

Report on
**NEW ZEALAND'S
MMPO MIDWIVES**
Care activities and outcomes



2011



MMPO MIDWIVES 2011 ANNUAL REPORT ON CARE ACTIVITIES AND OUTCOMES

The Midwifery and Maternity Providers Organisation (MMPO) was established by the New Zealand College of Midwives (NZCOM) in 1997. The main purpose was to provide midwife members with a supportive 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 New Zealand College of Midwives

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 HealthPac.

Over time, MMPO has worked with 'Solutions Plus' (our Maternity Practice Management System (MPMS)) designers 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.

The MMPO would like to take the opportunity to thank all the midwives and women who have contributed to this annual MMPO Midwives' Report 2011.

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The purpose of this publication is to inform discussion and guide midwives and the profession in decision making on issues surrounding the provision of maternity care. The authors have taken great care to ensure the information supplied within the project timeframe is accurate. However, neither the MMPO, NZCOM, nor the contributors involved can accept responsibility for any errors or omissions. All responsibility for action based on any information in this report rests with the reader. The authors accept no liability for any loss of whatever kind, or damage, arising from reliance in whole or part, by any person, corporate or natural, on the contents of this report. The views expressed in this report are those of the authors and do not necessarily represent those of the MMPO or NZCOM.

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

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Apgar score

Numerical score used to evaluate the infant's condition at one and five minutes after birth. Five variables are scored: colour, breathing, heart rate, reactivity to stimulation, 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 20.0 weeks gestation and/or with a birth weight of more than 400 grams.

Birth 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.

emergency (acute)

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

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 as.

Fetal death

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

Full-term birth/labour

Birth/labour at 37 or more gestational weeks.

1 Adapted from: Ministry of Health, N. Z. 2006. Report on Maternity: Maternal and Newborn Information 2003. Retrieved 29.11.2007, from <http://www.nzhis.govt.nz/publications/maternityreport.html>.

2 Ministry of Health, N. Z. 2007. Report on Maternity: Maternal and Newborn Information 2004. Retrieved 28.11.2007, from <http://www.nzhis.govt.nz/publications/maternityreport.html>.

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

MMPO

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

Neonatal death

The death of a baby that has occurred up to 27 days after birth.

Early neonatal death = death before 7 days.

Late neonatal death = death between 7 – 27 days.

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 subsequent births.

Perinatal death

A category that includes fetal deaths of 20 weeks' gestation or 400g 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

Is 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 foetus 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.

WHO

World Health Organisation.

EXECUTIVE SUMMARY

All Lead Maternity Carer (LMC) midwife members of the New Zealand College of Midwives have the opportunity to join the MMPO, which is a nationwide organisation that offers a practice management service for community based LMC midwives. In return for free membership, the midwives contribute to a national midwifery activities and outcomes database, namely the NZCOM research database. The information obtained by MMPO LMC midwife 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 2011 cohort of birthing mothers from the MMPO registrations. In this year there were 61,823 registered births (live and stillbirths) in New Zealand (Statistics New Zealand, 2011) of which 32,083 babies were captured in the MMPO database. They represent 51.9 percent of all registered births in New Zealand for 2011.

In 2011, 866 registered MMPO midwives throughout New Zealand contributed data, with the largest proportion coming from the Canterbury and Otago regions of the South Island, where the MMPO has had a longer establishment base. From these midwives:

- 31,739 mothers who gave birth between 01 January and 31 December 2011 have been registered into the system
- 32,083 babies were born to these women

This report summarises the outcomes for mothers and babies who had midwives providing their LMC care. It provides data on place of birth, type of birth, personal 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 giving birth.

HIGHLIGHTS

Mothers and pregnancy

- The majority of women (72.9 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 17.3 percent over the age of 35 years.
- The majority of women identified their ethnicity as NZ European/Pakeha (61.4 percent), followed by Maori (21.8 percent) and Asian (7.1 percent).
- Smoking rates during pregnancy were higher in younger mothers (35.9 percent for those under 20 years of age).

Labour and births

- The majority of babies (69.1 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 instrumental vaginal births.
- The largest proportion of births (48.0 percent) occurred in secondary facilities.
- 4.9 percent of babies were born at home.
- 28.2 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 (9.7 percent versus 5.5 percent).

Babies

- The majority of babies were born after 37 weeks of pregnancy with only 7.4 percent born prematurely.
- The majority of babies (66.1 percent) weighed between 3,000 gm and 3,999 gm
- Babies born to women who identified as Māori were more likely to be normal vaginal births (78.7 percent), whereas babies born to mothers in the 'Asian' and 'Other' ethnic categories had higher rates of caesarean sections (28.3 and 30.5 percent respectively).
- Babies born to younger mothers (under 20 years of age) had higher normal vaginal birth rates (78.6 percent), with the rates of caesarean sections increasing as the mothers' age increased (peaking at 35.7 percent at 40+ years of age).
- Babies born to primiparous mothers, as compared to multiparous mothers, tended to weigh slightly less (56.8 percent under 3500gm versus 47.4 percent).

Postnatal period

- The majority of babies (77.5 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 (90.5 percent).
- New Zealand European women had the highest rate per ethnic group of exclusive breastfeeding at 2 weeks (72 percent).
- Overall smoking rates decreased postnatally compared with antenatal smoking rates.

The next section will demonstrate the gestation and mode of birth for the 2011 cohort by way of flow charts. The first flow chart demonstrates the gestation and mode of birth for the total cohort, followed by gestation and mode of birth for primiparous women. This is followed by a flow chart for the gestation and mode of birth for the multiparous women without a previous caesarean section.

MODE OF BIRTH FOR FULL COHORT (EXCLUDES MULTIPLE BIRTHS)

VB	Vaginal birth
IVB	instrumental vaginal birth
CS	caesarean section

Pre-Term < 37 wks 2,015/31,397= 6.4%			% of Total No.
VB	1,257	62.4%	4.0%
IVB	115	5.7%	0.4%
CS	643	31.9%	2.0%
Total	2,015	100.0%	6.4%

All Women Total No. = 31,397		% of Total No.
VB	22,029	70.2%
IVB	2,435	7.8%
CS	6,933	22.1%
Total	31,397	100.0%

Full-Term ≥ 37 wks 29,382/31,397=93.6%			% of Total No.
VB	20,772	70.7%	66.2%
IVB	2,320	7.9%	7.4%
CS	6,290	21.4%	20.0%
Total	29,382	100.0%	93.6%

Elective CS 112/2,015= 5.6%			% of Total No.
CS	112	100.0%	0.4%

Spontaneous Labour 1,479/2,015= 73.4%			% of Total No.
VB	935	63.2%	3.0%
IVB	81	5.5%	0.3%
CS	463	31.3%	1.5%
Total	1,479	100.0%	4.7%

Induced Labour 424/2,015= 21.0%			% of Total No.
VB	322	75.9%	1.0%
IVB	34	8.0%	0.1%
CS	68	16.0%	0.2%
Total	424	100.0%	1.4%

Elective CS 2,439/29,382= 8.3%			% of Total No.
CS	2,439	100.0%	7.8%

Spontaneous Labour 21,542/29,382= 73.3%			% of Total No.
VB	17,282	80.2%	55.0%
IVB	1,684	7.8%	5.4%
CS	2,576	12.0%	8.2%
Total	21,542	100.0%	68.6%

Induced Labour 5,401/29,382= 18.4%			% of Total No.
VB	3,490	64.6%	11.1%
IVB	636	11.8%	2.0%
CS	1,275	23.6%	4.1%
Total	5,401	100.0%	17.2%

For the 31,397 women in the 2011 cohort:

- 70.2 percent had a normal vaginal birth
- 7.8 percent had an instrumental vaginal birth
- 22.1 percent had a caesarean birth
- 6.4 percent of the births were preterm (born at less than 37 weeks gestation)

For the 93.6 percent of women who were full term 18.4 percent had their labour induced of which;

- 23.6 percent had a caesarean birth compared to 12.0 percent following a spontaneous onset of labour
- 11.8 percent had an instrumental vaginal birth compared to 7.8 percent when labour onset was spontaneous.

NB This chart excludes 342/31,739 (1.1%) of the total women in the 2011 cohort who had a multiple birth.

MODE OF BIRTH FOR PRIMIPAROUS WOMEN (EXCLUDES MULTIPLE BIRTHS)

VB	Vaginal birth
IVB	instrumental vaginal birth
CS	caesarean section

Pre-Term < 37 wks 864/12,778 = 6.8%			% of Total No.
VB	517	59.8%	4.0%
IVB	90	10.4%	0.7%
CS	257	29.7%	2.0%
Total	864	100.0%	6.8%

All Women Total No. = 12,778		% of Total No.
VB	7,692	60.2%
IVB	1,952	15.3%
CS	3,134	24.5%
Total	12,778	100.0%

Full-Term ≥ 37 wks 11,914/12,778 = 93.2%			% of Total No.
VB	7,175	60.2%	56.2%
IVB	1,862	15.6%	14.6%
CS	2,877	24.1%	22.5%
Total	11,914	100.0%	93.2%

Of the 12,778 primiparous women in the 2011 cohort:

- 60.2 percent had a normal vaginal birth
- 15.3 percent had an instrumental vaginal birth
- 24.5 percent had caesarean section
- 6.8 percent of the births were preterm

For 93.2 percent of women who had a full term labour, 23.6 percent had their labour induced and of these:

- 45.6 percent had a normal vaginal birth compared to 67.9 percent when labour onset was spontaneous
- 35.8 percent had a caesarean section compared to 16.6 percent when labour onset was spontaneous.

NB This chart includes all primiparous women in the 2011 cohort who did not have a multiple birth.

Elective CS 27/864 = 3.3%			% of Total No.
CS	27	100.0%	0.2%

Spontaneous Labour 645/864 = 77.6%			% of Total No.
VB	392	60.8%	3.1%
IVB	64	9.9%	0.5%
CS	189	29.3%	1.5%
Total	645	100.0%	5.0%

Induced Labour 192/864 = 19.1%			% of Total No.
VB	125	65.1%	1.0%
IVB	26	13.5%	0.2%
CS	41	21.4%	0.3%
Total	192	100.0%	1.5%

Elective CS 425/11,914 = 3.6%			% of Total No.
CS	425	100.0%	3.4%

Spontaneous Labour 8,673/11,914 = 72.8%			% of Total No.
VB	5,892	67.9%	46.1%
IVB	1,338	15.4%	10.5%
CS	1,443	16.6%	11.3%
Total	8,673	100.0%	67.9%

Induced Labour 2,816/11,914 = 23.6%			% of Total No.
VB	1,283	45.6%	10.0%
IVB	524	18.6%	4.1%
CS	1,009	35.8%	7.9%
Total	2,816	100.0%	22.0%

MODE OF BIRTH FOR MULTIPAROUS WOMEN WITHOUT PREVIOUS CAESAREAN SECTION (EXCLUDES MULTIPLE BIRTHS)

VB	Vaginal birth
IVB	instrumental vaginal birth
CS	caesarean section

Pre-Term < 37 wks 856/14,785= 5.8%			% of Total No.
VB	660	77.1%	4.5%
IVB	15	1.8%	0.1%
CS	181	21.1%	1.2%
Total	856	100.0%	5.8%

All Women Total No. = 14,785		% of Total No.
VB	13,343	90.2%
IVB	290	2.0%
CS	1,152	7.8%
Total	14,785	100.0%

Full-Term ≥ 37 wks 13,929/14,785= 94.2%			% of Total No.
VB	12,683	91.1%	85.8%
IVB	275	2.0%	1.9%
CS	971	7.0%	6.6%
Total	13,929	100.0%	94.2%

Of the 14,785 multiparous women without a previous caesarean birth in the 2011 cohort:

- 90.2 percent had a normal vaginal birth
- 2.0 percent had an instrumental vaginal birth
- 7.8 percent had a caesarean birth
- 5.8 percent of the births were preterm

For the 94.2 percent of women who had a full term labour, 16.9 percent had their labour induced of which

- 7.6 percent had a caesarean section compared with 3.6 percent when labour onset was spontaneous
- 3.5 percent had an instrumental vaginal birth compared with 1.7 percent when labour onset was spontaneous.

NB This chart includes all multiparous women in the 2011 cohort who did not have a multiple birth.

Elective CS 29/856= 3.4%			% of Total No.
CS	29	100.0%	0.2%

Spontaneous Labour 623/856= 72.8%			% of Total No.
VB	481	77.2%	3.3%
IVB	9	1.4%	0.1%
CS	133	21.3%	0.9%
Total	623	100.0%	4.2%

Induced Labour 204/856= 23.8%			% of Total No.
VB	179	87.7%	1.2%
IVB	6	2.9%	0.04%
CS	19	9.3%	0.1%
Total	204	100.0%	1.4%

Elective CS 396/13,929= 2.8%			% of Total No.
CS	396	100.0%	2.7%

Spontaneous Labour 11,178/13,929= 80.2%			% of Total No.
VB	10,588	94.7%	71.6%
IVB	193	1.7%	1.3%
CS	397	3.6%	2.7%
Total	11,178	100.0%	75.6%

Induced Labour 2,355/13,929= 16.9%			% of Total No.
VB	2,095	89.0%	14.2%
IVB	82	3.5%	0.6%
CS	178	7.6%	1.2%
Total	2,355	100.0%	15.9%

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 (NZCOM 2008) as well as the maternity services specifications for Lead Maternity Carers (Ministry of Health 2007). The New Zealand College of Midwives support the establishment of a partnership relationship with women which is enhanced by continuity of care from the beginning of pregnancy, through the birth and into the postnatal period. When midwives work with women they provide care in many different settings and remain accountable for the care that they provide. In New Zealand the majority of primary maternity care is provided by midwives who work as Lead Maternity Carers and provide care from early pregnancy, labour and birth and for up to six weeks during the postnatal period. The majority of midwife LMC's 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 Lead Maternity Carer (LMC) midwives. The MMPO is co-located with the NZCOM National Office in Christchurch. MMPO personnel include a National Manager, a part time accountant and data entry staff who process claims and provide data management services for midwives. The organisation also has a representative board comprised of midwives and consumers.

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. By 2011 the MMPO had a membership of 866 LMC midwives throughout New Zealand. 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 out of 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, planning and to improve care outcomes
- Maternity service funders and providers
- Midwifery researchers

A biostatistician was contracted by the MMPO to provide an objective analysis of data collated from the 866 MMPO midwife members throughout New Zealand in 2011. 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 LMC midwives about the women to whom they provided care during the year 2011. It is important to note it is not a technical report with statistically significant analysis, but rather, an annual report of the data analysed from the 2011 database. It can be seen as an annual report for 2011 of women who had their maternity care provided by midwives who worked as LMC's 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 – Mothers and Pregnancies

This section provides information about pregnancy as obtained from women by the MMPO LMC midwives in 2011. 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 woman'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 2011. It provides information on gestational age at time of birth, apgar scores, birth weight and neonatal transfers following birth.

Chapter 6 - Postnatal

The postnatal period is covered in this chapter which provides information on babies feeding behaviour at two weeks post partum along with maternal postnatal smoking status.

Appendix

The appendix describes the MMPO Maternity Notes dataset.

1.4 '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. The process of data collection includes:

1. MMPO midwife members purchase a set of MMPO Maternity Notes to be used with each woman who registers with that midwife for lead maternity care. The notes are the woman's and midwives 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 optional 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 Health Payments Agreements & Compliance (HealthPAC) 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 HealthPAC 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. Midwives also have the option of submitting their data electronically through a replica of the master database on their own computer.
6. MMPO staff deal with HealthPAC 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.
7. 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).

1.5 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 was able to be cross-checked and audited using a number of processes, namely:

1. Individual Lead Maternity Carer 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 for payment. This motivates the midwife to submit complete and accurate information to ensure there are no delays in payment.

1.6 KEY DATA SOURCES

The data for this report was sourced from all pregnant women who registered with MMPO LMC midwives during their pregnancy and who gave birth between 01 January and 31 December 2011. 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.

1.6.1 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 LMC throughout the country based on District Health Board (DHB) regions for 2011.

Table 1.1: Number and percentage of data contributors, by DHB region.

DHB region	Number and percentage of MMPO member LMC midwives contributing data	
	Number	Percentage
Northland	44	5.1
Waitamata	62	7.2
Auckland	53	6.1
Counties Manukau	28	3.2
Waikato	85	9.8
Bay of Plenty	43	5.0
Lakes	29	3.3
Taranaki	20	2.3
Tairāwhiti	20	2.3
Hawkes Bay	30	3.5
Wairarapa	11	1.3
Whanganui	8	0.9
Midcentral	47	5.4
Hutt	27	3.1
Capital and Coast	55	6.4
Nelson Marlborough	34	3.9
Canterbury	158	18.2
West Coast	5	0.6
South Canterbury	5	0.6
Otago	67	7.7
Southland	35	4.0
TOTAL	866	100.0

**Otago and Southland are now combined as Southern DHB.*

The highest proportion of midwives came from the Canterbury region, whereas the West Coast and Whanganui had relatively low proportions. Almost 65 percent (64.9 percent) of MMPO LMC midwives were located in the North Island.

1.6.2 Professional profile of data contributors

The following table (Table 1.2) summarises the MMPO midwives' professional experience as at 2011, 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: Number and percentage of years as 'Continuity of Care' midwives.

Years as 'Continuity of Care' midwife	Number	Percentage	Cumulative percentage
Less than 1 year	9	1.0	1.0
1 – 4 years	243	28.1	29.1
5 – 9 years	204	23.6	52.7
10 – 14 years	134	15.5	68.1
15 – 19 years	82	9.5	77.6
20 – 24 years	65	7.5	85.1
More than 24 years	129	14.9	100.0
TOTAL	866	100.0	

Table 1.2 shows that during 2011, the largest group of midwives were those who had between one and four years professional experience as a 'Continuity of Care' midwife (28.1 percent) followed by midwives with between five and nine years experience as a Continuity of Care midwife (23.6 percent). Almost one third of all MMPO midwives (31.9 percent) had fifteen years or more of midwifery experience.

2 MOTHERS AND PREGNANCY

2.1 DEMOGRAPHIC PROFILE

This chapter provides demographic information for the women who were registered with an MMPO LMC midwife during their pregnancy and birth for 2011. It discusses the number of pregnant women in the 2011 MMPO database who were registered during their pregnancy and gave birth, the gestational age at registration with the midwife LMC, maternal age, maternal ethnicity and antenatal history along with the gestation at commencement of labour.

2.1.1 Registered births

In 2011, there were 61,823 registered births (live and stillbirths) in New Zealand (Statistics New Zealand, 2011). This same year, 32,083 of these babies (including 31,912 liveborn babies) were captured in the MMPO database. They represent 51.9 percent of the New Zealand babies registered in 2011. The number of mothers registered with MMPO LMC midwives was 31,739 which indicates there were 344 more babies born (including stillborns) than there were mothers (multiple births).

2.1.2 DHB region of births

In the 2011 MMPO cohort the largest group of women were living in the catchment area for the Canterbury District Health Board (DHB) (14.4 percent) and 5.4 percent in Otago (table 2.1). On the North Island, 9.6 percent were living in the catchment area for Waikato and 9.9 percent in Waitamata. This reflects the membership of MMPO with the majority of midwife members living in Canterbury and Otago districts.

Table 2.1: Number and percentage of mothers by DHB region.

DHB Region	Number and percentage of birthing women	
	Number	Percentage
Northland	1,716	5.4
Waitemata	3,137	9.9
Auckland	1,001	3.2
Counties Manakau	1,187	3.7
Waikato	3,048	9.6
Bay of Plenty	1,517	4.8
Lakes	1,020	3.2
Tairāwhiti	695	2.2
Taranaki	985	3.1
Whanganui	196	0.6
Hawkes Bay	1,564	4.9
Wairarapa	362	1.1
Mid Central	1,601	5.0
Capital and Coast	1,631	5.1
Hutt	926	2.9
Nelson/Marlborough	1,231	3.9
West Coast	86	0.3
Canterbury	4,584	14.4
South Canterbury	125	0.4
Otago	1,722	5.4
Southland	1,585	5.0
Not stated	1,820	5.7
TOTAL	31,739	100.0

2.1.3 Gestation at registration

The following table (table 2.2) provides the gestation at which women have registered with an MMPO midwife. The majority of registrations (72.9 percent) occurred before the fifteenth week of pregnancy (first trimester). There were 17.4% of registrations which occurred in the second trimester of pregnancy and 9.7 percent in the third trimester of pregnancy - after week 28.

Table 2.2: Number and percentage of women, by weeks of gestation at registration.

Weeks gestation	Number	Percentage
< 5 weeks	93	0.3
5 - 9	10,008	31.5
10 - 14	13,035	41.1
15 - 20	3,384	10.7
21 - 27	2,129	6.7
28 - 34	1,474	4.6
35 - 39	1,020	3.2
40+	596	1.9
TOTAL	31,739	100.0

2.1.4 Maternal age

The pregnant woman's age at registration with an LMC midwife (Figure 2.1) indicates that over half (53.4 percent) of the women in the MMPO dataset for 2011 were aged between 25 and 34 years. Less than nine percent were under 20 years of age, 17.3 percent were over 35 years of age of which 2.8 percent were over the age of 40 years.

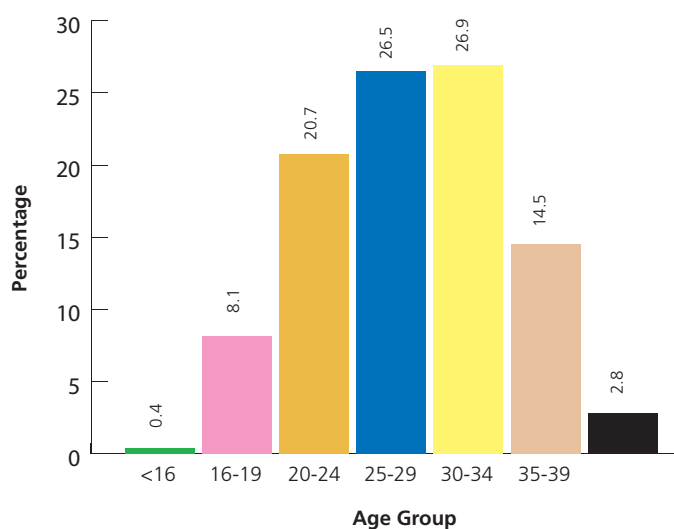


Figure 2 1: Percentage of women, by age group at registration.

2.1.5 Maternal ethnicity

The ethnicity data for the women in the 2011 dataset, (as recorded at the time of registration) is shown in Table 2.3. This demonstrates that the majority (61.4 percent) identified themselves as 'NZ European', followed by 21.8 percent who identified themselves as 'Maori'. The third highest ethnic group was recorded as 'Asian' (7.1 percent) and 5.9 percent identified themselves as 'Pacific Islander.' The 'Other' category included women from Africa, the Middle East, and Latin America. Less than one percent of women did not state their ethnic origin.

Table 2.3: Number and percentage of women by ethnicity at registration.

Ethnicity	Number	Percentage
NZ European	19,487	61.4
Maori	6,929	21.8
Pacific Islander	1,882	5.9
Asian	2,254	7.1
Other	1,138	3.6
Not stated	49	0.2
TOTAL	31,739	100.0

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 were carried to term 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 thirty percent (29.5) of all women who registered with an MMPO midwife in 2011 were experiencing their first pregnancy (refer to Table 2.4).

Table 2.4: Number and percentage of birthing women by gravida.

Gravida		Number	Percentage
Primigravida	1	9,378	29.5
Multigravida	2-5	20,279	63.9
	>5	2,082	6.6
TOTAL		31,739	100.0

2.2.2 Factors that may influence pregnancy

During pregnancy the midwife undertakes a full medical 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 2.5 for the 2011 cohort and include multiple pregnancy, previous caesarean section, giving birth for the first time and being over 37 years of age and being over 39 years when giving birth.

Using these criteria 44.4 percent of the entire 2011 MMPO cohort had one or more of these factors (Table 2.5). There were 342 (1.1 percent) women with a multiple pregnancy and 3,898 (12.3 percent) women in the 2011 cohort had experienced a previous caesarean section.

Table 2.5: Number and percentage of birthing women by factors that may influence pregnancy.

Specific features	Number	Percentage
Nulliparous >37 years of age	414	1.3
Over 39 Years of age	893	2.8
Previous caesarean section	3,898	12.3
Multiple pregnancy (2+ babies)	342	1.1
Medical conditions	10,739	33.8
Woman with one or more of the above factors	14,098	44.4
Women with none of the above factors	17,641	55.6
TOTAL	31,739	100.0

There were 10,739 women (33.8 percent) in the 2011 cohort who had a medical condition. The type of medical condition is described in more detail in Table 2.6. This table provides the frequency of the condition identified with some women reporting more than one medical condition.

Table 2.6: Number and percentage of women with pre-existing medical conditions.

Condition	Number	Percentage of total women
Asthma	4,037	12.7
Psychiatric	3,168	10.0
UTI Renal	2,982	9.4
Sexual transmitted Infection (STI)	2,354	7.4
Hypertension	494	1.6
Thyroid conditions	430	1.4
Cardiac Disease	259	0.8
Diabetes	270	0.9
Epilepsy	213	0.7
Other*	291	0.9

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

The most commonly identified condition was asthma (12.7 percent) followed by psychiatric condition (10.0 percent) and previous urinary tract infection or renal condition (9.4 percent) and a previous sexually transmitted infection (7.4 percent). Conditions that were less commonly identified were hypertension (1.6 percent), thyroid disease (1.4 percent), cardiac disease (0.8 percent), epilepsy (0.7 percent) and diabetes (0.9 percent).

2.2.3 Smoking status during pregnancy

Smoking status, including number of cigarettes per day, is recorded at the time of registration with an MMPO LMC midwife. This data indicates that, 82.5 percent of women reported that they were smoke free during pregnancy leaving 17.5 percent reporting that they were smoking during their pregnancy (Figure 2.2).

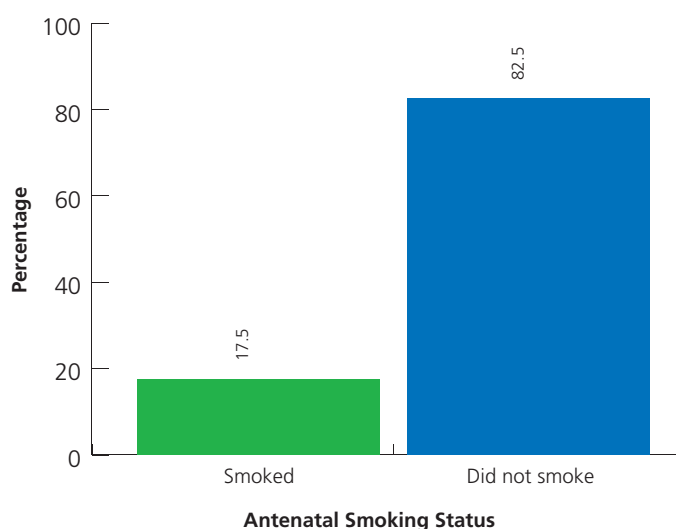


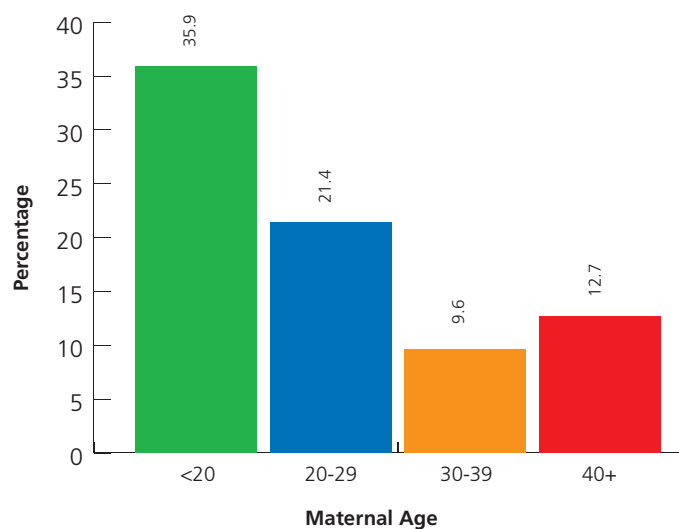
Figure 2-2: Smoke free status at registration.

The age group with the highest level of smoking were women under the age of 20 (35.9 percent). The majority of pregnant women over 30 years of age reported being smoke free (90.2 percent) see Table 2.7 and Figure 2.3. Of the 17.5 percent of women who reported that they did smoke, the majority (58.4 percent) smoked less than 10 cigarettes per day.

Table 2.7: Number and percentage of women who reported smoking at registration by age group and number of cigarettes smoked per day.

Cigarettes smoked per day	Number of women in age group (years)				
	<20	20 - 29	30 - 39	40+	Total
Number					
Nil	1,730	11,785	11,888	780	26,183
1 – 4	308	883	308	18	1,517
5 – 9	316	1,016	351	43	1,726
10 – 19	297	1,084	483	38	1,902
20+	47	226	124	14	411
TOTAL	2,698	14,994	13,154	893	31,739
Percentage					
Nil	64.1	78.6	90.4	87.3	82.5
1 – 4	11.4	5.9	2.3	2.0	4.8
5 – 9	11.7	6.8	2.7	4.8	5.4
10 – 19	11.0	7.2	3.7	4.3	6.0
20+	1.7	1.5	0.9	1.6	1.3
TOTAL	100.0	100.0	100.0	100.0	100.0

Figure 2.3: Percentage of women who reported smoking during pregnancy, by age group.



2.3 DURATION OF PREGNANCY

For the majority of women (88.0 percent) the onset of labour was between 37 and 41 weeks gestation (Table 2.8) with only a small number (1.1 percent) with very premature labours (before 32 weeks gestation). For 5.1 percent of the cohort the gestation was 42 weeks or more at the commencement of labour.

Table 2.8: Number and percentage of women by weeks of gestation at labour commencement or elective caesarean (all women).

Weeks gestation	Number	Percentage	Cumulative percentage
20 – 23	80	0.3	0.3
24 – 27	84	0.3	0.5
28 – 31	189	0.6	1.1
32 – 36	1,834	5.8	6.9
37 – 41	27,934	88.0	94.9
42+	1,618	5.1	100.0
TOTAL	31,739	100.0	

3 LABOUR DETAILS

This chapter is based upon the data obtained from the 31,739 women registered with MMPO LMC midwives who laboured and gave birth in 2011. 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 (71.9 percent) had a labour length recorded as eight hours or less. Only 5.4 percent had a labour of more than 15 hours. Primiparous women had longer labours, with 43.5 percent of first-time mothers reported as having labours more than eight hours compared with 11.9 percent of multiparous women.

Table 3.1: Number and percentage of women by hours of labour and parity (excludes elective caesareans).

Hours of labour	Primiparous	Multiparous	Total
	Number		
<1	91	578	669
1-2	370	2,365	2,735
2-4	1,730	5,925	7,655
4-6	2,358	3,674	6,032
6-8	2,095	1,729	3,824
8-10	1,730	852	2,582
10-15	2,412	809	3,221
>15	1,246	322	1,568
Not stated	367	435	802
TOTAL	12,399	16,689	29,088
Percentage			
<1	0.7	3.5	2.3
1-2	3.0	14.2	9.4
2-4	14.0	35.5	26.3
4-6	19.0	22.0	20.7
6-8	16.9	10.4	13.1
8-10	14.0	5.1	8.9
10-15	19.5	4.8	11.1
>15	10.0	1.9	5.4
Not stated	3.0	2.6	2.8
TOTAL	100.0	100.0	100.0

NOTE: The information in Table 3.1 excludes the women who had an elective caesarean (n=2,651).

3.2 TRANSFERS DURING LABOUR

The majority of women (96.1 percent) gave birth in the facility in which they had planned to give birth (see 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 2011 cohort 3.9 percent of women were transferred to another facility during labour, 1.3 percent from a planned home birth and 2.5 percent from a planned primary unit birth.

Table 3.2: Total number and percentage of transfers during labour by birth setting (excludes elective caesareans).

Intrapartum transfers	Transfers	
	Number	Percentage
Home	376	1.3
Primary facility	713	2.5
Secondary facility*	27	0.1
Tertiary facility*	6	0.02
Total transferred	1,122	3.9
Total not transferred	27,966	96.1
TOTAL	29,088	100.0

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

The number of women planning to give birth in a primary unit or at home and the number who transferred are summarised in Table 3.3. This demonstrates that of the cohort of women who planned to give birth at home 19.2 percent transferred to a facility during labour. This means, for example, while 1,960 women had planned to give birth at home, 376 (19.2 percent) were transferred to a birthing facility during labour and therefore, 1,584 women actually gave birth at home. For those who planned to give birth in a primary facility 15.6 percent were transferred in labour.

Table 3.3: Number and percentage of women transferring from primary birthing localities during labour (excludes elective caesareans).

Planned place of birth	Planned place of birth	Transfers	
	Number	Number	Percentage
Home	1,960	376	19.2
Primary facility	4,578	713	15.6
TOTAL	6,538	1,089	16.7

NOTE: These figures do not include the elective caesareans, 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 (81.4 percent) commenced labour spontaneously in 2011. Labour was induced for 18.6 percent of the women in the MMPO cohort (Table 3.4). Primiparous women were more likely to be induced (23.6 percent) than multiparous women (15.3 percent).

Table 3.4: Number and percentage of women by labour induction and parity (all women).

Procedure INDUCTION	Primiparous		Multiparous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	3,039	23.6	2,880	15.3	5,919	18.6
No	9,844	76.4	15,976	84.7	25,820	81.4
TOTAL	12,883	100.0	18,856	100.0	31,739	100.0

3.3.2 Anaesthetics during labour

Overall, the majority of women (71.8 percent) did not have any anaesthetic procedures during labour, but of those that did, epidurals were the most common (Table 3.5). Anaesthetic use was higher for primiparous women for all anaesthetic procedures. The rates of epidurals (including those combined with spinals) for primiparous women was 33.9 percent, compared with only 10.8 percent for the multiparous women. There was a higher rate of spinal anaesthesia in primiparous women than multiparous women (4.2 versus 3.4 percent, respectively).

Table 3.5: Number and percentage of women in labour by anaesthetic procedures and parity (excludes women who had an elective caesarean).

ANAESTHETIC PROCEDURES	Primiparous		Multiparous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Epidural	4,036	32.6	1,721	10.3	5,757	19.8
Epidural and spinal	169	1.4	89	0.5	258	0.9
General anaesthetic	7	0.1	4	0.02	11	0.04
Local anaesthetic	83	0.7	41	0.2	124	0.4
Spinal	521	4.2	560	3.4	1,081	3.7
Other	56	0.5	45	0.3	101	0.3
Nil used	7,164	57.8	13,710	82.1	20,874	71.8
Not stated	363	2.9	519	3.1	882	3.0
TOTAL	12,399	100.0	16,689	100.0	29,088	100.0

3.3.3 Other types of pain management

Other types of pain management are provided in Table 3.6, which includes only those women who were reported as having entenox, pethidine or water immersion during labour. As it is possible to have more than one type of pain management, women may be listed more than once. Table 3.6 therefore reflects the number and percentage of each pain relief type and is not a count of the women.

For the 2011 cohort of women 40.6 percent received Nitrous Oxide as part of pain management, 9.7 percent received Pethidine and 28.2 percent used water to help with pain management. This report identifies Pethidine because it is the only narcotic that can be prescribed legally by midwives within their scope of practice.

Table 3.6: Number and percentage of pain relief type during labour.

Type of Pain Relief	Number	Percentage of all 2011 women (31,739)
Nitrous Oxide	12,886	40.6
Pethidine	3,077	9.7
Water	8,963	28.2

4 BIRTHS

Information presented in this chapter relates to the type of birth, age and ethnicity as well as birth setting and geographical areas. The births and types of birth figures are based upon the number of actual births which took place (this includes multiple pregnancies). So whilst there were 31,739 women who gave birth, there were 32,083 babies born. The information presented in this next section relates to the birth of the baby and includes 344 more babies than mothers due to multiple births (340 sets of twins and two 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.

4.1 TYPE OF BIRTH

The majority of babies born to the women in the 2011 cohort were normal vaginal births (69.1 percent) (Table 4.1). The caesarean section rate was 22.9 percent of which 8.6 percent were elective caesareans and 14.3 percent were emergency caesareans. Of the instrumental births, 4.8 percent were ventouse births and 2.8 percent were forceps births.

4.1.1 Birth type and parity

The mother's parity and type of birth are compared and presented in Table 4.1 below.

Table 4.1: Number and percentage of births by birth type and parity of total cohort.

Birth type	Primiparous		Multiparous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Normal vaginal	7,702	59.3	14,469	75.8	22,171	69.1
Vaginal breech	29	0.2	60	0.3	89	0.3
Instrumental breech	7	0.1	3	0.02	10	0.03
Ventouse	1,200	9.2	355	1.9	1,555	4.8
Forceps	747	5.8	146	0.8	893	2.8
Other Instrumental *	18	0.1	1	0.005	19	0.1
Total vaginal	9,703	74.7	15,034	78.7	24,737	77.1
Elective caesarean	516	4.0	2,233	11.7	2,749	8.6
Emergency caesarean	2,770	21.3	1,827	9.6	4,597	14.3
Total caesarean	3,286	25.3	4,060	21.3	7,346	22.9
TOTAL	12,989	100.0	19,094	100.0	32,083	100.0

* e.g kiwi cup

Nearly 60% of primiparous women and more than three quarters of multiparous women had a normal vaginal birth (table 4.1). Just over a quarter of primiparous women and a fifth of multiparous women had a caesarean section.

More multiparous women had an elective caesarean (11.7 percent) than primiparous women (4.0 percent). Conversely more primiparous women had an emergency caesarean (21.3 percent) when compared to multiparous women (9.6 percent).

4.1.2 Birth type and maternal age

The influence of age and birth type is explored in Table 4.2 for the 2011 cohort. Women under 20 years of age were only a small proportion of the overall cohort of births (8.4 percent) but they had the highest incidence of normal vaginal births (78.6 percent). For babies born to women forty years of age or older (2.8 percent of cohort) the incidence of normal vaginal births was the lowest (58.8 percent). Overall the normal vaginal birth rate reduced as the woman's age increased.

Table 4.2: Number of births by birth type and maternal age.

Birth type	Maternal age (years)							
	< 16	16 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
	Number							
Normal vaginal	106	2,026	5,049	5,939	5,644	2,871	536	22,171
Vaginal breech	1	1	22	20	24	16	5	89
Instrumental breech	0	0	2	3	4	1	0	10
Ventouse	4	130	284	431	477	199	30	1,555
Forceps	2	87	138	243	269	139	15	893
Other Instrumental	0	3	1	6	6	3	0	19
Total vaginal	113	2,247	5,496	6,642	6,424	3,229	586	24,737
Elective caesarean	1	56	316	640	901	684	151	2,749
Emergency caesarean	11	283	815	1,215	1,318	781	174	4,597
Total caesarean	12	339	1,131	1,855	2,219	1,465	325	7,346
TOTAL	125	2,586	6,627	8,497	8,643	4,694	911	32,083
	Percentage							
Normal vaginal	84.8	78.3	76.2	69.9	65.3	61.2	58.8	69.1
Vaginal breech	0.8	0.04	0.3	0.2	0.3	0.3	0.5	0.3
Instrumental breech	-	-	0.03	0.04	0.05	0.02	-	0.03
Ventouse	3.2	5.0	4.3	5.1	5.5	4.2	3.3	4.8
Forceps	1.6	3.4	2.1	2.9	3.1	3.0	1.6	2.8
Other Instrumental	-	0.1	0.02	0.1	0.1	0.1	-	0.1
Total vaginal	90.4	86.9	82.9	78.2	74.3	68.8	64.3	77.1
Elective caesarean	0.8	2.2	4.8	7.5	10.4	14.6	16.6	8.6
Emergency caesarean	8.8	10.9	12.3	14.3	15.2	16.6	19.1	14.3
Total caesarean	9.6	13.1	17.1	21.8	25.7	31.2	35.7	22.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The highest incidence of instrumental births was in the 30-34 years age group (8.7 percent) whereas the age group with the highest incidence of elective and emergency caesarean sections were women who were 40 years and older (35.7 percent).

4.1.3 Birth type and maternal ethnicity

The following table (Table 4.3) and figure (Figure 4.1) refer to the numbers of births by birth type and maternal ethnicity. Women who identified as Maori or Pacific Island had the highest rate of normal vaginal births at 78.7 percent and 77.9 percent respectively and the lowest caesarean rates (16.8 and 18.1 percent, respectively). Conversely, the women who identified as Asian or Other had the lowest rate of normal vaginal births at 59.1 percent and 58.6 percent respectively.

Table 4.3: Number of births by birth type and maternal ethnicity.

Birth type	NZ European	Maori	Pacific Island	Asian	Other	Not stated	Total
Normal vaginal	13,136	5,511	1,477	1,339	676	32	22,171
Vaginal breech	58	18	4	5	4	0	89
Instrumental breech	8	0	1	0	1	0	10
Ventouse	1,049	196	48	193	68	1	1,555
Forceps	639	94	24	84	52	0	893
Other Instrumental	11	3	0	4	0	1	19
Total vaginal	14,901	5,822	1,554	1,625	801	34	24,737
Elective caesarean	1,979	377	97	174	116	6	2,749
Emergency caesarean	2,839	800	246	467	236	9	4,597
Total caesarean	4,818	1,177	343	641	352	15	7,346
TOTAL	19,719	6,999	1,897	2,266	1,153	49	32,083
	Percentage						
Normal vaginal	66.6	78.7	77.9	59.1	58.6	65.3	69.1
Vaginal breech	0.3	0.3	0.2	0.2	0.3	-	0.3
Instrumental breech	0.04	-	0.1	-	0.1	-	0.03
Ventouse	5.3	2.8	2.5	8.5	5.9	2.0	4.8
Forceps	3.2	1.3	1.3	3.7	4.5	-	2.8
Other Instrumental	0.1	0.04	-	0.2	-	2.0	0.1
Total vaginal	75.6	83.2	81.9	71.7	69.5	69.4	77.1
Elective caesarean	10.0	5.4	5.1	7.7	10.1	12.2	8.6
Emergency caesarean	14.4	11.4	13.0	20.6	20.5	18.4	14.3
Total caesarean	24.4	16.8	18.1	28.3	30.5	30.6	22.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

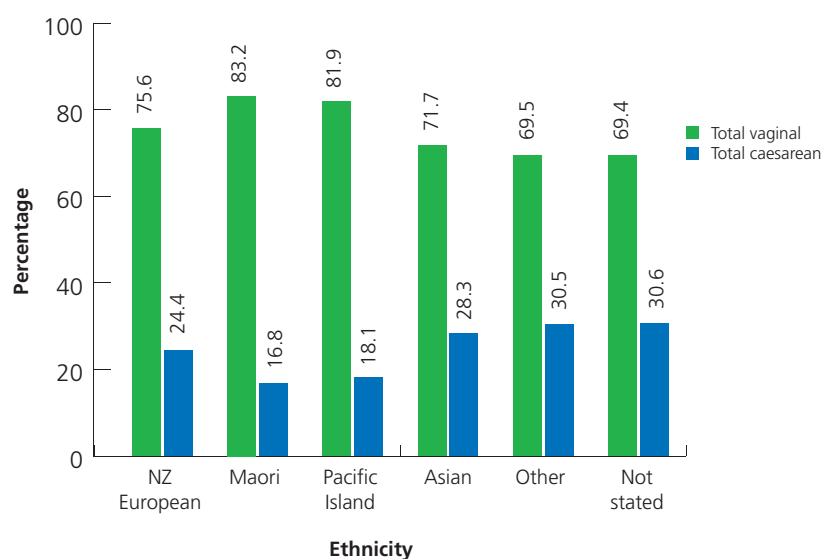


Figure 4.1: Percentage of births by birth type – vaginal versus caesarean – and ethnicity.

4.2 PLACE OF BIRTH - GEOGRAPHIC DISTRIBUTION AND BIRTH PLACE SETTING

This section examines the geographic distribution of the women giving birth in the North and South Islands, along with the DHB region. It also explores the rurality for the women registered with an MMPO LMC midwife in 2011.

The MMPO database has more records of women giving birth in the North Island (69.0 percent) compared to the South Island. The majority of the births occurred in secondary facilities (48.0 percent), while 34.9 percent birthed in one of the six tertiary facilities in the country. Almost eighteen percent (17.2 percent) of women registered with an LMC MMPO midwife gave birth in primary facilities or at home.

Table 4.4: Number and percentage of women by birth place type and geographic distribution.

Birth place type	North Island		South Island		New Zealand	
	Number	Percentage	Number	Percentage	Number	Percentage
Home births	1,070	4.9	514	5.2	1,584	5.0
Primary facility	2782	12.7	1,083	11.0	3,865	12.2
Secondary facility	12,632	57.7	2,592	26.3	15,224	48.0
Tertiary facility	5,415	24.7	5,651	57.4	11,066	34.9
TOTAL	21,899	100.0	9,840	100.0	31,739	100.0

4.2.1 Births in rural areas

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 not rural, semi-rural, rural and remote rural. The data obtained from the 2011 MMPO cohort is presented in Table 4.5 and Figure 4.2.

Table 4.5: Number of births by birth setting and rurality.

Rurality	Home birth	Primary	Secondary facility	Tertiary facility	Total
Number					
Not rural	737	1,075	8,296	7,439	17,547
Semi-rural	240	337	2,580	1,068	4,225
Rural	431	1,897	3,375	1,954	7,657
Remote rural	152	493	695	464	1,804
Not Stated	25	69	443	313	850
TOTAL	1,585	3,871	15,389	11,238	32,083
Percentage					
Not rural	4.2	6.1	47.3	42.4	100.0
Semi-rural	5.7	8.0	61.1	25.3	100.0
Rural	5.6	24.8	44.1	25.5	100.0
Remote rural	8.4	27.3	38.5	25.7	100.0
Not Stated	2.9	8.1	52.1	36.8	100.0
TOTAL	4.9	12.1	48.0	35.0	100.0

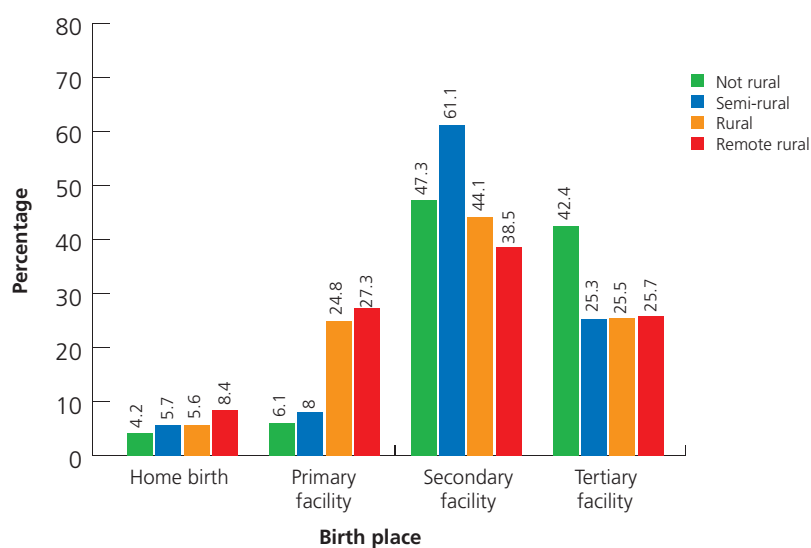


Figure 4.2: Percentage of births by birthplace and rurality.

Overall, 54.7 percent of the babies born to women registered with MMPO LMC midwives were from urban (non rural) domiciles and, of these 89.7 percent gave birth in either a tertiary or secondary setting. A greater proportion of rural women birthed in primary settings (19.9 percent) than urban women (6.1) and slightly more rural women gave birth at home (6.0 percent) when compared to urban women (4.2).

4.3 BIRTH SETTING AND PARITY

Birth place and maternal parity are examined in Table 4.6. For primiparous women, the majority (88.8 percent) gave birth in either a secondary or tertiary facility compared to 79 percent of multiparous women. Primiparous women were less likely to give birth at home (2.3 percent) or in a primary unit (8.9 percent) than multiparous women.

Table 4.6: Number and percentage of births by birth setting and parity.

Place of birth	Primiparous		Multiparous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Home birth	298	2.3	1,287	6.7	1,585	4.9
Primary facility	1,157	8.9	2,714	14.2	3,871	12.1
Secondary facility	6,434	49.5	8,955	46.9	15,389	48.0
Tertiary facility	5,100	39.3	6,138	32.1	11,238	35.0
TOTAL	12,989	100.0	19,094	100.0	32,083	100.0

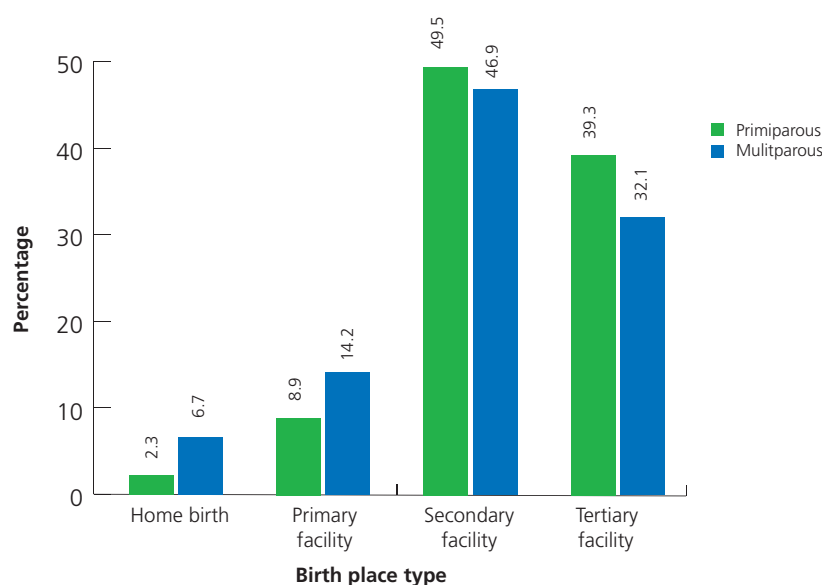


Figure 4.3: Percentage of births by birth setting and parity.

4.3.1 Birth setting and type of birth

For the 2011 cohort 69.1 percent had a normal vaginal birth of which 47.3 percent occurred in a secondary facility and 28.3 percent in a tertiary facility (Table 4.7 and Figure 4.4). Secondary facilities had a lower rate of elective caesareans than tertiary facilities (8.7 percent versus 12.5 percent, respectively). Tertiary facilities had the highest rates of emergency caesareans, ventouse births and forceps births.

Table 4.7: Number of births by birth setting and birth type.

Birth type	Home	Primary facility	Secondary facility	Tertiary facility	Total
Number					
Normal vaginal	1,581	3,830	10,484	6,276	22,171
Vaginal breech	4	9	32	44	89
Instrumental breech	0	0	6	4	10
Ventouse	0	20	755	780	1,555
Forceps	0	10	362	521	893
Other Instrumental	0	0	9	10	19
Total vaginal	1,585	3,869	11,648	7,635	24,737
Elective caesarean	0	0	1,343	1,406	2,749
Emergency caesarean	0	2	2,398	2,197	4,597
Total caesarean	0	2	3,741	3,603	7,346
TOTAL	1,585	3,871	15,389	11,238	32,083
Percentage					
Normal vaginal	99.7	98.9	68.1	55.8	69.1
Vaginal breech	0.3	0.2	0.2	0.4	0.3
Instrumental breech	-	-	0.04	0.04	0.03
Ventouse	-	0.5	4.9	6.9	4.8
Forceps	-	0.3	2.4	4.6	2.8
Other Instrumental	-	-	0.1	0.1	0.1
Total vaginal	100.0	99.9	75.7	67.9	77.1
Elective caesarean	-	-	8.7	12.5	8.6
Emergency caesarean	-	0.1	15.6	19.5	14.3
Total caesarean	-	0.1	24.3	32.1	22.9
TOTAL	100.0	100.0	100.0	100.0	100.0

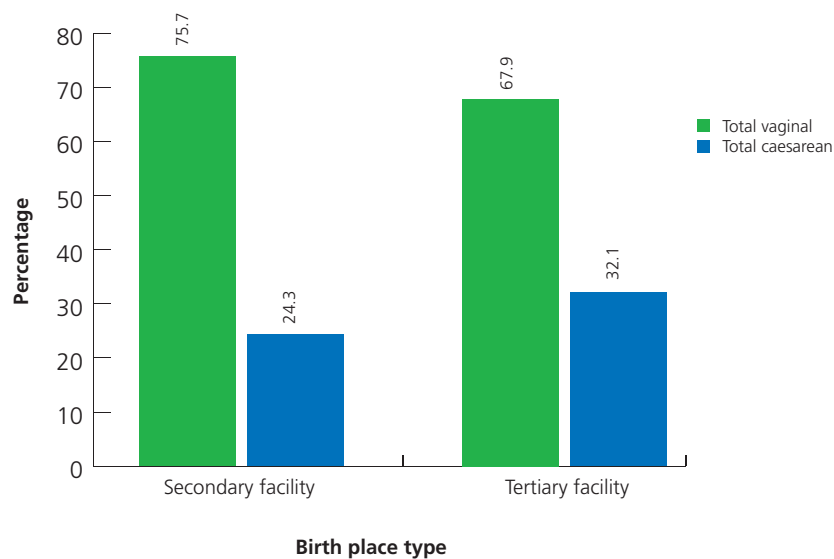


Figure 4.4: Percentage of births at secondary and tertiary facilities by birth type – vaginal versus caesarean.

Women giving birth at home or in a primary facility do not have access to caesarean procedures and require referral and transfer to a secondary or tertiary facility and therefore are not included in the above graph.

4.4 WATER BIRTH

Immersion in water during labour is known to have beneficial analgesic properties. The percentage of babies born into water remains low at 7.1 percent of all births (Table 4.8) although 28.2 percent of women in the cohort reported using water during labour (table 3.6 page 28). Women who gave birth at home or at a primary facility had a higher proportion of water births (21.9 percent and 21.2 percent, respectively) than those birthing in secondary or tertiary facilities. Secondary and tertiary facilities had much lower levels of water births (4.8 percent and 2.3 percent, respectively).

Table 4.8: Number of births to women using water in labour (excludes elective caesareans).

Use of water	Home	Primary	Secondary facility	Tertiary facility	Total
Number					
Water births	347	822	674	228	2,071
Non water births	1,235	3,008	9,927	6176	20,346
Not stated	3	41	3,445	3,428	6,917
TOTAL BIRTHS	1,585	3,871	14,046	9,832	29,334
Percentage					
Water births	21.9	21.2	4.8	2.3	7.1
Non water births	77.9	77.7	70.7	62.8	69.4
Not stated	0.2	1.1	24.5	34.9	23.6
TOTAL BIRTHS	100.0	100.0	100.0	100.0	100.0

4.5 PERINEAL TRAUMA

4.5.1 Vaginal tears

The majority of women (66.6 percent) in the 2011 cohort had either an intact perineum or a first degree tear (Table 4.9) and 31.0 percent had a second degree tear. The rates of 3rd and 4th degree tears were low (2.3 & 0.2 percent respectively). The majority of multiparous women had an intact perineum (61.5 percent).

Table 4.9: Number and percentage of women by perineal trauma and parity following all vaginal births.

Perineum	Primiparous		Multiparous		All Women	
	Number	Percentage	Number	Percentage	Number	Percentage
Intact/Graze	3,185	32.9	9,169	61.5	12,354	50.2
1st degree	1,418	14.7	2,602	17.4	4,020	16.3
2nd degree	4,634	47.9	2,980	20.0	7,614	31.0
3rd degree	406	4.2	150	1.0	556	2.3
4th degree	30	0.3	16	0.1	46	0.2
TOTAL	9,673	100.0	14,917	100.0	24,590	100.0

NOTE: Includes only the women who had a vaginal birth and excludes all caesarean births

4.5.2 Episiotomy

For the 2011 cohort the episiotomy rate was 8.6 percent with 3.1 percent of multiparous women receiving an episiotomy compared to 16.7 percent of primiparous women.

Table 4.10: Number and percentage of episiotomies by parity.

Procedure EPISIOTOMIES	Primiparous		Multiparous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	2,157	16.7	575	3.0	2,732	8.6
No	10,672	82.8	18,220	96.6	28,892	91.0
Not stated	54	0.4	61	0.3	115	0.4
TOTAL	12,883	100.0	18,856	100.0	31,739	100.0

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 2006). The next section reports on the blood loss volumes during the third stage 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 4.11). Women who had a normal vaginal birth had the lowest blood loss volumes with 91.5 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 35.4 percent reported to have a blood loss of more than 500 mls. Women who had an assisted vaginal birth also had an increased blood loss volume, with 16.1 percent having a blood loss of more than 500mls.

Table 4.11: Post partum blood loss by birth type for all births.

Postpartum Blood Loss (ml)	Birth Type			
	Normal Vaginal Birth	Instrumental Vaginal Birth	Caesarean Section	Total
Number				
0-500	20,375	2,073	4,632	27,080
501-749	737	166	1,351	2,254
750-1000	582	142	882	1,606
>1000	501	91	367	959
Not Stated	65	5	114	184
Total	22,260	2,477	7,346	32,083
Percentage				
0-500	91.5	83.7	63.1	84.4
501-749	3.3	6.7	18.4	7.0
750-1000	2.6	5.7	12.0	5.0
>1000	2.3	3.7	5.0	3.0
Not Stated	0.3	0.2	1.6	0.6
Total	100.0	100.0	100.0	100.0

For women who had a normal vaginal birth only 2.3 percent had a blood loss of more than 1000mls compared to 3.7 percent for instrumental vaginal birth and 5.0 percent for women following caesarean section (Table 4.11).

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 a 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 are initially managed physiologically but then require a treatment with a uterotonic.

The New Zealand College of Midwives consensus statement for the third stage recognises that women can expect a physiological third stage when labour has been preceded by a physiological labour and birth (NZCOM 2006).

The data in the following 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 either active (& treatment) or physiological (& treatment); more babies were born to women who had active management (63.8 percent) than physiological care (35.7 percent) (Table 4.12).

More women who had active management of the third stage had a blood loss greater than 500mls (9.7 percent) than those receiving physiological care (5.5 percent). More women actively managed also had a blood loss greater than 1000mls (2.9 percent) compared with those in the physiological group (1.1 percent). See Figure 4.5.

Table 4.12: Number and total percentage of births, by postpartum blood loss and third stage care, for all non-operative births.

Postpartum blood loss (ml)	Active	Active & treatment	Physiological	Physiological & treatment	Not Stated	Total
Number						
0 -500	11,450	1,345	6,420	1,073	87	20,375
501 - 749	236	281	48	167	5	737
750 - 1000	151	295	23	112	1	582
>1000	117	296	10	76	2	501
Not stated	35	6	17	3	4	65
TOTAL	11,989	2,223	6,518	1,431	99	22,260
Percentage						
0 -500	95.5	60.5	98.5	75.0	87.9	91.5
501 - 749	2.0	12.6	0.7	11.7	5.1	3.3
750 - 1000	1.3	13.3	0.4	7.8	1.0	2.6
>1000	1.0	13.3	0.2	5.3	2.0	2.3
Not stated	0.3	0.3	0.3	0.2	4.0	0.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

For the women who required treatment during the third stage, 60.5 percent of the active and treatment group had a blood loss of less than 500 mls compared to 75.0 percent of the physiological and treatment group. There were 13.3 percent of women who had a blood loss of more than 1000mls in the active and treatment group compared to 5.3 percent in the physiological and treatment group. This can be seen graphically in figure 4.5.

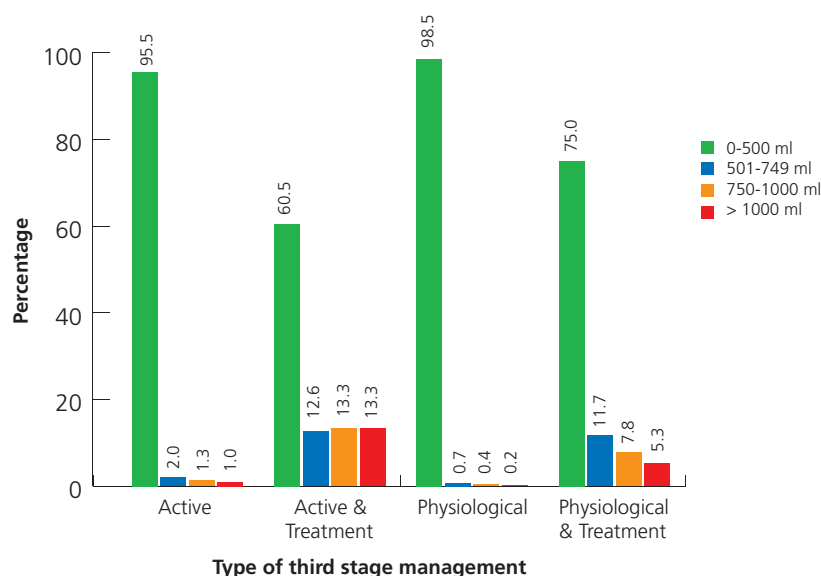


Figure 4.5: Percentage of births, by postpartum blood loss by third stage care for all non-operative births.

4.6.4 Third stage management and parity

When examining parity and the type of third stage care provided (Table 4.13), more multiparous women had a physiological third stage (37.8 percent) than primiparous women (31.7 percent).

Table 4.13: Number and percentage of births, by third stage care and parity following all non-operative births.

Ecbotic procedures	Primiparous		Multiparous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Active	4,375	56.6	7,614	52.4	11,989	53.9
Active & treatment	865	11.2	1,358	9.3	2,223	10.0
Physiological	1,839	23.8	4,679	32.2	6,518	29.3
Physiological & treatment	611	7.9	820	5.6	1,431	6.4
Not stated	41	0.5	58	0.4	99	0.4
TOTAL PROCEDURES	7,731	100.0	14,529	100.0	22,260	100.0

4.6.5 The condition of the placenta and membranes

When discussing the third stage of labour, it is useful to know the condition of the placenta and membranes and if the placenta was retained requiring a manual removal or examination under anaesthetic (EUA). The midwives have recorded 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 4.14). 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.

Table 4.14: Number and percentage of births by placenta condition and birth type (all births).

Placenta Condition	Birth type			
	Normal Vaginal Birth	Instrumental Vaginal Birth	Caesarean Section	Total
Number				
Complete	20,247	2,299	6,963	29,509
Ragged Membranes	1,613	114	228	1,955
EUA/Manual removal	199	34	83	316
Incomplete	161	24	41	226
Not Stated	40	6	31	77
Total	22,260	2,477	7,346	32,083
Percentage				
Complete	91.0	92.8	94.8	92.0
Ragged Membranes	7.2	4.6	3.1	6.1
EUA/Manual removal	0.9	1.4	1.1	1.0
Incomplete	0.7	1.0	0.6	0.7
Not Stated	0.2	0.2	0.4	0.2
Total	100.0	100.0	100.0	100.0

In the 2011 cohort one percent of the overall cohort required a manual removal or examination under anaesthetic.

While the majority of placentae (91.0 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 4.6).

Table 4.15: Number and total percentage of births, by third stage care and placental condition, following all non-operative births.

Placenta condition	Active	Active & treatment	Physiological	Physiological & treatment	Not Stated	Total	
	Number	Number	Number	Number	Number	Number	Percentage
Complete	11,122	1,830	6,004	1,201	90	20,247	91.0
Ragged Membranes	727	217	481	180	8	1,613	7.2
EUA/Manual removal	51	116	4	28	0	199	0.9
Incomplete	68	51	22	19	1	161	0.7
Not Stated	21	9	7	3	0	40	0.2
Total	11,989	2,223	6,518	1,431	99	22,260	100.0

The rate of ragged membranes was higher for those in the physiological only and physiological plus treatment group (7.4 percent and 12.6 percent, respectively) than those in the active only or active plus treatment group (6.1 percent and 9.8 percent, respectively).

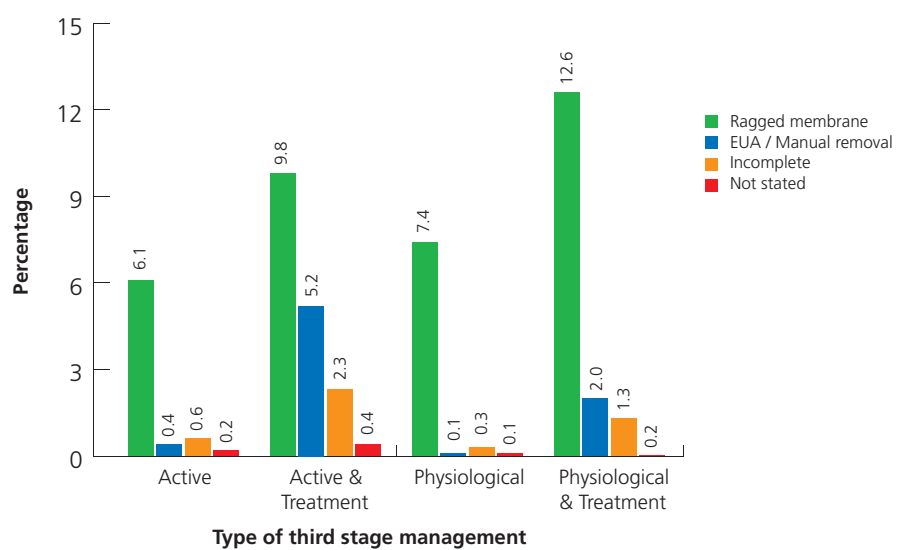


Figure 4.6: Percentage of normal vaginal births and condition of placenta by third stage management.

NOTE: excludes data where the placenta was delivered "complete".

5 BABIES

This chapter is based upon the number of babies born to mothers registered with an MMPO midwife in 2011. The total number of babies born in New Zealand in 2011 was 61,823 (Statistics New Zealand, 2011) of which 32,083 babies (51.9 percent) are included within this report. The data includes multiple births (340 sets of twins and two sets of triplets) and relates to neonatal outcomes with 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 to 41 weeks gestation. Only 7.4 percent were born prior to 36 weeks and therefore 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: Number and percentage of babies by gestational age at birth and parity.

Gestational age (weeks)	Primiparous		Multiparous		All births	
	Number	Percentage	Number	Percentage	Number	Percentage
20 - 23	36	0.3	51	0.3	87	0.3
24 - 27	46	0.4	42	0.2	88	0.3
28 - 31	75	0.6	128	0.7	203	0.6
32 - 36	832	6.4	1,151	6.0	1,983	6.2
37 - 41	11,246	86.6	16,854	88.3	28,100	87.6
42+	754	5.8	868	4.5	1,622	5.1
TOTAL	12,989	100.0	19,094	100.0	32,083	100.0

5.2 APGAR SCORES

Five minutes after birth, a set of observations are made of newborns and their responses to certain stimuli are rated according to an Apgar score. The results for the 2011 MMPO birth cohort are presented in Table 5.2 along with the place of birth.

Over 92 percent of babies born in the 2011 MMPO cohort had an Apgar score of 9 or 10 at five minutes. The number of babies that showed a zero after five minutes is close to the figure for the number of stillborns and neonatal deaths.

Table 5.2: Number and percentages of births, by Apgar score at 5 minutes and birth place type.

Apgar score	Home	Primary facility	Secondary facility	Tertiary facility	Total
Number					
0	3	4	78	103	188
1-4	4	10	59	68	141
5-8	40	152	811	976	1,979
9-10	1,538	3,705	14,441	10,091	29,775
TOTAL	1,585	3,871	15,389	11,238	32,083
Percentage					
0	0.2	0.1	0.5	0.9	0.6
1-4	0.3	0.3	0.4	0.6	0.4
5-8	2.5	3.9	5.3	8.7	6.2
9-10	97.0	95.7	93.8	89.8	92.8
TOTAL	100.0	100.0	100.0	100.0	100.0

5.3 BIRTH WEIGHTS

The table below (Table 5.3) shows the birth weight of the babies born in the 2011 MMPO cohort. The majority of babies (66.1 percent) weighed between 3000 to 3999 grams at birth. Only 0.6 percent of the babies weighed less than 1000 grams, and 5.3 percent weighed less than 2500 grams with 15.9 percent weighing over 4 kg.

Overall, primiparous women had babies with lower birth weights than the multiparous women.

Table 5.3: Number and percentage of births by birth weight of babies and parity.

Birth weight (grams)	Primiparous		Multiparous		All Babies	
	Number	Percentage	Number	Percentage	Number	Percentage
0 - 999	82	0.6	97	0.5	179	0.6
1000 - 1499	55	0.4	70	0.4	125	0.4
1500 - 1999	156	1.2	163	0.9	319	1.0
2000 - 2499	512	3.9	576	3.0	1,088	3.4
2500 - 2999	1,914	14.7	2,148	11.2	4,062	12.7
3000 - 3499	4,657	35.9	5,999	31.4	10,656	33.2
3500 - 3999	4,046	31.1	6,506	34.1	10,552	32.9
4000+	1,566	12.1	3,532	18.5	5,098	15.9
Not stated	1	0.008	3	0.02	4	0.01
TOTAL	12,989	100.0	19,094	100.0	32,083	100.0

5.4 BIRTH STATUS

In 2011 there were 31,739 women who gave birth to 32,083 babies; this figure includes 340 sets of twins and two sets of triplets. Of the total cohort of babies, 99.5 percent (n=31,912) were liveborn, 0.5 percent (n=171) were stillborn, and 0.2 percent (n=63) died within 27 days of birth. Reasons for mortality vary and may relate to prematurity, abnormality or may be unexplained and this report does not provide information on the reasons for mortality.

Table 5.4: Number of mothers and babies.

MMPO registrations 2011	Total	Details
Total birthing women	31,739	
Total liveborn babies	31,912	31,849 liveborn babies + 63 neonatal deaths 0-27 days
TOTAL BABIES	32,083	31,912 liveborn babies + 171 stillbirths

Table 5.5: Number of births and perinatal related deaths by neonatal status.

Neonatal Status	Neonatal Status	Number
Liveborn	Liveborn	29,979
	Liveborn with congenital abnormality	50
	Neonatal referrals	1,820
Perinatal Mortality	Stillborns	171
	Early Neonatal mortality (less than 7 days)	55
Neonatal Mortality	Late Neonatal mortality (7 to 27)	8
TOTAL		32,083

Table 5.6: Number and rate of perinatal related deaths by status at birth and birth place type.

Place of birth	Home	Primary	Secondary Facility	Tertiary Facility	Total
Number					
Live Births (a)	1,583	3,868	15,318	11,143	31,912
Stillbirths (b)	2	3	71	95	171
Total births	1,585	3,871	15,389	11,238	32,083
Neonatal deaths (c)	4	4	20	35	63
Perinatal deaths (d)	6	7	88	125	226
Perinatal related deaths (e)	6	7	91	130	234
Rate per 1,000 births					
Stillbirth rate (f)	1.3	0.8	4.6	8.5	5.3
Neonatal mortality rate (g)	2.5	1.0	1.3	3.1	2.0
Perinatal mortality rate (h)	3.8	1.8	5.7	11.1	7.0
Perinatal related death rate (i)	3.8	1.8	5.9	11.6	7.3

(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 2011, a total of 171 babies were stillborn, with the majority occurring at secondary and tertiary facilities. 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 premature births. Of the 4 neonatal deaths in the home birth group 2 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 2011 MMPO baby cohort are shown in Table 5.7. Thirty-four home birth babies (2.1 percent) and 84 primary facility babies (2.2 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 5.7: Number and percentage of admissions/transfers to NNU/SCBU of babies, by birth place type.

Transfer to NNU/ SCBU	Home		Primary facility	
	Number	Percentage	Number	Percentage
Yes	34	2.1	84	2.2
No	1,551	97.9	3,787	97.8
TOTAL	1,585	100.0	3,871	100.0

6 POSTNATAL PERIOD

This chapter provides information on the postnatal period and is based on the number of babies who were born in 2011 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 LMC midwives have type of feeding recorded at the initial feed, 48 hours, two weeks and on discharge from the LMC (between 4 – 6 weeks of age).

The following tables present the breastfeeding data for 2 weeks postpartum and at postpartum discharge. This data has been collated according to birthing locality and maternal ethnicity. More than three quarters of 2011 MMPO babies were exclusively or fully breastfed at two weeks of age. Babies born at home had the highest rate at 90.5 percent (Table 6.1 and Figure 6.1).

The highest level of exclusive breastfeeding 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. Primary, secondary and tertiary facilities had similar rates of artificial feeding (bottle-feeding) at around eight percent.

Table 6.1: Number and total percentage of births, by breastfeeding at 2 weeks and birth place type.

Breast feeding at 2 weeks	Home	Primary	Secondary facility	Tertiary facility	Total
Number					
Exclusive	1,379	3,001	10,485	7,413	22,278
Fully	56	160	1,322	1,057	2,595
Subtotal	1,435	3,161	11,807	8,470	24,873
Partial	65	335	1,757	1,459	3,616
Artificial	53	293	1,278	862	2,486
Not stated	32	82	547	447	1,108
TOTAL	1,585	3,871	15,389	11,238	32,083
Percentage					
Exclusive	87.0	77.5	68.1	66.0	69.4
Fully	3.5	4.1	8.6	9.4	8.1
Subtotal	90.5	81.7	76.7	75.4	77.5
Partial	4.1	8.7	11.4	13.0	11.3
Artificial	3.3	7.6	8.3	7.7	7.7
Not stated	2.0	2.1	3.6	4.0	3.5
TOTAL	100.0	100.0	100.0	100.0	100.0

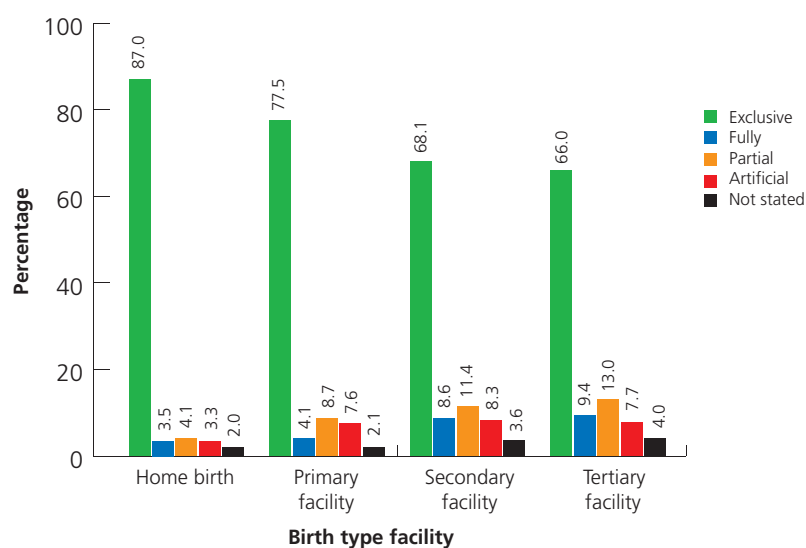


Figure 6.1: Percentage of births, by breastfeeding at 2 weeks and birth place type.

Breastfeeding at Postnatal Discharge

Type of feeding was documented by the midwife prior to postnatal discharge; the timing of discharge is variable and occurs between 4 and 6 weeks postnatal. At this time 70.4 percent of women continued to breastfeed (exclusive or fully) a reduction of 7.1 percent over this period. Women who gave birth at home continued to have higher levels of breastfeeding with a reduction of 4.3 percent compared to 7.9 percent for women who gave birth at a primary unit, 7.5 percent for women who gave birth in a secondary facility and 6.9 percent for women who gave birth at a tertiary facility.

Table 6.2: Number and total percentage of births, by breastfeeding at discharge and birth place type.

Breast feeding at discharge	Home	Primary	Secondary facility	Tertiary facility	Total
Number					
Exclusive	1,285	2,645	9,166	6,500	19,596
Fully	81	210	1,488	1,197	2,976
Subtotal	1,366	2,855	10,654	7,697	22,572
Partial	85	413	1,890	1,518	3,906
Artificial	100	521	2,298	1,573	4,492
Not stated	34	82	547	450	1,113
TOTAL	1,585	3,871	15,389	11,238	32,083
Percentage					
Exclusive	81.1	68.3	59.6	57.8	61.1
Fully	5.1	5.4	9.7	10.7	9.3
Subtotal	86.2	73.8	69.2	68.5	70.4
Partial	5.4	10.7	12.3	13.5	12.2
Artificial	6.3	13.5	14.9	14.0	14.0
Not stated	2.1	2.1	3.6	4.0	3.5
TOTAL	100.0	100.0	100.0	100.0	100.0

The breastfeeding data 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 79.4 percent. Asian babies showed the lowest exclusive breastfeeding rate in 2011 (61.3 percent) and Maori babies the highest rate of artificial breastfeeding (10.4 percent). The highest rate of any type of breastfeeding (exclusive, fully or partial) was reported by Asian women (94.3 percent), followed by Other (93.3 percent), NZ European (89.2 percent), Pacific Island (88.1 percent) and Maori (85.2 percent).

Table 6.3: Number and total percentage of births by breastfeeding at 2 weeks and ethnicity.

Breast feeding at 2 weeks	NZ European	Maori	Pacific Island	Asian	Other	Not Stated	Total
Number							
Exclusive	14,200	4,626	1,214	1,389	810	39	22,278
Fully	1,449	560	199	282	102	3	2,595
Sub total	15,649	5,186	1,413	1,671	912	42	24,873
Partial	1,947	776	259	466	164	4	3,616
Artificial	1,513	728	150	55	38	2	2,486
Not stated	610	309	75	74	39	1	1,108
TOTAL	19,719	6,999	1,897	2,266	1,153	49	32,083
Percentage							
Exclusive	72.0	66.1	64.0	61.3	70.3	79.6	69.4
Fully	7.3	8.0	10.5	12.4	8.8	6.1	8.1
Subtotal	79.4	74.1	74.5	73.7	79.1	85.7	77.5
Partial	9.9	11.1	13.7	20.6	14.2	8.2	11.3
Artificial	7.7	10.4	7.9	2.4	3.3	4.1	7.7
Not stated	3.1	4.4	4.0	3.3	3.4	2.0	3.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

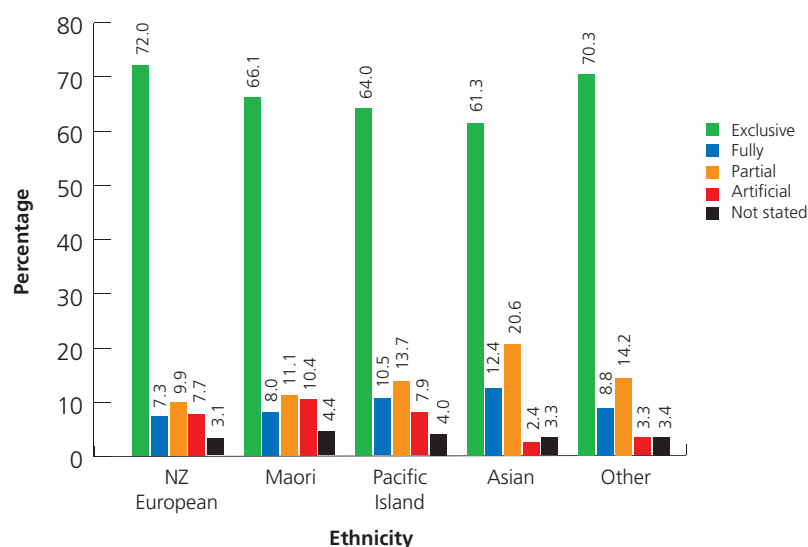


Figure 6.2: Percentage of births, by breastfeeding at 2 weeks and ethnicity.

6.2 POSTNATAL HEALTH: SMOKING STATUS

Smoking status, including number of cigarettes smoked, is also recorded by MMPO midwives postnatally. Overall, the data indicates a general decrease in smoking rates when recorded at this point.

Table 6.4: Number and percentage of women who reported smoking postnatally, by age group and number of cigarettes smoked per day.

Cigarettes smoked per day	Number of women in age group (years)				
	<20	20 - 29	30 - 39	40+	Total
Number					
Nil	1,775	11,883	11,699	781	26,138
1 - 4	237	657	225	11	1,130
5 – 9	286	941	356	36	1,619
10 – 19	276	990	433	42	1,741
20+	29	156	81	6	272
Not stated	95	367	360	17	839
TOTAL	2,698	14,994	13,154	893	31,739
Percentage					
Nil	65.8	79.3	88.9	87.5	82.4
1 - 4	8.8	4.4	1.7	1.2	3.6
5 - 9	10.6	6.3	2.7	4.0	5.1
10 - 19	10.2	6.6	3.3	4.7	5.5
20+	1.1	1.0	0.6	0.7	0.9
Not stated	3.5	2.4	2.7	1.9	2.6
TOTAL	100.0	100.0	100.0	100.0	100.0

During pregnancy 17.5 percent of women reported smoking (refer to Figure 2.2 in chapter 2). This rate dropped by 2.5 percent to 15.0 percent postnatally (Table 6.4) with 82.4 percent of women reporting they were smoke free and 2.6 percent not stated.

In the group with the highest reported smoking rate, (the mothers who were under 20 years of age) there was a 5.2 percent decrease in smoking, followed by a 3.1 percent decrease in the mothers aged 20 to 29 years, a 1.3 percent decrease in mothers aged 30-39 years and a 2.0 percent decrease in mothers aged over 40 years (Figure 6.3).

Overall there was a reduction in the number of women smoking 10 or more cigarettes a day from 7.3 percent to 6.3 percent and those smoking 20 or more a day dropped from 1.3 percent to 0.9 percent. For those women who did smoke postnatally the majority smoked between 5 and 9 or 10 to 19 a day (5.1 and 5.5 percent respectively) (refer to Table 6.3).

The change in smoking behaviour between the antenatal and postnatal period is shown in Figure 6.3. Almost 31 percent of women younger than 20 years of age reported smoking postnatally but this was a decrease from the antenatal smoking behaviour. Reductions in smoking behaviour occurred for each age group. In the age group of 30-39 years the majority of women (88.9 percent) did not smoke at all.

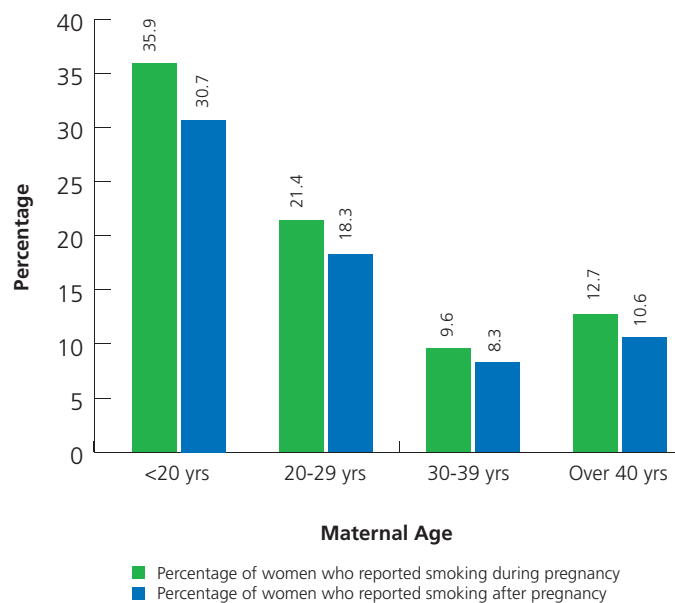


Figure 6.3: Percentage of women who reported smoking during pregnancy and postnatally, by age.

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APPENDIX: “THE MMPO MATERNITY NOTES” DATASET

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