

New Zealand Maternity Clinical Indicators 2010

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Executive summary

The New Zealand Maternity Clinical Indicators are the result of a collaborative process involving the Ministry of Health and maternity stakeholders representing consumer, midwifery, obstetric, general practice, paediatric and anaesthetic perspectives. Building on previous work undertaken across Australasia, an expert working group has established a set of 12 maternity clinical indicators that are relevant to the New Zealand setting and can be measured using available data collections.

This second report on benchmarked clinical maternity data presents data for 2010. Data has been benchmarked using the same standardised definitions as in the previous (2009) report and is therefore comparable.

This is the second report using the *standard primipara* definition which allows the separate assessment of a group of women for whom interventions and outcomes should be similar. In addition to eight indicators for standard primiparae, there are also three indicators for all women giving birth in hospital and one indicator covering all babies born in hospital. Other indicators will be added over time as improved data becomes available.

The release of this second report provides an opportunity for district health boards (DHBs) and local maternity stakeholders to participate in and add value by undertaking further investigation at a local level as part of maternity quality and safety programmes. DHBs and local maternity stakeholders can undertake early time series and trend analysis using this second full year of data.

There are small changes seen in national rates of some indicators in 2010 compared to 2009. Small changes are seen in the rates of spontaneous vaginal birth (increase), instrumental vaginal birth (decrease), induction of labour (decrease), intact lower genital tract (decrease), rate of blood transfusion with Caesarean section (decrease) and rate of premature birth between 32 and 36 weeks (decrease).

As seen in the previous report, there is variation between DHBs and between individual secondary and tertiary facilities. This variation among a group of women who would be expected to have similar outcomes (standard primiparae) needs to be investigated. Variation is seen in rates of spontaneous vaginal birth, instrumental vaginal birth, induction of labour and intact lower genital tract. These findings merit further investigation of data quality and integrity, as well as the local clinical practice management reasons for these variations.

Introduction

What are the New Zealand Maternity Clinical Indicators?

The New Zealand Maternity Clinical Indicators are benchmarked data for each DHB region and secondary/tertiary maternity facility showing key maternity outcomes. The purpose of the indicators is to increase the visibility of the quality and safety of maternity services and to highlight areas where quality improvement could be achieved. The benchmarked data will be used to support the local clinical review of maternity services. The purpose of local clinical review is to identify and implement service improvements.

The New Zealand Maternity Clinical Indicators are based on Australasian clinical indicators developed by the Australian Council on Healthcare Standards (2008, 2011). These indicators are evidence-based and cover a range of procedures and outcomes for mothers and their babies. The initial set of New Zealand Maternity Clinical Indicators is deliberately small and is focused on the labour and birth period. It is important to start small until there is strong sector confidence in the accuracy of the data used in the indicators.

Background to the New Zealand Maternity Clinical Indicators

In 2010 the Minister of Health asked the Ministry of Health to develop a national quality and safety programme for maternity services, including New Zealand maternity standards and clinical indicators. As a result, the Ministry of Health initiated conversations with key professional colleges to discuss the scope of clinical indicators and how they might be used as part of a national quality and safety programme.

It was agreed that the clinical indicators would be used to:

- increase the degree of national consistency in reporting maternity data
- support clinical quality improvement by helping DHBs to identify areas they should focus on in their local clinical reviews
- provide a broader national picture of maternity outcomes in New Zealand than just maternal and perinatal mortality
- provide standardised (benchmarked) data to DHBs so that they can see how their maternity services compare with other maternity services in New Zealand.

The Ministry of Health convened an expert working group to develop the initial set of clinical indicators. The working group included representation from midwifery, obstetric, paediatric, general practice, epidemiology, service management and consumer backgrounds. As a starting point, the working group used the existing Australasian maternity indicators developed by the Australian Council on Healthcare Standards, as well as the work undertaken by Women's Hospitals Australasia on a core set of maternity indicators for Australia (Women's Hospitals Australasia 2007).

The working group aimed to establish an appropriate initial set of indicators for the New Zealand context. The group decided on the set of 12 indicators presented in this document as those for which the data could be considered reliable and which would be relevant for local clinical review.

This publication is the second report on the initial set of 12 indicators. This publication presents data for the 2010 calendar year, using the same definitions and data as the 2009 year report; thus it can be considered directly comparable with the 2009 report.

Overview of the indicators

Table 1 lists the maternity indicators covered in this publication, including the numerator and denominator for each indicator. Indicators 1 to 8 present information on standard primiparae giving birth in hospital, indicators 9 to 11 look at all women giving birth in hospital, and indicator 12 looks at all babies born in hospital.

For this report, a *standard primipara* is defined as a woman aged between 20 and 34 years at the time of birth in a hospital or birthing unit, with no record of any previous birth event in a New Zealand hospital, whose birth is at term (from 37 weeks 0 days to 41 weeks 6 days gestation), where the outcome of the birth is a singleton baby, presentation is cephalic, and the pregnancy has had no recorded obstetric complications that are indications for specific obstetric intervention.

The standard primipara represents an uncomplicated pregnancy for which intervention and complication rates should be low and consistent across hospitals. Using standard primiparae (rather than all women giving birth) controls for differences in case mix and increases the validity of inter-hospital comparisons for maternity care (adapted from Australian Council on Healthcare Standards 2008, p 29). Standard primiparae account for approximately 16 percent of all births nationally, although this proportion varies from 12 to 21 percent across DHBs.¹ See 'Appendix 1: Technical notes' for more information on definitions.

¹ All primiparae account for approximately 41 percent of all births nationally, with the proportion ranging from 30 to 50 percent between DHBs.

How the indicators will be used

The indicators will be published at least annually. The aim is to help inform a programme of ongoing, systematic review by local multidisciplinary teams that work together to identify ways that maternity services and care can be improved and to implement those improvements. At the DHB level, the programme will consist of local clinical review of maternity services. It will be driven by local leaders from midwifery, general practice and obstetrics working together, and will include practitioners working across both community- and hospital-based maternity services and maternity consumer representation, brought together as a local maternity network.

Table 1: New Zealand Maternity Clinical Indicators

	Indicator	Numerator	Denominator
1	Standard primiparae who have a spontaneous vaginal birth	Total number of standard primiparae who have a spontaneous vaginal birth	Total number of standard primiparae who give birth
2	Standard primiparae who undergo an instrumental vaginal birth	Total number of standard primiparae who undergo an instrumental vaginal birth	Total number of standard primiparae who give birth
3	Standard primiparae who undergo Caesarean section	Total number of standard primiparae who undergo Caesarean section	Total number of standard primiparae who give birth
4	Standard primiparae who undergo induction of labour	Total number of standard primiparae who undergo induction of labour	Total number of standard primiparae who give birth
5	Standard primiparae with an intact lower genital tract (no 1st–4th-degree tear or episiotomy)	Total number of standard primiparae with an intact lower genital tract	Total number of standard primiparae giving birth vaginally
6	Standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear	Total number of standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear while giving birth vaginally	Total number of standard primiparae giving birth vaginally
7	Standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy	Total number of standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy	Total number of standard primiparae giving birth vaginally
8	Standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear	Total number of standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear while giving birth vaginally	Total number of standard primiparae giving birth vaginally
9	General anaesthesia for Caesarean section	Total number of women having a general anaesthetic for a Caesarean section	Total number of women having a Caesarean section
10	Blood transfusion with Caesarean section	Total number of women who undergo Caesarean section who require a blood transfusion during the same admission	Total number of women who undergo Caesarean section
11	Blood transfusion with vaginal birth	Total number of women who give birth vaginally who require a blood transfusion during the same admission	Total number of women who give birth vaginally
12	Premature births (between 32 and 36 weeks gestation)	Total number of babies born at between 32 weeks 0 days and 36 weeks 6 days gestation	Total number of babies born in hospital

Data sources for the indicators

All data for these indicators were sourced from publicly funded hospital events reported to the National Minimum Dataset (NMDS). The NMDS holds information collected routinely from all publicly funded events in which a patient is discharged from a hospital in New Zealand. This information contains a substantial amount of clinical information, including health conditions and procedures, which are encoded using the appropriate International Statistical Classification of Disease and Related Health Problems, 10th revision, Australian Modification (ICD-10-AM) clinical codes. The NMDS includes births that occur in a publicly funded hospital, and publicly funded births that occur in a private hospital or birthing unit.

For this report, all women discharged following a publicly funded hospital birth in 2010 and all babies live-born in hospital in 2010 were selected from the NMDS. Specific conditions and procedures (including birth type) were identified using ICD-10-AM-v6 clinical codes.

The standard primipara definition was applied using clinical codes and demographic information sourced from the current birth event, from any antenatal events corresponding to the pregnancy, and from a search of historical maternity events held in the NMDS to determine primiparity. See 'Appendix 1: Technical notes' for more detail on definitions and code ranges.

The definitions and data source used in this report are consistent with the previous (2009) report. These definitions and data source will remain constant for one further (2011) report. A three-year publication cycle has been chosen to enable time trend analysis, and to enable ongoing improvements to nationally collected maternity data to be utilised.

Following the publication of 2011 data, the indicators data will be sourced from the National Maternity Collection, which integrates different sources of maternity data. This will improve the quality and completeness of the data presented, and will enable additional indicators to be included, broadening the scope of this publication. The National Maternity Monitoring Group will advise the Ministry of Health on recommended changes to the indicators set, indicator definitions and source data.

Data integrity

This report has been compiled from data supplied by DHBs. DHBs are responsible for ensuring the quality of data to national collections. No independent parity measure and no antenatal primary care information is available currently for reporting, and so the definition of standard primipara is approximate at this time.

Numbers and rates

Data is presented in this report in two ways.

- Data presented by DHB of domicile is intended to provide DHBs with information on the women usually resident in their region.
- Data presented by facility is intended to allow monitoring of trends over time at the facility level. Data for births in secondary and tertiary facilities are presented graphically, while data for births in primary and private facilities are presented in the appendices.

Rates are presented as raw percentages. Rates have not been standardised by age or ethnicity because the choice of denominator (standard primiparae) is intended to group women into clinically similar cohorts who would be expected to experience similar birth outcomes. Although this report does not include differences in rates by ethnicity or socioeconomic group, these could be a possible area of focus for analysis at the DHB level. Due to the design of the indicators, some rates are based on small numbers of events. All rates derived from small numbers should be treated with caution.

Indicators 1–4: Type of birth

Rationale and purpose

Indicators 1 to 4 present data on the types of birth among standard primiparae. These indicators compare the rate of spontaneous vaginal birth with rates of medical interventions in a pre-risk-adjusted population.² Their purpose is to encourage maternity service providers to review the appropriateness of these interventions, with the long-term aim of reducing maternal and perinatal morbidity, thereby improving maternal satisfaction with the process of giving birth, including infant bonding and establishment of breastfeeding (adapted from *Women's Hospitals Australasia 2007*, p 88–89). The following sections describe the rationale and purpose of the specific indicators.

Spontaneous vaginal birth (indicator 1)

This indicator measures the proportion of women having a spontaneous (non-instrumental) vaginal birth, using a pre-risk-adjusted population. It is expected to encourage maternity service providers to review, evaluate and make necessary changes to clinical practice aimed at supporting women to achieve a spontaneous vaginal birth (adapted from *Women's Hospitals Australasia 2007*, p 89). This measure includes events where labour may have been augmented or induced.

Instrumental vaginal birth (indicator 2)

This indicator helps maternity service providers to evaluate the appropriate use of instrumental interventions, including vacuum (ventouse) and forceps births, in a pre-risk-adjusted population. If their rates are significantly higher than their peer group at a national level, service providers will need to examine the results of other indicators that may be affected by instrumental birth, including maternal and perinatal morbidity.

Caesarean section (indicator 3)

The purpose of this indicator is to encourage maternity service providers to evaluate whether Caesarean sections were performed on the right women at the right place and at the right time. If their rates are significantly different from their peer group at a national level, maternity service providers may need to examine the results of other indicators that can be affected by Caesarean section (such as post-partum haemorrhage, and maternal and neonatal morbidity and mortality rates) to ascertain whether there is any correlation (adapted from *Women's Hospitals Australasia 2007*, p 74). The longer-term aim is to reduce the risks associated with an unnecessary Caesarean section, reduce the number of women at risk of a subsequent Caesarean section and reduce the number of women who experience difficulties with their second

² Indicators that do not sum to 100 percent are due to missing data codes for some events.

and subsequent births as a consequence of a primary Caesarean section (adapted from Women's Hospitals Australasia 2007, p 75).

Induction of labour (indicator 4)

The purpose of this indicator is to benchmark rates of induction of labour within a pre-risk-adjusted population. It provides maternity services with an indicator that may encourage further investigation of policies and practices with respect to inducing labour in low-risk women. If rates are significantly higher than their peer group at a national level, maternity services may need to examine the results of other indicators that can be affected by induction, such as Caesarean section, postpartum haemorrhage and episiotomy, to ascertain whether there is any correlation (adapted from Women's Hospitals Australasia 2007, p 68).

Comment on data for 1 January–31 December 2010

There is variation between DHBs and between secondary and tertiary facilities in the rates of spontaneous vaginal birth, with DHB rates ranging from 51 to 86 percent and facility rates ranging from 51 to 83 percent. This merits further investigation. For some secondary or tertiary facilities, the rates of intervention could be influenced by transfers from primary facilities. Individual DHBs could compare rates of intervention according to where labour was initiated.

There is variation in the facility rates of instrumental vaginal birth, which range from 6 to 27 percent. Caesarean section rates also vary, from 11 to 24 percent among standard primiparae. These variations indicate the need for detailed review.

Standard primiparae are unlikely to have indications for induction of labour and so rates of induction for this group should be low. Rates significantly above the national average should be investigated.

Compared to 2009:

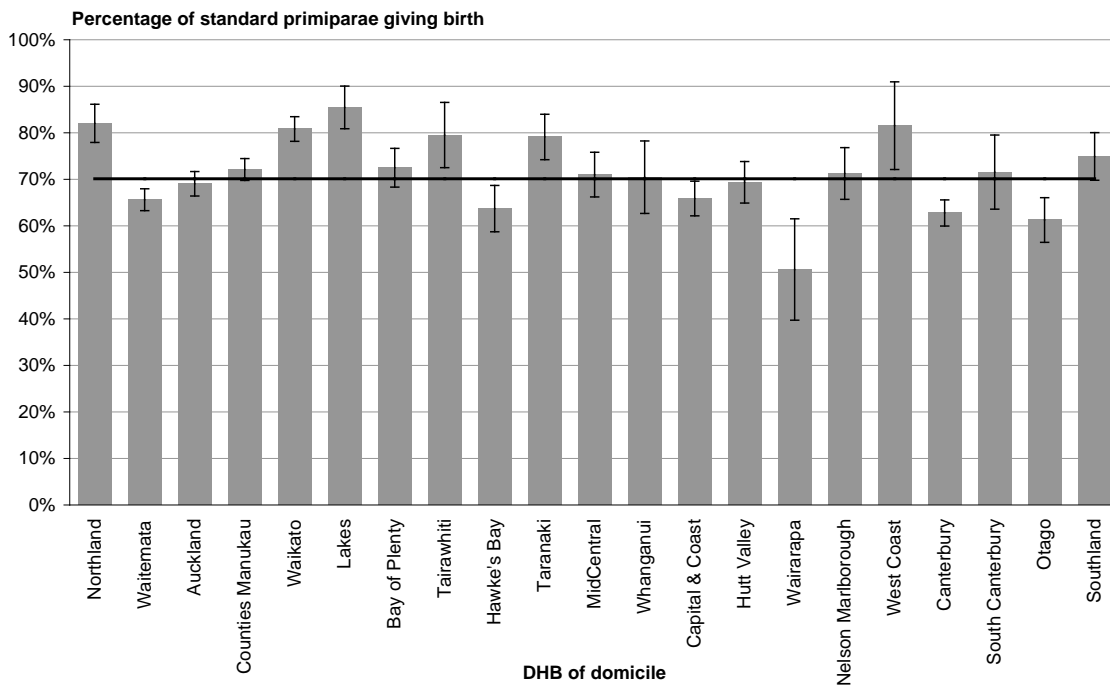
- the national rate of spontaneous vaginal birth has increased slightly
- the national rate of instrumental vaginal birth has decreased
- the national rates of Caesarean section and induction of labour have remained stable.

Indicator 1: Spontaneous vaginal births among standard primiparae, 2010

Table 2: Number and percentage of spontaneous vaginal births among standard primiparae, by DHB of domicile, 2010

DHB of domicile	Spontaneous vaginal births	Standard primiparae	Rate (%)
Northland	274	334	82.0
Waitemata	1028	1567	65.6
Auckland	819	1186	69.1
Counties Manukau	1011	1402	72.1
Waikato	683	845	80.8
Lakes	194	227	85.5
Bay of Plenty	319	440	72.5
Tairāwhiti	101	127	79.5
Hawke's Bay	228	358	63.7
Taranaki	212	268	79.1
MidCentral	245	345	71.0
Whanganui	93	132	70.5
Capital & Coast	409	621	65.9
Hutt Valley	283	408	69.4
Wairarapa	41	81	50.6
Nelson Marlborough	181	254	71.3
West Coast	53	65	81.5
Canterbury	715	1139	62.8
South Canterbury	88	123	71.5
Otago	242	395	61.3
Southland	206	275	74.9
Unspecified	4	5	80.0
New Zealand	7429	10,597	70.1

Figure 1: Percentage of spontaneous vaginal births among standard primiparae, by DHB, 2010

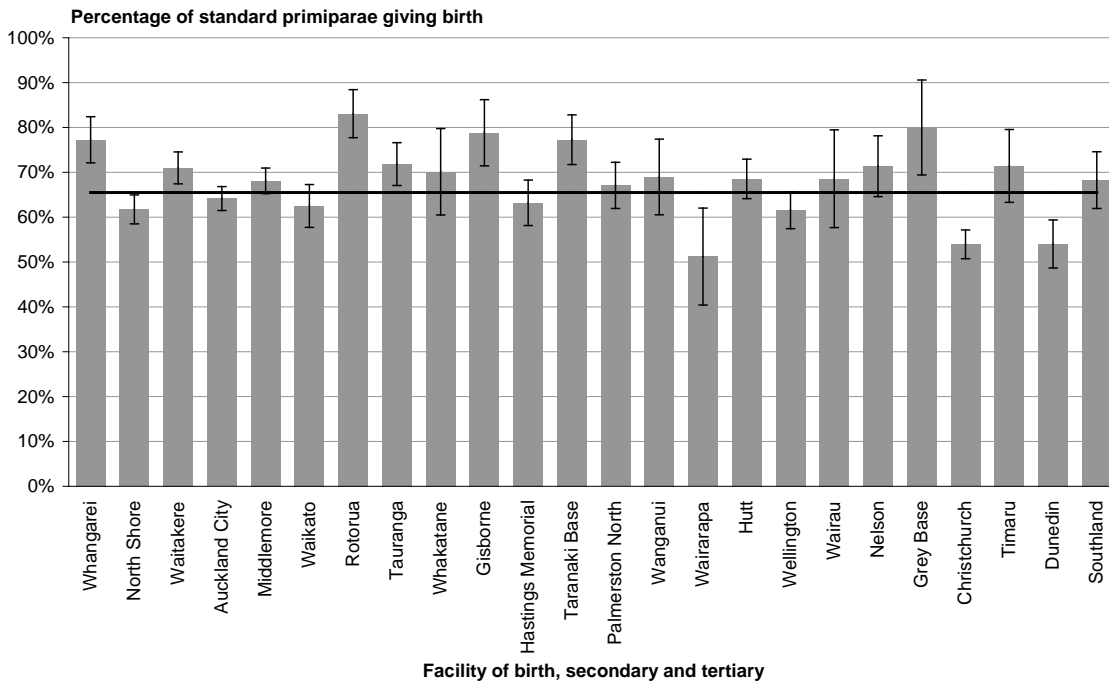


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 3: Number and percentage of spontaneous vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2010

Facility	Spontaneous vaginal births	Standard primiparae	Rate (%)
Whangarei	197	255	77.3
North Shore	537	870	61.7
Waitakere	445	627	71.0
Auckland City	797	1242	64.2
Middlemore	696	1022	68.1
Waikato	245	392	62.5
Rotorua	157	189	83.1
Tauranga	245	341	71.8
Whakatane	61	87	70.1
Gisborne	93	118	78.8
Hastings Memorial	220	348	63.2
Taranaki Base	170	220	77.3
Palmerston North	216	322	67.1
Whanganui	80	116	69.0
Wairarapa	42	82	51.2
Hutt	294	429	68.5
Wellington	333	541	61.6
Wairau	48	70	68.6
Nelson	122	171	71.3
Grey Base	44	55	80.0
Christchurch	499	925	53.9
Timaru	85	119	71.4
Dunedin	181	335	54.0
Southland	142	208	68.3
All secondary and tertiary facilities	5949	9084	65.5

Figure 2: Percentage of spontaneous vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2010



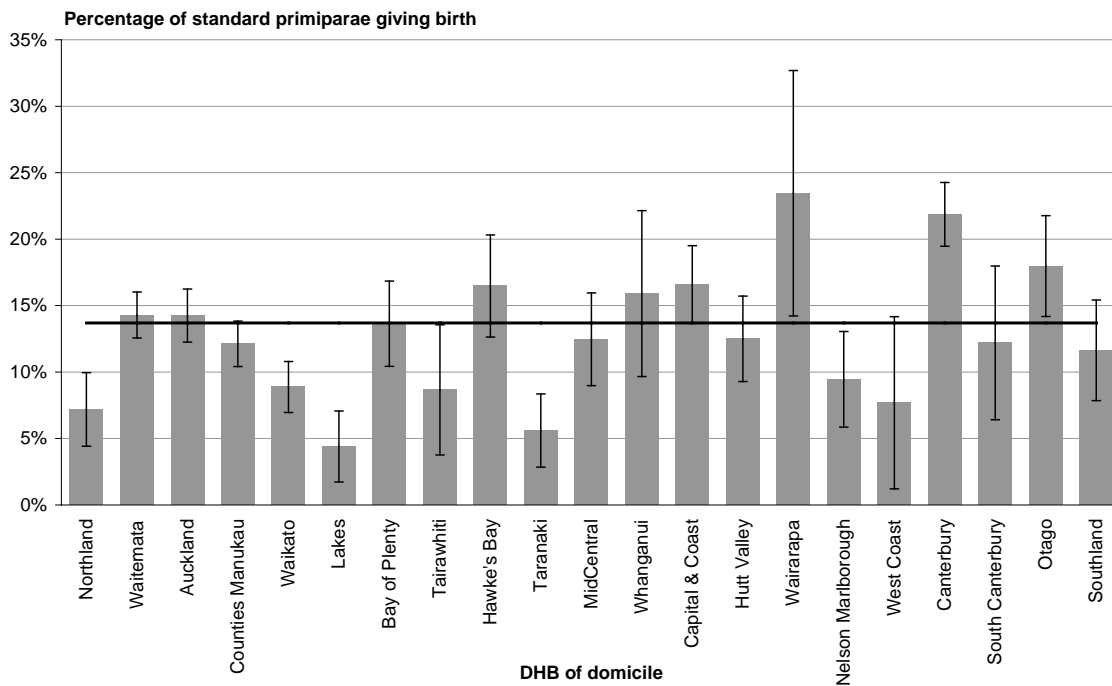
Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicator 2: Instrumental vaginal birth among standard primiparae, 2010

Table 4: Number and percentage of standard primiparae undergoing an instrumental vaginal birth, by DHB of domicile, 2010

DHB of domicile	Instrumental vaginal births	Standard primiparae	Rate (%)
Northland	24	334	7.2
Waitemata	224	1567	14.3
Auckland	169	1186	14.2
Counties Manukau	170	1402	12.1
Waikato	75	845	8.9
Lakes	10	227	4.4
Bay of Plenty	60	440	13.6
Tairāwhiti	11	127	8.7
Hawke's Bay	59	358	16.5
Taranaki	15	268	5.6
MidCentral	43	345	12.5
Whanganui	21	132	15.9
Capital & Coast	103	621	16.6
Hutt Valley	51	408	12.5
Wairarapa	19	81	23.5
Nelson Marlborough	24	254	9.4
West Coast	5	65	7.7
Canterbury	249	1139	21.9
South Canterbury	15	123	12.2
Otago	71	395	18.0
Southland	32	275	11.6
Unspecified	1	5	20.0
New Zealand	1451	10,597	13.7

Figure 3: Percentage of standard primiparae undergoing an instrumental vaginal birth, by DHB of domicile, 2010

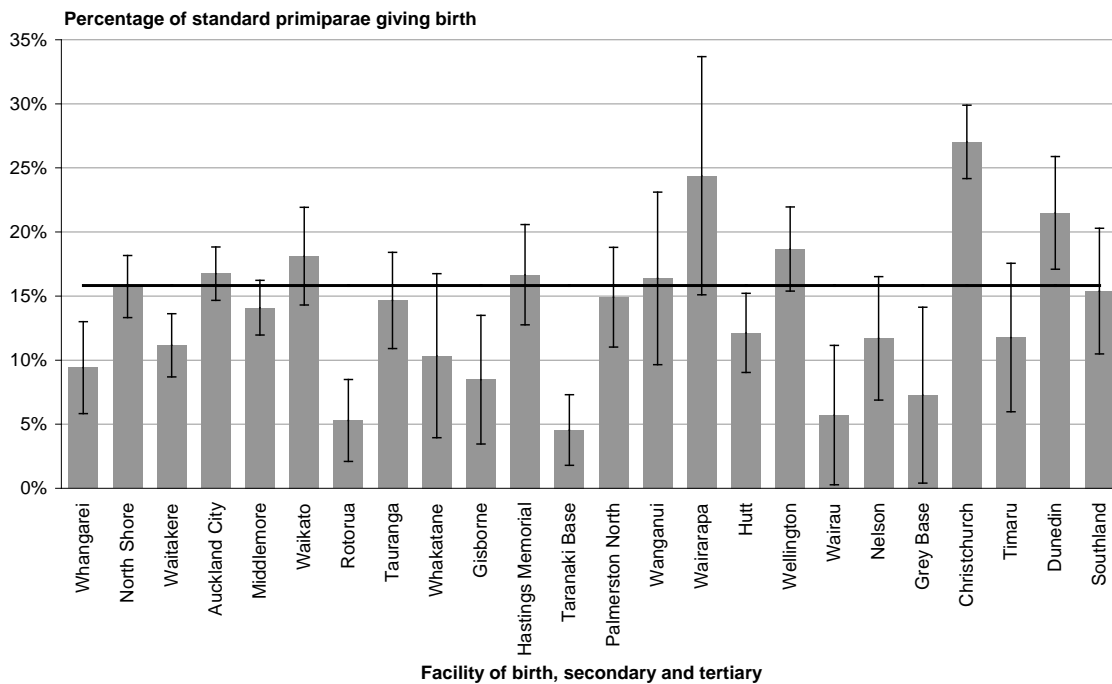


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 5: Number and percentage of standard primiparae undergoing an instrumental vaginal birth, by facility of birth (secondary and tertiary facilities), 2010

Facility	Instrumental vaginal births	Standard primiparae	Rate (%)
Whangarei	24	255	9.4
North Shore	137	870	15.7
Waitakere	70	627	11.2
Auckland City	208	1242	16.7
Middlemore	144	1022	14.1
Waikato	71	392	18.1
Rotorua	10	189	5.3
Tauranga	50	341	14.7
Whakatane	9	87	10.3
Gisborne	10	118	8.5
Hastings Memorial	58	348	16.7
Taranaki Base	10	220	4.5
Palmerston North	48	322	14.9
Whanganui	19	116	16.4
Wairarapa	20	82	24.4
Hutt	52	429	12.1
Wellington	101	541	18.7
Wairau	4	70	5.7
Nelson	20	171	11.7
Grey Base	4	55	7.3
Christchurch	250	925	27.0
Timaru	14	119	11.8
Dunedin	72	335	21.5
Southland	32	208	15.4
All secondary and tertiary facilities	1437	9084	15.8

Figure 4: Percentage of standard primiparae undergoing an instrumental vaginal birth, by facility of birth (secondary and tertiary facilities), 2010



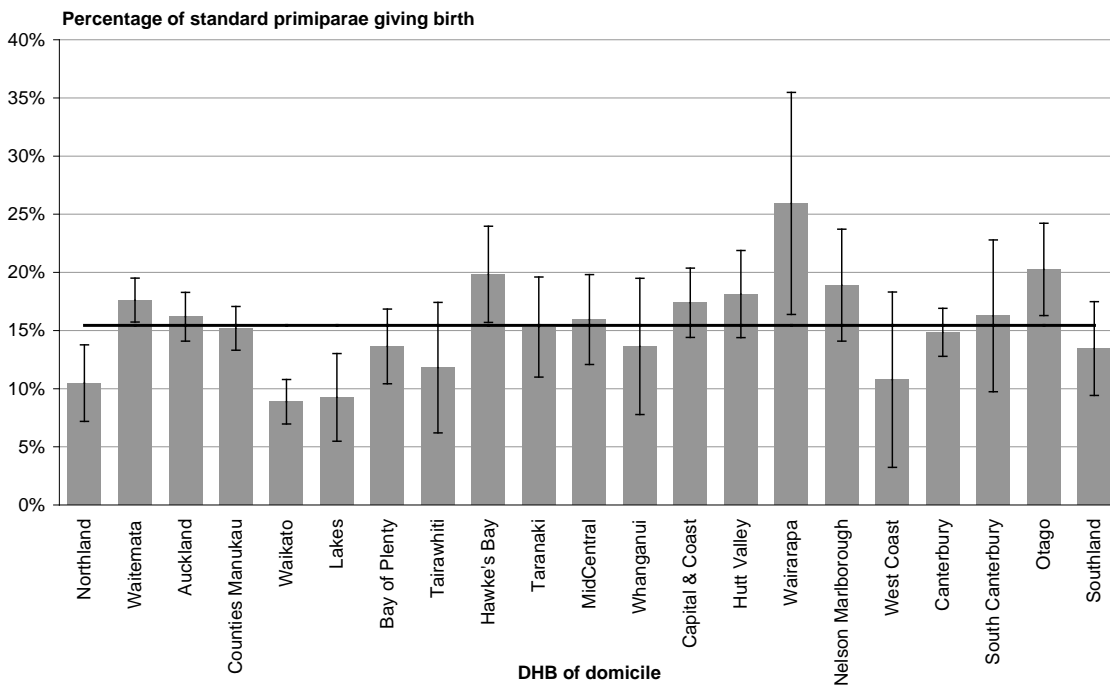
Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicator 3: Caesarean section among standard primiparae, 2010

Table 6: Number and percentage of standard primiparae giving birth by Caesarean section, by DHB of domicile, 2010

DHB of domicile	Caesarean sections	Standard primiparae	Rate (%)
Northland	35	334	10.5
Waitemata	276	1567	17.6
Auckland	192	1186	16.2
Counties Manukau	213	1402	15.2
Waikato	75	845	8.9
Lakes	21	227	9.3
Bay of Plenty	60	440	13.6
Tairāwhiti	15	127	11.8
Hawke's Bay	71	358	19.8
Taranaki	41	268	15.3
MidCentral	55	345	15.9
Whanganui	18	132	13.6
Capital & Coast	108	621	17.4
Hutt Valley	74	408	18.1
Wairarapa	21	81	25.9
Nelson Marlborough	48	254	18.9
West Coast	7	65	10.8
Canterbury	169	1139	14.8
South Canterbury	20	123	16.3
Otago	80	395	20.3
Southland	37	275	13.5
Unspecified	0	5	
New Zealand	1636	10,597	15.4

Figure 5: Percentage of standard primiparae giving birth by Caesarean section, by DHB of domicile, 2010

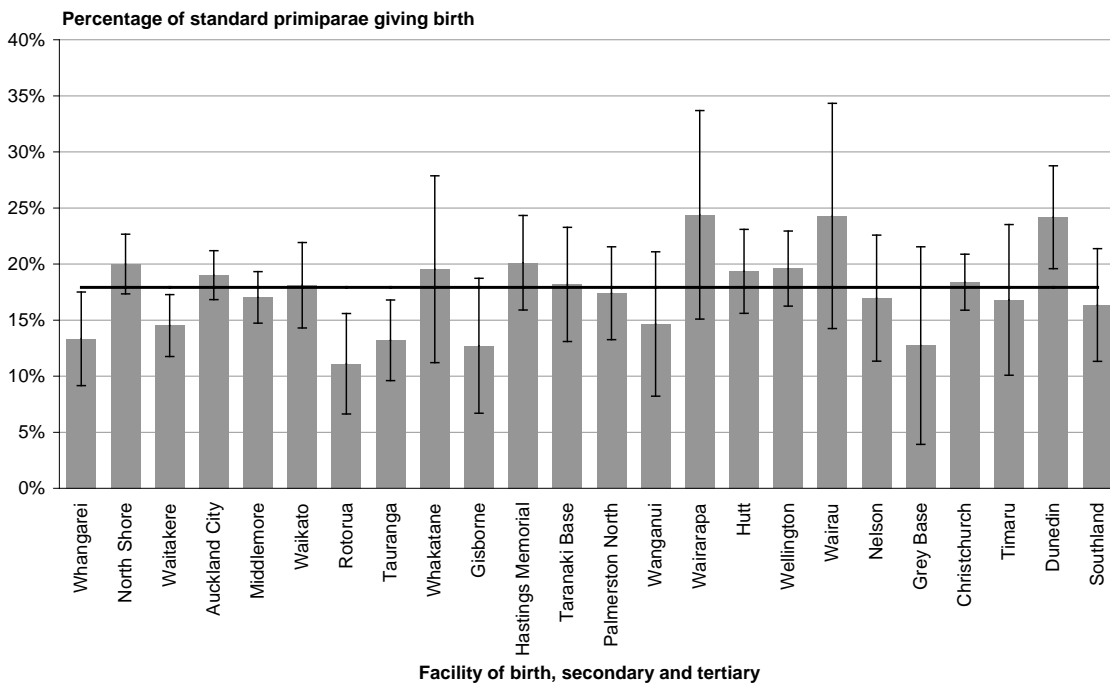


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 7: Number and percentage of standard primiparae giving birth by Caesarean section, by facility of birth (secondary and tertiary facilities), 2010

Facility	Caesarean sections	Standard primiparae	Rate (%)
Whangarei	34	255	13.3
North Shore	174	870	20.0
Waitakere	91	627	14.5
Auckland City	236	1242	19.0
Middlemore	174	1022	17.0
Waikato	71	392	18.1
Rotorua	21	189	11.1
Tauranga	45	341	13.2
Whakatane	17	87	19.5
Gisborne	15	118	12.7
Hastings Memorial	70	348	20.1
Taranaki Base	40	220	18.2
Palmerston North	56	322	17.4
Whanganui	17	116	14.7
Wairarapa	20	82	24.4
Hutt	83	429	19.3
Wellington	106	541	19.6
Wairau	17	70	24.3
Nelson	29	171	17.0
Grey Base	7	55	12.7
Christchurch	170	925	18.4
Timaru	20	119	16.8
Dunedin	81	335	24.2
Southland	34	208	16.3
All secondary and tertiary facilities	1628	9084	17.9

Figure 6: Percentage of standard primiparae giving birth by Caesarean section, by facility of birth (secondary and tertiary facilities), 2010



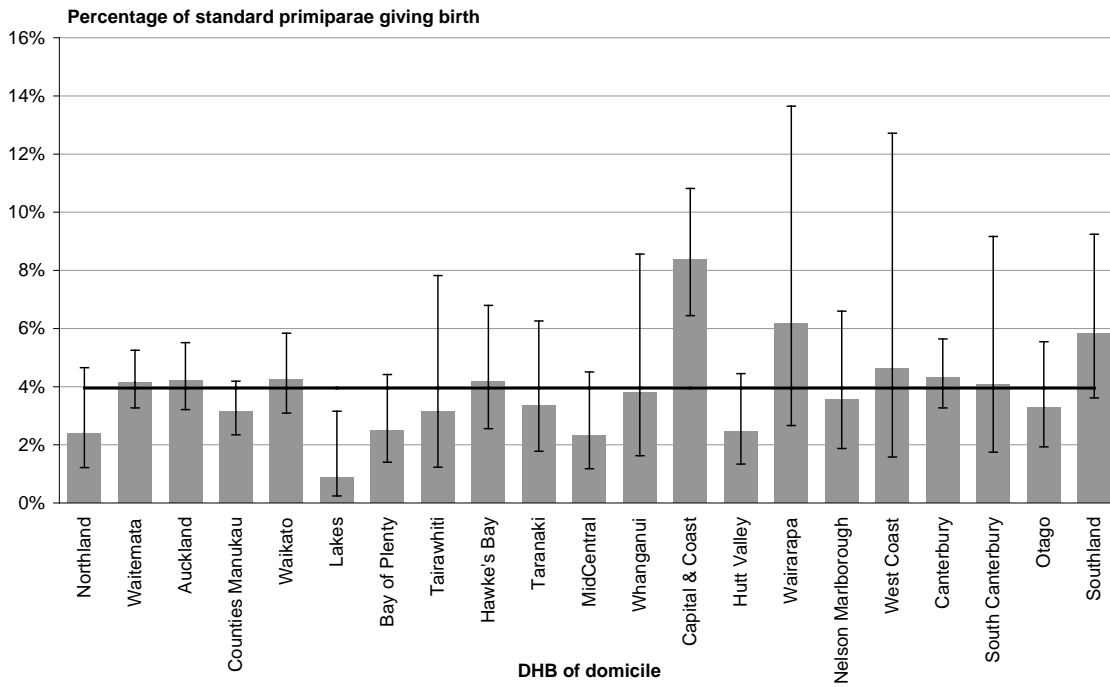
Black line represents average for all secondary and tertiary facilities
 Error bars represent 95% confidence interval

Indicator 4: Induction of labour among standard primiparae, 2010

Table 8: Number and percentage of standard primiparae undergoing induction of labour, by DHB of domicile, 2010

DHB of domicile	Induction of labour	Standard primiparae	Rate (%)
Northland	8	334	2.4
Waitemata	65	1567	4.1
Auckland	50	1186	4.2
Counties Manukau	44	1402	3.1
Waikato	36	845	4.3
Lakes	2	227	0.9
Bay of Plenty	11	440	2.5
Tairāwhiti	4	127	3.1
Hawke's Bay	15	358	4.2
Taranaki	9	268	3.4
MidCentral	8	345	2.3
Whanganui	5	132	3.8
Capital & Coast	52	621	8.4
Hutt Valley	10	408	2.5
Wairarapa	5	81	6.2
Nelson Marlborough	9	254	3.5
West Coast	3	65	4.6
Canterbury	49	1139	4.3
South Canterbury	5	123	4.1
Otago	13	395	3.3
Southland	16	275	5.8
Unspecified	0	5	
New Zealand	419	10,597	4.0

Figure 7: Percentage of standard primiparae undergoing induction of labour, by DHB of domicile, 2010

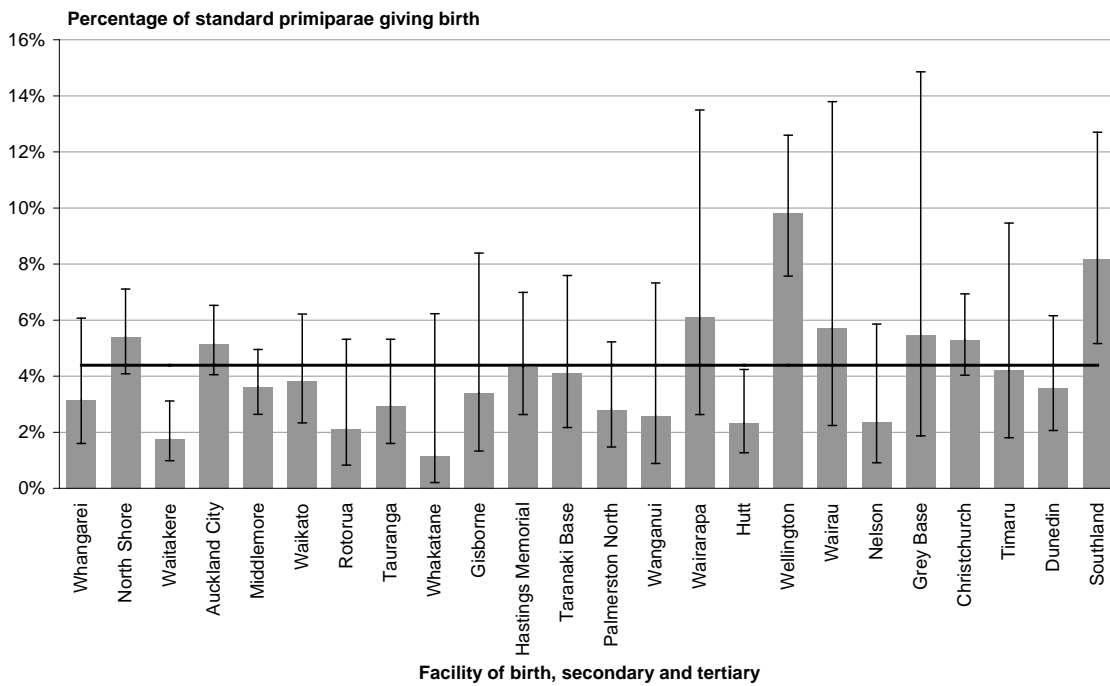


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 9: Number and percentage of standard primiparae undergoing induction of labour, by facility of birth (secondary and tertiary facilities), 2010

Facility	Induction of labour	Standard primiparae	Rate (%)
Whangarei	8	255	3.1
North Shore	47	870	5.4
Waitakere	11	627	1.8
Auckland City	64	1242	5.2
Middlemore	37	1022	3.6
Waikato	15	392	3.8
Rotorua	4	189	2.1
Tauranga	10	341	2.9
Whakatane	1	87	1.1
Gisborne	4	118	3.4
Hastings Memorial	15	348	4.3
Taranaki Base	9	220	4.1
Palmerston North	9	322	2.8
Whanganui	3	116	2.6
Wairarapa	5	82	6.1
Hutt	10	429	2.3
Wellington	53	541	9.8
Wairau	4	70	5.7
Nelson	4	171	2.3
Grey Base	3	55	5.5
Christchurch	49	925	5.3
Timaru	5	119	4.2
Dunedin	12	335	3.6
Southland	17	208	8.2
All secondary and tertiary facilities	399	9084	4.4

Figure 8: Percentage of standard primiparae undergoing induction of labour, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicators 5–8: Degree of damage to the lower genital tract

Rationale and purpose

Indicators 5 to 8 cover the degree of damage to the lower genital tract from vaginal birth in standard primiparae. Perineal trauma remains one of the most common complications of childbirth and is thought to affect between 60 and 85 percent of women who give birth vaginally. Reasons for perineal trauma are varied and may reflect either maternal or neonatal issues. For women, any perineal damage can cause pain and longer-term morbidity. The long-term aim of these indicators is to reduce genital tract trauma and its associated maternal morbidity, improving maternal satisfaction and mother–infant bonding by reducing maternal exposure to pain and discomfort (adapted from Women’s Hospitals Australasia 2007, p 78–79).

Intact lower genital tract (indicator 5)

The four categories of perineal tear classification enable a standardised description of perineal damage, with third- and fourth-degree tears being further classified depending on the involvement of the anal sphincter. Assessing and identifying the degree of lower genital tract damage remains a complex process, and the classification of first- or second-degree tear does not reflect the level of pain or longer-term morbidity the woman may experience. Measuring the number of women who are not affected by perineal trauma (who have an intact perineum) provides a more concise measure which cannot presently be achieved by reviewing the rates of first- or second-degree tears. This indicator therefore provides a measure that can encourage further investigation to determine how higher rates of intact perineum can be achieved.

Episiotomy (indicator 6)

This indicator aims to encourage further investigation to ensure that risks to the mother as well as the infant are assessed before undertaking an episiotomy. If rates are significantly higher than their peer group at a national level, maternity service providers may need to examine the results of other indicators that can be affected by episiotomy, such as bleeding, infection and maternal morbidity rates, to ascertain whether there is any correlation (adapted from Women’s Hospitals Australasia 2007, p 79).

Third- and fourth-degree tears (with or without episiotomy) (indicators 7 and 8)

The aim of this indicator is to encourage maternity service providers to consider the rate of tears in conjunction with episiotomy rates, and to undertake further investigation of labour management if rates are significantly different from their peer group at a national level. This includes the use of induction, instrumental delivery and management of second-stage labour (adapted from Women's Hospitals Australasia 2007, pp 82–83).

Comment on data for 1 January–31 December 2010

The national rate of intact lower genital tract has decreased slightly compared to 2009 data. Rates of intact lower genital tract range from 17 to 58 percent across DHBs and 14 to 57 percent across secondary and tertiary facilities. This regional variation requires investigation of data integrity as well as of local clinical practice.

There is also variation in the rate of episiotomy without third- or fourth-degree tear (5 to 29 percent across DHBs and 5 to 32 percent across secondary and tertiary facilities). This represents greater variation than 2009. Outlier DHBs and facilities should investigate the reasons for these differences, which could include the clinical indications given in specific cases and the discipline and number of practitioners performing episiotomies.

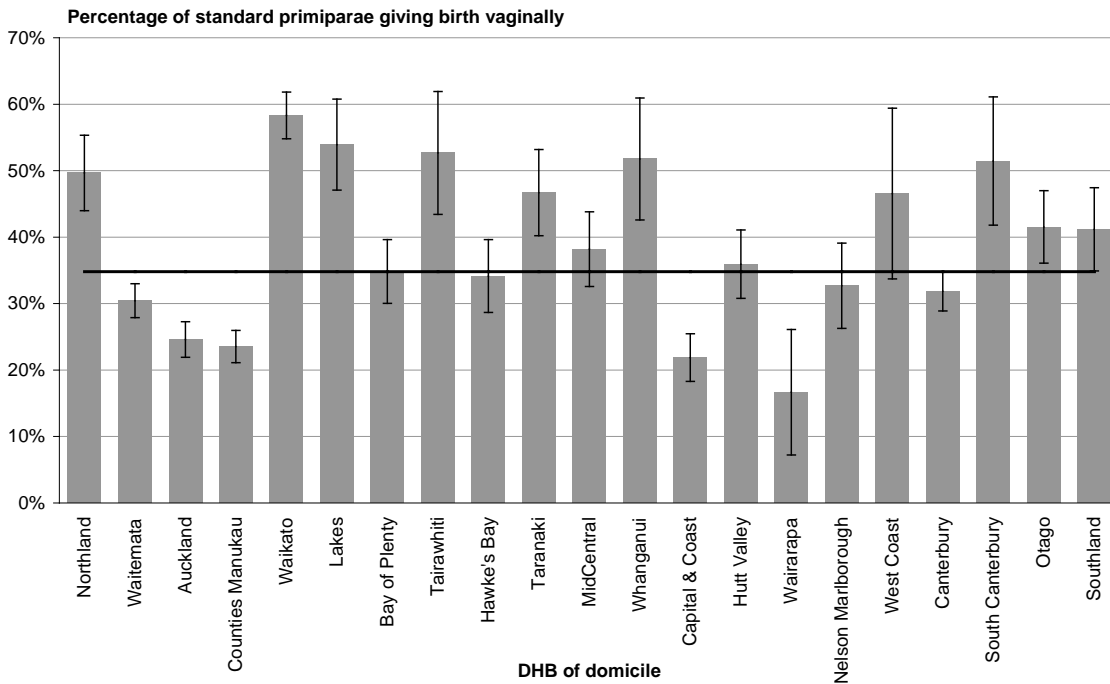
National data does not show a systematic correlation between episiotomy rates and rates of third- and fourth-degree tears. DHBs are encouraged to undertake more detailed analysis at a local level of the relationship between rates of intact perineum, episiotomy and third- and fourth-degree tears.

Indicator 5: Intact lower genital tract among standard primiparae giving birth vaginally, 2010

Table 10: Number and percentage of standard primiparae giving birth vaginally with intact lower genital tract, by DHB of domicile, 2010

DHB of domicile	Intact lower genital tract	Standard primiparae giving birth vaginally	Rate (%)
Northland	148	298	49.7
Waitemata	381	1252	30.4
Auckland	243	988	24.6
Counties Manukau	278	1181	23.5
Waikato	442	758	58.3
Lakes	110	204	53.9
Bay of Plenty	132	379	34.8
Tairāwhiti	59	112	52.7
Hawke's Bay	98	287	34.1
Taranaki	106	227	46.7
MidCentral	110	288	38.2
Whanganui	59	114	51.8
Capital & Coast	112	512	21.9
Hutt Valley	120	334	35.9
Wairarapa	10	60	16.7
Nelson Marlborough	67	205	32.7
West Coast	27	58	46.6
Canterbury	307	964	31.8
South Canterbury	53	103	51.5
Otago	130	313	41.5
Southland	98	238	41.2
Unspecified	0	5	
New Zealand	3090	8880	34.8

Figure 9: Percentage of standard primiparae giving birth vaginally with intact lower genital tract, by DHB of domicile, 2010

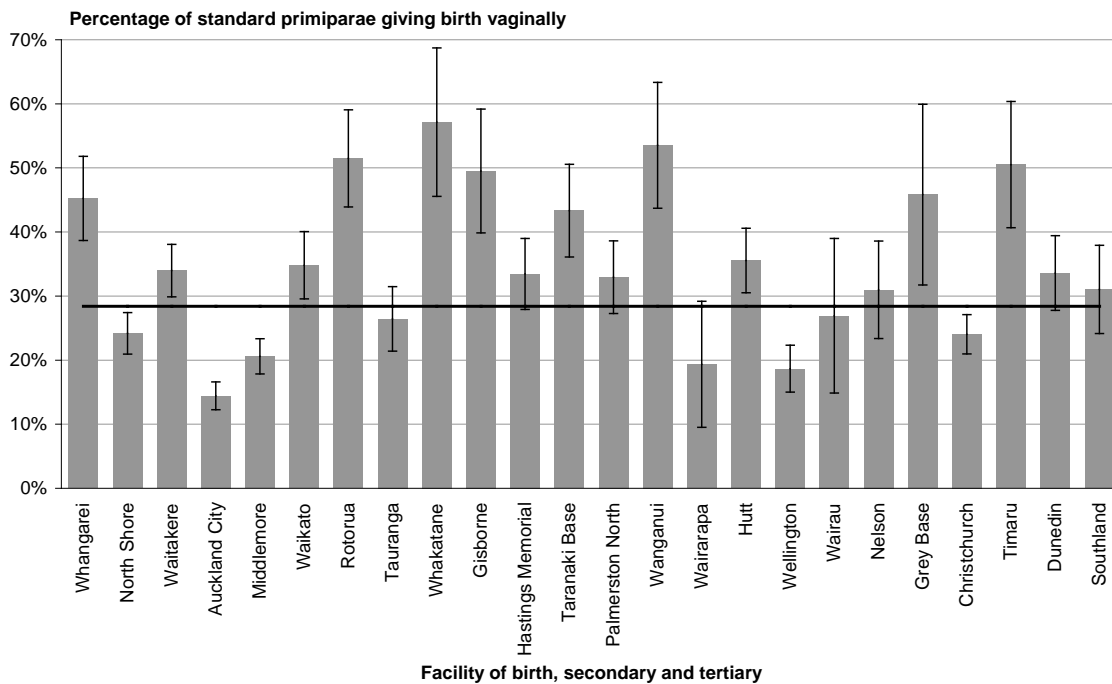


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 11: Number and percentage of standard primiparae giving birth vaginally with an intact lower genital tract, by facility of birth (secondary and tertiary facilities), 2010

Facility	Intact lower genital tract	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	100	221	45.2
North Shore	163	674	24.2
Waitakere	175	515	34.0
Auckland City	145	1005	14.4
Middlemore	173	840	20.6
Waikato	110	316	34.8
Rotorua	86	167	51.5
Tauranga	78	295	26.4
Whakatane	40	70	57.1
Gisborne	51	103	49.5
Hastings Memorial	93	278	33.5
Taranaki Base	78	180	43.3
Palmerston North	87	264	33.0
Whanganui	53	99	53.5
Wairarapa	12	62	19.4
Hutt	123	346	35.5
Wellington	81	434	18.7
Wairau	14	52	26.9
Nelson	44	142	31.0
Grey Base	22	48	45.8
Christchurch	180	749	24.0
Timaru	50	99	50.5
Dunedin	85	253	33.6
Southland	54	174	31.0
All secondary and tertiary facilities	2097	7386	28.4

Figure 10: Percentage of standard primiparae giving birth vaginally with an intact lower genital tract, by facility of birth (secondary and tertiary facilities), 2010



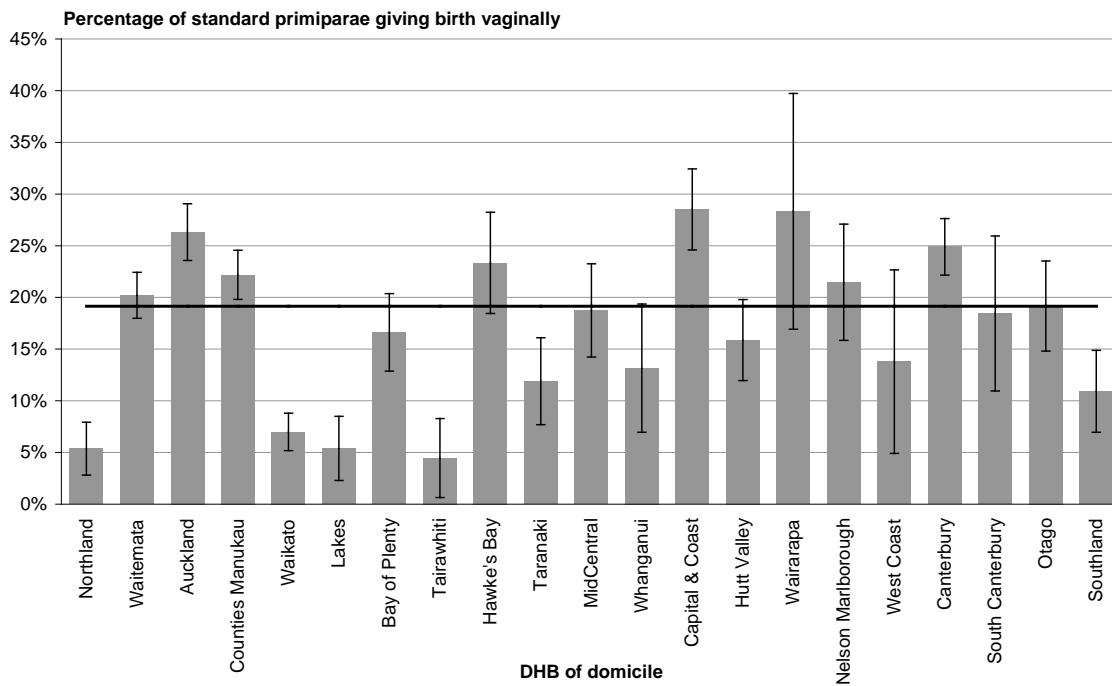
Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicator 6: Episiotomy and no third- or fourth-degree tear among standard primiparae giving birth vaginally, 2010

Table 12: Number and percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by DHB of domicile, 2010

DHB of domicile	Episiotomy without 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Northland	16	298	5.4
Waitemata	253	1252	20.2
Auckland	260	988	26.3
Counties Manukau	262	1181	22.2
Waikato	53	758	7.0
Lakes	11	204	5.4
Bay of Plenty	63	379	16.6
Tairāwhiti	5	112	4.5
Hawke's Bay	67	287	23.3
Taranaki	27	227	11.9
MidCentral	54	288	18.8
Whanganui	15	114	13.2
Capital & Coast	146	512	28.5
Hutt Valley	53	334	15.9
Wairarapa	17	60	28.3
Nelson Marlborough	44	205	21.5
West Coast	8	58	13.8
Canterbury	240	964	24.9
South Canterbury	19	103	18.4
Otago	60	313	19.2
Southland	26	238	10.9
Unspecified	2	5	40.0
New Zealand	1701	8880	19.2

Figure 11: Percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by DHB of domicile, 2010



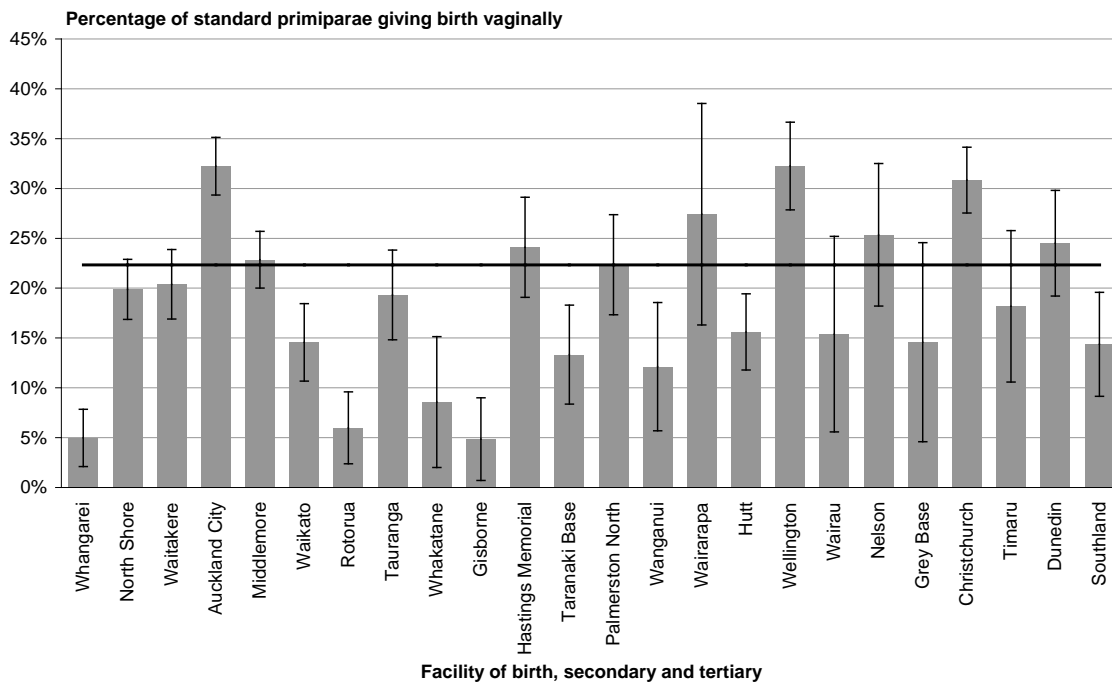
Black line represents national average.

Error bars represent 95% confidence interval.

Table 13: Number and percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2010

Facility	Episiotomy without 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	11	221	5.0
North Shore	134	674	19.9
Waitakere	105	515	20.4
Auckland City	324	1005	32.2
Middlemore	192	840	22.9
Waikato	46	316	14.6
Rotorua	10	167	6.0
Tauranga	57	295	19.3
Whakatane	6	70	8.6
Gisborne	5	103	4.9
Hastings Memorial	67	278	24.1
Taranaki Base	24	180	13.3
Palmerston North	59	264	22.3
Whanganui	12	99	12.1
Wairarapa	17	62	27.4
Hutt	54	346	15.6
Wellington	140	434	32.3
Wairau	8	52	15.4
Nelson	36	142	25.4
Grey Base	7	48	14.6
Christchurch	231	749	30.8
Timaru	18	99	18.2
Dunedin	62	253	24.5
Southland	25	174	14.4
All secondary and tertiary facilities	1650	7386	22.3

Figure 12: Percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.

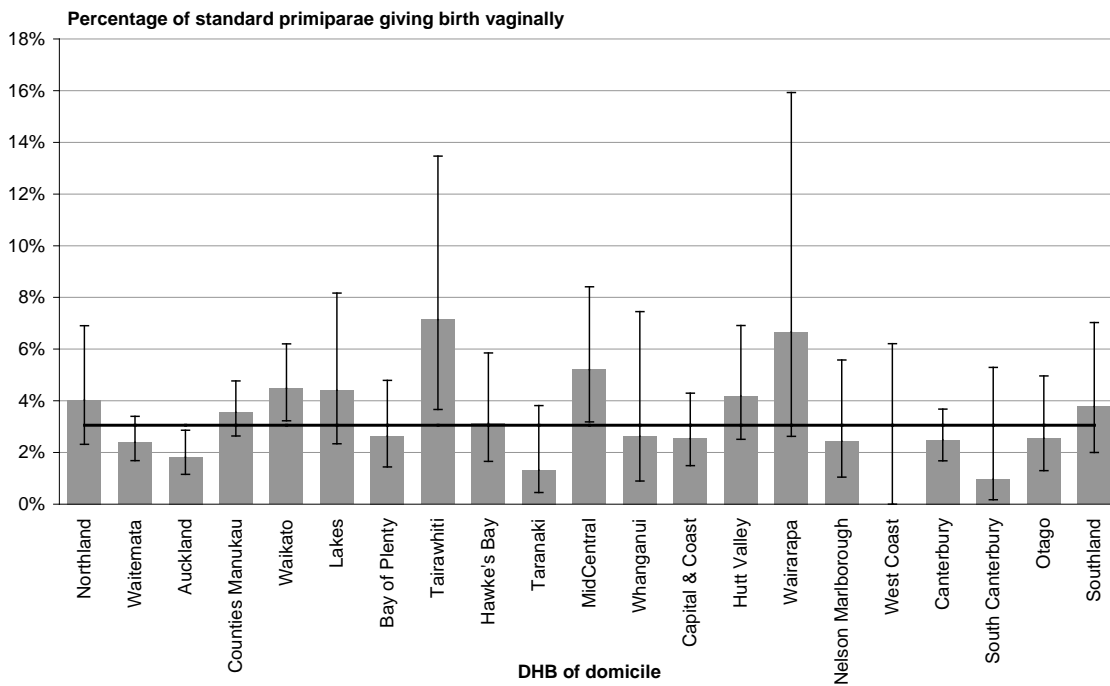
Error bars represent 95% confidence interval.

Indicator 7: Third- or fourth-degree tear and no episiotomy among standard primiparae giving birth vaginally, 2010

Table 14: Number and percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by DHB of domicile, 2010

DHB of domicile	3rd- or 4th-degree tear without episiotomy	Standard primiparae giving birth vaginally	Rate (%)
Northland	12	298	4.0
Waitemata	30	1252	2.4
Auckland	18	988	1.8
Counties Manukau	42	1181	3.6
Waikato	34	758	4.5
Lakes	9	204	4.4
Bay of Plenty	10	379	2.6
Tairāwhiti	8	112	7.1
Hawke's Bay	9	287	3.1
Taranaki	3	227	1.3
MidCentral	15	288	5.2
Whanganui	3	114	2.6
Capital & Coast	13	512	2.5
Hutt Valley	14	334	4.2
Wairarapa	4	60	6.7
Nelson Marlborough	5	205	2.4
West Coast	0	58	
Canterbury	24	964	2.5
South Canterbury	1	103	1.0
Otago	8	313	2.6
Southland	9	238	3.8
Unspecified	0	5	
New Zealand	271	8880	3.1

Figure 13: Percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by DHB of domicile, 2010



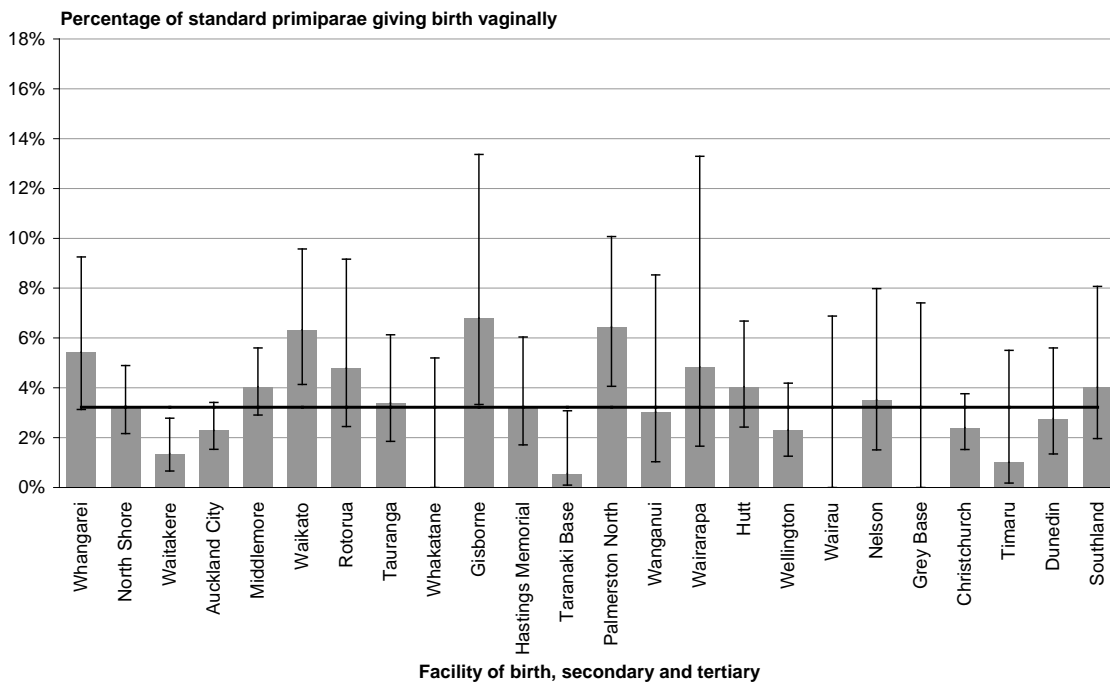
Black line represents national average.

Error bars represent 95% confidence interval.

Table 15: Number and percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by facility of birth (secondary and tertiary facilities), 2010

Facility	3rd- or 4th-degree tear without episiotomy	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	12	221	5.4
North Shore	22	674	3.3
Waitakere	7	515	1.4
Auckland City	23	1005	2.3
Middlemore	34	840	4.0
Waikato	20	316	6.3
Rotorua	8	167	4.8
Tauranga	10	295	3.4
Whakatane	0	70	
Gisborne	7	103	6.8
Hastings Memorial	9	278	3.2
Taranaki Base	1	180	0.6
Palmerston North	17	264	6.4
Whanganui	3	99	3.0
Wairarapa	3	62	4.8
Hutt	14	346	4.0
Wellington	10	434	2.3
Wairau	0	52	
Nelson	5	142	3.5
Grey Base	0	48	
Christchurch	18	749	2.4
Timaru	1	99	1.0
Dunedin	7	253	2.8
Southland	7	174	4.0
All secondary and tertiary facilities	238	7386	3.2

Figure 14: Percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.

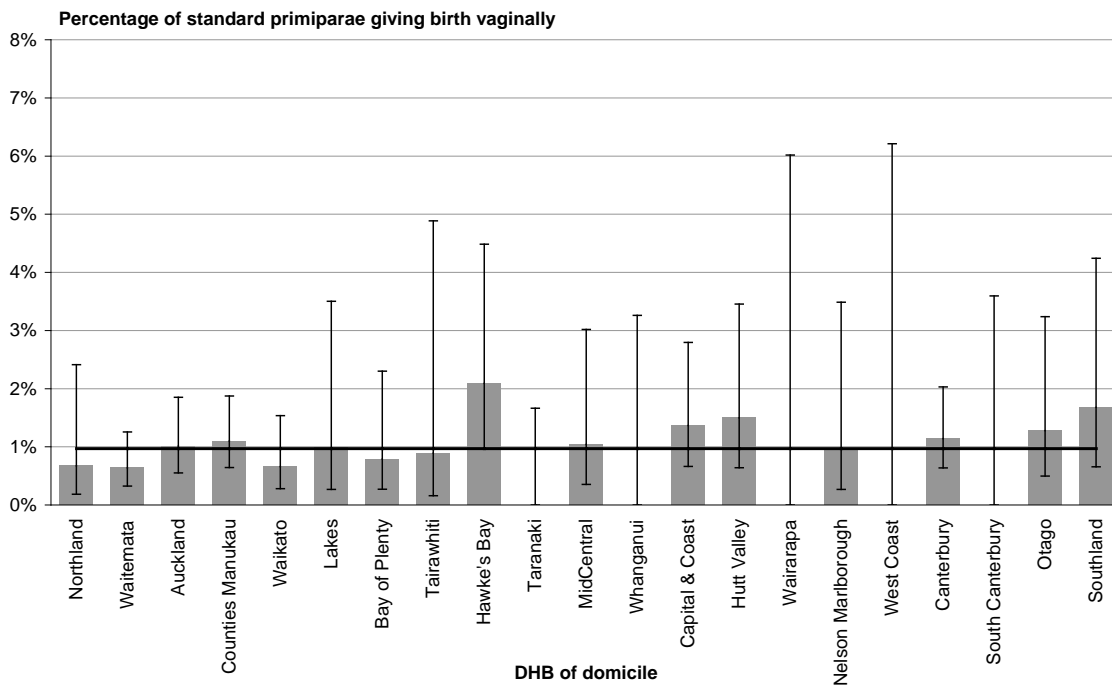
Error bars represent 95% confidence interval.

Indicator 8: Episiotomy and third- or fourth-degree tear among standard primiparae giving birth vaginally, 2010

Table 16: Number and percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by DHB of domicile, 2010

DHB of domicile	Episiotomy with 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Northland	2	298	0.7
Waitemata	8	1252	0.6
Auckland	10	988	1.0
Counties Manukau	13	1181	1.1
Waikato	5	758	0.7
Lakes	2	204	1.0
Bay of Plenty	3	379	0.8
Tairāwhiti	1	112	0.9
Hawke's Bay	6	287	2.1
Taranaki	0	227	
MidCentral	3	288	1.0
Whanganui	0	114	
Capital & Coast	7	512	1.4
Hutt Valley	5	334	1.5
Wairarapa	0	60	
Nelson Marlborough	2	205	1.0
West Coast	0	58	
Canterbury	11	964	1.1
South Canterbury	0	103	
Otago	4	313	1.3
Southland	4	238	1.7
Unspecified	0	5	
New Zealand	86	8880	1.0

Figure 15: Percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by DHB of domicile, 2010

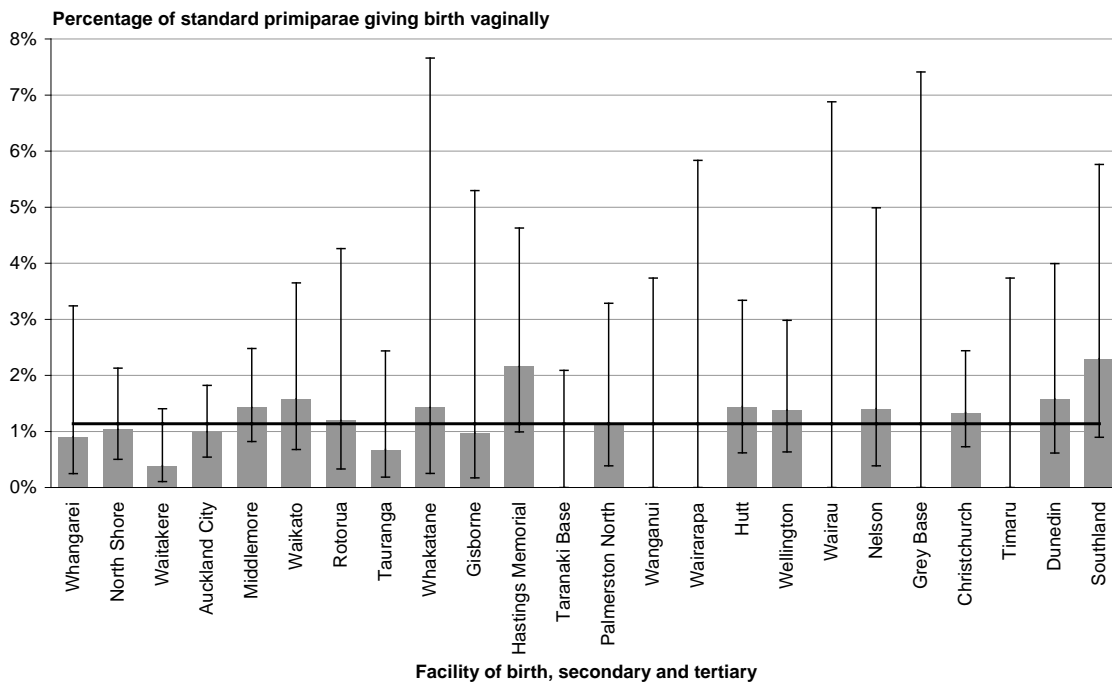


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 17: Number and percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2010

Facility	Episiotomy with 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	2	221	0.9
North Shore	7	674	1.0
Waitakere	2	515	0.4
Auckland City	10	1005	1.0
Middlemore	12	840	1.4
Waikato	5	316	1.6
Rotorua	2	167	1.2
Tauranga	2	295	0.7
Whakatane	1	70	1.4
Gisborne	1	103	1.0
Hastings Memorial	6	278	2.2
Taranaki Base	0	180	
Palmerston North	3	264	1.1
Whanganui	0	99	
Wairarapa	0	62	
Hutt	5	346	1.4
Wellington	6	434	1.4
Wairau	0	52	
Nelson	2	142	1.4
Grey Base	0	48	
Christchurch	10	749	1.3
Timaru	0	99	
Dunedin	4	253	1.6
Southland	4	174	2.3
All secondary and tertiary facilities	84	7386	1.1

Figure 16: Percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.

Error bars represent 95% confidence interval.

Indicator 9: General anaesthetic for women giving birth by Caesarean section

Rationale and purpose

Although the risks of general anaesthetic for Caesarean section have reduced greatly in recent decades, regional anaesthetic is still safer than general anaesthetic because it results in less maternal and neonatal morbidity (Australian Council on Healthcare Standards 2008, p 474). A proportion of Caesarean sections will continue to be done under general anaesthetic because of factors such as patient preference, as well as some high-risk cases (such as pre-eclampsia) where only general anaesthetic can be used. General anaesthetic is more likely to be used when Caesarean sections are done urgently, which can be related to the configuration and organisation of obstetric and anaesthetic services (for example, whether a specialist anaesthetist is on site) or to the level of antenatal care received.

The objective of this indicator is to encourage those services that have higher-than-average rates of general anaesthetic for Caesarean sections to undertake further investigation to determine the causes of these higher rates and evaluate whether they are justified.

Comment on data for 1 January–31 December 2010

The national rate of general anaesthetic for Caesarean section in 2010 is similar to 2009. Regional variation appears to have increased in 2010 compared with 2009. These rates are based on small numbers so caution must be exercised when performing comparisons.

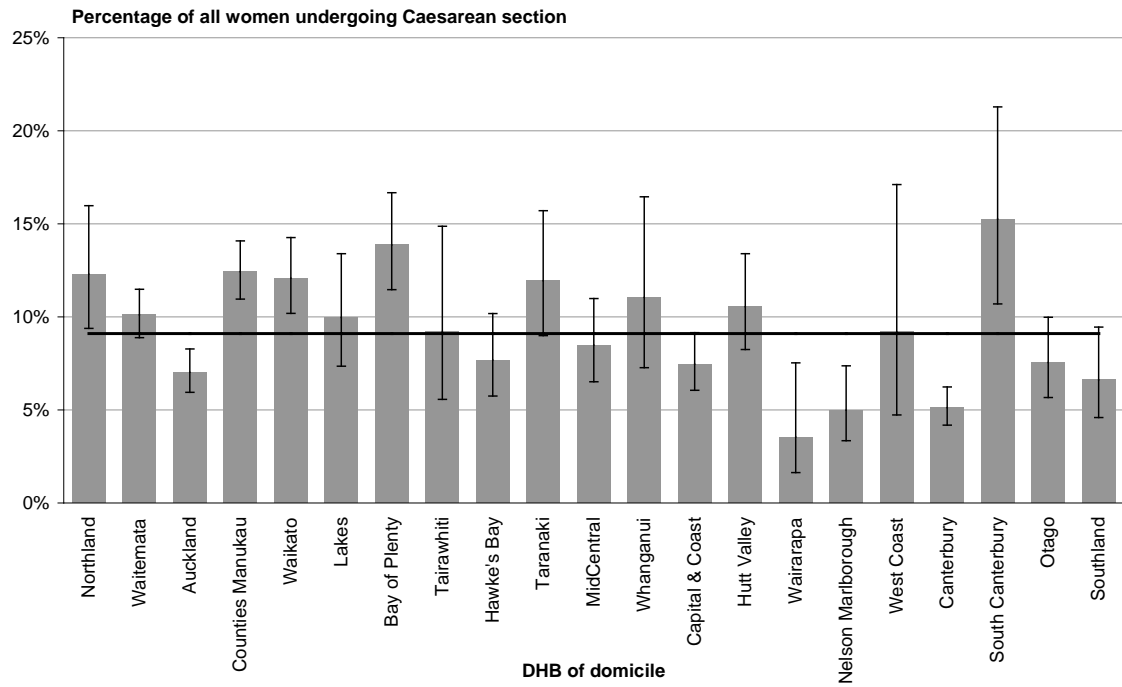
All DHBs should review their rates of general anaesthetic for Caesarean sections and consider the impact of the ratio between acute and elective Caesarean section rates. The reasons for higher rates of general anaesthetic for acute Caesarean sections should be investigated further.

Indicator 9: General anaesthetic for women giving birth by Caesarean section, 2010

Table 18: Number and percentage of women undergoing a Caesarean section under general anaesthetic, by DHB of domicile, 2010

DHB of domicile	General anaesthetic	All Caesarean sections	Rate (%)
Northland	47	382	12.3
Waitemata	210	2077	10.1
Auckland	130	1851	7.0
Counties Manukau	213	1713	12.4
Waikato	119	985	12.1
Lakes	38	381	10.0
Bay of Plenty	94	678	13.9
Tairāwhiti	14	152	9.2
Hawke's Bay	43	560	7.7
Taranaki	43	360	11.9
MidCentral	51	601	8.5
Whanganui	20	181	11.0
Capital & Coast	83	1113	7.5
Hutt Valley	58	550	10.5
Wairarapa	6	169	3.6
Nelson Marlborough	23	461	5.0
West Coast	8	87	9.2
Canterbury	91	1779	5.1
South Canterbury	27	177	15.3
Otago	44	583	7.5
Southland	27	408	6.6
Unspecified	0	4	
New Zealand	1389	15,252	9.1

Figure 17: Percentage of women undergoing a Caesarean section under general anaesthetic, by DHB of domicile, 2010

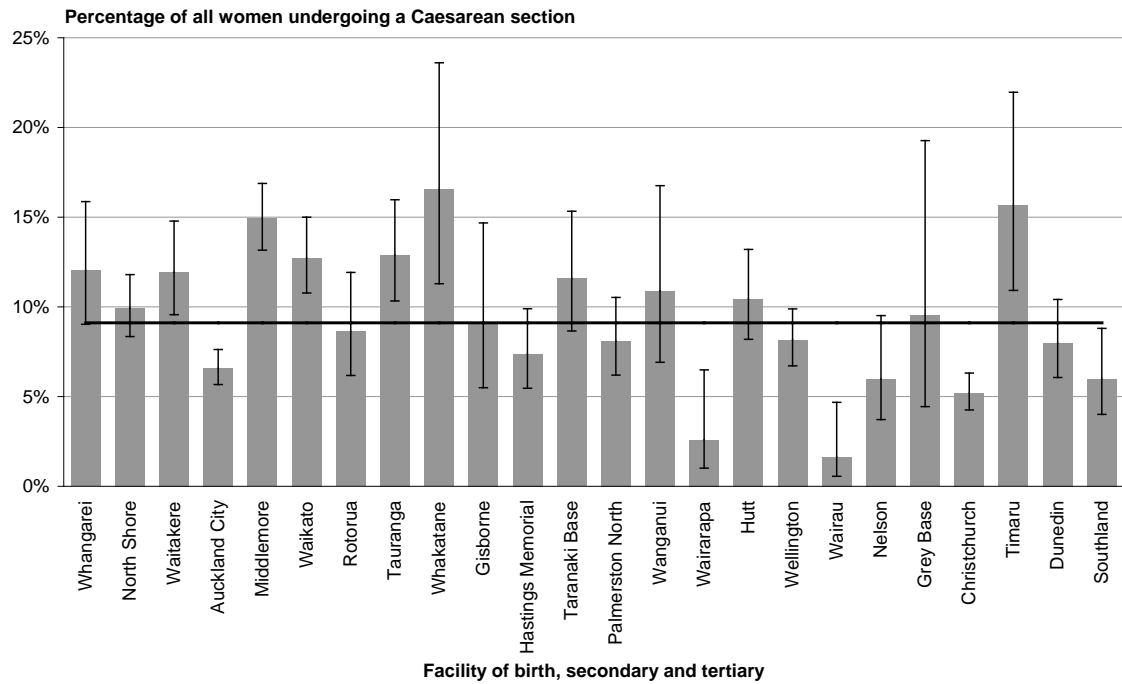


Black line represents national average.
 Error bars represent 95% confidence interval

Table 19: Number and percentage of women undergoing a Caesarean section under general anaesthetic, by facility of birth (secondary and tertiary facilities), 2010

Facility	General anaesthetic	All Caesarean sections	Rate (%)
Whangarei	42	349	12.0
North Shore	115	1157	9.9
Waitakere	71	595	11.9
Auckland City	164	2492	6.6
Middlemore	210	1407	14.9
Waikato	122	958	12.7
Rotorua	32	371	8.6
Tauranga	70	543	12.9
Whakatane	23	139	16.5
Gisborne	14	154	9.1
Hastings Memorial	40	542	7.4
Taranaki Base	41	354	11.6
Palmerston North	50	617	8.1
Whanganui	17	156	10.9
Wairarapa	4	154	2.6
Hutt	60	575	10.4
Wellington	94	1152	8.2
Wairau	3	184	1.6
Nelson	16	267	6.0
Grey Base	6	63	9.5
Christchurch	94	1811	5.2
Timaru	26	166	15.7
Dunedin	48	602	8.0
Southland	23	385	6.0
All secondary and tertiary facilities	1385	15,193	9.1

Figure 18: Percentage of women undergoing a Caesarean section under general anaesthetic, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicators 10 and 11: Blood transfusion during birth admission

Rationale and purpose

According to the Australian Council on Healthcare Standards (2008), 'postpartum haemorrhage (PPH) is a potentially life-threatening complication of birth that occurs in about 3–5 percent of vaginal births [and] remains a leading cause of maternal morbidity and mortality' (p 480). Excessive blood loss is often defined as an amount in excess of 1000 mL, although accuracy of measurement at this level is questionable, especially as the blood loss is often cumulative. A different and (some suggest) more objective measure is whether there is a requirement for blood transfusion due to excessive blood loss during or following the birth. This measurement is also not without difficulties, as there may be different tolerances for when a blood transfusion is required and refusal of blood transfusion due to religious or other beliefs. However, as a broad measure of excessive blood loss and potential long-term morbidity due to that blood loss, it is considered by many to be a useful measure of severe, life-threatening, PPH.

This indicator aims to provide maternity services with an indicator of significant blood loss that will stimulate further investigation of risk-screening strategies and the clinical management of the birth process. National benchmarking will encourage clinicians to investigate prevention and management strategies used in services that have significantly lower rates (adapted from Women's Hospitals Australasia 2007, p 104).

Comment on data for 1 January–31 December 2010

The national rate of blood transfusion with Caesarean section in 2010 is lower than 2009, and regional variation appears to have decreased. The national rate of blood transfusion with vaginal birth in 2010 is similar to 2009. These rates are based on small numbers, so caution must be exercised when performing comparisons.

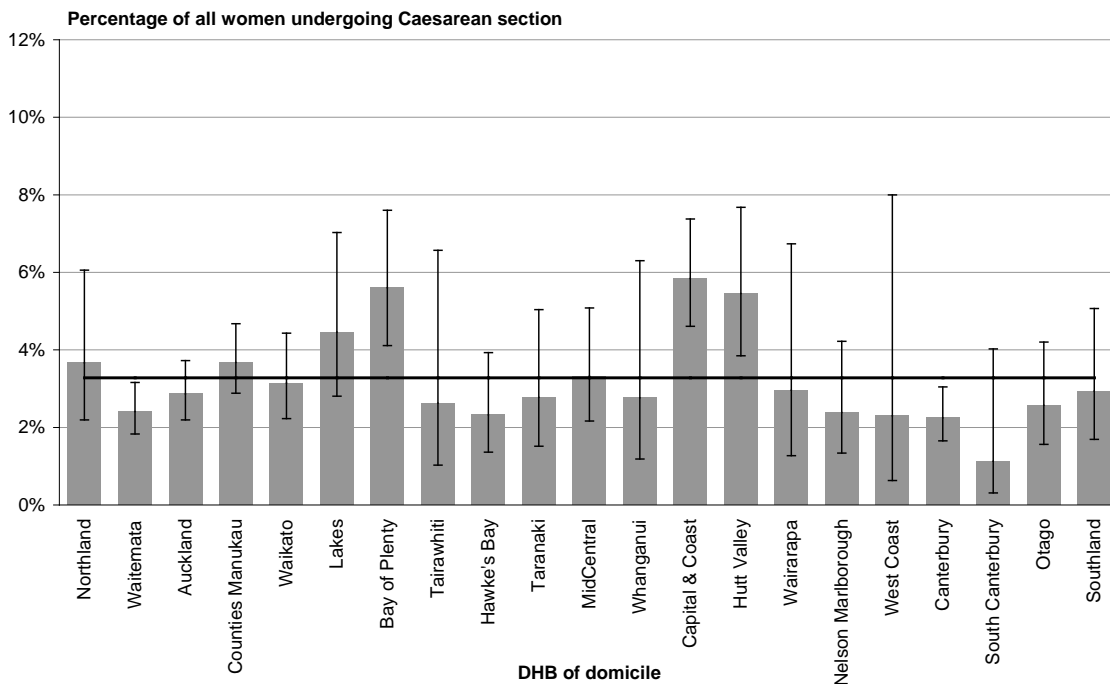
Overall, rates of blood transfusion are low and there is relatively low variation, although the rate and range is greater with Caesarean section deliveries. DHBs should investigate the reasons behind the greater variation in rates of blood transfusion with Caesarean sections. Because this indicator is a marker for PPH, the focus should not be on changing this indicator in isolation but on understanding and addressing the underlying causes.

Indicator 10: Blood transfusion during birth admission for Caesarean section delivery, 2010

Table 20: Number and percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by DHB of domicile, 2010

DHB of domicile	Blood transfusions	All Caesarean sections	Rate (%)
Northland	14	382	3.7
Waitemata	50	2077	2.4
Auckland	53	1851	2.9
Counties Manukau	63	1713	3.7
Waikato	31	985	3.1
Lakes	17	381	4.5
Bay of Plenty	38	678	5.6
Tairāwhiti	4	152	2.6
Hawke's Bay	13	560	2.3
Taranaki	10	360	2.8
MidCentral	20	601	3.3
Whanganui	5	181	2.8
Capital & Coast	65	1113	5.8
Hutt Valley	30	550	5.5
Wairarapa	5	169	3.0
Nelson Marlborough	11	461	2.4
West Coast	2	87	2.3
Canterbury	40	1779	2.2
South Canterbury	2	177	1.1
Otago	15	583	2.6
Southland	12	408	2.9
Unspecified	0	4	
New Zealand	500	15,252	3.3

Figure 19: Percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by DHB of domicile, 2010

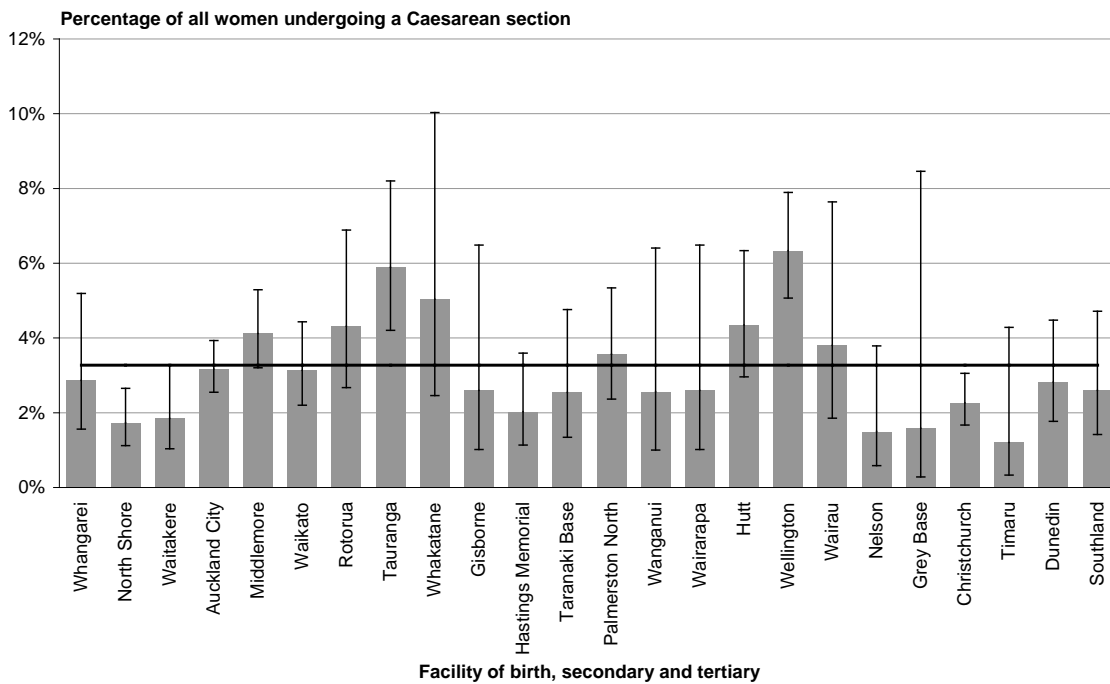


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 21: Number and percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2010

Facility	Blood transfusions	All Caesarean sections	Rate (%)
Whangarei	10	349	2.9
North Shore	20	1157	1.7
Waitakere	11	595	1.8
Auckland City	79	2492	3.2
Middlemore	58	1407	4.1
Waikato	30	958	3.1
Rotorua	16	371	4.3
Tauranga	32	543	5.9
Whakatane	7	139	5.0
Gisborne	4	154	2.6
Hastings Memorial	11	542	2.0
Taranaki Base	9	354	2.5
Palmerston North	22	617	3.6
Whanganui	4	156	2.6
Wairarapa	4	154	2.6
Hutt	25	575	4.3
Wellington	73	1152	6.3
Wairau	7	184	3.8
Nelson	4	267	1.5
Grey Base	1	63	1.6
Christchurch	41	1811	2.3
Timaru	2	166	1.2
Dunedin	17	602	2.8
Southland	10	385	2.6
All secondary and tertiary facilities	497	15,193	3.3

Figure 20: Percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2010



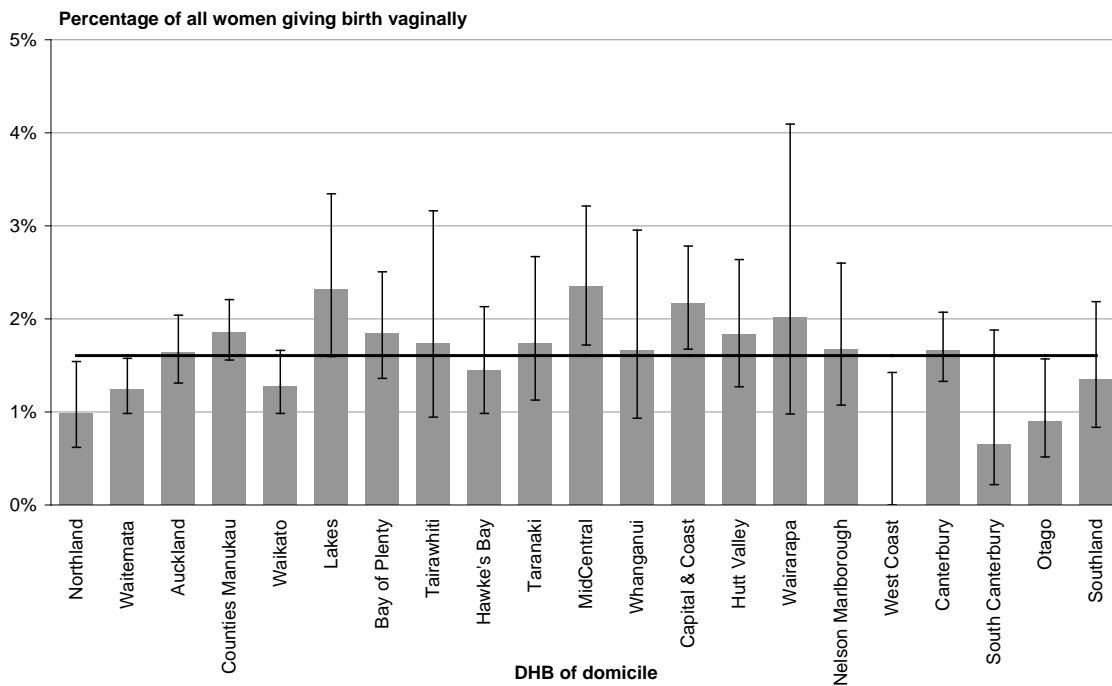
Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicator 11: Blood transfusion during birth admission for vaginal birth, 2010

Table 22: Number and percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by DHB of domicile, 2010

DHB of domicile	Blood transfusions	All vaginal births	Rate (%)
Northland	18	1839	1.0
Waitemata	68	5460	1.2
Auckland	77	4707	1.6
Counties Manukau	124	6683	1.9
Waikato	55	4298	1.3
Lakes	27	1167	2.3
Bay of Plenty	40	2165	1.8
Tairāwhiti	10	577	1.7
Hawke's Bay	25	1725	1.4
Taranaki	20	1151	1.7
MidCentral	38	1615	2.4
Whanganui	11	661	1.7
Capital & Coast	58	2684	2.2
Hutt Valley	28	1527	1.8
Wairarapa	7	348	2.0
Nelson Marlborough	19	1135	1.7
West Coast	0	266	
Canterbury	76	4579	1.7
South Canterbury	3	465	0.6
Otago	12	1331	0.9
Southland	16	1183	1.4
Unspecified	0	21	
New Zealand	732	45,587	1.6

Figure 21: Percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by DHB of domicile, 2010

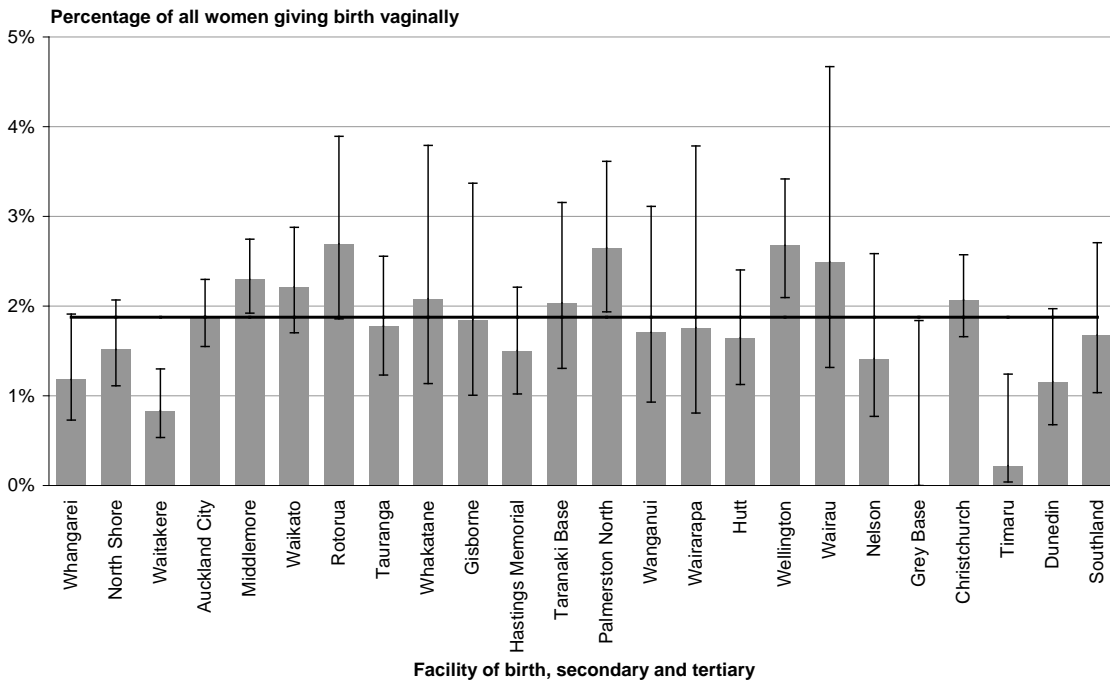


Black line represents national average.
 Error bars represent 95% confidence interval.

Table 23: Number and percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2010

Facility	Blood transfusions	All vaginal births	Rate (%)
Whangarei	16	1354	1.2
North Shore	39	2570	1.5
Waitakere	19	2276	0.8
Auckland City	97	5138	1.9
Middlemore	117	5092	2.3
Waikato	54	2438	2.2
Rotorua	27	1002	2.7
Tauranga	28	1576	1.8
Whakatane	10	480	2.1
Gisborne	10	541	1.8
Hastings Memorial	25	1663	1.5
Taranaki Base	19	934	2.0
Palmerston North	38	1435	2.6
Whanganui	10	586	1.7
Wairarapa	6	341	1.8
Hutt	26	1578	1.6
Wellington	62	2315	2.7
Wairau	9	361	2.5
Nelson	10	707	1.4
Grey Base	0	205	
Christchurch	78	3772	2.1
Timaru	1	452	0.2
Dunedin	13	1123	1.2
Southland	16	954	1.7
All secondary and tertiary facilities	730	38,893	1.9

Figure 22: Percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

Indicator 12: Premature birth

Rationale and purpose

Premature birth is a significant contributor to perinatal mortality and neonatal morbidity, especially for those born under 32 weeks gestation. Moderate prematurity from 32 to 36 weeks gestation makes up between 5 and 7 percent of births and may be under-recognised as a contributor to neonatal morbidity. Spontaneous preterm birth, premature rupture of membranes, multiple pregnancy and pregnancy-induced hypertension are the most common causes for premature birth in this group. Reporting on premature births between 32 and 36 weeks of pregnancy provides a baseline for further reporting on perinatal and neonatal infant outcomes.

Comment on data for 1 January–31 December 2010

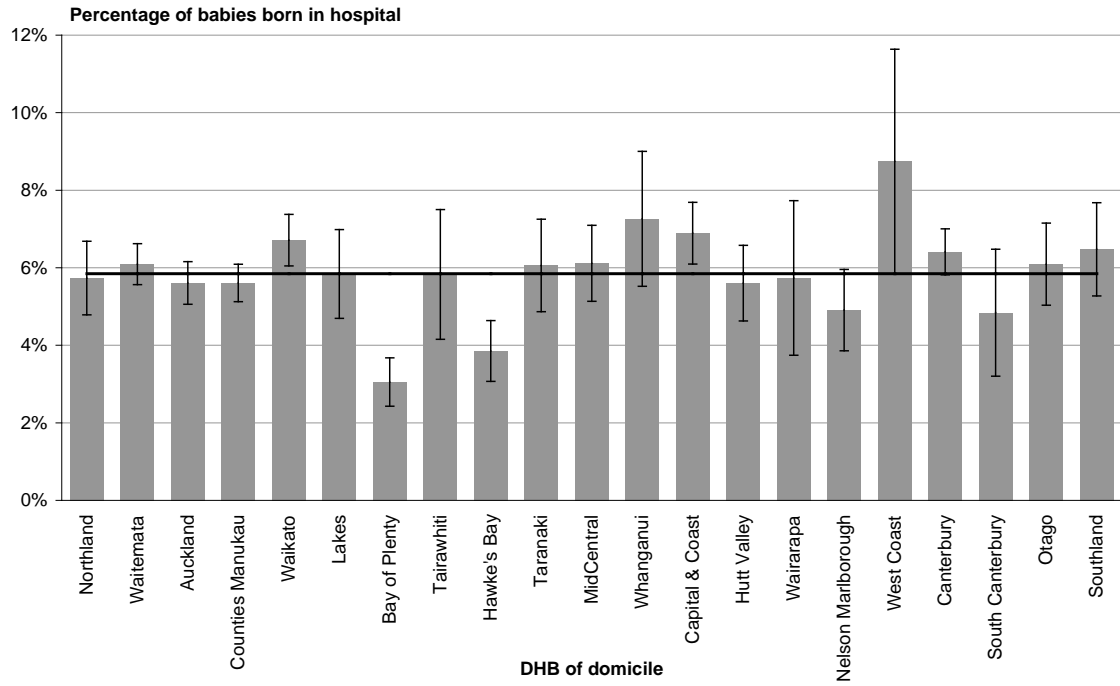
There is some variation in rates of premature birth between 32 and 36 weeks across DHBs. The national rate of premature birth between 32 and 36 weeks in 2010 has decreased slightly compared with 2009. All DHBs should consider their outcomes in the context of their population demographics.

Indicator 12: Premature birth (at 32–36 weeks gestation), 2010

Table 24: Percentage of premature births, by DHB of domicile, 2010

DHB of domicile	Babies born at 32–36 weeks gestation	All babies born in hospital	Rate (%)
Northland	132	2302	5.7
Waitemata	476	7812	6.1
Auckland	376	6706	5.6
Counties Manukau	491	8756	5.6
Waikato	367	5467	6.7
Lakes	94	1610	5.8
Bay of Plenty	89	2916	3.1
Tairāwhiti	44	755	5.8
Hawke's Bay	89	2310	3.9
Taranaki	93	1535	6.1
MidCentral	140	2290	6.1
Whanganui	62	854	7.3
Capital & Coast	269	3903	6.9
Hutt Valley	120	2142	5.6
Wairarapa	30	523	5.7
Nelson Marlborough	80	1630	4.9
West Coast	32	366	8.7
Canterbury	418	6520	6.4
South Canterbury	32	661	4.8
Otago	119	1953	6.1
Southland	104	1606	6.5
Unspecified	7	41	17.1
New Zealand	3664	62,658	5.8

Figure 23: Percentage of premature births, by DHB of domicile, 2010

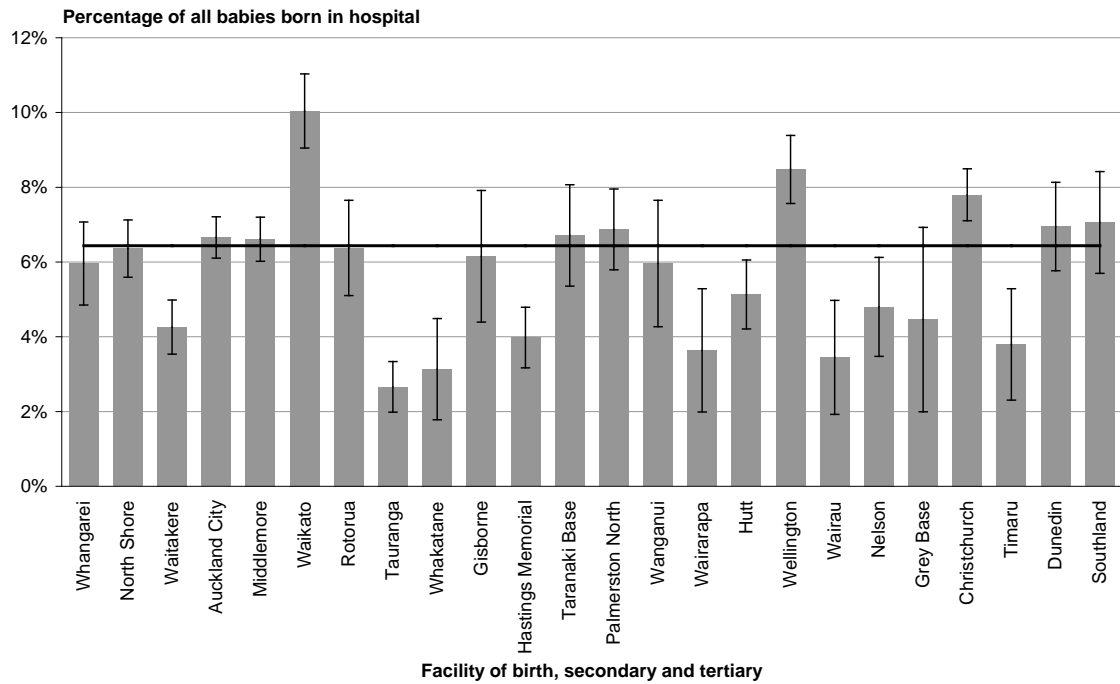


Black line represents national average.
Error bars represent 95% confidence interval.

Table 25: Percentage of premature births, by facility of birth (secondary and tertiary facilities), 2010

Facility	Babies born at 32–36 weeks gestation	All babies born in hospital	Rate (%)
Whangarei	104	1745	6.0
North Shore	247	3884	6.4
Waitakere	127	2981	4.3
Auckland City	518	7781	6.7
Middlemore	450	6806	6.6
Waikato	355	3535	10.0
Rotorua	90	1411	6.4
Tauranga	58	2179	2.7
Whakatane	20	638	3.1
Gisborne	44	715	6.2
Hastings Memorial	89	2237	4.0
Taranaki Base	88	1311	6.7
Palmerston North	145	2110	6.9
Whanganui	45	755	6.0
Wairarapa	18	495	3.6
Hutt	113	2201	5.1
Wellington	304	3586	8.5
Wairau	19	551	3.4
Nelson	48	1000	4.8
Grey Base	12	269	4.5
Christchurch	448	5743	7.8
Timaru	24	632	3.8
Dunedin	123	1770	6.9
Southland	96	1360	7.1
All secondary and tertiary facilities	3585	55695	6.4

Figure 24: Percentage of premature births, by facility of birth (secondary and tertiary facilities), 2010



Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence interval.

References

Australian Council on Healthcare Standards. 2008. *Australasian Clinical Indicator Report: 2001–2008: Determining the potential to improve quality of care: 10th edition*. Ultimo, NSW: Australian Council on Healthcare Standards. Available from: <http://www.achs.org.au>

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Women's Hospitals Australasia. 2007. *Findings from the Core Maternity Indicators Project Funded by the Australian Council on Safety and Quality in Health Care and Sponsored by the Department of Health, Western Australia*. Turner, ACT: Women's Hospitals Australasia. Available from: <https://www.health.gov.au>

Appendices

Appendix 1: Technical notes

Clinical codes and definitions

Standard primiparae: a group of mothers considered to be clinically comparable and who are expected to require low levels of obstetric intervention. Standard primiparae are defined in this report as women recorded in the National Minimum Dataset who meet all of the following inclusions:

- aged between 20 and 34 (inclusive) at delivery
- pregnant with a single baby presenting in labour in cephalic position (Tables A1, A2)
- have no known prior pregnancy of 20-plus weeks gestation
- have no recorded obstetric complications in the present pregnancy that are indications for specific obstetric interventions (Table A4)
- deliver a live or stillborn baby at term gestation: 37 to 41 weeks inclusive (Table A3).

Table A1: Cephalic presentation exclusion criteria

Clinical code (ICD-10-AM)	Description
9047000	Spontaneous breech delivery
9047001	Assisted breech delivery
9047002	Assisted breech delivery with forceps to after-coming head
9047003	Breech extraction
3047004	Breech extraction with forceps to after-coming head
O640–O649	Labour and delivery affected by malposition and malpresentation of fetus

Table A2: Singleton birth exclusion criteria

Clinical code (ICD-10-AM)	Description
O300–O309	Multiple gestation
O632	Delayed delivery of second twin, triplet, etc
Z372–Z377	Outcome of delivery – twins or multiple

Table A3: Duration of pregnancy (gestation exclusion criteria)

Clinical code (ICD-10-AM)	Description
O090–O095	Duration of pregnancy under 37 weeks
O48	Prolonged pregnancy
O60	Preterm labour and delivery

Table A4: Obstetric complications exclusion criteria

Clinical code (ICD-10-AM)	Description
O100–O16	Hypertension, proteinuria, pre-eclampsia, eclampsia
O240–O249	Diabetes mellitus
O360, O361, O363, O364, O365	Known or suspected fetal problems
O411, O420–O429	Infection or premature rupture of membranes
O450–O459, O460–O469, O48	Premature separation of placenta, antepartum haemorrhage, prolonged pregnancy

Spontaneous vaginal birth: the birth of a baby without obstetric intervention (ie, without Caesarean section, forceps or vacuum (ventouse)), identified by the presence of a spontaneous vaginal birth clinical code with no concurrent instrumental/Caesarean section code (Table A5). These may include births where labour has been induced or augmented.

Table A5: Delivery type codes

Clinical code (ICD-10-AM)	Description
O80	Single spontaneous delivery
O81	Single delivery by forceps and vacuum extractor
O82	Single delivery by Caesarean section
9046700	Spontaneous vertex delivery
9046800–9046804	Forceps delivery
9046900	Vacuum extraction with delivery
1652000–1652003	Caesarean section

Instrumental vaginal birth: a vaginal birth requiring instrumental assistance with no concurrent clinical code indicating a Caesarean section. Interventions include forceps and/or vacuum (ventouse) extraction (Table A5). Failed attempts at forceps or vacuum extraction are excluded (Table A6).

Table A6: Excluded delivery procedure codes

Clinical code (ICD-10-AM)	Description
9046805	Failed forceps
9046901	Failed vacuum extraction

Caesarean section: an operative birth through an abdominal incision. This includes emergency and elective, lower segment and classical, and it is identified by the presence of any Caesarean section clinical code (Table A5).

Induction of labour: an intervention to stimulate the onset of labour by pharmacological or other means, identified by induction of labour clinical codes (Table A7).

Table A7: Induction procedure codes

Clinical code (ICD-10-AM)	Description
9046500	Medical induction of labour, oxytocin
9046501	Medical induction of labour, prostaglandin
9046502	Other medical induction of labour
9046503	Surgical induction of labour by artificial rupture of membranes (ARM)
9046504	Other surgical induction of labour
9046505	Medical and surgical induction of labour

Intact lower genital tract: identified by an absence of clinical codes indicating an episiotomy or a tear of any degree (first to fourth, and including unspecified degree) (Table A8).

Episiotomy: an incision of the perineal tissue surrounding the vagina at the time of birth to facilitate delivery, identified by the presence of an episiotomy clinical code (Table A8).

Third- and fourth-degree tear: a third- or fourth-degree perineal laceration during birth, identified by the presence of a third- or fourth-degree of tear clinical code (Table A8).

Table A8: Episiotomy and/or perineal tear codes

Clinical code (ICD-10-AM)	Description
9047200	Episiotomy
0700	First-degree perineal laceration during delivery
0701	Second-degree perineal laceration during delivery
0702	Third-degree perineal laceration during delivery
0703	Fourth-degree perineal laceration during delivery
0709	Perineal laceration during delivery, unspecified

General anaesthetic for a Caesarean section birth: identified by the presence of a general anaesthetic clinical code (Table A9) and a Caesarean section clinical code (Table A5).

Table A9: General anaesthetic procedure codes

Clinical code (ICD-10-AM)	Description
92514XX	General anaesthesia

Blood transfusion during birth admission: identified by clinical codes for selected blood transfusion procedures.

Premature birth: the birth of a baby born between 32 weeks 0 days and 36 weeks 6 days gestation.

Other technical notes

Facility graphs: all facility graphs in this report present maternity events occurring in secondary and tertiary hospitals only. The aim of this is to enable the comparison of deliveries or births for which clinicians have access to similar clinical facilities and interventions. Indicators for DHBs include data for all facilities, including primary facilities. Data for individual primary facilities are provided in the appendix tables. Care should be taken when making comparisons, because many primary units have only a small number of maternity events, meaning that in many cases differences between rates will not be statistically significant.

Presentation of confidence intervals: the error bars on the charts in this document represent 95 percent confidence intervals for the sample proportion, which have been calculated using the Wilson score (see Newcombe RG, 1998, Two-sided confidence intervals for the single proportion: Comparison of seven methods, *Statistics in Medicine* 17: 857–72).

Presentation of Southern DHB data: in May 2010, Otago and Southland DHBs were merged into a single entity (Southern DHB). Southern DHB began reporting to the Ministry of Health National Collections in 2011. For this report, which presents 2010 data, Otago and Southland are presented separately. Data for Otago and Southland will be merged in subsequent reports.

Christchurch and Christchurch Women's data merge: from 1 July 2009 maternity events that had previously been reported as occurring in Christchurch Women's hospital were reported as occurring in Christchurch Hospital. This change represents a change in the way the data is reported rather than a change in patient care. For this report, Christchurch Women's Hospital and Christchurch Hospital events are summed.

Appendix 2: Secondary and tertiary facilities

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Whangarei	1354	255	221	349	197	8	24	34	100	11	12	2	42	16	10	1745	104
North Shore	2570	870	674	1157	537	47	137	174	163	134	22	7	115	39	20	3884	247
Waitakere	2276	627	515	595	445	11	70	91	175	105	7	2	71	19	11	2981	127
Auckland City	5138	1242	1005	2492	797	64	208	236	145	324	23	10	164	97	79	7781	518
Middlemore	5092	1022	840	1407	696	37	144	174	173	192	34	12	210	117	58	6806	450
Waikato	2438	392	316	958	245	15	71	71	110	46	20	5	122	54	30	3535	355
Rotorua	1002	189	167	371	157	4	10	21	86	10	8	2	32	27	16	1411	90
Tauranga	1576	341	295	543	245	10	50	45	78	57	10	2	70	28	32	2179	58
Whakatane	480	87	70	139	61	1	9	17	40	6	0	1	23	10	7	638	20
Gisborne	541	118	103	154	93	4	10	15	51	5	7	1	14	10	4	715	44
Hastings Memorial	1663	348	278	542	220	15	58	70	93	67	9	6	40	25	11	2237	89
Taranaki Base	934	220	180	354	170	9	10	40	78	24	1	0	41	19	9	1311	88
Palmerston North	1435	322	264	617	216	9	48	56	87	59	17	3	50	38	22	2110	145
Whanganui	586	116	99	156	80	3	19	17	53	12	3	0	17	10	4	755	45
Wairarapa	341	82	62	154	42	5	20	20	12	17	3	0	4	6	4	495	18
Hutt	1578	429	346	575	294	10	52	83	123	54	14	5	60	26	25	2201	113
Wellington	2315	541	434	1152	333	53	101	106	81	140	10	6	94	62	73	3586	304
Wairau	361	70	52	184	48	4	4	17	14	8	0	0	3	9	7	551	19
Nelson	707	171	142	267	122	4	20	29	44	36	5	2	16	10	4	1000	48
Grey Base	205	55	48	63	44	3	4	7	22	7	0	0	6	0	1	269	12
Christchurch	3772	925	749	1811	499	49	250	170	180	231	18	10	94	78	41	5743	448
Timaru	452	119	99	166	85	5	14	20	50	18	1	0	26	1	2	632	24
Dunedin	1123	335	253	602	181	12	72	81	85	62	7	4	48	13	17	1770	123
Southland	954	208	174	385	142	17	32	34	54	25	7	4	23	16	10	1360	96

Appendix 3: Primary facilities

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Akaroa Community	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ashburton	96	27	27	1	27	0	0	0	15	0	3	0	1	0	0	100	2
Bay of Islands	226	39	39	0	39	0	0	0	20	3	1	0	0	0	0	240	5
Birthcare Huntly	159	27	27	0	27	0	0	0	24	0	1	0	0	0	0	159	2
Birthcare Parnell	420	122	122	0	122	0	0	0	121	0	0	0	0	0	0	427	2
Botany Downs Maternity	413	96	95	21	94	0	1	1	33	10	2	0	0	0	1	479	5
Buller	24	5	5	0	5	0	0	0	5	0	0	0	0	0	0	27	0
Burwood	169	44	44	0	44	0	0	0	33	0	1	1	0	0	0	172	1
Charlotte Jean Maternity Unit	86	21	21	0	21	0	0	0	21	0	0	0	0	0	0	86	3
Clutha Health First	38	12	12	0	12	0	0	0	9	0	0	0	0	0	0	36	0
Dannevirke Community	54	12	12	0	12	0	0	0	7	0	0	0	0	0	0	54	2
Darfield	15	6	6	0	6	0	0	0	5	0	0	0	0	0	0	15	0
Dargaville	4	1	1	0	1	0	0	0	0	0	0	0	0	0	0	5	0
Elizabeth R	90	17	17	0	17	0	0	0	17	0	0	0	0	0	0	90	2
Forest Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Golden Bay Community	13	2	2	0	2	0	0	0	0	0	0	0	0	0	0	13	0
Gore Health Centre	77	20	20	0	20	0	0	0	2	0	2	0	0	0	0	79	0
Hawera	112	30	30	0	25	0	5	0	12	3	2	0	0	1	0	113	1
Helensville Birthing Unit	60	11	11	0	11	0	0	0	11	0	0	0	0	0	0	49	0
Hokianga	50	15	15	0	13	0	2	0	15	0	0	0	0	0	0	50	1
Horowhenua	170	26	26	0	26	0	0	0	20	0	0	0	0	0	0	169	4

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Kaikoura	21	7	7	0	7	0	0	0	6	0	0	0	0	0	0	21	0
Kaitia	152	14	13	0	13	0	0	0	7	2	0	0	0	0	0	159	10
Kapiti Medical Centre	156	28	28	0	28	0	0	0	9	3	0	1	0	0	0	157	0
Kenepuru	204	36	36	0	36	0	0	0	17	2	2	0	0	0	0	213	2
Lakes District	41	11	11	0	11	1	0	0	8	1	0	0	0	0	0	43	0
Lincoln	95	27	27	0	27	0	0	0	16	2	1	0	0	0	0	98	0
Maniototo Health Services Ltd	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Matariki	110	22	22	0	22	0	0	0	15	1	2	0	0	0	0	114	1
Maternity Services Ltd	51	9	9	0	9	0	0	0	9	0	0	0	0	0	0	51	0
Murupara	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Northern Southland Birthing Centre	18	3	3	0	3	0	0	0	2	0	0	0	0	0	0	19	1
Oamaru	92	30	29	0	29	0	0	0	19	0	1	0	0	0	0	95	0
Opotiki	46	7	7	0	7	0	0	0	4	0	0	0	0	0	0	45	0
Papakura Obstetric	423	64	57	18	54	1	3	6	26	6	0	0	2	0	2	485	9
Pohlen Trust	117	32	31	0	30	1	1	0	30	1	0	0	0	0	0	119	1
Pukekohe	395	82	81	19	80	0	1	1	38	5	2	0	1	0	0	431	8
Rangiora	104	21	21	0	21	0	0	0	15	2	0	0	0	0	0	105	0
Rhoda Read	85	19	19	0	19	0	0	0	14	0	2	0	0	0	0	87	1
River Ridge (East) Birthing Centre	602	146	143	0	143	7	0	0	114	2	5	0	0	0	0	617	1
St Georges	331	88	88	0	87	0	1	0	38	6	1	0	0	0	0	342	0
Taumarunui	69	11	11	0	11	0	0	0	9	0	0	0	0	1	0	71	1
Taupo General	188	46	46	0	46	0	0	0	30	1	1	0	0	0	0	193	1
Te Kuiti	54	9	9	0	9	0	0	0	6	1	0	0	0	0	0	57	0

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Te Whare Hauora o Ngati Porou	36	8	8	0	8	0	0	0	7	0	0	0	0	0	0	36	0
Thames	101	18	18	0	18	0	0	0	13	0	1	0	0	0	0	107	0
Tokoroa	84	9	9	0	9	0	0	0	4	0	1	0	0	0	0	90	2
Tuatapere Maternity	23	9	9	0	9	0	0	0	7	0	0	0	0	0	0	24	0
Waihi	82	22	22	0	22	0	0	0	22	0	0	0	0	0	0	81	1
Waikari	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Waimarino Health Centre	14	3	3	0	3	0	0	0	3	0	0	0	0	0	0	14	0
Wairoa	48	5	5	0	5	0	0	0	3	0	0	0	0	0	0	49	0
Warkworth Birthing Centre	137	38	38	0	38	0	0	0	22	0	0	0	0	0	0	138	4
Waterford Birth Centre	435	129	125	0	125	10	0	0	83	0	2	0	0	0	0	437	5
Wellsford Birthing Unit	35	7	7	0	7	0	0	0	7	0	0	0	0	0	0	36	0
Winton Birthing Centre	60	19	19	0	19	0	0	0	19	0	0	0	0	0	0	59	0