

**State of Food  
and Nutrition  
in NSW Series**



# **Breastfeeding in New South Wales: Population Health Survey 2003–2004**



**The University of Sydney**

**NSW HEALTH**

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and supported by the Sydney Nutrition Research Foundation*

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# Executive summary

Evidence concerning the health benefits of breastfeeding is strong and continues to accrue. In recognition of this fact, the NSW Department of Health has been active in supporting and promoting breastfeeding in recent years, culminating in the recent release of the policy directive *Breastfeeding in NSW: Promotion, Protection and Support* (2006). Integral to these efforts has been an investment in monitoring breastfeeding practices in the NSW population, which is essential to policy development and service planning.

This is the second report describing breastfeeding practices in NSW at the population level. It builds on a previous report (Hector et al. 2004), which presented data from the New South Wales Child Health Survey 2001 (Centre for Epidemiology and Research 2002). This report uses data from the New South Wales Population Health Survey in 2003 and 2004 (Centre for Epidemiology and Research 2006), and compares it with data from the *New South Wales Child Health Survey 2001*. The percentage of the population meeting various breastfeeding indicators is presented for NSW overall, the 8 area health services, and various population subgroups.

In 2003–2004, among infants in NSW:

- 87.1 per cent had ever been breastfed
- 28.5 per cent were breastfed to 12 months
- 15.8 per cent were exclusively breastfed to 6 months
- 24.7 per cent were fully breastfed to 6 months
- 54.0 per cent were regularly receiving solid foods before 6 months
- 49.0 per cent were regularly receiving breastmilk substitutes before 6 months.

The median duration of breastfeeding among ever breastfed infants was 7 months.

With regard to regional differences:

- A significantly higher proportion of infants in the North Coast health area (96.7 per cent) and the Northern Sydney & Central Coast health area (93.1 per cent) and a significantly lower proportion of infants in the Hunter & New England health area (77.1 per cent) and the Greater Western health area (80.7 per cent) were ever breastfed.

- A significantly lower proportion of infants in the Greater Western health area (14.6 per cent) were breastfed to 12 months.
- A significantly higher proportion of infants in the Northern Sydney & Central Coast health area (22.6 per cent) and a significantly lower proportion of infants in the Greater Southern health area (7.7 per cent) were exclusively breastfed to 6 months.
- A significantly lower proportion of infants in the Greater Southern health area (16.6 per cent) were fully breastfed to 6 months.
- A significantly lower proportion of infants in the North Coast health area (37.9 per cent) received breastmilk substitutes before 6 months.
- The median duration of breastfeeding among ever breastfed infants was significantly higher in the South Eastern Sydney & Illawarra, Northern Sydney & Central Coast, and North Coast health areas (8 months), and significantly lower for the Hunter & New England and Greater Western health areas (6 months).

With regard to subgroup differences:

- A significantly higher proportion of infants with mothers who have tertiary qualifications were ever breastfed (95.5 per cent), breastfed to 12 months (37.8 per cent), exclusively breastfed to 6 months (20.7 per cent), fully breastfed to 6 months (29.7 per cent), and a significantly lower proportion of infants with mothers who have tertiary qualifications were regularly receiving breastmilk substitutes before 6 months (39.0 per cent), compared with infants of mothers without tertiary qualifications. The median duration of breastfeeding among infants who were ever breastfed was significantly higher among mothers with a tertiary qualification (9 months) than among mothers without tertiary qualifications (6 months).
- A significantly lower proportion of infants with mothers under the age of 25 years were breastfed to 12 months (15.1 per cent), exclusively breastfed to 6 months (5.2 per cent), and fully breastfed to 6 months (9.9 per cent), and a significantly higher proportion were regularly receiving solid foods before 6 months (74.9 per cent) and regularly receiving breastmilk

substitutes before 6 months (64.2 per cent), compared with mothers aged 25 years or older. The median duration of breastfeeding among infants who were ever breastfed was significantly lower among mothers less than 25 years of age (4 months) compared with mothers aged 25 years or more (7 months).

- A significantly higher proportion of infants in the least socioeconomic disadvantaged quintile were ever breastfed (94.3 per cent), were breastfed to 12 months (39.8 per cent), were exclusively breastfed to 6 months (30.0 per cent), and were fully breastfed to 6 months (39.0 per cent), and a significantly lower proportion were regularly receiving breastmilk substitutes before 6 months (35.2 per cent), compared with the overall NSW infant population. A significantly lower proportion of infants in the most socioeconomic disadvantaged quintile were exclusively breastfed to 6 months (9.5 per cent), and fully breastfed to 6 months (18.7 per cent), compared with the overall NSW infant population. The median duration of breastfeeding among infants who were ever breastfed decreased with increasing socioeconomic disadvantage, from 9 months to 6 months.
- A significantly higher proportion of infants with mothers who have an English speaking background (57.0 per cent) were regularly receiving solid foods before 6 months compared with mothers from a non English speaking background (41.3 per cent).

With regard to changes over time:

- A significantly lower proportion of infants were ever breastfed in 2003–2004 (87.1 per cent) compared with 2001 (90.3 per cent).
- There was no significant difference between the proportion of infants breastfed to 12 months in 2003–2004 compared with 2001.
- A significantly higher proportion of infants were fully breastfed at 6 months in 2003–2004 (24.7 per cent) compared with 2001 (14.2 per cent).
- Exclusive breastfeeding could not be determined from the New South Wales Child Health Survey 2001.
- A significantly lower proportion of infants were regularly receiving solid foods before 6 months in 2003–2004 (54.0 per cent) compared with 2001 (69.4 per cent).
- A significantly lower proportion of infants were regularly receiving breastmilk substitutes before 6 months in 2003–2004 (49.0 per cent) compared with 2001 (59.4 per cent).
- The median duration of breastfeeding increased significantly, from 6 months in 2001 to 7 months in 2003–2004.

Recommendations are made to focus breastfeeding promotion efforts on extending the duration of breastfeeding to 12 months; continuing to promote exclusive breastfeeding to 6 months, particularly among mothers that are most socioeconomically disadvantaged, less than 25 years of age, or with less than a tertiary education; and continuing to promote the introduction of solid foods around 6 months of age, particularly among mothers less than 25 years of age, or from a rural area. Recommendations are also made for continuing the commitment to, and improving the consistency of, monitoring breastfeeding in New South Wales.

## Context of this report

This is the second report on breastfeeding practices at the population level in NSW. It uses data from the New South Wales Population Health Survey in 2003 and 2004 (Centre for Epidemiology and Research 2006). A previous report (Hector et al. 2004) presented results from data collected from the New South Wales Child Health Survey 2001. The 2001 data are re-analysed in this report for comparison with the 2003–2004 data. The only other source of information about breastfeeding at the population level in NSW comes from the NSW sub-sample of the National Nutrition Survey in 1995 (Donath and Amir 2000). The National Nutrition Survey, conducted by the Australian Bureau of Statistics, provided some state comparisons but the data were not based on a representative sample of the NSW population and not all the recommended indicators could be reported on.

Monitoring breastfeeding in NSW is necessary to document the extent to which breastfeeding practices in the population, and important subgroups, are consistent with recommendations and how these practices are changing over time. The information can be used to assess the effects of statewide efforts to improve breastfeeding practices and identify the need for further refinement of policy and practice.

## Aims of this report

The aims of this report are to:

- Provide an overview of recent breastfeeding practices in NSW.
- Compare recent breastfeeding practices against recommended practices.
- Examine changes in breastfeeding practices in NSW over time.
- Provide information to support planning of population health approaches for improving breastfeeding practices in NSW.

## Target audience

This report is intended for those working to improve breastfeeding practices in the NSW population. This includes maternal and child health staff, lactation consultants, general practitioners, paediatricians, paediatric services staff, public health nutritionists, community nutritionists, public health epidemiologists, health promotion staff, health service planners, health professional organisations such as the Australian College of Midwives (including the NSW Midwives Association), the Dietitians Association of Australia, the Royal Australian College of General Practitioners, health service decision-makers, and workers in non-government organisations such as the Australian Breastfeeding Association.

## Importance of breastfeeding

The extensive body of evidence for the health benefits of breastfeeding is increasingly drawn from meta-analyses and systematic reviews of studies conducted in developed countries (Allen and Hector 2005) and the evidence continues to accumulate (for example, Chantry et al. 2006, Lunardelli and Peres 2006, Sacker et al. 2006, Paricio Talayero et al. 2006, Owen et al. 2006). The evidence shows that breastfeeding, particularly exclusive breastfeeding to 6 months, and a long duration of breastfeeding, is protective against a wide range of diseases and poor health outcomes in infants and mothers, including infectious diseases such as otitis media and respiratory tract infections (Lawrence and Pane 2007), chronic diseases such as type 2 diabetes and obesity, and cancers (particularly breast cancer). Evidence of the health benefits of breastfeeding is notable for children born pre-term or small for gestational age (for example, Callen and Pinelli 2005, Vohr et al. 2006). Many of the poor health outcomes from not breastfeeding are a significant burden on individuals, families, and the health system.

## Breastfeeding promotion

In recent years there has been considerable activity in breastfeeding promotion in NSW. For example:

- In 1995 the NSW Department of Health commissioned and disseminated a report to the area health services about the broad range of strategies that could be adopted to promote breastfeeding.
- Between 1995 and 2001 various area health services established breastfeeding promotion projects, which emphasised breastfeeding as the social norm, including early parenting schemes, providing parenting facilities in public places, and encouraging hospitals to adopt baby friendly hospital practices.
- In 2001 the NSW Department of Health conducted the New South Wales Child Health Survey, which included breastfeeding questions ([www.health.nsw.gov.au/public-health/survey/hsurvey.html](http://www.health.nsw.gov.au/public-health/survey/hsurvey.html)).
- From 2002 onwards, the NSW Department of Health commenced the continuous New South Wales Population Health Survey. From 2003 onwards the survey has included breastfeeding questions ([www.health.nsw.gov.au/public-health/survey/hsurvey.html](http://www.health.nsw.gov.au/public-health/survey/hsurvey.html)).
- In 2004 the NSW Department of Health, in consultation with the area health services, nominated breastfeeding promotion as a state priority as part of the nutrition strategy *Eat Well NSW 2003–2007*. This encouraged a number of area health services to intensify their work on breastfeeding promotion.
- The NSW Department of Health issued 2 reports, *Healthy People 2005* and the *Health and Equity Statement 2004*, which incorporated recommendations to promote breastfeeding, with a priority on disadvantaged groups.
- In 2004 and 2005 the NSW Centre for Public Health Nutrition prepared and disseminated a report on breastfeeding rates in NSW, provided an update of evidence of effectiveness of various types of programs to promote breastfeeding, and prepared a report with examples of breastfeeding interventions.
- In 2005 the NSW Department of Health established a Breastfeeding Project Group.

- In 2005 a special issue of the NSW Public Health Bulletin, *Breastfeeding and the Public's Health*, disseminated information about the health benefits of breastfeeding, NHMRC breastfeeding recommendations, current practices and determinants of breastfeeding, effective programs, the World Health Organization Code, and the Baby Friendly Health Initiative ([www.bfhi.org.au](http://www.bfhi.org.au)).
- In 2006 the NSW Department of Health launched a policy directive *Breastfeeding in NSW: Promotion, Protection and Support*, which can be downloaded from [www.health.nsw.gov.au/policies/pd/2006/PD2006\\_012.html](http://www.health.nsw.gov.au/policies/pd/2006/PD2006_012.html).

### **Policy Directive *Breastfeeding in NSW: Promotion, Protection and Support***

The goals of the policy directive are consistent with the NHMRC 2003 Dietary Guidelines for Children and Adolescents in Australia: Incorporating the Infant Feeding Guidelines for Health Workers, to:

- Maintain or increase the current proportion of infants who are ever breastfed.
- Increase the proportion of infants exclusively breastfed to 6 months.
- Increase the duration of breastfeeding.

The policy directive highlights the use of standardised definitions and indicators to report on breastfeeding in NSW, and the need for ongoing measurement and reporting of breastfeeding through the New South Wales Population Health Survey.

### **NHMRC Infant Feeding Guidelines**

The national recommendations underpinning the policy directive are the NHMRC 2003 Dietary Guidelines for Children and Adolescents in Australia: Incorporating the Infant Feeding Guidelines for Health Workers.

The key recommendations of the infant feeding guidelines are:

- Early initiation of breastfeeding (within the first hour of birth) and frequent on-demand feeding of newborns
- Exclusive breastfeeding until 6 months of age
- Breastfeeding complemented with appropriate and hygienically prepared solid foods from 6 months of age
- Continued breastfeeding until 12 months of age while regularly receiving appropriate complementary solid foods, and beyond 12 months if both mother and infant wish.

## Defining breastfeeding

The following definitions are recommended for worldwide use by the World Health Organization and are endorsed for use in Australia (Webb et al. 2001), and are included in the NSW Department of Health's breastfeeding policy directive (NSW Department of Health 2006). Definitions of key breastfeeding practices are:

- Ever breastfed: An ever breastfed infant has been put to the breast at least once or has received expressed breastmilk, even if he or she has never been put to the breast.
- Exclusive breastfeeding: An exclusively breastfed infant has received only breastmilk from his or her mother or wet nurse, or expressed breastmilk, and no other liquids or solid foods with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.
- Full breastfeeding: A fully breastfed infant receives breastmilk as the main source of nourishment. That is, the infant is either exclusively breastfed and receives only breastmilk with no other liquids or solid foods (except vitamins, mineral supplements, or medicines) or is predominantly breastfed and receives breastmilk and water, water-based liquids, fruit juice, or oral re-hydration salts, but not breastmilk substitutes or solid foods. The fully breastfed rate is thus the combined rate of exclusively breastfed and predominantly breastfed.
- Breastmilk substitute: Any milk (other than breastmilk), or food based fluid used in infant feeding, as a replacement for breastmilk, whether or not it is suitable for that purpose (commonly includes infant formula, cow's milk and other milks fed to infants).

A full set of definitions is included in the glossary of this report.

## Breastfeeding indicators

In 2001 a set of national indicators for monitoring breastfeeding was recommended by the Australian Food and Nutrition Monitoring Unit for the Commonwealth Department of Health and Ageing (Webb et al. 2001, Table 1). These indicators were adapted from those developed by the World Health Organization in 1999, after consultation with a wide range of key stakeholders in Australia. The aim was to standardise definitions, measurement and reporting of key breastfeeding practices nationally and statewide, by agencies that conduct population health and nutrition surveys in Australia.

The indicators in Table 2 were used for the analysis of the data for this report, as they were in the previous breastfeeding data report (Hector et al. 2004). Nationally recommended indicators 4–7 are not reported for the previous 24 hours because the 2001 and 2003–2004 surveys did not include questions based on 24-hour recall.

Each indicator is reported for:

- NSW as a whole.
- The 8 area health services.
- Region: urban and rural based on area health service.
- Maternal age: less than 25 years and greater than or equal to 25 years.
- Maternal education: tertiary qualifications and without tertiary qualifications
- Maternal background: English speaking and non English speaking. For differences between maternal background in this report and the previous report see Technical Notes.
- Quintiles of socioeconomic disadvantage developed from the Socio-Economic Indices for Areas (SEIFA).

**Table 1: Recommended breastfeeding indicators for Australia**

Indicator 1	Per cent ever breastfed
Indicator 2	Per cent breastfed at each completed month of age to 12 months
Indicator 3	Median duration of breastfeeding among ever breastfed infants
Indicator 4	Per cent exclusively breastfeeding in the previous 24 hours among infants at each completed month of age to 6 months
Indicator 5	Per cent fully breastfeeding in the previous 24 hours among infants at each completed month of age to 6 months
Indicator 6	Per cent regularly receiving solid foods in the previous 24 hours among infants at each completed month of age to 6 months
Indicator 7	Per cent regularly receiving breastmilk substitutes in the previous 24 hours among infants at each completed month of age to 6 months

Source: Webb et al. 2001.

**Table 2: Breastfeeding indicators for the 2001 Child Health Survey and 2003–2004 Population Health Survey, NSW**

Indicator 1	Per cent ever breastfed
Indicator 2	Per cent breastfed at each month of age to 12 months
Indicator 3	Median duration of breastfeeding among ever breastfed infants
Indicator 4	Per cent exclusively breastfeeding at each month of age to 6 months <sup>1</sup>
Indicator 5	Per cent fully breastfeeding at each month of age to 6 months
Indicator 6	Per cent regularly receiving solid foods before each month of age to 6 months <sup>2</sup>
Indicator 7	Per cent regularly receiving breastmilk substitutes before each month of age to 6 months

1. Exclusive breastfeeding could not be determined from the New South Wales Child Health Survey 2001.
2. Until 2003 the recommendation for the minimum age of introduction of solid foods was 4 months.

Note: The terminology 'completed' month, referred to in Table 1, is no longer used.

## Data sources

Data from the child component of the New South Wales Population Health Survey 2003–2004 (Centre for Epidemiology and Research 2006) were used for this report, and were compared with data from the New South Wales Child Health Survey 2001 (Centre for Epidemiology and Research 2002).

### ***New South Wales Child Health Survey 2001***

The New South Wales Child Health Survey 2001 was a computer assisted telephone interview survey conducted between March and September 2001. The respondents were mothers, fathers or carers of children aged 0–12 years from households selected by list-assisted random digit dialling across the state. The target sample was 9,500 children. The overall response rate was 84 per cent, with a total sample of 9,425 infants and children aged 0–12 years.

The sample was weighted to adjust for differences in the probabilities of selection among subjects, and for differences between the age and sex structure of the sample and the Australian Bureau of Statistics mid-year population estimates for NSW. This enabled calculation of estimates for the state population rather than for the respondents selected. The sample was originally weighted to the then 17 area health services. The 2001 sample was re-weighted to the current 8 area health services to enable comparisons with the 2003–2004 data.

The survey questions relating to breastfeeding and infant feeding practices were asked of mothers (87.7 per cent) and fathers (12.3 per cent) of infants and children aged 0–2 years. The total sample for breastfeeding and infant feeding practices was 1,489 infants and children, with the sample for the area health services ranging from 114 to 243.

### ***New South Wales Population Health Survey 2003–2004***

The continuous NSW Population Health Survey commenced in 2002. It is also a computer assisted telephone interview survey. Data are collected from February to December each year. One person from the household is randomly selected by list-assisted random digit dialling across the state. If the selected respondent is a child under the age of 16 years, a parent or carer provides the information. The target sample is approximately 12,000 each year (including 4,000 children aged 0–15 years).

To gain a large enough sample size of children 0–15 years, 2 years of data were combined (2003 and 2004). The overall response rate for 2003–2004 was 65 per

cent, with a total sample of 7,679 infants and children aged 0–15 years.

The sample was weighted to adjust for differences in the probabilities of selection among subjects and for differences between the age and sex structure of the sample and the Australian Bureau of Statistics mid-year population estimates for NSW. This enabled calculation of estimates for the state population rather than for the respondents selected. The sample was weighted to the current 8 area health services.

The survey questions relating to breastfeeding and infant feeding practices were asked of mothers (82.5 per cent) and fathers (17.5 per cent) of infants and children aged 0–4 years. The total sample for breastfeeding and infant feeding practices was 1,483 infants and children, with the sample for area health services ranging from 126 to 259.

The potential effect of the different length of recall between the 2 surveys (up to 4 years in 2003–2004 and up to 2 years in 2001) on breastfeeding indicator estimates were compared through a re-analysis of the 2003–2004 data using only respondents recalling for up to 2 years. No significant differences were observed (see Technical Notes).

## Survey questions

The *New South Wales Population Health Survey 2003–2004* asked the following questions on breastfeeding and infant feeding practices:

- Has [child] ever been breastfed?
- Is [child] currently being breastfed?
- Including times of weaning, what is the total time [child] was breastfed in months and weeks?
- What was the main reason you stopped breastfeeding [child]?
- What were the main reasons you decided not to breastfeed [child]?
- Has [child] ever been given infant or toddler formula regularly?
- At what age was [child] first given infant or toddler formula regularly?
- Has [child] ever been given cow's milk regularly?
- At what age was [child] first given cow's milk regularly?
- Has [child] ever been given any other type of milk substitute on a regular basis?
- What type of milk substitutes did [child] have?

- At what age was [child] first given milk substitutes regularly?
- At what age was [child] first given solid foods regularly?
- At what age was [child] first given fruit juice regularly?
- At what age was [child] first given water regularly?

The above questions were also asked in the New South Wales Child Health Survey 2001, except for the last two questions relating to fruit juice and water. The code frames and skips for these questions are included in Appendix 1.

## Calculating the indicators

The SURVEYMEANS procedure in SAS version 8.02 (SAS Institute 2001) was used to calculate the point estimates for ever breastfed and the 95 per cent confidence intervals that account for the sample design. Taylor expansion is used in this procedure to calculate standard errors.

For all other indicators, survival analysis using the Life Table method (PROC LIFETEST METHOD=LT) in SAS version 8.02, with the weights rescaled to the survey sample, was used to calculate the point estimate and 95 per cent confidence intervals.

A 95 per cent confidence interval provides a range of values that should contain the actual value 95 per cent of the time. In general, a wider confidence interval reflects less certainty in the indicator estimate.

For each pairwise comparison of subgroup estimates, the p-value for a 2-tailed test was calculated using the normal distribution probability function PROBNORM in SAS 8.02, assuming approximate normal distribution of each individual subgroup estimates with the estimated standard errors, and approximate normal distribution for the estimated difference.

The Wilcoxon rank sum test was used to test for differences between medians.

## Indicator 1: Per cent ever breastfed

Ever breastfed includes infants who were put to the breast at least once or received expressed breastmilk even if he or she has never been put to the breast. The indicator provides a measure of intent to breastfeed. The question used to determine the indicator was:

- Has [child] ever been breastfed?

### *2003–2004*

In 2003–2004, 87.1 per cent of infants in NSW were ever breastfed.

A significantly lower proportion of infants in the Hunter & New England health area (77.1 per cent) and the Greater Western health area (80.7 per cent) were ever breastfed, and a significantly higher proportion of infants in the Northern Sydney & Central Coast health area (93.1 per cent) and the North Coast health area (96.7 per cent), were ever breastfed, compared with the overall NSW infant population.

A significantly higher proportion of infants with mothers who have tertiary qualifications (95.5 per cent) were ever breastfed compared with infants of mothers without tertiary qualifications (83.2 per cent).

A significantly higher proportion of infants in the least socioeconomic disadvantaged quintile (94.3 per cent) were ever breastfed, compared with the overall NSW infant population.

## *Comparison with 2001*

The proportion of infants who were ever breastfed decreased significantly between 2001 and 2003–2004 from 90.3 per cent to 87.1 per cent for the overall NSW infant population. There was a significant decrease in the proportion of infants in the Hunter & New England health area who were ever breastfed, between 2001 and 2003–2004, from 94.1 per cent to 77.1 per cent. There was a significant decrease in the proportion of infants ever breastfed among infants from rural areas between 2001 and 2003–2004, from 91.5 per cent to 87.8 per cent.

There was a significant decrease in the proportion of infants ever breastfed among infants from the second most disadvantaged quintile between 2001 and 2003–2004, from 92.4 per cent to 85.1 per cent.

There was a significant decrease in the proportion of infants ever breastfed among mothers from an English speaking background between 2001 and 2003–2004, from 91.3 per cent to 86.2 per cent.

**Table 3: Per cent ever breastfed by health area, maternal characteristics and survey period, NSW**

	Survey period			
	2001		2003–2004	
	%	(95% CI)	%	(95% CI)
<b>NSW</b>	90.3	(88.0–92.6)	87.1	(85.0–89.3)
<b>Health area</b>				
Sydney South West	88.1	(80.8–95.5)	83.5	(77.3–89.7)
South Eastern Sydney & Illawarra	92.2	(87.3–97.1)	89.7	(83.9–95.6)
Sydney West	86.9	(80.9–93.0)	89.5	(85.1–93.9)
Northern Sydney & Central Coast	92.0	(87.1–96.9)	93.1	(89.5–96.8)
Hunter & New England	94.1	(90.1–98.1)	77.1	(69.3–84.9)
North Coast	95.4	(91.2–99.6)	96.7	(93.6–99.7)
Greater Southern	91.4	(86.9–95.9)	86.0	(80.2–91.8)
Greater Western	84.4	(78.5–90.3)	80.7	(75.4–86.0)
<b>Region</b>				
Urban	90.0	(87.2–92.9)	86.9	(84.3–89.6)
Rural	91.5	(89.0–93.9)	87.8	(85.1–90.5)
<b>Maternal age</b>				
Less than 25 years	84.5	(78.0–90.9)	89.6	(84.1–95.0)
25 years and over	90.5	(87.7–93.2)	88.6	(86.2–90.9)
<b>Maternal education</b>				
Tertiary qualifications	96.5	(94.5–98.6)	95.5	(93.1–97.8)
Without tertiary qualifications	86.8	(83.5–90.1)	83.2	(80.3–86.1)
<b>Maternal background</b>				
English speaking	91.3	(89.1–93.5)	86.2	(83.9–88.6)
Non English speaking	85.8	(78.1–93.5)	91.1	(86.1–96.1)
<b>SEIFA quintile</b>				
Least disadvantaged	96.3	(93.7–98.9)	94.3	(89.4–99.2)
2nd quintile	89.8	(85.4–94.3)	83.5	(77.9–89.1)
3rd quintile	87.3	(82.0–92.7)	87.0	(82.4–91.5)
4th quintile	92.4	(87.7–97.0)	85.1	(80.9–89.3)
Most disadvantaged	86.3	(79.3–93.3)	87.2	(82.6–91.8)

Source: NSW Health Survey Program, NSW Department of Health.

## Indicator 2: Per cent breastfed at each month of age to 12 months

An infant is breastfed if they receive some breastmilk as well as any solid foods or liquids, including breastmilk substitutes. The questions used to define the indicator were:

- Has [child] ever been breastfed?
- Is [child] currently being breastfed?
- Including times of weaning, what is the total time [child] was breastfed?

The recommendation in Australia is that infants be breastfed to at least 12 months of age (NHMRC 2003). The NSW Department of Health's breastfeeding policy directive follows the World Health Organization in recommending that breastfeeding continues for up to two years and beyond, and that breastmilk can continue to meet half of an infant's nutritional needs during the second half of the first year of life and up to one-third of an infant's nutritional needs during the second year of life. As such, although it is not currently recommended as an indicator for use in Australia and NSW, the proportion of infants in NSW breastfed at each month of age up to 23 months are reported in Appendix 2.

### 2003–2004 (Breastfed at each month of age)

In 2003–2004, the proportion of infants in NSW who were breastfed at each month of age declined from 87.1 per cent at birth to 78.7 per cent at 1 month, 69.1 per cent at 3 months, 53.9 per cent at 6 months, and 28.5 per cent at 12 months.

### Comparison with 2001 (Breastfed at each month of age)

There was no significant difference between the proportion of infants regularly receiving any breastmilk at each month of age to 12 months between 2001 and 2003–2004 for the overall NSW infant population.

### 2003–2004 (Breastfed to 12 months)

In 2003–2004, 28.5 per cent of infants in NSW were breastfed to 12 months of age.

A significantly lower proportion of infants in the Greater Western health area (14.6 per cent) were breastfed to 12 months of age, compared with the overall NSW infant population (28.5 per cent).

A significantly lower proportion of infants with mothers under the age of 25 years (15.1 per cent) were breastfed to 12 months of age, compared with mothers aged 25 years or older (29.2 per cent).

A significantly higher proportion of infants with mothers who have tertiary qualifications (37.8 per cent) were breastfed to 12 months, compared with infants of mothers without tertiary qualifications (23.9 per cent).

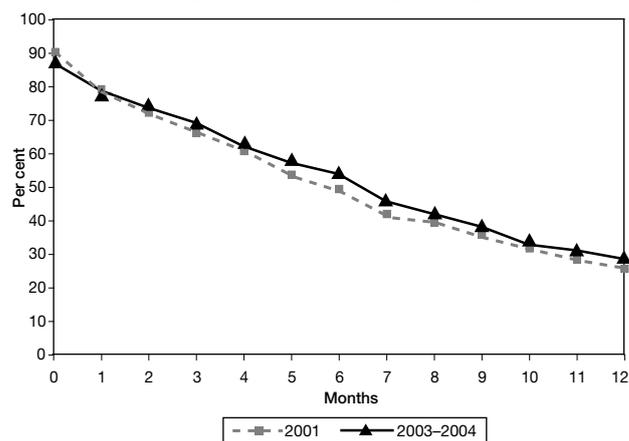
A significantly higher proportion of infants in the least disadvantaged quintile (39.8 per cent) and a significantly lower proportion of infants in the fourth most disadvantaged quintile (22.5 per cent) were breastfed to 12 months, compared with the overall NSW infant population (28.5 per cent).

### Comparison with 2001 (Breastfed to 12 months)

Overall, there was no significant difference between the proportion of NSW infants who were breastfed to 12 months in 2001 and 2003–2004. There was a significant increase in the proportion of infants who were breastfed to 12 months in the third quintile of socioeconomic disadvantage, from 17.4 per cent in 2001 to 28.1 per cent in 2003–2004.

There was a significant increase in the proportion of infants with mothers without tertiary qualifications who were breastfed to 12 months, from 19.4 per cent in 2001 to 23.9 per cent in 2003–2004.

**Figure 1: Per cent regularly receiving any breastmilk at each month of age to 12 months by survey period, NSW**



Note: The percentage at time 0 months corresponds to the percentage ever breastfed.

Source: NSW Health Survey Program, NSW Department of Health.

**Table 4: Per cent breastfed at each month of age to 12 months by survey period, NSW**

Age in months	Survey period			
	2001		2003–2004	
	%	(95% CI)	%	(95% CI)
0 *	90.3	(88.0–92.6)	87.1	(85.0–89.3)
1	79.2	(77.1–81.3)	78.7	(76.6–80.8)
2	72.4	(70.1–74.7)	73.6	(71.4–75.9)
3	66.3	(63.8–68.7)	69.1	(66.8–71.5)
4	60.8	(58.2–63.3)	62.1	(59.6–64.7)
5	53.8	(51.2–56.5)	57.1	(54.5–59.6)
6	49.5	(46.8–52.2)	53.9	(51.3–56.5)
7	42.1	(39.4–44.8)	45.7	(43.1–48.3)
8	39.5	(36.8–42.2)	41.9	(39.2–44.5)
9	35.2	(32.6–37.9)	38.1	(35.5–40.7)
10	31.9	(29.2–34.5)	32.8	(30.3–35.4)
11	28.1	(25.5–30.7)	31.0	(28.5–33.5)
12	25.8	(23.2–28.4)	28.5	(26.1–31.0)

\* 0 months is equivalent to ever breastfed.

Source: NSW Health Survey Program, NSW Department of Health.

**Table 5: Per cent breastfed to 12 months of age by health area, maternal characteristics and survey period, NSW**

	Survey period			
	2001		2003–2004	
	%	(95% CI)	%	(95% CI)
<b>NSW</b>	25.8	(23.2–28.4)	28.5	(26.1–31.0)
<b>Health area</b>				
Sydney South West	24.0	(18.3–29.7)	28.7	(23.2–34.2)
South Eastern Sydney & Illawarra	24.7	(18.4–30.9)	30.6	(24.2–37.0)
Sydney West	24.6	(18.6–30.6)	30.7	(24.9–36.4)
Northern Sydney & Central Coast	31.2	(24.1–38.2)	33.4	(26.9–39.9)
Hunter & New England	26.3	(18.6–34.0)	23.5	(16.8–30.2)
North Coast	28.0	(17.2–38.8)	32.7	(22.8–42.7)
Greater Southern	24.8	(14.8–34.9)	21.7	(13.4–30.0)
Greater Western	25.9	(13.9–37.9)	14.6	(5.8–23.4)
<b>Region</b>				
Urban	25.7	(22.7–28.6)	29.6	(26.8–32.4)
Rural	24.9	(19.3–30.5)	25.0	(20.0–30.0)
<b>Maternal age</b>				
Less than 25 years	11.3	(6.1–16.4)	15.1	(8.6–21.5)
25 years and over	28.6	(25.4–31.7)	29.2	(26.2–32.1)
<b>Maternal education</b>				
Tertiary qualifications	36.9	(31.7–42.1)	37.8	(32.8–42.8)
Without tertiary qualifications	19.4	(16.5–22.3)	23.9	(21.2–26.7)
<b>Maternal background</b>				
English speaking	25.7	(22.9–28.4)	27.9	(25.3–30.5)
Non English speaking	25.7	(17.5–33.9)	31.4	(24.2–38.5)
<b>SEIFA quintile</b>				
Least disadvantaged	40.6	(34.3–47.0)	39.8	(33.4–46.2)
2nd quintile	29.5	(23.9–35.1)	30.4	(24.9–35.8)
3rd quintile	17.4	(12.2–22.7)	28.1	(22.8–33.4)
4th quintile	21.8	(15.7–27.8)	22.5	(17.7–27.3)
Most disadvantaged	16.0	(10.8–21.3)	23.5	(18.1–28.8)

Source: NSW Health Survey Program, NSW Department of Health.

### Indicator 3: Median duration of breastfeeding among ever breastfed infants

An infant is breastfed if they receive some breastmilk as well as any solid foods or liquids including breastmilk substitutes. The questions used to define the indicator were:

- Has [child] ever been breastfed?
- Is [child] currently being breastfed?
- Including times of weaning, what is the total time [child] was breastfed?

#### 2003–2004

In 2003–2004, the median duration of breastfeeding among infants in NSW who were ever breastfed was 7 months.

The median duration of breastfeeding among infants ever breastfed among the health areas ranged from 6 months in Hunter & New England and Greater Western health areas, to 8 months in South Eastern Sydney & Illawarra, Northern Sydney & Central Coast, and North Coast health areas.

The median duration of breastfeeding among infants ever breastfed was significantly lower among mothers less than 25 years of age (4 months) compared with mothers 25 years or more (7 months). Also, the median duration of breastfeeding among infants ever breastfed was significantly higher for mothers with a tertiary qualification (9 months) than for mothers without tertiary qualifications (6 months).

The median duration of breastfeeding among infants ever breastfed decreased with socioeconomic disadvantage, from 9 months to 6 months.

#### Comparison with 2001

Overall, the median duration of breastfeeding among NSW infants ever breastfed increased significantly from 6 months in 2001 to 7 months in 2003–2004.

The median duration of breastfeeding among infants who were ever breastfed increased or remained the same for all health areas except the Greater Western health area, which decreased significantly from 7 months in 2001 to 6 months in 2003–2004.

There was a significant increase in the median duration of breastfeeding among infants who were ever breastfed in urban areas, from 6 months in 2001 to 7 months in 2003–2004.

Between 2001 and 2003–2004 there was a significant increase of 1 month for the median duration of

breastfeeding among infants with mothers under the age of 25 years (from 3 to 4 months), mothers aged 25 years or older (from 6 to 7 months), mothers without tertiary qualifications (from 5 to 6 months), and mothers from an English speaking background (from 6 to 7 months).

Between 2001 and 2003–2004 the median duration of breastfeeding among infants who were ever breastfed decreased significantly for infants in the least disadvantaged quintile from 10 to 9 months, increased significantly in the second quintile from 7 to 9 months, increased significantly in the third and fourth quintiles from 6 to 7 months and 5 to 6 months respectively, and did not change in the most disadvantaged quintile.

**Table 6: Median duration of breastfeeding among ever breastfed infants by health area, maternal characteristics and survey period, NSW**

	Survey period	
	2001 Months*	2003– 2004 Months*
<b>NSW</b>	6	7
<b>Health area</b>		
Sydney South West	6	7
South Eastern Sydney & Illawarra	6	8
Sydney West	6	7
Northern Sydney & Central Coast	8	8
Hunter & New England	6	6
North Coast	8	8
Greater Southern	7	7
Greater Western	7	6
<b>Region</b>		
Urban	6	7
Rural	7	7
<b>Maternal age</b>		
Less than 25 years	3	4
25 years and over	6	7
<b>Maternal education</b>		
Tertiary qualifications	9	9
Without tertiary qualifications	5	6
<b>Maternal background</b>		
English speaking	6	7
Non English speaking	7	7
<b>SEIFA quintile</b>		
Least disadvantaged	10	9
2nd quintile	7	9
3rd quintile	6	7
4th quintile	5	6
Most disadvantaged	6	6

\* A difference in median value of 1 or more months for comparisons between survey years or subgroups indicates a significant difference.

Source: NSW Health Survey Program, NSW Department of Health.

## Indicator 4: Per cent exclusively breastfed at each month of age to 6 months

An infant is exclusively breastfed if they receive only breastmilk from their mother or a wet nurse, or expressed breastmilk, and no other liquids or solid foods with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines. The questions used to define the indicator were:

- Has [child] ever been breastfed?
- Is [child] currently being breastfed?
- Including times of weaning, what is the total time [child] was breastfed?
- Has [child] ever been given infant or toddler formula regularly? (Regularly means at least once a day.)
- At what age was [child] first given infant or toddler formula regularly?
- Has [child] ever been given cow's milk regularly?
- At what age was [child] first given cow's milk regularly?
- Has [child] ever been given any other type of milk substitute on a regular basis? (Apart from breast milk–infant formula–cows milk.)
- At what age was [child] first given [milk substitute] regularly?
- At what age was [child] first given solid foods regularly?
- At what age was [child] first given fruit juice regularly?
- At what age was [child] first given water regularly?

The current recommendation in Australia is that infants are exclusively breastfed until 6 months of age, when solid foods should be introduced (NHMRC 2003). As questions were not asked about the giving of water-based liquids (for example, cordial or tea) those infants who were determined to be exclusively breastfed in this report could have received water-based liquids other than water or fruit juice.

### ***2003–2004 (Exclusively breastfed at each month of age)***

In 2003–2004 the proportion of NSW infants exclusively breastfed at each month of age declined from 87.1 per cent at birth to 66.8 per cent at 1 month, 50.9 per cent at 3 months, and 15.8 per cent at 6 months.

### ***Comparison with 2001 (Exclusively breastfed at each month of age)***

The proportion of exclusive breastfeeding could not be determined for 2001 as questions relating to the giving of liquids other than breastmilk and breastmilk substitutes (water or juice) asked in 2003–2004 were not asked in 2001.

### ***2003–2004 (Exclusively breastfed to 6 months)***

In 2003–2004, 15.8 per cent of infants in NSW were exclusively breastfed to 6 months.

A significantly lower proportion of infants in the Greater Southern health area (7.7 per cent) and a significantly higher proportion of infants in the Northern Sydney & Central Coast health area (22.6 per cent) were exclusively breastfed to 6 months compared with the NSW infant population (15.8 per cent). A significantly higher proportion of infants from urban areas (16.7 per cent) were exclusively breastfed to 6 months compared with infants from rural areas (11.5 per cent).

A significantly lower proportion of infants with mothers under the age of 25 years (5.2 per cent) were exclusively breastfed to 6 months compared with infants with mothers 25 years or older (14.6 per cent).

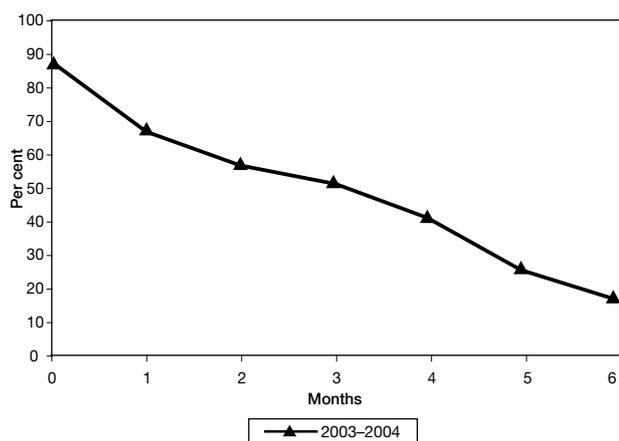
A significantly higher proportion of infants with mothers with tertiary qualifications (20.7 per cent) were exclusively breastfed to 6 months of age compared with infants of mothers without tertiary qualifications (13.5 per cent).

The proportion of infants exclusively breastfed to 6 months was significantly higher in the least disadvantaged quintile (30.0 per cent) and significantly lower in the fourth quintile (11.1 per cent) and the most disadvantaged quintile (9.5 per cent) than in NSW overall (15.8 per cent).

### ***Comparison with 2001 (Exclusively breastfed to 6 months)***

The proportion of exclusive breastfeeding could not be determined for 2001 as questions relating to the giving of liquids other than breastmilk and breastmilk substitutes (water or juice) asked in 2003–2004 were not asked in 2001.

Figure 2: Per cent exclusively breastfed at each month of age to 6 months, NSW Population Health Survey, 2003–2004



Note: The percentage at time 0 months corresponds to the percentage ever breastfed.

Source: NSW Health Survey Program, NSW Department of Health.

Table 7: Per cent exclusively breastfed at each month of age to 6 months, NSW Population Health Survey, 2003–2004

Months	%	(95% CI)
0*	87.1	(85.0–89.3)
1	66.8	(64.4–69.3)
2	56.5	(53.9–59.2)
3	50.9	(48.3–53.6)
4	40.6	(38.0–43.2)
5	25.0	(22.7–27.4)
6	15.8	(13.8–17.7)

\* 0 months is equivalent to ever breastfed.

Source: NSW Health Survey Program, NSW Department of Health.

Table 8: Per cent exclusively breastfed to 6 months by health area and maternal characteristics, NSW, 2003–2004

	%	(95% CI)
<b>NSW</b>	15.8	(13.8–17.7)
<b>Health area</b>		
Sydney South West	14.9	(10.7–19.0)
South Eastern Sydney & Illawarra	18.0	(12.8–23.3)
Sydney West	16.7	(11.9–21.4)
Northern Sydney & Central Coast	22.6	(16.9–28.4)
Hunter & New England	10.5	(5.5–15.5)
North Coast	15.4	(7.4–23.3)
Greater Southern	7.7	(2.3–13.1)
Greater Western	13.9	(5.5–22.2)
<b>Region</b>		
Urban	16.7	(14.5–19.0)
Rural	11.5	(7.8–15.2)
<b>Maternal age</b>		
Less than 25 years	5.2	(1.5–8.9)
25 years and over	14.6	(12.3–16.8)
<b>Maternal education</b>		
Tertiary qualifications	20.7	(16.5–24.8)
Without tertiary qualifications	13.5	(11.3–15.7)
<b>Maternal background</b>		
English speaking	15.9	(13.8–18.0)
Non English speaking	15.5	(9.9–21.1)
<b>SEIFA quintile</b>		
Least disadvantaged	30.0	(23.9–36.1)
2nd quintile	15.8	(11.5–20.1)
3rd quintile	14.7	(10.6–18.9)
4th quintile	11.1	(7.4–14.8)
Most disadvantaged	9.5	(5.8–13.1)

Source: NSW Health Survey Program, NSW Department of Health.

## Indicator 5: Per cent fully breastfed at each month of age to 6 months

An infant is fully breastfed if they receive breastmilk as the main source of nourishment. That is, the infant is either *exclusively* breastfed and receives only breastmilk with no other liquids or solid foods (except vitamins, mineral supplements, or medicines) or is *predominantly* breastfed and receives breastmilk and water, water-based liquids, fruit juice, or oral re-hydration therapy but not breastmilk substitutes or solid foods. The questions used to define the indicator were:

- Has [child] ever been breastfed?
- Is [child] currently being breastfed?
- Including times of weaning, what is the total time [child] was breastfed?
- Has [child] ever been given infant or toddler formula regularly? (Regularly means at least once a day.)
- At what age was [child] first given infant or toddler formula regularly?
- Has [child] ever been given cow's milk regularly?
- At what age was [child] first given cow's milk regularly?
- Has [child] ever been given any other type of milk substitute on a regular basis? (Apart from breast milk–infant formula–cows milk.)
- At what age was [child] first given [milk substitute] regularly?
- At what age was [child] first given solid foods regularly?

### **2003–2004 (Fully breastfed at each month of age to 6 months)**

In 2003–2004, the proportion of NSW infants fully breastfed at each month of age declined from 87.1 per cent at birth to 75.2 per cent at 1 month, 64.1 per cent at 3 months, and 24.7 per cent at 6 months.

### **Comparison with 2001 (Fully breastfed at each month of age to 6 months)**

A significantly higher proportion of NSW infants were fully breastfed between 3 and 6 months in 2003–2004 compared with 2001.

### **2003–2004 (Fully breastfed to 6 months)**

In 2003–2004, 24.7 per cent of NSW infants were fully breastfed to 6 months.

A significantly lower proportion of infants in the Greater Southern health area (16.6 per cent) were fully breastfed to 6 months compared with the NSW infant population (24.7 per cent). A significantly higher proportion of infants from urban areas (25.8 per cent) were fully breastfed to 6 months compared with rural areas (20.3 per cent).

A significantly lower proportion of infants with mothers aged less than 25 years (9.9 per cent) were fully breastfed to 6 months compared with infants of mothers 25 years or older (23.9 per cent).

A significantly higher proportion of infants with mothers who have tertiary qualifications (29.7 per cent) were fully breastfed to 6 months compared with infants of mothers without tertiary qualifications (22.3 per cent).

A significantly higher proportion of infants in the least disadvantaged quintile (39.0 per cent) and a significantly lower proportion in the most disadvantaged quintile (18.7 per cent) were fully breastfed to 6 months compared with the NSW infant population (24.7 per cent). The proportion of infants fully breastfed to 6 months in the least disadvantaged quintile was also significantly higher than for all other quintiles of socioeconomic disadvantage (24.3 per cent, 23.8 per cent, 20.1 per cent, and 18.7 per cent in quintiles 2, 3, 4 and 5 respectively).

### **Comparison with 2001 (Fully breastfed to 6 months)**

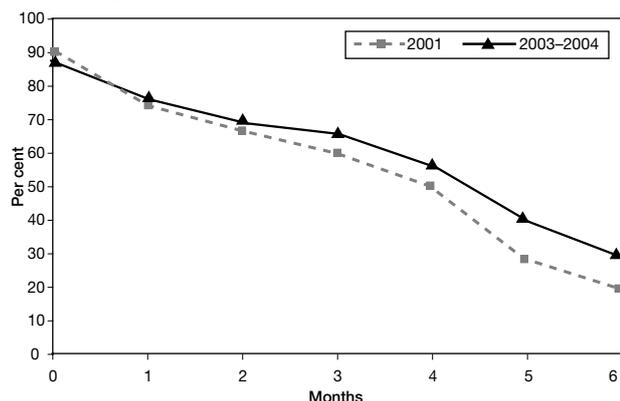
The proportion of NSW infants fully breastfed to 6 months increased significantly between 2001 (14.2 per cent) and 2003–2004 (24.7 per cent). The proportion of infants fully breastfed to 6 months significantly increased in the following health areas: Sydney South West (from 11.0 per cent to 24.0 per cent), South Eastern Sydney & Illawarra (from 14.2 per cent to 26.2 per cent), Sydney West (from 12.5 per cent to 26.7 per cent), and Northern Sydney & Central Coast (from 17.5 per cent to 29.9 per cent).

Between 2001 and 2003–2004, the proportion of infants in urban areas fully breastfed to 6 months increased significantly from 13.7 per cent to 25.8 per cent.

Between 2001 and 2003–2004, the proportion of infants with mothers aged 25 years or older fully breastfed to 6 months increased significantly from 13.8 per cent to 23.9 per cent. During this period the proportion of infants fully breastfed to 6 months increased significantly for infants with mothers with tertiary qualifications (from 18.7 per cent to 29.7 per cent) and without tertiary qualifications (from 11.6 per cent to 22.3 per cent), and for infants with mothers with an English speaking background (from 13.6 per cent to 23.6 per cent) and a non English speaking background (from 17.2 per cent to 30.3 per cent).

Between 2001 and 2003–2004, there was a significant increase in the proportion of infants fully breastfed to 6 months in the least disadvantaged quintile (from 15.9 per cent to 39.0 per cent), the second quintile of disadvantage (from 16.2 per cent to 24.3 per cent), the third quintile of disadvantage (from 13.7 per cent to 23.8 per cent), and the fourth quintile of disadvantage (from 12.2 per cent to 20.1 per cent).

Figure 3: Per cent fully breastfed at each month of age to 6 months, by survey period, NSW



Note: The percentage at time 0 months corresponds to the percentage ever breastfed.

Source: NSW Health Survey Program, NSW Department of Health.

Table 9: Per cent fully breastfed at each month of age to 6 months by survey period, NSW

Month	Survey period			
	2001		2003-2004	
	%	(95% CI)	%	(95% CI)
0*	90.3	(88.0-92.6)	87.1	(85.0-89.3)
1	73.4	(71.2-75.7)	75.2	(73.0-77.5)
2	65.0	(62.5-67.4)	68.2	(65.8-70.6)
3	57.7	(55.2-60.3)	64.1	(61.6-66.6)
4	47.3	(44.7-50.0)	53.7	(51.1-56.4)
5	23.8	(21.5-26.1)	36.4	(33.9-39.0)
6	14.2	(12.3-16.1)	24.7	(22.4-27.0)

\* 0 months is equivalent to ever breastfed.

Source: NSW Health Survey Program, NSW Department of Health.

Table 10: Per cent fully breastfed to 6 months of age by health area, maternal characteristics and survey period, NSW

	Survey period			
	2001		2003-2004	
	%	(95% CI)	%	(95% CI)
<b>NSW</b>	14.2	(12.3-16.1)	24.7	(22.4-27.0)
<b>Health area</b>				
Sydney South West	11.0	(7.3-14.7)	24.0	(19.0-29.0)
South Eastern Sydney & Illawarra	14.2	(9.5-19.0)	26.2	(20.3-32.1)
Sydney West	12.5	(8.3-16.8)	26.7	(21.2-32.2)
Northern Sydney & Central Coast	17.5	(12.2-22.7)	29.9	(23.6-36.2)
Hunter & New England	13.5	(7.9-19.1)	19.6	(13.3-25.8)
North Coast	23.1	(13.6-32.5)	28.1	(18.7-37.6)
Greater Southern	14.5	(7.3-21.8)	16.6	(9.3-24.0)
Greater Western	17.1	(8.0-26.3)	18.5	(9.4-27.6)
<b>Region</b>				
Urban	13.7	(11.6-15.9)	25.8	(23.1-28.4)
Rural	16.4	(12.1-20.8)	20.3	(15.8-24.9)
<b>Maternal age</b>				
Less than 25 years	11.5	(6.8-16.2)	9.9	(4.8-14.9)
25 years and over	13.8	(11.6-16.0)	23.9	(21.3-26.6)
<b>Maternal education</b>				
Tertiary qualifications	18.7	(15.0-22.4)	29.7	(25.1-34.2)
Without tertiary qualifications	11.6	(9.5-13.8)	22.3	(19.7-24.9)
<b>Maternal background</b>				
English speaking	13.6	(11.6-15.6)	23.6	(21.2-26.0)
Non English speaking	17.2	(11.2-23.2)	30.3	(23.4-37.2)
<b>SEIFA quintile</b>				
Least disadvantaged	15.9	(11.5-20.3)	39.0	(32.6-45.4)
2nd quintile	16.2	(12.0-20.5)	24.3	(19.3-29.2)
3rd quintile	13.7	(9.5-17.9)	23.8	(18.8-28.7)
4th quintile	12.2	(7.9-16.6)	20.1	(15.6-24.6)
Most disadvantaged	13.2	(9.1-17.4)	18.7	(13.9-23.5)

Source: NSW Health Survey Program, NSW Department of Health.

## Indicator 6: Per cent regularly receiving solid foods before each month of age to 6 months

Breastfeeding provides sufficient nutrients until around the age of 6 months for most infants. There is almost universal agreement that solids should not be started before the age of 4 months and that they should not be delayed much beyond the age of 6 months. The current recommendation in Australia is that solid foods be introduced to infants when they are 6 months of age (NHMRC 2003). Solid foods are defined as any nutrient-containing foods (semi-solid or solid): for example, dilute infant cereals. Solid foods do not include breastmilk or breastmilk substitutes, fruit and vegetable juices, sugar water, etc. The questions used to define the indicator were:

- Has [child] ever been breastfed?
- At what age was [child] first given solid foods regularly?

### *2003–2004 (Regularly receiving solid foods before each month of age to 6 months)*

In 2003–2004, 8.1 per cent of infants in NSW were regularly receiving solid foods before 4 months, 36.5 per cent before 5 months, and 54.0 per cent before 6 months.

### *Comparison with 2001 (Regularly receiving solid foods before each month of age to 6 months)*

There was a significant decrease in the proportion of infants regularly receiving solid foods before each month of age from 4 months to 6 months between 2001 and 2003–2004.

### *2003–2004 (Regularly receiving solid foods before 6 months)*

In 2003–2004, 54.0 per cent of NSW infants were regularly receiving solid foods before 6 months of age.

A significantly lower proportion of infants in urban areas (52.1 per cent) were regularly receiving solid foods before 6 months compared with infants in rural areas (61.1 per cent).

A significantly higher proportion of infants with mothers aged less than 25 years (74.9 per cent) were regularly receiving solid foods before 6 months compared with mothers 25 years or older (58.4 per cent).

A significantly higher proportion of infants with mothers who have an English speaking background (57.0 per cent) were regularly receiving solid foods before 6 months compared with mothers from a non English speaking background (41.3 per cent).

### *Comparison with 2001 (Regularly receiving solid foods before 6 months)*

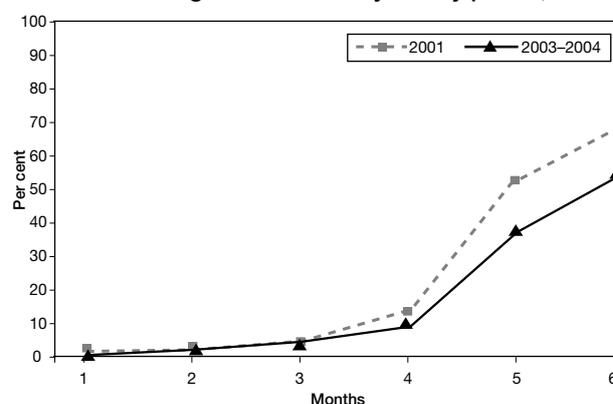
Overall, the proportion of NSW infants regularly receiving solid foods before 6 months decreased significantly between 2001 (69.4 per cent) and 2003–2004 (54.0 per cent).

The proportion of infants regularly receiving solid foods before 6 months decreased significantly in the following health areas: Sydney South West (from 71.9 per cent to 50.8 per cent), South Eastern Sydney & Illawarra (from 67.5 per cent to 53.8 per cent), Sydney West (from 74.1 per cent to 48.4 per cent), Northern Sydney & Central Coast (from 67.0 per cent to 52.9 per cent), and Greater Southern (from 75.2 per cent to 61.2 per cent).

The proportion of infants regularly receiving solid foods before 6 months of age decreased significantly between 2001 and 2003–2004 in urban areas (from 69.4 per cent to 52.1 per cent), rural areas (from 69.6 per cent to 61.1 per cent), mothers aged 25 years or older (from 71.7 per cent to 58.4 per cent), mothers from an English speaking background (from 73.0 per cent to 57.0 per cent), mothers from a non English speaking background (from 52.4 per cent to 41.3 per cent), mothers with a tertiary qualification (from 67.1 per cent to 52.5 per cent), and mothers without a tertiary qualification (from 71.0 per cent to 54.8 per cent).

The proportion of infants regularly receiving solid foods before 6 months of age decreased significantly between 2001 and 2003–2004 for all quintiles of socioeconomic disadvantage, except for infants in the fourth quintile of disadvantage (least disadvantaged quintile from 73.5 per cent to 48.8 per cent, second quintile from 65.1 per cent to 53.4 per cent, third quintile from 72.0 per cent to 54.1 per cent, and most disadvantaged quintile from 70.7 per cent to 54.5 per cent).

**Figure 4: Per cent regularly receiving solid foods before each month of age to 6 months by survey period, NSW**



Source: NSW Health Survey Program, NSW Department of Health.

**Table 11: Per cent regularly receiving solid foods before 6 months of age by health area, maternal characteristics and survey period, NSW**

	Survey period			
	2001		2003–2004	
	%	(95% CI)	%	(95% CI)
<b>NSW</b>	69.4	(66.9–72.0)	54.0	(51.4–56.7)
<b>Health area</b>				
Sydney South West	71.9	(66.4–77.4)	50.8	(44.9–56.7)
South Eastern Sydney & Illawarra	67.5	(61.0–74.0)	53.8	(47.2–60.4)
Sydney West	74.1	(68.4–79.9)	48.4	(42.2–54.7)
Northern Sydney & Central Coast	67.0	(60.4–73.6)	52.9	(45.9–59.8)
Hunter & New England	67.1	(59.4–74.7)	59.7	(52.0–67.3)
North Coast	64.5	(53.6–75.5)	60.2	(49.8–70.5)
Greater Southern	75.2	(66.4–84.1)	61.2	(51.5–70.9)
Greater Western	64.0	(51.7–76.2)	58.7	(46.8–70.6)
<b>Region</b>				
Urban	69.4	(66.5–72.3)	52.1	(49.1–55.2)
Rural	69.6	(64.2–75.1)	61.1	(55.5–66.6)
<b>Maternal age</b>				
Less than 25 years	78.6	(72.4–84.8)	74.9	(67.2–82.5)
25 years and over	71.7	(68.8–74.6)	58.4	(55.3–61.4)
<b>Maternal education</b>				
Tertiary qualifications	67.1	(62.5–71.6)	52.5	(47.5–57.5)
Without tertiary qualifications	71.0	(67.9–74.1)	54.8	(51.7–58.0)
<b>Maternal background</b>				
English speaking	73.0	(70.4–75.7)	57.0	(54.1–59.8)
Non English speaking	52.4	(44.2–60.6)	41.3	(33.9–48.6)
<b>SEIFA quintile</b>				
Least disadvantaged	73.5	(68.1–78.9)	48.8	(42.3–55.3)
2nd quintile	65.1	(59.6–70.5)	53.4	(47.6–59.2)
3rd quintile	72.0	(66.4–77.6)	54.1	(48.2–59.9)
4th quintile	66.7	(60.2–73.1)	59.1	(53.4–64.7)
Most disadvantaged	70.7	(64.8–76.5)	54.5	(48.4–60.5)

Source: NSW Health Survey Program, NSW Department of Health.

**Table 12: Per cent regularly receiving solid foods before each month of age to 6 months by survey period, NSW**

Age in months	Survey period			
	2001		2003–2004	
	%	(95% CI)	%	(95% CI)
1	0.2	(0.0–0.4)	0.1	(0.0–0.2)
2	1.0	(0.5–1.5)	0.7	(0.3–1.1)
3	3.0	(2.1–3.9)	2.2	(1.4–3.0)
4	12.8	(11.0–14.6)	8.1	(6.7–9.6)
5	52.4	(49.6–55.1)	36.5	(33.9–39.1)
6	69.4	(66.9–72.0)	54.0	(51.4–56.7)

Source: NSW Health Survey Program, NSW Department of Health.

## **Indicator 7: Per cent regularly receiving breastmilk substitutes before each month of age to 6 months**

Breastmilk substitutes are defined as any milk (other than breastmilk), or food based fluid used in infant feeding as a replacement for breastmilk, whether or not it is suitable for that purpose (commonly includes infant formula, cows milk, and other milks fed to infants). The questions used to define the indicator were:

- Has [child] ever been breastfed?
- Has [child] ever been given infant or toddler formula regularly? (Regularly means at least once a day.)
- At what age was [child] first given infant or toddler formula regularly?
- Has [child] ever been given cow's milk regularly?
- At what age was [child] first given cow's milk regularly?
- Has [child] ever been given any other type of milk substitute on a regular basis? (Apart from breast milk–infant formula–cows milk.)
- At what age was [child] first given [milk substitute] regularly?

### ***2003–2004 (Regularly receiving breastmilk substitutes before each month of age to 6 months)***

In 2003–2004, 22.1 per cent of infants in NSW were regularly receiving breastmilk substitutes before 1 month of age and this increased with age, to 49.0 per cent regularly receiving breastmilk substitutes before 6 months of age.

### ***Comparison with 2001 (Regularly receiving breastmilk substitutes before each month of age to 6 months)***

Between 2001 and 2003–2004, there was a significant decrease in the proportion of NSW infants regularly receiving breastmilk substitutes before each month of age from 3 to 6 months.

### ***2003–2004 (Receiving breastmilk substitutes before 6 months)***

In 2003–2004, 49.0 per cent of NSW infants regularly received breastmilk substitutes before 6 months of age.

A significantly lower proportion of infants from the North Coast health area (37.9 per cent) were regularly receiving breastmilk substitutes before 6 months of age compared with the overall NSW infant population (49.0 per cent).

A significantly higher proportion of infants with mothers under the age of 25 years (64.2 per cent) were regularly receiving breastmilk substitutes before 6 months of age compared with infants with mothers 25 years or older (47.0 per cent).

A significantly lower proportion of infants with mothers who have tertiary qualifications (39.0 per cent) were regularly receiving breastmilk substitutes before 6 months of age compared with infants of mothers without tertiary qualifications (53.7 per cent).

A significantly lower proportion of infants in the least disadvantaged quintile (35.2 per cent) were regularly receiving breastmilk substitutes before 6 months compared with the overall NSW infant population (49.0 per cent).

### ***Comparison with 2001 (Regularly receiving breastmilk substitutes before 6 months)***

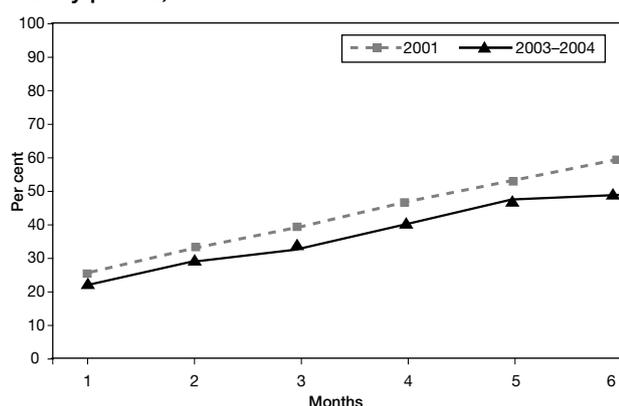
The proportion of NSW infants regularly receiving breastmilk substitutes before 6 months of age decreased significantly between 2001 (59.4 per cent) and 2003–2004 (49.0 per cent).

Between 2001 and 2003–2004, the proportion of infants who received breastmilk substitutes before 6 months decreased significantly in the following health areas: Sydney South West (from 68.0 per cent to 50.5 per cent), South Eastern Sydney & Illawarra (from 61.7 per cent to 47.1 per cent), and Sydney West (from 62.3 per cent to 49.7 per cent).

The proportion of infants regularly receiving breastmilk substitutes before 6 months of age decreased significantly between 2001 and 2003–2004 in urban areas (from 61.4 per cent to 49.3 per cent), mothers aged 25 years or older (from 57.8 per cent to 47.0 per cent), mothers with a tertiary qualification (from 46.7 per cent to 39.0 per cent), mothers without a tertiary qualification (from 66.7 per cent to 53.7 per cent), mothers from an English speaking background (from 58.2 to 49.3 per cent), mothers from a non English speaking background (from 64.0 per cent to 46.4 per cent).

The proportion of infants regularly receiving breastmilk substitutes before 6 months of age decreased significantly between 2001 and 2003–2004 for all quintiles of socioeconomic disadvantage: least disadvantaged (from 49.3 per cent to 35.2 per cent), second quintile (from 56.4 per cent to 46.9 per cent), third quintile (from 64.4 per cent to 53.2 per cent), fourth quintile (from 62.8 per cent to 51.7 per cent) and most disadvantaged quintile (from 64.3 per cent to 55.4 per cent).

Figure 5: Per cent regularly receiving breastmilk substitutes before each month of age to 6 months by survey period, NSW



Source: NSW Health Survey Program, NSW Department of Health.

Table 13: Per cent regularly receiving breastmilk substitutes before each month of age to 6 months by survey period, NSW

Age in months	Survey period			
	2001		2003-2004	
	%	(95% CI)	%	(95% CI)
1	25.0	(22.7-27.2)	22.1	(20.0-24.3)
2	32.9	(30.5-35.3)	29.4	(27.0-31.7)
3	39.3	(36.8-41.9)	33.1	(30.6-35.5)
4	46.4	(43.8-49.0)	40.6	(38.0-43.2)
5	53.6	(51.0-56.3)	46.4	(43.8-49.0)
6	59.4	(56.8-62.1)	49.0	(46.4-51.6)

Source: NSW Health Survey Program, NSW Department of Health.

Table 14: Per cent regularly receiving breastmilk substitutes before 6 months of age by health area, maternal characteristics and survey period, NSW.

	Survey period			
	2001		2003-2004	
	%	(95% CI)	%	(95% CI)
<b>NSW</b>	59.4	(56.8-62.1)	49.0	(46.4-51.6)
<b>Health area</b>				
Sydney South West	68.0	(62.5-73.4)	50.5	(44.7-56.2)
South Eastern Sydney & Illawarra	61.7	(55.1-68.3)	47.1	(40.5-53.7)
Sydney West	62.3	(56.4-68.2)	49.7	(43.6-55.8)
Northern Sydney & Central Coast	52.0	(45.2-58.8)	45.1	(38.4-51.8)
Hunter & New England	58.2	(50.3-66.0)	53.0	(45.4-60.6)
North Coast	43.3	(32.6-54.1)	37.9	(27.9-48.0)
Greater Southern	51.1	(41.1-61.1)	50.6	(41.0-60.2)
Greater Western	58.4	(46.5-70.2)	57.0	(45.3-68.6)
<b>Region</b>				
Urban	61.4	(58.5-64.4)	49.3	(46.3-52.3)
Rural	52.6	(46.8-58.4)	48.0	(42.5-53.6)
<b>Maternal age</b>				
Less than 25 years	69.0	(62.3-75.6)	64.2	(56.3-72.1)
25 years and over	57.8	(54.8-60.9)	47.0	(44.0-50.1)
<b>Maternal education</b>				
Tertiary qualifications	46.7	(42.0-51.4)	39.0	(34.2-43.8)
Without tertiary qualifications	66.7	(63.6-69.7)	53.7	(50.6-56.8)
<b>Maternal background</b>				
English speaking	58.2	(55.4-61.0)	49.3	(46.5-52.0)
Non English speaking	64.0	(56.6-71.5)	46.4	(39.1-53.6)
<b>SEIFA quintile</b>				
Least disadvantaged	49.3	(43.3-55.3)	35.2	(29.1-41.4)
2nd quintile	56.4	(50.8-61.9)	46.9	(41.2-52.5)
3rd quintile	64.4	(58.7-70.1)	53.2	(47.5-58.8)
4th quintile	62.8	(56.5-69.1)	51.7	(46.1-57.3)
Most disadvantaged	64.3	(58.6-70.0)	55.4	(49.4-61.3)

Source: NSW Health Survey Program, NSW Department of Health.

## Breastfeeding practices in New South Wales

### 2003–2004

In 2003–2004, 87.1 per cent of NSW infants had ever been breastfed, 28.5 per cent were breastfed to 12 months, 15.8 per cent were exclusively breastfed to 6 months, 24.7 per cent were fully breastfed to 6 months, 54.0 per cent were regularly receiving solid foods before 6 months of age, and 49.0 per cent regularly received breastmilk substitutes before 6 months of age. The median duration of breastfeeding among ever breastfed infants was 7 months.

### Trends 1995–2004

A significantly lower proportion NSW infants were ever breastfed in 2003–2004 (87.1 per cent) compared with 2001 (90.3 per cent). There was no significant difference in the proportion of infants breastfed to 12 months in 2003–2004 compared with 2001. A significantly higher

proportion of infants were fully breastfed to 6 months in 2003–2004 (24.7 per cent) compared with 2001 (14.2 per cent). A significantly lower proportion of infants were regularly receiving solid foods before 6 months in 2003–2004 (54.0 per cent) compared with 2001 (69.4 per cent). A significantly lower proportion of infants were regularly receiving breastmilk substitutes before 6 months in 2003–2004 (49.0 per cent) compared with 2001 (59.4 per cent). The median duration of breastfeeding among ever breastfed infants increased significantly from 6 months in 2001 to 7 months in 2003–2004.

Comparable data from the NSW sub-sample of the 1995 National Health Survey (Table 15) shows there has been an upward trend in the proportion of infants being breastfed since 1995. For example, the proportion of infants being breastfed at 6 months increased from 44.2 per cent in 1995 to 53.9 per cent in 2003–2004 and the proportion of infants fully breastfed increased from 17.2 per cent in 1995 to 24.7 per cent in 2003–2004.

Table 15: Breastfeeding practices, NSW, 1995–2004

Breastfeeding practice	1995 National Health Survey, NSW sub-sample <sup>1</sup>	2001 NSW Child Health Survey	2003–2004 NSW Population Health Survey
		%	%
Ever breastfed	n/a	90.2	87.1
Breastfed at 1 month	n/a	79.2	78.7
Breastfed at 3 months	60.0	66.3	69.1
Breastfed at 6 months	44.2	49.5	53.9
Breastfed at 12 months	21.1	25.8	28.5
Fully breastfed to 3 months	56.6	57.7	64.1
Fully breastfed to 4 months	n/a	47.3	53.7
Fully breastfed to 6 months	17.2	14.2	24.7
Exclusively breastfed to 6 months	n/a	n/a	15.8
Solid foods before 4 months	n/a	12.8	8.1
Solid foods before 6 months	n/a	69.4	54.0
Breastmilk substitutes before 4 months <sup>2</sup>	n/a	46.4	40.6
Breastmilk substitutes before 6 months <sup>2</sup>	n/a	59.4	49.0
Median duration of breastfeeding (months)	n/a	6	7

1. Source: Donath and Amir (2001).

2. Breastmilk substitutes refers to infant formula and any other milks other than breastmilk.

Note: Shaded cells indicates significant difference between survey years.

## Breastfeeding practices among area health services

### 2003–2004

A significantly higher proportion of NSW infants in the North Coast health area (96.7 per cent) and the Northern Sydney & Central Coast health area (93.1 per cent) and a lower proportion of infants in the Hunter & New England (77.1 per cent) and Greater Western health areas (80.7 per cent) were ever breastfed. A significantly lower proportion of infants in the Greater Western health area (14.6 per cent) were breastfed to 12 months. A significantly higher proportion of infants in the Northern Sydney & Central Coast health area (22.6 per cent) and a significantly lower proportion of infants in the Greater Southern health area (7.7 per cent) were exclusively breastfed to 6 months. A significantly lower proportion of infants in the Greater Southern health area (16.6 per cent) were fully breastfed to 6 months. A significantly lower proportion of infants in the North Coast health area (37.9 per cent) received breastmilk substitutes before 6 months. The median duration of breastfeeding among ever breastfed infants was significantly higher for the South Eastern Sydney & Illawarra, Northern Sydney & Central Coast, and North Coast health areas (8 months) and significantly lower for the Hunter & New England and Greater Western health areas (6 months).

### Trends 2001 and 2003–2004

The proportion of NSW infants who were ever breastfed only changed significantly between 2001 and 2003–2004 in the Hunter & New England health area (77.1 per cent to 94.1 per cent). The proportion of infants fully breastfed to 6 months increased significantly between 2001 and 2003–2004 in the Sydney South West (from 11.0 per cent to 24.0 per cent), South Eastern Sydney & Illawarra (from 14.2 per cent to 26.2 per cent), Sydney West (from 12.5 per cent to 26.7 per cent), and Northern Sydney & Central Coast (from 17.5 per cent to 29.9 per cent) health areas whereas the remaining health areas did not significantly change. The proportion of infants regularly receiving solid foods before 6 months decreased significantly between 2001 and 2003–2004 in the Sydney South West (from 71.9 per cent to 50.8 per cent), South Eastern Sydney & Illawarra (from 67.5 per cent to 53.8 per cent), Sydney West (from 74.1 per cent to 48.4 per cent), Northern Sydney & Central Coast (from 67.0 per cent to 52.9 per cent) and Greater Southern (from 75.2 per cent to 61.2 per cent) health areas whereas the remaining health areas did not significantly change.

The proportion of infants who received breastmilk substitutes before 6 months decreased significantly between 2001 and 2003–2004 in the Sydney South West (from 68.0 per cent to 50.5 per cent), South Eastern Sydney & Illawarra (from 61.7 per cent to 47.1 per cent), and Sydney West (from 62.3 per cent to 49.7 per cent) health areas whereas the remaining health areas did not change significantly.

## Breastfeeding practices among population subgroups

### 2003–2004

A significantly higher proportion of NSW infants with mothers who have tertiary qualifications were ever breastfed (95.5 per cent), breastfed to 12 months (37.8 per cent), exclusively breastfed to 6 months (20.7 per cent), fully breastfed to 6 months (29.7 per cent), and a significantly lower proportion of infants with mothers who have tertiary qualifications were regularly receiving breastmilk substitutes before 6 months of age (39.0 per cent) compared with infants of mothers without tertiary qualifications.

A significantly lower proportion of infants with mothers under 25 years were breastfed to 12 months (15.1 per cent), exclusively breastfed to 6 months (5.2 per cent), fully breastfed to 6 months (9.9 per cent), and a significantly higher proportion were regularly receiving solid foods before 6 months (74.9 per cent) and regularly receiving breastmilk substitutes before 6 months (64.2 per cent) compared with mothers 25 years or older.

A significantly higher proportion of infants in the least socioeconomic disadvantaged quintile were ever breastfed (94.3 per cent), breastfed to 12 months (39.8 per cent), exclusively breastfed to 6 months (30.0 per cent), fully breastfed to 6 months (39.0 per cent), and a significantly lower proportion were regularly receiving breastmilk substitutes before 6 months (35.2 per cent) compared with the overall NSW infant population. A significantly lower proportion of infants in the most socioeconomic disadvantaged quintile were exclusively breastfed to 6 months (9.5 per cent) and fully breastfed to 6 months (18.7 per cent) compared with the overall NSW infant population.

A significantly higher proportion of infants with mothers who have an English speaking background (57.0 per cent) were regularly receiving solid foods before 6 months compared with mothers from a non English speaking background (41.3 per cent).

### ***Trends 2001 to 2003–2004***

There was a significant decrease between 2001 and 2003–2004 in the proportion of NSW infants ever breastfed for the fourth quintile of socioeconomic disadvantage (from 92.4 per cent to 85.1 per cent) and for mothers from an English speaking background (from 91.3 per cent to 86.2 per cent).

There was a significant increase between 2001 and 2003–2004 in the proportion of infants who were breastfed to 12 months for the third quintile of socioeconomic disadvantage (from 17.4 per cent to 28.1 per cent) and for mothers without tertiary qualifications (from 19.4 per cent to 23.9 per cent).

The proportion of infants who were fully breastfed to 6 months increased significantly between 2001 (14.2 per cent) and 2003–2004 (24.7 per cent) for the overall NSW infant population and in all subgroups except for mothers aged less than 25 years of age and in the most disadvantaged socioeconomic quintile.

The proportion of infants who were regularly receiving solid foods before 6 months decreased significantly between 2001 (69.4 per cent) and 2003–2004 (54.0 per cent) for the overall NSW infant population and in all subgroups except for mothers aged less than 25 years of age and in the fourth quintile of socioeconomic disadvantage.

The proportion of infants who were regularly receiving breastmilk substitutes before 6 months of age decreased significantly between 2001 (59.4 per cent) and 2003–2004 (49.0 per cent) for the overall NSW infant population and in all subgroups except for mothers aged less than 25 years of age.

# Recommendations

## Areas of focus for breastfeeding promotion

Although 87.1 per cent of infants had ever been breastfed, only 28.5 per cent were breastfed to 12 months and only 15.8 per cent were exclusively breastfed to 6 months.

In 2003–2004, a significantly lower proportion mothers without tertiary qualifications ever breastfed (83.2 per cent) or breastfed to 12 months (23.9 per cent), compared with mothers with tertiary qualifications, and a significantly lower proportion mothers under 25 years of age were breastfed to 12 months (15.1 per cent) or exclusively breastfed to 6 months (5.2 per cent), compared with mothers aged 25 years and over. Also, a significantly lower proportion of infants in the most socioeconomic disadvantaged quintile were exclusively breastfed to 6 months (15.8 per cent).

### **Recommendation 1**

Efforts to promote and support breastfeeding should focus on:

- Maintaining high rates of initiation of breastfeeding.
- Increasing the proportion of infants exclusively breastfed to 6 months.
- Increasing the proportion of infants breastfed to 12 months.
- Targeting mothers aged less than 25 years, mothers with less than a tertiary education, and mothers in the most disadvantaged socioeconomic quintiles.

## Introduction of solid foods

Although the proportion of infants who were regularly receiving solid foods before 6 months has decreased significantly between 2001 and 2003–2004, 54.0 per cent of the overall NSW infant population was still regularly receiving solid foods before 6 months of age. In 2003–2004, the highest proportion of infants regularly receiving solid foods before 6 months of age had mothers aged less than 25 years (74.9 per cent), followed by infants of mothers in rural areas (61.1 per cent).

### **Recommendation 2**

Efforts to support and promote the introduction of solids foods at around 6 months of age should continue, focusing in particular on mothers aged less than 25 years and mothers in rural areas.

## Use of evidence in breastfeeding promotion

The NSW Department of Health and the NSW Centre for Public Health Nutrition have produced a policy directive *Breastfeeding in NSW: Promotion, Protection and Support*, a special edition of the NSW Public Health Bulletin, case studies on breastfeeding interventions, and reports on evidence-based breastfeeding practice.

### **Recommendation 3**

Practitioners should use these publications to develop, implement and evaluate their breastfeeding promotion efforts.

## Commitment to continued and enhanced monitoring of breastfeeding

In 2001 the NSW Department of Health conducted the New South Wales Child Health Survey, which included breastfeeding questions. From 2003 onwards the NSW Department of Health's continuous New South Wales Population Health Survey included breastfeeding questions.

In 2005 2 additional questions relating to current practice among babies were included in the New South Wales Population Health Survey, about 24-hour recall, which is the most precise way to measure exclusive breastfeeding to 6 months as recommended by the World Health Organization and for use in Australia.

Breastfeeding data from the New South Wales Population Health Survey in 2005–2006 will therefore serve as a baseline for the policy directive issued in 2006, and ongoing monitoring of breastfeeding practices beyond 2006 will be able to measure the success of the policy directive.

#### **Recommendation 4**

The NSW Department of Health needs to maintain and enhance its commitment to the collection, analysis and reporting of breastfeeding from the New South Wales Population Health Survey.

### **Consistency in data collection, analysis and reporting between jurisdictions**

The most recent national breastfeeding data are from the 1995 National Nutrition Survey and the 2001 National Health Survey.

Currently, although breastfeeding questions are similar among state-based population health surveys, they are not the same. There has not been an audit of breastfeeding questions, and data analysis and interpretation, throughout Australia.

There has been no formal process of follow-up to the document *Towards a national system for monitoring breastfeeding in Australia: Recommendations for population indicators, definitions and next steps* (Webb et al. 2001). Since this document was released, various states, particularly New South Wales and Queensland, have gained considerable experience in monitoring breastfeeding at the population level.

The Public Health Information Development Group (PHIDG) CATI Harmonisation Project is a mechanism through which questions used in population health surveys can become more consistent, with the possibility of either combining state estimates or state data to produce national estimates.

#### **Recommendation 5**

That NSW Health supports the need for consistent questions, analysis and reporting of breastfeeding in population health surveys throughout Australia, in order to produce national estimates.

## Length of recall of breastfeeding practices

In order to explore whether length of recall had an effect on breastfeeding practices, the data for 2003–2004 were re-analysed using children aged 0–24 months instead of children aged 0–48 months. This reduced the total sample size from 1,483 to 890, which subsequently increased the 95 per cent confidence intervals by 2.6 per cent for ever breastfed, 1.8 per cent for breastfed to 12 months, 1.0 per cent for exclusively breastfed to 6 months, 1.2 per cent for fully breastfed to 6 months, 1.7 per cent for regularly receiving solid foods before 6 months, and by 1.6 per cent for regularly receiving breastmilk substitutes before 6 months. When the data for 2003–2004 were reanalysed using children aged 0–24 months instead of children 0–48 months, the point estimates increased by 0.8 per cent for ever breastfed, 1.4 per cent for breastfed to 12 months, 4.1 per cent for regularly receiving solid foods before 6 months, and 3.4 per cent for regularly receiving breastmilk substitutes before 6 months. Point estimates decreased by 1.8 per cent for exclusively breastfed to 6 months and 2.1 per cent for fully breastfed to 6 months. For each indicator, the Log-rank test was used to compare children aged 0–24 months and children aged 0–48 months. No significant differences were revealed (all p-values were >0.05).

Using children aged 0–48 months to calculate the 2003–2004 indicator estimates improved the precision of the estimates without compromising the validity. Therefore, the inclusion of the wider age group in 2003–2004 does not compromise the differences shown between the point estimates from the 2001 survey, when only children aged 0–24 months were included, and the 2003–2004 survey.

## Description of survival analysis

Survival analysis models data that specifies a time between an initial event (such as commencing breastfeeding) and the terminating event (for example ceasing all breastfeeding or the date of the survey). Where the terminating event was the ceasing of all

breastfeeding these cases are called uncensored observations. Where the terminating event was the date of survey (for example the child was still being breastfed), these cases are called censored observations. The censored observations remain in the analysis until the time of censoring. The survival analysis determines the non-parametric estimates of the survival distribution function using the Life Table method. The estimate of the per cent breastfeeding at each month of age thus includes both those currently breastfeeding (censored) and those that have ceased (uncensored). The inclusion of both censored and uncensored observations increases the sample size. It is assumed that someone who stopped breastfeeding at a particular age was breastfeeding for all the time up until the age of cessation (for example a child who stopped breastfeeding at 4 months is assumed to have been breastfed at ages 1, 2 and 3 months).

The Life Table method was adopted because the duration of breastfeeding and age of the child are recorded as an interval (in months) rather than an exact date. The results from the life table method can be interpreted in alignment with the required indicators.

## Constructing confidence intervals for survival estimates

To create the confidence intervals for the estimates the survey weights were rescaled to the survey sample before input into SAS. The confidence intervals have been calculated in a way that does not account for the variation in the estimation weights used in the analysis. Limited analysis has suggested that to allow for the possible impact of variation of weights, the width of the confidence intervals could be increased by a factor of 1.2. A check revealed that applying this factor would not affect the conclusions of this report.

## Differences between this report and the 2004 report

The data from the New South Wales Child Health Survey 2001 was reanalysed in this report using the Life Table survival analysis method, as opposed to the Kaplan Meier survival analysis method used previously.

The definition of English speaking and non English speaking background used in this report differs from that used in the earlier report on the 2001 breastfeeding data (Hector et al. 2004). In the current report 'background' refers to the mother's country of birth: that is, anyone born in Australia, New Zealand, United Kingdom, Ireland, United States of America, Canada or South Africa (DIMIA English Proficiency Group 1) is considered to be from an English speaking background. Non English speaking background is used to describe people who have re-settled in Australia but who come from countries where English is not the primary language spoken. This includes people born in all countries not identified as English speaking background countries (equivalent to DIMIA English Proficiency Groups 2 to 4).

In the previous report (Hector et al. 2004) maternal background was determined by country of birth and English speaking or non English speaking. In the current report maternal background was determined by country of birth alone.

# Glossary

<b>Term</b>	<b>Meaning</b>
<b>Age</b>	In months.
<b>Breastfeeding</b>	The child receives some breastmilk but can also receive any solid foods or liquids including breastmilk substitutes.
<b>Breastfeeding duration</b>	The total length of time an infant received any breastmilk at all, from initiation until weaning is complete.
<b>Breastmilk</b>	Human milk and colostrum.
<b>Breastmilk substitute</b>	Any milk (other than breastmilk), or food based fluid used in infant feeding as a replacement for breastmilk, whether or not it is suitable for that purpose (commonly includes infant formulae, cows milk, and other milks fed to infants).
<b>Complementary feeding</b>	The child receives both breastmilk and solid or semi-solid foods or breastmilk substitutes.
<b>Confidence interval</b>	A 95 per cent confidence interval provides a range of values that should contain the actual value 95 per cent of the time. In general, a wider confidence interval reflects less certainty in the indicator estimate. If confidence intervals do not overlap then the observed estimates are generally significantly different.
<b>Current practices</b>	Respondents are asked about recent infant feeding practices, usually in the previous 24 hours. This is distinct from recalled practices that occurred sometime in the past: for example, weeks or months or years ago.
<b>Exclusively breastfed</b>	An infant has received only breastmilk from his or her mother or a wet nurse, or expressed breastmilk, and no other liquids or solid foods with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.
<b>Ever breastfed</b>	An infant has been put to the breast, if only once, and/or an infant has received expressed breastmilk but has never been put to the breast.
<b>English speaking background</b>	Includes anyone born in Australia, New Zealand, United Kingdom, Ireland, United States of America, Canada or South Africa (DIMIA English Proficiency Group 1).
<b>Fully breastfed</b>	An infant is fully breastfed if he or she receives breastmilk as the main source of nourishment. This includes infants who are either a) exclusively breastfed or b) predominantly breastfed. That is, infants can be classified as fully breastfed if a) they receive only breastmilk with no other liquids or solid foods (except vitamins, mineral supplements, or medicines) or b) they receive breastmilk and any of: water, water-based liquids, fruit juice, ritual fluids (in limited quantities), or oral rehydration therapy, but do not receive breastmilk substitutes or solid foods. The fully breastfed rate is the combined rate of exclusively breastfed and predominantly breastfed.
<b>Indicator</b>	An indicator is used in the field of public health monitoring and surveillance to describe a specific and measurable statistical construct for monitoring progress towards a goal (a broad statement of desired improvement).
<b>Median</b>	The midpoint in a series of numbers: half the data values are above the median and half are below.
<b>Median duration of breastfeeding among ever breastfed children</b>	The month of age at which 50 per cent of the ever breastfed children are no longer regularly receiving breastmilk.

<b>Term</b>	<b>Meaning</b>
<b>Month</b>	One month is considered to be a calendar month unless a question was answered in weeks. In this case, 4 weeks is considered to be 1 month.
<b>Non English speaking background</b>	This term is used to describe people who have re-settled in Australia but who come from countries where English is not the primary language spoken. Includes people born in all countries not identified as English speaking background countries (equivalent to DIMIA English Proficiency Groups 2 to 4). See also English speaking background.
<b>Predominant breastfeeding</b>	An infant's predominant source of nourishment has been breastmilk but the infant may also have received water and water-based liquids (sweetened and flavoured water, teas, infusions etc.); fruit juice; oral rehydration therapy; drop and syrup forms of vitamins, minerals and medicines; or ritual fluids (in limited quantities). All other food based fluids, in particular breastmilk substitutes, and solid foods are excluded.
<b>Retrospective practices</b>	Practices measured retrospectively, that is, respondents are asked to recall and report their behaviour as it was some time in the past.
<b>Rural</b>	Rural means the respondent of the survey lived in 1 of the following 4 area health services designated as rural: Greater Southern, Greater Western, Hunter & New England, and North Coast.
<b>SEIFA quintile</b>	The Socio-Economic Indexes for Areas (SEIFA) describe the socioeconomic aspects of geographical areas in Australia, using a number of underlying variables such as family and household characteristics, personal educational qualifications, and occupation. The SEIFA index used is the Index of Relative Socio-Economic Disadvantage. This index is calculated on attributes such as low income and educational attainment, high unemployment, and people working in unskilled occupations. The SEIFA index values are grouped into 5 quintiles, with quintile 1 being the least disadvantaged and quintile 5 being the most disadvantaged.
<b>Solid foods</b>	Any nutrient-containing foods (semi-solid or solid), for example dilute infant cereals. Does not include breastmilk or breastmilk substitutes, fruit and vegetable juices, sugar water, etc.
<b>Tertiary qualifications</b>	A tertiary qualification was defined a University, College of Advanced Education, or some other tertiary institute degree or higher.
<b>Urban</b>	Urban means the respondent of the survey lived in 1 of the following 4 area health services designated as metropolitan: Northern Sydney & Central Coast, South Eastern Sydney & Illawarra, Sydney South West, and Sydney West.
<b>Weaning</b>	The period during which infants are introduced to breastmilk substitutes and/or solid foods with the intention of replacing some or all of the breastmilk in the diet.
<b>Weaned</b>	The infant or child no longer receives any breastmilk.

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# Appendix 1

## Breastfeeding questions in the 2003–2004 New South Wales Population Health Survey and the 2001 Child Health Survey.

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- Q1.** Has [child] ever been breastfed?  
1. Yes  
2. No → Q5  
X Don't know → Q6  
R Refused → Q6
- Q2.** Is [child] currently being breastfed?  
1. Yes → Q6  
2. No  
X Don't know → Q6  
R Refused → Q6
- Q3.** Including times of weaning, what is the total time [child] was breastfed in months and weeks?  
1. Answer in weeks (1–12 weeks only)  
2. Answer in months (1–48 months only)  
3. Less than 1 week  
X Don't know → Q6  
R Refused → Q6
- Q4.** What was the main reason you stopped breastfeeding?  
1. REASON \_\_\_\_\_ → Q6  
X Don't know → Q6  
R Refused → Q6
- Q5.** What were the main reasons you decided not to breastfeed?  
1. REASON \_\_\_\_\_  
X Don't know  
R Refused
- Q6.** Has [child] ever been given infant or toddler formula regularly?  
(PROMPT IF NECESSARY: regularly means at least once a day)  
1. Yes  
2. No → Q8  
X Don't know → Q8  
R Refused → Q8
- Q7.** At what age was [child] first given infant or toddler formula regularly?  
(ENTER FULL NUMBERS ONLY: IGNORE HALF. FOR EXAMPLE ENTER 1 WEEK FOR ONE-AND-A-HALF WEEKS)  
1. Answer weeks (1–12 weeks only)  
2. Answer months (1–48 months only)  
3. Less than 1 week  
X Don't know  
R Refused
- Q8.** Has [child] ever been given cow's milk regularly?  
1. Yes  
2. No → Q10  
X Don't know → Q10  
R Refused → Q10

- Q9.** At what age was [child] first given cow's milk regularly?  
(ENTER FULL NUMBERS ONLY: IGNORE HALF. FOR EXAMPLE ENTER 1 WEEK FOR ONE-AND-A-HALF WEEKS)
1. Answer weeks (1–12 weeks only)
  2. Answer months (1–48 months only)
  3. Less than 1 week
- X Don't know  
R Refused
- Q10.** Has [child] ever been given any other type of milk substitute on a regular basis?  
(PROMPT: Apart from breast milk–infant formula–cows milk)
1. Yes
  2. No → Q13
- X Don't know → Q13  
R Refused → Q13
- Q11.** What type of milk substitutes did [child] have? [MULTIPLE RESPONSE]
1. Soya bean milk
  2. Goat's milk
  3. Evaporated milk
  4. Other [SPECIFY]
- X Don't know  
R Refused
- Q12.** At what age was [child] first given [milk substitute] regularly?  
(NOTE: IF USED MORE THAN 1 TYPE OF MILK RECORD EARLIEST AGE THAT ANY MILK SUBSTITUTE WAS GIVEN REGULARLY) (ENTER FULL NUMBERS ONLY: IGNORE HALF)
1. Answer weeks (1–12 weeks only)
  2. Answer months (1–48 months only)
  3. Less than 1 week
- X Don't know  
R Refused
- Q13.** At what age was [child] first given solid foods regularly?  
(ENTER FULL NUMBERS ONLY: IGNORE HALF. FOR EXAMPLE ENTER 1 WEEK FOR ONE-AND-A-HALF WEEKS)
1. Answer weeks (1–12 weeks only)
  2. Answer months (1–48 months only)
  3. Never given solid foods or not yet started solid foods
- X Don't know  
R Refused
- Q14.** At what age was [child] first given fruit juice regularly?  
(ENTER FULL NUMBERS ONLY: IGNORE HALF. FOR EXAMPLE ENTER 1 WEEK FOR ONE-AND-A-HALF WEEKS)
1. Answer weeks (1–12 weeks only)
  2. Answer months (1–48 months only)
  3. Less than 1 week
  4. Never given fruit juice or not yet started fruit juice
- X Don't know  
R Refused
- Q15.** At what age was [child] first given water regularly?  
(ENTER FULL NUMBERS ONLY: IGNORE HALF. FOR EXAMPLE ENTER 1 WEEK FOR ONE-AND-A-HALF WEEKS)
1. Answer weeks (1–12 weeks only)
  2. Answer months (1–48 months only)
  3. Less than 1 week
  4. Never given water or not yet started water
- X Don't know  
R Refused

# Appendix 2

## Breastfed at each month of age from 0 to 23 months

The current NSW Department of Health policy directive, referred to in this report, endorses the NHMRC recommendation that mothers continue breastfeeding until 12 months of age and beyond if both mother and child wish. The questions used to define the indicator were:

- Has [child] ever been breastfed?
- Is [child] currently being breastfed?
- Including times of weaning, what is the total time [child] was breastfed?

### 2003–2004

In 2003–2004, the proportion of infants that were breastfed at each month of age between 12 and 23 months declined from 28.5 per cent at 12 months to 19.7 per cent at 13 months, to 10.4 per cent at 18 months and 6.4 per cent at 23 months.

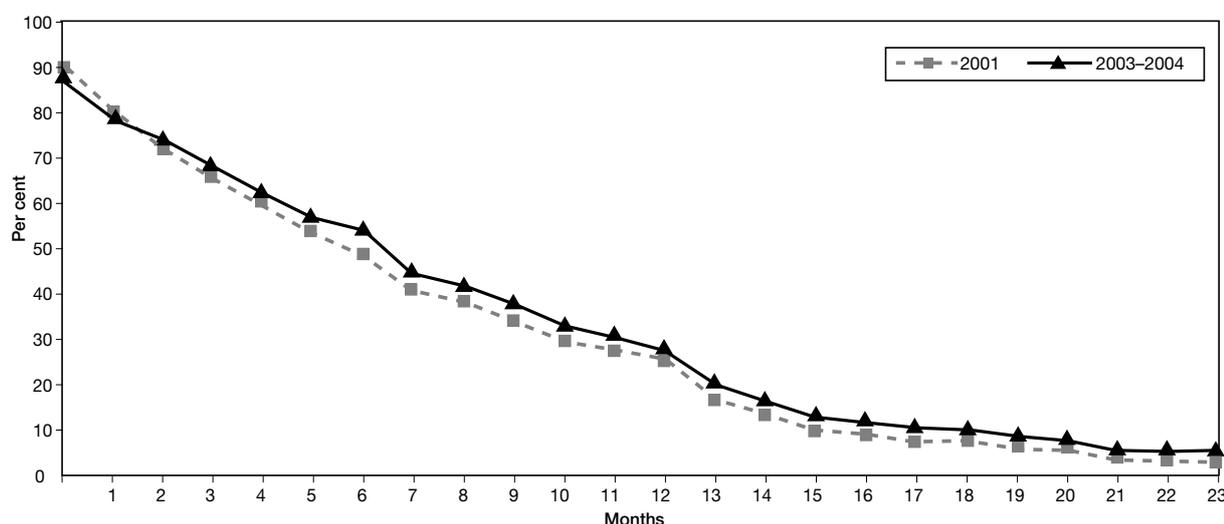
### Comparison with 2001

There was no significant difference between the proportion of infants regularly receiving any breastmilk at each month of age from 12 months to 23 months, between 2001 and 2003–2004.

Table 16: Per cent breastfed at each month of age from 0 to 23 months by survey period, NSW

Age in months	Survey period			
	2001		2003–2004	
	%	(95% CI)	%	(95% CI)
0	90.3	(88.0–92.6)	87.1	(85.0–89.3)
1	79.2	(77.1–81.3)	78.7	(76.6–80.8)
2	72.4	(70.1–74.7)	73.6	(71.4–75.9)
3	66.3	(63.8–68.7)	69.1	(66.8–71.5)
4	60.8	(58.2–63.3)	62.1	(59.6–64.7)
5	53.8	(51.2–56.5)	57.1	(54.5–59.6)
6	49.5	(46.8–52.2)	53.9	(51.3–56.5)
7	42.1	(39.4–44.8)	45.7	(43.1–48.3)
8	39.5	(36.8–42.2)	41.9	(39.2–44.5)
9	35.2	(32.6–37.9)	38.1	(35.5–40.7)
10	31.9	(29.2–34.5)	32.8	(30.3–35.4)
11	28.1	(25.5–30.7)	31.0	(28.5–33.5)
12	25.8	(23.2–28.4)	28.5	(26.1–31.0)
13	17.4	(15.0–19.8)	19.7	(17.5–21.9)
14	15.0	(12.7–17.4)	16.3	(14.3–18.4)
15	11.9	(9.7–14.1)	13.5	(11.6–15.5)
16	10.2	(8.1–12.4)	11.9	(10.1–13.8)
17	9.7	(7.6–11.8)	10.8	(9.1–12.6)
18	9.1	(7.0–11.1)	10.4	(8.6–12.1)
19	7.2	(5.2–9.2)	7.7	(6.2–9.3)
20	6.9	(4.8–8.9)	7.5	(5.9–9.0)
21	4.7	(2.7–6.7)	6.7	(5.3–8.2)
22	4.7	(2.7–6.7)	6.5	(5.1–8.0)
23	4.7	(2.7–6.7)	6.4	(5.0–7.9)

Figure 6: Per cent regularly receiving any breastmilk at each month of age from 0 to 23 months by survey period, NSW



Source: NSW Health Survey Program, NSW Department of Health.







