey year from 1985 to 2010. The results presented in this chapter indicated that over the research period, there were considerable disparities in the practice of breastfeeding at one week between subgroups of mothers, despite the fact that these mothers had successfully initiated breastfeeding. Specifically, independent positive associations were observed between breastfeeding continuation at one week and the following factors: older maternal age; higher education (beyond age 18); BME origin; residing in England and Wales rather than Scotland; having a baby with low birthweight; having breastfed one's most recent child for at least six weeks; having an awareness of the health benefits of breastfeeding; knowing mostly women who breastfed their own babies; being exclusively breastfed oneself as a baby; receiving enough help with infant feeding in hospital; being taught to position and attach the baby at the breast; and initiating breastfeeding early. In contrast, independent negative

associations were observed between breastfeeding continuation at one week and smoking during pregnancy and receiving enough help with infant feeding in hospital (Table 6.6, page 161). When compared to the independent associations observed with breastfeeding initiation in the previous chapter, these present findings suggest that some of the effects underlying the inequalities in breastfeeding initiation between subgroups may continue to influence the practice of breastfeeding at one week.

The results indicated that there was no evidence of heterogeneity in the effects of education and ethnicity, and in the influence of other women's infant feeding behaviours over time that might account for the upward trend in breastfeeding continuation at one week at the population level. At the same time, assuming causality, the PAF estimates indicated that there were important changes in the contribution of these factors to overall breastfeeding continuation at one week, especially the increasing contributions of education and ethnicity.

Conversely, age and how mothers were fed when they were babies showed significant variation in their effects on breastfeeding continuation at one week over the research period. The contributions of these factors to overall breastfeeding continuation at one week, although considerable, were less consistent over time. The next chapter, chapter 7, considers the potential influences of these and other factors on the practice of breastfeeding at six weeks among mothers who successfully continued to breastfeed at one week.

Table 6.2. Distribution of the explanatory factors among the population of mothers who initiated breastfeeding and who were included in the analysis of breastfeeding continuation at one week, GB, 1985 to 2010

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age at delivery												
Under 20	267	(5.5)	219	(4.1)	197	(4.2)	244	(4.8)	306	(5.1)	255	(3.9)
20-24	1,160	(26.9)	973	(21.2)	736	(16.2)	766	(15.2)	1,124	(17.7)	1,228	(15.8)
25-29	1,553	(37.6)	1,701	(38.5)	1,499	(34.2)	1,380	(28.1)	1,795	(26.0)	2,758	(29.0)
30 or over	1,207	(30.1)	1,537	(36.2)	1,985	(45.3)	2,551	(51.9)	4,078	(51.1)	5,540	(51.3)
<i>Missing</i>	14	0.3	13	0.3	7	0.2	12	0.2	28	0.4	40	0.4
Education level												
16 or under	2,107	(49.9)	1,902	(43.0)	1,514	(34.8)	1,426	(28.8)	1,536	(22.1)	1,349	(15.3)
17 or 18	1,267	(30.8)	1,566	(36.2)	1,651	(38.5)	1,705	(35.6)	2,311	(32.6)	2,538	(27.6)
Over 18	799	(19.3)	939	(20.8)	1,225	(26.7)	1,793	(35.6)	3,417	(45.2)	5,837	(57.2)
<i>Missing</i>	28	0.7	36	0.8	34	0.8	29	0.6	67	0.9	97	1.0
SOC												
Managerial & professional	318	(8.0)	427	(10.2)	423	(9.1)	-	-	-	-	-	-
Intermediate	970	(25.1)	1,011	(24.6)	1,238	(30.2)	-	-	-	-	-	-
Skilled-Non-manual	400	(9.9)	386	(9.3)	341	(8.4)	-	-	-	-	-	-
Skilled-Manual	1,229	(30.9)	1,164	(28.3)	950	(23.3)	-	-	-	-	-	-
Semi-skilled	517	(12.8)	512	(11.6)	394	(9.3)	-	-	-	-	-	-
Unskilled	218	(3.3)	91	(1.4)	170	(2.8)	-	-	-	-	-	-
Unclassified	529	(10.1)	828	(14.6)	878	(16.8)	-	-	-	-	-	-
<i>Missing</i>	20	0.5	24	0.5	30	0.7	-	-	-	-	-	-

Abbreviations: SOC, socioeconomic status based on partner's occupation. Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.2. continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
NS-SEC												
Managerial & professional	-	-	-	-	-	-	1,767	(35.6)	3,173	(41.5)	4,189	(38.4)
Intermediate	-	-	-	-	-	-	1,038	(21.6)	1,574	(21.1)	1,930	(19.4)
Routine and manual	-	-	-	-	-	-	1,192	(23.7)	2,003	(28.3)	2,286	(24.8)
Never worked	-	-	-	-	-	-	500	(10.1)	381	(6.3)	660	(8.9)
Unclassified	-	-	-	-	-	-	456	(8.9)	200	(2.8)	756	(8.4)
Ethnicity												
White	-	-	-	-	-	-	6,747	(93.6)	6,297	(84.4)	8,208	(82.7)
BME	-	-	-	-	-	-	415	(6.9)	970	(15.6)	1,421	(17.3)
Missing	-	-	-	-	-	-	206	2.8	64	0.9	96	1.0
Partnership status												
Married	3,516	(86.3)	3,428	(80.0)	3,142	(72.4)	3,162	(66.1)	4,484	(62.4)	6,235	(61.5)
Cohabiting	301	(7.0)	486	(10.9)	700	(16.7)	1,129	(23.2)	1,791	(25.4)	2,547	(27.2)
Single	363	(6.7)	505	(9.0)	552	(10.9)	624	(10.7)	963	(12.2)	943	(11.4)
Missing	21	0.5	24	0.5	30	0.7	38	0.8	93	1.3	96	1.0
Country of residence												
England & Wales	3,247	(91.8)	3,410	(92.9)	3,298	(93.0)	3,594	(93.4)	5,838	(90.9)	7,585	(93.2)
Scotland	954	(8.2)	1,033	(7.1)	1,126	(7.0)	1,359	(6.6)	1,493	(9.1)	2,236	(6.8)

Abbreviations: NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.2. continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Baby's birthweight (kg)												
Less than 2.5	189	(4.6)	151	(3.2)	233	(5.2)	268	(5.5)	391	(5.5)	448	(5.1)
2.5 - 2.99	706	(16.7)	758	(17.7)	706	(16.5)	746	(15.8)	1,075	(15.0)	1,295	(14.3)
3 -3.49	1,653	(39.5)	1,660	(37.9)	1,625	(36.8)	1,646	(34.6)	2,507	(35.0)	3,453	(35.9)
3.5 or more	1,638	(39.2)	1,818	(41.2)	1,847	(41.4)	2,249	(44.1)	3,313	(44.4)	4,516	(44.7)
<i>Missing</i>	15	0.4	56	1.3	13	0.3	44	0.9	45	0.6	109	1.1
Parity												
1	2,115	(50.0)	2,256	(49.9)	2,289	(51.2)	2,590	(51.7)	3,859	(54.2)	5,188	(54.5)
2	1,286	(31.1)	1,285	(29.7)	1,334	(30.9)	1,602	(32.9)	2,417	(32.6)	3,234	(32.5)
3 or more	781	(18.9)	876	(20.4)	777	(17.8)	761	(15.4)	1,055	(13.2)	1,317	(13.0)
<i>Missing</i>	19	0.5	26	0.6	24	0.5	0	0	0	0	82	0.8
Type of Delivery												
Vaginal spontaneous	3,213	(77.6)	3,367	(77.4)	3,149	(71.6)	3,171	(64.5)	4,507	(63.0)	5,855	(61.6)
Caesarean	443	(10.5)	523	(11.6)	702	(15.7)	1,073	(21.5)	1,825	(23.7)	2,466	(23.9)
Vaginal assisted	498	(12.0)	495	(11.0)	557	(12.7)	704	(14.0)	978	(13.4)	1,473	(14.5)
<i>Missing</i>	47	1.1	58	1.3	16	0.4	5	0.1	21	0.3	27	0.3
Length of hospital or other maternity centres												
2 days or less	1,133	(30.6)	1,503	(38.9)	1,157	(28.2)	2,507	(54.4)	4,432	(62.9)	6,261	(68.5)
3-5 days	1,578	(36.2)	1,962	(43.0)	1,841	(38.5)	1,923	(36.4)	2,412	(31.6)	2,621	(26.3)
6 days or more	1,449	(33.1)	841	(18.1)	1,426	(33.3)	500	(9.2)	414	(5.5)	532	(5.2)
<i>Missing</i>	41	1.0	137	3.1	0	0	23	0.5	73	1.0	407	4.1

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Baby was treated in a special care unit or with phototherapy												
Yes	843	(20.7)	559	(11.5)	632	(13.0)	640	(12.1)	837	(11.2)	1,052	(10.8)
No	3,239	(79.3)	3,854	(88.5)	3,771	(87.0)	4,275	(87.9)	6,474	(88.8)	8,743	(89.2)
Missing	258	3.6	64	0.8	33	0.5	56	0.8	22	0.2	34	0.3
Smoking status during pregnancy												
Yes	1,009	(22.5)	1,018	(21.5)	799	(17.0)	815	(15.3)	977	(13.2)	875	(9.7)
No	489	(11.9)	499	(11.7)	573	(13.1)	169	(3.6)	161	(2.3)	222	(2.2)
Non-smoker	2,677	(65.6)	2,859	(66.8)	3,018	(69.9)	3,806	(81.1)	5,993	(84.5)	8,489	(88.1)
Missing	26	0.6	67	1.5	34	0.8	163	3.3	200	2.7	235	2.4
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	4,545	(92.6)	6,565	(89.9)	8,699	(87.6)
No	-	-	-	-	-	-	336	(7.4)	636	(10.1)	945	(12.4)
Missing	-	-	-	-	-	-	72	1.5	130	1.8	177	1.8
Whether breastfed most recent child												
BF for 6 wks+	1,351	(34.0)	1,244	(29.5)	1,380	(32.2)	1,435	(29.9)	2,213	(29.2)	3,110	(31.6)
BF for <6 wks	344	(9.1)	457	(11.1)	367	(8.7)	484	(10.2)	686	(9.1)	647	(6.4)
Never BF recent	228	(5.2)	409	(8.9)	347	(7.6)	353	(7.1)	526	(7.2)	486	(5.6)
No previous child	2,115	(51.7)	2,256	(50.5)	2,289	(51.5)	2,590	(52.8)	3,859	(54.5)	5,188	(56.4)
Missing	163	3.9	77	1.7	41	0.9	91	1.8	47	0.6	390	4.0

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Other women's infant feeding behaviours												
Knew mostly women who BF	-	-	1,139	(26.5)	1,289	(30.3)	1,422	(29.3)	1,931	(26.1)	1,686	(17.4)
Knew mostly women who mixed fed	-	-	1,114	(26.0)	1,080	(24.8)	1,170	(24.9)	2,099	(28.8)	4,314	(43.7)
Knew mostly women who FF	-	-	1,688	(36.2)	1,559	(34.4)	1,595	(31.7)	2,204	(29.9)	2,463	(24.5)
Unaware	-	-	478	(11.4)	463	(10.5)	655	(14.1)	1,064	(15.2)	1,338	(14.4)
Missing	-	-	24	0.5	33	0.7	111	2.2	33	0.5	20	0.2
How mothers themselves were fed as babies												
BF only	-	-	1,275	(29.9)	1,112	(26.3)	1,177	(24.8)	2,022	(29.3)	3,318	(35.5)
Mixed fed	-	-	1,091	(25.5)	1,017	(24.3)	1,006	(21.9)	1,547	(22.7)	2,240	(24.0)
FF only	-	-	1,638	(35.1)	1,921	(40.5)	2,368	(45.3)	3,156	(40.0)	3,414	(31.2)
Don't know	-	-	414	(9.5)	374	(8.9)	371	(8.0)	563	(8.0)	787	(9.3)
Missing	-	-	25	0.6	0	0	31	0.6	43	0.6	62	0.6
Received enough support with infant feeding												
Yes	3,990	(95.4)	4,085	(94.3)	4,140	(94.6)	4,647	(94.0)	5,561	(75.5)	7,173	(73.7)
No	187	(4.6)	249	(5.7)	230	(5.4)	281	(6.0)	1,704	(24.5)	2,548	(26.3)
Missing	24	0.6	109	2.5	54	1.2	25	0.5	66	0.9	100	1.0
Discussed feeding baby during antenatal visits												
Yes	1,833	(41.7)	2,051	(45.6)	2,671	(58.6)	3,481	(69.1)	5,051	(68.4)	7,553	(75.0)
No	2,332	(58.3)	2,319	(54.4)	1,717	(41.4)	1,383	(30.9)	2,136	(31.6)	2,237	(25.0)
Missing	36	0.9	73	1.6	36	0.8	89	1.8	144	2.0	31	0.3

Abbreviations: BF, breastfed; FF, formula fed

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Research populations (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
	<i>n</i>	% ^b	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Baby stayed beside mother while in hospital (rooming in)												
Yes	1,985	(48.6)	2,687	(64.1)	3,232	(76.5)	4,011	(81.9)	6,161	(85.1)	8,764	(90.0)
No	2,186	(51.4)	1,688	(35.9)	1,135	(23.5)	918	(18.1)	1,118	(14.9)	995	(10.0)
Missing	30	0.7	68	1.5	57	1.3	24	0.5	52	0.7	62	0.6
Taught to position and attach the baby at the breast for breastfeeding												
Yes	-	-	-	-	-	-	-	-	2,161	(29.7)	4,697	(48.1)
No	-	-	-	-	-	-	-	-	5,140	(70.3)	5,056	(51.9)
Missing	-	-	-	-	-	-	-	-	30	0.4	68	0.7
Had skin-to-skin contact with baby												
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	5,653	(76.8)	8,280	(83.7)
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	675	(9.0)	744	(7.9)
No	-	-	-	-	-	-	-	-	966	(14.2)	763	(8.4)
Missing	-	-	-	-	-	-	-	-	37	0.5	34	0.3
Early initiation of breastfeeding												
Yes	2,338	(59.0)	2,586	(62.6)	2,864	(67.0)	3,569	(73.5)	5,261	(74.0)	7,311	(77.0)
No	1,762	(41.0)	1,741	(37.4)	1,482	(33.0)	1,304	(26.5)	1,874	(26.0)	2,217	(23.0)
Missing	101	2.4	116	2.6	78	1.8	80	1.6	196	2.7	293	3.0
Received help to initiate breastfeeding												
Yes	-	-	-	-	-	-	3,403	(67.7)	5,340	(72.4)	6,853	(68.7)
No	-	-	-	-	-	-	1,527	(32.3)	1,974	(27.6)	2,953	(31.3)
Missing	-	-	-	-	-	-	23	0.5	17	0.2	15	0.2

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.A Associations between breastfeeding continuation at one week and sociodemographic factors, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations initiated (n)</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>Still BF at 1wk, n</i>	3,555			3,678			3,438			4,063			6,137			8,428		
<i>Still BF at 1wk %</i>	86.4			84.7			84.3			83.8			84.7			87.0		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Age at delivery																		
Under 20	76.2	0.34	(0.23-0.49)	69.8	0.29	(0.21-0.42)	69.6	0.29	(0.20-0.42)	66.3	0.28	(0.20-0.38)	70.8	0.29	(0.21-0.40)	70.4	0.23	(0.16-0.3
20-24	81.8	0.47	(0.36-0.61)	79.8	0.51	(0.40-0.65)	75.2	0.38	(0.29-0.49)	76.8	0.46	(0.37-0.58)	75.5	0.37	(0.31-0.44)	79.1	0.37	(0.30-0.4
25-29	88.1	0.78	(0.60-1.02)	85.2	0.73	(0.58-0.92)	84.3	0.67	(0.54-0.84)	83.3	0.70	(0.57-0.86)	84.7	0.66	(0.54-0.80)	86.5	0.62	(0.53-0.7
30 or over	90.5	1.00		88.7	1.00		88.9	1.00		87.7	1.00		89.3	1.00		91.1	1.00	
Education level																		
16 or under	82.0	0.60	(0.48-0.74)	79.7	0.64	(0.52-0.78)	77.4	0.64	(0.53-0.79)	75.7	0.66	(0.54-0.80)	74.8	0.62	(0.52-0.76)	76.4	0.72	(0.60-0.8
17 or 18	88.4	1.00		86.0	1.00		84.2	1.00		82.6	1.00		82.6	1.00		81.7	1.00	
Over 18	94.9	2.43	(1.65-3.60)	92.7	2.08	(1.52-2.84)	93.3	2.61	(1.94-3.53)	91.3	2.22	(1.76-2.79)	91.2	2.18	(1.80-2.65)	92.5	2.76	(2.33-3.2
SOC																		
Managerial & professional	95.2	3.64	(2.04-6.50)	94.3	3.78	(2.35-6.08)	93.0	3.14	(1.97-5.02)	-	-	-	-	-	-	-	-	-
Intermediate	90.5	1.74	(1.31-2.31)	89.0	1.86	(1.43-2.43)	87.6	1.67	(1.28-2.17)	-	-	-	-	-	-	-	-	-
Skilled-Non-manual	88.0	1.33	(0.93-1.92)	85.7	1.38	(0.98-1.96)	88.6	1.83	(1.21-2.77)	-	-	-	-	-	-	-	-	-
Skilled-Manual	84.6	1.00		81.3	1.00		81.0	1.00		-	-	-	-	-	-	-	-	-
Semi-skilled	81.8	0.82	(0.61-1.10)	79.3	0.88	(0.66-1.18)	79.0	0.88	(0.63-1.23)	-	-	-	-	-	-	-	-	-
Unskilled	84.7	1.01	(0.67-1.52)	79.5	0.89	(0.49-1.61)	76.7	0.77	(0.49-1.22)	-	-	-	-	-	-	-	-	-
Unclassified	79.4	0.70	(0.52-0.94)	81.5	1.01	(0.79-1.30)	80.4	0.97	(0.74-1.26)	-	-	-	-	-	-	-	-	-

Abbreviations: OR, odds ratio; CI, confidence interval; SOC, socioeconomic status based on partner's occupation. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.A continued

	1985			1990			1995			2000			2005			2010		
<i>Populations initiated (n)</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>Still BF at 1wk, n</i>	3,555			3,678			3,438			4,063			6,137			8,428		
<i>Still BF at 1wk %</i>	86.4			84.7			84.3			83.8			84.7			87.0		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
NS-SEC																		
Managerial & professional	-	-	-	-	-	-	-	-	-	89.9	2.68	(2.13-3.37)	90.3	2.57	(2.19-3.02)	91.9	2.51	(2.09-3.01)
Intermediate	-	-	-	-	-	-	-	-	-	82.7	1.45	(1.15-1.83)	81.3	1.20	(1.01-1.42)	84.4	1.19	(0.98-1.44)
Routine and manual	-	-	-	-	-	-	-	-	-	76.8	1.00		78.4	1.00		82.0	1.00	
Never worked	-	-	-	-	-	-	-	-	-	81.4	1.33	(0.99-1.78)	86.3	1.73	(1.28-2.34)	86.4	1.39	(1.03-1.86)
Unclassified	-	-	-	-	-	-	-	-	-	83.4	1.52	(1.11-2.09)	86.1	1.70	(1.10-2.64)	86.2	1.37	(1.03-1.81)
Ethnicity																		
White	-	-	-	-	-	-	-	-	-	83.0	1.00		83.2	1.00		85.1	1.00	
BME	-	-	-	-	-	-	-	-	-	92.3	2.47	(1.63-3.76)	92.6	2.51	(1.85-3.39)	94.9	3.24	(2.40-4.38)
Partnership status																		
Married	87.5	1.00		86.1	1.00		86.2	1.00		85.9	1.00		87.6	1.00		90.6	1.00	
Cohabiting	81.7	0.64	(0.46-0.89)	81.6	0.71	(0.54-0.94)	80.4	0.65	(0.51-0.83)	80.5	0.68	(0.56-0.83)	80.7	0.59	(0.51-0.69)	82.6	0.49	(0.42-0.58)
Single	76.9	0.47	(0.35-0.64)	76.2	0.51	(0.40-0.66)	77.7	0.56	(0.43-0.72)	78.0	0.59	(0.46-0.74)	77.4	0.48	(0.40-0.58)	78.6	0.38	(0.31-0.46)
Country of residence																		
England & Wales	86.5	1.00		84.9	1.00		84.4	1.00		83.9	1.00		85.1	1.00		87.3	1.00	
Scotland	85.1	0.89	(0.72-1.09)	82.6	0.84	(0.70-1.02)	82.5	0.87	(0.72-1.05)	82.2	0.89	(0.75-1.05)	81.1	0.75	(0.66-0.86)	82.9	0.70	(0.61-0.81)

Abbreviations: OR, odds ratio; CI, confidence interval; NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.B Associations between breastfeeding continuation at one week and health-related factors, and previous breastfeeding experience, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations initiated (n)</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>Still BF at 1wk, n</i>	3,555			3,678			3,438			4,063			6,137			8,428		
<i>Still BF at 1wk %</i>	86.4			84.7			84.3			83.8			84.7			87.0		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Birthweight (kg)																		
Less than 2.5	85.1	0.83	(0.52-1.32)	82.2	0.85	(0.52-1.38)	87.8	1.61	(0.98-2.63)	86.6	1.17	(0.78-1.77)	90.7	1.79	(1.16-2.77)	89.0	1.17	(0.80-1.71)
2.5 - 2.99	85.9	0.88	(0.66-1.16)	81.9	0.83	(0.65-1.06)	80.4	0.75	(0.58-0.96)	81.4	0.80	(0.63-1.01)	83.7	0.94	(0.75-1.18)	86.5	0.93	(0.75-1.15)
3 - 3.49	85.8	0.87	(0.70-1.08)	86.6	1.18	(0.96-1.45)	84.8	1.01	(0.82-1.25)	83.3	0.91	(0.75-1.10)	84.4	1.00	(0.84-1.19)	86.3	0.91	(0.78-1.07)
3.5 or more	87.4	1.00		84.5	1.00		84.6	1.00		84.6	1.00		84.5	1.00		87.4	1.00	
Type of delivery																		
Vaginal spontaneous	86.7	1.00		85.9	1.00		85.2	1.00		84.2	1.00		84.6	1.00		87.2	1.00	
Caesarean	87.6	1.08	(0.78-1.50)	78.8	0.61	(0.47-0.79)	83.1	0.86	(0.67-1.10)	84.1	0.99	(0.80-1.22)	85.5	1.07	(0.89-1.29)	86.7	0.96	(0.81-1.14)
Vaginal assisted	83.1	0.75	(0.57-0.99)	83.7	0.85	(0.64-1.12)	81.2	0.75	(0.58-0.98)	81.2	0.81	(0.64-1.02)	83.5	0.92	(0.73-1.15)	86.9	0.97	(0.79-1.20)
Length of stay in hospital or other maternity centres																		
2 days or less	90.6	1.00		87.7	1.00		84.4	1.00		84.9	1.00		85.0	1.00		87.6	1.00	
3-5 days	84.8	0.58	(0.45-0.75)	83.2	0.70	(0.56-0.86)	81.0	0.79	(0.63-0.98)	82.0	0.81	(0.68-0.97)	84.2	0.94	(0.80-1.11)	84.9	0.79	(0.68-0.93)
6 days or more	84.5	0.57	(0.44-0.74)	81.3	0.61	(0.47-0.79)	88.2	1.38	(1.07-1.78)	84.7	0.99	(0.73-1.34)	84.2	0.94	(0.66-1.34)	89.0	1.14	(0.81-1.61)
Baby was treated in a special care unit or with phototherapy																		
Yes	84.7	0.85	(0.67-1.07)	85.1	1.03	(0.78-1.36)	84.0	0.97	(0.74-1.27)	83.2	0.95	(0.73-1.22)	86.4	1.17	(0.90-1.52)	88.6	1.19	(0.93-1.51)
No	86.8	1.00		84.7	1.00		84.3	1.00		83.9	1.00		84.5	1.00		86.8	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.B continued

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)
Smoking status during pregnancy												
Yes	79.2	0.47 (0.38-0.58)	78.1	0.52 (0.42-0.63)	77.6	0.54 (0.43-0.68)	73.9	0.45 (0.37-0.56)	74.4	0.44 (0.36-0.54)	75.7	0.40 (0.32-0.49)
No	85.3	0.71 (0.52-0.96)	83.0	0.71 (0.53-0.94)	81.6	0.69 (0.53-0.90)	72.5	0.42 (0.28-0.62)	71.5	0.38 (0.25-0.59)	70.9	0.31 (0.21-0.45)
Non-smoker	89.1	1.00	87.3	1.00	86.5	1.00	86.2	1.00	82.1	1.00	88.7	1.00
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	84.5	1.95 (1.47-2.57)	85.7	2.01 (1.60-2.53)	87.7	1.49 (1.21-1.84)
No	-	-	-	-	-	-	73.7	1.00	74.9	1.00	82.7	1.00
Whether breastfed most recent child												
BF for 6 wks+	95.3	7.05 (4.59-10.82)	96.7	14.03 (9.39-20.97)	95.8	10.29 (6.90-15.36)	96.2	13.05 (8.82-19.30)	97.5	20.41 (13.84-30.09)	96.4	15.03 (11.02-20.49)
BF for <6 wks	78.3	1.26 (0.82-1.94)	76.4	1.56 (1.12-2.17)	69.0	1.02 (0.71-1.46)	69.3	1.18 (0.85-1.64)	67.1	1.05 (0.79-1.41)	67.2	1.17 (0.87-1.57)
Never BF recent	74.1	1.00	67.5	1.00	68.7	1.00	65.7	1.00	66.0	1.00	63.8	1.00
No previous child	83.0	1.71 (1.20-2.43)	82.4	2.26 (1.74-2.95)	82.2	2.10 (1.57-2.81)	81.6	2.31 (1.76-3.04)	83.2	2.56 (2.01-3.26)	86.3	3.57 (2.81-4.55)

Abbreviations: BF, breastfed; wks, weeks. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.C Associations between breastfeeding continuation at one week and indirect breastfeeding experience, GB, 1990 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations initiated (n)</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>Still BF at 1wk, n</i>	3,555			3,678			3,438			4,063			6,137			8,428		
<i>Still BF at 1wk %</i>	86.4			84.7			84.3			83.8			84.7			87.0		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Other women's infant feeding behaviours																		
Knew mostly women who BF	-	-	-	93.8	1.00		94.2	1.00		91.8	1.00		93.2	1.00		95.2	1.00	
Knew mostly women who mixed fed	-	-	-	85.4	0.39	(0.28-0.53)	83.7	0.32	(0.23-0.44)	83.9	0.47	(0.36-0.62)	84.5	0.40	(0.31-0.52)	88.1	0.38	(0.28-0.50)
Knew mostly women who FF	-	-	-	78.2	0.24	(0.18-0.32)	77.7	0.22	(0.16-0.29)	76.7	0.30	(0.23-0.38)	77.5	0.25	(0.20-0.32)	78.7	0.19	(0.14-0.25)
Unaware	-	-	-	82.3	0.31	(0.21-0.45)	79.9	0.24	(0.17-0.35)	82.6	0.43	(0.31-0.58)	84.6	0.40	(0.30-0.54)	88.0	0.37	(0.27-0.52)
How mothers themselves were fed as babies																		
BF only	-	-	-	90.7	1.00		91.3	1.00		89.5	1.00		91.8	1.00		93.2	1.00	
Mixed fed	-	-	-	87.9	0.74	(0.56-0.99)	88.8	0.76	(0.55-1.04)	84.7	0.65	(0.49-0.86)	86.0	0.55	(0.42-0.71)	89.8	0.64	(0.51-0.80)
FF only	-	-	-	78.5	0.37	(0.29-0.48)	78.2	0.34	(0.26-0.45)	80.9	0.50	(0.39-0.63)	79.2	0.34	(0.28-0.41)	78.7	0.27	(0.22-0.32)
Don't know	-	-	-	79.6	0.40	(0.29-0.56)	80.1	0.39	(0.27-0.56)	80.9	0.50	(0.35-0.71)	82.5	0.42	(0.31-0.58)	84.2	0.39	(0.29-0.51)

Abbreviations: BF, breastfed; FF, formula fed

Notes: Categories for other women's breastfeeding behaviours shortened due to limited space; *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.D Associations between breastfeeding continuation at one week and support received in hospital, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations initiated (n)</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>Still BF at 1wk, n</i>	3,555			3,678			3,438			4,063			6,137			8,428		
<i>Still BF at 1wk %</i>	86.4			84.7			84.3			83.8			84.7			87.0		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Received enough support with infant feeding																		
Yes	87.0	2.30	(1.59-3.33)	85.0	1.57	(1.12-2.20)	84.8	1.77	(1.24-2.51)	84.1	1.47	(1.07-2.03)	85.8	1.39	(1.17-1.65)	88.7	1.67	(1.43-1.94)
No	74.4	1.00		78.3	1.00		75.9	1.00		78.3	1.00		81.3	1.00		82.5	1.00	
Discussed infant feeding during antenatal visits																		
Yes	86.0	0.94	(0.77-1.13)	85.0	1.05	(0.88-1.26)	83.4	0.86	(0.71-1.04)	83.8	1.00	(0.83-1.20)	84.7	0.98	(0.83-1.16)	86.9	0.97	(0.82-1.14)
No	86.8	1.00		84.3	1.00		85.5	1.00		83.8	1.00		84.9	1.00		87.2	1.00	
Baby stayed beside mother while in hospital (rooming in)																		
Yes	85.5	0.86	(0.71-1.04)	85.6	1.18	(0.98-1.41)	85.3	1.27	(1.03-1.57)	84.6	1.32	(1.07-1.62)	84.5	0.92	(0.74-1.14)	86.9	0.88	(0.69-1.11)
No	87.2	1.00		83.4	1.00		82.0	1.00		80.6	1.00		85.6	1.00		88.3	1.00	
Taught to position and attach the baby at the breast for breastfeeding																		
Yes	-	-	-	-	-	-	-	-	-	-	-	-	87.9	1.45	(1.21-1.74)	88.7	1.32	(1.14-1.53)
No	-	-	-	-	-	-	-	-	-	-	-	-	83.4	1.00		85.6	1.00	
Had skin-to-skin contact with baby																		
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	-	-	-	-	85.6	1.00		87.4	1.00	
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	-	-	-	-	81.3	0.73	(0.56-0.94)	87.4	1.00	(0.77-1.33)
No	-	-	-	-	-	-	-	-	-	-	-	-	81.8	0.75	(0.61-0.94)	83.0	0.70	(0.55-0.90)

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.3.D continued

	1985			1990			1995			2000			2005			2010		
<i>Populations initiated (n)</i>	4,201			4,443			4,424			4,953			7,331			9,821		
<i>Still BF at 1wk, n</i>	3,555			3,678			3,438			4,063			6,137			8,428		
<i>Still BF at 1wk %</i>	86.4			84.7			84.3			83.8			84.7			87.0		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Early initiation of breastfeeding																		
Yes	89.7	1.78	(1.46-2.17)	88.9	1.99	(1.65-2.40)	87.9	1.98	(1.64-2.40)	85.9	1.52	(1.26-1.82)	86.8	1.44	(1.21-1.71)	88.8	1.33	(1.13-1.58)
No	83.0	1.00		80.1	1.00		78.5	1.00		80.1	1.00		82.1	1.00		85.6	1.00	
Received help to initiate breastfeeding																		
Yes	-	-	-	-	-	-	-	-	-	81.3	0.52	(0.43-0.64)	82.7	0.54	(0.45-0.66)	85.9	0.70	(0.59-0.83)
No	-	-	-	-	-	-	-	-	-	89.2	1.00		89.8	1.00		89.7	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.A Associations between breastfeeding continuation at one week and sociodemographic factors, GB, 1985 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age at delivery												
Under 20	ns	ns	ns	ns	0.56	(0.36-0.88)	0.44	(0.30-0.66)	0.51	(0.35-0.76)	0.60	(0.38-0.96)
20-24	ns	ns	ns	ns	0.65	(0.48-0.88)	0.63	(0.47-0.83)	0.48	(0.37-0.61)	0.75	(0.58-0.97)
25-29	ns	ns	ns	ns	1.01	(0.78-1.32)	0.86	(0.68-1.09)	0.69	(0.54-0.87)	0.78	(0.64-0.95)
30 or over	ns	ns	ns	ns	1.00		1.00		1.00		1.00	
Education level												
16 or under	0.62	(0.51-0.75)	0.81	(0.65-1.01)	0.83	(0.66-1.05)	0.77	(0.61-0.96)	0.80	(0.64-1.01)	0.88	(0.70-1.10)
17 or 18	1.00		1.00		1.00		1.00		1.00		1.00	
Over 18	1.86	(1.33-2.60)	1.50	(1.08-2.10)	2.01	(1.43-2.81)	1.38	(1.07-1.79)	1.51	(1.20-1.90)	1.73	(1.42-2.12)
SOC												
Managerial & professional	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-
Intermediate	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-
Skilled-Non-manual	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-
Skilled-Manual	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-
Semi-skilled	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-
Unskilled	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-
Unclassified	ns	ns	ns	ns	ns	ns	-	-	-	-	-	-

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; SOC, socioeconomic status based on partner's occupation. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.A continued

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
NS-SEC												
Managerial & professional	-	-	-	-	-	-	ns	ns	ns	ns	1.34	(1.07-1.69)
Intermediate	-	-	-	-	-	-	ns	ns	ns	ns	1.01	(0.80-1.28)
Routine and manual	-	-	-	-	-	-	ns	ns	ns	ns	1.00	
Never worked	-	-	-	-	-	-	ns	ns	ns	ns	0.92	(0.61-1.38)
Unclassified	-	-	-	-	-	-	ns	ns	ns	ns	0.91	(0.66-1.26)
Ethnicity												
White	-	-	-	-	-	-	1.00		1.00		1.00	
BME	-	-	-	-	-	-	1.98	(1.19-3.31)	2.21	(1.51-3.23)	2.29	(1.71-3.08)
Partnership status												
Married	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.00	
Cohabiting	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	0.80	(0.66-0.98)
Single	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	0.70	(0.53-0.93)
Country of residence												
England & Wales	ns	ns	ns	ns	ns	ns	ns	ns	1.00		1.00	
Scotland	ns	ns	ns	ns	ns	ns	ns	ns	0.73	(0.60-0.89)	0.70	(0.60-0.83)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.B Associations between breastfeeding continuation at one week and health-related factors, and previous breastfeeding experience, GB, 1985 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
Populations initiated (n)	4,201		4,443		4,424		4,953		7,331		9,821	
Still BF at 1wk, n	3,555		3,678		3,438		4,063		6,137		8,428	
Still BF at 1wk %	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Birthweight (kg)												
Less than 2.5	ns	ns	ns	ns	2.09	(1.16-3.75)	ns	ns	2.43	(1.45-4.07)	ns	ns
2.5 - 2.99	ns	ns	ns	ns	0.87	(0.64-1.17)	ns	ns	1.24	(0.95-1.63)	ns	ns
3 - 3.49	ns	ns	ns	ns	1.14	(0.90-1.45)	ns	ns	1.14	(0.92-1.40)	ns	ns
3.5 or more	ns	ns	ns	ns	1.00		ns	ns	1.00		ns	ns
Type of delivery												
Vaginal spontaneous	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Caesarean	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Vaginal assisted	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Length of stay in hospital or other maternity centres												
2 days or less	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
3-5 days	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
6 days or more	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Baby was treated in a special care unit or with phototherapy												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.B continued

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Smoking status during pregnancy												
Yes	0.57	(0.47-0.69)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
No	0.79	(0.61-1.04)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Non-smoker	1.00		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	1.64	(1.17-2.31)	1.94	(1.45-2.61)	ns	ns
No	-	-	-	-	-	-	1.00		1.00		ns	ns
Whether breastfed most recent child												
BF for 6 wks+	4.31	(2.95-6.31)	9.16	(5.89-14.31)	5.75	(3.75-8.82)	6.65	(4.27-10.36)	11.58	(7.32-18.34)	7.78	(5.41-11.17)
BF for <6 wks	0.98	(0.67-1.45)	1.21	(0.84-1.74)	0.88	(0.59-1.31)	0.90	(0.62-1.32)	0.93	(0.65-1.32)	0.95	(0.67-1.35)
Never BF recent	1.00		1.00		1.00		1.00		1.00		1.00	
No previous child	1.26	(0.91-1.73)	1.75	(1.30-2.35)	1.98	(1.42-2.76)	2.05	(1.49-2.81)	2.00	(1.45-2.77)	2.63	(2.04-3.41)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; wks, weeks

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.C Associations between breastfeeding continuation at one week and indirect breastfeeding experience, GB, 1990 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Other women's infant feeding behaviours												
Knew mostly women who BF	-	-	1.00		1.00		1.00		1.00		1.00	
Knew mostly women who mixed fed	-	-	0.47	(0.34-0.66)	0.40	(0.28-0.57)	0.54	(0.40-0.72)	0.56	(0.42-0.75)	0.46	(0.33-0.63)
Knew mostly women who FF	-	-	0.37	(0.27-0.51)	0.38	(0.27-0.54)	0.47	(0.35-0.62)	0.49	(0.37-0.66)	0.39	(0.28-0.54)
Unaware	-	-	0.49	(0.33-0.73)	0.36	(0.24-0.55)	0.58	(0.41-0.82)	0.65	(0.46-0.91)	0.59	(0.41-0.86)
How mothers themselves were fed as babies												
BF only	-	-	1.00		1.00		1.00		1.00		1.00	
Mixed fed	-	-	0.87	(0.64-1.19)	0.90	(0.64-1.27)	0.70	(0.51-0.95)	0.61	(0.46-0.83)	0.70	(0.55-0.90)
FF only	-	-	0.49	(0.37-0.64)	0.46	(0.34-0.62)	0.59	(0.45-0.78)	0.41	(0.31-0.53)	0.42	(0.34-0.52)
Don't know	-	-	0.53	(0.37-0.76)	0.55	(0.36-0.84)	0.59	(0.38-0.89)	0.60	(0.39-0.91)	0.47	(0.34-0.65)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.D Associations between breastfeeding continuation at one week and support received in hospital, GB, 1985 to 2010: Multivariable analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Received enough support with infant feeding												
Yes	2.34	(1.65-3.33)	1.48	(1.02-2.14)	1.91	(1.28-2.86)	1.70	(1.16-2.48)	1.30	(1.05-1.59)	1.56	(1.31-1.87)
No	1.00		1.00		1.00		1.00		1.00		1.00	
Discussed infant feeding during antenatal visits												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Baby stayed beside mother while in hospital (rooming in)												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Taught to position and attach the baby at the breast for breastfeeding												
Yes	-	-	-	-	-	-	-	-	1.58	(1.25-1.99)	1.22	(1.02-1.47)
No	-	-	-	-	-	-	-	-	1.00		1.00	
Had skin-to-skin contact with baby												
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	ns	ns	ns	ns
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	ns	ns	ns	ns
No	-	-	-	-	-	-	-	-	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.4.D continued

	1985		1990		1995		2000		2005		2010	
<i>Populations initiated (n)</i>	4,201		4,443		4,424		4,953		7,331		9,821	
<i>Still BF at 1wk, n</i>	3,555		3,678		3,438		4,063		6,137		8,428	
<i>Still BF at 1wk %</i>	86.4		84.7		84.3		83.8		84.7		87.0	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Early initiation of breastfeeding												
Yes	1.53	(1.29-1.83)	1.69	(1.38-2.07)	1.60	(1.28-1.99)	1.32	(1.07-1.64)	1.40	(1.14-1.72)	ns	ns
No	1.00		1.00		1.00		1.00		1.00		ns	ns
Received help to initiate breastfeeding												
Yes	-	-	-	-	-	-	0.62	(0.47-0.81)	0.60	(0.46-0.78)	0.79	(0.64-0.98)
No	-	-	-	-	-	-	1.00		1.00		1.00	

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.5 Contribution of explanatory factors to breastfeeding continuation at one week at the population level, GB, 1985 to 2010: PAF estimates

	1985	1990	1995	2000	2005	2010
Populations initiated (n)	4,201	4,443	4,424	4,953	7,331	9,821
Still BF at 1wk, n	3,555	3,678	3,438	4,063	6,137	8,428
Still BF at 1wk %	86.4	84.7	84.3	83.8	84.7	87.0
PAF (%)						
Age at delivery						
Under 25			Reference			
25-29	8.8	ns	12.2	9.3	7.7	2.0
30 or over	8.4	ns	18.8	23.0	28.0	14.6
Education level						
18 or under			Reference			
Over 18	12.9	9.4	16.1	13.9	19.2	27.2
Ethnicity						
White			Reference			
BME	-	-	-	4.8	9.3	10.6
Other women's infant feeding behaviours						
Knew mostly women who FF			Reference			
Knew women who BF or mixed fed	-	22.9	20.1	19.1	16.7	16.4
How mothers themselves were fed as babies						
FF only			Reference			
BF or mixed fed	-	30.8	24.1	13.9	26.4	32.1

Abbreviations: OR, odds ratio; PAFs, population attributable fractions; ns, OR not statistically significant; BME, black and minority ethnicity; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; PAF estimates based on prevalence of factor and statistically significant ORs ($P < 0.05$). Some ORs obtained from refitting final models with recoded variables. ORs were adjusted for other factors; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 6.6 Summary of the associations between breastfeeding continuation at one week and explanatory factors, GB, 1985 to 2010

Level	Explanatory factors	1985	1990	1995	2000	2005	2010
	Sociodemographic						
	30 or over at birth of index baby	ns	ns	●	●	●	●
	Completed full-time education over age 18	●	●	●	●	●	●
	SOC	ns	ns	ns	-	-	-
	NS-SEC: managerial and professional socioeconomic group	-	-	-	ns	ns	●
	BME origin	-	-	-	●	●	●
	Married	ns	ns	ns	ns	ns	●
	Residing in Scotland	ns	ns	ns	ns	●	●
	Health-related						
	Low birthweight	ns	ns	●	ns	●	ns
	Type of delivery	ns	ns	ns	ns	ns	ns
	Length of stay in hospital or other maternity centres	ns	ns	ns	ns	ns	ns
	Baby was treated in a special care unit or with phototherapy	ns	ns	ns	ns	ns	ns
	Smoked during pregnancy	●	ns	ns	ns	ns	ns
	Aware of health benefits of breastfeeding	-	-	-	●	●	ns
	Direct previous breastfeeding experience						
	Breastfed most recent child for 6 weeks or more	●	●	●	●	●	●

Key:
 Individual
 Family and social support
 Local community
 Societal
 ● Positive association
 ● Negative association
 ns = Not significant
 - Not assessed by IFS

Table 6.6 continued

Level	Explanatory factors	1985	1990	1995	2000	2005	2010
	Indirect breastfeeding experience						
	Knew mostly women who breastfed their own babies	-	●	●	●	●	●
	Mother was exclusively breastfed as a baby	-	●	●	●	●	●
	Support in hospital						
	Discussed infant feeding during antenatal visits	ns	ns	ns	ns	ns	ns
	Received enough support with infant feeding	●	●	●	●	●	●
	Baby stayed beside mother while in hospital (rooming in)	ns	ns	ns	ns	ns	ns
	Taught to position and attach the baby for breastfeeding	-	-	-	-	●	●
	Had skin-to-skin contact with baby	-	-	-	-	ns	ns
	Early initiation of breastfeeding	●	●	●	●	●	ns
	Received help to initiate breastfeeding	-	-	-	●	●	●

Key:
 Individual
 Family and social support
 Local community
 Societal
 ● Positive association
 ● Negative association
 ns = Not significant
 - Not assessed by IFS

7 Trends in breastfeeding continuation at six weeks in GB: 1985 to 2010

7.1 Chapter introduction

This chapter presents the results of the statistical analyses of the associations between breastfeeding continuation at six weeks and the explanatory factors. The statistical analyses addressed objectives 2, 3 and 4, which were as follows: to estimate the independent effects of each of factor on breastfeeding continuation at six weeks in each survey year (objective 2); to assess changes in the effects of each factor on breastfeeding continuation at six weeks over the period 1985 to 2010 (objective 3); and to estimate the extent to which the prevalence of explanatory factors contributed to breastfeeding continuation at six weeks at the population level in each survey year (objective 4). For these analyses, the research populations were further restricted to mothers who continued to breastfeed at one week and whose baby was at least six weeks old (Table 7.1 below). Table 7.2 (pages 179-185) summarises the distribution of factors among these mothers in each survey year. Of these mothers, the proportion who continued to breastfeed at six weeks ranged from 70.1% in 1985 to 79.9% in 2010. The results are presented according to the order of the breastfeeding behaviours conceptual model, beginning with the sociodemographic factors. The chapter concludes with a summary in section 7.6.

Table 7.1 Summary of the research populations used in the analysis of breastfeeding continuation at six weeks

Survey populations	1985	1990	1995	2000	2005	2010
Numbers initially surveyed	8,154	11,105	12,314	13,112	19,848	30,760
Numbers responding at stage 1	7,455	9,777	9,130	9,492	12,290	15,724
Numbers excluded from analysis: Northern Ireland	0	1,823	1,753	1,778	1,886	2,648
Numbers excluded from analysis: multiple births	131	362	158	154	317	163
Numbers excluded from analysis: non-hospital births	62	8	172	192	310	598
Numbers included in main research populations and used in the analysis of breastfeeding initiation	7,262	7,584	7,047	7,368	9,777	12,315
Numbers excluded from analysis of breastfeeding continuation at one week: did not initiate breastfeeding	3,061	3,141	2,623	2,415	2,446	2,494
Numbers initiated and used in the analysis of breastfeeding continuation at one week	4,201	4,443	4,424	4,953	7,331	9,821
Numbers excluded from analysis of breastfeeding continuation at six weeks: did not continue breastfeeding at one week	646	765	986	890	1,194	1,393
Numbers excluded from analysis of breastfeeding continuation at six weeks: baby was younger than six weeks at time of stage 1 questionnaire	3	45	260	1,271	1,369	1,032
Numbers who continued to breastfeed at one week, whose baby was at least six weeks old, and therefore used in the analysis of breastfeeding continuation at six weeks	3,552	3,633	3,178	2,792	4,768	7,396

7.2 The effects of sociodemographic factors

7.2.1 Univariable analysis

Table 7.3.A (page 187) shows the weighted proportions and unadjusted ORs for the association between breastfeeding continuation at six weeks and sociodemographic factors in each survey year. These associations were observed prior to adjustments for other factors. Associations were considered statistically significant if they showed P values of less than 0.10.

As with the previous breastfeeding outcomes, breastfeeding continuation at six weeks was positively associated with older maternal age, higher education (over age 18), and higher socioeconomic status ($P < 0.10$). Having a partner, whether married or cohabiting, and being of BME origin were also associated with higher odds of continuing to breastfeed at six weeks in each survey year. Unlike with breastfeeding initiation and breastfeeding continuation at one week, breastfeeding continuation at six weeks was positively associated with living in Scotland; however, this was statistically significant in 1995 and 2000 only ($P < 0.10$) (Table 7.3.A).

Prior to adjustments for other factors, mothers who were on paid maternity leave were more likely to continue breastfeeding at six weeks in 1990 (OR: 1.24, 95% CI: 1.02-1.51) and 2000 (OR: 1.27, 95% CI: 1.07-1.52) than mothers who were not working in the first six weeks after having their baby. Likewise, mothers who were on unpaid maternity leave were more likely to continue breastfeeding at six weeks in 1995 (OR: 1.66, 95% CI: 1.13-2.45) and 2000 (OR: 1.79, 95% CI: 1.11-2.87) than mothers who were not working in the first six weeks after having their baby (Table 7.3.A).

7.2.2 Multivariable analysis

Adjustments for potential confounders attenuated the associations between sociodemographic factors and breastfeeding continuation at six weeks in each survey year (Table 7.4.A, page 195). Nevertheless, mothers aged 30 or over remained more likely to continue breastfeeding at six weeks than mothers who were younger than 30 in every year except 2000 ($P<0.05$). Likewise, the effects of education and ethnicity were attenuated in each survey year. Firstly, from 2000 to 2010, there was no significant difference in the odds of continuing to breastfeed at six weeks between mothers who completed full-time education at 16 or under and those who completed at 17 or 18 ($P<0.05$). Secondly, ethnicity was not associated with breastfeeding continuation at six weeks in 2000. However, mothers who completed full-time education over 18, and those of BME origin, were most likely to continue breastfeeding at six weeks, showing adjusted ORs of 1.66 (95% CI: 1.37-2.01) and 2.38 (95% CI: 1.81-3.14) by 2010, respectively.

Unlike breastfeeding initiation and breastfeeding continuation at one week, breastfeeding continuation at six weeks was less strongly associated with partnership status, socioeconomic status and country of residence, after adjustments for confounders in most survey years. For instance, married mothers were significantly more likely to continue breastfeeding at six weeks than cohabiting and single mothers in 2010 only ($P<0.05$), and mothers who resided in Scotland showed higher odds of still breastfeeding at six weeks in 2000 than those who resided in England and Wales (aOR: 1.42, 95% CI: 1.17-1.72) (Table 7.3). Following adjustments, maternal employment

status in the first six weeks after childbirth was no longer associated with breastfeeding continuation at six weeks (Table 7.4.A).

7.2.3 Changes in the effects of sociodemographic factors on breastfeeding continuation at six weeks from 1985 to 2010

Figure 7.1 shows the adjusted ORs and 95% CIs for the association between age at delivery and breastfeeding continuation at six weeks from 1985 to 2010. Specifically, it illustrates that mothers over 30 were almost twice as likely to continue breastfeeding at six weeks than mothers under 25, with no marked heterogeneity in this effect over time ($I^2=0\%$; $P=0.45$).

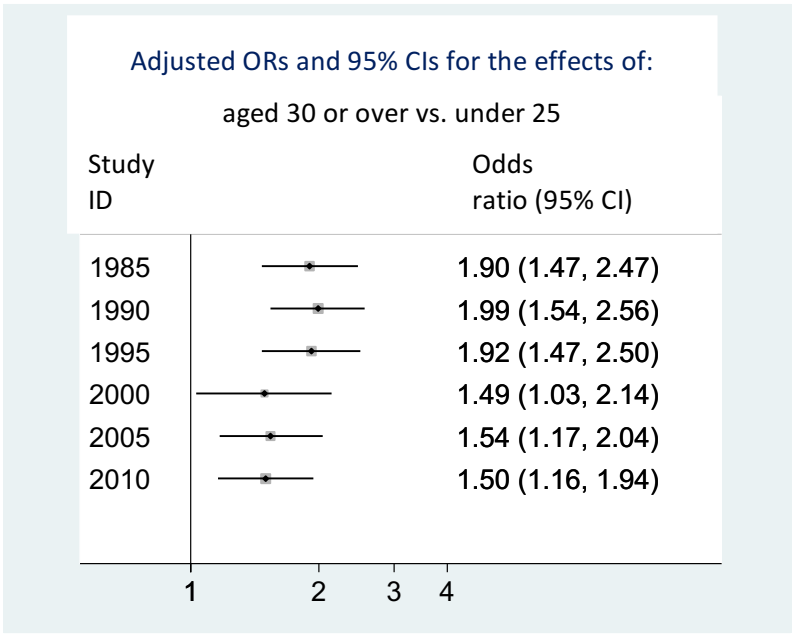


Figure 7.1 Change in the effect of age on breastfeeding continuation at six weeks, GB, 1985 to 2010.

Note: To estimate these effects, age was recoded as ‘under 25’, ‘25-29’ and ‘30 or over’, using ‘under 25’ as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at six weeks in each year from 1985 to 2010 using this recoded variable.

Figure 7.2 shows the adjusted OR and 95% CIs for the association between education and breastfeeding continuation at six weeks from 1985 to 2010. It shows that mothers who completed full-time education beyond age 18 were consistently more likely to continue breastfeeding at six weeks than mothers who completed at age 18 or under, with some evidence of heterogeneity in this effect over time, particularly in 1995 ($I^2=58.7\%$; $P=0.03$).

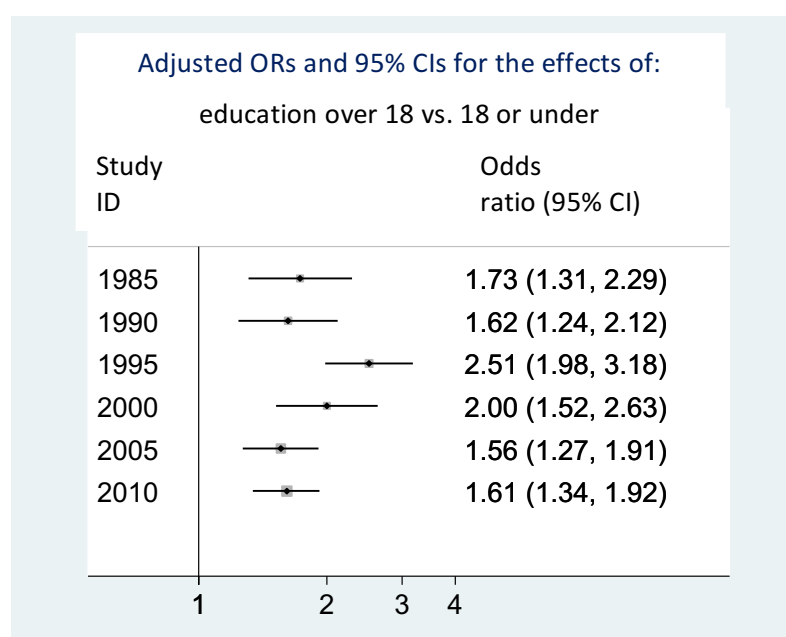


Figure 7.2 Change in the effect of education on breastfeeding continuation at six weeks, GB, 1985 to 2010.

Note: To estimate these effects, education was recoded as '18 or under' and 'over 18', using '18 or under' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at six weeks in each year from 1985 to 2010 using this recoded variable.

Figure 7.3 shows the adjusted ORs and 95% CIs for the association between ethnicity and breastfeeding continuation at six weeks from 2000 to 2010. Mothers who were of BME origin were more likely than white mothers to continue breastfeeding at

six weeks, although this association was not statistically significant in 2000. There was no strong evidence of a change in effect over time ($I^2=44.8\%$; $P=0.16$).

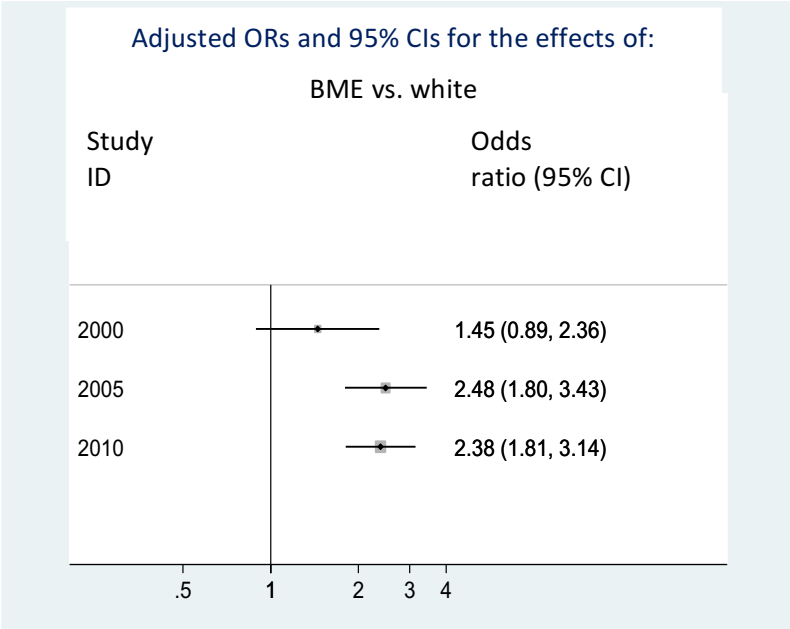


Figure 7.3 Change in the effect of ethnicity on breastfeeding continuation at six weeks, GB, 2000 to 2010.

Note: Ethnicity was not assessed in the 1985-1995 surveys.

7.2.4 Contribution of sociodemographic factors to overall breastfeeding continuation at six weeks in 1985 to 2010

Assuming causality, the proportion of breastfeeding continuation at six weeks that was attributable to mothers in the population who were age 30 or over at delivery rose from 17.1% in 1985 to 25.7% in 1995, before falling to 20.3% in 2005, then 19.4% in 2010. The trend for education was less consistent, with the proportion of breastfeeding continuation at six weeks that was attributable to mothers who completed full-time education over age 18 fluctuating from 11% in 1985 to 24.7% by 2010. Lastly, the

proportion of breastfeeding continuation at six weeks that was attributable to mothers who were of BME origin remained largely consistent at 13.3% in 2005 and 13.5% in 2010 (Table 7.5, page 203).

7.3 The effects of health-related factors and direct previous experience of breastfeeding

7.3.1 Univariable analysis

Table 7.3.B (page 190) shows that, prior to adjustments for confounders, breastfeeding continuation at six weeks was negatively associated with low birthweight from 1985 to 2005; receiving special care or phototherapy from 1985 to 2010; length of hospital stay of six days or more in 1985, 1990, 2000 and 2010; and Caesarean delivery in 1985 and 2005 ($P<0.10$). In addition, mothers who smoked in the six weeks following childbirth were less likely to continue breastfeeding at six weeks in each survey year, while mothers who did not smoke were two to three times more likely to continue breastfeeding at six weeks ($P<0.10$).

As with the previous breastfeeding outcomes, previous breastfeeding experience continued to show a strong association with breastfeeding continuation at six weeks. Specifically, mothers who breastfed their most recent child for at least six weeks were between two and seven times more likely to continue breastfeeding at six weeks than mothers who never breastfed their most recent child ($P<0.10$). Furthermore, mothers for whom the index baby was their first child were about twice as likely to continue breastfeeding at six weeks than multiparous mothers who never breastfed their most recent child ($P<0.10$). Unlike with the previous outcomes, having

an awareness of the health benefits of breastfeeding was not associated with breastfeeding continuation at six weeks in any survey year (Table 7.3.B).

7.3.2 Multivariable analysis

Following adjustments for other factors, breastfeeding continuation at six weeks remained significantly associated with both maternal smoking status and direct previous breastfeeding experience. Specifically, mothers who did not smoke in the six weeks following childbirth showed higher odds of breastfeeding at six weeks from 1985 (aOR: 1.34, 95% CI: 1.09-1.65) to 2010 (aOR: 2.33, 95% CI: 1.75-3.11). Over the research period, mothers who breastfed their most recent child for six weeks or more were two to five times more likely to continue breastfeeding at six weeks than mothers who never breastfed their most recent child ($P<0.05$). From 1990 to 2000, mothers for whom this was their first baby were about twice as likely to continue breastfeeding at six weeks as mothers who never breastfed their most recent child. Mothers who breastfed their most recent child for less than six weeks were least likely to continue breastfeeding at six weeks in 1985, 2005 and 2010 ($P<0.05$) (Table 7.4.B, page 198).

7.3.3 Changes in the effects of smoking postnatally on breastfeeding continuation at six weeks from 1985 to 2010

Figure 7.4 shows the adjusted ORs and 95% CIs for the association between smoking in the first six weeks after birth and breastfeeding continuation at six weeks from 1985 to 2010. It illustrates that mothers who did not smoke were more likely to continue breastfeeding at six weeks, with adjusted ORs ranging from 1.34 to 2.33 over the research period. There was evidence of heterogeneity in this effect over time ($I^2=63.9\%$; $P=0.02$).

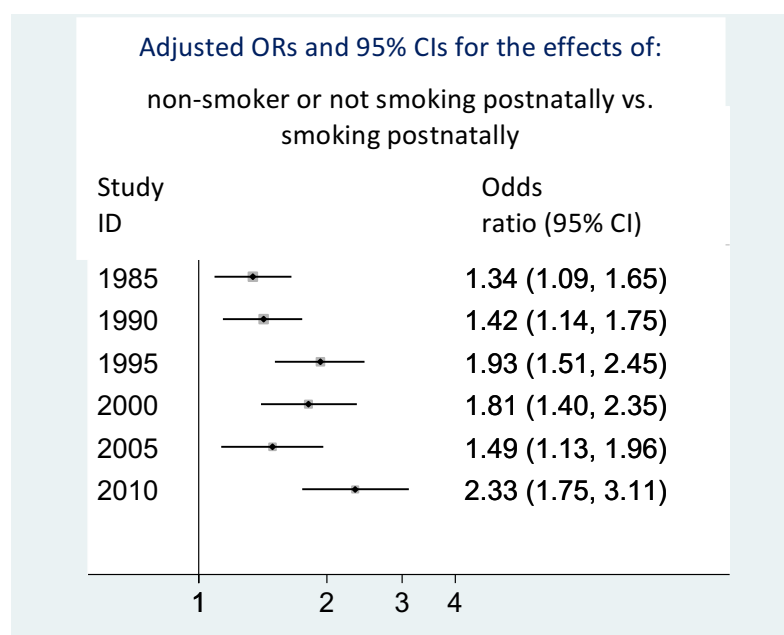


Figure 7.4 Change in the effect of smoking postnatally on breastfeeding continuation at six weeks, GB, 1985 to 2010.

7.3.4 Contribution of maternal smoking postnatally to overall breastfeeding continuation at six weeks in 1985 to 2010

Assuming causality, the proportion of breastfeeding continuation at six weeks that was attributable to mothers in the population who did not smoke postnatally rose from 20.4% in 1985 to 53.8% in 2010 (Table 7.5, page 203).

7.4 The influence of other women's infant feeding behaviours

7.4.1 Univariable analysis

Table 7.3.C (page 192) shows that, as with the previous breastfeeding outcomes, mothers who knew mostly women who breastfed their own babies were significantly more likely to continue breastfeed at six weeks in each survey year ($P < 0.10$). Conversely, the odds of continuing to breastfeed at six weeks were significantly lower among

mothers who knew mostly women who mixed fed their own babies; those who knew mostly women who formula fed their own babies; and those who either did not know other women who breastfeed or were otherwise unaware of how other women had fed their own babies ($P < 0.10$). Likewise, mothers who were exclusively breastfed when they themselves were babies were most likely to continue breastfeeding at six weeks in each year ($P < 0.10$).

7.4.2 Multivariable analysis

After adjustments for potential confounders including sociodemographic differences, mothers who knew mostly women who breastfed their own babies remained most likely to continue breastfeeding at six weeks in each survey year, while mothers who knew mostly women who formula fed their own babies remained least likely to continue breastfeeding from 1990 (aOR: 0.44, 95% CI: 0.34-0.57) to 2010 (aOR: 0.43, 95% CI: 0.32-0.58). Mothers were also more likely to continue breastfeeding at six weeks in each year if they themselves were exclusively breastfed as babies ($P < 0.05$) (Table 7.4.C, page 200).

7.4.3 Changes in the influence of other women's infant feeding behaviours on breastfeeding continuation at six weeks from 1990 to 2010

Figure 7.5 shows that mothers who knew other women who breastfed their own babies, even if in combination with formula feeding, were more likely to continue breastfeeding at six weeks than those who knew mostly women who formula fed their own babies. There was no evidence of a change in this effect over time ($I^2 = 28.6\%$; $P = 0.23$).

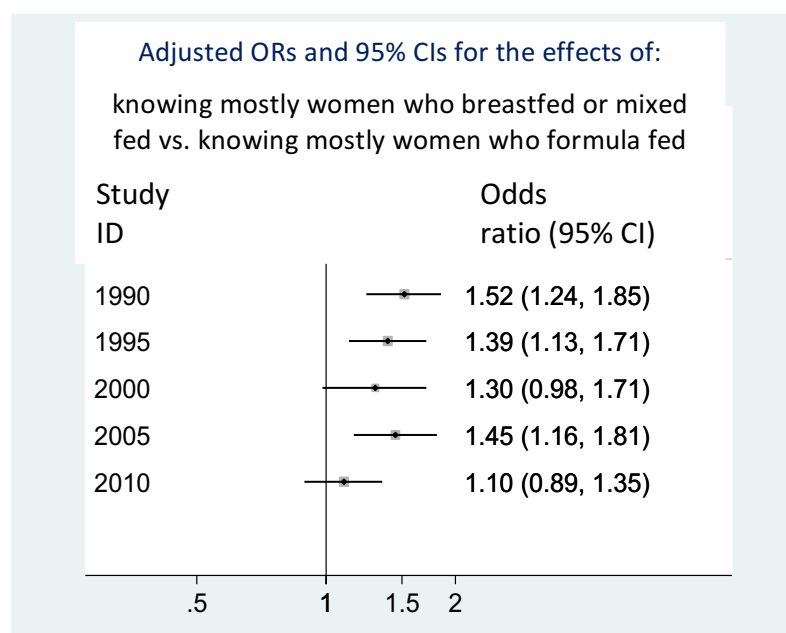


Figure 7.5 Change in the influence of how other women fed their own babies on breastfeeding continuation at six weeks, GB, 1990 to 2010.

Note: To estimate these effects, other women's infant feeding behaviours was recoded as 'knew mostly women who breastfed or mixed fed', 'knew mostly women who formula fed' and 'don't know', using 'knew mostly women who formula fed' as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at six weeks in each year from 1985 to 2010 using this recoded variable.

Figure 7.6 shows that mothers who were breastfed when they themselves were babies, whether exclusively or in combination with infant formula, were more likely to continue breastfeeding at six weeks than mothers who were entirely formula fed when they themselves were babies, with no evidence of heterogeneity in this effect over time ($I^2=13.7\%$; $P=0.33$).

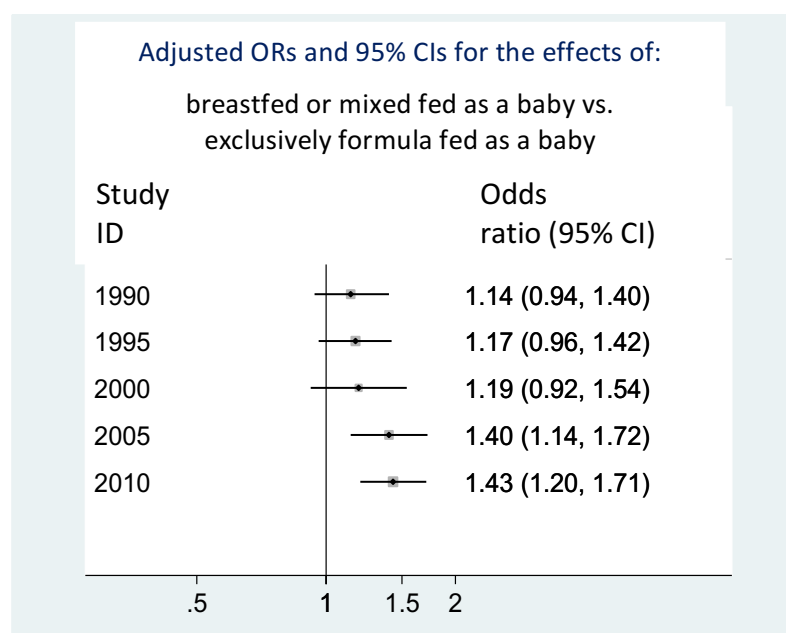


Figure 7.6 Change in the effect of how mothers themselves were fed as infants on breastfeeding continuation at six weeks, GB, 1990 to 2010.

Note: To estimate these effects, this variable was recoded as ‘breastfed or mixed fed as a baby’, ‘exclusively formula fed as a baby’ and ‘don’t know’, using ‘exclusively formula fed as a baby’ as the reference group. The adjusted ORs were obtained by refitting the final model for breastfeeding continuation at six weeks in each year from 1990 to 2010 using this recoded variable.

7.4.4 Contribution of the influence of other women’s infant feeding behaviours to overall breastfeeding continuation at six weeks in 1990 to 2010

Table 7.5 (page 203) shows that, assuming causality, the proportion of breastfeeding continuation at six weeks that was attributable to mothers who knew other women who breastfed their own babies fluctuated from 20.6% in 1990 to 5.8% in 2010. The proportion attributable to mothers who were breastfed when they themselves were babies increase from 7.7% in 1990 to 19.7% by 2010.

7.5 The effects of receiving support with breastfeeding in hospital and at home

7.5.1 Univariable analysis

Prior to adjustments for confounders, breastfeeding continuation at six weeks was positively associated with rooming-in in 1990, 2000 and 2005; having skin-to-skin contact in 2005 and 2010; and having been taught to position and attach the baby at the breast in 2005 and 2010 ($P < 0.10$). Mothers who initiated breastfeeding early were more also likely to continue breastfeeding at six weeks in every year than mothers who did not initiate early. Receiving help to initiate breastfeeding showed a negative effect on breastfeeding continuation at six weeks from 2000 to 2010, while receiving enough help with infant feeding while in a hospital was positively associated with breastfeeding continuation at six weeks in every year ($P < 0.10$) (Table 7.3.D, page 193).

Mothers who received help from a voluntary organisation or community group that helps recent mothers with infant feeding were considerably more likely to continue breastfeeding at six weeks in each survey year than mothers who did not receive such help ($P < 0.10$). Receiving professional help at home with feeding problems also had a positive effect on breastfeeding continuation at six weeks: mothers who received help with problems showed higher odds of breastfeeding than those who did not receive help, although both groups of mothers were significantly less likely to continue breastfeeding at six weeks than mothers who did not have feeding problems ($P < 0.10$). Mothers who either received free samples of infant formula or saw an advertisement for an infant formula were significantly less likely to continue breastfeeding at six weeks in 1985, 2000 and 2010 ($P < 0.10$).

7.5.2 Multivariable analysis

Following adjustments, breastfeeding continuation at six weeks remained positively associated with rooming-in in 1990 (aOR: 1.23, 95% CI: 1.01-1.49); being taught to position and attach the baby for breastfeeding in 2005 (aOR: 1.74, 95% CI: 1.37-2.22); and received enough help with infant feeding in hospital in 2010 (aOR: 1.54, 95% CI: 1.29-1.85). Mothers who initiated breastfeeding early also remained significantly more likely to continue breastfeeding at six weeks in every year than mothers who did not initiate early ($P < 0.05$). Mother who received help to initiate breastfeeding remained less likely to continue breastfeeding at six weeks in 2005 (aOR: 0.66; 95% CI: 0.52-0.85) and 2010 (aOR: 0.69; 95% CI: 0.56-0.85) (Table 7.4.D, page 201).

Mothers who received help from a voluntary organisation or community group were twice as likely as mothers who did not receive such help to continue breastfeeding at six weeks in 1985, 1990, 2005 and 2010 ($P < 0.05$). Mothers who received professional help at home with feeding problems were more likely to continue breastfeeding at six weeks than mothers who did not receive help in 1985, 1995, 2005 and 2010 ($P < 0.05$). Mothers who either received free samples of infant formula or were exposed to an advertisement for an infant formula continued to show significantly lower odds of breastfeeding at six weeks in 1985 (aOR: 0.68, 95% CI: 0.56-0.82) and 2000 (aOR: 0.28, 95% CI: 0.19-0.42) (Table 7.4.D).

7.6 Chapter summary

Among mothers who continued to breastfeed at one week, the proportion who continued to breastfeed at six weeks increased from 70.1% in 1985 to 79.9% in 2010. There were considerable disparities in the practice of breastfeeding at six weeks

between subgroups of mothers, despite the fact that these mothers had successfully continued breastfeeding to one week. Specifically, independent positive associations were observed between breastfeeding continuation at six weeks and the following factors: older maternal age; higher education (over age 18); BME origin; managerial and professional socioeconomic status; residing in England and Wales; having breastfed one's most recent child for at least six weeks; knowing mostly women who breastfed their own babies; being exclusively breastfed oneself as a baby; receiving enough help with infant feeding in hospital; being taught to position and attach the baby at the breast; initiating breastfeeding early; rooming-in; and receiving help with infant feeding from a health professional, voluntary organisation or community group.

In contrast, breastfeeding continuation at six weeks was negatively associated with smoking postnatally, and receiving free samples of infant formula or being exposed to an advertisement for infant formula (Table 7.6, page 205). Following adjustments for other factors, including sociodemographic differences, maternal employment status in the first six weeks was not significantly associated with breastfeeding continuation at six weeks in this DPhil research. These present findings suggest that some of the effects underlying the inequalities in breastfeeding at one week between subgroups may continue to influence the practice of breastfeeding at six weeks.

The results indicated that there was no evidence of heterogeneity in effects of education and ethnicity, and in the influence of other women's infant feeding behaviours on breastfeeding continuation at six weeks over time. At the same time, assuming causality, the PAF estimates indicated that there were important changes in the contribution of these factors to overall breastfeeding continuation at six weeks,

albeit inconsistently. The next chapter, chapter 8, considers the potential influences of these and other factors on the practice of breastfeeding in public.

Table 7.2. Distribution of the explanatory factors among the population of mothers who continued to breastfeed at one week, whose baby was at least six weeks old, and who were included in the analysis of breastfeeding continuation at six weeks, GB, 1985 to 2010

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age at delivery												
Under 20	193	(4.8)	143	(3.4)	111	(3.3)	108	(4.0)	152	(4.0)	137	(3.0)
20-24	914	(25.3)	739	(19.6)	461	(14.1)	367	(13.4)	640	(15.2)	792	(13.9)
25-29	1,350	(38.3)	1,410	(38.9)	1,082	(34.7)	748	(26.6)	1,143	(26.3)	2,027	(28.5)
30 or over	1,086	(31.6)	1,331	(38.1)	1,519	(47.9)	1,560	(56.1)	2,818	(54.5)	4,413	(54.5)
<i>Missing</i>	9	0.3	10	0.3	5	0.2	9	0.3	15	0.3	27	0.4
Education level												
16 or under	1,676	(47.1)	1,448	(40.3)	982	(31.8)	707	(25.6)	886	(19.2)	872	(13.3)
17 or 18	1,099	(31.6)	1,303	(36.8)	1,178	(38.0)	913	(33.9)	1,451	(31.5)	1,745	(25.4)
Over 18	755	(21.4)	853	(23.0)	994	(30.2)	1,156	(40.4)	2,392	(49.4)	4,702	(61.3)
<i>Missing</i>	22	0.6	29	0.8	24	0.8	16	0.6	39	0.8	77	1.0
SOC												
Managerial & professional	301	(8.9)	392	(11.3)	331	(9.8)	-	-	-	-	-	-
Intermediate	876	(26.5)	875	(25.9)	941	(31.8)	-	-	-	-	-	-
Skilled-Non-manual	344	(10.1)	315	(9.3)	260	(9.0)	-	-	-	-	-	-
Skilled-Manual	1,018	(30.2)	923	(27.2)	670	(22.9)	-	-	-	-	-	-
Semi-skilled	414	(12.2)	385	(10.7)	270	(8.7)	-	-	-	-	-	-
Unskilled	172	(3.2)	70	(1.3)	109	(2.4)	-	-	-	-	-	-
Unclassified	409	(9.1)	655	(14.2)	578	(15.4)	-	-	-	-	-	-
<i>Missing</i>	18	0.5	18	0.5	19	0.6	-	-	-	-	-	-

Abbreviations: SOC, socioeconomic status based on partner's occupation. Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.2. continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
NS-SEC												
Managerial & professional	-	-	-	-	-	-	1,059	(37.2)	2,187	(44.3)	3,315	(40.4)
Intermediate	-	-	-	-	-	-	590	(22.3)	973	(20.1)	1,402	(19.0)
Routine and manual	-	-	-	-	-	-	579	(20.4)	1,172	(25.4)	1,624	(23.5)
Never worked	-	-	-	-	-	-	300	(11.1)	282	(7.0)	515	(9.3)
Unclassified	-	-	-	-	-	-	264	(9.0)	154	(3.2)	540	(7.9)
Employment status at stage 1												
Paid maternity leave	240	(7.2)	880	(25.7)	1254	(40.9)	1317	(46.5)	2834	(58.3)	4,597	(59.4)
Unpaid maternity leave	311	(8.9)	241	(6.4)	219	(6.5)	123	(4.1)	169	(3.6)	301	(4.2)
Doing paid work	186	(5.4)	257	(7.7)	225	(6.5)	172	(6.2)	139	(2.4)	394	(5.1)
Not doing paid work	2,797	(78.5)	2245	(60.2)	1470	(46.1)	1172	(43.3)	1601	(35.7)	2,036	(31.3)
<i>Missing</i>	18	0.5	10	0.3	10	0.3	8	0.3	25	0.5	68	0.9
Ethnicity												
White	-	-	-	-	-	-	6,747	(93.1)	3,904	(80.6)	5,976	(79.6)
BME	-	-	-	-	-	-	415	(6.9)	813	(19.4)	1,131	(20.4)
<i>Missing</i>	-	-	-	-	-	-	206	2.8	51	1.1	289	3.9
Partnership status												
Married	3,020	(87.5)	2,859	(81.2)	2,315	(74.0)	1,824	(66.6)	2,994	(64.7)	4,937	(64.8)
Cohabiting	240	(6.6)	383	(10.6)	494	(16.2)	620	(22.7)	1,097	(23.6)	1,773	(25.0)
Single	273	(5.9)	373	(8.2)	350	(9.8)	329	(10.6)	603	(11.8)	613	(10.2)
<i>Missing</i>	19	0.5	18	0.5	19	0.6	19	0.7	74	1.6	73	1.0

Abbreviations: NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.2. continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Country of residence												
England & Wales	2,756	(92.0)	2,793	(93.0)	2,306	(92.3)	1,780	(90.3)	4,067	(93.7)	5,641	(93.0)
Scotland	796	(8.0)	840	(7.0)	872	(7.7)	1,012	(9.7)	701	(6.3)	1,755	(7.0)
Baby's birthweight (kg)												
Less than 2.5	154	(4.4)	123	(3.1)	177	(5.7)	163	(6.0)	290	(6.3)	352	(5.2)
2.5 - 2.99	592	(16.6)	602	(17.1)	468	(15.2)	408	(15.7)	694	(15.1)	959	(14.0)
3 - 3.49	1,397	(39.4)	1,376	(38.8)	1,152	(36.7)	891	(33.3)	1,624	(35.0)	2,582	(35.9)
3.5 or more	1,395	(39.6)	1,487	(41.0)	1,370	(42.4)	1,301	(45.0)	2,122	(43.6)	3,413	(44.9)
<i>Missing</i>	14	0.4	45	1.2	11	0.3	29	1.0	38	0.8	90	1.2
Parity												
1	1,716	(48.1)	1,792	(48.6)	1,612	(50.3)	1,373	(48.0)	2,421	(52.7)	3,816	(53.1)
2	1,127	(32.3)	1,085	(30.6)	993	(31.9)	944	(35.0)	1,617	(33.3)	2,484	(33.4)
3 or more	694	(19.6)	734	(20.8)	559	(17.9)	475	(17.0)	730	(14.0)	1,034	(13.5)
<i>Missing</i>	15	0.4	22	0.6	14	0.4	0	0	0	0	62	0.8
Type of Delivery												
Vaginal spontaneous	2,729	(77.9)	2,776	(78.1)	2,283	(71.9)	1,759	(63.6)	2,895	(61.7)	4,404	(61.0)
Caesarean	380	(10.6)	405	(10.9)	503	(16.0)	647	(23.1)	1,243	(25.1)	1,869	(24.6)
Vaginal assisted	403	(11.5)	406	(10.9)	381	(12.1)	381	(13.3)	613	(13.2)	1,101	(14.4)
<i>Missing</i>	40	1.1	46	1.3	11	0.3	5	0.2	17	0.4	22	0.3
Length of hospital or other maternity centres												
2 days or less	998	(31.9)	1,270	(40.2)	818	(27.7)	1,366	(54.0)	2,849	(61.7)	4,730	(68.4)
3-5 days	1,317	(35.6)	1,578	(42.3)	1,305	(37.7)	1,092	(35.2)	1,573	(32.2)	1,941	(26.1)
6 days or more	1,207	(32.5)	666	(17.5)	1,055	(34.6)	322	(10.9)	294	(6.0)	422	(5.5)
<i>Missing</i>	30	0.8	119	3.3	0	0	12	0.4	52	1.1	303	4.1

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Baby was treated in a special care unit or with phototherapy												
Yes	694	(20.2)	455	(11.4)	446	(12.8)	386	(13.0)	585	(12.1)	816	(11.1)
No	2,756	(79.8)	3,153	(88.6)	2,714	(87.2)	2,385	(87.0)	4,166	(87.9)	6,560	(88.9)
Missing	102	2.9	25	0.7	18	0.6	21	0.8	17	0.4	20	0.3
Smoking postnatally												
Yes	857	(23.1)	819	(21.7)	565	(17.1)	454	(15.4)	559	(11.9)	545	(7.9)
No	2,644	(76.9)	2,732	(78.3)	2,576	(82.9)	2,250	(84.6)	4,090	(88.1)	6,676	(92.1)
Missing	51	1.4	82	2.3	37	1.2	88	3.2	119	2.5	175	2.4
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	2,592	(93.5)	4,271	(90.6)	6,563	(88.0)
No	-	-	-	-	-	-	158	(6.5)	401	(9.4)	691	(12.0)
Missing	-	-	-	-	-	-	42	1.5	96	2.0	142	1.9
Whether breastfed most recent child												
BF for 6 wks+	1,280	(37.8)	1,173	(34.0)	1,107	(35.9)	990	(36.8)	1,704	(34.6)	2,633	(35.5)
BF for <6 wks	257	(8.0)	336	(9.9)	225	(7.3)	222	(8.4)	330	(6.6)	359	(5.0)
Never BF recent	163	(4.3)	267	(6.9)	206	(6.3)	154	(5.7)	283	(5.7)	262	(4.3)
No previous child	1,716	(49.8)	1,792	(49.2)	1,612	(50.5)	1,373	(49.2)	2,421	(53.0)	3,816	(55.2)
Missing	136	3.8	65	1.8	28	0.9	53	1.9	30	0.6	326	4.4

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Other women's infant feeding behaviours												
Knew mostly women who BF	-	-	1,044	(29.3)	1,044	(33.9)	916	(33.2)	1,409	(29.6)	1,420	(19.4)
Knew mostly women who mixed fed	-	-	919	(26.2)	764	(24.1)	657	(25.0)	1,389	(29.5)	3,286	(44.4)
Knew mostly women who FF	-	-	1,265	(33.4)	1,046	(32.4)	806	(28.2)	1,255	(25.9)	1,655	(21.5)
Unaware	-	-	384	(11.1)	303	(9.6)	342	(13.6)	691	(15.1)	1,020	(14.6)
<i>Missing</i>	-	-	21	0.6	21	0.7	71	2.5	24	0.5	15	0.2
How mothers themselves were fed as babies												
BF only	-	-	1,111	(32.1)	849	(28.2)	741	(27.9)	1,455	(32.4)	2,691	(37.8)
Mixed fed	-	-	935	(26.5)	780	(25.9)	585	(23.3)	1,064	(23.4)	1,741	(24.8)
FF only	-	-	1,247	(32.4)	1,294	(37.5)	1,250	(41.0)	1,852	(36.4)	2,329	(28.2)
Don't know	-	-	317	(9.0)	255	(8.5)	203	(7.8)	366	(7.8)	590	(9.3)
<i>Missing</i>	-	-	23	0.6	0	0	13	0.5	31	0.7	45	0.6
Received enough support with infant feeding												
Yes	3,392	(96.0)	3,354	(94.7)	2,992	(95.0)	2,635	(94.2)	3,631	(75.3)	5,542	(75.2)
No	138	(4.0)	184	(5.3)	148	(5.0)	147	(5.8)	1,094	(24.7)	1,781	(24.8)
<i>Missing</i>	22	0.6	95	2.6	38	1.2	10	0.4	43	0.9	73	1.0
Discussed feeding baby during antenatal visits												
Yes	1,543	(41.5)	1,671	(45.8)	1,913	(58.6)	1,952	(67.3)	3,264	(68.1)	5,647	(74.3)
No	1,979	(58.5)	1,901	(54.2)	1,238	(41.4)	784	(32.7)	1,401	(31.9)	1,727	(25.7)
<i>Missing</i>	30	0.8	61	1.7	27	0.8	56	2.0	103	2.2	22	0.3

Abbreviations: BF, breastfed; FF, formula fed. Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Baby stayed beside mother while in hospital (rooming in)												
Yes	1,666	(48.0)	2,225	(65.0)	2,328	(76.7)	2,255	(81.7)	3,985	(84.4)	6,586	(89.9)
No	1,859	(52.0)	1,354	(35.0)	819	(23.3)	522	(18.3)	747	(15.6)	767	(10.1)
Missing	30	0.7	68	1.5	57	1.3	24	0.5	52	0.7	62	0.6
Taught to position and attach the baby at the breast for breastfeeding												
Yes	-	-	-	-	-	-	-	-	1,387	(30.3)	3,625	(49.1)
No	-	-	-	-	-	-	-	-	3,356	(69.7)	3,719	(50.9)
Missing	-	-	-	-	-	-	-	-	25	0.5	52	0.7
Had skin-to-skin contact with baby												
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	3,655	(76.8)	6,246	(84.0)
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	430	(8.7)	565	(8.1)
No	-	-	-	-	-	-	-	-	657	(14.5)	556	(8.0)
Missing	-	-	-	-	-	-	-	-	26	0.5	29	0.4
Early initiation of breastfeeding												
Yes	2,062	(60.8)	2,223	(64.7)	2,166	(69.8)	2,049	(73.6)	3,450	(73.9)	5,626	(77.5)
No	1,432	(39.2)	1,366	(35.3)	980	(30.2)	723	(26.4)	1,228	(26.1)	1,635	(22.5)
Missing	58	1.6	44	1.2	32	1.0	20	0.7	90	1.9	135	1.8
Received help to initiate breastfeeding												
Yes	-	-	-	-	-	-	1,838	(63.8)	3,378	(70.5)	5,066	(67.4)
No	-	-	-	-	-	-	943	(36.2)	1,373	(29.5)	2,321	(32.6)
Missing	-	-	-	-	-	-	11	0.4	17	0.4	9	0.1

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.2 continued

	1985		1990		1995		2000		2005		2010	
<i>Populations (n)</i>	3,552		3,633		3,178		2,792		4,768		7,396	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%	<i>n</i>	%	<i>n</i>
Received help from a voluntary organisation or community group that helps recent mothers with breastfeeding												
Yes	242	(7.6)	286	(8.4)	320	(10.6)	260	(10.8)	3,103	(65.9)	1,596	(22.8)
No	3,294	(92.4)	3,296	(91.6)	2809	(89.4)	2506	(89.2)	1,621	(34.1)	5,607	(77.2)
Missing	16	0.5	51	1.4	49	1.5	26	0.9	44	0.9	193	2.6
Received professional help with infant feeding problems at home												
Yes	1,092	(31.2)	1105	(30.5)	1037	(32.7)	860	(30.2)	1568	(32.1)	2,381	(30.5)
No	85	(2.3)	100	(2.8)	73	(2.4)	68	(2.7)	188	(4.1)	408	(5.8)
Had no feeding problems	2,349	(66.4)	2397	(66.8)	2040	(64.9)	1834	(67.1)	2965	(63.8)	4,602	(63.7)
Missing	26	0.7	31	0.9	28	0.9	30	1.1	47	1.0	5	0.1
Received free or reduced-price milk, or exposed to an advertisement for infant formula												
Yes	1,110	(30.4)	-	-	-	-	175	(6.2)	2,866	(60.9)	6,527	(86.8)
No	2,409	(69.6)	-	-	-	-	2,594	(93.8)	1,858	(39.1)	830	(13.2)
Missing	33	0.9	-	-	-	-	23	0.8	44	0.9	39	0.5

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.A Associations between breastfeeding continuation at six weeks and sociodemographic factors, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Age at delivery																		
Under 20	45.2	0.20	(0.14-0.29)	42.0	0.17	(0.11-0.25)	51.2	0.22	(0.15-0.35)	57.6	0.33	(0.23-0.49)	55.4	0.27	(0.18-0.41)	68.3	0.39	(0.25-0.60)
20-24	59.1	0.36	(0.29-0.44)	61.2	0.37	(0.29-0.45)	60.7	0.34	(0.26-0.43)	63.8	0.43	(0.34-0.55)	68.2	0.47	(0.38-0.59)	68.0	0.38	(0.31-0.46)
25-29	72.2	0.36	(0.53-0.79)	73.4	0.64	(0.52-0.76)	69.8	0.50	(0.40-0.61)	70.4	0.59	(0.48-0.71)	77.2	0.75	(0.61-0.91)	77.3	0.61	(0.53, 0.70)
30 or over	80.1	0.36		81.1	1.00		81.6	1.00		80.3	1.00		81.9	1.00		84.7	1.00	
Education level																		
16 or under	61.5	0.60	(0.50-0.71)	64.8	0.66	(0.55-0.79)	62.7	0.66	(0.54-0.81)	62.4	0.69	(0.57-0.85)	66.0	0.72	(0.58-0.89)	70.0	0.93	(0.75-1.14)
17 or 18	72.8	1.00		73.7	1.00		72.4	1.00		70.6	1.00		73.0	1.00		71.6	1.00	
Over 18	85.4	2.19	(1.69-2.84)	85.5	2.15	(1.67-2.77)	86.9	2.74	(2.13-3.52)	85.1	2.38	(1.93-2.94)	84.8	2.06	(1.70-2.49)	85.0	2.25	(1.92-2.64)
SOC																		
Managerial & professional	85.8	3.07	(2.11-4.46)	83.4	2.17	(1.56-3.02)	86.2	3.20	(2.13-4.79)	-	-	-	-	-	-	-	-	-
Intermediate	79.6	1.98	(1.58-2.47)	79.7	1.73	(1.36-2.18)	81.0	2.05	(1.59-2.64)	-	-	-	-	-	-	-	-	-
Skilled-Non-manual	68.9	1.12	(0.84-1.48)	75.8	1.33	(0.97-1.82)	72.6	1.24	(0.88-1.75)	-	-	-	-	-	-	-	-	-
Skilled-Manual	66.4	1.00		69.7	1.00		67.7	1.00		-	-	-	-	-	-	-	-	-
Semi-skilled	61.6	0.81	(0.63-1.05)	62.5	0.74	(0.56-0.97)	70.3	1.03	(0.73-1.45)	-	-	-	-	-	-	-	-	-
Unskilled	54.3	0.60	(0.42-0.86)	66.3	0.86	(0.49-1.53)	56.9	0.72	(0.44-1.19)	-	-	-	-	-	-	-	-	-
Unclassified	58.6	0.72	(0.55-0.92)	65.2	0.82	(0.65-1.03)	64.0	0.87	(0.67-1.13)	-	-	-	-	-	-	-	-	-

Abbreviations: OR, odds ratio; CI, confidence interval; SOC, socioeconomic status based on partner's occupation. Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.A continued

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
NS-SEC																		
Managerial & professional	-	-	-	-	-	-	-	-	-	81.9	2.75	(2.20-3.45)	82.3	2.13	(1.75-2.59)	83.5	1.89	(1.59-2.24)
Intermediate	-	-	-	-	-	-	-	-	-	73.4	1.68	(1.32-2.14)	75.1	1.38	(1.10-1.73)	76.9	1.24	(1.02-1.51)
Routine and manual	-	-	-	-	-	-	-	-	-	62.1	1.00		68.6	1.00		72.9	1.00	
Never worked	-	-	-	-	-	-	-	-	-	74.5	1.78	(1.33-2.39)	84.0	2.40	(1.62-3.56)	85.6	2.22	(1.61-3.07)
Unclassified	-	-	-	-	-	-	-	-	-	74.8	1.81	(1.31-2.49)	86.4	2.91	(1.69-4.99)	81.9	1.68	(1.26-2.24)
Employment status at stage 1																		
Paid maternity leave	73.6	1.20	(0.87-1.65)	75.6	1.24	(1.02-1.51)	75.3	1.10	(0.92-1.31)	76.8	1.27	(1.07-1.52)	76.8	0.91	(0.76-1.08)	79.0	0.86	(0.73-1.00)
Unpaid maternity leave	72.3	1.12	(0.85-1.49)	77.0	1.38	(0.97-1.96)	80.1	1.66	(1.13-2.45)	82.3	1.79	(1.11-2.87)	79.9	1.09	(0.68-1.77)	78.5	0.84	(0.58-1.21)
Doing paid work	65.1	0.81	(0.58-1.13)	71.0	0.98	(0.72-1.33)	73.7	1.06	(0.75-1.50)	67.7	0.81	(0.58-1.13)	77.8	0.96	(0.58-1.60)	80.1	0.92	(0.67-1.27)
Not doing paid work	69.9	1.00		71.4	1.00		72.2	1.00		72.2	1.00		78.4	1.00		81.4	1.00	
Ethnicity																		
White	-	-	-	-	-	-	-	-	-	73.0	1.00		74.7	1.00		79.6	1.00	
BME	-	-	-	-	-	-	-	-	-	82.6	1.75	(1.29-2.37)	88.8	2.69	(2.08-3.48)	90.0	2.74	(2.18-3.49)

Abbreviations: OR, odds ratio; CI, confidence interval; NS-SEC, National Statistics Socioeconomic Classification

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.A continued

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Partnership status																		
Married	72.4	1.00		75.4	1.00		76.4	1.00		78.6	1.00		81.8	1.00		83.8	1.00	
Cohabiting	55.3	0.47	(0.35-0.63)	65.9	0.63	(0.49-0.81)	67.3	0.65	(0.51-0.82)	68.9	0.60	(0.49-0.74)	69.6	0.51	(0.42-0.61)	73.2	0.53	(0.45-0.63)
Single	53.8	0.44	(0.34-0.58)	58.3	0.46	(0.36-0.59)	62.4	0.52	(0.40-0.67)	59.9	0.41	(0.32-0.52)	69.3	0.50	(0.40-0.64)	69.7	0.44	(0.36-0.53)
Country of residence																		
England & Wales	70.1	1.00		72.9	1.00		73.3	1.00		74.0	1.00		77.6	1.00		79.9	1.00	
Scotland	70.6	1.03	(0.86-1.22)	73.0	1.01	(0.85-1.21)	76.7	1.22	(1.02-1.47)	79.4	1.36	(1.16-1.59)	77.6	1.00	(0.82-1.23)	79.9	1.00	(0.89-1.13)

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.B Associations between breastfeeding continuation at six weeks and health-related factors, and previous breastfeeding experience, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Birthweight (kg)																		
Less than 2.5	52.5	0.44	(0.31-0.64)	64.5	0.63	(0.41-0.96)	67.7	0.64	(0.44-0.93)	59.9	0.42	(0.31-0.59)	72.6	0.70	(0.51-0.98)	76.8	0.87	(0.67-1.1)
2.5 - 2.99	70.7	0.97	(0.77-1.21)	70.9	0.86	(0.68-1.08)	72.8	0.90	(0.69-1.18)	72.7	0.76	(0.59-0.96)	73.4	0.73	(0.58-0.93)	79.4	1.02	(0.86-1.2)
3 - 3.49	70.8	0.97	(0.82-1.16)	73.4	0.96	(0.80-1.16)	71.9	0.81	(0.67-0.99)	72.8	0.76	(0.63-0.92)	78.4	0.97	(0.80-1.17)	81.1	1.13	(1.00-1.2)
3.5 or more	71.3	1.00		74.1	1.00		76.0	1.00		77.9	1.00		79.0	1.00		79.1	1.00	
Type of delivery																		
Vaginal spontaneous	70.7	1.00		74.2	1.00		73.8	1.00		75.8	1.00		78.9	1.00		80.2	1.00	
Caesarean	64.2	0.74	(0.58-0.94)	69.1	0.79	(0.61-1.01)	70.8	0.89	(0.70-1.12)	73.7	0.90	(0.73-1.10)	74.5	0.78	(0.65-0.94)	78.4	0.89	(0.78-1.0)
Vaginal assisted	71.8	1.06	(0.82-1.35)	69.7	0.80	(0.62-1.03)	75.1	1.12	(0.85-1.48)	69.8	0.74	(0.58-0.94)	76.9	0.89	(0.69-1.14)	80.4	1.01	(0.85-1.1)
Length of stay in hospital or other maternity centres																		
2 days or less	73.9	1.00		75.6	1.00		74.1	1.00		75.6	1.00		78.7	1.00		80.7	1.00	
3-5 days	70.2	0.83	(0.68-1.01)	72.4	0.84	(0.70-1.01)	70.9	0.88	(0.71-1.09)	74.4	0.94	(0.78-1.13)	76.2	0.87	(0.73-1.03)	78.8	0.89	(0.78-1.0)
6 days or more	66.6	0.71	(0.58-0.86)	67.5	0.68	(0.54-0.85)	75.8	1.09	(0.86-1.36)	69.5	0.74	(0.57-0.96)	75.4	0.83	(0.60-1.15)	73.9	0.67	(0.53-0.8)
Baby was treated in a special care unit or with phototherapy																		
Yes	65.2	0.74	(0.61-0.89)	65.0	0.65	(0.52-0.83)	69.2	0.77	(0.60-0.99)	66.8	0.64	(0.51-0.81)	71.2	0.68	(0.54-0.85)	75.8	0.76	(0.62-0.9)
No	71.7	1.00		74.0	1.00		74.1	1.00		75.7	1.00		78.4	1.00		80.3	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.B continued

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Smoking postnatally																		
Yes	58.6	1.00		61.0	1.00		55.2	1.00		53.9	1.00		58.1	1.00		53.8	1.00	
No	73.8	2.00	(1.68-2.38)	76.3	2.07	(1.73-2.49)	77.1	2.75	(2.22-3.40)	78.4	3.11	(2.53-3.83)	80.2	2.93	(2.34-3.65)	82.1	3.92	(3.15-4.8)
Awareness of the health benefits of breastfeeding																		
Yes	-	-	-	-	-	-	-	-	-	74.3	0.85	(0.60-1.21)	77.9	1.22	(0.93-1.60)	79.8	0.98	(0.81-1.1)
No	-	-	-	-	-	-	-	-	-	77.2	1.00		74.3	1.00		80.0	1.00	
Whether breastfed most recent child																		
BF for 6 wks+	81.5	3.21	(2.21-4.69)	85.8	4.54	(3.29-6.26)	86.7	6.71	(4.66-9.67)	87.9	6.93	(4.85-9.91)	90.3	4.59	(3.24-6.50)	87.9	4.80	(3.49-6.6)
BF for <6 wks	43.0	0.54	(0.35-0.84)	53.8	0.88	(0.61-1.25)	47.6	0.89	(0.58-1.36)	46.3	0.83	(0.56-1.23)	46.9	0.44	(0.29-0.64)	52.3	0.73	(0.50-1.0)
Never BF recent	57.8	1.00		57.0	1.00		50.7	1.00		51.1	1.00		67.0	1.00		60.1	1.00	
No previous child	67.7	1.52	(1.06-2.18)	69.8	1.73	(1.29-2.31)	70.5	2.43	(1.74-3.38)	72.0	2.46	(1.78-3.41)	74.2	1.42	(1.04-1.94)	78.2	2.37	(1.76-3.2)

Abbreviations: BF, breastfed; wks, weeks

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.C Associations between breastfeeding continuation at six weeks and indirect breastfeeding experience, GB, 1990 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Other women's infant feeding behaviours																		
Knew mostly women who BF	-	-	-	89.0	1.00		89.5	1.00		86.0	1.00		87.1	1.00		91.1	1.00	
Knew mostly women who mixed fed	-	-	-	70.8	0.38	(0.30-0.49)	69.7	0.42	(0.33-0.55)	69.5	0.37	(0.29-0.47)	77.6	0.52	(0.41-0.65)	78.7	0.36	(0.29-0.46)
Knew mostly women who FF	-	-	-	48.8	0.28	(0.22-0.35)	52.5	0.29	(0.23-0.36)	66.4	0.32	(0.25-0.41)	66.9	0.30	(0.25-0.37)	71.8	0.25	(0.19-0.32)
Unaware	-	-	-	65.5	0.39	(0.29-0.54)	67.3	0.38	(0.27-0.53)	72.7	0.43	(0.32-0.58)	77.4	0.51	(0.39-0.67)	80.0	0.39	(0.30-0.52)
How mothers themselves were fed as babies																		
BF only	-	-	-	79.2	1.00		82.5	1.00		81.4	1.00		84.1	1.00		86.9	1.00	
Mixed fed	-	-	-	75.2	0.56	(0.45-0.71)	80.3	0.69	(0.53-0.88)	74.2	0.66	(0.51-0.85)	78.4	0.69	(0.54-0.87)	78.0	0.53	(0.44-0.65)
FF only	-	-	-	51.3	0.50	(0.40-0.61)	55.3	0.58	(0.46-0.73)	70.7	0.55	(0.44-0.68)	72.0	0.49	(0.40-0.60)	72.6	0.40	(0.33-0.48)
Don't know	-	-	-	53.2	0.39	(0.29-0.52)	59.2	0.54	(0.38-0.76)	70.9	0.56	(0.40-0.78)	74.1	0.54	(0.39-0.75)	77.1	0.51	(0.39-0.66)

Abbreviations: BF, breastfed; FF, formula fed

Notes: Categories for other women's breastfeeding behaviours shortened due to limited space; *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.D Associations between breastfeeding continuation at six weeks and support received in hospital, GB, 1985 to 2010: Univariable Analysis

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Received enough support with infant feeding																		
Yes	70.6	1.56	(1.08-2.25)	73.1	1.50	(1.07-2.11)	74.0	1.45	(0.99-2.12)	74.7	1.23	(0.87-1.74)	79.0	1.35	(1.13-1.63)	81.8	1.60	(1.38-1.86)
No	60.6	1.00		64.3	1.00		66.0	1.00		70.6	1.00		73.5	1.00		73.8	1.00	
Discussed infant feeding during antenatal visits																		
Yes	68.3	0.85	(0.73-1.00)	70.9	0.86	(0.73-1.01)	72.5	0.90	(0.76-1.08)	75.0	1.10	(0.92-1.31)	77.9	1.07	(0.92-1.24)	79.9	1.02	(0.90-1.15)
No	71.6	1.00		74.0	1.00		74.7	1.00		73.2	1.00		76.7	1.00		79.5	1.00	
Baby stayed beside mother while in hospital (rooming in)																		
Yes	69.8	0.97	(0.83-1.13)	74.1	1.23	(1.05-1.46)	73.7	1.08	(0.88-1.32)	75.8	1.42	(1.16-1.75)	78.6	1.43	(1.20-1.70)	80.2	1.25	(1.01-1.54)
No	70.5	1.00		69.9	1.00		72.8	1.00		68.8	1.00		72.0	1.00		76.4	1.00	
Taught to position and attach the baby at the breast for breastfeeding																		
Yes	-	-	-	-	-	-	-	-	-	-	-	-	80.8	1.31	(1.09-1.58)	81.1	1.17	(1.02-1.34)
No	-	-	-	-	-	-	-	-	-	-	-	-	76.2	1.00		78.6	1.00	
Had skin-to-skin contact with baby																		
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	-	-	-	-	78.6	1.00		80.5	1.00	
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	-	-	-	-	76.6	0.90	(0.67-1.19)	77.9	0.85	(0.69-1.04)
No	-	-	-	-	-	-	-	-	-	-	-	-	72.7	0.73	(0.58-0.91)	75.5	0.75	(0.59-0.95)

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.3.D continued

	1985			1990			1995			2000			2005			2010		
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552			3,633			3,178			2,792			4,768			7,396		
<i>Still BF at 6wks, n</i>	2,459			2,617			2,340			2,112			3,705			5,922		
<i>Still BF at 6wks, %</i>	70.1			72.8			74.0			75.5			77.6			79.9		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Early initiation of breastfeeding																		
Yes	75.5	1.82	(1.56-2.13)	76.4	1.60	(1.36-1.88)	77.1	1.78	(1.48-2.14)	77.3	1.66	(1.39-2.00)	79.8	1.45	(1.21-1.74)	81.8	1.51	(1.29-1.74)
No	62.9	1.00		67.1	1.00		65.8	1.00		67.2	1.00		73.1	1.00		74.9	1.00	
Received help to initiate breastfeeding																		
Yes	-	-	-	-	-	-	-	-	-	72.5	0.72	(0.60-0.86)	75.3	0.63	(0.52-0.76)	77.8	0.66	(0.57-0.76)
No	-	-	-	-	-	-	-	-	-	78.5	1.00		82.9	1.00		84.1	1.00	
Received help from a voluntary organisation or community group that helps recent mothers with breastfeeding																		
Yes	88.9	3.67	(2.40-5.61)	87.3	2.74	(1.87-4.01)	84.4	2.09	(1.49-2.93)	83.5	1.84	(1.34-2.54)	80.3	1.58	(1.34-1.87)	85.0	1.59	(1.37-1.87)
No	68.7	1.00		71.6	1.00		72.1	1.00		73.4	1.00		72.1	1.00		78.1	1.00	
Received professional help with infant feeding problems at home																		
Yes	58.3	0.42	(0.36-0.50)	63.1	0.50	(0.42-0.59)	66.5	0.61	(0.51-0.73)	64.9	0.48	(0.40-0.57)	73.6	0.66	(0.55-0.78)	79.0	0.84	(0.74-0.95)
No	42.2	0.22	(0.14-0.36)	65.8	0.54	(0.34-0.85)	57.1	0.39	(0.23-0.66)	63.5	0.45	(0.28-0.72)	59.3	0.34	(0.24-0.49)	63.4	0.39	(0.31-0.48)
Had no feeding problems	76.8	1.00		77.8	1.00		77.5	1.00		79.4	1.00		80.9	1.00		81.7	1.00	
Received free or reduced-price milk, or exposed to an advertisement for infant formula																		
Yes	63.6	0.65	(0.55-0.77)	-	-	-	-	-	-	57.8	0.28	(0.21-0.38)	78.2	1.11	(0.94-1.31)	78.8	0.60	(0.47-0.76)
No	72.9	1.00		-	-	-	-	-	-	76.5	1.00		76.4	1.00		86.1	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* < 0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.A Associations between breastfeeding continuation at six weeks and sociodemographic factors, GB, 1985 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age at delivery												
Under 20	0.35	(0.23-0.55)	0.26	(0.17-0.41)	0.46	(0.28-0.76)	ns	ns	0.60	(0.38-0.97)	0.87	(0.49-1.54)
20-24	0.55	(0.42-0.72)	0.55	(0.42-0.72)	0.55	(0.41-0.75)	ns	ns	0.66	(0.49-0.89)	0.64	(0.49-0.83)
25-29	0.75	(0.58-0.95)	0.78	(0.62-0.99)	0.71	(0.56-0.89)	ns	ns	0.84	(0.66-1.06)	0.71	(0.59-0.86)
30 or over	1.00		1.00		1.00		ns	ns	1.00		1.00	
Education level												
16 or under	0.68	(0.55-0.83)	0.78	(0.63-0.96)	0.77	(0.62-0.97)	0.88	(0.69-1.12)	0.85	(0.66-1.10)	1.11	(0.85-1.44)
17 or 18	1.00		1.00		1.00		1.00		1.00		1.00	
Over 18	1.41	(1.04-1.91)	1.45	(1.09-1.93)	2.15	(1.63-2.84)	1.90	(1.48-2.44)	1.47	(1.18-1.85)	1.66	(1.37-2.01)
SOC												
Managerial & professional	1.64	(1.07-2.50)	ns	ns	ns	ns	-	-	-	-	-	-
Intermediate	1.28	(0.98-1.67)	ns	ns	ns	ns	-	-	-	-	-	-
Skilled-Non-manual	0.92	(0.67-1.26)	ns	ns	ns	ns	-	-	-	-	-	-
Skilled-Manual	1.00		ns	ns	ns	ns	-	-	-	-	-	-
Semi-skilled	0.88	(0.66-1.17)	ns	ns	ns	ns	-	-	-	-	-	-
Unskilled	0.56	(0.38-0.84)	ns	ns	ns	ns	-	-	-	-	-	-
Unclassified	0.82	(0.59-1.13)	ns	ns	ns	ns	-	-	-	-	-	-

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; SOC, socioeconomic status based on partner's occupation

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.A continued

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
NS-SEC												
Managerial & professional	-	-	-	-	-	-	1.83	(1.38-2.41)	ns	ns	ns	ns
Intermediate	-	-	-	-	-	-	1.34	(1.01-1.78)	ns	ns	ns	ns
Routine and manual	-	-	-	-	-	-	1.00		ns	ns	ns	ns
Never worked	-	-	-	-	-	-	1.91	(1.30-2.81)	ns	ns	ns	ns
Unclassified	-	-	-	-	-	-	1.47	(1.00-2.14)	ns	ns	ns	ns
Employment status at stage 1												
Paid maternity leave	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Unpaid maternity leave	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Doing paid work	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Not doing paid work	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Ethnicity												
White	-	-	-	-	-	-	ns	ns	1.00		1.00	
BME	-	-	-	-	-	-	ns	ns	2.48	(1.80-3.43)	2.38	(1.81-3.14)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.A continued

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Partnership status												
Married	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.00	
Cohabiting	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	0.79	(0.65-0.95)
Single	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	0.67	(0.50-0.91)
Country of residence												
England & Wales	ns	ns	ns	ns	ns	ns	1.00		ns	ns	ns	ns
Scotland	ns	ns	ns	ns	ns	ns	1.42	(1.17-1.72)	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; NS-SEC, National Statistics Socioeconomic Classification

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.B Associations between breastfeeding continuation at six weeks and health-related factors, and previous breastfeeding experience, GB, 1985 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Birthweight (kg)												
Less than 2.5	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2.5 - 2.99	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
3 - 3.49	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
3.5 or more	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Type of delivery												
Vaginal spontaneous	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Caesarean	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Vaginal assisted	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Length of stay in hospital or other maternity centres												
2 days or less	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
3-5 days	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
6 days or more	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Baby was treated in a special care unit or with phototherapy												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.B continued

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Smoking status postnatally												
Yes	1.00		1.00		1.00		1.00		1.00		1.00	
No	1.34	(1.09-1.65)	1.42	(1.14-1.75)	1.93	(1.51-2.45)	1.81	(1.40-2.35)	1.49	(1.13-1.96)	2.33	(1.75-3.11)
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	-	-	-	ns	ns	ns	ns	ns	ns
No	-	-	-	-	-	-	ns	ns	ns	ns	ns	ns
Whether breastfed most recent child												
BF for 6 wks+	2.18	(1.43-3.30)	2.92	(2.01-4.24)	4.02	(2.74-5.91)	5.58	(3.71-8.40)	2.63	(1.76-3.92)	2.08	(1.36-3.16)
BF for <6 wks	0.46	(0.28-0.75)	0.74	(0.49-1.11)	0.75	(0.47-1.20)	0.78	(0.49-1.25)	0.39	(0.25-0.60)	0.40	(0.24-0.66)
Never BF recent	1.00		1.00		1.00		1.00		1.00		1.00	
No previous child	1.45	(0.97-2.19)	1.63	(1.15-2.32)	1.87	(1.31-2.67)	2.23	(1.52-3.27)	0.89	(0.61-1.30)	1.41	(0.94-2.12)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; wks, weeks

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.C Associations between breastfeeding continuation at six weeks and indirect breastfeeding experience, GB, 1990 to 2010: Multivariable Analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Other women's infant feeding behaviours												
Knew mostly women who BF	-	-	1.00		1.00		1.00		1.00		1.00	
Knew mostly women who mixed fed	-	-	0.49	(0.37-0.65)	0.53	(0.40-0.71)	0.43	(0.33-0.57)	0.62	(0.48-0.80)	0.38	(0.29-0.50)
Knew mostly women who FF	-	-	0.44	(0.34-0.57)	0.50	(0.38-0.66)	0.50	(0.38-0.66)	0.52	(0.40-0.69)	0.43	(0.32-0.58)
Unaware	-	-	0.57	(0.40-0.81)	0.54	(0.37-0.78)	0.57	(0.40-0.80)	0.70	(0.51-0.96)	0.48	(0.35-0.67)
How mothers themselves were fed as babies												
BF only	-	-	1.00		ns	ns	ns	ns	1.00		1.00	
Mixed fed	-	-	0.63	(0.49-0.81)	ns	ns	ns	ns	0.70	(0.53-0.92)	0.59	(0.47-0.73)
FF only	-	-	0.68	(0.54-0.87)	ns	ns	ns	ns	0.60	(0.47-0.77)	0.55	(0.45-0.67)
Don't know	-	-	0.46	(0.33-0.64)	ns	ns	ns	ns	0.55	(0.38-0.80)	0.58	(0.42-0.80)

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.D Associations between breastfeeding continuation at six weeks and support received, GB, 1985 to 2010: Multivariable analysis

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Received enough support with infant feeding												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.54	(1.29-1.85)
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.00	
Discussed infant feeding during antenatal visits												
Yes	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Baby stayed beside mother while in hospital (rooming in)												
Yes	ns	ns	1.23	(1.01-1.49)	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	1.00		ns	ns	ns	ns	ns	ns	ns	ns
Taught to position and attach the baby at the breast for breastfeeding												
Yes	-	-	-	-	-	-	-	-	1.74	(1.37-2.22)	ns	ns
No	-	-	-	-	-	-	-	-	1.00		ns	ns
Had skin-to-skin contact with baby												
Yes, within 1 st hour after birth	-	-	-	-	-	-	-	-	ns	ns	ns	ns
Yes, after 1 st hour of birth	-	-	-	-	-	-	-	-	ns	ns	ns	ns
No	-	-	-	-	-	-	-	-	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.4.D continued

	1985		1990		1995		2000		2005		2010	
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	3,552		3,633		3,178		2,792		4,768		7,396	
<i>Still BF at 6wks, n</i>	2,459		2,617		2,340		2,112		3,705		5,922	
<i>Still BF at 6wks, %</i>	70.1		72.8		74.0		75.5		77.6		79.9	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Early initiation of breastfeeding												
Yes	1.61	(1.35-1.95)	1.42	(1.18-1.72)	1.58	(1.28-1.95)	1.57	(1.27-1.95)	1.40	(1.14-1.73)	1.34	(1.11-1.62)
No	1.00				1.00		1.00		1.00		1.00	
Received help to initiate breastfeeding												
Yes	-	-	-	-	-	-	ns	ns	0.66	(0.52-0.85)	0.69	(0.56-0.85)
No	-	-	-	-	-	-	ns	ns	1.00		1.00	
Received help from a voluntary organisation or community group that helps recent mothers with breastfeeding												
Yes	2.11	(1.29-3.46)	2.32	(1.51-3.58)	ns	ns	ns	ns	1.64	(1.34-2.00)	1.71	(1.38-2.11)
No	1.00		1.00		ns	ns	ns	ns	1.00		1.00	
Received professional help with infant feeding problems at home												
Yes	0.37	(0.31-0.45)	0.40	(0.33-0.49)	0.54	(0.24-0.78)	0.38	(0.31-0.48)	0.62	(0.50-0.76)	0.82	(0.68-0.99)
No	0.20	(0.12-0.35)	0.63	(0.36-1.08)	0.43	(0.24-0.78)	0.46	(0.26-0.80)	0.39	(0.26-0.59)	0.45	(0.33-0.61)
Had no feeding problems	1.00		1.00		1.00		1.00		1.00		1.00	
Received free or reduced-price milk, or exposed to an advertisement for infant formula												
Yes	0.68	(0.56-0.82)	-	-	-	-	0.28	(0.19-0.42)	ns	ns	ns	ns
No	1.00		-	-	-	-	1.00		ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.5 Contribution of explanatory factors to breastfeeding continuation at six weeks at the population level, GB, 1985 to 2010: PAF estimates

	1985	1990	1995	2000	2005	2010
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	<i>3,552</i>	<i>3,633</i>	<i>3,178</i>	<i>2,792</i>	<i>4,768</i>	<i>7,396</i>
<i>Still BF at 6wks, n</i>	<i>2,459</i>	<i>2,617</i>	<i>2,340</i>	<i>2,112</i>	<i>3,705</i>	<i>5,922</i>
<i>Still BF at 6wks, %</i>	<i>70.1</i>	<i>72.8</i>	<i>74.0</i>	<i>75.5</i>	<i>77.6</i>	<i>79.9</i>
PAF (%)						
Age at delivery						
Under 25				Reference		
25-29	11.8	14.9	8.7	ns	5.9	1.8
30 or over	17.1	21.0	25.7	19.7	20.3	19.4
Education level						
18 or under				Reference		
Over 18	11.0	10.4	21.9	23.2	19.4	24.7
Ethnicity						
White				Reference		
BME	-	-	-	ns	13.3	13.5
Smoking postnatally						
Yes				Reference		
No	20.4	24.0	42.0	39.8	29.8	53.8

Abbreviations: OR, odds ratio; PAFs, population attributable fractions; ns, OR not statistically significant; BME, black and minority ethnicity; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; PAF estimates based on prevalence of factor and statistically significant ORs ($P < 0.05$). Some ORs obtained from refitting final models with recoded variables. ORs were adjusted for other factors; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.5 continued

	1985	1990	1995	2000	2005	2010
<i>Populations still BF at 1wk and whose baby was 6+ wks, n</i>	<i>3,552</i>	<i>3,633</i>	<i>3,178</i>	<i>2,792</i>	<i>4,768</i>	<i>7,396</i>
<i>Still BF at 6wks, n</i>	<i>2,459</i>	<i>2,617</i>	<i>2,340</i>	<i>2,112</i>	<i>3,705</i>	<i>5,922</i>
<i>Still BF at 6wks, %</i>	<i>70.1</i>	<i>72.8</i>	<i>74.0</i>	<i>75.5</i>	<i>77.6</i>	<i>79.9</i>
PAF (%)						
Other women's infant feeding behaviours						
Knew mostly women who FF				Reference		
Knew women who BF or mixed fed	-	20.6	17.7	ns	19.4	ns
How mothers themselves were fed as babies						
FF only				Reference		
BF or mixed fed	-	ns	ns	ns	16.9	19.7

Abbreviations: OR, odds ratio; PAFs, population attributable fractions; ns, OR not statistically significant; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; PAF estimates based on prevalence of factor and statistically significant ORs ($P < 0.05$). Some ORs obtained from refitting final models with recoded variables. ORs were adjusted for other factors; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 7.6 Summary of the associations between breastfeeding continuation at six weeks and explanatory factors, GB, 1985 to 2010

Level	Explanatory factors	1985	1990	1995	2000	2005	2010
	Sociodemographic						
	30 or over at birth of index baby	●	●	●	ns	●	●
	Completed full-time education over age 18	●	●	●	●	●	●
	SOC: managerial and professional socioeconomic group	●	ns	ns	-	-	-
	NS-SEC: managerial and professional socioeconomic group	-	-	-	●	ns	ns
	Employment status at stage 1	ns	ns	ns	ns	ns	ns
	BME origin	-	-	-	ns	●	●
	Married	ns	ns	ns	ns	ns	●
	Residing in Scotland	ns	ns	ns	●	ns	ns
	Health-related						
	Birthweight	ns	ns	ns	ns	ns	ns
	Type of delivery	ns	ns	ns	ns	ns	ns
	Length of stay in hospital or other maternity centres	ns	ns	ns	ns	ns	ns
	Baby was treated in a special care unit or with phototherapy	ns	ns	ns	ns	ns	ns
	Smoked postnatally	●	●	●	●	●	●
	Aware of health benefits of breastfeeding	-	-	-	ns	ns	ns
	Direct previous breastfeeding experience						
	Breastfed most recent child for 6 weeks or more	●	●	●	●	●	●

Key: Individual Family and social support Local community Societal ● Positive association ● Negative association ns = Not significant - Not assessed by IFS

Table 7.6 continued

Level	Explanatory factors	1985	1990	1995	2000	2005	2010
	Indirect breastfeeding experience						
	Knew mostly women who breastfed their own babies	-	●	●	●	●	●
	Mother was exclusively breastfed as a baby	-	●	ns	ns	●	●
	Support in hospital						
	Discussed infant feeding during antenatal visits	ns	ns	ns	ns	ns	ns
	Received enough support with infant feeding	●	●	●	●	●	●
	Baby stayed beside mother while in hospital (rooming in)	ns	ns	ns	ns	ns	ns
	Taught to position and attach the baby for breastfeeding	-	-	-	-	●	●
	Had skin-to-skin contact with baby	-	-	-	-	ns	ns
	Early initiation of breastfeeding	●	●	●	●	●	ns
	Received help to initiate breastfeeding	-	-	-	●	●	●
	Support at home						
	Received help from voluntary organisation or community group	●	●	ns	ns	●	●
	Did not receive professional help with feeding problems at home	●	ns	●	●	●	●
	Received free or reduced-price milk, or exposed to an advertisement for infant formula	●	-	-	●	ns	ns

Key:
 Individual
 Family and social support
 Local community
 Societal
 ● Positive association
 ● Negative association
 ns = Not significant
 - Not assessed by IFS

8 Trends in breastfeeding in public in GB: 1995 to 2010

8.1 Chapter introduction

This chapter presents the results of the statistical analyses of the associations between breastfeeding in public and the explanatory factors. The statistical analyses addressed objective 2, which was to estimate the independent effects of each of factor on breastfeeding in public in each survey year from 1995 to 2010. Breastfeeding in public was first measured by the IFS at stage 2 when babies were four to six months old. Therefore, for these analyses, the main research populations were restricted to mothers who initiated breastfeeding and continued to breastfeed at four months, and whose baby was at least 17 weeks old at the time of completing the stage 2 questionnaire (Table 8.1). Table 8.2 (pages 215-222) summarises the distribution of factors among these mothers in each survey year. The results indicate that in each survey year, most mothers who continued to breastfeed at four months were aged 30 or over, educated beyond the age of 18, married, and in the managerial, professional and intermediate socioeconomic groups. Compared to mothers included in the analyses of breastfeeding in the first six weeks, fewer of these present mothers had smoked in the first six weeks after childbirth. In addition, fewer of these mothers reported having problems with infant feeding, while more mothers reported being aware of the health benefits of breastfeeding to mothers and babies. Many of these mothers were first-time mothers, and among those who had previous children, most had breastfed their most recent child for six weeks or more. When placed within the context of the previous findings in

chapters 5 to 7, these present results are further evidence of the attributes and experiences that are most likely to facilitate the long-term continuation of breastfeeding. Table 8.2 also shows that among these mothers, the proportion who had ever breastfed in public remained highly consistent over the research period, from 83.5% of mothers in 1995 to 82.8% in 2010. The results are presented in this chapter according to the order of the breastfeeding behaviours conceptual model, beginning with sociodemographic factors. The chapter concludes with a summary in section 8.8.

Table 8.1 Summary of the research populations used in the analysis of breastfeeding in public

Survey populations	1995	2000	2005	2010
Numbers initially surveyed	12,314	13,112	19,848	30,760
Numbers responding at stage 1	9,130	9,492	12,290	15,724
Numbers excluded from analysis: Northern Ireland	1,753	1,778	1,886	2,648
Numbers excluded from analysis: multiple births	158	154	317	163
Numbers excluded from analysis: non-hospital births	172	192	310	598
Numbers included in main research populations and used in the analysis of breastfeeding initiation	7,047	7,368	9,777	12,315
Numbers excluded from analysis of breastfeeding in public: did not initiate breastfeeding	2,623	2,415	2,446	2,494
Numbers excluded from analysis of breastfeeding in public: did not respond to stage 2 questionnaire; did not continue breastfeeding at four months; and whose baby was younger than 17 weeks old at time of stage 2 questionnaire	2,745	3,358	4,750	5,546
Numbers who initiated and were still breastfeeding at four months, and whose baby was at least 17 weeks old, and therefore used in the analysis of breastfeeding in public	1,679	1,595	2,581	4,275

Note: Breastfeeding in public was not assessed by the IFS in 1985, and there is no data on breastfeeding in public in the 1990 IFS dataset.

8.2 The effects of sociodemographic factors

8.2.1 Univariable analysis

Table 8.3.A (page 224) shows the weighted proportions and unadjusted ORs for the associations between breastfeeding in public and sociodemographic factors in each survey year. As with the previous breastfeeding outcomes, mothers aged 30 and over showed a significantly higher prevalence of breastfeeding in public in each survey year, as did mothers who completed full-time education over age 18 and those in the highest socioeconomic groups. Meanwhile, there was no significant difference in the prevalence of breastfeeding in public between the subgroups of partnership status and those of country of residence in 1995 and 2000. However, in 2005 and 2010, mothers residing in Scotland were significantly more likely to have ever breastfed in public than mothers in England and Wales. The results also show that a higher proportion of white mothers had breastfed in public in each survey year than mothers who were of BME origin. For example, in 2000 90% of white mothers had ever breastfed in public compared to 74.5% of BME mothers ($P < 0.10$). These associations were observed prior to adjusting for other factors.

8.2.2 Multivariable analysis

After adjustments, the effects of education, ethnicity and socioeconomic status on breastfeeding in public were slightly attenuated. For example, while mothers of BME origin remained significantly less likely to have breastfed in public than white mothers from 2000 to 2010, the ORs for this association were attenuated towards the null (aOR: 0.46, 95% CI: 0.24-0.88; aOR: 0.30, 95% CI: 0.22-0.42; and aOR: 0.32, 95% CI: 0.24-0.42 in 2000, 2005 and 2010, respectively). In comparison to the previous breastfeeding

outcomes, breastfeeding in public was significantly associated with fewer sociodemographic factors, after accounting for the potential effects of other factors (Table 8.4.A on page 232).

8.3 The effects of health-related factors and direct previous experience of breastfeeding

8.3.1 Univariable analysis

Table 8.3.B (page 224) shows that, as with the previous breastfeeding outcomes, mothers who breastfed their most recent child for six weeks or more were more likely to have breastfed in public in each survey year, especially compared to mothers who never breastfed their most recent child ($P < 0.10$). Similarly, mothers who were aware of the health benefits of breastfeeding were significantly more likely to have breastfed in public than those who were unaware in 2000, 2005 and 2010 ($P < 0.10$). Conversely, mothers whose baby had a low birthweight were less likely to have breastfed in public in most survey years than mothers whose baby had a normal birthweight. In this DPhil research, breastfeeding in public was not significantly associated with other health-related factors at the 10% level.

8.3.2 Multivariable analysis

After adjusting for other factors, mothers who did not breastfeed their most recent child remained least likely to have breastfed in public compared to mothers who breastfed their most recent child for six weeks or more: aOR in 1995 was 0.48 (95% CI: 0.24-0.95); and aOR in 2005 was 0.43 (95% CI: 0.22-0.85). Independent negative associations were also observed with having a baby who weighed 2.5-2.99 kg at birth in 2005 or < 2.5 kg at birth in 2010. After adjustments, mothers who were aware of the health benefits of

breastfeeding remained over twice as likely to have breastfed in public from 2000 to 2010 as mothers who were unaware of any health benefits (Table 8.4.B, page 234).

8.4 The influence of other women's infant feeding behaviours

8.4.1 Univariable analysis

Table 8.3.C (page 228) also shows that mothers who knew of women who had breastfed their own babies, whether exclusively or alongside formula feeding, were more likely to have breastfed in public in each survey year than mothers who knew mostly women who had formula fed their babies, and mothers who were unaware of how other women fed their babies. However, only in 2005 was the influence of knowing about other women's infant feeding behaviours statistically significant at the 10% level. Mothers who were exclusively formula fed when they themselves were babies were most likely to have breastfed their own baby in public in each survey year from 1995 (86.1%) to 2010 (88%), and showed significantly higher unadjusted odds in 2000 to 2010 relative to mothers who were exclusively breastfed when they were babies ($P < 0.10$).

8.4.2 Multivariable analysis

After controlling for confounders, how mothers were fed when they themselves were babies was rendered non-significant, while the influence of other women's infant feeding behaviours was attenuated. Significant independent associations were observed between breastfeeding in public and the following only: knowing mostly women who breastfed their own babies in 2005 (aOR: 1.49, 95% CI: 1.03-2.17); and being unaware of other women's infant feeding behaviours in 2000 and 2010 (aOR: 0.33, 95% CI: 0.18-0.62 and aOR: 0.58, 95% CI: 0.41-0.82, respectively) (Table 8.4.C, page 236).

8.5 The effects of receiving support with breastfeeding in hospital and at home

8.5.1 Univariable analysis

Table 8.3.D (page 229) also shows that the odds of ever breastfeeding in public were significantly higher in most survey years among the following subgroups of mothers: those who initiated breastfeeding early; those who received help from a voluntary organisation or community group that helps recent mothers with infant feeding; and those who received help with infant feeding problems at home from a health professional ($P < 0.10$). As with breastfeeding continuation at one week and six weeks, receiving help to initiate breastfeeding had a negative effect on breastfeeding in public in 2000 and 2005. Of note, being taught to position and attach the baby at the breast for breastfeeding showed a positive effect in 2005 and a negative effect in 2010 ($P < 0.10$). Other factors at the local community level were not significantly associated with breastfeeding in public prior to adjusting for the effects of other factors.

8.5.2 Multivariable analysis

Following adjustments, being taught to position and attach the baby at the breast for breastfeeding remained significantly associated with higher odds of breastfeeding in public in 2005 (aOR: 1.44, 95% CI: 1.00-2.09). Likewise, mothers who initiated breastfeeding early in 1995 and 2010, and those who received help from a voluntary organisation or community group in 2005 and 2010, remained significantly more likely to have breastfed in public ($P < 0.05$) (Table 8.4.D, page 237).

8.6 The effects of legislation and other supportive strategies that protect breastfeeding in public

8.6.1 Univariable analysis

Prior to adjustments for confounders, including sociodemographic differences, mothers who were aware of legislation protecting their right to breastfeed in public were significantly more likely to have breastfed in public in 2005 and 2010, showing unadjusted ORs of 1.67 (95% CI: 1.17-2.36) and 1.39 (95% CI: 1.13-1.72), respectively. Mothers who were exposed to an advertisement for an infant formula were also more likely to have breastfed in public in 2005 and 2010, as were mothers in 2010 who noticed stickers or leaflets in public places welcoming breastfeeding ($P < 0.10$) (Table 8.3.E, page 231).

8.6.2 Multivariable analysis

Following adjustments for confounders, mothers who were exposed to an advertisement for an infant formula remained significantly more likely to have breastfed in public in 2010 than those who did not see such an advertisement (aOR: 1.73, 95% CI: 1.23-2.45). Also in 2010, mothers who noticed stickers or leaflets welcoming breastfeeding remained significantly more likely to have breastfed in public (aOR: 1.37, 95% CI: 1.03-1.81). After accounting for the potential effects of other factors, neither residing in a country in which legislation was introduced nor being aware of the presence of legislation showed any significant association with breastfeeding in public (Table 8.4.E, page 239).

8.7 Chapter summary

In each survey year from 1995 to 2010, most mothers who were still breastfeeding at four months were 30 or over at delivery; had completed full-time education over age 18; were married; and were in the managerial, professional and intermediate socioeconomic groups. Additionally, most of these mothers had not smoked in the first six weeks after giving birth; they did not experience problems with infant feeding while they were at home; they were aware of the health benefits of breastfeeding; and they were mostly first-time mothers or mothers who had breastfed their most recent child for at least six weeks. These present findings may be indicative of the attributes and experiences that are most likely to facilitate the continuation of breastfeeding.

There also may have been a relationship between ever breastfeeding in public and breastfeeding continuation, given that over 80% of mothers who continued to breastfeed at four months had breastfed in public. However, based on the way in which breastfeeding in public was assessed in the IFS, it is unclear if having breastfed in public contributed to the continuation of breastfeeding to four months. It may be that most mothers who continued to breastfeed at four months were so inclined to breastfeed that they were willing to practise breastfeeding in a public place.

The findings also showed that inequalities in the practice of breastfeeding in public can still persist within subgroups of mothers who successfully continue to breastfeed at four months. Specifically, mothers who were most likely to have breastfed in public had the following characteristics: completed full-time education over age 18; white ethnicity; managerial and professional socioeconomic status; had breastfed their most recent child for at least six weeks; were aware of the health benefits of

breastfeeding; knew other women who breastfed their own babies; had been taught to position and attach their baby at the breast for breastfeeding; initiated breastfeeding early; received help with infant feeding from a voluntary organisation or community group that helps recent mothers; noticed stickers or leaflets that welcome breastfeeding in public places; and had been exposed to an advertisement for an infant formula. The proportion of mothers who had breastfed in public remained largely consistent from 1995 to 2010, despite an increase in the proportion of mothers who continued to breastfeed at four months. The findings also indicate that legislation that protects the right of mothers to breastfeed their baby in public may not have exerted a strong influence on breastfeeding in public. This was evidenced by the fact that breastfeeding in public was not independently associated with either being aware of the presence of protective legislation or residing in a country with such legislation. Lastly, mothers were asked in the IFS stage 2 questionnaire if they had ever breastfed the index baby in public since he or she was born. As such, it cannot be discerned whether these research results reflect the likelihood of breastfeeding in public just once or on a regular basis (Table 8.5, page 240).

Table 8.2. Distribution of the explanatory factors among the population of mothers who initiated and continued breastfeeding at four months, whose baby was at least 17 weeks old, and who were included in the analysis of breastfeeding in public, GB, 1995 to 2010

	1995		2000		2005		2010	
Populations (n)	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age at delivery								
Under 20	33	(2.0)	34	(2.2)	48	(2.3)	35	(1.9)
20-24	169	(9.5)	123	(8.3)	221	(10.1)	278	(10.6)
25-29	498	(29.7)	408	(25.3)	572	(25.2)	1,071	(28.1)
30 or over	978	(58.7)	1,026	(64.2)	1,733	(62.5)	2,882	(59.4)
<i>Missing</i>	1	0.1	4	0.3	7	0.3	9	0.2
Education level								
16 or under	406	(25.1)	311	(19.6)	324	(13.0)	354	(10.0)
17 or 18	569	(35.0)	473	(31.2)	682	(28.0)	807	(21.5)
Over 18	694	(39.8)	802	(49.2)	1,553	(59.0)	3,075	(68.5)
<i>Missing</i>	10	0.6	9	0.6	22	0.9	39	0.9
SOC								
Managerial & professional	239	(13.1)	-	-	-	-	-	-
Intermediate	589	(37.2)	-	-	-	-	-	-
Skilled-Non-manual	135	(8.7)	-	-	-	-	-	-
Skilled-Manual	290	(18.9)	-	-	-	-	-	-
Semi-skilled	134	(8.3)	-	-	-	-	-	-
Unskilled	41	(1.8)	-	-	-	-	-	-
Unclassified	243	(11.9)	-	-	-	-	-	-
<i>Missing</i>	8	0.5	-	-	-	-	-	-

Abbreviations: SOC, socioeconomic status based on partner's occupation

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2. continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
NS-SEC								
Managerial & professional	-	-	747	(47.0)	1,381	(52.2)	2,224	(44.4)
Intermediate	-	-	315	(20.7)	480	(18.1)	754	(17.7)
Routine and manual	-	-	276	(16.7)	509	(20.0)	728	(20.0)
Never worked	-	-	118	(7.6)	137	(6.7)	237	(9.6)
Unclassified	-	-	139	(8.7)	74	(2.9)	332	(7.8)
Ethnicity								
White	-	-	1,434	(91.4)	2,120	(79.7)	3,477	(77.6)
BME	-	-	110	(8.6)	442	(20.3)	648	(22.4)
Missing	-	-	51	3.2	51	2	150	3.5
Partnership status								
Married	1,336	(80.2)	1,170	(74.5)	1,803	(72.0)	3,118	(70.0)
Cohabiting	214	(13.4)	291	(18.6)	502	(19.7)	896	(22.2)
Single	121	(6.4)	124	(6.8)	239	(8.3)	227	(7.8)
Missing	8	0.5	19	1.2	74	2.9	34	0.8
Country of residence								
England & Wales	1,219	(92.3)	1,057	(91.1)	2,077	(91.8)	3,239	(93.3)
Scotland	460	(7.7)	538	(0.2)	504	(8.2)	1,036	(6.7)

Abbreviations: NS-SEC, National Statistics Socioeconomic Classification; BME, black and minority ethnicity

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2. continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Baby's birthweight (kg)								
Less than 2.5	63	(3.5)	56	(3.3)	101	(4.1)	169	(4.7)
2.5 - 2.99	237	(14.9)	218	(15.0)	342	(13.8)	531	(14.0)
3 -3.49	610	(36.3)	500	(32.6)	873	(34.6)	1,500	(36.2)
3.5 or more	764	(45.2)	808	(49.1)	1,250	(47.5)	2,029	(45.2)
<i>Missing</i>	5	0.3	13	0.8	38	1.5	46	1.1
Parity								
1	742	(43.4)	751	(46.8)	1,220	(63.9)	2,143	(52.6)
2	565	(34.6)	554	(35.0)	896	(22.6)	1,475	(33.2)
3 or more	361	(22.0)	290	(18.2)	465	(13.5)	624	(14.1)
<i>Missing</i>	11	0.7	11	0.7	0	0	33	0.8
Type of delivery								
Vaginal spontaneous	1,226	(74.0)	1,041	(65.9)	1,619	(49.0)	2,591	(62.9)
Caesarean	245	(14.5)	337	(21.0)	615	(34.3)	998	(22.2)
Vaginal assisted	204	(11.6)	216	(13.1)	341	(16.7)	675	(14.9)
<i>Missing</i>	4	0.2	13	0.8	17	0.7	11	0.3
Length of hospital or other maternity centres								
2 days or less	436	(27.5)	827	(56.1)	1,607	(65.0)	2,844	(71.7)
3-5 days	649	(35.3)	609	(35.6)	816	(29.7)	1,038	(23.7)
6 days or more	594	(37.1)	154	(8.3)	135	(5.3)	203	(4.6)
<i>Missing</i>	0	0	5	0.3	52	2	190	4.4

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2 continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Baby was treated in a special care unit or with phototherapy								
Yes	204	(11.3)	173	(9.3)	234	(8.9)	397	(9.4)
No	1,465	(88.7)	1,413	(90.7)	2,339	(91.1)	3,871	(90.6)
<i>Missing</i>	10	0.6	9	0.6	17	0.7	7	0.2
Smoking postnatally								
Yes	181	(10.5)	141	(8.5)	162	(6.0)	154	(4.1)
No	1,474	(89.5)	1,413	(91.5)	2,353	(94.0)	4,035	(95.9)
<i>Missing</i>	24	1.4	41	2.6	119	4.6	86	2
Awareness of the health benefits of breastfeeding								
Yes	-	-	1,510	(95.5)	2,396	(92.9)	3,923	(89.9)
No	-	-	63	(4.5)	147	(7.1)	290	(10.1)
<i>Missing</i>	-	-	22	1.4	96	3.7	62	1.5
Whether breastfed most recent child								
BF for 6 wks+	779	(48.3)	698	(44.8)	1,175	(44.3)	1,785	(40.9)
BF for <6 wks	67	(4.2)	66	(4.1)	73	(2.5)	84	(2.2)
Never BF recent	70	(3.8)	55	(3.5)	95	(3.9)	79	(2.3)
No previous child	742	(43.7)	751	(47.6)	1,220	(49.3)	2,143	(54.6)
<i>Missing</i>	21	1.3	25	1.6	30	1.2	184	4.3

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2 continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Other women's infant feeding behaviours								
Knew mostly women who BF	697	(42.7)	668	(42.4)	969	(37.1)	1,034	(23.9)
Knew mostly women who mixed fed	444	(25.6)	334	(21.0)	528	(20.4)	783	(18.0)
Knew mostly women who FF	384	(23.1)	371	(23.8)	705	(27.3)	1,930	(44.2)
Unaware	143	(8.6)	181	(12.8)	368	(15.3)	519	(13.9)
<i>Missing</i>	11	0.7	41	2.6	24	0.9	9	0.2
How mothers themselves were fed as babies								
Breastfed only	556	(34.3)	485	(31.6)	926	(38.2)	1,847	(45.5)
Fed formula only	604	(33.0)	664	(39.5)	928	(32.7)	1,146	(22.9)
Mixed fed	392	(24.9)	338	(22.3)	553	(23.2)	997	(24.0)
Don't know	127	(7.8)	102	(6.6)	156	(5.8)	265	(7.6)
<i>Missing</i>	0	0	2	0.1	31	1.2	20	0.5
Received enough support with feeding baby								
Yes	1,592	(95.6)	1,514	(95.0)	2,022	(77.6)	3,332	(77.8)
No	66	(4.4)	72	(5.0)	537	(22.4)	901	(22.3)
<i>Missing</i>	21	1.3	9	0.6	43	1.7	42	1
Discussed feeding baby during antenatal visits								
Yes	967	(55.4)	1,142	(69.5)	1,757	(67.1)	3,341	(75.8)
No	698	(44.6)	425	(30.5)	782	(32.9)	921	(24.3)
<i>Missing</i>	14	0.8	28	1.8	103	4	13	0.3

Abbreviations: BF, breastfed; FF, formula fed

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2 continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Baby stayed beside mother while in hospital (rooming in)								
Yes	1,237	(77.8)	1,343	(85.8)	2,228	(87.9)	3,899	(91.7)
No	422	(22.2)	245	(14.2)	337	(12.1)	360	(8.3)
<i>Missing</i>	20	(1.2)	7	(0.4)	52	(2.0)	16	(0.4)
Taught to position and attach the baby at the breast for breastfeeding								
Yes	-	-	-	-	824	(32.3)	2,103	(50.0)
No	-	-	-	-	1,749	(67.7)	2,150	(50.0)
<i>Missing</i>	-	-	-	-	25	1	22	0.5
Had skin-to-skin contact with baby								
Yes, within the first hour	-	-	-	-	2,077	(79.9)	3,719	(86.6)
Yes, after the first hour	-	-	-	-	220	(8.3)	301	(7.0)
No	-	-	-	-	272	(11.8)	241	(6.4)
<i>Missing</i>	-	-	-	-	26	1	14	0.3
Early initiation of breastfeeding								
Yes	1,230	(75.7)	1,287	(81.1)	2,010	(78.4)	3,437	(81.7)
No	430	(24.3)	306	(18.9)	549	(21.6)	795	(18.3)
<i>Missing</i>	19	1.1	2	0.1	90	3.5	43	1
Received help to initiate breastfeeding								
Yes	-	-	575	(62.3)	1,735	(66.4)	2,863	(65.6)
No	-	-	1,019	(37.7)	841	(33.6)	1,409	(34.4)
<i>Missing</i>	-	-	1	0.1	17	0.7	3	0.1

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2 continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Received help from a voluntary organisation or community group that helps recent mothers with breastfeeding								
Yes	209	(13.1)	195	(13.3)	758	(28.8)	1,089	(26.2)
No	1,444	(86.9)	1,394	(86.7)	1,804	(71.2)	3,068	(73.8)
<i>Missing</i>	26	1.5	6	0.4	44	1.7	118	2.8
Received professional help with infant feeding problems at home								
Yes	422	(24.7)	455	(27.4)	790	(29.2)	1,429	(31.8)
No	24	(1.5)	19	(1.3)	59	(2.7)	142	(3.7)
No feeding problems	1,215	(73.9)	1,105	(71.3)	1,714	(68.1)	2,699	(64.5)
<i>Missing</i>	18	1.1	6	0.4	47	1.8	5	0.1
Received free or reduced-price milk, or exposed to an advertisement for infant formula								
Yes	472	(29.4)	28	(2.0)	1,659	(65.4)	3,816	(86.5)
No	1,198	(70.6)	1,553	(98.0)	900	(34.6)	444	(13.5)
<i>Missing</i>	9	0.5	14	0.9	44	1.7	15	0.4

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.2 continued

	1995		2000		2005		2010	
<i>Populations (n)</i>	1,679		1,595		2,581		4,275	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Aware of legislation protecting the right to breastfeed in public in Scotland (2005)								
Yes	-	-	-	-	364	(5.9)	-	-
No	-	-	-	-	137	(2.2)	-	-
Not living in Scotland	-	-	-	-	2,080	(91.9)	-	-
Aware of legislation protecting the right to breastfeed in public in GB (2010)								
Yes	-	-	-	-	-	-	2,433	(52.2)
No	-	-	-	-	-	-	1,769	(47.8)
<i>Missing</i>	-	-	-	-	-	-	73	1.7
Noticed signs welcoming breastfeeding in public places								
Yes	-	-	-	-	-	-	2,691	(66.3)
No	-	-	-	-	-	-	1,567	(33.7)
<i>Missing</i>	-	-	-	-	-	-	17	0.4

Notes: *n* = unweighted numbers of mothers analysed for BF outcome in each survey; % = weighted proportion who BF each year; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.A Associations between breastfeeding in public and sociodemographic factors, GB, 1995 to 2010: Univariable Analysis

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Age at delivery												
Under 20	68.3	0.33	(0.14-0.78)	72.7	0.33	(0.13-0.81)	71.3	0.42	(0.20-0.91)	71.9	0.42	(0.16-1.07)
20-24	78.1	0.55	(0.35-0.87)	82.8	0.59	(0.33-1.06)	68.9	0.38	(0.26-0.55)	68.3	0.35	(0.25-0.49)
25-29	80.2	0.62	(0.45-0.86)	91.4	1.32	(0.84-2.08)	77.6	0.59	(0.44-0.78)	76.8	0.54	(0.43-0.68)
30 or over	86.7	1.00		89.0	1.00		85.5	1.00		86.0	1.00	
Education level												
16 or under	76.9	0.34	(0.23-0.51)	86.2	0.67	(0.42-1.07)	74.9	0.55	(0.39-0.78)	74.6	0.59	(0.42-0.82)
17 or 18	81.0	0.44	(0.30-0.64)	88.1	0.79	(0.52-1.20)	79.4	0.71	(0.54-0.95)	79.6	0.78	(0.61-1.01)
Over 18	90.6	1.00		90.3	1.00		84.4	1.00		83.3	1.00	
Ethnicity												
White	-	-	-	90.0	1.00		87.8	1.00		89.0	1.00	
BME	-	-	-	74.5	0.32	(0.20-0.53)	58.5	0.20	(0.15-0.26)	59.7	0.18	(0.15-0.23)
Partnership status												
Married	83.9	1.00		89.2	1.00		82.1	1.00		81.8	1.00	
Cohabiting	82.6	0.91	(0.59-1.40)	86.8	0.80	(0.51-1.24)	83.5	1.10	(0.79-1.52)	83.3	1.11	(0.87-1.43)
Single	81.5	0.84	(0.50-1.41)	86.6	0.78	(0.41-1.46)	77.4	0.74	(0.5-1.10)	71.2	0.55	(0.38-0.79)

Abbreviations: OR, odds ratio; CI, confidence interval; BME, black and minority ethnicity; BF, breastfeeding.

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.A continued

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
SOC												
Managerial and professional	86.7	1.00		-	-	-	-	-	-	-	-	-
Intermediate	88.4	1.17	(0.70-1.94)	-	-	-	-	-	-	-	-	-
Skilled-Non-manual	90.6	1.48	(0.68-3.20)	-	-	-	-	-	-	-	-	-
Skilled-Manual	74.6	0.45	(0.27-0.76)	-	-	-	-	-	-	-	-	-
Semi-skilled	76.3	0.49	(0.27-0.92)	-	-	-	-	-	-	-	-	-
Unskilled	86.1	0.95	(0.35-2.60)	-	-	-	-	-	-	-	-	-
Unclassified	79.1	0.58	(0.33-1.01)	-	-	-	-	-	-	-	-	-
NS-SEC												
Managerial and professional	-	-	-	89.9	1.00		89.5	1.00		89.8	1.00	
Intermediate	-	-	-	92.1	1.31	(0.76-2.25)	82.3	0.55	(0.38-0.78)	85.0	0.64	(0.47-0.88)
Routine and manual	-	-	-	88.2	0.84	(0.51-1.39)	75.4	0.36	(0.26-0.50)	73.8	0.32	(0.24-0.42)
Never worked	-	-	-	68.7	0.25	(0.15-0.42)	49.7	0.12	(0.08-0.18)	51.0	0.12	(0.08-0.17)
Unclassified	-	-	-	93.2	1.54	(0.72-3.34)	65.7	0.23	(0.12-0.42)	79.0	0.43	(0.30-0.62)
Country of residence												
England & Wales	83.3	1.00		88.5	1.00		80.9	1.00		80.8	1.00	
Scotland	85.8	1.21	(0.93-1.57)	91.1	1.34	(0.94-1.92)	87.2	1.62	(1.19-2.19)	86.7	1.55	(1.24-1.94)

Abbreviations: OR, odds ratio; CI, confidence interval; SOC, socioeconomic class based on partner's occupation; NS-SEC, National Statistics Socioeconomic Classification

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.B Associations between breastfeeding in public and health-related factors, and previous breastfeeding experience, GB, 1995 to 2010: Univariable Analysis

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Baby's birthweight (kg)												
Less than 2.5	72.9	0.44	(0.22-0.86)	74.5	0.26	(0.12-0.55)	73.4	0.47	(0.27-0.84)	66.8	0.39	(0.25-0.60)
2.5 - 2.99	82.2	0.76	(0.49-1.16)	86.7	0.57	(0.34-0.97)	70.3	0.41	(0.29-0.57)	74.4	0.57	(0.42-0.76)
3 - 3.49	82.0	0.74	(0.54-1.03)	87.1	0.60	(0.39-0.91)	81.4	0.75	(0.57-1.00)	83.3	0.97	(0.76-1.23)
3.5 or more	85.9	1.00		92.0	1.00		85.3	1.00		83.7	1.00	
Type of delivery												
Vaginal spontaneous	83.5	1.00		89.3	1.00		80.0	1.00		80.7	1.00	
Caesarean	81.8	0.90	(0.6-1.33)	87.4	0.83	(0.54-1.28)	85.7	1.49	(1.10-2.03)	80.2	0.97	(0.76-1.24)
Vaginal assisted	85.8	1.19	(0.74-1.92)	87.6	0.84	(0.50-1.42)	81.6	1.11	(0.77-1.60)	84.9	1.34	(0.99-1.81)
Length of stay in hospital or other maternity centres												
2 days or less	85.2	1.00		89.9	1.00		81.1	1.00		81.9	1.00	
3-5 days	80.3	0.71	(0.49-1.02)	87.3	0.77	(0.53-1.13)	83.1	1.15	(0.88-1.50)	78.9	0.83	(0.65-1.04)
6 days or more	85.4	1.02	(0.69-1.49)	86.5	0.72	(0.40-1.32)	75.7	0.72	(0.44-1.20)	74.9	0.66	(0.43-1.01)
Baby was treated in a special care unit or with phototherapy												
Yes	78.8	0.70	(0.46-1.07)	81.5	0.52	(0.31-0.86)	83.2	1.14	(0.74-1.78)	77.5	0.78	(0.57-1.07)
No	84.1	1.00		89.5	1.00		81.3	1.00		81.6	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.B continued

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Smoking status postnatally												
Yes	88.7	1.00		89.5	1.00		77.5	1.00		85.6	1.00	
No	83.3	0.63	(0.37-1.09)	88.9	0.94	(0.49-1.79)	81.5	0.78	(0.48-1.27)	80.9	0.72	(0.42-1.23)
Whether breastfed most recent child												
BF for 6 wks+	87.0	1.00		93.3	1.00		85.4	1.00		84.8	1.00	
BF for <6 wks	80.0	0.60	(0.29-1.22)	90.4	0.67	(0.24-1.86)	82.4	0.80	(0.39-1.65)	69.2	0.40	(0.22-0.74)
Never BF recent	72.8	0.40	(0.20-0.79)	81.9	0.32	(0.14-0.74)	68.2	0.37	(0.21-0.64)	62.0	0.29	(0.16-0.56)
No previous child	81.8	0.67	(0.49-0.92)	85.2	0.41	(0.27-0.63)	79.1	0.65	(0.50-0.84)	79.8	0.71	(0.57-0.88)
Awareness of the health benefits of breastfeeding												
Yes	-	-	-	89.8	3.86	(2.07-7.20)	84.2	5.58	(3.78-8.25)	84.8	5.52	(4.12-7.38)
No	-	-	-	69.4	1.00		48.7	1.00		50.3	1.00	

Abbreviations: BF, breastfed; wks, weeks

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.C Associations between breastfeeding in public and indirect breastfeeding experience, GB, 1995 to 2010: Univariable Analysis

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Other women's infant feeding behaviours												
Knew mostly women who BF	85.6	0.92	(0.62-1.38)	91.7	1.11	(0.66-1.86)	87.7	1.42	(1.01-2.00)	82.9	0.98	(0.75-1.29)
Knew mostly women who mixed fed	86.5	1.00		90.9	1.00		83.3	1.00		83.1	1.00	
Knew mostly women who FF	81.4	0.68	(0.44-1.05)	89.0	0.81	(0.47-1.41)	77.3	0.68	(0.48-0.97)	83.0	0.99	(0.74-1.32)
Unaware	72.9	0.42	(0.25-0.71)	75.0	0.30	(0.17-0.52)	69.2	0.45	(0.31-0.65)	69.6	0.46	(0.35-0.62)
How mothers themselves were fed as babies												
BF only	84.2	1.00		87.8	1.00		79.3	1.00		80.6	1.00	
Mixed fed	81.9	0.85	(0.58-1.24)	85.8	0.84	(0.53-1.35)	80.7	1.10	(0.80-1.50)	79.9	0.96	(0.74-1.23)
FF only	86.1	1.16	(0.81-1.68)	92.0	1.60	(1.02-2.51)	87.6	1.85	(1.35-2.51)	88.0	1.77	(1.33-2.34)
Don't know	75.0	0.56	(0.34-0.93)	83.0	0.68	(0.35-1.32)	66.2	0.51	(0.33-0.80)	69.4	0.54	(0.38-0.78)

Abbreviations: BF, breastfed; FF, formula fed

Notes: Categories for other women's breastfeeding behaviours shortened due to limited space; *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; *P* = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.D Associations between breastfeeding in public and support received in hospital, GB, 1995 to 2010: Univariable Analysis

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Received enough support with feeding												
Yes	83.6	1.25	(0.63-2.45)	89.2	1.91	(0.97-3.76)	81.3	1.02	(0.76-1.36)	80.7	0.87	(0.68-1.12)
No	80.3	1.00		81.1	1.00		81.0	1.00		82.8	1.00	
Discussed infant feeding during antenatal visits												
Yes	82.2	0.78	(0.58-1.06)	88.8	0.93	(0.62-1.39)	82.9	1.21	(0.93-1.57)	82.7	1.49	(1.18-1.86)
No	85.5	1.00		89.5	1.00		80.0	1.00		76.2	1.00	
Rooming-in												
Yes	83.3	0.91	(0.64-1.30)	89.2	1.36	(0.84-2.19)	81.0	0.84	(0.58-1.22)	81.6	1.37	(0.98-1.92)
No	84.5	1.00		85.9	1.00		83.6	1.00		76.4	1.00	
Taught to position and attach the baby at the breast for breastfeeding												
Yes	-	-	-	-	-	-	86.3	1.66	(1.26-2.19)	79.1	0.76	(0.62-0.93)
No	-	-	-	-	-	-	79.1	1.00		83.3	1.00	
Had skin-to-skin contact with baby												
Yes-within the 1 st hour after birth	-	-	-	-	-	-	82.4	1.00		82.5	1.00	
Yes-after the 1 st hour of birth	-	-	-	-	-	-	80.3	0.87	(0.57-1.34)	76.7	0.70	(0.48-1.02)
No	-	-	-	-	-	-	76.9	0.71	(0.50-1.02)	70.3	0.50	(0.35-0.72)

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.D continued

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Early initiation of breastfeeding												
Yes	85.5	1.65	(1.20-2.26)	89.1	1.18	(0.76-1.83)	83.5	1.72	(1.31-2.28)	82.9	1.68	(1.32-2.13)
No	78.1	1.00		87.4	1.00		74.6	1.00		74.2	1.00	
Received help to initiate breastfeeding												
Yes	-	-	-	86.9	0.61	(0.41-0.90)	79.5	0.67	(0.51-0.88)	82.3	1.23	(0.99-1.52)
No	-	-	-	91.6	1.00		85.2	1.00		79.1	1.00	
Received help from a voluntary organisation or community group												
Yes	91.2	2.17	(1.25-3.77)	91.3	1.38	(0.77-2.47)	84.1	1.76	(1.36-2.27)	87.4	1.84	(1.42-2.39)
No	82.6	1.00		88.4	1.00		75.0	1.00		79.1	1.00	
Received professional help with infant feeding problems at home												
Yes	86.0	1.30	(0.92-1.85)	87.6	0.86	(0.58-1.28)	84.6	1.32	(1.00-1.75)	88.3	2.17	(1.70-2.77)
No	19.9	1.00		92.6	1.51	(0.20-11.64)	77.3	0.82	(0.39-1.72)	80.7	1.20	(0.71-2.02)
Had no feeding problems	82.5	1.00		89.1	1.00		80.7	1.00		77.7	1.00	
Received free or reduced-price milk, or exposed to an advertisement for infant formula												
Yes	84.7	0.89	(0.65, 1.23)	84.2	0.66	(0.34-1.26)	83.9	1.57	(1.22-2.02)	84.8	3.99	(3.09-5.15)
No	83.1	1.00		89.0	1.00		76.8	1.00		58.3	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.3.E Associations between breastfeeding in public and legislation and support strategies, GB, 1995 to 2010: Univariable Analysis

	1995			2000			2005			2010		
<i>Numbers still BF at 4 months</i>	1,679			1,595			2,581			4,275		
<i>Numbers BF in public</i>	1,398			1,423			2,126			3,642		
<i>% BF in public</i>	83.5			88.7			81.4			82.8		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Aware of legislation protecting the right to breastfeed in public in Scotland (2005)												
Yes	-	-	-	-	-	-	87.6	1.67	(1.17-2.36)	-	-	-
No	-	-	-	-	-	-	86.2	1.47	(0.85-2.53)	-	-	-
Not living in Scotland	-	-	-	-	-	-	80.9	1.00		-	-	-
Aware of legislation protecting the right to breastfeed in public in GB (2010)												
Yes	-	-	-	-	-	-	-	-	-	84.0	1.39	(1.13-1.72)
No	-	-	-	-	-	-	-	-	-	79.0	1.00	
Noticed signs welcoming breastfeeding in public places												
Yes	-	-	-	-	-	-	-	-	-	86.5	1.81	(1.44-2.27)
No	-	-	-	-	-	-	-	-	-	78.7	1.00	

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR unadjusted for other factors; Bold = statistically significant; P = <0.10 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.A Associations between breastfeeding in public and sociodemographic factors, GB, 1995 to 2010: Multivariable Analysis

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age at delivery								
Under 20	ns	ns	ns	ns	ns	ns	ns	ns
20-24	ns	ns	ns	ns	ns	ns	ns	ns
25-29	ns	ns	ns	ns	ns	ns	ns	ns
30 or over	ns	ns	ns	ns	ns	ns	ns	ns
Education								
16 or under	0.37	(0.24-0.57)	ns	ns	ns	ns	ns	ns
17 or 18	0.51	(0.34-0.76)	ns	ns	ns	ns	ns	ns
Over 18	1.00		ns	ns	ns	ns	ns	ns
Ethnicity								
White	-	-	1.00		1.00		1.00	
BME	-	-	0.46	(0.24-0.88)	0.30	(0.22-0.42)	0.32	(0.24-0.42)
Partnership status								
Married	ns	ns	ns	ns	ns	ns	ns	ns
Cohabiting	ns	ns	ns	ns	ns	ns	ns	ns
Single	ns	ns	ns	ns	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BME, black and minority ethnicity

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.A continued

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
SOC								
Managerial and professional	ns	ns	-	-	-	-	-	-
Intermediate	ns	ns	-	-	-	-	-	-
Skilled-Non-manual	ns	ns	-	-	-	-	-	-
Skilled-Manual	ns	ns	-	-	-	-	-	-
Semi-skilled	ns	ns	-	-	-	-	-	-
Unskilled	ns	ns	-	-	-	-	-	-
Unclassified	ns	ns	-	-	-	-	-	-
NS-SEC								
Managerial and professional	-	-	ns	ns	1.00		1.00	
Intermediate	-	-	ns	ns	0.63	(0.43-0.91)	0.73	(0.51-1.04)
Routine and manual	-	-	ns	ns	0.54	(0.38-0.77)	0.49	(0.36-0.68)
Never worked	-	-	ns	ns	0.30	(0.16-0.55)	0.38	(0.24-0.60)
Unclassified	-	-	ns	ns	0.41	(0.19-0.86)	0.61	(0.39-0.96)
Country of residence								
England & Wales	ns	ns	ns	ns	ns	ns	ns	ns
Scotland	ns	ns	ns	ns	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; SOC, socioeconomic status based on partner's occupation; NS-SEC, National Statistics Socioeconomic Classification

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.B Associations between breastfeeding in public and health-related factors, and previous breastfeeding experience, GB, 1995 to 2010:
Multivariable Analysis

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Baby's birthweight (kg)								
Less than 2.5	ns	ns	ns	ns	0.84	(0.42, 1.66)	0.51	(0.30-0.87)
2.5 - 2.99	ns	ns	ns	ns	0.51	(0.35-0.75)	0.73	(0.51, 1.04)
3 - 3.49	ns	ns	ns	ns	0.87	(0.63, 1.20)	1.16	(0.87, 1.55)
3.5 or more	ns	ns	ns	ns	1.00		1.00	
Type of delivery								
Vaginal spontaneous	ns	ns	ns	ns	ns	ns	ns	ns
Caesarean	ns	ns	ns	ns	ns	ns	ns	ns
Vaginal assisted	ns	ns	ns	ns	ns	ns	ns	ns
Length of stay in hospital or other maternity centres								
2 days or less	ns	ns	ns	ns	ns	ns	ns	ns
3-5 days	ns	ns	ns	ns	ns	ns	ns	ns
6 days or more	ns	ns	ns	ns	ns	ns	ns	ns
Baby was treated in a special care unit or with phototherapy								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.B continued

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Smoking status postnatally								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns
Whether breastfed most recent child								
BF for 6 wks+	1.00		1.00		1.00		1.00	
BF for <6 wks	0.78	(0.34-1.75)	0.61	(0.21-1.80)	1.01	(0.45-2.28)	0.42	(0.19-0.91)
Never BF recent	0.48	(0.24-0.95)	0.32	(0.13-0.79)	0.43	(0.22-0.85)	0.48	(0.23-1.00)
No previous child	0.63	(0.45-0.88)	0.36	(0.23-0.56)	0.50	(0.36-0.70)	0.65	(0.50-0.87)
Awareness of the health benefits of breastfeeding								
Yes	-	-	2.93	(1.29-6.62)	1.97	(1.21-3.22)	2.24	(1.50-3.35)
No	-	-	1.00		1.00		1.00	

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; wks, weeks

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.C Associations between breastfeeding in public and indirect breastfeeding experience, GB, 1995 to 2010: Multivariable Analysis

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Other women's infant feeding behaviours								
Knew mostly women who BF	ns	ns	1.08	(0.62-1.87)	1.49	(1.03-2.17)	1.02	(0.73-1.41)
Knew mostly women who mixed fed	ns	ns	1.00		1.00		1.00	
Knew mostly women who FF	ns	ns	0.76	(0.42-1.37)	0.82	(0.56-1.22)	0.86	(0.60-1.23)
Unaware	ns	ns	0.33	(0.18-0.62)	0.77	(0.50-1.18)	0.58	(0.41-0.82)
How mothers themselves were fed as babies								
BF only	ns	ns	ns	ns	ns	ns	ns	ns
Mixed fed	ns	ns	ns	ns	ns	ns	ns	ns
FF only	ns	ns	ns	ns	ns	ns	ns	ns
Don't know	ns	ns	ns	ns	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant; BF, breastfed; FF, formula fed

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.D Associations between breastfeeding in public and support received in hospital, GB, 1995 to 2010: Multivariable analysis

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Received enough support with infant feeding								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns
Discussed infant feeding during antenatal visits								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns
Baby stayed beside mother while in hospital (rooming in)								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns
Taught to position and attach the baby at the breast for breastfeeding								
Yes	-	-	-	-	1.44	(1.00-2.09)	ns	ns
No	-	-	-	-	1.00		ns	ns
Had skin-to-skin contact with baby								
Yes, within 1 st hour after birth	-	-	-	-	ns	ns	ns	ns
Yes, after 1 st hour of birth	-	-	-	-	ns	ns	ns	ns
No	-	-	-	-	ns	ns	ns	ns

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.D continued

	1995		2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679		1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398		1,423		2,126		3,642	
<i>% BF in public</i>	83.5		88.7		81.4		82.8	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Early initiation of breastfeeding								
Yes	1.41	(1.01-1.98)	ns	ns	ns	ns	1.44	(1.06-1.95)
No	1.00		ns	ns	ns	ns	1.00	
Received help to initiate breastfeeding								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns
Received help from a voluntary organisation or community group								
Yes	ns	ns	ns	ns	1.45	(1.07-1.94)	1.52	(1.12-2.07)
No	ns	ns	ns	ns	1.00		1.00	
Received professional help with infant feeding problems at home								
Yes	ns	ns	ns	ns	ns	ns	ns	ns
No	ns	ns	ns	ns	ns	ns	ns	ns
Had no feeding problems	ns	ns	ns	ns	ns	ns	ns	ns
Received free or reduced-price milk-or exposed to an advertisement for infant formula								
Yes	ns	ns	ns	ns	ns	ns	1.73	(1.23-2.45)
No	ns	ns	ns	ns	ns	ns	1.00	

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; *P* = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.4.E Associations between breastfeeding in public and legislation and support strategies, GB, 1995 to 2010: Multivariable Analysis

	1995			2000		2005		2010	
<i>Numbers still BF at 4 months</i>	1,679			1,595		2,581		4,275	
<i>Numbers BF in public</i>	1,398			1,423		2,126		3,642	
<i>% BF in public</i>	83.5			88.7		81.4		82.8	
	OR	95% CI	%	OR	95% CI	OR	95% CI	OR	95% CI
Aware of legislation protecting the right to breastfeed in public in Scotland (2005)									
Yes	-	-	-	-	ns	ns	-	-	-
No	-	-	-	-	ns	ns	-	-	-
Not living in Scotland	-	-	-	-	ns	ns	-	-	-
Aware of legislation protecting the right to breastfeed in public in GB (2010)									
Yes	-	-	-	-	-	-	ns	ns	ns
No	-	-	-	-	-	-	ns	ns	ns
Noticed signs welcoming breastfeeding in public places									
Yes	-	-	-	-	-	-	1.37	(1.03-1.81)	
No	-	-	-	-	-	-	1.00		

Abbreviations: OR, odds ratio; CI, confidence interval; ns, not statistically significant

Notes: *n* = unweighted population of mothers analysed for BF outcome in each survey; Numbers who BF in each year are unweighted; % = weighted proportion who BF each year; OR adjusted for other factors; Bold = statistically significant; P = <0.05 unless indicated by asterisks; Dash indicates that the factor was not assessed by the IFS in that survey year.

Table 8.5 Summary of the associations between breastfeeding in public and explanatory factors, GB, 1995 to 2010

Level	Explanatory factors	1995	2000	2005	2010
	Sociodemographic				
	Age at delivery	ns	ns	ns	ns
	Completed full-time education over age 18	●	ns	ns	ns
	SOC	ns	-	-	-
	NS-SEC: managerial and professional socioeconomic group	-	ns	●	●
	Employment status at stage 1	ns	ns	ns	ns
	BME origin	-	●	●	●
	Partnership status	ns	ns	ns	ns
	Country of residence	ns	ns	ns	ns
	Health-related				
	Birthweight less than 3 kg	ns	ns	●	●
	Type of delivery	ns	ns	ns	ns
	Length of stay in hospital or other maternity centres	ns	ns	ns	ns
	Baby was treated in a special care unit or with phototherapy	ns	ns	ns	ns
	Smoked postnatally	ns	ns	ns	ns
	Aware of health benefits of breastfeeding	-	●	●	●
	Direct previous breastfeeding experience				
	Never breastfed most recent child	●	●	●	ns

Key: Individual Family and social support Local community Societal ● Positive association ● Negative association ns = Not significant - Not assessed by IFS

Table 8.5 continued

Level	Explanatory factors	1995	2000	2005	2010
	Indirect breastfeeding experience				
	Knew mostly women who breastfed their own babies	ns	ns	●	ns
	How mothers themselves were fed as babies	ns	ns	ns	ns
	Support in hospital				
	Discussed infant feeding during antenatal visits	ns	ns	ns	ns
	Received enough support with infant feeding	ns	ns	ns	ns
	Baby stayed beside mother while in hospital (rooming in)	ns	ns	ns	ns
	Taught to position and attach the baby for breastfeeding	-	-	●	ns
	Had skin-to-skin contact with baby	-	-	ns	ns
	Early initiation of breastfeeding	●	ns	ns	●
	Received help to initiate breastfeeding	-	●	●	●
	Support at home				
	Received help from voluntary organisation or community group	ns	ns	●	●
	Received professional help with feeding problems at home	ns	ns	ns	ns
	Received free or reduced-price milk, or exposed to an advertisement for infant formula	ns	ns	ns	●
	Legislation protecting breastfeeding in public				
	Aware of legislation protecting the right to breastfeed in public	ns	ns	ns	ns
	Noticed signs welcoming breastfeeding in public places	-	-	-	●

Key:
 Individual
 Family and social support
 Local community
 Societal
 ● Positive association
 ● Negative association
 ns = Not significant
 - Not assessed by IFS

9 Discussion of the main research findings

9.1 Chapter introduction

The 1975 launch of the Infant Feeding Survey (IFS) marked the beginning of population-level monitoring of breastfeeding rates in GB. Since then breastfeeding initiation and continuation rates have risen steadily. However, the rates of continuation and exclusivity have not increased at a similar pace as the initiation rate.

The reasons behind the increase in breastfeeding rates over time are not well understood. Firstly, population-based breastfeeding rates often mask disparities in breastfeeding behaviours between subgroups of mothers, such as between older and younger mothers. Therefore, changes in disparities over time may influence population-based rates. Secondly, the increase in breastfeeding rates coincided with a period of considerable changes in the characteristics of the childbearing population, and in the social, cultural and policy context in which mothers in GB practise breastfeeding. Previous studies of the changing trends in population-based breastfeeding rates in other HICs such as the US, Norway and Spain, attribute the trend in those countries to either one or a combination of the following: (1) changes in the disparities in breastfeeding behaviours between subgroups of mothers; (2) increases in the prevalence of subgroups of mothers in the population who are characteristically most likely to breastfeed (Hendershot, 1984; Liestol et al., 1988; Colodro-Conde et al., 2011).

There is also evidence that breastfeeding in public is still considered to be unacceptable by many people in GB (Morris et al., 2016). However, it remains unclear

which factors influence the practice of breastfeeding in public in GB, especially as previous studies of breastfeeding in public in GB have been either qualitative or based on small-scale selective populations (Scott et al., 2015; Morris et al., 2016).

To address these gaps in the knowledge of breastfeeding behaviours in GB, this DPhil research used data from the IFS surveys in 1985 to 2010 to investigate whether the distribution of selected factors (or subgroups) among the childbearing population of GB had changed between 1985 and 2010 (objective 1). The research then investigated whether, in each survey year from 1985 to 2010, some subgroups of mothers were more likely than others to initiate breastfeeding and continue breastfeeding at one week and six weeks after birth (objective 2). Whether some subgroups of mothers were more likely than others to breastfeed in public in 1995 to 2010 was also investigated (objective 2). Following this, the research investigated whether the disparities in breastfeeding in the first six weeks between subgroups had changed over time (objective 3). Finally, the research investigated the extent to which changes in the distribution of subgroups of mothers among the childbearing population contributed to the increase in breastfeeding rates in the first six weeks from 1985 to 2010 (objective 4).

In this chapter, the main findings of this DPhil research are discussed in relation to the four research objectives. In sections 9.2 to 9.5, the results are summarised with reference to the existing knowledge about breastfeeding behaviours in GB. The results are interpreted against the background of existing evidence of changes in the social, cultural and policy context of GB. In section 9.6, the potential strengths and limitations

of the research are presented. The main conclusions and potential implications of the research findings are presented in chapter 10.

9.2 The changing social, cultural and policy context of GB from 1985 to 2010

9.2.1 Section introduction

The results of this DPhil research suggest that considerable changes had occurred in the characteristics of the childbearing population of GB in the 25 years between 1985 and 2010. In particular, the proportion of mothers who participated in higher education grew dramatically from 14% to 51%, mothers were increasingly classified in the highest socioeconomic groups, and there was a 10-fold increase in the proportion of mothers who received paid maternity leave. There was also a trend toward delayed childbearing and a corresponding increase in older maternal age. Cohabitation also increasingly replaced marriage. The increasing cultural diversity of the population was characterised by a doubling of the proportion of mothers from black and minority ethnic (BME) groups between 2000 and 2010. The proportion of mothers who had been breastfed when they themselves were babies increased from 46% to 53%, while the proportion who had been exclusively formula fed declined from 43% to 38%. Additionally, the proportion of mothers who knew of other women who had mainly breastfed their own babies increased over those who knew of other women who had mainly formula fed their own babies. Finally, smoking during and after pregnancy became less common, and there was an improvement in the level of breastfeeding support that mothers received in hospital and other maternity centres. In this section of the discussion, these population changes are placed in the wider context of social, cultural and policy changes in GB that began around the mid-20th century. This section builds on the existing literature by

reflecting specifically on how these contextual changes may have brought about a reshaping in the context of GB to one more favourable to breastfeeding.

9.2.2 Inequalities in maternal employment outside the home

By the start of the research period in 1985, several pieces of legislation had already been enacted in GB to protect the rights of women who participate in employment outside the home (Figure 9.1). One such crucial piece of legislation is the Employment Protection Act, which was passed in 1975. This legislation granted women the right to return to the same employer and job, and under similarly favourable working terms and conditions to those that would have been provided to them had they not taken a period of absence for childbirth and childcare. It also provided maternity pay that was in addition to that paid under the maternity allowance scheme that had been in place since 1948. For the first time in GB, there existed a maternity policy that entitled women to both a replacement of earnings lost due to an absence from work and the protection from future loss of earnings in the short-term following childbearing (National Archives, UK, 1975).

However, under this Act, entitlements were restricted to women who had worked for the same employer prior to pregnancy for a minimum of two consecutive years full-time or five consecutive years part-time. Moreover, maternity payment was limited to a period of 18 weeks (National Archives, UK, 1975). Consequently, few women would have benefitted from these maternity entitlements in the earlier survey years of this DPhil research. In fact, the research results indicate that only about 12% of mothers were on maternity leave at stage 1 in the 1985 survey. About half of these mothers were on paid maternity leave, while the other half were on unpaid maternity leave. In striking

contrast, over 80% of mothers in the same survey year had stopped doing paid work outside the home, presumably with no replacement of earnings or job protection whatsoever. The remainder of mothers had either started or returned to paid employment.

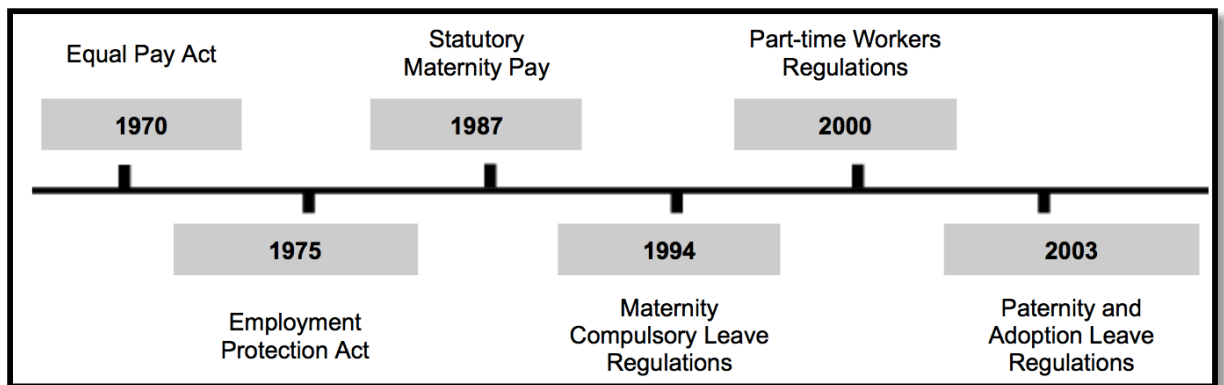


Figure 9.1. Timeline: Some key legislation in support of equality in employment for women in GB.

Source: The National Archives, GB.

9.2.3 Changes in women's socioeconomic dependence

A major correlate of the incipient expansion of employment policies was the restructuring of the British economy in the 1980s from male-dominated, labour-intensive, manufacturing jobs to knowledge- and service-based jobs (Kent, 2009). One consequence of this change was a decline in full-time employment rates among men. On the other hand, there was a growing demand for part-time and flexible workers, which undoubtedly created an opportunity for more women to (re-)enter the workforce after childbirth and possibly combine family and childcare responsibilities with paid employment (Kent, 2009). The effects of this change on women's socioeconomic position over time are reflected in the results of this DPhil research. For instance,

between 1985 and 2010, there was a dramatic increase in the proportion of mothers who were classified in the managerial, professional and intermediate socioeconomic groups, which are primarily information- and service-oriented. In the 1985 to 1995 survey years when measures of maternal socioeconomic status were based on their partner's occupation, there was an overrepresentation of mothers in the labour-intensive, skilled-manual socioeconomic group. However, from 2000 to 2010 when measures were based on maternal occupation, mothers were classified mostly in the managerial, professional and intermediate groups. Reports of data from the UK Labour Force Survey show a similar increase in the employment rate and economic activity of women aged 16-59 years in 1971 to 2008 (Kent, 2009).

It is worth noting here that the practice of using two separate measures to assign women to a socioeconomic group in GB was itself borne out of the change in the economic structure over time. Following the advances in women's own employment, older measures based solely on the partner's occupation became considerably limited in their ability to estimate the relationship between maternal and child health outcomes and women's socioeconomic position, especially for more modern socioeconomic groups of women such as self-employed women (Rose and Pevalin, 2005)

9.2.4 Growing ethnic differences and cultural diversity

Over the research period, the proportion of mothers who were of BME origin doubled from 7% in 2000 to 14% in 2010. This result is consistent with previous findings of an increase in the proportion of men and women in the population of GB who are from non-White BME groups. For instance, census data indicate that the BME population in England and Wales rose from 9% in 2001 to 14% in 2011 (ONS, 2011). The BME

population in Scotland, although considerably lower, doubled from 2% to 4% between 2001 and 2011 (National Statistics, Scotland, 2014).

The demand for labour has influenced non-European immigration to GB since the 1940s, with an influx of mainly adult men from Commonwealth countries following the Second World War (Diamond and Clarke, 1989). The economic restructuring likely resulted in a change in the type of labour that was in demand, which would have influenced not only a further increase in immigration but also a change in immigration from a largely “male phenomenon” (Diamond and Clarke, 1989 , p. 179). Women’s increasing access to higher education and the availability of more attractive employment options in GB may have also encouraged the increasing immigration of young women. Of course, immigration of BME groups to GB may have also risen over time as a result of socio-political instability in other countries. In such cases, whole families including women and children migrated. Among the many cultural distinctions between white British groups and BME groups is a difference in the structure of households and families. This includes differences in the gendered division of household labour and caring responsibilities, the level of autonomy of women in infant feeding and the extent of involvement of fathers and other family members in infant feeding and childrearing.

9.2.5 Advances in women’s participation in higher education

Since the late 1980s, the rate of participation in higher education in GB has increased rapidly, most noticeably among women. The results of this DPhil research show that from 1985 to 2000, most mothers completed full-time education at age 16 or under, instead of pursuing further education or training. However, by 2010, one out of two

mothers had pursued further education or training full-time after age 18. This trend is consistent with previous reports of the increasing participation of women in further education in GB since the 1970s, and coincides with the period of economic restructuring (ONS, 2010). In fact, training professionals for the future development of GB's knowledge- and service-based economy increasingly became the goal of higher education (Blanden and Machin, 2004). Women, once disadvantaged by inequalities in access to education, have now outpaced men in higher education participation. It has been speculated that, among other things, women may be more incentivised than men to pursue higher education because there are fewer attractive work opportunities for women with lower qualifications than for men with lower qualifications (Blanden and Machin, 2004).

Compared to women with lower qualifications, women with higher qualifications have access to more employment opportunities outside the home and may be more successful at re-entering their career following a period of absence for childbearing. At the same time, women who take a leave of absence from work for childbearing face unique and considerable opportunity costs that are not faced by men and childless women. These include lost earnings as a result of discontinuous work, depreciation of skills, lower return on investments in skills, and limited career progression upon re-entry into the workforce (Adda et al., 2017). For some women, the burden of these costs may factor centrally into their decisions about whether and when to start a family, the number of children they will have and the length of time they will spend away from the workforce for childbearing. These in turn may influence their decisions about the type, duration and period of exclusivity of infant feeding. In addition, these opportunity costs may vary across occupations, which means that

women often must weigh their career aspirations against their plans for starting a family as early as adolescence or the beginning of adulthood (Adda et al., 2017).

9.2.6 Changes in family formation and the age of childbearing

At the beginning of the research period in 1985, marriage was still almost synonymous with pregnancy and childbearing, and the normative expectation for young women was the entrance into marriage in order to start having a family (Kiernan, 1989). Consequently, eight out of ten mothers in the 1985 survey were married and most mothers were aged 20-29 years when they had the index baby. Additionally, most mothers had at least two children including the index baby. The research results suggest that successive cohorts of young women were more inclined, or enabled, than women in 1985 to take advantage of the increasing access to higher education and paid work outside the home rather than start a family (Kiernan, 1989; Mills et al., 2011). The evidence is the increasing delay in the age of childbearing such that by the 2010 survey, nearly half of all mothers were 30 or over when they had the index baby. National data show a similar trend for women in England and Wales between 1973 and 2016, with the average age at which women have their first child increasing to 30.4 years (ONS, 2017). In Scotland, the number of first births declined steadily among women under 30 between 1976 and 2016 (ISD, 2016b). This phenomenon has also been observed in other European countries, and in non-European countries including the US and Australia (Mathews and Hamilton, 2014; Eurostat, 2015; Australian Bureau of Statistics, 2016).

There was a corresponding decline in the total number of children that mothers had over the research period. By 2010, 53% of all mothers had reported that the index baby was their first child compared to 46% of all mothers in 1985. Meanwhile, the

proportion of mothers who reported having at least three children, including the index baby, declined steadily from 21% to 14%. Similarly, national data show that the total fertility rate of women in England and Wales declined from 2.4 children per woman in 1985 to 1.9 children per woman in 2010 (ONS, 2017). Outside of delays in childbearing, the decline in parity may have been driven in part by the return to employment outside the home. Previous studies found that mothers who returned to work on either a continuous part-time basis or a full-time basis following the birth of their first child were likely to have fewer children than mothers who returned intermittently or not at all (Dex et al., 2006). Findings from the 1984 to 2012 British Social Attitudes (BSA) surveys also showed that over the last 30 years, women increasingly returned to work outside the home while having a dependent child under the age of one (Scott and Clery, 2013).

As highlighted previously, many women face opportunity costs to childbearing and to minimise such costs, some women may decide to return to paid work much earlier than is desirable or ideal for breastfeeding, even when provided with long maternity leave. Other women may avoid or postpone such opportunity costs by delaying childbearing. For these women, the tradition of getting married at an early age may decline in importance. This may explain in part the decline in the proportion of mothers who were married from 80% in the 1985 survey to 56% by the 2010 survey. Furthermore, the women's liberation movement in the 1960s contributed to landmark policy changes regarding women's sexual and reproductive rights, including the introduction of oral contraceptives to the UK in 1961 and the passage of the Abortion Act in 1967. Such changes likely aided in transforming societal attitudes towards premarital sex and courtship, and furthered the decline in the expectation that women should marry because of pregnancy or childbearing (Kiernan, 1989). Government

policies such as the Family Law Reform Act (1987) also contributed to the destigmatisation of childbearing outside of marriages by extending the same legal rights to all children born in GB, irrespective of their parents' marital status. One potential result of these changes is the emergence of cohabitation as commonplace over the DPhil research period, trebling from 8% in 1985 to 24% by 2010. Previous reports have also found an increase in cohabiting partnerships in GB and other European countries. Specifically, the number of cohabiting families more than doubled and was the fastest growing family type between 1996 and 2016, and there are now more dependent children living with cohabiting couples than with married couples and single parents (Eurostat, 2015; ONS, 2016b).

9.2.7 Towards equality in maternal employment outside the home

In the 25 years between 1985 and 2010, successive reforms to employment policies in GB have increased maternity payment rates, extended the coverage and duration of maternity leave, and provided paid paternity and parental leave (Dex et al., 1998; UK Government, 2017). In addition, regulations were introduced in 2000 to protect part-time workers, the majority of whom are women, from being treated less favourably than full-time workers (National Archives, UK, 2000). The results of this DPhil research suggest that these more recent policy changes contributed to a considerable improvement in maternal employment status following childbirth. For instance, by the 2010 survey, the proportion of mothers who were on paid maternity leave had increased substantially from 6% in 1985 to 57%. Additionally, the proportion of mothers who were on unpaid maternity leave declined from 7% in 1985 to just 4% in 2010. Presently, all women in GB are entitled to 52 weeks of maternity leave and the right to

return to the same job and under equal working conditions, irrespective of the length of service with the present employer. Women may also be entitled to receive Statutory Maternity Pay for up to 39 weeks and Shared Parental Leave with their husband or partner. Fathers may be entitled to up to two weeks of paid Paternity Leave (UK Government, 2017).

9.2.8 The medicalisation of childbirth and infant feeding

By the 1970s, it was recommended that all women in GB should give birth in a hospital, and there were growing concerns about the medicalisation of the birthing process in hospitals (Davis, 2013). Among the concerns were the routine use of induction to initiate labour; the increasing performance of Caesarean sections, often in the absence of medical need; and the routine distribution of free infant formula to mothers on postnatal wards by medical professionals and representatives from the infant formula industry (Wallace and Chason, 2007). Previous studies have found these hospital-based practices to be contrary to the initiation of breastfeeding at birth (Chaparro and Lutter, 2013; Piwoz and Huffman, 2015; Rollins et al., 2016).

In the 1985 IFS survey, about 11% of mothers had delivered the index baby by Caesarean section. Mothers were not asked the reason for having a Caesarean so it is unknown what proportion of these were medically indicated. A further 11% of mothers had an instrumental vaginal birth. Over the 25-year research period, the proportion of Caesarean deliveries doubled to 23%, while that of instrumental births rose slightly from 11% to 14%. The increasing trend in Caesarean deliveries has been well-documented for GB and other countries, although the underlying reasons are not entirely clear (Bragg et al., 2010; Fairley et al., 2011; Betrán et al., 2016; Henderson and Redshaw, 2017). It

has been postulated that increasing maternal age, repeat Caesarean sections and the option for women to request a planned Caesarean may be attributing factors (Thulier and Mercer, 2009; Fairley et al., 2011).

Women who have a Caesarean delivery may have a longer stay in hospital (Heck et al., 2003; Essex et al., 2013). However, over the research period, the proportion of mothers who stayed in hospital longer than two days declined from 65% in 1985 to 26% in 2010. This trend towards shorter stays of two days was also reported by a recent cross-sectional study on women's views of maternity care in England from 1995 to 2014 (Henderson and Redshaw, 2017). This trend likely reflects a general policy of reducing the duration of hospital stays in the UK (Campbell et al., 2016).

Similarly, there was a decline in the proportion of mothers in this DPhil research who reported that their baby was cared for in a special care unit or treated with phototherapy. In contrast, one study of trends in admissions to NICUs in England reported an increase in NICU admissions from 6.5% in 2011 to 7.1% in 2013 (Battersby et al., 2017). The authors of that study analysed data from a different period to the DPhil research period and they focused on full-term (≥ 37 weeks gestation) newborns only, which may partly account for the dissimilar results. Their finding suggests that full-term newborns, who previously would have received special care on the ordinary postnatal ward, were increasingly being transferred to specialist areas (Harrison and Goodman, 2015).

The results of this DPhil research also provide some indication of how widespread the practice of distributing free infant formula to mothers was in the 1980s.

In 1985, 43% of all mothers in this research reported receiving a free sample of infant formula before leaving the hospital.

9.2.9 The ‘naturalisation’ of childbirth and infant feeding

Among those who expressed concerns about the medicalised practices in the 1970s were health professionals themselves; feminist groups; and childbirth advocacy groups, particularly the National Childbirth Trust (NCT), which was established in 1956 (Davis, 2013). By the 1980s, there was a collective call in GB for fewer unnecessary medical interventions during hospital births, and a so-called natural childbirth campaign emerged as medicalised practices were increasingly situated (by feminist groups) in the wider contexts of gender equality and women’s autonomy over their own bodies and childbearing experiences (Davis, 2013). In addition, key global policies that addressed these hospital practices were adopted in GB. For example, the International Code of Marketing of Breastmilk Substitutes (The Code) was affirmed in 1981, albeit loosely implemented, and the Baby-friendly Hospital Initiative (BFHI) was launched in 1994. Both of these policies seek to limit the promotion of breastmilk substitutes and increase the promotion and support of breastfeeding as the norm.

These responses may have contributed in part to the changes in breastfeeding support provided to mothers and babies over the research period. Between the 1985 and 2010 surveys, more mothers reported receiving the following types of support: skin-to-skin contact with their baby shortly after delivery, being taught how to position and attach their baby for breastfeeding, and initiating breastfeeding within the first hour after giving birth. There was also an increase in the proportion of mothers who discussed infant feeding during antenatal visits, and who sought help with infant feeding

in the postnatal period from a voluntary organisation or community group that helps recent mothers. Such forms of support are in accordance with the recommended practices of the BFHI and are now recognised as part of the minimum standard of care in most maternity units and health visiting services across the UK (UNICEF, 2017).

Less favourable changes were also observed. Firstly, there was a decline in the proportion of mothers who felt that they had received enough help with infant feeding while they were in hospital. For this question in the IFS questionnaire, 'infant feeding' referred to both breastfeeding and infant formula feeding, and the data was not disaggregated into breastfeeding or formula feeding in the IFS datasets. Nevertheless, it may be speculated that this declining trend was mostly driven by mothers who chose to breastfeed. This is made plausible by the fact that breastfeeding can take more time and skill than infant formula feeding to initiate, and the proportion of mothers who initiated breastfeeding increased over time.

Secondly, there was no change over time in the proportion of mothers who received professional support at home with infant feeding problems. A recent analysis of maternity care provisions in England in 1995 to 2014 reported that an increasing proportion of mothers would have liked more home visits from the midwife, including help to settle their baby (Henderson and Redshaw, 2017). The authors of that study ascribed the shortfall in support to the changing pattern of postnatal care where breastfeeding clinics and drop-in centres are increasingly replacing the provision of support in mothers' homes (Henderson and Redshaw, 2017).

Thirdly, the widespread promotion of infant formula had not abated over time. On the one hand, the presence of The Code and BFHI seemingly ended the practice of

distributing free infant formula samples directly to mothers in hospitals. On the other hand, free or reduced-price infant formula was instead given to mothers as part of a Bounty bag of 'try before you buy' products. In 1995 and 2000, 29% and 12% of mothers, respectively reported receiving such a bag after giving birth. This practice still counted as the promotion of breastmilk substitutes to mothers and therefore was in direct violation of The Code. While Bounty bags no longer contain free samples of infant formula, the infant formula industry continues to circumvent The Code by advertising infant formula, especially follow-on formula, directly to mothers through various mass media. In the 2005 survey, 62% of mothers reported having seen or heard this type of promotion. By 2010, the proportion rose to nearly nine out of ten mothers. Similar marketing practices have been documented in the US, Canada and Australia, and the widespread promotion of follow-on formula may result in a 'spill-over effect' where mothers who would otherwise breastfeed needlessly use infant formula in the first six months (Berry et al., 2012; Smith and Blake, 2013).

In spite of this, there may have been a shift in women's attitude towards breastfeeding following the natural birth campaign of the 1970s and subsequent 'breastfeeding-friendly' policies. For instance, in the 1990 and 2000 surveys, there was an increase in the proportion of mothers who reported having been exclusively formula fed when they themselves were babies. These mothers were likely born between the 1960s and 1980s, a period coinciding with the nadir of breastfeeding in high-income countries (Trussell et al., 1992). In 2005 and 2010, this pattern declined and mothers increasingly reported that they were exclusively breastfed when they themselves were babies. It may be that more women had come to value breastfeeding over infant formula feeding from the 1970s onwards and so mothers in this DPhil research who

were born during this period of change were more likely to have been breastfed themselves (Wright and Schanler, 2001).

This reflection of how women may have perceived breastfeeding in the past is dissimilar to how women might perceive breastfeeding now, according to the findings of this DPhil research. For instance, over the research period, there was a decline in the proportion of mothers who reported knowing mostly women who either exclusively formula fed their babies or exclusively breastfed their babies. Instead, mothers increasingly reported knowing mostly women who practised mixed feeding. Perhaps these successive cohorts of women had also come to value breastfeeding over infant formula feeding as their own mothers did, but only to the extent that the practice of breastfeeding was feasible within their given context. It is worth noting here that these interpretations may be limited, given that these estimates relied on the accuracy of the mothers' recollection of what they were told by their own mothers and what they observed or heard from other women.

9.2.10 Changes in maternal smoking behaviours

Over the last 40 years, the governments of GB have implemented several policies and supportive strategies aimed at raising public awareness of the dangers of environmental tobacco smoke and reducing the prevalence of smoking (McAndrew et al., 2012; PHE, 2015). For example, the white paper, *Smoking Kills*, was published in 1998 and resulted in the adoption of a control strategy to reduce the prevalence of smoking in the UK. Subsequently, smoke-free policies were implemented in Scotland in 2006 and in England, Wales and Northern Ireland in 2007. These legally prohibit smoking in all enclosed public places and workplaces. Successive increases in the taxes on tobacco

products have been imposed, and the standardisation of tobacco packaging has been enforced. Support for smoking cessation is also available through the National Health Service (NHS) Stop Smoking Services and the Stoptober campaign. In addition, the IFS has been used to monitor changes in the smoking behaviours of recent mothers in the UK since 1975.

These measures have contributed to changes in public perceptions about smoking and in actual smoking behaviours among adults. For example, findings from the Opinions and Lifestyles Survey show that smoking among adults in GB declined from 46% in 1976 to 19% in 2014 (ONS, 2016a). A previous study of generational trends in smoking among British adults from 1972 to 2005 concluded that the declining prevalence of smoking in GB was largely due to smokers discontinuing at an increasingly younger age and fewer young people starting to smoke (Davy, 2006). In this DPhil research, there was a considerable decline in the proportion of mothers who reported smoking during pregnancy (from 30.2% in 1985 to 13.2% in 2010) and at six weeks after giving birth (from 33.4% in 1985 to 14.4% in 2010). The decline in maternal smoking may be particularly driven by the social stigma associated with smoking during pregnancy. Similar declines in maternal smoking in GB have been documented elsewhere (ISD, 2016a; National Health Service, 2017).

9.3 The effects of population characteristics on breastfeeding behaviours in the first six weeks

9.3.1 Section introduction

The preceding section discussed changes in the prevalence of key factors among the childbearing population in GB that occurred between successive cohorts of mothers over the 25-year research period. The extent to which these population changes contributed to the increase in breastfeeding rates in the first six weeks after birth will be discussed in section 9.4. This present section considers how these key factors may have influenced the difference in breastfeeding behaviours between subgroups of mothers within a given cohort (survey year).

9.3.2 Women's education and socioeconomic position

Consider first the differences in breastfeeding behaviours according to maternal education. In nearly every survey year, mothers who completed full-time education over the age of 18 were more likely than mothers with fewer years of education to initiate breastfeeding; continue breastfeeding at one week after initiating; and continue breastfeeding at six weeks after breastfeeding at one week. These results confirm previous findings of an independent linear relationship between maternal education and breastfeeding behaviours (Forster et al., 2006; van Rossem et al., 2010; Oakley et al., 2013; Yang et al., 2014). One potential explanation for the beneficial effect of higher education on breastfeeding behaviours is that well-educated mothers have more theoretical knowledge about breastfeeding (Wambach and Cole, 2000). By virtue of their higher education, these mothers are more likely to encounter or seek information about health in general, which may include information about pregnancy, childbirth and

infant feeding (Skafida, 2009). Having knowledge of breastfeeding and, more importantly, being aware that it confers health benefits to mothers and babies, has been identified as a significant determinant of breastfeeding initiation and continuation in numerous studies (Dennis, 2002; Thulier and Mercer, 2009; Schafer et al., 2017).

Over 80% of mothers in this DPhil research were able to name at least one benefit of breastfeeding to the health of either mothers or babies. These mothers were over twice as likely to initiate breastfeeding and continue breastfeeding at one week as mothers who were unaware of any health benefits of breastfeeding. However, having such theoretical knowledge had no significant effect on breastfeeding continuation at six weeks. A previous qualitative study of the breastfeeding experiences of mothers in England highlighted that, although mothers may be aware, in theory, that breastfeeding is healthy, their decision about whether to breastfeed may be more influenced by how much this theoretical knowledge is exemplified or embodied in their daily lives (Marshall et al., 2007). Examples of such embodiment include seeing other women breastfeeding and being supported in their decision to breastfeed by those within their social sphere (Marshall et al., 2007). The relative importance given to theoretical knowledge versus embodied knowledge may vary between mothers (Hoddinott and Pill, 1999), and it may be that for many mothers in this DPhil research, theoretical knowledge of the health benefits of breastfeeding was not sufficient on its own to enable them to continue breastfeeding to six weeks.

Importantly, mothers who are well-educated may not only possess theoretical knowledge of the benefits of breastfeeding but also may be better situated to apply such knowledge in their everyday reality (Skafida, 2009). For instance, with the

transformation of the British economy and expansion of higher education there were, ipso facto, improvements in women's occupational mobility and socioeconomic position. Women in higher occupation groups, such as managerial and professional groups, may have access to jobs that provide more family-friendly working conditions, including paid maternity leave and flexibility in the hours and location of work. Therefore, these women may be better able to combine breastfeeding with employment outside the home.

The hypothesised pathways through which work outside the home influences breastfeeding include long-term physical separation of mother and baby and demands on maternal time. These may decrease the regularity of the baby's suckling at the mother's breast, which in turn lessens the likelihood of breastfeeding continuation if either breast milk production or breast milk removal (from the breast) decreases (Damis et al., 2012; Amir et al., 2015). The implementation of maternity and family-friendly policies over the past 30 years may have helped to mitigate such negative effects by allowing mothers to take time out of work for childbearing and extending the period within which mothers return to work. According to a recent economic analysis of maternity policies in GB, offering both wage replacement and job protection in the form of paid maternity leave may encourage mothers to take time out of work in both the short term and long term (Stearns, 2017). Other studies also confirmed that longer-term periods out of work increase the likelihood of breastfeeding exclusivity and breastfeeding continuation beyond three months (Hawkins et al., 2007a; Baker and Milligan, 2008; Cooklin et al., 2008; Skafida, 2012; Sinha et al., 2015; Dagher et al., 2016; Steurer, 2017b).

However, mothers may still breastfeed in the short term following childbirth, even without access to maternity entitlements. For example, the results of this DPhil research show that among all mothers who initiated and then continued to breastfeed at one week, the proportion who were not on maternity leave and who continued to breastfeed at six weeks were not significantly different from the proportion of mothers who were on maternity leave and who continued to breastfeed at six weeks. Moreover, after adjustments for other factors such as sociodemographic differences and social and professional support, mothers without maternity entitlements were no more or less likely to continue breastfeeding at six weeks than mothers with entitlements. This is evidence that the effects of other factors may outweigh the effects of paid maternity leave on breastfeeding continuation in the early weeks after childbirth.

As alluded to above, mothers in higher occupations may have greater access to maternity entitlements and family-friendly working conditions. However, maternal higher occupation in itself has not consistently been found to be associated with breastfeeding behaviours after accounting for maternal education. In this DPhil research, the potential effect of mothers' occupation group on breastfeeding behaviours was observed through the effect of socioeconomic status. After accounting for the potential effect of maternal education, mothers in higher socioeconomic groups were not significantly more likely to breastfeed than mothers in lower socioeconomic groups in the 2000 to 2010 surveys. This finding is consistent with well-established evidence that maternal education accounts for the association between breastfeeding and socioeconomic status when the measure of socioeconomic status is based on maternal income or occupation (Trussell et al., 1992; Skafida, 2009; Magnusson et al., 2016). Conversely, in the 1985 to 1995 surveys when maternal socioeconomic status

was based on their partner's occupation group, mothers in higher socioeconomic groups were significantly more likely to initiate breastfeeding than mothers in lower socioeconomic groups. Previous studies have also reported an independent relationship between breastfeeding behaviours and maternal socioeconomic status based on partner's occupation group (Trussell et al., 1992). A recent study of a population-based Swedish cohort found a positive linear association between long-term breastfeeding continuation and fathers' socioeconomic status, even after adjusting for both paternal and maternal education (Flacking et al., 2010).

The occupation groups of partners (or fathers) may be indicative of their income or potential earnings. Previous studies found an inverse relationship between husbands' earnings and women's employment outside the home, although their conclusions were based on cross-sectional, unadjusted estimates (Leibowitz and Klerman, 1995; Dex et al., 1998). Nevertheless, partners' earnings may augment or help to replace women's wages in the short term following childbirth, which may encourage women to take time out of work for childbearing. This form of financial support may be one of the mechanisms by which partnerships positively influence early breastfeeding behaviours. In this DPhil research, mothers who were married or cohabiting with a partner were significantly more likely to breastfeed than mothers who were single.

9.3.3 Partner support

Having a partner may influence a mother's breastfeeding behaviours in several other ways. One important influence is partners' knowledge and attitudes about breastfeeding, which has been consistently identified as a strong predictor of mothers' own attitudes and final decision about whether to breastfeed (Bar-Yam and Darby,

1997; Rempel and Rempel, 2004; Griffiths et al., 2005; Rempel and Rempel, 2011; Skafida, 2012). Another important influence is the practical support provided by partners, including the level of partner involvement in childcare and household labour. Few studies have systematically investigated the extent to which such level of partner support influences breastfeeding behaviours (Emmott and Mace, 2015). Findings from the 1984 to 2012 BSA surveys suggest that, while public attitudes toward the gendered division of unpaid work inside the home have changed over time, there has been no significant change in the actual work behaviours of men and women inside the home. Over the 30-year period of the BSA surveys, women consistently reported performing nearly twice as much housework and assuming over twice as much of the childcare responsibilities as men. Additionally, the BSA surveys revealed that the proportion of women who worked part-time while caring for a child under the age of one had doubled over time, largely replacing the proportion of women who stayed at home (Scott and Clery, 2013). When considered with the wider evidence of women's increasing participation in the workforce over time, this suggests that mothers in GB have increasingly faced a double burden posed by working, especially in higher occupations, and being the primary carer for the family. Further investigation is warranted to understand the potential ramifications of this on breastfeeding behaviours in GB, particularly on the long-term continuation of breastfeeding within the first 12 months.

9.3.4 Prior experiences of breastfeeding

There was a general increase in age at delivery for mothers in this DPhil research between 1985 and 2010. This trend may be largely attributed to women's increasing postponement of childbearing and increasing entry into higher education and

employment outside the home, all of which began decades earlier. In this DPhil research, younger mothers were, in general, less well-educated, less well-employed and from lower socioeconomic groups. Characteristically, these mothers are less likely to have theoretical knowledge of breastfeeding and less able to put any such knowledge into practice (Ingram et al., 2008; Bevan and Brown, 2014). Furthermore, they are more likely to perceive themselves as unable to breastfeed. Other studies among young mothers in the UK have found that they are more likely to use infant formula as they often regard the demands of breastfeeding as conflicting with their youth and thus more suited to older mothers (Hoddinott and Pill, 1999; Murphy, 1999).

Among the factors which may inform their perceptions is the extent of their exposure to breastfeeding prior to the arrival of their baby. For instance, mothers in this DPhil research were considerably more likely to initiate breastfeeding and continue breastfeeding at six weeks in 1985 to 2010 if, prior to giving birth to their baby, they knew other women who had breastfed their own babies. In contrast, mothers were significantly less likely to breastfeed if they knew other women who had formula fed their own babies. Similarly, mothers were considerably more likely to breastfeed if they themselves were breastfed when they were babies and less likely to breastfeed if they were formula fed when they themselves were babies. These vicarious experiences of breastfeeding are important routes through which new and young mothers in particular can acquire theoretical and embodied knowledge about breastfeeding; develop confidence in their ability to manage breastfeeding and overcome difficulties; and form realistic expectations about what it is like to practise breastfeeding within the context of their everyday realities (Marshall et al., 2007; Hoddinott et al., 2010b; Fox et al., 2015; Hackman et al., 2015; Bartle and Harvey, 2017).

Perceptions may also be shaped by having direct prior experience of breastfeeding (Dennis, 2002). In this DPhil research, having breastfed one's previous child for at least six weeks was the strongest independent predictor of whether mothers subsequently breastfed the index baby at birth and up to six weeks. Additionally, this DPhil research is one of few studies to have examined the association between the duration of previous breastfeeding and mothers' subsequent breastfeeding behaviours. In doing so, this research provides new and convincing evidence that the quality of previous breastfeeding experience, rather than simply the number of children (parity), may explain the breastfeeding behaviours of multiparous women (Taylor et al., 2008; Phillips et al., 2011; Bai et al., 2015). The results of this DPhil research also suggest that most mothers will repeat their previous breastfeeding behaviours. At least 80% of mothers who breastfed previously for six weeks or more subsequently breastfed the index baby for up to six weeks. This near certainty that these mothers would have breastfed again may have resulted in the very large adjusted odds ratios for the association between breastfeeding previously for at least six weeks and breastfeeding initiation. These odds ratios ranged from 25 in 1985 to 34 in 2010. Among other differences, younger mothers are less likely than older mothers to have these direct and indirect experiences, which may lead them to form poorer perceptions about the normality of breastfeeding in GB. (Marshall et al., 2007; Fox et al., 2015).

9.3.5 Ethnic disparities in breastfeeding behaviours

Several qualitative studies of mostly South Asian mothers living in the UK suggest that these mothers may be subject to a transgenerational transfer of positive beliefs and attitudes regarding breastfeeding, which help them to reinforce traditional 'breast is

best' messages (Ingram et al., 2008; McFadden et al., 2013). These studies point to the strong influence of partners, grandmothers and extended family members in such transfer. Other studies have consistently shown the appearance of a 'minority ethnic advantage' in breastfeeding in GB (Kelly et al., 2006; Oakley et al., 2013).

In this DPhil research, mothers of BME origin were over two to three times more likely than white mothers to initiate breastfeeding and continue breastfeeding up to six weeks, even after accounting for the effects of sociodemographic differences and support. Similarly, a previous study using data from the Millennium Cohort Study found that, after controlling for any potential socioeconomic disparities, BME mothers were more likely to breastfeed than white mothers (Kelly et al., 2006). BME groups are more likely to live in the most socially disadvantaged areas of high-income countries, perhaps as a consequence of their desire for cultural familiarity and social cohesion, as well as their relatively lower rates of social mobility (Nazroo et al., 2007; Becares et al., 2015). At the same time, there is compelling evidence that ethnic dense communities themselves embody the traditional normality of breastfeeding, and even those who are least likely to breastfeed, such as white and single mothers, can be positively influenced by living in such communities (Griffiths et al., 2005; Becares et al., 2009; Becares et al., 2015).

In this DPhil research, mothers who lived in England and Wales were more likely than those who lived in Scotland to initiate breastfeeding and continue breastfeeding at one week. However, at six weeks, mothers who lived in Scotland were more likely to breastfeed, although this was observed in the 2000 survey only, following adjustments. The reasons behind the presence of a country-specific effect are unclear and may have

been influenced by unaccounted effects, including differences between mothers in England and Wales.

9.3.6 Smoking during and after pregnancy

Since the 1990s, several public health initiatives and legislative policies have been implemented to reduce the prevalence of cigarette smoking in the general population, including pregnant women (McAndrew et al., 2012). These strategies may have contributed to a downward trend in smoking during and after pregnancy as successive generations of women were more likely to either discontinue smoking or refrain from starting to smoke. In self-completed surveys such as the IFS, maternal under-reporting of smoking behaviours can occur, particularly of smoking during pregnancy given the associated stigma (Giglia et al., 2006; Shipton et al., 2009). If anything, under-reporting of smoking status in this DPhil research, especially among mothers who did not breastfeed, would have resulted in an underestimation of the effects of smoking status on breastfeeding behaviours. Smoking also tends to be higher among the more disadvantaged and thus, may be a surrogate measure for poverty. As such, mothers in this DPhil research were more likely to smoke during and after pregnancy if they were younger, less well-educated, unmarried, and in lower socioeconomic groups – characteristics which potentially approximated higher poverty levels (Kiernan and Pickett, 2006; Fitzpatrick et al., 2016). However, after adjusting for sociodemographic differences, smoking during pregnancy was still associated with a lower likelihood of initiating breastfeeding, and smoking after pregnancy remained associated with a lower likelihood of breastfeeding at six weeks. This suggests the presence of other potential effects that could not be accounted for in this DPhil research.

A range of other mechanisms for the negative action of smoking on breastfeeding has been proposed by previous studies, including a deleterious effect of nicotine on breast milk production and a retardation of newborn suckling reflexes (Napierala et al., 2016). However, these previous studies had methodological limitations, including failing to account for physical barriers to breastfeeding such as poor breastfeeding technique (Amir, 2001). Mothers who are characteristically more likely to smoke may be less likely to seek help for such breastfeeding problems (Brown et al., 2011). In contrast, mothers who are less likely to smoke are also those who are more likely to have better health-seeking behaviours and, as demonstrated throughout much of this section of the discussion, are better able to adopt 'healthier' behaviours including breastfeeding. As postulated earlier, these subgroups of mothers may also have been the first to embrace calls for more natural childbirth experiences in the 1970s, which may have inspired the launch of the BFHI worldwide some three decades later in 1991. (Wright and Schanler, 2001).

9.3.7 'Baby-friendly' support for breastfeeding in hospital and at home

According to Munn et al. (2016), a key tenet of the BFHI is that maternal attitudes towards breastfeeding can be influenced by prenatal education. In this DPhil research however, discussing infant feeding during antenatal visits did not significantly influence mothers' breastfeeding behaviours, except for having an inexplicable negative effect on breastfeeding initiation in 2010. This result is highly consistent with findings from previous studies, including the findings from a recent Cochrane review which showed that antenatal education, including peer and professional counselling, did not significantly influence breastfeeding initiation and continuation (Lumbiganon et al.,

2016). The result from this DPhil research was observed after accounting for other potential factors, including measures of maternal theoretical and embodied knowledge, socioeconomic position and partnership status. As discussed earlier, these factors may strongly dictate mothers' breastfeeding attitudes and intentions and, more importantly, they likely preceded pregnancy with the index baby and antenatal visits. Furthermore, other key influences of mothers' breastfeeding attitudes and behaviours succeeded antenatal education, such as the level of support they received with breastfeeding in the immediate and early postpartum periods. Thus, prenatal education may have been insufficient on its own to prepare mothers for the realities of breastfeeding (Marshall et al., 2007).

Two key measures of breastfeeding support in the immediate postpartum period are mother-baby rooming-in and skin-to-skin contact. In this DPhil research, both factors appeared to mainly influence breastfeeding initiation, but not continuation. With the exception of the negative effect of rooming-in in 2010, both types of support independently increased the likelihood of initiating breastfeeding. The quality of the published evidence for an effect of rooming-in on breastfeeding behaviours is limited (Forster and McLachlan, 2007; Jaafar et al., 2016), while the most recent Cochrane review on the effects of skin-to-skin contact found a positive association with both breastfeeding initiation and continuation up to four months (Moore et al., 2016). The difference between the findings from this DPhil research and those of the Cochrane review may be due in part to the restriction of the analysis of breastfeeding continuation in this DPhil research to mothers who initiated breastfeeding.

Two examples of support in the early postpartum period are early initiation and being taught to position and attach one's baby to the breast for breastfeeding. In this DPhil research, mothers who reported having these experiences were significantly more likely to continue breastfeeding at one week and six weeks in most survey years. Rarely have previous studies examined the independent effects of either of these experiences, particularly the early initiation of breastfeeding, which has been treated mainly as an outcome rather than a potential determinant of breastfeeding continuation (Esteves et al., 2014; Balogun et al., 2015). Nevertheless, recent reviews of practices that promote or inhibit breastfeeding highlighted the importance of including these types of support as part of a model of care for promoting breastfeeding (Renfrew and Hall, 2008; Renfrew et al., 2012). This position is supported by the potential mechanisms by which breastfeeding may be enhanced. For example, both skin-to-skin contact and early initiation take advantage of the newborn's instinctive abilities to find and self-attach to the mother's breast within the first two hours after birth (Schafer and Genna, 2015). Rooming-in may facilitate the physical closeness mothers and babies need to continue skin-to-skin contact and achieve proper breastfeeding positioning and attachment. This may reduce the physical problems of breastfeeding and enhance lactation and continuation (Ingram et al., 2002; McAndrew et al., 2012).

Interestingly, mothers who felt that they received enough help with infant feeding postpartum were significantly less likely to initiate breastfeeding in most survey years. However, at one week and six weeks, such mothers were more likely to continue breastfeeding. In the IFS, this question did not differentiate between breastfeeding and formula feeding. It may be that the amount of help required by mothers who planned to initiate breastfeeding was greater than that required by mothers who planned to

initiate formula feeding. This is highly plausible, given that breastfeeding is inherently more difficult to initiate than formula feeding. As such, whether mothers felt that they received enough help with infant feeding in hospital may have been directly related to whether mothers had chosen to initiate breastfeeding. Therefore, the association between whether mothers felt that they received enough help and breastfeeding initiation may have been underestimated. In contrast, the analyses of breastfeeding at one week and six weeks included only mothers who had initiated breastfeeding and mothers who continued breastfeeding at one week, respectively, thereby minimising any potential confounding arising from the differential needs posed by infant formula feeding.

Equally interesting is the finding that mothers who received help to initiate breastfeeding were less likely to breastfeed at one week and six weeks. These effects may have been largely due to indication bias, where mostly mothers who experienced problems with breastfeeding initiation received help to initiate (Pérez-Escamilla et al., 2016). The negative effects of experiencing breastfeeding problems early may have then persisted to one and six weeks.

Breastfeeding behaviours may also be influenced by other experiences during and immediately after birth, including the type of delivery. For example, in the 1985 and 1990 surveys, mothers who delivered by Caesarean section were significantly less likely to initiate breastfeeding than mothers who had a vaginal delivery. This was observed after controlling for the potential effects of older maternal age and socioeconomic position, which may increase the likelihood of having a Caesarean (Hobbs et al., 2016). The potential effect of a longer length of hospital stay following delivery by Caesarean

was also accounted for and, interestingly, longer lengths of stay (for three or more days) were independently associated with higher odds of breastfeeding initiation. Mothers who stayed longer in hospital may have received additional information and support related to breastfeeding, partly explaining their higher likelihood of initiation (Heck et al., 2003; Thulier and Mercer, 2009). The benefits of additional information and support are understandable given some of the attributes of mothers and babies who are most likely to stay longer in hospital after delivery: primiparous women; mothers who experience difficulties breastfeeding; mothers (and babies) who deliver by Caesarean; babies born premature or with low birthweight; and babies in need of special care (Heck et al., 2003; Waldenstrom and Aarts, 2004; Thulier and Mercer, 2009; Beake et al., 2016; Nilsson et al., 2017). Adjustments for these and other factors attenuated but did not fully account for the observed differentials in breastfeeding initiation by either Caesarean section, length of stay, special care or birthweight. This suggests the presence of other unaccounted-for factors, including the reason for a Caesarean delivery, and maternal physical and psychosocial responses to either the trauma of a Caesarean delivery, or the physical frailty of their preterm or low birthweight newborn (Hobbs et al., 2016; Wallenborn et al., 2017).

Another tenet of the BFHI underscores the importance of a continuum of support for breastfeeding following discharge from hospital or other maternity centres (Munn et al., 2016). In this DPhil research, mothers who sought help from a voluntary organisation or community group that helps recent mothers with infant feeding were about twice as likely to continue breastfeeding at six weeks. Additionally, mothers who received professional help at home with infant feeding problems were more likely to continue breastfeeding at six weeks than those who did not receive help. These results

are similar to those from previous observational studies in the UK, which found that mothers who received help from health professional and non-health professional sources were more like to continue breastfeeding (Henderson and Redshaw, 2011; Oakley et al., 2014). It should be noted that the results of this DPhil research may have been partly influenced by unaccounted for factors related to the willingness of mothers to seek help for breastfeeding problems, including intention and commitment to breastfeeding (Oakley et al., 2014). In contrast to the DPhil research results, UK-based trials of the effect of non-health professional support have not found a significant association with breastfeeding continuation (Hoddinott et al., 2010a; Jolly et al., 2012). However, findings from two recent systematic reviews suggest that either form of support may be effective at improving breastfeeding continuation when offered in combination with other breastfeeding support practices (Sinha et al., 2015; McFadden et al., 2017).

Finally, the results of this DPhil research confirm that the distribution of free or reduced-priced formula milk directly to mothers negatively influences breastfeeding. In the 1985 survey when this practice was widespread in hospitals, mothers who received free samples were significantly less likely to continue breastfeeding at six weeks. Similarly, in 2000, mothers who received free or reduced-price milk in Bounty bags after birth were significantly less likely to breastfeed at six weeks. Although these practices have been discontinued, the infant formula industry has continued to use mass media advertising to influence women's infant-feeding decisions. Interestingly, exposure to advertisements for infant formula was not significantly associated with breastfeeding at six weeks in the 2005 and 2010 surveys. Aside from potential confounding effects, it may be that receiving free milk samples from a health professional had a more

persuasive effect on mothers' breastfeeding behaviours than seeing or hearing an advertisement.

9.3.8 Section conclusion

The preceding discussion summarised new evidence showing that, in each survey year from 1985 to 2010, some population subgroups of mothers in GB were, without exception, more likely than others to practise breastfeeding in the first six weeks after birth. These were subgroups that have been historically identified as being more likely to breastfeed in high-income countries since the breastfeeding resurgence in the 1970s. Importantly, the prevalence of these subgroups increased considerably over the research period. One implication of this is clear: while breastfeeding rates in GB were improving over time, the breastfeeding practices of mothers in the 'least likely to breastfeed' groups continued to lag in each year.

The discussion also highlighted new evidence that differences in breastfeeding behaviours at each stage from birth to six weeks continued to persist between subgroups, even after mothers within these groups had already managed to breastfeed at the previous stage. The next section of the discussion provides further understanding of the underlying causes of the increasing trends in breastfeeding by focusing on whether these behavioural differences between subgroups changed from 1985 to 2010.

9.4 Increasing trends in breastfeeding in the first six weeks: changing behaviours or changing population characteristics?

9.4.1 Section introduction

Few studies have been able to investigate the breastfeeding behaviours of women in HICs and LMICs before and after the period when breastfeeding trends reversed. The few studies that have done so found not only a change in the differential behaviours between some subgroups, but a complete reversal in the likelihood of breastfeeding for some subgroups relative to others. For example, a Norwegian study that examined breastfeeding practices from 1860 to 1984 showed that up until the 1920s, breastfeeding rates were high, driven mostly by married women in lower socioeconomic groups. Following a period of decline in breastfeeding across all population subgroups in the 1920s to 1960s, there was a dramatic rise in breastfeeding rates, driven largely by a more rapid return of breastfeeding among married mothers in higher socioeconomic groups than among those in lower socioeconomic groups (Liestol et al., 1988). Similar reversals have been documented between white and non-Hispanic black mothers in the US from the early 1900s to the 1980s (Hendershot, 1984), and between mothers with higher education and those with lower education in Latin American and Caribbean countries from 1986 to 2005 (Chaparro and Lutter, 2010).

One might not expect to observe such dramatic changes in breastfeeding behaviours in GB between 1985 and 2010 given that the height of the return of breastfeeding in GB likely happened in the 1970s. Furthermore, the remarkable consistency with which some population subgroups breastfed more than others in each survey year suggests that the current patterns of breastfeeding had already become

established by 1985. Instead, one might expect to observe whether those subgroups that consistently lagged in their breastfeeding practices ultimately narrowed the gap with their more able counterparts.

9.4.2 Differences in breastfeeding behaviours between subgroups of women from 1985 to 2010

The results of this DPhil research revealed that, over the period 1985 to 2010, there were no meaningful changes in the differences in breastfeeding in the first six weeks between subgroups of mothers, except for the following groups: (between) mothers who had a husband or partner and single mothers; and (between) mothers who had been exclusively breastfed or mixed fed when they were babies and mothers who were exclusively formula fed when they were babies. In both instances, changes were observed for breastfeeding initiation only.

Firstly, between 1990 and 2000, there was a decrease in the difference in breastfeeding initiation between mothers with a husband or partner and single mothers, followed by a considerable increase in 2010. It is highly plausible to think that the decreasing difference between 1990 and 2000 was caused by the increasing likelihood of initiating breastfeeding among single mothers relative to married mothers (in particular) in these survey years. This may be evidence of an improvement in breastfeeding among single mothers, albeit short-lived. The dramatic turnaround in 2010 may have been due to distinct and unaccounted-for differences between married mothers and cohabiting and single mothers. For example, it may be postulated that, over the research period, married mothers remained more conventional than cohabiting and single mothers in their attitudes towards family formation and infant

feeding. As the context of GB increasingly shifted towards cohabiting partnerships and single parenting, the attitudes and behaviours of married mothers may have become more divergent. Two research findings are consistent with this theory: (1) The survey year 2010 was the first time in the research period that married mothers were significantly more likely to initiate breastfeeding than cohabiting mothers; (2) The difference in breastfeeding initiation between married mothers and single mothers was greater in 2010 than in any other survey year.

Secondly, over the research period, the difference in breastfeeding initiation increasingly widened between mothers who had been breastfed when they were babies and those who were exclusively formula fed when they were babies. It is difficult to say with any certainty whether this change was due to a further increase in breastfeeding among mothers who were breastfed themselves as babies, or a decline in breastfeeding among mothers who were exclusively formula fed. Nevertheless, it is reasonable to presume that, over time, both the manner in which mothers themselves were fed as babies and their attitudes and intentions about feeding their own babies, were positively influenced by the overall shift in attitudes towards more breastfeeding and less infant formula feeding that emerged in the 1970s.

As stated above, other changes in the differences in breastfeeding in the first six weeks between subgroups were not meaningful, despite being statistically significant. Instead, these changes likely resulted from methodological limitations or artefactual effects. Most notably, over time, there was a statistically significant change in the difference in breastfeeding initiation between mothers in the managerial and professional socioeconomic group and mothers in the routine and manual group.

However, this change was most likely a reflection of first using partner's occupation to assign maternal socioeconomic status in 1985 to 1995 and then using mothers' own occupation to assign maternal socioeconomic status in 2000 to 2010.

9.4.3 Impact of population characteristics on the trends in breastfeeding in the first six weeks from 1985 to 2010

As discussed earlier, there was a substantial increase in the prevalence of those factors among the childbearing population that most favoured the practice of breastfeeding initiation and continuation. Moreover, while any change in breastfeeding behaviours in GB had predated the research period, the changes in the prevalence of favourable factors in the population had either recently begun or had not yet started by 1985.

From 1985 to 2010, the factors that made the highest potential contribution to the increasing trend in breastfeeding initiation at the population level were as follows: managerial and professional socioeconomic status, for which the estimated population attributable fraction (PAF) for breastfeeding initiation ranged from 22%-45%; married or cohabiting with a partner, for which the PAF ranged from 22%-44%; not smoking during pregnancy, for which the PAF ranged from 23%-27%; knowing other women who breastfed their own babies, for which the PAF ranged from 23%-29%; and having been breastfed oneself as a baby, for which the PAF ranged from 27%-38%. The contributions of higher education (PAF of 10%-23%), maternal age of 30 or over (PAF of 12%-26%) and BME origin (PAF of 6%-12%) showed the most important changes over time, with the PAFs doubling as the prevalence of each of these factors increased in the population.

The impact of these factors on the trends in breastfeeding continuation at one week and six weeks were less consistent. Of note is the decline in the contribution to

breastfeeding continuation at one week (PAF of 23%-16%) and six weeks (PAF of 21%-18%) made by subgroups of mothers who knew mostly women who had breastfed their own babies. Within this subgroup, the proportion who knew mostly women who exclusively breastfed decreased over the research period while the proportion who knew mostly women who mixed fed increased. Furthermore, there was an increase in the latter within each survey cohort as mothers progressed from initiation to one week to six weeks. These patterns may indicate an increased likelihood of encountering (or practising) mixed feeding the longer women continue to breastfeed. The reasons for such an early replacement of breastfeeding with formula feeding may lie in mothers' early experiences of breastfeeding as they transition from the birthplace to their homes and communities. These patterns may also have contributed to the considerable fall-off in breastfeeding in the first week and the persistently low continuation rates.

Other factors that made marked contributions over time to the population trends at one week and six weeks included higher education (PAF of 9%-27% and 11%-25%, respectively) and maternal age of 30 or over (PAF of 8%-28% and 17%-26%, respectively). Other important changes included the doubling in the contribution made by BME groups (PAF of 5%-11%) to breastfeeding continuation at one week. Additionally, not having smoked after pregnancy contributed to 20%-54% of the trend in breastfeeding continuation at six weeks at the population level over time. This was most likely due to the steady downward trend in smoking from 1985 to 2010

Based on the results presented here, the increasing trends in breastfeeding initiation and continuation to six weeks from 1985 to 2010 may be attributed to the increasing prevalence of those factors which made important and sizeable contributions

to breastfeeding at the population level. At the same time, there are several assumptions underlying the analysis and estimations of the PAF that may limit this interpretation. These include the assumption that there is a causal relationship between each explanatory factor and breastfeeding behaviours; that each factor is independent of other factors; and that the level of breastfeeding among population subgroups with more favourable factors is immediately attainable by population subgroups with less favourable factors (Rockhill et al., 1998). These assumptions are limited by the observational nature of the research and can only be inferred rather than explicitly concluded. Additionally, many of the explanatory factors analysed in this DPhil research are surrogate measures for more proximate influences of women's breastfeeding behaviours. Nevertheless, understanding the extent of the contributions of these factors to population-based breastfeeding trends is important for priority setting, especially where population subgroups that are most prone to not breastfeeding can be highlighted for further examination and targeted intervention.

9.5 Trends in breastfeeding in public in GB from 1995 to 2010

9.5.1 Section introduction

In comparison to breastfeeding initiation and continuation to six weeks, breastfeeding in public was associated with fewer explanatory factors in this DPhil research. This was observed after adjusting for sociodemographic, health-related, and support factors. This may have resulted in part from a methodological limitation. For example, the numbers of mothers within some categories were reduced during analysis after the research population was restricted to mothers who were present at stage 2 of the IFS and still breastfeeding at four months. Consequently, the power to detect significant

differences in effects on breastfeeding in public between some subgroups may have been reduced.

The prevalence of breastfeeding in public among mothers who continued to breastfeed at four months remained relatively stable at about 80% from 1995 to 2010, despite more marked increases in the prevalence of both breastfeeding initiation and breastfeeding continuation up to four months over the same period. Findings from previous studies, although mostly qualitative, suggest that maternal decisions about where to practise breastfeeding is greatly influenced by their perceptions of the attitudes of others (Scott et al., 2003; Morris et al., 2016). Specifically, breastfeeding in the home or in public spaces may be influenced in part by mothers' perceptions of the normality and acceptability of breastfeeding within a given context. Context itself may be (re)shaped over time by a combination of societal attitudes and policy. As discussed below, the interpretation of what is normal and acceptable, and the weight given to societal attitudes versus policy within a given context, may vary within and across subgroups of mothers (Marshall et al., 2007).

9.5.2 Perceptions of the normality of breastfeeding in public

The previous sections of this discussion have already established which factors may be associated with having a normative attitude towards breastfeeding. As a reminder, these included higher education; higher socioeconomic status; married or cohabiting with a partner; BME origin; knowledgeable about the health benefits of breastfeeding; having had prior direct or indirect experiences of breastfeeding; and having been supported with breastfeeding in hospital or through community-based services. For many of these factors, the effects were either attenuated considerably or disappeared

completely after adjusting for potential confounders. This suggests that while it may have been normal to practise breastfeeding behaviours in general, some mothers gave more weight to their perceptions of societal attitudes than their own perceptions of normality and decided to remain in their private spaces. A recent UK-based qualitative study on the opinions of adults about women who breastfeed in public provided a glimpse of the public's perceptions of the normality of breastfeeding in public. The study showed that those who described breastfeeding as 'natural' felt more positively and sympathetic towards women who breastfeed in public, while those who viewed breast milk like any other bodily fluid felt negatively and even disgusted (Morris et al., 2016).

Mothers who possessed the characteristics (factors) that remained significantly associated with breastfeeding in public may have been most enabled to prioritise their own normative attitudes over any perceived societal disapproval. Among these mothers were those who pursued higher education and those in the managerial and professional socioeconomic group. As discussed earlier, these mothers are more likely to highly value their own knowledge that breastfeeding is always best for their baby's health and have the means to put this into practice. 'Means' in this case may include having a choice of breastfeeding in a more welcoming, comfortable or discrete public space. It is worth noting here that there is no standard definition of a public space for breastfeeding within the literature and the legal definition is broad if not covertly vague. As such, there may have been a high degree of variability in the adequacy of spaces for mothers to breastfeed in public, which may have influenced their decisions. The phrasing of the questions in the IFS precluded the possibility of accounting for this in the DPhil research analysis.

Further to the point of having adequate means is having the skills and confidence to manage breastfeeding while in a public space. It may be for this reason that having prior direct and indirect experiences of breastfeeding, and having received help with infant feeding from a voluntary organisation, also remained positively associated with breastfeeding in public in some survey years. Similar associations have been reported elsewhere (Hoddinott and Pill, 1999; Bartle and Harvey, 2017). It is equally telling that breastfeeding in public was also positively influenced by having been taught proper breastfeeding positioning and attachment and having initiated breastfeeding within the first hour after giving birth. Among other benefits, these experiences are likely to enhance a mother's ability to initiate a breastfeed, even in the least ideal of spaces, with less effort and discomfort than a mother who lacks the skills and confidence afforded by having had such experiences (Bartlett, 2002).

9.5.3 Perceived unacceptance of breastfeeding in public

The results of this DPhil research strongly suggest that, in some cases, breastfeeding in public in GB may be perceived as unacceptable. Mothers in BME groups, who consistently were about twice as likely as white mothers to breastfeed in the first six weeks, were less than half as likely to have breastfed in public in the 2000 to 2010 surveys. A UK-based qualitative study exploring the barriers to exclusive breastfeeding among BME groups found that South Asian women, particularly those who were Muslim, found it difficult to breastfeed outside the home because it is culturally unacceptable for women to expose their bodies in public (Ingram et al., 2008). Mothers from BME groups who live in GB may experience even tighter cultural restrictions on breastfeeding in public as a result of the overt sexualisation of women's bodies in

Westernised and European societies (Scott et al., 2003; Morris et al., 2016). So, while mothers and other adults from BME groups may have been born in or descended from a country outside GB where breastfeeding in public is a social norm, they may harbour feelings of anxiety and embarrassment about breastfeeding in public in GB. At the same time, some BME groups may be less deterred than others by the social context of GB. The same UK-based qualitative study reported that mothers who were of Afro-Caribbean ethnicity were more likely than others to prioritise their baby's need (to breastfeed) over the public's acceptance (Ingram et al., 2008). This may be another example of mothers giving higher value to their own perceptions of normality.

Ultimately, public rejection, whether real or perceived, is a defining component of the context within which breastfeeding in public occurs. In this DPhil research, it was seemingly weighted above an equally-important component of context: legislation. Thus, after accounting for factors that represented mothers' normative attitudes, including their knowledge about and means to breastfeed, breastfeeding in public was not significantly influenced by whether mothers were aware of any laws protecting the right to breastfeed in public. Mothers' country of residence also showed no significant independent association with breastfeeding in public, despite the fact that the enactment of a law in Scotland preceded that in England and Wales by five years. As the IFS was focused on mothers, there was no assessment of whether others were also aware of the existence of these laws. It is also unclear whether the enactment of laws in GB influenced a change in societal attitudes. It may only be postulated that the societal attitudes towards breastfeeding in public remained similar across the countries of GB over time and exerted a stronger influence than legislation on mothers' decision to breastfeed in public.

Having strategies in place that visibly promote and enforce legislation may positively influence women's decisions. In the 2010 survey, mothers who noticed signs in public places welcoming breastfeeding were more likely to have breastfed in public. At present, there has been no formal evaluation of whether there are adequate strategies in place in GB to promote public awareness and understanding of the laws and support their full enforcement. The importance of such strategies cannot be overstated considering that a simple 'welcome' sticker may be a grand enough social gesture to reassure mothers of their rights.

9.6 Strengths and limitations of this DPhil research

9.6.1 Strengths

A major strength of this DPhil research is that it was one of few studies globally to examine the underlying causes of the increasing trends in breastfeeding rates in HICs. Furthermore, it was the first to do so in GB and using population-based samples of mothers that are highly representative of women in the childbearing population, including sufficient numbers of young women and those in the lowest socioeconomic group. Therefore, the findings in this DPhil research can potentially be generalised to the wider childbearing population in GB with a high degree of confidence. The changes in the characteristics of the population in GB were highly consistent with those taking place in other European and non-European HICs. This suggests that there may be similarities between the context in these countries and GB, and the findings in this research may help to further existing knowledge of the temporal changes in breastfeeding behaviours in these other countries. At the same time, variations in the timing and stages of population changes between GB and other HICs potentially limits

the generalisability to other country contexts. This DPhil research was also the first study to use population-based samples to investigate whether and how breastfeeding in public may be independently influenced by the social, cultural and policy context of GB.

The use of data from the IFS sets this research apart from other previous studies on trends in breastfeeding rates. Unlike the data sources used in previous studies, the IFS remained largely consistent in its sampling methods; the geographical areas assessed; the definition of the target population; the definition and measurement of breastfeeding behaviours; and the periods of assessment and length of recall of breastfeeding behaviours. The assessment of a wide range of maternal and infant factors also allowed for the control of potential confounding effects. These attributes made it appropriate to compare changes in breastfeeding behaviours at a population level over successive cohorts.

The inclusion of a wide range of explanatory factors during data analysis also made it possible to examine independently the effects of proximate and distal factors on differences in breastfeeding behaviours between subgroups. In addition, the analysis of differences in each breastfeeding behaviour was restricted to the population of mothers who successfully practised the previous breastfeeding behaviour. For example, the analysis of differences in breastfeeding continuation at one week included only the population of mothers who had initiated breastfeeding. This method allowed for the separation of the potential effects of factors on breastfeeding continuation at different time points. Few previous studies have employed a similar approach when examining

breastfeeding continuation (Wright et al., 2006; Baxter et al., 2009; Agboado et al., 2010; Oakley et al., 2014; Whipps, 2017).

Perhaps the strongest feature of this DPhil research is the research period. The 1985 to 2010 period covered one of the longest periods of investigation into breastfeeding behaviours to ever be conducted in GB.

9.6.2 Limitations

9.6.2.1 Bias, chance and residual confounding

As noted above, the research included population-based samples of mothers for each survey year that were highly representative of the general population of mothers. In addition, each survey year included survey weights which were designed by the IFS team and corrected for differences in non-response at stage 1. Stage 1 weights corrected for differential response by socioeconomic status, mothers' age and, in the 2010 IFS, by mothers' deprivation status. Information on these maternal factors were obtained from registration data for the full samples of mothers who were initially sent a stage 1 questionnaire, including non-respondents. These measures minimised the risk of selection (volunteer) bias resulting from maternal sociodemographic differences. At the same time, other factors, such as a general exhaustion or indifference ('survey fatigue') among respondents toward taking part in research surveys, may have increased in the general childbearing population over time and affected the response to the stage 1 questionnaire in later surveys. This may explain in part the substantial decline in the response rate over the research period from 91% in 1985 to 51% in 2010.

While the definitions of the research outcomes and explanatory factors were based on mothers' own reports, studies have found maternal recall of breastfeeding

behaviours and related circumstances to be reliable and valid (Li et al., 2005). Moreover, the IFS required only short-term recall of breastfeeding at each stage and most factors were measured early in the postnatal period thereby reducing the risk of recall bias. At the same time, it is acknowledged that the prevalence of smoking among mothers, and its effects on breastfeeding behaviours, may have been underestimated if some mothers felt the need to provide more socially desirable responses to questions about their smoking status.

In the stage 1 IFS questionnaire, mothers were asked whether they felt that they received enough help with feeding their baby after birth while in hospital. The wording of this question, which does not distinguish between breastfeeding and infant formula feeding, may have resulted in a bias in the research results known as confounding by severity. Specifically, mothers who planned to breastfeed likely needed more help to initiate breastfeeding in hospital than mothers who planned to feed infant formula needed to initiate formula feeding. Therefore, the severity of the need for help was directly related to the infant feeding outcome that is whether mothers had chosen to breastfeed. This may explain the finding in this DPhil research that mothers who received more help with feeding their baby were less likely to initiate breastfeeding. Therefore, the association between breastfeeding initiation and receiving help with feeding one's baby in hospital was most likely underestimated. The effects of this bias on the analyses of breastfeeding continuation at one week and six weeks were minimised when the research populations were restricted to mothers who breastfed.

Multiple statistical tests were performed in this research, which may have resulted in some associations being statistically significant purely by chance. However,

most associations had p values of less than 0.01, which may be considered as strong evidence that the observed associations in this research were not likely the result of chance.

Finally, while the analyses in this DPhil research adjusted for a wide range of potential confounders, all the analyses were based on observational data. Therefore, the estimates of the associations between explanatory factors and breastfeeding may be attributable in part to the effects of other factors that were not measured by the IFS and, as such, not adjusted for during data analyses. The observational nature of the data also precludes any inference of a causal relationship between explanatory factors and breastfeeding behaviours.

9.6.2.2 Other methodological considerations

For most variables in the IFS datasets, the rate of item missingness was less than 5%. Previous studies posit that this rate is sufficiently low to maintain valid statistical inferences while minimising the loss of useable data (Bennett, 2001; Schafer and Graham, 2002). Therefore, any observation with missing data where the rate of item missingness was less than 5% was disregarded and only complete cases were analysed.

As mentioned in Chapter 3, the 2000-2010 IFS asked mothers to self-identify within one of the five ethnic groups used in the 2001 UK Census: 'white', 'mixed', 'Asian or Asian British', 'black or black British', and 'Chinese or other ethnic group'. This DPhil research distinguished between two ethnic groups, 'white' and 'black or minority ethnic' (BME), because disaggregation of the non-white groups resulted in small population sizes that were unlikely to have the power to detect significant associations with breastfeeding, especially when included in multivariable regression. Table 9.2

(Appendix II, page 320) highlights this issue by showing the distribution of mothers in the main research populations according to the five ethnic groups in 2000-2010. It also shows the proportion of mothers in each ethnic group who initiated breastfeeding. The treatment of ethnicity as a binary variable is based on the underlying assumption that women from different BME groups are more similar to each other in their breastfeeding behaviours and associated factors than they are to white women. This is plausible given the wider normalisation of breastfeeding among BME groups compared to white groups. At the same time, it is acknowledged that BME groups are distinct from each other in terms of their culture, language, religion, disease profiles, and migration histories, and such diversity may also influence breastfeeding behaviours and the commissioning of relevant services.

For the analysis of breastfeeding in public, the numbers of mothers within some categories were reduced after the research populations in the 1995 to 2010 surveys were restricted to mothers who were present at stage 2 of the IFS and still breastfeeding at four months. Consequently, there may have been a reduction in the power to detect differences in the effects of some factors on breastfeeding in public.

As mentioned previously, there are generally three assumptions underlying the estimation of population attributable fractions (PAFs). One is that there is a causal relationship between explanatory factors and breastfeeding behaviours. However, as this DPhil research was an observational study, the findings can only be considered as strong evidence of associations between factors and breastfeeding behaviours, without any certainty of causation. The second assumption is that each factor was independent of others, an assumption that may not be reasonable given the interrelatedness of the

factors, even after adjustments during analysis. In the case of this DPhil research, the third underlying assumption would suppose that the lower rates of breastfeeding among more disadvantaged subgroups may be improved by a change in the prevalence of explanatory factors. This assumption is also unjustified given the nature of the research. Moreover, many of the factors are surrogate measures for more proximate influences of breastfeeding behaviours. Therefore, caution should be exercised when interpreting the PAF estimates.

Finally, questions were added to the IFS questionnaire between survey years to measure factors that were either relevant to, or the result of public health policies and interventions. This resulted in the inclusion of comparable but not identical questions over time. Most notably was the use of partner's occupation-based socioeconomic status to assign mothers' socioeconomic status in the 1985 to 1995 surveys, followed by the use of mothers' own occupation to assign their socioeconomic status in 2000 to 2010. This change reflects a wider contextual change that was borne out of the change in the economic structure of GB.

Another contextual change over the research period was the discontinuation of the distribution of free infant formula samples directly to mothers, and the increased promotion of infant formula through mass media advertising. This change is reflected in the change from asking mothers whether they were given free or reduced-price baby milks in hospital or in Bounty Bags (1985-2000), to whether they had ever seen or heard an advertisement for infant formula (2005-2010).

10 Conclusions and implications for public health policy and research

10.1 The social, cultural and policy context of GB has changed

In the 25 years from 1985 to 2010, the childbearing population of GB underwent a momentous transformation. Women increasingly participated in higher education and higher occupations, which likely contributed to the trend towards delayed childbearing to age 30 or over. Marriage also declined markedly, while cohabitation emerged as commonplace for one out of four mothers. Policies supporting the sexual liberation of women may have contributed to the declining normative importance of marriage. Around the same time, there was an increasing call for a less interventionist model of maternity care in GB which, bolstered by the support of successive 'breastfeeding-friendly' policies and national initiatives, contributed to an increase in the proportion of mothers who were given support to breastfeed in hospital or other maternity centres. The IFS also became a tool for monitoring the prevalence of smoking among mothers, and various tobacco control initiatives and legislation were implemented. As a result, over the research period, mothers increasingly reported not having smoked during or after pregnancy. These changes coincided with a radical reform of the British economy, which partly contributed to the doubling of the proportion of immigrants in the population who were of working and reproductive age, including BME groups. More recently, there was further acknowledgement of the growing presence of breastfeeding mothers in public spaces with the enactment of legislation to protect breastfeeding in

public. Overall, these changes contributed to a reshaping of the context in which mothers practise infant feeding in GB to one more favourable to breastfeeding. At the same time, the relatively low rates of breastfeeding continuation and exclusivity suggest that progress remains far from complete.

10.2 Inequalities in breastfeeding behaviours persisted within each survey year

In each survey year, mothers within the emergent population subgroups were significantly more likely than those in other subgroups to initiate breastfeeding and continue breastfeeding at one week and six weeks. These included mothers in the higher education and higher socioeconomic groups; those who were living with a husband or partner instead of being single; those from a BME group; those who had both theoretical and embodied knowledge of breastfeeding, especially prior to the arrival of their baby; and those who received practical help with breastfeeding from a health professional while in hospital and from a voluntary group while at home. The broader conclusion from these findings is that a combined, multi-levelled approach to breastfeeding promotion and protection is needed in GB; one that looks beyond the mother-infant dyad to include all the key influences of breastfeeding initiation and continuation.

10.2.1 Viewing fathers as equal ‘partners’ in the practice of breastfeeding

Greater recognition, akin to the current public health emphasis given to the role of health professionals, needs to be given to the early influences at mothers’ interpersonal level, especially partners. The evidence in this DPhil research strongly suggests that fathers play a largely non-substitutable role in the successful initiation of breastfeeding. However, their importance is often stereotypically relegated to secondary in

comparison to grandmothers, women's peers and health professionals. For decades, this has reduced their prominence in breastfeeding research, in public health interventions and, until recently, on the gender equality agenda. The ramifications of such under-recognition may include less employer and peer encouragement for paternity leave and shared parental leave, and less willingness among fathers to take longer time out of work for childcare. This is an important area for further research. In particular, more evidence is needed to highlight the precise nature of the economic, emotional and practical contributions that fathers make to breastfeeding and whether each contribution affects breastfeeding differently. Consider for example how a father lending practical support to the mother in the form of feeding the baby himself might inadvertently encourage mixed feeding or breastfeeding discontinuation. Furthermore, how might the contributions of fathers differ depending on whether they are on paternity leave or (longer) shared parental leave? Finally, how is breastfeeding managed and maintained within the first 12 months when mothers return to work while fathers stay home on shared parental leave with more daily responsibility for infant feeding?

10.2.2 The need for more professional support with breastfeeding

Breastfeeding behaviours were also clearly influenced positively by professional and non-professional support, and mothers increasingly expressed their need for more support with breastfeeding after delivery and at home. There may be a need for hospital (and other maternity centre) staff to commit more time to placing mothers in skin-to-skin contact with their babies and ensuring they achieve proper breastfeeding positioning and attachment before discharge from hospital. More effort may also be required to encourage mothers to access additional support for breastfeeding problems

through community-based breastfeeding clinics, baby cafés and peer support services. The dramatic declines in breastfeeding in the first week after birth, and the concomitant increase in mothers' exposure to mixed feeding at one and six weeks are evidence of the need to prioritise these strategies.

10.2.3 Timing of interventions may be key to the normalisation of breastfeeding

Despite being a commonly-recommended approach, antenatal education had no significant influence on breastfeeding behaviours in this DPhil research. This was not surprising, given that previous studies suggest that the ability to act on one's theoretical knowledge about breastfeeding may be more important to the actual practice of breastfeeding than the mere possession of theoretical knowledge. This also highlights the issue of the timing of interventions and that perhaps the personalised promotion of breastfeeding to mothers when they are already pregnant may be a little too late. Vicarious experiences of infant feeding may begin in early childhood when girls and boys see their own mothers breastfeeding or formula feeding a sibling, or observe the practices of other female members of their family or wider community. Moreover, adolescent girls have been shown to base their future infant feeding decisions on the knowledge of how they themselves were fed during their infancy. Therefore, informing girls, boys and young women about the significance of breastfeeding at an earlier, more formative stage may be useful for their own future decision-making as parents, as well as for wider normalisation of breastfeeding. As an intervention, breastfeeding could be included as a core topic in primary and secondary school science syllabuses.

Young mothers remained especially prone to not breastfeeding over the research period, even after taking into account their potential lack of breastfeeding

knowledge and experience, their potentially lower socioeconomic status and less access to maternity entitlements, and the higher probability of less formal partnerships. There may be an ingrained belief among young mothers that breastfeeding is incompatible with their youth and sexuality. This is not inconceivable, especially considering the hypersexualisation of breasts in westernised societies. Evidence-based strategies are urgently needed to target the underlying psychological and cultural drivers of young mothers' convictions. A key target should certainly be the mass media framing of breasts, breastfeeding and breastmilk substitutes.

10.2.4 Working parents' concerns about opportunity costs may impact breastfeeding behaviours

Although statistically non-significant in this DPhil research, maternal employment status is likely to remain a key issue in the struggle to improve breastfeeding exclusivity and continuation in GB and globally. Inevitably, more women will enter the workforce, with many assuming higher occupations that require highly-qualified, difficult-to-replace skill sets. Even with 12 months of paid maternity leave and shared parental leave, and guaranteed job protection, many mothers will likely return to work earlier out of fear of losing their skills, or suffering a loss on their investments to become qualified. These fears are likely shared by fathers in higher occupations. There is an urgent need for greater investments in workplace breastfeeding policies and innovative options for childcare for working parents.

10.2.5 Addressing the widespread promotion of infant formula to mothers

That nearly all mothers in the 2010 survey were exposed to an advertisement for infant formula underscores the need for tighter regulation of the infant formula industry in

GB. While the GB government formally endorsed the resolutions of The International Code of Marketing of Breastmilk Substitutes (The Code) in 1981, these have not yet been fully implemented in legislation. Furthermore, evidence suggests that exposure to follow-on formula in GB is high. This is despite current GB laws such as the Infant Formula and Follow-on Formula Regulations (2007), and current codes of practice for print and broadcast advertising, which prohibit the advertising of first-stage formula and any misrepresentation that may lead to confusion between first-stage formula and follow-on formula. Studies from other European countries have documented instances of the latter among women. It has also been suggested that the widespread marketing of follow-on formula may result in a spill-over effect where mothers who would otherwise breastfeed needlessly use first-stage formula.

It is estimated that GB has one of the largest infant formula markets in the world and further growth is expected (Rollins et al., 2016). Therefore, stronger political will is needed to see that The Code is implemented in legislation and enforced in full, along with all other national laws and codes of practice. Enforcement should include stricter penalties to hold all violators accountable.

10.3 Overall breastfeeding trends in GB driven by changing population context

There was a brief narrowing in the difference in breastfeeding initiation between mothers with a husband or partner and single mothers from 1990 to 2000. This suggests that, for a short-lived period, single mothers initiated breastfeeding at a rate closer to that of mothers who had partner support. Of course, other environmental factors not accounted for in this DPhil research may have also influenced this narrowing and, unfortunately, the reversion that followed for the rest of the research period.

Less encouraging was the widening difference in breastfeeding initiation over the entire research period between mothers who were themselves breastfed as babies and mothers who were exclusively formula fed when they were babies, with the latter becoming increasingly less likely to breastfeed. This is a worrying trend, especially if it resulted from a further worsening in breastfeeding initiation among mothers who were themselves exclusively formula fed as babies, as it may be taken as an indication that the intergenerational effect of formula feeding was growing stronger. If so, there may be a need for greater consideration of the effects of grandmaternal influence.

Excluding the above, the remaining subgroups of mothers who were most likely to breastfeed in 1985 (or 2000 in the case of BME groups) remained as likely to breastfeed in 2010. Other observed changes in the differences in breastfeeding behaviours between subgroups most likely resulted from methodological limitations or artefactual effects. Current breastfeeding behaviours were most likely already established by the 1980s and have shown very little improvement since then. The increasing trends in breastfeeding rates at the population level have largely hidden subgroup inequalities, and the favourable changes in the context of GB clearly did not benefit all mothers equally. The disadvantaged subgroups highlighted in this DPhil research may need more targeted support to lessen these inequalities.

The overall conclusion of this DPhil research is that the increase in breastfeeding in the first six weeks at the population level from 1985 to 2010 were mainly due to the remarkable increase in the prevalence of subgroups of mothers who were most likely to breastfeed. While dramatic changes in breastfeeding behaviours likely predated the research period, unprecedented changes in the prevalence of key 'breastfeeding-

friendly' factors among the childbearing population had barely begun. Some of these factors made the most important contributions to the increasing trends in breastfeeding initiation and continuation to six weeks. These included higher education, maternal age of 30 or over, married or cohabiting with a partner, BME origin, and not smoking during or after pregnancy. This reinforces the need to direct research and interventions at the more vulnerable counterparts. The purpose should be to further understand how and why the less favourable factors negatively influence breastfeeding, and to devise innovative and context-sensitive strategies to modify the negative association. The evidence from this DPhil research may contribute to furthering that understanding.

10.4 Breastfeeding in public in GB is influenced by perceived social norms

The prevalence of breastfeeding in public among mothers who were still breastfeeding at four months remained relatively steady at about 80% from 1995 to 2010. The findings of this DPhil research suggest that the factors most important for breastfeeding in public in GB may be those that influence mothers' perceptions of the normality and acceptability of breastfeeding. As with breastfeeding initiation and continuation, perceptions of normality may have been shaped by having knowledge that breastfeeding is beneficial to the health of mothers and babies, and having prior exposure to breastfeeding before the arrival of the present baby. Perceptions of acceptability, however, may have been formed differently by the same mothers depending on whether they were breastfeeding in a private or public space. Most notably, mothers from BME groups, who culturally perceive breastfeeding as a normative infant feeding behaviour, were seemingly less convinced than white mothers that breastfeeding outside the home was acceptable.

So ingrained were mothers' concerns about acceptability that not even being aware of the Breastfeeding etc. (Scotland) Act 2005 or the Equality Act (2010) was enough to influence breastfeeding in public. This speaks to the interaction between social norms and legislation. Mothers in GB may continue to feel less comfortable about breastfeeding outside their homes, even when there is a law protecting their right to do so, so long as the dominant societal view is that breastfeeding is an individual and private matter. Strategies that reinforce the nutritional functions of breasts and breast milk, and the public health significance of breastfeeding, may help to challenge this view. It also may be useful to challenge the way breastfeeding in public is portrayed by news coverage and the film and television industry (Bartlett, 2002; Bartlett, 2005).

Given that the IFS assessed mothers only, it was not possible to examine whether the general public was aware of the existence of legislation that protects breastfeeding in public, and if public awareness influenced whether mothers breastfed in public. It may be necessary to investigate this given that it has been at least seven years since GB enacted legislation to protect breastfeeding in public, yet whether this has effected a change in the context remains unclear. In addition, it may be necessary to evaluate the adequacy of public spaces for breastfeeding in GB and whether existing strategies adequately support the full enforcement of protective legislation.

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Appendix I: Validating the IFS survey populations

Table 9.1 Comparing sociodemographic characteristics of mothers in the IFS with those of the general population of mothers, England & Wales, 1985 to 2010

198519901995200020052010												
Populations	n	N	n	N	n	N	n	N	n	N	n	N
	5,335	656.4	5,732	706.1	5,240	648.1	5,440	604.4	8,210	645.8	9,969	723.2
	%											
Age at delivery												
Under 20	8.1	8.7	6.9	7.9	6.2	6.5	7.0	7.6	7.3	6.9	5.3	5.6
20-24	29.9	29.5	25.1	25.5	19.2	20.2	17.9	17.8	19.8	18.9	18.6	19.0
25-29	34.4	34.7	37.3	35.8	34.1	33.5	28.4	28.2	25.9	25.4	27.8	27.6
30 or over	27.3	27.1	30.6	30.9	40.4	39.8	46.3	46.3	46.8	48.7	47.8	47.8
Missing	0.3		0.3		0.2		0.4		0.2		0.5	
Partnership status												
Married	80.3	80.4	72.8	71.7	65.9	66.1	59.0	60.5	55.7	57.2	55.7	53.1
Unmarried	19.2	19.2	26.5	28.3	33.3	33.9	40.1	39.5	44.4	42.8	44.3	46.9
Missing	0.5		0.7		0.8		0.9		0		0	
SOC												
Managerial, professional & intermediate	31.1	29.9	34.3	35.1	41.4	37.7	44.2	44.1	-	-	-	-
Skilled-Non-manual	9.7	10.6	9.6	10.5	9.5	11.3	10.3	10.7	-	-	-	-
Skilled-Manual	35.5	34.8	33.5	33.4	27.0	29.1	25.0	27.2	-	-	-	-
Semi-skilled and unskilled	19.9	20.0	16.5	16.9	15.0	16.9	15.5	13.6	-	-	-	-
Unclassified	3.8	4.8	6.1	4.2	7.2	5.0	5.0	3.6	-	-	-	-

Table 9.1 continued

198519901995200020052010												
Populations	n	N	n	N	n	N	n	N	n	N	n	N
	5,335	656.4	5,732	706.1	5,240	648.1	5,440	604.4	8,210	645.8	9,969	723.2
Sub-population of married women	4,004	530.2	3,894	506.1	3,302	428.2	3,045	365.8	4,486	369.3	5,753	384.4
	%											
NS-SEC (5 categories)												
Managerial & professional	-	-	-	-	-	-	-	-	46.8	46.3	43.8	46.6
Intermediate	-	-	-	-	-	-	-	-	18.0	6.2	16.3	6.3
Small employers, own account workers	-	-	-	-	-	-	-	-	4.0	13.0	2.4	13.5
Lower supervisory & technical	-	-	-	-	-	-	-	-	4.6	10.9	2.4	10.5
Semi-routine & routine	-	-	-	-	-	-	-	-	17.5	18.6	16.7	18.5
Never worked	-	-	-	-	-	-	-	-	6.0	4.9	9.6	4.6
Not stated	-	-	-	-	-	-	-	-	2.8		8.8	

Notes: *n* = unweighted survey populations from England and Wales only; N = General population of mothers from England and Wales, thousands; Survey % weighted using IFS stage 1 weights, including non-response weights; Married refers to women in the IFS who reported being married at Stage 1 (4-10 weeks after birth) and women in the general population who reported being married at birth registration (up to 6 weeks after birth); Unmarried includes all women who were living with partners, in civil partnerships, single, separated, divorced, or widowed; Comparisons for socioeconomic status were restricted to married women in England and Wales due to the variability in the definition of unmarried women. Dash indicates that factor was not assessed by the IFS in that survey year, or no data was available for the general population.

Appendix II: Disaggregation of mothers' ethnic origin by the five ethnic groups used in the 2001 UK Census

Table 9.2 Distribution of mothers in the main research populations, and the proportion of mothers who initiated breastfeeding, by the five ethnic groups, GB, 2000 to 2010

Research population (n)	2000			2005			2010		
	7,368			9,777			12,315		
	All mothers		Initiated	All mothers		Initiated	All mothers		Initiated
	n	%	%	n	%	%	n	%	%
Ethnicity									
White	6,747	93.1	67.9	8,658	87.2	73.6	10,571	85.9	78.8
Mixed (White, Black, Asian, and other)	59	1.0	84.7	143	1.8	83.5	162	1.7	88.3
South Asian	190	3.1	87.4	497	6.2	94.3	673	7.6	94.8
Black (British, African, Caribbean, and other)	116	2.0	95.8	288	3.5	95.8	367	4.2	95.5
Chinese and other groups	50	0.8	87.7	115	1.3	93.3	140	1.3	97.9
<i>Missing</i>	206	2.9		76	0.8		402	3.4	

Notes: *n* = unweighted number of mothers; % = weighted proportion of mothers