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Report on
**NEW ZEALAND'S
MMPO MIDWIVES**

Care activities and outcomes



2013

Report prepared for



New Zealand
College of Midwives

TE KĀRETI O NGA KAIWHAKAWHANAU KI AOTEAROA

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Executive Summary

All Lead Maternity Carer (LMC) midwife members of the New Zealand College of Midwives (NZCOM) have the opportunity to join the MMPO, which is a nationwide organisation that offers a practice management service for community-based LMC midwives. In return for free membership, the midwives contribute to a national midwifery activities and outcomes database, namely the NZCOM research database. The information obtained by MMPO LMC midwife (henceforth 'MMPO midwife') registrations of expectant mothers is entered into the database, which is supported by an independent software vendor. This report is an objective descriptive summary of the data collation from the 2013 cohort of 33,600 birthing mothers from the MMPO registrations. In this year there were 59,620 babies born (live and stillbirths) in New Zealand, of which 33,986 babies were captured in the MMPO database (Ministry of Health, 2015). They represent 57.6 percent of the births in New Zealand for 2013.

In 2013, there were 987 registered MMPO midwives throughout New Zealand who contributed data.

The largest proportion of contributors came from the Canterbury region of the South Island, where the MMPO has had a longer establishment base.

Overall, the MMPO midwives have provided a complete episode of care for:

- 33,600 mothers who gave birth between 1 January and 31 December 2013 and were registered into the system
- 33,986 babies who were born to these women

This report summarises the outcomes for mothers and babies who had MMPO midwives providing their LMC care. It provides data on place of birth, type of birth, demographic information such as age and ethnicity, parity, and types of third stage of labour procedures. It also includes information about maternal smoking status (before and after birth) and the babies' weight, gestation and breastfeeding status.

Highlights

Women and pregnancy

- The majority of women (76.9 percent) registered with an MMPO midwife prior to 15 weeks gestation.
- 29.8 percent of women were pregnant for the first time.
- More than half of the women (54.7 percent) who registered with MMPO midwives were aged between 25 and 34 years old, with 16.3 percent over the age of 35 years.
- The majority of women identified their ethnicity as NZ European (61.5 percent), followed by Māori (18.8 percent) and Asian (10.2 percent).
- 47.1 percent of women had a healthy body mass index, with a further 24.2 percent classed as overweight and 23.1 percent obese.

Labour and births

- The majority of babies (67.9 percent) were born to women who had a normal vaginal birth.
- Home births and births in primary facilities had higher normal vaginal birth rates than births in other facilities.
- The combined caesarean section (elective and emergency) rate was 23.9 percent.
- A further 7.8 percent of babies were born via instrumental vaginal births.
- The largest proportion of births (47.4 percent) occurred in secondary facilities.
- 4.8 percent of babies were born at home.
- 23.5 percent of women used water immersion for pain management during labour and 8.7 percent of babies were born in water.
- Babies born to women who identified as Māori were more likely to be born by normal vaginal birth (78.3 percent), whereas babies born to mothers in the 'Asian' and 'Other' ethnic categories had higher rates of caesarean sections (29.1 and 28.9 percent respectively).
- Babies born to younger mothers (under 20 years of age) had higher normal vaginal birth rates (76.4 percent), with the rates of caesarean sections increasing as the mother's age increased (peaking at 35.7 percent at 40+ years of age).
- A higher proportion of women who had a vaginal birth and physiological care during the third stage of labour had a blood loss of less than 500mls (98.1 percent) when compared to women who had active management of the third stage of labour (92.8 percent).

Babies

- The majority of babies were born after 37 weeks of pregnancy with only 6 percent born prematurely.
- The majority of babies weighed between 2.5kg and 4.5kg (91.6 percent) at birth with 5.5 percent less than 2.5kg and 2.5 percent more than 4.5kg.

Postnatal period

- The majority of babies (68.7 percent) were fully or exclusively breastfed at 2 weeks following birth.
- Babies born at home had higher rates of exclusive or fully breastfeeding at 2 weeks of age (84.4 percent).
- NZ European women had the highest rate per ethnic group of exclusive breastfeeding at 2 weeks (71.5 percent).
- Smoking rates decreased from 17 percent at pregnancy registration to 14.6 percent during the postnatal period.
- The majority of women (46.4 percent) received 1 or 2 visits from their MMPO midwife when in a maternity facility and a further 27.1 per cent received 3 to 5 visits.
- The majority of women (70.8 percent) received 6 to 9 home visits during the postnatal period, with a further 13 percent receiving 10 to 14 visits.

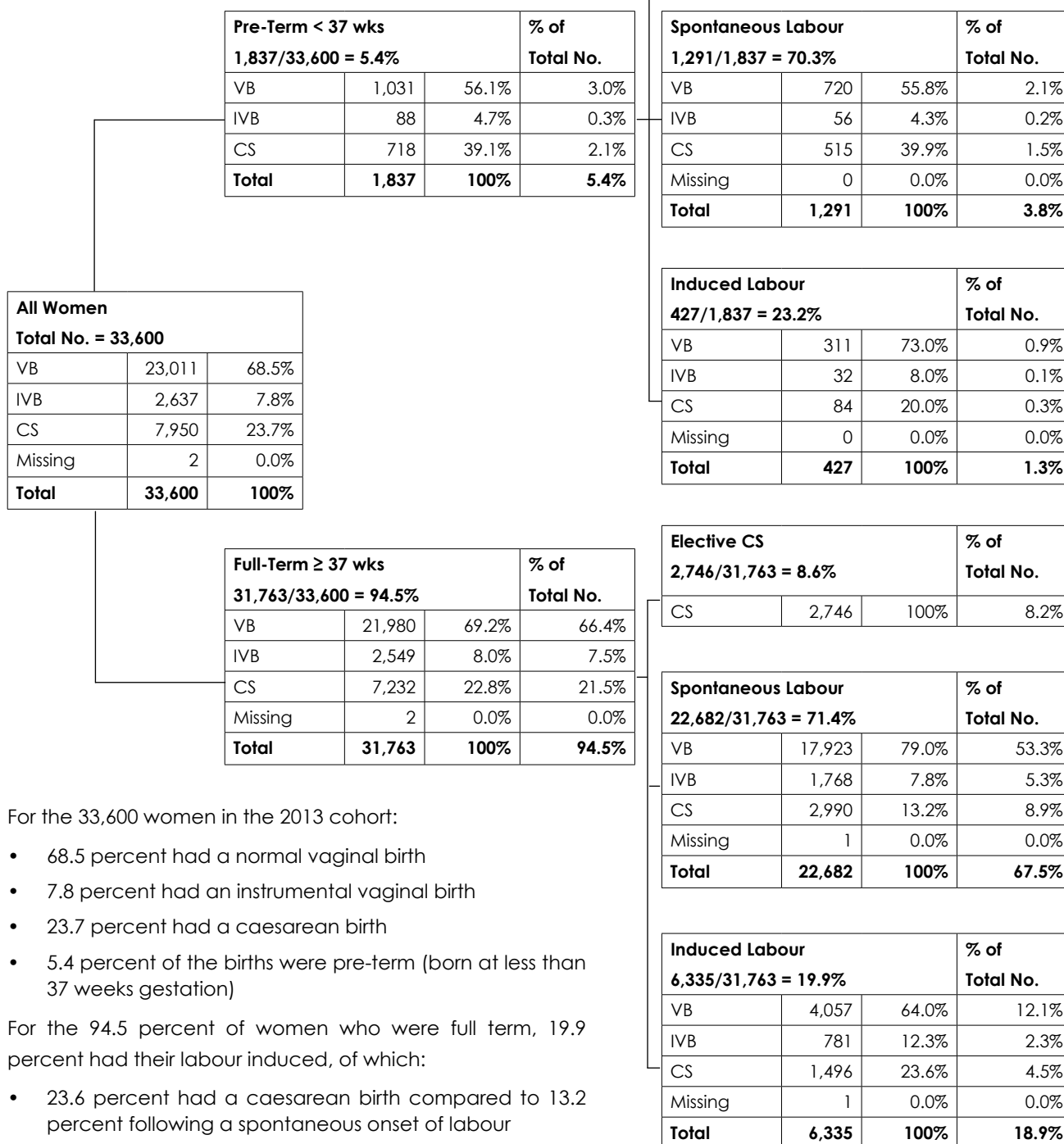
The next section will discuss the gestation and mode of birth for the 2013 cohort by way of flow charts. The first flow chart demonstrates the gestation and mode of birth for the total cohort, followed by gestation and mode of birth for primiparous women. This is followed by a flow chart for the gestation and mode of birth for multiparous women without a previous caesarean section and excluding multiple births.

Flowchart 1: Gestation at onset of labour and mode of birth: Full cohort (excludes multiple births)

VB - Vaginal birth

IVB - Instrumental vaginal birth

CS - Caesarean section



For the 33,600 women in the 2013 cohort:

- 68.5 percent had a normal vaginal birth
- 7.8 percent had an instrumental vaginal birth
- 23.7 percent had a caesarean birth
- 5.4 percent of the births were pre-term (born at less than 37 weeks gestation)

For the 94.5 percent of women who were full term, 19.9 percent had their labour induced, of which:

- 23.6 percent had a caesarean birth compared to 13.2 percent following a spontaneous onset of labour
- 12.3 percent had an instrumental vaginal birth compared to 7.8 percent when labour onset was spontaneous.

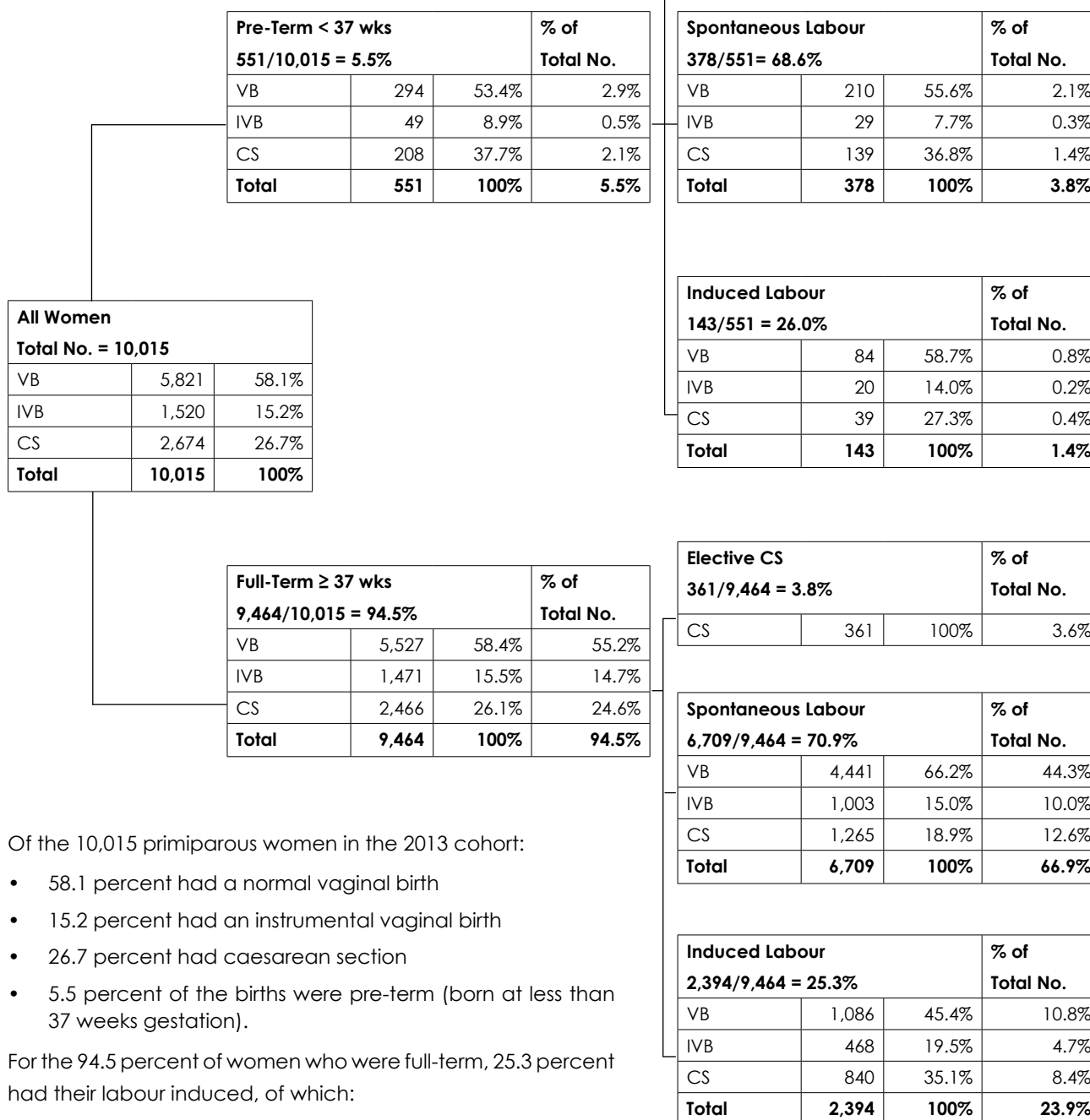
NB This chart provides data on the mother and excludes multiple births.

Flowchart 2: Gestation at onset of labour and mode of birth: Women having their first baby (Primiparous, excludes multiple births)

VB - Vaginal birth

IVB - Instrumental vaginal birth

CS - Caesarean section



Of the 10,015 primiparous women in the 2013 cohort:

- 58.1 percent had a normal vaginal birth
- 15.2 percent had an instrumental vaginal birth
- 26.7 percent had caesarean section
- 5.5 percent of the births were pre-term (born at less than 37 weeks gestation).

For the 94.5 percent of women who were full-term, 25.3 percent had their labour induced, of which:

- 45.4 percent had a normal vaginal birth compared to 66.2 percent when labour onset was spontaneous.
- 35.1 percent had a caesarean compared to 18.9 percent when labour onset was spontaneous.

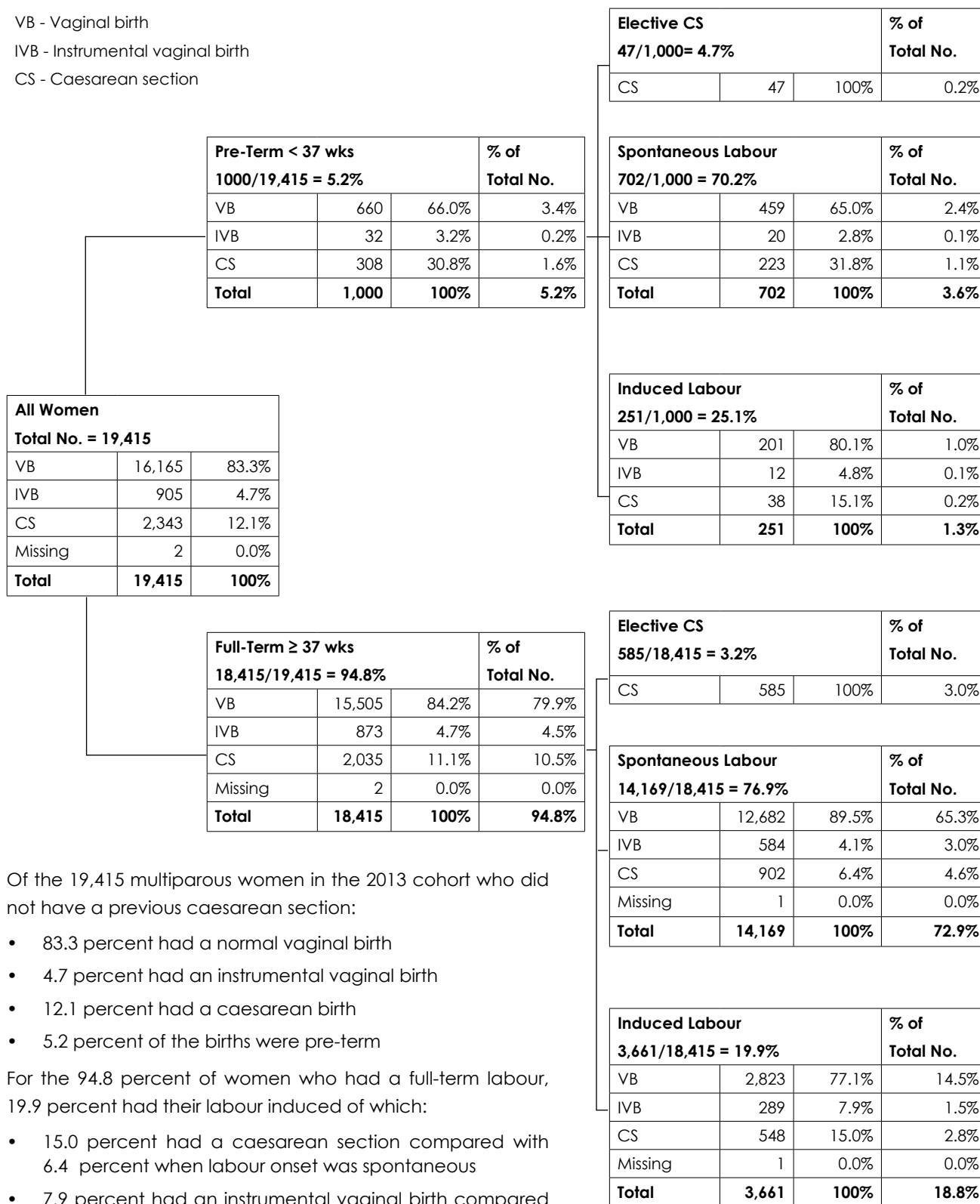
NB This chart provides data on the mother and excludes multiple births.

Flowchart 3: Gestation at onset of labour and mode of birth: Multiparous women without previous caesarean section (excludes multiple births)

VB - Vaginal birth

IVB - Instrumental vaginal birth

CS - Caesarean section



Of the 19,415 multiparous women in the 2013 cohort who did not have a previous caesarean section:

- 83.3 percent had a normal vaginal birth
- 4.7 percent had an instrumental vaginal birth
- 12.1 percent had a caesarean birth
- 5.2 percent of the births were pre-term

For the 94.8 percent of women who had a full-term labour, 19.9 percent had their labour induced of which:

- 15.0 percent had a caesarean section compared with 6.4 percent when labour onset was spontaneous
- 7.9 percent had an instrumental vaginal birth compared with 4.1 percent when labour onset was spontaneous.

NB This chart provides data on the mother and excludes multiple births.

1. Introduction

Continuity of care is a key aspect of maternity care in New Zealand. It is a concept that is written into the philosophy and competencies of practice for midwives (New Zealand College of Midwives [the College], 2015), as well as the maternity services specifications for Lead Maternity Carers (LMCs) (Ministry of Health, 2007). The College supports the establishment of a partnership relationship with women, which is enhanced by continuity of care from the beginning of pregnancy, through the labour and birth and into the postnatal period. When midwives work with women they provide care in many different settings and remain accountable for that care. In New Zealand the majority of primary maternity care is provided by midwives who work as LMCs and provide care from early pregnancy, labour and birth and for up to six weeks during the postnatal period. The majority of midwife LMCs are self-employed and enter into a contractual arrangement with the Ministry of Health (Section 88) under which they claim payment for services provided to women. All LMC midwives have the opportunity to join the Midwifery and Maternity Provider Organisation (MMPO).

1.1 The Midwifery and Maternity Provider Organisation (MMPO)

The MMPO was established by the College in 1997 to provide a practice management system for LMC midwives. The MMPO is co-located with the College National Office in Christchurch. MMPO personnel include management, accountancy, data entry and claims support staff.

Through the organisation's partnership with the College, a number of initiatives were implemented to enhance the development of LMC services. In 2002, the MMPO (which was previously restricted to the provision of services to South Island midwives) extended membership to midwives throughout the country. MMPO services are free to College members, with operational costs met by the provision of clinical record systems and contracts negotiated to support midwifery practice. Midwives are able to enter their own data and have an electronic interface with the MMPO.

The MMPO provides a practice management service to LMC midwife members, which includes claiming payment for maternity services on the schedule

specified in the Primary Maternity Services Notice pursuant to Section 88 of the Public Health and Disability Act 2000 (Ministry of Health, 2007). A 'national midwifery activities and outcomes database' was developed in 2003 to extract relevant midwifery care and outcome data from this process. This data is used to provide individual midwives with personalised care outcome reports and is aggregated into regional and national midwifery outcome reports. This data provides a benchmark for:

- individual midwife LMCs, against which they can measure their own activities and care outcomes
- the midwifery profession to guide education and planning, and to improve care outcomes
- maternity service founders and providers
- midwifery researchers

The independent software vendor collated the data provided by the midwives following provision of care. The data was then aggregated and analysed for this report.

1.2 Purpose of this report

The MMPO Midwives Care Activities and Outcomes Report provides analysis of the data collected by MMPO midwives about the women to whom they provided care during the year 2013. It is important to note it is not a technical report with statistically significant analysis, but rather, an annual report of the data analysed from the 2013 database. It can be seen as an annual report for 2013 of women who had their maternity care provided by midwives who worked as LMCs and were members of the MMPO and the College.

1.3 Report structure

Chapter 1 - Introduction

This chapter provides the background information about the MMPO, along with the demographics of the registered midwives. It describes the data collation and analysis processes.

Chapter 2 – Women and pregnancy

This section provides information about pregnancy as obtained from women by the MMPO midwives in 2013. The information collected provides a description of maternal age, ethnicity and gestation at the time of registration and at the time of labour onset, along with maternal health status.

Chapter 3 – Labour details

The third chapter provides information about the women's labour and includes details on the length of labour, labour procedures such as induction, and anaesthetic use and transfers during labour.

Chapter 4 – Births

This chapter provides information about the type of birth, along with the place of birth. Maternal age, ethnicity and parity are described, along with birth outcomes and birth place setting. Third stage of labour care and outcomes are also discussed, along with perineal trauma following birth.

Chapter 5 – Babies

This chapter is based on the number of babies born and entered into the MMPO database in 2013. It provides information on gestational age at time of birth, Apgar scores, birth weight and neonatal transfers following birth.

Chapter 6 - Postnatal period

The postnatal period is covered in this chapter which provides information on babies' feeding status at two weeks postpartum, along with maternal postnatal smoking status.

Appendix

The appendix describes the MMPO Maternity Notes dataset.

1.4 Key data sources

The data for this report were sourced from all pregnant women who registered with MMPO midwives during their pregnancy and who gave birth between 01 January and 31 December 2013. Therefore, the information in this report does not include any data relating to pregnancies ending in terminations or miscarriages. The data was generated using a Microsoft Access database as two separate files – with one file providing data related to the mother and the other to the baby. Each of the files has the same date and cohort parameters and they are merged so that outcomes can be examined.

Cohort numbers vary between various sections within this report. The reasons for this are: firstly, the exclusion of elective caesarean sections for particular aspects, such as labour management, and secondly, multiple births, which increase the cohort of babies in the 'Births' and 'Babies' sections of this report.

1.4.1 Regional profile of data contributors

In 2002, the MMPO opened membership to midwives nationally. Prior to this point, membership was restricted by contract with the Ministry of Health to the South Island. This accounts for the disproportionately high numbers of midwife members in the South Island at this time. The following table (Table 1.1) shows the distribution of MMPO midwives throughout the country based on District Health Board (DHB) regions for 2013.

Table 1.1: Data contributors by DHB region

DHB region	Number and percentage of MMPO midwives contributing data	
	n	%
Northland	46	4.7
Waitemata	77	7.8
Auckland	61	6.2
Counties Manukau	36	3.6
Waikato	106	10.7
Bay of Plenty	50	5.1
Lakes	24	2.4
Taranaki	28	2.8
Tairāwhiti	16	1.6
Hawke's Bay	34	3.4
Wairarapa	10	1.0
Whanganui	12	1.2
MidCentral	47	4.8
Hutt	33	3.3
Capital and Coast	75	7.6
Nelson Marlborough	41	4.2
Canterbury	155	15.7
West Coast	8	0.8
South Canterbury	5	0.5
Otago*	75	7.6
Southland*	38	3.9
Missing (DHB not identified)	10	1.0
TOTAL	987	100

*Otago and Southland are now combined as Southern DHB.

The highest proportion of midwives came from the Canterbury region, whereas the West Coast, South Canterbury and Wairarapa had low proportions. The majority (66.3 percent) of MMPO midwives were located in the North Island.

1.4.2 Professional profile of data contributors

The following table (Table 1.2) summarises the MMPO midwives' professional experience as at 2013, reported as the number of years' experience as a 'Continuity of Care' midwife.

The term 'continuity of care' midwife is used here as opposed to a 'Lead Maternity Carer' (LMC) midwife because the LMC term was not introduced until 1996 and a proportion of MMPO midwives reported having professional experience prior to this date.

Table 1.2: Years as 'Continuity of Care' midwife and comparison to Midwifery Council workforce data

Years	MMPO 2013		Midwifery Council Workforce Survey 2013	
	n	%	n	%
≤1 year	152	15.4	331	11.3
2-5 years	269	27.3	451	15.4
6-10 years	245	24.8	478	16.3
11-15 years	167	16.9	428	14.6
16-20 years	44	4.5	408	13.9
21-25 years	29	2.9	311	10.6
26-30 years	9	0.9	219	7.5
31-35 years	10	1.0	158	5.4
36-40 years	5	0.5	108	3.7
41+ years	1	0.1	43	1.5
Missing	56	5.7	3	0.1
TOTAL	987	100	2,938	100

Table 1.2 shows the MMPO data compared to that held by the Midwifery Council in 2013 (Midwifery Council of New Zealand, 2013). For the MMPO data the largest group of midwives were those who had between 2 and 5 years' professional experience as a 'continuity of care' midwife (27.3 percent), followed by midwives with between 6 and 10 years' experience (24.8 percent). There were 5.4 percent of midwives with 20 years or more of 'continuity of care' midwifery experience.

1.5 Methodology

The purpose and objectives of the report along with a summary of the methodology used to compile the reports are available on the College of Midwives website www.midwife.org.nz

2 Women and pregnancy

2.1 Demographic profile

This chapter provides demographic information, pregnancy registration, maternal age, maternal ethnicity and antenatal history, along with the gestation at commencement of labour for women in the 2013 MMPO cohort.

2.1.1 Registered births

In 2013, there were 59,227 women who gave birth and 59,620 babies born in New Zealand (Ministry of Health, 2015). This same year, 33,600 pregnant women were captured in the MMPO database, and gave birth to 33,986 babies. These represent 56.7 percent of all women and 57 percent of all babies. There were 386 more babies born (including stillbirths) in the MMPO cohort than there were mothers, due to the multiple births.

2.1.2 DHB region of births

In the 2013 MMPO cohort, the largest group of women were living in the catchment area for Canterbury DHB (14.2 percent), with 9.3 percent in the Waikato region and 9.2 percent in Waitemata (Table 2.1).

Table 2.1: Women by DHB region

DHB region	n	%
Northland	1,583	4.7
Waitemata	3,098	9.2
Auckland	1,228	3.7
Counties Manukau	1,442	4.3
Waikato	3,140	9.3
Bay of Plenty	1,474	4.4
Lakes	922	2.7
Taranaki	933	2.8
Tairāwhiti	665	2.0
Hawke's Bay	1,567	4.7
Wairarapa	210	0.6
Whanganui	217	0.6
MidCentral	1,500	4.5
Hutt	1,063	3.2
Capital and Coast	1,730	5.1
Nelson Marlborough	1,239	3.7
Canterbury	4,766	14.2
West Coast	113	0.3
South Canterbury	187	0.6
Otago	1,656	4.9
Southland	1,636	4.9
Not identified	3,231	9.6
TOTAL	33,600	100

2.1.3 Gestation at registration

The following table (Table 2.2) indicates the gestation at which women registered with an MMPO midwife. An increasing number of women are registering with a midwife before 10 weeks gestation, with 43.1 percent in 2013 compared to 39 percent in 2012. A further 33.8 percent registered before 14 weeks, with a total of 76.9 percent of women registering in the first trimester of pregnancy, 17.0 percent registering in the second trimester and 6.0 percent registering in the third trimester of pregnancy.

Table 2.2: Gestation at registration

Weeks gestation	n	%
< 10 weeks	14,480	43.1
10-14 weeks	11,373	33.8
15-20 weeks	3,807	11.3
21-27 weeks	1,913	5.7
28 to term	2,027	6.0
TOTAL	33,600	100

2.1.4 Maternal age

The mean age of pregnant women at registration was 28 years (SD 6), with the majority of women (54.8 percent) aged between 25 and 34 years (Table 2.3). There was 8.0 percent under 20 years of age, and 2.5 percent over 40 years of age.

Table 2.3: Age at registration

Maternal age	n	%
≤14 years	45	0.1
15-16 years	390	1.2
17-19 years	2,265	6.7
20-24 years	6,986	20.8
25-29 years	9,434	28.1
30-34 years	8,971	26.7
35-39 years	4,666	13.9
40+ years	838	2.5
Missing	5	0.0
TOTAL	33,600	100

2.1.5 Maternal ethnicity

The ethnicity data for the women in the 2013 dataset (as recorded at the time of registration) is shown in Table 2.4. This demonstrates that the majority (61.5 percent) identified as NZ European, followed by 18.8 percent who identified as Māori. The third highest ethnic group was recorded as Asian (10.2 percent) and 6.7 percent identified as Pasifika. The Other category included women from Africa, the Middle East, and Latin America.

Table 2.4: Ethnicity at registration

Ethnicity	n	%
NZ European	20,667	61.5
Māori	6,313	18.8
Pasifika	2,242	6.7
Asian	3,427	10.2
Other	951	2.8
TOTAL	33,600	100

2.2 Antenatal history

This section includes data on selected maternal health and other factors that could influence the current pregnancy.

2.2.1 Gravida

Gravida refers to the total number of pregnancies a woman has had, including the current one, regardless of whether they have given birth to a baby greater than 20 weeks gestation or not. Multiple pregnancies count as one pregnancy. For example, a woman who had one previous pregnancy and is currently pregnant is designated as 'gravida 2'. Almost 30 percent (29.8) of all women who registered with an MMPO midwife in 2013 were experiencing their first pregnancy (Table 2.5).

Table 2.5: Birthing women by gravida

Gravida	n	%
Primigravida	10,015	29.8
Multigravida	19,437	57.8
	4,145	12.5
Missing	3	0.0
TOTAL	33,600	100

2.2.2 Body Mass Index

A healthy body size is known to be important for health and wellbeing during pregnancy. Body Mass Index (BMI) is a widely used indicator of body weight with classifications indicating underweight, healthy weight, overweight and obese, with obesity also categorised into 3 classes (World Health Organization (WHO) <http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi>).

For pregnant women in 2013 the mean BMI was 26.3 (Standard Deviation (SD) 5.9) and the median was 24.9. The majority of women (47.1 percent) were within the healthy range BMI, with 26.2 percent overweight, and a further 24.2 percent in the obese category.

Table 2.6: Body Mass Index

BMI	n	%
Underweight (<18.5)	825	2.5
Healthy weight (18.5-24.9)	15,825	47.1
Overweight (25-29.9)	8,817	26.2
Obese class 1 (30-34.9)	4,528	13.5
Obese class 2 (35-39.9)	1,979	5.9
Obese class 3 (>40 obese)	1,626	4.8
TOTAL	33,600	100

2.2.3 Factors that may influence pregnancy

During pregnancy the midwife undertakes a full health and obstetric history. Data from this assessment is used to identify some features of interest that could influence the care provision and outcomes for the existing pregnancy, labour and birth.

Some of these factors are identified in Table 2.7 for the 2013 cohort and include multiple pregnancy (1.1 percent), previous caesarean section (12.4 percent), giving birth for the first time and being over 37 years of age (1.2 percent) or being over 39 years of age when giving birth (0.8 percent).

Table 2.7: Factors that may influence pregnancy outcome

Specific features	n	%
Nulliparous >37 years of age	413	1.2
Nulliparous >39 years of age	277	0.8
Previous caesarean section	4,168	12.4
Multiple pregnancy (≥2 babies)	380	1.1

2.2.4 Existing medical conditions

There were 16,403 (48.8 percent) women in the 2013 cohort who had one or more existing medical condition. The type of medical condition is described in more detail in Table 2.8. This table provides the frequency of the condition identified with some women reporting more than one medical condition.

The most commonly identified condition was asthma (13 percent) followed by psychiatric conditions (9.2 percent), previous urinary tract infections or a renal condition (10.7 percent) and a previous sexually transmitted infection (7.5 percent). Conditions that were less commonly identified were hypertension (1.9 percent), thyroid disease (1.8 percent), cardiac disease (1.3 percent), epilepsy (0.7 percent) and diabetes (0.9 percent).

Table 2.8: Pre-existing medical conditions

Condition	n	%
Asthma	4,353	13.0
Psychiatric	3,095	9.2
UTI Renal	3,582	10.7
Sexual transmitted Infection (STI)	2,512	7.5
Hypertension (essential)	647	1.9
Thyroid conditions	604	1.8
Cardiac disease	447	1.3
Diabetes	318	0.9
Rheumatic fever	65	0.2
Epilepsy	219	0.7
Coagulation disorder	202	1.1
Other*	359	1.1

* Autoimmune disorders, TB, bowel problems, cancer therapy.

2.2.5 Smoking status during pregnancy

Smoking status is being recorded with more information about smoking history and demonstrates that 17 percent of women continued to smoke during pregnancy in the 2013 cohort, while 70.4 percent had never smoked (Table 2.9). A small proportion of women (12.6 percent) reported having a history of smoking but being smoke free at the time of pregnancy registration.

Age was examined, looking at women who reported smoking (current smoker) or being smoke-free during pregnancy. Women under 20 years of age reported the highest levels of smoking, with 35.9 percent of women between 17 and 19 years smoking and 33.6 percent of the women 16 years or younger.

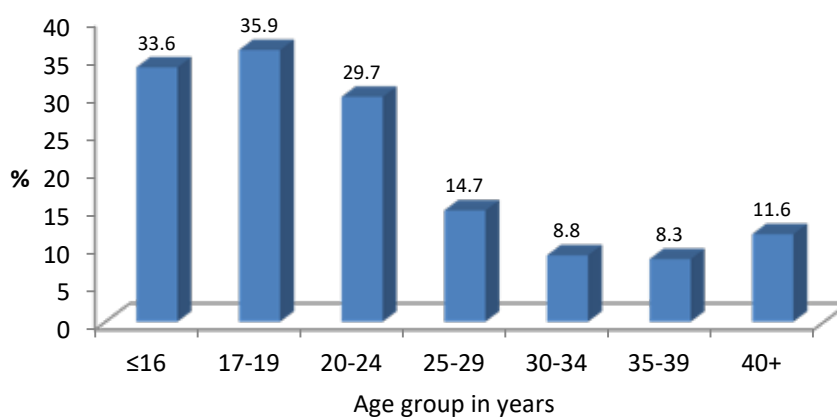


Figure 2.1: Percentage of women who reported smoking during pregnancy, by age group

Table 2.9: Smoking status at registration

Smoking status	n	%
Current smoker	5,697	17.0
Ex smoker (<12 months abstinent)	1901	5.7
Ex smoker (>12 months abstinent)	1416	4.2
Never smoked tobacco	23,650	70.4
Nil - no longer used	28	0.1
Now smokefree (> 4 wks) - no longer used	904	2.7
Unknown - no longer used	4	0.0
TOTAL	33,600	100

Ethnicity was examined, looking at women who reported being a current smoker or being smoke-free (Figure 2.2). The ethnic group with the greatest proportion of women smoking during pregnancy were women who identified as Māori (44.4 percent), followed by Pasifika (15.8 percent) and NZ European women (12.1 percent).

2.3 Duration of pregnancy

For the majority of women (88 percent) the onset of labour was between 37 and 41 weeks gestation (Table 2.10) with only a small number (0.5 percent) with very premature labours (before 27 weeks gestation). For 6.6 percent of the cohort the gestation was 42 weeks or more at the onset of labour.

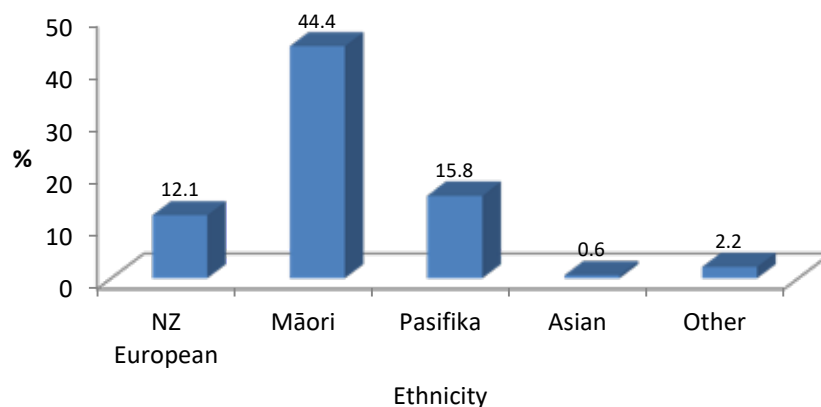


Figure 2.2: Percentage of women who reported smoking during pregnancy, by ethnicity

Table 2.10: Women by weeks of gestation at labour commencement or elective caesarean (all women)

Gestation at labour commencement*	Weeks	n	%
Extremely pre term	20–23	96	0.3
	24–27	77	0.2
Very pre term	28–31	158	0.5
Moderate to late pre term	32–36	1,506	4.5
	37	1,603	4.8
	38	3,824	11.4
	39	7,857	23.4
	40	9,329	27.8
	41	6,921	20.6
	42	2,092	6.2
Post term	>42	137	0.4
TOTAL		33,600	100

*WHO definition of prematurity <http://www.who.int/news-room/fact-sheets/detail/preterm-birth>

2.4 Frequency of antenatal assessments

The average number of antenatal visits for women was 10.0 (SD 3.7). The majority of women (45.4 percent) received 11 to 15 visits with a further 37.7 percent receiving 6 to 10 visits (Table 2.11).

Table 2.11: Antenatal visits by MMPO midwife

Antenatal visits	n	%
None	648	1.9
1-5 visits	3,465	10.3
6-10 visits	12,652	37.7
11-15 visits	15,252	45.4
16-20 visits	1,468	4.4
>20 visits	109	0.3
Missing	6	0.0
TOTAL	33,600	100

3 Labour details

This chapter is based upon the data obtained from the 33,600 women registered with MMPO midwives who laboured and gave birth in 2013. It describes length of labour, transfers during labour and specific labour procedures such as induction of labour.

3.1 Length of labour

MMPO midwives report separately on both the onset of contractions and established labour in the clinical notes for women. The midwife discusses with the woman when contractions started and when labour was thought to be established. This helps to clarify the length of the labour for both the woman and the midwife. The data for length of labour for this report has been taken from the time that established labour is reported.

Overall, the majority of women (69.6 percent) had a labour length recorded as eight hours or less, with 5 percent of women having a labour of more than 15 hours. Primiparous women had longer labours, with 36.0 percent of first-time mothers reported as having labours more than eight hours compared with 14 percent of multiparous women.

Table 3.1: Women by hours of labour and parity

Hours of labour	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
<1	92	1.0	796	3.8	888	2.9
1-2	300	3.1	2,679	12.7	2,979	9.7
3-4	1,351	14.0	6,486	30.7	7,837	25.5
5-6	1,774	18.4	4,020	19.0	5,794	18.9
7-8	1,576	16.4	2,325	11.0	3,901	12.7
9-10	1,213	12.6	1,298	6.1	2,511	8.2
11-15	1,361	14.2	1,019	4.8	2,380	7.7
>15	890	9.2	646	3.1	1,536	5.0
Unknown	1,067	11.1	1,840	8.7	2,907	9.5
TOTAL	9,624	100	21,109	100	30,733*	100

* Excludes elective caesarean (n=2,865) and women with missing parity data (n=2).

3.2 Transfers during labour

The majority of women (95.9 percent) gave birth in the facility in which they had planned to give birth (Table 3.2). For women who plan to give birth in a primary unit or at home there is sometimes a need to transfer during labour to the regional secondary or tertiary unit. The reasons for transfer vary but may be due to a requirement for obstetric input or additional analgesia. For the overall 2013 cohort 4.0 percent of

women were transferred to another facility during labour, 1.2 percent from a planned home birth and 2.7 percent from a planned primary unit birth.

Table 3.2: Transfers during labour by birth setting

Intrapartum transfers	n	%
Home	370	1.2
Primary facility	820	2.7
Secondary facility*	35	0.1
Tertiary facility*	8	0.0
Total transferred	1,233	4.0
Total not transferred	29,502	95.9
TOTAL	30,735**	100

* Transfers from secondary and tertiary facilities may be due to unavailability of a neonatal service in the planned place of birth.

** Excludes elective caesarean (n=2,865).

The number of women planning to give birth in a primary unit or at home and the number who transferred are summarised in Table 3.3. This demonstrates that of the cohort of women who planned to give birth at home, 18.8 percent transferred to a facility during labour. This means, for example, while 1,969 women planned to give birth at home, 370 (18.8 percent) were transferred to a maternity facility during labour and therefore, 1,599 women actually gave birth at home. For those who planned to give birth in a primary facility 18.5 percent were transferred in labour.

Table 3.3: Transfers from home and primary birthing localities during labour

Planned place of birth	Planned place of birth	Transfers	
	n	n	%
Home	1,969	370	18.8
Primary facility	4,419	820	18.5
TOTAL	6,388	1,190	18.6

3.3 Labour procedures

3.3.1 Induction of labour

The majority of women (78.0 percent) in the MMPO cohort commenced labour spontaneously, while labour was induced for 22.0 percent of the women (Table 3.4). Primiparous women were more likely to be induced (26.4 percent) than multiparous women (20.0 percent). As women's age increased, the incidence of induction also increased, with 38.2 percent of women 40 years or older induced, compared to 19.8 percent of women aged 20 to 24 years of age.

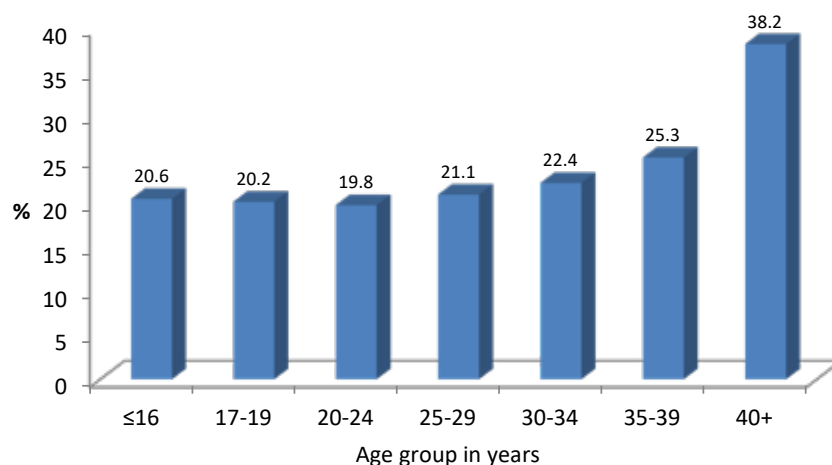


Figure 3.1: Induction of labour by age group

Table 3.4: Labour induction and parity

Induction	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
No	7,087	73.6	16,885	80.0	23,971	78.0
Yes	2,537	26.4	4,224	20.0	6,760	22.0
TOTAL	9,624	100	21,109	100	30,733*	100

* Excludes the women who had an elective caesarean (n=2,865) and women with missing parity (n=2).

3.3.2 Anaesthesia during labour

Overall, the majority of women (67.7 percent) did not have any anaesthetic procedures during labour, but of those who did, epidurals were the most common (Table 3.5). Anaesthetic use was higher for primiparous for all anaesthetic procedures. The rate of epidurals and spinals (including combined epidural/spinal and general anaesthesia, epidural, spinal) for nulliparous women was 45.9 percent, compared with 23.8 percent for multiparous women.

3.3.3 Other pharmaceutical pain management

The different types of pharmaceutical pain management are reported in Table 3.6, and demonstrate that women may use more than one type of pharmaceutical pain management during labour.

For the 2013 cohort of women 42.6 percent used Entonox® alone with a further 4.2 percent using Entonox® with pethidine. Pethidine alone was used by 2.0 percent, while 0.3 percent of women used fentanyl patient controlled analgesia (PCA) alone.

Table 3.5: Anaesthetic procedures and parity

Anaesthetic procedures	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Epidural	2,994	31.1	2,888	13.7	5,882	19.1
Epidural and spinal	104	1.1	135	0.6	239	0.8
Spinal	991	10.3	1,631	7.7	2,622	8.5
General anaesthetic	167	1.7	247	1.2	414	1.3
Pudendal	138	1.4	91	0.4	229	0.7
General/Spinal/epidural	25	0.3	35	0.2	60	0.2
Other	87	0.9	122	0.6	209	0.7
Nil used	5,022	52.2	15,779	74.7	20,801	67.7
Not stated	81	0.8	173	0.8	254	0.8
Missing	15	0.2	10	0.0	25	0.1
TOTAL	9,624	100	21,111	100	30,735*	100

* Excludes the women who had an elective caesarean (n=2,865).

Half of the women in the 2013 cohort (50.0 percent) didn't use any pharmacological pain relief methods.

In order to identify how many women didn't use either anaesthetic methods or pharmacological pain relief we reviewed the data for the 21,054 (Table 3.5), women who did not have an anaesthetic procedure (no epidural/spinal etc.) to identify if they used pharmacological pain relief (Table 3.7). We found that 44 percent of primiparous women and 56.9 percent of multiparous women used neither anaesthetic methods nor pharmacological pain relief methods.

Table 3.6: Type of pain relief during labour

Other type of pain relief	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Entonox®	4,687	48.7	8,406	39.8	13,093	42.6
Entonox®, Pethidine	633	6.6	663	3.1	1,296	4.2
Entonox®, Fentanyl PCA	9	0.1	6	0.0	15	0.0
Pethidine	269	2.8	351	1.7	620	2.0
Fentanyl PCA	60	0.6	38	0.2	98	0.3
Other**	63	0.7	91	0.4	154	0.5
Not known	3	0.0	7	0.0	10	0.0
Nil used	3,900	40.5	11,549	54.7	15,449	50.0
TOTAL	9,624	100	21,111	100.0	30,735*	100

* Excludes elective caesarean (n=2,865).

Table 3.7: Type of pain relief for women who did not have any other anaesthesia (epidural etc.)

Other type of pain relief	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Entonox®	2,379	46.6	6,177	38.7	8,556	40.6
Entonox®, Pethidine	294	5.8	401	2.5	695	3.3
Entonox®, Fentanyl PCA	4	0.1	2	0.0	6	0.0
Pethidine	134	2.6	214	1.3	348	1.7
Fentanyl PCA	17	0.3	26	0.2	43	0.2
Other	28	0.5	49	0.3	77	0.4
Not known	1	0.0	2	0.0	3	0.0
Nil used	2,246	44.0	9,080	56.9	11,326	53.8
TOTAL	5,103	100	15,951	100.0	21,054*	100

* Excludes elective caesarean (n=2,865).

3.3.4 Water and complementary forms of pain management

This section reports those women who used any of the identified non-pharmaceutical types of pain management. Women may have used any or all of these plus pharmaceutical pain management. Therefore Table 3.8 reflects the number and percentage of each form of pain management and is not a count of women.

In 2013 the most popular types of pain management were positional techniques (changes in position) (30.0 percent), use of water (23.5 percent), massage

(19.3 percent) and heat packs (13.8 percent). Less commonly used were TENS (transcutaneous electronic nerve stimulation), acupressure, acupuncture and homeopathy.

Table 3.8: Other type of pain relief during labour

Other pain management	n	%
Positional techniques	9,222	30.0
Water	7,236	23.5
Massage	5,932	19.3
Heat Packs	4,233	13.8
Acupressure	1,314	4.3
Homeopathy	1,028	3.3
TENS	570	1.9
Acupuncture	302	1.0

* Excludes elective caesarean (n=2,865).

4 Births

Information presented in this chapter relates to the type of birth, maternal age and ethnicity, as well as birth setting and geographical areas.

4.1 Type of birth

The information presented in the following table relates to the birth of the baby and includes 386 more babies than mothers due to multiple births (374 sets of twins and six sets of triplets; 1.1 percent of births). For these multiple births it is possible for a woman to have more than one type of birth. The denominator for this group is therefore 33,986 births. For other tables which include maternal characteristics the denominator is 33,600 women who gave birth.

4.1.1 Birth type

The majority of babies born in this cohort were born vaginally, with 68.1 percent having a vaginal birth and 7.8 percent an instrumental birth (Table 4.1). The caesarean section rate was 24.0 percent, of which 8.7 percent were elective caesareans and 15.3 percent were emergency caesareans. This differs from the Ministry of Health report for 2013 (2015) which identified 65 percent of women having a vaginal birth and 26.2 percent a caesarean section.

Table 4.1: Type of birth, comparing MMPO data with Ministry of Health data

Birth type	MMPO		MOH	
	n	%	n	%
Spontaneous vaginal birth	23,159	68.1	37,795	65.0
Normal vaginal	23,088	67.9	37,662	64.8
Vaginal breech	71	0.2	133	0.2
Assisted birth	2,659	7.8	5,129	8.8
Ventouse	1,540	4.5	3,137	5.4
Forceps	1,081	3.2	1,873	3.2
Other Instrumental *	15	0.0	17	0.0
Instrumental breech	23	0.1	102	0.1
Caesarean section	8,155	24.0	15,238	26.2
Elective caesarean	2,954	8.7	7,004	12.0
Emergency caesarean	5,201	15.3	8,234	14.2
Unknown	13	0.0	1,065	1.8
TOTAL	33,986	100	59,227	100

*e.g. Kiwi cup

During registration the midwife discusses previous maternity and obstetric history of the woman. Using this data there were 4,168 women who had a history of previous caesarean section in the 2013 MMPO dataset. Of these, 44.2 percent (n=1,841) had an elective caesarean section. Of the remaining

2,327 women who attempted a vaginal birth after caesarean section, 46.8 percent had an emergency caesarean section with 53.2 percent achieving a vaginal birth.

Table 4.2: Outcomes of women with a previous caesarean section

Birth type	TOTAL	
	n	%
Spontaneous vaginal birth		
Normal vaginal	1,019	43.8
Vaginal breech	9	0.4
Assisted birth		
Ventouse	128	5.5
Forceps	79	3.4
Other Instrumental *	2	0.1
Caesarean section		
Emergency caesarean	1,090	46.8
TOTAL	2,327	100

*e.g. Kiwi cup

4.1.2 Birth type and parity

The mother's parity and type of birth are compared and presented in Table 4.3 for the 33,600 women who gave birth. More multiparous women (77.6 percent) had a vaginal birth compared to primiparous women (73.3 percent). More primiparous women (26.7 percent) than multiparous (22.4 percent) had a caesarean section.

Table 4.3: Birth type and parity

Birth type	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Normal vaginal	5,805	58.0	17,152	72.7	22,957	68.3
Vaginal breech	22	0.2	53	0.2	75	0.2
Ventouse	892	8.9	637	2.7	1,529	4.6
Forceps	617	6.2	455	1.9	1,072	3.2
Other	5	0.0	10	0.0	15	0.0
Instrumental *						
Total vaginal	7,341	73.3	18,307	77.5	25,648	76.3
Elective caesarean	391	3.9	2,474	10.5	2,865	8.5
Emergency caesarean	2,283	22.8	2,802	11.9	5,085	15.1
Total caesarean	2,674	26.7	5,276	22.4	7,950	23.7
Unknown	0	0.0	2	0.0	2	0.0
TOTAL	10,015	100	23,585	100	33,600	100

* e.g. Kiwi cup

Fewer primiparous women (3.9%) had an elective caesarean when compared to multiparous women (10.5 percent), with more primiparous women having an emergency caesarean (22.8 percent) when compared to multiparous women (11.9 percent).

4.1.3 Birth type and maternal age

The influence of maternal age and birth type is explored in Table 4.4 for the 2013 cohort. Women under 20 years of age were only a small proportion of the overall cohort of births (8.0 percent) but they had the highest incidence of normal vaginal births (75.5 percent). For babies born to women 40 years of age or older (2.5 percent of cohort) the incidence of normal vaginal births was the lowest (57.9 percent). Overall the normal vaginal birth rate reduced as the woman's age increased.

The highest incidences of instrumental births were in the under 16 years age group (8.4 percent) and the 25-29 age group (8.3 percent), whereas the age group with the highest incidence of elective and emergency caesarean sections was women who were 40 years and older (35.7 percent).

4.1.4 Birth type and maternal ethnicity

The following table (Table 4.5) and figure (Figure 4.1) refer to the numbers of births by birth type and maternal ethnicity. Women who identified as Māori or Pasifika had the highest rate of normal vaginal births at 78.3 percent and 76.3 percent respectively, and the lowest caesarean rates (17.3 and 19.3 percent respectively). Conversely, the women who identified as Asian or Other had the lowest rate of normal vaginal births at 58.6 percent and 60.7 percent respectively.

Table 4.4: Birth type and maternal age

Birth type	Maternal age (years)							Total
	<16	16-19	20-24	25-29	30-34	35-39	40+	
n								
Normal vaginal	126	1,917	5,263	6,566	5,767	2,833	485	22,957
Vaginal breech	0	5	15	26	15	10	4	75
Ventouse	8	139	275	449	436	190	32	1,529
Forceps	6	81	177	335	309	147	17	1,072
Other Instrumental*	0	3	4	3	3	1	1	15
Total vaginal	140	2,145	5,734	7,379	6,530	3,181	539	25,648
Elective caesarean	5	55	341	653	968	701	142	2,865
Emergency caesarean	20	340	911	1,401	1,472	784	157	5,085
Total caesarean	25	395	1,252	2,054	2,440	1,485	299	7,950
Unknown	0	0	0	0	2	0	0	2
TOTAL	165	2,540	6,986	9,433	8,972	4,666	838	33,600
%								
Normal vaginal	76.4	75.5	75.3	69.6	64.3	60.7	57.9	68.3
Vaginal breech	0.0	0.2	0.2	0.3	0.2	0.2	0.5	0.2
Ventouse	4.8	5.5	3.9	4.8	4.9	4.1	3.8	4.6
Forceps	3.6	3.2	2.5	3.6	3.4	3.2	2.0	3.2
Other Instrumental*	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0
Total vaginal	84.8	84.4	82.1	78.2	72.8	68.2	64.3	76.3
Elective caesarean	3.0	2.2	4.9	6.9	10.8	15.0	16.9	8.5
Emergency caesarean	12.1	13.4	13.0	14.9	16.4	16.8	18.7	15.1
Total caesarean	15.2	15.6	17.9	21.8	27.2	31.8	35.7	23.7
TOTAL	100	100	100	100	100	100	100	100

* e.g Kiwi cup

Table 4.5: Birth type and maternal ethnicity

Birth type	NZ European		Māori		Pasifika		Asian		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Normal vaginal	13,720	66.4	4,941	78.3	1,710	76.3	2,009	58.6	577	60.7	22,957	68.3
Vaginal breech	46	0.2	15	0.2	4	0.2	7	0.2	3	0.3	75	0.2
Ventouse	983	4.8	170	2.7	59	2.6	258	7.5	59	6.2	1,529	4.6
Forceps	756	3.7	89	1.4	36	1.6	155	4.5	36	3.8	1,072	3.2
Other Instrumental*	11	0.1	2	0	0	0	1	0	1	0.1	15	0
Total vaginal	15,516	75.1	5,217	82.7	1,809	80.7	2,430	70.9	676	71.1	25,648	76.3
Elective caesarean	2,007	9.7	329	5.2	131	5.8	314	9.2	84	8.8	2,865	8.5
Emergency caesarean	3,144	15.2	766	12.1	301	13.4	683	19.9	191	20.1	5,085	15.1
Total caesarean	5,151	24.9	1,095	17.3	432	19.3	997	29.1	275	28.9	7,950	23.7
Birth type missing	0	0	1	0	1	0	0	0	0	0	2	0
TOTAL	20,667	100	6,313	100	2,242	100	3,427	100	951	100	33,600	100

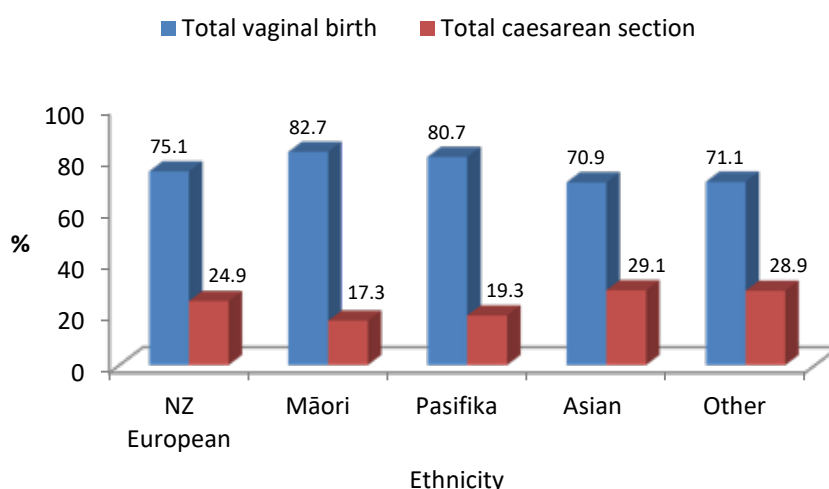


Figure 4.1: Births by birth type – vaginal versus caesarean – and ethnicity

4.2 Place of birth – geographic distribution and birth place setting

This section examines the place of birth and relates to the district health board region. It also explores the rurality of the women registered with an MMPO midwife in 2013.

The majority of the births occurred in secondary facilities (47.4 percent), while 37.1 percent birthed in one of the six tertiary facilities in the country. There were 5,198 women (15.5 percent) registered with an

MMPO midwife who gave birth either at a primary facility or at home.

The region with the highest percentage of home births was the West Coast (42.5 percent), followed by Northland (9.1 percent) and Wairarapa (7.4 percent). Waikato was the region with the highest percentage of primary unit births (29.4 percent), followed by Counties Manakau (24.1 percent) and Northland (19.3 percent).

Table 4.6: Birth place type and geographic distribution (District Health Board)

DHB region	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Northland	145	9.1	305	19.3	1,115	70.3	17	1.1	1,582	100
Waitemata	120	3.9	114	3.7	2,730	88.1	134	4.3	3,098	100
Auckland	42	3.4	84	6.8	135	11	967	78.7	1,228	100
Counties Manukau	39	2.7	346	24.1	8	0.6	1,049	72.5	1,442	100
Waikato	124	3.9	923	29.4	46	1.5	2,045	65.2	3,138	100
Bay of Plenty	84	5.6	29	2.0	1,348	91.4	13	0.9	1,474	100
Lakes	41	4.4	143	15.5	717	77.8	21	2.3	922	100
Taranaki	50	5.4	72	7.7	806	86.4	5	0.5	933	100
Tairāwhiti	31	4.7	13	2.0	617	92.8	4	0.6	665	100
Hawke's Bay	62	4.0	50	3.2	1,443	92.1	12	0.8	1,567	100
Wairarapa	15	7.4	0	0.0	187	92.1	8	0.1	210	100
Whanganui	6	2.8	35	16.1	175	80.6	1	0.5	217	100
MidCentral	90	6.0	56	3.7	1,334	89.0	18	1.2	1,498	100
Hutt	50	4.7	0	0.0	980	92.2	32	3.1	1,062	100
Capital and Coast	115	6.6	261	15.1	63	3.6	1,291	74.6	1,730	100
Nelson Marlborough	84	6.8	57	4.6	1,080	87.2	18	1.5	1,239	100
Canterbury	206	4.3	423	8.9	45	0.9	4,092	85.9	4,766	100
West Coast	48	42.5	4	3.5	49	43.4	12	10.6	113	100
South Canterbury	10	5.3	7	3.7	152	81.3	18	9.6	187	100
Otago	80	4.8	164	9.9	55	3.3	1,357	81.9	1,656	100
Southland	44	2.7	223	13.6	1,160	70.9	209	12.7	1,636	100
Missing (DHB not identified)	113	3.5	290	9.0	1,687	52.2	1,141	35.3	3,231	100
TOTAL	1,599	4.8	3,599	10.7	15,932	47.4	12,464	37.1	33,594*	100

* Excludes women with missing birth locality data (n=6)

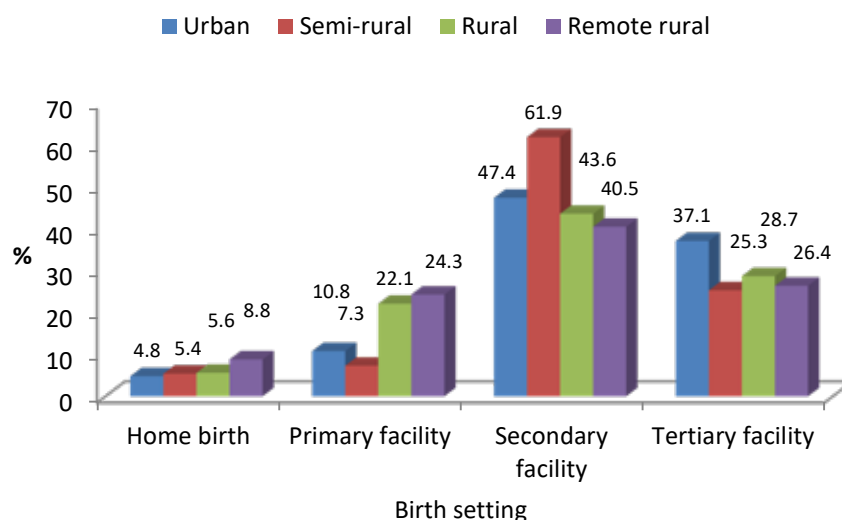


Figure 4.2: Births by birth setting and rurality

4.2.1 Births in rural areas

The Section 88 Maternity Notice 2007 (Ministry of Health, 2007) defines the domicile of the mother according to the rurality of the place of residence. This is defined as urban, semi-rural, rural and remote rural. The data obtained from the 2013 MMPO cohort is presented in Table 4.7 and Figure 4.2.

Overall, 69.7 percent of the babies born to women registered with MMPO midwives were from urban (not rural) domiciles and, of these, 88.2 percent gave birth in either a tertiary or secondary setting. A greater proportion of women living in rural areas (22.1 percent rural and 24.3 percent remote rural) gave birth in primary units. More remote rural women gave birth at home (8.8 percent) than urban women (4.3 percent).

Table 4.7: Birth by setting and rurality

Rurality	Home birth	Primary facility	Secondary facility	Tertiary facility	Total
	n				
Urban	994	1,759	10,993	9,672	23,418
Semi-rural	159	217	1,829	749	2,954
Rural	321	1,279	2,536	1,668	5,804
Remote rural	125	344	574	375	1,418
TOTAL	1,599	3,599	15,932	12,464	33,594*

* Excludes women with birth location missing data (n=6)

4.3 Birth setting and parity

Birth setting and maternal parity are examined in Table 4.8. For primiparous women, the majority (90.6 percent) gave birth in either a secondary or tertiary facility compared to 82 percent of multiparous women. Primiparous women were less likely to give birth at home (2.0 percent) or in a primary unit (7.7 percent) than multiparous women.

Table 4.8: Birth by setting and parity (excludes multiple births)

Place of birth	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Home birth	198	2.0	1,401	5.9	1,599	4.6
Primary facility	757	7.6	2,842	12.1	3,599	11.6
Secondary facility	4,874	48.6	11,055	46.9	15,929*	47.4
Tertiary facility	4,180	41.7	8,284	35.1	12,464	36.4
TOTAL	10,009	100	23,582	100	33,591*	100

* Excludes women with missing data (n=9)

4.3.1 Birth setting and type of birth

For the cohort of 33,600 women giving birth in 2013, 68.3 percent had a normal vaginal birth, of which 46.7 percent occurred in a secondary facility and 30.7 percent in a tertiary facility (Table 4.9). Secondary facilities had a lower rate of elective caesareans than tertiary facilities (8.8 percent versus 11.7 percent, respectively). Tertiary facilities had the highest rates of ventouse births and forceps births and of emergency caesarean births.

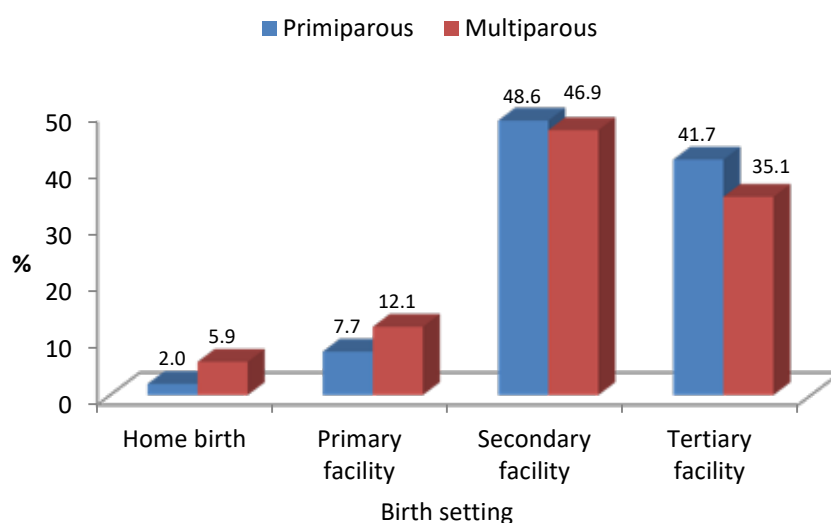


Figure 4.3: Births by birth setting and parity

Table 4.9: Birth setting and type of birth (excludes multiple births)

Birth type	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Spontaneous vaginal birth										
Normal vaginal	1,596	99.8	3,596	99.9	10,711	67.2	7,054	56.6	22,957	68.3
Vaginal breech	3	0.2	3	0.1	30	0.2	18	0.1	54	0.2
Total vaginal births	1,599	100	3,599	100	10,741	67.5	7,072	56.7	23,011	68.5
Instrumental birth										
Ventouse	0	0	0	0	736	4.6	791	6.3	1,527	4.6
Forceps	0	0	0	0.2	381	2.4	687	5.5	1,068	3.2
Other Instrumental *	0	0	0	0	6	0	9	0.1	15	0
Operative breech	0	0	0	0	10	0	11	0.1	21	0.1
Total assisted births	0	0	0	0.2	1,133	7.1	1,498	12.0	2,631	7.8
Caesarean section										
Elective caesarean	0	0	0	0	1,404	8.8	1,461	11.7	2,865	8.5
Emergency caesarean	0	0	0	0	2,653	16.7	2,432	19.5	5,085	15.1
Total caesarean births	0	0	0	0	4,057	25.5	3,893	31.2	7,950	23.6
Unknown	0	0	0	0	1	0	1	0	2	0
TOTAL	1,599	100	3,599	100	15,932	100	12,464	100	33,594**	100

* e.g. Kiwi cup

** Excludes women with missing birth type data (n=6)

4.4 Water birth

Immersion in water during labour is known to reduce the need for epidural analgesia and increase maternal satisfaction with labour. The percentage of babies born into water remains low, at 8.7 percent of all births (Table 4.10), although 23.5 percent of women report using water during labour (Table 3.8, p.18). Women who gave birth at home or in a primary facility had a higher proportion of water births (27.0 percent and 28.8 percent, respectively) than those birthing in secondary or tertiary facilities (5.8 percent and 3.4 percent, respectively).

Table 4.10: Water births and place of birth

Use of water	Water births		Non water births		Not stated		Total
	n	%	n	%	n	%	
Home	431	27.0	1,166	72.9	2	0.1	1,599
Primary facility	1,038	28.8	2,556	71.0	5	0.1	3,599
Sec-ondary facility	839	5.8	9,953	68.5	3,736	25.7	14,528
Tertiary facility	377	3.4	6,760	61.4	3,866	35.1	11,003
TOTAL	2,685	100	20,435	100	7,609	100	30,729*

* Excludes elective caesarean (n=2,865) and women with missing location of birthplace data (n=6)

4.5 Perineal trauma

4.5.1 Vaginal tears

The majority of women (70.0 percent) in the 2013 cohort had either an intact perineum or a first degree tear (Table 4.11) and 27.5 percent had a second degree tear. The rates of third and fourth degree tears were low (2.3 and 0.2 percent respectively). The majority of multiparous women had an intact perineum (62.2 percent).

Table 4.11: Perineal trauma and parity

Perineum	Primiparous		Multiparous		All women	
	n	%	n	%	n	%
Intact/ Graze	4,556	47.3	13,128	62.2	17,684	57.5
1st degree	902	9.4	2,938	13.9	3,841	12.5
2nd degree	3,732	38.8	4,730	22.4	8,461	27.5
3rd degree	404	4.2	289	1.4	693	2.3
4th degree	30	0.3	22	0.1	52	0.2
TOTAL	9,624	100	21,107	100	30,731*	100

* Excludes elective caesarean (n=2,865) and women with missing data (n=4).

4.5.2 Episiotomy

For the 2013 total cohort the episiotomy rate was 10.1 percent (Table 4.12), with 6.3 percent of multiparous women receiving an episiotomy compared to 18.6 percent of primiparous women.

Table 4.12: Episiotomy by parity

Procedure	Primiparous		Multiparous		All women	
	n	%	n	%	n	%
Episiotomy						
Yes	1,793	18.6	1,326	6.3	3,119	10.1
No	7,831	81.4	19,783	93.7	27,614	89.9
TOTAL	9,624	100	21,109	100	30,733*	100

* Excludes elective caesarean (n=2,865) and women with missing data (n=2)

For the 22,957 women who had a normal vaginal birth only (assisted births and all caesareans removed), then overall 5.9 percent had an episiotomy, of which 12.3 percent were primiparous and 3.7 percent were multiparous women (Table 4.13).

Table 4.13: Normal vaginal birth and episiotomy, by parity

Episiotomy		n	%
Primiparous	No	5093	87.7
	Yes	712	12.3
	Total	5805	100.0
Multiparous	No	16,520	96.3
	Yes	631	3.7
	Total	17,151	100.0
TOTAL	No	21,613	94.0
	Yes	1,343	5.9
	Total	22,956*	100.0

* Excludes missing data (n=1)

4.6 Third stage of labour outcomes

The third stage of labour is defined as 'the period from the birth of the baby until the complete birth of the placenta and membranes' (New Zealand College of Midwives, 2013). The next section reports on the blood loss volumes along with the third stage management used by the midwives. The placental condition following birth is also described.

4.6.1 Blood loss volumes

The blood loss data is reported as less than 500ml, 501-749ml, 750-1,000ml, 1,001-1,499ml and more than 1,500ml. The blood loss volumes were examined for the total cohort for type of birth and volume of blood loss (Table 4.14). Women who had a normal vaginal birth had the lowest blood loss volumes, with 89.6 percent reported as having a blood loss of 500ml or less. Women who had a caesarean section had higher reported levels of blood loss, with 35 percent reported to have a blood loss of more than 500ml. Women who had an assisted vaginal birth also had an increased blood loss volume, with 19.4 percent having a blood loss of more than 500ml.

For women who had a normal vaginal birth 1.9 percent had a blood loss of more than 1500ml, compared to 3.3 percent of women who had instrumental vaginal birth and 2.7 percent of women following caesarean section (Table 4.14).

4.6.2 Induction/augmentation and blood loss

Women who had their labour induced or augmented had a higher blood loss than women who had a spontaneous onset and progression of labour (no syntocinon administered). Figure 4.14 demonstrates that women who had a spontaneous onset and progression to birth (no induction and no syntocinon infusion for augmentation) had a lower level of severe blood loss regardless of the type of birth. Of women who had a spontaneous labour and an instrumental birth, 2.6 percent had a blood loss of more than 1,500ml, compared to 4.4 percent of women who had labour induced and an instrumental birth. For the women who had labour augmented with syntocinon, 3.4 percent who had an instrumental birth had a blood loss of more than 1,500ml.

Table 4.14: Postpartum blood loss by birth type (all women)

Postpartum blood loss (ml)	Birth type									
	Normal vaginal birth		Instrumental vaginal birth		Caesarean section		Birth type missing		Total	
	n	%	n	%	n	%	n	%	n	%
0-500	20,615	89.6	2,102	79.7	4,970	62.5	0	0	27,687	82.4
501-749	881	3.8	204	7.7	1,462	18.4	0	0	2,547	7.6
750-1,000	724	3.1	182	6.9	948	11.9	0	0	1,854	5.5
1,001-1,499	249	1.0	40	1.5	165	2.1	0	0	454	1.4
≥1,500	429	1.9	88	3.3	213	2.7	0	0	730	2.2
Not Stated	113	0.5	21	0.8	192	2.4	2	100	328	1.0
TOTAL	23,011	100	2,637	100	7,950	100	2	100	33,600	100

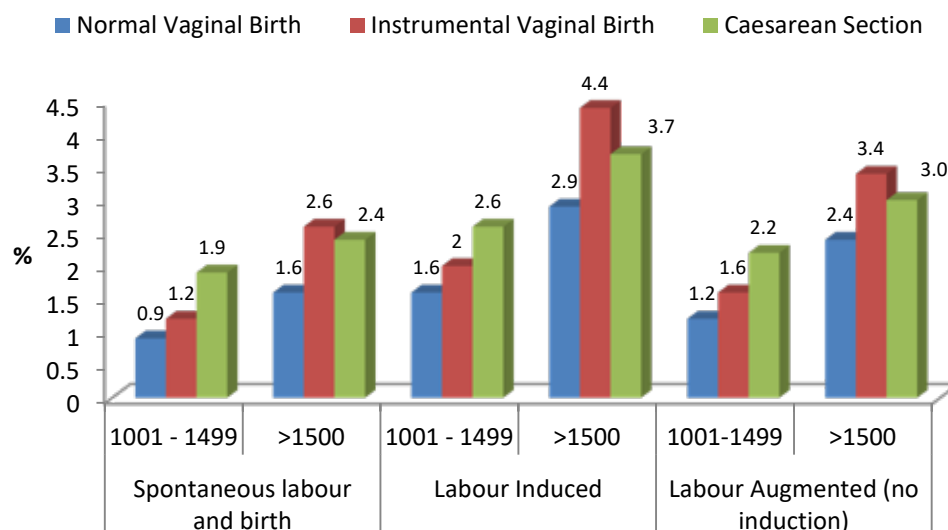


Figure 4.4: Births by labour onset and blood loss volume

4.6.3 Third stage management

MMPO midwives report on four categories for management of the third stage of labour (placental delivery):

1. Active management of the third stage involves the administration of an uterotonic during the third stage, cord clamping and cutting, and controlled cord traction to facilitate the birth of the placenta.
2. Active management and treatment includes women who have active management but then require further uterotonic administration during the third stage of labour.
3. Physiological management involves an approach that facilitates the physiology of the woman's body. It is a "hands off" approach to the third stage in which there is minimal intervention during the third stage and the woman expels the placenta herself using maternal effort and without the use of a uterotonic.
4. Physiological and treatment refers to women who initially have physiological management but then require treatment with an uterotonic.

The New Zealand College of Midwives consensus statement for the third stage recognises that women can expect a physiological third stage when preceded by a physiological labour and birth (New Zealand College of Midwives, 2013).

The data in the following figures and tables provide third stage information for all vaginal births. Instrumental births and caesarean births have been excluded to ensure the data describes the normal vaginal birth third stage outcomes only.

4.6.4 Third stage management, treatment and blood loss for normal vaginal birth

The third stage management style was described as either active (and treatment) or physiological (and treatment). More women had active management (64.8 percent) than physiological care (35.1 percent) (Table 4.15).

Of the women who had active management of the third stage 92.8 percent had a blood loss of less than 500ml compared to 98.1 percent of women who had

Table 4.15: Blood loss by third stage care (excludes instrumental births and caesareans)

Postpartum blood loss (ml)	Active		Active & treatment		Physiological		Physiological & treatment		Not stated		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
0 -500	12,057	92.8	972	51.5	6,429	98.1	1,091	72.4	18	85.7	20,567	90.0
501-749	385	3.0	279	14.8	51	0.8	164	11.0	2	9.5	881	3.8
750-1,000	282	2.2	279	14.8	21	0.3	138	9.2	1	4.8	721	3.2
1,001-1,499	72	0.6	135	7.2	3	0.0	39	2.6	0	0.0	249	1.1
≥1,500	132	1.0	218	11.6	12	0.2	66	4.4	0	0.0	428	1.9
Not stated	63	0.5	4	0.2	37	0.6	8	0.5	0	0.0	110	0.5
TOTAL	12,991	100	1,887	100	6,553	100	1,506	100	21	100	22,958	100

physiological third stage care. Similarly, women who had active management and required treatment had a lower proportion of women with a blood loss of less than 500ml (51.5 per cent) compared to women who had physiological care and treatment (72.5 per cent). This can be seen graphically in Figure 4.5.

There were 2.8 percent of women who had a blood loss of more than 1000ml in the active and treatment group compared to 1.5 percent in the physiological and treatment group.

4.6.6 Placenta condition and membranes

When discussing the third stage of labour, it is useful to know the state of the placenta and membranes and if the placenta was retained, requiring a manual removal or examination under anaesthetic (EUA). The midwives record whether the placenta appears complete or incomplete, whether the membranes are ragged and whether a manual removal of placenta or examination under anaesthetic is required (Table 4.17). The results for the total cohort are reported, along with the type of birth, so that the impact of type of birth on placental outcomes can be examined.

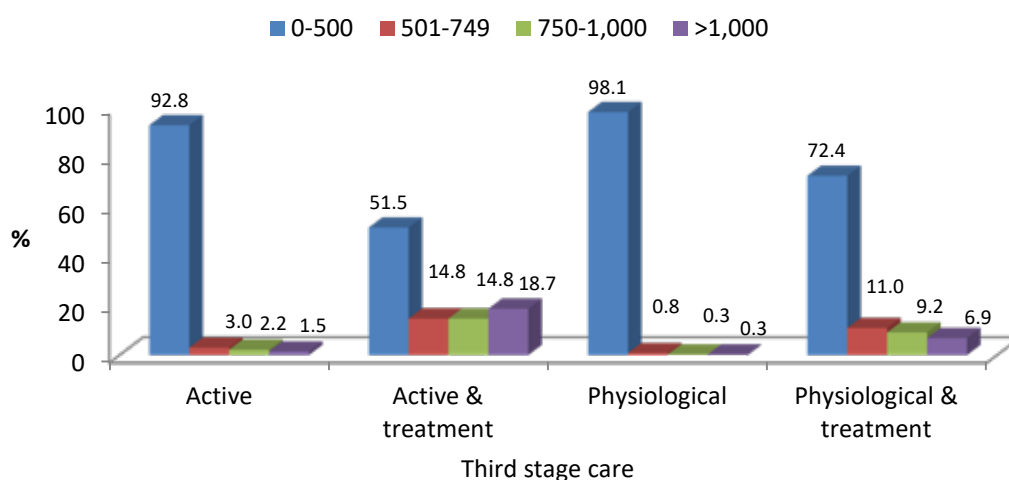


Figure 4.5: Births by postpartum blood loss by third stage care for all non-operative births

4.6.5 Third stage management and parity

When examining parity and the type of third stage care provided (Table 4.16), more multiparous women had a physiological third stage (27.0 per cent) than primiparous women (19.2 per cent).

Table 4.16: Third stage care and parity

Uterotonic procedures	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Active	6,559	65.5	14,310	60.7	20,869	62.1
Active & treatment	1,513	15.1	2,833	12.0	4,346	12.9
Physiological	1,474	14.7	5,235	22.2	6,709	20.0
Physiological & treatment	457	4.6	1,180	5.0	1,637	4.9
Not stated	12	0.1	24	0.1	36	0.1
TOTAL	10,015	100	23,582	100	33,597*	100

* Excludes 3 women with missing parity data

In the 2013 cohort one percent of the overall cohort required a manual removal or examination under anaesthetic.

While the majority of placentae (91.9 per cent) were delivered complete, those with their third stage reported as having 'physiological management' or 'physiological & treatment' had lower manual removals and EUA rates when compared to their respective 'active' and 'active & treatment' groups (Table 4.18).

The rate of ragged membranes (Figure 4.6) was higher for those in the physiological only and physiological and treatment group (7.1 per cent and 14.5 per cent, respectively) than those in the active only or active and treatment group (6.1 per cent and 10.2 per cent, respectively).

Table 4.17: Placenta condition and birth type (all births)

Placenta Condition	Birth type							
	Normal vaginal birth		Instrumental vaginal birth		Caesarean section		Total	
	n	%	n	%	n	%	n	%
Complete	20,899	90.8	2,470	93.7	7,520	94.6	30,889	91.9
Ragged Membranes	1,670	7.3	106	4.0	265	3.3	2,041	6.1
EUA/Manual removal	210	0.9	31	1.2	85	1.1	326	1.0
Incomplete	181	0.8	23	0.9	48	0.6	252	0.8
Not Stated	51	0.2	7	0.3	32	0.4	90	0.3
TOTAL	23,011	100	2,637	100	7,950	100	33,598*	100

* Excludes women with missing parity data (n=2)

Table 4.18: Placenta condition and third stage care following all normal vaginal births (excludes instrumental births and caesarean sections)

Placenta Condition	Active	Active & treatment	Physiological	Physiological & treatment	Not stated	Total	
	n	n	n	n	n	n	%
Complete	12,047	1,526	6,067	1,240	19	20,899	90.8
Ragged Membranes	790	193	468	219	0	1,670	7.3
EUA/Manual removal	71	111	2	25	1	210	0.9
Incomplete	89	56	15	21	1	182	0.8
Not Stated	30	6	12	2	-	50	0.2
TOTAL	13,027	1,892	6,564	1,507	21	23,011	100

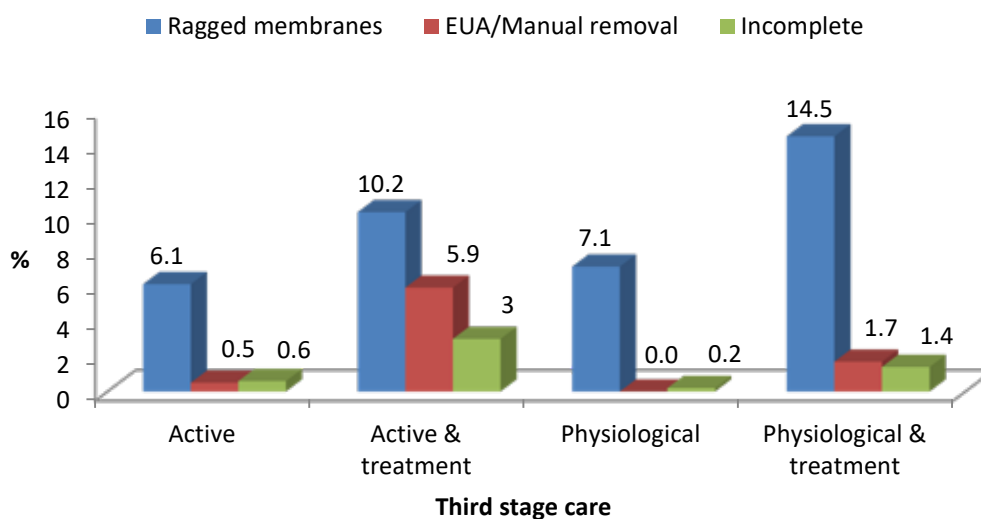


Figure 4.6: Normal vaginal births and condition of placenta by third stage management

Excludes data where the placenta was delivered "complete"

5 Babies

The total number of babies born in New Zealand in 2013 was 59,620 (Ministry of Health, 2015) of which 33,986 babies (57 percent) are included within this report. The data includes multiple births (374 sets of twins and 6 sets of triplets) and relates to neonatal outcomes with a particular focus upon gestational age at birth, Apgar score, and birth weight followed by status at birth.

5.1 Gestational age at birth

The majority of babies (87.5 percent) were born between 37 and 41 weeks gestation, with 5.9 percent born before 36 weeks 6 days and therefore considered premature (Table 5.1). There were 6.6 percent born after 42 weeks gestation.

Table 5.1: Gestational age at birth and parity

Gestational age (weeks)	n	%
20-23	101	0.3
24-27	84	0.2
28-31	175	0.5
32-36	1,667	4.9
37-41	29,727	87.5
42+	2,232	6.6
TOTAL	33,986	100

Table 5.2: Apgar score at 5 minutes and birth setting

Apgar score	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
1-7	10	0.6	27	0.7	322	2.0	329	2.6	688	2.0
8-10	1,594	99.4	3,579	99.3	15,719	97.6	12,263	96.8	33,155	97.6
Missing	0	0.0	0	0.0	68	0.4	75	0.6	143	0.4
TOTAL	1,604	100	3,606	100	16,109	100	12,667	100	33,986	100

Table 5.3: Birth weight of babies and gestation

Week	<2.5 kg		2.5-4.5 kg		>4.5 kg		Total	
	n	%	n	%	n	%	n	%
20-23	98	99.0	1	1.0	0	0.0	99	100
24-27	83	99.8	1	1.2	0	0.0	84	100
28-31	168	96.6	6	3.4	0	0.0	174	100
32-36	883	53.0	780	46.8	3	0.2	1,666	100
37-41	630	2.1	28,391	95.5	705	2.4	29,726	100
42+	5	0.2	2,084	93.5	141	6.3	2,230	100
TOTAL	1,867	5.5	31,263	92.0	849	2.5	33,979*	100

* Excludes missing weight data (n=7)

5.2 Apgar scores

At one, five and ten minutes after birth, a set of observations are made of newborns and their responses to certain stimuli, which are rated as an Apgar score. The results for the 2013 MMPO birth cohort are presented in Table 5.2 along with the place of birth.

Over 97.6 percent of babies born in the 2013 MMPO cohort had an Apgar score of more than 7 at five minutes. There were 2.0 percent of babies born in a secondary facility and 2.6 percent born in a tertiary facility with a low Apgar score.

5.3 Birth weight

The table below (Table 5.3) shows the birth weight of the babies born in the 2013 MMPO cohort. The majority of babies weighed between 2.5 and 4.5 kg (92 percent), with 5.5 percent weighing less than 2.5 kg and 2.5 percent weighing more than 4.5 kg.

The majority of babies born at less than 2.5 kg were also born before 36 weeks gestation, with 2.3 percent born with a low birth weight (less than 2.5kg) at term. Of the babies with a high birth weight (more than 4.5kg), 6.3 percent were more than 42 weeks gestation.

5.4 Birth status

In the 2013 cohort there were 33,600 women who gave birth to 33,986 babies; this figure includes 374 sets of twins and six sets of triplets. Of the total cohort of babies, 99.4 percent (n=33,796) were born alive, 0.5 percent (n=190) were stillborn, and 0.2 percent (n=73) died within 27 days of birth (Table 5.4). Reasons for mortality vary and may relate to prematurity, abnormality or may be unexplained and the data in this report does not provide information on the reasons for mortality.

Table 5.4: Perinatal deaths by status at birth

Total births		33,986
Stillbirths	Antenatal	154
	Intrapartum	36
Neonatal deaths	Early <7 days	59
	Late 7-27 days	14

Table 5.5: Perinatal related deaths by status and birth setting

Place of birth	Home	Primary facility	Secondary facility	Tertiary facility	Total
n					
Live births (a)	1,604	3,604	16,020	12,568	33,796
Stillbirths (b)	0	2	89	99	190
Total births	1,604	3,606	16,109	12,667	33,986
Neonatal deaths (c)	1	3	33	36	73
Perinatal deaths (d)	1	4	117	131	253
Perinatal related deaths (e)	1	5	122	135	263
Rate per 1,000 births					
Stillbirth rate (f)	0.0	0.5	5.5	7.8	5.5
Neonatal mortality rate (g)	0.6	0.8	2.0	2.8	2.1
Perinatal mortality rate (h)	0.6	1.1	7.2	10.0	7.3
Perinatal related death rate (i)	0.6	1.3	7.5	10.6	7.7

(a) Includes neonatal deaths

(b) Death after 20 weeks gestation or more than 400gms (includes terminations for fetal abnormality)

(c) Neonatal death up to and including 27 days

(d) Stillbirth and early neonatal death <7 days

(e) Stillbirths and neonatal deaths up to and including 27 days

(f) Rate of stillbirths per 1,000 total births

(g) Rate of neonatal deaths per 1,000 total births

(h) Rate of perinatal deaths per 1,000 total births

(i) Rate of perinatal related deaths per 1,000 total births

Table 5.5 identifies the location of birth and perinatal related mortality using the perinatal mortality definitions used in New Zealand, with rates calculated per 1,000 births. Among the babies born to the MMPO registered women in 2013, a total of 190 babies were stillborn, with the majority occurring at secondary and tertiary facilities. When a baby has died during pregnancy the midwife will refer to an obstetrician so as to make a plan for the birth. Therefore, the majority of women who had an identified stillbirth will have been referred to a secondary or tertiary unit to give birth. The overall perinatal mortality rate (stillbirth and early neonatal mortality) for the MMPO cohort was 7.3 per 1,000 births.

The vast majority of perinatal mortality occurs prior to term (Table 5.6), with 38.9 percent of mortality occurring between 20 and 23 weeks gestation, a further 22.2 percent between 24 and 31 weeks gestation and 19.7 percent at term.

5.5 Neonatal transfers from home and primary facilities

Babies can be transferred after birth to either a neonatal unit (NNU) or a special care baby unit (SCBU) for neonatal care. The transfers that occurred in the 2013 MMPO baby cohort are shown in Table 5.7. Twenty seven home birth babies (1.6 percent) and 44 primary facility babies (1.2 percent) were transferred to a NNU/SCBU. There were 640 (4.0 percent) and 680 (5.4 percent) babies transferred/referred to a NICU from a secondary or tertiary facility.

Table 5.6: Perinatal mortality and gestation

Gestation and mortality	Stillbirth antenatal		Stillbirth intrapartum		Neonatal death		Total	
	n	%	n	%	n	%	n	%
20-23 weeks	52	33.8	18	50.0	26	35.6	96	38.9
24-31 weeks	35	22.7	4	11.1	19	26.0	58	22.2
32-36 weeks	36	23.4	3	8.3	15	20.0	54	19.2
37+ weeks	31	20.1	11	30.6	13	17.8	55	19.7
Total	154	100	36	100	73	100	263	100

Table 5.7: Admissions/transfers to NNU/SCBU of babies, by birth setting

	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Referred/Transferred to NNU/SCBU	27	1.6	44	1.2	640	3.9	680	5.4	1,391	4.0
TOTAL	1,604		3,606		16,109		12,667		33,986	

6 Postnatal period

This chapter provides information on the postnatal period and is based on the number of babies who were born in 2013, and their mothers. The first part of this section examines data regarding breastfeeding with the second part looking at maternal smoking status.

6.1 Breastfeeding

All babies born with MMPO midwives have the type of feeding recorded at the initial feed, 48 hours, two weeks and on discharge (between 4-6 weeks of age).

The following tables present the breastfeeding data for 2 weeks postpartum and at postpartum discharge. This data has been collated according to birthing locality and maternal ethnicity. More than three quarters of 2013 MMPO babies were exclusively or fully breastfed at two weeks of age. Babies born at home had the highest rate at 88.4 percent (Table and Figure 6.1). The highest level of exclusive breastfeeding rates occurred for women who gave birth at home or in a primary unit. The secondary and tertiary facilities had higher rates of babies that were fully breastfed.

Secondary facilities had a higher rate of artificial feeding (bottle-feeding) at 7.8 percent followed by tertiary and primary units.

6.1.1 Breastfeeding and postnatal discharge

Type of feeding was documented by the midwife at postnatal discharge; the timing of discharge is variable and occurs between 4 and 6 weeks postnatal. At this time 70.9 percent of women breastfed exclusively or fully, a reduction of 6.2 percent over this period (Table 6.2). Women who gave birth at home continued to have higher levels of exclusive or fully breastfeeding with 85.0 percent compared to 75.5 percent for primary unit births, 70.3 percent for secondary and 68.7 percent for women who gave birth in tertiary maternity facilities.

The breastfeeding data at 2 weeks based on maternal ethnicity is presented in Table 6.3. NZ Europeans had the highest rate per ethnic group of babies exclusively and fully breastfed at 79.3 percent. Women of Pasifika ethnicity had the lowest exclusive breastfeeding rate in 2013 (62.6 percent) and Māori had the highest rate of artificial feeding (10.1 percent).

Table 6.1: Feeding status at 2 weeks and birth setting

Feeding status at 2 weeks	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Exclusive	1,357	84.6	2,827	78.4	10,947	68.0	8,229	64.9	23,360	68.7
Fully	62	3.8	159	4.4	1,407	8.7	1,200	9.5	2,828	8.3
Subtotal	1,419	88.4	2,986	82.9	12,352	76.6	9,429	74.4	26,188	77.1
Partial	88	5.4	291	8.1	2,077	12.9	1,862	14.7	4,318	12.7
Artificial	68	4.3	249	6.9	1,253	7.8	931	7.3	2,500	7.4
Not stated	29	1.9	80	2.2	425	2.6	445	3.5	980	2.9
TOTAL	1,604	100	3,606	100	16,109	100	12,667	100	33,986	100

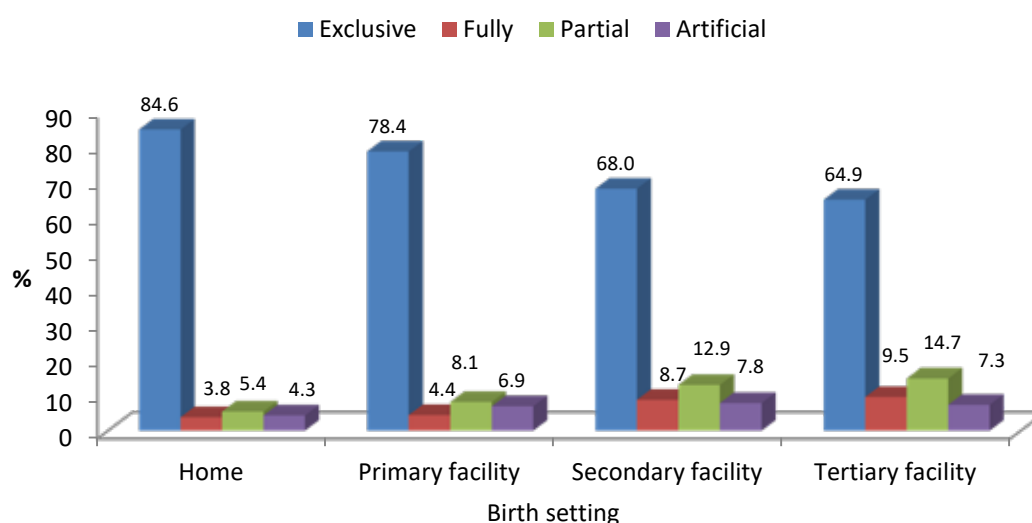


Figure 6.1: Feeding status at 2 weeks and birth setting

Table 6.2: Feeding status at discharge from maternity service and birth setting

Feeding status at 2 weeks	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Exclusive	1,273	79.1	2,522	70.0	9,707	60.3	7,344	58.0	20,846	61.3
Fully	93	5.9	200	5.5	1,610	10.0	1,360	10.7	3,263	9.6
Subtotal	1,366	85.0	2,722	75.5	11,317	70.3	8,704	68.7	24,109	70.9
Partial	101	6.3	319	8.7	2,085	12.9	1,786	14.1	4,291	12.6
Artificial	107	6.7	483	13.4	2,279	14.1	1,728	13.6	4,597	13.5
Not stated	30	1.9	82	2.3	428	2.7	449	3.6	989	2.9
TOTAL	1,604	100	3,606	100	16,109	100	12,668	100	33,986	100

Table 6.3: Feeding status at 2 weeks and mother's ethnicity

Feeding status at 2 weeks	NZ European		Māori		Pasifika		Asian		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Exclusive	14,767	71.5	4,167	66.0	1,403	62.6	2,186	63.8	698	73.4	23,221	69.1
Fully	1,616	7.8	474	7.5	215	9.6	387	11.3	64	6.7	2,756	8.2
Subtotal	16,383	79.3	4,641	73.5	1,618	72.2	2,573	75.1	762	80.1	25,977	77.3
Partial	2,290	11.1	756	12.0	328	14.6	687	20.0	138	14.5	4,199	12.5
Artificial	1,502	7.3	637	10.1	209	9.3	83	2.4	32	3.4	2,463	7.3
Not stated	492	2.4	279	4.4	87	3.9	84	2.5	19	2.0	961	2.9
TOTAL	20,667	100	6,313	100	2,242	100	3,427	100	951	100	33,600	100

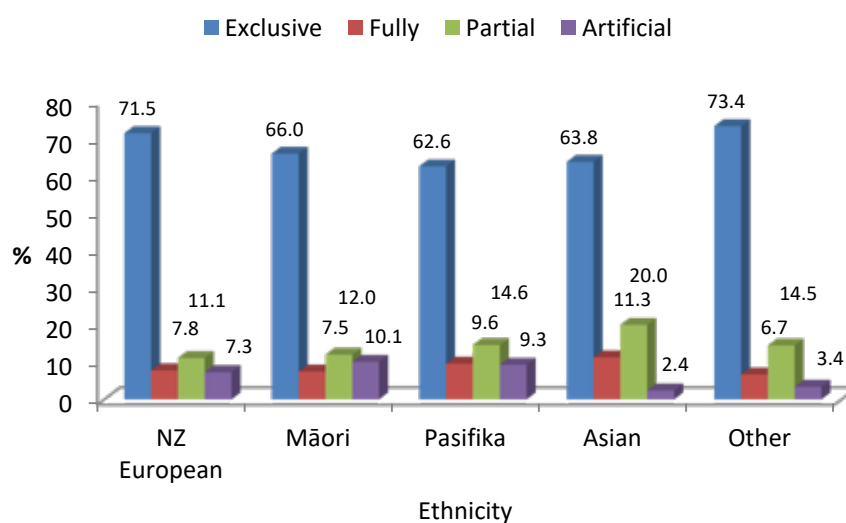


Figure 6.2: Feeding status at 2 weeks and ethnicity

6.2 Postnatal health: Smoking status

Smoking status is also recorded by MMPO midwives during the postnatal period. Overall, the data indicates a general decrease in smoking rates when recorded at this point.

During pregnancy 17 percent of women were reported as current smokers (refer to Table 2.9 in Chapter 2, p.14). This rate dropped by 2.4 percent to 14.6 percent by the postnatal period (Table 6.4) with 83.3 percent of women reporting they were smoke-free and 2.1 percent not stated.

Table 6.4: Women who reported smoking postnatally

Smoking status	n	%
Current smoker	4,910	14.6
Ex smoker (<12 months abstinent)	1,647	4.9
Ex smoker (>12 months abstinent)	1,016	3.0
Never smoked tobacco	24,544	73.0
Nil - no longer used	11	0.0
Now smokefree (> 4 wks) - no longer used	777	2.3
Unknown- no longer used	695	2.1
Total	33,600	100

6.3 Postnatal care

Following the birth the woman has a choice to have up to 48 hours of postnatal care within a maternity facility before going home. The midwife will visit the woman at home for up to six weeks following birth.

Table 6.5: Number and place of postnatal visits

Postnatal care	Assessment at a maternity facility		Assessment at home	
	n	%	n	%
0 visits	6,725	20.0	462	1.4
1-2 visits	15,585	46.4	296	0.9
3-5 visits	9,108	27.1	3,833	11.4
6-9 visits	979	2.9	23,794	70.8
10-14 visits	147	0.4	4,375	13.0
15+ visits	12	0.0	128	0.4
Missing	1,044	3.1	712	2.1
Total	33,600	100	33,600	100

In 2013 46.4 per cent of women received 1-2 hospital visits and a further 27.1 per cent received between 3 and 5 hospital visits (Table 6.5). Once home 70.8 percent of women received 6-9 home visits, with a further 13 percent receiving between 10 and 14 visits.

7 References

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8 List of Terms¹

Apgar score: Numerical score used to evaluate the infant's condition at one, five and ten minutes after birth. Five variables are scored: colour, breathing, heart rate, irritability and muscle tone. A baby may be able to be resuscitated after an initial one-minute score of zero, but a five-minute score of zero usually means that the infant cannot be resuscitated. If no heart rate had been heard before or during resuscitation, then this would be documented as a stillbirth. If a heart rate had been heard, but the baby could not be fully resuscitated, this would be called a live birth and neonatal death.

Birth: The birth of a baby (or babies for a multiple birth) after a minimum of 20 weeks 0 days gestation and/or with a birth weight of more than 400 grams.

Birth weight: The first weight of the baby obtained after birth (usually measured to the nearest five grams and obtained within one hour of birth).

Low = < 2,500 grams

Very low = < 1,500 grams

Extremely low = < 1,000 grams

Breastfeeding, exclusive: The infant has never, to the mother's knowledge, had any water, formula, or other liquid or solid food. Only breast milk from the breast or expressed and prescribed medicines defined as per the Medicines Act 1981 have been given to the baby from birth.

Breastfeeding, fully: The infant has taken breast milk only. No other liquids or solids except for a minimal amount of water or prescribed medicines in the previous 48 hours.

Breastfeeding, partial: The infant has taken some breast milk and some infant formula or other solid food in the past 48 hours.

Feeding, artificial: The infant has had no breast milk, but has had alternative liquid such as infant formula with or without solid food in the past 48 hours.

Caesarean section: Operative birth through an abdominal incision.

Caesarean section, emergency (acute): Caesarean section performed urgently for clinical reasons (such as if the health of the mother or baby is endangered).

Caesarean section, elective: Caesarean section performed as a planned procedure.

District Health Board (DHB): An organisation established as a District Health Board by or under Section 19 of the New Zealand Public Health and Disability Act 2000.

Epidural anaesthesia and analgesia: Involves the placing of a needle into the epidural space. Local anaesthetic and/or opioid is injected either directly through the needle, or more commonly through a fine catheter which has been passed through the needle into the epidural space. The epidural space is the space outside the dura mater through which nerve roots pass to and from the spinal cord.

Episiotomy: An incision of the perineal tissue surrounding the vagina at the time of birth.

Ethnicity: The ethnic group that the woman identifies herself with.

Fetal death: The death of a baby born at 20 weeks or beyond or weighing at least 400 grams if gestation is unknown. Fetal death includes stillbirth and termination of pregnancy.

Full-term birth/labour: Birth/labour at 37 or more gestational weeks.

Gestational age: The duration of pregnancy in completed weeks, calculated from the date of the first day of a woman's last menstrual period and her infant's date of birth, or derived from clinical assessment during pregnancy, or from examination of the infant after birth.

Gravida: The total number of pregnancies the woman has experienced, including the current one. For example, a woman who has one previous pregnancy and is currently pregnant is designated as 'gravida 2'.

Home birth: A birth that takes place in a person's home and not in a maternity facility or birthing unit, or a birth where management of the labour commences at home and there is a documented plan to give birth at home.

Induction of labour: An intervention undertaken to stimulate the onset of labour by pharmacological or other means.

Instrumental vaginal birth: The vaginal birth of a baby assisted by the use of instruments, this term includes forceps, ventouse, instrumental vaginal breech and other instrumental births for example Kiwi cup.

¹ Adapted from: (Ministry of Health, 2007)

Lead maternity carer (LMC): An authorised practitioner who is a registered midwife, or an obstetrician or a general practitioner with a Diploma of Obstetrics (or equivalent, as determined by the Royal New Zealand College of General Practitioners), who has been chosen by the women to provide her lead maternity care.

Live birth: The birth of a baby, irrespective of duration of pregnancy; which breathes or shows evidence of life such as beating of the heart, pulsation of the umbilical cord, or definitive movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

Maternity facility: A facility that provides both labour and birth services as well as inpatient postnatal care, as described in the relevant service specification issued by the Ministry of Health.

Primary: A maternity facility for labour, birth and postnatal care provided by midwives – does not have 24-hour on-site obstetric specialist services available.

Secondary: A facility that provides antenatal, labour & birth, and postnatal care for women who experience complications and require specialist input from obstetricians, paediatricians or anaesthetists.

Tertiary: A facility that provides a multidisciplinary specialist team for women and babies with complex and/or rare maternity needs who require access to such a team.

MMPO: Midwifery and Maternity Providers Organisation; a practice management system provider for Lead Maternity Carer (LMC) midwives.

Neonatal death: The death of a baby that has occurred up to 27 days after birth. Early neonatal death = death before 7 days. Late neonatal death = death between 7 – 27 days.

New Zealand College of Midwives (the College): The national professional body.

Normal birth: The spontaneous birth of a live baby born vaginally in a cephalic presentation.

Parity: The number of previous pregnancies resulting in live births or stillbirths.

Nulliparous: A woman who has never given birth to a viable infant.

Primiparous: A woman who has given birth only once.

Multiparous: A woman who has had more than one subsequent birth.

Perinatal death: A category that includes fetal deaths of 20 weeks' gestation or 400 grams birth weight (stillbirth), plus infant deaths within less than 168 completed hours (seven days) after birth (early neonatal death).

Perinatal related death: Refers to fetal deaths and early and late neonatal deaths born at 20 weeks gestation or beyond or weighing at least 400 grams if gestation is unknown.

Plurality: The number of births resulting from a pregnancy.

Postnatal: All pregnancy-related events following birth.

Registration: The documentation showing that a woman has selected a Lead Maternity Carer.

Rural area: An area is defined as rural if the census area unit (domicile) is located in an area of fewer than 10,000 people.

Spinal anaesthesia: The injection of local anaesthetic into the cerebrospinal fluid around the spinal cord, by passing a needle into the subarachnoid space (through both dura mater and arachnoid mater).

Stillbirth: Death prior to the complete expulsion or extraction from its mother of a baby of 20 or more completed weeks of gestation, or of 400 grams or more birth weight. Death is indicated after separation either when the fetus does not breathe or show any other evidence of life.

Urban area: An area is defined as urban if the census area unit (domicile) is located in an area of more than 10,000 people.

Vacuum extraction (Ventouse): Assisted birth using a suction cup applied to the baby's head.

Vaginal breech birth: Birth in which the baby's buttocks or lower limbs are the presenting parts, rather than the head.

Viable infant/pregnancy: A baby born at more than 20 weeks of gestation.

WHO: World Health Organization.

Appendix: "The MMPO Maternity Notes" dataset

Client Profile Summary

Maternity Notes number

Registration Type New Registration Change in LMC

Name (do not capital please)
Surname or family name
First Names
Previous Surname(s)
Date of Birth

Address (do not capital please)
Street and No.
Suburb
City / Town
Phone Home
Email address

Partner Yes No Partner

Next of Kin (do not capital please)
Name
Address
Email address
Phone Home
District Health Board Region

Woman's Occupation

Eligibility for Section 88 Yes No

Woman's ethnic group(s) (if more than one)
 NZ Maori Samoan
 NZ European Cook Is. I.
 Other European Tongan
 African Declined

First Language

LMP Date

EDD Date

Menstrual Cycle Regular Irregular

Contraception

Family Doctor/General Practitioner (GP)
Practice Name

Woman referred by Self Another M

Labour and Birth Summary

Maternity Notes number

NBE

Planned place of birth at onset of labour: Home Birth facility

Actual place of birth: Home Birth facility
 Other locality

Postnatal transfer planned, to:

Induction of Labour Yes No weeks gestation

Date Time

Method of induction Prostaglandin ARM Oxytocin Other

Reason Pregnancy > 42 weeks Fetal distress Social/maternal request
 Pre-eclampsia IUGR Infection
 Prolonged rupture of membranes Maternal disease/compromise
 Large for gestational age Other

Onset of Labour weeks Gestation weeks

Transferred during L&B from planned place of birth Yes No

Transfer initiated Date Time

Transferred from Home Primary Hospital Secondary Hospital Tertiary Hospital

Mode of transfer Ambulance Car (family's) Car (midwife's) Air Transport

Woman accompanied by Midwife Other

LMC care transferred Yes No

Midwifery care provided by

Labour and birth

	Date (day/month/year)	Time (am/pm)
Admitted to hospital		
Midwife in attendance		
Rupture of membranes		
Onset contractions		
Labour established		
Fully dilated		
Effective pushing commenced		
Time of birth		
Time of birth (twin II)		
Placenta / umbilical		
Completion of care		

LMC present at birth Yes No Back up present at birth Yes No

Claiming birth Yes No or

Claiming labour and birth exceptional circumstances Yes No

Length of labour 1st Stage 2nd Stage 3rd Stage

Total length of labour

ARM during labour Yes No

Augmented with Oxytocids Yes No IV fluids for hydration Yes No

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