MMPO
Midwifery & Maternity

Report on

NEW ZEALAND'S MMPO MIDWIVES

Care activities and outcomes

2012

Report prepared for

New Zealand College of Midwives (Inc)

REPORT AUTHORS

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The NZCOM and the MMPO welcome comments and suggestions about this publication.

MMPO Midwifery & Maternity

NEW ZEALAND COLLEGE OF MIDWIVES (INC)

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The tables in this report use the following denominators:

- Pregnant women giving birth = 33,931
- Pregnant women giving birth, excluding 2,846 who had an elective lower section caesarean section (LSCS) = 31,085
- Babies born = 34,313 (includes 382 babies from multiple births).

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Executive Summary

All Lead Maternity Carer (LMC) midwife members of the New Zealand College of Midwives have the opportunity to join the Midwifery and Maternity Provider Organisation Limited (MMPO), which is a nationwide organisation that offers a practice management service for community-based LMC midwives. 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 2012 cohort of birthing mothers from the MMPO registrations. In this year there were 62,321 registered births (live and stillbirths) in New Zealand, of which 34,313 babies were captured in the MMPO database (Ministry of Health, 2015). These babies represent 55 percent of the registered births in New Zealand for 2012.

In 2012, we have been able to identify 532 registered MMPO midwives throughout New Zealand who contributed data. This number is lower than previous years due to an IT systems change which was designed to strengthen the system but which also inadvertently meant that the correct number of midwives providing data in 2012 was not collected accurately. We have been unable to ascertain a corrected retrospective number. This fault has been corrected for future reports.

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

These midwives have provided a complete episode of care for:

- 33,931 mothers who gave birth between 01 January and 31 December 2012 and were registered into the system.
- 34,313 babies who were born to these women.

This report summarises the outcomes for women 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 baby's weight, gestation and breastfeeding status.

Highlights

Women and pregnancy

- The majority of women (72.8 percent) registered with an MMPO midwife prior to 15 weeks gestation.
- Nearly 30 percent of women were pregnant for the first time.
- More than half of the women who registered with MMPO midwives were aged between 25 and 34 years old with 15.6 percent over the age of 35 years.
- The majority of women identified their ethnicity as NZ European/Pakeha (61.5 percent), followed by Māori (19 percent) and Asian (9.6 percent).
- Fifty percent of women had a healthy body mass index, with a further 25.5 percent classed as overweight and 23.1 percent obese.
- Seventeen percent of pregnant women were current smokers during pregnancy at the time of registration with a midwife.

Labour and births

- The majority of babies (69.4 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 22.9 percent.
- A further 7.7 percent of babies were born via instrumental vaginal births.
- The largest proportion of births (47.3 percent) occurred in secondary facilities.
- 4.5 percent of babies were born at home.
- 23.9 percent of women used water immersion for pain management during labour and 7.1 percent of babies were born in water.
- Women who had active management of the third stage of labour experienced greater blood loss (more than 500mls) than those who had a physiological pathway for the third stage (10.9 percent versus 6.3 percent).
- Babies born to women who identified as Māori were more likely to be born by normal vaginal birth (78.9 percent), whereas babies born to mothers in the 'Asian' and 'Other' ethnic categories had higher rates of caesarean sections (26.3 and 35.8 percent respectively).
- Babies born to younger mothers (under 20 years of age) had higher normal vaginal birth rates (78.4 percent), with the rates of caesarean sections increasing as the mother's age increased (peaking at 36.4 percent at 40+ years of age).

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 5.6 percent less than 2.5kg and 2.8 percent more than 4.5kg.

Postnatal period

- The majority of babies (70.3 percent) were fully or exclusively breastfed at 2 weeks following birth.
- Babies born at home had higher rates of exclusive or fully breastfeeding at two weeks of age (89.5 percent).
- New Zealand European women had the highest rate per ethnic group of exclusive breastfeeding at 2 weeks (72 percent).
- Smoking rates decreased to 15.2 percent during the postnatal period.
- The majority of women (45.7 percent) received between 1 and 2 visits from their MMPO midwife when in a maternity facility and a further 27.6 percent received between 3 and 5 visits.
- The majority of women (71.4 percent) received between 6 and 9 home visits during the postnatal period with a further 13 percent receiving between 10 and 14 visits.

The next section will discuss the gestation and mode of birth for the 2012 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 the primiparous women. This is followed by a flow chart for the gestation and mode of birth for the multiparous women.

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

All Women		
Total No. = 33,931		
VB	23,651	69.7%
IVB	2,603	7.7%
CS	7,672	22.6%
Missing	5	0.0%
Total	**33,931**	**100%**

Pre-Term < 37 wks			**% of**
1,895/33,931 = 5.6%			**Total No.**
VB	1,052	55.5%	3.1%
IVB	90	4.7%	0.3%
CS	750	39.6%	2.2%
Missing	3	0.2%	0.0%
Total	**1,895**	**100%**	**5.6%**

Elective CS			**% of**
158/1,895 = 8.3%			**Total No.**
CS	158	100%	0.5%

Spontaneous Labour			**% of**
1,362/1,895 = 71.8%			**Total No.**
VB	775	56.98%	2.3%
IVB	61	4.5%	0.2%
CS	525	38.5%	1.5%
Missing	1	0.1%	0.0%
Total	**1,362**	**100%**	**4.0%**

Induced Labour			**% of**
375/1,895 = 19.7%			**Total No.**
VB	278	74.1%	0.8%
IVB	28	7.5%	0.1%
CS	67	17.9%	0.2%
Missing	2	0.5%	0.0%
Total	**375**	**100%**	**1.1%**

Full-Term ≥ 37 wks			**% of**
32,036/33,931 = 94.4%			**Total No.**
VB	22,599	70.5%	66.6%
IVB	2,513	7.8%	7.4%
CS	6,922	21.6%	20.4%
Missing	2	0.0%	0.0%
Total	**32,036**	**100%**	**94.4%**

Elective CS			**% of**
2,688/32,036 = 8.3%			**Total No.**
CS	2,688	100%	7.9%

Spontaneous Labour			**% of**
23,227/32,036 = 72.5%			**Total No.**
VB	18,621	80.1%	54.9%
IVB	1,765	7.6%	5.2%
CS	2,840	12.3%	8.4%
Missing	1	0.0%	0.0%
Total	**23,227**	**100%**	**68.5%**

Induced Labour			**% of**
6,121/32,036 = 19.1%			**Total No.**
VB	3,978	65.0%	11.7%
IVB	748	12.2%	2.2%
CS	1,394	22.8%	4.1%
Missing	1	0.0%	0.0%
Total	**6,121**	**100%**	**18%**

For the 33,931 women in the 2012 cohort:

- 69.7 percent had a normal vaginal birth
- 7.7 percent had an instrumental vaginal birth
- 22.6 percent had a caesarean birth
- 5.6 percent of the births were pre-term (born at less than 37 weeks gestation)

For the 94.4 percent of women who were full term, 19.1 percent had their labour induced, of which:

- 22.8 percent had a caesarean birth compared to 12.3 percent following a spontaneous onset of labour
- 12.2 percent had an instrumental vaginal birth compared to 7.6 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

All Women		
Total No. = 13,957		
VB	8,351	59.8%
IVB	2,121	15.2%
CS	3,482	24.9%
Missing	3	0.0%
Total	**13,957**	**100%**

Pre-Term < 37 wks			**% of**
859/13,957 = 6.2%			**Total No.**
VB	469	54.6%	3.4%
IVB	77	9.0%	0.6%
CS	311	36.2%	2.2%
Missing	2	0.2%	0.0%
Total	**859**	**100%**	**6.2%**

Elective CS			**% of**
57/859 = 6.6%			**Total No.**
CS	57	100%	0.3%

Spontaneous Labour			**% of**
623/859= 72.5%			**Total No.**
VB	359	57.6%	2.6%
IVB	52	8.3%	0.4%
CS	211	33.9%	1.5%
Missing	1	0.2%	0.0%
Total	**623**	**100%**	**4.5%**

Induced Labour			**% of**
179/859 = 20.8%			**Total No.**
VB	110	61.5%	0.8%
IVB	25	14.0%	0.2%
CS	43	24.0%	0.3%
Missing	1	0.6%	0.0%
Total	**179**	**100%**	**1.3%**

Full-Term ≥ 37 wks			**% of**
13,098/13,957 = 93.8%			**Total No.**
VB	7,882	60.2%	56.5%
IVB	2,044	15.6%	14.6%
CS	3,171	24.2%	22.7%
Missing	1	0.0%	0.0%
Total	**13,098**	**100%**	**93.8%**

Elective CS			**% of**
469/13,098 = 3.5%			**Total No.**
CS	469	100%	3.4%

Spontaneous Labour			**% of**
9,438/13,098 = 72.0%			**Total No.**
VB	6,360	67.4%	45.6%
IVB	1,409	14.9%	10.1%
CS	1,668	17.7%	11.9%
Missing	1	0.0%	0.0%
Total	**9,438**	**100%**	**67.6%**

Induced Labour			**% of**
3191/13,098 = 24.5%			**Total No.**
VB	1,528	47.9%	10.9%
IVB	629	19.7%	4.5%
CS	1,034	32.4%	7.4%
Missing	0	0.0%	0.0%
Total	**3,191**	**100%**	**22.9%**

Of the 13,957 primiparous women in the 2012 cohort:

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

For the 93.8 percent of women who were full-term, 24.5 percent had their labour induced, of which:

- 32.4 percent had a caesarean section compared to 17.7 percent when labour onset was spontaneous.
- 19.7 percent had an instrumental vaginal birth compared to 14.9 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

All Women		
Total No. = 15,962		
VB	14,275	89.4%
IVB	310	1.9%
CS	1,375	8.6%
Missing	2	0.0%
Total	**15,962**	**100%**

Pre-Term < 37 wks			**% of**
760/15,962 = 4.8%			**Total No.**
VB	523	68.8%	3.3%
IVB	8	1.1%	0.1%
CS	228	30%	1.4%
Missing	1	0.1%	0.0%
Total	**760**	**100%**	**4.8%**

Elective CS			**% of**
40/760 = 5.2%			**Total No.**
CS	40	100%	0.3%

Spontaneous Labour			**% of**
540/760 = 71%			**Total No.**
VB	370	68.5%	2.3%
IVB	6	1.1%	0.0%
CS	164	30.4%	1.0%
Total	**540**	**100%**	**3.4%**

Induced Labour			**% of**
180/760 = 23.7			**Total No.**
VB	153	85.0%	1.0%
IVB	2	1.1%	0.0%
CS	24	13.3%	0.2%
Missing	1	0.6%	0.0%
Total	**180**	**100%**	**1.1%**

Full-Term ≥ 37 wks			**% of**
15,202/15,962 = 95.2%			**Total No.**
VB	13,752	90.5%	86.2%
IVB	302	2.0%	1.9%
CS	1,147	7.5%	7.2%
Missing	1	0.0%	0.0%
Total	**15,202**	**100%**	**95.2%**

Elective CS			**% of**
462/15,202 = 3.0%			**Total No.**
CS	462	100%	2.90%

Spontaneous Labour			**% of**
12,100/15,202 = 79.6			**Total No.**
VB	11,420	94.4%	71.5%
IVB	204	1.7%	1.3%
CS	476	3.9%	3.0%
Total	**12,100**	**100%**	**75.8%**

Induced Labour			**% of**
2,640/15,202 = 17.4%			**Total No.**
VB	2,332	88.3%	14.6%
IVB	98	3.7%	0.6%
CS	209	7.9%	1.3%
Missing	1	0.0%	0.0%
Total	**2,640**	**100%**	**16.5%**

Of the 15,962 multiparous women in the 2012 cohort who did not have a previous caesarean section:

- 89.4 percent had a normal vaginal birth
- 1.9 percent had an instrumental vaginal birth
- 8.6 percent had a caesarean birth
- 4.8 percent of the births were pre-term

For the 95.2 percent of women who had a full-term labour, 17.4 percent had their labour induced of which:

- 7.9 percent had a caesarean section compared with 3.9 percent when labour onset was spontaneous
- 3.7 percent had an instrumental vaginal birth compared with 1.7 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, 2015) as well as the maternity services specifications for Lead Maternity Carers (LMCs) (Ministry of Health, 2007). The New Zealand College of Midwives supports the establishment of a partnership relationship with women, which is enhanced by continuity of care. 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, throughout 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 New Zealand College of Midwives (NZCOM) in 1997 to provide a practice management system for LMC midwives. The MMPO is co-located with the NZCOM national office in Christchurch. At the time of publication MMPO personnel includes an Executive Director, a part-time accountant, IT and data entry teams who process claims and provide data management services for midwives.

Through the organisation's partnership with NZCOM, a number of initiatives were implemented to enhance the development of LMC services, particularly for self-employed midwives. 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 NZCOM members, with operational costs met by the sale of MMPO Maternity Notes and a stand-alone electronic version of the database. This allows midwives to enter their own data and have an electronic interface with the MMPO.

The MMPO provides a practice management service to 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 2012. It is important to note that it is not a technical report with statistically significant analysis, but rather, an annual report of the data analysed from the 2012 database. It can be seen as an annual report for 2012 of women who had their maternity care provided by midwives who worked as LMCs and were members of the MMPO and the New Zealand College of Midwives.

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 2012. 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 2012. 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.

Chapters 7 - 9

These chapters provide the references, list of terms and purpose of this report.

Appendix

The appendix is an example of 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 2012. 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 split into two separate sections that each had the same date and cohort parameters. Actual cohort numbers vary between the two sections. 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 2012.

Table 1.1: Data contributors by DHB region.

DHB region	Number and percentage of MMPO midwives contributing data	
	n	%
Northland	30	5.6
Waitemata	43	8.1
Auckland	36	6.8
Counties Manukau	12	2.3
Waikato	52	9.8
Bay of Plenty	16	3.0
Lakes	12	2.3
Taranaki	14	2.6
Tairawhiti	10	1.9
Hawkes Bay	15	2.8
Wairarapa	4	0.8
Whanganui	4	0.8
Midcentral	27	5.1
Hutt	19	3.6
Capital and Coast	41	7.7
Nelson Marlborough	26	4.9
Canterbury	97	18.2
West Coast	1	0.2
South Canterbury	3	0.6
Otago*	46	8.6
Southland*	24	4.5
TOTAL	**532**	**100**
*Otago and Southland are now combined as Southern DHB.		

The highest proportion of midwives came from the Canterbury region, whereas the West Coast, Wairarapa and Whanganui had relatively low proportions. The majority (63 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 2012, 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 experience as 'Continuity of Care' midwife.

Years as 'Continuity of Care' midwife	n	%	Cumulative %
Less than 1 year	27	5.1	5.1
1 – 4 years	149	28.0	33.1
5 – 9 years	143	26.9	60.0
10 – 14 years	88	16.5	76.5
15 – 19 years	45	8.5	85.0
20 – 24 years	42	7.9	92.9
More than 24 years	38	7.1	**100**
TOTAL	**532**	**100**	

Table 1.2 shows that during 2012, the largest group of midwives were those who had between one and four years' professional experience as a 'continuity of care' midwife (28 percent) followed by midwives with between five and nine years' experience as a 'continuity of care' midwife (26.9 percent). Almost one quarter of all MMPO midwives (23.5 percent) had fifteen years or more of 'continuity of care' midwifery experience.

2 Women and Pregnancy

2.1 Demographic profile

This chapter provides demographic information for the women who were registered with an MMPO midwife during their pregnancy and birth for 2012. It discusses the number of pregnant women in the 2012 MMPO database who were registered during their pregnancy and gave birth, the gestational age at registration with the MMPO midwife, maternal age, maternal ethnicity and antenatal history, along with the gestation at commencement of labour.

2.1.1 Registered births

In 2012, there were 62,321 registered births (live and stillbirths) in New Zealand (Ministry of Health, 2015). This same year, 33,931 pregnant women were captured in the MMPO database, and gave birth to 34,313 babies. They represent 55 percent of the New Zealand babies registered in 2012. There were 382 more babies born (including stillbirths) than there were mothers, due to the multiple births.

2.1.2 DHB region of births

In the 2012 MMPO cohort, the largest group of women were living in the catchment area for the Canterbury District Health Board (DHB) (13.7 percent) with 10.2 percent from the Waitemata DHB region and 9.4 percent from the Waikato region (Table 2.1).

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 39 percent in 2012 compared to 31.8 percent in 2011. A further 33.8 percent registered before 14 weeks with a total of 72.8 percent of women registering in the first trimester of pregnancy, 19.1 percent of women registered in the second trimester and 8.1 percent in the third trimester of pregnancy.

Table 2.1: Domicile of women at registation, by DHB region.

DHB region	n	%
Northland	1,697	5.0
Waitemata	3,452	10.2
Auckland	1,236	3.6
Counties Manukau	1,620	4.8
Waikato	3,182	9.4
Bay of Plenty	1,650	4.9
Lakes	1,083	3.2
Taranaki	916	2.7
Tairawhiti	703	2.1
Hawkes Bay	1,658	4.9
Wairarapa	308	0.9
Whanganui	185	0.5
Midcentral	1,501	4.4
Hutt	1,107	3.3
Capital and Coast	1,735	5.1
Nelson Marlborough	1,223	3.6
Canterbury	4,643	13.7
West Coast	81	0.2
South Canterbury	184	0.5
Otago	1,700	5.0
Southland	1,573	4.6
Not identified	2,494	7.4
TOTAL	**33,931**	**100**

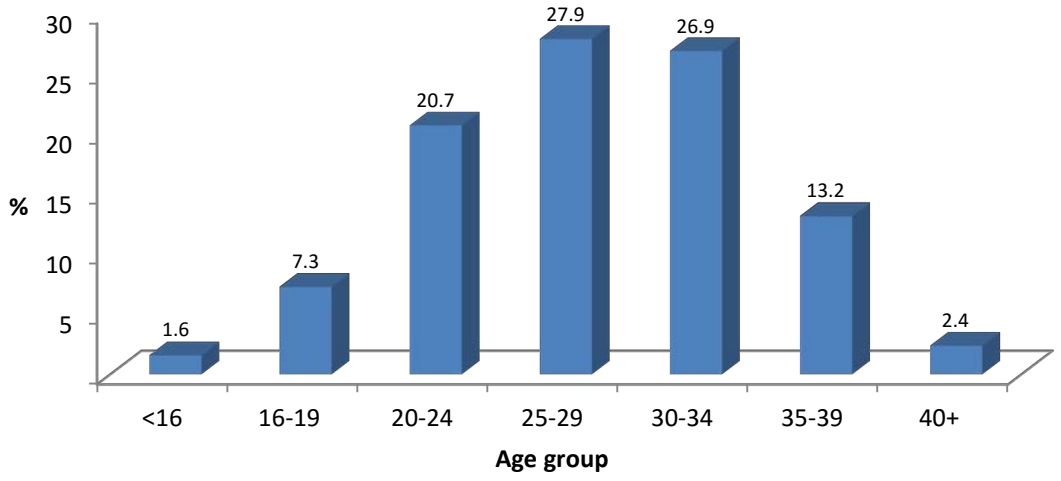

Figure 2.1: Women by age group at registration.

Table 2.2: Gestation at registration.

Weeks gestation	n	%
< 5 weeks	338	1.0
5 - 9 weeks	12,908	38.0
10 - 14 weeks	11,458	33.8
15 - 20 weeks	4,256	12.5
21 - 27 weeks	2,227	6.6
28 to term	2,742	8.1
Missing	2	0.0
TOTAL	**33,931**	**100**

2.1.4 Maternal age

The mean age of pregnant women at registration was 31 years standard deviation (SD 6), with the majority of women (54.7 percent) aged between 25 and 34 years (Figure 2.1). There were 8.9 percent under 20 years of age, and 2.4 percent over 40 years of age.

2.1.5 Maternal ethnicity

The ethnicity data for the women in the 2012 dataset, (as recorded at the time of registration) is shown in Table 2.3. This demonstrates that the majority (61.5 percent) identified as NZ European, followed by 19 percent who identified as Māori. The third highest ethnic group was recorded as Asian (9.6 percent) and 6.3 percent identified as Pasifika. The Other category included women from Africa, the Middle East, and Latin America.

Table 2.3: Ethnicity at registration.

Ethnicity	n	%
NZ European	20,866	61.5
Māori	6,445	19.0
Pasifika	2,137	6.3
Asian	3,243	9.6
Other	1,238	3.6
Not stated	2	0.0
TOTAL	**33,931**	**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 2012 were experiencing their first pregnancy (Table 2.4).

Table 2.4: Birthing women by gravida.

Gravida		n	%
Primigravida	1	10,126	29.8
Multigravida	2 to 4	21,596	63.7
	>5	2,209	6.5
TOTAL		**33,931**	**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)).

For pregnant women in 2012 the mean BMI was 26.2 (Standard Deviation (SD) 5.8) and the median was 24.8. Almost half (47.9 percent) were within the healthy range BMI, with 26.5 percent overweight, and a further 23.1 percent in the obese category.

Table 2.5: Body Mass Index

BMI	n	%
Underweight (<18.5)	833	2.5
Healthy weight (18.5 to 24.9)	16,264	47.9
Overweight (25 to 29.9)	8,990	26.5
Obese class 1 (30 to 34.9)	4,434	13.0
Obese class 2 (35 to 39.9)	1,884	5.6
Obese class 3 (>40 obese)	1,526	4.5
TOTAL	**33,931**	**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 2.6 for the 2012 cohort and include multiple pregnancy (1.1 percent), previous caesarean section (13.1 percent), giving birth for the first time and being over 37 years of age (5.6 percent) or being over 39 years of age when giving birth (3.1 percent).

Table 2.6: Factors that may influence pregnancy outcome.

Specific features	n	%
Nulliparous >37 years of age	1,894	5.6
Nulliparous >39 years of age	1,071	3.1
Previous caesarean section	4,467	13.1
Multiple pregnancy (≥2 babies)	378	1.1

2.2.4 Existing medical conditions

There were 15,850 (46.7 percent) in the 2012 cohort who had one or more existing medical condition. The type of medical condition is described in more detail in Table 2.7. This table provides the frequency of the condition identified with some women reporting more than one medical condition.

Table 2.7: Pre-existing medical conditions.

Condition	n	%
Asthma	4,400	13.0
Psychiatric	3,458	10.2
UTI Renal	3,144	9.3
Sexual transmitted Infection (STI)	2,572	7.6
Hypertension (essential)	504	1.5
Thyroid conditions	516	1.5
Cardiac disease	319	0.9
Diabetes	343	1.0
Rheumatic fever	63	0.2
Epilepsy	241	0.7
Other*	290	0.9

* Coagulation disorders, autoimmune disorders, TB, bowel problems, cancer therapy.

The most commonly identified condition was asthma (13 percent) followed by psychiatric conditions (10.2 percent), previous urinary tract infections or a renal condition (9.3 percent) and a previous sexually transmitted infection (7.6 percent). Conditions that were less commonly identified were hypertension (1.5 percent), thyroid disease (1.5 percent), cardiac disease (0.9 percent), epilepsy (0.7 percent) and diabetes (1 percent).

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 while 74.3 percent had never smoked (Table 2.8). A small proportion of women (8.6 percent) reported having a history of smoking but being smoke free at the time of pregnancy registration.

Table 2.8: Smoke-free status at registration.

Smoke-free status	n	%
Current smoker	5,769	17.0
Ex smoker (<12 months abstinent)	554	1.6
Ex smoker (>12 months abstinent)	21	0.1
Never smoked tobacco	25,225	74.3
Nil - no longer used	138	0.4
Now smokefree (> 4 wks) - no longer used	2,223	6.5
Unknown - no longer used	1	0.0
TOTAL	**33,931**	**100**

*The data collection about smoking was changed in 2012 so that more detail was collected – the change occurred as notes were renewed – so this table is a collection of both data collection sets

Age was examined, looking at women who reported smoking (current smoker) or being smoke-free (all other) during pregnancy. The age group with the highest level of smoking was women between 16 and 20 years of age with 37.2 percent smoking, followed

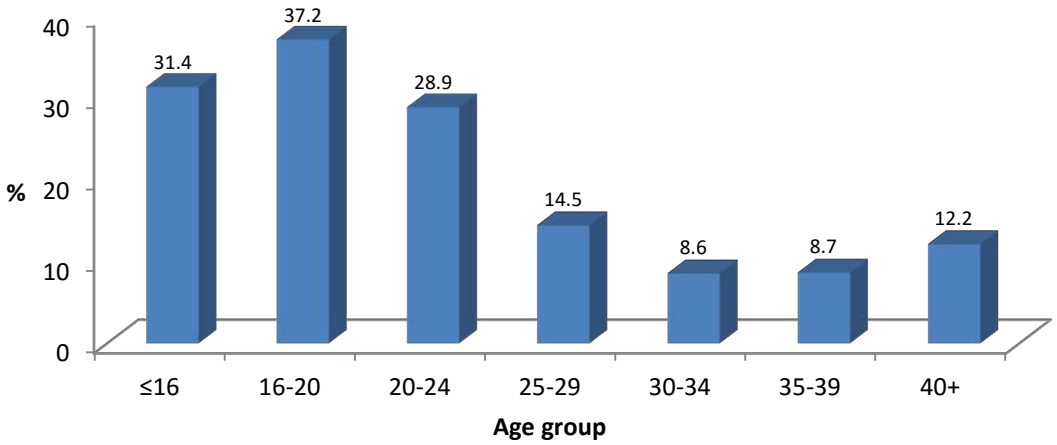

Figure 2.2: Women who reported smoking during index pregnancy, by age group.

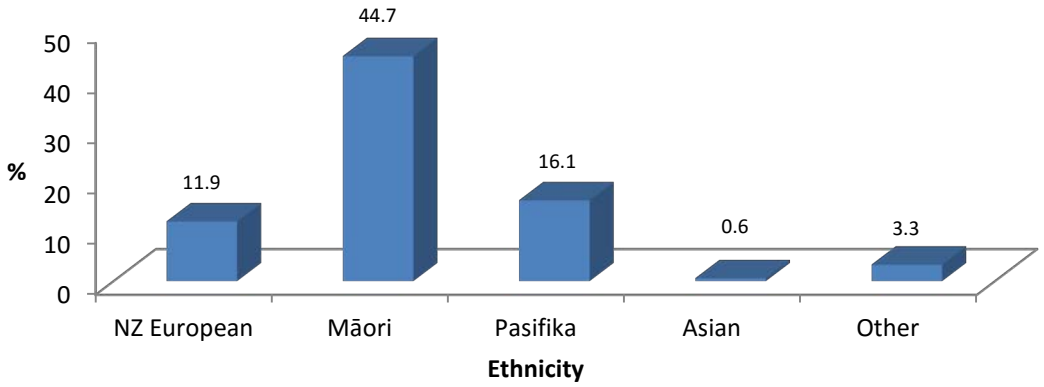

Figure 2.3: Women who reported smoking during index pregnancy, by ethnicity.

by those younger than 16 years old with 31.4 percent smoking during pregnancy.

Ethnicity was examined, looking at women who reported being a current smoker or being smoke-free. The ethnic group with the greatest proportion of women smoking during pregnancy were women who identified as Māori (44.7 percent) followed by Pasifika (16.1 percent) and NZ European women (11.9 percent).

2.3 Duration of pregnancy

For the majority of women (86.9 percent) the onset of labour was between 37 and 41 weeks gestation (Table 2.9) with only a small number (1 percent) with very premature labours (before 32 weeks gestation). For 7.5 percent of the cohort the gestation was 42 weeks or more at the onset of labour.

Table 2.9: Women by weeks of gestation at labour commencement or elective caesarean (all women).

Weeks gestation	n	%
20 – 23	75	0.2
24 – 27	91	0.3
28 – 31	178	0.5
32 – 36	1,551	4.6
37 – 41	29,495	86.9
42+	2,541	7.5
TOTAL	**33,931**	**100**

3 Labour Details

This chapter is based upon the data obtained from the 33,931 women registered with MMPO midwives who laboured and gave birth in 2012. 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 (72.6 percent) had a labour length recorded as eight hours or less, with 5.8 percent of women having a labour of more than 15 hours. Primiparous women had longer labours, with 43.4 percent of first-time mothers reported as having labours more than eight hours compared with 11.7 percent of multiparous women.

Table 3.1: Women by hours of labour and parity (excludes elective caesareans).

Hours of labour	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
<1	131	1.0	762	4.3	893	2.9
1-2	446	3.3	2,731	15.5	3,177	10.2
2-4	1,984	14.8	6,226	35.3	8,210	26.4
4-6	2,481	18.5	3,677	20.8	6,158	19.8
6-8	2,282	17.0	1,860	10.5	4,142	13.3
8-10	1,821	13.6	897	5.1	2,718	8.7
10-15	2,608	19.4	751	4.3	3,359	10.8
>15	1,396	10.4	399	2.3	1,795	5.8
Unknown	282	2.1	351	2.0	633	2.0
TOTAL	**13,431**	**100**	**17,654**	**100**	**31,085**	**100**

NOTE: The information in Table 3.1 excludes the women who had an elective caesarean section (n=2846).

3.2 Transfers during labour

The majority of women (95.6 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 2012 cohort 4.3 percent of women were transferred to another facility during labour, including 1.7 percent from a planned home birth and 2.5 percent from a planned primary unit birth.

Table 3.2: Transfers during labour by birth setting (excludes elective caesareans).

Intrapartum transfers	n	%
Home	531	1.7
Primary facility	774	2.5
Secondary facility*	31	0.1
Tertiary facility*	9	0.02
Total transferred	1,345	4.3
Total not transferred	29,740	95.6
TOTAL	**31,085**	**100**

* NOTE: Transfers from secondary and tertiary facilities may be due to unavailability of a neonatal service in the planned place of birth. The information in this table excludes the women who had an elective caesarean (n=2846).

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 while 2,087 women had planned to give birth at home, 531 (25.4 percent) were transferred to a birthing facility during labour and therefore, 1,556 women actually gave birth at home. For those who planned to give birth in a primary facility 16.3 percent were transferred in labour. The number of women transferred from home increased from 19.2 percent in 2011 to 25.4 percent in 2012.

Table 3.3: Transfers from home and primary birthing localities during labour (excludes elective caesareans).

Planned place of birth	Planned place of birth	Transfers	
	n	n	%
Home	2,087	531	25.4
Primary facility	4,721	774	16.3
TOTAL	**6,808**	**1305**	**19.1**

NOTE: These figures do not include the elective caesareans (n=2846) because the place of birth was pre-arranged at the time of the caesarean booking.

3.3 Labour procedures

3.3.1 Induction of labour

The majority of women (79.2 percent) commenced labour spontaneously in 2012. Labour was induced for 20.8 percent of the women in the MMPO cohort (Table 3.4). Primiparous women were more likely to be induced (25.1 percent) than multiparous women (17.5

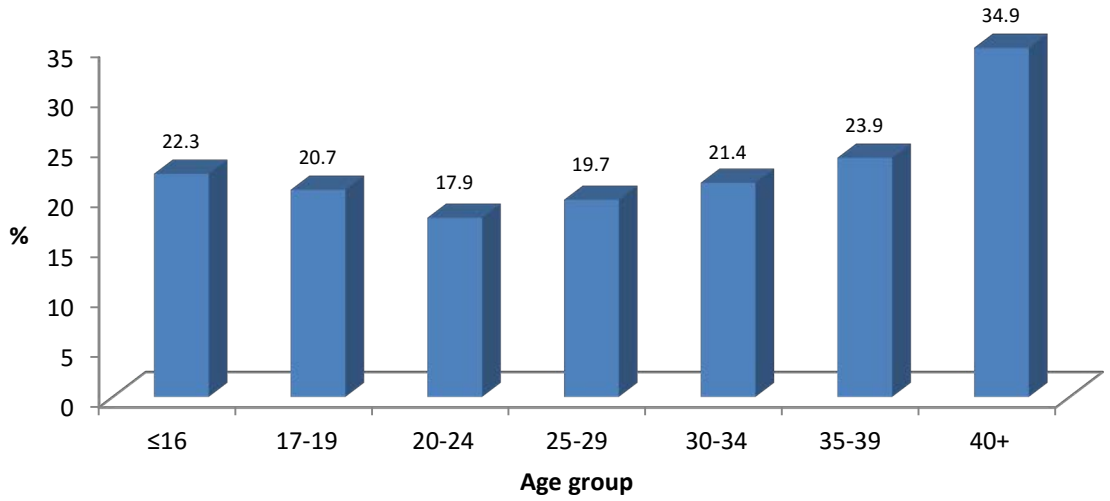

Figure 3.1: Induction of labour by age group.

percent). Induction of labour by maternal age was reviewed. 34.9 percent of women who were over 40 years of age were induced compared to 17.9 percent of women aged between 20 and 24 years of age.

Table 3.4: Labour induction and parity (excludes elective caesarean section).

Procedure Induction	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
No	10,061	74.9	14,568	82.5	24,629	79.2
Yes	3,370	25.1	3,086	17.5	6,456	20.8
TOTAL	**13,431**	**100**	**17,654**	**100**	**31,085**	**100**

3.3.2 Anaesthesia during labour

Overall, the majority of women (69.6 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 nulliparous women (44.6 percent) for all anaesthetic procedures, when compared with parous women (17.7 percent).

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 2012 cohort of women 39.3 percent used Entonox alone with a further 5.5 percent using Entonox with pethidine. Nearly 3 percent used pethidine alone and 0.3 percent used fentanyl patient controlled analgesia (PCA) alone.

Table 3.5: Anaesthetic procedures and parity (excludes elective caesarean section).

Anaesthetic procedures	Nulliparous		Parous		Total	
	n	%	n	%	n	%
Epidural	4,069	30.3	1,573	8.9	5,642	18.2
Epidural and spinal	184	1.4	88	0.5	272	0.9
Spinal	1,261	9.4	1,182	6.7	2,443	7.9
General anaesthetic	220	1.6	173	1.0	393	1.3
Pudendal	137	1.0	55	0.3	192	0.6
General/ Spinal/epidural	52	0.4	26	0.1	78	0.3
Other	76	0.6	38	0.2	114	0.4
Nil used	7,297	54.3	14,329	81.1	21,626	69.6
Not stated	135	1.0	190	1.1	325	1.0
TOTAL	**13,431**	**100**	**17,654**	**100**	**31,085**	**100**

3.3.4 Water and complementary forms of pain management

This section reports those women who have 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 the table below reflects the number and percentage of each form of pain management and is not a count of women.

Table 3.6: Type of pain relief during labour.

Other type of pain relief	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Entonox	5,997	44.7	6,213	35.2	12,210	39.3
Entonox, Pethidine	1,167	8.7	544	3.1	1,711	5.5
Entonox, Other	70	0.5	34	0.5	104	0.3
Entonox, Fentanyl PCA	62	0.5	30	0.5	92	0.3
Pethidine	597	4.4	313	1.8	910	2.9
Fentanyl PCA	73	0.5	32	0.2	105	0.3
Other	53	0.4	39	0.2	92	0.3
Not known	6	0	3	0	9	0.3
Nil used	5,406	40.3	10,446	59.2	15,852	51
TOTAL	**13,431**	**100**	**17,654**	**100.7**	**31,085**	**100**

*** The data collection on opiates was changed in 2012 to support more detail. Midwives using older version of the notes will have provided less detail and used the 'other' field to denote a specific opiate.**

Table 3.7: Other type of pain relief during labour.

Other pain management	n	%
Positional techniques	8,992	28.9
Water	7,429	23.9
Massage	6,159	19.8
Heat Packs	4,379	14.1
Acupressure	1,268	4.1
Homeopathy	1,110	3.6
TENS	592	1.9
Acupuncture	332	1.1

In 2012 the most popular types of pain management were positional techniques (changes in position) (28.9 percent), use of water (23.9 percent), massage (19.8 percent) and heat packs (14.1 percent). Less commonly used were TENS (transcutaneous electronic nerve stimulation), acupressure, acupuncture and homeopathy.

4 Births

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

4.1 Type of birth

4.1.1 Birth type

The information presented in Table 4.1 relates to the birth of the baby and includes 382 more babies than mothers due to multiple births (374 sets of twins and 4 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.

Table 4.1: Type of birth.

Birth type	Total	
	n	%
Spontaneous vaginal birth	**23,809**	**69.4**
Normal vaginal	23,720	69.1
Vaginal breech	89	0.3
Assisted Birth	**2,628**	**7.7**
Ventouse	1,631	4.8
Forceps	974	2.8
Other Instrumental *	10	0.0
Instrumental breech	13	0.0
Caesarean section	**7,861**	**22.9**
Elective caesarean	2,916	8.5
Emergency caesarean	4,945	14.4
Unknown	15	0.0
TOTAL	**34,313**	**100**
*eg Kiwi cup		

The majority of babies born in 2012 were born vaginally with 69.4 percent having a vaginal birth and 7.7 percent an instrumental birth (Table 4.1). The caesarean section rate was 22.9 percent of which 8.5 percent were elective caesareans and 14.4 percent were emergency caesareans.

4.1.2 Birth type and parity

The mother's parity and type of birth are compared and presented in Table 4.2 below. This section relates to the demographics of the 33,931 women who gave birth in 2012. More multiparous women (76.3 percent) had a normal vaginal birth when compared to primiparous women (59.6 percent), with a quarter (25 percent) of primiparous women and a fifth of multiparous (22.6 percent) women having a caesarean section.

Fewer primiparous women (3.8 percent) had an elective caesarean when compared to multiparous women (11.6 percent), with more primiparous women having an emergency caesarean (21.2 percent) when compared to multiparous women (9.4 percent).

Table 4.2: Birth type and parity.

Birth type	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Normal vaginal	8,325	59.6	15,239	76.3	23,564	69.4
Vaginal breech	33	0.2	67	0.3	100	0.3
Ventouse	1,276	9.1	333	1.7	1,609	4.7
Forceps	830	5.9	141	0.7	971	2.9
Other Instrumental *	8	0.1	2	0.0	10	0.0
Total vaginal	**10,472**	**75.0**	**15,782**	**79**	**26,254**	**77.3**
Elective caesarean	526	3.8	2,320	11.6	2,846	8.4
Emergency caesarean	2,956	21.2	1,870	9.4	4,826	14.2
Total caesarean	**3,482**	**25.0**	**4,190**	**21**	**7,672**	**22.6**
Unknown	3	0.0	2	0.0	5	0.0
TOTAL	**13,957**	**100**	**19,974**	**100**	**33,931**	**100**
* e.g Kiwi cup						

4.1.3 Birth type and maternal age

The influence of age and birth type is explored in Table 4.3 for the 2012 cohort. Women under 20 years of age were only a small proportion of the overall cohort of births (8.9 percent) but they had the highest incidence of normal vaginal births (78.2 percent). For babies born to women forty years of age or older (2.4 percent of cohort) the incidence of normal vaginal births was the lowest (58.6 percent). Overall the normal vaginal birth rate reduced as the woman's age increased.

The highest incidence of instrumental births was in the 25-29 years age group (8.5 percent) whereas the age group with the highest incidence of elective and emergency caesarean sections were women who were 40 years and older (36.4 percent).

4.1.4 Birth type and maternal ethnicity

Table 4.4 and 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 78.9 percent and 76.4 percent respectively and the lowest caesarean rates (16.5 and 19.6 percent, respectively). Conversely, the women who identified as Asian or Other had the lowest rate of normal vaginal births at 62.2 percent and 60.2 percent respectively.

Table 4.3: Birth type and maternal age.

Birth type	Maternal age (years)								
	< 16	16 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Unknown	Total
	n								
Normal vaginal	428	1,943	5,259	6,637	6,072	2,739	477	10	23,565
Vaginal breech	1	3	26	22	29	19	0	0	100
Ventouse	33	97	299	517	458	183	22	0	1,609
Forceps	14	76	189	285	265	124	18	0	971
Other Instrumental*	1	0	1	4	3	0	1	0	10
Total vaginal	**477**	**2,119**	**5,774**	**7,465**	**6,827**	**3,065**	**518**	**0**	**26,245**
Elective caesarean	1	45	346	696	964	668	126	2	2,848
Emergency caesarean	69	312	885	1,306	1,334	748	170	0	4,824
Total caesarean	**70**	**357**	**1,231**	**2,002**	**2,298**	**1,416**	**296**	**0**	**7,670**
Unknown	0	1	1	2	0	0	0	0	4
TOTAL	**547**	**2,477**	**7,006**	**9,469**	**9,125**	**4,481**	**814**	**12**	**33,931**
	%								
Normal vaginal	78.2	78.4	75	70.1	66.5	61.1	58.6	0.04	69.4
Vaginal breech	0.2	0.1	0.4	0.2	0.3	0.4	0	0	0.3
Ventouse	6.0	3.9	4.3	5.5	5	4.1	2.7	0	4.7
Forceps	2.6	3.1	2.7	3	2.9	2.8	2.2	0	2.9
Other Instrumental*	0.2	0	0	0	0	0	0	0	0
Total vaginal	**87.2**	**85.5**	**82.4**	**78.8**	**74.7**	**68.4**	**63.5**	**0**	**77.3**
Elective caesarean	0.2	1.8	4.9	7.3	10.6	14.9	15.5	0.07	8.4
Emergency caesarean	12.6	12.6	12.6	13.8	14.6	16.7	20.9	0	14.2
Total caesarean	**12.8**	**14.4**	**17.5**	**21.1**	**25.2**	**31.6**	**36.4**	**0**	**22.6**
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* e.g Kiwi cup **proportion of missing age per birth type

Table 4.4: Birth type and maternal ethnicity.

Birth type	NZ European		Māori		Pasifika		Asian		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Normal vaginal	14,077	67.5	5,087	78.9	1,633	76.4	2,019	62.2	746	60.2	23,562	69.4
Vaginal breech	58	0.3	23	0.4	7	0.3	7	0.2	5	0.4	100	0.3
Ventouse	1,082	5.2	157	2.4	46	2.2	251	7.7	74	6	1,610	4.7
Forceps	664	3.2	111	1.7	31	1.4	116	3.6	49	4	971	2.9
Other Instrumental	8	0	2	0.2	0	0	0	0	0	0	10	0
Total vaginal	**15,889**	**76.2**	**5,380**	**83.6**	**1,717**	**80.3**	**2,393**	**73.7**	**874**	**70.6**	**26,253**	**77.4**
Elective caesarean	2,035	9.8	324	5	113	5.3	252	7.8	122	9.9	2,846	8.4
Emergency caesarean	2,939	14.1	740	11.5	306	14.3	600	18.5	242	19.5	4,827	14.2
Total caesarean	**4,974**	**23.9**	**1,064**	**16.5**	**419**	**19.6**	**852**	**26.3**	**364**	**29.4**	**7,673**	**22.6**
Birth type missing	3	0	1	0	1	0	0	0	0	0	5	0
TOTAL	**20,866**	**100**	**6,445**	**100**	**2,137**	**100**	**3,245**	**100**	**1,238**	**100**	**33,931**	**100**

4.2 Place of birth – geographic distribution and birth place setting

This section examines the place of birth and relates to the geographic distribution of the women giving birth in the North and South Island, along with the DHB region. It also explores the rurality of the women registered with an MMPO midwife in 2012 (Table 4.5).

The MMPO database has more records of women giving birth in the North Island (64.9 percent) than the South Island although for 7.4 percent the DHB of birth

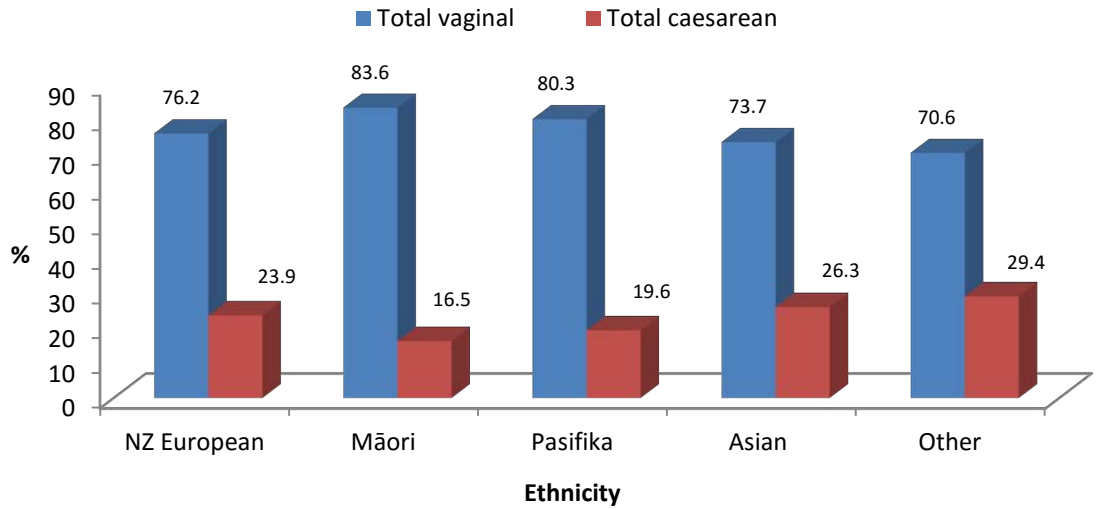

Figure 4.1: Births by birth type – vaginal versus caesarean – and ethnicity.

Table 4.5: Birth place type and geographic distribution.

Birth place type	North Island		South Island		Not known		New Zealand	
	n	%	n	%	n	%	n	%
Home births	1,038	4.7	460	4.9	58	2.3	1,556	4.5
Primary facility	2,754	12.5	918	9.8	255	10.4	3,927	11.6
Secondary facility	12,522	56.8	2,441	26.0	1,119	44.7	16,082	47.4
Tertiary facility	5,719	26.0	5,585	59.4	1,062	42.3	12,366	36.4
TOTAL	**22,034**	**100**	**9,405**	**100**	**2,492**	**100**	**33,931**	**100**

Table 4.6: Birth by setting and rurality.

Rurality	Home birth		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Urban	992	4.2	1,857	7.8	11,356	47.8	9,576	40.3	23,780	100
Semi-rural	150	5.1	216	7.3	1,814	61.3	781	26.4	2,961	100
Rural	300	5.2	1,500	25.8	2,402	41.4	1,604	27.6	5,806	100
Remote rural	114	8.3	354	25.6	510	36.8	405	29.3	1,384	100
TOTAL	**1,556**	**4.6**	**3,927**	**11.6**	**16,082**	**47.4**	**12,366**	**36.4**	**33,931**	**100**

was unknown. The majority of the births occurred in secondary facilities (47.4 percent), while 36.4 percent birthed in one of the six tertiary facilities in the country. There were 5510 women (16.2 percent) registered with an MMPO midwife who gave birth either at a primary facility or at home.

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 or remote rural. The data obtained from the 2012 MMPO cohort is presented in Table 4.6 and Figure 4.2.

Overall, 70 percent of the babies born to women registered with MMPO midwives were from urban (not rural) domiciles and of these, 88 percent gave birth in either a tertiary or secondary setting. A greater proportion of women living in rural areas (26 percent rural and 25.8 percent remote rural) gave birth in primary units. More remote rural women gave birth at home (8.3 percent) than urban women (4.2 percent).

4.3 Birth setting and parity

Birth place and maternal parity are examined in Table 4.7. For primiparous women, the majority (89.1 percent) gave birth in either a secondary or tertiary facility compared to 80 percent of multiparous women. Primiparous women were less likely to give birth at home (2.2 percent) or in a primary unit (8.6 percent) than multiparous women.

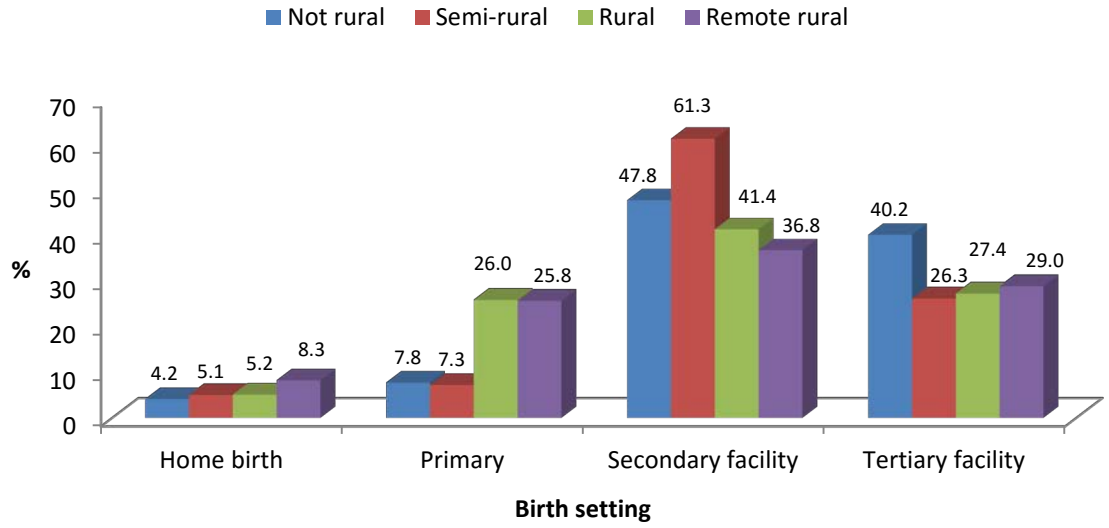

Figure 4.2: Births by birth setting and rurality.

Table 4.7: Birth by setting and parity (all women).

Place of birth	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Home birth	309	2.2	1,247	6.2	1,556	4.6
Primary facility	1,195	8.6	2,732	13.7	3,927	11.6
Secondary facility	6,787	48.6	9,295	46.5	16,082	47.4
Tertiary facility	5,666	40.5	6,700	33.5	12,366	36.4
TOTAL	**13,957**	**100**	**19,974**	**100**	**33,931**	**100**

4.3.1 Birth setting and type of birth

For the 33,931 women giving birth in 2012, 69.7 percent had a vaginal birth, of which 46.4 percent occurred in a secondary facility and 30.4 percent in a tertiary facility (Table 4.8). Secondary facilities had a lower rate of elective caesareans than tertiary facilities (9 percent versus 11.4 percent, respectively). Tertiary facilities had the highest rates of ventouse births and forceps births and of emergency caesarean births.

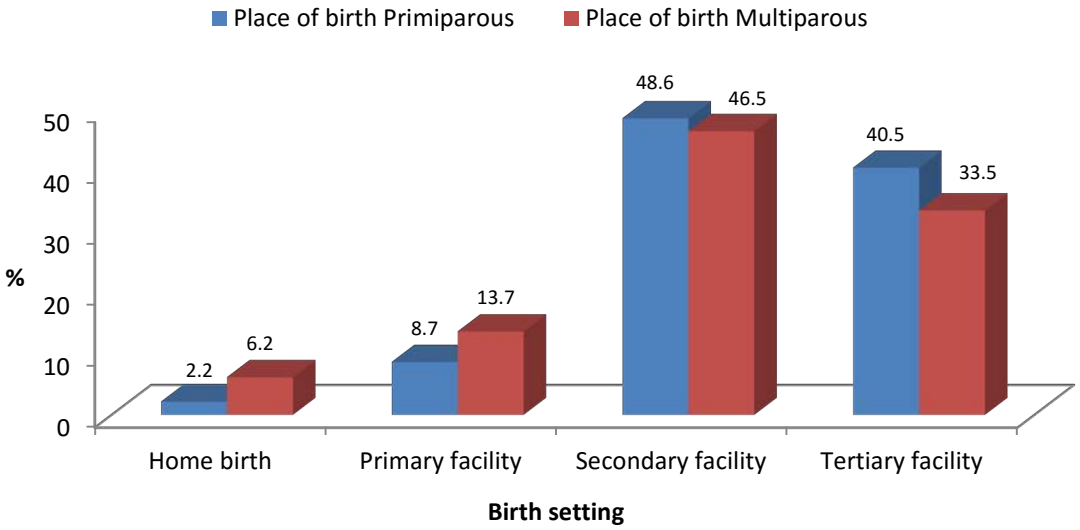

Figure 4.3: Births by birth setting and parity.

Table 4.8: Birth setting and type of birth (all women)

Birth type	Home		Primary facility		Secondary facility		Tertiary facility		Total	
Spontaneous vaginal birth	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Normal vaginal	1,548	99.5	3,905	99.4	10,944	68.1	7,168	58.0	22,017	64.9
Vaginal breech	8	0.5	8	0.2	39	0.2	32	0.3	82	0.2
Total	**1,556**	**100**	**3,913**	**99.6**	**10,983**	**68.3**	**7,203**	**58.2**	**23,655**	**69.7**
Assisted Birth										
Ventouse	0	0	6	0.2	750	4.7	8,53	6.9	1,609	4.7
Forceps	0	0	8	0.2	325	2.0	6,37	5.2	970	2.9
Other Instrumental *	0	0	0	0	5	0	5	0	10	0
Instrumental breech	0	0	0	0	5	0	8	0.1	10	0
Caesarean section										
Elective caesarean	0	0	0	0	1,442	9.0	1,404	11.4	3,699	10.9
Emergency caesarean	0	0	0	0	2,568	16.0	2,178	17.6	3,973	11.7
Total	**0**	**0**	**0**	**0**	**4,010**	**24.9**	**3,661**	**29.6**	**7,672**	**22.6**
Unknown	0	0	0	0	4	0	1	0	5	0
TOTAL	**1,556**	**100**	**3,927**	**100**	**16,082**	**100**	**12,366**	**100**	**33,931**	**100**
* e.g kiwi cup										

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 7.1 percent of all births (Table 4.9) although 23.9 percent of women report using water during labour (Table 3.7). Women who gave birth at home or primary facility had a higher proportion of water births (23.9 percent and 24.9 percent, respectively) than those birthing in secondary or tertiary facilities (4.8 and 2.6 percent, respectively).

Table 4.9: Water births and place of birth.

Use of water	Water births		Non water births		Not stated		Total
	n	**%**	**n**	**%**	**n**	**%**	**n**
Home	373	24.0	1,182	76.0	1	0.1	1,556
Primary facility	983	25.0	2,921	74.4	23	1.0	3,927
Sec-ondary facility	764	4.8	10,287	64.0	5031	31.3	16,082
Tertiary facility	327	2.6	6,932	56.1	5090	41.2	12,366
TOTAL	**2,447**	**7.2**	**21,323**	**62.8**	**10,161**	**29.9**	**33,931**

4.5 Perineal trauma

4.5.1 Vaginal tears

The majority of women (53.8 percent) in the 2012 cohort had either an intact perineum or a first degree tear (Table 4.10) and 28.3 percent had a second degree tear. The rates of 3rd and 4th degree tears were low (2.3 and 0.2 percent respectively). The majority of multiparous women had an intact perineum (64.5 percent). This table includes emergency caesarean section of which 21 women had some degree of perineal trauma.

Table 4.10: Perineal trauma and parity.

Perineum	Primiparous		Multiparous		All Women	
	n	**%**	**n**	**%**	**n**	**%**
Intact/Graze	6,220	46.3	11,379	64.5	17,599	56.6
1st degree	1399	10.4	2528	14.3	3,927	12.6
2nd degree	5271	39.2	3526	20.2	8,797	28.3
3rd degree	500	3.7	209	1.2	709	2.3
4th degree	41	0.3	12	0.1	53	0.2
TOTAL	**13431**	**100**	**17,654**	**100**	**31,085**	**100**

NOTE: Excludes women who had an elective caesarean birth (2846)

4.5.2 Episiotomy

For the 2012 cohort the episiotomy rate was 9.9 percent, with 3.6 percent of multiparous women receiving an episiotomy compared to 18.3 percent of primiparous women (Table 4.11).

Table 4.11: Episiotomies by parity.

Procedure	Primiparous		Multiparous		All Women	
Episiotomies	**n**	**%**	**n**	**%**	**n**	**%**
Yes	2452	18.3	634	3.6	3,086	9.9
No	10979	81.7	17020	96.4	27,999	90.1
TOTAL	**13,431**	**100**	**17,654**	**100**	**31,085**	**100**
NOTE: Excludes women who had an elective caesarean birth (2846)						

NB: Caution should be used when comparing to previous report as the 2011 data reported episiotomies as a proportion of all births and did not exclude elective caesarean sections.

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'(NZCOM, 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 to 749mls, 750 to 1000mls, and more than 1000mls. The blood loss volumes were examined for the total cohort for type of birth and volume of blood loss (Table 4.12). Women who had a normal vaginal birth had the lowest blood loss volumes with 90.4 percent reported as having a blood loss of 500mls or less. Women who had a caesarean section had higher reported levels of blood loss with 36.4 percent reported to have a blood loss of more than 500mls. Women who had an assisted vaginal birth also had an increased blood loss volume, with 17.4 percent having a blood loss of more than 500mls.

Table 4.12: 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	21392	90.4	2143	82.3	4765	62.1	4	80	28,304	83.4
501-749	941	4.0	206	7.9	1470	19.2	0	0	2617	7.7
750-1000	671	2.8	143	5.5	961	12.5	1	20	1776	5.2
>1000	593	2.5	104	4.0	361	4.7	0	0	1058	3.1
Not Stated	54	0.2	7	0.3	115	1.5	0	0	176	0.5
TOTAL	**23,651**	**100**	**2,603**	**100**	**7,672**	**100**	**5**	**100**	**33,931**	**100**

For women who had a normal vaginal birth 2.5 percent had a blood loss of more than 1000mls compared to 4 percent for instrumental vaginal birth and 4.7 percent for women following caesarean section (Table 4.12).

4.6.2 Third stage management

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

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 (NZCOM, 2013).

The data in the following figures and tables provides 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.

4.6.3 Third stage management, treatment and blood loss

The third stage management style was described as either active (and treatment) or physiological (and treatment). More babies were born to women who had active management (65.7 percent) than physiological care (34.2 percent) (Table 4.13).

More women who had active management (and treatment) of the third stage had a blood loss greater than 500mls (10.9 percent) than those receiving physiological (and treatment) care (6.3 percent). More women actively managed also had a blood loss greater than 1000mls (3.1 percent) compared with those in the physiological group (1.3 percent). See Figure 4.4.

Table 4.13: 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	12,523	94.7	1,289	55.8	6,530	98.0	1,036	72.4	14	77.8	21,392	90.4
501 - 749	362	2.7	336	14.5	63	0.9	178	12.4	2	11.1	941	4.0
750 - 1000	180	1.4	327	14.2	37	0.6	127	8.9	0	0.0	671	2.8
>1000	136	1.0	352	15.2	15	0.2	89	6.2	1	5.6	593	2.5
Not stated	29	0.2	6	0.3	18	0.3	0	0.0	1	5.6	54	0.2
TOTAL	**13,230**	**100**	**2,310**	**100**	**6,663**	**100**	**1,430**	**100**	**18**	**100**	**23,651**	**100**

4.6.4 Third stage management and parity

When examining parity and the type of third stage care provided (Table 4.14), more multiparous women had a physiological third stage (36.3 percent) than primiparous women (30.4 percent).

Table 4.14: Third stage care and parity.

Uterotonic procedures	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Active	4,931	59.0	8,299	54.2	13,230	55.9
Active & treatment	873	10.5	1,437	9.4	2,310	9.8
Physiological	1,969	23.6	4,694	30.7	6,663	28.2
Physiological & treatment	570	6.8	860	5.6	1,430	6.0
Not stated	8	0.1	10	0.1	18	0.1
TOTAL	**8,351**	**100**	**15,300**	**100**	**23,651**	**100**

4.6.5 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 4.15). 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. In the 2012 cohort less than one percent of the overall cohort required a manual removal or examination under anaesthetic.

While the majority of placentae (91.6 percent) were delivered complete, those with their third stage reported as having 'physiological management' or 'physiological & treatment' had the lowest manual removals and EUA rates when compared to their respective 'active' and 'active & treatment' groups (Figure 4.5).

The rate of ragged membranes was higher for those in the physiological only and physiological and treatment group (7.8 percent and 13 percent, respectively) than those in the active only or active and treatment group (5.5 percent and 10.4 percent, respectively)(Table 4.16 and Figure 4.5).

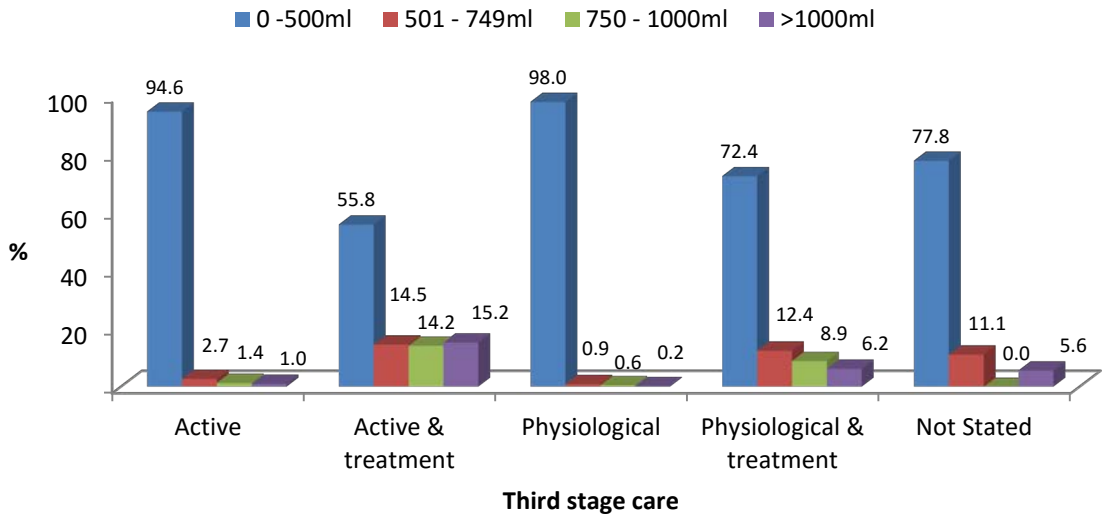

Figure 4.4: Births, by postpartum blood loss by third stage care for all non-operative births.

Table 4.15: Placenta condition and birth type (all women).

Placenta Condition	Birth type									
	Normal Vaginal Birth		Instrumental Vaginal Birth		Caesarean Section		Birth type unknown		Total	
	n	%	n	%	n	%	n	%	n	%
Complete	21,541	91.1	2,420	93.0	7,135	93.0	5	100.0	31,096	91.6
Ragged Membranes	1,677	7.1	109	4.2	266	3.5	0	0.0	2,052	6.0
EUA/Manual removal	216	0.9	38	1.5	168	2.2	0	0.0	422	1.2
Incomplete	166	0.7	30	1.2	58	0.8	0	0.0	254	0.7
Not Stated	51	0.2	6	0.2	45	0.5	0	0.0	102	0.3
TOTAL	**23,651**	**100**	**2,603**	**100**	**7,672**	**100**	**5**	**100**	**33,931**	**100**

Table 4.16: Placenta condition and third stage care following all normal vaginal births (excludes instrumental births and caesareans).

Placenta condition	Active	Active & treatment	Physiological	Physiological & treatment	Not Stated	Total	
	n	n	n	n	n	n	%
Complete	12,324	1,886	6,115	1,200	16	21,541	91.1
Ragged Membranes	733	240	518	186	0	1,677	7.1
EUA/Manual removal	69	121	3	22	1	216	0.9
Incomplete	74	53	19	20	0	166	0.7
Not Stated	30	10	8	2	1	51	0
TOTAL	**13,230**	**2,310**	**6,663**	**1,430**	**18**	**23,651**	**100**

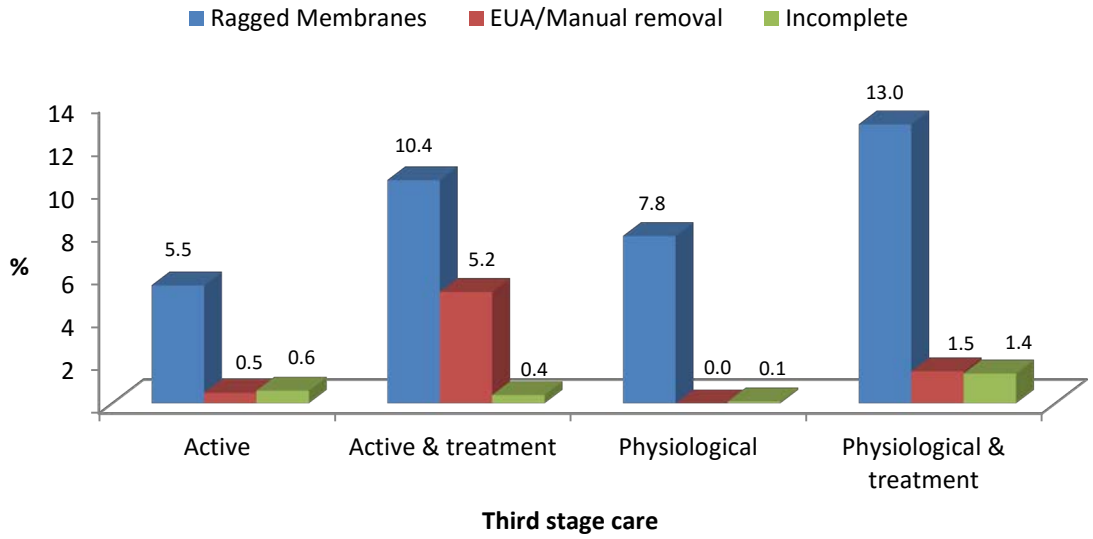

Figure 4.5: Normal vaginal births and condition of placenta by third stage management.
NOTE: excludes data where the placenta was delivered "complete".

5 Babies

The total number of babies born in New Zealand in 2012 was 62,321 (Report on Maternity 2012) of which 34,313 babies (55 percent) are included within this report. The data includes multiple births (374 sets of twins and 4 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 (87.6 percent) were born between 37 and 41 weeks gestation. Only 7.4 percent were born at or before 36 weeks 6 days and would be considered premature. There were 5.1 percent born after 42 weeks gestation. Primiparous mothers had slightly more births at 42+ weeks (5.8 percent) compared with multiparous women (4.5 percent).

Table 5.1: Gestational age at birth and parity.

Gestational age (weeks)	n	%
20 - 23	76	0.2
24 - 27	102	0.3
28 - 31	203	0.6
32 - 36	1706	5.0
37 - 41	29684	86.5
42+	2542	7.4
TOTAL	**34313**	**100**

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 2012 MMPO birth cohort are presented in Table 5.2 along with the place of birth. Over 92 percent of babies born in the 2012 MMPO cohort had an Apgar score of 9 or 10 at five minutes. The number of babies with a score of zero after five minutes is slightly higher than the number of stillbirths and will include some neonatal mortality.

5.3 Birth weight

Table 5.3 shows the birth weight of the babies born in the 2012 MMPO cohort. The majority of babies weighed between 2.5 and 4.5 kg (91.7 percent), with 5.6 percent weighing less than 2.5 kg and 2.8 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) 6.7 percent were more than 42 weeks gestation.

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	%
0	0	0	3	0.1	35	0.2	26	0.2	64	0.6
1 to 4	5	0.3	10	0.3	74	0.5	66	0.5	155	0.5
5 to 8	36	2.3	161	4.1	873	5.4	1,154	9.2	2,224	6.5
9 to 10	1,517	97.3	3,779	95.6	15,204	93.6	11,237	89.6	31,737	92.5
Missing	1	0.1	1	0.0	66	0.4	65	0.5	133	1.0
TOTAL	**1,559**	**100**	**3,954**	**100**	**16,252**	**100**	**12,548**	**100**	**34,313**	**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	73	96.1	3	3.9	0	0.0	76	100
24 - 27	99	97.1	3	2.9	0	0.0	102	100
28 - 31	193	95.1	10	4.9	0	0.0	203	100
32 - 36	871	51.1	832	48.8	3	0.2	1,706	100
37 - 41	670	2.3	28,234	95.1	779	2.6	29,683	100
42+	6	0.2	2,365	93.1	170	6.7	2,541	100
TOTAL	**1,912**	**5.6**	**31,447**	**91.7**	**952**	**2.8**	**34,311***	**100**
*2 with missing weight data								

5.4 Birth status

In 2012 there were 34,313 babies born, of which, 34,132 (99.5 percent) were born alive, 181 (0.5 percent) were stillborn, and 39 (0.1 percent) died within 27 days of birth (Table 5.4). Reasons for mortality vary and may relate to prematurity, abnormality or may be unexplained and this report does not generally provide information on the reasons for mortality.

Table 5.4: Birth status in 2012.

Total births		**34,313**
Still births	Antenatal	140
	Intrapartum	41
Neonatal deaths	Early <7 days	35
	Late 7-27 days	4

Table 5.5: Perinatal related deaths by status and birth setting.

Place of birth	Home	Primary	Secondary facility	Tertiary facility	Total
			n		
Live Births (a)	1,557	3,951	16,164	12,460	34,132
Stillbirths (b)	2	3	88	88	181
Total births	**1,559**	**3,954**	**16,252**	**12,548**	**34,313**
Neonatal deaths (c)	0	0	19	20	39
Perinatal deaths (d)	2	3	106	105	216
Perinatal related deaths (e)	2	3	107	108	220
Rate per 1,000 births					
Stillbirth rate (f)	1.2	0.7	5.4	7.0	5.2
Neonatal mortality rate (g)	0.0	0.0	1.2	1.6	1.1
Perinatal mortality rate (h)	1.2	0.7	6.5	8.3	6.2
Perinatal related death rate (i)	1.2	0.7	6.6	8.6	6.4

(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 1000 total births

(g) Rate of Neonatal deaths per 1000 total births

(h) Rate of Perinatal deaths per 1000 total births

(i) Rate of Perinatal related deaths per 1000 total births

Among the babies born to the MMPO registered women in 2012, a total of 181 babies were stillborn, with the majority occurring at secondary and tertiary facilities (Table 5.5). When a baby has died during pregnancy the midwife refers to an obstetrician to discuss labour induction. Therefore the majority of women who had a fetal death may have been referred to a secondary or tertiary unit to give birth. Similarly not all homebirths are planned and can be the place of birth for precipitate and/or premature births. Both of the stillbirths in the home birth group were at a very premature gestation.

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 from home or a primary facility in the 2012 MMPO baby cohort are shown in Table 5.7. Twenty seven home birth babies (1.7 percent) and 61 primary facility babies (1.5 percent) were transferred to a NNU/SCBU. Data on neonatal transfers within secondary and tertiary facilities was not considered reliable and has therefore not been included because some 'internal' transfers (from delivery suite to NNU in the same hospital) did not seem to be identified as a transfer.

Table 5.6: Admissions/transfers to NNU/SCBU of babies, by birth setting.

Referred/Transferred to NNU/SCBU	Home		Primary facility	
	n	%	n	%
Yes	27	1.7	61	1.5
No	1,532	98.3	3,893	98.5
TOTAL	**1,559**	**100**	**3,954**	**100**

6 Postnatal Period

This chapter provides information on the postnatal period and is based on the number of babies who were born in 2012, although some of the information relates to the 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 (Table 6.1 and Table 6.2) 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 2012 MMPO babies were exclusively or fully breastfed at two weeks of age. Babies born at home had the highest rate at 89.5 percent (Table 6.1 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 8.6 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 70.3 percent of women breastfed exclusively or fully, a reduction of 6.7 percent over this period. Women who gave birth at home continued to have higher levels of exclusive or fully breastfeeding, with 85.2 percent compared to 74.6 percent for primary unit births, 69.1 percent for secondary and 68.8 percent for women who gave birth in tertiary maternity facilities.

Table 6.1: Breastfeeding at 2 weeks and birth setting.

Breastfeeding at 2 weeks	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Exclusive	1,346	86.3	3,064	77.5	10,945	67.3	8,181	65.2	23536	68.6
Fully	49	3.1	187	4.7	1,416	8.7	1,252	10.0	2904	8.5
Subtotal	**1,395**	**89.5**	**3,251**	**82.2**	**12,361**	**76.1**	**9,433**	**75.2**	**26,440**	**77.0**
Partial	77	4.9	336	8.5	1,953	12.0	1,735	13.8	4101	11.9
Artificial	57	3.7	279	7.1	1,398	8.6	965	7.7	2,699	7.9
Not stated	30	1.9	88	2.2	540	3.3	415	3.3	1073	3.1
TOTAL	**1,559**	**100**	**3,954**	**100**	**16,252**	**100**	**12,548**	**100**	**34,313**	**100**

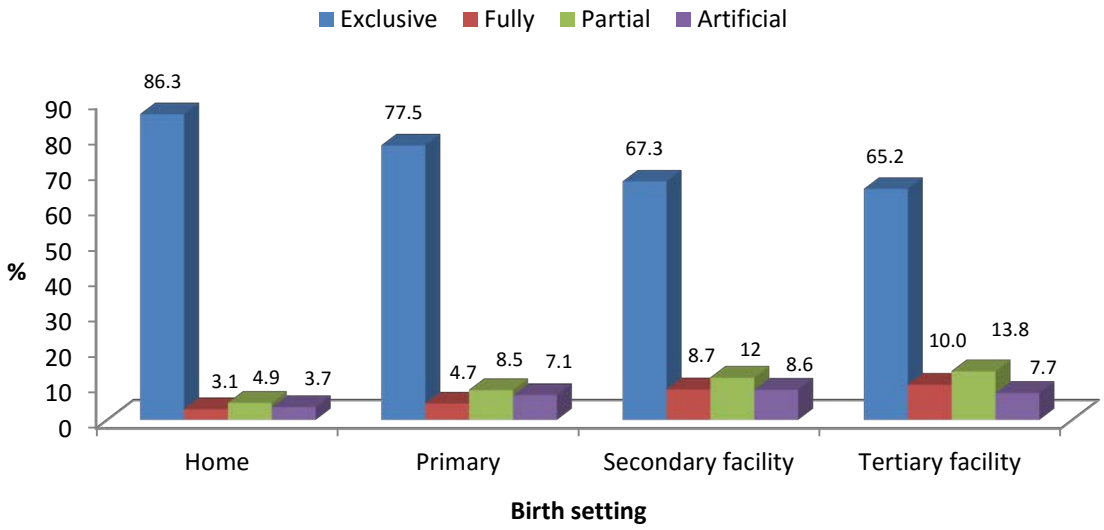

Figure 6.1: Births, by breastfeeding at 2 weeks and birth setting.

Table 6.2: Breastfeeding at discharge and birth setting.

Breastfeeding at discharge	Home		Primary facility		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%
Exclusive	1,257	80.6	2,727	69.0	9,666	59.5	7,268	57.9	20,918	61.0
Fully	71	4.6	224	5.7	1,559	9.6	1,364	10.9	3,218	9.4
Subtotal	**1,328**	**85.2**	**2,951**	**74.6**	**11,225**	**69.1**	**8,632**	**68.8**	**24,136**	**70.3**
Partial	102	6.5	395	10.0	2,007	12.3	1,761	14.0	4,265	12.4
Artificial	99	6.4	520	13.2	2,477	15.2	1,737	13.8	4,833	14.1
Not stated	30	1.9	88	2.2	543	3.3	418	3.3	1,079	3.1
TOTAL	**1,559**	**100**	**3,954**	**100**	**16,252**	**100**	**12,548**	**100**	**34,313**	**100**

Table 6.3: Breastfeeding at 2 weeks and mother's ethnicity.

Breastfeeding at 2 weeks	NZ European		Māori		Pasifika		Asian		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Exclusive	15,034	72.1	4,217	65.4	1,351	63.2	1,947	60.0	861	69.5	23,410	69.0
Fully	1,552	7.4	506	7.9	236	11.0	438	13.5	101	8.2	2,833	8.3
Subtotal	**16,586**	**79.5**	**4,723**	**73.3**	**1,587**	**74.3**	**2,385**	**73.5**	**962**	**77.7**	**26,243**	**77.3**
Partial	2,123	10.2	752	11.7	281	13.1	644	19.9	175	14.1	3,975	11.7
Artificial	1,587	7.6	742	11.5	189	8.8	92	2.8	49	4.0	2,659	7.8
Not stated	570	2.7	228	3.5	80	3.7	122	3.8	52	4.2	1,052	3.1
TOTAL	**20,866**	**100**	**6,445**	**100**	**2,137**	**100**	**3,243**	**100**	**1,238**	**100**	**33,929***	**100**
*2 with missing ethnicity												

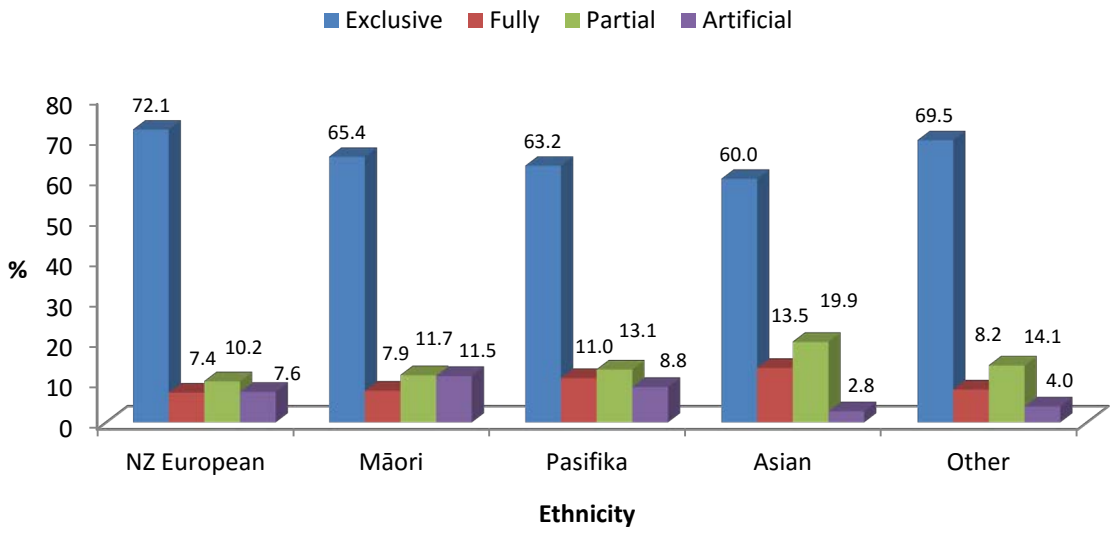

Figure 6.2: Births, by breastfeeding at 2 weeks and ethnicity.

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 79.5 percent. Those of Asian ethnicity had the lowest exclusive breastfeeding rate in 2012 (60 percent) and Māori had the highest rate of artificial breastfeeding (11.5 percent). The highest rate of any type of breastfeeding (exclusive, fully or partial) was reported by Asian women (93.3 percent), followed by Other (91.8 percent), NZ European (89.7 percent), Pasifika (87.3 percent) and Māori (85 percent).

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 reported smoking at registration (refer to Table 2.8 in chapter 2). This rate dropped by 1.7 percent to 15.3 percent by the postnatal period (Table 6.4) with 82.3 percent of women reporting they were smoke-free and 2.4 percent not stated.

Table 6.4: Women who reported smoking postnatally.

Postnatal period	n	%
Current smoker	5186	15.3
Ex smoker (<12 months abstinent)	514	1.5
Ex smoker (>12 months abstinent)	32	0.1
Never smoked tobacco	24857	73.3
Nil - no longer used	396	1.2
Now smokefree (> 4 wks) - no longer used	2143	6.3
Unknown- no longer used	803	2.4
Total	**33931**	**100**

*The data collection about smoking was changed in 2012 – the IT system changed but paper notes were renewed as new notes were ordered. Up to this point the only postnatal smoking questions was: 'Smoking: No. per day at 2 weeks / No. per day at completion of care / Does not smoke. In 2012 the data was coded as one of two categories: 'never smoked' or 'current smoker'.

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.

In 2012 45.7 per cent of women received 1-2 hospital visits and a further 27.6 per cent received between 3 and 5 hospital visits. Once home 71.4 percent of women received 6-9 home visits, with a further 13 percent receiving between 10 and 14 visits.

Table 6.5: Number and place of postnatal visits.

Postnatal care	MMPO midwife visits during stay at a maternity facility		MMPO midwife visits at home	
	n	%	n	%
0 visits	6635	19.5	339	1.0
1-2 visits	15507	45.7	205	0.6
3-5 visits	9354	27.6	3772	11.1
6-9 visits	1016	3.0	24236	71.4
10-14 visits	165	0.5	4426	13.0
15+ visits	16	0.0	133	0.4
Missing	1238	3.7	820	2.4
Total	**33931**	**100**	**33931**	**100**

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World Health Organization (WHO). *Global Database on Body Mass Index.* Retreived from http://apps.who.int/bmi/index.jsp?introPage=intro_3.html)

8 List of Terms[1]

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.

Birthing unit: A facility that provides a venue for labour and birth, but not for inpatient postnatal care.

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.

Domicile code: A code representing the mother's usual residential address.

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.

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

1Adapted from: (NZ Ministry of Health, 2006, 2007)

determined by the NZ 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 proves 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.

Normal birth: The spontaneous birth of a live baby born vaginally in a vertex position.

NZCOM: New Zealand College of Midwives.

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; this includes the forwarding of this information to HealthPAC.

Reproductive age: Women aged 15-44 years.

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.

9 Purpose and quality of the Annual Reports on MMPO Midwives Care Activities and Outcomes

In 1997, the Midwifery and Maternity Providers Organisation (MMPO) was established by the New Zealand College of Midwives (NZCOM). The main purpose was to provide midwife members with a practice management and quality assurance infrastructure, thereby supporting the provision of high quality continuity of care for women by midwives throughout Aotearoa, New Zealand.

The key objectives of the MMPO are:

- To ensure midwives continue to have an environment where they can provide maternity care to women within the midwifery model of care as articulated in the NZCOM Standards for Practice, by providing information, management systems, and support to midwives
- To collect relevant maternity outcome data to ensure midwives can review their work against the standards of the profession, and to guide the achievement of high quality outcomes from midwifery-led maternity care
- To ensure that all midwife members take part in quality assurance activities and are members of their national recognised professional body, the NZCOM
- To support the professional role of the NZCOM to position, develop, and service the profession of midwifery in New Zealand
- To provide aggregated clinical information to member midwives and the NZCOM.

From small beginnings the MMPO has grown, with the support of the NZCOM, to become the largest maternity provider organisation in New Zealand. The MMPO is located in Christchurch, New Zealand, where a small team of data entry staff manage both hard copy and electronic data related to midwifery activities and care outcomes. The data is gathered in a standardised manner through the use of a specifically designed set of maternity notes. These notes function as both a clinical record for the woman and midwife during care, in addition to being a mechanism for recording the data required to generate clinical outcomes reports, and for claiming service payment from Sector Services.

Over time, MMPO has worked with the vendor 'Solutions Plus' who has provided software called 'Maternity Plus' to provide a Maternity Practice Management System (MPMS) and continued to refine our data management and reporting frameworks. This course of action has given midwife members and the NZCOM confidence in the reliability of data that is available from 2004 onwards.

9.1 'The MMPO Maternity Notes' dataset

The data in this report is obtained from data collected by the midwives, via the MMPO maternity notes, which is either captured in hard copy or electronically (see Appendix 1). The process of data collection includes:

1. MMPO midwife members use MMPO Maternity Notes with each woman who registers with that midwife for lead maternity care. The notes are the woman's and midwife's record of all the woman's clinical care and outcomes at every visit. They contain pink carbonated forms (which are situated beneath each page of clinical notes the midwife uses for her assessment), and care documentation. The forms are generally set out as tick boxes or as blank boxes for midwives to fill in, and include information such as dates, times and specified aspects of care or outcomes.
2. They also include information required for the Ministry of Health Sector Services to process Section 88 claims.
3. Once completed by the midwife, the pink carbonated copy is sent to the MMPO by post. Unique codes are used on these forms to de-identify the woman, thereby retaining her confidentiality.
4. On receipt of the forms, MMPO data professionals enter the midwives' handwritten clinical data into electronic format and submit the required claiming component to Sector Services for payment electronically. This claiming data, plus additional clinical data submitted in the forms, is retained and aggregated electronically to form a series of midwifery activities and outcomes reports within the MMPO database.
5. The majority of midwives now submit their data electronically through a replica of the master database on their own computer.
6. Midwives pay a nominal fee for the MMPO claiming service per module of care claimed for, which is slightly higher for paper claiming than electronic claiming.

7. MMPO staff deal with Sector Services claim rejections and data queries, in addition to managing inadequate and inaccurate data prior to submission for midwives. This ensures that only the most accurate and complete data is entered into in the MMPO database.

8. Midwife members are regularly informed of Section 88 compliance responsibilities and the need to submit 'clean' data (a list of definitions is provided in the back of each set of notes to ensure data consistency).

9.2 Data quality and limitations

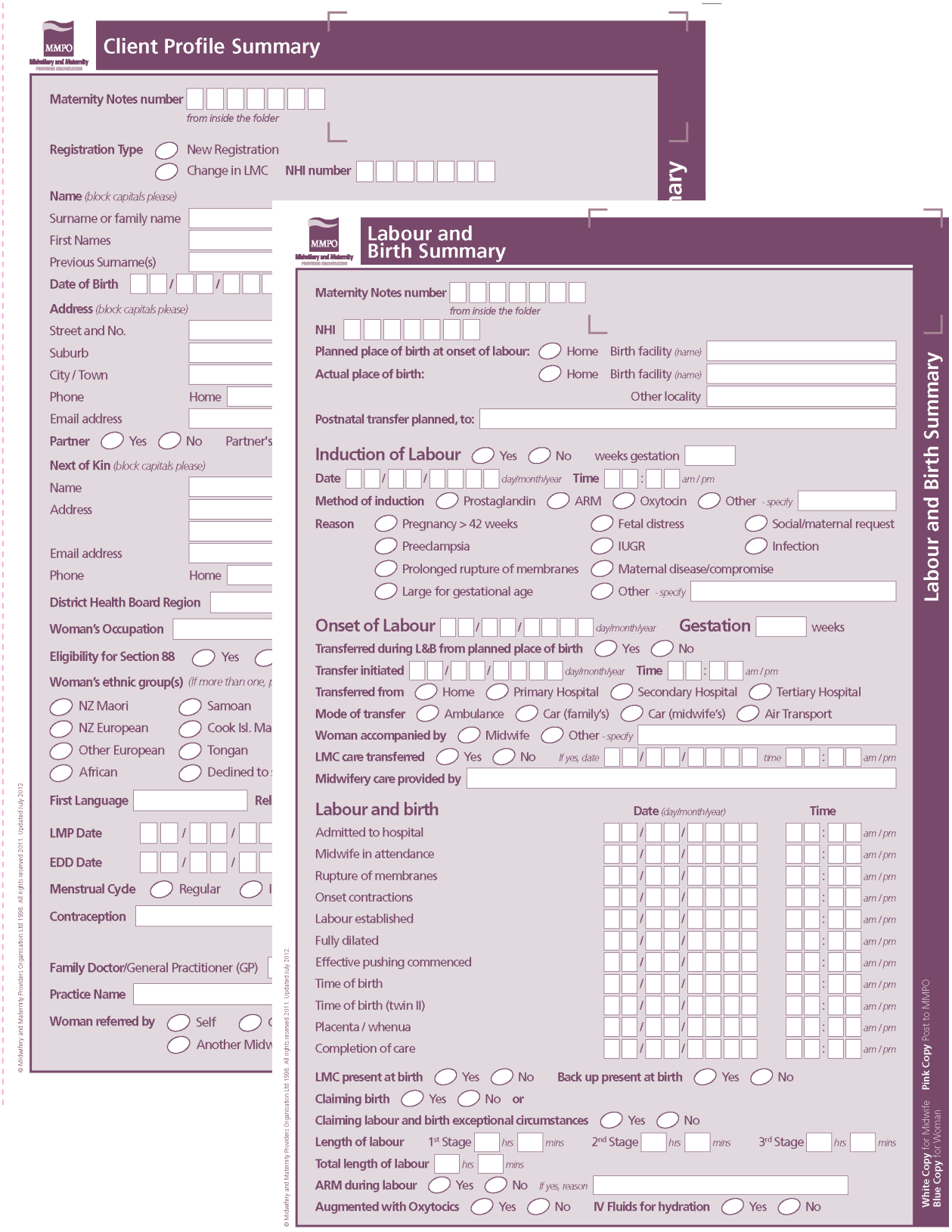
The MMPO midwifery practice management system has a number of inbuilt features that reduce the risk of data-entry error. The system is also continually being improved. The data used in this report were able to be cross-checked and audited using a number of processes, namely:

1. Individual LMC reports are produced using the same database. Midwives use these reports for their NZCOM Midwifery Standards Review (MSR) . Midwives check their individual reports for gaps in data, which can then be followed up by MMPO data entry staff.

2. The MMPO audits the data entry quality by generating random reports and then checking for data accuracy.

3. Claims entered into the MMPO database must meet MMPO standard criteria before they are submitted. This motivates the midwife to submit complete and accurate information to ensure there are no delays in payment.

Appendix: "The MMPO Maternity Notes" dataset



Client Profile Summary

Maternity Notes number
from inside the folder

Registration Type ◯ New Registration ◯ Change in LMC NHI number

Name *(block capitals please)*
Surname or family name
First Names
Previous Surname(s)
Date of Birth / /

Address *(block capitals please)*
Street and No.
Suburb
City / Town
Phone Home
Email address
Partner ◯ Yes ◯ No Partner's

Next of Kin *(block capitals please)*
Name
Address
Email address
Phone Home

District Health Board Region
Woman's Occupation
Eligibility for Section 88 ◯ Yes
Woman's ethnic group(s) *(If more than one,*
◯ NZ Maori ◯ Samoan
◯ NZ European ◯ Cook Isl. Ma
◯ Other European ◯ Tongan
◯ African ◯ Declined to
First Language Rel
LMP Date / /
EDD Date / /
Menstrual Cyde ◯ Regular
Contraception

Family Doctor/General Practitioner (GP)
Practice Name
Woman referred by ◯ Self
◯ Another Midw

Labour and Birth Summary

Maternity Notes number
from inside the folder
NHI
Planned place of birth at onset of labour: ◯ Home Birth facility *(name)*
Actual place of birth: ◯ Home Birth facility *(name)*
Other locality
Postnatal transfer planned, to:

Induction of Labour ◯ Yes ◯ No weeks gestation
Date / / *day/month/year* Time : *am / pm*
Method of induction ◯ Prostaglandin ◯ ARM ◯ Oxytocin ◯ Other *- specify*
Reason
◯ Pregnancy > 42 weeks ◯ Fetal distress ◯ Social/maternal request
◯ Preeclampsia ◯ IUGR ◯ Infection
◯ Prolonged rupture of membranes ◯ Maternal disease/compromise
◯ Large for gestational age ◯ Other *- specify*

Onset of Labour / / *day/month/year* **Gestation** weeks
Transferred during L&B from planned place of birth ◯ Yes ◯ No
Transfer initiated / / *day/month/year* Time : *am / pm*
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 *- specify*
LMC care transferred ◯ Yes ◯ No *If yes, date* / / *time* : *am / pm*
Midwifery care provided by

Labour and birth

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

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 *hrs* *mins* 2nd Stage *hrs* *mins* 3rd Stage *hrs* *mins*
Total length of labour *hrs* *mins*
ARM during labour ◯ Yes ◯ No *If yes, reason*
Augmented with Oxytocics ◯ Yes ◯ No IV Fluids for hydration ◯ Yes ◯ No

Labour and Birth Summary
White Copy for Midwife **Blue Copy** for Woman **Pink Copy** Post to MMPO

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