

# BREASTFEEDING AND SOLIDS

## Introduction

The Ministry of Health recommends that babies be exclusively breastfed until they are ready for and need extra food at around six months of age [1]. This is because breastfeeding has considerable health benefits for both baby and mother. Breastfed babies have lower rates of common childhood infections such as diarrhoea, respiratory infections and otitis media, and lower rates of sudden infant death syndrome [2]. Mothers who breastfeed have lower rates of post-partum haemorrhage, breast cancer and ovarian cancer, lose their extra pregnancy weight faster, and are less likely to become pregnant soon after their baby's birth [2,3,4].

Research also suggests that formula feeding may be associated with higher risks for major chronic conditions such as type 2 diabetes, asthma and obesity, all of which are becoming more common [5]. Introducing solid foods prior to four months of age may increase the risk of conditions such as eczema, asthma, food allergies and gastroenteritis [1]. Introducing solid food after six months, however, may be associated with an increased risk of iron deficiency and malnutrition [1].

In New Zealand all lead maternity carers are required to promote breastfeeding [6]. Yet, while NZ Breastfeeding Authority data suggests that New Zealand has a relatively high rate of breastfeeding initiation (in 2005, 80.5% of infants born in Baby Friendly Hospitals were exclusively breastfed on discharge [4]), there is a significant decline in the prevalence of exclusive breastfeeding through the first six months of life [4]. While the decision to breastfeed or not is a personal one, and mothers should not be made to feel guilty if they are unable to, or choose not to breastfeed, the success rate among mothers who wish to breastfeed can be improved if there is active support from families, friends, communities, clinicians, health care leaders, employers and policymakers [2].

The following section reviews breastfeeding rates at <6 weeks, 3 months and 6 months using Plunket data. The proportion of babies who were given solid food prior to four months of age is also reviewed, using data from the 2011/12 NZ Health Survey

### Data Sources and Methods

#### Indicator

1. Exclusive/full breastfeeding rates in Plunket babies at <6 weeks, 3 months and 6 months of age

#### Data Source

Plunket Client Information System

Numerator: The number of Plunket babies exclusively/fully breastfed at

<6 weeks (range: 2 weeks to 5 weeks, 6 days),

3 months (range: 10 weeks to 15 weeks, 6 days)

6 months (range: 16 weeks to 7 months, 4 weeks)

Denominator: The number of babies in contact with Plunket at these ages

#### Notes on Interpretation

Note 1: Plunket currently enrol more than 88% of the new baby population, although Māori and Pacific mothers may be under-reported in these samples. Plunket have breastfeeding data dating back to 1922, with more detailed information being available in recent years.

Note 2: Plunket's breastfeeding definitions, which are similar to the World Health Organization are:

*Exclusive Breastfeeding:* The infant has never had any water, formula or other liquid or solid food. Only breast milk, from the breast or expressed, and prescribed medicines have been given from birth.

*Fully Breastfed:* The infant has taken breast milk only and no other liquids or solids except a minimal amount of water or prescribed medicines, in the past 48 hours.

*Partially Breastfed:* The infant has had some breast milk and some infant formula or other solid food in the past 48 hours.

*Artificially Fed:* The infant has had no breast milk, but has had an alternative liquid such as infant formula, with or without solid food in the past 48 hours



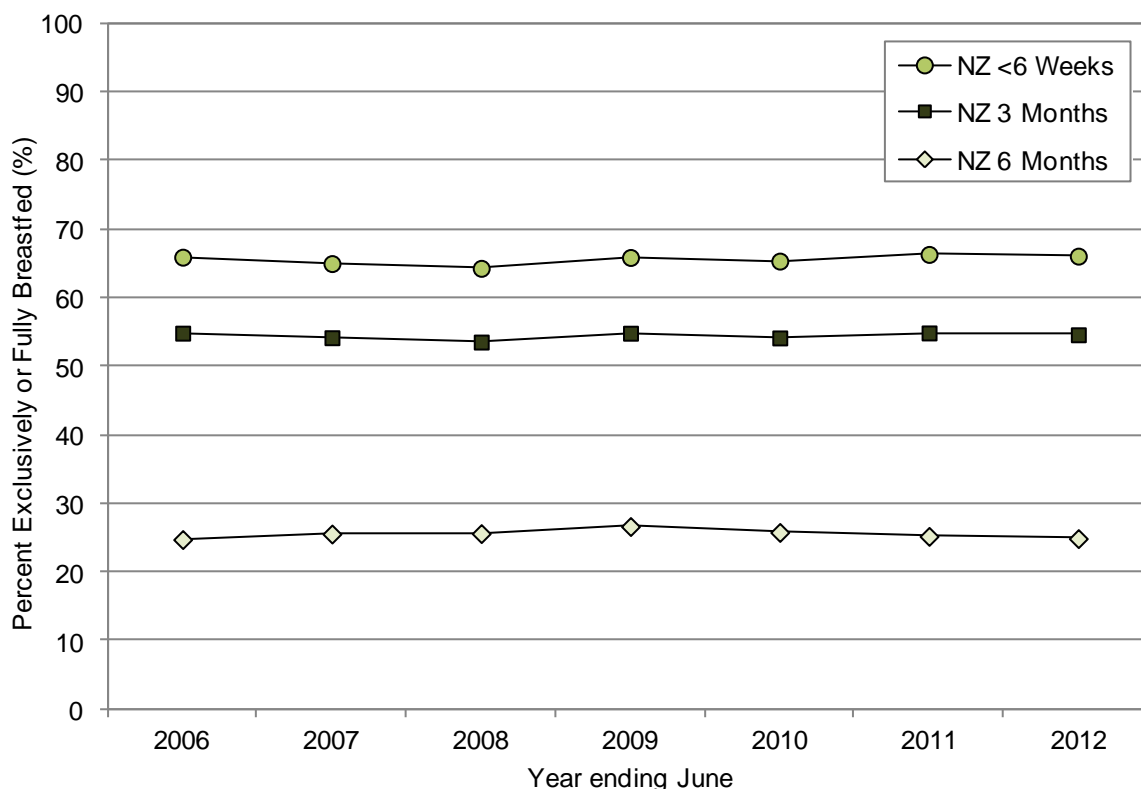
## Exclusive/Full Breastfeeding Rates in Plunket Babies

### New Zealand Distribution and Trends

#### New Zealand Trends by Age

In New Zealand during the years ending June 2006–2012, the proportion of Plunket babies who were exclusively or fully breastfed remained relatively static. Exclusive/full breastfeeding rates in the year ending June 2012 were 66.1% at <6 weeks, 54.6% at 3 months and 24.9% at 6 months of age (**Figure 1**).

Figure 1. Proportion of Plunket Babies who were Exclusively or Fully Breastfed by Age, New Zealand, Years Ending June 2006–2012



Source: Plunket Client Information System

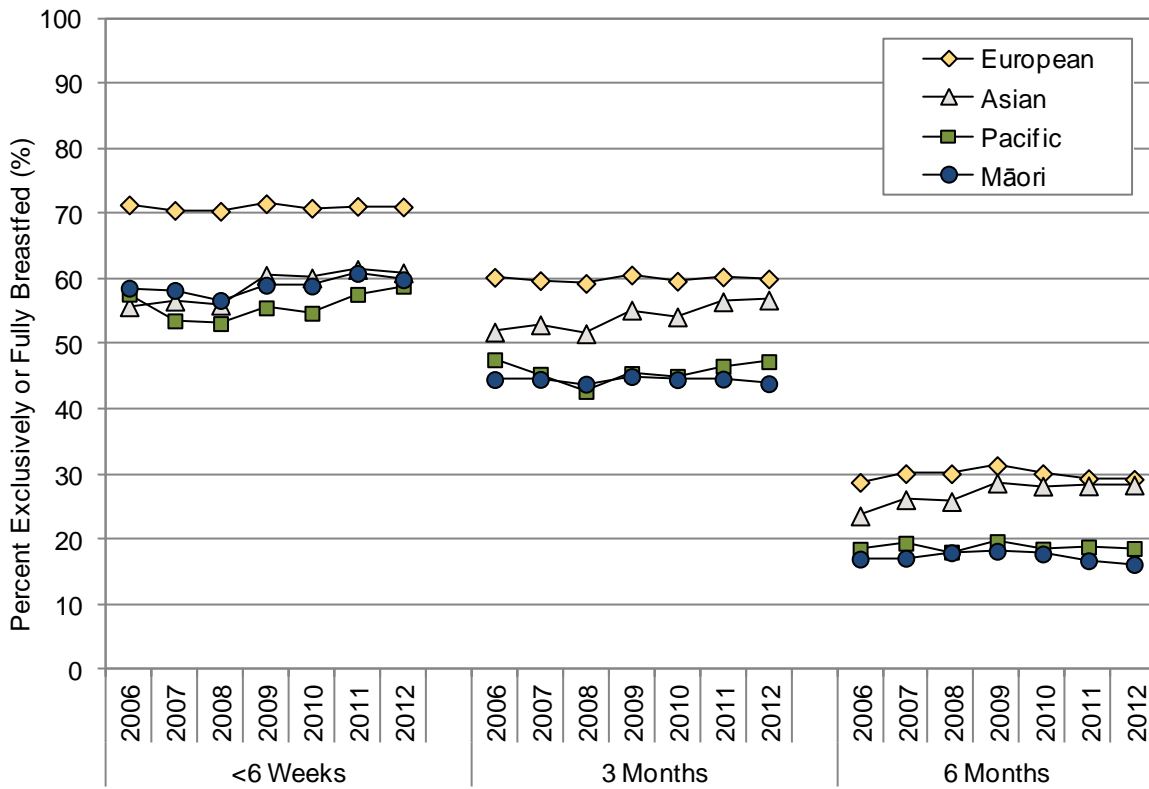
#### New Zealand Trends by Ethnicity

In New Zealand during the years ending June 2006–2012, exclusive/full breastfeeding rates at <6 weeks of age were consistently higher for European babies than for babies of other ethnic groups. At 3 and 6 months of age however, exclusive/full breastfeeding rates were generally higher for European > Asian > Māori and Pacific babies, with differences between Asian and European babies decreasing as the period progressed (**Figure 2**).

#### New Zealand Distribution by NZ Deprivation Index Decile

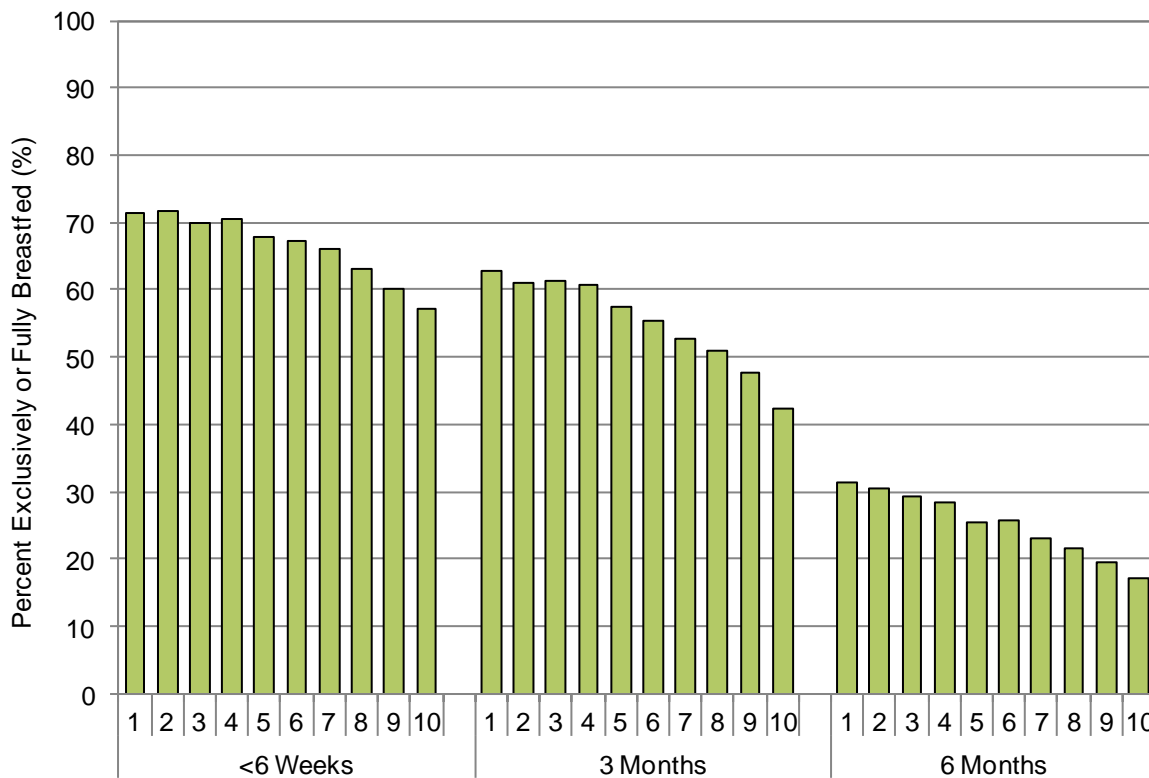
In New Zealand during the year ending June 2012, exclusive/full breastfeeding rates at <6 weeks, 3 months and 6 months were lower for babies from the most deprived (NZDep decile 10) areas, than for babies from average or less deprived areas (**Figure 3**).

Figure 2. Proportion of Plunket Babies who were Exclusively or Fully Breastfed by Age and Ethnicity, New Zealand, Years Ending June 2006–2012



Source: Plunket Client Information System

Figure 3. Proportion of Plunket Babies who were Exclusively or Fully Breastfed by Age and NZ Deprivation Index Decile, New Zealand, Year Ending June 2012



Source: Plunket Client Information System



## South Island DHBs Distribution and Trends

### South Island DHBs vs. New Zealand

In the South Island during the years ending June 2006–2012, exclusive/full breastfeeding rates at <6 weeks and 3 months in Nelson Marlborough, the West Coast and Otago were generally higher than the New Zealand rate, while in the remaining DHBs rates were similar. DHB vs. NZ differences at 6 months were more variable (**Figure 4**).

### South Island DHBs Distribution by Ethnicity

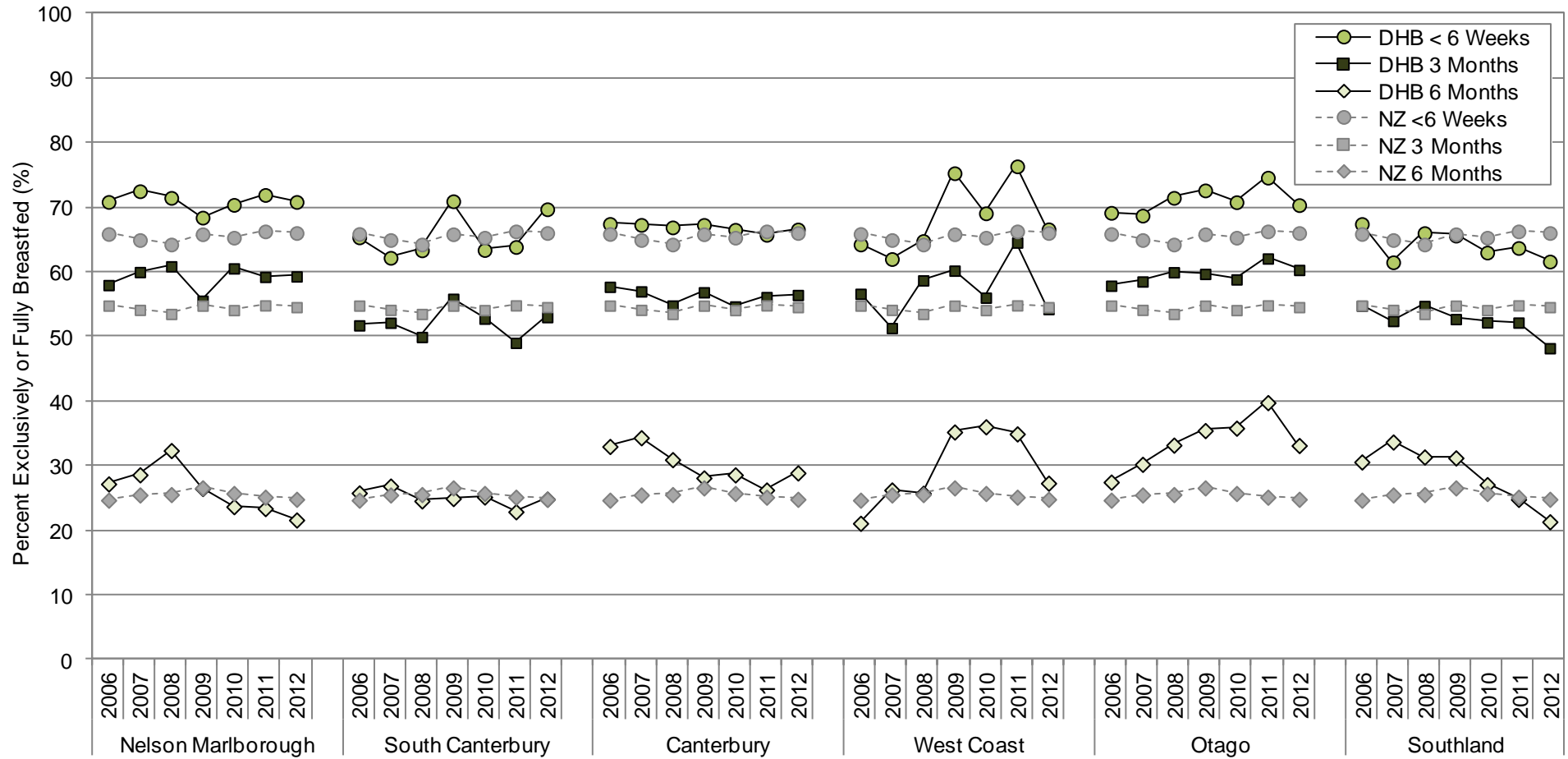
In all of the South Island DHBs except the West Coast during the years ending June 2006–2012, exclusive/full breastfeeding rates at <6 weeks, 3 months and 6 months were generally higher for European babies than for Māori babies. In the West Coast, ethnic specific rates were more variable, possibly as the result of small numbers (**Figure 5, Figure 6**).

### South Island DHBs Distribution by NZDep Decile

In all of the South Island DHBs during the year ending June 2012, exclusive/full breastfeeding rates at <6 weeks and 3 months were lower for babies living in the most deprived (NZDep decile 10) areas, than for babies living in the least deprived (NZDep decile 1) areas. Differences at 6 months were less consistent (**Figure 7**).

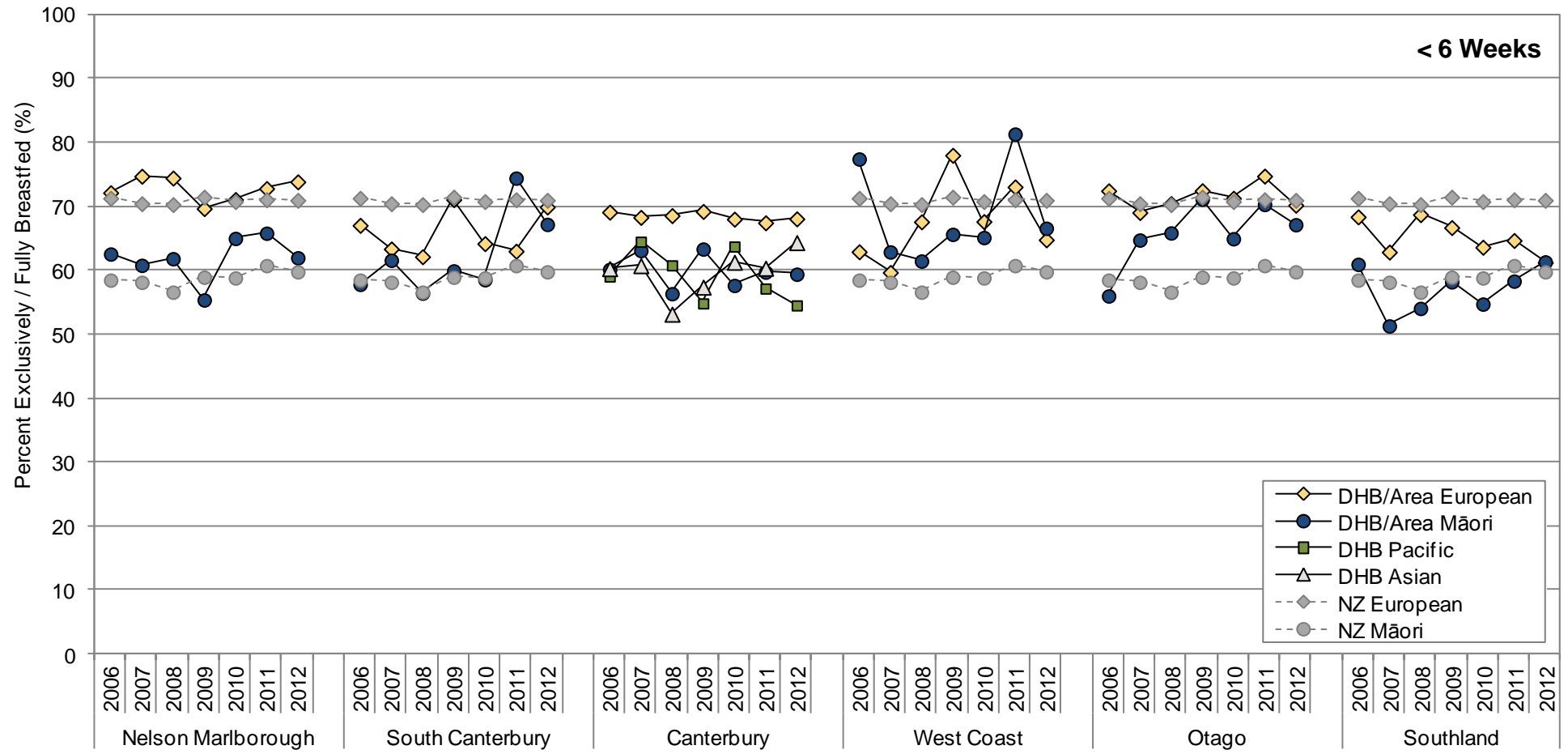


Figure 4. Proportion of Plunket Babies who were Exclusively or Fully Breastfed by Age, South Island DHBs vs. New Zealand, Years Ending June 2006–2012



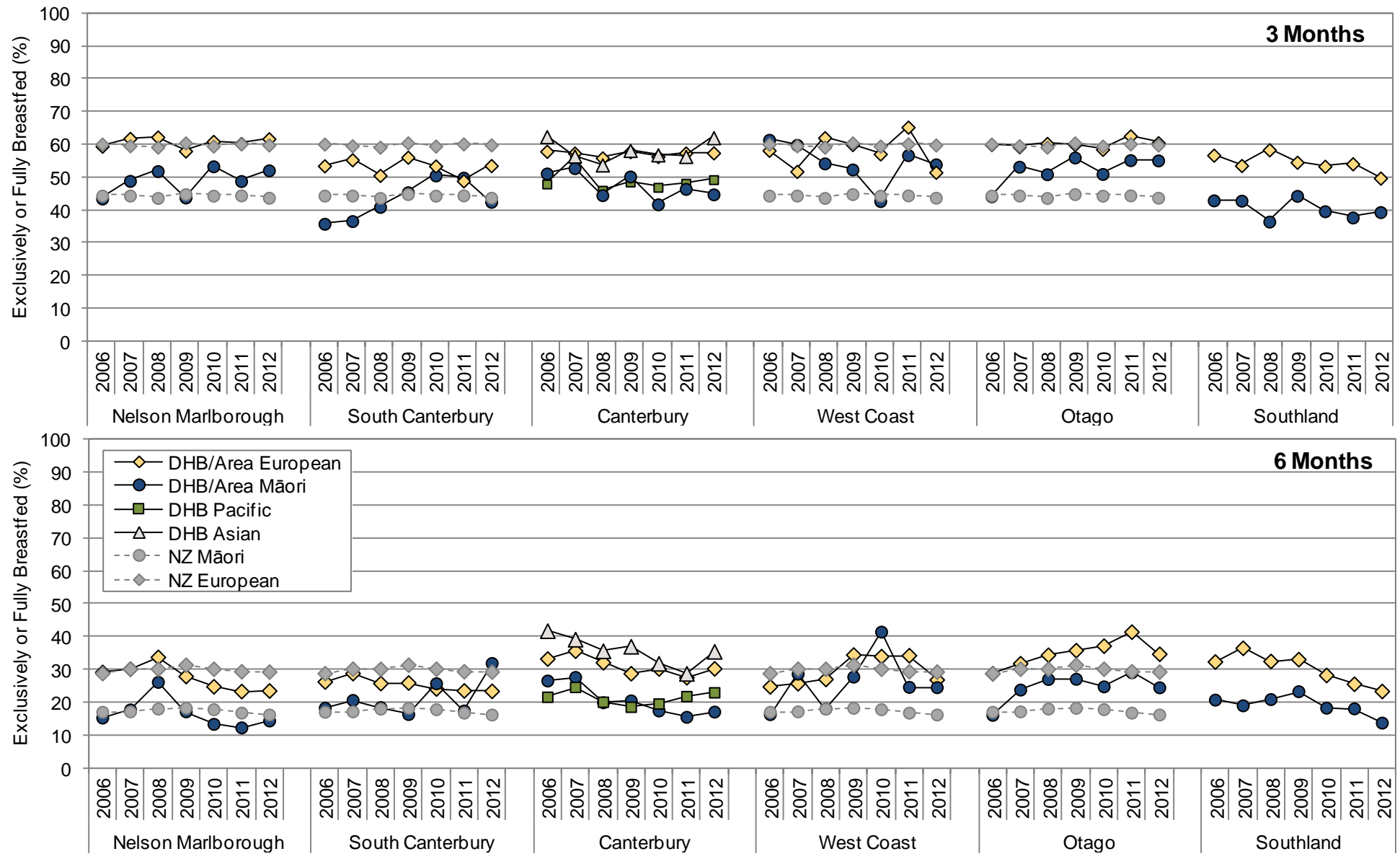
Source: Plunket Client Information System

Figure 5. Proportion of Plunket Babies who were Exclusively or Fully Breastfed at < 6 Weeks by Ethnicity, South Island DHBs vs. New Zealand, Years Ending June 2006–2012



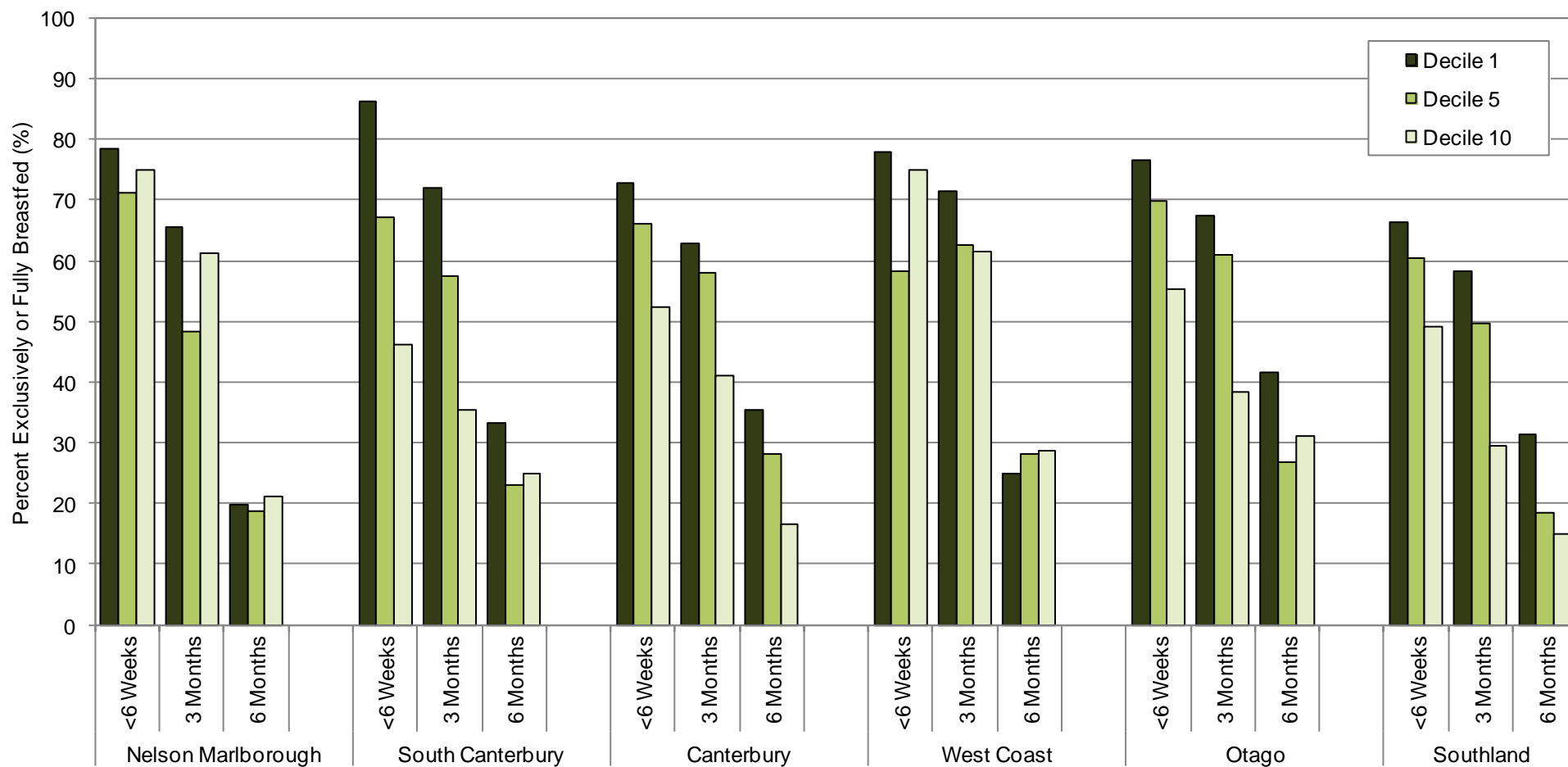
Source: Plunket Client Information System

Figure 6. Proportion of Plunket Babies who were Exclusively or Fully Breastfed at 3 Months and 6 Months by Ethnicity, South Island DHBs vs. New Zealand, Years Ending June 2006–2012



Source: Plunket Client Information System

Figure 7. Proportion of Plunket Babies who were Exclusively or Fully Breastfed by Age and NZ Deprivation Index Decile, South Island DHBs, Year Ending June 2012



Source: Plunket Client Information System



## Babies Given Solid Food Before Four Months of Age

In the 2011/12 NZ Health Survey [1], the parents of children aged under five years were asked at what age their child was first given solid food. Information was collected in a similar way to the 2006/07 NZ Health Survey, making it possible to compare changes over time. The following section thus briefly reviews changes in the proportion of children given solid food prior to four months of age between the 2006/07 and 2011/12 NZ Health Surveys, before exploring the distribution of early solids by a range of socio-demographic factors, in the most recent 2011/12 NZHS.

### Data Sources and Methods

#### Indicator

The proportion of children aged 4 months to 4 years who were given solid food before four months of age

#### Data Source

The 2011/12 New Zealand Health Survey (NZHS)

The data in this section were derived from *The Health of New Zealand Children 2011/12: Key Findings of the New Zealand Health Survey*, and its associated data tables, downloadable at:

<http://www.health.govt.nz/publication/health-new-zealand-children-2011-12>

Regional results were sourced from:

<http://www.health.govt.nz/publication/regional-results-2011-12-new-zealand-health-survey>

#### Notes on Interpretation

The 2011/12 NZ Health Survey [1] was a cross sectional survey carried out between July 2011 and August 2012, which collected information on 4,478 children aged from birth to 14 years. In this survey the parents of children aged less than five years (four months to four years) were asked at what age their child was first given solid food. Further detail on the 2011/12 NZ Health Survey is available in the Data Sources and Methods section of the Overweight and Obesity Section.

Differences between estimates are said to be statistically significant when the confidence intervals for each rate do not overlap. Sometimes, however, even when there are overlapping confidence intervals, the difference between the groups can be statistically significant. Any differences between two variables where the confidence intervals overlap are tested using a t-test. The significance of a t-test is represented by the p-value. If a p-value is below 0.05, then we are 95 percent confident the difference between the two estimates is statistically significant [7].

## Trends in Giving Solids Before Four Months

### Trends by Gender and Ethnicity

*Overall:* The proportion of children aged 4 months to 4 years given solid food before four months of age decreased *significantly* ( $p=0.00$ ) between NZ Health Surveys, with rates falling from 15.8% (95% CI 13.7–18.1) in 2006/07, to 9.5% (95% CI 7.9–11.4) in 2011/12.

*By Gender:* When broken down by gender, the proportion of boys aged 4 months to 4 years given solid food before four months declined *significantly* ( $p=0.01$ ), from 15.4% (95% CI 12.4–18.9) in 2006/07 to 10.2% (95% CI 8.0–12.9) in 2011/12. Rates for girls also declined *significantly* ( $p=0.00$ ) from 16.2% (95% CI 13.3–19.5) in 2006/07 to 8.8% (95% CI 6.4–11.7) in 2011/12 (**Figure 8**). Once adjusted for age, there were no *significant* gender differences in the proportion of babies given solid foods before four months of age in the 2011/12 NZHS.

*By Ethnicity:* When broken down by ethnicity, the proportion of Māori children aged 4 months to 4 years given solid food before four months declined *significantly* ( $p=0.04$ ), from 21.7% (95% CI 17.8–26.0) in 2006/07 to 15.6% (95% CI 11.7–20.2) in 2011/12. Rates for Asian children fell ( $p=0.00$ ) from 9.5% (95% CI 6.7–12.9) in 2006/07 to 2.9% (95% CI 1.0–6.4) in 2011/12, while rates for European/Other children fell ( $p=0.00$ ) from 14.4% (95% CI 11.9–17.1) in 2006/07 to 8.1% (95% CI 6.2–10.3) in 2011/12. While rates for Pacific children also fell, from 20.7% (95% CI 14.7–27.9) in 2006/07 to 14.3% (95% CI 8.8–21.5) in 2011/12, the differences did not reach statistical significance ( $p=0.15$ ) (**Figure 8**).

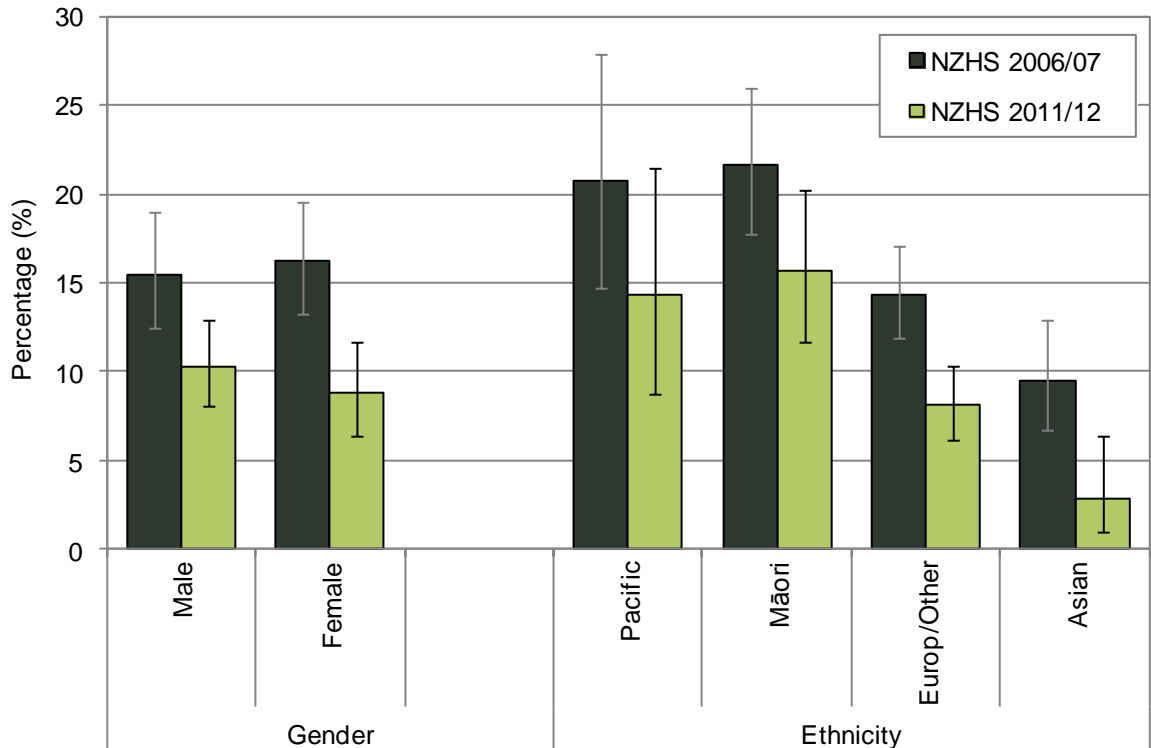
### Distribution by Region

When broken down by region, the proportion of children aged 4 months to 4 years in the Northern and Central regions given solid food before four months of age decreased *significantly* ( $p=0.00$ ) between NZ Health Surveys. While rates in the Southern region ( $p=0.10$ ) also fell, from 15.7% (95% CI 10.8–21.8) in 2006/07, to 9.9% (95% CI 5.9–15.2)



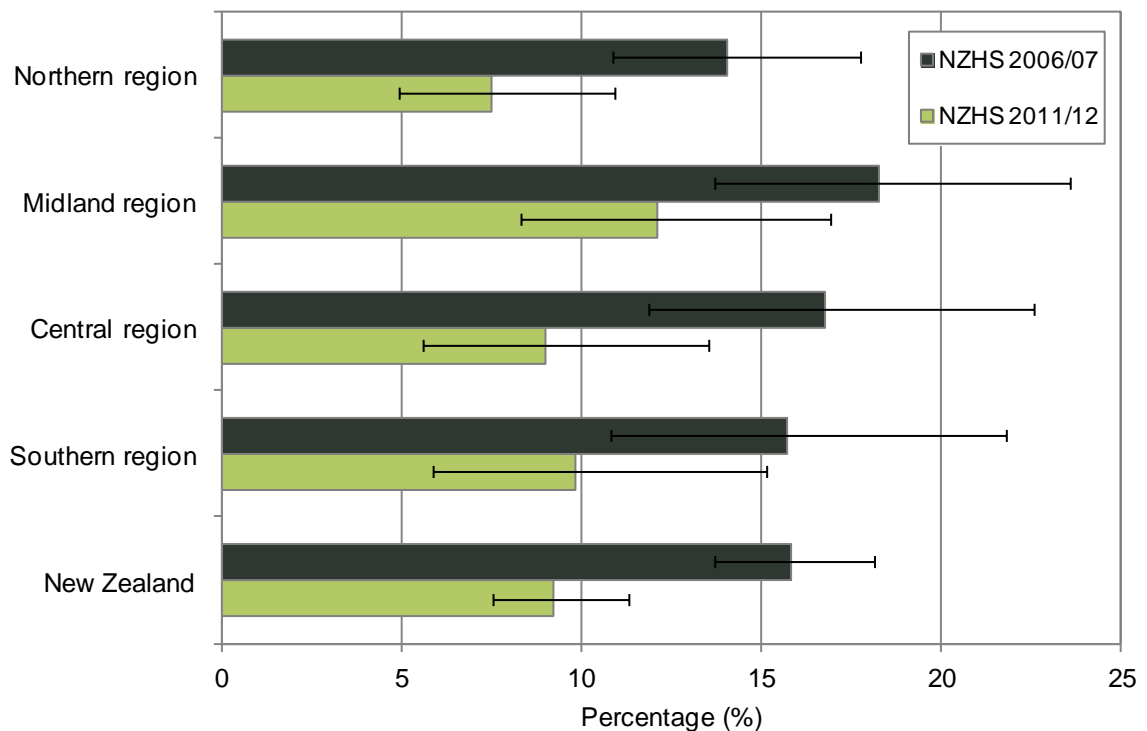
in 2011/12, these differences did not reach statistical significance. In the Midland (p=0.05) region rates also fell, but again these differences did not reach statistical significance (Figure 9).

Figure 8. Proportion of Babies and Children Aged 4 Months to 4 Years Who Were Given Solid Food Before Four Months of Age by Gender and Ethnicity, 2006/07 and 2011/12 New Zealand Health Surveys



Source: 2011/12 New Zealand Health Survey; Note: Rates are unadjusted for age

Figure 9. Proportion of Babies and Children Aged 4 Months to 4 Years Who Were Given Solid Food Before Four Months of Age by Region, 2006/07 and 2011/12 New Zealand Health Surveys



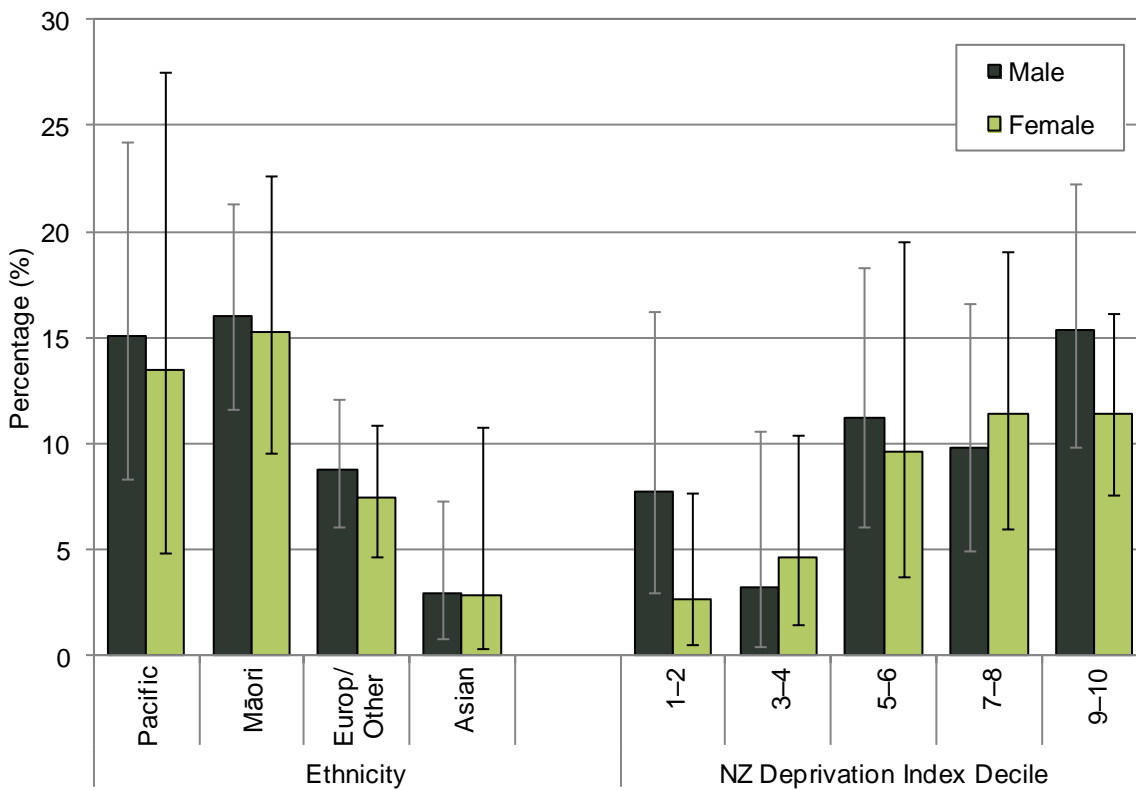
Source: 2011/12 New Zealand Health Survey; Note: Rates are unadjusted for age

## Current Distribution of Giving Solids Before Four Months

### Distribution by Ethnicity and NZ Deprivation Index Decile

In the 2011/12 NZHS, Māori children aged 4 months–4 years were 2.23 (95% CI 1.56–3.19) times more likely to be given solid food before four months of age than non-Māori children, while Pacific children were 1.67 (95% CI 1.09–2.56) times more likely to be given solid food before four months than non-Pacific children, once rates were adjusted for age and gender. In contrast, Asian children were *significantly* less likely to be given solid food before four months (aRR 0.28 (95% CI 0.11–0.68)) than non-Asian children. There were however, no *significant* differences in the proportion of children from the most and least deprived NZDep06 areas being given solid food before four months, once rates were adjusted for age, sex and ethnic group (**Figure 10**).

Figure 10. Proportion of Babies and Children Aged 4 Months to 4 Years Who Were Given Solid Food Before Four Months of Age by Gender, Ethnicity and NZ Deprivation Index Decile, 2011/12 New Zealand Health Survey



Source: 2011/12 New Zealand Health Survey; Note: Rates are unadjusted for age

## Local Policy Documents and Evidence-based Reviews Relevant to Breastfeeding and Infant Nutrition

In New Zealand there are a range of policy documents and reviews relevant to breastfeeding and infant nutrition and these are briefly summarised in **Table 1**, along with a number of evidence-based reviews which consider these issues in the overseas context.

Table 1. Local Policy Documents and Evidence-Based Reviews Relevant to Breastfeeding and Infant Nutrition

Ministry of Health Policy Documents
<p>National Breastfeeding Committee. 2009. <b>National Strategic Plan of Action for Breastfeeding 2008-2012</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/national-strategic-plan-action-breastfeeding-2008-2012">http://www.health.govt.nz/publication/national-strategic-plan-action-breastfeeding-2008-2012</a></p> <p>This publication (the Plan) contains the advice of the National Breastfeeding Committee to the Director General of Health. The Plan recognises that the influences on breastfeeding rates are complex and that cultural change is required to improve breastfeeding rates. While the health sector has the leading role in the protection, promotion and support of breastfeeding all sectors of society need to be involved. The Plan proposes objectives to describe what needs to be done and a list of desired outcomes in each of the following settings: government, family and community, health services, and workplaces, childcare and early childhood education.</p>
<p>Ministry of Health. 2008. <b>Food and Nutrition Guidelines for Healthy Infants and Toddlers (Aged 0-2): A background paper – Partially revised December 2012</b> Wellington: Ministry of Health <a href="http://www.health.govt.nz/publication/food-and-nutrition-guidelines-healthy-infants-and-toddlers-aged-0-2-background-paper-partially">http://www.health.govt.nz/publication/food-and-nutrition-guidelines-healthy-infants-and-toddlers-aged-0-2-background-paper-partially</a></p> <p>The purpose of this paper is to provide up to date policy advice and information on nutrition and physical activity for infants and toddlers to be used: as a basis for education programmes to support families and children, to guide and support health practitioners in their work, to provide a basis for preparing policies on the protection, promotion and support of breastfeeding and to identify inequalities so that education and support can be targeted at reducing inequalities related to nutrition and physical activity. Chapter 3 includes concise but comprehensive guidelines on breastfeeding. Exclusive breastfeeding is recommended until an infant is six months of age. Chapters 7 and 8 relate specifically to Māori, Pacific and Asian infants and toddlers. Some sections have been partially revised because of changes in policy. Updated recommendations include those to decrease the risk of food-related choking in babies and young children, and minor changes to the information on infant formula.</p>
<p>Ministry of Health. 2007. <b>Implementing and Monitoring the International Code of Marketing of Breast-milk Substitutes in New Zealand: The Code in New Zealand</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/implementing-and-monitoring-international-code-marketing-breast-milk-substitutes-nz-code-nz">http://www.health.govt.nz/publication/implementing-and-monitoring-international-code-marketing-breast-milk-substitutes-nz-code-nz</a></p> <p>This document provides a New Zealand Interpretation of <i>International Code of Marketing of Breast-Milk Substitutes</i> (WHO 1981) and subsequent relevant World Health Assembly resolutions (to which NZ is a signatory). It includes the Code of Practice for Health Workers in New Zealand and the Code of Practice for the Marketing of Infant Formula.</p>
<p>The National Breastfeeding Advisory Committee. 2007. <b>Protecting, Promoting and Supporting Breastfeeding in New Zealand: A review of breastfeeding in New Zealand, and of the evidence for successful interventions supporting breastfeeding</b>. Wellington: The National Breastfeeding Advisory Committee. <a href="http://www.health.govt.nz/publication/national-strategic-plan-action-breastfeeding-2008-2012">http://www.health.govt.nz/publication/national-strategic-plan-action-breastfeeding-2008-2012</a></p> <p>This literature review was commissioned by the National Breastfeeding Advisory Committee to inform the development of the National Strategic Plan of Action for Breastfeeding. It covers the context and history of breastfeeding in New Zealand, the local and global legislative and policy context for breastfeeding, and social and clinical issues influencing breastfeeding in New Zealand. It includes a literature review of the evidence for interventions supporting breastfeeding and concludes with a concise summary of common interventions undertaken both in New Zealand and internationally. It briefly assesses the quality of these interventions according to the evidence from the reviewed literature. Interventions of proven effectiveness are listed as follows:</p> <ul style="list-style-type: none"> <li>• Training health professionals in the psycho-social and physiological elements of breastfeeding and lactation management</li> <li>• Accreditation to the Baby Friendly Hospital Initiative and implementation of the 10 Steps to successful breastfeeding, particularly: kangaroo care, training of staff, early initiation of breastfeeding, the promotion of exclusive breastfeeding and limitation of any form of supplementation, and on-demand breastfeeding;</li> <li>• Skilled peer support provided by well-trained and knowledgeable peers;</li> <li>• Home visitation as a service delivery mechanism;</li> <li>• The provision of adequate workplace facilities in which to express breast milk or to breastfeed; and</li> <li>• Childcare that is supportive of breastfeeding.</li> </ul> <p>Promising interventions identified include prenatal education, biological nurturing approaches, social marketing, support for fathers, family/whānau and friends, and developing breastfeeding friendly business and public spaces.</p>

Ministry of Health. 2006 (Revised 2008). **Food and Nutrition Guidelines for Healthy Pregnant and Breastfeeding Women: A background paper**. Wellington: Ministry of Health. <http://www.health.govt.nz/publication/food-and-nutrition-guidelines-healthy-pregnant-and-breastfeeding-women-background-paper>

This background paper (revised in 2008 and updated in 2009) provides evidence-based policy advice on the nutrition, physical activity, lifestyle and environmental determinants for achieving and maintaining the best possible health for healthy pregnant and breastfeeding women, and the best possible pregnancy outcome. It provides information that can be used as a basis for programmes and education to support healthy pregnant and breastfeeding women and guidance for all health practitioners involved in their care. It also aims to identify health inequalities relating to nutrition and physical activity so that education and support for healthy pregnant and breastfeeding women can be targeted to reduce health inequalities between population groups, and includes sections that focus on the needs of Māori and Pacific women. It includes food and nutrition guidelines for pregnant and breastfeeding women, a review of energy intakes and weight changes in pregnant and breastfeeding women, and infant birthweight and the determinants of infant birthweight, and recommended sources and dietary intakes of nutrients.

#### International Guidelines

Montgomery A & Hale TW. 2012. **Academy of Breastfeeding Medicine clinical protocol #15: analgesia and anesthesia for the breastfeeding mother, revised 2012**. *Breastfeed Med*, 7(6), 547-53.

These guidelines provide recommendations for safe and appropriate use of pharmacologic agents for anaesthesia and pain relief in breastfeeding women during labour and postpartum and for lactating women during surgery, and examine the evidence currently available for various approaches to labour pain management on breastfeeding outcomes. They make recommendations for prudent practice.

National Institute for Health and Clinical Excellence. 2011. **Improving the nutrition of pregnant and breastfeeding mothers and children in low-income households (NICE public health guidance 11)**. London: National Institute for Health and Clinical Excellence. <http://publications.nice.org.uk/maternal-and-child-nutrition-ph11>

These evidence-based guidelines for health professionals, managers, commissioners and all those involved in pre-school childcare are aimed at pregnant women (and those who are planning to become pregnant), mothers and other carers of children aged under 5 and their children, particularly aimed at those on a low income or from a disadvantaged group. The report includes key priorities and recommendations and a review of the evidence base. Recommendations include: to provide women with information and advice on the benefits of taking a vitamin D supplement during pregnancy and while breastfeeding; to provide 'Healthy Start' vitamin supplements (folic acid and vitamin C and D) for eligible pregnant women; to implement a structured programme to encourage breastfeeding, including training for health professionals, within NHS organisations; to encourage breastfeeding by providing information, practical advice and ongoing support, including the help of breastfeeding peer supporters; and once infants are aged six months, to assist parents and carers to progressively introduce them to a variety of nutritious foods, in addition to milk.

2011. **Academy of Breastfeeding Medicine clinical protocol #10: breastfeeding the late preterm infant (34(0/7) to 36(6/7) weeks gestation) (first revision June 2011)**. *Breastfeed Med*, 6(3), 151-6.

These guideline's objectives include: To promote, support, and sustain breastfeeding in the late preterm infant; to maintain optimal health of the infant and mother; to allow the late preterm infant to breastfeed and/or breastmilk feed to the greatest extent possible; to heighten awareness of difficulties that late preterm infants and their mothers may experience with breastfeeding; to offer strategies to anticipate, identify promptly, and manage breastfeeding problems that the late preterm infant and mother may experience in the inpatient and outpatient settings; to prevent medical problems such as dehydration, hypoglycemia, hyperbilirubinemia, and failure to thrive in the late preterm infant; to maintain awareness of mothers' needs, understanding of current plans, and ability to cope.

Philipp BL. 2010. **Academy of Breastfeeding Medicine Clinical Protocol #7: Model Breastfeeding Policy (Revision 2010)**. *Breastfeed Med*, 5(4), 173-7.

This updated guideline targets all pregnant women, new mothers, and their support people to promote a philosophy and practice of maternal-infant care that advocates breastfeeding; to support the normal physiologic functions involved in the establishment of this process; and to assist families choosing to breastfeed with initiating and developing a successful and satisfying experience. The document outlines a model breastfeeding policy for institutions based on recommendations from the most recent breastfeeding policy statements published by the Office on Women's Health of the U.S. Department of Health and Human Services, the American Academy of Pediatrics, the American College of Obstetricians and Gynecologists, the American Academy of Family Physicians, the World Health Organization, the Academy of Breastfeeding Medicine, and the UNICEF/WHO evidence-based "Ten Steps to Successful Breastfeeding."

2010. **Academy of Breastfeeding Medicine clinical protocol #8: human milk storage information for home use for full-term infants (original protocol March 2004; revision #1 March 2010)**. *Breastfeed Med*, 5(3), 127-30.

This guideline provides information on safe human milk storage in the home for full-term infants for breastfeeding mothers and family members and caregivers. It outlines preparation, storage and use of stored human milk.

Centre for Clinical Practice. **Donor breast milk banks: the operation of donor milk bank services**. London (UK): National Institute for Health and Clinical Excellence (NICE); 2010 Feb. 132 p. (Clinical guideline; no. 93).

This guideline offers best practice advice on the operation of donor breast milk bank services and protecting the safety of donor milk. The guideline gives recommendations on: quality assurance; recruiting donors; screening and selecting donors; serological testing; consent and continued eligibility; stopping or suspending milk donations; handling donor milk at home, during transportation and at the milk bank; and tracking and tracing.

Jansson LM. 2009. **Academy of Breastfeeding Medicine clinical protocol #21: Guidelines for breastfeeding and the drug-dependent woman.** *Breastfeed Med*, 4(4), 225-8.

This document provides evidence-based guidelines for the evaluation and management of the drug-dependent woman choosing to breastfeed. Infants of drug-dependent women, at risk for multiple health and developmental difficulties, stand to benefit substantially from breastfeeding and human milk, as do their mothers. An antenatal plan preparing the mother for parenting, breastfeeding, and postpartum substance abuse treatment should be formulated for each woman.

Berens P. 2009. **ABM clinical protocol #20: Engorgement.** *Breastfeed Med*, 4(2), 111-3.

This guideline evaluates the state of evidence on the prevention, recognition, and management of breast engorgement to encourage successful breastfeeding.

### Cochrane Systematic Reviews

Jahanfar S, et al. 2013. **Antibiotics for mastitis in breastfeeding women.** *Cochrane Database of Systematic Reviews*(2).

Infective mastitis is commonly caused by *Staphylococcus aureus*. The prevalence of mastitis in breastfeeding women may reach 33%. Effective milk removal, pain medication and antibiotic therapy have been the mainstays of treatment. This review examines the effectiveness of antibiotic therapies in relieving symptoms for breastfeeding women with mastitis with or without laboratory investigation. Two randomised controlled trials met the inclusion criteria but the numbers were small and the quality poor in one of the studies. There is insufficient evidence to confirm or refute the effectiveness of antibiotic therapy for the treatment of lactational mastitis.

Renfrew MJ, et al. 2012. **Support for healthy breastfeeding mothers with healthy term babies.** *Cochrane Database of Systematic Reviews*(5).

This review assessed the effectiveness of support for breastfeeding mothers and included randomised or quasi-randomised controlled trials comparing extra support for healthy breastfeeding mothers of healthy term babies with usual maternity care. Of the 67 studies that were eligible for inclusion, 52 contributed outcome data to the review (56,451 mother-infant pairs). All forms of extra support analysed together showed an increase in duration of 'any breastfeeding' (includes partial and exclusive breastfeeding) (risk ratio (RR) for stopping any breastfeeding before six months 0.91, 95% confidence interval (CI) 0.88 to 0.96). All forms of extra support together also had a positive effect on duration of exclusive breastfeeding (RR at six months 0.86, 95% CI 0.82 to 0.91; RR at four to six weeks 0.74, 95% CI 0.61 to 0.89). Extra support by both lay and professionals had a positive impact on breastfeeding outcomes. Strategies that rely mainly on face-to-face support are more likely to succeed. Support that is only offered reactively, in which women are expected to initiate the contact, is unlikely to be effective; women should be offered ongoing visits on a scheduled basis so they can predict that support will be available. Support should be tailored to the needs of the setting and the population group.

Kramer MS & Kakuma R. 2012. **Optimal duration of exclusive breastfeeding.** *Cochrane Database of Systematic Reviews*(8).

This systematic review assessed the effects on child health, growth, and development, and on maternal health, of exclusive breastfeeding for six months versus exclusive breastfeeding for three to four months with mixed breastfeeding (introduction of complementary liquid or solid foods with continued breastfeeding) thereafter through six months. All internally-controlled clinical trials and observational studies were selected and studies were stratified according to study design (controlled trials versus observational studies), provenance (developing versus developed countries), and timing of compared feeding groups (three to seven months versus later). Twenty-three independent studies meeting the selection criteria were identified: 11 from developing countries (two of which were controlled trials in Honduras) and 12 from developed countries (all observational studies). Infants who are exclusively breastfed for six months experience less morbidity from gastrointestinal infection than those who are partially breastfed as of three or four months, and no deficits have been demonstrated in growth among infants from either developing or developed countries who are exclusively breastfed for six months or longer. Moreover, the mothers of such infants have more prolonged lactational amenorrhoea. Although infants should still be managed individually so that insufficient growth or other adverse outcomes are not ignored and appropriate interventions are provided, the available evidence demonstrates no apparent risks in recommending, exclusive breastfeeding for the first six months in developing and developed-countries.

Abdulwadud OA & Snow EM. 2012. **Interventions in the workplace to support breastfeeding for women in employment.** *Cochrane Database of Systematic Reviews*(10).

This systematic review assessed the effectiveness of workplace interventions to support and promote breastfeeding among women returning to paid work after child birth, and its impact on process outcomes pertinent to employees and employers. No trials have evaluated the effectiveness of workplace interventions in promoting breastfeeding among women returning to paid work after the birth of their child. The impact of such intervention on process outcomes is also unknown. Randomised controlled trials are required to establish the benefits of various types of workplace interventions to support, encourage and promote breastfeeding among working mothers.

Jaafar HS, et al. 2012. **Effect of restricted pacifier use in breastfeeding term infants for increasing duration of breastfeeding.** *Cochrane Database of Systematic Reviews*(7).

This review assessed the effect of unrestricted versus restricted pacifier use in healthy full-term newborns whose mothers have initiated breastfeeding and intend to exclusively breastfeed, on the duration of breastfeeding, other breastfeeding outcomes and infant health. Three trials (involving 1915 babies) were identified but only two trials were included (involving 1302 healthy full-term breastfeeding infants) in the analysis. Pacifier use in healthy term breastfeeding infants, started from birth or after lactation is established, did not significantly affect the prevalence or duration of exclusive and partial breastfeeding up to four months of age.

Moore ER, Anderson GC, Bergman N. 2007. **Early skin-to-skin contact for mothers and their healthy newborn infants.** Cochrane Database of Systematic Reviews, 2007(3)

Early skin-to-skin contact (SSC) involves placing the naked baby (ideally soon after birth) prone on the mother's bare chest and covered across the back with a blanket. It is thought that this elicits innate mammalian behaviours from both the mother and the neonate and promotes the release of maternal oxytocin which increases maternal skin temperature (thus warming the neonate) and also decreases maternal anxiety and enhances mother-infant bonding and the likelihood of spontaneous breastfeeding. This review included thirty studies (1925 mother-infant dyads) which were either RCTs of quasi-RCTs comparing early SSC with usual hospital care however only 8 out of 64 outcome measures had data from more than two of the trials which limited the possibilities for meta-analysis. SSC had statistically significant positive effects on breastfeeding at one to four months post birth (10 trials; 552 participants) (odds ratio (OR) 1.82, 95% CI 1.08 to 3.07), and breastfeeding duration (seven trials; 324 participants) (weighted mean difference (WMD) 42.55, 95% CI -1.69 to 86.79). There were trends found for improved summary scores with early SSC for maternal affectionate love/touch during observed breastfeeding (four trials; 314 participants) (standardized mean difference (SMD) 0.52, 95% CI 0.07 to 0.98) and maternal attachment behaviour (six trials; 396 participants) (SMD 0.52, 95% CI 0.31 to 0.72). One trial (44 participants) found that SSC infants cried for a shorter length of time (WMD -8.01, 95% CI -8.98 to -7.04). Late preterm infants with early SSC had better cardio-respiratory stability (one trial; 35 participants) (WMD 2.88, 95% CI 0.53 to 5.23). No adverse effects from SSC were found. The review authors concluded "Based on the available evidence, SSC appears to have some clinical benefit, especially for breastfeeding and for temperature and cardio-respiratory stability in late preterm infants".

#### Systematic and Other Reviews From the International Literature

Lefebvre CM & John RM. 2013. **The effect of breastfeeding on childhood overweight and obesity: A systematic review of the literature.** Journal of the American Association of Nurse Practitioners.

There is increasing attention to the topic of prevention and continued debate as to whether breastfeeding (BF) is protective against childhood obesity. Previous systematic reviews on this topic were done in 2005 showing that BF was protective against childhood obesity but, because of confounding variables, the evidence was weak. The majority of studies identified in this article showed a relationship between BF and obesity prevention, but because of confounding maternal, child, cultural, genetic, and environmental variables, the relationship remains unclear.

Holmes A. 2013. **Establishing successful breastfeeding in the newborn period.** *Pediatr Clin North Am*, 60(1), 147-68.

This article reviews how hospital newborn services can be constructed or restructured to support the breastfeeding mother-infant dyad so that they can achieve high levels of breastfeeding success. These include: Patient education and preparation; skin-to-skin contact and early, unrestricted breastfeeding; The Baby-Friendly Hospital Initiative's "Ten Steps"; and support of breastfeeding through common medical problems in the newborn period such as hypoglycemia and hyperbilirubinemia, and in the late preterm infant. Important positive and negative factors from the prenatal period, and the preparation for hospital discharge are also discussed

Neifert M & Bunik M. 2013. **Overcoming clinical barriers to exclusive breastfeeding.** *Pediatr Clin North Am*, 60(1), 115-45.

This review explores common personal and societal barriers to exclusive breastfeeding and offers evidence-based strategies to support mothers to breastfeed exclusively, such as ensuring antenatal education, supportive maternity practices, timely follow-up, and management of lactation challenges. The article also addresses common reasons nursing mothers discontinue exclusive breastfeeding, including the perception of insufficient milk, misinterpretation of infant crying, returning to work or school, early introduction of solid foods, and lack of support.

Labbok MH. 2013. **Breastfeeding: population-based perspectives.** *Pediatr Clin North Am*, 60(1), 11-30.

This review, mainly focused on the USA, discusses trends in breastfeeding, influences on the reacceptance of a breastfeeding norm, and breastfeeding as a social and public health issue. The goal is to create an enabling environment for optimal breastfeeding in health care and social norms, and to adjust the social and political realities to support an economic milieu that favours breastfeeding.

Demirtas B. 2012. **Strategies to support breastfeeding: a review.** *Int Nurs Rev*, 59(4), 474-81.

This review of 38 papers focuses on strategies to support breastfeeding. The findings included collaboration with community and family members; confidence building; appropriate ratio of staffing levels; development of communication skills; and 'closing the gap' in inequalities in health. Mothers benefit from strategies that encourage breastfeeding, with guidance that supports self-efficacy and feelings of being capable and empowered, and is tailored to individual needs.

Kaunonen M, et al. 2012. **A systematic review of peer support interventions for breastfeeding.** *J Clin Nurs*, 21(13-14), 1943-54.

The systematic review describes peer support interventions supporting breastfeeding during pregnancy and the postnatal period. It included studies from Europe, North America, Australia and New Zealand. During pregnancy, hospitalisation and the postnatal period, individual support and education were used most commonly. Peer support was strongly associated with the postnatal period. The combination of professional support and peer support by trained and experienced peer supporters was effective in ensuring the continuation of breastfeeding.

Trout KK, et al. 2011. **Promoting breastfeeding among obese women and women with gestational diabetes mellitus.** *Curr Diab Rep*, 11(1), 7-12.

Breastfeeding has many health benefits for women and their babies, but particularly if the woman is obese and/or had a pregnancy affected with gestational diabetes mellitus (GDM). Women who have had GDM are at high risk for developing metabolic syndrome or type 2 diabetes, and their offspring are at greater risk for these metabolic disorders both in childhood and later in adulthood. There is considerable evidence that breastfeeding may attenuate these risks. This article presents the most recent evidence on what is known about how breastfeeding can mitigate the adverse metabolic effects of obesity and GDM on both mother and child, and describes best practices that can support and sustain breastfeeding, particularly in racial/ethnic communities at risk.

Hector D, Hebden L, Innes-Hughes C, King L. (2010) **Update of the evidence base to support the review of the NSW Health Breastfeeding Policy** (PD2006\_012): A rapid appraisal. PANORG; Sydney  
[http://ses.library.usyd.edu.au/bitstream/2123/9085/1/PANORG\\_Hector\\_Breastfeeding%20review.pdf](http://ses.library.usyd.edu.au/bitstream/2123/9085/1/PANORG_Hector_Breastfeeding%20review.pdf)

This review of systematic reviews or meta-analyses, published in English from June 2005 to November 2010 was to update the evidence base to support the review of the New South Wales (Australia) Health Breastfeeding Policy. Specifically, it appraises the evidence around the health benefits of breastfeeding, it identifies those subgroups of the population that are most at risk of poorer breastfeeding practices (not breastfeeding at all, short duration of (exclusivity) of breastfeeding, and it examines the evidence, particularly from systematic reviews, of the effectiveness of interventions to promote, encourage and support breastfeeding.

U.S. Department of Health and Human Services. 2011. **The Surgeon General's Call to Action to Support Breastfeeding.** Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General.  
<http://www.surgeongeneral.gov/topics/breastfeeding/calltoactiontosupportbreastfeeding.pdf>

The U.S. Surgeon General has identified 20 key actions to improve support for breastfeeding. These are presented under the headings: Actions for Mothers and their Families, Actions for Communities, Actions for Healthcare, Actions for Employment, Actions for Research and Surveillance, and Actions for Public Health Infrastructure. As well as setting out implementation strategies for each of the actions, this report also has chapters on The importance of breastfeeding, Rates of breastfeeding in the U.S., Barriers to breastfeeding in the U.S. and Breastfeeding from a public health perspective. Links to resources related to the Surgeon General's report including Action Guides for doctors, nurses and healthcare leaders. The executive summary can be found on this CDC website:  
<http://www.cdc.gov/breastfeeding/promotion/calltoaction.htm>

Dyson L, Renfrew M, McFadden A, et al. 2006. **Promotion of breastfeeding initiation and duration: Evidence into practice briefing.** London: National Institute for Health and Clinical Excellence.  
[http://www.nice.org.uk/niceMedia/pdf/EAB\\_Breastfeeding\\_final\\_version.pdf](http://www.nice.org.uk/niceMedia/pdf/EAB_Breastfeeding_final_version.pdf)

This document does not represent NICE guidance but is the culmination of work commissioned by the former Health Development Agency (whose functions were transferred to the National Institute for Clinical Excellence when it became the National Institute for Health and Clinical Excellence). It sets out a series of evidence-based actions for promoting both the initiation and the continuation of breastfeeding, particularly among population groups where breastfeeding rates are low. These were developed from a list of interventions for which there is international research evidence of effectiveness which became a list of "what will really work in practice in England". The evidence-based actions are:

- Baby Friendly Initiative (BFI) in the maternity and community services
- Education and/or support programmes
- Changing policy and practice within community and hospital settings in order to support effective positioning and attachment, encourage baby-led feeding, and encourage women with "insufficient milk" through supportive care, teaching technique, providing sound information and reassurance.
- Abandoning the following policies in hospitals and the community: restricting timing and/or frequency of breastfeeds in immediate post-natal care, restricting mother-baby contact from birth onwards, routine or medically unjustified supplementary feeding, separating babies from mothers for the treatment of jaundice, and the provision of hospital discharge packs containing promotional material for formula.
- Complementary telephone peer or volunteer support
- Education and support from one professional (targeted particularly to low income women)
- Education and support throughout the first year
- Media programmes targeting teenagers to improve attitudes towards breastfeeding

The briefing is largely based on one evidence briefing and three systematic reviews but appendix B provides brief details of the individual studies relating to each of the effective and the harmful interventions and the full list of references is contained in appendix D.

The publications on which this briefing is largely based are:

Renfrew M, Dyson L, Wallace L, et al. 2005. **The effectiveness of public health interventions to promote the duration of breastfeeding.** London: National Institute of Health and Clinical Excellence.  
[http://www.nice.org.uk/niceMedia/pdf/Breastfeeding\\_vol\\_1.pdf](http://www.nice.org.uk/niceMedia/pdf/Breastfeeding_vol_1.pdf)

Protheroe L, Dyson L, Renfrew M J, et al. 2003. **The effectiveness of public health interventions to promote the initiation of breastfeeding: Evidence briefing.** London: Health Development Agency.  
[http://www.nice.org.uk/nicemedia/documents/breastfeeding\\_evidencebriefing.pdf](http://www.nice.org.uk/nicemedia/documents/breastfeeding_evidencebriefing.pdf)



## Other Relevant Publications

Department of Labour. 2010. **Breastfeeding in the workplace: a guide for employers**. Wellington: Department of Labour. <http://www.dol.govt.nz/er/holidaysandleave/parentalleave/infantfeeding/breastfeeding.pdf>

Under section 69Y of the Employment Relations Act 2000, since 1 April 2009 employers have been required, as far as it is reasonable and practicable, to provide appropriate breaks and facilities for employees who wish to breastfeed their infants or express milk during working hours. This publication provides guidance for employers on this issue.

### **The 2008 Infant Feeding Amendment to the Employment Relations Act 2000**

<http://www.legislation.govt.nz/act/public/2008/0058/latest/whole.html>

The purpose of this Act includes: (i) require facilities and breaks to be provided, so far as is reasonable and practicable in the circumstances, for employees who wish to breastfeed in the workplace or during work periods; and (ii) require employees to be provided with rest breaks and meal breaks. Breastfeeding breaks are in addition to breaks an employee is already entitled to, however, if an employee and employer agree, the same break may be taken for both purposes. Section 69Y of the Act (relating to breastfeeding facilities and breaks in the workplace) came into force on 1 April 2009.

New Zealand Breastfeeding Authority Board. 2011. **WHO/UNICEF Baby Friendly Hospital Initiative Documents for Aotearoa New Zealand 2011**. Christchurch: New Zealand Breastfeeding Authority Board.

<http://www.babyfriendly.org.nz/going-baby-friendly/bfhi-documents/>

The Ministry of Health has contracted the New Zealand Breastfeeding Authority Board (NZBA) to develop and manage the Baby Friendly Hospital Initiative (BFHI) which is a global effort launched by the WHO and UNICEF in 1991 to implement practices that protect, promote and support breastfeeding. The New Zealand BFHI documents have been developed from the WHO BFHI documents (see below) to reflect the unique circumstances of New Zealand's health system and acknowledge the Treaty of Waitangi principles of protection, partnership and participation. The format of the documents differs somewhat from that of the WHO documents. The New Zealand BFHI documents, which can be found on the NZBA website (select BFHI resources from the drop down list under the resources tab) are:

- Forward
- Part 1: Background and Baby Friendly Implementation in New Zealand
- Part 2: The NZBA Criteria for BFHI
- Part 3: Self-Appraisal Questionnaire
- Part 4: BFHI Assessment Manual
- Part 5: BFHI Assessment Summary
- Part 6: Resources for Aotearoa New Zealand
- Part 7: BFHI Annual Self-Appraisal Questionnaire

New Zealand Breastfeeding Authority. **Baby Friendly Community Initiative**. <http://www.babyfriendly.org.nz/going-baby-friendly/baby-friendly-community-initiative/>

The Ministry of Health has contracted the New Zealand Breastfeeding Authority Board (NZBA) to facilitate the implementation of the Baby Friendly Community Initiative (BFCl) in health services in the community. The BFCl consists of a seven point plan for the protection, promotion and support of breastfeeding in the community (details of which can be found on the website) in order to achieve three objectives: to increase the proportion of babies who are breastfed, to increase the duration of exclusive breastfeeding, and to sustain breastfeeding beyond six months alongside feeding with appropriate, adequate and safe complementary foods. The BFCl also included standards of care for the non-breastfeeding mother and her baby.

World Health Organization, UNICEF. 2009. **Baby-Friendly Hospital Initiative Revised, updated and expanded for integrated care**. Geneva: World Health Organization and UNICEF.

[http://whqlibdoc.who.int/publications/2009/9789241594967\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241594967_eng.pdf)

These documents are revisions of the original 1992 BFHI guidelines and the first four of the five sections of the revised BFHI package are available on the website. The five sections are 1. Background and Implementation, 2. Strengthening and Sustaining the BFHI: A course for decision-makers, 3. Breastfeeding Promotion and Support in a Baby-friendly Hospital: a 20-hour course for maternity staff, 4. Hospital Self-Appraisal and Monitoring, and 5. External Assessment and Reassessment. Section 5 is for limited distribution only to external assessors.

[http://www.eeotrust.org.nz/content/docs/breastfeeding\\_sheets.pdf](http://www.eeotrust.org.nz/content/docs/breastfeeding_sheets.pdf)

Webpage from Equal Employment Opportunities Trust, Women's Health Action on implementing breastfeeding support in the workplace.

<https://www.health.govt.nz/your-health/healthy-living/babies-and-toddlers/breastfeeding>

New Zealand Ministry of Health information about breastfeeding for mothers and their supporters.

Note: The publications listed were identified using the search methodology outlined in Appendix 1 (Search Methods for Policy Documents and Evidence-Based Reviews)

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