Growing Up in New Zealand

Before we are born

2010

Growing Up in New Zealand

THE UNIVERSITY OF AUCKLAND
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Te Whare Wānanga o Tāmaki Makaurau

Growing Up in New Zealand: A longitudinal study of New Zealand children and their families

Report 1: Before we are born

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Further information on *Growing Up in New Zealand* is available at www.growingup.co.nz

Data access for researchers: Refer to www.growingup.co.nz for information about using *Growing Up in New Zealand* data for research purposes.

Foreword

It is my pleasure to introduce this first report from *Growing Up in New Zealand*. Although a developed country, New Zealand faces real challenges in health, welfare and education, and performs poorly in OECD rankings in several of these parameters. As an organisation committed to making a contribution to New Zealand through excellent research and teaching, The University of Auckland is therefore pleased to be the host and a major supporter of New Zealand's 21st century longitudinal study.

Research across several University faculties has shown us that equity of opportunity for our citizens cannot be guaranteed by intervening at a single point in the life of a child, youth or adult. We need to understand how family circumstances and government policies impact throughout the life span. But there is no doubt that it all begins with a healthy start to life.

Researchers know that it is only with research-based evidence that quality policy decisions can be made to ensure every child born in New Zealand enjoys the safe, healthy and happy childhood they are entitled to.

Growing Up in New Zealand will provide that evidence.

The study will collect and analyse a range of information about children and their families including details of health and emotional wellbeing, parenting, family functioning, early childhood, education, culture and identity.

More than 7,000 babies have been recruited into the study. Their parents have volunteered their time over the next 21 years to provide insights into their lives and those of their children. It is a significant commitment and one that over time I expect all New Zealanders to increasingly value as a major contribution to the development of excellent public policy.

This report provides what is a first for longitudinal studies worldwide: data from interviews with both parents before the child was born.

These data generate insights not only into the hopes, dreams and realities faced by soon-to-be-parents, but also into New Zealand's evolving population.

Growing Up in New Zealand is a partnership between researchers and policy makers.

The University of Auckland acknowledges the key role of the Ministry of Social Development in identifying the need for a longitudinal study that reflects the diversity of today's New Zealand and for its ongoing support. Other agencies, as well as The University of Auckland, have contributed to the cost of the study to-date.

These are: the Ministry of Health, the New Zealand Police, the Ministry of Justice, the Families Commission, the Children's Commission, the Department of Labour, the Ministry of Education, Housing New Zealand and Sport and Recreation New Zealand.

The investment in *Growing Up in New Zealand* is already significant. Further investment will be required over the next 20 years for the study to continue to deliver on its potential. The University of Auckland is committed to ensuring the future of *Growing Up in New Zealand*. It is an investment which is well on the way to being one of the country's 21st century's taonga.

Professor Stuart McCutcheon
Vice-Chancellor
The University of Auckland

About the research team

Dr Susan Morton is the Director and Principal Investigator leading *Growing Up in New Zealand*. Susan is a specialist in Public Health Medicine and a Senior Lecturer in Epidemiology and Population Health at The University of Auckland. Susan also holds postgraduate qualifications in mathematics and statistics and is an expert in life course epidemiology. She qualified as a secondary school teacher before transitioning into her medical career. Her major research interests are in maternal and child wellbeing, intergenerational and life course effects on health and development, translational research and economic modeling of life course outcomes.

Associate Professor Cameron Grant is an Associate Director of *Growing Up in New Zealand* and the study's Health and Wellbeing domain leader. Cameron is a paediatrician at Starship Children's Hospital and an Associate Professor at The University of Auckland. His research focuses on improving health in early childhood.

Dr Polly Atatoa Carr is an Associate Director of *Growing Up in New Zealand* and the study's Culture and Identity domain leader. Polly is a specialist in Public Health Medicine based at the Waikato Clinical School, and an Honorary Senior Lecturer at The University of Auckland. She has a background in molecular biology, and has broad research interests in population health and child development. Polly is particularly passionate about the elimination of health and social inequalities.

Elizabeth Robinson is the senior biostatistician for *Growing Up in New Zealand*. Elizabeth is a consultant biostatistician in the Faculty of Medical and Health Studies at The University of Auckland. Her strengths are in the design and analysis of methodologies commonly used in medical research.

Dr Vivienne Ivory is the study's Social Context, Neighbourhood and Environment domain leader. Vivienne is a social scientist working in the public health field. Her interests include the contextual influences on health and child outcomes.

Dr Te Kani Kingi (Ngāti Pūkeko and Ngāti Awa) is the Māori theme leader for *Growing Up in New Zealand*. Te Kani is the Director of Te Mata o te Tau, the Academy for Māori Research and Scholarship at Massey University in Wellington. Te Kani has particular research interests in psychometrics, mental health, and Māori development.

Dr Renee Liang heads the study's Asian theme. Renee is a paediatrician, and her areas of interest are child health and adolescent health. Renee is also a poet, playwright and writer with links to the arts and Asian communities.

Dr Lana Perese is the study's Pacific theme leader. Lana is a Principal Research Analyst at the Ministry of Pacific Island Affairs. Lana has been involved in a number of research projects related to Pacific peoples in New Zealand, focusing on gambling, addictions, health and justice.

Dr Elizabeth Peterson co-leads the study's Psychosocial and Cognitive domain. Elizabeth is a developmental psychologist at The University of Auckland's Psychology Department. She specialises in the field of individual differences that can affect and predict student learning outcomes.

Associate Professor Jan Pryor is the leader for the Families and Whānau domain. Jan was the inaugural Director of the McKenzie Centre for the Study of Families at Victoria University of Wellington, and has occupied the role of Families Commissioner. Jan's research focus is family dynamics, including family transitions.

Associate Professor Elaine Reese is the study's Education domain leader. Elaine is a member of the Psychology Department at the University of Otago. Her research expertise is on the role of parent-child interactions in children's development.

Associate Professor Karen Waldie is co-leader of the Psychosocial and Cognitive domain. Karen is a part of the Department of Psychology and the Centre for Brain Research (at The University of Auckland). She is a developmental neuropsychologist and her research interests include life-span development as well as the precursors and determinants of neurodevelopmental disorders.

Dr Clare Wall is the nutrition expert in the Health and Wellbeing domain. She is a Senior Lecturer in the Faculty of Medical and Health Sciences at The University of Auckland. Her research focus is the inter-relationship between nutrition and paediatric health outcomes.

Other research team members

Dinusha Bandara is a biostatistician with *Growing Up in New Zealand*.

Dr Amy Bird is a research fellow with the study.

Mary-Rose Cavanagh is the study's research manager.

Dr Emma Marks is a research fellow with the study.

Dr Jatender Mohal is the study's research data manager.

Dr Johanna Schmidt is a research fellow with the study.

Anita Winn-Robertson is the study's research administrator.

Acknowledgements

Most importantly we would like to acknowledge the children and the families who are part of the *Growing Up in New Zealand* study. Their collective information provides us with the record of what it is like to grow up in New Zealand today, and the project would not exist without them.

We are extremely grateful to our families for their generosity and honesty and we are indebted to them for sharing their life stories with us. We look forward to our continuing association with them. For most of our families, their pregnancy and the arrival of their child has been a time of excitement and joy. For a few, however, it has been a time of distress and occasionally loss. We acknowledge this, and hope that there is some comfort in knowing that all their information forms a cherished and important part of this valuable resource.

In addition to acknowledging the current research team working on the *Growing Up in New Zealand* project, we would like to recognise the wider *Growing Up in New Zealand* team members, without whom there would be no information collected from participants. In particular, we acknowledge Robert Bulpin (Executive Director and Manager of the Operations Team), Linda Hefford (Interview Manager), Peter Tricker (Data and Systems Manager), Diane Abad Vergara (Communications Manager), Nick Langstone (Database and IT specialist), Monique Davies (Community Team Manager), Florence Falconer (Quality Assurance Manager), and Liberina Rodrigues (Operations Administration Team Leader). We also thank all other members of the Operations Team, especially the Computer Assisted Telephone Interview (CATI) Team, the Interview team, the Community Team and their support staff. All these wonderful people make the data collection possible and support the research team. We would also like to acknowledge former research team members, particularly Dr Barry Milne, who was the data manager for the antenatal data collection wave, and Debbie Waayer – a former research fellow. In addition we thank our Scientific Advisory Group members, our Kaitiaki group members, our domain and theme advisors, and all the stakeholders whom we have consulted with and who have assisted us in the early stages of this study.

We would also like to acknowledge those who previously contributed to the success of this project during its development and early operational phase. In particular we name the researchers who contributed substantially to the development and design phase of the project between 2005 and 2007. The Morton Consortium, as it became known at that time, undertook the detailed planning and piloting work for the *Growing Up in New Zealand* study under the name of the Longitudinal Development Project, or LDP. The reports they produced during this development phase underpin the study and inform this report. They were responsible for identifying and resolving many of the challenges associated with planning and implementing a longitudinal study.

The Morton Consortium:

- Dr Susan Morton, School of Population Health and the Liggins Institute, The University of Auckland.
- Dr Melani Anae, Centre for Pacific Studies, The University of Auckland.
- Associate Professor Tony Blakely, Department of Public Health, Wellington School of Medicine & Health Sciences, University of Otago.
- Dr Sue Crengle, Department of Māori and Pacific Health, The University of Auckland.
- Professor Peter Davis, Department of Sociology, The University of Auckland.
- Associate Professor Robyn Dixon, Centre for Child & Family Policy Research, The University of Auckland.
- Dr Jackie Fawcett, Department of Public Health, Wellington School of Medicine & Health Sciences, University of Otago.
- Associate Professor Cameron Grant, Department of Pediatrics, The University of Auckland.
- Vivienne Ivory, Department of Public Health, Wellington School of Medicine & Health Sciences, University of Otago.
- Associate Professor Jan Pryor, Roy McKenzie Centre for the Study of Families, Victoria University of Wellington.
- Elizabeth Robinson, Epidemiology & Biostatistics, School of Population Health, The University of Auckland.
- Dr Karen Waldie, Department of Psychology, The University of Auckland.
- Dr Samson Tse, Centre for Asian Health Research & Evaluation, The University of Auckland.

Also to be acknowledged for their significant enthusiasm and foresight to launch this study are the initial funders, the Ministry of Social Development (MSD), supported by the Health Research Council (HRC) in the development phase. Key people within both of these agencies enabled the Morton Consortium to develop a study design that is one of the most robustly evaluated and refined plans of

its kind in New Zealand today. We especially acknowledge Ross Mackay who has been the key advocate within MSD for many years. The ongoing funding and support from MSD, in particular from its Chief Executive, Peter Hughes, as well as the support of his extended team, contributes to the study's ability to move forward as we plan future data collections. We also acknowledge the other agencies who have contributed substantially to the funding and success of this study. Importantly we acknowledge the Ministries of Health, Education, Justice, Research, Science and Technology, Women's Affairs and Pacific Island Affairs, the Families Commission, Departments of Corrections and Labour, Housing New Zealand, Te Puni Kokiri, Office of Ethnic Affairs, Children's Commission, Statistics New Zealand, the New Zealand Police, Sport and Recreation New Zealand and the Treasury.

We acknowledge the ongoing and essential support from Auckland UniServices (Mr Peter Lee and Megan Putterill in particular), and The University of Auckland. We especially mention The University of Auckland's Vice-Chancellor, Professor Stuart McCutcheon. His support, advice, and consistent and steady influence have been a very strong contributor to these first years of *Growing Up in New Zealand.*

The Scientific Advisory Group

Professor Robert Beaglehole, The University of Auckland.

Professor Tony Blakely, Otago University.

Dr Bianca de Stavola, London School of Hygiene and Tropical Medicine.

Professor Anne Duggan, Johns Hopkins University, Baltimore, General Paediatrics Research Centre.

Professor Sir Mason Durie, Massey University (and *Growing Up in New Zealand* Kaitiaki Group Chair).

Professor Sir Peter Gluckman, The University of Auckland.

Professor Hazel Inskip, University of Southhampton.

Professor Heather Joshi, Centre for Longitudinal Studies, Institute of Education, University of London.

Professor John Lynch, School of Health Sciences at the University of South Australia.

Professor Stuart McNaughton, The University of Auckland.

Professor Ed Mitchell, The University of Auckland.

Dr Susan Morton (Chair), *Growing Up in New Zealand*, The University of Auckland.

Associate Professor Jan Nicholson, Longitudinal Study of Australian Children, Murdoch Children's Research Unit.

Dr Teuila Percival, The University of Auckland.

Professor Chris Power, The Institute of Child Health, University College London.

Professor Ann Sanson, the University of Melbourne.

Associate Professor Fred Seymour, The University of Auckland.

Dr Amritha Sobrujun-Maharaj, The University of Auckland.

Directors summary

We are very excited to release the first results from *Growing Up in New Zealand*, the 21st century longitudinal study of New Zealand children and their families. The information collected from families before their children are born clearly paints a picture of a changing New Zealand.

The participants of this longitudinal study are being born into a culturally and structurally diverse New Zealand, with many of their parents having moved here only in their adult years. Our children also have diverse socioeconomic realities (with many being born into families and neighbourhoods that experience high levels of deprivation), and their parents have varied intentions for their care arrangements in the future.

Cutting across the diversity of the families in this study are remarkably similar aspirations of parents for their children. They hope that their children will grow up healthy and happy in New Zealand. They want their children to be able to follow their dreams in a society that they will contribute to, and which in turn will respect and value their diversity.

Information from the first of many interviews in this study challenges much of our traditional rhetoric about growing up in New Zealand. These early findings also challenge us all to consider how we can ensure that these children will be able to achieve their dreams as they grow into our future adults.

We would like to thank the government for their foresight in terms of enabling this new study to begin and for supporting it throughout its early phases. Our ongoing partnership with multiple agencies is especially important to ensure that the stories of all our families are represented at the policy table.

Summary of study approach

Growing Up in New Zealand is a longitudinal study that provides an up-to-date, population relevant picture of what it is like to be a child growing up in New Zealand in the 21st century. It is the first longitudinal study of its kind that has recruited and collected information from both mothers and their partners from before children are born. It is unique in terms of its capacity to provide a comprehensive picture of child development across multiple domains of influence for all current children born in New Zealand, and for including significant numbers of our Māori, Pacific and Asian children as well as our European and other New Zealanders.

There are clear inequalities in health and education-related outcomes within our population, with poorer outcomes in general for our Māori and Pacific children and their families and for those living in socioeconomic deprivation. Despite attempts to remediate these differences in outcomes over several decades, inequalities often remain and in many cases they have widened. It is not enough to simply describe these differences. The information provided by our families in *Growing Up in New Zealand* over time is designed to give us a more complete picture of the pathways that lead to differential outcomes, and to provide much better evidence for the development of strategies to reduce inequalities and to improve outcomes for all children.

From its inception the study has been explicitly designed to follow children from before birth until they are young adults, to understand 'what works' for our children and families (rather than primarily focusing on negative outcomes) and to consider pathways of development across multiple domains of influence. This will allow a much better understanding of the complex interplay of all the factors that lead to child outcomes including their growth, their health, their behaviours and their cognitive development. The model of child development shaping this study is always child-centred, but never forgets that children develop in dynamic interactions with their families, communities, environments and societal contexts over time. This conceptual approach to the study acknowledges the growth in our understanding of early child development in the last few decades, with an increasing recognition of the importance of the antenatal period and the first few years of life for shaping future developmental pathways for our children.

The drive for a new longitudinal study to provide up-to-date, population relevant evidence about our children growing up in New Zealand, to understand the developmental environment for our increasingly diverse population, and to build on the success and proven value of earlier New Zealand longitudinal studies, has been championed by the Ministry of Social Development.

This Ministry, together with those of Health and Education, the Treasury, and the Families Commission, originally sought a research group to develop a new longitudinal study in late 2004. Throughout the development phase (2005-2007) and since the 2008 launch of the *Growing Up in New Zealand* study, several other agencies have also contributed to the study sustainability. These include the Ministries of Justice, Pacific Island Affairs, Te Puni Kokiri, Research Science and Technology, Housing New Zealand, Sport and Recreation New Zealand, the Children's Commission, New Zealand Police, Statistics New Zealand, the Department of Labour and the Office of Ethnic Affairs. The research team has worked with all these stakeholders (and many other policy development agencies) to ensure that this study has been designed and implemented appropriately to inform effective and efficient cross-sectoral policy that addresses the specific needs of our population now and into the future. This engagement with policy makers from the outset is also a novel feature of this longitudinal study.

Focus on the Antenatal Data Collection Wave

The recruitment of the *Growing Up in New Zealand* children and their families, and the collection of baseline information from before the children's births has established the foundations of a valuable resource with both immediate salience and future potential. In particular:

- *Growing Up in New Zealand* has recruited a unique cohort of children and their families that is able to provide population-relevant contemporary information about what it is like to grow up in New Zealand in the 21st century. No other study or data source is able to do similarly;
- the recruited cohort represents the diversity of our current New Zealand families having children. In particular it reflects their economic and socioeconomic diversity;
- *Growing Up in New Zealand* has recruited more fathers (and partners) from the outset than any previous longitudinal study from before birth;
- the recruited cohort of children is broadly generalisable to all the children currently being born in New Zealand.

The findings of these first antenatal interviews thus provide an accurate snapshot of the context which all our babies are being born into, and the hopes and aspirations of New Zealand parents for their children born today. This multidisciplinary evidence collected from the families is a treasure, and over time with the increasing involvement of the children themselves, this study will allow for the development of strategic policies and interventions that are effective, efficient, and truly targeted to the needs of our current population.

Key findings from before birth

The key findings summarised here are also detailed throughout the report, and illustrated with common quotations from interview participants.

Of greatest salience is the increasing diversity of our families, and their children, who will become our adult New Zealanders in less than two decades. These families are very different from those of previous generations, and vastly different from those families involved in earlier longitudinal studies undertaken in this country. In particular:

- the mean age of mothers and fathers having children is increasing. Whilst we continue to see a high rate of teenage pregnancy in New Zealand, the average age of parents having children in New Zealand (first or subsequent) is now greater than 30 years;
- 1 in 3 of our children is born to at least one parent who did not grow up in New Zealand themselves and who may have only been in New Zealand for a short time before their child is born;
- whilst 90% of the relationships between mothers and fathers of the *Growing Up in New Zealand* children are stable during pregnancy, just 60% of all relationships are legally binding. For 1 in 10 children the relationship between their parents will change significantly between the beginning of the pregnancy and their birth;
- most mothers are living with another adult during their pregnancy, usually their partners (80%), but increasingly our children are being born into varied family structures including mothers living with extended families (nearly 24% overall and more than half of all Pacific families), with non-kin (3% overall but greater than 10% for Asian mothers) or without other adults (3% overall but 7% for Māori mothers).

The home environments that the children are being born into are also increasingly diverse. Specifically:

- only 80% of the households that our children are being born into use English as their primary language for everyday conversations. The remaining 20% use a wide range of languages for everyday conversations, although the majority of parents are also able to converse in English;
- 1 in 3 of the homes where children will grow up has at least one parent who is multilingual;
- only 1 in 20 of the children's parents are able to converse in te reo Māori which raises concerns about maintenance of this unique resource for our future generations.

Household resources for families of the *Growing Up in New Zealand* children are often limited. Four out of every 10 of our children are being born into a family living in the most deprived areas of New Zealand (NZDep2006) categories 8 through 10). This is not just a feature of this cohort but is typical of all families currently having children in New Zealand according to the most recent routine birth statistics. In addition:

- almost half of all families are living in rental accommodation when their child is born;
- perhaps in part related to housing tenure, our families are highly mobile with over half of all families moving more than twice in the last five years;
- the majority of the mothers of the children being born are in paid employment towards the end of their pregnancy, regardless of whether this is their first or a subsequent child, and most intend to return to work after their child is born;
- both mothers and partners would like to take more leave than they feel they are able to take in the first months after their child is born. Mothers would like their leave to be twice as long as the 8 months (on average) they are able to take, whereas partners would like to take a few extra weeks;
- many parents in the most deprived areas were not aware of either Paid Parental Leave or Working for Families tax credits. This is disappointing given that these are the families who probably require this additional support most.

In terms of the pregnancies themselves for the mothers of the *Growing Up in New Zealand children*, 60% were reported to be planned and over half of the children in the cohort will have older siblings, with the overall size of the families they are born into most likely to have 2 or 3 children including them, rather than 4 or more. During pregnancy most mothers were able to find a Lead Maternity Carer reasonably quickly in their pregnancy and few had problems registering with their first choice of maternity carer.

In terms of behaviours in pregnancy there are an increasing number of guidelines provided to mothers. However, it is clear that not all mothers follow all the guidelines, especially with respect to food and drink. In particular:

- over 90% of mothers did make changes to their diet in pregnancy, most frequently avoiding alcohol, caffeine and raw or highly processed foods. However, a considerable number continued to eat these items and consume alcohol in pregnancy;
- mothers who reported their pregnancies were unplanned were less likely to take folate in the first trimester of their pregnancy than mothers with a planned pregnancy. However, 16% of all mothers did not take folate at any time before or during their pregnancy;
- despite a reduction in smoking rates overall during pregnancy, more than 1 in 10 mothers continued to smoke, with an over-representation of smokers in mothers who identified as Māori and those who lived in the most deprived areas;
- mothers who were physically active prior to their pregnancy were most likely to continue to exercise throughout their pregnancy whereas mothers who were not physically active prior to pregnancy were highly unlikely to take up exercise at any time during their pregnancy.

The diversity of behaviours in pregnancy (relating to diet, alcohol, smoking, and physical activity) across all mothers will allow us to determine what effect adherence and non-adherence to specific guidelines have on children's outcomes at birth and as they grow up over time. We also asked partners independently if they made similar changes to their behaviours during their partner's pregnancy, which has not been done previously. This provides unique additional information to determine whether shifts in partners' behaviours assist mothers to make lifestyle changes during pregnancy.

As well as asking about parental background, current family structure, and describing the neighbourhoods and environments that our children would be exposed to after

birth, we were also interested in parental plans for their babies after they were born. In particular we asked about plans for early feeding, childhood immunisation, early care of children, and how parents expected their children to identify themselves. Specifically:

- parental intentions for the ethnic identity of their children were more diverse than the ethnic identities identified by the parents themselves. This largely reflects the mixed ethnicity of the parents and their wishes for their children to identify with all the ethnicities that they identify with. The evolution of ethnic identity will be a key trajectory that is followed for these children over time, and the children will be able to express their own opinions about their own identities as they grow up;
- the majority of mothers and partners intend that their child will be breastfed until they are at least 6 months of age. This would translate into higher rates of breastfeeding than we currently see in our population, so there are likely to be mitigating factors that influence future practice. We will be able to determine these factors further over time;
- the majority of mothers and partners reported that they intend to fully immunise their child after they are born. Again, the intended rates of immunisation were higher across all groups than the rates we know are currently achieved in our population. The longitudinal information from *Growing Up in New Zealand* will be critical to determine the additional encouraging or discouraging factors that influence practice.

A key advantage of the *Growing Up in New Zealand* study is that this information has been collected in pregnancy so it will not be biased by asking about the pregnancy after the child is already born. In this way it will be possible to assess whether parents have been able to fulfill their intentions postnatally, and if so, what has enabled this to happen, or if not what barriers can be addressed to optimise development.

Despite the diversity of the parents of the *Growing Up in New Zealand* children, most parents shared common aspirations for their children to grow up happy, healthy and well-educated. They also expressed the hope that their children would play an active role in their society and that the society that they belonged to would in turn value their place in it.

Overall, the information collated from the first interviews with the parents of the *Growing Up in New Zealand* children indicate that New Zealand is changing rapidly. Our children are becoming more diverse and the environments they will experience as they grow up here are also changing rapidly. These children are our future and this evidence is critical to ensuring that we make that future the best it can be for all our young New Zealanders.

The first data collection wave for *Growing Up in New Zealand* has provided a detailed snapshot of the developmental influences on the next generation in this country. There has been considerable investment in setting up this new longitudinal study and this investment can now begin to be repaid.

This study has immediate value in terms of its ability to provide cross-sectional information about the families and environments that our current New Zealand children are being born into today. The detail and depth of information from the mothers and partners themselves, and the timely manner in which it is available, provides evidence that is not available for our population from routine statistics or from any other data collection.

The information in this report also describes the foundations for future longitudinal analyses of the *Growing Up in New Zealand* cohort. Clear and comprehensive investment in building this foundation has ensured there are appropriate study methodologies for the research and for recruitment, and that effective partnerships have been forged to ensure this study is sustainable and delivers valuable evidence for decades to come.

We are delighted to present the collective voices of families currently having children in New Zealand in this report, and we greatly appreciate their participation.

Growing Up in New Zealand is privileged to be able to contribute to the lives and wellbeing of our children and families, now and into the future.

Dr Susan Morton
Research Director
Growing Up in New Zealand

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1. What is Growing Up in New Zealand?

Growing Up in New Zealand is a new longitudinal study of children and their families beginning before birth and following children in the context of their families and wider environments as they grow to adulthood in 21st century New Zealand.

The overall objective of this study is to provide a robust, population relevant evidence base in order to inform public policy for all current New Zealand children and their families. The data collected in this study will create a valuable resource for the benefit of all New Zealanders, in particular:

- for researchers to gain a better understanding of the causal pathways that lead to particular developmental outcomes;
- for policy makers to inform strategies to optimise development;
- for the children and families who take part in this study as well as for all future generations of New Zealanders.

Refer to Appendix 1 for more detailed objectives.

1.1 Background

Growing Up in New Zealand was set up in response to a recognised need by New Zealand policymakers for more robust, contemporary, population relevant evidence to inform their efforts to improve the quality of young New Zealander's lives. The Ministry of Social Development has been the lead agency responsible for commissioning and funding this study, with support from multiple other agencies including Ministries of Health, Education, Justice, and Research, Science and Technology as well as Statistics New Zealand, the Families Commission, Ministry of Pacific Island Affairs, Department of Labour, New Zealand Police, SPARC (Sport and Recreation New Zealand) and Te Puni Kokiri. The design and processes for this study were subject to an extensive, peer-reviewed development phase between 2005 and 2007. After agreement that the proposed design would meet the required objectives, the longitudinal study proper was launched as *Growing Up in New Zealand* in April 2008.

1.2 Conceptual framework

Growing Up in New Zealand has been designed as explicitly longitudinal from the outset; it is multi-disciplinary in nature and includes a translational dimension, with an explicit intent to both relate to the current policy context and inform future policy development. The study design and outcomes are intended to achieve a better understanding of children's development in the unique context that is New Zealand in the 21st century. This new study builds on the success and demonstrated value of previous New Zealand longitudinal studies whose participants are now into their fourth decade of life. Importantly, the new design reflects both the international and national scientific and demographic changes that have occurred since the earlier studies began in the 1970's. In particular *Growing Up in New Zealand* has:

- a greater consideration of antenatal and intergenerational influences on child development (recruiting and beginning data collection from before birth);
- a greater emphasis on collecting early life data, especially in the first 2 years of a child's life (4 data collection points in the first 2 years);
- included fathers (and partners) from before birth (independent interviews);
- sought to recruit an ethnically diverse cohort to represent all current births in New Zealand;
- taken an interdisciplinary and life course approach to child development from the design phase;
- built relationships with multiple stakeholders, notably with policymakers throughout all stages of the study to facilitate translation of research findings.

1.3 Conceptual model

Growing Up in New Zealand is designed to provide an understanding of how children grow up in New Zealand in the context of their families and their environment in the 21st century. Therefore, the information collected from before birth is centred on the child as the participant throughout. Information is collected to determine trajectories of development; that is, to determine what influences child development over time, rather than as a series of cross-sectional snap-shots of development. The conceptual model applied is deliberately designed to understand the dynamic interactions between each child and their environment across a broad range of influences from the immediate family environment to the wider societal context. The model also incorporates the notion that the development of all children begins from before they are born (intergenerational) and that each life course outcome is the result of a complex interplay over time between the individual's biology and their environment (epigenetics).

These components of the conceptual approach underpinning the *Growing Up in New Zealand* study are represented in Figure 1.

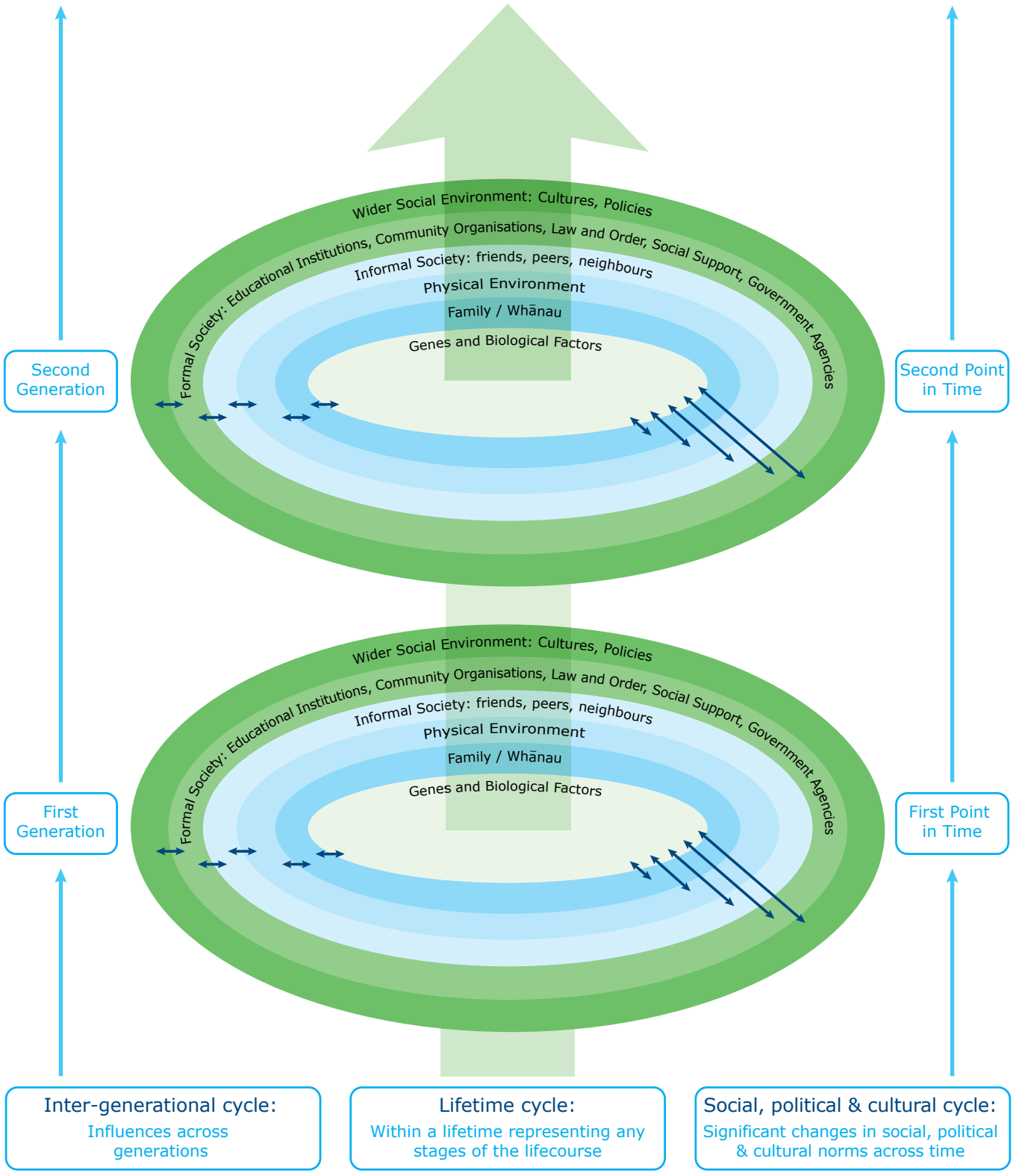


Figure 01. Conceptual framework for understanding child development in *Growing Up in New Zealand*

1.4 Study design

In order to realise the broad objectives and to operationalise the conceptual framework of *Growing Up in New Zealand*, domain experts provide input across the multiple research disciplines that influence the various aspects of child development (domains are shown vertically in Figure 2) alongside theme experts who provide integrated guidance to relate this disciplinary evidence to the unique New Zealand population and context (themes are shown horizontally in Figure 2). The domains and themes are represented as separate entities in Figure 2, but in reality they overlap to determine inter-connected influences on child development.

The domains and themes represent the multi-disciplinary influences that need to be considered at any cross-sectional point in time for each child in the *Growing Up in New Zealand* study. The lattice is modelled on the weaving of a kete (a traditional Māori basket), which holds all the elements necessary for life. At each data collection point in the study, a balance of information is sought from participants to describe the current status of each of these domains and themes for the children and their environments, whilst keeping a longitudinal perspective overall.

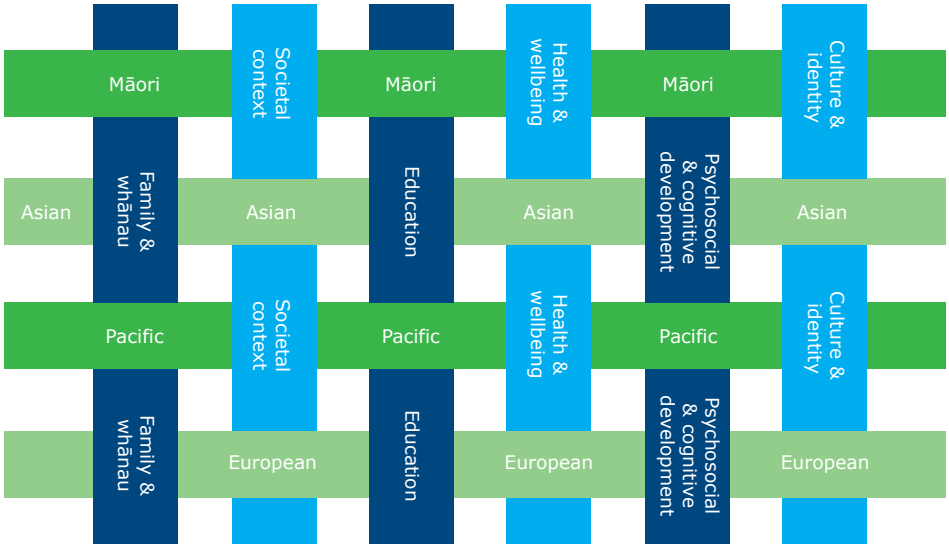


Figure 02. Domains and Themes informing *Growing Up in New Zealand*

The domain and theme structure in Figure 2 was used to inform the key research questions that *Growing Up in New Zealand* seeks to address to understand child development in New Zealand over time. These are summarised in four over-arching research questions. Addressing these questions will provide the population relevant evidence to inform cross-sectoral policy decisions.

1. What determines developmental trajectories across multiple levels of influence (political, social, cultural, intergenerational, familial, and individual) through the life course in the major domains of interest?
2. How are New Zealand children faring developmentally across multiple domains at discrete points in the lifecourse?
3. How are these developmental trajectories and outcomes associated with ethnicity across the lifecourse?
4. What factors and trajectories, particularly across multiple levels of influence, confer resilience and optimise development for New Zealand children?

More specific research questions are detailed according to the domains of influence on children's development shown in Figure 2. These detailed research questions are provided in Appendix 2. All questions are integral to the over-arching objective of *Growing Up in New Zealand* to provide relevant, population evidence to inform policy.

In particular in the New Zealand context, the integration of the Māori theme and experts in the Kaitiaki group ensure that *Growing Up in New Zealand* provides a unique opportunity to examine the factors which contribute to the wellbeing of Māori tamariki (children) and their whānau (families) in New Zealand in the 21st century.

1.5 Recruiting the cohort

The *Growing Up in New Zealand* cohort was planned to be recruited before birth (antenatally) so as to describe the families and environments of the children from before they were born. Pregnant mothers were the contact point for recruitment of the cohort children, and through the mothers current partners were also invited to participate from the first data collection point.

The sampling frame for the cohort was all expected births occurring in the regions covered by three District Health Boards (DHBs): Auckland, Counties-Manukau and Waikato within a defined time period. All pregnant women with an estimated delivery date (EDD) between 25 April 2009 and 25 March 2010, who lived within one of these three DHB areas during their pregnancy, were eligible to participate. There were no other inclusion or exclusion criteria.

The choice of a sampling frame across a geographically defined area was to ensure that the recruited cohort would be broadly generalisable to all current New Zealand births whilst also maximising resource efficiency for recruitment, retention and data collection. The Auckland and greater Waikato areas were chosen for the *Growing Up in New Zealand* sampling frame because almost a third of the population of New Zealand resides there (29% in 2006). Furthermore over 33% of all New Zealand live births occur in these regions (Ministry of Health 2010). Most importantly though, the sampling frame for *Growing Up in New Zealand* was located in these areas to ensure that the cohort would be broadly generalisable to all current New Zealand births in terms of ethnic diversity and markers of parental socioeconomic position.

A cohort of approximately 7,000 pregnant mothers meeting the eligibility criteria was sought to provide adequate statistical power to undertake complex analyses of interlinked developmental trajectories over time across the whole cohort of children as well as within particular subgroups. The total sample size was based in particular on achieving adequate precision of statistical estimates for children identified as Māori throughout the study period. A further consideration in the determination of the required sample size was to ensure that the cohort recruited would remain appropriately powered after the anticipated attrition over the course of the study.

In addition to this main group of children, a specially selected Leading Light group of approximately 200 children was recruited via their mothers in late 2008. The children in this group are approximately 6 months older than the oldest Main Cohort children. The Leading Lights were recruited in the same way as the Main Cohort, and are from the same geographical area. This important group of children and their parents are known as Te Roopu Piata (shining stars) as they guide the way for all the data collection waves.

1.6 Data collection in the first two years

Growing Up in New Zealand sought to collect more detailed information about the children's development over the first 2 years of their lives than previous New Zealand longitudinal studies had been able to. Four data collection waves are planned to provide information about development during the critical early years of life for the children starting from before their birth. The data collection points and the primary method of data collection at each time point is summarised in Figure 3.

	Ante-natal	Birth	6-weeks	35-weeks	9-months	12-months	16-months	23-months	Two-years
Mother	√		√	√	√		√	√	√
Partner	√				√				√
Child-proxy					√				√
Child									√
Household Grid	√			√				√	√
Data Linkage		√				√			

Key: face to face | external source | telephone

Figure 03. Data collection for *Growing Up in New Zealand* during the childrens first 2 years

During pregnancy, when the child is 9 months, and again at the age of 2 years, data is collected via face-to-face Computer Assisted Personal Interview (CAPI), as well as by direct observation of the child at 2 years. At each face-to-face data collection point, interviews are offered to mothers and their partners independently. Linkage to routinely collected data (with appropriate parental consent) supplements self-reported information about the birth and the first year of the child's life. This adds value to the interview data and reduces the burden on parents to report data repeatedly. Further information is collected between the face-to face-interviews via Computer Assisted Telephone Interviews (CATI) at 6 weeks, 35 weeks, 16 months and 23 months.

1.7 Focus on the Antenatal Data Collection Wave

Interviews for the Antenatal Data Collection Wave were completed in June 2010. The information collected has been collated and this report describes the cohort of mothers and partners and provides descriptive statistics that relate to the children of the *Growing Up in New Zealand* cohort before they were born. Notably, the antenatal data collection wave served two key purposes as the baseline data collection point for this new longitudinal study:

1. to engage the parents of children born in New Zealand in the longitudinal study so that their children's development could be followed from before birth to early adult life;
2. to collect baseline information about the family, the pregnancy, the wider environment, and the hopes and dreams for the participant from before the time of the child's birth.

As such, this report provides a snap-shot of the families and a cross-sectional look at the environments the children will potentially grow up in. Baseline data from the Antenatal Data Collection Wave is reported where descriptions are possible from this data collection alone.

The data provides an essential baseline for all future data collection wave reporting and longitudinal assessments and analyses of children's developmental trajectories. It is unique in terms of other contemporary longitudinal birth cohort studies in that it has collected this baseline information before the children are born rather than at birth or soon thereafter (refer to Appendix 3 for more details about baseline data collection).

2. Who is part of Growing Up in New Zealand?

2. Who is part of Growing Up in New Zealand?

The *Growing Up in New Zealand* children were recruited from before their birth. Hence, in the antenatal data collection wave information was collected from mothers of the cohort children as well as from the mothers' partners where permission was gained from the mothers to contact her partner. The challenges for the *Growing Up in New Zealand* recruitment team were first to ensure that all eligible pregnant mothers received an invitation for their child to participate in the study, and then to ensure that the resulting recruited cohort of children would be broadly generalisable to all the children being born in New Zealand at the beginning of the 21st century.

Multiple strategies were used to make contact with eligible mothers. Some 10,315 referrals to the study were received from a combination of pregnant mothers themselves (free-phone, web-site or text), Lead Maternity Carers (LMCs) on behalf of the mother, antenatal clinics, or face-to-face invitations from the *Growing Up in New Zealand* recruitment team. The quality of these referrals differed in that self-referrals were most likely to be converted into a completed antenatal interview and a potential child in the cohort, whereas referrals through an intermediary (as was the case with referrals from LMCs) were variable in terms of the prior information that the women had about the study. When a referral was received, each mother was contacted by the *Growing Up in New Zealand* interview team to ascertain if she wished to enrol her child in the study, and if so, to arrange a suitable time for her to complete her antenatal interview. At that time the mother was also asked if she could provide the contact details for her current partner (defined as the partner she was in a 'significant social relationship with'), so that the *Growing Up in New Zealand* team could also contact the partner to attempt to arrange an independent interview before the child was born.

2.1 Mothers

For pregnant mothers, their primary referral source is summarised in Table 1 (occasionally a referral was received via more than one method e.g. self-referral and LMC).

Table 01. Mothers primary referral method

	Auckland DHB n (Column %)	Manukau DHB n (Column %)	Waikato DHB n (Column %)	Total
Free phone number referral	168 (4.6)	139 (3.3)	172 (6.9)	479
LMC referral	1602 (44.3)	1675 (39.8)	995 (39.9)	4272
Malls – direct referral	1211 (33.5)	1997 (47.5)	796 (31.9)	4004
Text – self referral	70 (1.9)	88 (2.1)	103 (4.1)	261
Web – self referral	566 (15.6)	307 (7.3)	426 (17.1)	1299
Total	**3617**	**4206**	**2492**	**10,315**

In order for a referral to be converted into a potential child participant, mothers needed firstly to agree to an antenatal interview, and secondly to complete the interview (usually in their own homes). At the time of the interview, formal consent for the child to participate in the longitudinal study was sought, as well as additional consents for linkage to perinatal and infancy health records. Consent was necessary for a child to be entered into the longitudinal cohort, but consent for linkage was optional, although more than 97% of all mothers did agree to this.

Of the 10,315 mother referrals received, 6,822 (66%) mothers in total completed the antenatal interview and their children were recruited into the longitudinal study. The conversion process from referral to completed interview required that the mothers were eligible for participation and also that they were fully aware and accepting of the required long term commitment for the duration of the study. Although interviews were planned to occur prior to the birth of the child, in some cases, despite antenatal enrolment of the mothers, this was not possible. For 514 mothers, interviews were completed after the child was born. For a further 640 eligible mothers, enrolment and interviews were completed postnatally, that is after their baby was born.

Despite the postnatal interview completion times for these 1154 mothers, they all satisfied the eligibility criteria for recruitment into the study and for participation of their children. In cases where a child was already born before the antenatal interview took place, pregnancy and prior family information was collected retrospectively wherever feasible. Throughout the enrolment and interview process, regular quality assurance and checks were carried out to ensure that a representative cohort was being recruited to allow the study objectives to be achieved.

2.2 Partners

Partners were only able to be recruited at baseline if their contact details were provided to the recruitment team by the mothers. Partners were defined as being the current social partners of the mothers at the time they enrolled in the study. For two-thirds of all mothers (4,404), their partners consented to participate in the longitudinal study. Nearly 87% of these partners completed their interviews before the birth of the cohort child, while 13% completed them after the child was born. In terms of stated relationship to the mothers, 4374 (99%) of the partners were the biological fathers of the children, 26 partners stated that they were not the biological parent, and 3 did not provide information regarding their status.

Importantly, whilst mothers were specifically recruited to ensure that a broadly generalisable cohort of children was being generated, this was not necessarily the case for partners because their participation was determined by the willingness of the mother to share their details with the recruitment team. Hence, throughout the baseline report that follows, the characteristics of the mothers may be generalisable to all mothers having children in New Zealand during this period, but the partners are a selective subset of all the partners of these mothers. Over time, it will be possible to assess how representative the partners are when further data is collected from the families and when routine statistics are available to cover this birth period.

2.3 Growing Up in New Zealand children

The distribution of children's actual birth dates are summarised in Figure 4. Currently these are obtained from the self-reported birth dates provided by mothers during phone calls at 6 weeks after expected dates of delivery. The actual birth dates will be confirmed in the planned perinatal data linkage. The birth dates extend beyond the expected delivery dates in the eligibility criteria because of two key factors. Firstly some babies were born prematurely (between 24 and 37 weeks completed gestation), which means that the earliest Main Cohort deliveries occurred in March 2009. Secondly the recruitment team relied on maternal self-report of their expected dates of delivery and occasionally these were not accurate.

In general, the distribution of interview dates preceded the overall distribution of births as might be expected, given the preferred antenatal recruitment and interview completion. Few details are provided about the children in this report because complete data will not be available until the perinatal data collection is collated.

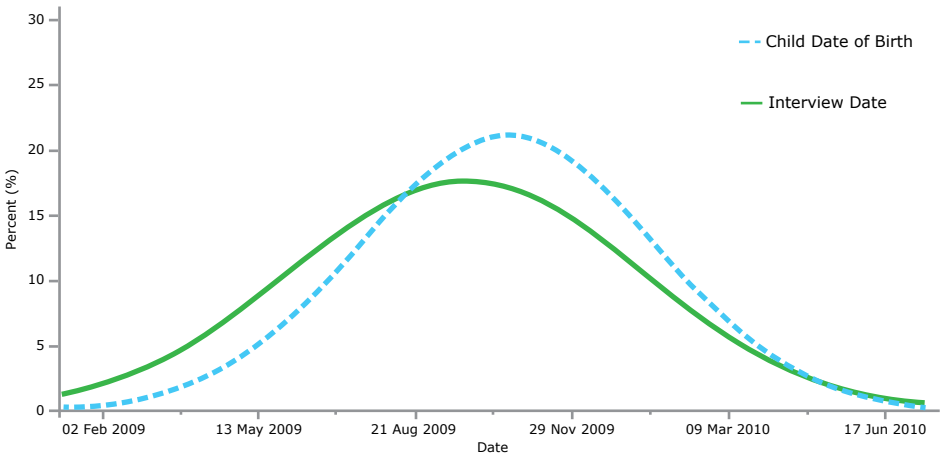


Figure 04. Distribution of Mothers interview date and childs date of birth

2.4 Statistical analyses

This report contains results pertaining to information from the main cohort of eligible pregnant mothers and, where available, from their partners. In most tables the mother and partner data from similar or the same question have been reported independently for all participating parents. However for a few specified measures the information from the two parents has been combined. In these cases the results are relevant to the subset of children where both mother and partner provided baseline information.

Descriptive statistics including means, medians, ranges, percentages and 95 percent confidence intervals are given. Statistical testing between groups has not been carried out at this stage. The percentages are estimates of the proportion of the population that have a particular characteristic or behaviour. Tables also include the number of participants ('n') who reported each of the different response(s) for a given question and the total number of participants ('N') who answered the question(s) excluding those who refused to answer a particular question or who responded with 'don't know'. The number answering each question varies because of the branching nature of the questionnaire and the inclusion of 'refused' and 'don't know' options.

The 95% confidence intervals (95% CIs) indicate the precision of the estimate by providing an interval in which the true proportion is likely to lie. The wider the confidence interval the less precise the estimate. However confidence intervals have not been calculated where fewer than 10 cases have been reported for a given response.

Data in the report text have been rounded to the nearest whole number, whereas in tables and graphs, numbers have been rounded to one decimal place. The rounding to one decimal place means percentages may not necessarily add exactly to 100%. Where multiple response(s) have been allowed percentages can total to more than 100%.

Note that in the tables in this document, row (horizontal) and column (vertical), percentages are used to illustrate specific findings.

2.5 Adding a personal voice

Throughout this report, quotations from parents regarding their hopes and dreams for their children are presented (adapted, so as to not identify individuals) to give voice to the main findings.

I hope that by doing this interview my baby will benefit from what people are trying to do, and hopefully things can change for the better in the future for the rest of our children growing up in New Zealand

3. Who are the Growing Up in New Zealand parents?

3. Who are the Growing Up in New Zealand parents?

The *Growing Up in New Zealand* cohort were recruited from before birth. Hence the antenatal baseline interviews collected information about their parents and families as well as intentions for the children after their birth. The following section describes the key characteristics of the parents of the *Growing Up in New Zealand* children.

Mothers (and their partners) are older when they have their children than in previous generations

The age of the mothers of the *Growing Up in New Zealand* cohort ranged between 15 and 47 years of age at the time of their pregnancy (Figure 5). The average age of mothers was 30 years and the median was 31 years, which reflects the median age of 30 years for all mothers delivering in New Zealand hospitals in 2006. This is consistent with the increasing age of delivery for New Zealand mothers over the last few decades (Ministry of Health 2010).

3.1 Parental age

I hope that as older parents, we have a knowledge base from our experiences to offer this child the opportunity to be all she can be

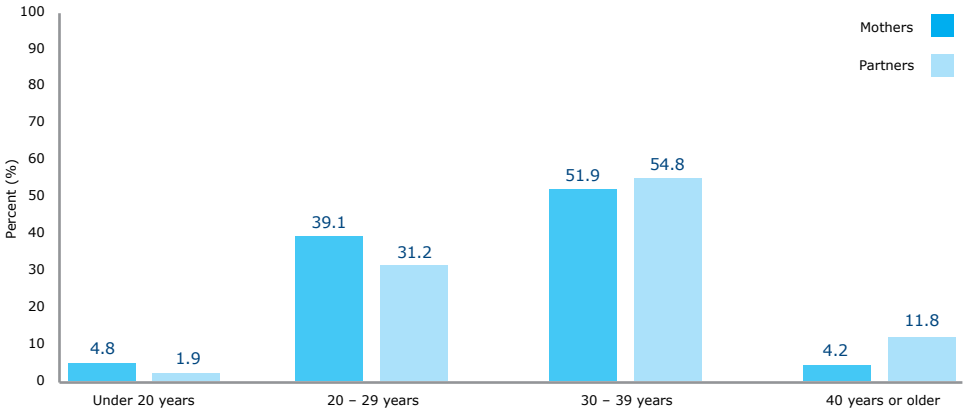


Figure 05. Age (years) of Mothers and Partners

Almost 5% (328 of the 6822) of mothers of the *Growing Up in New Zealand* children were aged between 15 and 19 years at the time of their pregnancy. The majority of these teenage mothers were 18 or 19 years of age (68%).

The age range of the partners for whom information was available differed from the mothers. The youngest partner was 16 years of age at the time of the first data collection, whilst the oldest partner was 64 years. The average age of partners was 33 years (median was also 33 years) and only 84 of the 4404 (2%) were teenagers (aged between 15 and 19 years of age).

More than 40% of the *Growing Up in New Zealand* cohort were born to first time mothers with an average age of 28 years. The remaining 57% of the pregnancies are second or later pregnancies and the mothers' average age in these cases was 31 years.

Teenage mothers are well represented in *Growing Up in New Zealand*, with 5% of the cohort aged 15-19

3.2 Parental ethnicity

Mothers and partners were asked about their own ethnicity at the pregnancy interview. All the ethnic groups they identified with were recorded, as well as that with which they identified most strongly.

Table 02. All identified ethnicities

	Mother		Partner	
	n (N=6814)	Column % (95% CI)	n (N=4158)	Column % (95% CI)
All identified ethnicities ≠				
New Zealand European	4237	62.2 (61.0 - 63.3)	2879	69.2 (67.8 - 70.6)
Māori	1246	18.3 (17.4 - 19.2)	612	14.7 (13.6 - 15.8)
Pacific Peoples	1151	16.9 (16.0 - 17.8)	548	13.2 (12.2 - 14.2)
Asian	1074	15.8 (14.9 - 16.6)	597	14.4 (13.3 - 15.4)
Middle Eastern/Latin American/African	179	2.6 (2.2 - 3.0)	111	2.7 (2.2 - 3.2)
Other	44	0.6 (0.5 - 0.8)	8	0.2
Number of identified ethnicities				
One	5465	80.2 (79.3 - 81.1)	3354	80.7 (79.5 - 81.9)
Two	1131	16.6 (15.7 - 17.5)	677	16.3 (15.2 - 17.4)
Three	172	2.5 (2.2 - 2.9)	98	2.4 (1.9 - 2.8)
More than three	46	0.7 (0.5 - 0.9)	29	0.7 (0.4 - 1.0)

Where fewer than 10 cases have been reported CIs have not been calculated
≠ Mothers and partners responded with multiple response(s) and will total to more than 100%

I expect my baby to grow up to be a responsible and caring citizen in a country where she will not be judged by her colour or ethnicity, but rather by her abilities

Parents identified as New Zealand European most frequently, with Māori, Pacific and Asian being the next most common identified ethnicities (Table 2). Fewer than 4% of mothers or partners identified with any ethnic groups outside of these classifications.

Almost 20% of mothers and partners identified with more than 1 ethnic group, with the majority of this group nominating 2 ethnicities and fewer than 4% reporting 3 or more.

The parents of the *Growing Up in New Zealand* children are ethnically diverse, and one fifth report identifying with more than one ethnic group

Table 03. Main ethnicity as identified by parents

	Mother		Partner	
	n (N=6811)	Column % (95% CI)	n (N=4154)	Column % (95% CI)
Main ethnicity as identified by participant ≠				
New Zealand European	3894	57.2 (56.0 - 58.3)	2710	65.2 (63.8 - 66.7)
Māori	961	14.1 (13.3 - 14.9)	429	10.3 (9.4 - 11.3)
Pacific Peoples	1020	15.0 (14.1 - 15.8)	482	11.6 (10.6 - 12.6)
Asian	1008	14.8 (14.0 - 15.6)	559	13.5 (12.4 - 14.5)
Middle Eastern/Latin American/African	158	2.3 (2.0 - 2.7)	97	2.3 (1.9 - 2.8)
Other	32	0.5 (0.3 - 0.6)	7	0.2
Number of main ethnicities as identified by participant				
One	6492	95.3 (94.8 - 95.8)	3983	95.9 (95.3 - 96.5)
Two	319	4.7 (4.2 - 5.2)	171	4.1 (3.5 - 4.7)

Where fewer than 10 cases have been reported CIs have not been calculated
≠ Mothers and partners responded with multiple response(s) and will total to more than 100%

Rather than imposing an external prioritisation system on the ethnicity of parents, we asked the mothers and partners to nominate their main ethnic group themselves (Table 3). Whilst we asked for one main ethnic group we allowed two ethnicities if the parents were unable to decide between two main groups. This was the case for around 5% of the respondents. Allowing self prioritisation had the effect of reducing the overall numbers in each ethnic group but the relative proportions in each of the major subgroups were not greatly changed. Of note is that mothers and partners who would have been prioritised to Māori or Pacific in previous standard New Zealand prioritisation systems did not always choose this as their self-identified main ethnicity (Table 4).

Ethnic identity prioritised by an external prioritisation system would have over-represented mothers and partners in the Māori and Pacific categories when compared to self-identified prioritisation by *Growing Up in New Zealand*

Table 04. All identified ethnicities by nominated main ethnicity

All identified ethnicities	Nominated main ethnicity						
	N	New Zealand European Row %	Māori Row %	Pacific Peoples Row %	Asian Row %	Middle Eastern /Latin American/ African Row %	Other Row %
Mother							
New Zealand European	4234	86.2	10.1	2.6	0.6	0.4	0.1
Māori	1246	20.8	73.7	4.7	0.6	0.0	0.2
Pacific Peoples	1151	5.6	5.8	87.8	0.5	0.0	0.2
Asian	1072	3.5	0.9	1.5	93.2	0.5	0.4
Middle Eastern/Latin American/African	179	8.9	1.7	1.1	1.7	86.6	0.0
Other	44	27.3	4.5	2.3	2.3	4.5	59.1
Partner							
New Zealand European	2876	89.9	6.8	2.3	0.4	0.5	0.2
Māori	609	29.2	65.4	4.1	0.5	0.3	0.5
Pacific Peoples	547	7.5	4.9	86.8	0.5	0.0	0.2
Asian	597	3.4	1.0	2.2	93.0	0.3	0.2
Middle Eastern/Latin American/African	111	15.3	0.9	0.0	0.9	82.0	0.0
Other	8	50.0	0.0	12.5	25.0	0.0	12.5

3.3 Parental education

We want our child to be happy and healthy, and to finish school. Education is extremely important – as long as she gets an education she can make her own decisions

Over a third of all the parents of the *Growing Up in New Zealand* children have tertiary level educational qualifications, with very little gender difference between achieved education for mothers and partners (Figure 6).

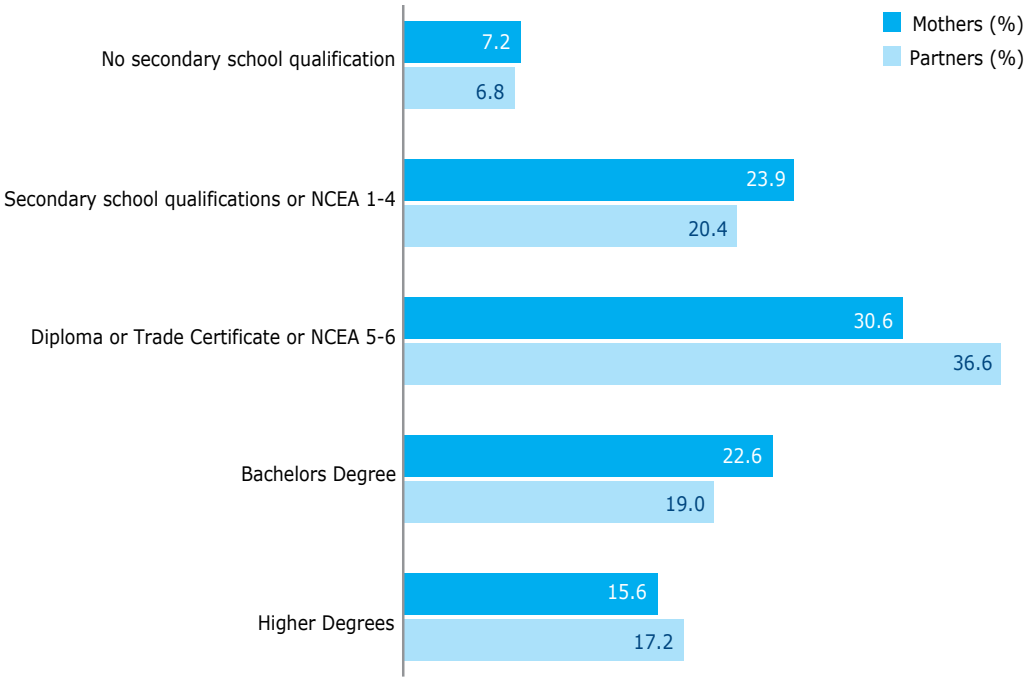


Figure 06. Highest educational qualification

However, average maternal age at the time of first pregnancy varied considerably with highest completed education (Table 5). Over half of all teenage mothers had no formal secondary school qualifications. In general, the higher the attained education the later the age of first birth, with more than half of all mothers with tertiary qualifications having their first child after the age of 30 years. This proportion rises to over 70% of mothers with higher degrees.

Most parents (mothers and partners) are well educated in comparison to earlier generations of parents

Table 05. Maternal age by highest educational qualification for mothers with first child

	n (N=2923)	< 20 years Row % (95% CI)	20 - 29 years Row % (95% CI)	30 - 39 years Row % (95% CI)	40+ years Row % (95% CI)
No secondary school qualification	150	52.7 (44.7 - 60.7)	34.0 (26.4 - 41.6)	12.0 (6.8 - 17.2)	1.3
Secondary school qualification NCEA 1–4	647	18.9 (15.8 - 21.9)	55.5 (51.7 - 59.3)	24.3 (21.0 - 27.6)	1.4
Diploma or Trade Certificate or NCEA 5–6	865	8.7 (6.8 - 10.5)	56.2 (52.9 - 59.5)	32.6 (29.5 - 35.7)	2.5 (1.5 - 3.6)
Bachelors Degree	728	0	44.0 (40.3 - 47.6)	53.0 (49.4 - 56.6)	3.0 (1.8 - 4.3)
Higher Degrees	533	0	26.6 (22.9 - 30.4)	69.4 (65.5 - 73.3)	3.9 (2.3 - 5.6)

Where fewer than 10 cases have been reported CIs have not been calculated

3.4 Parental employment status

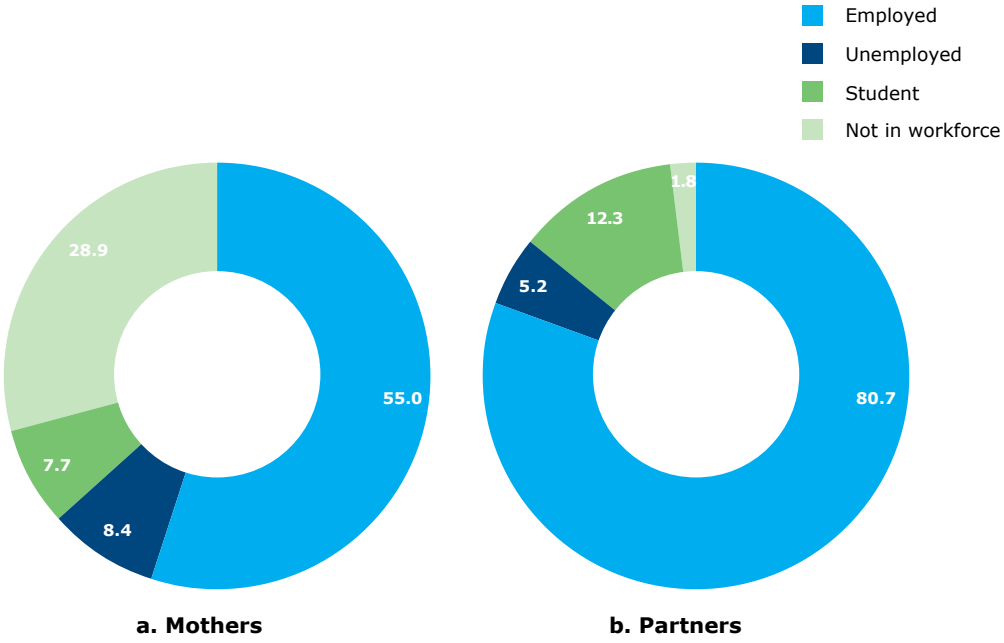


Figure 07. Employment status for (a) Mothers and (b) Partners (%)

Over half of all the mothers and over 80% of all the partners were currently employed during the mother's pregnancy (Figure 7). For the mothers who were not in employment, the majority were not in the workforce by choice (29%). A further 8% in each case described themselves either as a current student, or as actively seeking employment (labelled unemployed in Figure 7).

For the partners only 2% reported not being in the workforce by choice, with 12% describing themselves as current students and 5% as actively seeking employment

First time mothers were more likely to be in employment during this pregnancy than mothers with older children, whereas more mothers having second or subsequent children were not in the workforce by choice (Figure 8). However, of note is that even for mothers having their second or subsequent child, almost half were in the workforce towards the end of this current pregnancy.

I am hoping to become a business manager to provide my daughter with the life I never had

The majority of the mothers are in employment towards the end of their pregnancies, regardless of whether they are having their first or subsequent children

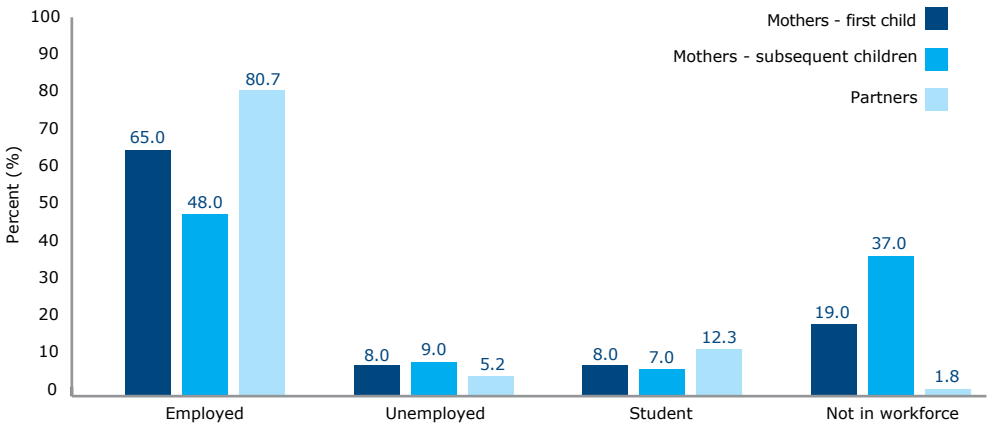


Figure 08. Employment status for Mothers (by parity) and Partners

3.5 Parental relationship status

Over 60% of all couples are either married or in a civil union during this pregnancy

Mothers were asked about their relationship status during the later stages of this pregnancy. Just over 5% of mothers were not in any relationship at this time. This group tended to be slightly younger than mothers who were in a current relationship (average age 26 years compared to 30 years). Nearly 63% were either married or in a civil union, with a further 28% living with their partner and 4% in a relationship but not co-habiting (Table 6).

Table 06. Relationship status during pregnancy

	n (N=6167)	Column % (95% CI)	Mean age (95% CI)
No relationship	333	5.4 (4.8 - 6.0)	26.2 (25.4 - 26.9)
Dating but not co-habiting	256	4.2 (3.7 - 4.6)	24.1 (23.3 - 24.9)
Co-habiting	1723	27.9 (26.8 - 29.1)	28.3 (28.0 - 28.6)
Married/civil union	3855	62.5 (61.3 - 63.7)	31.5 (31.3 - 31.6)

Relationship to the biological partner

I hope he or she will grow up to be as happy as the rest of our family, and one day find a loving relationship like that of their mum and dad

All mothers were also asked about their relationship with the biological father of the child at the time they became pregnant. Just under 60% were married to or in a civil union with the child's biological father, 34% were co-habiting, 4% were dating only (but not co-habiting), and less than 2% had no formal relationship with the biological father when they became pregnant (Table 7).

Table 07. Relationship to the biological father

	n (N=6803)	Column % (95% CI)	Mean age (95% CI)
No relationship	127	1.9 (1.5 - 2.2)	27.5 (26.3 - 28.7)
Dating but not co-habiting	280	4.1 (3.6 - 4.6)	24.7 (24.0 - 25.5)
Co-habiting	2336	34.3 (33.2 - 35.5)	28.0 (27.8 - 28.3)
Married/civil union	4060	59.7 (58.5 - 60.8)	31.6 (31.5 - 31.8)

Change in relationship with the biological partner

Mothers were also asked about any change in their relationship with the biological father during the course of the pregnancy (Table 8). Approximately 90% of the relationships did not change during the course of the pregnancy, but for 10% there was a change in status. Just over half of the changed status was due to couples no longer living together, whilst the remainder either moved from living apart to co-habiting, or became engaged or married during the pregnancy.

Over 90% of all relationships are stable during the pregnancy period, with the remaining 10% equally likely to become either more or less committed

Table 08. Change in relationship with biological father during pregnancy

	n (N=6752)	Column % (95% CI)	Mean age (95% CI)
No change	6067	89.9 (89.1 - 90.6)	30.5 (30.3 - 30.6)
Separated	299	4.4 (3.9 - 4.9)	25.7 (25.0 - 26.5)
Co-habiting (previously not)	157	2.3 (2.0 - 2.7)	25.9 (24.9 - 26.9)
Not co-habiting (previously co-habiting)	60	0.9 (0.7 - 1.1)	25.0 (23.3 - 26.7)
Married/civil union (changed status)	169	2.5 (2.1 - 2.9)	28.3 (27.4 - 29.3)

Over the course of the longitudinal study, changes in parental relationship status will be tracked (along with other changes in family structures and dynamics) to determine their association with trajectories of child development and wellbeing over time.

3.6 Parental health and wellbeing

Both mothers and partners were asked to rate their own general health status – in the case of mothers, this was in relation to their pre-pregnancy health (Figure 9). The majority rated their health status as good, very good, or excellent, although 13% of partners rated their current health and 10% of mothers their pre-pregnancy health as poor or fair.

Mothers and partners were asked to report having a current chronic disability (lasting more than 6 months). Of the mothers who answered the question about disability (6179), 384 (6%) reported having a current chronic disability. The specific forms of disability reported varied considerably but these mainly related to vision (25%); mobility (23%); and mental health (19%).

For partners, 323 of 4156 (8%) reported having a current chronic disability. Again, there was considerable variety in the type of disability reported, and they included: mobility (35%); vision (19%); and mental health (12%).

There was no clear association between parents reporting a current disability and their own self-rated current health. The distribution of self-rated health for parents who reported a disability was very similar to those who did not.

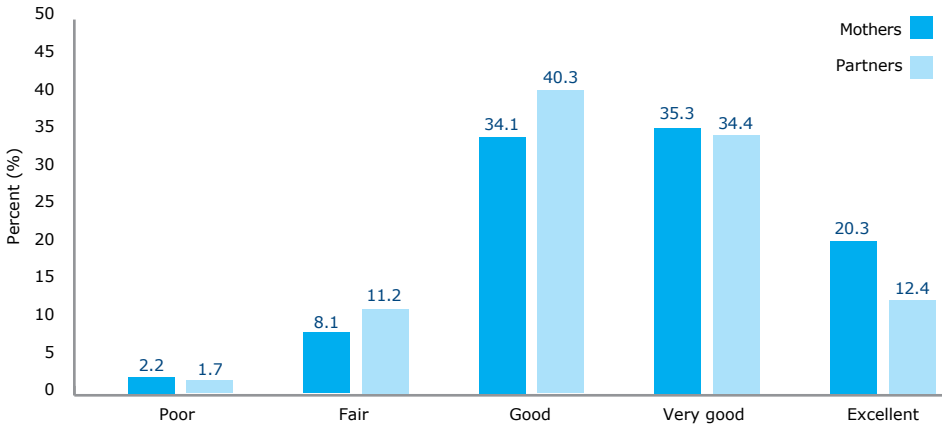


Figure 09. Self rated general health by Mothers (before pregnancy) and Partners

Most parents report being in good or excellent health about the time of the pregnancy, regardless of whether or not they also report having chronic disabilities

Mothers health and wellbeing

Mothers were asked to provide information about pre-existing as well as certain common pregnancy related health conditions that had been confirmed by doctor diagnosis (Figure 10).

In general, health related issues decline during pregnancy (as expected), although for a small number of mothers, specific issues occur for the first time

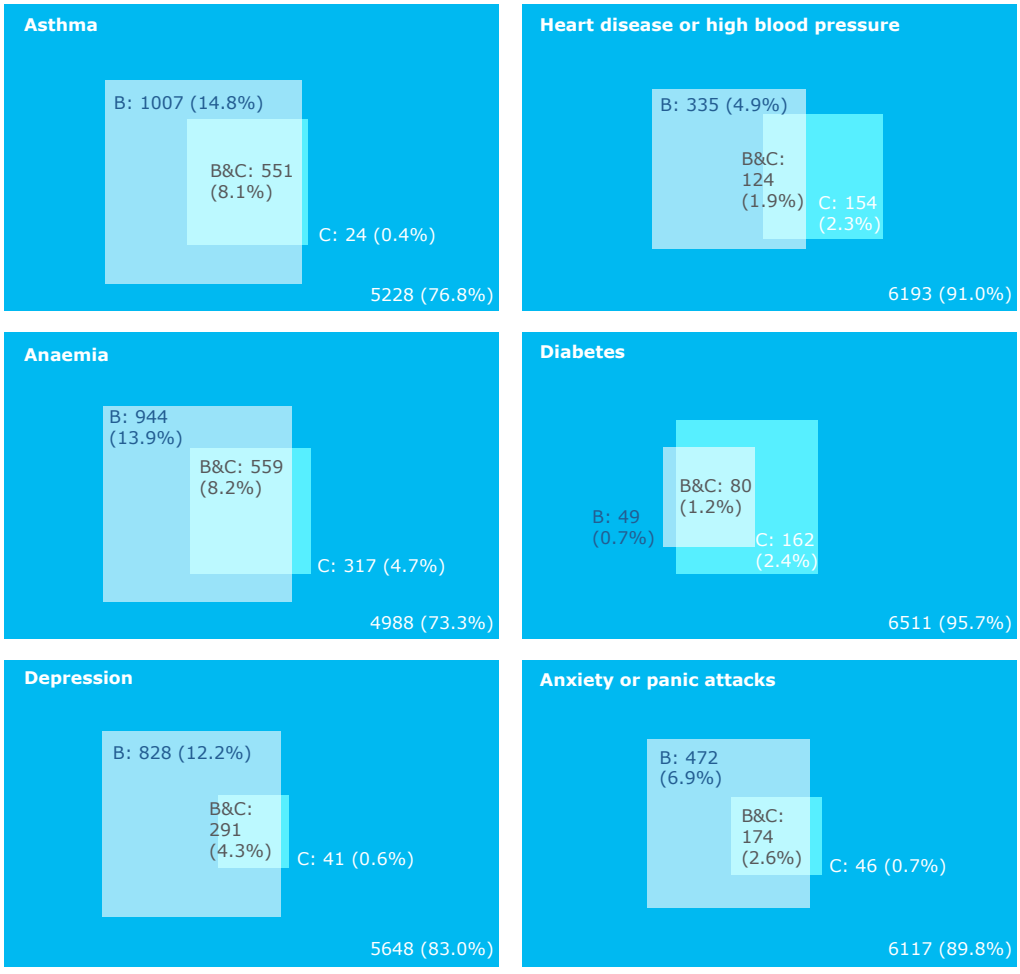


Figure 10. Mothers illnesses diagnosed by a doctor

(B: Before pregnancy, B&C: Before and current pregnancy and C: Current pregnancy)

In general, most mothers were physically well and did not report either prior or current health issues. Almost a quarter (23%) of all mothers reported that they had been diagnosed with asthma at some time before they were pregnant, with 8% noting that they also had asthma during this pregnancy. Only 24 mothers (0.4%) had developed asthma for the first time during this pregnancy.

In terms of cardiac or related disorders (including high blood pressure), 7% of mothers reported ever being diagnosed with these, with 2% reporting issues that continued during the course of their pregnancy. A further 2% developed cardiac or related disorders anew during the course of their pregnancy. In the case of gestational hypertension and pre-eclampsia, we might expect that the rates of these conditions in the general population would be between 5 and 10%, with first time and older mothers being at increased risk, and with these conditions commonly arising late in pregnancy. In this report the rates of these conditions are expected to be lower as the information

presented was collected at approximately 28 weeks gestation. Data regarding pregnancy conditions that arose after the antenatal interview will be available from later data collections.

Less than 1% (49) of all mothers reported being diabetic prior to but not during pregnancy, whereas almost double this number (80) reported diabetes both before and during pregnancy. A further 2% (162) of mothers developed diabetes during pregnancy. Determining the full extent of gestational diabetes in this population will also require the information relating to the final stages of the pregnancies which will be available from later data collections.

Over 1 in 5 mothers reported ever being told they were anaemic, with approximately a third of those continuing to experience issues with anaemia during pregnancy. A further 5% of all mothers became anaemic during their pregnancies.

Sixteen percent of all mothers reported that they had been diagnosed with depression at some time before their pregnancy, with 1 in 4 of these mothers reporting continuing issues during this pregnancy. A further 1% of mothers reported that they developed depression during their pregnancy. However in responding to specific additional screening questions asked of all mothers to assess their psychological well-being at the time of the interview, 16% (1020 mothers) reported some depressive symptoms at that time.

In terms of panic or anxiety attacks, 10% reported that they had ever experienced these, with 1 in 3 experiencing ongoing issues during their pregnancy. Only 1% experienced these only during their current pregnancy.

Partners health and wellbeing

For the partners, most illnesses tended to be less commonly reported either at any time in their life or currently. The exception was cardiac related illness that, as with mothers, was reported for 7% of partners prior to as well as during the pregnancy. Proportions of reported asthma and diabetes were slightly lower in partners than mothers, but reported rates of depression (8% in partners compared to 16% ever in mothers), and anxiety and panic attacks (6% compared to 10% in mothers) were markedly lower in the partners when compared to maternal rates exclusive of pregnancy.

Similarly, for the current assessment of psychological wellbeing, almost 96% of partners reported no symptoms consistent with a current depressive episode and just over 4% (174 partners) reported some depressive symptoms.

4. Who are the Growing Up in New Zealand families?

4. Who are the Growing Up in New Zealand families?

One third of the children born in New Zealand have at least one parent born overseas

New Zealand's general population has undergone a great deal of demographic change in the last three decades. This is largely due to immigration, but also to the different age structures of our population sub-groups and differential fertility rates across these groups.

These changes are reflected in the increasing numbers of children being born to parents who were themselves born outside of New Zealand. For the *Growing Up in New Zealand* children, approximately two-thirds of their mothers were born in New Zealand. Of the mothers who were born elsewhere, the time they had lived in New Zealand before this pregnancy varied depending on their place of birth, as did their average age at pregnancy (Table 9).

4.1 Place of birth

For mothers who identified as Māori, almost all were born in New Zealand (98%), although 2% moved to New Zealand at an average of 8 years of age. The age of moving to New Zealand for this group ranged from newborn to adult.

For those mothers who identified their ethnicity as New Zealand European, 80% were born in New Zealand, the remaining 20% tended to migrate to New Zealand as young adults. Overall, for mothers who identified their ethnicity as Pacific, approximately half (477 of 1020, 47%) were born in New Zealand, whereas the remainder tended to move to New Zealand (on average) in their early teenage years. By contrast, most mothers who identified as Asian were born outside of New Zealand (94%), and those mothers tended to move to New Zealand in their adult years. This pattern was also seen for our increasingly diverse population from throughout Africa and the Americas.

For the partners of the *Growing Up in New Zealand* mothers, nearly 65% were born in New Zealand, with those not born in New Zealand coming mostly from the Pacific Islands, Europe and Asia (Table 10). For partners who identified as Māori almost all were born in New Zealand (97%), although 3% had moved to New Zealand sometime, usually during their childhood.

I hope that my baby will have a nice childhood with outside activities, and be safe, and that I have the time to spend with my child and as a family, and enjoy New Zealand, because in our country it could have been difficult

Table 09. Mothers birth place, age (years) at the interview and number of years in New Zealand

Place of birth	n (N=6815)	Column % (95% CI)	Current age Mean (95% CI)	Number of years in NZ Mean (95% CI)
New Zealand	4374	64.2 (63.0 - 65.3)	29.6 (29.5 - 29.8)	n.a.
Birth outside New Zealand				
Australia	121	1.8 (1.5 - 2.1)	30.9 (29.8 - 31.9)	18.2 (16.0 - 20.4)
European Countries				
Europe	133	2.0 (1.6 - 2.3)	31.7 (30.9 - 32.5)	9.6 (8.0 - 11.2)
United Kingdom	318	4.7 (4.2 - 5.2)	33.4 (32.9 - 34.0)	11.4 (10.2 - 12.6)
Pacific Islands				
Samoa	237	3.5 (3.0 - 3.9)	29.9 (29.0 - 30.7)	12.9 (11.7 - 14.1)
Tonga	206	3.0 (2.6 - 3.4)	30.7 (29.9 - 31.4)	11.3 (10.3 - 12.3)
Fiji	183	2.7 (2.3 - 3.1)	29.0 (28.3 - 29.8)	7.6 (6.4 - 8.7)
Cook Islands	45	0.7 (0.5 - 0.9)	29.8 (27.9 - 31.8)	19.6 (16.1 - 23.0)
Other Pacific Islands	41	0.6 (0.4 - 0.8)	28.6 (26.6 - 30.5)	15.0 (11.6 - 18.4)
Asian Countries				
East Asia	269	3.9 (3.5 - 4.4)	30.8 (30.3 - 31.4)	7.9 (7.3 - 8.5)
South Asia	269	3.9 (3.5 - 4.4)	29.4 (28.9 - 29.9)	4.5 (4.0 - 4.9)
South East Asia	209	3.1 (2.7 - 3.5)	30.4 (29.7 - 31.1)	7.4 (6.4 - 8.4)
Rest of Asia	24	0.4 (0.2 - 0.5)	33.0 (31.4 - 34.6)	11.8 (8.9 - 14.7)
Rest of World				
Africa & South Africa	174	2.6 (2.2 - 2.9)	30.6 (29.8 - 31.4)	7.7 (6.6 - 8.8)
North & South America	114	1.7 (1.4 - 2.0)	32.2 (31.2 - 33.2)	8.0 (6.6 - 9.4)
Middle East	54	0.8 (0.6 - 1.0)	28.7 (27.3 - 30.1)	7.2 (5.5 - 8.9)
Other Countries	44	0.6 (0.5 - 0.8)	32.7 (31.1 - 34.2)	9.6 (6.5 - 12.7)

n.a. = not available/applicable

I hope our baby enjoys growing up in New Zealand, because we came home for the lifestyle

I hope that she will be healthy, happy, and smart and that she has a good mix of her mother's and father's cultures and can speak both our languages. I dream that one day she can go to her father's country and see where he came from

Table 10. Partners birth place, age (years) at the interview and number of years in New Zealand

Place of birth	n (N=4402)	Column % (95% CI)	Current age Mean (95% CI)	Numbers of years in NZ Mean (95% CI)
New Zealand	2847	64.7 (63.3 - 66.1)	32.8 (32.6 - 33.1)	n.a.
Birth outside New Zealand				
Australia	86	2.0 (1.5 - 2.4)	32.0 (30.6 - 33.3)	17.2 (14.6 - 19.8)
European Countries				
Europe	73	1.7 (1.3 - 2.0)	34.9 (33.6 - 36.1)	10.9 (8.3 - 13.4)
United Kingdom	299	6.8 (6.0 - 7.5)	35.8 (35.1 - 36.4)	12.5 (11.1 - 13.9)
Pacific Islands				
Samoa	126	2.9 (2.4 - 3.4)	31.3 (30.1 - 32.6)	11.6 (10.0 - 13.2)
Tonga	108	2.5 (2.0 - 2.9)	33.1 (31.9 - 34.4)	13.2 (11.3 - 15.1)
Fiji	117	2.7 (2.2 - 3.1)	32.4 (31.3 - 33.6)	9.1 (7.4 - 10.7)
Cook Islands	15	0.3 (0.2 - 0.5)	28.0 (22.9 - 33.1)	15.7 (9.6 - 21.9)
Other Pacific Islands	27	0.6 (0.4 - 0.8)	31.2 (28.2 - 34.2)	15.9 (11.2 - 20.6)
Asian Countries				
East Asia	117	2.7 (2.2 - 3.1)	32.3 (31.2 - 33.4)	9.0 (8.0 - 10.0)
South Asia	218	5.0 (4.3 - 5.6)	33.5 (32.8 - 34.1)	7.1 (6.3 - 7.8)
South East Asia	112	2.5 (2.1 - 3.0)	32.6 (31.5 - 33.7)	7.4 (6.1 - 8.8)
Rest of Asia	14	0.3 (0.2 - 0.5)	32.0 (28.0 - 36.0)	11.6 (8.0 - 15.1)
Rest of World				
Africa & South Africa	135	3.1 (2.6 - 3.6)	33.8 (32.8 - 34.9)	8.4 (7.1 - 9.7)
North & South America	71	1.6 (1.2 - 2.0)	34.5 (33.0 - 36.0)	10.7 (8.1 - 13.4)
Middle East	37	0.8 (0.6 - 1.1)	35.2 (32.3 - 38.1)	7.5 (5.9 - 9.2)

n.a. = not available/applicable

Of those partners who identified their ethnicity as New Zealand European, 79% were born in New Zealand, the remaining 21% tended to migrate to New Zealand as young adults. For partners who identified as Pacific, 43% were born in New Zealand, whereas the remainder also tended to move to New Zealand (on average) in their early teenage years. By contrast, most partners who identified as Asian were born outside of New Zealand (94%), and they tended to move to New Zealand as adults during the last decade. This pattern was also seen for our increasingly diverse population from Africa and the Americas.

Where we have information from both the parents of the *Growing Up in New Zealand* children, they were both born in New Zealand for more than 50% of the children.

4.2 Languages spoken by parents

Almost 97% of the mothers and over 97% of the partners were able to have an everyday conversation in English. Over 5% of the mothers and 3% of the partners could also converse in Māori. The majority of those able to converse in Māori had identified themselves as Māori, although 20% did not. Slightly more could converse in Samoan than in Māori. Other languages were spoken by fewer parents, but the diversity of languages that parents were able to converse in was great, with over 30 languages represented across the families.

A wide range of languages are spoken by parents, with a third of children currently being born into families where parents speak more than 1 language

Table 11. Language(s) spoken by parents

	Mother		Partner	
	n	Column %	n	Column %
Language used in a conversation (N^M = 6815, N^P = 4404) ≠				
English	6594	96.7	4291	97.4
Māori	356	5.2	154	3.5
Samoan	397	5.8	219	5.0
Tongan	277	4.1	134	3.0
Fijian	34	0.5	46	1.0
Niuean	43	0.6	22	0.5
Cook Islands Māori	60	0.9	27	0.6
Cantonese	103	1.5	62	1.4
Mandarin	262	3.8	131	3.0
Korean	25	0.4	13	0.3
Japanese	77	1.1	35	0.8
Hindi	335	4.9	237	5.4
Arabic	35	0.5	30	0.7
Other	1088	15.9	690	15.7
Total number of language(s) used in a conversation (N^M = 6815, N^P = 4403)				
One language	4298	63.1	2990	67.9
Two languages	2193	32.2	1164	26.4
Three languages	296	4.3	224	5.1
More than three languages	28	0.4	25	0.4
Main language spoken at home (N^M = 6815, N^P = 4403)				
English	5463	80.2	3629	82.4
Māori	19	0.3	5	0.1
Samoan	195	2.9	93	2.1
Tongan	189	2.8	82	1.9
Cantonese	49	0.7	29	0.7
Mandarin	155	2.3	83	1.9
Hindi	195	2.9	117	2.7
Other	550	8.1	365	8.3

N^M = Mothers, N^P = Partners
≠ Mothers and partners responded with multiple response(s) and will total to more than 100%

A fifth of the children will grow up in homes where English is not the main language spoken, although 97% of the parents are able to have an everyday conversation in English

I hope that we can retain our Māori language within the home, and that our baby will know their Ngati Porou side

Approximately a third of all mothers and partners are able to converse in more than 1 language and approximately 5% of all the parents are able to converse in more than 2 languages.

Although the vast majority of parents stated that they were able to have a conversation in English, only 80% of mothers nominated this as the primary language they used at home. The most usual non-English languages spoken in the home are Samoan, Hindi, Tongan or Mandarin (2-3% for each) with 1 in 12 homes primarily conversing in 1 of more than 30 other languages.

Over time, we will gather data on the languages the children can converse in, and the languages they speak at home.

4.3 Mothers living arrangements

The *Growing Up in New Zealand* children were recruited antenatally via their pregnant mothers. Each recruited mother was also invited to provide contact details of her current partner when she agreed to be part of the new study. Regardless of whether partners provided information at baseline or not we asked mothers to describe their current living arrangements and their relationships.

Around 80% of mothers live with their partners during the pregnancy. Others were either on their own or with extended family (sometimes including their partner)

Two-thirds of all the mothers were living with their partner (and other children, where applicable) in the final stages of their pregnancy (Figure 11). One quarter of mothers were living with extended family and around 3% of mothers were living alone (without other adults, but potentially with other children). Nearly 7% of mothers were living with non-family members (with or without their partner).

The mothers living with extended family tended to be the youngest group of mothers with an average age of nearly 27 years. Mothers living with non-relatives were a slightly older group (average age of 28 years), with those living alone (average age 30 years) and living with partners (average age 32 years) the oldest groups.

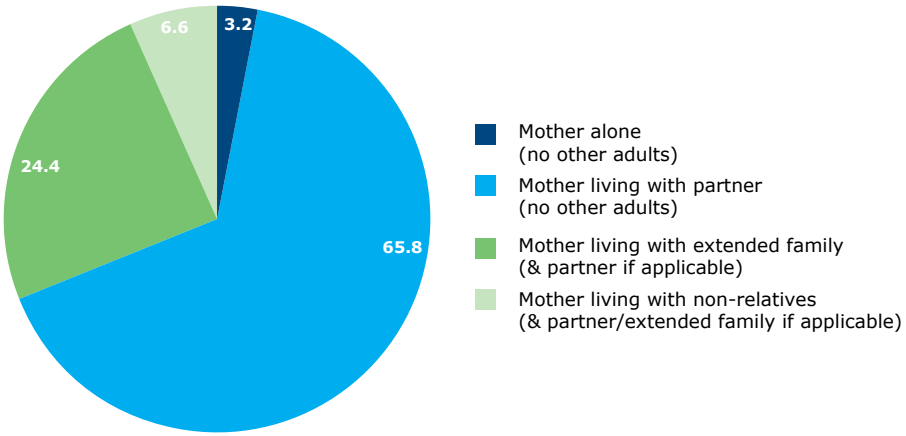


Figure 11. Mothers living arrangements (%)

The likelihood of mothers living alone, with partners, with family or with non-family was patterned by the mothers' main ethnic identity. Living with a partner (only) was most common for mothers who identified either as New Zealand European or as belonging to one of the smaller collective 'Other' groups. Pacific mothers were more likely to be living with extended family during their pregnancy than any other mothers. Māori mothers were most likely to be living alone (Table 12).

Table 12. Mothers living arrangements by main ethnicity

	N	Mother alone[1] Row % (95% CI)	Mother living with partner[1] Row % (95% CI)	Mother living with extended family[2] Row % (95% CI)	Mother living with non-relatives[3] Row % (95% CI)
New Zealand European	3890	2.4 (1.9 - 2.9)	79.2 (77.9 - 80.5)	13.3 (12.2 - 14.3)	5.1 (4.4 - 5.8)
Māori	956	7.4 (5.8 - 9.1)	47.4 (44.2 - 50.6)	37.0 (34.0 - 40.1)	8.2 (6.4 - 9.9)
Pacific Peoples	1011	4.8 (3.5 - 6.2)	34.2 (31.3 - 37.1)	54.2 (51.1 - 57.3)	6.7 (5.2 - 8.3)
Asian	1006	0.8	59.1 56.0 - 62.1	29.0 26.2 - 31.8	11.1 (9.2 - 13.1)
Middle Eastern/ Latin American/ African	157	4.5	73.9 (67.0 - 80.8)	17.2 (11.3 - 23.1)	4.5
Other	32	6.3	68.8 (52.7 - 84.8)	25.0	0

Where fewer than 10 cases have been reported CIs have not been calculated
[1] (no other adults); [2] (& partner if applicable); [3] (& partner/extended family if applicable)

Family structure is more diverse than for previous generations. *Growing Up in New Zealand* will observe the evolution of family structures and dynamics over time

4.4 Family resources

Household income

Mothers were asked to provide details about their household income over the previous 12 month period. The median household income band for the families was $70,001 to $100,000 with a considerable range across all the households in the study (Figure 12). If the household income distribution is restricted by maternal parity, then the notable differences are that for households having first children there are 45% in the greater than $100,000 p.a. range as compared to only 30% of households who are having second or subsequent children. Overall, families with more children tend to have less total household income.

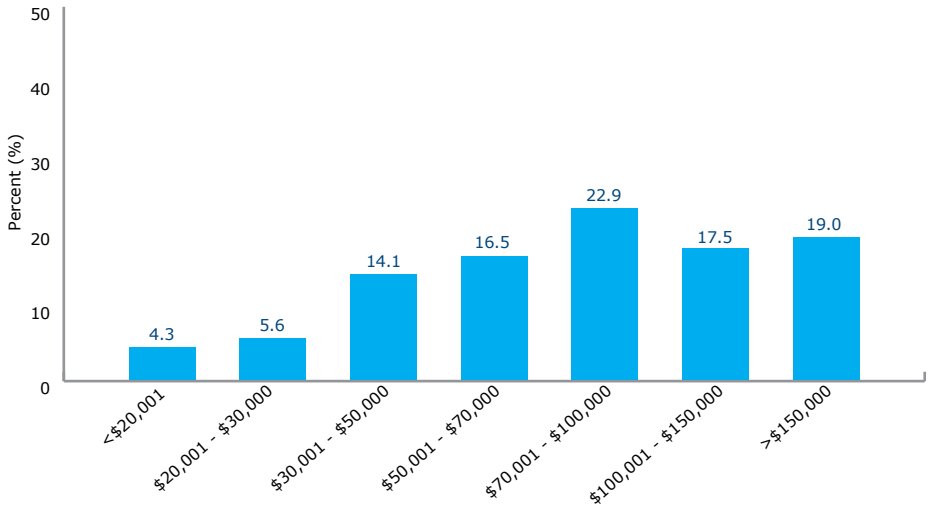


Figure 12. Household income (last 12 months)

I want my baby to have better things than I did in my life

Home tenure

Mothers were asked about their current household tenure. Just over half of mothers were living in their own homes, with 48% in rental accommodation during their pregnancy (Figure 13).

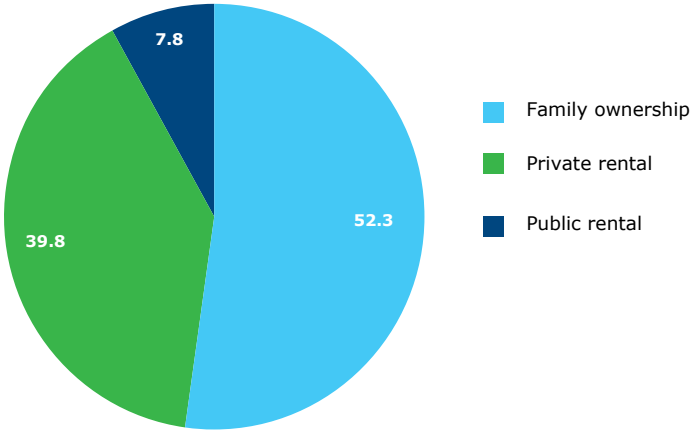


Figure 13. Dwelling ownership (Mothers) (%)

Half of our children are born into families living in rental accommodation

Mothers living alone were more likely to be in rental accommodation, with a quarter in public rental accommodation. Mothers living with partners or extended family were less likely to be in rental accommodation (private or public) than mothers living alone, but approximately half were in rental accommodation nonetheless (Table 13).

Table 13. Dwelling ownership by living arrangement (Mothers)

	N	Family ownership Row % (95% CI)	Private rental Row % (95% CI)	Public rental Row % (95% CI)
Mother alone[1]	174	19.5 (13.6 - 25.4)	54.6 (47.2 - 62.0)	25.9 (19.4 - 32.4)
Mother living with partner[1]	4052	56.0 (54.5 - 57.6)	39.2 (37.7 - 40.7)	4.7 (4.1 - 5.4)
Mother living with extended family[2]	1461	48.0 (45.4 - 50.5)	37.1 (34.6 - 39.6)	14.9 (13.1 - 16.7)
Mother living with non-relatives[3]	425	45.4 (40.7 - 50.1)	49.2 (44.4 - 53.9)	5.4 (3.3 - 7.6)

Where fewer than 10 cases have been reported CIs have not been calculated
[1] (no other adults); [2] (& partner if applicable); [3] (& partner/extended family if applicable)

We need our own space, our own house to live in

Family deprivation

The distribution of families in the study according to New Zealand 2006 deprivation categories (Salmond et al. 2007) are shown in Figure 14. These deprivation categories are area-based measures of deprivation (rather than individual measures) and are assigned to households according to where they live. Deprivation areas are divided into deciles for the whole population with decile 1 being the least deprived and 10 the most deprived. Different reporting divides the deciles into either 3 groups (as above) or 5 quintiles (2 deciles combined).

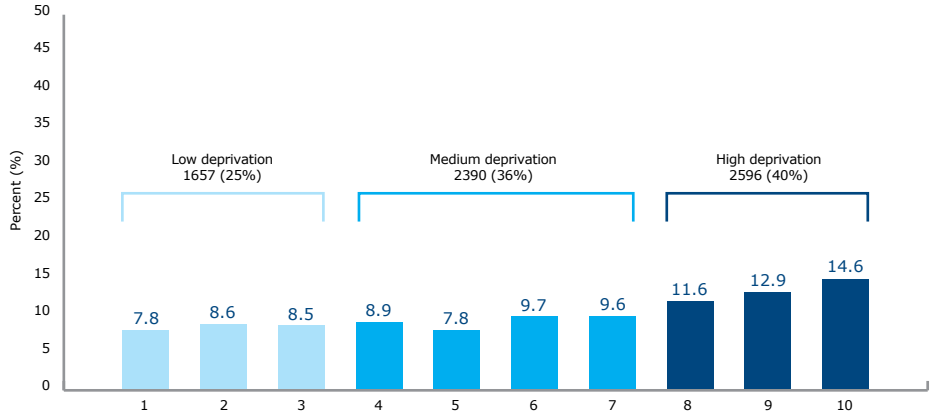


Figure 14. Household NZDep2006 categories

For the *Growing Up in New Zealand* families having their first or subsequent children, an over representation of families were living in the most deprived areas (deciles 8 through 10). However, this is not unexpected for families with young children in a New Zealand context. At the 2006 census 14.3% of births across New Zealand were to mothers living in the least deprived areas (deciles 1 and 2) versus 29.5% in the most deprived (deciles 9 and 10) (Ministry of Health 2010). For the families in the *Growing Up in New Zealand* cohort, 17% lived in deciles 1 and 2 and 28% lived in deciles 9 and 10. At baseline and over time this is likely to provide a generalisable group of families and children in terms of the current deprivation distribution of New Zealand families with young children.

Financial support from the government

Over one third of mothers (35%) reported receiving some form of financial support from the government in the previous 12 months. This type of financial support was varied and included the Unemployment Benefit, Domestic Purposes Benefit, Student Allowance and Paid Parental Leave.

I hope my baby will have opportunities available to him or her, and will be supported if needed

Mothers and partners were asked specifically if they were aware of the Working for Families tax credit, which is intended to increase the nett income of low-income families (Centre for Social Research and Evaluation and Inland Revenue 2010). The responses varied according to whether they were pregnant with their first or a subsequent child. Overall 77% of mothers said they were aware of the Working for Families tax credit, but this was much more common for mothers having their second or later child rather than first time mothers. Of the 23% of mothers who said they were not aware of the family tax credits two-thirds were having their first child. It was also more common for mothers who lived in higher deprivation areas to be unaware of the Working for Families tax credits (45%) as compared to those living in the least deprived areas (22%).

Fewer partners than mothers (70% versus 77%) overall said that they were aware of the Working for Families tax credits.

5. Where do Growing Up in New Zealand families live?

5. Where do Growing Up in New Zealand families live?

5.1 Family location

Most of our children are being born to families living in urban areas, although we also have children being born to families living in rural and remote areas

Most mothers of the *Growing Up in New Zealand* children lived in urban areas during the time of their pregnancy, either in major cities or satellite or independent urban areas (Table 14). Approximately 8% of the mothers lived in rural or remote areas. This is comparable to the distribution of all families in the study area with respect to urban or rural neighbourhoods.

I would like her to grow up in the country, as I think better kids grow up in the country

Table 14. Urban/rural location (Mothers)

	n (N=6669)	Column % (95% CI)
Urban area		
Main urban area	5740	86.1 (85.2 - 86.9)
Satellite urban area	210	3.1 (2.7 - 3.6)
Independent urban area	199	3.0 (2.6 - 3.4)
Rural area		
Rural area with high urban influence	97	1.5 (1.2 - 1.7)
Rural area with moderate urban influence	123	1.8 (1.5 - 2.2)
Rural area with low urban influence	226	3.4 (3.0 - 3.8)
Highly rural/remote area	51	0.8 (0.6 - 1.0)
Area outside urban/rural	23	0.3 (0.2 - 0.5)

5.2 Household mobility

The *Growing Up in New Zealand* mothers and their families are a highly mobile group. Only 15% had lived in the same dwelling for the 5 years prior to this pregnancy, 22% had moved once, but most commonly 63% had moved twice or more in the previous 5 years. Families with other children were slightly less likely to have moved as frequently, but only 18% of them had not moved at all in the previous 5 years, and 57% had moved twice or more (Table 15).

Table 15. Household mobility in the last 5 years by parity (Mothers)

	First child		Subsequent children	
	n (N=2921)	Column % (95% CI)	n (N=3878)	Column % (95% CI)
Did not move	329	11.3 (10.1 - 12.4)	716	18.5 (17.2 - 19.7)
Moved once	543	18.6 (17.2 - 20.0)	947	24.4 (23.1 - 25.8)
Moved twice	559	19.1 (17.7 - 20.6)	752	19.4 (18.1 - 20.6)
Moved more than twice	1490	51.0 (49.2 - 52.8)	1463	37.7 (36.2 - 39.3)

I hope he is happy and has lots of fun in his childhood, and enjoys the lifestyle that you can have in a small town in New Zealand

The highest mobility occurred in mothers currently living with non-relatives followed by mothers living alone, compared to those with current partners or living with extended families (Table 16). Also, households living in private rental properties were the most likely to have moved at all and more often. Those in their own homes or public rental properties were relatively more stable (Table 17), although all groups were highly mobile.

Table 16. Mobility in the last 5 years by living arrangement

	Mother alone[1]		Mother living with partner[1]		Mother living with extended family[2]		Mother living with non-relatives[3]	
	n (N= 215)	Column % (95% CI)	n (N= 4467)	Column % (95% CI)	n (N= 1649)	Column % (95% CI)	n (N= 449)	Column % (95% CI)
Did not move	23	10.7 (6.6 - 14.8)	668	15.0 (13.9 - 16.0)	319	19.3 (17.4 - 21.3)	32	7.1 (4.7 - 9.5)
Moved once	42	19.5 (14.2 - 24.8)	1017	22.8 (21.5 - 24.0)	356	21.6 (19.6 - 23.6)	73	16.3 (12.8 - 19.7)
Moved twice	33	15.3 (10.5 - 20.2)	868	19.4 (18.3 - 20.6)	328	19.9 (18.0 - 21.8)	77	17.1 (13.7 - 20.6)
Moved more than twice	117	54.4 (47.8 - 61.1)	1914	42.8 (41.4 - 44.3)	646	39.2 (36.8 - 41.5)	267	59.5 (54.9 - 64.0)

[1] (no other adults); [2] (& partner if applicable); [3] (& partner/extended family if applicable)

Our children are born into families that are highly mobile – over half have moved more than twice in the last 5 years, although they are often moving within the same neighbourhood

Table 17. Mobility in the last 5 years by dwelling ownership

	Family ownership		Private rental		Public rental	
	n (N=3201)	Column % (95% CI)	n (N=2432)	Column % (95% CI)	n (N=480)	Column % (95% CI)
Did not move	682	21.3 (19.9 - 22.7)	117	4.8 (4.0 - 5.7)	109	22.7 (19.0 - 26.5)
Moved once	808	25.2 (23.7 - 26.7)	417	17.1 (15.6 - 18.6)	111	23.1 (19.4 - 26.9)
Moved twice	611	19.1 (17.7 - 20.4)	489	20.1 (18.5 - 21.7)	81	16.9 (13.5 - 20.2)
Moved more than twice	1100	34.4 (32.7 - 36.0)	1409	57.9 (56.0 - 59.9)	179	37.3 (33.0 - 41.6)

5.3 Neighbourhood mobility and belonging

Despite high mobility generally, many of the moves made by mothers were to dwellings in the same or proximal neighbourhoods. Mothers were asked how long they had lived in their current neighbourhood (rather than in any one dwelling), as well as the reasons why they choose to live in that area. The average duration for mothers to be in their current neighbourhood was 4 years prior to this pregnancy. The reasons for mothers choosing to reside in their neighbourhoods are summarised in Figure 15 (multiple responses allowed).

Parents generally feel connected to their communities, and safe living in their neighbourhoods

The main reasons mothers chose to live in their neighbourhood were because they felt it was a 'good, safe' neighbourhood with friends and/or family nearby, and it was close to work and amenities they used regularly. Almost a third of mothers reported that they enjoyed the local lifestyle.

Nearly two-thirds stated that they felt connected to their local community and participated in it in some tangible way.

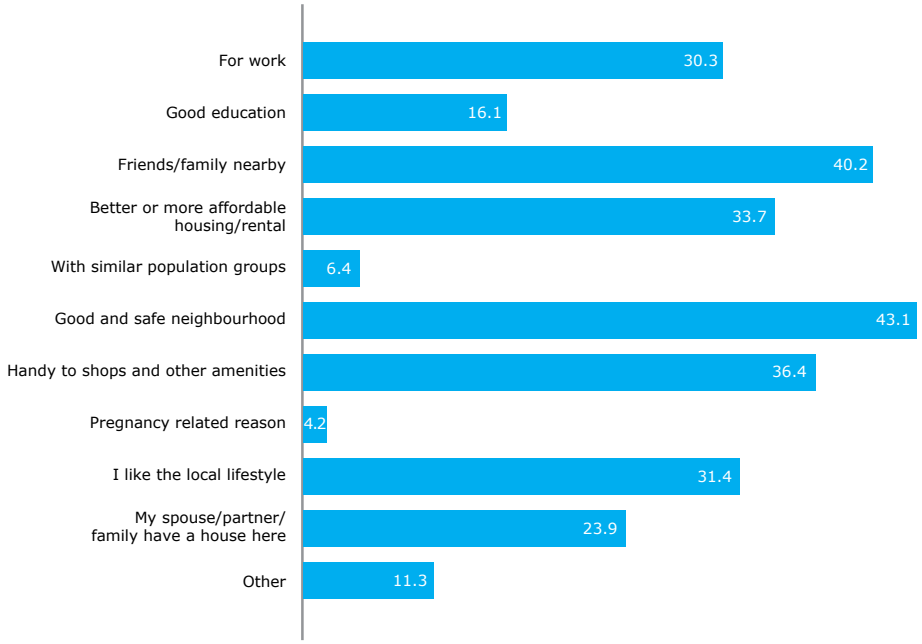


Figure 15. Mothers reasons for choosing current neighbourhood (%)

N=4418. Mothers selected multiple response(s) so will total to more than 100%

I hope that we will be able to buy a house in a nice area where our baby will have a good community around them

We asked mothers to further characterise the neighbourhoods that they were living in at the time of their pregnancy. We particularly asked about their sense of neighbourhood integration, perceived safety and how connected they felt to their neighbourhood.
The details of the questions they were asked to rate are in Table 18. In general those living in the least deprived areas tended to feel more integrated in their neighbourhoods than those in medium or more deprived areas, although overall proportions across groups were generally greater than 50%. Whilst the majority of mothers felt their neighbourhoods were safe for them and their children, more mothers felt safe in the least deprived areas than in the medium and most deprived areas. There was less variation in the degree of perceived connection felt across the different deprivation areas (Table 18).

I hope my child will grow up in a safe neighbourhood, with people who care about them

Table 18. Neighbourhood integration, safety and isolation by NZDep2006 categories (Mothers)

	Low deprivation		Medium deprivation		High deprivation	
	n/N	% (95% CI)	n/N	% (95% CI)	n/N	% (95% CI)
Neighbourhood integration						
Feel sorry if I had to move away from the people	779/1513	51.5 (49.0 - 54.0)	938/2179	43.0 (41.0 - 45.1)	900/2330	38.6 (36.6 - 40.6)
Have a lot in common with people	672/1508	44.6 (42.1 - 47.1)	823/2177	37.8 (35.8 - 39.8)	840/2327	36.1 (34.1 - 38.0)
My neighbours treat me with respect	1226/1512	81.1 (79.1 - 83.1)	1702/2177	78.2 (76.4 - 79.9)	1674/2330	71.8 (70.0 - 73.7)
I like living where I live	1416/1516	93.4 (92.2 - 94.7)	1891/2185	86.5 (85.1 - 88.0)	1794/2336	76.8 (75.1 - 78.5)
I am good friends with people	933/1513	61.7 (59.2 - 64.1)	1303/2181	59.7 (57.7 - 61.8)	1478/2331	63.4 (61.5 - 65.4)
Trust my neighbours to look out for me	1238/1513	81.8 (79.9 - 83.8)	1617/2181	74.1 (72.3 - 76.0)	1618/2333	69.4 (67.5 - 71.2)
Neighbourhood safety						
Safe to walk around at night	1050/1508	69.6 (67.3 - 72.0)	1254/2173	57.7 (55.6 - 59.8)	1026/2324	44.1 (42.1 - 46.2)
Children are safe walking around during the day	1125/1512	74.4 (72.2 - 76.6)	1518/2177	69.7 (67.8 - 71.7)	1402/2324	60.3 (58.3 - 62.3)
Neighbourhood connectedness						
If I no longer lived here, hardly anyone would notice	484/1512	32.0 (29.7 - 34.4)	743/2181	34.1 (32.1 - 36.1)	797/2328	34.2 (32.3 - 36.2)
I have little to do with people	497/1514	32.8 (30.5 - 35.2)	818/2180	37.5 (35.5 - 39.6)	893/2331	38.3 (36.3 - 40.3)

6. Growing Up in New Zealand children before birth

6. Growing Up in New Zealand children before birth

The following section describes the specific characteristics of the pregnancies of the mothers of the *Growing Up in New Zealand* children. In general, this information was gathered from mothers during the last trimester of their pregnancy (between 28 weeks gestation and the estimated date of delivery at 40 weeks). However, in some instances information was collected retrospectively where an interview could not be completed before the child's birth.

6.1 Becoming pregnant

60% of all the *Growing Up in New Zealand* pregnancies were planned

Mothers were asked if their pregnancies had been planned or not planned (Table 19). This information is important when evaluating activities and behaviours undertaken prior to or in the early stages of pregnancy. This information is not intended to provide judgement about the mother's or her partner's feelings about the pregnancy once it was confirmed.

Planned and unplanned pregnancies

Table 19. Planned and unplanned pregnancy characteristics (Mothers)

	Planned		Unplanned	
	n (N=4091)	Column % (95% CI)	n (N=2700)	Column % (95% CI)
Age (years)	31.5 (31.3 - 31.6), 32.0, (16 - 47) ±		27.8 (27.6 - 28.1), 28.0, (15 - 46) ±	
Education				
No secondary school qualification	118	2.9 (2.4 - 3.4)	370	13.7 (12.4 - 15.0)
Secondary school qualification or NCEA 1–4	815	19.9 (18.7 - 21.2)	808	30.0 (28.3 - 31.7)
Diploma or Trade Certificate or NCEA 5–6	1145	28.0 (26.6 - 29.4)	931	34.6 (32.8 - 36.4)
Bachelors Degree	1139	27.9 (26.5 - 29.3)	392	14.6 (13.2 - 15.9)
Higher Degrees	869	21.3 (20.0 - 22.5)	192	7.1 (6.2 - 8.1)
Parity				
First child	1802	44.0 (42.5 - 45.6)	1111	41.1 (39.3 - 43.0)
Subsequent children	2289	56.0 (54.4 - 57.5)	1589	58.9 (57.0 - 60.7)

± Mean (95% CIs), median, (range)

For the mothers of the *Growing Up in New Zealand* children, 60% reported that this pregnancy had been actively planned. In almost 10% of these planned pregnancies, parents had had adjunct treatment to assist them with conception. The type of reproductive assistance varied substantially, but the most common treatment was IVF (in-vitro-fertilisation).

10% of the *Growing Up in New Zealand* parents overall required some assistance to achieve a pregnancy

There was a wide range of time taken to achieve pregnancy for all these mothers. Whilst the median time to become pregnant (if planning for this outcome) was just under 2 months, there were a small number of mothers who had been trying to achieve a pregnancy for 12 years or more.

Mothers who reported that their pregnancy was planned were older than those who reported that their pregnancy was not planned (average age of 32 years for those planned compared to 28 years for those not planned). Mothers with planned pregnancies were also more likely to have educational qualifications of any kind, and in particular were 2 to 3 times more likely to have a tertiary degree (bachelors or higher). However, there was little difference in the percentage of planned pregnancies compared to unplanned according to whether these were a first or a subsequent pregnancy.

6.2 Maternal pregnancy history

Nearly 70% of all mothers reported that they had had a previous recognised pregnancy before this current pregnancy. Of the previous pregnancies reported, nearly 17% had ended sometime before 24 weeks completed gestation. Of the 3960 mothers who had previously had a live birth, 55% had previously had one child, 27% two, and 18% three or more (Figure 16). This means over half the *Growing Up in New Zealand* children will have older siblings (ranging from 1 to more than 4).

Most *Growing Up in New Zealand* children will have older siblings, commonly 1 or 2

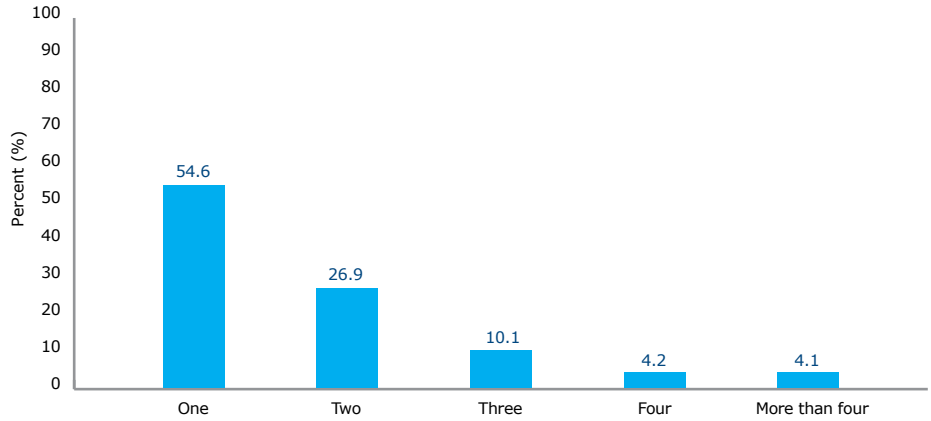


Figure 16. Number of previous live births (Mothers)

6.3 Current pregnancy (Growing Up in New Zealand children)

We're excited to have a new baby to complete the family, and a sibling for my son

In almost all cases this report describes information collected from mothers during the latter stages of their pregnancy, rather than at or after birth. More detailed information about the birth itself and the early wellbeing of mothers and babies will be collated from routine perinatal record linkage and subsequent data collection points. This will be provided in subsequent reports. However, preliminary analyses of information from mothers when their babies were approximately 6 weeks older than their estimated date of delivery suggest that for 6752 pregnancies, there were 6844 live births of 6662 singletons (99%) and 90 (1%) were multiples (twins and triplets). Of the known births 3526 (51%) were male and 3318 (49%) were female.

6.4 Care during pregnancy

New Zealand has a unique system of provision of antenatal care which has been the subject of much debate since its introduction in the early 1990s. Often there is discussion about how challenging it is for women to get their choice of Lead Maternity Carer (LMC) in a timely manner. This was an area that mothers were asked about during their pregnancy. By the last trimester of pregnancy almost 98% of mothers had an LMC. In rural areas almost 99% of mothers had a confirmed LMC towards the end of their pregnancy. Almost 9 out of 10 mothers overall (88%) stated that they had a choice of LMC (higher in rural areas at 92%), and that the average time taken to find their LMC was just under 4 weeks (close to 3 in rural areas), with a range of 1 to 13 weeks. Most mothers also received their first choice of LMC: 89% of mothers in urban and 93% in rural areas.

Almost all mothers had a Lead Maternity Carer (LMC) during their pregnancy, most had little difficulty in engaging their LMC, and in most cases they achieved their choice of LMC within a few weeks

Of the 715 mothers who did not receive their first choice in the type of lead maternity care, their preferred carer would have been an independent midwife most often (almost 50%) with obstetrician (17%) and General Practitioner (11%) as the next most preferred. A further 9% would have preferred to have shared care with their family practitioner and a midwife.

The type of LMC that *Growing Up in New Zealand* mothers accessed is summarised in Figure 17. More than two-thirds of all mothers were cared for by an independent midwife, with hospital based midwives and obstetricians being the next two most popular options. Only 1% of mothers were cared for in pregnancy by a General Practitioner, which is likely to reflect the lack of General Practitioners offering maternity care.

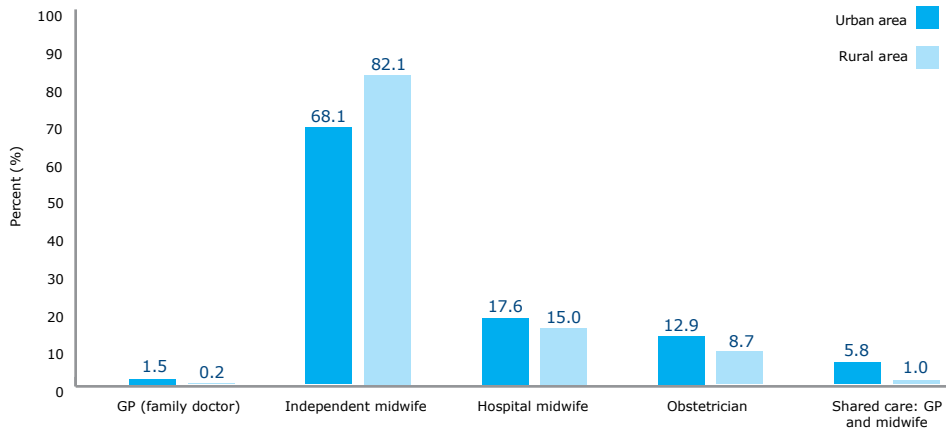


Figure 17. Type of Lead Maternity Carer by rurality (Mothers)

Mothers selected multiple response(s) so will total to more than 100%

A further area of interest at baseline and as the *Growing Up in New Zealand* children are born and enter infancy, is the continuity of care (or otherwise) that families have with their primary health care providers. This has been an area of concern with the changes in the delivery of maternity services, as most women need to change carer for their pregnancy.

Aside from maternity care, mothers were asked about their interaction with a primary health provider before and during their current pregnancy. Almost 90% reported that they had a regular family doctor whom they saw prior to their pregnancy. Some 80% of mothers had also seen a family practitioner during the course of this pregnancy, 4 out of 5 of these saw the same primary health care provider as before their pregnancy. Mothers were also asked if they knew who they would consult for primary health care after this baby was born. Over 86% of these mothers stated that this would be the same as their primary health carer before pregnancy. Issues of access to primary care and continuity of care will be further evaluated throughout the course of the study as the children grow up.

Most mothers had a regular family doctor prior to their pregnancy, and 80% of them had seen their doctor during their pregnancy

7. Growing Up in New Zealand pregnancy behaviours

7. Growing Up in New Zealand pregnancy behaviours

Mothers and their partners were both asked independently about their pregnancy-related behaviours. Those relating to diet, alcohol, smoking and activity levels are reported here.

7.1 Maternal diet in pregnancy

Over 90% of mothers had actively made changes to their diets during pregnancy

Recommendations about what to eat and in particular what foods and beverages to avoid during pregnancy have become increasingly complex over the last two or so decades. The mothers of the *Growing Up in New Zealand* cohort were asked to describe the changes they had made to their diets during the course of their pregnancy, specifically in terms of added or avoided foods. They were also asked where they found information about dietary changes in pregnancy, and whom they would trust to provide them with information about their pregnancy diet. Mothers were also asked about their current overall dietary patterns.

Table 20. Mothers dietary changes by education

	Avoided certain foods and drinks		Added certain foods and drinks	
	n/N	% (95% CI)	n/N	% (95% CI)
No secondary school qualification	350/488	71.7 (67.7 - 75.7)	164/489	33.5 (29.4 - 37.7)
Secondary school qualification or NCEA 1–4	1338/1626	82.3 (80.4 - 84.1)	603/1625	37.1 (34.8 - 39.5)
Diploma or Trade Certificate or NCEA 5–6	1798/2081	86.4 (84.9 - 87.9)	868/2081	41.7 (39.6 - 43.8)
Bachelors Degree	1429/1538	92.9 (91.6 - 94.2)	682/1538	44.3 (41.9 - 46.8)
Higher Degrees	997/1064	93.7 (92.2 - 95.2)	460/1064	43.2 (40.3 - 46.2)

Almost all mothers had made deliberate changes to their diets during pregnancy. At some point during their pregnancy, 87% of all mothers deliberately avoided certain food or drinks, and nearly 41% had added food or drinks to their usual pre-pregnancy diet. The likelihood of making changes (either avoiding or adding) was patterned according to maternal education. Mothers who had the highest educational qualifications tended to be more likely to either avoid or add foods than those with no qualifications, with a graded effect of educational attainment across the mothers (Table 20).

Table 21. Mothers dietary changes by NZDep2006

	Avoided certain foods and drinks		Added certain foods and drinks	
	n/N	% (95% CI)	n/N	% (95% CI)
Low deprivation	1545/1656	93.3 (92.1 - 94.5)	693/1656	41.8 (39.5 - 44.2)
Medium deprivation	2130/2387	89.2 (88.0 - 90.5)	984/2388	41.2 (39.2 - 43.2)
High deprivation	2094/2588	80.9 (79.4 - 82.4)	1030/2588	39.8 (37.9 - 41.7)

Mothers who changed their diets tended to be slightly younger than mothers who made no change (29 versus 30 years). The likelihood of mothers avoiding certain foods was also strongly patterned by the deprivation categories relating to the areas in which they lived, with mothers in the least deprived areas more likely to avoid foods than those in the most deprived areas. However, over 80% of mothers in the most deprived areas also made these changes (Table 21). There was a much less marked difference in the proportion of mothers who added foods or drinks to their diets by area deprivation (approximately 40% across all areas).

Details about what types of foods or drinks were either avoided or added by mothers were also sought. The most common additions to mothers' diets at any time during their pregnancy (in comparison to pre-pregnancy) were vegetables and fruits, milk products and extra beverages*. Mothers also tended to increase their intake of protein rich foods, with a smaller number increasing their intake of bread and cereal* (Table 22). Where foods were added they tended to be added throughout the pregnancy rather than for one particular time period.

Table 22*. Added food and beverages (Mothers)

	Overall ≠ n (%) (N=2780)	Timeline		
		During first 3 months of pregnancy n (%)	After first 3 months of pregnancy n (%)	Throughout the pregnancy n (%)
Beverages	1201 (43.2)	203 (7.3)	430 (15.5)	567 (20.4)
Bread and cereals	177 (6.4)	29 (1.0)	67 (2.4)	81 (2.9)
Milk and milk products	1069 (38.5)	165 (5.9)	326 (11.7)	578 (20.8)
Vegetables and fruits	1359 (48.9)	211 (7.6)	350 (12.6)	798 (28.7)
Protein rich foods	703 (25.3)	91 (3.3)	267 (9.6)	344 (12.4)
Supplement	136 (4.9)	35 (1.3)	56 (2.0)	45 (1.6)
Other	533 (19.2)	102 (3.7)	189 (6.8)	241 (8.7)

≠ Includes those who added food any time during pregnancy but didn't specify as to when they added this food
*Updated 5 August 2011

There are multiple sources of information for mothers about foods and drinks to specifically avoid during their pregnancy. Table 23 looks at the most commonly recommended list (as per Ministry of Health information (Ministry of Health 2006)) and the proportion of mothers who avoided these during their pregnancy together with other commonly avoided foods. Where foods were avoided, this tended to be for the whole of pregnancy. The most commonly avoided drinks were alcohol and caffeinated beverages (65% and 38% respectively), and the most commonly avoided foods were raw and processed seafood (47%), processed meat and deli goods (33-35%) and soft pasteurised cheeses (31%). Carbonated drinks and sushi were also avoided by approximately 1 in 5 of the mothers who made changes (Table 23).

Foods and drinks most often avoided by pregnant mothers were alcohol, caffeinated beverages, deli and processed goods, raw foods and shellfish

Table 23. Avoided food and beverages (Mothers)

	Overall ≠ n (%) (N=5921)	Timeline		
		During first 3 months of pregnancy n (%)	After first 3 months of pregnancy n (%)	Throughout the pregnancy n (%)
Avoided food (MoH recommendations)				
Pâté	145 (2.4)	41 (0.7)	1 (0.0)	103 (1.7)
Cold precooked chicken	299 (5.0)	52 (0.9)	27 (0.5)	220 (3.7)
Ham and other chilled pre-cooked meat products	2142 (36.2)	419 (7.1)	76 (1.3)	1647 (27.8)
Stored salads and coleslaw	1940 (32.8)	301 (5.1)	69 (1.2)	1570 (26.5)
Raw, smoked or pre-cooked fish, seafood products chilled or frozen	2802 (47.3)	437 (7.4)	130 (2.2)	2233 (37.7)
Sushi	986 (16.7)	163 (2.8)	40 (0.7)	783 (13.2)
Raw unpasteurised milk and milk products	106 (1.8)	11 (0.2)	4 (0.1)	91 (1.5)
Soft pasteurised cheese (e.g brie, camembert, blue, ricotta, mozzarella, feta)	1854 (31.3)	345 (5.8)	62 (1.0)	1446 (24.4)
Marinated mussels or surimi	28 (0.5)	10 (0.2)	2 (0.0)	16 (0.3)
Raw eggs	373 (6.3)	35 (0.6)	15 (0.3)	323 (5.5)
Hummus	69 (1.2)	10 (0.2)	4 (0.1)	55 (0.9)
Other avoided food				
Additives, preservatives, colouring	28 (0.5)	2 (0.0)	0	26 (0.4)
Raw food unspecified	42 (0.7)	4 (0.1)	6 (0.1)	32 (0.5)
Chocolate	55 (0.9)	11 (0.2)	16 (0.3)	28 (0.5)
Bread, bakery flour, gluten	71 (1.2)	8 (0.1)	16 (0.3)	47 (0.8)
Pre-prepared food unspecified	79 (1.3)	10 (0.2)	3 (0.1)	66 (1.1)
Nuts	127 (2.1)	12 (0.2)	10 (0.2)	105 (1.8)
Spicy food	168 (2.8)	32 (0.5)	34 (0.6)	102 (1.7)
Raw/rare meat	181 (3.1)	17 (0.3)	10 (0.2)	154 (2.6)
High fat/sugar content	545 (9.2)	77 (1.3)	144 (2.4)	323 (5.5)
Other dairy	249 (4.2)	38 (0.6)	30 (0.5)	181 (3.1)
Other food	441 (7.4)	72 (1.2)	105 (1.8)	264 (4.5)
Avoided beverages				
Alcohol	3843 (64.9)	596 (10.1)	157 (2.7)	3085 (52.1)
Caffeinated beverages (tea, coffee, energy drinks)	2244 (37.9)	426 (7.2)	162 (2.7)	1655 (28.0)
Carbonated drinks	1116 (18.8)	185 (3.1)	182 (3.1)	747 (12.6)

≠ Includes those who avoided food any time during pregnancy but didn't specify as to when they avoided this food

Information source

Nearly 72% of all the mothers of the *Growing Up in New Zealand* children reported that they had changed their diet specifically because of information they had received during or around the time of this pregnancy. The most common source for dietary information was their midwife, who almost three-quarters of these women gave as an information source. Other frequently cited sources of dietary information were family doctors (GPs), printed media, and friends and family (Figure 18).

All mothers were also asked who they would trust most to provide them with this information (multiple responses were permitted). The most trusted informants reported were health or allied health professionals, most often their midwife (84%) followed closely by their family doctor (69%), nutritionist (33%) and their obstetrician (27%). Mothers also tended to trust information they received from family (38%), printed media (28%) and friends (24%) more than from antenatal classes (21%) or other media sources (Figure 18).

Women most often obtained information about dietary changes from their LMC, who tended to also be a trusted source of such information

Family and friends were also key providers of information relating to pregnancy diet, and they were well-trusted

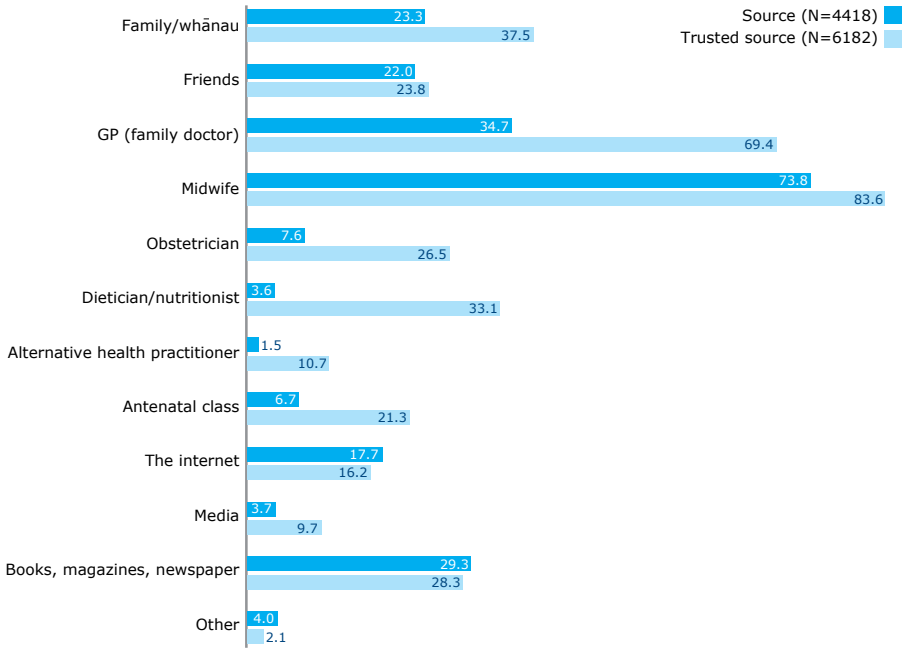


Figure 18. Sources of information for dietary change (Mothers) (%)

Mothers selected multiple response(s) so will total to more than 100%

Over time it will be of interest to observe the impact of these maternal dietary changes on children's health and development. Many recommendations for changes to maternal diet have developed after case studies have suggested problems with particular food groups (and where a biologically plausible explanation exists for their implication). However, the suggested list of restrictions has grown significantly over the last two decades, and this longitudinal study provides a chance to evaluate the effects of these changes on the health and wellbeing of our population, at birth and beyond.

7.2 Partners diet in pregnancy

In addition to gaining information from mothers about their changes in diet during pregnancy, we also sought this information from the partners. Whilst there is no good biological reason why a change in partners' diet is likely to have an immediate effect on the *Growing Up in New Zealand* child's health and wellbeing, behaviourally it may be easier for a mother to change her own diet if her partner does likewise.

Many partners also made changes to their diets alongside the mothers

Table 24. Partners dietary changes by education

	Avoided certain foods and drinks		Added certain foods and drinks	
	n/N	% (95% CI)	n/N	% (95% CI)
No secondary school qualification	39/80	48.8 (37.8 - 59.7)	37/80	46.3 (35.3 - 57.2)
Secondary school qualification or NCEA 1–4	101/219	46.1 (39.5 - 52.7)	85/218	39.0 (32.5 - 45.5)
Diploma or Trade Certificate or NCEA 5–6	211/453	46.6 (42.0 - 51.2)	194/455	42.6 (38.1 - 47.2)
Bachelors Degree	120/243	49.4 (43.1 - 55.7)	87/243	35.8 (29.8 - 41.8)
Higher Degrees	97/201	48.3 (41.3 - 55.2)	81/201	40.3 (33.5 - 47.1)

Table 25. Partners dietary changes by NZDep2006

	Avoided certain foods and drinks		Added certain foods and drinks	
	n/N	% (95% CI)	n/N	% (95% CI)
Low deprivation	142/329	43.2 (37.8 - 48.5)	116/329	35.3 (30.1 - 40.4)
Medium deprivation	199/439	45.3 (40.7 - 50.0)	173/439	39.4 (34.8 - 44.0)
High deprivation	211/395	53.4 (48.5 - 58.3)	180/396	45.5 (40.5 - 50.4)

Of the partners who provided information, less than one third said that they made changes to their own diet during their partners' pregnancy. The likelihood of partners making changes was unrelated to their educational status (Table 24), but was patterned according to the deprivation level of the area they lived in, with partners living in areas of high deprivation being most likely to make changes to their diet (Table 25). This is in contrast to the patterns seen for maternal dietary change.

7.3 Maternal supplement intake

The use of supplements during pregnancy was influenced by whether a pregnancy was planned or unplanned (Table 26).

Table 26. Supplement intake (Mothers)

	N	Never n (Row %)	Before pregnancy n (Row %)	Added during pregnancy n (Row %)
Planned				
Folate or folic acid*	3719	284 (7.6)	2167 (58.3)	1268 (34.1)
Iron*	3718	911 (24.5)	1126 (30.3)	1681 (45.2)
Vitamins/multivitamins/ minerals	3719	1121 (30.1)	1534 (41.2)	1064 (28.6)
Unplanned				
Folate or folic acid*	2441	685 (28.1)	217 (8.9)	1539 (63.0)
Iron*	2440	888 (36.4)	277 (11.4)	1275 (52.2)
Vitamins/multivitamins/ minerals	2442	1250 (51.2)	321 (13.1)	871 (35.6)

* Including as part of a multivitamin

The likelihood of taking folate before and during early pregnancy was influenced by whether the pregnancy was actively planned

Mothers who reported that their pregnancy was planned were more likely to take folic acid (folate) before and throughout their pregnancy compared to mothers where the pregnancy was unplanned (Table 26). Of the planned pregnancies, 58% of mothers were taking folic acid before their pregnancy, and almost all continued during pregnancy, while an additional 34% of mothers started taking folic acid during their pregnancy, usually from the first trimester onwards. Only 8% of mothers with planned pregnancies did not take folate at any time (Table 26).

Nearly 1 in 6 mothers did not take folate supplements at all, either before or during their pregnancy

For pregnancies that were unplanned, 28% did not take folic acid at any time (before or during pregnancy). Nearly 9% were taking folic acid before and during their pregnancy and 63% took folic acid during their pregnancy, with approximately half beginning in the first trimester (Table 26).

So overall, despite recommendations encouraging mothers to take folic acid if planning a pregnancy, and at least during the early weeks of pregnancy (Ministry of Health 2006), nearly 16% of all the *Growing Up in New Zealand* mothers (almost 1 in 6) did not take folic acid at all around or during the time of their pregnancy.

Approximately 30% of all mothers whose pregnancy was planned took supplementary iron before pregnancy, and an additional 45% added supplementary iron during their pregnancy. Of the mothers with unplanned pregnancies, 11% took supplementary iron prior to being pregnant, while a further 52% did so during pregnancy (Table 26). In both groups there was an increase in the number of mothers taking iron supplements after the first trimester of their pregnancy.

For other vitamin supplements, women with planned pregnancies were more likely to take these before their pregnancy than those with unplanned pregnancies (41% compared to 13%). There was little difference between planned and unplanned pregnancies for maternal use of vitamin supplements during pregnancy (Table 26).

All mothers were also asked who they would trust to provide them with information about supplements (with multiple responses allowed). Health practitioners were the most trusted source of information (midwives followed by GPs), with family and friends the next most trusted sources of information (Figure 19).

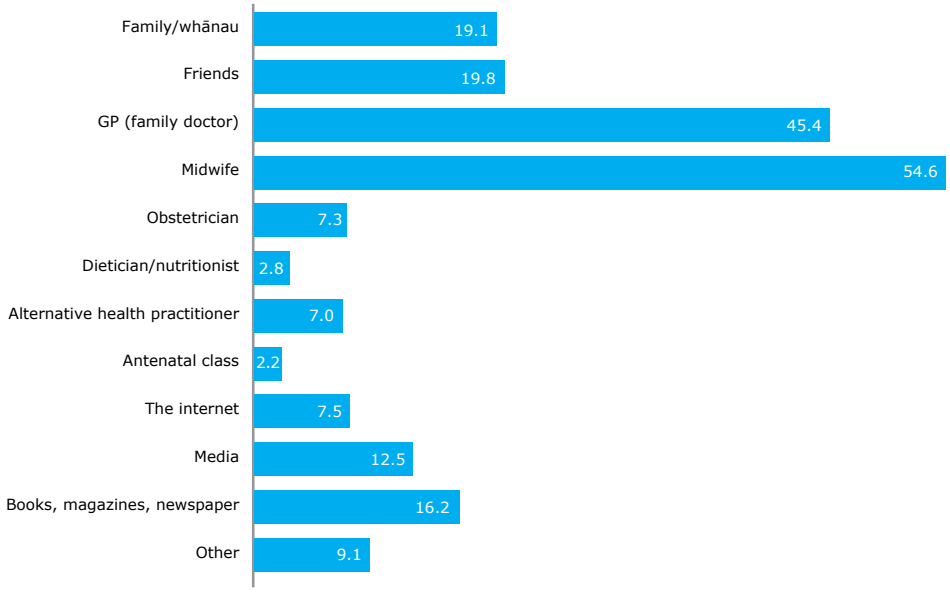


Figure 19. Sources of information about vitamin supplements (Mothers) (%)

N=5610. Mothers selected multiple response(s) so will total to more than 100%

7.4 Maternal smoking in pregnancy

Nearly 11% of women were active smokers during their pregnancy

Mothers were asked about current smoking, as well as their history of smoking and any changes they had made to their smoking behaviours during the course of this pregnancy. Twenty percent of all mothers who identified themselves as regular smokers before this pregnancy reported smoking an average of 11 cigarettes per day. New Zealand European and Māori mothers reported the highest numbers per day (Figure 20). The average age the mothers had taken up smoking also varied by their ethnic identity. Māori women who smoked tended to take up smoking earliest (average age of 15 years), followed by New Zealand European (16 years), then Pacific (17 years) and Asian women (19 years).

Nearly 11% of all mothers were smokers in this pregnancy, although the average number of cigarettes per day had reduced to just over 8 per day across all groups with less variability by ethnic identity. Further, 7% of all mothers stated that they often spent time in the same vicinity as a regular smoker during their pregnancy. For 60% of these women this occurred every day of the week. Of the group who reported often having a regular smoker in their vicinity, half were also current smokers themselves.

Mothers in more deprived areas and with lower education levels were more likely to smoke during pregnancy

The likelihood of a mother smoking in pregnancy was patterned by deprivation area and her completed level of education. Mothers were much more likely to be smokers during pregnancy if they lived in high deprivation areas (17% of mothers in high deprivation areas were smoking in pregnancy compared to less than 5% of those living in the least deprived areas). Further, less than 2% of all mothers who had tertiary level qualifications were smoking in pregnancy compared to 43% of mothers who had left school without any formal qualifications.

Smoking rates in pregnancy for planned pregnancies were also considerably lower compared to where the pregnancy was reported as unplanned (4% smokers in planned compared to 21% in unplanned). This may reflect deliberate efforts to cease smoking whilst attempting to conceive, but is likely also be related to the higher educational qualifications and older age of the mothers in whom pregnancy was reported to have been planned.

When considering the change in maternal smoking from before pregnancy to the last trimester, all groups of mothers (by ethnic identity) reduced their rates of smoking (Figure 20). In most subgroups the proportion of mothers continuing to smoke in pregnancy reduced by more than half, except in Māori mothers where the reduction was slightly less (Figure 20).

I hope that my baby is healthy, because of my smoking – I've had a hard time dealing with that

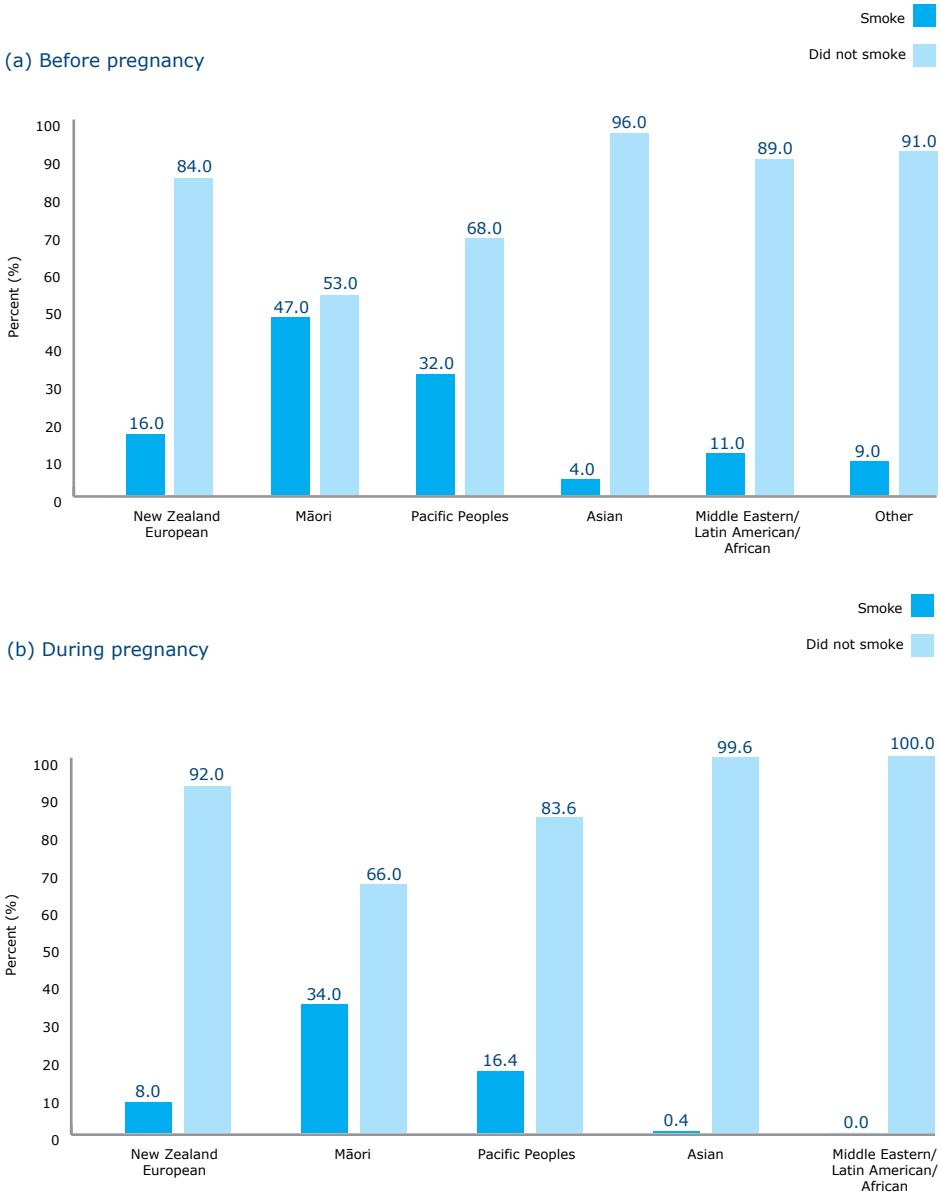


Figure 20. Mothers smoking by main ethnicity

All groups of mothers who smoked reduced or stopped their smoking in pregnancy, but smoking rates remained highest among Māori women

7.5 Partners smoking

Partners were also asked about their current smoking, as well as their history of smoking and any changes they had made to their smoking behaviours during the course of the mother's pregnancy. A higher number of partners reported current smoking compared to mothers who smoked prior to pregnancy (28% reporting smoking regularly, with 18% reporting that they smoked every day). The daily smokers averaged 11 cigarettes per day. There were differences in the proportions of current smokers by ethnic identity for partners, with Māori and Pacific partners being most likely to smoke (Figure 21). The average age the partners had taken up smoking was 18 years, but this varied by their ethnic identity and was older in each group than the average ages reported by the mothers. Partners who identified as Māori tended to take up smoking earliest (average age of 16 years), followed by New Zealand European and Pacific (both 17 years) and then Asian partners (21 years).

Close to half of the partners who had ever smoked changed their smoking patterns during the mother's pregnancy

Close to half (45.6%) of all partners who have ever smoked made changes to their smoking patterns during the mother's pregnancy. Partners who identified as Asian, Pacific or Māori were more likely to make changes than those who identified as New Zealand European (56% of Asian partners changed compared to 40% of New Zealand European). The most common changes were cutting down the number of cigarettes per day, stopping smoking and smoking outside only (43%, 42%, and 23% of those who changed, respectively). A further 12% of those who changed said they no longer smoked as frequently around their partner and they planned to quit before the baby was born. While this indicates a general trend in partners positively altering their smoking habits when expecting a baby, it should be noted that 21% of partners who altered their smoking habits had increased their frequency of smoking.

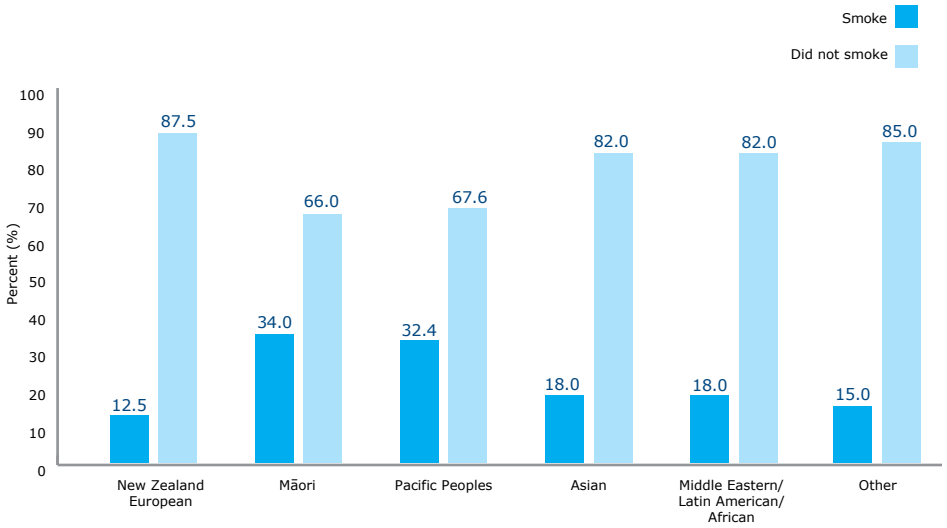


Figure 21. Partners smoking by main ethnicity

7.6 Maternal alcohol consumption

Prior to pregnancy there was marked variation in the average amount of alcohol consumed across all mothers (ranging from no alcohol to over 20 drinks per week). Approximately 30% of all mothers reported that they did not drink alcohol prior to their pregnancy, with similar patterns of alcohol consumption for mothers where pregnancy was planned compared to those where it was unplanned (Figure 22).

Many mothers consume some alcohol in pregnancy

The patterns of alcohol consumption changed in both groups during pregnancy. In the first 3 months of pregnancy more mothers in the planned pregnancy group had stopped drinking any alcohol compared to the unplanned group (83% compared to 69%).

From the second trimester of pregnancy onwards more mothers in the unplanned pregnancy group had stopped drinking alcohol (upward trend from 69% to 89%) with 85% of the planned group abstaining.

Whilst the majority of all mothers avoided alcohol during pregnancy, a number did continue to consume some alcohol throughout their pregnancy. The current Ministry of Health guidelines (Ministry of Health 2006) recommend that mothers avoid alcohol altogether in pregnancy, but not all mothers are choosing to do so (Figure 22). Further, in unplanned pregnancies there is a greater chance that pre-pregnancy alcohol consumption will continue until a pregnancy is recognised or confirmed. One third of mothers with unplanned pregnancies consumed 4 or more drinks of alcohol per week prior to pregnancy, and 13% of mothers with unplanned pregnancies consumed 4 or more drinks of alcohol a week in the first trimester. However, it should also be noted that of those mothers who reported drinking alcohol at all during this pregnancy, many reported drinking less than 1 drink per week.

Compared to pre-pregnancy, mothers reduced the quantity of alcohol intake during pregnancy, although the reduction came later if the pregnancy was unplanned

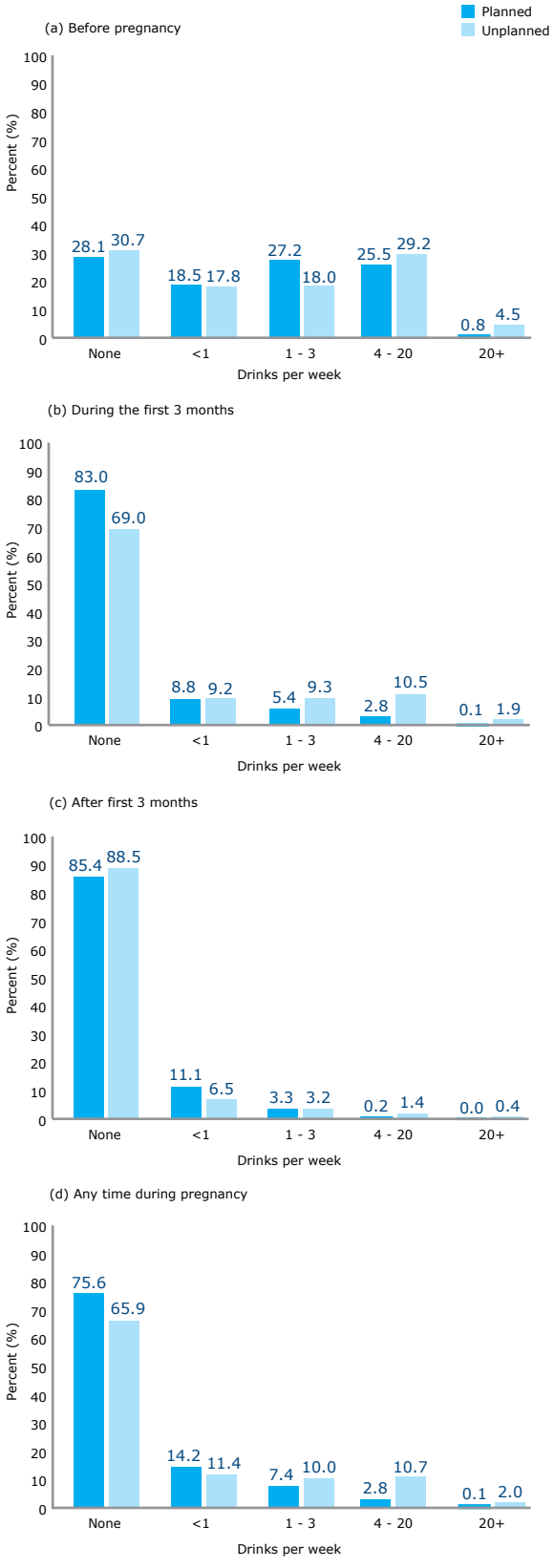


Figure 22. Mothers alcohol consumption per week by planned and unplanned pregnancy and gestation

7.7 Partners alcohol consumption

Nearly 82% of all the partners stated that they consumed alcohol regularly and that this continued during the mother's pregnancy. The partners were asked whether they had actively made any changes to their drinking patterns during the course of this pregnancy. The changes they reported are displayed in Figure 23. Whilst 43% of partners did not make any change to their drinking patterns, over half reported drinking less than usual. A small number reported drinking more than usual.

Over half the partners reduced their alcohol intake during the mothers pregnancies

As with dietary changes, partners cutting down on their drinking may assist mothers in stopping drinking.

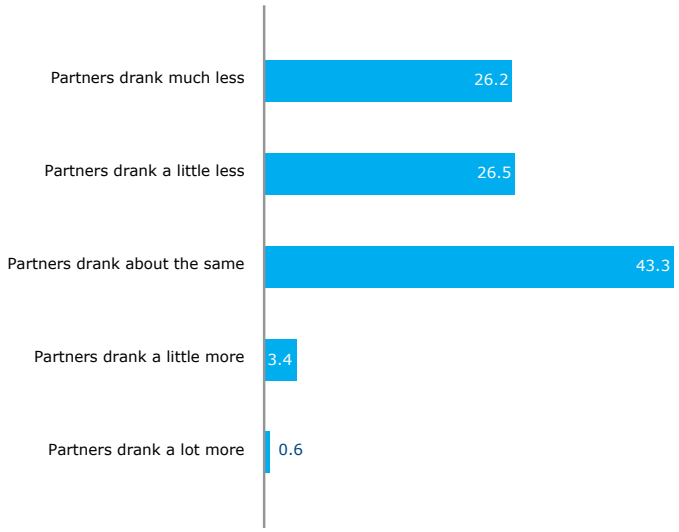


Figure 23. Change in alcohol consumption during pregnancy compared with before (Partners)

7.8 Maternal activity in pregnancy

Nearly 60% of all mothers were physically active prior to pregnancy

Mothers were asked about their usual physical activity levels prior to pregnancy, as well as during their current pregnancy. Classification of moderate or vigorous exercise was based on the recommendations for adults of activity for at least 30 minutes on 5 (or more) days a week (Ministry of Health 2003).

For all mothers, 61% met the criteria for being 'active' prior to pregnancy. Of this group, approximately 60% continued with approximately the same level of activity during the first 3 months of their pregnancy, while 40% reduced to less than this. A further 30% of this group reduced their exercise further in the second and third trimesters.

For the group classified as 'inactive' prior to pregnancy, only 4% became active during the first 3 months of their pregnancy and over 50% of this group continued that activity into the second and third trimesters (Figure 24).

Overall these findings suggest that the chance of mothers becoming active in pregnancy is highly unlikely if they were previously relatively inactive.

60% of those who were physically active before their pregnancy continued to exercise in their first trimester, and 70% of those women continued into the later stages of their pregnancies

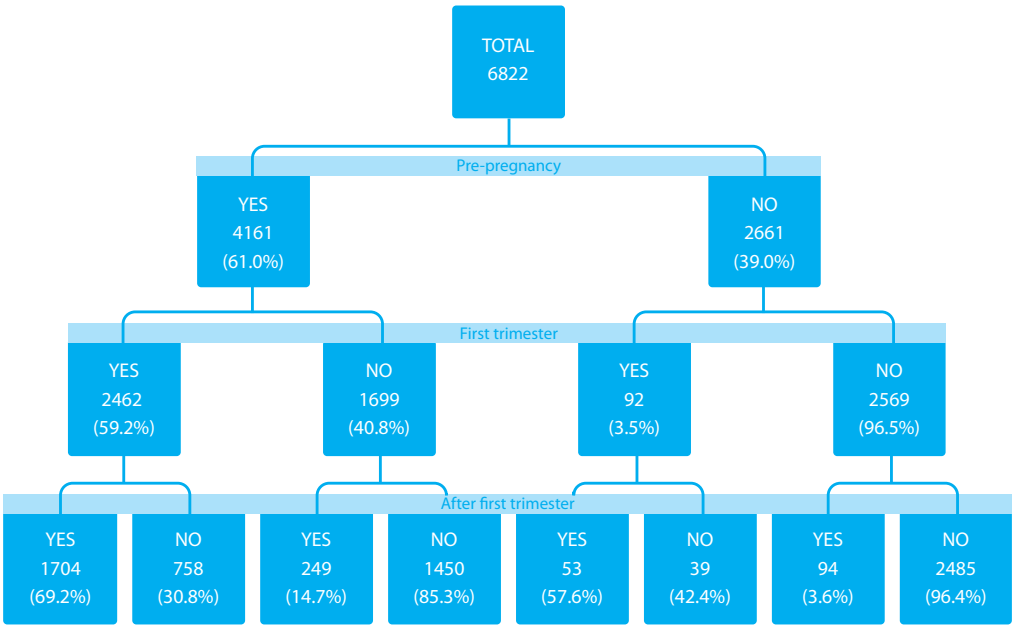


Figure 24. Change in activity for mothers during pregnancy

Mothers were classified YES if they met the Ministry of Health (2008) criteria and NO if they did not

Very few of the women who were less physically active prior to becoming pregnant increased their activity levels during pregnancy

7.9 Advice and support during pregnancy

Childbirth preparation classes (commonly called 'antenatal classes') are offered by a variety of organisations for parents during pregnancy. However, attendance at these is not universal. In some cases, parents may choose not to attend because they have attended for a previous pregnancy, but sometimes there has been an active decision not to attend even for a first pregnancy.

At the time of their interview, mothers and partners were asked about their attendance and/or their intentions to attend in the last trimester of pregnancy (Tables 27 and 28). Approximately the same proportions living in each deprivation area still intended to attend classes, but had not attended as yet.

The group of those making a decision not to attend antenatal classes is strongly patterned by the deprivation area in which the families live. Mothers and partners living in the most deprived areas were most likely to have made a decision not to attend during this pregnancy than those in less deprived areas (44% of most deprived mothers, compared to 15% of least deprived mothers and 35% of most deprived partners compared to 20% of least deprived partners) (Tables 27 and 28).

Whilst antenatal classes are offered by many organisations, a considerable number of mothers and partners had not attended these during this pregnancy, and did not intend to do so

Table 27. Mothers attendance at a childbirth preparation class by NZDep2006

	Low deprivation		Medium deprivation		High deprivation	
	n (N=1652)	Column % (95% CI)	n (N=2377)	Column % (95% CI)	n (N=2571)	Column % (95% CI)
Attended for current pregnancy	380	23.0 (21.0 - 25.0)	549	23.1 (21.4 - 24.8)	392	15.2 (13.9 - 16.6)
Attended for previous pregnancy	750	45.4 (43.0 - 47.8)	862	36.3 (34.3 - 38.2)	614	23.9 (22.2 - 25.5)
Attended for current and previous pregnancies	24	1.5 (0.9 - 2.0)	27	1.1 (0.7 - 1.6)	24	0.9 (0.6 - 1.3)
Intend to attend	258	15.6 (13.9 - 17.4)	411	17.3 (15.8 - 18.8)	392	15.2 (13.9 - 16.6)
No and don't intend to attend	240	14.5 (12.8 - 16.2)	528	22.2 (20.5 - 23.9)	1149	44.7 (42.8 - 46.6)

Table 28. Partners attendance at a childbirth preparation class by NZDep2006

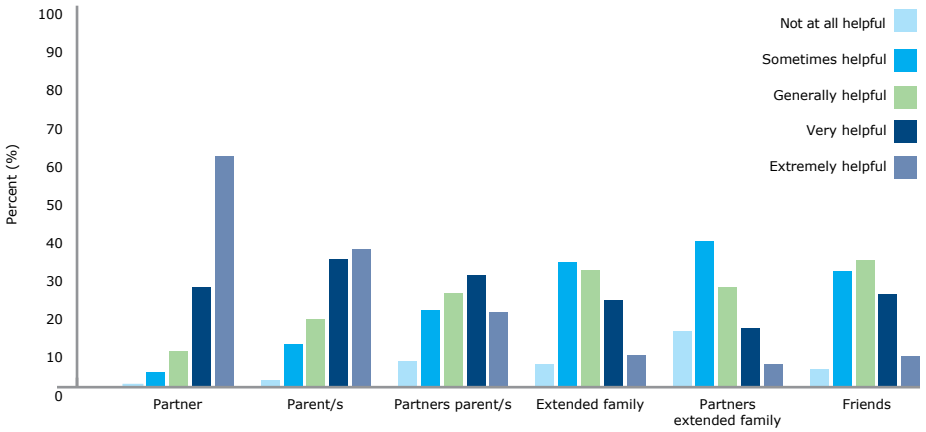
	Low deprivation		Medium deprivation		High deprivation	
	n (N=1207)	Column % (95% CI)	n (N=1632)	Column % (95% CI)	n (N=1397)	Column % (95% CI)
Attended for current pregnancy	310	25.7 (23.2 - 28.1)	415	25.4 (23.3 - 27.5)	274	19.6 (17.5 - 21.7)
Attended for previous pregnancy	329	27.3 (24.7 - 29.8)	340	20.8 (18.9 - 22.8)	233	16.7 (14.7 - 18.6)
Attended for current and previous pregnancies	36	3.0 (2.0 - 3.9)	30	1.8 (1.2 - 2.5)	18	1.3 (0.7 - 1.9)
Intend to attend	271	22.4 (20.1 - 24.8)	386	23.7 (21.6 - 25.7)	337	24.1 (21.9 - 26.4)
Not decided	17	1.4 (0.7 - 2.1)	42	2.6 (1.8 - 3.3)	38	2.7 (1.9 - 3.6)
No and don't intend to attend	244	20.2 (17.9 - 22.5)	419	25.7 (23.6 - 27.8)	497	35.6 (33.1 - 38.1)

Informal support expected postnatally

Mothers and partners were asked independently to consider where they expected their informal support (partner, family and friends) to come from after their child's birth and to estimate how helpful they expected each source of support to be. The results are provided in Figure 25 (multiple sources were able to be chosen). Both mothers and partners were most likely to expect their partners to be their most helpful support in the postnatal period. However mothers had lower expectations of their partner's level of support than their partners had of them. Where couples could be compared, in 85% of cases they tended to agree about expected levels of support.

I hope that the baby can sleep well so I don't need to get up at night much. I hope my husband will be really supportive of me

(a) Mothers



(b) Partners

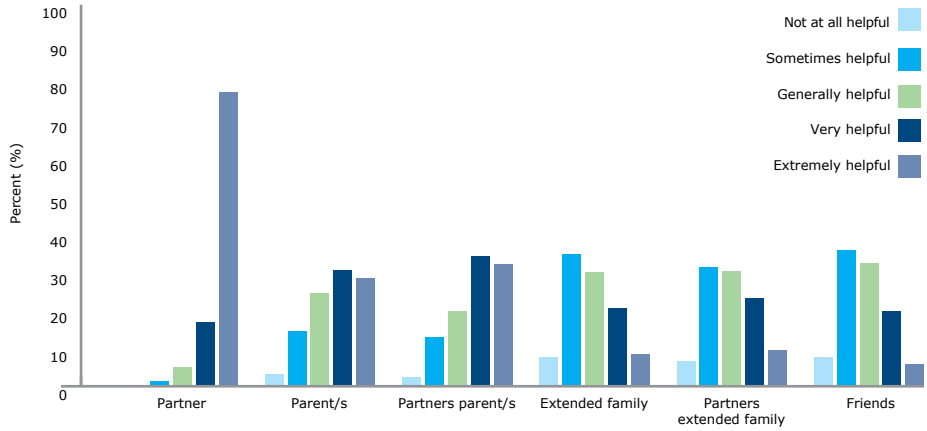


Figure 25. Expected sources of informal support for (a) Mothers and (b) Partners

Most mothers and partners expected their informal support predominantly from their respective partners and their immediate families after their baby was born

Further, both mothers and partners expected that their parents would be very or extremely helpful once their grandchild was born, with mothers particularly favouring their own parents over their partner's parents. Whilst both generally felt that extended family and friends would also offer this type of support, it was not ranked as highly by either mothers or partners.

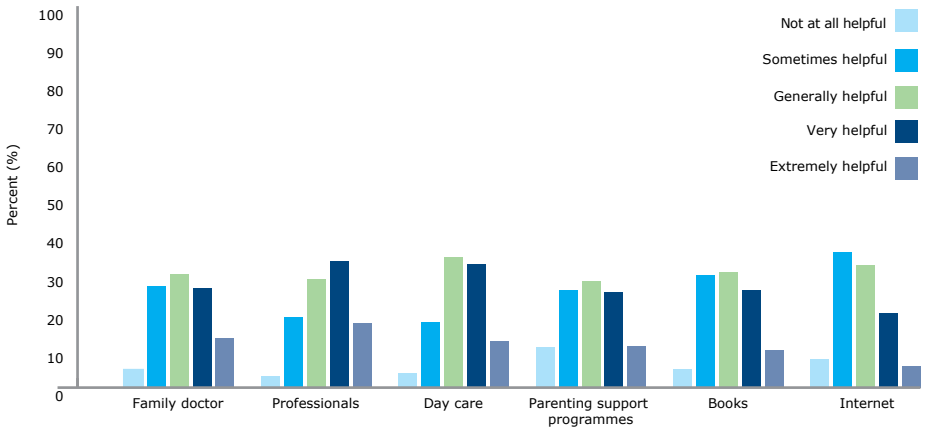
Formal support expected postnatally

Mothers and partners were also asked who they expected to receive more formal support from after their child was born. This included expected support from health professionals as well as from media and organised parenting classes.

Multiple responses were allowed and parents were again independently also asked to provide an expectation of how helpful they expected each formal support source to be for them.

Most parents expected formal support to come from health or early childhood education professionals

(a) Mothers



(b) Partners

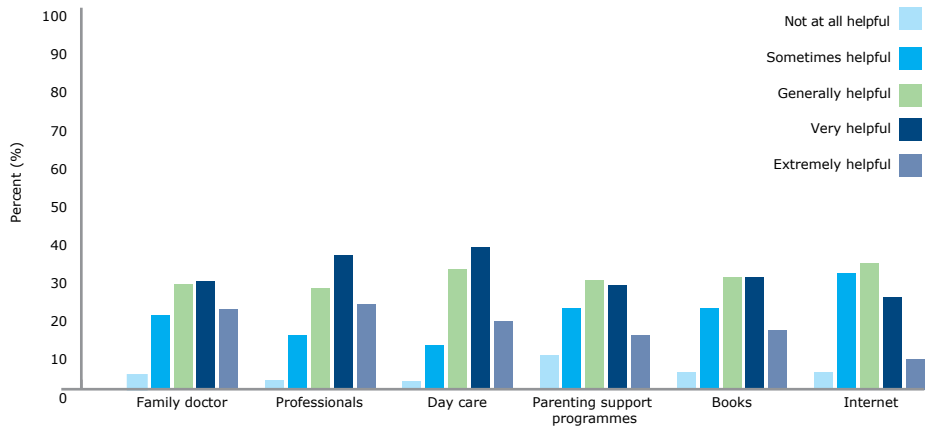


Figure 26. Expected sources of formal support for (a) Mothers and (b) Partners

A summary of the expectations is provided in Figure 26. For both mothers and partners there was a general expectation that health professionals (family doctors and Plunket nurses specifically) would be a very helpful source of support for them postnatally. Day care (which included kindergarten and Kōhanga Reo) ranked equally highly on the expected support for both mothers and partners, with formal parenting programmes, books and the internet being close behind.

Update of pregnancy specific characteristics at later data collections

The information about pregnancy specific characteristics is collated from the self-reported information provided by mothers and partners during their baseline interviews. This information will be supplemented with linkage to routine birth data as well as with additional information reported at the postnatal follow up calls made at approximately 6 weeks after the expected delivery date of the children.

8. Growing Up in New Zealand plans beyond birth

8. Growing Up in New Zealand plans beyond birth

I hope that my child is familiar with his culture and has close links to where he is from on both sides

In addition to asking about expectations of formal and informal support for parents once their child is born, mothers and partners were also asked about their intentions for their children after birth. Over time it will be considered whether parents are able to fulfil these plans and what factors or conditions either enable or challenge their capacity to do so once their baby is born. In particular, we asked mothers and partners to report independently on their intentions for the ethnic identity of their child, their plans for early feeding and immunisation, their intentions for taking parental leave and when they each expected to return to work (if appropriate), as well as who would care for this child if they intended to do so. To remove the possibility of recall bias, only those parents who had their interviews completed before their child was born are included in the reported responses.

8.1 Childs intended ethnicity

Children are likely to be more ethnically diverse and to identify with a greater number of ethnicities than their parents

As well as nominating their own ethnicities, parents were asked what ethnic group their child would belong to (Table 29). Of particular note is the increase in the number of ethnic groups that the parents anticipate for their child over their own choices of ethnic identity. This suggests an increasing ethnic diversity in this generation of children and for the New Zealand population in general over the next few decades as the children become adults. Almost a quarter of the mothers expect their child to identify as Māori, compared to a fifth Pacific, and 1 in 6 Asian. However, alongside these figures almost three-quarters also expect their child to identify as New Zealand European. Partners who provided this information had similar expectations for their children, although interestingly mothers and partners did not always agree with respect to the children's intended ethnicities. As the children grow up, we will be able to ask them which groups they identify with and relate this back to their parents' backgrounds and expectations.

I hope that my baby will be healthy, and will grow up negotiating beautifully with the two cultures that he is from

Table 29. Intended ethnicity for the child

	Mother		Partner	
	n (N=6180)	Column % (95% CI)	n (N=4156)	Column % (95% CI)
Intended ethnicity for the child ≠				
New Zealand European	4481	72.5 (71.4 - 73.6)	3317	79.8 (78.6 - 81.0)
Māori	1487	24.1 (23.0 - 25.1)	800	19.2 (18.1 - 20.4)
Pacific Peoples	1321	21.4 (20.4 - 22.4)	617	14.8 (13.8 - 15.9)
Asian	1004	16.2 (15.3 - 17.2)	700	16.8 (15.7 - 18.0)
Middle Eastern/Latin American/African	199	3.2 (2.8 - 3.7)	131	3.2 (2.6 - 3.7)
Other	7	0.1	13	0.3 (0.1 - 0.5)
Number of ethnicities				
One	3472	56.2 (54.9 - 57.4)	2447	58.9 (57.4 - 60.4)
Two	2024	32.8 (31.6 - 33.9)	1307	31.4 (30.0 - 32.9)
Three	518	8.4 (7.7 - 9.1)	300	7.2 (6.4 - 8.0)
More than three	166	2.7 (2.3 - 3.1)	102	2.5 (2.0 - 2.9)

Where fewer than 10 cases have been reported CIs have not been calculated
≠ Mothers and partners selected multiple response(s) so will total to more than 100%

8.2. Plans for early feeding

Mothers and partners were asked independently about how they intend their child to be fed when they are first born. Approximately 9 out of 10 mothers and partners stated that they intend their child to be breastfed, a few opted for only bottle feeding, while a slightly larger group of between 7 and 10% of parents opted for a combination of breast and bottle feeding from the start (Table 30). The proportions opting for each were similar regardless of whether a mother was having her first or a subsequent birth, although the expectation that a child would be fully breastfed did reduce slightly in the mothers with older children. Partners had only slightly lower expectations of breastfeeding than mothers. Very few parents were undecided about their feeding intentions as they neared the end of this pregnancy.

Over 80% of all mothers intend to breastfeed their children, and most thought it would be ideal to do so for more than 6 months

Table 30. Intentions for initial feeding

	Mother				Partner	
	First child		Subsequent children			
	n (N=2659)	Column % (95% CI)	n (N=3522)	Column % (95% CI)	n (N=4151)	Column % (95% CI)
Breast	2425	91.2 (90.1 - 92.3)	3056	86.8 (85.6 - 87.9)	3618	87.2 (86.1 - 88.2)
Bottle	22	0.8 (0.5 - 1.2)	108	3.1 (2.5 - 3.6)	51	1.2 (0.9 - 1.6)
Both breast and bottle	200	7.5 (6.5 - 8.5)	333	9.5 (8.5 - 10.4)	416	10.0 (9.1 - 10.9)
No decision	12	0.5 (0.2 - 0.7)	25	0.7 (0.4 - 1.0)	66	1.6 (1.2 - 2.0)

Partners were as committed to breastfeeding as the mothers

New Zealand European mothers had the highest expected breastfeeding rates and Pacific mothers the lowest (and the highest expected rates of bottle feeding postnatally), although across all groups (except 'Other') over 80% of all mothers intend to breastfeed this child (Table 31).

Relatively few parents were undecided as to how they would like to initially feed their baby

Table 31. Intentions for initial feeding by main ethnicity

	N	Breast Row % (95% CI)	Bottle Row % (95% CI)	Both breast and bottle Row % (95% CI)	No decision Row % (95% CI)
Mother					
New Zealand European	3580	91.5 (90.6 - 92.4)	1.4 (1.0 - 1.7)	6.5 (5.7 - 7.3)	0.6 (0.4 - 0.9)
Māori	863	86.1 (83.8 - 88.4)	3.5 (2.3 - 4.7)	9.3 (7.3 - 11.2)	1.2 (0.4 - 1.9)
Pacific Peoples	894	81.2 (78.6 - 83.8)	4.9 (3.5 - 6.3)	13.5 (11.3 - 15.8)	0.3
Asian	905	87.5 (85.4 - 89.7)	1.2 (0.5 - 1.9)	10.8 (8.8 - 12.9)	0.4
Middle Eastern / Latin American/ African	150	89.3 (84.4 - 94.3)	0.7	9.3 (4.7 - 14.0)	0.7
Other	9	77.8	0	22.2	0
Partner					
New Zealand European	2705	87.0 (85.7 - 88.3)	1.0 (0.6 - 1.3)	10.3 (9.2 - 11.5)	1.7 (1.2 - 2.2)
Māori	428	88.3 (85.3 - 91.4)	1.2	8.6 (6.0 - 11.3)	1.9
Pacific Peoples	482	83.2 (79.9 - 86.5)	3.1 (1.6 - 4.7)	12.0 (9.1 - 14.9)	1.7
Asian	556	89.0 (86.4 - 91.6)	1.1	9.2 (6.8 - 11.6)	0.7
Middle Eastern / Latin American/ African	97	95.9 (91.9 - 99.8)	1.0	2.1	1.0
Other	7	100	0	0	0

Where fewer than 10 cases have been reported CIs have not been calculated

Mothers were asked to indicate how long they believed it was ideal to breastfeed their child (irrespective of their other intentions regarding leave or other perceived constraints). The ideal durations are shown in Table 32. The majority of all mothers and partners stated that they thought it would be ideal to breastfeed for longer than 6 months. Mothers with older children were most likely to choose this as the ideal length of breastfeeding.

Where information about intentions could be compared between mother and partner, there was over 80% agreement between couples about the intended mode of postnatal feeding. In just under 15% of cases, one partner had nominated breast alone and the other a mix of breast and bottle feeding.

Table 32. Perceived ideal breast feeding duration

	Mother				Partner	
	First child		Subsequent children			
	n (N=2593)	Column % (95% CI)	n (N=3393)	Column % (95% CI)	n (N=3667)	Column % (95% CI)
Up to 6 weeks	20	0.8 (0.4 - 1.1)	20	0.6 (0.3 - 0.8)	53	1.4 (1.1 - 1.8)
Up to 3 months	110	4.2 (3.5 - 5.0)	113	3.3 (2.7 - 3.9)	245	6.7 (5.9 - 7.5)
Up to 6 months	907	35.0 (33.1 - 36.8)	740	21.8 (20.4 - 23.2)	1295	35.3 (33.8 - 36.9)
Longer than 6 months	1556	60.0 (58.1 - 61.9)	2520	74.3 (72.8 - 75.7)	2074	56.6 (55.0 - 58.2)

Those mothers who intend to breastfeed their children were also asked their intended duration of breastfeeding. Most mothers intend to breastfeed their child for more than 6 months regardless of whether this was their first or subsequent child (Table 33). However, as for mother's perception of ideal breastfeeding duration, mothers who already had children were more likely to intend to breastfeed this child for longer than 6 months.

Most mothers intend to breastfeed for more than 6 months, with the mothers who already had children slightly more likely to have this intention

Table 33. Mothers intended duration of breast feeding

	First child		Subsequent children	
	n (N=2592)	Column % (95% CI)	n (N=3396)	Column % (95% CI)
Up to 6 weeks	24	0.9 (0.6 - 1.3)	55	1.6 (1.2 - 2.0)
Up to 3 months	149	5.7 (4.9 - 6.6)	150	4.4 (3.7 - 5.1)
Up to 6 months	874	33.7 (31.9 - 35.5)	718	21.1 (19.8 - 22.5)
Longer than 6 months	1545	59.6 (57.7 - 61.5)	2473	72.8 (71.3 - 74.3)

The proportions of parents who intend that their infant be breastfed varied according to educational qualifications for mothers and partners. The mothers and partners with the lowest educational qualifications were least likely to intend to breastfeed their babies. This was more marked in mothers than partners (Figure 27).

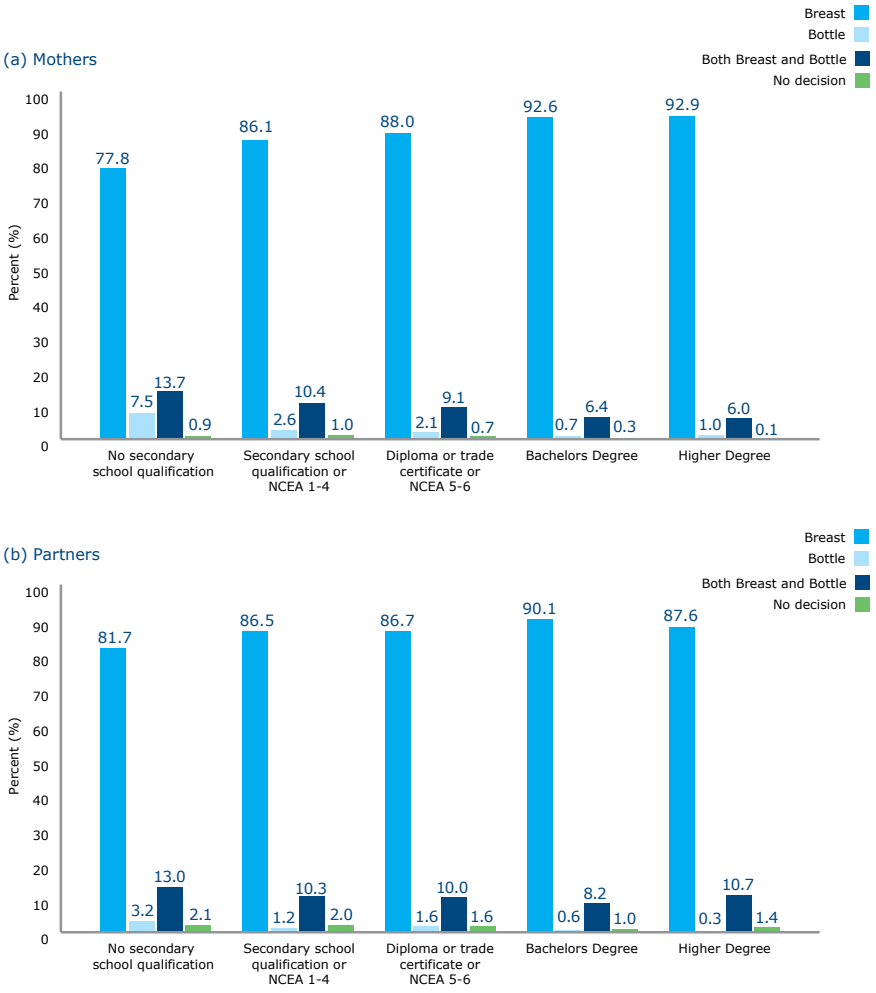


Figure 27. Intentions for initial feeding by education for (a) Mothers and (b) Partners

Intentions to breastfeed were also influenced by the mother's current employment status in pregnancy. Interestingly, mothers who were currently employed were more likely to intend to breastfeed their babies when compared to mothers who were unemployed (Figure 28). There was little effect on partners' intentions according to their current employment status.

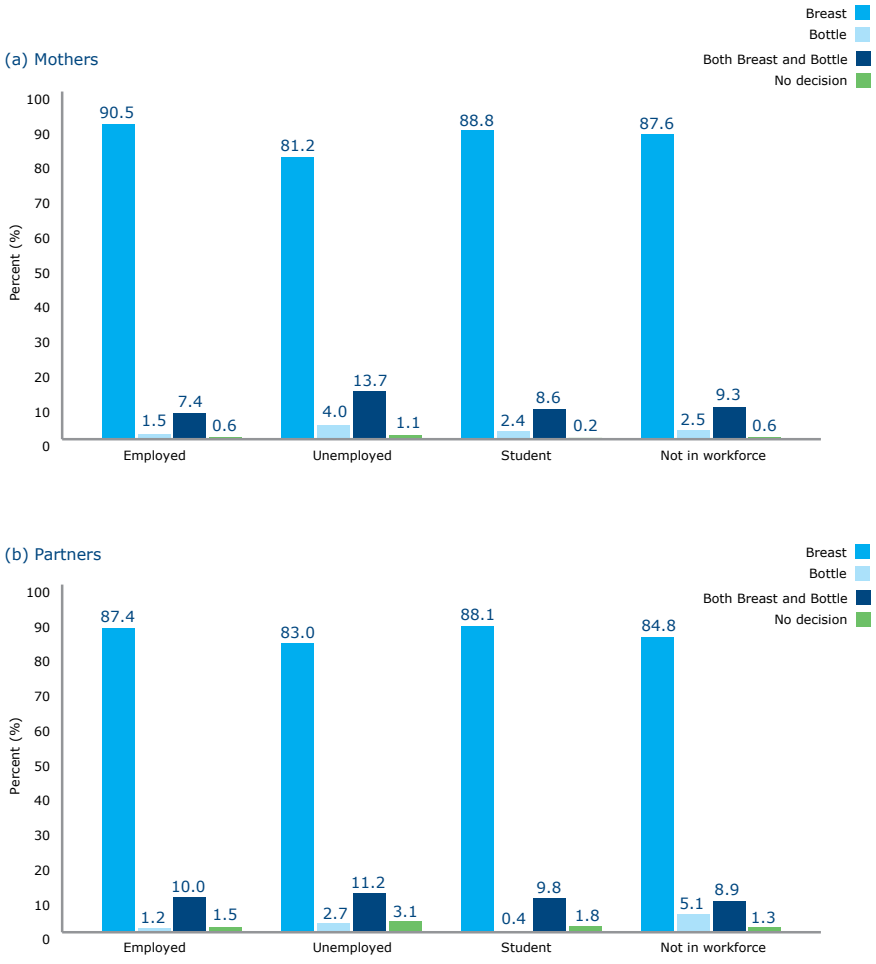


Figure 28. Intentions for initial feeding by employment status for (a) Mothers and (b) Partners

I hope that I'm able to breastfeed

Mothers were asked in pregnancy whether they thought that the length of time they would breastfeed their babies was likely to be limited by their need to return to paid employment (Figure 29). Almost 30% said that they thought this would be a limiting factor, but 62% felt it would not. A further 10% were unsure.

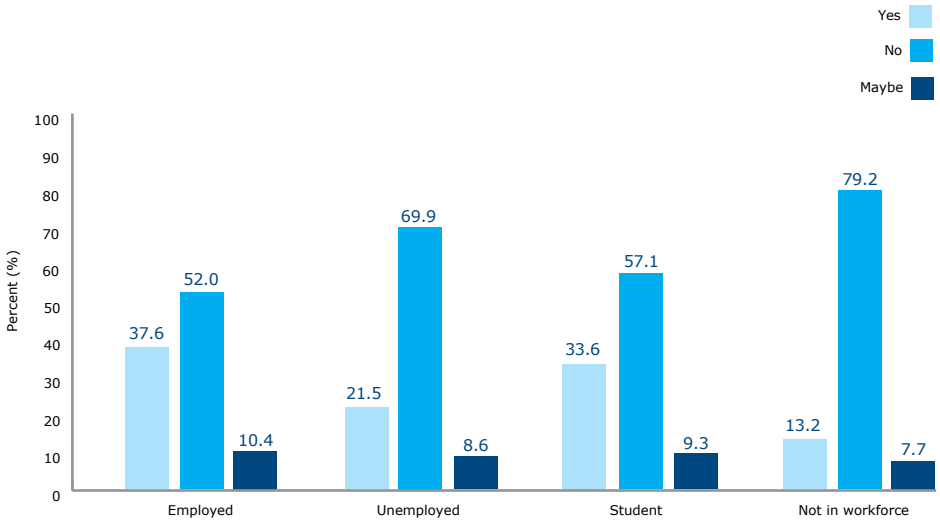


Figure 29. Perception that return to work will limit breastfeeding duration (Mothers)

8.3 Intentions for child immunisation

More parents are undecided about immunising their baby than about how their baby will be fed

New Zealand has a low rate of uptake of childhood immunisations and ranks amongst the lowest for this statistic across OECD developed countries (OECD 2009). Mothers and partners were asked independently about their intentions regarding childhood immunisations for their children. Each was asked whether they intend their child to be fully or partially immunised or if they had decided that their child would not be immunised. Parents were also asked about the sources of encouraging and discouraging information they had received that had influenced their decisions.

The majority of mothers and partners reported that they intend their child to be fully immunised (over 80% of mothers and over 70% of partners) and less than 3% said they had decided that their child would not be immunised. However around 12% of the mothers and nearly one quarter of all partners stated that they were undecided about immunisation for their child when asked late in pregnancy (Table 34).

Table 34. Intentions for child immunisation

	Mother		Partner	
	n (N=6172)	Column % (95% CI)	n (N=4154)	Column % (95% CI)
Child will be fully immunised	5014	81.2 (80.3 - 82.2)	2942	70.8 (69.4 - 72.2)
Child will be partially (selectively) immunised	245	4.0 (3.5 - 4.5)	208	5.0 (4.3 - 5.7)
Child will not be immunised	140	2.3 (1.9 - 2.6)	83	2.0 (1.6 - 2.4)
Not decided	773	12.5 (11.7 - 13.4)	921	22.2 (20.9 - 23.4)

Where information about intentions to immunise was available from couples, they generally reported the same intentions regarding immunisation (65% of couples agreed that their child will be fully immunised and a further 8% are both undecided).

In approximately 16% of couples one parent wished the child to be fully immunised but the other was undecided. Relatively few (just over 3%) agreed that their child would either be partially immunised or not immunised at all.

Table 35. Mothers intentions for child immunisation by parity

	First child		Subsequent child	
	n (N=2651)	Column % (95% CI)	n (N=3521)	Column % (95% CI)
Child will be fully immunised	1893	71.4 (69.7 - 73.1)	3121	88.6 (87.6 - 89.7)
Child will be partially (selectively) immunised	90	3.4 (2.7 - 4.1)	155	4.4 (3.7 - 5.1)
Child will not be immunised	27	1.0 (0.6 - 1.4)	113	3.2 (2.6 - 3.8)
Not decided	641	24.2 (22.5 - 25.8)	132	3.7 (3.1 - 4.4)

Maternal decisions regarding intentions to immunise did appear to be influenced by whether this was the mother's first or subsequent child. More mothers having their first child had not yet decided whether they would immunise their child, whereas for mothers with older children, only 4% remained undecided and over 90% intend their child to be fully or partially immunised after birth (Table 35).

Intentions regarding immunisations also differed by parental ethnic identity. New Zealand European mothers were the least likely to have decided that their child would be fully immunised and most likely to be undecided in late pregnancy. Māori mothers were the next least decided group. Pacific and Asian mothers were less undecided and more intended to have their children fully immunised. Similarly, New Zealand European and Māori partners were most likely to be undecided about immunisation for their children and less likely than partners who identified as Pacific or Asian to have decided that their child would be fully immunised (Figure 30).

As the children are followed up after birth, parents will be asked about childhood immunisations and there will be an opportunity to review their intentions alongside the decisions made postnatally, as well as an opportunity to compare antenatal intentions with the child's actual immunisation record.

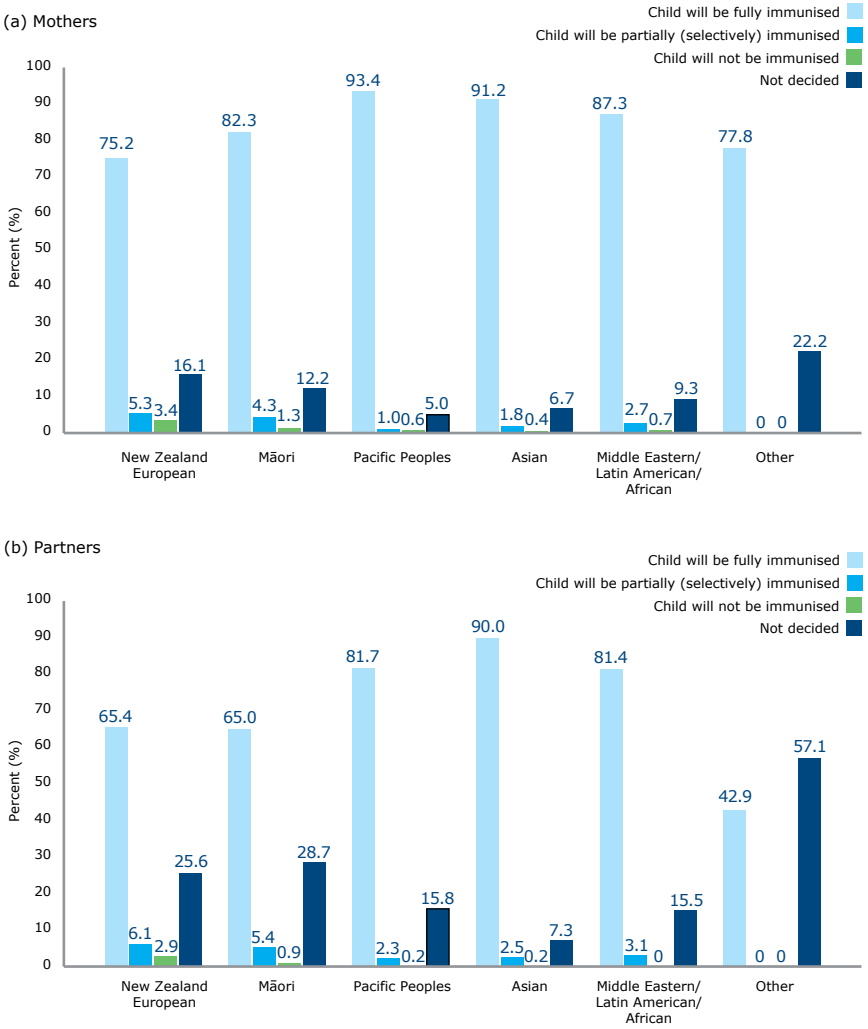


Figure 30. Intentions for immunisation by main ethnicity for (a) Mothers and (b) Partners

Most parents receive advice about immunisation from multiple sources

We asked mothers and partners to tell us where they had received information that either encouraged or discouraged childhood immunisation. In terms of sources of encouraging information the predominant source was health professionals (notably midwives and family doctors). Friends and antenatal classes also rated strongly as sources of supportive advice regarding immunisation. Mothers and partners tended to report the same sources, although partners were more likely to also get encouraging advice from the television.

Parents generally trust health professionals, and family and friends as sources of information about immunisation. The information they receive from these sources is both encouraging and discouraging about immunisation

In terms of discouraging advice regarding immunisation, friends and family were by far the most significant sources of this for both mothers and partners, with partners also getting discouraging advice from other media.

Interestingly, some sources figured significantly in both the encouraging and discouraging advice categories, notably health professionals and antenatal classes (Figure 31).

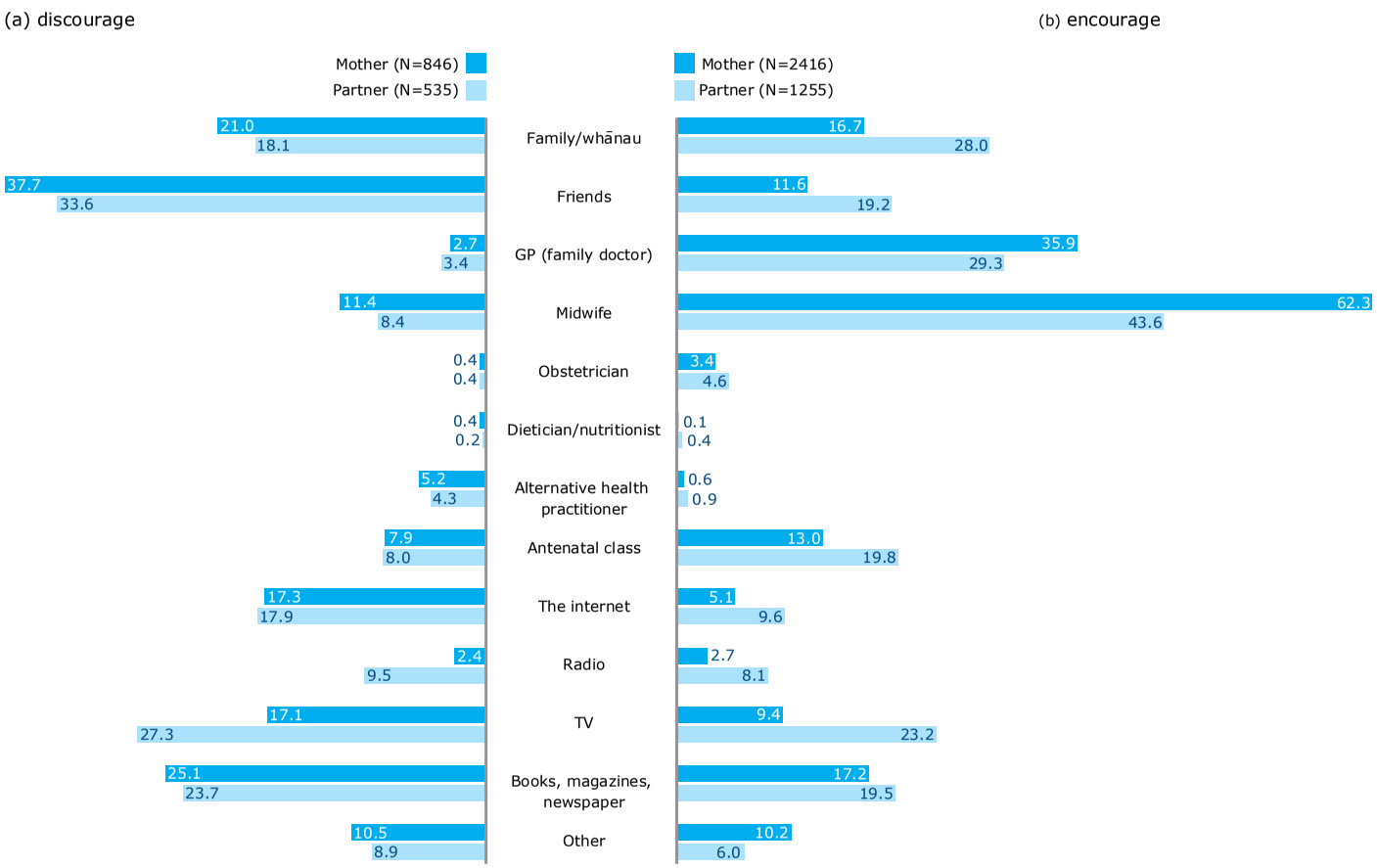


Figure 31. Sources of information which (a) discourage and/or (b) encourage immunisation (%)

Mothers and Partners selected multiple response(s) so total to more than 100%

8.4 Involvement in day-to-day care of the child/children

Mothers and partners were independently asked to report on the level of involvement that they expected to have in the day-to-day care of their child after birth, as well as their expectations of their partners' involvement.

Mothers and partners both expect to be highly involved in the daily care of their children, with mothers expected to be slightly more involved by both parents

Mothers and partners tended to agree that mothers would be more involved with the day-to-day care of the child (all of the time), compared to the partner. However, over three-quarters of the partners also expected that they would be involved most or all of the time in their child's everyday care (Table 36). A mother's expectations of her own involvement varied slightly according to whether this was her first or subsequent child, with a slightly higher expectation that she would be involved in care all of the time if this was not her first child.

Table 36. Expectation of self involvement in day-to-day care

	Mother				Partner	
	First child		Subsequent children			
	n (N=2658)	Column % (95% CI)	n (N=3529)	Column % (95% CI)	n (N=4158)	Column % (95% CI)
Not much of the time	6	0.2 (0.0 - 0.4)	7	0.2 (0.1 - 0.3)	33	0.8 (0.5 - 1.1)
Some of the time	12	0.5 (0.2 - 0.7)	42	1.2 (0.8 - 1.6)	908	21.8 (20.6 - 23.1)
Most of the time	587	22.1 (20.5 - 23.7)	654	18.6 (17.3 - 19.9)	1727	41.5 (40.0 - 43.0)
All of the time	2053	77.2 (75.6 - 78.8)	2817	80.0 (78.7 - 81.3)	1490	35.8 (34.4 - 37.3)

Mothers did not expect their partners to be involved as much as they expected themselves to be and this expectation was further reduced for mothers having their second or subsequent child (Table 37). Partners expected the mothers to be involved most or all of the time (98% of the responses).

Table 37. Expectation of partners involvement in day-to-day care

	Mother				Partner	
	First child		Subsequent children			
	n (N=2646)	Column % (95% CI)	n (N=3512)	Column % (95% CI)	n (N=4159)	Column % (95% CI)
Not applicable	96	3.6 (2.9 - 4.3)	100	2.8 (2.3 - 3.4)	n.a.	n.a.
Not much of the time	53	2.0 (1.5 - 2.5)	130	3.7 (3.1 - 4.3)	3	0.1 (0.0 - 0.2)
Some of the time	742	28.0 (26.3 - 29.8)	1252	35.6 (34.1 - 37.2)	70	1.7 (1.3 - 2.1)
Most of the time	1256	47.5 (45.6 - 49.4)	1413	40.2 (38.6 - 41.9)	1103	26.5 (25.2 - 27.9)
All of the time	499	18.9 (17.4 - 20.3)	617	17.6 (16.3 - 18.8)	2983	71.7 (70.4 - 73.1)

n.a. = not available/applicable

8.5 Feelings about being the parent of the child/children

Mothers and partners were each asked about their expected competence in a parenting role. Both mothers and partners had a high degree of confidence in their ability to be a competent parent for this child, with the majority expecting to be better than average parents. There was little difference in rating of this between mothers and partners, and the expectations were not markedly affected by mothers already having parenting experience (Table 38).

I hope that one day my baby says to me 'I really appreciate what you have done for me' – that will make all the hard work worthwhile

Table 38. Feelings about being a parent

	Mother				Partner	
	First child		Subsequent children			
	n (N=2648)	Column % (95% CI)	n (N=3517)	Column % (95% CI)	n (N=4157)	Column % (95% CI)
Not very good at being a parent	4	0.2	2	0.1	1	0.0
A person who has some trouble being a parent	35	1.3 (0.9 - 1.8)	23	0.7 (0.4 - 0.9)	36	0.9 (0.6 - 1.1)
An average parent	290	11.0 (9.8 - 12.1)	407	11.6 (10.5 - 12.6)	310	7.5 (6.7 - 8.3)
A better than average parent	736	27.8 (26.1 - 29.5)	930	26.4 (25.0 - 27.9)	1257	30.2 (28.8 - 31.6)
A very good parent	1583	59.8 (57.9 - 61.6)	2155	61.3 (59.7 - 62.9)	2553	61.4 (59.9 - 62.9)

Where fewer than 10 cases have been reported CIs have not been calculated

The majority of mothers and partners were confident about their ability to parent their child

8.6 Parental plans for paid work and leave

Parental plans for paid work

All mothers and partners were asked about their plans to return to or take up paid employment after the birth of this child, regardless of their current employment situation. Nearly 9 out of 10 mothers (89%) expected either to take up, or return to, employment (either part or full-time) after the birth of this child. On average, mothers expected that their children would be between 14 and 15 months of age when they did so.

Most mothers and almost all partners expected to return to or take up paid employment after the birth of this child

For mothers, intention to return to work was patterned by parity, deprivation and education. The higher the level of the mother's education, the more likely it was that she intended to return to work after the baby's birth (Table 39).

A similar proportion of partners (91%) expected to take up or return to paid employment (part or full time) after the birth of this child. A further 8% do not expect to stop work at all or take any leave, with just 1% of partners not planning to return to or take up paid employment. Education levels had little discernible relationship to the intention of partners to return to work after the birth of their child (Table 39).

Table 39. Parents who intend to return to paid work

	Mother		Partner±	
	n/N	% (95% CI)	n/N	% (95% CI)
Parity				
First child	2407/2596	92.7 (91.7 - 93.7)	n.a.	
Subsequent child	2945/3426	86.0 (84.8 - 87.1)	n.a.	
NZDep2006				
Low deprivation	1371/1487	92.2 (90.8 - 93.6)	1046/1053	99.3 (98.8 - 99.8)
Medium deprivation	1959/2132	91.9 (90.7 - 93.0)	1375/1386	99.2 (98.7 - 99.7)
High deprivation	1903/2268	83.9 (82.4 - 85.4)	1175/1196	98.2 (97.5 - 99.0)
Education				
No secondary school qualification	296/405	73.1 (68.8 - 77.4)	240/245	98.0 (96.2 - 99.7)
Secondary school qualification or NCEA 1–4	1196/1414	84.6 (82.7 - 86.5)	723/735	98.4 (97.5 - 99.3)
Diploma or Trade Certificate or NCEA 5–6	1627/1838	88.5 (87.1 - 90.0)	1354/1371	98.8 (98.2 - 99.3)
Bachelors Degree	1284/1380	93.0 (91.7 - 94.4)	732/734	99.7 (99.4 - 100.0)
Higher Degrees	942/976	96.5 (95.4 - 97.7)	671/674	99.6 (99.1 - 100.0)

n.a. = not available/applicable

± Percentage calculations include only those partners who plan to take leave

I hope I will get a job after the baby is born, and my husband has a permanent job, not temporary, so we can get things for the baby

Plans for parental leave

Mothers and partners who were currently employed were asked independently about their intentions to take leave when their child was born, what type of leave they intended taking and for how long (Table 40 and 41). Further, they were also asked whether this was their ideal leave period and if not how it differed.

Both mothers and partners would prefer to take more parental leave than they anticipated actually taking

Over 95% of all the mothers in paid employment during this pregnancy intended to take leave once the baby was born. The expected length of maternal leave averaged between 8 and 9 months, but ranged from 1 week to many years. For partners, a slightly lower proportion planned to take leave after the birth of the baby (89%), with an expected average duration of 2 to 3 weeks. Although the range of expected leave for partners was between 1 week and 3 years, fewer than 10 partners overall anticipated taking leave lasting longer than 6 months.

In addition to expected leave, mothers and partners were also asked to comment on their ideal leave (if there were no financial or other constraints). Mothers chose approximately 12 months as their median preferred leave option and partners chose approximately 1 month as their ideal (Table 40). In terms of how well expectations of leave met with their ideal length of leave, mothers' ideals and expectations of actual leave were the same in approximately 44% of all mothers, with the majority of the remainder having longer ideal periods of leave than expected actual leave (54%). The remaining 2% of mothers thought their actual leave would be longer than their ideal leave. For partners, almost two-thirds felt their expected leave would be less than their ideal leave (64%). Approximately one third (35%) felt their expected leave would match their ideal leave period, while 1% expected that their leave would be longer than ideal.

Table 40. Parental leave – anticipated compared to preferred

	Mother		Partner	
	N (N=3324)	Column % (95% CI)	N (N=3480)	Column % (95% CI)
Length of anticipated leave (months) (N^M=3326, N^P=3244)	8, (0.3:263) ±		2, (1:156) ±*	
Length of preferred leave (months) (N^M=3420, N^P=3580)	12, (0.3:263) ±		1, (0.3:263) ±	
Anticipated leave to be more than preferred leave	60	1.8 (1.4 - 2.3)	48	1.4 (1.0 - 1.8)
Anticipated leave to be less than preferred leave	1808	54.4 (52.7 - 56.1)	2206	63.4 (61.8 - 65.0)
Anticipated leave to be the same as preferred leave	1456	43.8 (42.1 - 45.5)	1226	35.2 (33.6 - 36.8)

Median, (range)
* Reported in weeks
N^M = Mothers, N^P = Partners

I hope we can spend as much time with her as possible without being stressed about returning to the workforce

Table 41. Anticipated parental leave

	Mother		Partner	
	n/N	Column % (95% CI)	n/N	Column % (95% CI)
Parity				
First Child	1816/1846	98.4 (97.8 - 99.0)	n.a.	
Subsequent child	1678/1825	91.9 (90.7 - 93.2)	n.a.	
NZDep2006				
Low deprivation	1001/1055	94.9 93.6 - 96.2	993/1089	91.2 89.5 - 92.9
Medium deprivation	1369/1438	95.2 94.1 - 96.3	1271/1443	88.1 86.4 - 89.8
High deprivation	1061/1108	95.8 94.6 - 96.9	967/1104	87.6 85.6 - 89.5
Education				
No secondary school qualification	92/97	94.8 90.4 - 99.2	171/217	78.8 73.4 - 84.2
Secondary school qualification or NCEA 1–4	657/701	93.7 91.9 - 95.5	626/737	84.9 82.4 - 87.5
Diploma or Trade Certificate or NCEA 5–6	995/1063	93.6 92.1 - 95.1	1246/1400	89.0 87.4 - 90.6
Bachelors Degree	995/1030	96.6 95.5 - 97.7	670/737	90.9 88.8 - 93.0
Higher Degrees	754/779	96.8 95.6 - 98.0	626/671	93.3 91.4 - 95.2

n.a. = not available/applicable

8.7 Expected care for children in postnatal period

The majority of mothers who intend to return to work have decided on care arrangements for their child, although not all have decided yet

Where mothers had expressed an intention to return to paid employment after the birth of this child, they were asked if they had made a decision about who would care for the child whilst they were in employment (part-time or full). The majority of mothers (62%) had decided late in their pregnancy who would care for their child when they returned to the workforce. Mothers with older children were more likely to have made a decision on care for this child compared to mothers having their first child (Table 42), but there was little difference according to maternal living arrangements, that is according to whether the mother lived with other adults or not (Table 43).

Table 42. Decision on who will look after the child by parity

	n (N=5191)	Decided Row % (95% CI)	Not decided Row % (95% CI)
First Child	2330	54.0 (52.0 - 56.0)	46.0 (44.0 - 48.0)
Subsequent child	2861	67.5 (65.8 - 69.2)	32.5 (30.8 - 34.2)

Table 43. Decision on who will look after the child by living arrangement

	n (N=5174)	Decided Row % (95% CI)	Not decided Row % (95% CI)
Mother alone[1]	130	53.8 (45.3 - 62.4)	46.2 (37.6 - 54.7)
Mother living with partner[1]	3495	60.1 (58.4 - 61.7)	39.9 (38.3 - 41.6)
Mother living with extended family[2]	1196	65.6 (62.9 - 68.3)	34.4 (31.7 - 37.1)
Mother living with non-relatives[3]	353	62.9 (57.8 - 67.9)	37.1 (32.1 - 42.2)

[1] (no other adults); [2] (& partner if applicable); [3] (& partner/extended family if applicable)

Table 44. Decision on who will look after the child by employment

	n (N=5190)	Decided Row % (95% CI)	Not decided Row % (95% CI)
Employed	3152	64.4 (62.7 - 66.1)	35.6 (33.9 - 37.3)
Unemployed	387	58.1 (53.2 - 63.1)	41.9 (36.9 - 46.8)
Student	413	66.1 (61.5 - 70.7)	33.9 (29.3 - 38.5)
Not in workforce	1238	53.4 (50.6 - 56.2)	46.6 (43.8 - 49.4)

Mothers currently employed during this pregnancy or mothers who were currently students also tended to have decided more often than mothers who were unemployed or deliberately not in the workforce during this pregnancy (Table 44).

I would like the daycares to be really good with looking after him and with his learning. I hope he makes good friends and has a really good education

Table 45. Planned child care for those mothers who intend to use child care

	n (N=3190)	% (95% CI)
Childminder in participant's home (not family)	133	4.2 (3.5 - 4.9)
Childminder in their home (not family)	159	5.0 (4.2 - 5.7)
Partner	720	22.6 (21.1 - 24.0)
Other family member in participant's home	830	26.0 (24.5 - 27.5)
Other family member in their home	568	17.8 (16.5 - 19.1)
Early childhood centre or similar	1246	39.1 (37.4 - 40.8)
Looking after the baby while working	480	15.0 (13.8 - 16.3)
Other	229	7.2 (6.3 - 8.1)

Mothers who had decided who would care for their child when they returned to employment were asked to describe their planned care, with multiple responses possible if there was more than one arrangement being considered. The most likely choice of care was an early childhood centre or similar (39%), with family members and partners being the next most prevalent choice. A proportion of mothers also anticipated caring for their babies themselves whilst working (Table 45). There was some variability in the choice of care according to maternal ethnicity. In particular, more New Zealand European mothers intended to work whilst caring for their child themselves than mothers identifying with other groups, and more Asian and Pacific mothers expected that the care would be provided by family members in their own home (Table 46).

Table 46. Type of child care by main ethnicity among those mothers who intend to use child care

	N	Child minder in participants home (not family) Row % (95% CI)	Child minder in their home (not family) Row % (95% CI)	Partner Row % (95% CI)	Other family member in participants own home Row % (95% CI)	Other family member in their home Row % (95% CI)	Early childhood centre or similar Row % (95% CI)	Looking after the baby while working Row % (95% CI)	Other Row % (95% CI)
New Zealand European	1851	5.8 (4.7 - 6.8)	6.6 (5.5 - 7.7)	22.5 (20.6 - 24.4)	15.4 (13.8 - 17.0)	17.7 (15.9 - 19.4)	39.6 (37.4 - 41.8)	20.1 (18.3 - 21.9)	9.2 (7.9 - 10.6)
Māori	452	2.0	2.9 (1.3 - 4.4)	20.4 (16.6 - 24.1)	18.1 (14.6 - 21.7)	18.4 (14.8 - 21.9)	44.0 (39.4 - 48.6)	14.4 (11.1 - 17.6)	9.5 (6.8 - 12.2)
Pacific Peoples	497	0.8	1.2	23.9 (20.2 - 27.7)	37.8 (33.6 - 42.1)	21.3 (17.7 - 24.9)	29.8 (25.8 - 33.8)	4.6 (2.8 - 6.5)	4.6 (2.8 - 6.5)
Asian	589	2.0 (0.9 - 3.2)	3.7 (2.2 - 5.3)	18.0 (14.9 - 21.1)	51.4 (47.4 - 55.5)	13.4 (10.7 - 16.2)	31.6 (27.8 - 35.3)	6.8 (4.8 - 8.8)	2.2 (1.0 - 3.4)
Middle Eastern/Latin American/African	75	4.0	5.3	17.3 (8.8 - 25.9)	18.7 (9.8 - 27.5)	4.0	57.3 (46.1 - 68.5)	8.0	9.3

Mothers selected multiple response(s) so will total to more than 100%
Where fewer than 10 cases have been reported CIs have not been calculated

9. Hopes and dreams for the future for the Growing Up in New Zealand children

9. Hopes and dreams for the future for the Growing Up in New Zealand children

I hope he or she becomes their own person and reaches their full potential on their own terms and becomes part of the fabric of the community

The majority of the antenatal information sought from the parents of the future *Growing Up in New Zealand* children was specifically designed to provide a more complete picture about the families and environments that children in New Zealand are currently being born into.

We also wished to ask about postnatal plans for the child after they were born and, because of the longitudinal nature of this study, we will be able to follow up how well these have been able to be fulfilled.

As well as this largely quantifiable information, we also asked mothers and partners independently at the end of their interview to tell us briefly what their hopes, dreams and expectations are for this child. A summary of the most frequent responses from the parents is reported here.

By far the most common response was that both mothers and their partners hoped that their child would grow up happy and healthy. The next most common response was that parents hoped that their children would receive a good education. This ranged from parents who hoped that their children would finish school to those parents who hoped their child would gain a PhD. Many parents also hoped that their children would grow into adults with 'good careers'. These wishes varied from a general hope that their children would have a good job, to more specific aspirations for their children to grow up to become doctors or pilots. Parents also hoped that their children would have financial security as adults, with some parents explicitly linking this to their hopes about their child's future career.

To grow up and have clothes, shoes, and food on the table, and to grow up in a happy environment and to not have to worry about anything

Alongside parental wishes for their children to be healthy, happy, well-educated and employed, many parents also expressed the general hope that their children might engage in a range of activities and have a breadth of experiences as they grew up. Occasionally they were more explicit, hoping that their child would take part in specific sports, or that they might enjoy the New Zealand outdoor activities and experience rural lifestyles. Less common, though still frequent, was the parental hope that their children would not have particular experiences; for example, wanting their children to stay away from drugs or not become involved in criminal activity.

Hopes and dreams that related to how the children would identify with their cultural and family backgrounds were also important for many parents. Many parents expressed a desire for their children to learn to speak the languages that their parents spoke when they were growing up. Parents also explicitly hoped that their children would know about their family backgrounds, especially for those from outside of New Zealand, in addition to knowing about being a New Zealander.

I hope my baby is filled with love, is against discrimination, and will stand up and have their rights and not be fearful

Many parents also expressed a desire that their children would have an understanding of more than one culture, and value cultural diversity. Many parents felt that growing up in New Zealand was a particular advantage because of the cultural diversity of this country. In terms of other beliefs many parents also hoped that their children would continue their family traditions of valuing and living by their spirituality.

That they will grow up safe and have a lot of opportunities to enjoy life in a multi-cultural New Zealand

As well as parents having specific hopes and dreams about what their children would do and what skills they would acquire as they grew up, many spoke of wanting their children to have particular personal qualities. In particular they explicitly hoped that their children would grow up to be respectful and confident, with a belief in their own capacity to achieve their dreams. Others also expressed a hope that their children would contribute to their local community and to New Zealand more generally, so that the world would be a better place for their being in it. These aspirations for their own children were frequently accompanied by a parallel hope that the society and world their children would grow up in would enable this. Specifically, these comments ranged from the hope that their children would grow up in good neighbourhoods and communities, to the hope that their children's lives would be free of war and conflict. As well as aspiring to have children who would contribute to society, these parents hoped for a society that would support their children in their own aspirations.

That they feel like that they are part of a ethnically diverse country and part of a community, e.g. school, neighbourhood, friends. Freedom to comfortably come and go as they please

Another significant hope from the parents was that their child would know the importance of belonging to their family, and that they would feel loved and supported, regardless of how they grew up. A large number referred explicitly to the role they, as parents, would have in shaping their child's future – by setting a good example, giving them emotional security, providing for them, and nurturing strong relationships with their children.

Overall, the *Growing Up in New Zealand* parents aspired to raise children who would be able to realise their own dreams, and who would make New Zealand a better place to live in for themselves and for others.

I hope they will have the same upbringing I had, i.e. safe, tight knit, family values, safety and security, access to good education, interest in sports and a really good Kiwi upbringing

10. Growing Up in New Zealand – a taonga (treasure)

10. Growing Up in New Zealand – a taonga (treasure)

The recruited *Growing Up in New Zealand* cohort of children and their families and the information they have provided is broadly generalisable to all children currently being born in New Zealand. This is especially important as it provides a unique resource of relevant evidence about our current population of births in the New Zealand context, and is therefore able to appropriately inform policy. No other longitudinal study in New Zealand (or internationally) is able to provide such a treasure.

Whilst the routine statistics for actual births for 2009 and 2010 are yet to be released, trends from the previous years' births are used to extrapolate the patterns of diversity that have become evident. The following section describes how the children and families in the *Growing Up in New Zealand* study compare to all contemporary families having children in New Zealand, where routine statistics are available and complete.

10.1 Generalisability

The maternal and family characteristics of the parents of the *Growing Up in New Zealand* children are comparable to those of all current New Zealand parents, based on the most complete maternity statistics from 2006 (Ministry of Health 2010). Details of the comparability are provided here for the key parental characteristics of maternal age, parental ethnicity and markers of family socioeconomic status. These characteristics illustrate the utility of the detailed information being provided by the *Growing Up in New Zealand* cohort. The families have been recruited from a defined geographical area (largely for efficiency of recruitment, retention and data collection). These specific areas were chosen because they could provide a group of families that would be broadly generalisable to all families having children in New Zealand. This generalisability has been achieved.

10.2 Maternal age in pregnancy

The range of maternal age during pregnancy in the *Growing Up in New Zealand* cohort was from 15 to 47 years, with an average age of 30 years and a median age of 31 years. This is comparable to the most recent routine statistics (2006), where the median age of all mothers having children in New Zealand was 30.3 years. Over half (50.2%) of all the mothers of the *Growing Up in New Zealand* children were over 30 years at the time of their pregnancy, compared to 50.7% of all mothers in the 2006 New Zealand birth statistics. Further, approximately 5% of mothers of the *Growing Up in New Zealand* children were teenagers, which is also comparable to the current teenage birth rate of approximately 7% throughout the whole of New Zealand.

10.3 Parents place of birth

Approximately two-thirds of the *Growing Up in New Zealand* parents were born in New Zealand themselves. This is comparable to the numbers of mothers and partners born outside of New Zealand for all New Zealand births in 2008 (statistics based on mothers who are registered as New Zealand residents). Further, 52% of all children in the *Growing Up in New Zealand* cohort, where the partner information is available, have both parents born in New Zealand. This is comparable to 57% of children in the 2008 registered births. The distribution of birth place for parents born outside New Zealand is similar to the distribution for all New Zealand births (Table 47).

Table 47. Place of birth: Generalisability of *Growing Up in New Zealand* cohort

	Growing Up in New Zealand		New Zealand Birth Data, 2008±	
	Mother (N=6815)	Partner (N=4402)	Mother (N=64,343)	Partner (N=64,343)
New Zealand	64.2	64.7	72.8	66.1
Australia	1.8	2.0	2.0	1.6
Other Oceania	10.4	8.9	7.0	7.9
Asia	11.3	10.5	8.2	6.9
Europe	6.6	8.5	6.0	6.0
Africa	2.6	3.1	2.0	1.1
The Americas	1.7	1.6	1.3	2.0
Middle East	0.8	0.8	0.5	0.5
Not Stated	0.6	0.0	0.1	7.9

± Source: StatsNZ - Births registered in New Zealand to mothers resident in New Zealand by date of registration

10.4 Parents ethnicity

The majority of the *Growing Up in New Zealand* parents identified as New Zealand European, as is the case for parents throughout New Zealand (Table 48). Importantly, the *Growing Up in New Zealand* cohort also includes comparable proportions of parents who identify as Māori, Pacific and Asian to allow developmental outcomes to be examined across all births, within these key population groups, and between ethnicities. The ethnic diversity intended for the *Growing Up in New Zealand* child (as identified by their parents) is greater, which will further enhance the capacity of this study to examine outcomes within and between these population sub-groups over time.

Table 48. Parents ethnicity: Generalisability of *Growing Up in New Zealand* cohort

	Growing Up in New Zealand ≠		New Zealand Birth Data, 2008±	
	Mother (N=6814)	Partner (N=4158)	Mother (N=64,343)	Partner (N=64,343)
New Zealand European	62.2	69.2	65.9	59.2
Māori	18.3	14.7	23.1	18.9
Pacific Peoples	16.9	13.2	12.0	11.5
Asian	15.8	14.4	10.5	8.7
Middle Eastern/Latin American/African	2.6	2.7	1.4	1.4
Other	0.6	0.2	0.6	0.8
Not Elsewhere Included[1]	n.a.	n.a.	0.4	9.9

n.a. = not available/applicable
≠ Mothers and Partners responded with multiple response(s)
± Source: StasNZ - Births registered in New Zealand to mothers resident in New Zealand by date of registration. Each birth has been included in every ethnic group specified. For this reason, some births are counted more than once
[1] Includes Don't Know, Refused to Answer, Repeated Value, Unidentifiable, Outside Scope and Not Stated

10.5 Languages spoken by parents

Amongst the *Growing Up in New Zealand* parents, almost 97% of the mothers and over 97% of the partners said they were able to have an everyday conversation in English. Additionally, more than 5% of the mothers and 3% of the partners could converse in te reo Māori. By comparison, the 2006 census data for the whole New Zealand population (rather than those having children only) reported that 96% of adults were able to have an everyday conversation in English and just over 4% could converse in te reo Māori (Statistics New Zealand 2006). It is likely that the *Growing Up in New Zealand* parents are representative of their reproductive age group given these general population statistics.

Number of languages spoken by parents

Almost one-third of the *Growing Up in New Zealand* mothers reported being multilingual (able to speak two or more languages), which is more than that reported for the total New Zealand population in the 2006 census (17.5% of females multilingual) (Statistics New Zealand 2006). This difference no doubt reflects the age distribution of the parents of the *Growing Up in New Zealand* children as compared to the whole population sampled in the Census. We would expect that families having children will represent a greater diversity of cultures and languages than the general population due to the immigration of younger adults and families to New Zealand. These results from *Growing Up in New Zealand* suggest that our current population of children will be exposed to a far greater diversity of languages and cultures than those of previous generations.

10.6 Urban/rural distribution

The majority of *Growing Up in New Zealand* families live in main urban areas (86%). This is comparable to the number of families in the wider Auckland and Waikato regions who also live predominantly in main urban areas (85%). Within the cohort 14% of families live in secondary/minor urban or rural areas as compared to 25% of all New Zealand families. While the percentage of cohort families in rural areas is slightly less than that nationally, almost 1000 families in *Growing Up in New Zealand* live outside main urban areas. These families provide ample capacity to examine relevant outcomes for the rural New Zealand population.

10.7 Family deprivation

Using the New Zealand deprivation index from 2006 (Salmond et al., 2007) to categorise families according to the deprivation of the areas in which they live, it is clear that the parents who have been recruited into the *Growing Up in New Zealand* cohort are representative of all current families having children in New Zealand by this key indicator (Figure 32). In particular, the most deprived deciles are more than adequately represented in *Growing Up in New Zealand*. Therefore, over time there will be important opportunities to see how children living in the most disadvantaged areas grow up in comparison to those living in less deprived areas. In particular we will be able to see what works well for child development in families in less advantaged areas and how to foster resilience in such circumstances.

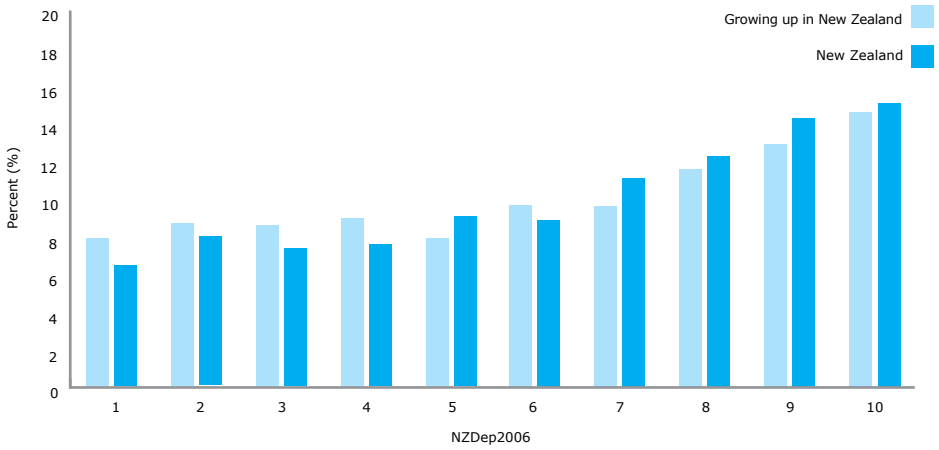


Figure 32. NZDep2006 Generalisability of *Growing Up in New Zealand* cohort

10.8 Where to next? Future data collection and reporting

This report has provided a cross-sectional descriptive summary of the families and the environments that the children who are part of the *Growing Up in New Zealand* cohort will be born into. It has also provided a view of the intentions and aspirations the parents have for their children after they are born. These details were provided independently by mothers and partners at their first face-to-face interviews for this ongoing longitudinal study.

This report also provides an essential baseline for the planning of all future data collection waves, for future reporting, and for longitudinal analyses of children's developmental trajectories. Currently, the second face-to-face interviews with mothers and partners when the *Growing Up in New Zealand* children are aged approximately nine months of age are underway, and the two-year interviews are about to begin for our earliest births.

Routine linkage is also being undertaken to perinatal data for the mothers and babies in the cohort who provided their consent.

10.9 The value of Growing Up in New Zealand

The recruitment of the *Growing Up in New Zealand* cohort, and the collection of the baseline information from families before the birth of their children, has established the foundations of a valuable resource that has both immediate salience and future potential to inform policy development for the New Zealand population. The recruited cohort of children is broadly generalisable to all the children being born in New Zealand during this period of the 21st century, particularly in terms of their ethnic diversity and markers of their families' socioeconomic status. The information collected from the families (and, over time, the children themselves) will therefore provide valuable evidence about what it is like to grow up in New Zealand in the 21st century.

This multidisciplinary evidence, which has been explicitly collected to inform policy, will allow the development of strategies and interventions that are truly targeted to our current population needs and which are appropriate for the contemporary New Zealand context.

Glossary

CAPI	Computer Assisted Personal Interview
CATI	Computer Assisted Telephone Interview
DHB	District Health Board
EDD	Expected Date of Delivery
Eligible referral	Pregnant mothers had an EDD between 25 April 2009 and 25 March 2010 and lived in the study area at recruitment, covering the following District Health Board areas: Auckland, Counties Manukau and Waikato.
GP	General Practitioner
HRC	Health Research Council of New Zealand
Leading Light	The first 200 families recruited into the study. Mothers recruited had an EDD between 24 November and 14 December 2008 and lived in the study region at recruitment (as above).
LMC	Lead Maternity Carer (includes independent and hospital midwives, general practitioners and obstetricians)
NZDep2006	NZDep2006 is an updated version of earlier indices of socioeconomic deprivation and combines 9 variables from the 2006 census reflecting 8 dimensions of deprivation. The NZDep2006 Index Decile is a scale from 1 to 10 which divides the distribution of the NZDep2006 Index score for the total New Zealand population into equal tenths. A decile of 1 represents areas with the least deprived scores and 10 represents areas with the most deprived scores. It should be noted that NZDep2006 deprivation scores and deciles apply to areas rather than individual people.
MoH	Ministry of Health
Parity	Number of previous births for mother
Perinatal	Around the time of pregnancy and birth
Trimester	One of 3 approximately equal thirds of the 40 weeks of an average pregnancy (first, second and third trimesters).

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Appendices

Appendix 1 – Study objectives (detail)

The overall study objectives for the longitudinal study are detailed below. These were agreed during the development phase of the study and have been reviewed during the intensive planning phase for each Data Collection Wave. This process will continue.

The overarching goal of *Growing Up in New Zealand* has been to design and implement a contemporary longitudinal study of New Zealand children in the context of their families and the wider social, cultural and political environments to enable the following broad objectives to be met.

1. A mapping of the developmental trajectories for a cohort of New Zealand children as a group and within New Zealand European/Pakeha, Māori, Pacific and Asian subgroups, in order to identify the main causal pathways, and the links between them, across multiple levels of influence (political, social, cultural, intergenerational, familial and individual) for outcomes in key social, developmental and health domains across the life course. Specifically to:
    - determine the associations between outcomes at different points in the life course development of the child and in different environmental domains (referring to environment in its widest sense including the family, physical, social and political);
    - determine the nature and temporal sequence of determinants in the pathways, establishing those that are direct and those that are indirect (i.e. temporally proximal factors, in relation to the outcome, that act as mediators of more distal determinants in the developmental pathways);
    - determine the nature and the timing of factors that are of key importance and that may be amenable to intervention at the individual or at the policy level.
2. A description of cross-sectional outcomes (in several domains) at key points in the life course of the developing child to enable comparisons between subgroups and within New Zealand European/Pakeha, Māori, Pacific and Asian subgroups, and with international populations. Specifically to:
    - describe patterns of development at different stages of the life course across the New Zealand population;
    - describe patterns of variation in developmental outcomes between different groups in the population (for example, by ethnicity, geographic location, socioeconomic status, parental and family characteristics);
    - compare these outcomes and variations in them with both international and earlier New Zealand cohorts.
3. A focus on factors and trajectories, across multiple levels of influence, that confer resilience and optimise development, rather than focusing solely on risk factors for poor outcomes. Specifically to:
    - examine influences on the range of normal development rather than focusing only on extremes of outcome.
4. Identification of critical or sensitive periods in development, and levels of influence, that will allow the development of policy directed at optimising the life course development of every child born in New Zealand. Specifically to:
    - consider appropriate policy initiatives to address outcomes in key domains of individual development from childhood to adulthood including cognitive capacity, physical health, mental and emotional wellbeing, educational attainment, socialisation, behaviours (including risk-taking) and reproductive outcomes;
    - consider appropriate policy initiatives to address outcomes related to the wider influences on development including family structure and support, poverty and financial stress, social networks, cultural affiliation, physical environments and the media.

Appendix 2: Longitudinal research questions

Specific research questions were developed to shape the design of the longitudinal study throughout its 21 years. They are divided into domain specific questions, but each question is not only relevant to one specific domain. Rather the collective set of questions addresses the overall study objectives.

As each data collection wave is planned these questions are used to begin the process of deciding what constructs need to be measured at each time point.

Health and wellbeing

1. What are the developmental pathways that determine the health status of children across the lifecourse from antenatal development to early adulthood?
2. How does an individual's biological profile, and the environment in which they grow, mutually interact over time to influence development?

Psychosocial and cognitive development

3. What are the key determinants of the developmental trajectories that lead to psychosocial competence, and what precipitates either continuity or change in these trajectories?
4. What biological and environmental factors impact on cognitive ability and how do these factors influence developmental outcomes and trajectories over the lifecourse?

Education

5. How do the multiple levels of educational context and composition, self, family and environment influence and affect educational and development outcomes over time?
6. What factors influence academic motivation, perceived academic competence and educational achievement through life, in particular at key transition points?

Family/whānau

7. How does the quality of family dynamics including sibling, parent-child, inter-parental and relationships with extended family and whānau influence children's development?
8. How do children's experiences of family/whānau vary and what factors confer resilience or present risks to their development, in diverse family/whānau forms and in periods of transition?
9. How involved are fathers in children's lives, and what are their influences over time on children's development and wellbeing?

Culture and identity

10. How are culture and ethnic identity understood and shaped for children and their families and what developmental trajectories are associated with different cultural upbringings across the lifecourse?
11. What influences do the physical, social and cultural environments have on children and their families' cultural experiences and identities in terms of holistic development?

Societal context and neighbourhood

12. What are the key features (social networks, infrastructure, and physical environment) of neighbourhoods and environment which impact on an individual's development over time?
13. What role do neighbourhoods and environment have in mediating the associations between family circumstances, dynamics and social conditions, and child development?
14. How important is engagement of the family and child with key social services and institutions—including health, education and social service providers—in affecting child outcomes? What factors in the social and family environment facilitate effective engagement?
15. How are diverse social and economic contexts expressed in family values, practices, beliefs and resources? How are child outcomes shaped by the effect of these social locations on family values, practices, beliefs and resources?
16. How are child outcomes affected by the nature of their parents' workforce participation, and what factors both internal and external to the family modify these effects?
17. What effects do mass media, communications, and new technologies have on children's health and development, and what factors in the family and social environment modify these effects?

Appendix 3: Summary of high level constructs measured in the Antenatal Data Collection Wave (mothers and partners as appropriate)

Below is a summary of the key constructs that were measured at the antenatal interviews with mothers and partners. Detailed questionnaires will be made available on the Growing Up project web-site (www.growingup.co.nz).

Health and wellbeing

- Pregnancy history and parental health information
- General health, exercise, diet, alcohol, and smoking
- Access and alignment to guidelines for pregnancy care
- Intentions to immunise
- Intentions for infant feeding
- Continuity of primary care around pregnancy

Psychosocial and cognitive development

- Psychological wellbeing, including depression
- Parent stress and response
- Parental personality (partner)

Education

- Parents' education
- Education abilities and difficulties (partner)
- Intentions regarding early childhood education
- Information regarding uptake/utility of guidelines

Family and whānau

- Family cohesion and partner conflict
- Parental relationship and expected support
- Family stressors
- Relationships history and structure
- Values and beliefs
- Parenting efficacy (self-perceived)
- Aspirations for the child

Culture and identity

- Ethnic identity
- Language(s)
- Cultural identity and belonging
- Perception of ethnic discrimination

Neighbourhood and environment (part of Societal context domain)

- Housing tenure, type, and mobility
- Interaction with local environment
- Perception of neighbourhood
- Sense of belonging

Societal context

- Demographics and socio economic status
- Expected parental or other leave
- Social cohesion