

New Zealand Maternity Clinical Indicators

2012

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Executive summary

The New Zealand Maternity Clinical Indicators are the result of collaboration between the Ministry of Health and maternity stakeholders representing consumer, midwifery, obstetric, general practice, paediatric and anaesthetic perspectives. In 2011 an expert working group established a set of 12 maternity clinical indicators that could be measured using the available data collections at that time.

Since then, data collections and data quality have improved. In 2013 the National Maternity Monitoring Group reviewed the original indicator set and recommended a range of changes to improve the quality, completeness and scope of the New Zealand Maternity Clinical Indicators. These proposed changes were further reviewed and developed by the original expert working group to ensure the objectives of the New Zealand Maternity Clinical Indicators were retained: being a tool for assessing the quality and national consistency in the delivery of maternity services in New Zealand.

This report presents the first year of these revised indicators. In addition to improved quality and completeness of the existing 12 indicators, three new indicators have been added that reflect care during pregnancy and the postnatal period, and severe maternal morbidity.

For this report, as with previous reports in this series, the 'standard primipara' definition (see 'Summary of Changes' on p2) is used to identify a group of women for whom interventions and outcomes should be similar. Of the 15 indicators covered in this report, 8 apply to standard primiparae, 4 apply to all women giving birth, 2 apply to women who registered with a Lead Maternity Carer and 1 applies to all babies born.

Since 2012, district health boards (DHBs) and maternity stakeholders have used this national benchmarked data in their local maternity quality and safety programmes to identify areas warranting further investigation at a local level. Using the data in this report, DHBs and local maternity stakeholders can expand the scope of their investigations and view trends over a four-year period.

As the three previous reports demonstrated, maternity service delivery and outcomes vary between DHBs and between individual secondary and tertiary facilities. 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 show key maternity outcomes for each DHB region and secondary/tertiary maternity facility.

The purpose of the New Zealand Maternity Clinical Indicators is to:

- highlight areas where quality can be improved at a national level
- support local quality improvement by helping DHBs to identify focus areas for local clinical review of maternity services
- provide a broader picture of maternity outcomes in New Zealand than that obtainable from maternal and perinatal mortality data alone
- provide standardised (benchmarked) data allowing DHBs to evaluate their maternity services over time and against the national average
- improve national consistency and quality in maternity data reporting.

The New Zealand Maternity Clinical Indicators are evidence-based and cover a range of procedures and outcomes for mothers and their babies. Where possible the New Zealand Maternity Clinical Indicators are aligned with international maternity indicators to enable international comparison.

The New Zealand Maternity Clinical Indicators are developed and published by the Ministry of Health with support from the National Maternity Monitoring Group and the New Zealand Maternity Clinical Indicators Expert Working Group.

It is an expectation in the New Zealand Maternity Standards that the New Zealand Maternity Clinical Indicators are reviewed every three years.

Background

In 2010 the Minister of Health directed the Ministry of Health to develop a national quality and safety programme for maternity services, encompassing standards and clinical indicators. The Ministry of Health worked with key professional colleges to identify potential indicators and consider how these might be used as part of a national quality and safety programme.

The Ministry of Health convened an expert working group to develop the initial set of 12 indicators, comprising representatives from midwifery, obstetric, paediatric, general practice, epidemiology, service management and consumer backgrounds.

Following three publications of these 12 indicators (2009 to 2011), the National Maternity Monitoring Group reviewed the available data and recommended a range of changes to improve the quality, completeness and scope of the New Zealand Maternity Clinical Indicators.

The next review of the New Zealand Maternity Clinical Indicators will occur prior to the development of the 2015 report.

Overview

This report presents the first year of these revised indicators, developed in partnership with the New Zealand Maternity Clinical Indicators Expert Working Group. In addition to improved quality and completeness of the existing 12 indicators, 3 new indicators have been added that reflect care during pregnancy and the postnatal period, and severe maternal morbidity.

This publication is the fourth annual report on the original 12 indicators, and the first report presenting new indicators and revised definitions. Its focus is presenting data for the 2012 calendar year.

Because the indicators have been revised using new definitions and data sources, data presented here cannot necessarily be compared to the previously published reports for 2009 to 2011. Refer to Appendix 3 and accompanying online tables for 2009 to 2011 figures calculated using the revised definitions and data sources.

Summary of changes

Three changes, enabled by improvements in nationally collected data, have been made to this current report compared to the previous reports. They are: improving the accuracy of the standard primipara calculation, expanding the population covered by the indicators to include births occurring outside maternity facilities, and introducing three new indicators.

Standard primipara

The standard primipara represents a woman expected to have an uncomplicated pregnancy; intervention and complication rates for such women should be low and consistent across hospitals. Compiling data from only standard primiparae (rather than all women giving birth) controls for differences in case mix and increases the validity of inter-hospital comparisons of maternity care (adapted from Australian Council on Healthcare Standards 2008, p 29).

For this report, a 'standard primipara' is defined as a woman aged between 20 and 34 years at the time of birth, having her first baby (parity = 0)¹ at term (37 to 41 weeks gestation) where the outcome of the birth is a singleton baby, the presentation is cephalic and there have been no recorded obstetric complications that are indications for specific obstetric intervention. Standard primiparae account for approximately 14% of all births nationally; this proportion varies across DHBs.² See 'Appendix 1: Technical notes' for more information on definitions.

Changes to data sources for the 2012 report have improved the accuracy of the standard primipara calculation but do not change the definition of a standard primipara.

¹ Primiparae – women giving birth for the first time (parity=0) – account for approximately 40% of all births nationally; the proportion ranges from 32% to 50% between DHBs. The number of primiparae giving birth at home is lower, around 20%, ranging from 6% to 28% between DHBs.

² The proportion of standard primiparae among all women giving birth ranges from 12% to 17% between DHBs. Around 37% of all primiparae are 'standard'.

Population

The population from which the indicators are derived has changed. Due to system limitations, previous reports focused on women giving birth and babies born in maternity facilities only. For 2012 onwards, where possible the scope of the indicators is expanded to all births known to the Ministry of Health, including births not occurring at a maternity facility – that is, home births and births where the location was unknown. Indicators 1 and 14 cover all women registered with a Lead Maternity Carer, indicators 10 to 13 cover all women giving birth (regardless of birth location) and indicator 15 covers all babies born (regardless of birth location).

For 2012, indicators 2 to 9 (standard primiparae) are limited to women giving birth at a maternity facility. Alternative methodologies to expand the definition of standard primipara to accurately include births not at a maternity facility are being developed and tested, and are expected to apply from the 2013 report onwards.

New and modified indicators

The existing preterm birth indicator (indicator 15) has been modified in this report to include all babies born under 37 weeks gestation (that is, all live births between 20 weeks 0 days and 36 weeks and 6 days). A breakdown of babies born under 32 weeks and 32 to 36 weeks gestation for 2012 is provided in this report.

Three new indicators have also been added. These additions reflect government policies such as the Health Target 'better help for smokers to quit', the recommendations of the National Maternity Monitoring Group regarding timely access to a Lead Maternity Carer, and an increased focus on severe morbidity by the Perinatal and Maternal Mortality Review Committee.

Further indicators of severe maternal morbidity and infant outcomes will be considered for future reports.

Table 1 lists numerators and denominators for the 15 Clinical Indicators presented in this publication. Previous years' data (2009 to 2011) has been reproduced using the new definitions to enable a comparison over time.

Data sources

Data for these indicators was extracted from all pregnancies and live births recorded on the National Maternity Collection (MAT) on 23 January 2014.

MAT provides statistical, demographic and clinical information about selected publicly funded maternity services up to nine months before and three months after a birth. It integrates health information from three sources:

- inpatient and day-patient health event data during pregnancy, birth and the postnatal period for mother and baby, sourced from the National Minimum Dataset (NMDS)
- Lead Maternity Carer (LMC) claim forms for primary maternity services provided under Section 88 of the New Zealand Public Health and Disability Act 2000
- primary maternity services provided by DHBs to women who do not have a community LMC or are under the care of a DHB secondary service during their pregnancy or birth.³

³ This data is being collected in 2014 and is not included in this 2012 report. All data on primary maternity services in this report is sourced from Lead Maternity Carer claims.

These sources are collected for administrative purposes (including the funding of maternity services).

MAT does not contain details of stillborn babies. Information about stillbirths is included in the Mortality Collection. Refer to the MAT data dictionary for more information on the data held in MAT.

Table 1: New Zealand Maternity Clinical Indicators

Source	Indicator	Numerator	Denominator
LMC Claims (MAT)	1 Registration with a Lead Maternity Carer in the first trimester of pregnancy	Total number of women who register with a Lead Maternity Carer in the first trimester of their pregnancy	Total number of women who register with a Lead Maternity Carer
Hospital Events (NMDS)	2 Standard primiparae who have a spontaneous vaginal birth	Total number of standard primiparae who have a spontaneous vaginal birth at a maternity facility	Total number of standard primiparae who give birth at a maternity facility
	3 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 at a maternity facility
	4 Standard primiparae who undergo caesarean section	Total number of standard primiparae who undergo caesarean section	Total number of standard primiparae who give birth at a maternity facility
	5 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 at a maternity facility
	6 Standard primiparae with an intact lower genital tract (no 1st to 4th-degree tear or episiotomy)	Total number of standard primiparae with an intact lower genital tract with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	7 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 with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	8 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 with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	9 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 with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	All women giving birth (MAT)	10 Women having a general anaesthetic for caesarean section	Total number of women having a general anaesthetic for caesarean section
11 Women requiring a blood transfusion with caesarean section		Total number of women requiring a blood transfusion with caesarean section	Total number of women who undergo caesarean section
12 Women requiring a blood transfusion with vaginal birth		Total number of women requiring a blood transfusion with vaginal birth	Total number of women who give birth vaginally
13 Diagnosis of eclampsia at birth admission		Total number of women diagnosed with eclampsia during birth admission	Total number of women giving birth
LMC claims (MAT)	14 Maternal tobacco use during postnatal period	Total number of women identified as smokers at 2 weeks after birth	Total number of women with smoking status at 2 weeks after birth reported
All babies born (MAT)	15 Preterm birth	Total number of babies born under 37 weeks gestation	Total number of babies born (live births)

Note: This table lists the 15 indicators presented in this publication and differs from previous reports in this publication series.

National Minimum Dataset

The National Minimum Dataset (NMDS) stores administrative information routinely collected for all publicly funded inpatients of a New Zealand maternity facility (hospitals and birthing units). This information contains a large amount of demographic and clinical data, including data on diagnoses and the procedures used. The information is assigned standardised codes that are internationally comparable. The classification system used is the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM). This system is designed for the classification of morbidity and mortality information for statistical, epidemiological and clinical purposes. Refer to the NMDS data dictionary for more information on the data held in the NMDS.

Lead Maternity Carer claims data

This dataset contains information on women and babies who access primary maternity services provided under Section 88 of the New Zealand Public Health and Disability Act 2000. This information is received through the Lead Maternity Carer (LMC) claim forms and includes all women registered with an LMC. This represented 89% of all women giving birth in 2012.

DHB funded primary maternity services data

Collection of this dataset is under way and is expected to be available in future reports. This dataset contains information on women who access a DHB provider, including a DHB caseload midwife, DHB primary midwifery teams and shared care arrangements. Once complete, this dataset will increase the scope of information the Ministry holds on women and babies who access primary maternity services, including the level of service they receive and their trimester of registration when the DHB is the primary maternity provider.

Analytical methods

The data presented in this report primarily pertains to women recorded as giving birth and babies live-born in 2012 from MAT. Data between 2009 and 2011 has also been analysed using the same methods and criteria to provide a time-series view.

Records of babies born at gestational age of less than 20 weeks and the corresponding records for their mothers have been excluded from this analysis. All efforts have been made to ensure that the data presented does not include duplicate events.

Standard primiparae were identified using maternal age, gestational age and reported parity from MAT, and clinical codes sourced from the current birth event, from antenatal events corresponding to the pregnancy, and from a search of historical maternity events held in the NMDS. See 'Appendix 1: Technical notes' for more detail on definitions and code ranges.

Due to insufficient data at time of analysis, standard primiparae in this report only include women giving birth in maternity facilities and exclude home births or births where the location was unknown. It is estimated that approximately 13% of women giving birth at home met the criteria for standard primiparae nationally (6% to 17% between DHBs). Work to expand the definition of standard primipara to accurately include births not at a maternity facility (such as home births) is under way and changes are expected to apply from the 2013 report onwards.

The definitions and data sources used in this report have been revised and differ from previously published reports (2009 to 2011). Therefore, data presented in this report should not be compared to previous reports. See the accompanying spreadsheets for time-series analysis.

Data integrity

This report has been compiled from data supplied by DHBs and LMCs. DHBs and facilities are individually responsible for ensuring the completeness and quality of data they supply to national collections. LMCs are contractually responsible for ensuring the accuracy of data they supply on claims for payment. Data quality management has been applied at several points in the collection, extraction and reporting of the data presented here. However, errors can occur. Contact the Ministry of Health if you have concerns regarding any of the data or analyses presented here.

Numbers and rates

Data is presented in this report in two ways:

- by DHB of domicile: this data is intended to provide DHBs with information relevant to their usually resident population
- by facility of birth: this data is intended to allow monitoring of trends over time at the facility level. Data for births in secondary and tertiary facilities is presented graphically in the body of this document, and data for births in primary and private facilities and home births (where available) is presented in tables in the appendices.

Rates are presented as raw percentages. Rates have not been standardised by age or ethnicity; the choice of denominator (standard primiparae) is intended to group women into clinically similar cohorts that would be expected to experience similar birth outcomes. Differences in rates by ethnicity or socioeconomic group could be an 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 and should therefore be treated with caution.

Numbers by secondary/tertiary facility and by primary facility for each clinical indicator are presented in Appendix 4 and Appendix 5, respectively.

Notes on national data

At a national level, there was a statistically significant increase⁴ between 2009 and 2012 for rates of:

- registration with a Lead Maternity Carer in the first trimester of pregnancy (indicator 1)
- standard primiparae sustaining a 3rd- or 4th-degree perineal tear and undergoing episiotomy (indicator 9)
- women requiring a blood transfusion with vaginal birth (indicator 12).

At a national level, there was a statistically significant decrease⁵ between 2009 and 2012 for rates of:

- standard primiparae with an intact lower genital tract (indicator 6)
- women requiring a blood transfusion with caesarean section (indicator 11)
- maternal tobacco use during the postnatal period (indicator 14).

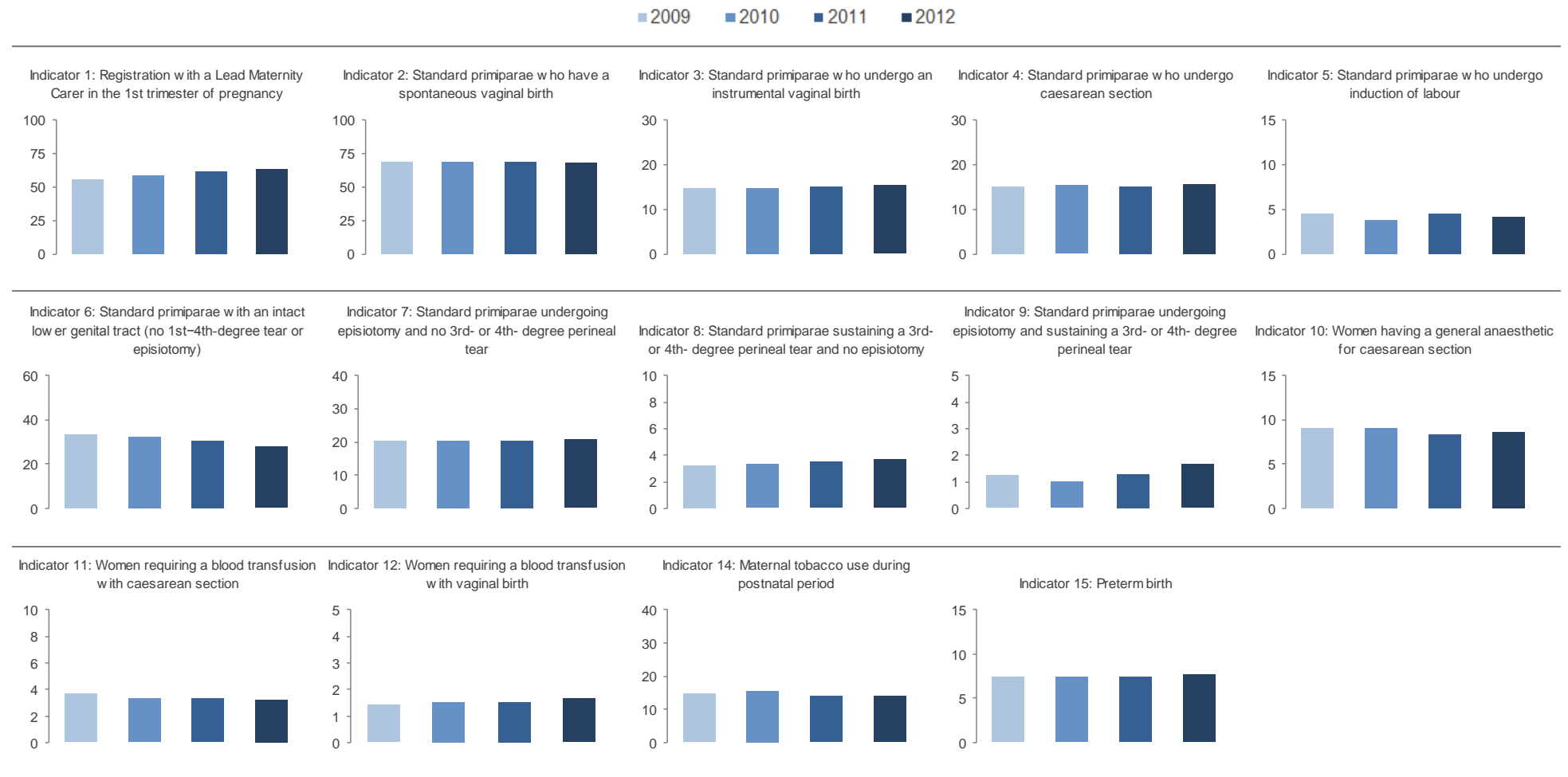
The remaining indicators fluctuated over the four-year period presented here or represent very small numbers from which trends cannot yet be drawn. Figure 1 presents four years of data for the indicators at the national level. This figure is also available by DHB and by secondary or tertiary facility in the accompanying online tables.

New Zealand has lower rates of obstetric intervention among standard primiparae relative to Australia, although methodology differences in the degree of standardisation limit true comparability. Other indicators among the wider birthing population including general anaesthetic for caesarean section (indicator 10) and maternal tobacco use (indicator 14) are similar to Australian counterparts. A greater percentage of women access antenatal care in the first trimester of pregnancy in Australia compared to New Zealand (indicator 1) (AIHW 2013).

⁴ Chi-square test for proportions with Yates' correction.

⁵ Chi-square test for proportions with Yates' correction.

Figure 1: New Zealand Maternity Clinical Indicator rates by year, 2009 to 2012



Note: The rate of eclampsia at birth admission (indicator 13) is not presented here due to low numbers (<0.05% annually). See Appendix 3 for underlying numbers.

Indicator 1: Registration with a Lead Maternity Carer

Rationale and purpose

The Perinatal and Maternal Mortality Review Committee (2012), National Maternity Monitoring Group (2013), and the Health Committee Inquiry into improving child health outcomes and preventing child abuse with a focus on preconception to three years of age (2013) all recommend early engagement with maternity care. The National Institute for Health and Care Excellence (2008) recommends that antenatal care be started in the first trimester and ideally by 10 weeks gestation.

Early engagement with a Lead Maternity Carer (LMC) enables opportunities for screening, education and referral, and begins the primary maternity continuity of care relationship between a woman and her LMC. The National Maternity Monitoring Group recommended in their 2013 annual report that DHBs develop new ways to improve access to LMC services in the first trimester and profiled a range of activities under way in DHBs.

This indicator monitors the number of women who registered with an LMC in the first trimester of their pregnancy, out of all women who had an LMC providing their primary maternity care. This indicator supports national and local monitoring of the effectiveness of activities to improve timely registration with an LMC.

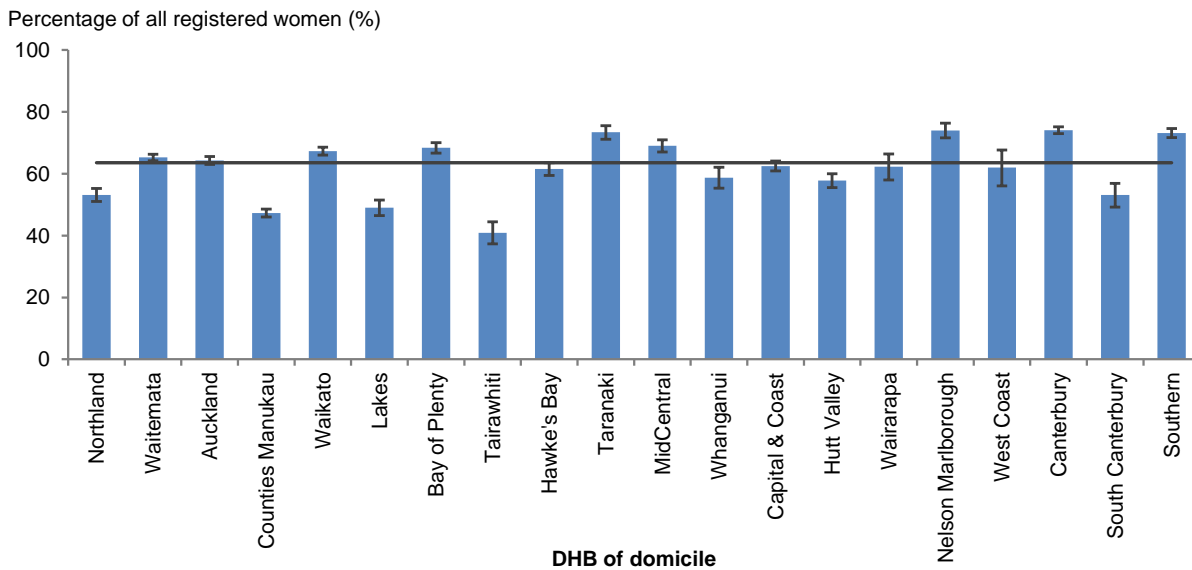
Women who access a DHB-funded primary maternity service are not yet captured in this dataset. This is estimated to be around 10% of women in 2012. Collection of service provision data for women receiving a DHB-funded primary maternity service is under way and will be included in this indicator as it becomes available.

Notes on 2012 data

Rates of registration with an LMC in the first trimester varied between DHBs and between secondary and tertiary facility of birth; rates by DHB of domicile ranged from 40.8% to 74.1%, and rates by facility of birth ranged from 40.8% to 79.5%. New initiatives in this area are expected to increase the rate of women engaging with an LMC in the first trimester of their pregnancy. The effects of these initiatives will become apparent in future reports.

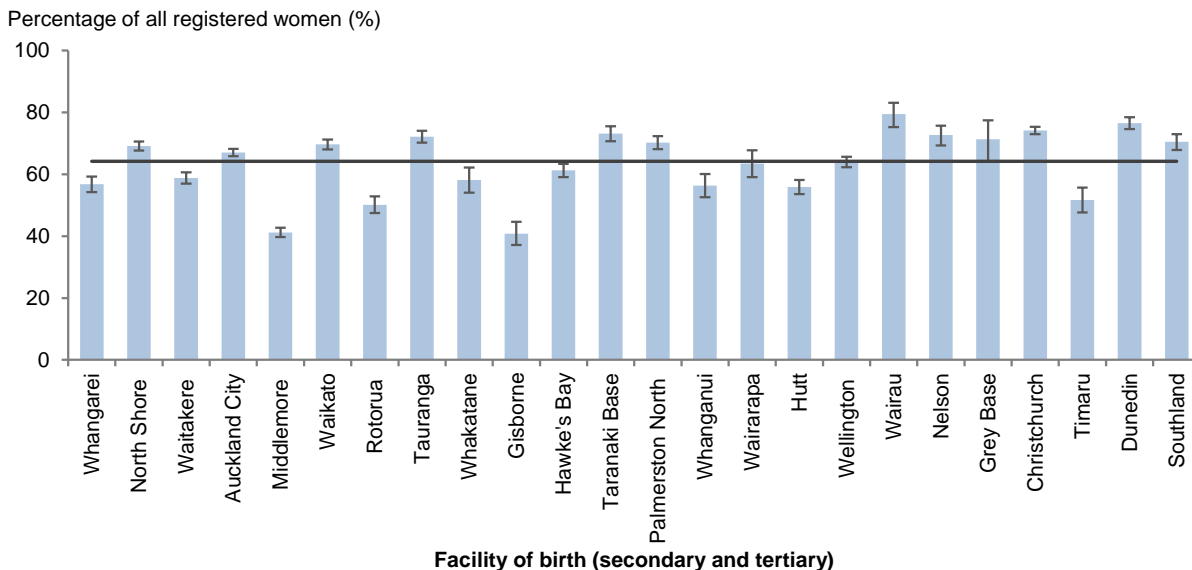
Indicator 1: Registration with a Lead Maternity Carer in the first trimester of pregnancy, 2012

Figure 2: Percentage of women who register with a Lead Maternity Carer in the first trimester of their pregnancy among all registered women, by DHB of domicile, 2012



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

Figure 3: Percentage of women who register with Lead Maternity Carer in the first trimester of their pregnancy among all registered women, by facility of birth (secondary and tertiary facilities), 2012



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

Table 2: Number and percentage of women who register with a Lead Maternity Carer in the first trimester of their pregnancy among all registered women, by DHB of domicile, 2012

DHB of domicile	Registered within the first trimester of pregnancy	All registered women	Rate (%)
Northland	1136	2137	53.2
Waitemata	4908	7521	65.3
Auckland	3266	5080	64.3
Counties Manukau	2741	5802	47.2
Waikato	3444	5120	67.3
Lakes	752	1535	49.0
Bay of Plenty	2025	2962	68.4
Tairāwhiti	299	732	40.8
Hawke's Bay	1298	2110	61.5
Taranaki	1130	1540	73.4
MidCentral	1410	2043	69.0
Whanganui	481	819	58.7
Capital & Coast	2223	3558	62.5
Hutt Valley	1084	1877	57.8
Wairarapa	312	501	62.3
Nelson Marlborough	976	1319	74.0
West Coast	165	266	62.0
Canterbury	4411	5956	74.1
South Canterbury	344	648	53.1
Southern	2593	3545	73.1
Unspecified	124	228	–
New Zealand	35,122	55,299	63.5

Table 3: Number and percentage of women who register with a Lead Maternity Carer in the first trimester of their pregnancy among all registered women, by facility of birth, 2012

Facility of birth	Registered within the first trimester of pregnancy	All registered women	Rate (%)
Whangarei	825	1454	56.7
North Shore	2554	3694	69.1
Waitakere	1652	2810	58.8
Auckland City	4057	6056	67.0
Middlemore	1612	3914	41.2
Waikato	2273	3264	69.6
Rotorua	662	1320	50.2
Tauranga	1530	2120	72.2
Whakatane	324	557	58.2
Gisborne	274	671	40.8
Hawke's Bay	1243	2030	61.2
Taranaki Base	934	1277	73.1
Palmerston North	1285	1830	70.2
Whanganui	378	671	56.3
Wairarapa	299	471	63.5
Hutt	1042	1865	55.9
Wellington	1983	3099	64.0
Wairau	325	409	79.5
Nelson	539	742	72.6
Grey Base	124	174	71.3
Christchurch	3849	5193	74.1
Timaru	309	598	51.7
Dunedin	1398	1826	76.6
Southland	847	1202	70.5
All secondary and tertiary facilities	30,318	47,247	64.2
All primary facilities	2828	4955	57.1
All home births	1255	1919	65.4
New Zealand¹	35,122	55,299	63.5

1 Includes women where birth location was unspecified.

Indicators 2 to 5:

Type of birth

Rationale and purpose

Indicators 2 to 5 present data on types of birth among standard primiparae. They compare rates of spontaneous vaginal birth and rates of medical interventions in a low risk population.⁶ Their purpose is to encourage maternity service providers to review the appropriateness of these interventions, with the long-term aim of supporting normal birth, improving maternal experience of maternity care, reducing maternal and perinatal morbidity, and supporting value for money for the health system. The following sections describe the rationale and purpose of the specific indicators.

Spontaneous vaginal birth (indicator 2)

This indicator measures the proportion of women having a spontaneous (non-instrumental) vaginal birth in a low risk population. This measure includes births for which labour was augmented or induced. Maternity service providers should review, evaluate and make necessary changes to clinical practice aimed at supporting women to achieve a spontaneous vaginal birth.

Instrumental vaginal birth (indicator 3)

This indicator measures the use of instrumental interventions, including vacuum (ventouse) and forceps. The use of instruments is associated with both short-term and long-term complications for the mother and the baby, some of which can be serious. Judicious use of instruments is needed (AIHW 2013). If a maternity service provider's rates of intervention are significantly higher than its peer group at a national level, it should examine the use of instrumental birth alongside other indicators that may be affected by instrumental birth, including maternal and perinatal morbidity.

Caesarean section (indicator 4)

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, and reduce the harm associated with potentially avoidable caesarean sections among low risk women. Caesarean birth is safer now than in the past and serious complications are uncommon, particularly for healthy women, but a small risk of serious morbidity and mortality for both the mother and the baby remains, and a primary caesarean section can complicate a subsequent pregnancy (AIHW 2013). If a provider's caesarean section rates are significantly different from their peer group at a national level, it should examine its use of caesarean sections among low risk women.

⁶ Some indicators do not sum to 100% due to missing data codes for some events.

Induction of labour (indicator 5)

The purpose of this indicator is to benchmark rates of induction of labour in a low risk population. Induction of labour is associated with risk of fetal distress, uterine hyperstimulation and postpartum haemorrhage, and can be the start of a cascade of further medical interventions (AIHW 2013). Maternity service providers should use this indicator in further investigation of their policies and practices with respect to inducing labour in low risk women. If a provider's rates of induction of labour are significantly higher than its peer group at a national level, it should review the appropriateness of inductions in this group as well as examine the results of other indicators that can be affected by induction, such as caesarean section and postpartum haemorrhage.

Exclusion of births outside maternity facilities

Standard primiparae presented in these indicators only include women giving birth at maternity facilities (including primary facilities) and exclude home births or births where the location was unknown, due to insufficient data at time of analysis.

It is estimated that approximately 13% of women (around 400 women in 2012) giving birth at home met the criteria for standard primiparae nationally (6% to 17% between DHBs). Work to expand the definition of standard primipara to accurately include births not at a maternity facility is under way.

Notes on 2012 data

Rates of spontaneous vaginal birth among standard primiparae varied significantly between DHBs and between secondary and tertiary facilities in 2012; DHB rates ranged from 57.1% to 83.8% and facility rates ranged from 57.1% to 83.9%. This variation merits further urgent investigation.

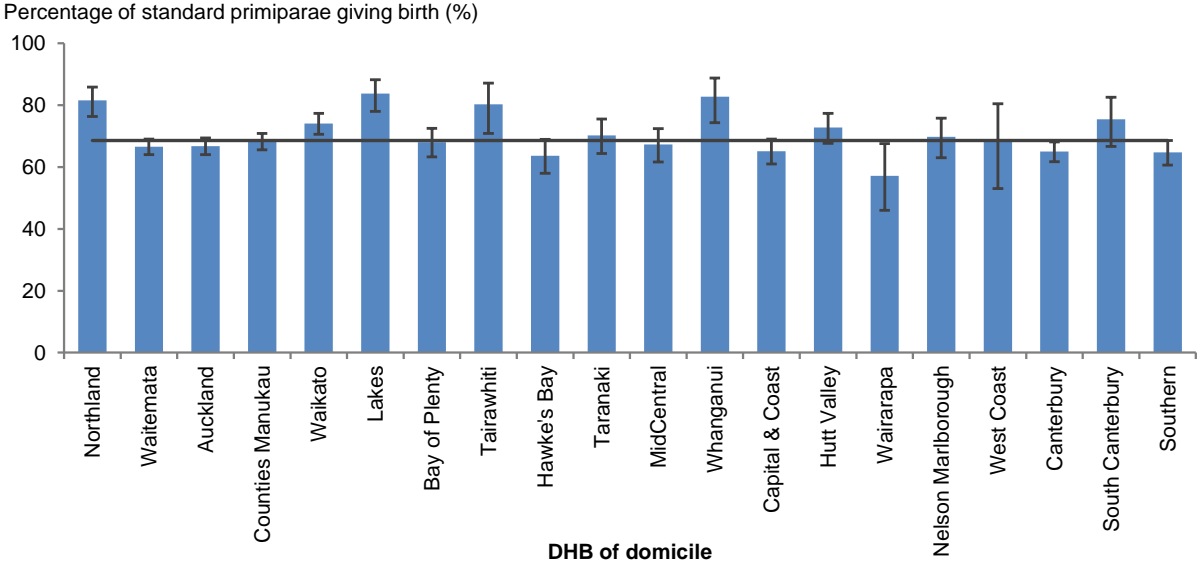
Rates of instrumental vaginal birth ranged from 4.3% to 23.8% between facilities. Caesarean section rates also varied by facility, from 8.2% to 25.2% and by DHB, from 7.1% to 22.1%. These variations indicate a need for urgent detailed review. DHBs not already reviewing caesarean sections among low risk women should do so.

Standard primiparae are unlikely to have indications for induction of labour, so rates of induction for this group should be low. DHBs and facilities with rates significantly above the national average should investigate reasons for high induction rates.

Rates of intervention in some secondary or tertiary facilities may be influenced by transfers from primary facilities, so DHBs should compare rates of intervention according to where labour was initiated, or by DHB of domicile.

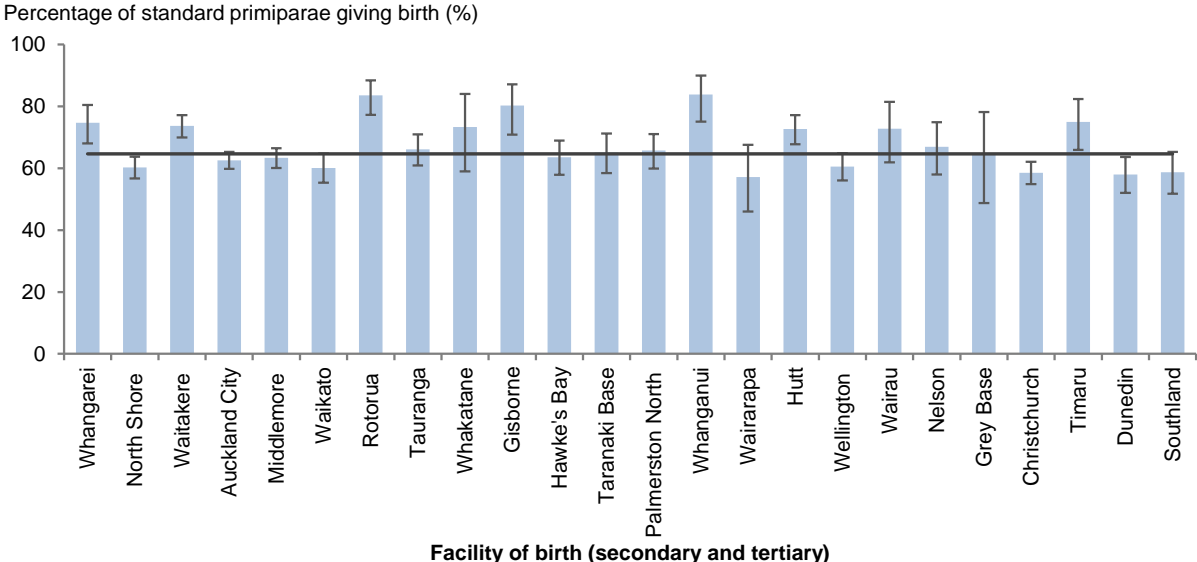
Indicator 2: Spontaneous vaginal birth among standard primiparae, 2012

Figure 4: Percentage of spontaneous vaginal births among standard primiparae, by DHB of domicile, 2012



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

Figure 5: Percentage of spontaneous vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2012



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

Table 4: Number and percentage of spontaneous vaginal births among standard primiparae¹, by DHB of domicile, 2012

DHB of domicile	Spontaneous vaginal births	Standard primiparae	Rate (%)
Northland	208	255	81.6
Waitemata	901	1353	66.6
Auckland	784	1174	66.8
Counties Manukau	801	1174	68.2
Waikato	477	644	74.1
Lakes	165	197	83.8
Bay of Plenty	266	391	68.0
Tairāwhiti	73	91	80.2
Hawke's Bay	187	294	63.6
Taranaki	177	252	70.2
MidCentral	193	287	67.2
Whanganui	86	104	82.7
Capital & Coast	349	536	65.1
Hutt Valley	235	323	72.8
Wairarapa	44	77	57.1
Nelson Marlborough	136	195	69.7
West Coast	28	41	68.3
Canterbury	555	854	65.0
South Canterbury	83	110	75.5
Southern	361	558	64.7
Unspecified	4	5	–
New Zealand	6113	8915	68.6

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

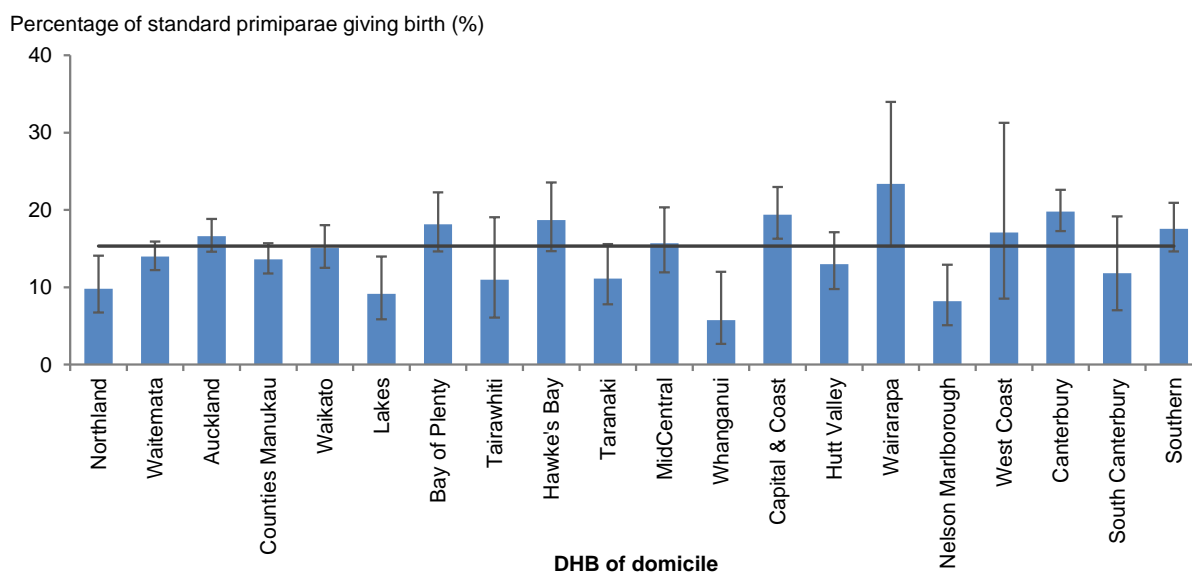
Table 5: Number and percentage of spontaneous vaginal births among standard primiparae¹, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Spontaneous vaginal births	Standard primiparae	Rate (%)
Whangarei	139	186	74.7
North Shore	452	750	60.3
Waitakere	412	559	73.7
Auckland City	761	1216	62.6
Middlemore	546	862	63.3
Waikato	247	411	60.1
Rotorua	142	170	83.5
Tauranga	224	339	66.1
Whakatane	33	45	73.3
Gisborne	73	91	80.2
Hawke's Bay	185	291	63.6
Taranaki Base	138	212	65.1
Palmerston North	180	274	65.7
Whanganui	78	93	83.9
Wairarapa	44	77	57.1
Hutt	245	337	72.7
Wellington	285	471	60.5
Wairau	56	77	72.7
Nelson	77	115	67.0
Grey Base	24	37	64.9
Christchurch	422	721	58.5
Timaru	78	104	75.0
Dunedin	157	271	57.9
Southland	118	201	58.7
All secondary and tertiary facilities	5116	7910	64.7
All primary facilities	997	1005	99.2
New Zealand	6113	8915	68.6

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

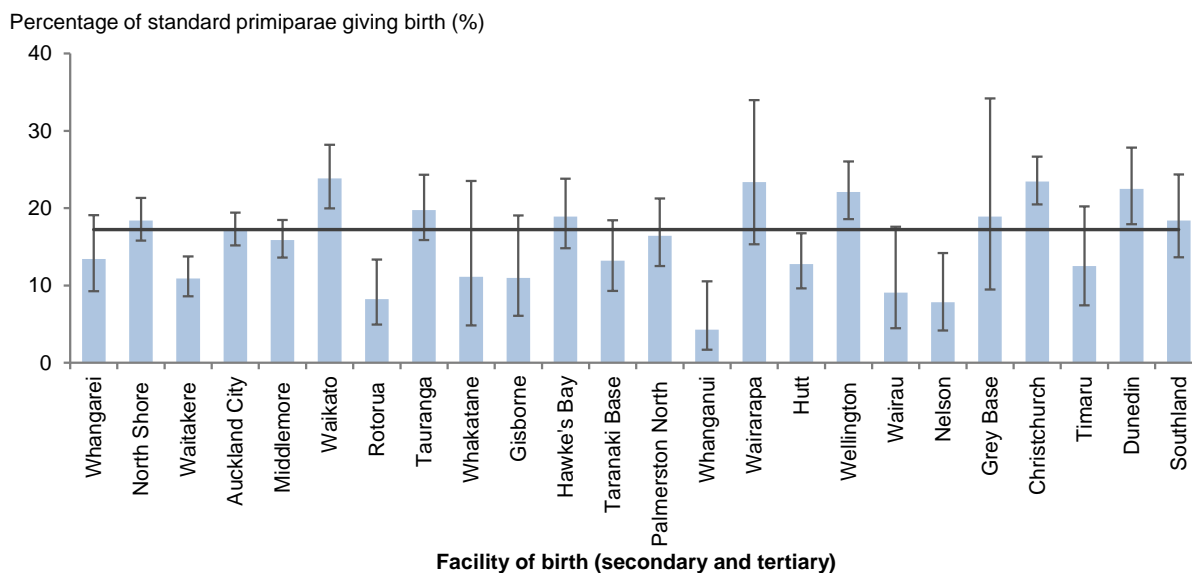
Indicator 3: Instrumental vaginal birth among standard primiparae, 2012

Figure 6: Percentage of instrumental vaginal births among standard primiparae, by DHB of domicile, 2012



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

Figure 7: Percentage of instrumental vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2012



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

Table 6: Number and percentage of instrumental vaginal births among standard primiparae¹, by DHB of domicile, 2012

DHB of domicile	Instrumental vaginal births	Standard primiparae	Rate (%)
Northland	25	255	9.8
Waitemata	189	1353	14.0
Auckland	195	1174	16.6
Counties Manukau	160	1174	13.6
Waikato	97	644	15.1
Lakes	18	197	9.1
Bay of Plenty	71	391	18.2
Tairāwhiti	10	91	11.0
Hawke's Bay	55	294	18.7
Taranaki	28	252	11.1
MidCentral	45	287	15.7
Whanganui	6	104	5.8
Capital & Coast	104	536	19.4
Hutt Valley	42	323	13.0
Wairarapa	18	77	23.4
Nelson Marlborough	16	195	8.2
West Coast	7	41	17.1
Canterbury	169	854	19.8
South Canterbury	13	110	11.8
Southern	98	558	17.6
Unspecified	0	5	–
New Zealand	1366	8915	15.3

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

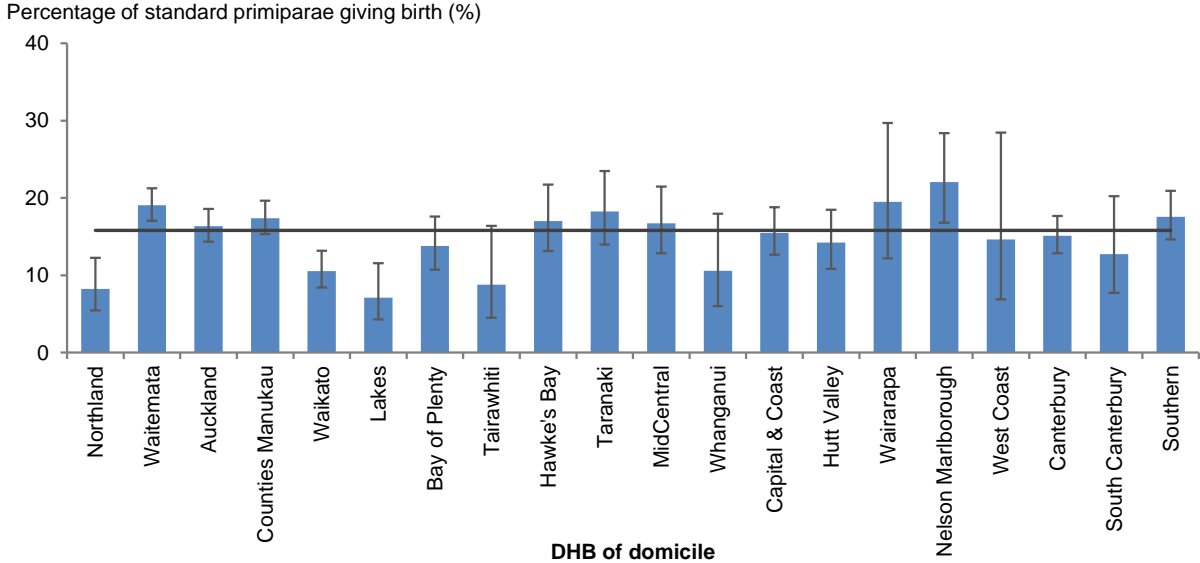
Table 7: Number and percentage of instrumental vaginal births among standard primiparae¹, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Instrumental vaginal births	Standard primiparae	Rate (%)
Whangarei	25	186	13.4
North Shore	138	750	18.4
Waitakere	61	559	10.9
Auckland City	209	1216	17.2
Middlemore	137	862	15.9
Waikato	98	411	23.8
Rotorua	14	170	8.2
Tauranga	67	339	19.8
Whakatane	5	45	11.1
Gisborne	10	91	11.0
Hawke's Bay	55	291	18.9
Taranaki Base	28	212	13.2
Palmerston North	45	274	16.4
Whanganui	4	93	4.3
Wairarapa	18	77	23.4
Hutt	43	337	12.8
Wellington	104	471	22.1
Wairau	7	77	9.1
Nelson	9	115	7.8
Grey Base	7	37	18.9
Christchurch	169	721	23.4
Timaru	13	104	12.5
Dunedin	61	271	22.5
Southland	37	201	18.4
All secondary and tertiary facilities	1364	7910	17.2
All primary facilities	2	1005	0.2
New Zealand	1366	8915	15.3

¹ Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

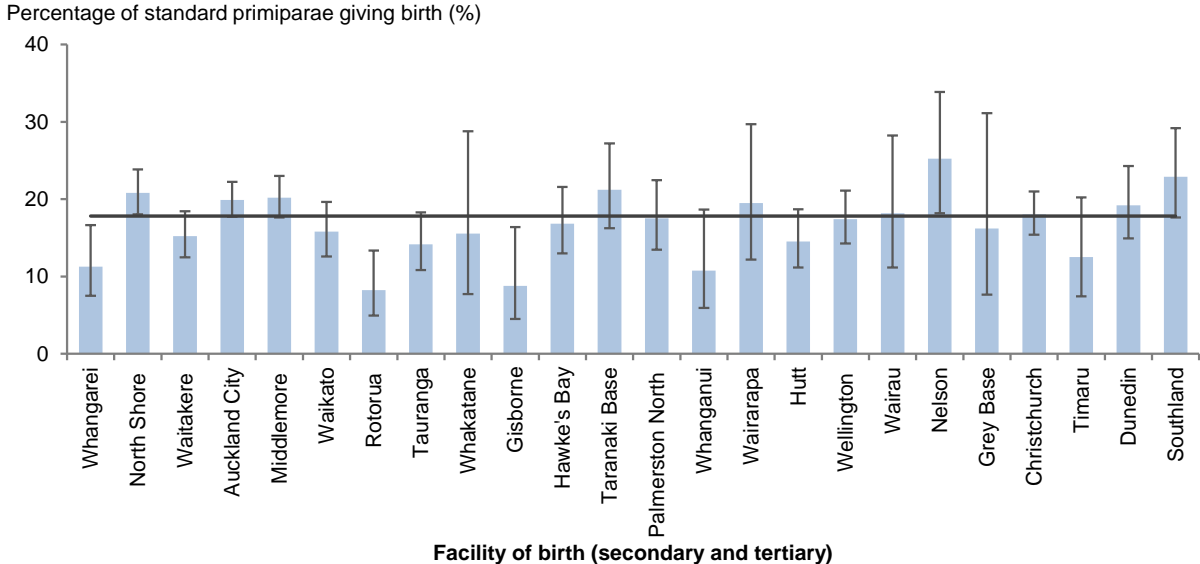
Indicator 4: Caesarean section among standard primiparae, 2012

Figure 8: Percentage of caesarean section deliveries among standard primiparae, by DHB of domicile, 2012



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

Figure 9: Percentage of caesarean section deliveries among standard primiparae, by facility of birth (secondary and tertiary facilities), 2012



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

Table 8: Number and percentage of deliveries by caesarean section among standard primiparae¹, by DHB of domicile, 2012

DHB of domicile	Caesarean sections	Standard primiparae	Rate (%)
Northland	21	255	8.2
Waitemata	258	1353	19.1
Auckland	192	1174	16.4
Counties Manukau	204	1174	17.4
Waikato	68	644	10.6
Lakes	14	197	7.1
Bay of Plenty	54	391	13.8
Tairāwhiti	8	91	8.8
Hawke's Bay	50	294	17.0
Taranaki	46	252	18.3
MidCentral	48	287	16.7
Whanganui	11	104	10.6
Capital & Coast	83	536	15.5
Hutt Valley	46	323	14.2
Wairarapa	15	77	19.5
Nelson Marlborough	43	195	22.1
West Coast	6	41	14.6
Canterbury	129	854	15.1
South Canterbury	14	110	12.7
Southern	98	558	17.6
Unspecified	1	5	–
New Zealand	1409	8915	15.8

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

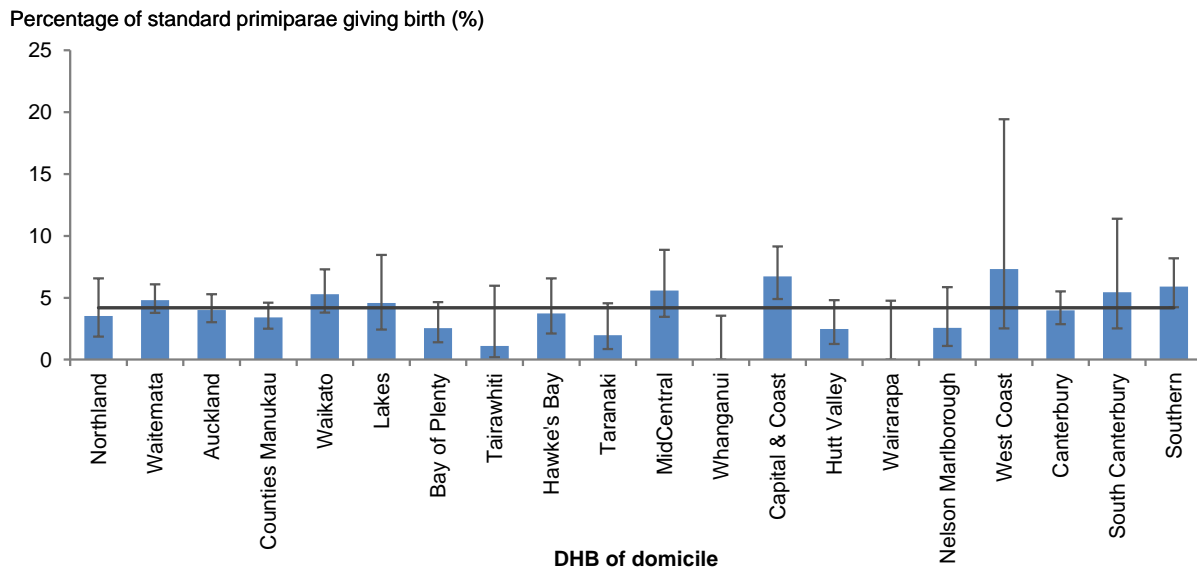
Table 9: Number and percentage of deliveries by caesarean section among standard primiparae¹, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Caesarean sections	Standard primiparae	Rate (%)
Whangarei	21	186	11.3
North Shore	156	750	20.8
Waitakere	85	559	15.2
Auckland City	242	1216	19.9
Middlemore	174	862	20.2
Waikato	65	411	15.8
Rotorua	14	170	8.2
Tauranga	48	339	14.2
Whakatane	7	45	15.6
Gisborne	8	91	8.8
Hawke's Bay	49	291	16.8
Taranaki Base	45	212	21.2
Palmerston North	48	274	17.5
Whanganui	10	93	10.8
Wairarapa	15	77	19.5
Hutt	49	337	14.5
Wellington	82	471	17.4
Wairau	14	77	18.2
Nelson	29	115	25.2
Grey Base	6	37	16.2
Christchurch	130	721	18.0
Timaru	13	104	12.5
Dunedin	52	271	19.2
Southland	46	201	22.9
All secondary and tertiary facilities	1408	7910	17.8
All primary facilities	1	1005	0.1
New Zealand	1409	8915	15.8

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

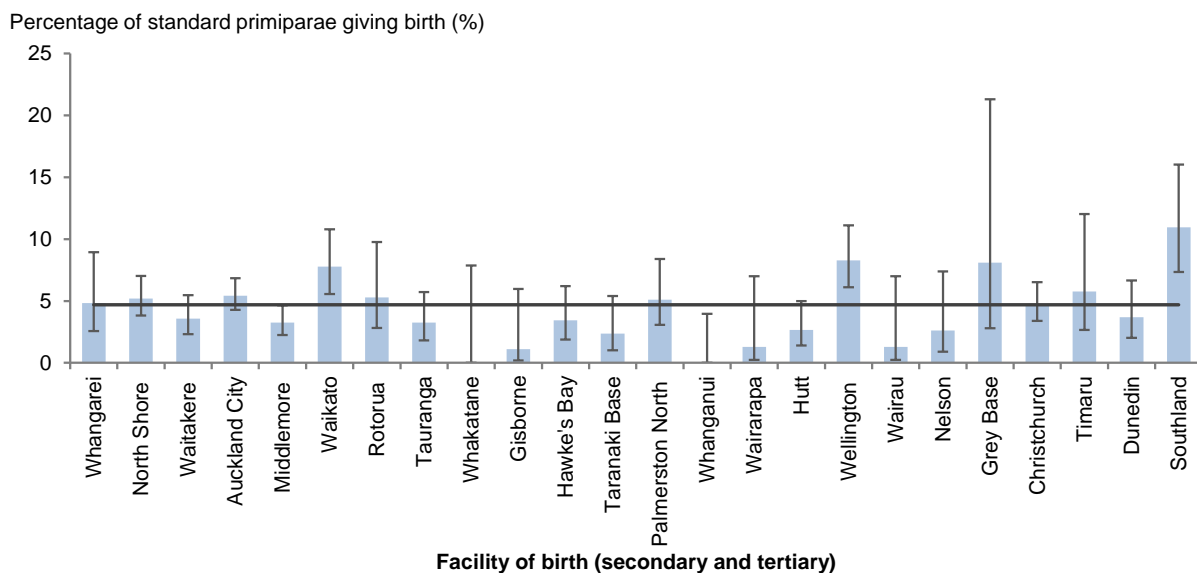
Indicator 5: Induction of labour among standard primiparae, 2012

Figure 10: Percentage of inductions of labour among standard primiparae, by DHB of domicile, 2012



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

Figure 11: Percentage of inductions of labour among standard primiparae, by facility of birth (secondary and tertiary facilities), 2012



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

Table 10: Number and percentage of inductions of labour among standard primiparae¹, by DHB of domicile, 2012

DHB of domicile	Inductions of labour	Standard primiparae	Rate (%)
Northland	9	255	3.5
Waitemata	65	1353	4.8
Auckland	47	1174	4.0
Counties Manukau	40	1174	3.4
Waikato	34	644	5.3
Lakes	9	197	4.6
Bay of Plenty	10	391	2.6
Tairāwhiti	1	91	1.1
Hawke's Bay	11	294	3.7
Taranaki	5	252	2.0
MidCentral	16	287	5.6
Whanganui	0	104	–
Capital & Coast	36	536	6.7
Hutt Valley	8	323	2.5
Wairarapa	0	77	–
Nelson Marlborough	5	195	2.6
West Coast	3	41	7.3
Canterbury	34	854	4.0
South Canterbury	6	110	5.5
Southern	33	558	5.9
Unspecified	1	5	–
New Zealand	373	8915	4.2

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

Table 11: Number and percentage of inductions of labour among standard primiparae¹, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Inductions of labour	Standard primiparae	Rate (%)
Whangarei	9	186	4.8
North Shore	39	750	5.2
Waitakere	20	559	3.6
Auckland City	66	1216	5.4
Middlemore	28	862	3.2
Waikato	32	411	7.8
Rotorua	9	170	5.3
Tauranga	11	339	3.2
Whakatane	0	45	–
Gisborne	1	91	1.1
Hawke's Bay	10	291	3.4
Taranaki Base	5	212	2.4
Palmerston North	14	274	5.1
Whanganui	0	93	–
Wairarapa	1	77	1.3
Hutt	9	337	2.7
Wellington	39	471	8.3
Wairau	1	77	1.3
Nelson	3	115	2.6
Grey Base	3	37	8.1
Christchurch	34	721	4.7
Timaru	6	104	5.8
Dunedin	10	271	3.7
Southland	22	201	10.9
All secondary and tertiary facilities	372	7910	4.7
All primary facilities	1	1005	0.1
New Zealand	373	8915	4.2

¹ Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

Indicators 6 to 9: Degree of damage to the lower genital tract

Rationale and purpose

Indicators 6 to 9 cover the degree of damage to the lower genital tract from vaginal birth among standard primiparae. Perineal trauma remains one of the most common complications of childbirth, and is thought to affect between 60% and 85% of women who give birth vaginally (WHA 2007). Reasons for perineal trauma are varied, and may reflect either maternal or neonatal issues. Perineal damage can cause women pain and longer-term morbidity. The long-term aim of these indicators is to reduce such trauma and its associated maternal morbidity. This may improve maternal satisfaction and mother–infant bonding by reducing maternal exposure to pain and discomfort. The following sections describe the rationale and purpose of the specific indicators.

Intact lower genital tract (indicator 6)

The four categories of perineal tear classification enable a standardised description of perineal damage. Assessing and identifying degrees of lower genital tract damage remains a complex process. A classification of first- or second-degree does not necessarily reflect the level of pain or long-term morbidity a woman experiences. Measuring the number of women who are not affected by perineal trauma (that is, those who have an intact perineum after birth) provides a more concise measure than that which could presently be achieved by reviewing reported rates of first- or second-degree tears. This indicator therefore provides a measure that can encourage further investigation to determine how maternity service providers can improve rates of intact lower genital tract.

Episiotomy (indicator 7)

This indicator aims to encourage further investigation among maternity service providers to ensure that they appropriately assess risks to the mother as well as the infant before undertaking an episiotomy. Meta-analysis of randomised controlled trials confirms that judicious use of episiotomy is better practice than routine use of episiotomy (AIHW 2013). If a provider's rates of episiotomy, particularly among low risk women, are significantly higher than its peer group at a national level, it should examine these results. Providers should also consider their rates alongside other indicators that can be affected by episiotomies, such as bleeding, infection and maternal morbidity rates, to ascertain whether there is any correlation (WHA 2007).

Third- and fourth-degree tears (with or without episiotomy) (indicators 8 and 9)

The aim of these indicators 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. Labour management may include birth position, the use of induction, instrumental delivery and management of second-stage labour (WHA 2007).

Exclusion of births outside maternity facilities

Standard primiparae presented in these indicators only include women giving birth at maternity facilities (including primary facilities) and exclude home births or births where the location was unknown, due to insufficient data at time of analysis.

It is estimated that approximately 13% of women (around 400 women in 2012) giving birth at home met the criteria for standard primiparae nationally (6% to 17% between DHBs). Work to expand the definition of standard primipara to accurately include births not at a maternity facility is under way.

Notes on 2012 data

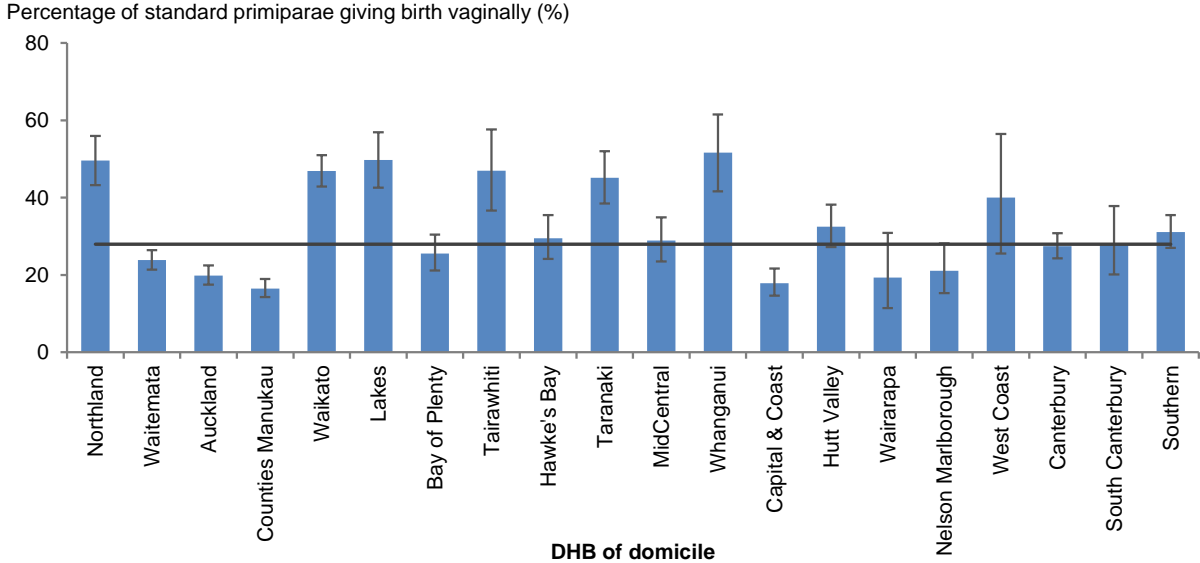
Rates of intact lower genital tract after vaginal birth among standard primiparae ranged from 16.5% to 51.6% across DHBs, and from 9.9% to 53.0% across secondary and tertiary facilities. This regional variation suggests that investigation of both data integrity and local clinical practice is required. Rates of intact lower genital tract appear to decrease over time since 2009. Further investigation of the causes of this is required.

Rates of episiotomy without third- or fourth-degree tear also varied, at 6.5% to 31.6% across DHBs, and 6.0% to 35.5% across secondary and tertiary facilities. Outlier DHBs and facilities should investigate the reasons for these differences, which could include review of the clinical indications given in specific cases and the discipline and number of practitioners performing episiotomies.

DHBs should undertake more detailed local analysis of the relationship between rates of intact perineum, episiotomies and third- and fourth-degree tears.

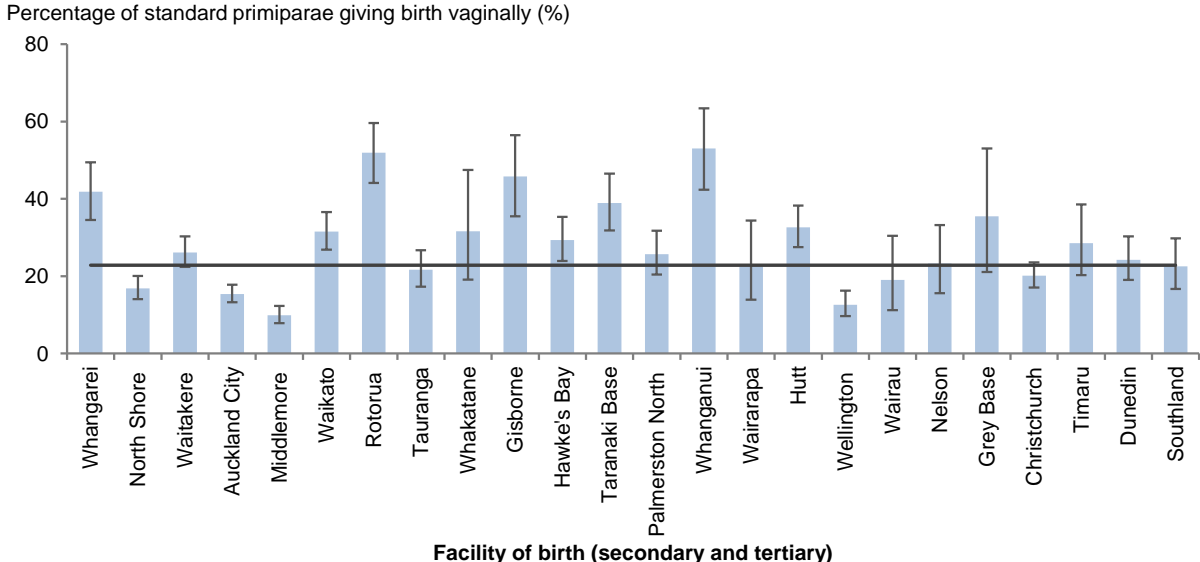
Indicator 6: Intact lower genital tract among standard primiparae giving birth vaginally, 2012

Figure 12: Percentage of standard primiparae giving birth vaginally with intact lower genital tract, by DHB of domicile, 2012



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

Figure 13: Percentage of standard primiparae giving birth vaginally with intact lower genital tract, by facility of birth (secondary and tertiary facilities), 2012



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

Table 12: Number and percentage of standard primiparae¹ giving birth vaginally with intact lower genital tract, by DHB of domicile, 2012

DHB of domicile	Intact lower genital tract	Standard primiparae giving birth vaginally	Rate (%)
Northland	116	234	49.6
Waitemata	261	1095	23.8
Auckland	195	982	19.9
Counties Manukau	160	970	16.5
Waikato	270	576	46.9
Lakes	91	183	49.7
Bay of Plenty	86	337	25.5
Tairāwhiti	39	83	47.0
Hawke's Bay	72	244	29.5
Taranaki	93	206	45.1
MidCentral	69	239	28.9
Whanganui	48	93	51.6
Capital & Coast	81	453	17.9
Hutt Valley	90	277	32.5
Wairarapa	12	62	19.4
Nelson Marlborough	32	152	21.1
West Coast	14	35	40.0
Canterbury	199	725	27.4
South Canterbury	27	96	28.1
Southern	143	460	31.1
Unspecified	2	4	–
New Zealand	2100	7506	28.0

¹ Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

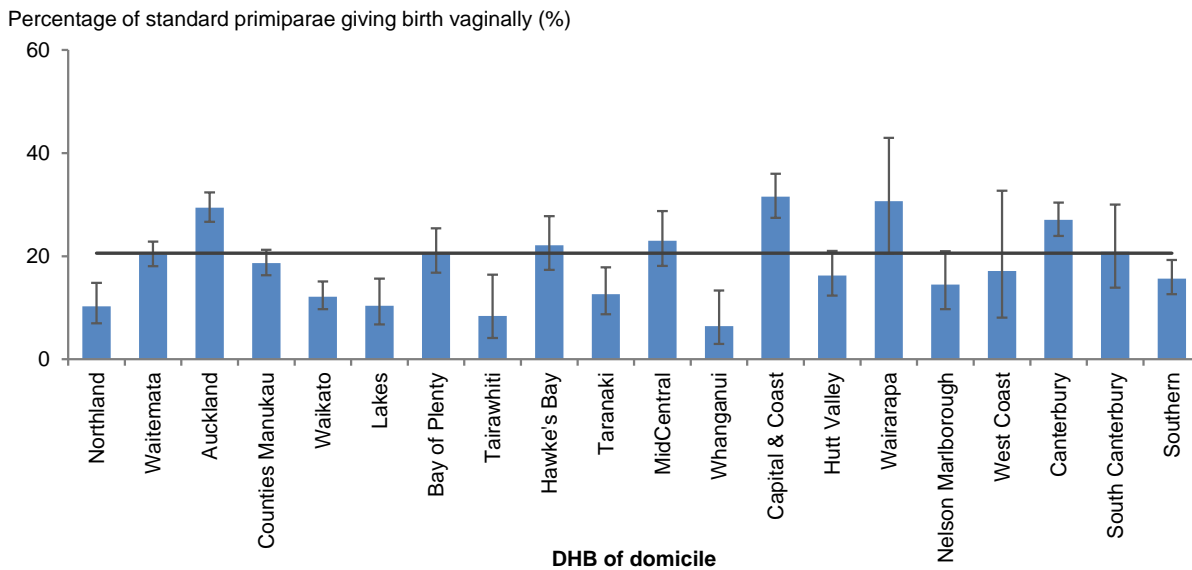
Table 13: Number and percentage of standard primiparae¹ giving birth vaginally with intact lower genital tract, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Intact lower genital tract	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	69	165	41.8
North Shore	100	594	16.8
Waitakere	124	474	26.2
Auckland City	150	974	15.4
Middlemore	68	688	9.9
Waikato	109	346	31.5
Rotorua	81	156	51.9
Tauranga	63	291	21.6
Whakatane	12	38	31.6
Gisborne	38	83	45.8
Hawke's Bay	71	242	29.3
Taranaki Base	65	167	38.9
Palmerston North	58	226	25.7
Whanganui	44	83	53.0
Wairarapa	14	62	22.6
Hutt	94	288	32.6
Wellington	49	389	12.6
Wairau	12	63	19.0
Nelson	20	86	23.3
Grey Base	11	31	35.5
Christchurch	119	591	20.1
Timaru	26	91	28.6
Dunedin	53	219	24.2
Southland	35	155	22.6
All secondary and tertiary facilities	1485	6502	22.8
All primary facilities	615	1004	61.3
New Zealand	2100	7506	28.0

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

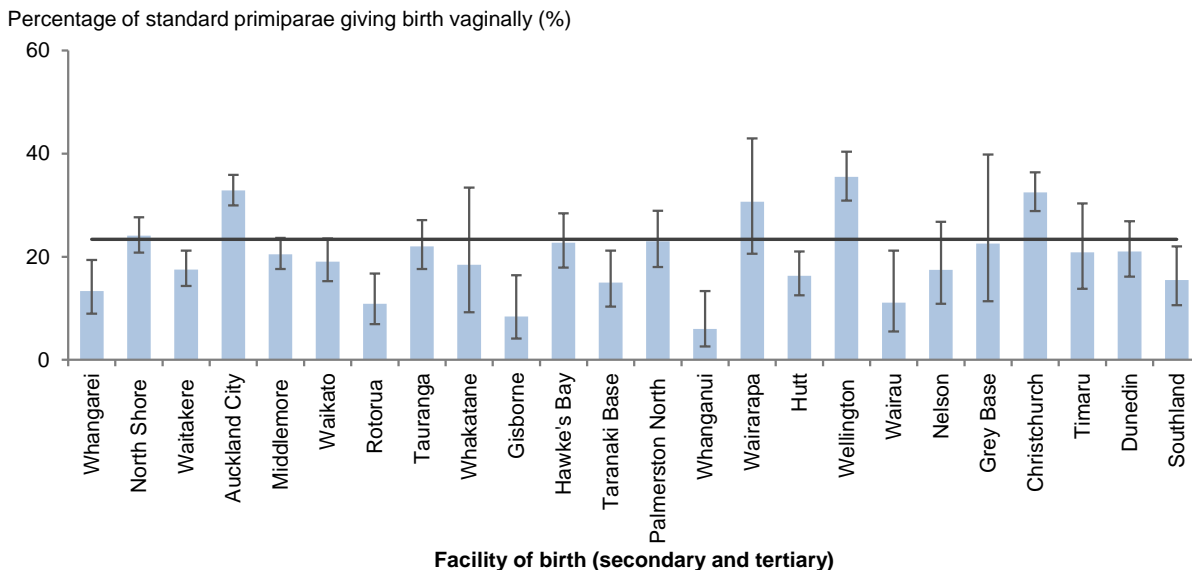
Indicator 7: Episiotomy and no third- or fourth-degree tear among standard primiparae giving birth vaginally, 2012

Figure 14: Percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by DHB of domicile, 2012



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

Figure 15: 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), 2012



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

Table 14: Number and percentage of standard primiparae¹ giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by DHB of domicile, 2012

DHB of domicile	Episiotomy without 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Northland	24	234	10.3
Waitemata	223	1095	20.4
Auckland	289	982	29.4
Counties Manukau	181	970	18.7
Waikato	70	576	12.2
Lakes	19	183	10.4
Bay of Plenty	70	337	20.8
Tairāwhiti	7	83	8.4
Hawke's Bay	54	244	22.1
Taranaki	26	206	12.6
MidCentral	55	239	23.0
Whanganui	6	93	6.5
Capital & Coast	143	453	31.6
Hutt Valley	45	277	16.2
Wairarapa	19	62	30.6
Nelson Marlborough	22	152	14.5
West Coast	6	35	17.1
Canterbury	196	725	27.0
South Canterbury	20	96	20.8
Southern	72	460	15.7
Unspecified	0	4	–
New Zealand	1547	7506	20.6

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

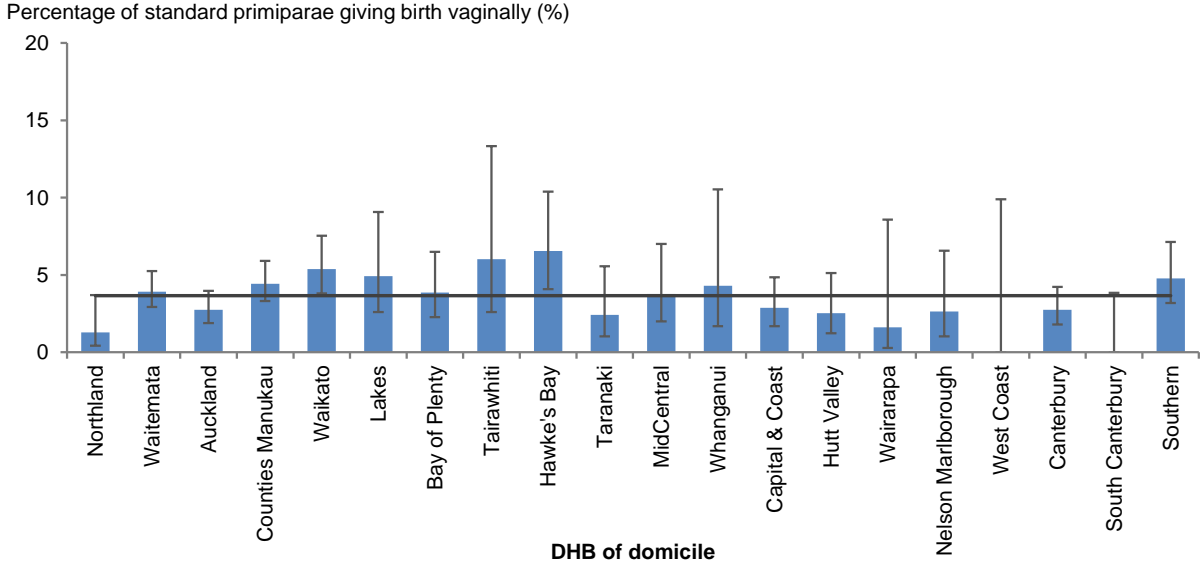
Table 15: Number and percentage of standard primiparae¹ giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Episiotomy without 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	22	165	13.3
North Shore	143	594	24.1
Waitakere	83	474	17.5
Auckland City	320	974	32.9
Middlemore	141	688	20.5
Waikato	66	346	19.1
Rotorua	17	156	10.9
Tauranga	64	291	22.0
Whakatane	7	38	18.4
Gisborne	7	83	8.4
Hawke's Bay	55	242	22.7
Taranaki Base	25	167	15.0
Palmerston North	52	226	23.0
Whanganui	5	83	6.0
Wairarapa	19	62	30.6
Hutt	47	288	16.3
Wellington	138	389	35.5
Wairau	7	63	11.1
Nelson	15	86	17.4
Grey Base	7	31	22.6
Christchurch	192	591	32.5
Timaru	19	91	20.9
Dunedin	46	219	21.0
Southland	24	155	15.5
All secondary and tertiary facilities	1521	6502	23.4
All primary facilities	26	1004	2.6
New Zealand	1547	7506	20.6

¹ Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

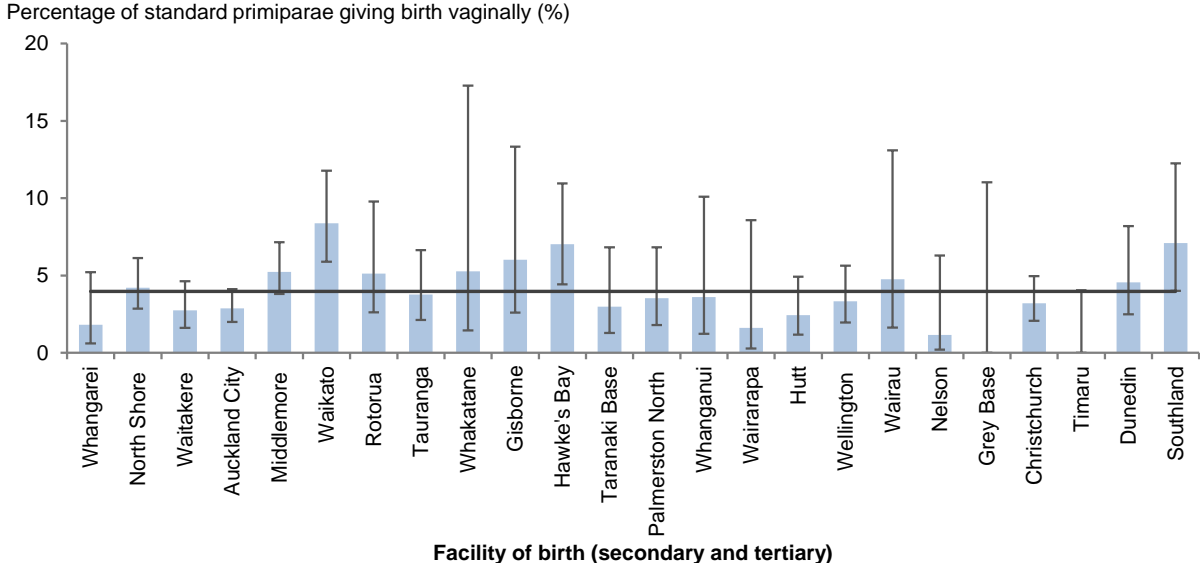
Indicator 8: Third- or fourth-degree tear and no episiotomy among standard primiparae giving birth vaginally, 2012

Figure 16: Percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by DHB of domicile, 2012



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

Figure 17: 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), 2012



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

Table 16: Number and percentage of standard primiparae¹ giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by DHB of domicile, 2012

DHB of domicile	3rd- or 4th-degree tear without episiotomy	Standard primiparae giving birth vaginally	Rate (%)
Northland	3	234	1.3
Waitemata	43	1095	3.9
Auckland	27	982	2.7
Counties Manukau	43	970	4.4
Waikato	31	576	5.4
Lakes	9	183	4.9
Bay of Plenty	13	337	3.9
Tairāwhiti	5	83	6.0
Hawke's Bay	16	244	6.6
Taranaki	5	206	2.4
MidCentral	9	239	3.8
Whanganui	4	93	4.3
Capital & Coast	13	453	2.9
Hutt Valley	7	277	2.5
Wairarapa	1	62	1.6
Nelson Marlborough	4	152	2.6
West Coast	0	35	–
Canterbury	20	725	2.8
South Canterbury	0	96	–
Southern	22	460	4.8
Unspecified	0	4	–
New Zealand	275	7506	3.7

¹ Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

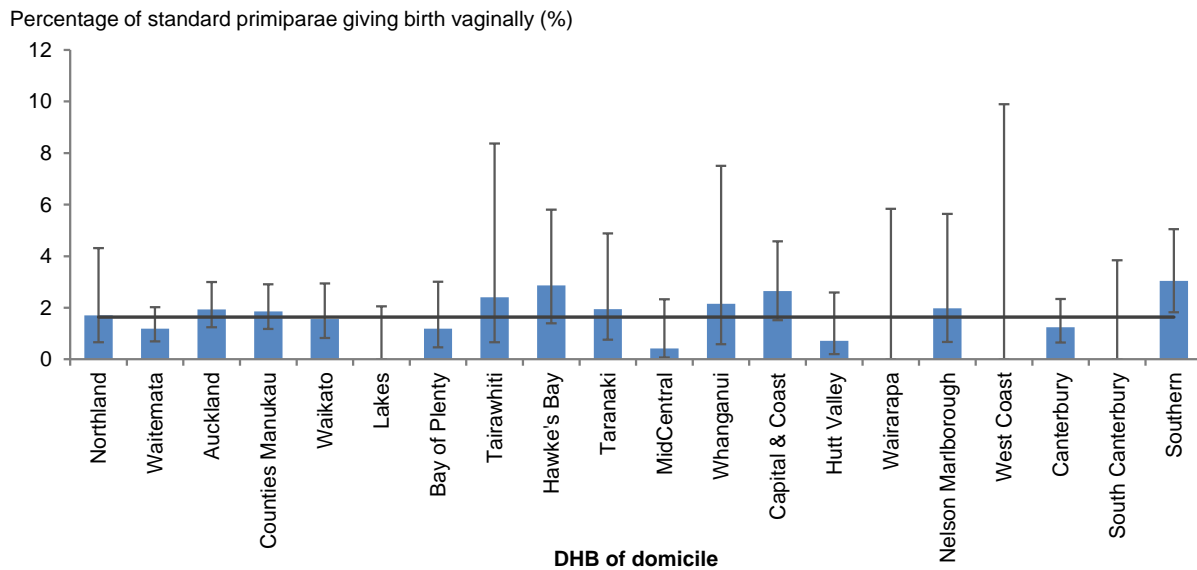
Table 17: Number and percentage of standard primiparae¹ giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	3rd- or 4th-degree tear without episiotomy	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	3	165	1.8
North Shore	25	594	4.2
Waitakere	13	474	2.7
Auckland City	28	974	2.9
Middlemore	36	688	5.2
Waikato	29	346	8.4
Rotorua	8	156	5.1
Tauranga	11	291	3.8
Whakatane	2	38	5.3
Gisborne	5	83	6.0
Hawke's Bay	17	242	7.0
Taranaki Base	5	167	3.0
Palmerston North	8	226	3.5
Whanganui	3	83	3.6
Wairarapa	1	62	1.6
Hutt	7	288	2.4
Wellington	13	389	3.3
Wairau	3	63	4.8
Nelson	1	86	1.2
Grey Base	0	31	-
Christchurch	19	591	3.2
Timaru	0	91	-
Dunedin	10	219	4.6
Southland	11	155	7.1
All secondary and tertiary facilities	258	6502	4.0
All primary facilities	17	1004	1.7
New Zealand	275	7506	3.7

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

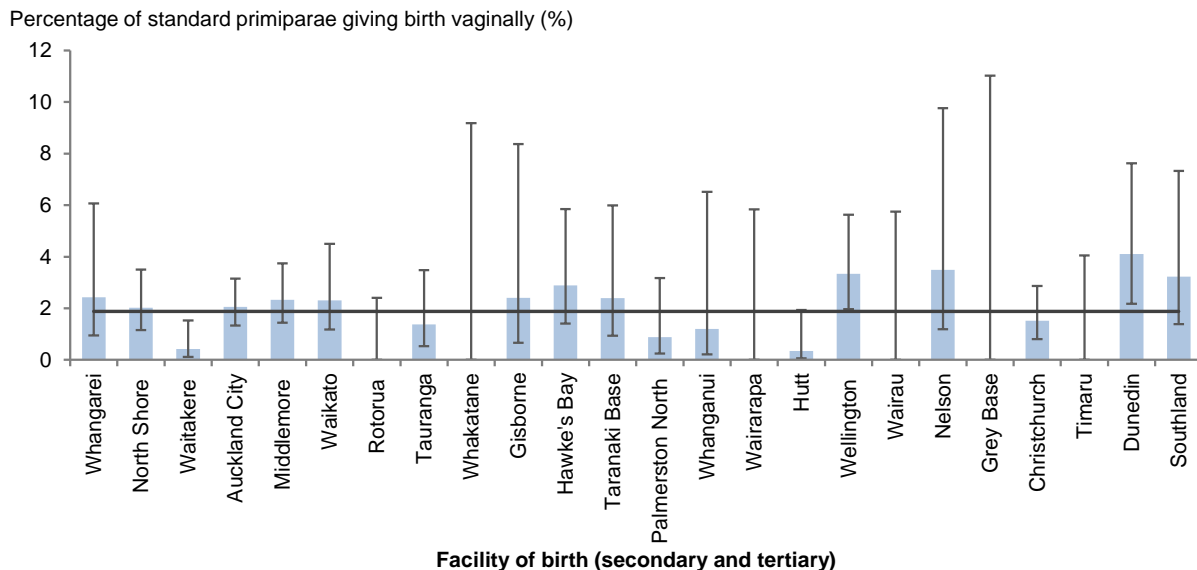
Indicator 9: Episiotomy and third- or fourth-degree tear among standard primiparae giving birth vaginally, 2012

Figure 18: Percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by DHB of domicile, 2012



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

Figure 19: 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), 2012



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

Table 18: Number and percentage of standard primiparae¹ giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by DHB of domicile, 2012

DHB of domicile	Episiotomy with 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Northland	4	234	1.7
Waitemata	13	1095	1.2
Auckland	19	982	1.9
Counties Manukau	18	970	1.9
Waikato	9	576	1.6
Lakes	0	183	–
Bay of Plenty	4	337	1.2
Tairāwhiti	2	83	2.4
Hawke's Bay	7	244	2.9
Taranaki	4	206	1.9
MidCentral	1	239	0.4
Whanganui	2	93	2.2
Capital & Coast	12	453	2.6
Hutt Valley	2	277	0.7
Wairarapa	0	62	–
Nelson Marlborough	3	152	2.0
West Coast	0	35	–
Canterbury	9	725	1.2
South Canterbury	0	96	–
Southern	14	460	3.0
Unspecified	0	4	–
New Zealand	123	7506	1.6

1 Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

Table 19: Number and percentage of standard primiparae¹ giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Episiotomy with 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	4	165	2.4
North Shore	12	594	2.0
Waitakere	2	474	0.4
Auckland City	20	974	2.1
Middlemore	16	688	2.3
Waikato	8	346	2.3
Rotorua	0	156	–
Tauranga	4	291	1.4
Whakatane	0	38	–
Gisborne	2	83	2.4
Hawke's Bay	7	242	2.9
Taranaki Base	4	167	2.4
Palmerston North	2	226	0.9
Whanganui	1	83	1.2
Wairarapa	0	62	–
Hutt	1	288	0.3
Wellington	13	389	3.3
Wairau	0	63	–
Nelson	3	86	3.5
Grey Base	0	31	–
Christchurch	9	591	1.5
Timaru	0	91	–
Dunedin	9	219	4.1
Southland	5	155	3.2
All secondary and tertiary facilities	122	6502	1.9
All primary facilities	1	1004	0.1
New Zealand	123	7506	1.6

¹ Standard primiparae only include women giving birth in maternity facilities (including primary facilities).

Indicator 10: 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 in some high risk cases (such as if a woman has pre-eclampsia) when only general anaesthetic can be used. General anaesthetic is more likely to be used when caesarean sections are done urgently; factors affecting this can include the configuration and organisation of obstetric and anaesthetic services (for example, whether a specialist anaesthetist is on site) and the level of antenatal care a woman has received.

The objective of this indicator is to encourage 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.

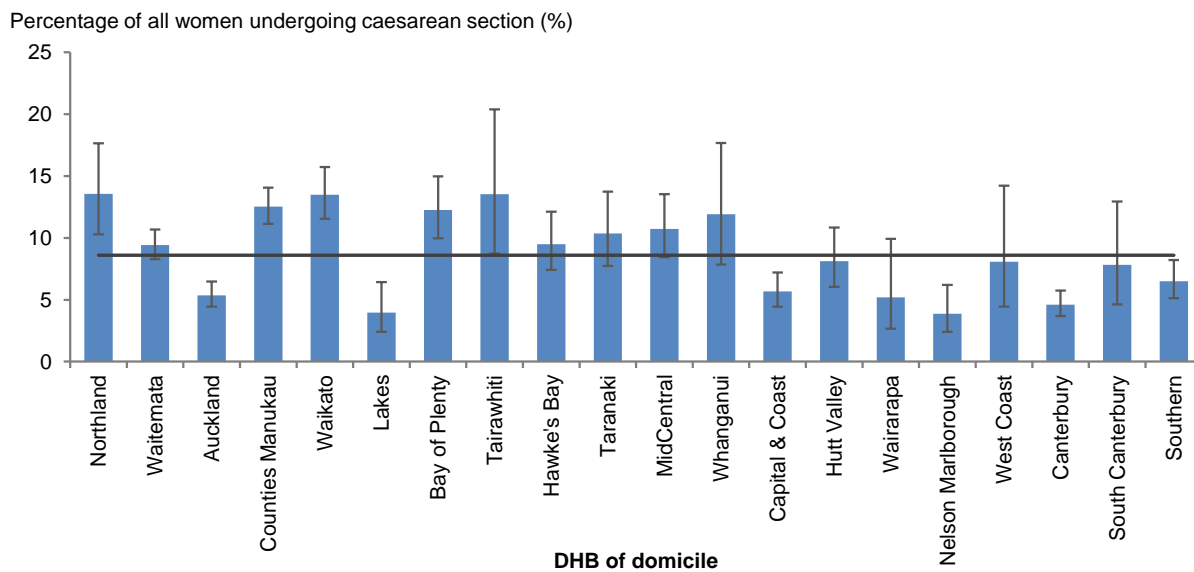
Notes on 2012 data

Rates of general anaesthetic use in caesarean section deliveries ranged from 3.9% to 13.6% across DHBs, and from 2.8% to 22.4% across secondary and tertiary facilities. These rates are based on small numbers, so caution must be used when making comparisons.

All maternity service providers who are outliers should review their rates of general anaesthetic for caesarean sections and consider the impact of the ratio between emergency and elective caesarean section rates. Providers should further investigate the reasons for higher rates of general anaesthetic for emergency caesarean sections to ensure this represents best possible quality of care for the woman and her baby.

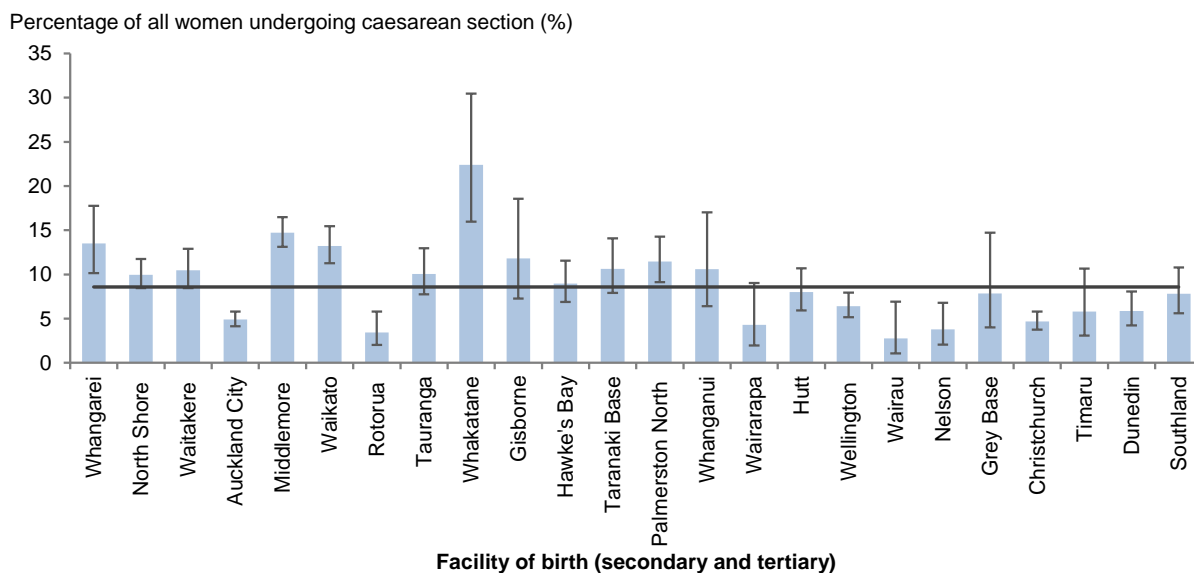
Indicator 10: General anaesthetic for women giving birth by caesarean section, 2012

Figure 20: Percentage of women undergoing a caesarean section under general anaesthetic, by DHB of domicile, 2012



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

Figure 21: Percentage of women undergoing a caesarean section under general anaesthetic, by facility of birth (secondary and tertiary facilities), 2012



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

Table 20: Number and percentage of women undergoing a caesarean section under general anaesthetic, by DHB of domicile, 2012

DHB of domicile	Caesarean section under general anaesthetic	All caesarean sections	Rate (%)
Northland	45	332	13.6
Waitemata	218	2316	9.4
Auckland	103	1919	5.4
Counties Manukau	248	1980	12.5
Waikato	139	1030	13.5
Lakes	15	379	4.0
Bay of Plenty	81	661	12.3
Tairāwhiti	18	133	13.5
Hawke's Bay	57	600	9.5
Taranaki	41	396	10.4
MidCentral	61	569	10.7
Whanganui	20	168	11.9
Capital & Coast	62	1094	5.7
Hutt Valley	41	505	8.1
Wairarapa	8	154	5.2
Nelson Marlborough	16	413	3.9
West Coast	10	124	8.1
Canterbury	75	1627	4.6
South Canterbury	13	166	7.8
Southern	65	999	6.5
Unspecified	2	7	–
New Zealand	1338	15,572	8.6

Table 21: Number and percentage of women undergoing a caesarean section under general anaesthetic, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Caesarean section under general anaesthetic	All caesarean sections	Rate (%)
Whangarei	42	311	13.5
North Shore	126	1263	10.0
Waitakere	77	735	10.5
Auckland City	126	2567	4.9
Middlemore	254	1724	14.7
Waikato	132	998	13.2
Rotorua	13	378	3.4
Tauranga	52	517	10.1
Whakatane	28	125	22.4
Gisborne	15	127	11.8
Hawke's Bay	52	580	9.0
Taranaki Base	41	386	10.6
Palmerston North	67	585	11.5
Whanganui	14	132	10.6
Wairarapa	6	140	4.3
Hutt	40	500	8.0
Wellington	76	1185	6.4
Wairau	4	144	2.8
Nelson	10	265	3.8
Grey Base	8	102	7.8
Christchurch	77	1646	4.7
Timaru	9	155	5.8
Dunedin	34	580	5.9
Southland	33	422	7.8
All secondary and tertiary facilities	1336	15,567	8.6
All primary facilities	2	5	40.0
New Zealand	1338	15,572	8.6

Indicators 11 and 12: 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% of vaginal births [and globally] 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 birth. This measurement is also not without difficulties; for example, decisions to perform blood transfusions depend on individual levels of patient tolerance, and some patients refuse a transfusion for religious or other beliefs. However, as a broad measure of excessive blood loss and potential long-term morbidity due to that blood loss, this indicator is a useful measure of severe, life-threatening PPH.

This indicator aims to provide maternity service providers with an indicator of significant blood loss that will stimulate further investigation of clinical management and intervention. All maternity service providers should be familiar with the national consensus guideline for treatment of PPH (Ministry of Health 2013).

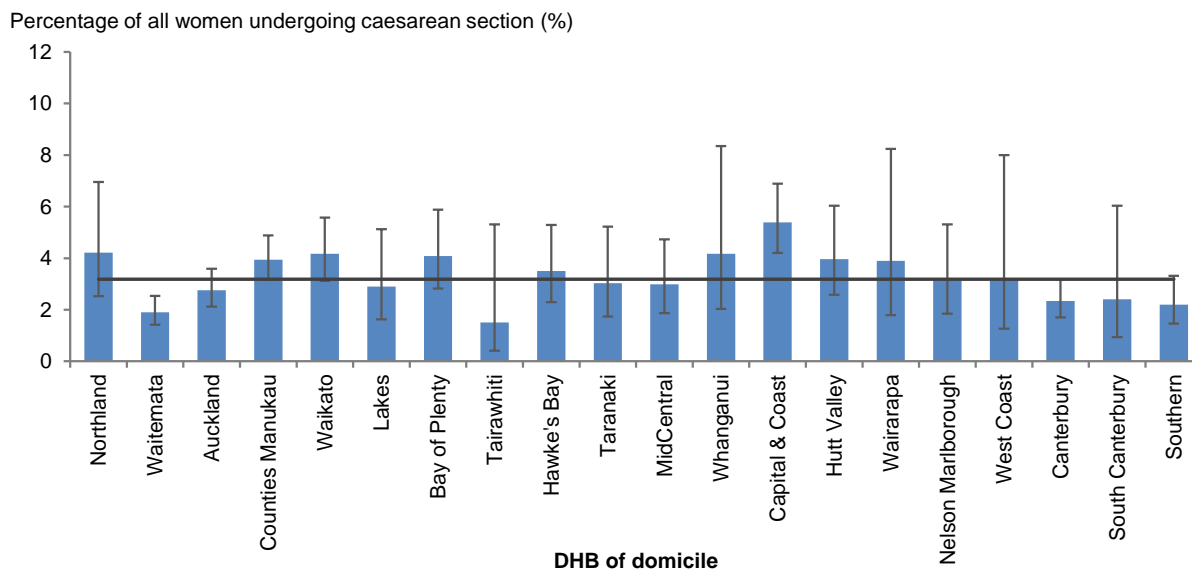
Notes on 2012 data

Overall, rates of blood transfusion were low and did not vary widely, although the rate and range was greater in the case of caesarean section deliveries than vaginal births. These rates were based on small numbers, so caution must be used when making comparisons.

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 be on understanding and addressing underlying causes, rather than addressing the indicator in isolation. All DHBs should ensure local practice aligns with the national consensus guideline for treatment of PPH (Ministry of Health 2013).

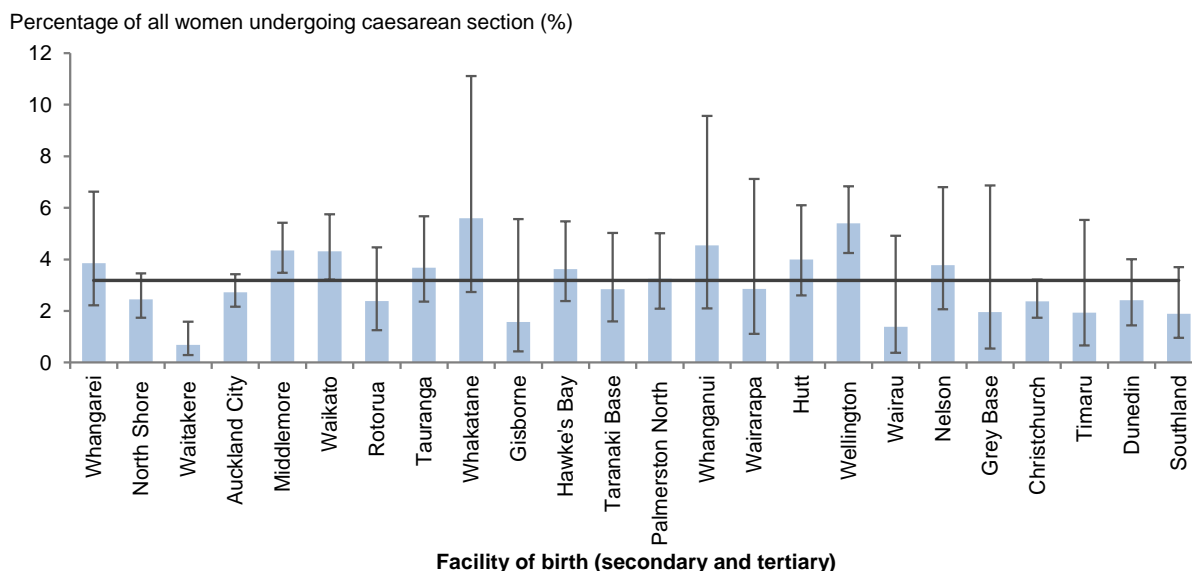
Indicator 11: Blood transfusion during birth admission for caesarean section delivery, 2012

Figure 22: Percentage of women giving birth by caesarean section and undergoing blood transfusion during birth admission, by DHB of domicile, 2012



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

Figure 23: Percentage of women giving birth by caesarean section and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2012



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

Table 22: Number and percentage of women giving birth by caesarean section and undergoing blood transfusion during birth admission, by DHB of domicile, 2012

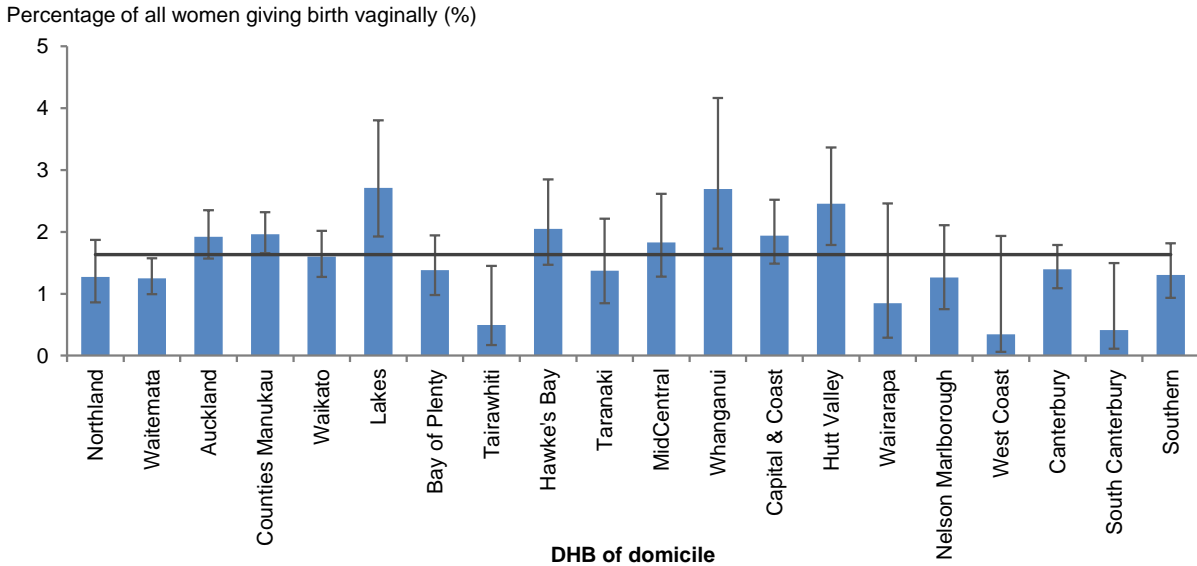
DHB of domicile	Blood transfusion	All caesarean sections	Rate (%)
Northland	14	332	4.2
Waitemata	44	2316	1.9
Auckland	53	1919	2.8
Counties Manukau	78	1980	3.9
Waikato	43	1030	4.2
Lakes	11	379	2.9
Bay of Plenty	27	661	4.1
Tairāwhiti	2	133	1.5
Hawke's Bay	21	600	3.5
Taranaki	12	396	3.0
MidCentral	17	569	3.0
Whanganui	7	168	4.2
Capital & Coast	59	1094	5.4
Hutt Valley	20	505	4.0
Wairarapa	6	154	3.9
Nelson Marlborough	13	413	3.1
West Coast	4	124	3.2
Canterbury	38	1627	2.3
South Canterbury	4	166	2.4
Southern	22	999	2.2
Unspecified	1	7	–
New Zealand	496	15,572	3.2

Table 23: 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), 2012

Facility of birth	Blood transfusion	All caesarean sections	Rate (%)
Whangarei	12	311	3.9
North Shore	31	1263	2.5
Waitakere	5	735	0.7
Auckland City	70	2567	2.7
Middlemore	75	1724	4.4
Waikato	43	998	4.3
Rotorua	9	378	2.4
Tauranga	19	517	3.7
Whakatane	7	125	5.6
Gisborne	2	127	1.6
Hawke's Bay	21	580	3.6
Taranaki Base	11	386	2.8
Palmerston North	19	585	3.2
Whanganui	6	132	4.5
Wairarapa	4	140	2.9
Hutt	20	500	4.0
Wellington	64	1185	5.4
Wairau	2	144	1.4
Nelson	10	265	3.8
Grey Base	2	102	2.0
Christchurch	39	1646	2.4
Timaru	3	155	1.9
Dunedin	14	580	2.4
Southland	8	422	1.9
All secondary and tertiary facilities	496	15,567	3.2
All primary facilities	0	5	-
New Zealand	496	15,572	3.2

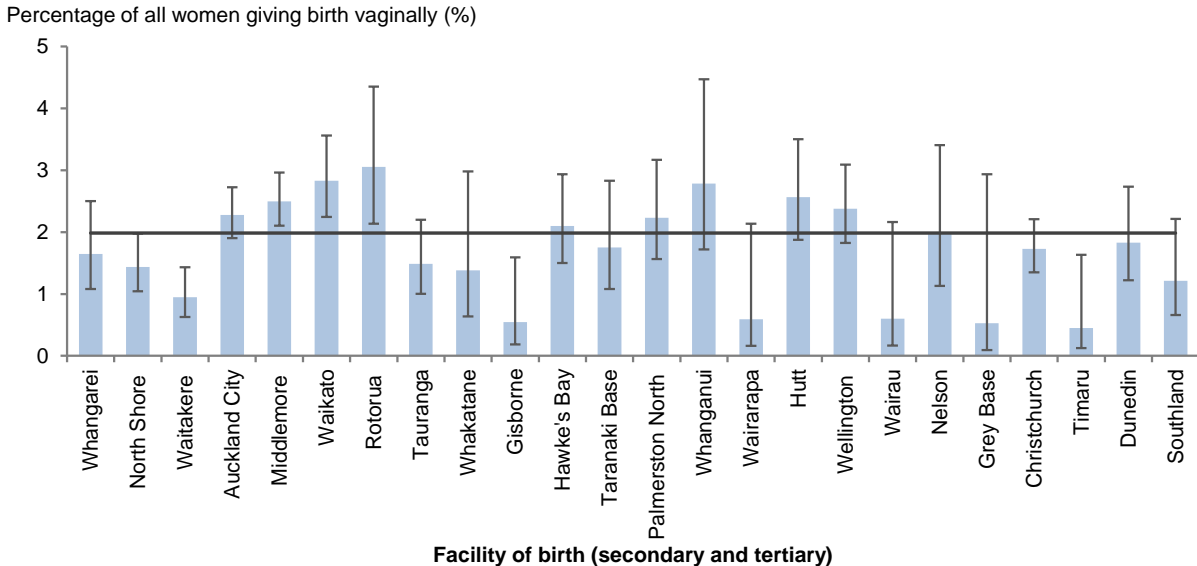
Indicator 12: Blood transfusion during birth admission for vaginal birth, 2012

Figure 24: Percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by DHB of domicile, 2012



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

Figure 25: Percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2012



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

Table 24: Number and percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by DHB of domicile, 2012

DHB of domicile	Blood transfusion	All vaginal births	Rate (%)
Northland	25	1968	1.3
Waitemata	71	5680	1.3
Auckland	92	4789	1.9
Counties Manukau	133	6781	2.0
Waikato	71	4430	1.6
Lakes	32	1180	2.7
Bay of Plenty	32	2316	1.4
Tairāwhiti	3	603	0.5
Hawke's Bay	34	1661	2.0
Taranaki	16	1167	1.4
MidCentral	29	1584	1.8
Whanganui	19	706	2.7
Capital & Coast	54	2788	1.9
Hutt Valley	37	1507	2.5
Wairarapa	3	354	0.8
Nelson Marlborough	14	1110	1.3
West Coast	1	289	0.3
Canterbury	61	4371	1.4
South Canterbury	2	483	0.4
Southern	34	2606	1.3
Unspecified	1	365	–
New Zealand	764	46,738	1.6

Table 25: Number and percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Blood transfusion	All vaginal births	Rate (%)
Whangarei	21	1276	1.6
North Shore	37	2574	1.4
Waitakere	22	2319	0.9
Auckland City	116	5091	2.3
Middlemore	128	5124	2.5
Waikato	70	2474	2.8
Rotorua	29	950	3.1
Tauranga	24	1615	1.5
Whakatane	6	434	1.4
Gisborne	3	549	0.5
Hawke's Bay	33	1572	2.1
Taranaki Base	16	913	1.8
Palmerston North	30	1345	2.2
Whanganui	16	575	2.8
Wairarapa	2	337	0.6
Hutt	38	1482	2.6
Wellington	54	2271	2.4
Wairau	2	333	0.6
Nelson	12	610	2.0
Grey Base	1	189	0.5
Christchurch	62	3586	1.7
Timaru	2	443	0.5
Dunedin	23	1256	1.8
Southland	10	826	1.2
All secondary and tertiary facilities	757	38,144	2.0
All primary facilities	7	5361	0.1
All home births	0	1923	–
New Zealand¹	764	46,738	1.6

1 Includes women where birth location was unspecified.

Indicator 13: Severe maternal morbidity

Rationale and purpose

Maternal mortality has long been monitored as an indicator of maternity system safety and quality. However, the number of maternal deaths in any given year is low and fewer still are potentially avoidable.⁷ The impact of severe morbidity is significant and long term, of high personal cost to a woman and her family and of high financial cost to the health system. Monitoring severe morbidity allows a view of a larger, but still limited, set of cases that might provide a broader picture of the true impact of adverse outcomes in maternity in New Zealand. Cases of severe maternal morbidity should be subject to local review for quality improvement purposes.

The first severe morbidity indicator to be included in the New Zealand Maternity Clinical Indicators is eclampsia among women giving birth. Additional categories of severe morbidity are likely to be added over time.

Eclampsia

Pre-eclampsia is a disorder of pregnancy characterised by high blood pressure and protein in the urine. Pre-eclampsia affects between 2% and 8% of pregnancies worldwide. Eclampsia is a serious complication of pre-eclampsia and results in high rates of perinatal and maternal morbidity and mortality (WHO 2011). Eclampsia is considered preventable through early detection and management of pre-eclampsia.

Notes on 2012 data

There were 14 women diagnosed with eclampsia during their birth admission across seven DHBs, with fewer than five in each DHB. DHBs with cases should investigate each case for upstream opportunities for management of hypertension and/or pre-eclampsia.

⁷ The 8th Annual Perinatal and Maternal Mortality Review Committee report identified 10 maternal deaths in 2012. For the period 2006 to 2012, 33.8% of maternal deaths were classified as potentially avoidable (PMMRC 2014).

Indicator 13: Diagnosis of eclampsia during birth admission, 2012

Table 26: Number and percentage of women diagnosed with eclampsia during birth admission, by DHB of domicile, 2012

DHB of domicile	Diagnosis of eclampsia during birth admission	All women giving birth
Northland	0	2300
Waitemata	2	7996
Auckland	0	6708
Counties Manukau	3	8761
Waikato	1	5460
Lakes	0	1559
Bay of Plenty	1	2977
Tairāwhiti	2	736
Hawke's Bay	0	2261
Taranaki	0	1563
MidCentral	0	2153
Whanganui	0	874
Capital & Coast	0	3882
Hutt Valley	0	2012
Wairarapa	1	508
Nelson Marlborough	0	1523
West Coast	0	413
Canterbury	4	5998
South Canterbury	0	649
Southern	0	3605
Unspecified	0	372
New Zealand	14	62,310

Table 27: Number and percentage of women diagnosed with eclampsia during birth admission, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Diagnosis of eclampsia during birth admission	All women giving birth
Whangarei	0	1587
North Shore	1	3837
Waitakere	1	3054
Auckland City	0	7658
Middlemore	3	6848
Waikato	1	3472
Rotorua	1	1328
Tauranga	0	2132
Whakatane	0	559
Gisborne	2	676
Hawke's Bay	0	2152
Taranaki Base	0	1299
Palmerston North	0	1930
Whanganui	0	707
Wairarapa	1	477
Hutt	0	1982
Wellington	0	3456
Wairau	0	477
Nelson	0	875
Grey Base	0	291
Christchurch	4	5232
Timaru	0	598
Dunedin	0	1836
Southland	0	1248
All secondary and tertiary facilities	14	53,711
All primary facilities	0	5366
All home births	0	1923
New Zealand¹	14	62,310

1 Includes women where birth location was unspecified.

Indicator 14: Maternal tobacco use during postnatal period

Rationale and purpose

Smoking during pregnancy leads to increased carbon monoxide concentration in the blood of both the mother and her baby. This reduces the oxygen and nourishment available to the baby and leads to higher rates of neonatal mortality, sudden unexpected death in infancy (SUDI), low birth weight and long-term respiratory problems for the child (The Quit Group 2004).

Pregnancy is often the time women seek to quit smoking for their health and the health of their unborn baby. This indicator monitors tobacco use at two weeks postnatal, which – when compared to tobacco use rates at first engagement with maternity services – seeks to ensure women who have quit smoking during their pregnancy maintain a smokefree environment for their newborn baby.

Improving this indicator requires coordinated tobacco cessation support during pregnancy and into the postnatal period that meets the needs of local populations, and requires tobacco cessation services to work closely with LMCs and DHB primary maternity services.

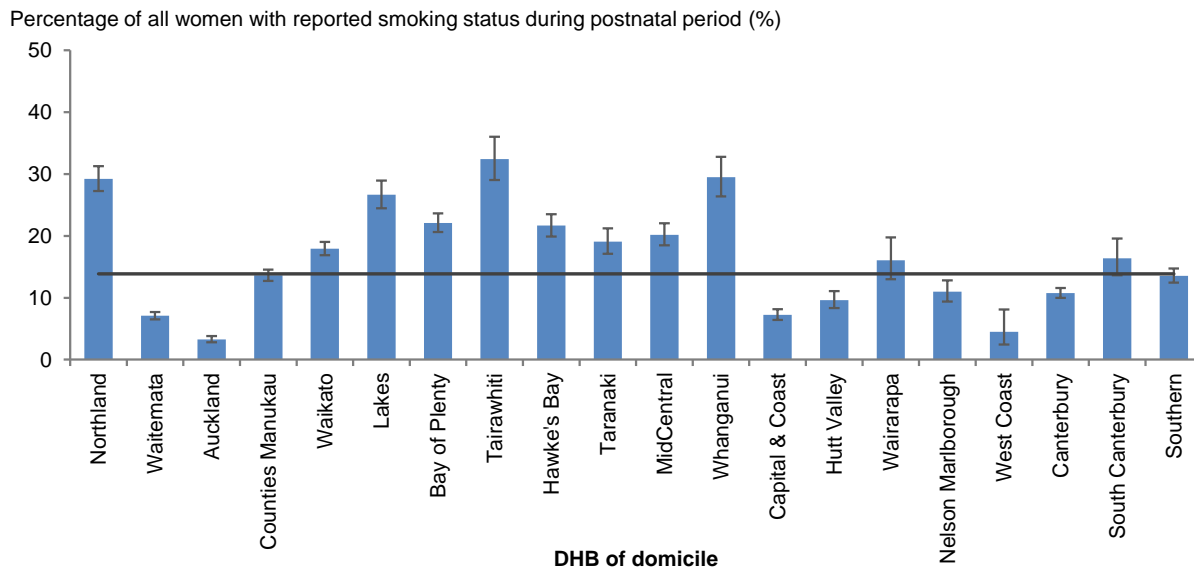
Notes on 2012 data

Rates of maternal tobacco use in the postnatal period (two weeks after birth) varied between DHBs and between secondary and tertiary facility of birth; DHB rates ranged from 3.3% to 32.4%, and facility rates ranged from 2.3% to 35.9%. DHBs and facilities with higher rates warrant further investigation into access to appropriate smoking cessation services and development of new initiatives to support smoking cessation among pregnant and postpartum women.

This indicator currently presents tobacco use information collected from women registered with a Lead Maternity Carer (89% of women in 2012). Collection of tobacco use data for women who receive DHB-funded primary maternity services is under way and will be included in this indicator when it becomes available.

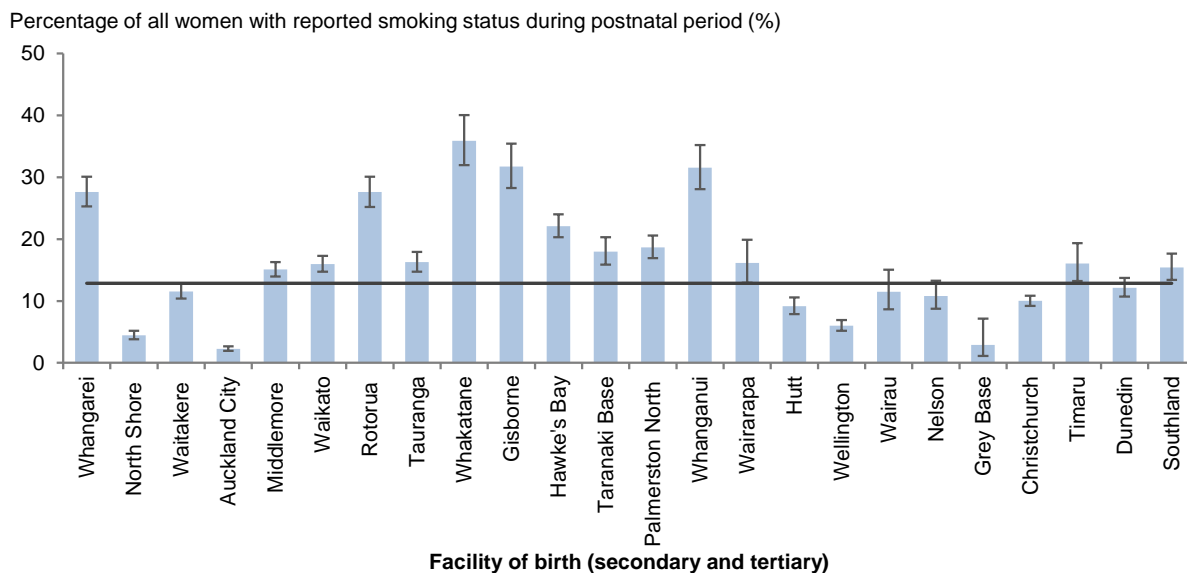
Indicator 14: Maternal tobacco use during postnatal period, 2012

Figure 26: Percentage of women identified as smokers during postnatal period (2 weeks after birth), by DHB of domicile, 2012



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

Figure 27: Percentage of women identified as smokers during postnatal period (2 weeks after birth), by facility of birth (secondary and tertiary facilities), 2012



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

Table 28: Number and percentage of women identified as smokers during postnatal period (2 weeks after birth), by DHB of domicile, 2012

DHB of domicile	Women identified as smokers at 2 weeks after birth	All women with reported smoking status at 2 weeks after birth	Rate (%)
Northland	579	1981	29.2
Waitemata	513	7229	7.1
Auckland	159	4882	3.3
Counties Manukau	741	5440	13.6
Waikato	888	4955	17.9
Lakes	397	1490	26.6
Bay of Plenty	638	2888	22.1
Tairāwhiti	223	688	32.4
Hawke's Bay	437	2018	21.7
Taranaki	268	1404	19.1
MidCentral	394	1952	20.2
Whanganui	229	777	29.5
Capital & Coast	248	3430	7.2
Hutt Valley	168	1748	9.6
Wairarapa	73	454	16.1
Nelson Marlborough	139	1267	11.0
West Coast	10	222	4.5
Canterbury	628	5836	10.8
South Canterbury	97	592	16.4
Southern	463	3416	13.6
Unspecified	31	200	–
New Zealand	7323	52,869	13.9

Table 29: Number and percentage of women identified as smokers during postnatal period (2 weeks after birth), by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Women identified as smokers at 2 weeks after birth	All women with reported smoking status at 2 weeks after birth	Rate (%)
Whangarei	370	1339	27.6
North Shore	159	3580	4.4
Waitakere	308	2670	11.5
Auckland City	132	5801	2.3
Middlemore	542	3591	15.1
Waikato	501	3134	16.0
Rotorua	354	1283	27.6
Tauranga	339	2084	16.3
Whakatane	192	535	35.9
Gisborne	203	640	31.7
Hawke's Bay	431	1951	22.1
Taranaki Base	207	1151	18.0
Palmerston North	327	1751	18.7
Whanganui	204	647	31.5
Wairarapa	70	434	16.1
Hutt	160	1750	9.1
Wellington	176	2935	6.0
Wairau	44	383	11.5
Nelson	78	723	10.8
Grey Base	4	139	2.9
Christchurch	508	5076	10.0
Timaru	88	548	16.1
Dunedin	216	1779	12.1
Southland	174	1129	15.4
All secondary and tertiary facilities	5787	45,053	12.8
All primary facilities	1085	4828	22.5
All home births	241	1856	13.0
New Zealand¹	7323	52,869	13.9

1 Includes women where birth location was unspecified.

Indicator 15: Preterm birth

Rationale and purpose

Preterm birth is a significant contributor to perinatal mortality and neonatal morbidity, especially for babies born under 32 weeks gestation. Preterm birth is among the top causes of death in infants worldwide (WHO 2013).

Preterm birth may have a number of consequences, including:

- higher neonatal mortality and morbidity
- long-term health effects on babies such as poorer neurodevelopmental and educational outcomes, more hospital admissions and increased general disease burden in childhood
- greater use of health resources.

Spontaneous preterm birth, premature rupture of membranes, multiple pregnancy and pregnancy-induced hypertension are the most common causes of preterm birth.

Management of maternal hypertension and tobacco use may reduce rates of early preterm birth. Clinical decision-making regarding timing of induction and elective caesarean section affects rates of late preterm birth.

Recent investigation by the National Maternity Monitoring Group found that rates of preterm birth at 34 and 35 weeks gestation have remained fairly constant over the four years from 2008 to 2011. However, preterm births at 36 weeks gestation may be increasing. This may represent changes in planned preterm births. The National Maternity Monitoring Group recommends that all DHBs should audit preterm births in their region, particularly births at 34, 35 and 36 weeks.

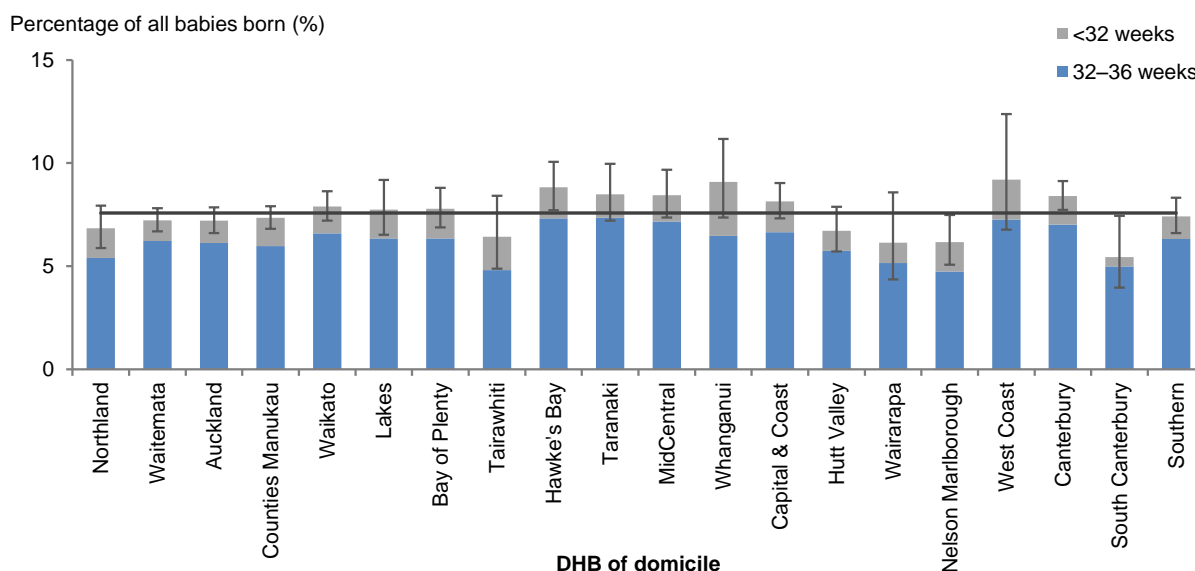
Notes on 2012 data

Overall rates of preterm birth (<37 weeks gestation) varied between DHBs, ranging from 5.4% to 9.2%, and varied more widely between secondary and tertiary facilities, ranging from 3.9% to 12.4%. The latter variation is likely to reflect clinical decision-making around management of women in preterm labour.

Rates of very preterm (<32 weeks gestation) birth have remained fairly stable while rates of moderate or late preterm birth (32 to 36 weeks gestation) appear to be increasing slightly over time. This warrants further investigation as to the cause of both.

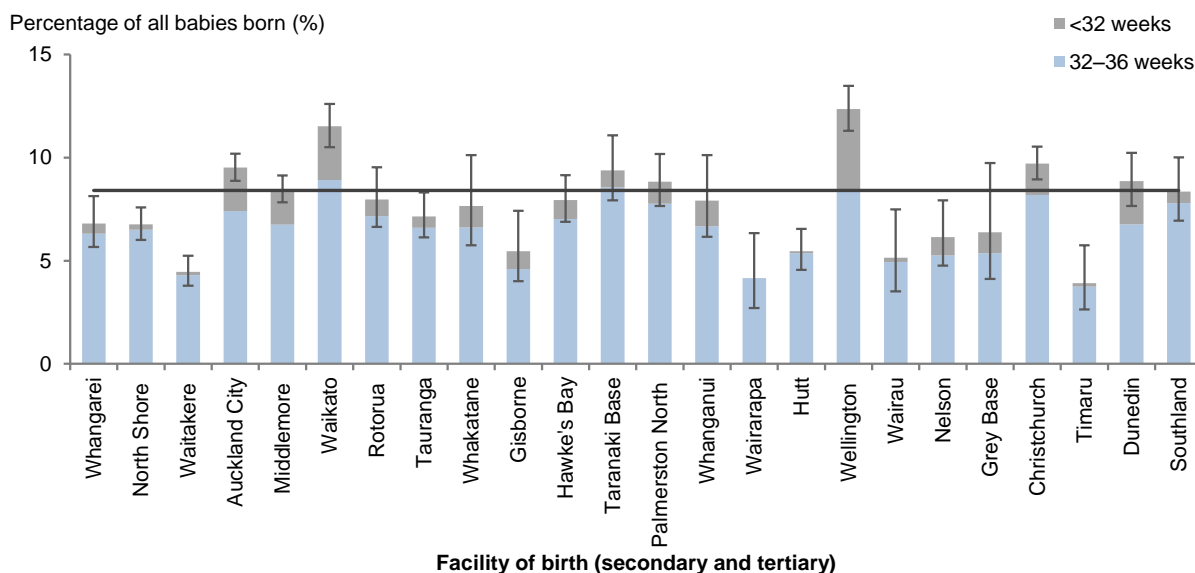
Indicator 15: Preterm births, 2012

Figure 28: Percentage of preterm births, by DHB of domicile, 2012



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

Figure 29: Percentage of preterm births, by facility of birth (secondary and tertiary facilities), 2012



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

Table 30: Number and percentage of preterm births, by DHB of domicile, 2012

DHB of domicile	Babies born under 37 weeks gestation			All babies born (live births)	Rate (%)
	<32 weeks	32–36 weeks	Total		
Northland	33	125	158	2312	6.8
Waitemata	81	503	584	8076	7.2
Auckland	73	413	486	6743	7.2
Counties Manukau	120	528	648	8824	7.3
Waikato	72	364	436	5525	7.9
Lakes	22	99	121	1561	7.8
Bay of Plenty	43	190	233	2992	7.8
Tairāwhiti	12	36	48	747	6.4
Hawke's Bay	34	166	200	2267	8.8
Taranaki	18	116	134	1578	8.5
MidCentral	28	158	186	2202	8.4
Whanganui	23	57	80	880	9.1
Capital & Coast	58	258	316	3884	8.1
Hutt Valley	20	117	137	2039	6.7
Wairarapa	5	26	31	505	6.1
Nelson Marlborough	22	73	95	1541	6.2
West Coast	8	30	38	413	9.2
Canterbury	84	425	509	6054	8.4
South Canterbury	3	33	36	661	5.4
Southern	40	229	269	3625	7.4
Unspecified	9	5	14	314	–
New Zealand	808	3951	4759	62,743	7.6

Table 31: Number and percentage of preterm births, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Babies born under 37 weeks gestation			All babies born (live births)	Rate (%)
	<32 weeks	32–36 weeks	Total		
Whangarei	8	102	110	1618	6.8
North Shore	10	252	262	3877	6.8
Waitakere	5	134	139	3117	4.5
Auckland City	164	577	741	7791	9.5
Middlemore	119	470	589	6963	8.5
Waikato	93	318	411	3569	11.5
Rotorua	11	97	108	1355	8.0
Tauranga	12	143	155	2168	7.1
Whakatane	6	38	44	575	7.7
Gisborne	6	32	38	695	5.5
Hawke's Bay	20	153	173	2178	7.9
Taranaki Base	11	113	124	1321	9.4
Palmerston North	21	152	173	1958	8.8
Whanganui	9	48	57	720	7.9
Wairarapa	0	20	20	481	4.2
Hutt	2	108	110	2014	5.5
Wellington	137	296	433	3506	12.4
Wairau	1	24	25	486	5.1
Nelson	8	47	55	894	6.2
Grey Base	3	16	19	298	6.4
Christchurch	81	438	519	5348	9.7
Timaru	1	23	24	614	3.9
Dunedin	39	126	165	1863	8.9
Southland	7	98	105	1258	8.3
All secondary and tertiary facilities	774	3825	4599	54,667	8.4
All primary facilities	8	73	81	5479	1.5
All home births	5	30	35	1655	2.1
New Zealand¹	808	3951	4759	62,743	7.6

1 Includes babies born without a birth location recorded.

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Appendices

Appendix 1: Technical notes

Clinical codes and definitions

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

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

Table A1: 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 A2: 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
9047004	Breech extraction with forceps to after-coming head
O640–O649	Labour and delivery affected by malposition and malpresentation of fetus

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 in pregnancy
O360, O361, O363, O364, O365	Known or suspected fetal problems
O411, O420–O429	Infection of the amniotic sac/membranes 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 (that is, 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 (see Table A5). Spontaneous vaginal births 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 (see Table A5). Instrumental vaginal births do not include failed attempts at forceps or vacuum extraction (see 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 definition includes emergency and elective, lower segment and classical caesarean sections, and it is identified by the presence of any caesarean section clinical code (see 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 (see 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
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 ‘was unspecified’ degree) (see 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 (see 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 tear clinical code (see Table A8).

Table A8: Episiotomy and/or perineal tear codes

Clinical code (ICD-10-AM)	Description
9047200	Episiotomy
O700	First-degree perineal laceration during delivery
O701	Second-degree perineal laceration during delivery
O702	Third-degree perineal laceration during delivery
O703	Fourth-degree perineal laceration during delivery
O709	Perineal laceration during delivery, was unspecified

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

Table A9: General anaesthetic procedure code

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

Blood transfusion during birth admission: identified by clinical codes for selected blood transfusion procedures (see Table A10).

Table A10: Blood transfusion procedure codes

Clinical code (ICD-10-AM)	Description
1370601	Administration of whole blood
1370602	Administration of packed cells
1370603	Administration of platelets
9206000	Administration of autologous blood
9206200	Administration of other serum
9206300	Administration of blood expander
9206400	Administration of other blood product

Diagnosis of eclampsia at birth admission: identified by the presence of an eclampsia clinical code (see Table A11).

Table A11: Eclampsia codes

Clinical code (ICD-10-AM)	Description
O150	Eclampsia in pregnancy
O151	Eclampsia in labour
O152	Eclampsia in the puerperium
O159	Eclampsia, was unspecified as to time period

Preterm birth: the birth of a baby born between 20 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 maternity facilities (hospitals) only, while DHB graphs present maternity events by DHB of residence and include births at all maternity facilities (including primary facilities). The aim of this is to enable the comparison of deliveries or births for which clinicians have access to similar clinical facilities and interventions. Data for individual primary facilities is provided in Appendix 5. Care should be taken when making comparisons, because many primary units deal with 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% 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).

Southern DHB data: in May 2010, Otago and Southland DHBs were merged into a single entity, Southern DHB, which began reporting to the Ministry of Health National Collections in 2011. All relevant data is reported in this report under ‘Southern DHB’.

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 the purposes of this report, Christchurch Women’s Hospital and Christchurch Hospital events have been summed.

Appendix 2: Catchment areas

The primary, secondary and tertiary maternity facilities with reported births between 2009 and 2012 are listed by DHB in the table below. Their geographical locations are presented in Figure A1.

District health board	Tertiary facility ¹	Secondary facility ²	Primary facility ³	
Northland	Auckland City	Whangarei	Bay of Islands Dargaville Hokianga Health Kaitaia	
Waitemata		North Shore Waitakere	Helensville Warkworth Wellsford	
Auckland			Birthcare Auckland	
Counties Manukau	Middlemore		Botany Downs Papakura Pukekohe	
Waikato	Waikato		Birthcare Huntly Matariki Pohlen Trust Rhoda Read River Ridge* Taumaranui Te Kuiti Thames Tokoroa Waihi Waterford	
Lakes		Rotorua	Taupo	
Bay of Plenty		Tauranga Whakatane	Murupara Opotiki	
Tairāwhiti		Gisborne	Ngāti Porou Hauora	
Taranaki		Taranaki Base	Elizabeth R Hawera	
Hawke's Bay		Wellington	Hawke's Bay Regional	Wairoa
MidCentral			Palmerston North	Dannevirke Horowhenua
Whanganui	Whanganui		Otaihape Waimarino	
Capital & Coast			Kapiti Kenepuru	
Hutt Valley	Hutt			
Wairarapa	Wairarapa			
Nelson Marlborough	Wairau Nelson		Golden Bay Motueka*	

District health board	Tertiary facility ¹	Secondary facility ²	Primary facility ³
West Coast	Christchurch	Grey Base	Buller
Canterbury			Akaroa** Ashburton Burwood Darfield Kaikoura Lincoln Rangiora St George's Waikari**
South Canterbury		Timaru	
Southern		Dunedin Southland	Charlotte Jean Clutha Dunstan Gore Lakes District Lumsden Maniototo Oamaru Tuatapere Winton

1 A facility that provides a multidisciplinary specialist team for women and babies with complex or rare maternity needs; for example, babies with major fetal disorders requiring prenatal diagnostic and fetal therapy services, or women with obstetric histories that significantly increase the risks during pregnancy, labour and delivery (for example, those who have already had two placental abruptions). This includes neonatal intensive care units.

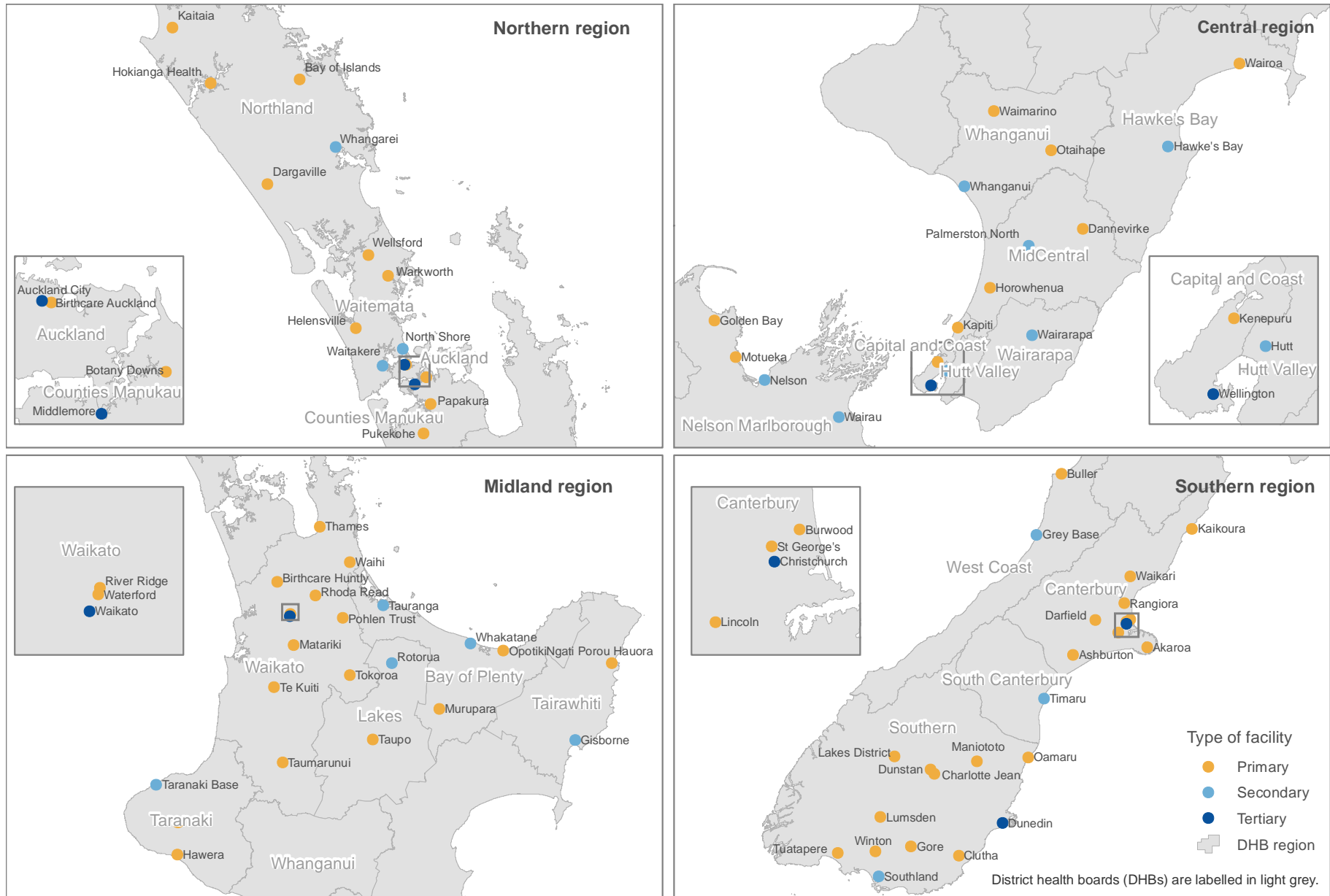
2 A facility that provides additional care during the antenatal, labour and birth, and postnatal periods for women and babies who experience complications and who have a clinical need for either specialist consultation or transfer.

3 A facility that does not have inpatient secondary maternity services or 24-hour on-site availability of specialist obstetricians, paediatricians and anaesthetists. This includes birthing units.

* Maternity data for 2012 was not supplied to the Ministry of Health for these primary maternity facilities.

** These facilities did not provide birth care in 2012.

Figure A1: Maternity facilities in New Zealand by district health board and facility type



Appendix 3: New Zealand Maternity Clinical Indicator numbers and rates by year, 2009 to 2012

New Zealand Maternity Clinical Indicator	Numerator value				Denominator value				Rate (%)			
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012
1 Registration with a Lead Maternity Carer in the 1st trimester of pregnancy	30,357	32,299	33,667	35,122	53,777	55,240	54,460	55,299	56.4	58.5	61.8	63.5
2 Standard primiparae who have a spontaneous vaginal birth	6693	6581	6349	6113	9709	9502	9163	8915	68.9	69.3	69.3	68.6
3 Standard primiparae who undergo an instrumental vaginal birth	1453	1399	1379	1366	9709	9502	9163	8915	15.0	14.7	15.0	15.3
4 Standard primiparae who undergo caesarean section	1480	1455	1386	1409	9709	9502	9163	8915	15.2	15.3	15.1	15.8
5 Standard primiparae who undergo induction of labour	433	368	408	373	9709	9502	9163	8915	4.5	3.9	4.5	4.2
6 Standard primiparae with an intact lower genital tract (no 1st- to 4th-degree tear or episiotomy)	2744	2599	2381	2100	8229	8047	7777	7506	33.3	32.3	30.6	28.0
7 Standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear	1663	1642	1581	1547	8229	8047	7777	7506	20.2	20.4	20.3	20.6
8 Standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy	266	268	269	275	8229	8047	7777	7506	3.2	3.3	3.5	3.7
9 Standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear	102	81	98	123	8229	8047	7777	7506	1.2	1.0	1.3	1.6
10 Women having a general anaesthetic for caesarean section	1376	1386	1244	1338	15,238	15,247	14,876	15,572	9.0	9.1	8.4	8.6
11 Women requiring a blood transfusion with caesarean section	569	500	487	496	15,238	15,247	14,876	15,572	3.7	3.3	3.3	3.2
12 Women requiring a blood transfusion with vaginal birth	707	747	728	764	48,983	49,203	47,422	46,738	1.4	1.5	1.5	1.6
13 Diagnosis of eclampsia at birth admission	27	22	17	14	64,221	64,450	62,298	62,310	0.04	0.03	0.03	0.02
14 Maternal tobacco use during postnatal period	7617	8159	7353	7323	51,042	52,908	52,121	52,869	14.9	15.4	14.1	13.9
15 Preterm birth	4745	4779	4585	4759	64,519	64,836	62,602	62,743	7.4	7.4	7.3	7.6

Appendix 4: New Zealand Maternity Clinical Indicator numbers, by facility of birth (secondary and tertiary facilities), 2012

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Whangarei	Num	825	139	25	21	9	69	22	3	4	42	12	21	0	370	110
	Den	1454	186	186	186	186	165	165	165	165	311	311	1276	1587	1339	1618
North Shore	Num	2554	452	138	156	39	100	143	25	12	126	31	37	1	159	262
	Den	3694	750	750	750	750	594	594	594	594	1263	1263	2574	3837	3580	3877
Waitakere	Num	1652	412	61	85	20	124	83	13	2	77	5	22	1	308	139
	Den	2810	559	559	559	559	474	474	474	474	735	735	2319	3054	2670	3117
Auckland City	Num	4057	761	209	242	66	150	320	28	20	126	70	116	0	132	741
	Den	6056	1216	1216	1216	1216	974	974	974	974	2567	2567	5091	7658	5801	7791
Middlemore	Num	1612	546	137	174	28	68	141	36	16	254	75	128	3	542	589
	Den	3914	862	862	862	862	688	688	688	688	1724	1724	5124	6848	3591	6963
Waikato	Num	2273	247	98	65	32	109	66	29	8	132	43	70	1	501	411
	Den	3264	411	411	411	411	346	346	346	346	998	998	2474	3472	3134	3569
Rotorua	Num	662	142	14	14	9	81	17	8	0	13	9	29	1	354	108
	Den	1320	170	170	170	170	156	156	156	156	378	378	950	1328	1283	1355
Tauranga	Num	1530	224	67	48	11	63	64	11	4	52	19	24	0	339	155
	Den	2120	339	339	339	339	291	291	291	291	517	517	1615	2132	2084	2168
Whakatane	Num	324	33	5	7	0	12	7	2	0	28	7	6	0	192	44
	Den	557	45	45	45	45	38	38	38	38	125	125	434	559	535	575
Gisborne	Num	274	73	10	8	1	38	7	5	2	15	2	3	2	203	38
	Den	671	91	91	91	91	83	83	83	83	127	127	549	676	640	695
Hawke's Bay	Num	1243	185	55	49	10	71	55	17	7	52	21	33	0	431	173
	Den	2030	291	291	291	291	242	242	242	242	580	580	1572	2152	1951	2178

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Taranaki Base	Num	934	138	28	45	5	65	25	5	4	41	11	16	0	207	124
	Den	1277	212	212	212	212	167	167	167	167	386	386	913	1299	1151	1321
Palmerston North	Num	1285	180	45	48	14	58	52	8	2	67	19	30	0	327	173
	Den	1830	274	274	274	274	226	226	226	226	585	585	1345	1930	1751	1958
Whanganui	Num	378	78	4	10	0	44	5	3	1	14	6	16	0	204	57
	Den	671	93	93	93	93	83	83	83	83	132	132	575	707	647	720
Wairarapa	Num	299	44	18	15	1	14	19	1	0	6	4	2	1	70	20
	Den	471	77	77	77	77	62	62	62	62	140	140	337	477	434	481
Hutt	Num	1042	245	43	49	9	94	47	7	1	40	20	38	0	160	110
	Den	1865	337	337	337	337	288	288	288	288	500	500	1482	1982	1750	2014
Wellington	Num	1983	285	104	82	39	49	138	13	13	76	64	54	0	176	433
	Den	3099	471	471	471	471	389	389	389	389	1185	1185	2271	3456	2935	3506
Wairau	Num	325	56	7	14	1	12	7	3	0	4	2	2	0	44	25
	Den	409	77	77	77	77	63	63	63	63	144	144	333	477	383	486
Nelson	Num	539	77	9	29	3	20	15	1	3	10	10	12	0	78	55
	Den	742	115	115	115	115	86	86	86	86	265	265	610	875	723	894
Grey Base	Num	124	24	7	6	3	11	7	0	0	8	2	1	0	4	19
	Den	174	37	37	37	37	31	31	31	31	102	102	189	291	139	298
Christchurch	Num	3849	422	169	130	34	119	192	19	9	77	39	62	4	508	519
	Den	5193	721	721	721	721	591	591	591	591	1646	1646	3586	5232	5076	5348
Timaru	Num	309	78	13	13	6	26	19	0	0	9	3	2	0	88	24
	Den	598	104	104	104	104	91	91	91	91	155	155	443	598	548	614
Dunedin	Num	1398	157	61	52	10	53	46	10	9	34	14	23	0	216	165
	Den	1826	271	271	271	271	219	219	219	219	580	580	1256	1836	1779	1863
Southland	Num	847	118	37	46	22	35	24	11	5	33	8	10	0	174	105
	Den	1202	201	201	201	201	155	155	155	155	422	422	826	1248	1129	1258

1 Refer to Table 1 for indicator descriptions and definitions. Num: numerator value; Den: denominator value.

Appendix 5: New Zealand maternity clinical indicator numbers, by facility of birth (primary facilities), 2012

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ashburton	Num	110	30	0	0	0	15	2	0	0	0	0	0	0	31	0
	Den	144	31	31	31	31	31	31	31	31	0	0	144	144	144	144
Bay of Islands	Num	80	35	0	0	0	25	1	0	0	0	0	0	0	77	4
	Den	219	35	35	35	35	35	35	35	35	0	0	222	222	213	230
Birthcare Auckland	Num	242	93	0	0	0	87	0	3	0	0	0	1	0	8	3
	Den	388	93	93	93	93	93	93	93	93	0	0	391	391	381	398
Birthcare Huntly	Num	66	24	0	0	0	24	0	0	0	0	0	0	0	63	3
	Den	127	24	24	24	24	24	24	24	24	0	0	127	127	124	129
Botany Downs	Num	153	86	0	0	0	22	1	4	0	0	0	0	0	22	1
	Den	296	86	86	86	86	86	86	86	86	1	1	380	381	288	392
Buller	Num	1	2	0	0	0	2	0	0	0	0	0	0	0	0	1
	Den	1	2	2	2	2	2	2	2	2	0	0	20	20	0	20
Burwood	Num	134	49	0	0	0	33	0	0	0	0	0	0	0	30	0
	Den	191	49	49	49	49	49	49	49	49	0	0	192	192	187	197
Charlotte Jean	Num	47	9	0	0	0	9	0	0	0	0	0	0	0	11	1
	Den	59	9	9	9	9	9	9	9	9	0	0	59	59	56	59
Clutha	Num	17	6	0	0	0	3	0	0	0	0	0	0	0	7	0
	Den	29	6	6	6	6	6	6	6	6	0	0	29	29	29	29
Dannevirke	Num	16	7	0	0	0	4	0	0	0	0	0	0	0	13	2
	Den	37	7	7	7	7	7	7	7	7	0	0	37	37	37	37
Darfield	Num	6	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	Den	7	0	0	0	0	0	0	0	0	0	0	7	7	7	6

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dargaville	Num	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Den	4	0	0	0	0	0	0	0	0	0	0	6	6	2	11
Dunstan	Num	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Den	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Elizabeth R	Num	73	20	0	0	0	20	0	0	0	0	0	0	0	17	0
	Den	89	20	20	20	20	20	20	20	20	0	0	89	89	86	89
Golden Bay	Num	1	4	0	0	0	1	0	0	0	0	0	0	0	1	0
	Den	4	4	4	4	4	4	4	4	4	0	0	10	10	2	10
Gore	Num	55	14	0	0	1	2	2	1	0	0	0	0	0	19	0
	Den	76	14	14	14	14	14	14	14	14	0	0	76	76	74	76
Hawera	Num	63	14	0	0	0	4	1	0	0	0	0	0	0	32	0
	Den	91	14	14	14	14	14	14	14	14	0	0	92	92	89	104
Helensville	Num	27	9	0	0	0	9	0	0	0	0	0	0	0	6	0
	Den	38	9	9	9	9	9	9	9	9	0	0	38	38	38	44
Hokianga Health	Num	15	5	0	0	0	5	0	0	0	0	0	0	0	19	1
	Den	42	5	5	5	5	5	5	5	5	0	0	42	42	38	39
Horowhenua	Num	56	17	1	0	0	12	2	0	0	0	0	0	0	44	3
	Den	118	18	18	18	18	18	18	18	18	0	0	125	125	115	129
Kaikoura	Num	7	3	0	0	0	2	0	0	0	0	0	0	0	5	1
	Den	11	3	3	3	3	3	3	3	3	0	0	11	11	11	11
Kaitaia	Num	63	23	0	0	0	14	1	0	0	0	0	1	0	57	8
	Den	145	23	23	23	23	23	23	23	23	0	0	165	165	136	168
Kapiti	Num	110	20	0	0	0	9	2	1	0	0	0	1	0	12	3
	Den	133	20	20	20	20	20	20	20	20	0	0	134	134	132	134
Kenepuru	Num	109	33	0	0	0	17	3	0	0	0	0	1	0	57	4
	Den	239	33	33	33	33	33	33	33	33	0	0	242	242	233	243

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lakes District	Num	11	14	0	0	0	9	0	0	0	0	0	1	0	1	0
	Den	50	14	14	14	14	14	14	14	14	0	0	54	54	50	56
Lincoln	Num	76	25	0	0	0	14	1	0	0	0	0	0	0	10	1
	Den	105	25	25	25	25	25	25	25	25	0	0	107	107	103	107
Lumsden	Num	16	11	0	0	0	10	0	0	0	0	0	0	0	0	0
	Den	23	11	11	11	11	11	11	11	11	0	0	24	24	23	24
Manitoto	Num	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Den	2	0	0	0	0	0	0	0	0	0	0	2	2	2	0
Matariki	Num	24	14	0	0	0	11	1	0	1	0	0	0	0	10	1
	Den	39	14	14	14	14	14	14	14	14	0	0	76	76	39	82
Murupara	Num	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	Den	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2
Ngati Porou Hauora	Num	4	2	0	0	0	2	0	0	0	0	0	0	0	6	0
	Den	12	2	2	2	2	2	2	2	2	0	0	12	12	9	13
Oamaru	Num	57	17	0	0	0	9	0	0	0	0	0	0	0	12	1
	Den	79	17	17	17	17	17	17	17	17	0	0	79	79	79	80
Opotiki	Num	40	10	0	0	0	7	0	0	0	0	0	0	0	40	1
	Den	71	10	10	10	10	10	10	10	10	0	0	72	72	70	73
Otaihape	Num	12	3	0	0	0	3	0	0	0	0	0	0	0	6	0
	Den	17	3	3	3	3	3	3	3	3	0	0	17	17	17	17
Papakura	Num	102	46	0	0	0	15	5	1	0	0	0	0	0	107	8
	Den	315	47	47	47	47	47	47	47	47	1	1	373	374	309	391
Pohlen Trust	Num	59	25	0	0	0	24	0	0	0	0	0	0	0	42	1
	Den	112	25	25	25	25	25	25	25	25	0	0	112	112	111	113
Pukekohe	Num	193	61	0	0	0	23	3	2	0	1	0	0	0	67	7
	Den	361	63	63	63	63	63	63	63	63	1	1	370	371	353	375

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rangiora	Num	70	27	0	0	0	16	1	1	0	0	0	0	0	19	1
	Den	110	27	27	27	27	27	27	27	27	0	0	115	115	110	119
Rhoda Read	Num	57	13	0	0	0	11	0	1	0	0	0	0	0	22	0
	Den	85	13	13	13	13	13	13	13	13	0	0	85	85	84	86
St George's	Num	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Den	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Taumaranui	Num	24	11	0	0	0	10	0	0	0	0	0	0	0	18	1
	Den	48	11	11	11	11	11	11	11	11	0	0	48	48	48	50
Taupo	Num	70	26	0	0	0	15	0	1	0	0	0	1	0	35	6
	Den	156	26	26	26	26	26	26	26	26	0	0	160	160	153	163
Te Kuiti	Num	6	4	0	0	0	2	0	0	0	0	0	0	0	4	0
	Den	19	4	4	4	4	4	4	4	4	0	0	48	48	12	48
Thames	Num	63	21	0	0	0	12	0	0	0	1	0	0	0	29	3
	Den	120	21	21	21	21	21	21	21	21	1	1	119	120	114	124
Tokoroa	Num	7	16	0	0	0	6	0	0	0	0	0	0	0	15	2
	Den	31	16	16	16	16	16	16	16	16	0	0	99	99	28	100
Tuatapere	Num	13	7	0	0	0	7	0	0	0	0	0	0	0	8	0
	Den	22	7	7	7	7	7	7	7	7	0	0	22	22	21	22
Waihi	Num	30	6	0	0	0	6	0	0	0	0	0	0	0	22	0
	Den	65	6	6	6	6	6	6	6	6	0	0	65	65	63	70
Waimarino	Num	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1
	Den	1	1	1	1	1	1	1	1	1	0	0	15	15	1	15
Wairoa	Num	3	4	1	1	0	2	0	0	0	0	0	1	0	0	2
	Den	6	6	6	6	6	5	5	5	5	1	1	29	30	1	31
Warkworth	Num	99	21	0	0	0	11	0	1	0	0	0	0	0	7	3
	Den	123	21	21	21	21	21	21	21	21	0	0	123	123	121	121

Facility of birth	Value	New Zealand Maternity Clinical Indicator ¹														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Waterford	Num	281	88	0	0	0	55	0	1	0	0	0	0	0	59	6
	Den	407	89	89	89	89	89	89	89	89	0	0	409	409	402	409
Wellsford	Num	19	7	0	0	0	7	0	0	0	0	0	0	0	6	0
	Den	33	7	7	7	7	7	7	7	7	0	0	33	33	29	33
Winton	Num	35	14	0	0	0	8	0	0	0	0	0	0	0	4	0
	Den	52	14	14	14	14	14	14	14	14	0	0	52	52	51	52

1 Refer to Table 1 for indicator descriptions and definitions. Num: numerator value; Den: denominator value.