

Growing Up in New Zealand

Now We Are Two: Describing our first 1000 days

2014



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

Now we are Two: Describing our first 1000 days

Susan M.B. Morton

Polly E. Atatoa Carr

Cameron C. Grant

Sarah D. Berry

Dinusha K. Bandara

Jatender Mohal

Peter J. Tricker

Vivienne C. Ivory

Te Kani R. Kingi

Renee Liang

Lana M. Perese

Elizabeth Peterson

Jan E. Pryor

Elaine Reese

Karen E. Waldie

Clare R. Wall

June 2014

Suggested citation: Morton, S.M.B., Atatoa Carr, P.E., Grant, C.C., Berry, S.D., Bandara, D.K., Mohal, J., Tricker, P. J., Ivory, V.C., Kingi, T.R., Liang, R., Perese, L.M., Peterson, E., Pryor, J.E., Reese, E., Waldie, K.E., and Wall, C.R. 2014. *Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Now we are Two: Describing our first 1000 days.* Auckland: Growing Up in New Zealand.

ISSN: 2253-251X (Online), ISSN: 2253-2501 (Print)

© *Growing Up in New Zealand* 2014

Contact details: Associate Professor Susan Morton, Director, *Growing Up in New Zealand*, PO Box 18288, Auckland 1743, Phone +64 9 373 7599.

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

Foreword



The first 1000 days of every child's life are critical to their development, building the foundations for their cognitive and physical development, health and wellbeing, as well as their language, social and cultural skills.

This report from *Growing Up in New Zealand*, "Now we are two: describing our first 1000 days", reveals rich new data generated by this important longitudinal study from before birth until 2 years.

Growing Up in New Zealand is the country's largest, and most ethnically and economically diverse, longitudinal study as it follows 7,000 children and their families, recruited from across the greater Auckland and the Waikato regions, as they grow up in contemporary New Zealand.

The study is an important resource that will help inform and support work to ensure that children and young people are safe, healthy, achieve and belong - not in isolation but as part of families and whānau, and communities.

From this report, we begin to see the impact of the complex mix of biology and environmental factors on the children's development. We also start to build an understanding of the huge potential the data offers to inform key social, health and educational issues that we as parents, families, whānau and decision-makers are facing.

For example, it gives us new insights into the high rates of mobility of many of these families, where a third has moved at least once during this period. This has significant implications for those planning and delivering services aimed at families with young children.

It also shows dynamic changes to family structures as a significant number of the mothers either formed a new relationship or became newly alone following the end of a relationship. These changes have important implications for the effectiveness of support systems for sole parents and their children. A future *Growing Up in New Zealand* report will focus on transitions in and out of vulnerability.

I am enormously proud of the role of the Families Commission in managing this study's contract since October last year. The Commission's new purpose is to increase the use of evidence to inform social sector decision-making. And that has been our focus with *Growing Up in New Zealand* – to increase the use of this data and to grow a strong and diverse community of users spanning the research, central and local government, and community sectors.

Further work is underway by the *Growing Up in New Zealand* team to analyse the data generated to understand its implications, to inform policies and programmes, and contribute to improved developmental outcomes for new generations of New Zealanders.

I strongly urge agencies and organisations to embrace this study to realise its significant potential to help us make better decisions for New Zealand's future.

Finally, I would like to acknowledge the *Growing Up in New Zealand* team for their passion and commitment to this study, as well as the University of Auckland and other agencies who have committed resources to this study. And a very sincere and special thanks to the families and children themselves for gifting us this important taonga.

A handwritten signature in black ink, appearing to read 'Belinda Milnes'.

Belinda Milnes
Families Commissioner

Acknowledgements

Growing Up in New Zealand would not exist without the continued commitment of the child and family participants. Fitting an ongoing involvement with *Growing Up in New Zealand* into their busy lives is not taken lightly and we recognise what a privilege it is to safeguard their time, honesty and shared information. Thank you.

The authors of this report are members of the *Growing Up in New Zealand* team: the Research Director (Associate Professor Susan Morton), Associate Directors (Dr Polly Atatoa Carr and Associate Professor Cameron Grant), Senior Research Fellow (Dr Sarah Berry), Biostatistician (Dinusha Bandara), Data and Systems Manager (Peter Tricker) and Research Data Manager (Dr Jatender Mohal).

The authorship also acknowledges that the content of this report is informed by the experts in the specific research domains and themes for *Growing Up in New Zealand*. Further information regarding the team and design for the study is available on our website: www.growingup.co.nz

This report would not be possible without the efforts of all those involved in the wider *Growing Up in New Zealand* team, particularly our interviewers who have collected the invaluable information on which this report is based. We specifically acknowledge Dr Mary Hedges (Senior Research Fellow), Dr Emma Marks (Research Fellow), Rina Prasad (Lead Data Manager), Xenia Chen (Biostatistician), Dean Adam (Research General Manager), Sabine Kruekel (Communications and Marketing Advisor) and Cherie Lovell (Interview Manager).

We would also like to acknowledge the key funders of *Growing Up in New Zealand*, who not only contribute to study sustainability, but also help to ensure that the information from our families contributes evidence to inform the policy environment in New Zealand.

We thank the initial funders of *Growing Up in New Zealand*, in particular the Ministry of Social Development, supported by the Health Research Council and the University of Auckland. We acknowledge the continued support of the Vice-Chancellor of The University of Auckland and The University of Auckland itself as well as Auckland UniServices.

Many other government agencies continue to contribute to the ongoing sustainability and utility of *Growing Up in New Zealand*. We thank particularly the Families Commission and we acknowledge funding and support received from the Ministry of Social Development, Ministry of Health and the Ministry of Education as well as Te Puni Kōkiri, and the Ministries of Justice, Science and Innovation, Pacific Island Affairs, Corrections, the New Zealand Police, Women's Affairs, Sport New Zealand and the Mental Health Commission. We also acknowledge the support of the Children's Commission, Department of Labour, Housing New Zealand, Office of Ethnic Affairs, Statistics New Zealand and the Treasury.

Growing Up in New Zealand acknowledges the ongoing support and advice provided by the national and international members of our Executive Scientific Advisory Board (chaired by Professor Carlos Camargo Jr.), our Kaitiaki Group (chaired by Professor Sir Mason Durie) and our Data Access Committee (chaired by Professor Jane Harding).

Directors foreword



It is once again my great pleasure to present a report on the lives of the *Growing Up in New Zealand* children, on behalf of all those involved in the *Growing Up in New Zealand* team.

This report provides a full description of the children in the cohort when they are two years old. It builds on the previous comprehensive descriptive reports that were released in 2010 and 2012 which documented the early life journeys of our new generation of New Zealand children from before they were born and throughout infancy.

This “Now we are Two” report provides an overview of the journey the children have taken in their first thousand days of life (from conception to age two years). This period in the life course is acknowledged as being critically important for shaping life time development across multiple outcomes including health and wellbeing, cognitive and educational outcomes and later behaviours. It is therefore especially rewarding to begin to understand what milestones the *Growing Up in New Zealand* children have reached at this point and importantly what has shaped this development. This information will be critical to informing how strategies might be developed and implemented to improve outcomes for all contemporary New Zealand children from their earliest years.

The information in this report once again highlights the diversity of the families and environments that the current generation of New Zealand children are growing up in. These environments are remarkably different than a generation ago. For example, children are living with families that include multiple generations and non-kin, and are commonly living in rental accommodation. Because we now have information over three time points we can also begin to appreciate how dynamic aspects such as household structure are across the cohort and how often they change for individual children during their first years of life. This current generation of children are highly likely to have moved house more than once during their first thousand days.

As one in three of the *Growing Up in New Zealand* children have at least one parent born overseas there are many in the cohort experiencing a childhood growing up in New Zealand for the first time in their family. Similarly we now have an important number of the children who were born in New Zealand living overseas. Understanding what has prompted the families of these children to move out of New Zealand and what may or may not encourage them to move back is also very important in terms of determining how we might provide a nurturing environment for those who stay.

The children themselves are also diverse, in terms of their identity but also in terms of their development and capabilities. The children are digital natives, many using technology with an ease that parents are amazed by. This generation is also commonly able to understand more than one language from an early age, and they are taking part in a wide range of activities with their families and in their wider communities. Understanding the impact these early skills and experiences will have on their cognitive, cultural and social development will be a key component of future analyses when pre-school information is available from the same children.

The diversity and environments that these children move in and out of with ease (including the electronic environment) will challenge the way we provide traditional services to support these children and families as they grow up. The high mobility of the families means planning where to deliver these services will be increasingly challenging.

This is true for the delivery of the education, health and social services. Regarding health service utilisation, in this report we see a high level of engagement of the

children and their families with primary care services, and we see very high rates of completed immunisations. But we are also seeing high rates of hospital admissions for respiratory and other illnesses, and emerging high rates of skin infections. We know that New Zealand children rank poorly in terms of early health outcomes compared to other countries so we are hopeful that the information we are collecting from the families and the children themselves will help us to understand how we can improve these statistics, and importantly how we can reduce the inequities in outcomes some groups of children experience.

Additionally we hear the tragic stories of our young children being involved in accidents or being injured far too regularly in New Zealand. The information emerging about how the *Growing Up in New Zealand* families provide safe environments for their children and how they interact with their immediate environments might enable us as a community to protect our children better.

This report also highlights so many stories that are emerging of good outcomes for this generation of children, often in the face of family hardship. The lessons we will be able to learn from these stories of resilience will be invaluable as well, and will help us to understand how we can truly enable all of our children born in New Zealand today to thrive, achieve and belong.

The way we are delivering the information about the children at two is a little different than the past two reports. This 'Now we are Two' report will be the first in a series that utilises the rich information that the parents and children have shared with us over their first thousand days. We hope you will enjoy this new format and we look forward to being able to provide more in depth information about key aspects of the children's early lives over the next year or so.

We remain overwhelmingly grateful to the families and the children who are part of the *Growing Up in New Zealand* study. It continues to be our privilege to bring together their collective stories and present them to those who are able to make a difference to theirs and all our children's lives and futures. I am also personally extremely grateful to the team of dedicated and passionate people who ensure that this project continues to deliver on a day to day basis. This is a special project and you are all very special people.



Associate Professor Susan Morton
Director, *Growing Up in New Zealand*

Contents

Foreword	ii
Acknowledgements	iii
Directors foreword	iv
List of Figures	viii
List of Tables	viii
1. Growing Up in New Zealand	1
1.1 Study overview	2
1.2 The Growing Up in New Zealand cohort	2
1.3 Data collection waves	3
1.4 Conceptual framework	4
1.5 The focus of this report	5
1.6 Next steps	7
2. The children of Growing Up in New Zealand at age two years	9
2.1 Cohort retention and data completeness	10
2.2 Cohort demographics: the children at two years	12
2.3 Selected areas of child health and wellbeing at two years	14
2.4 Selected aspects of child development at two years	16
3. Family and Whānau – Who the Growing Up in New Zealand children live with and how they interact	19
3.1 Parenting practices	20
3.2 Perceptions of parenting	21
3.3 Household structure	23
3.4 Household size	26
4. The Physical Environment of the Growing Up in New Zealand Children	29
4.1 Safety in the home	30
4.2 Housing tenure	31
4.3 Area level deprivation	34
4.4 Neighbourhood and residential mobility	35
4.5 Around New Zealand and around the world	36

5. Informal and formal society – The support systems for the children of Growing Up in New Zealand	39
5.1 Labour force status	40
5.2 Household income	42
5.3 Interaction with music, books and technology	44
5.4 Early childhood education and care arrangements	46
5.5 Access to services – focus on primary health care	50
5.6 Access to cultural support – focus on language and activities	52
6. Looking to the future	55
Growing Up in New Zealand publications	58



List of Figures

Figure 01:	Conceptual framework of <i>Growing Up in New Zealand</i>	4
Figure 02:	Child cohort retention from antenatal to two year data collection waves	11
Figure 03:	Demographic characteristics of the <i>Growing Up in New Zealand</i> children at two years of age	13
Figure 04:	Summary of aspects of health and wellbeing of the <i>Growing Up in New Zealand</i> cohort at two years of age	15
Figure 05:	Examples of interactions between mothers and their two year old children	20
Figure 06:	Parenting perceptions: how mothers and their partners felt overall about being a parent of their two year old	21
Figure 07:	Parenting perceptions: Mother and partner reports of parental enjoyment and attention	22
Figure 08:	Household structure at two years of age	23
Figure 09:	Change in household structure between nine months and two years of age	24
Figure 10:	Change in number of sole mother households between pregnancy, nine months and two years of age	25
Figure 11:	Change in household crowding between nine months and two years of age	26
Figure 12:	Summary of aspects of safety for two year olds	31
Figure 13:	Change in housing tenure between nine months and two years	32
Figure 14:	Household tenure by household structure	33
Figure 15:	Area level deprivation in pregnancy, at nine months and at two years of age	34
Figure 16:	Residence within New Zealand of <i>Growing Up in New Zealand</i> participants at two years of age	36
Figure 17:	Residence around the world of <i>Growing Up in New Zealand</i> participants at age two years	37
Figure 18:	Labour force status of the mothers of the <i>Growing Up in New Zealand</i> children at two years of age	41
Figure 19:	Reasons for why mothers of two year old children were not in paid work	42
Figure 20:	Household income over the 12 months prior to the two year interview	43
Figure 21:	Change in income tested benefit receipt between nine months and two years	43
Figure 22:	Technology, books and music at two years of age	45
Figure 23:	Regular childcare (formal and informal) arrangements at nine months and two years of age	46
Figure 24:	Reasons for child care (formal and informal) at nine months and two years	47
Figure 25:	Reasons for not using child care (formal and informal) at nine months and two years	48
Figure 26:	Main child care type (formal and informal) at nine months and two years	49
Figure 27:	Primary care access type at nine months and two years	51
Figure 28:	Illustration of languages understood by the <i>Growing Up in New Zealand</i> two year old children	52
Figure 29:	Activities and experiences for the <i>Growing Up in New Zealand</i> two year olds	53

List of Tables

Table 01:	Low, medium and high household deprivation at nine months and two years of age	35
Table 02:	Playing musical instruments, hearing stories and reading books at two years of age	44
Table 03:	Providers of Well Child/Tamariki Ora checks between nine months and two years of age	50

1. Growing Up in New Zealand



1.1 Study overview

Growing Up in New Zealand is a longitudinal study that provides a contemporary, population-relevant picture of what it is like to be a child growing up in New Zealand in the 21st century. The study recruited and collected information from both mothers and their partners from before their children were born, and has subsequently undertaken several further data collection waves during the children's first two years of life. *Growing Up in New Zealand* is unique in terms of its size and capacity to provide a comprehensive picture of child health and development across multiple domains of influence for children born in New Zealand, and for its inclusion of significant numbers of Māori, Pacific and Asian children as well as New Zealand European and other ethnicities. From its inception the *Growing Up in New Zealand* study has been explicitly designed to follow children from before birth until they are young adults, to understand 'what works' for 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 better understanding of the complex interplay of all the factors that lead to child outcomes including growth, health, behaviour and cognitive development. The model of child development shaping this study is 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 children.

1.2 The Growing Up in New Zealand cohort

Growing Up in New Zealand recruited pregnant women who were due to have their babies between the 25th of April 2009 and the 25th of March 2010. The geographical area chosen for recruitment was the region of the North Island covered by the three contiguous District Health Boards (DHBs) of Auckland, Counties Manukau and Waikato. Given the lack of a register of pregnant women, specific challenges for this study included ensuring that: all eligible pregnant mothers living in the selected recruitment region received a timely invitation for their child to participate; the cohort recruited was of sufficient size to provide adequate statistical power for complex analyses of developmental trajectories over time across the whole cohort of children as well as within subgroups (including by ethnicity and household deprivation); and that the cohort was broadly generalisable to all New Zealand children.

These challenges were met. *Growing Up in New Zealand* recruited 6822 pregnant women and 4401 of their partners. An additional 200 families in a 'Leading Light: Roopu Piata' group were recruited in late 2008. Key ethnic and socio-demographic characteristics of the recruited main cohort families are similar to those of families having children in New Zealand today. The key features of recruitment, retention, the *Growing Up in New Zealand* cohort and findings from the antenatal and nine month data collection wave can be accessed through www.growingup.co.nz, and *Growing Up in New Zealand* publications are listed at the end of this report.

1.3 Data collection waves

Trajectories of early life development from before birth are recognised as critical for the ongoing health, wellbeing and resilience of children and their families. Therefore, four *Growing Up in New Zealand* data collection waves (DCW) were conducted within the first two years of the children's lives.

The longitudinal information collected to date includes that from:

Face-to-face interviews

- Face-to-face interviews are conducted as Computer Assisted Personal Interviews (CAPI);
- The antenatal DCW (completed in June 2010) with the pregnant mother (most often in the last trimester of her pregnancy) and with her partner (almost always the biological father);
- The nine month DCW with the child's mother and her partner (completed in January 2011);
- The two year DCW with the child's mother and her partner (completed in mid-2012), which also involved direct observations, developmental and anthropometric assessments of the children at two years of age. The information from this two year DCW is the focus of this report which describes key characteristics of the children and their families at two years of age and over their first 1000 days.

Telephone interviews

- Telephone interviews are conducted as Computer Assisted Telephone Interviews (CATI);
- These have occurred when the children were 6 weeks, 35 weeks, 16 months, 23 months, 31 months and 45 months old. The information from these telephone interviews provides valuable age-appropriate information that enhances the data collected face to face;
- Information from the 16 and 23 month telephone interviews are included in this report where relevant. The information from the 31 and 45 month telephone interviews will be included in subsequent reports.

Data linkage

- Linkage between the *Growing Up in New Zealand* data and routinely collected perinatal health records was completed in 2012.

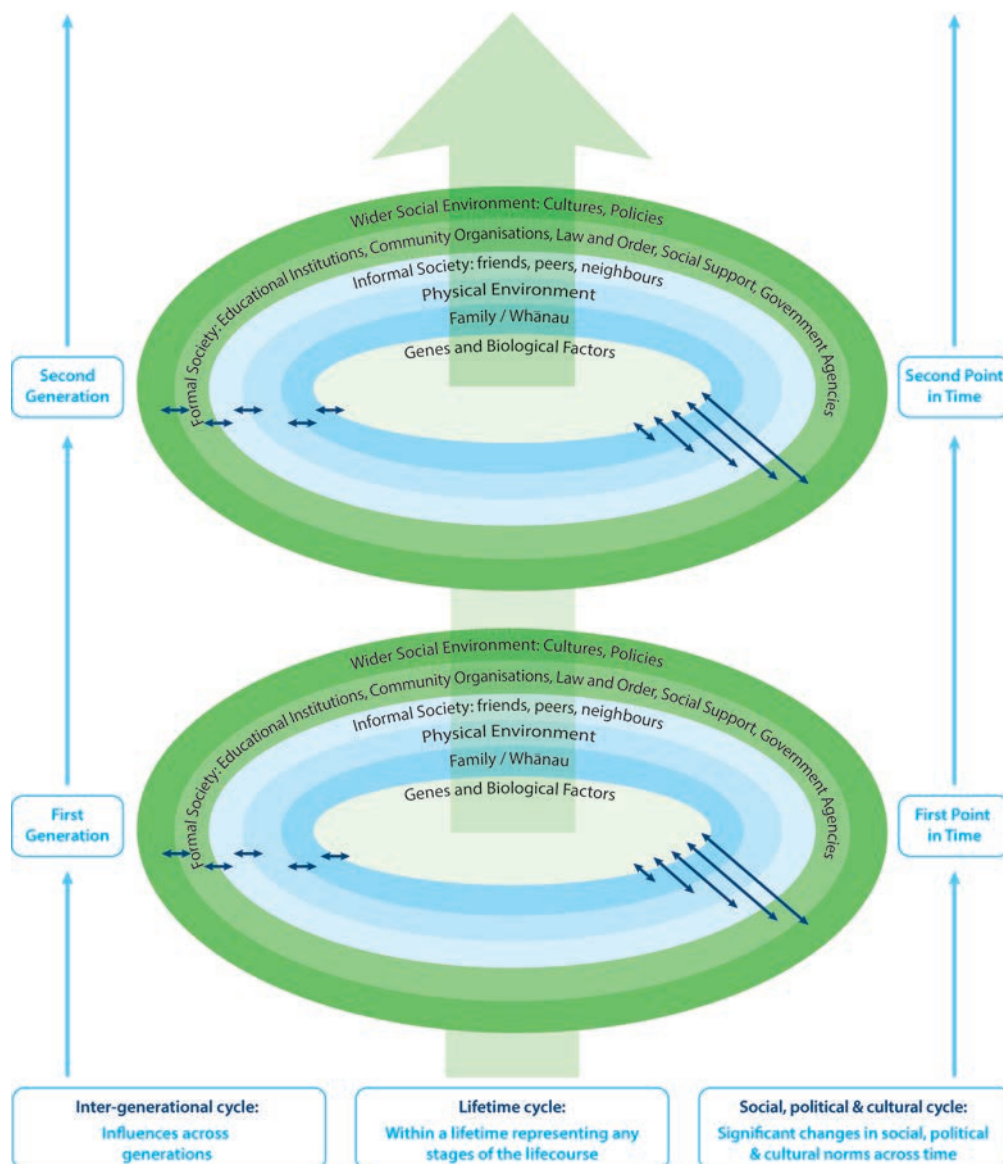
Each data collection of *Growing Up in New Zealand* seeks age-appropriate information across six inter-connected domains: family and whānau, societal context and neighbourhood, education, health and wellbeing, psychological and cognitive development, and culture and identity. Attention is given to ensuring that the methods utilised to collect domain-specific evidence acknowledge the New Zealand population and environmental context, particularly the unique opportunity that *Growing Up in New Zealand* provides to examine the influence of fathers as well as the factors which contribute to the wellbeing of Māori whānau in New Zealand in the 21st century. Other key issues that guide the development of methods and specific tools used for each data collection wave include the relevant constructs to be measured at specific time

points and transitions, policy-relevance and the overarching longitudinal research questions and objectives (available at www.growingup.co.nz).

1.4 Conceptual framework

Growing Up in New Zealand, with its longitudinal design, is multidisciplinary in nature and includes a translational dimension, with an explicit intent to both relate to the current policy context and inform future policy development. This study builds on the demonstrated value and lessons learnt from earlier New Zealand longitudinal studies, while reflecting the scientific and demographic changes that have occurred since these earlier studies began in the 1970s.

Figure 01: Conceptual framework of *Growing Up in New Zealand*



The conceptual framework for *Growing Up in New Zealand* takes a life course approach to child development and therefore seeks to facilitate an understanding of the dynamic interactions between children and their environments across a broad range of influences from their immediate family environments to their wider societal context over time (Figure 01). The information collected from the cohort families from before birth and over time (as described in Report 1: Before we are born; Report 2: Now we are born; and other publications available at www.growingup.co.nz)¹ is centred on the child as the participant. The model 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.

1.5 The focus of this report

Now we are Two: Describing our first 1000 days is the first in a series of reports about the children at two years of age, and it highlights some of the proximal influences which are most important for shaping the development of the children in *Growing Up in New Zealand*. Information in this report is primarily that collected during the two year DCW, but the report also draws upon longitudinal information from the antenatal DCW, the perinatal linked data, the nine month DCW, and six week, 35 week, and 23 month telephone interviews. This combination of data sources allows us to describe the cohort children throughout their first 1000 days of life.

The first 1000 days of life, from conception until the child's second birthday, is a critical stage in a child's development, setting a foundation for: brain development; acquisition of language skills; physical development; gaining of social skills and cultural capacity; health and well-being. Societal (government, community, family) focus and investment into supporting this early stage of child development, utilising contemporary population-based evidence of what works, can ensure that every child has the opportunity to reach their full potential. Unique and essential features of the *Growing Up in New Zealand* cohort include that data is collected from both parents of the study participant as well as significant ethnic and socioeconomic diversity. This first report from the two year data provides an overview of aspects within each part of the *Growing Up in New Zealand* conceptual framework. Further reports, policy statements and academic publications from this study will focus in more detail on specific aspects of child health and development, as well as provide a depth of evidence with respect to the influence of fathers, and the trajectories of Māori and other important subgroups.

Section 2 describes cohort retention and key demographics of the children at two years of age. This section also provides information about the health and wellbeing, and the developmental and behavioural progress of the *Growing Up in New Zealand* two year olds.

Sections 3 to 5 describe the elements of the environment of the children during their first 1000 days, using *Growing Up in New Zealand's* conceptual framework. Specifically:

- Section 3 describes aspects of the family and whānau of the *Growing Up in New Zealand* cohort at two years of age. This is the most proximal layer of the conceptual framework for this study, and a direct influence on the health and wellbeing of children. This section describes aspects of parenting as well as the household and family structures within which the cohort live (and how these have changed over time).

¹ A reference list of *Growing Up in New Zealand* publications to date are provided at the end of this report.

- Section 4 considers the physical environment within which the *Growing Up in New Zealand* cohort live at two years of age, and how this may impact on their health, wellbeing and development. This section looks specifically at household safety and housing tenure as well as considering neighbourhood and area-level influences including socioeconomic deprivation and mobility. The residential movement of the cohort has been significant in their first 1000 days and this section describes where in New Zealand and across the world our two year olds are currently living.
- Section 5 considers more distal layers of the *Growing Up in New Zealand* conceptual framework which includes informal society (including friends, peer and neighbours) and formal society (which includes educational institutions, community organisations, social support, and government agencies). This section describes aspects of the support systems for families with two year olds in New Zealand today – specifically looking at examples of economic resources (and labour force status), influences on early learning (including media, books and early childhood education and care), access to primary health services and language development as an indicator of cultural support.

A current policy approach is to support early intervention to provide a better start for children and improved outcomes for society.

Policy focus

The wider societal environment aspect of the conceptual framework is indicated by the inset boxes that contain specific areas of current policy focus in New Zealand. These highlight how information from the *Growing Up in New Zealand* cohort can contribute evidence to building and evaluating effective policy that supports families and allows children to thrive, achieve and belong.

Adding a personal voice

To give voice to the findings reported, quotations from *Growing Up in New Zealand* parents have also been included (adapted so as to not identify individuals). These quotations refer to the highlights (blue) and challenges (green) they have faced in the first two years of their children's lives.

"I was just saying that one minute people are carrying her, then she's crawling, and then she's walking, and then she's talking – and it's all happened so fast in the space of two years."

"Trying to remain calm, teach her obedience and to have respect for other people and their things, while she is trying to figure out who she is."

1.6 Next steps

'Now we are Two: Describing our first 1000 days' illustrates the breadth and depth of information that is available from the first 1000 days of the children and families in *Growing Up in New Zealand*. It provides a brief description of life at two years of age in contemporary New Zealand, and indicates the valuable and unique opportunity that *Growing Up in New Zealand* provides for understanding what makes a happy and healthy childhood, and how to support children's developmental needs. In addition to the data presented here, further detailed work is already underway to elucidate the relationships between the dynamic physical, cultural, educational, social, and service environments of children and families, and how these influence child outcomes in New Zealand today.

Growing Up in New Zealand study objectives and longitudinal research questions guide the development of the tools used to collect information and specific areas of data utilisation for research and policy purposes. These objectives and research questions can be found at www.growingup.co.nz. Areas of current focus for the *Growing Up in New Zealand* research team using the first 1000 days data include:

- Indicators of vulnerability, how these change over time and what factors can support resilience in children;
- Labour force status and leave provisions for parents in the early years;
- Immunisation receipt and timeliness and the opportunities to improve immunisation delivery;
- The reasons for neighbourhood and residential mobility, and the impact of mobility on child outcomes;
- Ethnic-specific summaries of the new generation of New Zealanders – including a specific description of contemporary Māori whānau and their alignment with whānau ora outcomes;
- Growth patterns, nutrition and physical activity;
- How the household environment affects child health;
- The expectations for and reality of early childhood education and care provisions in infancy in New Zealand;
- Influences on the development of parent-child relationships;
- Prevention of illness caused by infections in early childhood;
- Development of early language within the diverse family environments;
- Influences on child behaviour trajectories.

Further information about the research focus of *Growing Up in New Zealand* including current and future data collection waves, opportunities for policy and research response, and data access provisions are briefly described in Section 6 of this report.

2. The children of Growing Up in New Zealand at age two years



2.1 Cohort retention and data completeness

Attrition through loss to follow-up is a feature of (and one of the biggest challenges faced by) all longitudinal studies. It is often greatest in the first two years of a study when relationships with participants are being established. Maximising overall participation, as well as limiting any bias in attrition, is an ongoing goal for the *Growing Up in New Zealand* team. We have been successful in keeping loss to follow-up to date to a minimal level.

Two year interviews were completed with 6242 mothers and 3804 of their partners. Of the 6853 children in the *Growing Up in New Zealand* cohort, information for 6476 (95%) children was collected at the nine month DCW and information for 6327 (92%) was collected at the two year DCW (Figure 02).

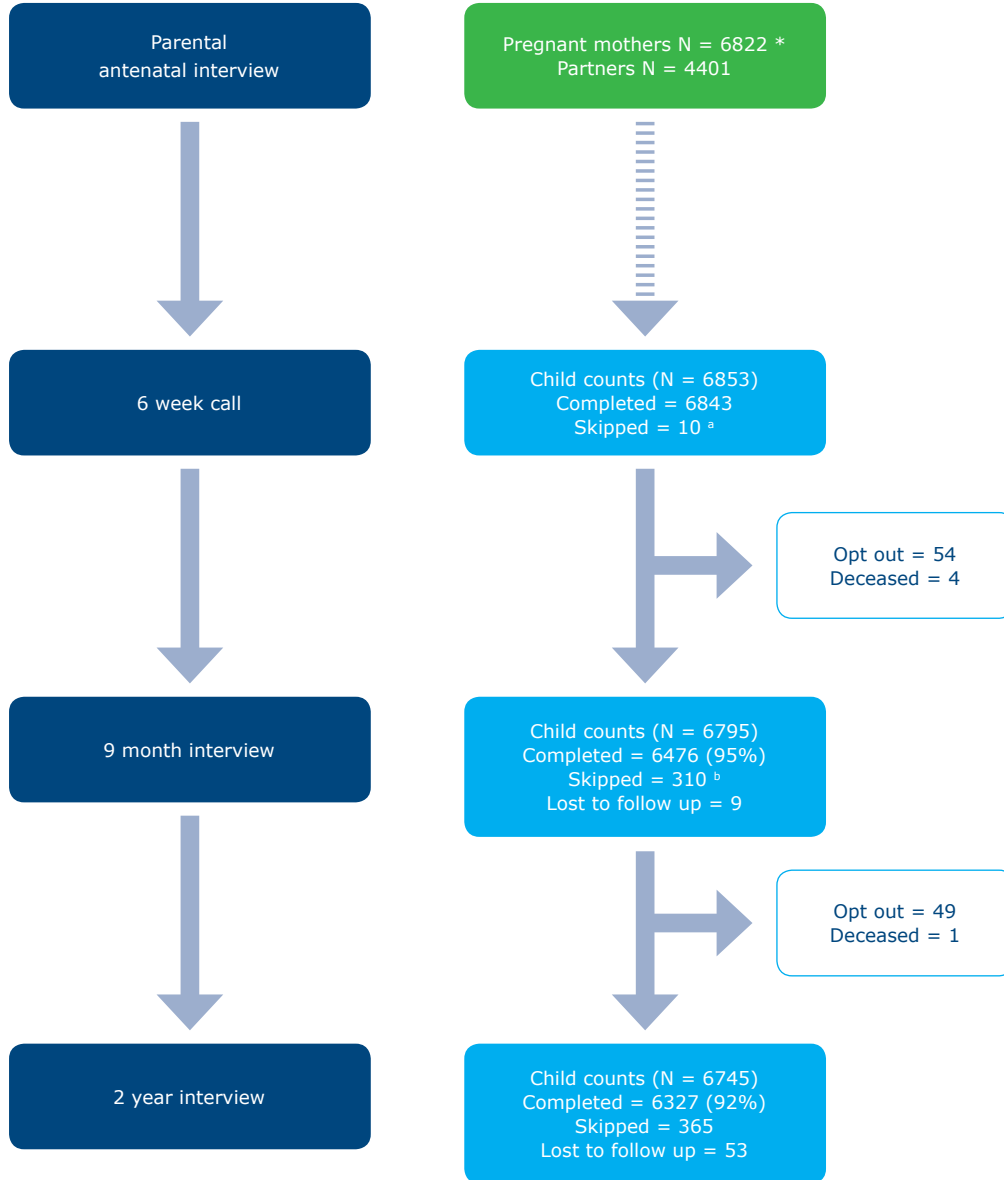
There are 164 children for whom two year data is available for this report even though their mothers had skipped the previous DCW (the nine month interview).

Specific socioeconomic and demographic characteristics of mothers and partners with complete data at the antenatal, nine month and two year data collection waves is monitored by the *Growing Up in New Zealand* team. In general, the distributions of key parental characteristics are very similar between each data collection waves and further information regarding the parents of the *Growing Up in New Zealand* cohort is available from www.growingup.co.nz

It is expected, as demonstrated in other international population-based longitudinal studies, that the number of participants for whom complete information is available will fluctuate across DCWs. *Growing Up in New Zealand's* high overall retention (92% at two years), and the subsequent inclusion of participants in this report who had previously elected to skip a DCW, is testament to the relationship that the *Growing Up in New Zealand* team has developed with our participants. It also illustrates the commitment of our participants to providing their time and information to contribute to this unique and important study of child development in contemporary New Zealand. For this we continue to be truly grateful.



Figure 02: Child cohort retention from antenatal to two year data collection waves



* Complete antenatal interview data. One additional mother provided incomplete antenatal data and information is included from six weeks onwards.

Skipped refers to a mother (reporting on child) who has been unable to provide information at a specific data collection point, but still intends to complete subsequent DCWs.

a Of these, 4 (40%) subsequently completed the 9 month interview.

b Of these, 164 (53%), subsequently completed the two year interview.

Loss to follow-up refers to a participant who could not be contacted at this specific DCW.

Opt out refers to a participant who has specifically indicated that they no longer wish to participate in the study; where this is a mother their participant child or children are therefore opted out

Percentage of completed, the denominator for completed DCWs is the total live births determined at the six week call (N=6853).

2.2 Cohort demographics: the children at two years

"Being a boy he is hard to manage – not like a girl – he doesn't do what he's told."

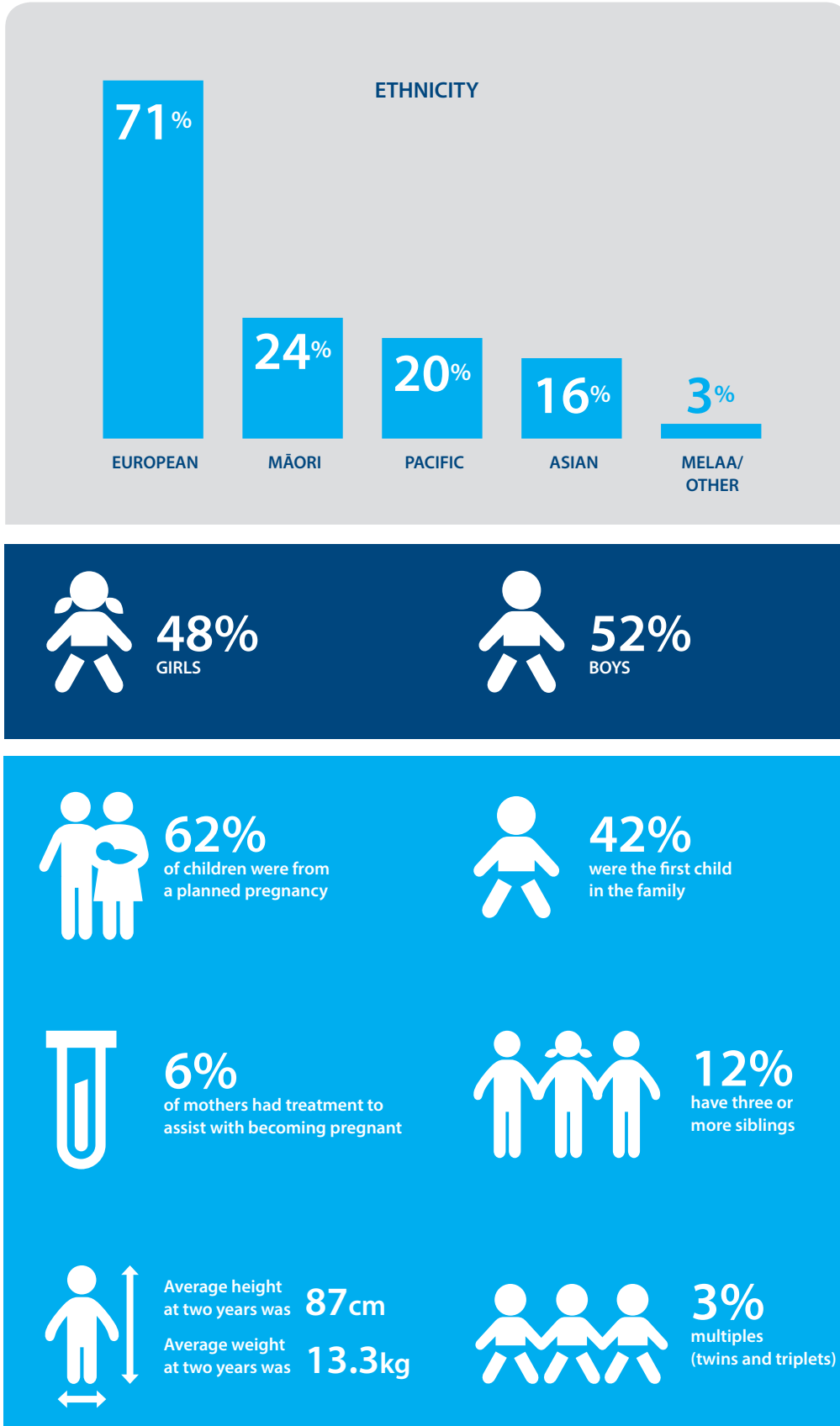
Selected demographic characteristics of the 6327 children who make up the *Growing Up in New Zealand* cohort at age two years are described below, and in Figure 03.

- The cohort consists of 3268 (52%) boys and 3059 (48%) girls.²
- There is significant ethnic diversity within the cohort. Of all children, 4364 (71%) children are expected (by their mothers) to identify at least one of their ethnicities as European, 1475 (24%) are expected to identify as Māori, 1254 (20%) are expected to identify within the Pacific Peoples ethnic grouping, 994 (16%) are expected to identify within the Asian ethnic grouping, and 185 (3%) are expected to identify as Middle Eastern, Latin American, African or within another ethnic group.
- Multiple ethnicities were indicated for 42% (2608) of children, with 73% of these children described as having two ethnicities, and 27% described as having three or more ethnicities.
- The majority of children (n=6166 or 97%) are singletons and there are 161 twins or triplet children (3%).
- 2663 (42%) of the children were the first child in the family; 3656 (58%) were a subsequent child in the family.
- Of those with complete sibling information available at sixteen months of age, 3928 (62%) had at least one sibling. These include half-brothers, half-sisters, step siblings, and also includes those siblings living in different households.
- Overall, 35% of the children had one sibling, 16% had two siblings and 12% had three or more siblings.
- There were 396 (6%) children whose mothers had treatment to assist with becoming pregnant with the cohort child.
- Of those where information on family planning was available (n=6298), 3880 children (62%) were from a planned pregnancy; 2418 (38%) from non-planned pregnancy.
- Of those children with a completed weight measurement (n=5843), the average weight of the children at two years of age was 13 kg.
- Of those children with a completed height measurement (n=5311), the average height of the children at two years of age was 87cm.

"A real highlight is watching him develop his personality and stand up for himself with his older siblings."

"Trying to keep a routine has been hard with twins."

²Within this document percentages in the text are rounded to zero decimal places (unless less than 2.0 and then 1 decimal place is provided). Numbers in the Figures and Tables are rounded to one decimal place.

Figure 03: Demographic characteristics of the *Growing Up in New Zealand* children at two years of age

2.3 Selected areas of child health and wellbeing at two years

Health and wellbeing is a key focus within *Growing Up in New Zealand*. Detailed information is collected on child health (such as growth, anthropometry, diet and nutrition, physical activity, specific illnesses and injury, and interaction with health services), parental health (including use of tobacco, alcohol and drugs) and family health status. Selected aspects of health status for the cohort children at two years of age are described in this section, and in Figure 04.

“He is happy and healthy – caring and loving – and he is growing up so fast.”

Overall health and wellbeing

- 5419 (86%) children were reported by their mothers to have excellent or very good health at two years of age.
- The majority of children (n=5228, 83%) were described by their mothers to be of normal weight. Of those children that were described by their mothers as outside of the normal weight range, 629 (10%) were reported as either somewhat underweight or very underweight, and 465 (7%) were reported as either somewhat overweight or very overweight. Analyses are currently underway comparing the anthropometric measurements of the children collected by *Growing Up in New Zealand* at two years of age with international and national standards for height, weight and body mass index.

Sleeping and eating

- On average, the children in the cohort were getting 10.5 hours of sleep per night at two years of age
- Some of the children’s favourite first foods were banana, yoghurt, cheese, pasta and fruit. Dietary patterns will be explored in more detail by the analysis of the information collected with the food frequency questionnaire which has been administered at each data collection wave. This will enable a longitudinal assessment of food type and portion size as well as consideration of nutrition within the context of the other areas of children’s lives.

“Dealing with his health – encompasses everything – sleep, work, ability to do other things and not worry about him.”

Immunisation

- The majority of children (n=5954, 94%) had received at least some of their 15 month immunisations by age two years. There were 5836 (92%) children who were fully immunised. Further analyses are currently underway looking at the specific rates and timeliness of immunisation status of the cohort (including comparisons with antenatal intentions to immunise and analysis of specific population groups). These analyses will be linked to the National Immunisation Register and compared to the national immunisation targets. This will allow identification of the most important targets to improve the timeliness of immunisation delivery and to eliminate the disparities in immunisation that persist in New Zealand.

General practitioner visits

- Nearly all of the children (n=6156 or 97%) had seen a GP or family doctor at least once in the last twelve months. The average number of GP or family doctor visits per child between one

and two years of age for all cohort children was six visits, and the median number of visits was four. Over a third of children (n=2336 or 37%) had seen a GP or family doctor five to ten times in the last year. 1330 (21%) had seen a doctor once or twice in the last year, 1835 (29%) three or four times, and 655 (10%) more than ten times in the last twelve months.

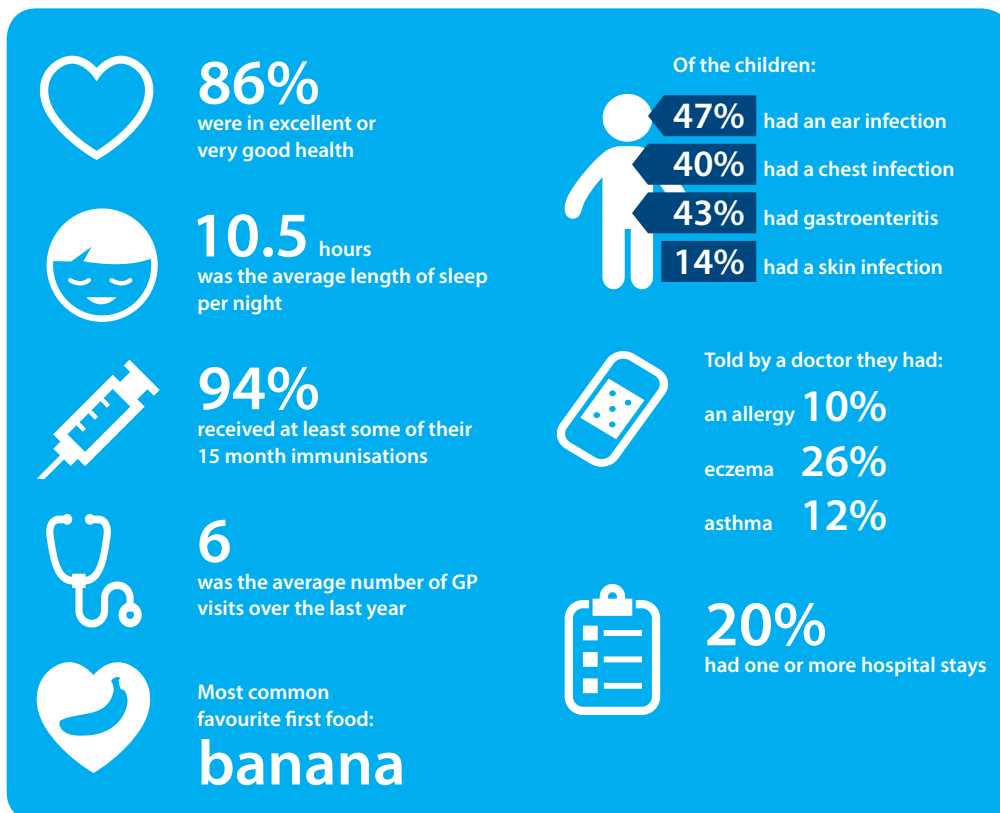
Infections and infectious diseases

- 2996 (47%) children had experienced an ear infection since they were nine months old. Of these, 2970 (99%) children saw a doctor at least once for their symptoms of ear infection, and 50 (2%) children were admitted to hospital for this illness. There were 257 (4%) children who had had grommets inserted by the time they were two years old.
- 2735 (43%) children had experienced symptoms of gastroenteritis since they were nine months old. Of these, 1993 (73%) children saw a doctor at least once for these symptoms, and 139 (5%) were admitted to hospital.
- Over one third (n=2497, 40%) of children had experienced a chest infection at least once since they were nine months old. Of these, 2432 (97%) children saw a doctor at least once because of their chest infection, and 404 (16%) children were admitted to hospital.
- 868 (14%) children had experienced a skin infection since they were nine months old. Of these, 800 (92%) children saw a doctor at least once for their skin infection, and 34 (4%) were admitted to hospital.

"Sleeping through the night is awesome. He's becoming more independent."

"When she's sick, it's quite frightening, especially dealing with hospital."

Figure 04: Summary of aspects of health and wellbeing of the *Growing Up in New Zealand* cohort at two years of age



Allergies and allergic diseases

- 651 (10%) children had been told by a doctor that they have an allergy of some kind. For these children, the most common specific allergens described were egg (36% of those with a doctor-diagnosed allergy, 235 children), dairy (36%, 234 children), peanuts (25%, 162 children), and house dust mites (15%, 95 children).
- Other atopic illnesses were common for the children at two years of age. 1655 (26%) children had been told by a doctor that they had eczema and 725 (12%) children had been told by a doctor that they had asthma.

Hospital admissions

- Approximately one fifth of children (n=1246, 20%) had experienced at least one hospital stay by the time they were two years old. Of those who had been in hospital, two thirds (n=826) had been only once, 295 (24%) children had been in hospital overnight two to three times and 10% of children (n=125) had been in hospital overnight four or more times since they were born. For these children, the average number of nights spent in hospital was three nights, the median was two nights. The most common reasons for these hospital admissions were bronchiolitis (17%, 216 children), gastroenteritis (10%, 127 children), fever (8%, 99 children), pneumonia (7%, 92 children), and skin infections (6%, 73 children).

2.4 Selected aspects of child development at two years

"His achievements like climbing, jumping, kissing, I have a companion now."

Within *Growing Up in New Zealand* information is collected on the progress towards developmental milestones, early temperament and patterns of behaviour. This information is collected from both parents independently as well as through observations of the children themselves and how they interact with their parents.

This section describes selected information on child development as reported by the mothers of the cohort. Further analyses comparing parental reports of behaviour as well as detailed analysis of the observational data is underway.

Motor skills

- The average and median age at which children took their first wobbly steps was 12 months.
- Measures of fine and gross motor skills showed the number of children that, at two years of age, could often:
 - Scribble on a piece of paper with a pencil or crayon: 6134 (97%).
 - Run fairly well, stopping themselves without bumping into things or falling: 5759 (91%).
 - Kick a ball without holding onto anything for support: 5022 (79%).
 - Jump with both feet leaving the floor at the same time: 4377 (69%).

"When he started to walk, his first words, when he said 'Mum.'"

First words

- The average and median age at which children spoke their first word was 10 months.
- For more than 2400 (37%) children, their first word was a version of Mama, Mum or Mummy.
- For more than 1700 (26%) children, their first word was a version of Dada, Dad or Daddy.
- Other common first words were ta, no, cat, duck, ball and up.

"That she can speak Māori and that that's her first language when she speaks."

Early self-concept

The development of self-concept (how a person perceives themselves) begins during early childhood. *Growing Up in New Zealand* has collected questionnaire and observational data on self-concept (full analyses underway), and selected aspects of the assessment of self-concept at age two years show that:

- Calling attention to something that they had done (e.g. 'Look what I did') was typical for 4931 children (78%).
- Two thirds of children (n=4176, 66%) typically resisted help by saying "do it myself" or something similar.
- 5926 children (94%) typically communicated likes and dislikes verbally or nonverbally.
- Nearly two thirds of children (n=3887, 62%) typically used their own name.
- Just under half of children (n=2853, 45%) typically insisted on wearing certain clothing.
- For 3534 children (63%) it was typical to know whether they were a boy or a girl.

"Her individuality. Her determination. Her independence. Knows what she likes and knows what she does not like."

Child behaviour

Growing Up in New Zealand has also asked questions and observed behaviour and psychological attributes of the cohort in the first 1000 days. This has included the assessment of emotional symptoms, conduct problems, hyperactivity and inattention, social development, peer and personal relationships. The following are some examples of aspects of behaviour and social interactions demonstrated over the six months prior to the two year interview, as reported by mothers:

- Helpful if someone is hurt, upset, or feeling ill:
 - Certainly true for 3666 children (58%) and somewhat true for 2287 children (36%).
- Shares readily with other children:
 - Certainly true for 1914 children (30%) and somewhat true for 3862 children (61%).
- Can stop and think things out before acting:
 - Certainly true for 1153 children (19%) and somewhat true for 3905 children (63%).
- Had at least one good friend:
 - Certainly true for 4118 children (66%) and somewhat true for 1532 children (24%).

"I have given a best friend to my older child, and now I have two best friends in the world."

“All the tantrums make me embarrassed in front of my friends. Other than that he is quite happy.”

- Described as generally liked by other children:
 - Certainly true for 4635 children (74%) and somewhat true for 1592 children (25%).

The ‘terrible twos’ were also common within the *Growing Up in New Zealand* cohort, with over three quarters (4932 children; 78%) of children described as often having temper tantrums or hot tempers.



3. Family and Whānau

Who the Growing Up in New Zealand children live with and how they interact



The interactions between children and their family and whānau are an important focus for *Growing Up in New Zealand*. The most important support system for the cohort children within their first 1000 days is their parents and the people that they live with day-to-day. An important unique feature of *Growing Up in New Zealand* is the independent data collection from both parents of the cohort children, where relevant and possible. Consequently, *Growing Up in New Zealand* can determine the influence of parents, the balance of roles between both parents, how this changes over time, and the impact of different parental styles and influences within the same family on child health and development outcomes.

This section includes information from both parents about how they interact with the cohort children, and how they feel about being a parent. Further, many of the cohort children live in a household with additional family and non-family members. This section also describes the size and structure of the households in which children live, and reports on how this has changed over time. Further research is underway to examine more detailed aspects of family and whānau, and how these interact with other influences on children in order to support their development.

3.1 Parenting practices

Growing Up in New Zealand has collected questionnaire data about parenting practices and about the relationship that parents perceive they have with their two year old child. Observational data has also been collected about parent-child interactions. Selected examples of the parenting practice and parent-child relationship measures, as provided by parental report, for the children at age two years include:

Parent-child relationship

- A majority of mothers, extremely often or all the time:
 - Let their child know they really care about them (n=5216, 82%).
 - Act supportively and understandingly towards their child (n=4552, 72%).
- Nearly all mothers (n=6093, 96%) often or very often put their child’s needs and wants before their own.
- Approximately 65% of mothers (n=4095) often or very often let their child take a risk if there is no major threat to the child’s safety.

“Every day’s a highlight. Risk taking, Walking, talking, becoming a person. Learning new facets to his personality. He’s a live wire.”

Figure 05: Examples of interactions between mothers and their two year old children



- For a third of mothers (n=2091; 33%) leaving their child with other people is often or very often upsetting, no matter how well they know the other person.

Discipline practices

The most common forms of discipline used often or very often by parents when their two year old children are naughty include:

- Telling them off: n=3451, 55% of mothers and n=1773, 46% of partners
- Sending them to time out: n=2096, 33% of mothers and n=1087, 28% of partners
- Ignoring their child: n=2004, 32% of mothers and n=766, 20% of partners
- Taking away treats: n=1669, 26% of mothers and n=943, 24% of partners

"Being a parent to her is a delight. She is very affectionate and she gives an awful lot back on an emotional level."

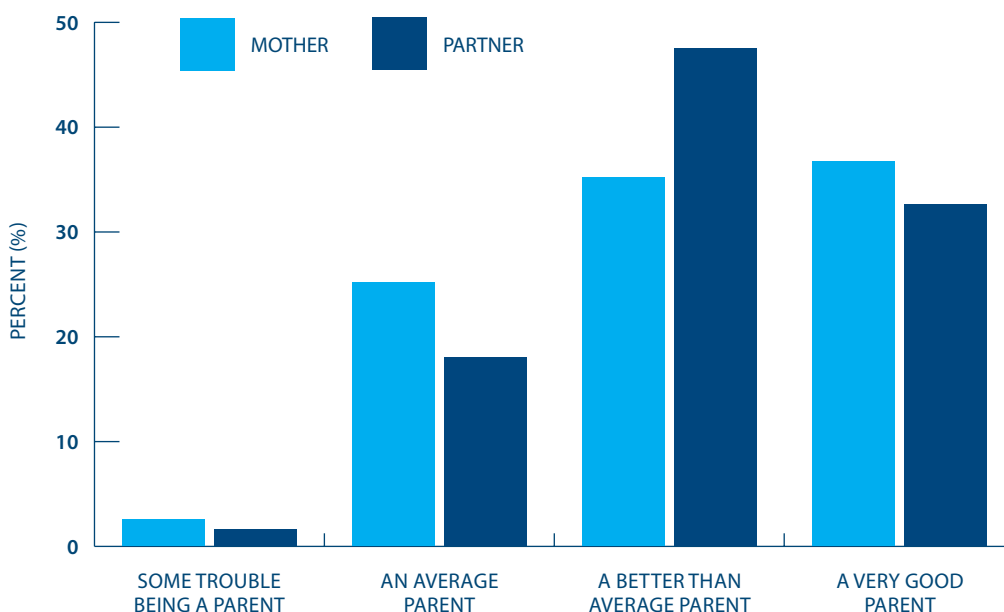
3.2 Perceptions of parenting

Growing Up in New Zealand has also collected questionnaire data about the way different parents act toward their children. These measures enable an understanding of how parents perceive their parenting style, and how this may impact later child development outcomes. A small number of selected key measures are provided here, and the data presented includes parenting perceptions from both the cohort child's mother and her partner, where possible.

"I don't know how to discipline her appropriately so that she'll listen to me."

How mothers and their partners feel overall about being a parent of their two year old is shown in Figure 06. Mothers were most likely to feel they were a very good parent (n=2320, 37%), and over one third (n=2218, 35%) felt they were a better than average parent. One quarter (n=1591) of mothers felt they were an average parent. Partners were most likely to feel that they were a

Figure 06: Parenting perceptions: how mothers and their partners felt overall about being a parent of their two year old



"As a parent I have learned a lot – I have learned I am a responsible person. It has made me stronger too as I have no family support and I can manage on my own."

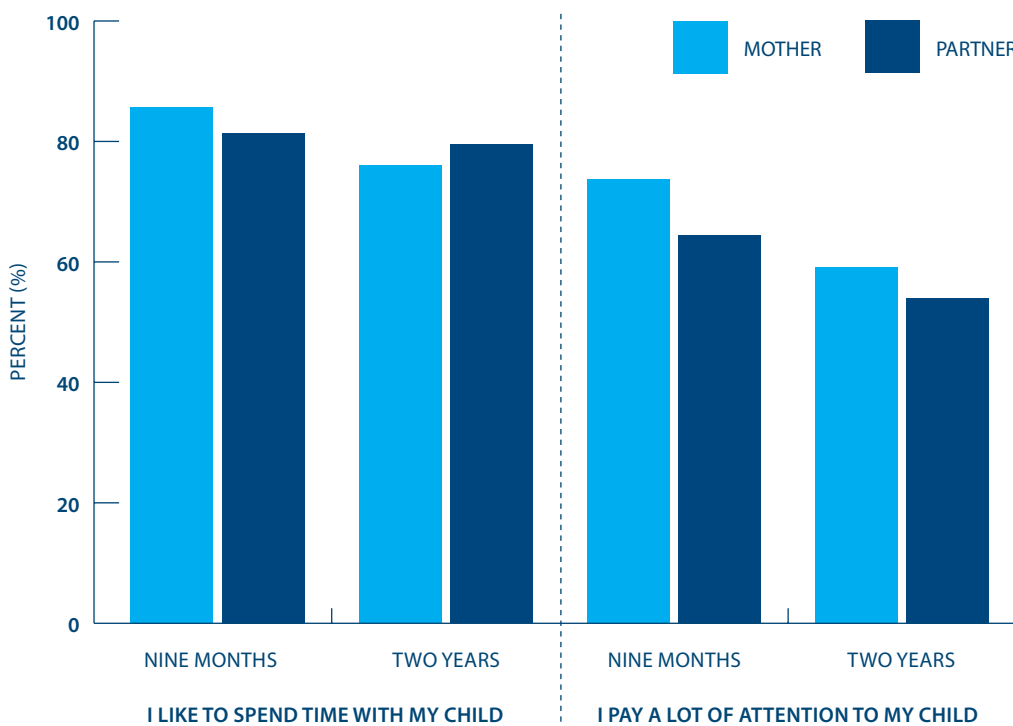
"My one on one time with her is very restricted."

better than average parent (n=1818, 48%) and an additional one third (n=1248) of partners felt they were a very good parent. There were 690 partners (18%) who felt they were an average parent of their two year old.

How much attention mothers and partners perceived they gave to their child at nine months and at two years of age, and how much mothers and partners enjoyed spending time with their child at nine months and at two years of age are shown in Figure 07. For mothers, 5275 (86%) almost always liked to spend time with their child at nine months of age, and this decreased to 4786 (76%) who almost always liked to spend time with their child at two years. The majority (81%, n=3249) of partners almost always liked to spend time with their child at nine months of age, and a similar proportion (79%, n=3037) almost always liked to spend time with their child at two years. For mothers, 4543 (74%) almost always paid a lot of attention to their child at nine months and this decreased to 3732 (59%) who almost always paid a lot of attention to their child at two years. Approximately 65% (2576) of partners almost always paid a lot of attention to their child at nine months of age, and this decreased to 54% (2062) who almost always paid a lot of attention to their child at two years. The reasons for changes in parental enjoyment and attention, including new siblings and changes in labour force status, will be the subject of future analyses.

"I have found it a joy. I think because I am an older parent I am enjoying the time, not wishing her time away."

Figure 07: Parenting perceptions: Mother and partner reports of parental enjoyment and attention*



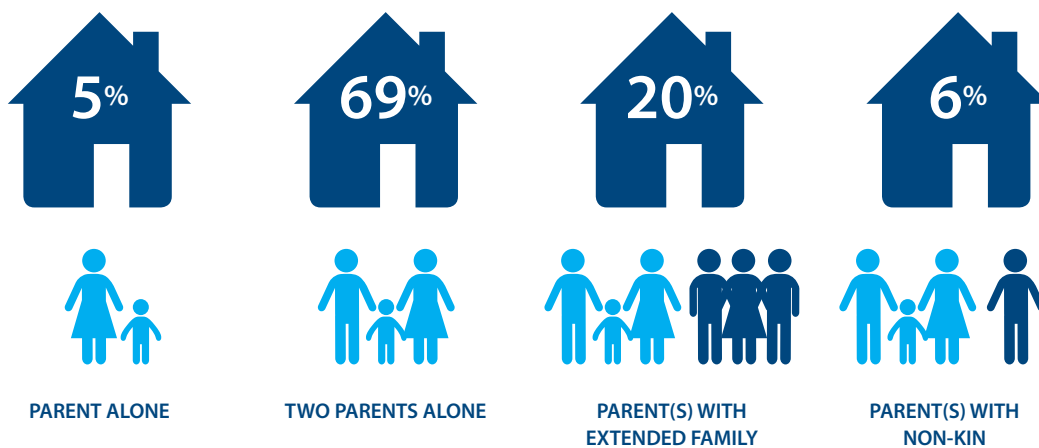
*The proportion of mothers and partners who reported that these statements were 'almost always true'

3.3 Household structure

When they were two years old, 69% of the *Growing Up in New Zealand* children were living in a household with two parents present (and no other adults, but possibly other children), and 20% were living in an extended family household (including one or two parents). More children (6%) were living in a household with their parent(s) and non-kin (such as flatmates) than those living with a single parent (without other adults, but possibly with other children; 5%) (Figure 08).

"It is amazing how much she's learning from being at home with her grandparents."

Figure 08: Household structure at two years of age

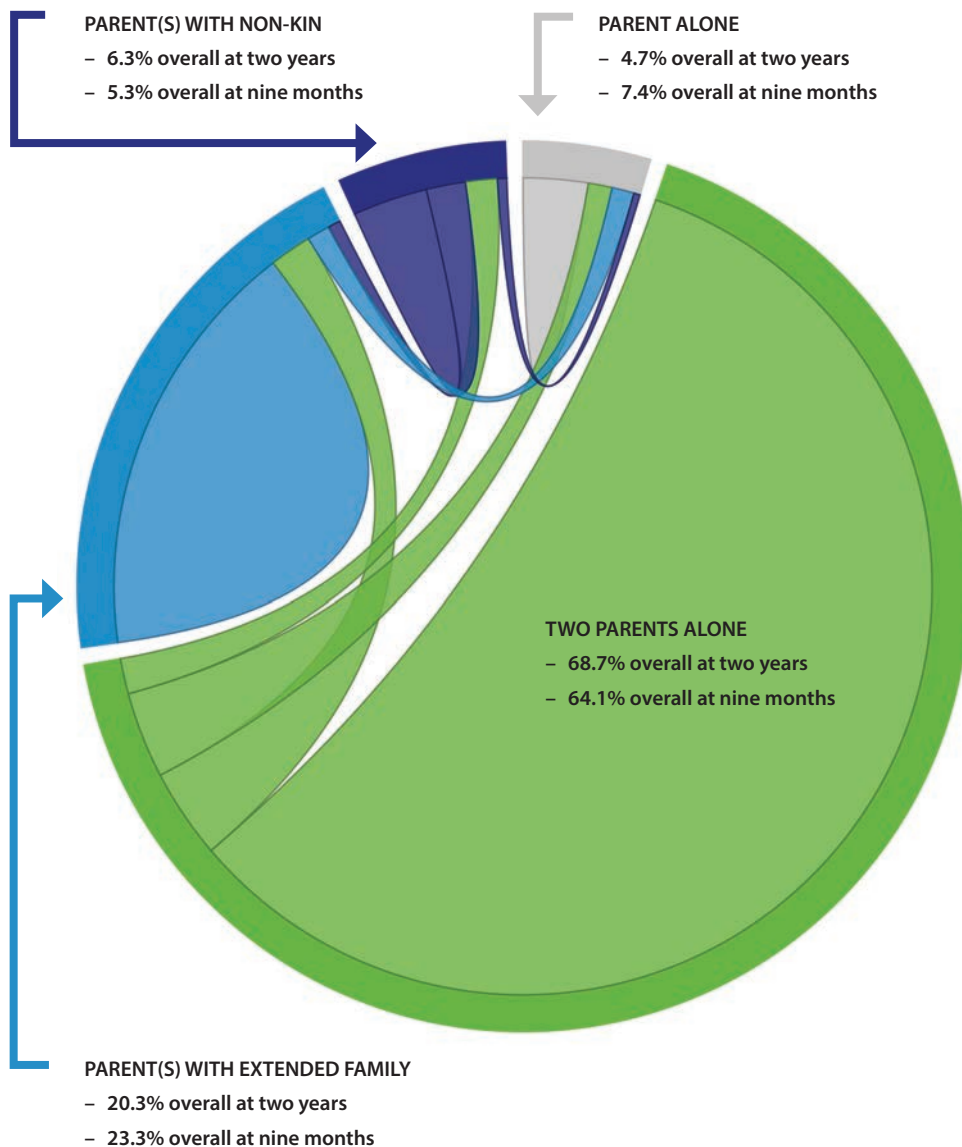


The proportion of children living in extended family households differed according to their identified ethnicity. Approximately 43% of children who identified as Pacific, 27% of children who identified as Asian and 27% of children who identified as Māori were living in extended family households. This is compared to the 14% of children who identified as European living in an extended family household.

The largest change in household structure between nine months and two years was families changing to two-parent households (with no other adults) from other household structure types (Figure 09). An increase of 9% (n=507) was seen in two-parent households, gaining 4% (n=207 households) from parent alone, and 4% (n=215 households) from parent(s) with extended family. An additional 1% (n=85 households) of this household type was previously parent(s) with non-kin. Over the same time period, 1% (n=57 households) of two-parent households changed to parent alone households, 2% (n=101 households) changed to parent(s) with extended family and a further 1% (n=76) changed household structure to parent(s) with non-kin. The result of this was an overall increase of 5% (n=273 households) of families in two-parent households at two years.

Parent alone households experienced the greatest reduction of any household structure between nine months and two years, particularly a drop of 4% (n=207) from a parent alone household structure to two parents alone. A further 1% (n=54 households) moved from parent alone to parent(s) with extended family, and less than 1% (22 households) moved to parent(s) with non-kin. While there were small movements between nine months and two years into the parent alone category from: two parents alone (1%, n=57 households); parent(s) with extended family (1%, n=53 households); and parent(s) with non-kin (less than 1%, n=15 households), the overall result was a reduction of parent alone household structure type by 3% (109 households).

Figure 09: Change in household structure between nine months and two years of age*



A current policy focus on vulnerable children in New Zealand could utilise contemporary evidence of the effective support systems for sole parents.

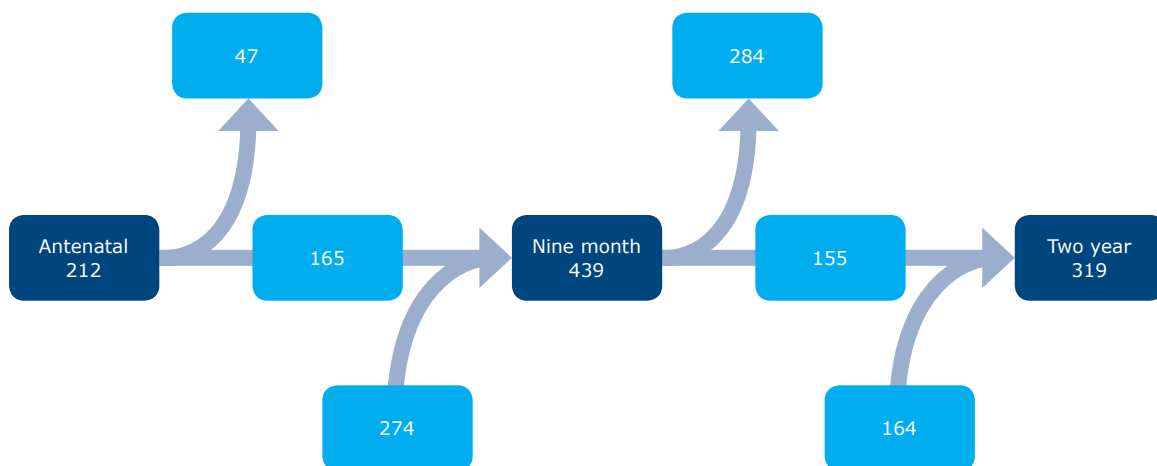
*Chord diagrams are used in this report as an illustration of change over time. The ring segments around the edge of this chord diagram represent the proportion of families/children in each category at two years. A chord running between a pair of segments in the diagram represents movement (in either direction) between the nine month and two year data collection waves. A chord the same colour as the segment it intersects represents an overall gain to the segment of that colour. The segment of the other colour has therefore experienced an overall loss between time periods. Refer to text for more detail.

A further example of the importance of the longitudinal nature of *Growing Up in New Zealand* is demonstrated by specifically examining the household composition status of the cohort mothers. At each cross-sectional time point (antenatal, nine months and two years), a difference in number of sole mother households is seen (those mothers who describe that they are living without other adults) – there were 212 of these mothers in pregnancy, 439 at nine months and 319 at two years of age (Figure 10). However, a longitudinal analysis of these participants provides more detail of those sole mother households who have changed their household structure status. For example, between the antenatal and nine month data collection waves, 274 mothers became newly alone in their household (more than those in pregnancy). Between nine months and two years, 155 sole mother households who were alone at nine months remained in this household structure at two years. Across this time period, a substantial number of sole mother households entered a different household structure (n=284), or became newly living alone (n=164). These dynamic changes in household structure (with potential impact on child development) are lost within cross-sectional surveys or studies. Consequently, community and environmental influences for developing a more resilient or stable state cannot be determined without longitudinal data.

“Being a single mum and being alone is a challenge.”

Growing Up in New Zealand will continue to monitor change in household structure and relationship status over time. The contemporary influences of stepfamily and other dynamic household structures (which are likely to increase in proportion over time) on the development of children will be an ongoing area of research focus. This will be assisted by information collected from all parents.

Figure 10: Change in number of sole mother households between pregnancy, nine months and two years of age*



*Exit arrows indicate those who left sole mother households between data collection waves, and entry arrows indicate those who entered sole mother households between data collection waves.

Housing is a current policy focus in New Zealand with an emphasis on safety, access to amenities and improvements in warmth and dryness to enhance the health of occupants.

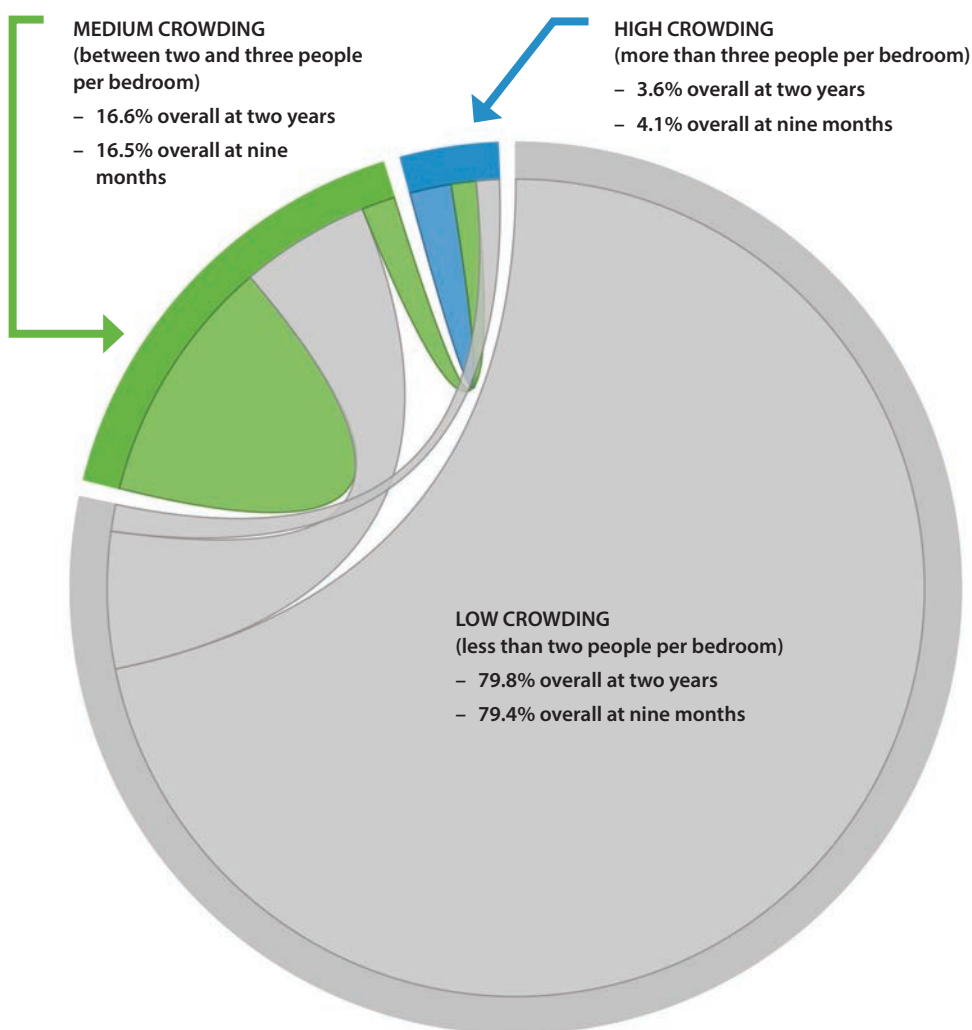
3.4 Household size

Overall, household size increased between nine months and two years, with the median household size at the two year data collection wave being 5 people, compared to a median of 4 people at the nine month and antenatal data collection waves.

A simple crowding measure (the number of people in the household and the number of available bedrooms) allows comparison between household crowding at nine months and two years.

Among the families of the *Growing Up in New Zealand* children where available information allowed for the crowding index to be calculated, when the children were aged two years (6182 families), just over 20% (n=1234) were living in a house where there were two or more people per bedroom – defined here as medium or high crowding (Figure 11).

Figure 11: Change in household crowding between nine months and two years of age*



*Chord diagrams are used in this report as an illustration of change over time. The ring segments around the edge of this chord diagram represent the proportion of families/children in each category at two years. A chord running between a pair of segments in the diagram represents movement (in either direction) between the nine month and two year data collection waves. A chord the same colour as the segment it intersects represents an overall gain to the segment of that colour. The segment of the other colour has therefore experienced an overall loss between time periods. Refer to text for more detail.

At two years of age 80% (n=4874) of families were living in households with low crowding (fewer than 2 people per bedroom). This was very similar to the proportion living in households with low crowding at nine months. An overall net increase of 25 families moved into low crowding from households with medium crowding (16 families) or from high crowding (9 families).

There was also little difference in the total number of families living in medium crowding households at two years compared to at nine months, with an overall net increase of five families. However, the change within this group was notable, because 5% (n=320) of families moved from a low crowding household to a medium crowding household while at the same time 6% (n=336) of families moved to a low crowding household from a medium crowding household. A further 1% (n=82) families moved from high crowding households to medium crowding households.

Among the families living in high crowding households at nine months of age, 2% (n=102) remained in high crowding households at two years of age. There was a net loss of less than 1% (n=30) families to low crowding houses and medium crowding houses.

Additional analyses of indices of crowding are underway within *Growing Up in New Zealand*. These will also be considered with other measures of the quality of home environment for New Zealand children, and the impact that household conditions have on health and development (particularly communicable disease outcomes) in their first 1000 days.



4. The Physical Environment of the Growing Up in New Zealand Children



This section focuses specifically on the physical environment of the cohort children over the first 1000 days. The most immediate physical environment is considered by describing some of the home safety features of the cohort at two years of age, and housing tenure status. Then, as aspects of more distal areas of the conceptual framework of *Growing Up in New Zealand* are described, this section specifically looks at neighbourhood and area level influences on child development (including socioeconomic status) and the geographic residence of the *Growing Up in New Zealand* participants. The location of the children at two years of age indicates the degree of residential mobility (also described in this section) experienced by the *Growing Up in New Zealand* children in their first 1000 days – an important feature of contemporary New Zealand families with significant policy implications.

4.1 Safety in the home

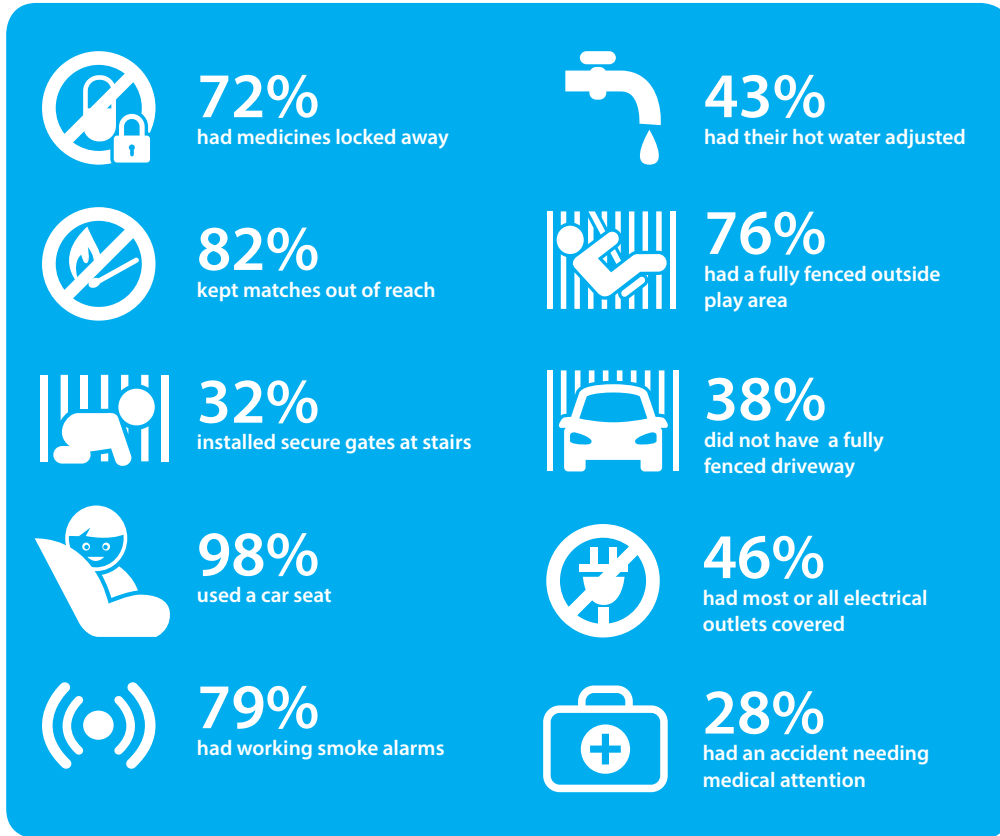
Ensuring that all housing in New Zealand meets minimum health and safety standards is a current policy focus.

Injuries and accidents in the home are common amongst New Zealand toddlers, and aspects of household and car safety information for the two year old *Growing Up in New Zealand* participants (Figure 12) include:

- In the homes of the children at two years of age the majority of mothers described that they always kept medicines locked away (n=4533, 72%) and always kept matches out of reach (n=5192, 82%).
- Working smoke alarms were present in the homes of 79% of children (n=4982).
- 98% of children (n=6204) always used a car seat when travelling in a car.
- Less than half of children lived in a house where there was: always locked gates or secure gates at stairs (n=2006, 32%); most or all electrical outlets covered (n=2924, 46%); or where the hot water was adjusted to the recommended temperature for children (n=2708, 43%).
- While 4799 (76%) children had outside play areas that were fully fenced, an important 38% of children (n=2432) were living in a house without a fully fenced off driveway.
- 1772 (28%) children had ever had an accident by age of two which required a doctor, health centre or hospital visit. These children had an average of 1.4 accidents per child (or a median of 1 accident per child). Of these children who had suffered an accident, 131 required admission to hospital as a result of their most severe accident.

The most common sources of information about safety that were accessed by the mothers of the cohort were from family or whānau members (n=1824; 29%), from the Well Child/ Tamariki Ora reference book (n=1157, 18%), or from Plunket Line or a Plunket nurse (n=785, 13%).

Figure 12: Summary of aspects of safety for two year olds



4.2 Housing tenure

Just over half (55%) of the *Growing Up in New Zealand* children lived in family owned accommodation at two years of age. The remaining 45% lived in rented accommodation, the majority of which (86%) was private rental.

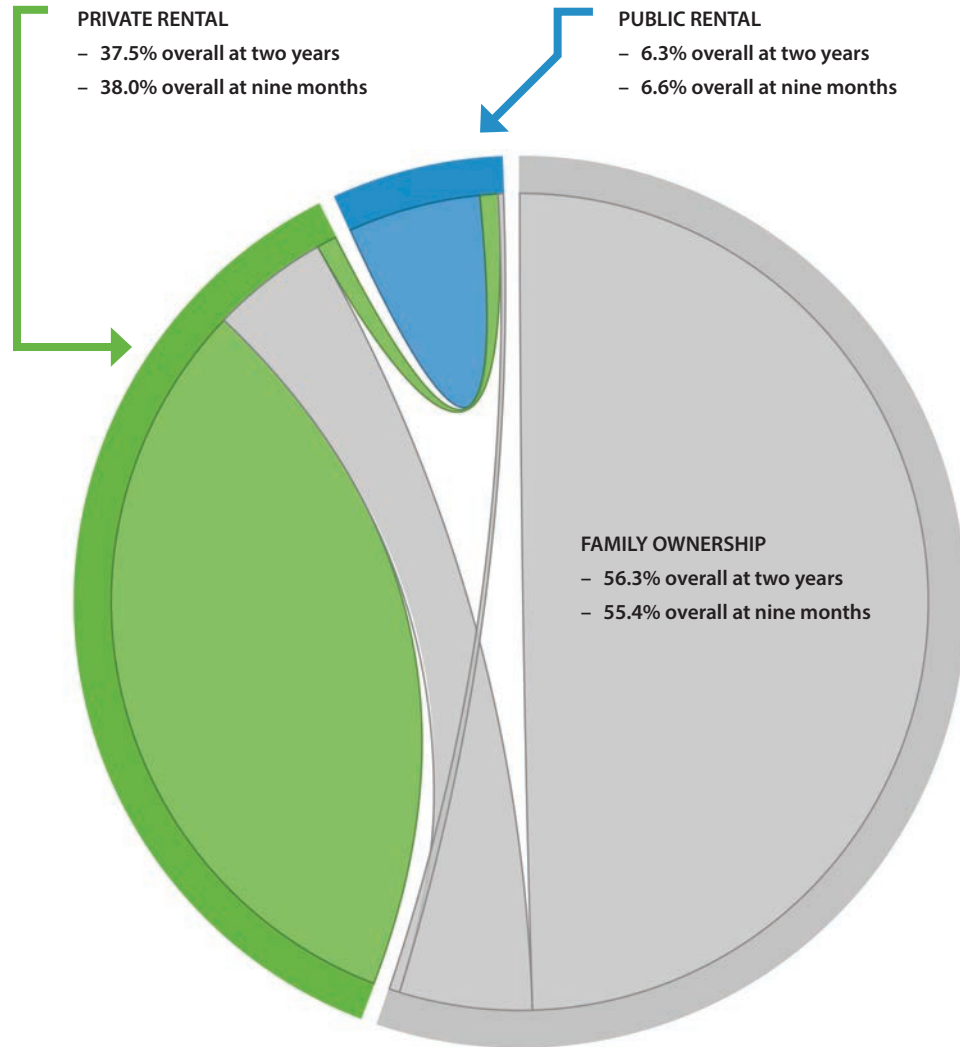
The comparison of tenure type over time between nine months and two years is shown in Figure 13. Just over half (51%) of all *Growing Up in New Zealand* families remained in family owned accommodation between nine months and two years. A further 5% (n=300) moved from private rental accommodation to family owned accommodation, and a small number (n=24) moved from public rental properties. There were 266 families who moved from family owned accommodation to private rental accommodation, and 12 moved to public rental properties.

Families living in private rental accommodation made up 37% (n=2101) of all *Growing Up in New Zealand* families at two years, similar to the 38% at nine months.

The total proportion of families in public rental accommodation at two years (6%) remained the same between nine months and two years. There was a small movement of 24 families from public rental properties to family owned accommodation and 45 families to private rental.

"We are so happy to have found a home. Our own home."

Figure 13: Change in housing tenure between nine months and two years*



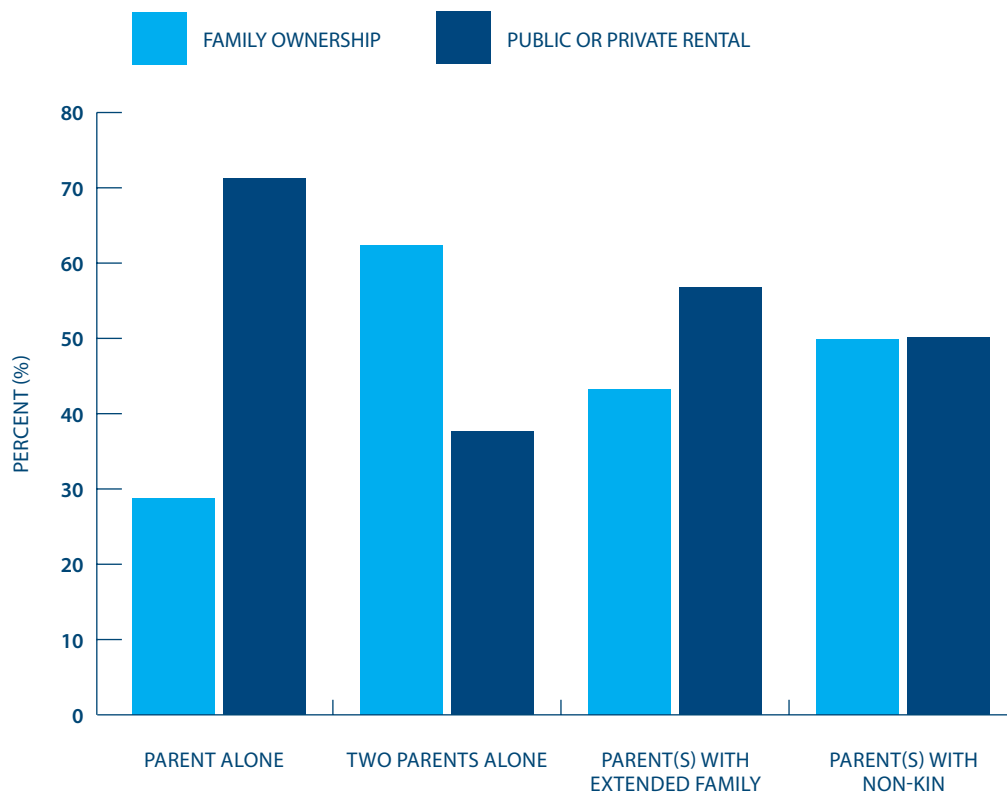
*Chord diagrams are used in this report as an illustration of change over time. The ring segments around the edge of this chord diagram represent the proportion of families/children in each category at two years. A chord running between a pair of segments in the diagram represents movement (in either direction) between the nine month and two year data collection waves. A chord the same colour as the segment it intersects represents an overall gain to the segment of that colour. The segment of the other colour has therefore experienced an overall loss between time periods. Refer to text for more detail.

Housing tenure differed by household structure (Figure 14). For households consisting of one parent alone, private or public rental (71%) accommodation was more common than a family owned house (29%). This was also observed for households consisting of parent(s) with extended family (57% in private or public rental, compared to 43% in family owned houses). For households with two parents alone, a family owned house (62%) was more common than a private or public rental (38%). There was no difference in tenure type for households consisting of parent(s) with non-kin.

"We had to move house because the rental was sold. I'd rather not have to have my children move."

The mothers of the cohort children were asked to report on their perceptions of the neighbourhood they live in. Aspects of the way that neighbourhoods were perceived – particularly "this is a safe neighbourhood" and "this is a clean neighbourhood" differed by tenure type. Of all mothers, 93% living in family owned dwellings and 90% living in private rental accommodation reported that they agreed or strongly agreed to the statement "this is a safe neighbourhood". In comparison, 80% of those living in public rental properties reported that they agreed or strongly agreed to the same statement. Similarly, 92% of those living in family owned properties and 89% of those living in private rental accommodation reported that they agreed or strongly agreed to the statement "this is a clean neighbourhood", while 75% of those living in public rental reported that they agreed or strongly agreed to the same statement.

Figure 14: Household tenure by household structure



The NZ Government currently has a broad programme of measures aimed at supporting families to own their first home.

4.3 Area level deprivation

Families with young children often experience some degree of vulnerability. A policy target is improving the social and economic wellbeing of families through ensuring that basic needs are met and families have adequate resources to access educational, health, recreational and wider cultural activities.

Growing Up in New Zealand measures a comprehensive picture of the factors that contribute to the socio-economic status of families and the impact of this status for child health and developmental outcomes over time.

One measure of socio-economic status that can be considered within the longitudinal data is area-level deprivation. The measure shown here for the *Growing Up in New Zealand* participants is the NZDep2006 where socio-economic status is determined utilising nine variables from the 2006 census. The NZDep2006 deciles in this report indicate those meshblocks in the least deprived 10 percent of all areas in New Zealand (decile 1), to the most deprived 10% of all areas (decile 10). As *Growing Up in New Zealand* progresses, updated deprivation measures (including NZDep13 from the 2013 census) will be compared over time as well as detailed analysis of different measures used to consider child poverty, hardship and socio-economic status.

Despite high mobility, and changes in family status from before birth and after birth, most *Growing Up in New Zealand* children were living in similar area level deprivation deciles at two years, nine months, and during pregnancy (Figure 15).

A change in area level deprivation status over time is reported in Table 1, using the following deprivation scores: high deprivation (deciles 8-10); medium deprivation (deciles 4-7); and low deprivation (deciles 1-3).

The majority (85%) of participants have stayed in the same level of area deprivation over time. Of those who were living in low deprivation at nine months, 3% had moved to medium deprivation and 1% to an area of high deprivation. Approximately 6% of children living in medium deprivation had moved either to an area of lower or higher deprivation level, with around half moving in either direction. Around 5% of those living in an area of high deprivation at nine months had moved out of this deprivation level at two years, with the majority of these moving to an area of medium deprivation.

“A real highlight has been moving into a bigger home for the family.”

Figure 15: Area level deprivation in pregnancy, at nine months and at two years of age

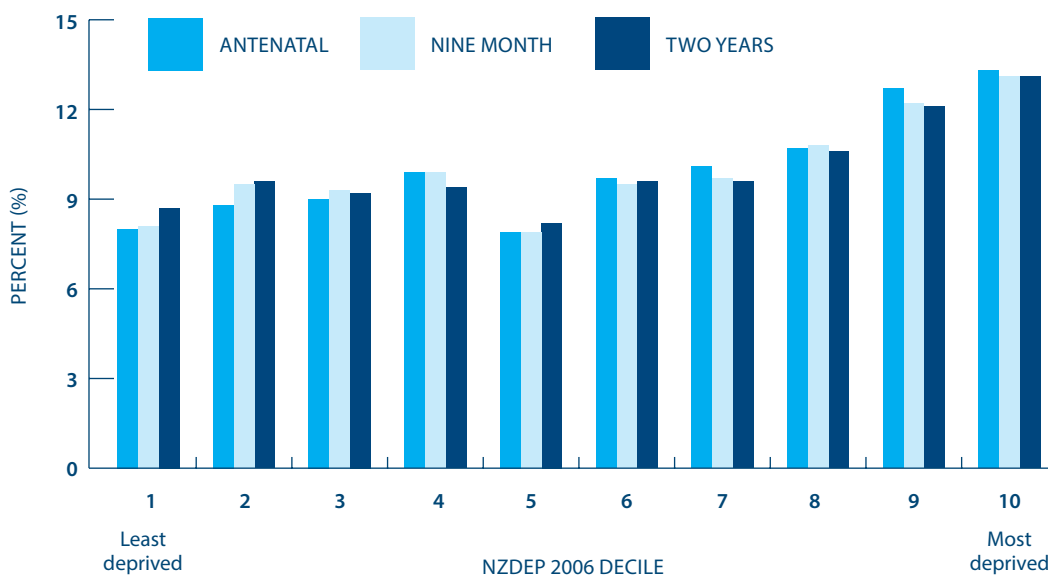


Table 01: Low, medium and high household deprivation at nine months and two years of age

Deprivation level, nine months	Deprivation level, two years			
	Low (deciles 1-3)	Medium (deciles 4-7)	High (deciles 8-10)	Total
Low (deciles 1-3)	1364 (22.6)	176 (2.9)	81 (1.3)	1621 (26.8)
Medium (deciles 4-7)	212 (3.5)	1839 (30.5)	187 (3.1)	2238 (37.1)
High (deciles 8-10)	95 (1.6)	211 (3.5)	1869 (31.0)	2175 (36.1)
Total	1671 (27.7)	2226 (36.9)	2137 (35.4)	6034 (100)

High residential mobility has significant implications for the design and implementation of policy in the health, education and social sectors aimed at service delivery for these families with young children.

4.4 Neighbourhood and residential mobility

Information collected at each contact point about where the child is living has important implications for cohort retention and also informs the context for child development over time. In previous reports, the *Growing Up in New Zealand* families were noted to be highly mobile, and that trend has persisted across the first 1000 days. Approximately a third (32%) of the *Growing Up in New Zealand* families had moved at least once between their nine month and two year interviews – more than the quarter (25%) that had moved between the antenatal and nine month interviews. Of the 1994 families that had moved between nine months and two years, 79% (1581) had moved once, 16% (324) had moved twice, and the remaining 4.5% (89) had moved three or more times in that 15 month period.

In addition, those who have moved between age nine months and two years were:

- more likely to be a first child rather than a subsequent child;
- less likely to be in a household with parent(s) and extended family or in a household with parent(s) and non-kin than in a household with parent(s) alone;
- more likely to identify as Māori than as New Zealand European;
- more likely to be living in private rental accommodation than in family owned accommodation.

“A real challenge has been moving house so many times and constantly adapting to new circumstances”



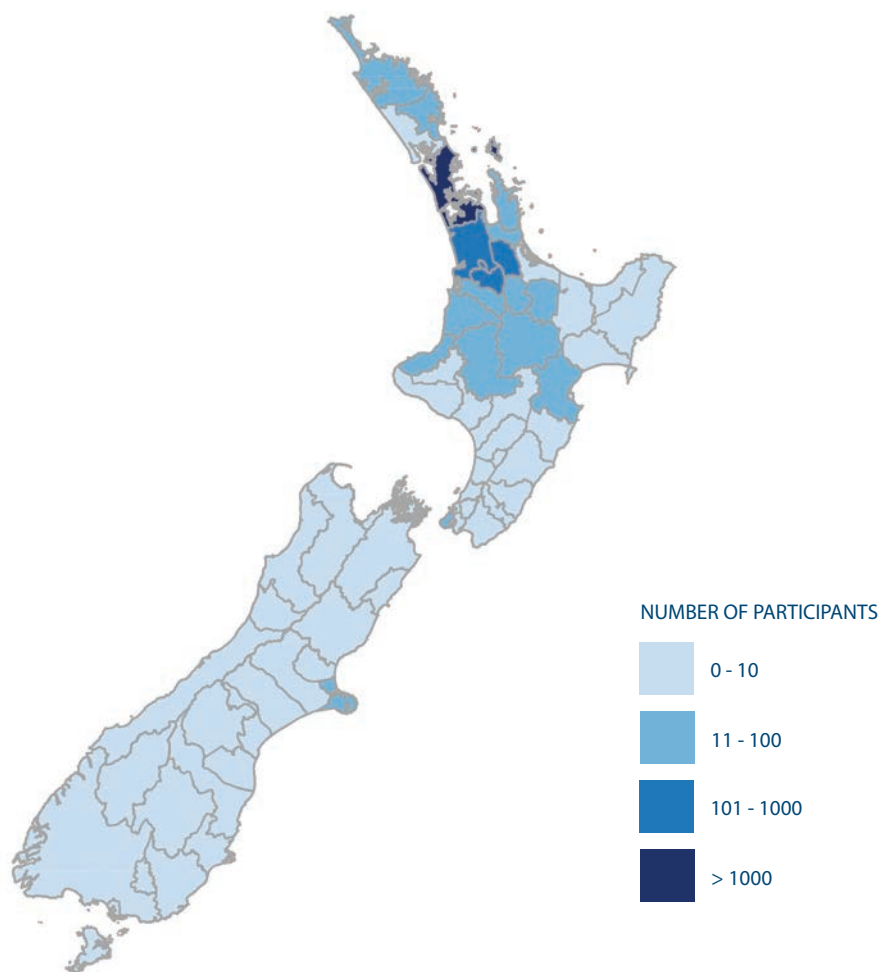
4.5 Around New Zealand and around the world

“Living in New Zealand is a real opportunity – thanks to the Rugby World Cup he now sings the national anthem in Māori.”

Although the original recruitment of the *Growing Up in New Zealand* cohort was focussed on pregnant women living in the geographical area defined by the Auckland, Counties-Manukau and Waikato District Health Boards, families continue to participate in the study even if they have moved out of this area. Cohort participants are now living throughout New Zealand as well as in many other countries around the world.

The location of cohort participants within New Zealand at two years of age is shown in Figure 16. Although the greatest density of participants is within the original recruitment area, there are over 300 participants who have moved out of this area and into another part of New Zealand by the age of two years. The 6103 families living in New Zealand that took part in the two year data collection wave are now spread throughout the North Island and the South Island.

Figure 16: Residence within New Zealand of *Growing Up in New Zealand* participants at two years of age*

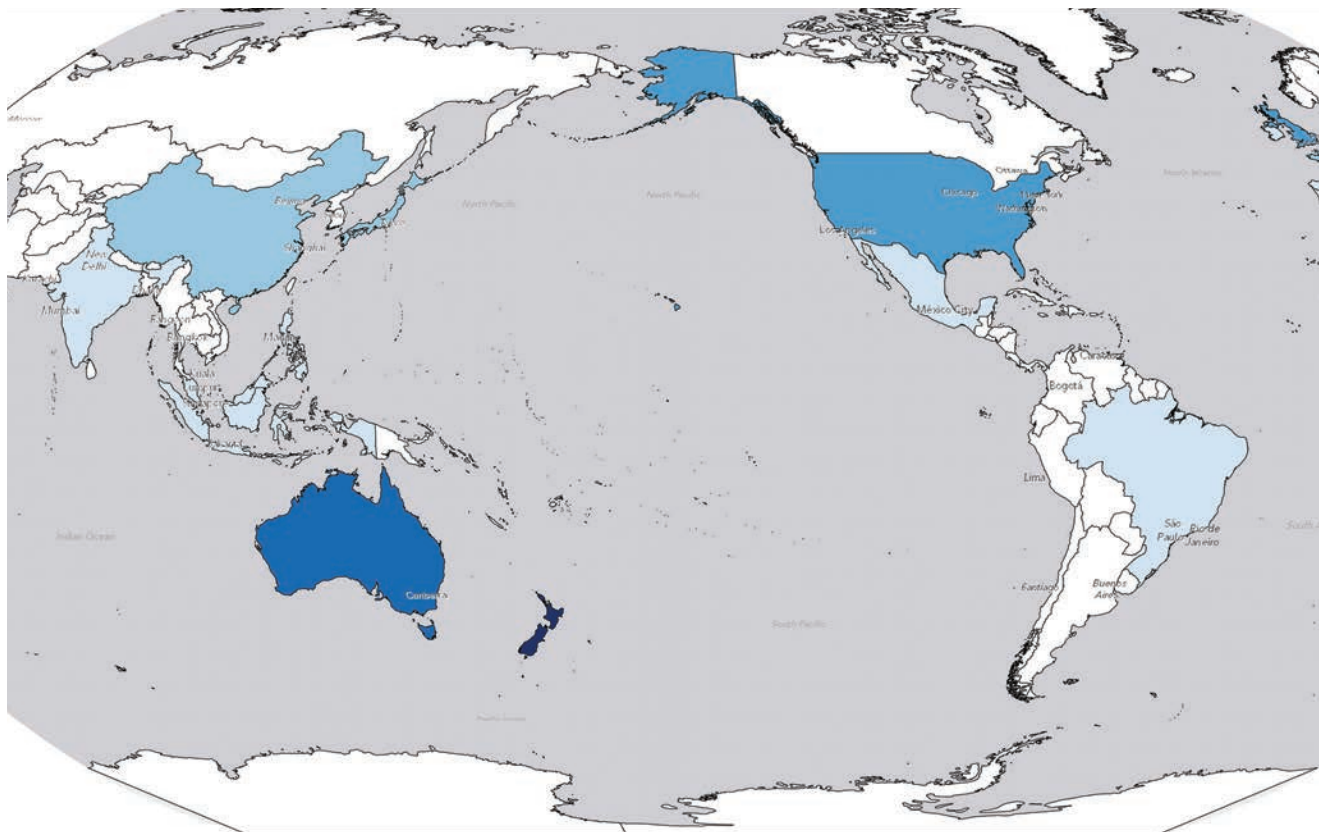


*Territorial Local Authority boundaries used

The location of cohort participants around the world at two years of age is shown in Figure 17. There were 139 cohort families living outside of New Zealand that contributed to the two year interviews. The majority of these participants were living in Australia (n= 90) at the time of the two year interview. Other participants were living throughout the world, including within Asia, the Pacific Islands, the Americas and across Europe.

"We have moved to a different country and are just trying to get settled and used to our new home."

Figure 17: Residence around the world of *Growing Up in New Zealand* participants at age two years



NUMBER OF PARTICIPANTS



5. Informal and formal society

The support systems for the children of Growing Up in New Zealand



"I have returned to work so just finding the balance to spend time with her has been hard".

Measuring the wellbeing of families and whānau, and the opportunities that families have to nurture the development of their children, requires an understanding of the support systems that contemporary New Zealand families can access and use effectively. Such support systems align to the informal societal component of the conceptual framework of *Growing Up in New Zealand* (friends, peers, neighbours) as well as the formal societal component (that includes educational, social and health-related institutions, community organisations and cultural support).

This section of this report considers financial resources for families with a description of maternal labour force status and household income. Aspects of the learning environment for children within their first 1000 days are also described, with examples of playing a musical instrument, reading books, hearing stories and interaction with media and technology.

Examples of the information collected by *Growing Up in New Zealand* on the quantity and quality of informal and formal early childhood education and care provisions is also described in this section. Government support and investment into early childhood education and care is significant, and further analysis of *Growing Up in New Zealand's* data in this area will contribute evidence to the development of effective, equitable and accessible education policy for children and their families. Information on access to primary health care for the *Growing Up in New Zealand* two year olds is also provided in this section as an example of an important formal public sector support for child health and development. Further analyses on the ability for children and their families to access health services as well as associations between specific illnesses, linkage to routine health data, and the physical, social and cultural context of development for children is underway.

"I love being at home with him instead of having to work."

Finally this section looks at aspects of cultural support for the *Growing Up in New Zealand* two year olds. Examples are provided of language development and activities and experiences for the cohort at this age. Further detailed data on the trajectories of social structures and cultural capital for this new generation of New Zealanders is possible utilising this unique data set.

5.1 Labour force status

Overall, 3322 mothers (53%) of *Growing Up in New Zealand* children (and 3583 partners, 94%) were in paid work when the *Growing Up in New Zealand* participants were two years old (Figure 18). This is a 44% increase from the 2306 mothers who were in paid work at nine months of age, and a 2% decrease from the 3666 partners who were in paid work when the children were nine months old.

Of those mothers who were in paid work when the children were two years of age, 2504 (75%) were paid employees and 167 (5%) were paid employees on parental leave. A further 16% (n=533) of the mothers in paid work were self-employed, with 145 of these employing others. Approximately 4% of mothers in paid work were working in a family business or on a family farm. On average, the mothers of the *Growing Up in New Zealand* two year olds were in paid work for 29 hours per week.

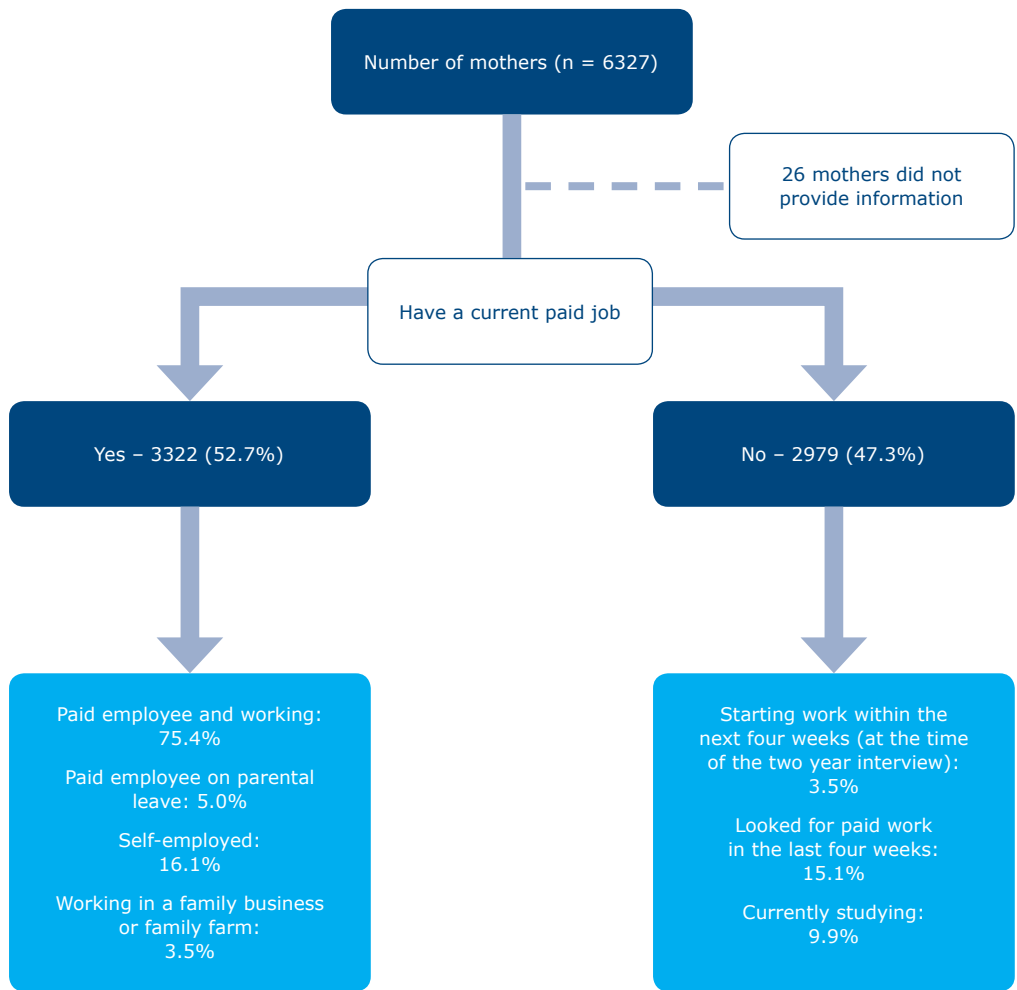
Of the 2979 mothers who were not in paid work by the time the children were two years of age, 105 (3.5%) of these had a job that they were starting within the next four weeks (at the time of the two year interview) and 450 (15%) had looked for paid work in the last four weeks.

A real policy challenge is balancing the need for families to take parental leave and spend time with young children, economic support, and returning to paid work.

For the 2830 mothers of the *Growing Up in New Zealand* children who provided reasons for not being in paid work by the time the children were two years of age, the most commonly provided reasons were family related (Figure 19): 79% (n=2246) of these said they preferred to look after their own children and 33% (n=924) said they were too busy with family to work outside the home. Additionally 29% (n=819) of the mothers not in paid work said that their partners earned enough to support the family and 10% (n=296) of mothers not in paid work said they were currently studying. Other commonly provided reasons for not being in paid work were related to either child care provision (18% of those not in paid work said it was not worthwhile with child care costs and 7% of those not in paid work said they could not get suitable child care) or job flexibility (12% of those not in paid work said they could not find a job with sufficient flexibility).

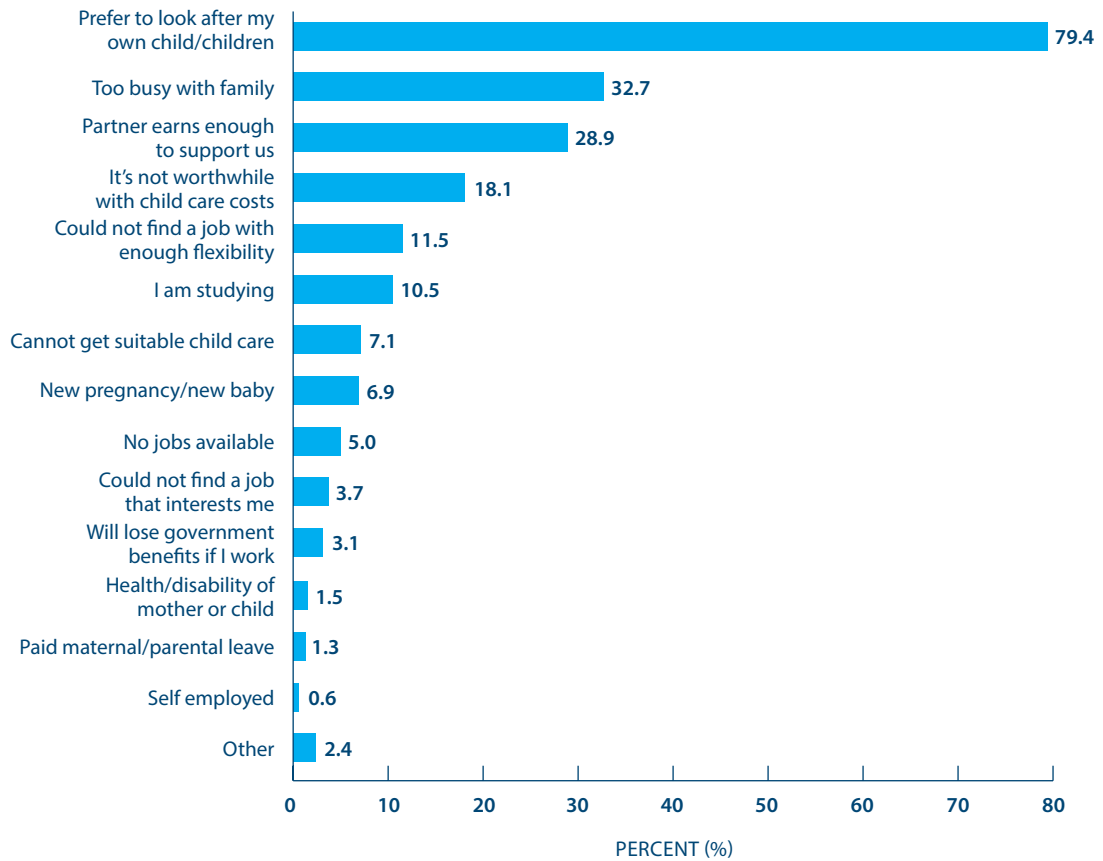
“Being a good parent is very important to me so I worry about balancing work and study and looking after the children. I would rather be at home but I need to develop my career.”

Figure 18: Labour force status of the mothers of the *Growing Up in New Zealand* children at two years of age



Supporting those who are not in education, employment, or training and who are caring for children is a current policy focus.

Figure 19: Reasons for why mothers of two year old children were not in paid work *



*Includes multiple responses therefore percentages will total to more than 100%.

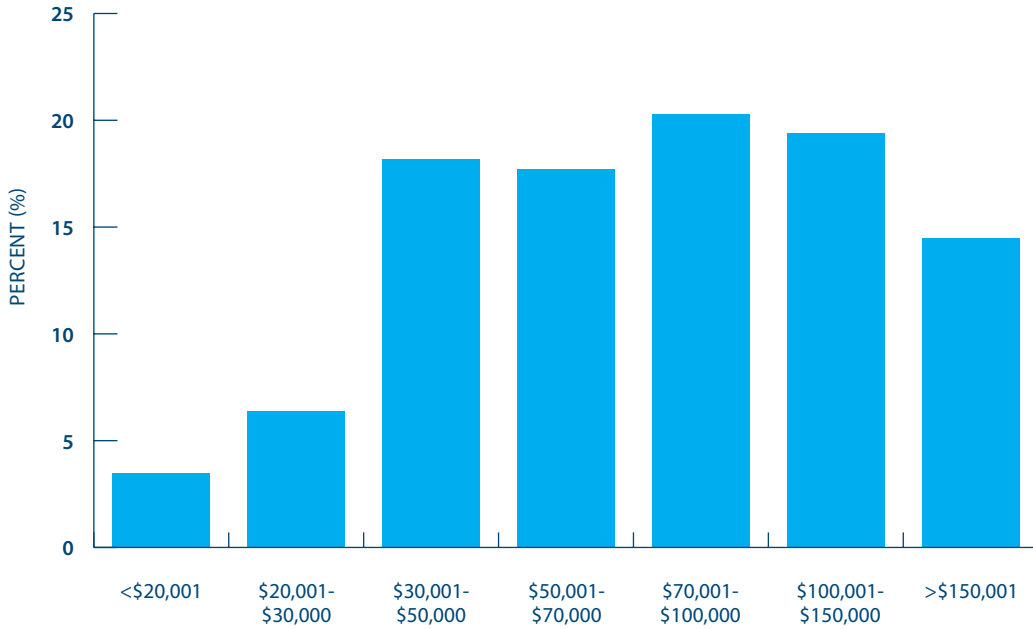
5.2 Household income

"A real highlight has been getting enough money to buy the children things."

Figure 20 shows the distribution of the before tax household income for the *Growing Up in New Zealand* families over the 12 months prior to their two year interview. The most common household income range (for 20% of the families) was \$70,001 to \$100,000, followed by \$100,001-\$150,000 (19% of families).

Twenty-six percent (n=1645) of households received income from only one source, whereas 40% (n=2538) of households received income from two sources, 22% (n=1406) from three, 8% (n=509) from four sources and around 3% (n=184) of households received income from five or more sources. A number of different income measures (personal and household, equivalised and in relation to household expenditure) have been collected over time within *Growing Up in New Zealand*. Further detailed analysis of the income measures for *Growing Up in New Zealand* families, and the impact of this on child outcomes, will soon be possible.

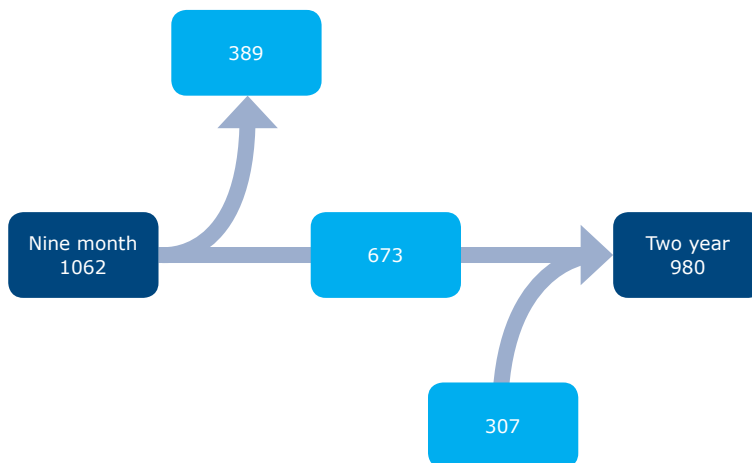
Figure 20: Household income over the 12 months prior to the two year interview



An example of the benefit of longitudinal data from the same participants can be seen when comparisons are made between the number of households receiving an income tested benefit (including unemployment benefit, sickness benefit, domestic purposes benefit, invalids benefit) at the nine month interview and at the two year interview (Figure 21). Although the overall proportion of households receiving an income tested benefit has not changed substantially between nine months and two years, there is shift in and out of these groups, with 389 households who were receiving an income tested benefit at nine months no longer receiving this at two years, and 307 households who were not receiving an income tested benefit at nine months now receiving it at two years. This again shows the importance of longitudinal data in understanding the dynamic nature of the context within which child development occurs.

“The lack of money stops us from doing things or buying things for her or us as a family.”

Figure 21: Change in income tested benefit receipt between nine months and two years*



*Exit arrows indicate households who stopped receiving an income tested benefit between data collection waves, and entry arrows indicate households who started receiving an income tested benefit between data collection waves.

Growing Up in New Zealand is measuring changes to families resources, service access and activities across the recent period of welfare reform.

5.3 Interaction with music, books and technology

Within *Growing Up in New Zealand*, many measures of the influences on children’s learning and education (including cognitive, social and emotional development) have been determined. For the purposes of this report the focus is on providing examples of the children’s interaction with music, books and technology.

Music, books and stories

“When I read books to him there is a stunned silence and wonder.”

The use of musical instruments, along with the frequency with which the two year old children had stories told to them and books read to them, as reported by mothers and their partners, is summarised in Table 02.

Approximately one third of the two year old children played with musical instruments at least once a day. There were 1529 (24%) of children that played with musical instruments once a week or less. Partners reported similar frequencies for the use of musical instruments by their two year old child when compared to mother report.

Approximately two thirds of mothers reported reading books to their child at least once a day, 38% (2365) reported reading books to their child several times a day, and 29% (1837) reported reading books to their child once a day. There were 875 mothers (14%) who read books to their child once a week or less. In contrast, approximately half of partners reported reading books to their child at least once a day, 19% (n=731) reported reading books to their child several times a day, and 31% (n=1164) reported reading books to their child once a day. There were 883 partners (23%) who read books to their child once a week or less.

Supporting access to digital technologies for children living in low decile areas is a policy approach that supports parents to engage with their children’s education.

The frequency of telling of stories (excluding reading books) to two year old children was similar for both mothers and their partners. Mothers told stories to their child once a day or several times a day for 19% of the cohort (1213 children). Mothers told stories to their child once a week or less for 3562 (57%) children. Partners told stories to their child once a day or several times a day for 13% of the cohort (480 children). Partners told stories to their child once a week or less for 2439 (64%) children.

Table 02: Playing musical instruments, hearing stories and reading books at two years of age

	Frequency that children play with musical instruments (real or toy versions) n (%)		Frequency that mothers or their partners tell stories to their two year old child (not including reading books) n (%)		Frequency that mothers or their partners read books with their two year old child n (%)	
	Mothers (n=6305)	Partners (n=3891)	Mothers (n=6305)	Partners (n=3891)	Mothers (n=6305)	Partners (n=3891)
Several times a day	1014 (16.1)	704 (18.4)	332 (5.3)	89 (2.3)	2365 (37.5)	731 (19.1)
Once a day	1110 (17.6)	648 (17)	881 (14)	391 (10.2%)	1837 (29.1)	1164 (30.5)
Several times a week	2638 (41.8)	1363 (35.7)	1525 (24.2)	900 (23.6%)	1225 (19.4)	1042 (27.3)
Once a week	1075 (17)	730 (19.1)	1378 (21.9)	971 (25.4)	561 (8.9)	474 (12.4)
Seldom or never	454 (7.2)	335 (8.8)	2184 (34.6)	1468 (38.4)	314 (5.0)	409 (10.7)

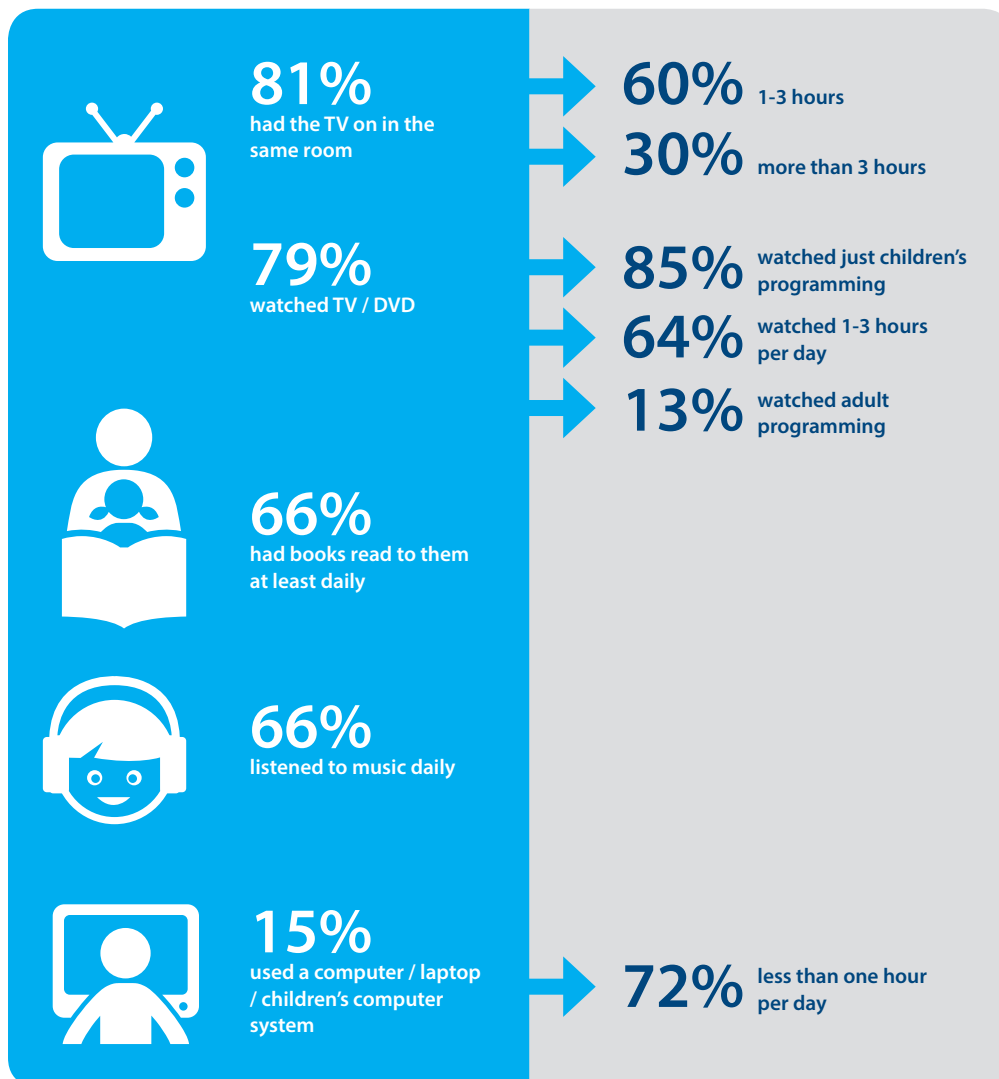
Technology

Exposure to television, DVDs and technology was determined for the *Growing Up in New Zealand* children at two years of age by maternal report of exposure during the previous weekday. Of all the *Growing Up in New Zealand* children, 81% (n=5084) had spent time in a room where the TV was switched on, whether or not they were watching it. This typically occurred for 1-3 hours (for 60% of the cohort), or more than 3 hours (for 30% of the cohort).

Of all the cohort children at their two year old *Growing Up in New Zealand* interview, 21% had not watched any television, DVDs, videos or similar (Figure 22). Of the remaining children (n=4829), information about duration and content of TV/DVD watching was provided. The average time spent watching TV/DVDs on the previous weekday was 1.6 hours (96 minutes) and the median was 1 hour. The majority of children who had watched TV/DVDs on the previous weekday had watched between one and three hours per weekday (64%). Approximately 28% of children had watched less than one hour and 9% of children had watched more than three hours of TV/DVDs on that weekday.

"He's learning a lot from the TV – while he is watching TV he can answer all the questions."

Figure 22: Technology, books and music at two years of age



"Her eyes are a magnet to the TV."

There are many recommendations available for families regarding aspects of early life such as childhood nutrition, physical activity and TV time. Growing Up in New Zealand describes the reality of contemporary family life and helps determine the best way to support families to meet such guidelines.

“Trying to cut his TV hours down is a real challenge.”

Of the children that had watched TV during the previous weekday, almost 85% (n=4095) had only watched children’s television programming (including free-to-air and pay TV, and children’s TV programmes on DVD). The most commonly watched programmes by two year olds were The Wiggles, Mickey Mouse Clubhouse and Thomas the Tank Engine.

Of the children that had watched some TV during the previous weekday, approximately 13% (n=621) had watched ‘grown-up’ television programmes on free-to-air or pay TV.

Approximately 15% (n=950) of the children in the cohort had spent time using a computer or laptop (including children’s computer systems such as Leapfrog) on the previous weekday. This was most usually (75%) for less than an hour.

A total of 311 children in the cohort (5%) had spent time playing with an electronic gaming system on the previous weekday, typically (72%) for less than one hour. Over two thirds of all cohort children (66%, n=4151) had spent time listening to music using (for example) CDs, iPods, or MP3 players on the previous weekday.

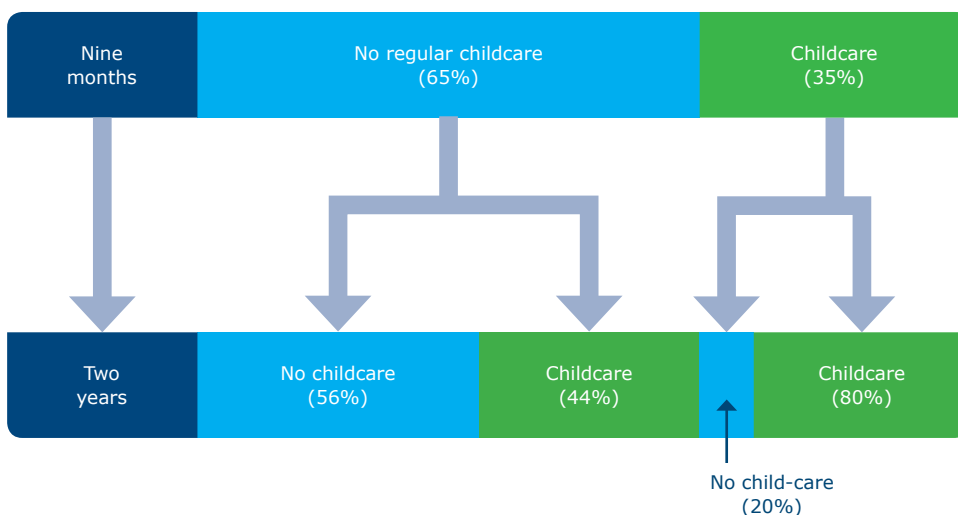
Further analyses to examine the total amount of time spent interacting with multiple types of technology and media, along with interactions between media use, nutrition and physical activity are underway.

“I am so proud of her that she started day care before she was one and really loves it.”

5.4 Early childhood education and care arrangements

At two years of age, 56% of children were being looked after regularly each week by someone other than their parents. This had increased from the 35% of children in regular formal or informal early childhood education and care at nine months of age. Of those children who were not in regular early childhood education and care at nine months, 44% were now in some form of early childhood education and care at two years of age (Figure 23).

Figure 23: Regular childcare (formal and informal) arrangements at nine months and two years of age

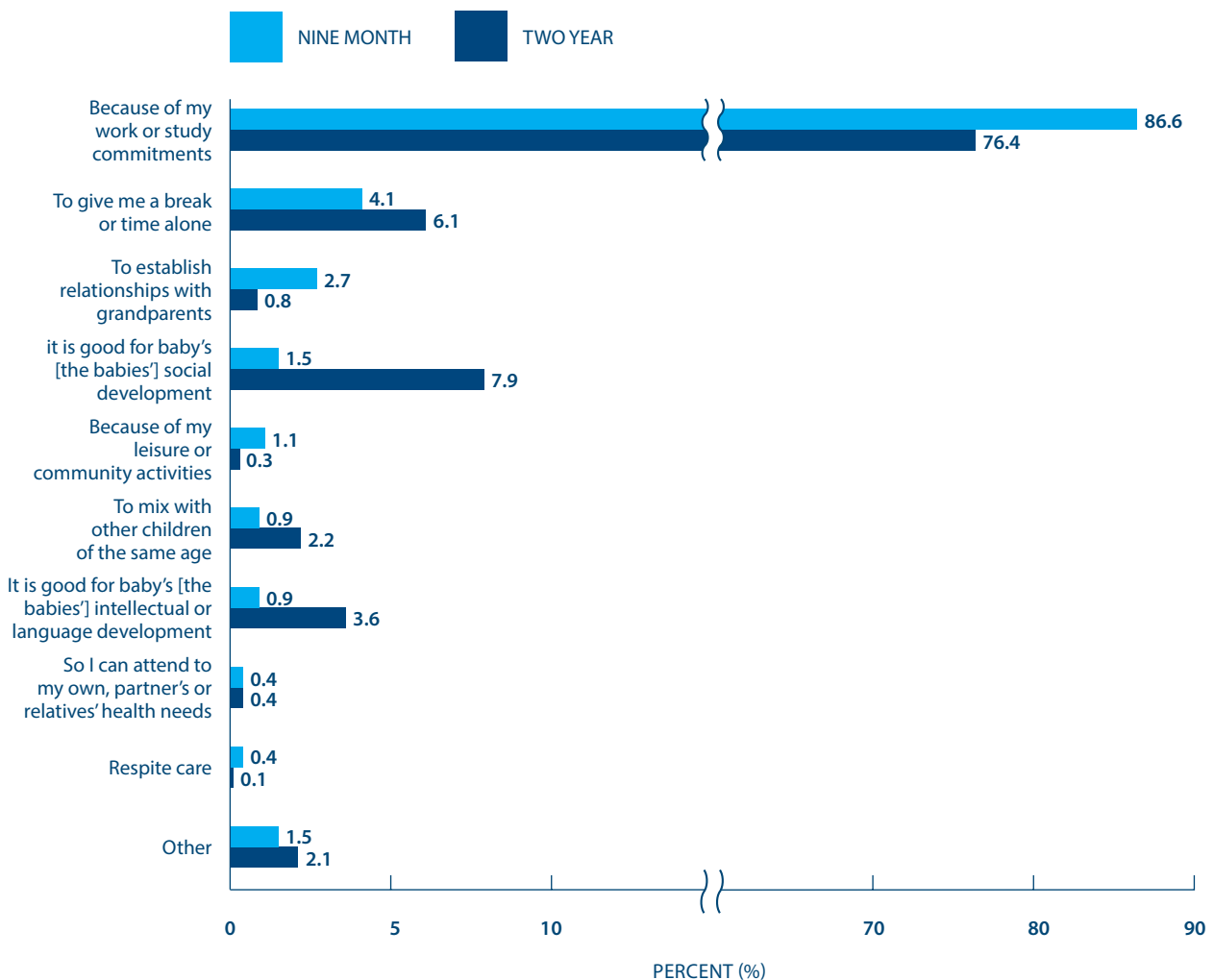


Participation in formal early childhood education is a current area of policy focus in New Zealand.

A summary of reasons for using early childhood education and care is provided in Figure 24. The main reason why children were in regular early childhood education and care at two years of age were similar to that described at nine months of age, and was predominantly (for 87%) because of the work and study commitments of their mothers. Compared to nine months of age, an increased proportion of children were in early childhood education and care arrangements in order to improve their social, intellectual or language development, or to give their mothers a break or time alone. A total of 12% of mothers provided these as reasons for using regular early childhood education and care at two years of age, compared to the 2.4% of mothers who provided these as reasons for using regular early childhood education and care at nine months of age.

"I am trying to make myself strong and trust the day care."

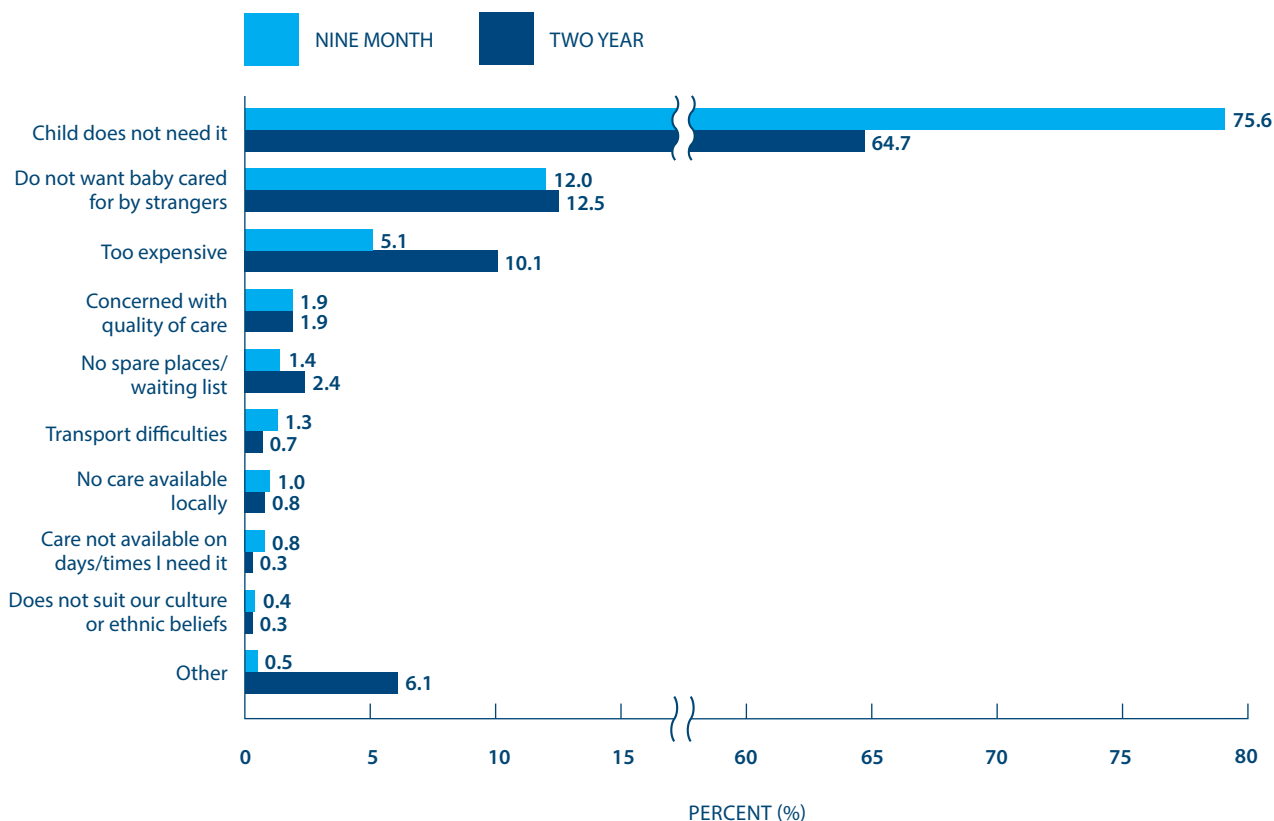
Figure 24: Reasons for child care (formal and informal) at nine months and two years



"He is really enjoying Kōhanga reo, and he settled in within a day."

For the 44% of two year olds (n=2783) that were not in regular child care arrangements at two years of age, the main reason for this was also similar to that described at nine months of age (Figure 25), and was predominantly (for 74%) because the child did not need care.

Figure 25: Reasons for not using child care (formal and informal) at nine months and two years



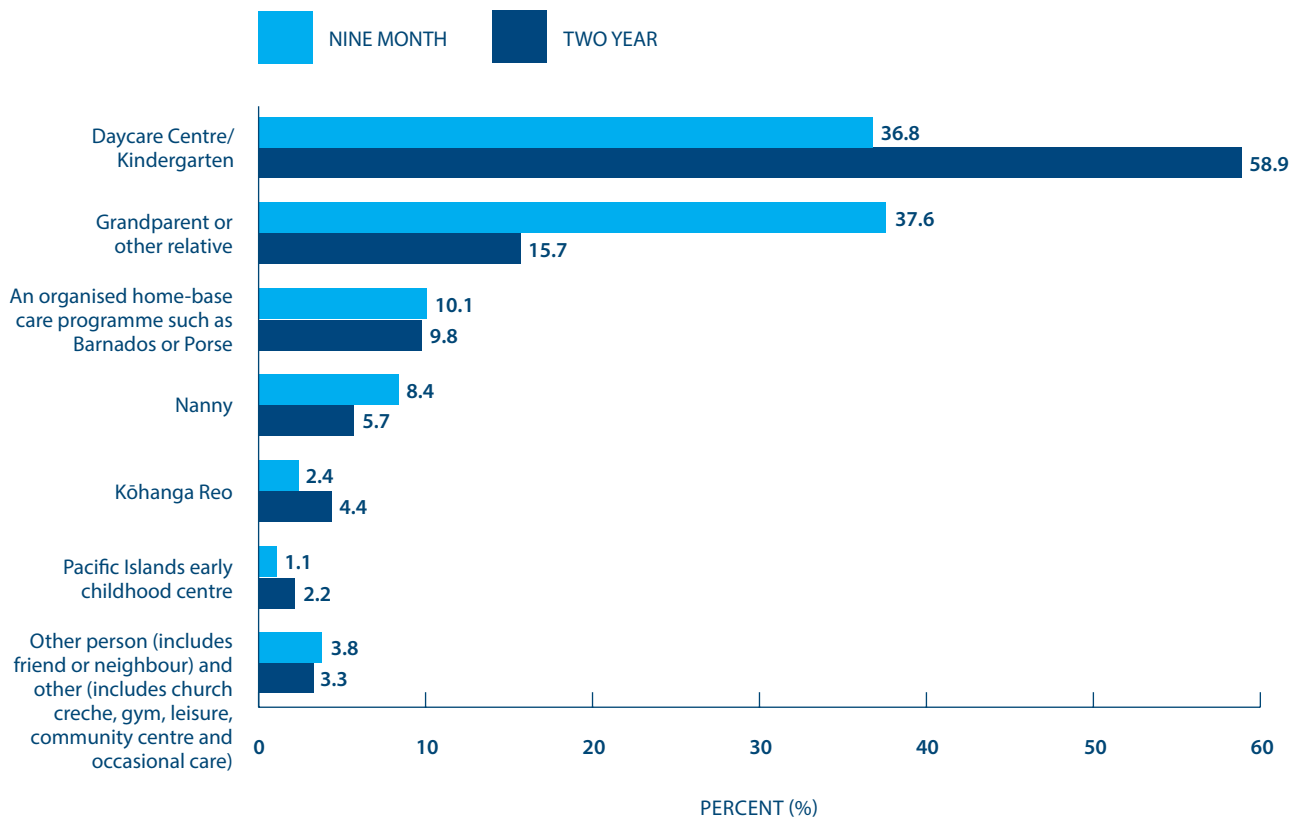
"It was hard for her to start kindergarten and to move from the babies room to the older children – she has been quite sick with colds over the winter."

The main care arrangement for each two year old was described by their mothers, and defined as the care that the children had for the most time each week. Over half (59%, n=1758) of two year olds had their main child care in a formal English-language day care centre, preschool or kindergarten, an increase from 37% of children at nine months. An increased proportion of two year olds (compared to at nine months) also had their main child care in a non-English language early childhood education and care centre or kindergarten with 4% (n=132) in Kōhanga reo and 2% (n=64) in a Pacific Islands language early childhood centre at two years. The biggest drop in proportion of main child care type between nine months and two years was seen in the use of grandparents or other relatives as carers (37% or n=621 at nine months and 15% or n=469 at two years). Fewer children were also looked after by a nanny as their main care provider at two years compared to at nine months of age. A similar proportion of children at age two years had their main child care with an organised home-based provider such as PORSE or Barnados (Figure 26).

The average length of time that two year olds were spending in their main child care type was 24 hours per week. The average cost of childcare per week was \$160 (median \$144). A childcare subsidy was received by 879 families (23% of the families using childcare). Approximately 93% (5531 families) indicated that they intended to use the government's scheme for 20 hours of subsidised childcare ("20 Hours ECE") at ages three and four years.

"He's coping with day care really well."

Figure 26: Main child care type (formal and informal) at nine months and two years



Primary care is a critical health service for young children. Current health policy in this area focuses on health IT, early intervention and preventative health measures to ensure families stay well.

5.5 Access to services – focus on primary health care

Well Child Tamariki Ora access

The number of children who had received their Well Child/Tamariki Ora checks, and by whom these checks were conducted, is described in Table 03. Nearly all of the children in the cohort had received their 8 to 10 month checks (98%) and their 15 month checks (95%). As described by maternal report, fewer children had received their 21-24 month check (33%), the timing for which would have overlapped with their *Growing Up in New Zealand* interview. Most Well Child/Tamariki Ora checks were conducted by Plunket/Well Child nurse at each time point, although this proportion dropped between the 8-10 month check and the 21-24 month check. The proportion of children seeing their GP or GP practice for their Well Child/Tamariki Ora checks increased slightly between the 8 to 10 month check and the 21 to 24 month check, as did the proportions of children seeing a Public Health Nurse, Māori Health Provider, or Pacific Health Provider.

Table 03: Providers of Well Child/Tamariki Ora checks between nine months and two years of age

	8 – 10 months (n=6184) n (%)	15 months (n=6036) n (%)	21 – 24 months (n=2063) n (%)
Plunket/Well Child nurse	5375 (91.2)	5009 (88.3)	1717 (86.5)
Public Health Nurse	87 (1.5)	104 (1.8)	38 (1.9)
Māori Health Provider	87 (1.5)	84 (1.5)	36 (1.8)
Pacific Health Provider	43 (0.7)	44 (0.8)	20 (1.0)
GP/GP Practice	565 (9.6)	743 (13.1)	238 (12.0)
Paediatrician/Specialist	21 (0.4)	26 (0.5)	11 (0.6)
Other	6 (0.1)	4 (0.1)	3 (0.2)

n= the number of children with completed Well Child/Tamariki Ora checks at each time point.

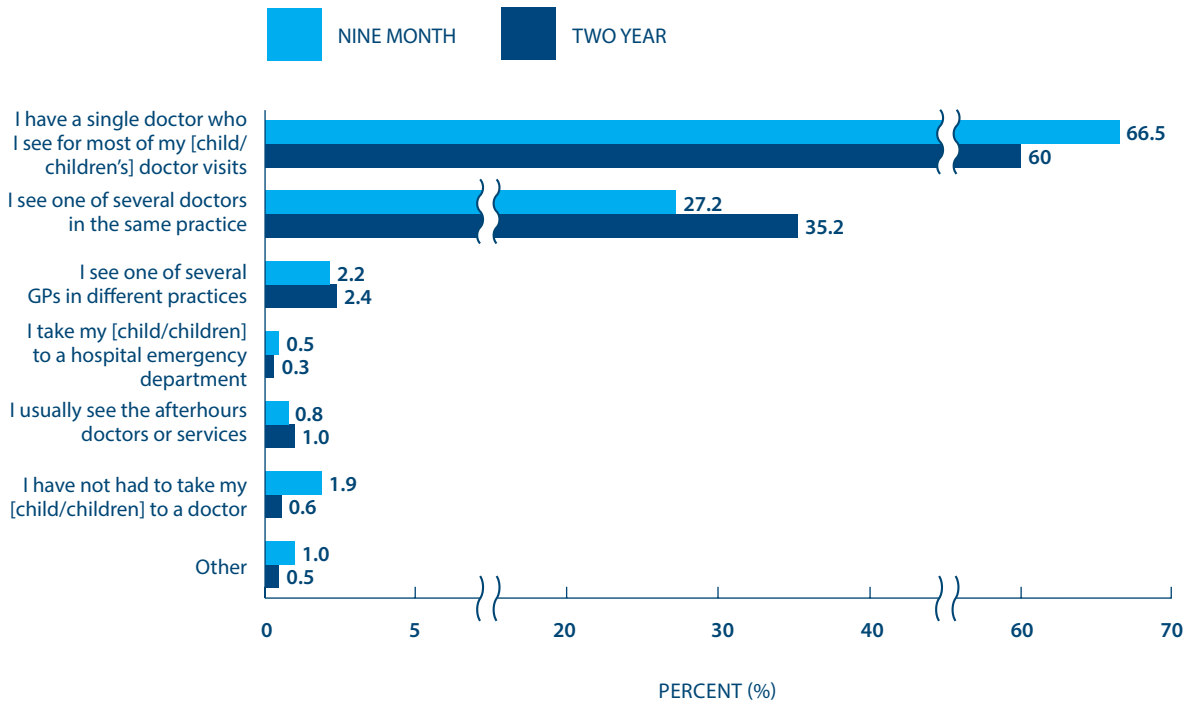
Primary medical care

“The highlight has been her health, and not visiting the doctor very often.”

The majority of *Growing Up in New Zealand* children had specific primary care access at age two years (Figure 27). Most children (n=3779, 60%) were taken to a single doctor within a single GP practice when requiring health care. A further 35% (n=2216) visited one of several doctors within the same GP practice. In comparison to nine months, a similar proportion of children accessed a specific GP practice – either with the same doctor, or with one of several doctors in the same practice. However at two years, more children (compared to at nine months) are being taken to one of several doctors in the same practice and fewer children are being taken to a single doctor at a specific practice (Figure 27).

At two years of age, a small number (n=85, 1%) of children were likely to be taken to an after-hours service or a hospital emergency department as the first option when requiring primary health care. Notably, the number of children in this situation for primary care is unchanged from the nine month data collection wave. Also unchanged between nine months and two years is the proportion of children being taken to several GPs in different practices.

Figure 27: Primary care access type at nine months and two years



Most children (87%) were attending the same GP/GP practice at two years as when they were nine months old. However, 13% of families had changed GP at least once, and 3% changed GP at least twice between the age of nine months and two years. For 92% (n=5769) of the children in the cohort, the health practitioner or service they were usually taken to was the same one that the child's mother also saw when she required a doctor/GP.

There were a small, but important, number of families that have never had a GP or GP practice for their child (2.4%, n=154). The most common reason for this, as provided by the mothers of these children was that primary care was not needed (31%, n=47), or that the GP practice was not open when needed or it was too difficult to get an appointment (27%, n=41). Smaller numbers of these families stated that primary care was too far away (9%, n=13), too hard to get to (6%, n=9), or the family had changed address (5%, n=8). Only three of these families (2%) stated that visiting a GP with their two year old child was too expensive.

In addition to GP doctors, 1054 (17%) of children had seen an alternative complementary/alternative practitioners/traditional healer since they were nine months of age. The most common of these were osteopaths (n=327 children, 5%), naturopaths (n=229 children, 4%), chiropractors (n=227 children, 4%) and homeopaths (n=174 children, 3%).

"His health has been a challenge – when he is sick he is so unhappy."

Monitoring immunisation rates, improving access to primary health care, and enhancing the coordination of services such as Well Child/ Tamariki Ora are current policy targets to improve outcomes for children.

5.6 Access to cultural support – focus on language and activities

Policy that supports parents and caregivers, and ensures they are adequately resourced to fully participate in education, cultural and recreational activities and connected to their community will in turn support children's learning, development and health.

A unique feature of *Growing Up in New Zealand* is the explicit inclusion of a Culture and Identity domain within the data collection methodology. The historical longitudinal studies in New Zealand reflected the European population, and were conducted prior to the significant demographic shifts within New Zealand. In contrast to these studies, approximately one in three of the *Growing Up in New Zealand* children had at least one parent who was born outside of New Zealand. Importantly also, approximately one quarter of the *Growing Up in New Zealand* cohort children are expected (by their parents) to identify as Māori, and approximately one fifth as Pacific. Therefore this study provides a unique opportunity to inform a better understanding of the persistent inequities in outcomes across the life course for different sub-groups in New Zealand, particularly to target those inequities experienced by Māori and Pacific children and their families.

A number of specific measures have been collected that are relevant to indigenous cultural practices and outcomes as well as the many other cultural experiences of families with young children in New Zealand. In this section, the focus is on languages used by the children and their families, and activities undertaken by two year olds.

Languages understood or spoken by children

At age two years, there were 2514 children (40%) who understood two or more languages, and 431 children (7%) who understood three or more languages. English was understood by 6090 children (96%), te reo Māori by 763 children (12%), Samoan by 464 children (7%), Tongan by 302 children (5%) and Hindi by 258 children (4%). Figure 28 illustrates the variety of languages,

Figure 28: Illustration of languages understood by the *Growing Up in New Zealand* two year old children*



*English language excluded. Translation of 'Hello' into each relevant language, with font size proportional to frequency understood.

excluding English, understood by children in *Growing Up in New Zealand*, with the size of the word reflecting the frequency at which that language is understood by the cohort children.

Activities and experiences

Figure 29 illustrates the kinds of activities and experiences the children in *Growing Up in New Zealand* had taken part in by the time they were two years of age. By age two years, 6193 children (98%) had been to a park, 4773 (76%) to a library, 3384 (54%) to community galas or fairs, 2483 children (39%) to swimming lessons, and 986 (16%) children had been to an event on a marae.

This snapshot of activities and experiences provides a lively depiction of the context of early life in contemporary New Zealand.

Figure 29: Activities and experiences for the *Growing Up in New Zealand* two year olds*



*Font size proportional to frequency



6. Looking to the future



Growing Up in New Zealand now has longitudinal information gathered from before birth and from multiple informants, including the children themselves. This data, collected from the same families over time, adds significant value to the cross-sectional information, and is able to describe much more fully the impact of environmental exposures on child outcomes, the impact of accumulated exposure, as well as the characteristics that define risk, and those that define resilience in children. Some examples that illustrate the nature and importance of this longitudinal information are included in this report. Many further possibilities (beyond what was achievable at the time of preparing this report) exist: to explore in detail the influences of early life outcomes over the first 1000 days of life; to understand the implications of the data for a wider societal context; and to translate this understanding into policy and programmes that will contribute to improved developmental outcomes for a new generation of New Zealanders. Much of this work is already underway. Additional longitudinal and life course analysis approaches will become more appropriate when further longitudinal data is collected and subsequently integrated with that collected from the first 1000 days.

A primary vision of *Growing Up in New Zealand* is to create a valuable resource that:

- enables better understanding of the causal pathways that contribute to positive (and negative) developmental outcomes;
- allows policy makers across all sectors to inform the development of strategies that will optimise children's development;
- allows researchers from multiple domains to explore research questions that were not otherwise able to be explored; and
- honours the children and whānau who take part in this study as well as all future generations of New Zealanders.

Accordingly, the *Growing Up in New Zealand* data resource is made available to be used wisely and widely, while maintaining the privacy, confidentiality and confidence of our cherished participants. The antenatal data set from mothers and partners is already available, and by August 2014 the nine month data will also be made available for researchers to answer their own research questions, with the two year data set becoming available in due course. This formal data access process ensures that the value of the study currently realised by the *Growing Up in New Zealand* team and policy partners can be extended to other researchers and policy makers in New Zealand and internationally.

Further information about data access workshops and how to access *Growing Up in New Zealand* data is available at www.growingup.co.nz.

Future data collection waves are also planned or underway to continue the collection of longitudinal data. These data collection waves will increasingly focus on information provided by the child participant themselves, thus allowing the children of this study to contribute their own views and decision-making to the policy process. Our interviewers are currently in the field with the preschool data collection wave, when the *Growing Up in New Zealand* children are four-and-a-half years old. This data collection wave includes a face-to-face interview, as well as direct measures and observations of the children (such as anthropometric, behavioural, literacy and numeracy, and personal interactions). This data collection also gathers biological samples from the children for the first time in this study – exciting work which will further our understanding

of the reasons for the unacceptably high infectious (and non-infectious) disease burden faced by New Zealand children. The preschool data collection wave will also facilitate further understanding of how genes and other biological factors interact with a child's environments and contribute to the health and wellbeing of our children.

Ongoing data collection waves are expected to occur every two to three years from the preschool point onwards to ensure that important transition points are detailed, developmental trajectories continue to be described for our New Zealand children, and the best evidence is used to facilitate positive outcomes and equity. Within the next year we will also be launching data collection for "Who are Today's Dad's?" – a study aimed especially at the fathers of the children in *Growing Up in New Zealand*, when the participants are approximately six years old.

This document has provided examples of the highlights and challenges for the parents of our participants during the first 1000 days with their children, as told by them. These rich quotes that provide insight into the lives of our families have been moving, funny, sad, uplifting and humbling to read. We continue to deeply thank all our participants for their involvement in this study and for their openness, honesty and inspiration. It is a true privilege to work with *Growing Up in New Zealand*, and to present 'Now we are Two: Describing our first 1000 days'.

Further surveillance and research regarding the biological and environmental conditions of Group A Streptococcus will help prevent rheumatic fever, an important target of current policy.



Growing Up in New Zealand publications

Growing Up in New Zealand Technical Report 1. 2013. Growing Up in New Zealand Calibration Protocol http://www.growingup.co.nz/pdf/gunz_calibration_working_doc_2013DEC.pdf

Ivory VC, Morton SMB, Schmidt J, Kingi TKR, Atatoa Carr PE. Capturing the capitals; a heuristic for measuring 'wealth' of NZ children in the 21st century. An application to the Growing Up in New Zealand longitudinal cohort. 2013. In Banwell C, Uljaszek S, Dixon J (Eds) *When Culture Impacts Health: Global Lessons for Effective Health Research*. Elsevier Science, San Diego

Morton SMB, Atatoa Carr PE, Bandara DK, Grant CC, Ivory VC, Kingi TR, Liang R, Perese LM, Peterson E, Pryor JE, Reese E, Robinson EM, Schmidt JM, Waldie KE. 2010. Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Report 1: Before we are born. Auckland: Growing Up in New Zealand. ISBN: 978-0-473-17889-5 (electronic), ISBN: 978-0-473-17974-8 (print)

Morton SMB, Atatoa Carr PE, Grant CC, Robinson EM, Bandara DK, Bird A, Ivory VC, Kingi TK, Liang R, Marks EJ, Perese LM, Peterson ER, Pryor JE, Reese E, Schmidt JM, Waldie KE, Wall C. 2012. Cohort Profile: Growing Up in New Zealand. *International Journal of Epidemiology*. 10.1093/ije/dyr206

Morton SMB, Atatoa Carr PE, Grant CC, Robinson ER, Bird A, Waayer D. How Do You Recruit and Retain a Pre-Birth Cohort? Lessons Learnt From Growing Up in New Zealand. *Evaluation and the Health Professions*. 2012 DOI: 10.1177/0163278712462717

Morton SMB, Atatoa Carr P, Grant CC, Lee A, Bandara DK, Mohal J, Kinloch J, Schmidt J, Hedges M, Ivory V, Kingi TK, Liang R, Perese, Peterson E, Pryor J, Reese E, Robinson E, Waldie K, Wall C. 2012 Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Report 2: Now we are born. University of Auckland, Auckland

Morton SMB, Bandara DK, Robinson EM, Atatoa Carr PE. 2012. In the 21st Century, what is an acceptable response rate? *Australian and New Zealand Journal of Public Health*, 36: 2, 106-108

Morton SMB, Grant CC, Atatoa Carr PE. Too many left at risk by current folic acid supplementation use: evidence from Growing Up in New Zealand. *Australian and New Zealand Journal of Public Health*, 37(2), 190-191. doi:10.1111/1753-6405.12042

Morton SMB, Grant CC, Wall C R, Atatoa Carr PE, Bandara D K, Schmidt JM, Ivory V, Inskip HM, Camargo Jr CA. 2014. Adherence to nutritional guidelines in pregnancy: Evidence from the Growing Up in New Zealand birth cohort study. *Public Health Nutrition*, FirstView Article, 1-11. doi: 10.1017/S1368980014000482

Morton SMB, Ramke J, Kinloch J, Grant CC, Atatoa Carr P, Leeson H, Lee AC, Robinson E. Growing Up in New Zealand cohort alignment with all New Zealand births. In press Jan 2014, *Australian and New Zealand Journal of Public Health*

Morton SMB, Atatoa Carr PE, Bandara DK. The Status of Our Families: Evidence from Growing Up in New Zealand. In: Families and Whānau Status Report 2013. <http://www.familiescommission.org.nz/publications/research-reports/families-and-wh%C4%81nau-statusreport-2013>

Peterson ER, Schmidt J, Reese E, Lee AC, Atatoa Carr PE, Grant CC, Morton SMB "I expect my baby to grow up to be a responsible and caring citizen.": What are expectant parents' hopes, dreams and expectations for their unborn children? In Press 2014 *Family Matters*

Power C, Kuh D, Morton SMB. 2013. From developmental origins of adult disease to life course research on adult disease and aging: insights from birth cohort studies. *Annual Rev Public Health*, 34, 7-28. doi:10.1146/annurev-publhealth-031912-114423

Pryor J, Morton SMB, Bandara D, Robinson E, Grant CC. Pregnant partners: Fathers of the Growing Up in New Zealand children. In press Jan 2014 *Journal of Family Studies*

Shulruf B, Morton SMB, Goodyear-Smith F, O'Loughlin C, Dixon R. 2007. Designing Multidisciplinary Longitudinal Studies of Human Development Analyzing Past Research to Inform Methodology. *Evaluation and the Health Professions*, 30(3), 207-228

Notes

