

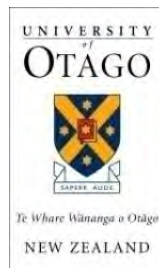
**THE DETERMINANTS OF HEALTH  
FOR CHILDREN AND  
YOUNG PEOPLE**

**IN THE MIDLAND REGION**





# The Determinants of Health for Children and Young People in the Midland Region



This Report was prepared for the Waikato, Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki DHBs by Elizabeth Craig, Rebecca Dell, Anne Reddington, Judith Adams, Glenda Oben, Andrew Wicken and Jean Simpson of the NZ Child and Youth Epidemiology Service.

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# INTRODUCTION AND OVERVIEW





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## Introduction

In August 2012, the Office of the Children's Commissioner's Expert Advisory Group (EAG) on Solutions to Child Poverty stated that *"Every child in New Zealand should have the opportunity to grow up without experiencing severe or persistent material deprivation [1]"*.

The EAG noted however that *"...it is not inevitable that children raised in poor families will experience poor outcomes. Some parents, families and neighbourhoods are very resilient. Providing support and services that invest in children, and build skills and the capacity of their parents and the community where they live, can lift children out of poverty [1]"*.

In developing policies to address these issues, the EAG noted that *"... recognition of the complex, multi-faceted nature of child poverty and the need for an integrated and comprehensive package of measures"* is required *"if solutions are to be effective"*. Further *"To be successful a strategy to reduce child poverty and to mitigate its effects will require strong leadership, effective policies and sustained effort [1]"*.

## Report Aims

This report, which focuses on the underlying determinants of health for children and young people in the Midland Region, provides an overview of many of the factors that would need to be addressed, should an integrated policy package, such as that outlined by the Office of the Children's Commissioner's EAG's, be developed.

The report, which is the second of a three part series on the health of children and young people in the Midland Region, fits into the reporting cycle as follows:

Year 1 (2011) The Health Status of Children and Young People

Year 2 (2012) The Determinants of Health for Children and Young People

Year 3 (2013) Children and Young People with Chronic Conditions and Disabilities

In addition to reviewing some of the determinants shaping children and young people's health and wellbeing, this report aims to assist District Health Board (DHB) staff to consider the roles other agencies play in influencing child and youth health outcomes. Further, it aims to assist those working locally, to utilise all of the available evidence when developing programmes and interventions to address child and youth health need.

## In-Depth Topics

When developing strategies to address the underlying determinants of health, understanding the role intergenerational factors play in shaping long term outcomes is crucial. The first of this year's in-depth topics thus focuses on services and interventions to improve outcomes for women experiencing multiple adversities during pregnancy. The early years are also a crucial period of personal, social and emotional development, with the second of this year's in-depth topics considering mental health issues in children. Specifically, the issues addressed by this year's in-depth topics include:

1. **Services and Interventions for Women Experiencing Multiple Adversities in Pregnancy:** This in-depth topic examines maternity care for women experiencing social adversity in pregnancy. It begins with an overview of adversities New Zealand women are exposed to during pregnancy, and the impact such adversities have on their pregnancy outcomes. A brief review of maternity services in New Zealand is then provided. The topic then focuses on five main areas of adversity: socioeconomic disadvantage, young maternal age, exposure to family violence, alcohol and other drugs, and maternal mental illness. There is an extensive international literature on addressing barriers to maternity care in women experiencing such adversities, and services and interventions aimed at improving maternal and child outcomes. Some models of care have been effective in reducing barriers to service access and improving outcomes. In New Zealand, there is a more limited evidence base assessing





barriers to care, or effective interventions, and it is recommended that new programmes and services should be thoroughly evaluated to ensure they are effective in improving outcomes and meeting the needs of pregnant women.

2. **Mental Health Issues in Children:** This in-depth topic focuses on mental health issues in children aged 0–14 years. It begins by stressing the importance of mental health issues to the overall burden of disease in New Zealand, as well as the rest of the world, and by noting that most adult mental illness has its origins in childhood. Some historical background to the development of the concepts of child mental disorder is provided, followed by a brief review of child mental health policy in New Zealand over recent decades. Many Government agencies have an interest in child mental health issues and service provision is divided among the health, education, social welfare and justice sectors. There is also increasing recognition of the need for mental health services for moderate as well as severe mental health issues, the value of prevention and early intervention, and the need for intersectoral collaboration. Among the most commonly seen mental health conditions in Child and Adolescent Mental Health Services are attention deficit hyperactivity disorder, oppositional defiant disorder and conduct disorder. This review provides an overview of the features, epidemiology and treatment of these conditions. There is an increasing acknowledgement of the importance of the mental health of very young children, so the review concludes with brief overview of this area.

## Report Sections and Indicators

As previously, this report is based on an *Indicator Framework* developed during the first three years of DHB reporting, with the majority of indicators in the *Socioeconomic and Cultural Determinants* and *Risk and Protective Factors* streams being updated in this year's edition. In addition, selected indicators from the *Individual and Whānau Health and Wellbeing* stream have been included, if they are themselves socioeconomically sensitive, or have the potential to underpin future health and wellbeing.

Drawing on these three streams, each of the indicators in this year's report has been assigned to one of four sections as follows:

1. **The Wider Macroeconomic and Policy Context:** Indicators in this section consider the wider economic and policy environment and include gross domestic product (GDP), income inequality, child poverty and living standards, unemployment, children reliant on benefit recipients and young people reliant on benefits.
2. **Socioeconomic and Cultural Determinants:** This section is divided into two parts, with the first considering factors related to household composition, including children living in sole parent households, and household crowding. The second considers education as a determinant of health, with indicators in this sub-section including early childhood education, enrolments in kura kaupapa Māori, educational attainment at school leaving, senior secondary school retention, stand-downs, suspensions, exclusions and expulsions, and truancy and unjustified absences.
3. **Risk and Protective Factors:** This section is also divided into two parts, with the first considering issues relevant to the Well Child/Tamariki Ora Schedule, including immunisation coverage and the uptake of Well Child/Tamariki Ora contacts (via Plunket and B4 School Checks). The second part considers a range of issues associated with substance use, including smoking in pregnancy, exposure to second-hand cigarette smoke, smoking in young people, and alcohol-related harm.
4. **Health Outcomes as Determinants:** This section is divided into three parts, with the first considering hospital admissions and mortality from a range of socioeconomically sensitive conditions. The second part considers children and young people's exposure to family violence and assault, with indicators including injuries arising from the assault, neglect or maltreatment of children, injuries arising from assault in young people, notifications to Child Youth and Family, and Police Family Violence investigations. Part

three then reviews mental health issues, including children and young people's access to mental health services, and suicide and self-harm.

## Evidence-Based Approaches to Intervention

As previously, each of the sections in this year's report concludes with a brief overview of local policy documents and evidence-based reviews which consider population level approaches to the prevention or management of the issue under review. **Appendix 1** provides an overview of the methodology used to develop these reviews. As previously, the quality and depth of evidence available varies considerably from indicator to indicator.

## Data Quality Issues and the Signalling of Statistical Significance

Because of the cancellation of the 2011 Census and concerns about extrapolating Census population estimate denominators beyond five years, in this section Statistics NZ population projections have been used to calculate rates from 2007 onwards. Because these projections are only available for a limited range of ethnic groups (Māori, Pacific and European/Other) and are unavailable by NZ Deprivation Index decile, the analyses in some sections are more limited than in previous years.

**Appendix 2** outlines the rationale for the use of statistical significance testing in this report and **Appendix 3** to **Appendix 5** contain information on the data sources used to develop each indicator. Readers are urged to be aware of the contents of these Appendices when interpreting any information in this report.

As outlined in **Appendix 2**, in order to assist the reader to determine whether tests of statistical significance have been used in a particular section, the significance of the associations presented has been signalled in the text with the words *significant*, or not *significant* in italics. Where the words *significant* or not *significant* do not appear in the text, then the associations described do not imply statistical significance or non-significance.



## Overview of the Determinants of Health for Children and Young People in the Midland Region

**Table 1** provides an overview of the indicators in this year's report. While the issues associated with each vary, a number of common themes emerge. Firstly, the challenging economic conditions seen nationally are reflected in the Midland DHBs' data, with unemployment rates remaining higher than in the mid 2000s, and with rates in the Bay of Plenty and Gisborne/Hawke's Bay Regions being higher than the New Zealand rate. In addition, the increases in the number of children reliant on benefit recipients seen during April 2008–2011 improved only marginally in this year's data.

However, within the region there was considerable variability, with hospitalisations for medical conditions with a social gradient being consistently higher than the New Zealand rate in the Bay of Plenty, Lakes DHB and Tairāwhiti, but lower than the New Zealand rate in the Waikato and Taranaki. Ethnic differences were evident in all DHBs however, with rates being higher for Māori than for European children.

Ongoing ethnic differences also remain in educational outcomes, with a lower proportion of Māori than European students leaving school with a University Entrance Standard in all Midland DHBs. Of significant concern was also the finding that maternal smoking rates during pregnancy and the postnatal period were significantly higher than the New Zealand rate in all Midland DHBs, with rates also being much higher for Māori than for European babies. In addition, youth suicide rates in Tairāwhiti were significantly higher than the New Zealand rate, with large increases in Tairāwhiti's rates being seen during the late 2000s.

Finally, patterns of access to mental health services are complex, with ethnic differences in children attending mental health services for conditions such as attention deficit hyperactivity disorder (ADHD) and conduct disorders nationally, being less marked than for young people attending services for conditions such as schizophrenia. In the Midland Region, access to mental health services for common childhood mental health diagnoses was significantly lower than the New Zealand rate in all DHBs except the Bay of Plenty. Such figures should not be taken as indicating the absence of disparities in need however, but rather potentially reflecting regional differences in the configuration of mental health services (vs. paediatric outpatient clinics) for this age group.

### Concluding Comments

This report provides an overview of the underlying determinants of health for children and young people in the Midland Region. It also aims to assist DHB staff to consider some of the other agencies influencing child and youth health locally. Such an intersectoral focus is necessary, as while addressing the large burden of avoidable morbidity and mortality experienced by Midland children and young people remains a formidable task. Collaborations with organisations such as Child Youth and Family to identify children at risk of non-accidental injury, or Housing New Zealand to improve the quality of housing stock, may provide more tangible starting points. Further, while addressing issues such as child poverty may be beyond of the scope of the health sector alone, some of the integrated policy responses outlined in the Evidence Base Review tables on **Page 62**, if implemented, would likely result in significant health gains for children and young people. Thus as previously, one of the key roles of the health sector remains ongoing advocacy, in order to ensure that each child and/or young person living locally is able to grow up to reach their full potential.





Table 1. Overview of the Determinants of Health for Children and Young People in the Midland Region

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
The Wider Macroeconomic and Policy Context			
Macroeconomic Indicators	GDP	<p>In New Zealand, GDP was either flat or decreased for six quarters from March 2008 to June 2009, before increasing again, for four quarters, from Sept. 2009 to Sept. 2010. GDP then declined by 0.1% in the Sept. quarter of 2010 and then remained static for a quarter, before increasing again, by 0.6% in the March quarter of 2011. Six consecutive quarters of growth were then seen, with GDP increasing by 0.6% in the June quarter of 2012.</p> <p>Economic activity for the year ending June 2012 increased by 2.0%, when compared to the year ending June 2011.</p>	
	Income Inequality	<p>During 1982–2011 income inequality, as measured by the P80/P20 ratio and Gini coefficient, was higher after adjusting for housing costs, as housing costs make up a greater proportion of household income for lower income, than for higher income households.</p> <p>The most rapid rises in income inequality occurred in the late 1980s and early 1990s. During the early–mid 2000s however, income inequality declined, as a result of the Working for Families package and improving employment.</p> <p>During 2009–2011, there was considerable volatility in income inequality, as a result of the differing size and timing of the impact of the global financial crisis and associated economic downturn on different parts of the income distribution.</p>	
	Child Poverty	<p>In New Zealand during 1988–1992, child poverty rates increased markedly, as a result of rising unemployment and the 1991 Benefit cuts. During 1994–1998, rates declined as economic conditions improved and unemployment fell. During 1998–2004, child poverty trends varied, depending on the measure used, but during 2004–2007 they again declined, following the roll out of the Working for Families package. Between 2009 and 2011, child poverty rates were more static.</p> <p>Child poverty rates were higher for younger children (0–11 vs. 12–17 years), larger households (3 or more children vs. 1 or 2 children), sole parent households and households where the adults were either workless, or where none worked full time.</p>	

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Macroeconomic Indicators	Living Standards	<p>In the 2008 Living Standards Survey, 51% of Pacific, 39% of Māori, 23% of “Other” and 15% of European children 0–17 years scored four or more on a composite deprivation index, which measured a range of “enforced lacks”, as did 59% of children whose family’s income source was a benefit.</p> <p>Children who scored four or more on the composite deprivation index had much higher exposures to household economising behaviours such as having to wear worn out shoes or clothing, sharing a bed or bedroom, cutting back on fresh fruit and vegetables and postponing doctors visits because of cost.</p>	
	Unemployment	<p>In the quarter ending June 2012, the seasonally adjusted unemployment rate rose to 6.8%, while seasonally adjusted unemployment numbers increased by 2,000.</p> <p>During June 1987–2012, unemployment rates were higher for younger people (15–19 years &gt; 20–24 years &gt; 25–29 years &gt; 35–39 years and 45–49 years), although no gender differences were evident for young people 15–24 years. Unemployment rates were also higher for those with no qualifications &gt; school qualifications, or post school but no school qualifications &gt; both post school and school qualifications.</p> <p>During 2008(Q1)–2012(Q2) unemployment rates were higher for Māori and Pacific, followed by Asian/Indian and then European people. During 2012(Q2), rates were 12.8% for Māori, 14.9% for Pacific, 8.2% for Asian/Indian and 5.2% for European people.</p> <p>During June 1987–2012, the highest proportion of people unemployed for 53+ weeks occurred in the early to mid 1990s, when unemployment rates were at their peak, while the highest proportion unemployed for only 1–4 weeks occurred in the mid to late 2000s, when unemployment rates were at their lowest. The proportion of people unemployed for more than 27 weeks however, has been increasing since June 2008.</p>	<p>Amongst the Regional Councils in the Midland Region during 2006(Q1)–2012(Q2), while there was considerable quarterly volatility, unemployment trends were similar to those occurring nationally, with all regions seeing rises in unemployment during 2009 and 2010. During 2009(Q1)–2012(Q2) unemployment rates in the Bay of Plenty and Gisborne/Hawke’s Bay were higher than the New Zealand rate, while rates in Taranaki were lower. Rates in the Waikato were similar to the New Zealand rate. During 2012(Q2) unemployment rates were 6.9% in the Waikato, 6.0% in the Bay of Plenty, 6.2% in Gisborne/Hawke’s Bay, and 3.8% in Taranaki.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Macroeconomic Indicators	Children Reliant on Benefit Recipients	<p>In New Zealand the proportion of children aged 0–18 years reliant on benefit recipients fell, from 24.9% in April 2000 to 17.5% in April 2008, before increasing again to 20.4% in 2011. By April 2012, 20.1% of all New Zealand children were reliant on a benefit recipient.</p> <p>A large proportion of the initial decline was due to a fall in the number reliant on unemployment benefit recipients. While the proportion reliant on DPB recipients also fell, the rate of decline was much slower, meaning that in relative terms, the proportion of benefit-dependent children reliant on DPB recipients increased, from 69.0% of benefit-dependent children in 2000, to 78.1% in 2012.</p> <p>In April 2012, the proportion reliant on a benefit recipient was highest for those 0–4 years of age. Rates then tapered off gradually during middle to late childhood and early adolescence, then very steeply after 17 years.</p>	<p>At the end of April 2012, there were 54,295 children aged 0–18 years who were reliant on a benefit recipient and who received their benefits from service centres in the Midland Region (Waikato (n=23,553), Bay of Plenty (n=12,490), Lakes DHB (n=8,451), Tairāwhiti (n=4,516) and Taranaki (n=5,285)). While the majority were reliant on DPB recipients, the number reliant on unemployment benefit recipients increased between April 2008 and April 2011.</p>
	Young People Reliant on Benefits	<p>During 2000–2012, there were large fluctuations in the number of young people aged 16–24 years reliant on a benefit, with rates falling from 164.4 per 1,000 in April 2000, to 73.8 per 1,000 in April 2008, before increasing again to 113.2 per 1,000 in April 2010. By April 2012, rates had again fallen to 102.4 per 1,000.</p> <p>When broken down by benefit type, the largest initial declines and subsequent increases in rates were seen for those receiving unemployment benefits. In contrast, the proportion reliant on the domestic purposes benefit (DPB) changed much more slowly, while the proportion reliant on invalid's and sickness benefits increased for most of 2000–2012.</p> <p>During April 2000–2012, DPB and unemployment benefit uptake was higher for Māori &gt; Pacific &gt; European/Other young people, while sickness and invalid's benefit uptake was higher for Māori than for European/Other young people. While invalid's benefit uptake for Pacific young people was lower than for European/Other young people throughout this period, sickness benefit uptake was only lower from April 2004 onwards.</p>	<p>In most of the DHBs in the Midland Region, the number of young people aged 16–24 years receiving a benefit increased between April 2007 and April 2011, with the most rapid increases occurring during 2009 and 2010. The numbers reliant on a benefit then fell slightly in most DHBs in April 2012. While the DPB was the most common benefit received in all DHBs, large increases were evident in unemployment benefit uptake between April 2008 and April 2011.</p>



Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Socioeconomic and Cultural Determinants			
Household Composition	Children in Sole Parent Households	<p>In New Zealand during 2006, 25.2% of children aged 0–14 years lived in sole parent households.</p> <p>Overall 42.6% of Māori and 30.8% of Pacific children lived in sole parent households, as compared to 18.1% of European and 15.9% of Asian children</p> <p>The proportion in sole parent households rose from 7.4% for those in the least deprived (NZDep decile 1) areas, to 47.1% for those in the most deprived (NZDep decile 10) areas.</p> <p>While the proportion in sole parent households increased with increasing NZDep deprivation for each of NZ's largest ethnic groups, at each level of deprivation, the proportion was higher for Māori, than for Pacific, than for Asian children. A lower proportion of European children lived in sole parent households than Pacific or Asian children in the least deprived (NZDep deciles 1–3) areas, although a higher proportion lived in sole parent households in the most deprived (NZDep deciles 9–10) areas.</p>	<p>In the Waikato during 2006, 27.0% of children aged 0–14 years lived in sole parent households, as compared to 31.4% in Lakes DHB, 29.4% in the Bay of Plenty, 36.3% in Tairāwhiti and 25.8% in Taranaki.</p> <p>In the Waikato, a higher proportion of Māori &gt; Pacific &gt; European and Asian children lived in sole parent households, while in Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki, a higher proportion of Māori than European children lived in a sole parent household.</p> <p>In all of the DHBs in the Midland Region, the proportion of children living in sole parent households increased with increasing NZDep deprivation, with the highest rates being seen in children living in the most deprived (NZDep decile 10) areas. Amongst those living in the most deprived areas, the proportion living in sole parent households was 50.0% in the Waikato, 49.9% in the Bay of Plenty, 54.4% in Lakes DHB, 53.0% in Tairāwhiti and 53.6% in Taranaki.</p>
	Household Crowding	<p>In New Zealand during 2006, 16.5% of children and young people aged 0–24 years lived in a crowded household.</p> <p>Overall, 50.1% of Pacific and 27.8% of Māori children and young people lived in crowded households, as compared to 22.8% of Asian and 5.8% of European children and young people.</p> <p>The proportion of children and young people living in crowded households increased from 2.8% for those in the least deprived (NZDep decile 1) areas, to 42.4% for those in the most deprived (NZDep decile 10) areas</p> <p>While the proportion of children and young people living in crowded households increased with increasing NZDep deprivation for each of New Zealand's largest ethnic groups, at each level of deprivation, the proportion was higher for Pacific &gt; Asian and Māori &gt; European children and young people.</p>	<p>In the Waikato during 2006, 15.6% of children and young people lived in crowded households, as compared to 18.8% in Lakes DHB, 16.4% in the Bay of Plenty, 23.3% in Tairāwhiti and 10.7% in Taranaki.</p> <p>A higher proportion of Waikato Pacific &gt; Māori &gt; Asian &gt; European children and young people lived in crowded households, while in Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki a higher proportion of Māori than European children and young people lived in crowded households.</p> <p>In all of the DHBs in the Midland Region during 2006, the proportion living in crowded households increased with increasing NZDep deprivation, with the highest rates being seen in those from the most deprived (NZDep decile 10) areas. Amongst those from the most deprived areas, the proportion living in crowded households was 37.2% in the Waikato, 39.4% in the Bay of Plenty, 36.3% in Lakes DHB, 37.4% in Tairāwhiti and 26.2% in Taranaki.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Education: Knowledge and Skills	Early Childhood Education	<p>During 2000–2011, the number of enrolments in early childhood education (ECE) increased by 26.1%. Changes varied by service type, with enrolments in Education and Care increasing by 59.9% and enrolments in Home Based Networks by 101.0%. In contrast, enrolments in Te Kōhanga Reo decreased by 13.5%, enrolments in Kindergarten by 19.4% and enrolments in Playcentre by 4.4%</p> <p>The average number of hours spent in ECE increased for all service types during 2000–2011, with the exception of Playcentres.</p> <p>The proportion of new entrants reporting participation in ECE prior to school entry also increased, from 90.3% in 2001 to 94.7% in 2011. While prior participation in ECE remained higher for European &gt; Asian &gt; Māori &gt; Pacific children, prior participation increased for all ethnic groups during 2001–2011.</p> <p>During 2011, 18.0% of children attending schools in the most deprived (decile 1) areas had not attended ECE prior to school entry, as compared to only 1.0% of children attending schools in the least deprived (decile 10) areas.</p>	<p>During 2001–2011, prior participation in ECE amongst school entrants increased in all DHBs in the Midland region, with prior participation rates in the Waikato and Bay of Plenty being similar to the New Zealand rate, while rates in Lakes DHB and Tairāwhiti were generally lower. Prior participation in Taranaki was slightly higher than the New Zealand rate during the mid to late 2000s.</p> <p>In the Waikato during 2001–2011, prior participation in ECE was generally higher for European children than for Māori or Pacific children, while in Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki, rates were higher for European than for Māori children.</p>
	Enrolments in Kura Kaupapa Māori	<p>Kura kaupapa Māori are schools where the teaching is in the Māori language and the school's aims, purposes and objectives reflect the Te Aho Matua philosophy. Kura teina were initiatives by communities wishing to develop a kura kaupapa Māori, which had prepared a business case and been formally accepted by the Ministry of Education into the establishment process. They ceased to exist after 2010.</p> <p>In New Zealand since 1992, there has been a 4.5-fold increase in the number of kura kaupapa Māori and kura teina, with numbers increasing from 13 in 1992, to 72 in 2011. The most dramatic increases occurred during the 1990s however, with the rate of growth flattening off since then.</p>	<p>In the Midland Region during 2011, there were 35 kura kaupapa Māori, which between them enrolled a total of 2,833 students (Kura kaupapa Māori: Waikato 11, Bay of Plenty 9, Lakes DHB 5, Tairāwhiti 7, Taranaki 3; Students: Waikato 1,055, Bay of Plenty 612, Lakes DHB 583, Tairāwhiti 443, Taranaki 140).</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Education: Knowledge and Skills	Educational Attainment at School Leaving	<p>During 2011, 16.2% of students left school with no formal qualifications, while 83.8% left with NCEA Level 1 or above, 71.8% left with NCEA Level 2 or above and 45.4% attained a University Entrance (UE) standard. While the proportion leaving with no formal qualifications declined during 2009–2011, the proportion attaining a UE standard increased.</p> <p>During 2009–2011, a higher proportion of Māori &gt; Pacific &gt; European &gt; Asian students left school with no formal qualifications, while a higher proportion of Asian &gt; European &gt; Pacific &gt; Māori students attained NCEA Level 1 or above, NCEA Level 2 or above, or a UE standard. During this period, the proportion of students with no formal qualifications declined, while the proportion attaining a UE standard increased for all ethnic groups.</p> <p>During 2011, while the proportion of students achieving a UE standard increased with increasing school socioeconomic decile, at each level of socioeconomic deprivation a higher proportion of Asian &gt; European &gt; Pacific and Māori students attained a UE standard.</p>	<p>In the Waikato during 2011, 17.1% of students left school with no formal qualifications, compared to 15.8% in Lakes DHB, 13.9% in the Bay of Plenty, 18.8% in Tairāwhiti and 11.7% in Taranaki. In contrast, 39.2% of Waikato students left with a University Entrance standard, compared to 39.2% in Lakes DHB, 44.6% in the Bay of Plenty, 35.4% in Tairāwhiti and 41.0% in Taranaki. While the proportion leaving with no formal qualifications declined in all Midland DHBs during 2009–2011, the proportion attaining a University Entrance standard increased.</p> <p>In the Waikato during 2009–2011, a higher proportion of Māori &gt; Pacific &gt; European &gt; Asian students left school with no formal qualifications, while a higher proportion of Asian &gt; European &gt; Māori and Pacific students left with a University Entrance standard. In Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki a higher proportion of Māori than European students left school with no formal qualifications, while a higher proportion of European than Māori students left school with a University Entrance standard.</p>
	Senior Secondary School Retention	<p>During 2009–2011, a higher proportion of Asian &gt; European and Pacific &gt; Māori students stayed on at school until at least 17 years of age. During 2011, 92.7% of Asian students stayed on at school until at least 17 years of age, as compared to 82.8% of European, 78.9% of Pacific, and 64.7% of Māori students.</p> <p>These ethnic differences need to be viewed in the context of the other educational opportunities available to students. During 2001–2010, a large number of students participated in tertiary education, with participation for Māori students being high in Certificate Level 1–3 courses. While tertiary participation also includes those 25+ years, such figures suggest that for many, participation in education does not cease at school leaving, although the income premiums achieved for completing various types of study need to be taken into consideration when assessing the longer term impacts education has on economic security.</p>	<p>In the Midland Region during 2009–2011, the proportion of students staying on at school until at least 17 years of age increased for students from all DHBs except Taranaki, with retention rates in the Waikato, Bay of Plenty, Lakes DHB and Tairāwhiti being generally lower than the New Zealand rate, while rates in Taranaki were similar to the New Zealand rate. By 2011, 75.7% of Waikato, 76.1% of Bay of Plenty, 72.9% of Lakes DHB, 76.5% of Tairāwhiti and 78.6% of Taranaki students stayed on at school until at least 17 years of age.</p> <p>In the Waikato during 2009–2011, a higher proportion of Asian &gt; European and Pacific &gt; Māori students stayed on at school until at least 17 years of age, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, retention rates at 17 years were higher for European than for Māori students.</p>



Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Education: Knowledge and Skills	Stand-Downs, Suspensions, Exclusions and Expulsions	<p>During 2000–2011, suspensions gradually declined, while stand-downs increased, reached a peak in 2006 and then declined. Exclusion and expulsion rates were more static. Throughout this period, the number of stand-downs exceeded the number of suspensions, which in turn exceeded the number of exclusions and expulsions.</p> <p>During 2000–2011, stand-downs and suspensions were higher for Māori &gt; Pacific &gt; European &gt; Asian students. Stand-downs for Māori, Pacific and European students declined after 2006, with the largest declines being seen for Māori and Pacific students. Suspension rates also declined for all ethnic groups during 2000–2011, with the largest declines again being seen for Māori students.</p> <p>During 2000–2011, exclusions were higher for Māori &gt; Pacific &gt; European &gt; Asian students, while expulsions were generally higher for Pacific &gt; Māori &gt; European and Asian students. Exclusions declined for Māori and Pacific students, although exclusion and expulsion rates for European and Asian students were more static.</p>	<p>Amongst the DHBs in the Midland Region during 2000–2011, there were no consistent trends in stand-down rates, although rates in the Waikato and Tairāwhiti were generally higher than the New Zealand rate, while rates in Lakes DHB were lower. Rates in Taranaki were slightly higher than the New Zealand rate from 2005 onwards, while rates in the Bay of Plenty were lower from 2006 onwards. Suspension rates in the Midland DHBs varied, with rates during the late 2000s being similar to the New Zealand rate in the Bay of Plenty, Tairāwhiti and Taranaki, but higher in Lakes DHB and the Waikato.</p> <p>There was large year to year variability in exclusion and expulsion rates amongst the Midland DHBs during 2000–2011, making precise interpretation of trends difficult.</p> <p>In the Waikato during 2000–2011, suspension rates were higher for Māori &gt; Pacific &gt; European &gt; Asian students, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki rates were higher for Māori than for European students.</p>
	Truancy and Unjustified Absences	<p>During 2011, total unjustified absences were relatively infrequent during primary school, but increased during secondary school, with the highest rates being in Year 13+. While frequent truancy rates also increased during the secondary school years, the rate of increase was less marked than for total unjustified absences.</p> <p>During 2006, 2009 and 2011, total unjustified absences and frequent truancy were higher for Māori and Pacific than for European and Asian students. Total unjustified absences were lower in 2011 than they were in 2006 for Māori, Pacific and Asian students, although rates for European students were similar. Similarly frequent truancy rates were lower in 2011 than in 2006 for Māori and Pacific students, although rates for European and Asian students were similar during the two periods.</p> <p>During 2011, total unjustified absences and frequent truancy decreased as the degree of deprivation of the school catchment decreased, with the lowest rates being seen in those in the least deprived (deciles 9–10) areas.</p>	<p>In the Waikato during 2011, the total unjustified absence rate was 2.9 days per week per 100 students, as compared to 3.2 days in the Bay of Plenty, 3.3 days in Lakes DHB, 4.2 days in Tairāwhiti, 2.4 days in Taranaki and 2.3 days for New Zealand as a whole. Similarly, the frequent truancy rate in the Waikato in 2011 was 1.2 per 100 students, as compared to 1.1 in the Bay of Plenty, 1.4 in Lakes DHB, 3.9 in Tairāwhiti, 1.1 in Taranaki and 1.0 per 100 students for New Zealand as a whole.</p> <p>In the Waikato during 2011, total unjustified absences and frequent truancy were higher for Māori and Pacific students than for European and Asian students, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, rates were higher for Māori students than for European students.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Risk and Protective Factors			
Well Child/Tamariki Ora Services	Immunisation Coverage	<p>During 2009 (Q2) to 2012 (Q2), immunisation coverage was highest for children aged 12 and 24 months &gt; 18 months &gt; 5 years &gt; 6 months. Coverage rates increased for all age groups during this period.</p> <p>During 2009 (Q2) to 2012 (Q2), coverage at 6 and 18 months was higher for Asian &gt; European &gt; Pacific &gt; Māori children. While similar ethnic differences were evident at 24 months during early 2009, by early 2012, coverage was higher for Asian and Pacific &gt; European &gt; Māori children. During 2012 (Q2) coverage at 24 months was 97.6% for Asian, 96.8% for Pacific, 93.3% for European and 92.2% for Māori children.</p> <p>During 2009 (Q2) to 2012 (Q2), coverage at 6, 12 and 18 months and 5 years was higher for children from the least deprived (NZDep deciles 1–2) &gt; average (NZDep deciles 5–6) &gt; most deprived (NZDep deciles 9–10) areas. While similar socioeconomic gradients were evident at 24 months during early 2009, these lessened, so that by the first two quarters of 2012, coverage rates were similar for those from the most and least deprived areas.</p>	<p>Amongst the DHBs in the Midland Region during 2009(Q2) to 2012(Q2), immunisation coverage rates were highest for children aged 12 and 24 months, followed by 18 months and five years, with coverage being lowest for children 6 months of age. Immunisation coverage rates however increased for all age groups and in all Midland DHBs during this period. Thus by 2012(Q2), immunisation coverage at 24 months was 91.6% in the Waikato, 90.5% in the Bay of Plenty, 94.1% in Lakes DHB, 94.9% in Tairāwhiti and 91.2% in Taranaki, as compared to 93.1% for New Zealand as a whole.</p> <p>In the Waikato during 2009(Q2) to 2012(Q2), immunisation coverage rates at 24 months were generally higher for Pacific and Asian children than for European and Māori children. In the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki while immunisation coverage rates at 24 months was generally higher for European children than for Māori children during 2009, by 2011, with the exception of Taranaki, these ethnic differences had disappeared. There were however, no consistent socioeconomic gradients (as measured by NZDep decile) in immunisation coverage rates at 24 months of age.</p>
	Well Child Visits: Plunket Well Child Data	<p>During July 2007–June 2012, the proportion of Plunket children receiving their Core 1 contact increased from 75.5% to 83.5%, while the proportions receiving their Core 2, Core 3 and Core 4 contacts were more static.</p> <p>In the cohort of Plunket children born during July 2007–June 2008, a higher proportion of European/Other &gt; Pacific &gt; Māori children received their Core 1–7 contacts. For this cohort, the Core 1 and 7 contacts were the least likely to be received, while the Core 2–5 contacts were the most likely to be received by children of all ethnic groups.</p> <p>In the same cohort, a higher proportion of children from the least deprived and average (NZDep deciles 1 and 5) areas received their Core 1–6 contacts, than did children from the most deprived (NZDep decile 10) areas. Differences by NZDep decile were less evident for the Core 7 contact.</p>	<p>Of the Waikato Plunket cohort born during July 2007–June 2008, 65.6% had received their Core 1 contact, as compared to 72.6% in the Bay of Plenty, 81.2% in Lakes DHB, 78.4% in Tairāwhiti and 90.9% in Taranaki. The Core 2–4 contacts were the most likely to be received in all DHBs, while the Core 6 and 7 contacts were the least likely to be received.</p> <p>Of the Waikato DHB Plunket cohort born during July 2010–June 2011, a higher proportion of European/Other children received their Core 1–5 contacts than did Pacific or Māori children. In the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki a higher proportion of European/Other children received their Core 1–5 contacts than did Māori children.</p> <p>Of the Plunket cohort born during July 2010–June 2011, a higher proportion of children from the least deprived (NZDep decile 1) areas received their Core 1–5 contacts, than did children from the most deprived (NZDep decile 10) areas in all Midland DHBs.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Well Child/Tamariki Ora Services	Well Child Visits: B4 School Checks		In the Waikato in the year ending June 2012, 80.9% of all eligible children received their B4 School Check, as compared to 83.0% in the Bay of Plenty, 89.1% in Lakes DHB, 77.8% in Tairāwhiti and 84.2% in Taranaki. In all Midland DHBs except Lakes, coverage was higher for children from the most deprived (NZDep deciles 9–10) areas (compared to all eligible children), with rates being 94.7% in the Waikato, 88.2% in the Bay of Plenty, 88.5% in Lakes DHB, 87.6% in Tairāwhiti and 94.1% in Taranaki.
Substance Use	Smoking in Pregnancy	<p>During 2009–2010, 16.2% of babies were born to mothers not registered with a LMC at delivery. However many of these mothers may have accessed hospital-based maternity services, making it difficult to estimate the proportion receiving no antenatal care during pregnancy. Pacific, Asian/Indian and Māori babies were significantly more likely to have mothers not registered with a LMC at delivery, as were the babies of younger mothers, and those from average to more deprived areas.</p> <p>Overall, 15.3% of babies did not have their mother's smoking status at first LMC registration recorded in the National Maternity Collection (MAT), with the majority being babies whose mothers were not registered with a LMC at delivery. Of babies whose mother's smoking status was known, 83.5% had a non-smoking mother, 10.5% had a mother who smoked &lt;10 cigarettes per day and 6.0% had a mother who smoked 10+ per day.</p> <p>Māori and Pacific babies, the babies of younger mothers and those from average to more deprived areas were significantly more likely to have mothers who smoked at first LMC registration.</p> <p>The mothers of Māori babies, regardless of maternal age, had higher smoking rates at first LMC registration than the mothers of European or Pacific babies, while the maternal smoking rates of Asian/Indian babies were lower.</p>	<p>In all of the DHBs in the Midland Region during 2009–2010, the proportion of babies whose mother was not registered with a LMC at delivery was significantly lower than the New Zealand rate. Of those who were un-registered, many may have accessed hospital-based maternity services, making it difficult to estimate the proportion who received no antenatal care at all during pregnancy.</p> <p>In all of the DHBs in the Midland Region during 2009–2010, maternal smoking rates at first LMC registration were significantly higher than the New Zealand rate amongst babies whose maternal smoking status was known (Waikato 21.5%, Lakes DHB 28.3%, Bay of Plenty 27.1%, Tairāwhiti 34.6% and Taranaki 21.4% vs. New Zealand 16.5%). These differences remained significant even when those with missing smoking data were included in the denominator.</p> <p>In the Waikato during 2009–2010, maternal smoking rates at first LMC registration were higher for Māori &gt; European &gt; Pacific &gt; Asian/Indian babies, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, rates were higher for Māori babies than for European babies.</p>



Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Substance Use	Second-Hand Cigarette Smoke Exposure: Maternal Smoking 2 Weeks After Delivery	<p>During 2009–2010, 19.4% of babies did not have their mother's smoking status at two weeks after delivery recorded in the National Maternity Collection, with the majority of omissions being for babies whose mothers were unregistered with a LMC at delivery. Of those babies whose mother's smoking status was known, 84.8% had a non-smoking mother, while 9.7% had a mother who smoked &lt;10 cigarettes per day and 5.6% had a mother who smoked 10+ cigarettes per day.</p> <p>Māori and Pacific babies (vs. European and Asian/Indian babies) were <i>significantly</i> more likely to have mothers who smoked, as were the babies of younger mothers (&lt;30 years vs. 30+ years). A <i>significantly</i> higher proportion of babies from average to more deprived areas (NZDep06 deciles 3–10 vs. deciles 1–2) also had mothers who smoked two weeks after delivery.</p>	<p>During 2009–2010, the proportion of babies whose mother's smoking status at two weeks after delivery was not recorded in the MAT varied from 3.3% in the Bay of Plenty to 11.7% in the Waikato. Of babies whose mother's smoking status was known, the proportion with a non-smoking mother varied from 64.5% in Tairāwhiti to 80.5% in the Waikato, while the proportion who had a mother who smoked 10+ cigarettes per day varied from 7.2% in the Waikato to 13.9% in Tairāwhiti.</p> <p>In all Midland DHBs during 2009–2010, maternal smoking at two weeks after delivery was significantly higher than the New Zealand rate amongst babies whose maternal smoking status was known (Waikato 19.5%, Lakes DHB 25.8%, Bay of Plenty 24.2%, Tairāwhiti 35.6% and Taranaki 21.4%).</p> <p>In the Waikato, maternal smoking at two weeks after delivery was higher for Māori &gt; European &gt; Pacific &gt; Asian babies, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, rates were higher for Māori than for European babies.</p>
	Second-Hand Cigarette Smoke Exposure: Second-Hand Cigarette Smoke in the Home	<p>During 2001–2010, the proportion of Year 10 students with a parent(s) who smoked did not change <i>significantly</i>, being 40.2% in 2001 and 38.1% in 2010. In contrast, the proportion of students who lived in homes where smoking occurred inside declined <i>significantly</i>, from 30.5% in 2001 to 19.1% in 2010.</p> <p>During 2001–2010, parental smoking rates were higher for Māori &gt; Pacific &gt; European &gt; Asian students. While there were no <i>significant</i> changes in parental smoking for European students, rates for Māori, Pacific and Asian students declined <i>significantly</i> during 2006–2010. The proportion living in homes where people smoked inside also declined for all ethnic groups during 2006–2010.</p> <p>During 2001–2010, parental smoking rates and exposure to smoking in the home were higher for students from the most deprived &gt; average &gt; least deprived areas. Parental smoking rates declined <i>significantly</i> for students from the least deprived areas. Exposure to smoking in the home also declined <i>significantly</i> for students of all socioeconomic groups during 2001–2010.</p>	<p>During 2001–2010, the proportion of Year 10 students who reported at least one parent smoking declined in Lakes DHB and Tairāwhiti, while the proportion who reported living a home where people smoked inside declined in all five DHBs. Rates for both measures were higher than the New Zealand rate in all Midland DHBs, with the exception of the Bay of Plenty, where the proportion who lived in a home where people smoked inside was similar to the New Zealand rate during 2006–2010.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Substance Use	Cigarette Smoking in Young People: ASH Surveys	<p>During 1999–2011 the proportion of Year 10 students who were daily smokers declined, from 15.6% in 1999 to 4.1% in 2011, while the proportion who had never smoked increased, from 31.6% to 70.4%.</p> <p>Daily smoking rates for Māori and Pacific students were higher for females, while rates for Asian students were higher for males. During 1999–2011, while daily smoking rates declined for students of all ethnic groups, rates remained higher for Māori &gt; Pacific &gt; European and Asian students</p> <p>Daily smoking rates were higher for students attending schools in the most deprived (deciles 1–3) &gt; average (deciles 4–7) &gt; least deprived (deciles 8–10) areas. While smoking rates were higher for females, gender differences diminished as the level of deprivation decreased. Daily smoking rates declined for students of all socioeconomic groups during 1999–2011.</p>	In all of the DHBs in the Midland Region during 1999–2011, the proportion of Year 10 students who were daily smokers declined, while the proportion who had never smoked increased. In the Bay of Plenty, Lakes DHB and Tairāwhiti, the proportion of students who were daily smokers was generally higher than the New Zealand rate, while the proportion who had never smoked was lower. In the Waikato and Taranaki, rates for both measures were more similar to the New Zealand rate.
	Cigarette Smoking in Young People: 2009 NZ Tobacco Use Survey	<p>In the 2009 NZ Tobacco Use Survey the proportion of young people aged 20–24 years (30.7%) who were current smokers was <i>significantly</i> higher than for those aged 15–19 years (18.0%).</p> <p>When compared to the total population, current smoking rates for Māori young people 15–19 years (RR 2.15 95% CI 1.62–2.67) were <i>significantly</i> higher, while rates for Asian young people were <i>significantly</i> lower (RR 0.24 95% CI 0.00–0.70). Rates for Pacific and European/Other young people were not <i>significantly</i> different from the total population rate.</p> <p>Current smoking rates for young people aged 15–19 years from the most deprived (NZDep deciles 9–10) areas (30.9% 95% CI 22.6–39.3) were <i>significantly</i> higher than for those from the least deprived (NZDep deciles 1–2) areas (10.0% 95% CI 4.2–19.2).</p> <p>Current smokers aged 15–19 years indicated the most common way of sourcing tobacco in the past month was to buy it themselves (79.3% 95% CI 70.7–87.9), although other sources of tobacco were friends (27.6% 95% CI 18.9–36.2) or family (22.9% 95% CI 14.7–31.1).</p>	

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Substance Use	Alcohol-Related Hospital Admissions	<p>During 2000–2011, alcohol-related hospital admissions in young people were relatively static. While on average 1,150 admissions occurred per year, it is likely that this reflects a significant undercount due to the limitations of the NMDS in identifying alcohol-related admissions.</p> <p>During 2007–2011, alcohol was listed as a contributory cause in a large number of hospital admissions. However only 8.8% had acute intoxication or the toxic effects of alcohol listed as the primary diagnosis. In 36.5% an injury was the primary diagnosis, while 32.2% were due to mental health conditions and 11.8% due to poisoning by other drugs or substances.</p> <p>Admissions were <i>significantly</i> higher for males and Māori &gt; Pacific or European/Other young people.</p>	<p>In the Midland Region during 2007–2011, alcohol-related hospital admissions in young people were significantly higher than the New Zealand rate in all DHBs except the Waikato DHB, where rates were similar to the New Zealand rate. While the average number of alcohol-related admissions per year varied from 32.0 in Tairāwhiti to 107.6 in the Waikato, in reality it is likely that the number was much higher due to the limitations of the National Minimum Dataset in identifying alcohol-related admissions in this age group.</p>
Health Outcomes as Determinants			
Socioeconomically Sensitive Hospital Admissions and Mortality	Hospital Admissions and Mortality with a Social Gradient	<p>During 2007–2011, gastroenteritis, bronchiolitis, and asthma were the leading causes of hospitalisations for medical conditions with a social gradient, while falls, followed by inanimate mechanical forces were the leading causes of injury admissions.</p> <p>During 2005–2009, SUDI made the largest contribution to mortality with a social gradient. Vehicle occupant injuries were the most frequent cause of injury-related deaths, while bacterial/non-viral pneumonia was the leading cause of mortality from medical conditions.</p> <p>Medical admissions with a social gradient increased during the early 2000s, reached peak in 2002 and then declined, with an upswing again being evident during 2007–2009. In contrast, injury admissions with a social gradient declined during 2000–2011.</p> <p>During 2000–2011, hospitalisations for medical conditions with a social gradient were consistently higher for Pacific &gt; Māori &gt; European/Other children, while injury admissions were higher for Pacific and Māori &gt; European/Other children.</p>	<p>In all of the DHBs in the Midland Region during 2007–2011, asthma, bronchiolitis, gastroenteritis and acute upper respiratory tract infections were in the top four reasons for hospitalisations for medical conditions with a social gradient, while falls, followed by inanimate mechanical forces, were the most frequent reasons for injury admissions with a social gradient in all DHBs.</p> <p>During 2000–2011, while trends varied by DHB, admissions for medical conditions were higher than the New Zealand rate in the Bay of Plenty, Lakes DHB and Tairāwhiti and generally lower than the New Zealand rate in the Waikato and Taranaki. Admissions for injuries exhibited a general downward trend in all Midland DHBs, with rates in the Bay of Plenty and Tairāwhiti being higher the New Zealand rate and rates in the Waikato and Taranaki (from 2006) being generally lower.</p> <p>In the Waikato, admissions for medical conditions were higher for Pacific and Māori children than for European/Other children, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, admissions were higher for Māori than for European/Other children. Admissions for injuries were generally higher for Māori than for European children in the Bay of Plenty and Lakes DHB, although in the Waikato, Tairāwhiti and Taranaki ethnic differences were less consistent.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Socioeconomically Sensitive Hospital Admissions and Mortality	Infant Mortality: Neonatal and Post Neonatal Mortality	<p>In New Zealand during the 1990s, neonatal and post neonatal mortality both declined, although rates were more static during the mid to late 2000s. An upswing in neonatal mortality was evident during 2007–2009 although it is too early to say whether this is a random fluctuation or the beginning of an upward trend.</p> <p>During 2005–2009, extreme prematurity and congenital anomalies were the leading causes of neonatal mortality, while SUDI was the leading cause of post neonatal mortality.</p> <p>Neonatal mortality was significantly higher for Pacific and Māori infants than for European infants, for males and for those from average to more deprived (NZDep deciles 5–10) areas. Post neonatal mortality was significantly higher for Māori and Pacific infants than for European and Asian/Indian infants, for males and for those from more deprived (NZDep deciles 7–10) areas.</p>	<p>In all of the DHBs in the Midland Region during 2005–2009, congenital anomalies and extreme prematurity were the most frequent causes of neonatal mortality, while SUDI was the most frequent cause of post neonatal mortality.</p> <p>In all of the DHBs in the Midland Region during 1990–2009, while there were large year to year fluctuations in rates (possibly as a result of small numbers), total infant mortality exhibited a general downward trend. While neonatal mortality rates were relatively static, post neonatal mortality exhibited a general downward trend in all Midland DHBs except Taranaki.</p> <p>In all of the DHBs in the Midland Region during 2005–2009, while neonatal mortality rates were higher than the New Zealand rate, in no case did these differences reach statistical significance. Similarly while post neonatal mortality rates in the Waikato, Lakes DHB, Tairāwhiti and Taranaki were all higher than the New Zealand rate, in no Midland DHB did these differences reach statistical significance.</p>
	Infant Mortality: SUDI	<p>In New Zealand, SUDI rates declined during the late 1990s and early 2000s, but became more static after 2002–03. When broken down by SUDI sub-type, deaths attributed to SIDS continued to decline throughout 1996–2009, while deaths due to suffocation or strangulation in bed became more prominent as the period progressed. It is unclear however, whether this represented a diagnostic shift in the coding of SUDI, or whether the sleeping environment made an increasingly greater contribution to SUDI as the period progressed.</p> <p>During 2005–2009, SUDI mortality was highest in infants 4–7 weeks, followed by those aged 8–11 weeks and then those 0–3 weeks of age. SUDI: Suffocation/Strangulation in Bed accounted for 61.0% of all SUDI deaths in those aged 0–3 weeks and 38.2% of SUDI deaths in those aged 4–7 weeks.</p> <p>Mortality from SUDI was significantly higher for Māori &gt; Pacific &gt; European &gt; Asian/Indian infants and those from more deprived (NZDep deciles 7–10) areas.</p>	<p>In the Bay of Plenty, Lakes DHB and Tairāwhiti during 1996–2009, SUDI rates declined. While rates in Lakes DHB and the Bay of Plenty remained higher than the New Zealand rate for the majority of this period, in the Bay of Plenty, while initially higher, rates became similar to the New Zealand rate after 2006. In the Waikato and Taranaki, while there was considerable year to year volatility, SUDI rates were relatively static overall.</p>



Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Safety and Family Violence	Injuries Arising from the Assault, Neglect or Maltreatment of Children	<p>During 2000–2011, hospital admissions for injuries arising from the assault, neglect or maltreatment of children declined gradually, while mortality during 2000–2009 remained relatively static. On average during 2000–2009, eight children per year died as a result of injuries arising from assault, neglect or maltreatment.</p> <p>During 2007–2011, admissions exhibited a U-shaped distribution with age, with rates being higher for infants less than one year and those over eleven years of age. In contrast, mortality was highest for infants less than one year, followed by those aged one and two years.</p> <p>During 2000–2011, admissions were consistently higher for Māori and Pacific children than for European/Other children. While rates for European/Other children declined during this period, rates for Māori children increased during the early to mid 2000s, but declined during 2010–2011. In contrast, admissions for Pacific children declined during the early to mid 2000s but increased during 2010–2011.</p>	<p>In the Midland Region during 2000–2011, while there large year to year variability, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were generally higher than the New Zealand rate in Lakes DHB, the Bay of Plenty and Tairāwhiti and consistently lower in the Waikato.</p> <p>In the Waikato during 2000–2009, four children died as the result of injuries arising from assault, neglect or maltreatment, as compared to two in Lakes DHB, three in the Bay of Plenty and three in Taranaki.</p>
	Injuries Arising from Assault in Young People	<p>During 2000–2011, hospital admissions for injuries arising from assault in young people remained relatively static, while mortality during 2000–2009 fluctuated. On average during 2000–2009, 12.5 young people per year died from assault-related injuries.</p> <p>During 2007–2011, admissions in males increased rapidly during the mid to late teens, reaching a peak at 19 years of age. While admissions for females also increased during the teenage years, rates were lower than for males at all ages. Assault mortality during 2005–2009 was also highest for males during their mid to late teens, although patterns for females were more variable.</p> <p>Assault admissions during 2007–2011 were significantly higher for Māori and Pacific young people than for European/Other young people.</p>	<p>In the Midland Region during 2000–2011, hospital admissions for injuries arising from assault in young people were consistently higher than the New Zealand rate in Lakes DHB, Tairāwhiti and the Bay of Plenty, and consistently lower in the Waikato and Lakes DHB. While large year to year variability made the interpretation of trends difficult in most DHBs, rates in the Bay of Plenty exhibited a consistent downward trend during this period.</p> <p>In the Waikato during 2000–2009, eleven young people died as the result of an assault, as compared to five in the Bay of Plenty, five in Lakes DHB and two in Tairāwhiti.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Safety and Family Violence	Child Youth and Family Notifications	<p>During the 2011 financial year, 150,747 care and protection notifications were received by Child Youth and Family (CYF), with 38.4% being thought to require further assessment. While this reflects an increase since 2004, when 40,939 notifications were received, the proportion requiring further assessment declined (86.3% required further assessment in 2004). The number of notifications requiring further assessment however continued to increase, from 35,350 in 2004 to 57,949 in 2011, an increase of 63.9% over this period</p> <p>Of those notifications which were assessed further during 2004–2011, a large proportion resulted in no abuse being found. Where abuse was found however, physical and emotional abuse, and neglect were prominent, while behavioural and relationship difficulties were the most frequent non-abuse findings.</p>	<p>During the 2011 financial year, CYF offices in the Midland Region received 40,198 care and protection notifications, with 33.0% being thought to require further assessment. While the number of notifications had increased from 9,415 in 2004, the proportion requiring further assessment declined (84.9% required further assessment in 2004). Nevertheless, the number of notifications requiring further assessment increased, from 7,997 in 2004 to 13,268 in 2011, an increase of 65.9% over this period.</p>
	Police Family Violence Investigations	<p>Of the 86,704 Police family violence investigations occurring during 2011, children were reported as being present, or usually residing with the victim in 54.0%.</p> <p>There were 35,536 Police family violence investigations where an offence occurred during 2011 and where the relationship between the offender and the victim/complainant was recorded. In 40.6% of cases the victim/complainant was the spouse or partner of the offender, with a further 24.4% having been either previously married or in a relationship. In 20.3% of cases the relationship was that of parent and child.</p> <p>During 2011, injuries were reported in 16.3% of Police family violence investigations. While the most common injuries reported were bruising and cuts, in 893 cases a hospital attendance was required, and in 20 cases the incident resulted in a death.</p> <p>Police family violence investigations during 2011 resulted in 39,935 offences being disclosed, with a very high proportion of these offences relating to assaults. Property damage, breach of violence orders, and threatening behaviour also made a significant contribution.</p>	<p>During 2011, a large number of family violence investigations occurred in the 11 Police Areas which most overlapped the Midland Region catchment. While these figures cannot be used to comment on trends in the prevalence of family violence during this period, they suggest that a large number of family violence incidents are occurring in the Midland Region each year, and that (based on NZ level figures) children are likely to be present at a large proportion of these.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Mental Health	Access to Mental Health Services: Childhood	<p>In New Zealand during 2009–2011, attention deficit hyperactivity disorder (ADHD) was the most frequent diagnosis assigned to children accessing mental health services, followed by conduct/disruptive behaviour disorders and parent-child relational problems.</p> <p>While ethnic differences in access to mental health services varied by diagnosis, the number of males accessing services for each of the conditions reviewed was <i>significantly</i> higher than for females.</p>	<p>Amongst the DHBs in the Midland Region during 2009–2011, ADHD, conduct/disruptive behaviour disorders and autism/pervasive developmental disorders were the most frequent diagnosis assigned to children accessing mental health services. While rates in most Midland DHBs (Waikato, Lakes DHB, Tairāwhiti, and Taranaki) were significantly lower than the New Zealand rate for most diagnoses, it must be remembered that many children with these diagnoses access paediatric outpatient services, and that this workload is not captured by PRIMHD. Thus the rates presented are likely to significantly underestimate the prevalence of these conditions in the community. Further, regional differences in the proportion of cases managed by mental health services vs. paediatric outpatients are also likely to account for some of the differences seen.</p>
	Access to Mental Health Services: Late Childhood and Adolescence	<p>During 2009–2011, a number of mental health diagnoses also became increasingly common during late childhood and early adolescence. These included anxiety disorders, stress reaction/adjustment disorders and eating disorders.</p> <p>The number of children and young people accessing mental health services with anxiety, stress reaction/adjustment and eating disorders was <i>significantly</i> higher for females and for European/Other &gt; Māori &gt; Pacific children and young people.</p>	<p>In the Waikato, Lakes DHB, Tairāwhiti and Taranaki during 2009–2011, the number of children and young people accessing mental health services with anxiety disorders, stress reaction/adjustment disorders and eating disorders was significantly lower than the New Zealand rate. In the Bay of Plenty, while the number accessing mental health services with anxiety disorders and stress reaction/adjustment disorders was significantly higher than the New Zealand rate, the number accessing services with eating disorders was similar to the New Zealand rate.</p> <p>In interpreting these differences, it must be remembered that these figures reflect access to services rather than the underlying prevalence of these conditions in the community. Further regional differences in the proportion of cases managed by paediatric outpatient services (which are not captured in PRIMHD) vs. child and youth mental health services may account for some of the differences seen.</p>

Stream	Indicator	New Zealand Distribution and Trends	Midland DHBs Distribution and Trends
Mental Health	Access to Mental Health Services: Late Adolescence	<p>During 2007–2011, the most common reasons for hospital admissions with mental health issues in young people were schizophrenia, followed by depression and stress reaction/adjustment disorders. Composite categories such as schizotypal/delusional disorders and drug and alcohol-related conditions also made a significant contribution.</p> <p>In addition to the diagnoses reviewed in earlier sections, a number of mental health diagnoses became increasingly common during late adolescence. During 2009–2011, these included schizophrenia and other psychotic disorders, depression, bipolar disorder and other mood disorders and personality disorders.</p> <p>During 2009–2011, substance use was also a very frequent co-diagnosis for young people accessing mental health services. Personality disorders, followed by schizophrenia and other psychotic disorders were the diagnoses most likely to have an alcohol-related disorder listed as a co-diagnosis, while schizophrenia, other psychotic disorders, and then personality disorders, were the most likely to have cannabis, or other substance use listed as a co-diagnosis.</p>	<p>Amongst the DHBs in the Midland Region during 2007–2011, the commonest reasons for hospital admissions with mental health diagnoses in young people were schizophrenia, schizotypal/delusional disorders, depression, the mental health effects of drugs and alcohol and stress reaction/adjustment disorders.</p> <p>Amongst the DHBs in the Midland Region during 2009–2011, depression and other mood disorders and schizophrenia and other psychotic disorders were the most frequent diagnoses assigned to young people accessing mental health services.</p> <p>Amongst the DHBs in the Midland Region during 2009–2011, alcohol-related disorders, cannabis-related disorders, and other drug-related disorders were all relatively frequent diagnosis for young people accessing mental health services, with there being considerable variation in access to services for these diagnoses across DHBs.</p>
	Self-Harm and Suicide	<p>During 2000–2009, suicide rates in young people 15–24 years remained relatively static, with on average 107 young people each year dying as a result of suicide.</p> <p>During 2007–2011, hospital admissions for intentional self-harm were <i>significantly</i> higher for Māori than for European/Other young people, while rates for Pacific young people were <i>significantly</i> lower. In contrast, suicide mortality during 2005–2009 was <i>significantly</i> higher for Māori and Pacific young people than for European/Other young people. While admissions for intentional self-harm were <i>significantly</i> higher for females than for males, suicide mortality was <i>significantly</i> higher for males than for females.</p>	<p>In the Bay of Plenty and Tairāwhiti during 2007–2011, hospital admissions for intentional self-harm were significantly higher than the New Zealand rate, while in the Waikato rates were significantly lower. In Lakes DHB and Taranaki, rates were not significantly different from the New Zealand rate.</p> <p>In Tairāwhiti during 2005–2009, suicide mortality was significantly higher than the New Zealand rate, while in the remaining four Midland DHBs rates were not significantly different from the New Zealand rate. In total, 36 Waikato, 11 Lakes DHB, 31 Bay of Plenty, 15 Tairāwhiti, and 14 Taranaki young people died as the result of suicide during this period.</p>





# THE WIDER MACROECONOMIC AND POLICY CONTEXT





# MACROECONOMIC INDICATORS







# GROSS DOMESTIC PRODUCT (GDP)

## Introduction

Gross Domestic Product (GDP) is defined as “the total market value of goods and services produced within a given period, after deducting the cost of goods utilised in the process of production” [2]. GDP is often used as a measure of the size of the economy, with nominal GDP being expressed in current dollar prices, and real GDP being expressed in constant dollar prices (i.e. the dollar value of a particular year, after adjustment for inflation).

Changes in real GDP are often used as a measure of economic growth, or the strength of the economy [2], with a recession typically being defined as two consecutive quarters of negative growth [3]. Recessions are often characterised by high unemployment, stagnant wages and a fall in retail sales, and though usually not lasting longer than a year [3], they may have significant implications for child wellbeing. New Zealand entered a recession at the end of June 2008 (after two consecutive quarters of negative growth), and left the recession at the end of September 2009 (when growth had increased to 0.3% [4]).

The following section briefly reviews changes in New Zealand's GDP since March 2006.

### Data Source and Methods

#### Definition

*Gross Domestic Product (GDP): Percent Change from Previous Quarter*

GDP is the total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment and government spending, plus the value of exports, minus the value of imports. A recession is defined as two consecutive quarters of negative growth (as measured by GDP).

#### Data Source

Statistics New Zealand: The New Zealand System of National Accounts. Produced Quarterly

#### Notes on Interpretation

Three approaches can be used to calculate GDP:

- *Production Approach*: This method calculates what each separate producer adds to the value of final output, by deducting intermediate consumption from gross output. Value added is summed for all producers.
- *Income Approach*: This approach measures the incomes received by the owners of the factors of production. These represent the returns to the labour and capital employed such as wages and salaries, and profits.
- *Expenditure Approach*: This method sums the values of all final demands, that is, final consumption expenditures (of households, government and private non-profit institutions serving households), changes in inventories, gross capital formation, and net exports.

Conceptually, both the production and expenditure approaches of measuring GDP are the same. However, as each series uses independent data and estimation techniques, some differences between the alternative measures arise. The expenditure approach series has historically shown more quarterly volatility and is more likely to be subject to timing and valuation problems. For these reasons, the production-based measure is the preferred measure for short-term quarter-on-quarter and annual changes [4]

## New Zealand Trends

### Production-based Measure of GDP

In New Zealand, GDP was either flat or decreased for six consecutive quarters from March 2008 to June 2009, before increasing again, for four consecutive quarters, from September 2009 to September 2010. GDP then briefly declined by 0.1% in the September quarter of 2010 and then remained static for a quarter, before increasing again, by 0.6% in the March quarter of 2011. Six consecutive quarters of growth were then seen, with GDP increasing by 0.6% in the June quarter of 2012 (**Figure 1**). Economic activity for the year ending June 2012 increased by 2.0%, when compared to the year ending June 2011 [4]

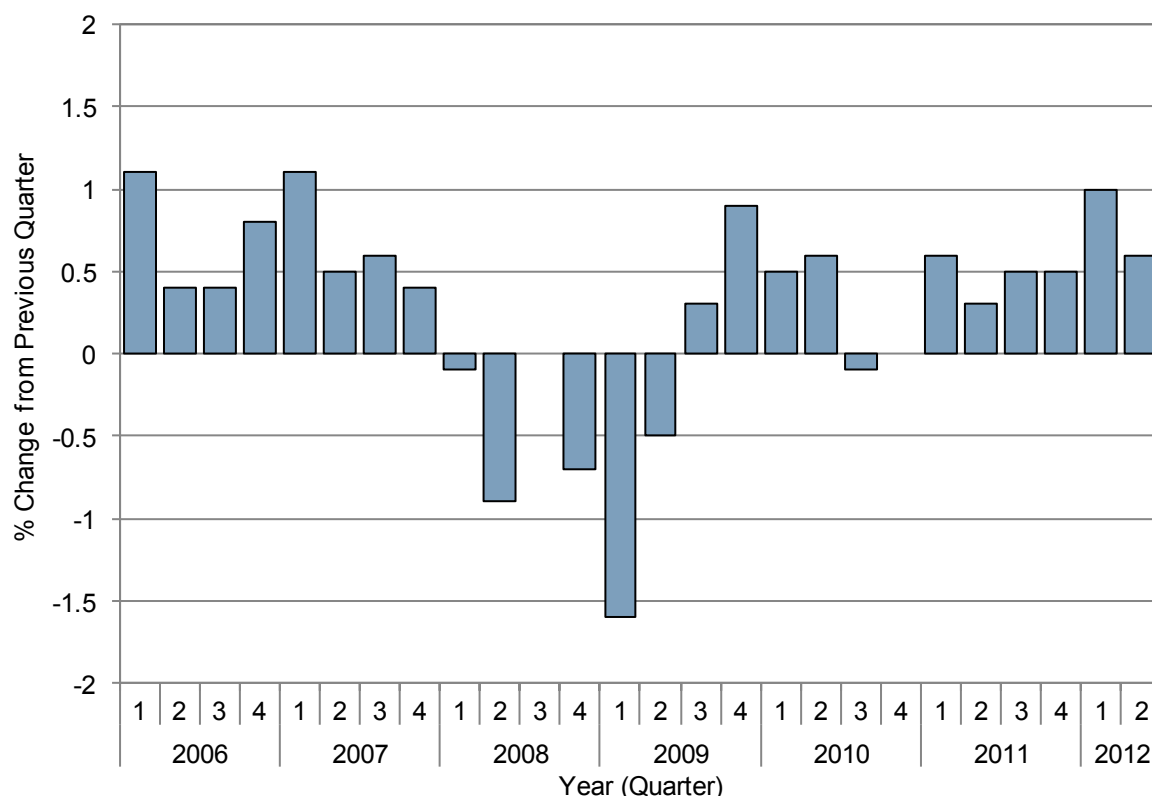
During the June 2012 quarter, agriculture (up 4.7%) was the largest contributor to economic growth, although construction (up 3.3%) and manufacturing (up 0.8%) also increased [4].



### Expenditure-based Measure of GDP

The expenditure-based measure of GDP, released concurrently with the production-based measure, increased by 0.3% in the June quarter of 2012. During this period, household consumption expenditure increased by 0.2%, while export volumes were down 1.2% and imports were down 2.9%. On an annual basis, expenditure on GDP for the year ending June 2012 increased by 1.7%, when compared to the year ending June 2011 [4].

Figure 1. Gross Domestic Product (GDP): Percentage Change from Previous Quarter, New Zealand March Quarter 2006 to June Quarter 2012



Source: Statistics New Zealand; Seasonally adjusted chain volume series expressed in 1995/96 prices

### Local Policy Documents and Evidence-Based Reviews Relevant to the Economic Environment for Children

Table 3 on Page 62 considers local policy documents and evidence-based reviews which are relevant to the social policy environment and the socioeconomic determinants of child and youth health.

# INCOME INEQUALITY

## Introduction

There has been much debate regarding the influence of income inequality on population health. While it is widely acknowledged that poverty plays a crucial role in shaping health disparities, authors such as Wilkinson and Marmot [5] argue that income inequality itself also plays a role, via its links to psychosocial pathways associated with relative disadvantage. They cite the Whitehall studies of British civil servants, which found that mortality increased in a stepwise manner as relative socioeconomic status decreased, with social gradients being evident even amongst those who were not poor. In addition, they note that while health inequalities exist within societies, there is little association between average income (GDP per capita) and life expectancy across rich countries. Rather, there appears to be a strong correlation between income inequality and mortality. In Wilkinson and Marmot's view, such associations suggest that it is not absolute material deprivation which shapes health at the population level, but rather the effects such inequalities have on psychosocial outcomes such as the degree of control over work, anxiety, depression and social affiliations. In support of this argument, they cite a number of studies which demonstrate social gradients in the lack of control over work, low variety at work and a severe lack of social support, with animal experiments also suggesting that low social status, via its effects on neuroendocrine pathways, leads to atherosclerosis, unfavourable lipid profiles, central obesity, insulin resistance and raised basal cortisol [5].

Others such as Lynch [6] however, would argue that it is not the psychological effects of income inequality which play the greatest role, but rather the lack of material resources (e.g. differentials in access to adequate nutrition, housing and healthcare), coupled with a systematic underinvestment in human, physical, health and social infrastructure (e.g. the types and quality of education, health services, transportation, recreational facilities and public housing available). In Lynch's view, the combination of these negative exposures is particularly important for the health of the most disadvantaged (who have the fewest individual resources), and that in this context, the associations between income inequality and health are not inevitable, but rather are contingent on the level of public infrastructure and resources available. While debate on the precise pathways continues, both sides of the income inequality argument agree, that reducing income inequality by raising incomes for the most disadvantaged, will improve population health [7].

The following section explores income inequalities in New Zealand since 1982 using two different measures, the P80/P20 Ratio and the Gini Coefficient.

### Definition

1. *Income Inequality as measured by the P80/P20 Ratio*
2. *Income Inequality as measured by the Gini Coefficient*

### Data Source

Statistics New Zealand Household Economic Surveys (NZHES n=2,800–3,500 households per survey) via Perry 2012 [8].

Note: The P80/P20 Ratio and Gini coefficient are monitored by the Ministry of Social Development using NZHES data which was available 2-yearly from 1982 to 1998, and 3-yearly thereafter. Since 2007, income data has become available annually through the new NZHES Incomes Survey. The full NZHES (including expenditure data) however remains 3-yearly. For more detail on methodology used see Perry 2012 [8].

### Notes on Interpretation

**P80/P20Ratio:** When individuals are ranked by equivalised household income and then divided into 100 equal groups, each group is called a percentile. If the ranking starts with the lowest income, then the income at the top of the 20<sup>th</sup> percentile is denoted P20 and the income at the top of the 80<sup>th</sup> percentile is called P80. The ratio of the value at the top of the 80<sup>th</sup> percentile to the value at the top of the 20<sup>th</sup> percentile is called the P80/20 ratio and is often used as a measure of income inequality (e.g. a P80/20 ratio of 3.0 indicates that those at the top of the 80<sup>th</sup> percentile have incomes 3.0x higher than those at the top of the 20<sup>th</sup> percentile). In general, the higher the ratio, the greater is the level of inequality [8].





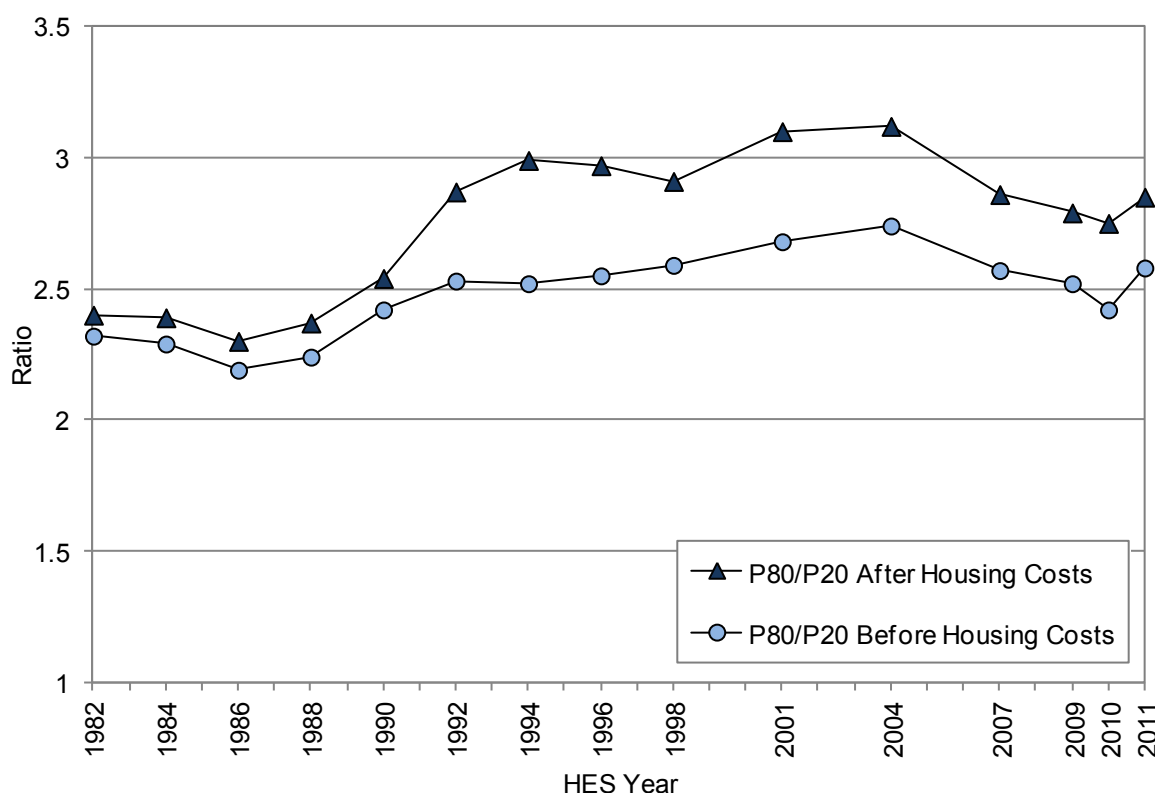
**Gini Coefficient:** The Lorenz curve is a graph with the horizontal axis showing the cumulative % of people in a population ranked by their income. The vertical axis shows the corresponding cumulative % of equivalised disposable household income (i.e. the graph shows the income share of any selected cumulative proportion of the population). The diagonal line represents a situation of perfect equality (i.e. all people having the same income). The Gini coefficient is derived from the Lorenz curve and is the ratio of the area between the actual Lorenz curve and the diagonal (or line of equality), compared to the total area under the diagonal. When the Gini coefficient = 0 all people have the same level of income. When it approaches 1, one person receives all the income (i.e. it is an overall measure of income inequality: the higher the number, the greater the level of inequality) [9]. When comparing changes in income distributions over time, the Gini coefficient is more sensitive to changes in the more dense low to middle parts of the distribution, than it is to changes towards the ends of the distribution [10].

## New Zealand Trends

### Income Inequality: P80/P20 Ratio

In New Zealand during 1982–2011 income inequality, as measured by the P80/P20 ratio, was higher after adjusting for housing costs (as housing costs generally make up a greater proportion of household income for lower income than for higher income households). The most rapid rises in income inequality occurred during 1988–1992. While income inequality also rose during 1994–2004, the rate of increase was slower. During 2004–2007, income inequality fell, a decline which Perry attributes to the Working for Families package. During 2009–2011 however, the impact of the economic downturn and global financial crisis led to volatility in the index, with Perry noting that it may take one or two further surveys before the post-crisis inequality level becomes clear [8] (**Figure 2**).

Figure 2. Income Inequality in New Zealand as Assessed by the P80/P20 Ratio for the 1982–2011 HES Years

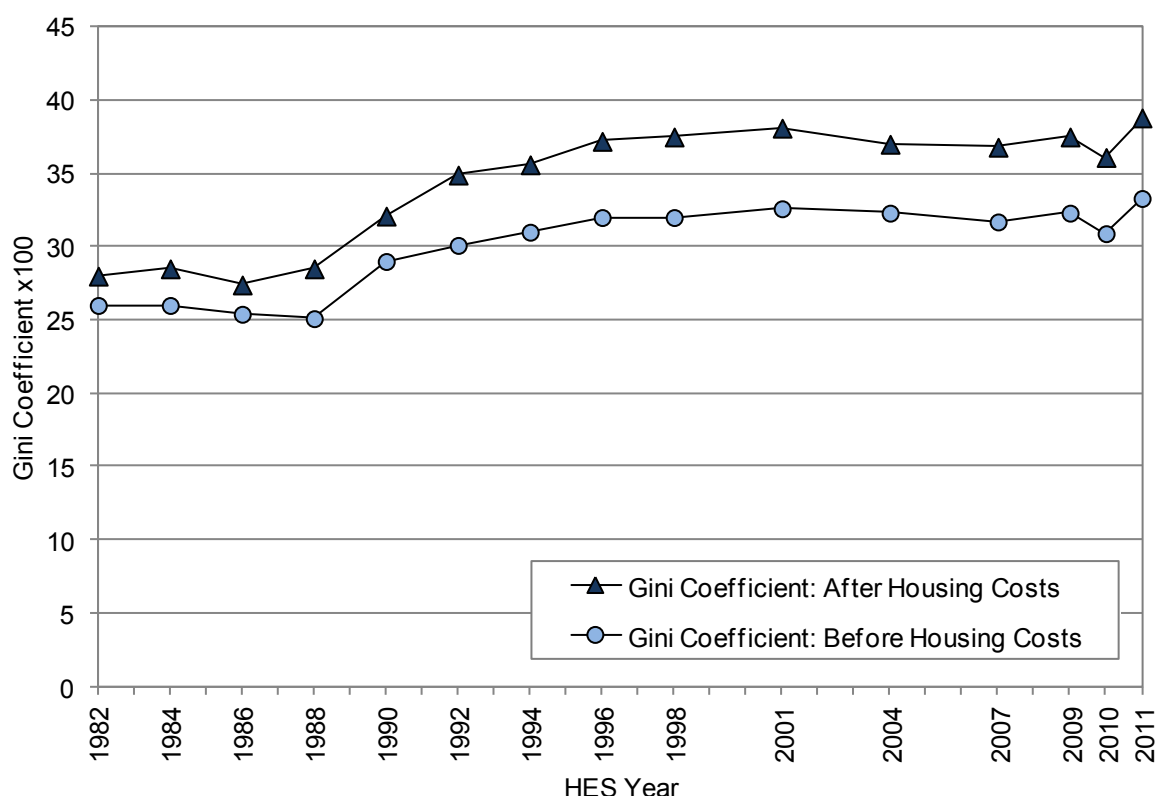


Source: Perry 2012 [8] derived from Statistics NZ Household Economic Survey (HES) 1982–2011

### Income Inequality: Gini Coefficient

In New Zealand during 1982–2011, income inequality as measured by the Gini coefficient, was also higher after adjusting for housing costs. The most rapid rises in income inequality also occurred between the late 1980s and early 1990s. Using both the before and after housing cost measures, the Gini Coefficient declined between 2001 and 2007, a decline which Perry attributes to improving employment and the impact of the Working for Families package. During 2009–2011 however, there was considerable volatility in the Gini coefficient, which Perry attributes to the differing size and timing of the impact of the global financial crisis and associated economic downturn on different parts of the income distribution. Again Perry notes it will take one or two more surveys to see where the inequality trend will settle after the impacts associated with the global financial crisis [8] (Figure 3).

Figure 3. Income Inequality in New Zealand as Assessed by the Gini Coefficient for the 1982–2011 HES Years



Source: Perry 2012 [8] derived from Statistics NZ Household Economic Survey (HES) 1982–2011

## Local Policy Documents and Evidence-Based Reviews Relevant to the Economic Environment for Children

Table 3 on Page 62 considers local policy documents and evidence-based reviews which are relevant to the social policy environment and the socioeconomic determinants of child and youth health.



# CHILD POVERTY AND LIVING STANDARDS

## Introduction

High rates of child poverty are a cause for concern, as low family income has been associated with a range of negative outcomes including low birth weight, infant mortality, poorer mental health and cognitive development, and hospital admissions from a variety of causes [11]. Further, longitudinal studies suggest that exposure to low family income during childhood and early adolescence may increase the risk of leaving school without qualifications, economic inactivity, early parenthood and contact with the justice system. While adjusting for potentially mediating factors (e.g. parental education, maternal age, and sole parent status) reduces the magnitude of these associations somewhat, they do not disappear completely. This suggests that the pathways linking low family income to long term outcomes are complex, and in part may be mediated by other socioeconomic factors [12]. While there is much debate about the precise pathways involved, there is a general consensus that the relationship between poverty and adverse outcomes is non-linear, with the effects increasing most rapidly across the range from partial to severe deprivation [13].

In New Zealand, the Ministry of Social Development has periodically reviewed the socioeconomic wellbeing of families with children using information from two data sources:

1. The NZ Household Economic Survey, which can be used to assess the proportion of families with children who live below the income poverty line [8].
2. The NZ Living Standards Surveys, which use the Economic Living Standards Index (NZELSI) to assess the proportion of families with children who live in severe or significant hardship [14].

The following section uses information from these two data sources to assess the proportion of New Zealand children living below the 60% poverty threshold, or in families exposed to much reduced living standards.

## Children Living in Households Below the Poverty Line

The Ministry of Social Development publishes an annual report on household incomes using information from the NZ Household Economic Survey (NZHES). The following section reviews the proportion of children aged 0–17 years living in households with incomes below the 60% income poverty threshold, by a range of demographic factors.

### Data Source and Methods

#### Definition

1. *Proportion of dependent children aged 0–17 years living below the 60% income poverty threshold before housing costs (BHC)*
2. *Proportion of dependent children aged 0–17 years living below the 60% income poverty threshold after housing costs (AHC)*

#### Data Source

Statistics New Zealand Household Economic Survey (NZHES n=2,800–3,500 households per survey) via Perry 2012 [8]. Note: Child Poverty measures are reported on by the Ministry of Social Development using NZHES data [8] which was available 2-yearly from 1982–1998, and 3-yearly thereafter. Since 2007, income data has become available annually through the new HES Incomes Survey. The full NZHES (including expenditure data) however remains 3-yearly. For more detail on methodology see Perry 2012 [8].

#### Interpretation

Relative poverty measures set a poverty benchmark that rises and falls with changes in national median incomes (i.e. poverty is defined in relation to the incomes of others in the same year). Constant-value (CV) poverty measures select a median at a set point in time (e.g. 1998 or 2007) and then adjust forward and back in time for changes in consumer prices (i.e. they seek to maintain a constant buying power for the poverty benchmark over time). In his 2011 update, Perry [8] notes that in real terms, the median income in 1998 was similar to 1982 and thus there is a good case for using 1998 as the reference year for CV poverty calculations back to 1982, as well as forward from 1998. By 2007 however, the median was 16% higher than in 1998 and by 2009, 26%. Thus the reference year was changed to 2007.



While reporting CV poverty figures back to 1982 using 2007 as the reference tells us what proportion were 'poor' back then, relative to 2007, this approach is not useful for assessing the extent of hardship 'back then' relative to the standards of the day. Thus in the analyses which follow, 2007 CV figures are provided from 2007 onwards, with earlier years using 1998 as the reference year. The first two figures however, report 1998 and 2007 CV figures for the entire period, in order to demonstrate the impact the change of reference year has on the poverty rates produced.

Note: Most income poverty measures use equivalised disposable household income (i.e. after tax household income adjusted for family size and composition). Both measures can be calculated before or after taking housing costs into account. For more detail on the methodology used see Perry 2012 [8].

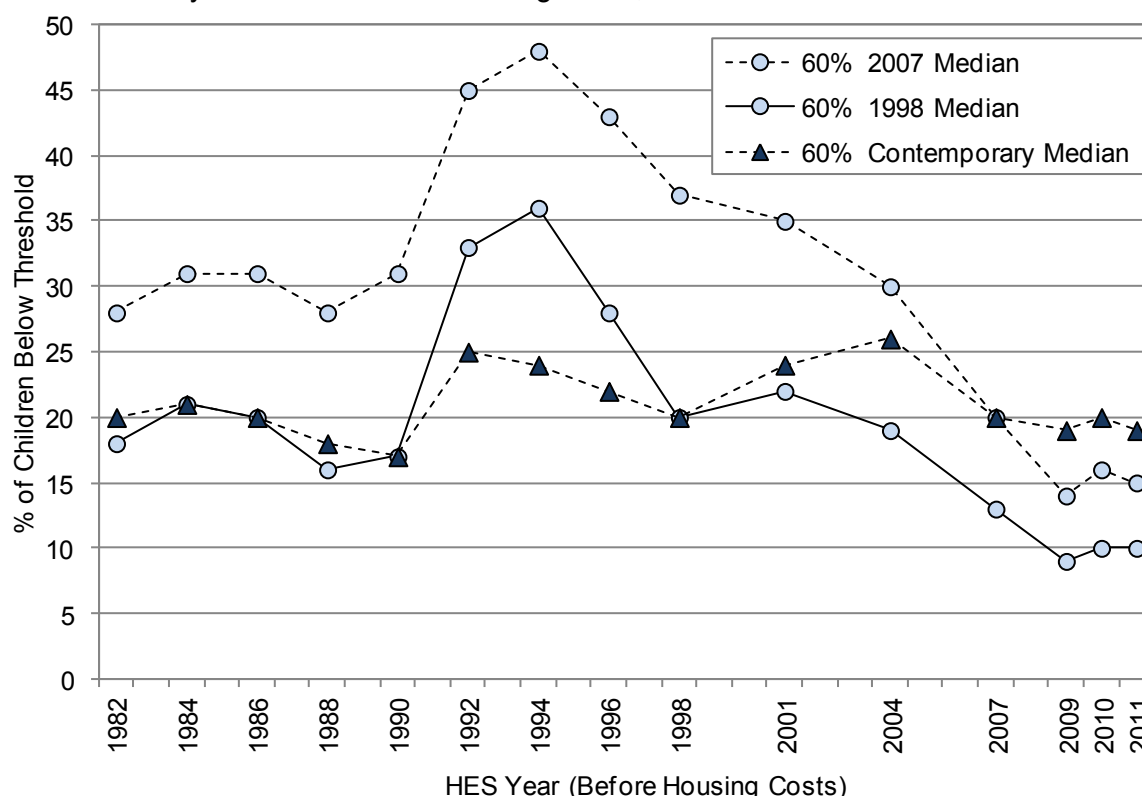
## Child Poverty Trends Using Different Poverty Measures

### Before Housing Costs (BHC)

**Relative Poverty (<60% Contemporary Median):** In New Zealand, relative child poverty rose rapidly during 1990–1992, with Perry [8] attributing this to rising unemployment and the 1991 Benefit Cuts (which disproportionately reduced incomes for beneficiaries). During 1992–1998, relative child poverty then declined, as a result of falling unemployment and the incomes of those around the poverty line rising more quickly than the median. After 1998 however, as economic conditions improved, median incomes again rose, while incomes for many low-income households with children did not, resulting in a rise in child poverty up until 2004. From 2004 to 2007 relative poverty rates again declined as a result of the Working for Families package. Child poverty rates however remained relatively static between 2009 and 2011. Before housing costs, relative child poverty rates in 2011 were similar to those in the 1980s [8] (**Figure 4**).

**Fixed Line Poverty (<60% 1998 and 2007 Median):** In New Zealand during the early 1990s, fixed line child poverty measures increased markedly, for similar reasons to those outlined above. During 1994–1998 however, child poverty rates declined, a trend which Perry attributes to improving economic conditions and falling unemployment. Rates fell more rapidly during 2004–2007 as a result of the Working for Families package. Between 2009 and 2011 child poverty rates remained relatively static [8] (**Figure 4**).

Figure 4. Proportion of Dependent Children Aged 0–17 Years Living Below the 60% Income Poverty Threshold Before Housing Costs, New Zealand 1982–2011 HES Years



Source: Perry 2012 [8], derived from Statistics NZ Household Economic Survey (HES) 1982–2011



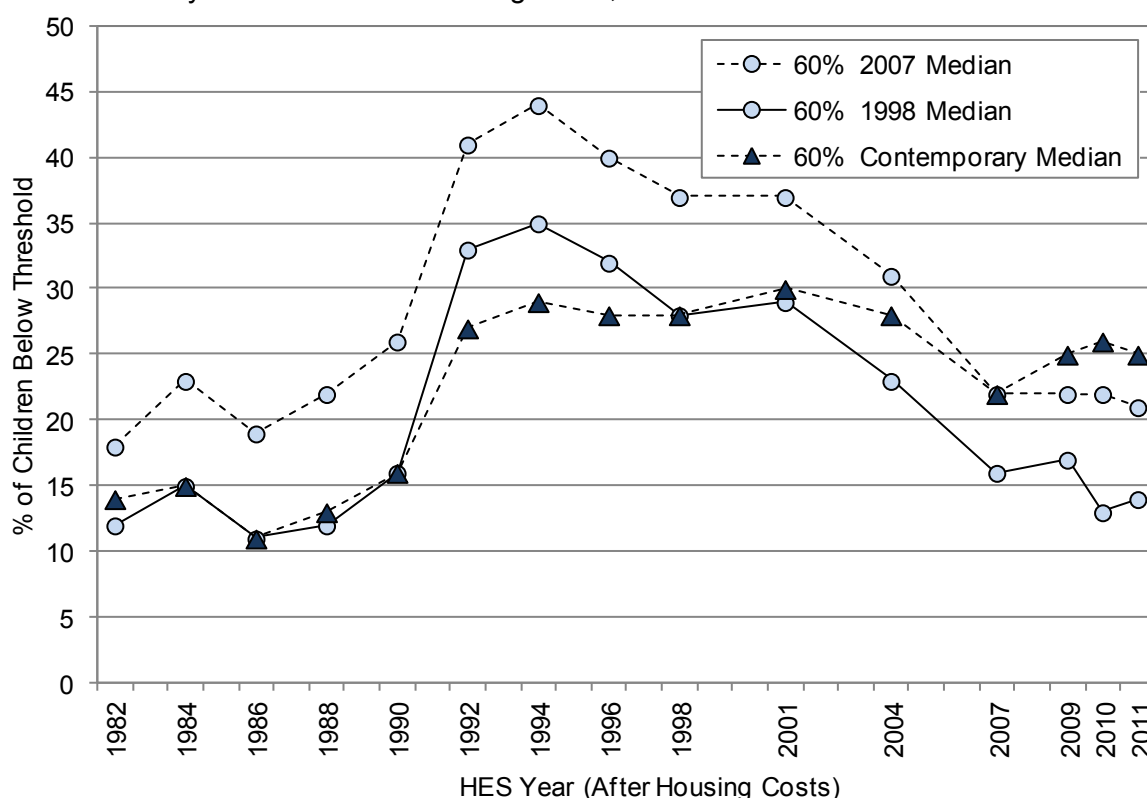


### After Housing Costs (AHC)

**Relative Poverty (<60% Contemporary Median):** In New Zealand during 1982–2011, while trends in relative child poverty after adjustment for housing costs (AHC) were broadly similar to before housing cost measures (BHC), AHC child poverty rates in 2011 were higher than in the 1980s, while BHC measures were closer to 1980s levels. Perry [8] attributes these differences to the fact that housing costs in 2011 accounted for a higher proportion of household expenditure for low-income households than they did in the 1980s (in 1988 17% of households in the lowest income quintile spent more than 30% of their income on housing; in 2007 this figure was 39%). Perry notes however that the income-related rental policies introduced in 2000, along with later changes to Accommodation Supplements, helped reduce housing expenditure for some low income households and that these changes contributed to reductions in AHC child poverty during 2001–2007. There were no further policy changes during 2007–2009 however, with maximum rates of assistance remaining fixed, as housing costs continued to increase. This resulted in increases in AHC child poverty rates during 2007–2009 [8] (**Figure 5**).

**Fixed Line Poverty (<60% 1998 and 2007 Median):** In New Zealand during 1984–2008, trends in fixed line child poverty after adjustment for housing costs, were broadly similar to before housing cost measures, with the fixed line (AHC) poverty rate in 2007 being around the same as it was in the 1980s (in contrast to the relative AHC poverty rate, which was much higher than in the 1980s) (**Figure 5**).

Figure 5. Proportion of Dependent Children Aged 0–17 Years Living Below the 60% Income Poverty Threshold After Housing Costs, New Zealand 1982–2011 HES Years



Source: Perry 2012 [8], derived from Statistics NZ Household Economic Survey (HES) 1982–2011

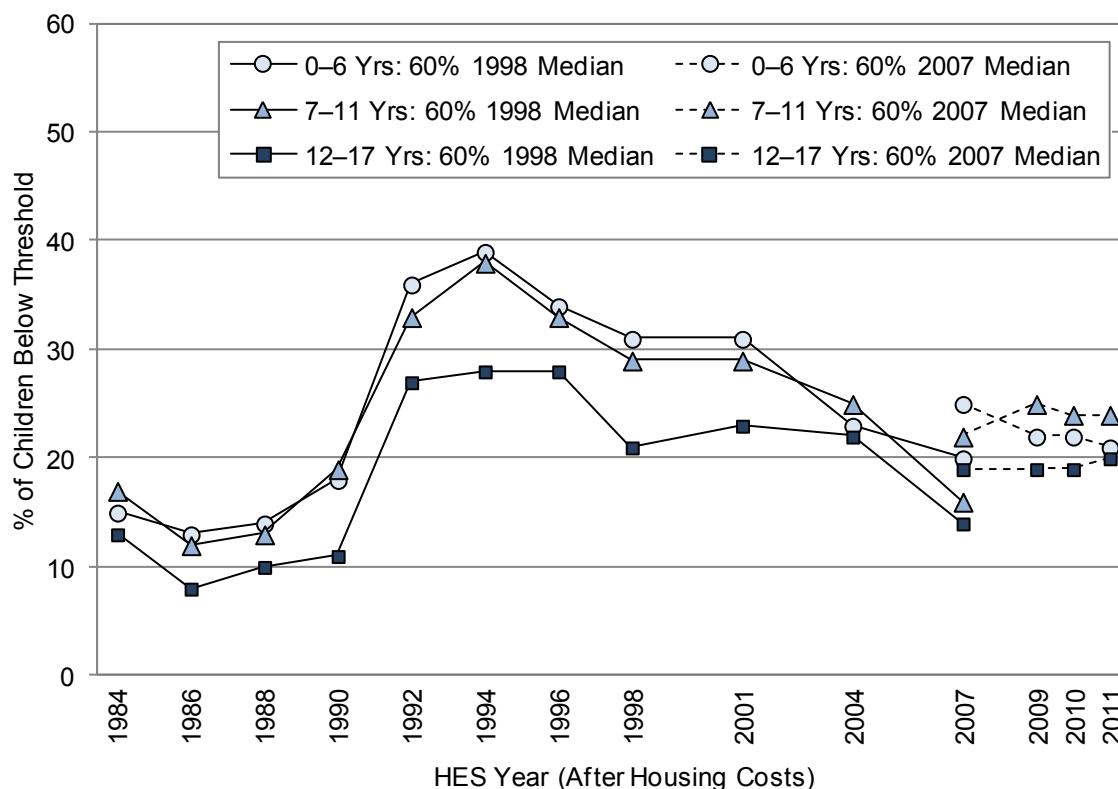
### Child Poverty by Children's Age

In New Zealand during 1984–2011, poverty rates for younger children (0–6 years and 7–11 years) were generally higher than for older children (12–17 years) (**Figure 6**).

### Child Poverty by Number of Children in Household

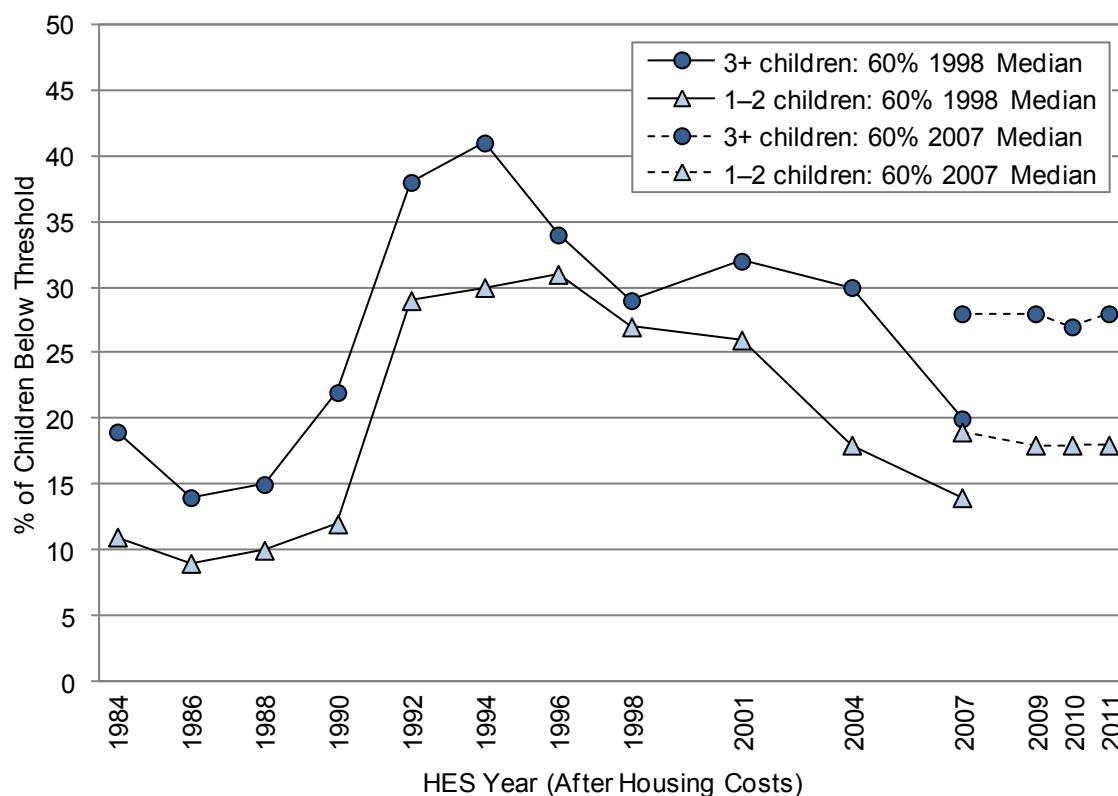
In New Zealand during 1984–2011, child poverty rates for households with three or more children were consistently higher than for those with one or two children (**Figure 7**). (Perry notes that in 2011, children from these larger households made up 48% of all poor children [8]).

Figure 6. Proportion of Dependent Children Living Below the 60% Income Poverty Threshold After Housing Costs by Age, New Zealand 1984–2011 HES Years



Source: Perry 2012 [8], derived from Statistics NZ Household Economic Survey (HES) 1984–2011

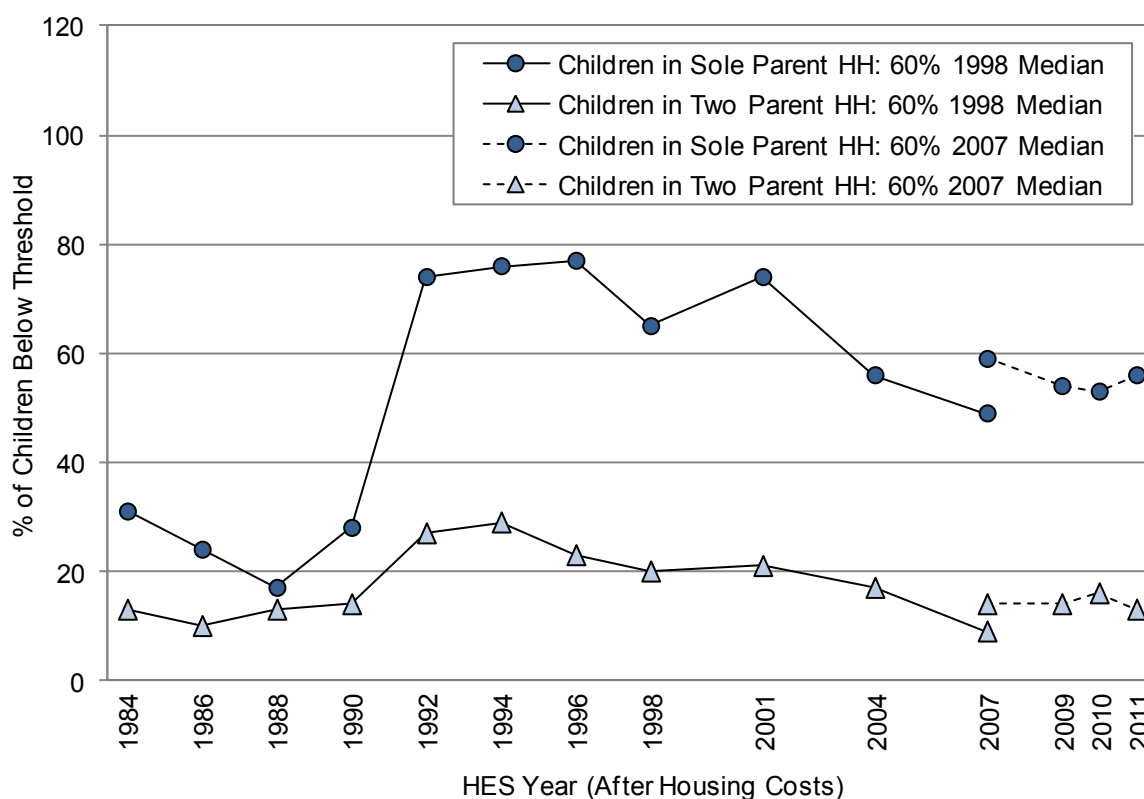
Figure 7. Proportion of Dependent Children Aged 0–17 Years Living Below the 60% Income Poverty Threshold After Housing Costs, by Number of Children in Household, New Zealand 1984–2011 HES Years



Source: Perry 2012 [8], derived from Statistics NZ Household Economic Survey (HES) 1984–2011

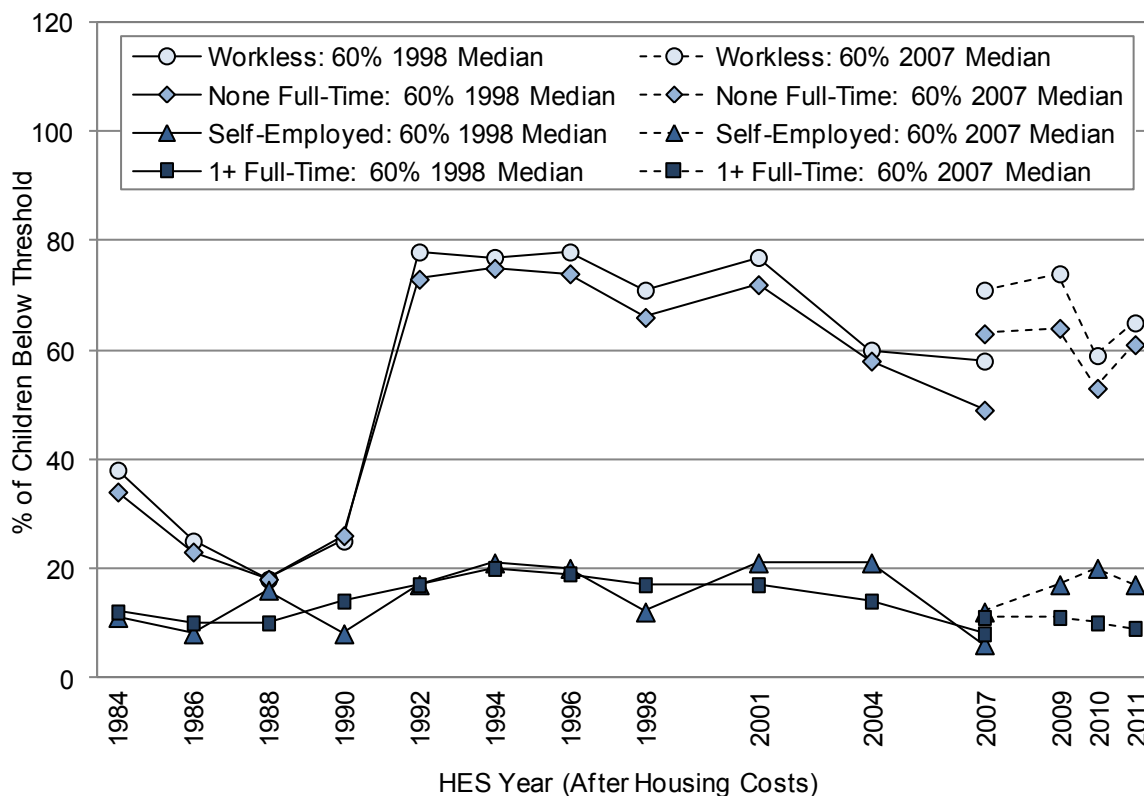


Figure 8. Proportion of Dependent Children Aged 0–17 Years Living Below the 60% Income Poverty Threshold After Housing Costs by Household Type, New Zealand 1984–2011 HES Years



Source: Perry 2012 [8], derived from Statistics NZ Household Economic Survey (HES) 1984–2011

Figure 9. Proportion of Dependent Children Aged 0–17 Years Living Below the 60% Income Poverty Threshold After Housing Costs, by Work Status of Adults in the Household, New Zealand 1984–2011 HES Years



Source: Perry 2012 [8], derived from Statistics NZ Household Economic Survey (HES) 1984–2011



### Child Poverty Trends by Household Type

In New Zealand, child poverty rates for children in both sole-parent and two-parent households increased rapidly between 1988 and 1992. In absolute terms however, rates rose most rapidly for children in sole-parent households (rates peaked at 77% for sole-parent households in 1996 and at 29% for two-parent households in 1994). While rates for both household types declined between 2001 and 2007, during 2007 rates for those in sole-parent households remained higher than their 1980s levels, while rates for two-parent households were similar (**Figure 8**). (Perry notes that one in three sole parent families live in wider households with other adults, and that children living in these “other” households have significantly lower poverty rates than those living in sole parent households, because of the greater household resources available [8]).

### Child Poverty Trends by Work Status of Adults in Household

In New Zealand, child poverty rates for children in workless households, or where no adults worked full-time, increased rapidly during 1988–1992. Poverty rates for children in these households remained elevated during the 1990s (range 66%–78%), before declining during 2001–2007. Even at their nadir in 2007, poverty rates for children in these households remained much higher than 1980s levels. In contrast, increases in child poverty for households where an adult worked full-time, or was self-employed, were much less marked, with rates in 2007–2009 being similar to those in the 1980s (**Figure 9**). (Perry notes that during the 1980s, children in workless households were around twice as likely to be in poor households; during 1992–2004 four times more likely; and during 2007–2011 six to seven times more likely [8]).

## Families with Reduced Living Standards

The Ministry of Social Development has undertaken three national Living Standards Surveys, in 2000, 2004 and 2008. The 2008 Survey collected information from 5000 households on their material circumstances, including ownership and quality of household durables, their ability to keep the house warm, pay the bills, have broken down appliances repaired, and pursue hobbies and other interests [14]. The following section briefly reviews the living standards of children aged 0–17 years, using the 2008 Living Standards Survey’s composite index of deprivation.

#### Data Source and Methods

##### Definition

*Proportion of Children Aged 0–17 Years with Deprivation Scores of Four or More*

##### Data Source

The Ministry of Social Development’s 2008 Living Standards Survey [14].

In the 2008 Living Standards Survey, respondents provided information about themselves and others in their Economic Family Unit (EFU). A respondent’s EFU comprised the respondent and partner (if any), together with their dependent children in the household (if any). This was a narrower concept than the census family unit which includes other family members such as adult children and parents of adult children.

In the survey, total response ethnicity was used, meaning that categories were not mutually exclusive, as one person could be in two or more categories depending on their response. When the analysis was repeated using prioritised ethnicity however, the change in classification had minimal impact on the results.

##### Deprivation Index Used in 2008 Living Standards Survey

In the 2008 Living Standards Survey, a 14 item material deprivation index was used to compare the relative positions of different population groups. Each item in the index assessed an ‘enforced lack’, with items being divided into two categories: ownership/participation, where an item was wanted but not possessed because of cost; and economising items, which focused on cutting back or going without in order to pay for other basic needs. The deprivation score for each respondent was the sum of all enforced lacks, with a cut off of 4+ being used as a measure of material hardship, as it represented the 15% of the population experiencing the most hardship (and was thus seen as being equivalent to the MSD’s income poverty measures).



14 Items (*Enforced Lacks*) are included in 2008 Living Standards Survey Deprivation Index

*Ownership/Participation*

- A good bed
- Ability to keep main rooms adequately warm
- Suitable clothes for important or special occasions
- Home contents insurance
- Presents for family and friends on special occasions

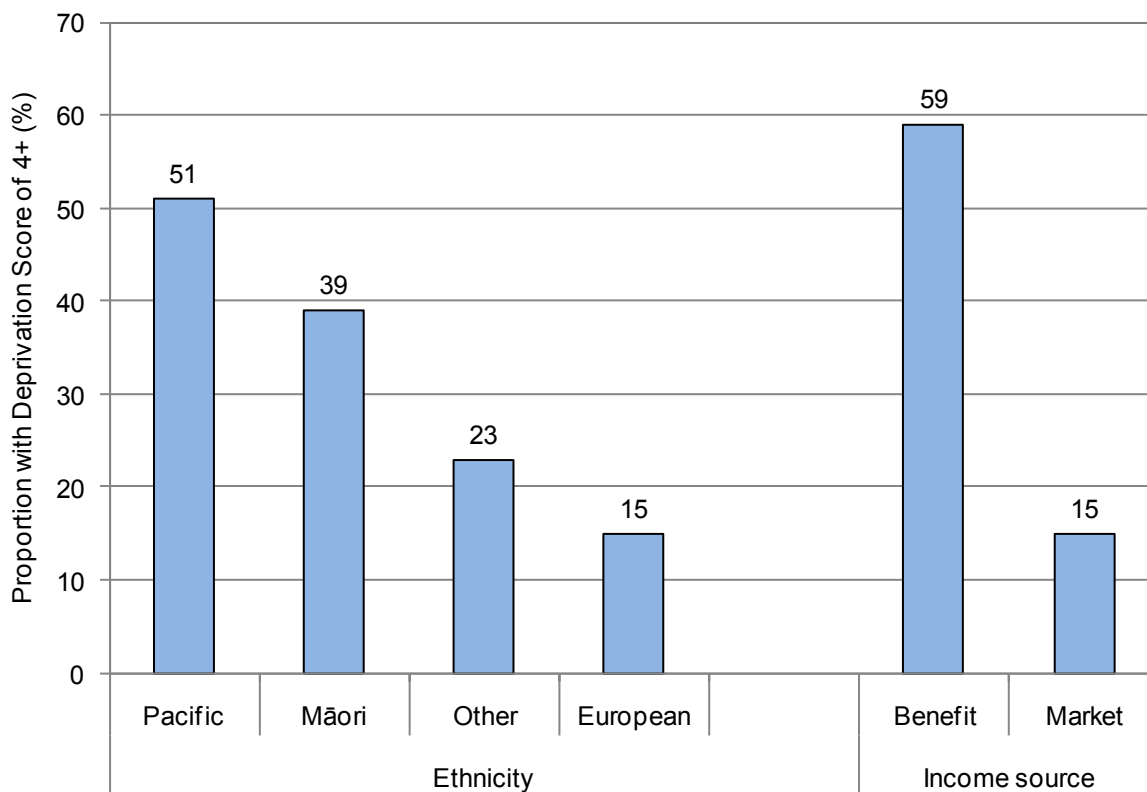
*Economising 'A Lot' (To Keep Down Costs to Help Pay for Other Basics)*

- Continued wearing worn out clothing
- Continued wearing worn out shoes
- Went without or cut back on fresh fruit and vegetables
- Bought cheaper or less meat than wanted
- Postponed visits to the doctor
- Did not pick up a prescription
- Put up with feeling cold to save on heating costs
- Went without or cut back on visits to family or friends
- Did not go to a funeral (tangi) you wanted to

### Proportion of Children with High Deprivation Scores

In the 2008 Living Standards Survey, 51% of Pacific children, 39% of Māori children, 23% of “Other” children and 15% of European children aged 0–17 years scored four or more on the composite deprivation index, which measured a range of “enforced lacks”, as outlined in the Methods box above. In addition, 59% of children whose family’s income source was a benefit had scores of four or more (**Figure 10**). When broken down by individual item, those children who scored four or more on the composite deprivation index had much higher exposures to household economising behaviours such as having to wear worn out shoes or clothing, sharing a bed or bedroom, cutting back on fresh fruit and vegetables and postponing doctors visits because of cost (**Table 2**).

Figure 10. Proportion of Children Aged 0–17 Years with Deprivation Scores of Four or More by Ethnicity and Family Income Source, NZ Living Standards Survey 2008



Source: NZ 2008 Living Standards Survey [14]. Ethnicity is Total Response



Table 2. Restrictions Experienced by Children, by the Deprivation Score of their Family, NZ Living Standards Survey 2008

	All	0	1	2-3	4-5	6+
<b>Distribution of children across the DEP scores</b>	<b>100</b>	<b>41</b>	<b>18</b>	<b>18</b>	<b>10</b>	<b>12</b>
Average number of children per family		2.2	2.3	2.5	2.7	2.7
Enforced lacks of children's items						
Friends to birthday party	6	-	-	5	9	31
Waterproof coat	8	-	2	8	11	39
Separate bed	5	-	-	3	13	20
Separate bedrooms for children of opposite sex (10+ yr)	8	2	3	6	14	24
All school uniform items required by the school	5	-	-	2	9	19
Economising 'a lot' on children's items to keep down costs to afford other basics						
Children continued to wear worn out shoes/clothes	8	-	-	5	15	39
Postponed child's visit to doctor	2	-	-	-	5	13
Did not pick up prescription for children	1	-	-	-	3	7
Unable to pay for school trip	3	-	-	-	6	17
Went without music, dance, kapa haka, art etc	9	2	4	8	18	37
Involvement in sport had to be limited	8	-	4	6	17	32
Multiple deprivation						
4+ of the 11 children's items above	6	-	-	2	11	35
5+ of the 11 children's items above	4	-	-	-	7	29
6+ of the 11 children's items above	3	-	-	-	2	24
Children's serious health problems reported by respondent						
Serious health problems for child in the last year	28	22	25	31	35	43
Enforced lacks reported by respondent in child's family						
Keep main rooms warm	9	-	3	8	18	37
Meal with meat/chicken/fish at least each second day	3	-	-	-	6	18
Cut back/did without fresh fruit and vegetables	14	-	-	15	32	63
Postponed visit to doctor	14	-	4	18	38	65
One weeks holiday away from home in last year	33	14	28	42	52	73
Home computer	8	3	6	8	13	25
Internet access	9	-	7	9	18	28
Housing and local community conditions						
Physical condition of house (poor/very poor)	7	-	3	7	15	28
Major difficulty to keep house warm in winter	22	9	13	27	38	58
Dampness or mould (major problem)	17	5	13	18	37	49
Crime or vandalism in the area (major problem)	11	6	6	11	13	31

Source: NZ 2008 Living Standards Survey [14]



## Local Policy Documents and Evidence-Based Reviews Relevant to the Social Determinants of Health

**Table 3** below provides a brief overview of local policy documents and evidence-based reviews which consider policies to address the social determinants of health. In addition, **Table 12** on **Page 103** reviews documents which consider the relationship between housing and health.

Table 3. Local Policy Documents and Evidence-Based Reviews Which Consider Policies to Address the Social Determinants of Child and Youth Health

Ministry of Health Policy Documents
<p>Ministry of Health. 2002. <b>Reducing Inequalities in Health</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/reducing-inequalities-health">http://www.health.govt.nz/publication/reducing-inequalities-health</a></p> <p>This report considers socioeconomic gradients and ethnic disparities in health in New Zealand. The report finds that addressing these inequalities in health requires a population health approach that takes into account all the influences on health and how they can be tackled. This approach requires both intersectoral action that addresses the social and economic determinants of health and action within health and disability services. The report proposes principles that should be applied to ensure that health sector activities help to overcome health inequalities. The proposed framework for intervention entails developing and implementing comprehensive strategies at four levels: structural (targeting the social, economic, cultural and historical determinants of health inequalities; intermediary pathways (targeting the material, psychosocial and behavioural factors that mediate health effects; health and disability services (undertaking specific actions within health and disability services); and impact (minimising the impact of disability and illness on socioeconomic position). The framework can be used to review current practice and ensure that actions contribute to improving the health of individuals and populations and to reducing inequalities in health.</p>
Other Government Publications
<p>New Zealand Treasury. 2011. <b>Working Towards Higher Living Standards for New Zealanders. New Zealand Treasury Paper 11/02</b>. Wellington: New Zealand Treasury. <a href="http://www.treasury.govt.nz/publications/research-policy/tp/higherlivingstandards">http://www.treasury.govt.nz/publications/research-policy/tp/higherlivingstandards</a></p> <p>This paper discusses the Treasury's understanding of living standards, which are defined as incorporating a broad range of material and non-material factors such as trust, education, health and environmental quality. The Treasury has developed a 'Living Standards Framework' centred on four main capital stocks: financial/physical, human, social, and natural; from which flows of material and non-material goods and services which enhance living standards are derived. The importance of the way living standards are distributed across society, and consideration of the distributional impacts of policy choices are highlighted as core aspects of policy advice.</p>
<p>Public Health Advisory Committee. 2004. <b>The Health of People and Communities. A Way Forward: Public policy and the economic determinants of health</b>. Wellington: Public Health Advisory Committee. <a href="http://nhc.health.govt.nz/publications/phac-pre-2011/health-people-and-communities-way-forward-public-policy-and-economic">http://nhc.health.govt.nz/publications/phac-pre-2011/health-people-and-communities-way-forward-public-policy-and-economic</a></p> <p>This report reviews the relationship between socioeconomic status and health, and focuses on the role public policy can play in reducing health inequalities. The report begins with a review of socioeconomic and ethnic disparities in health, based on a literature review and Māori analysis; interviews with government and non-government agencies; and a workshop and hui that looked at possible policy responses to identified public health problems. Priorities for action are identified, including: an official poverty measure, reduction in child poverty; a "whole of government" responsibility for coordinating and monitoring policy for reducing health inequalities; focusing on making transparent the changing relationships of socioeconomic status and ethnicity to health outcomes and on tracing the health effects of central and local government policies; and funding research to identify more effective policy interventions and to better understand the causal paths linking socioeconomic status, ethnicity and health.</p>
<p>Jacobsen V, et al. 2002. <b>Investing in Well-being: An Analytical Framework. New Zealand Treasury Working Paper 02/23</b>. Wellington: New Zealand Treasury. <a href="http://www.treasury.govt.nz/publications/research-policy/wp/2002/02-23/">http://www.treasury.govt.nz/publications/research-policy/wp/2002/02-23/</a></p> <p>This paper reports on a Treasury project to identify cost-effective interventions to improve outcomes for children and young adults, to maximise the value of government expenditure across the social sector and provide a framework to compare interventions across sectors. It includes a life-course view of child development that emphasises that experiences in childhood affect wellbeing throughout life. It also includes a review of the literature on how childhood experiences can affect later wellbeing; how child development and outcomes are influenced by individual, family and communal factors and how risk and resilience can be used to indicate individuals at increased risk of negative outcomes. Case studies of youth suicide, teenage pregnancy, educational underachievement and youth inactivity include literature reviews on the effectiveness of interventions.</p>

Mayer SE. 2002. **The Influence of Parental Income on Children's Outcomes**. Wellington: Ministry of Social Development. <http://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/research/influence-parental-income/influence-of-parental-income.pdf>

This report reviews theoretical basis of how parental income influences children's outcomes. It discusses a range of methodological issues before reviewing research into the effects of parental income on: cognitive test scores; socio-emotional functioning, mental health and behavioural problems; physical health; teenage childbearing; educational attainment; and future economic status. It considers whether the source of parental income matters, whether the effect of income varies with the age of the child, or their gender or ethnicity. The report finds that parental income is positively associated with all outcomes covered in the review, but when family background variables were controlled, the estimated size of the effect of parental income reduces, and the residual effects are generally small to modest on most outcomes. Effects were larger when low income persisted over time and there was some evidence to suggest that income in early childhood was more important for educational outcomes. There was too little research to draw strong conclusions about the impact of parental income on health. The report concludes that parental income contributes to many aspects of children's wellbeing, suggesting that that income gains have the potential to make a significant cumulative difference to the lives of children. A more recent follow-up study by the same author, examining evidence from the USA only, is available at <http://www.irp.wisc.edu/publications/focus/pdfs/foc272e.pdf>.

#### Cochrane Systematic Reviews

Lucas P, et al. 2008. **Financial benefits for child health and well-being in low income or socially disadvantaged families in developed world countries**. Cochrane Database of Systematic Reviews  
doi:10.1002/14651858.CD006358.pub2 <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006358.pub2/abstract>

This review assessed the effectiveness of direct financial benefits to socially or economically disadvantaged families in improving children's health, wellbeing and educational attainment. Nine RCTs, including over 25,000 participants, were included in the review. Eight of the studies assessed the effects of welfare reforms (changes to welfare payments including cash incentives such as negative taxation or income supplements combined with work support or requirement to work) and one study assessed a teenage pregnancy reduction programme. No effect was observed on child health, measures of child mental health or emotional state. Non-significant effects favouring the intervention group were seen for child cognitive development and educational achievement, and a non-significant effect favouring controls in rates of teenage pregnancy. While the authors did not find evidence to support the use of financial benefits as an intervention to improve child health, the conclusions were limited by the fact that most of the interventions had small effects on overall household income and were accompanied by strict conditions for receipt of payment. Gaps in the research evidence remain in the evaluation of unconditional payments of higher value, with high quality child outcome measures.

#### Other Systematic Reviews

Bambra C, et al. 2010. **Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews**. Journal of Epidemiology and Community Health, 64(4), 284-91.

This systematic review of systematic reviews (from developed countries, published 2000 to 2007) assessed the health effects of any intervention based on the wider determinants of health (water and sanitation, agriculture and food, access to health and social care services, unemployment and welfare, working conditions, housing and living environment, education, and transport). Thirty reviews were identified. Only reviews with adult participants (16 years and over) were included. Generally, the effects of interventions on health inequalities were unclear. However, there was evidence to suggest that certain categories of intervention, particularly in housing and the work environment may have a positive impact on inequalities, or on the health of specific disadvantaged groups.

Oliver S, et al. 2008. **Health promotion, inequalities and young people's health: a systematic review of research**. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.  
<http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2412>

This systematic review examined whether, and how, health promotion and public health research among young people has addressed inequalities in health. The researchers sought to identify how much research activity has addressed health inequalities among young people, what types of research have looked at gaps or gradients in health status, how much of this research specifically relates to socially disadvantaged young people, and how much of the research addresses the impact of structural interventions. The review identified 191 mostly observational studies, most of which were conducted in the USA, examined physical health (inequalities research) or health behaviours (intervention research) and sampled broad populations rather than defined disadvantaged groups. Most studies did not explicitly aim to measure or reduce inequalities. Recommendations for researching interventions intended to reduce inequalities are made including: to investigate appropriate research methods; to conduct high quality outcome evaluations of interventions which compare outcomes between different groups, especially SES comparisons; to conduct such evaluations with vulnerable groups; rigorous evaluations of the effects of structural and social support interventions which earlier reviews have highlighted as having potential for reducing inequalities; and evaluations which can provide information on the implementation of interventions and their acceptability to young people and their families.

## Other Relevant New Zealand Evidence

Expert Advisory Group on Solutions to Child Poverty. 2012. **Solutions to Child Poverty in New Zealand: Issues and Options Paper for Consultation**. Wellington: Office of the Children's Commissioner.

[http://www.occ.org.nz/publications/child\\_poverty](http://www.occ.org.nz/publications/child_poverty)

This report presents the initial package of proposals to reduce child poverty and mitigate its effects, developed by the Expert Advisory Group on Solutions to Child Poverty, established in March 2012 by the Children's Commissioner. The group examined international and New Zealand evidence on child poverty and its solutions, which are summarised in this document and available in a series of working papers on the website (the health policy working paper is available at: [http://www.occ.org.nz/\\_data/assets/pdf\\_file/0004/9850/No\\_17\\_-\\_Health\\_policy.pdf](http://www.occ.org.nz/_data/assets/pdf_file/0004/9850/No_17_-_Health_policy.pdf)). Proposals include: developing a standard approach to measuring child poverty; increased household incomes through changes to the child support and Family Tax Credit systems, a universal Child Payment and increasing parents' employment earnings; improvements in housing quality and affordability; and health and education system recommendations. Proposals for the health system include: improvements to maternity care to increase the uptake and early engagement of women from low socioeconomic backgrounds, especially teenagers, Māori and Pasifika, and integrated continuity of service from antenatal to age five; improved integration of health and social services for pre-school children; improved access to primary care; and youth health care through secondary schools. A final report will be published in December 2012.

Rowe Davies Research for Every Child Counts. 2012. **The Netherlands Study: Learning from the Netherlands to improve outcomes for New Zealand's children**. Wellington: Every Child Counts.

<http://www.everychildcounts.org.nz/news/the-netherlands-study-2/>

The Netherlands achieves high OECD rankings in child wellbeing outcomes, at relatively low cost compared to countries with similar outcomes. This report considers whether there are specific policies that contribute to these outcomes and have the potential to inform New Zealand's efforts to improve child wellbeing and status. The report found that a culture of respect for children and of the caring responsibilities of parents, combined with a universal approach to supporting parents, makes it easier for parents and children to access support when they need to and contributes to child wellbeing. Systematic, nationwide programmes appeared to be more widespread in the Netherlands. Differences in parental leave entitlement and work patterns, out-of-school rather than pre-school care, parent education and parent involvement in schools, generous housing assistance, rates of sole parenthood and teen parenthood, and historical difference in terms of colonisation were identified. The report makes a number of recommendations for New Zealand, including: expanding the reach of effective parent support and education programmes; expanding Plunket and well-child services to include access to practical help with childcare; developing effective services for mothers with post natal depression to improve their sensitivity to their infants; expanding the availability of out-of-school care; increasing statutory parental leave; and improving the effective provision of state-funded housing for parents.

Couchman J & Baker K. 2012. **One step at a time: Supporting families and whānau in financial hardship. A Families Commission research report**. Wellington: Families Commission.

<http://www.familiescommission.org.nz/publications/research-reports/one-step-at-a-time>

This report aims to assist the Families Commission in supporting families and whānau in financial hardship, by examining practices that community organisations use when working with families/whānau, and investigating how existing services can provide more effective support, to identify practical strategies for working with families/whānau. Five case studies of community organisations that have worked in partnership with the Families Commission were undertaken. These included interviews with family/whānau, staff, and other supportive organisations, hui, and focus groups. Findings included: building life skills and self-worth, and creating a less oppressive environment (through reducing the presence of fringe lenders, takeaways and alcohol outlets, and gambling machines) to improve health and reduce addictions, may be more effective than teaching 'financial education'; support is most effective when it is 'inside out' (driven from within a group or community), 'early intervention' may be seen as 'outside in' and the research suggested identifying 'opportunities for engagement', and to focus on building relationship networks from within a community, which can identify problems early would be helpful. Success factors included high-trust relationships, advocacy, promoting access to cultural, social, economic and environmental resources and the development of mana or self-esteem. A number of policy directions are identified.

Public Health Advisory Committee. 2010. **The Best Start in Life: Achieving effective action on child health and wellbeing**. Wellington: Ministry of Health. <http://nhc.health.govt.nz/resources/publications/best-start-life-achieving-effective-action-child-health-and-wellbeing>

This Public Health Advisory Committee report to the Minister of Health highlights that New Zealand ranks low in child health outcomes compared with other OECD countries, and there are wide disparities in the health outcomes of New Zealand children. It identifies four major improvements that are necessary across government and the health and disability sector to improve outcomes: strengthen leadership to champion child health and wellbeing; develop an effective whole-of-government approach for children; establish an integrated approach to service delivery for children; and monitor child health and wellbeing using an agreed set of indicators. Health sector recommendations include: prioritisation of, and increased spending on child health; development of DHB child health implementation plans with measurable outcomes and accountabilities; improved access to primary care; and ensuring a seamless transition from maternity services to health care services for infants and young children.



Fletcher M & Dwyer M. 2008. **A Fair Go For All Children: Actions to address child poverty in New Zealand.** Wellington: Office of the Children's Commissioner. [http://www.occ.org.nz/home/childpoverty/the\\_report](http://www.occ.org.nz/home/childpoverty/the_report)

This report, commissioned by the Children's Commissioner and Barnardos, summarises the level and distribution of child poverty in New Zealand. It reviews the consequences of child poverty, including the effects on child health, development, educational achievement and long term outcomes, and the cost to society including extra spending on services for preventable problems and long term costs of reduced economic capacity resulting from failure of individuals to reach their potential. A large number of proposals for action are identified including: giving children a good start (such as improving access to primary care and early childhood education and improving educational outcomes for young mothers); supporting parents to work (including improvements in paid parental leave and affordable out-of-school services); ensuring an adequate income for all families with children; and setting goals and measurable targets.

#### Other Relevant International Evidence

Macintyre S. 2007. **Inequalities in Health in Scotland: What are they and what can we do about them.** Glasgow: MRC Social & Public Health Sciences Unit. <http://www.sphsu.mrc.ac.uk/reports/OP017.pdf>

This report considered the basis for social inequalities in health and the current evidence for interventions and strategies to address them. It examined the characteristics of policies which are likely to be effective in reducing inequalities including structural changes in the environment (e.g. traffic calming, installing heating in damp cold houses); legislative and regulatory controls (e.g. drink driving legislation, house building standards); fiscal policies (e.g. increase price of tobacco and alcohol products); income support (e.g. tax and benefit systems); reducing price barriers (e.g. free prescriptions, school meals); improving accessibility of services (e.g. location and accessibility of primary health care); prioritising disadvantaged groups (e.g. multiply-deprived families and communities); offering intensive support (e.g. home visiting, good quality pre-school day care); and starting young (e.g. pre and post natal support pre-school day care). The report identifies potential for competition between the goals of producing aggregate health gain and reducing inequalities.

Marmot M, et al. 2010. **Fair Society, Health Lives: The Marmot Review.** London: The Marmot Review. <http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review>

This is the final report of the Marmot Review, an independent review set up at the request of the UK Secretary of State for Health to propose the most effective evidence-based strategies for reducing health inequalities in England from 2010. The extensive report identifies a number key messages including: reducing health inequalities is a matter of fairness and social justice; there is a social gradient in health, action should focus on reducing the gradient; health inequalities result from social inequalities, action on health inequalities requires action across all the social determinants of health; focusing solely on the most disadvantaged will not reduce health inequalities sufficiently, reducing the gradient requires universal action, but with a scale and intensity that is proportionate to the level of disadvantage (proportionate universalism); action taken to reduce health inequalities has economic benefits; fair distribution of health, wellbeing and sustainability are important than economic growth and tackling inequalities in health and tackling climate change must go together. The report identifies six policy objectives to reduce inequalities, for which priority objectives and policy recommendations are made:

1. Give every child the best start in life
2. Enable all children young people and adults to maximise their capabilities and have control over their lives
3. Create fair employment and good work for all
4. Ensure healthy standard of living for all
5. Create and develop healthy and sustainable places and communities
6. Strengthen the role and impact of ill health prevention

The report found that delivering these policy objectives requires action across sectors and national policies require effective local delivery systems focused on health equity in all policies, and effective local delivery requires effective participatory decision-making at the local level.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**



# UNEMPLOYMENT RATES

## Introduction

In the quarter ending December 2009, seasonally adjusted unemployment rates rose to 6.9%, their eighth consecutive quarterly rise. Since then unemployment rates have remained in the mid to high 6% range, with rates in the June quarter of 2012 being 6.8% [15]. Throughout this period, unemployment has been higher for Māori and Pacific people, young people (particularly those 15–19 years) and those without formal qualifications [16]. Such increases are of concern for New Zealand children and young people for two reasons:

Firstly, research suggests that children in families where their parents are unemployed have higher rates of psychosomatic symptoms, chronic illnesses and low wellbeing, and that while the magnitude of these associations is reduced once other potentially mediating factors are taken into account (e.g. parents' former occupation, sole parent status, and migrant status), the associations do not disappear completely [17]. Further, research suggests that these negative effects may be mediated via the impact unemployment has on parents' mental health, with the mental distress associated with decreased social status, disruption of roles, loss of self-esteem and increased financial strain, all impacting negatively on parents' emotional state [17]. This in turn may lead to non-supportive marital interactions, compromised parenting, and children's internalising (e.g. withdrawal, anxiety, depression) and externalising (e.g. aggressive or delinquent behaviour, substance abuse) behaviour [18].

Secondly, for young people the research suggests that unemployment leads to a range of negative psychological outcomes including depression, anxiety and low self-esteem, which are in turn associated with adverse outcomes such as heavy tobacco, alcohol and drug use; and higher mortality from suicide and accidents [19]. While social support may reduce the psychological distress associated with unemployment, the type of support provided is important (e.g. while positive support from family and friends decreases psychological distress amongst unemployed youth, parental advice may at times increase distress, as it may be perceived as pressure to find a job [19]). On a more positive note, research also suggests that this psychological distress decreases once young people find permanent employment, or return to further education [19].

The following section uses information from Statistics New Zealand's Quarterly Household Labour Force Surveys, to review unemployment rates since 1986.

### Data Source and Methods

#### Definition

1. *Unemployment Rate: The number of unemployed people expressed as a percentage of the labour force*

#### Data Source

Statistics New Zealand's Household Labour Force Survey (n≈15,000 households). Quarterly since March 1986 and available on Statistics New Zealand's website [www.stats.govt.nz](http://www.stats.govt.nz)

#### Notes on Interpretation

Unemployed refers to all people in the working-age population who during the reference week were without a paid job, were available for work and:

- (a) had actively sought work in the past four weeks ending with the reference week, or
- (b) had a new job to start within four weeks [20]

Note 1: A person whose only job search method in the previous four weeks has been to look at job advertisements in the newspapers is not considered to be actively seeking work.

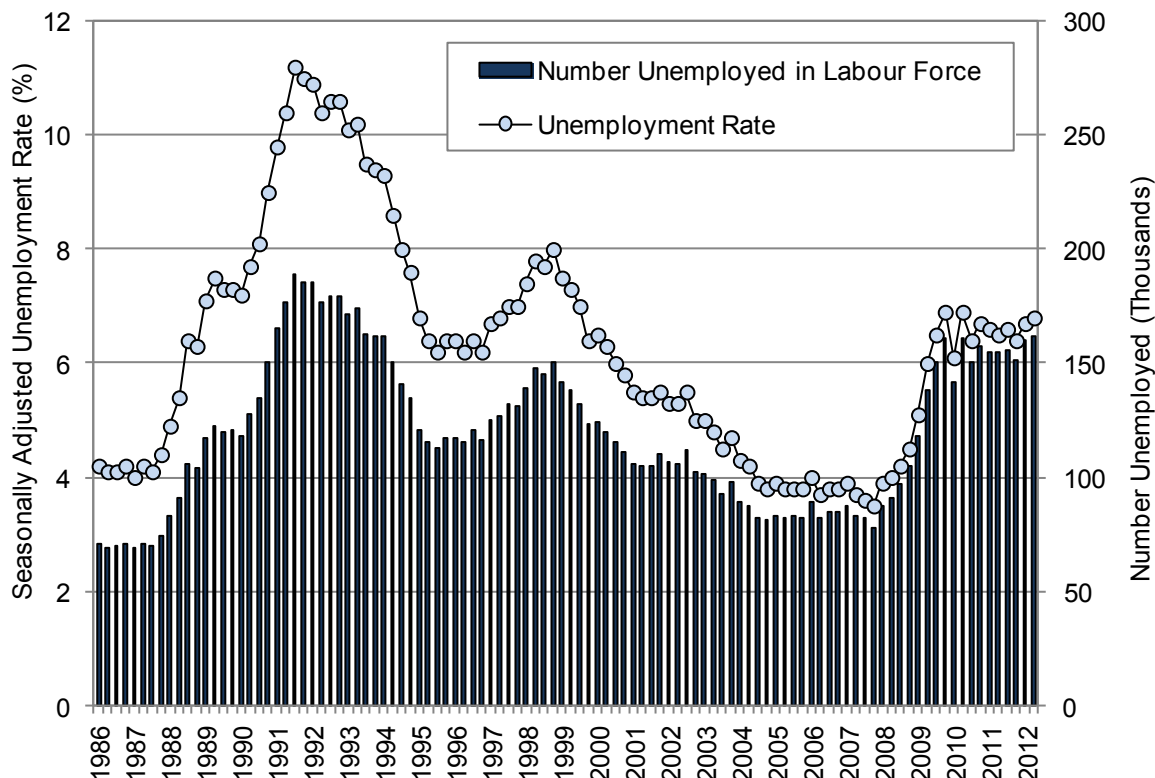
Note 2: Seasonal adjustment makes data for adjacent quarters more comparable by smoothing out the effects of any regular seasonal events. This ensures the underlying movements in time series are more visible. Each quarter, the seasonal adjustment process is applied to the latest and all previous quarters. This means that seasonally adjusted estimates for previously published quarters may change slightly [21].

## New Zealand Distribution and Trends

### Seasonally Adjusted Unemployment Rates

In the quarter ending June 2012, the seasonally adjusted unemployment rate rose to 6.8%, while seasonally adjusted unemployment numbers increased from 160,000 in the March 2012 quarter to 162,000 in the June quarter (**Figure 11**). The number of people employed decreased by 2,000 to reach 2,227,000 [15].

Figure 11. Seasonally Adjusted Unemployment Rates, New Zealand Quarter 1 (March) 1986 to Quarter 2 (June) 2012



Source: Statistics New Zealand, Household Labour Force Survey; Rates have been seasonally adjusted

### Unemployment Rates by Age

In New Zealand during June 1987–2012, unemployment rates were consistently higher for younger people (15–19 years > 20–24 years > 25–29 years > 35–39 years and 45–49 years). During the year ending June 2012, annual unemployment rates were 23.7% for those aged 15–19 years and 12.8% for those aged 20–24 years (**Figure 12**).

### Unemployment Rates by Age and Gender

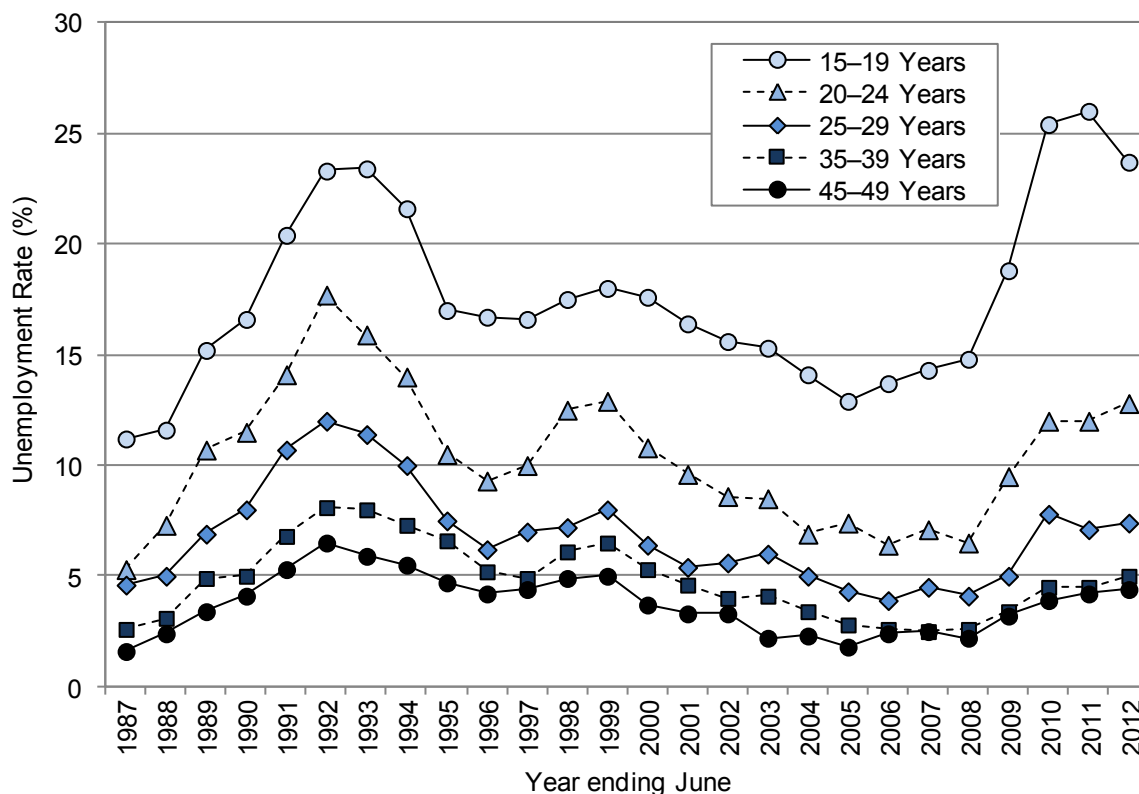
In New Zealand during June 1987–2012, there were no consistent gender differences in unemployment rates for young people aged 15–24 years. During the year ending June 2012, unemployment rates for those aged 15–19 years were 21.9% for females and 25.4% for males, while for those aged 20–24 years, rates were 12.8% for both females and males (**Figure 13**).

### Unemployment Rates by Ethnicity

In New Zealand during 2008(Q1)–2012(Q2) unemployment rates were consistently higher for Māori and Pacific, followed by Asian/Indian and then European people. Unemployment rates increased for all ethnic groups during 2008 and 2009, but became more static during 2010(Q1)–2012(Q2). During 2012(Q2), unemployment rates were 12.8% for Māori, 14.9% for Pacific, 8.2% for Asian/Indian and 5.2% for European people (**Figure 14**).

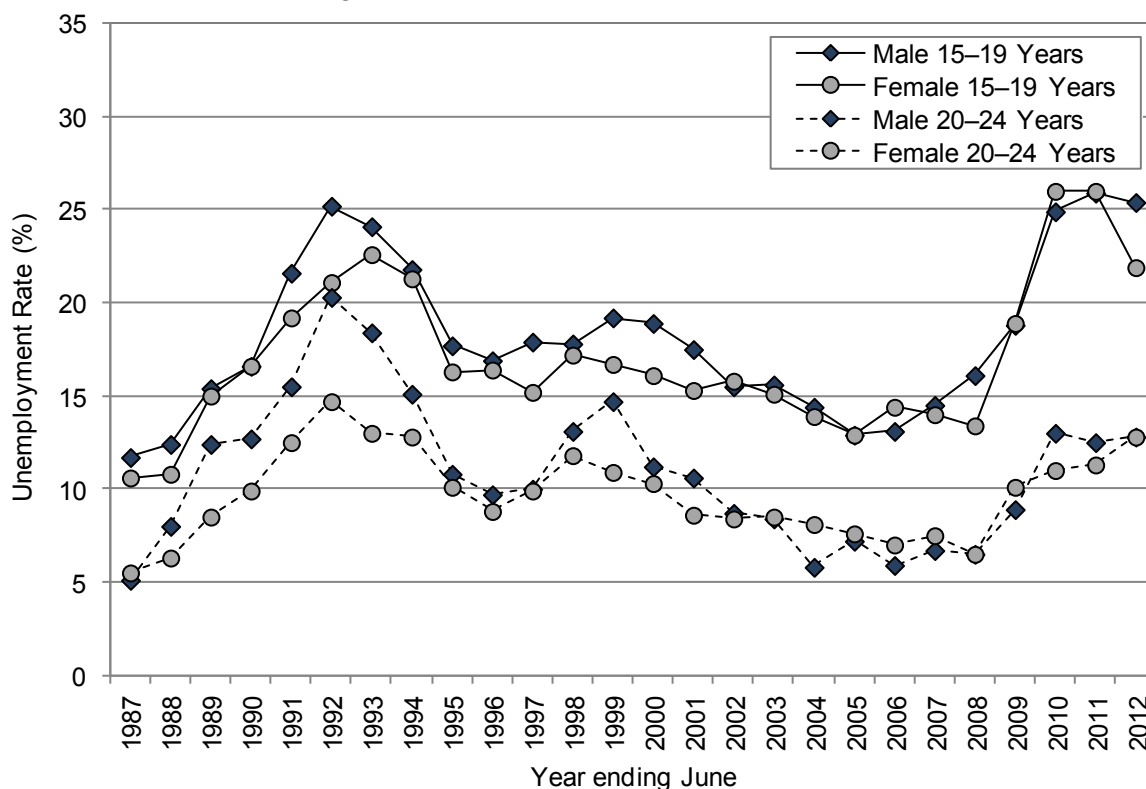


Figure 12. Unemployment Rates by Age (Selected Age Groups), New Zealand Years Ending June 1987–2012



Source: Statistics New Zealand Household Labour Force Survey

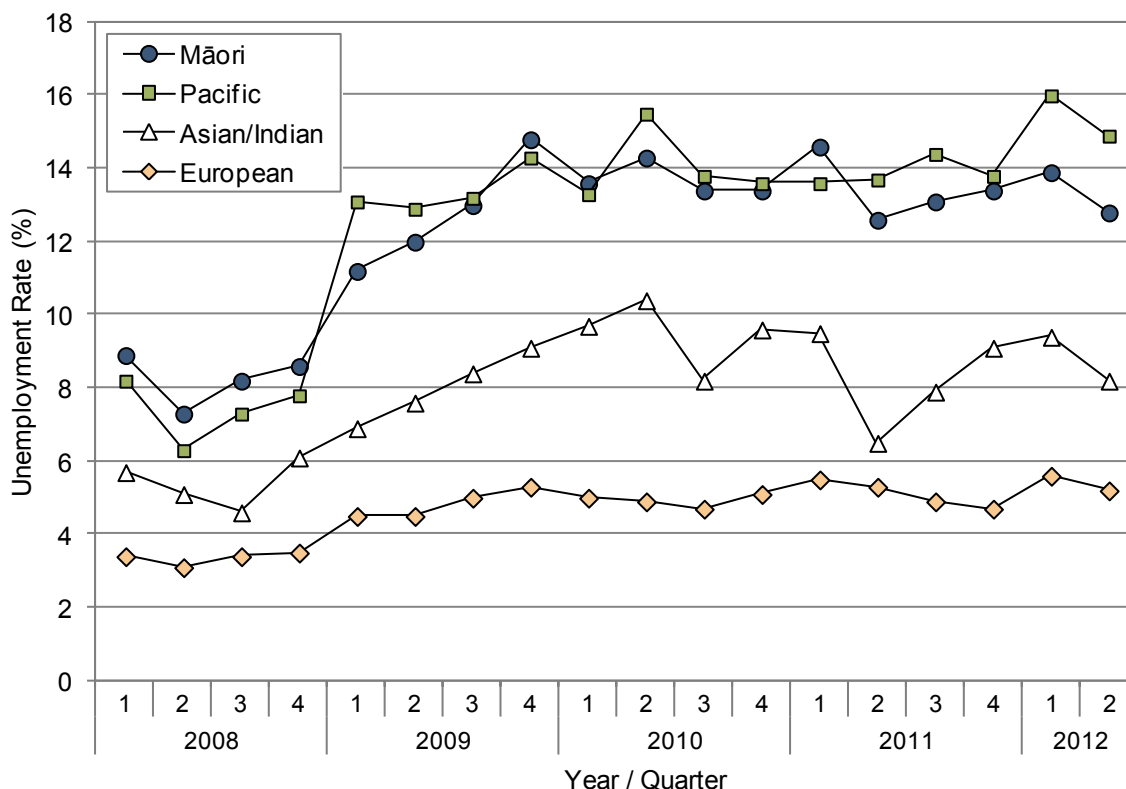
Figure 13. Unemployment Rates by Age and Gender in Young People Aged 15–24 Years, New Zealand Years Ending June 1987–2012



Source: Statistics New Zealand Household Labour Force Survey

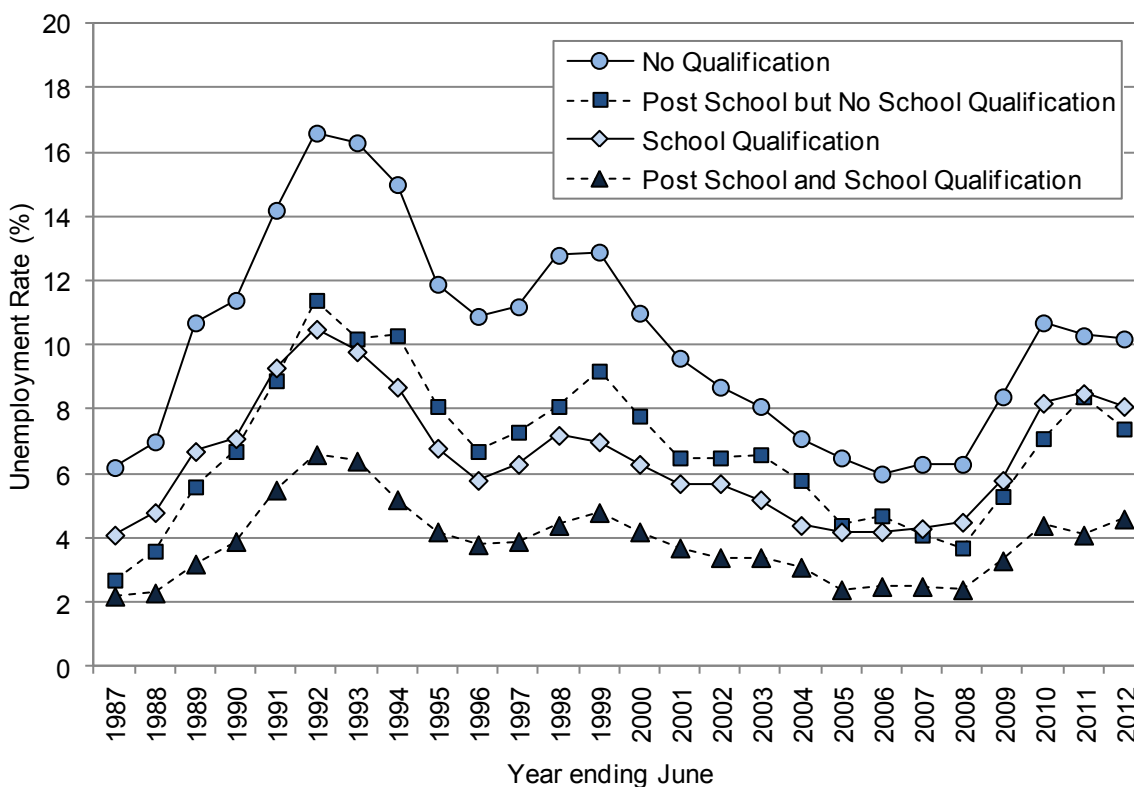


Figure 14. Unemployment Rates by Ethnicity, New Zealand Quarter 1 (March) 2008 to Quarter 2 (June) 2012



Source: Statistics New Zealand Household Labour Force Survey; Note: Ethnicity is Total Response

Figure 15. Unemployment Rates by Qualification, New Zealand Years Ending June 1987–2012



Source: Statistics New Zealand Household Labour Force Survey



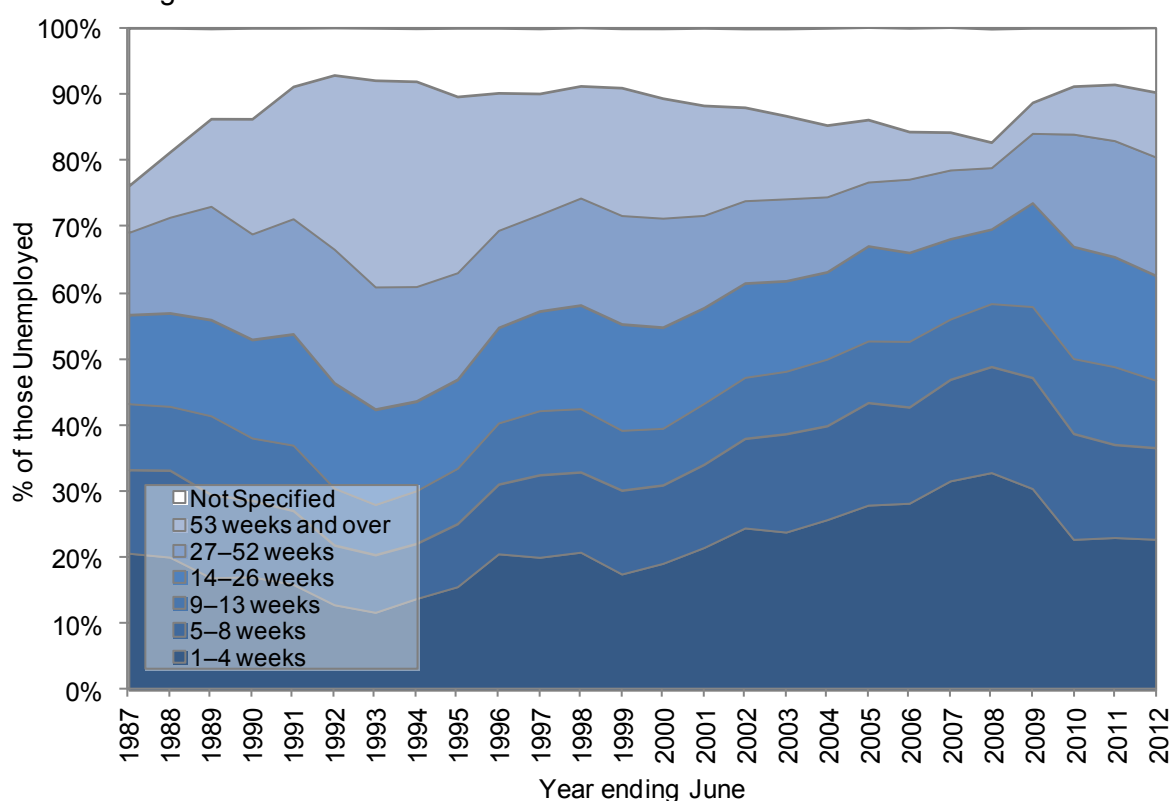
## Unemployment Rates by Qualification

In New Zealand during June 1987–2012, unemployment rates were higher for those with no qualifications, followed by those with school qualifications, or post school but no school qualifications, followed by those with both post school and school qualifications. In the year ending June 2012, unemployment rates were 10.2% for those with no qualifications, 8.1% for those with school qualifications, 7.4% for those with post school but no school qualifications and 4.6% for those with post school and school qualifications (**Figure 15**).

## Duration of Unemployment

In New Zealand during June 1987–2012, duration of unemployment varied markedly, and in a manner consistent with prevailing unemployment rates. Thus the highest proportion of people unemployed for 53+ weeks occurred during the early to mid 1990s, when unemployment rates were at their peak, while the highest proportion unemployed for only 1–4 weeks occurred in the mid to late 2000s, when unemployment rates were at their lowest. The proportion of people unemployed for more than 27 weeks however, has been increasing since June 2008 (**Figure 16**).

Figure 16. Proportion of those Unemployed by Duration of Unemployment, New Zealand Years Ending June 1987–2012



Source: Statistics New Zealand Household Labour Force Survey

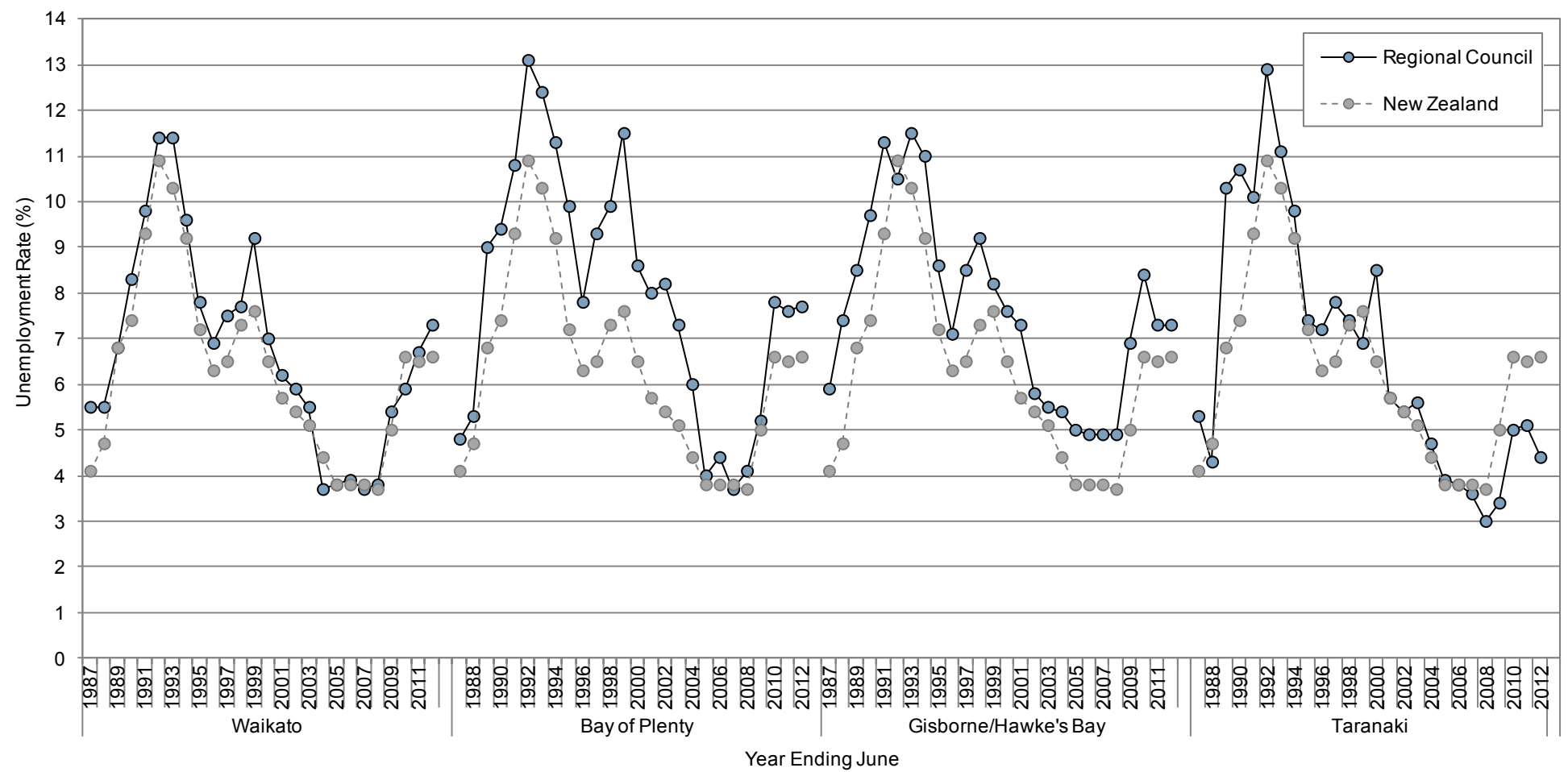
## Midland Region Distribution and Trends

### Annual Regional Unemployment Rates

Amongst the Regional Councils in the Midland region during June 1987–2012, unemployment trends were similar to those occurring nationally. The highest rates were seen during the early 1990s, with rates in the Bay of Plenty peaking at 13.1% in the year ending June 1992. The lowest rates were seen during the mid 2000s, with rates in Taranaki reaching 3.0% in the year ending June 2008. During the years ending June 2009–2012, unemployment rates in the Bay of Plenty and Gisborne/Hawke's Bay were generally higher than the New Zealand rate, while rates in Taranaki were lower. Rates in the Waikato were similar to the New Zealand rate (**Figure 17**).

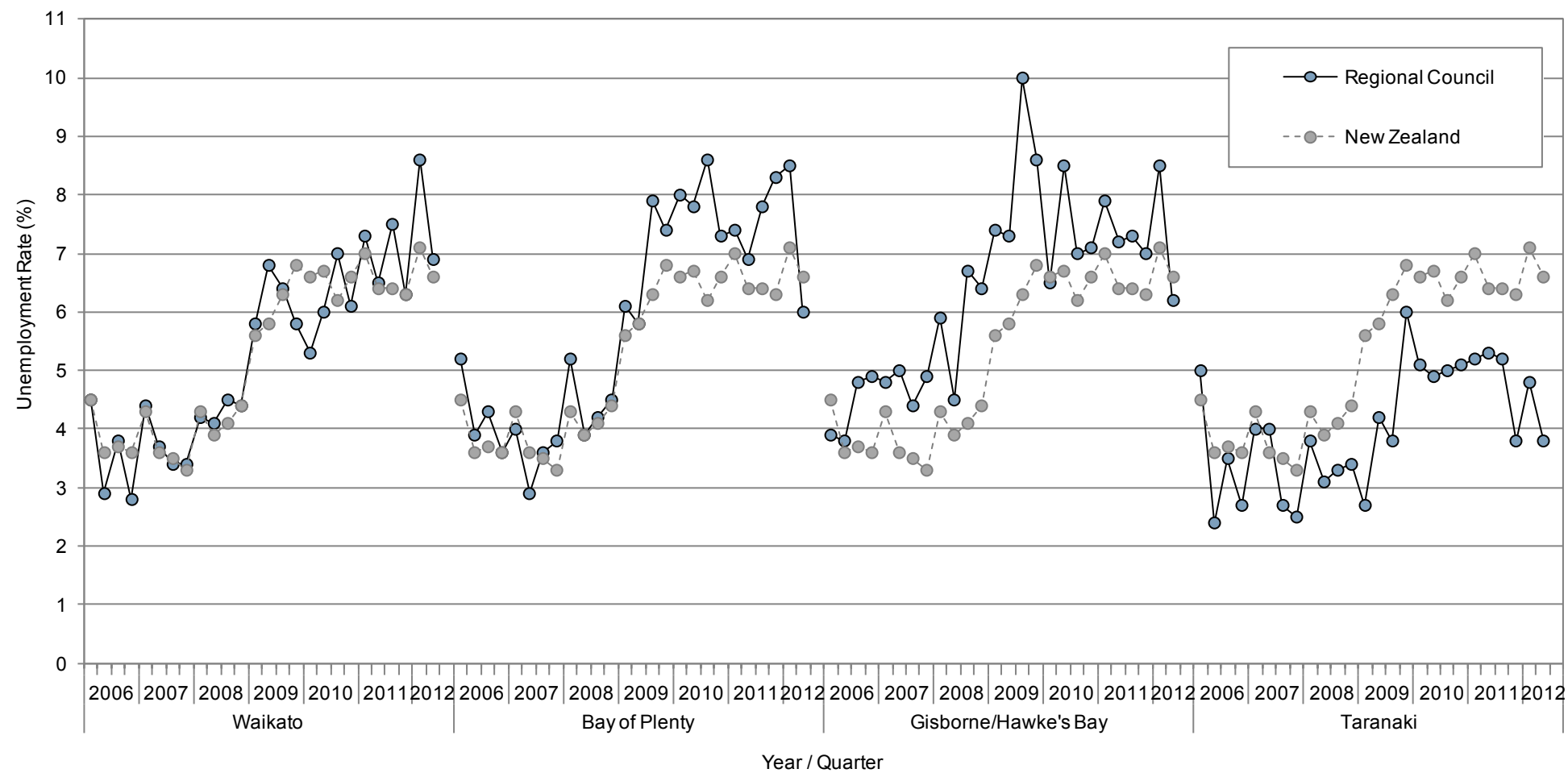


Figure 17. Unemployment Rates by Regional Council, Waikato, Bay of Plenty, Gisborne/Hawke's Bay and Taranaki Regions vs. New Zealand Years Ending June 1987–2012



Source: Statistics New Zealand Household Labour Force Survey

Figure 18. Quarterly Unemployment Rates by Regional Council, Waikato, Bay of Plenty, Gisborne/Hawke's Bay and Taranaki Regions vs. New Zealand Quarter 1 (March) 2006 to Quarter 2 (June) 2012



Source: Statistics New Zealand Household Labour Force Survey

## Quarterly Regional Unemployment Rates

Amongst the Regional Councils in the Midland Region during 2006(Q1)–2012(Q2), while there was considerable quarterly volatility, unemployment trends were similar to those occurring nationally, with all regions seeing rises in unemployment during 2009 and 2010. During 2009(Q1)–2012(Q2) unemployment rates in the Bay of Plenty and Gisborne/Hawke's Bay were higher than the New Zealand rate, while rates in Taranaki were lower. Rates in the Waikato were similar to the New Zealand rate. During 2012(Q2) unemployment rates were 6.9% in the Waikato, 6.0% in the Bay of Plenty, 6.2% in Gisborne/Hawke's Bay, and 3.8% in Taranaki (**Figure 18**).

## Local Policy Documents and Evidence-Based Reviews Relevant to Unemployment

**Table 3** on **Page 62** considers local policy documents and evidence-based reviews which are relevant to the social policy environment and the socioeconomic determinants of child and youth health.



# CHILDREN RELIANT ON BENEFIT RECIPIENTS

## Introduction

In New Zealand, children who are reliant on benefit recipients are a particularly vulnerable group, with the 2008 Living Standards [14] survey finding that 59% of children whose main source of family income was a benefit, scored four or more on a composite Deprivation Index. This Deprivation Index measured the extent to which families were economising on a range of items including being able to keep the main rooms of the house warm in winter, and having a meal with meat/chicken/fish at least every second day. Families scoring four or more on this Index were much more likely to report living in houses that were damp or mouldy, or in very poor physical condition; that their children were having to continue to wear worn out shoes or clothing; that they were cutting back on meat and fresh fruit and vegetables; and that they were postponing doctor's visits because of cost, all factors which are likely to impact adversely on children's health and wellbeing.

Using a different measure, in 2009 Perry noted that 75% of all households (including those with and without children) relying on income-tested benefits as their main source of income were living below the poverty line (housing adjusted equivalent disposable income <60% of 2007 median) [14]. This proportion has increased over the past two decades, rising from 39% of benefit-dependent households in 1990, to a peak of 76% in 1994, and then remaining in the low to mid 70s ever since [14], with these trends being attributed to three main factors: cuts in the level in income support during 1991, growth in unemployment (which peaked at 11% in 1991) and escalating housing costs, particularly for those in rental accommodation [22].

The following section thus reviews the number of children aged 0–18 years who were reliant on a benefit recipient during April 2000–2012, using information from the Ministry of Social Development's SWIFTT database. While the number of children reliant on a benefit recipient does not correlate precisely with the number living in significant hardship, they nevertheless reflect a particularly vulnerable group, who may have higher health needs, and as a consequence, may impact significantly on future health service demand.

### Data Source and Methods

#### Definition

1. Number of children aged 0–18 years reliant on a benefit recipient by benefit type

#### Data Source

Numerator: SWIFTT Database: Number of children aged 0–18 years who were reliant on a benefit recipient

Denominator: Statistics NZ Estimated Resident Population as at 31 March

#### Notes on Interpretation

Note 1: All data in this section was provided by the Ministry of Social Development (MSD) and are derived from the SWIFTT database. SWIFTT was developed by the NZ Income Support Service to calculate, provide and record income support payments and related client history [23]. It is thus able to provide information on the recipients of financial assistance through Work and Income.

Note 2: All figures refer to the number of children reliant on a benefit recipient at the end of April and provide no information on those receiving assistance at other times of the year.

Note 3: New Zealand trend data are for children 0–18 years, whereas Service Centre data may also include a very small number (n=3 in 2012) of young people aged 19+ years.

Note 4: "Other Benefits" includes: Domestic Purposes Benefit - Women Alone and Caring for Sick or Infirm, Emergency Benefit, Independent Youth Benefit, Unemployment Benefit Training and Unemployment Benefit Training Hardship, Unemployment Benefit Student Hardship, Widows Benefit, NZ Superannuation, Veterans and Transitional Retirement Benefit. "Other Benefits" *does not include* Orphan's and Unsupported Child's Benefits, or Non-benefit assistance.

To be eligible for a benefit, clients must have insufficient income from all sources to support themselves and any dependents and meet specific eligibility criteria. The current eligibility criteria for benefits can be found at <http://www.workandincome.govt.nz/individuals/a-z-benefits/>



## New Zealand Distribution and Trends

### Number of New Zealand Children Reliant on a Benefit Recipient

In New Zealand, the number of children aged 0–18 years who were reliant on a benefit recipient declined from 272,613 in April 2000, to 201,083 in April 2008, before increasing again to 234,572 in April 2011. By April 2012, 229,443 were reliant on a benefit recipient. Much of this variation can be attributed to changes in children relying on unemployment benefit recipients, with numbers falling from 49,499 in April 2000 to 5,289 in April 2008, before increasing again to 16,380 in 2010. In April 2012, 13,669 children were reliant on an unemployment benefit recipient. The number of children reliant on Domestic Purposes Benefit (DPB) recipients also fell from 188,216 in April 2000, to 158,173 in 2008, before increasing again to 180,845 in 2011 (**Table 4**).

### Proportion of New Zealand Children Reliant on a Benefit Recipient

In New Zealand the proportion of children aged 0–18 years who were reliant on a benefit recipient fell from 24.9% in April 2000 to 17.5% in April 2008, before increasing again to 20.4% in 2011. By April 2012, 20.1% of all New Zealand children were reliant on a benefit recipient. A large part of the initial decline was due to a fall in the proportion of children reliant on unemployment benefit recipients (from 4.5% of children in 2000, to 0.5% in 2008; but increasing again to 1.4% in 2011 and 1.2% in 2012). While the proportion of children reliant on DPB recipients also fell (from 17.2% of children in 2000, to 13.8% in 2008; and back up to 15.8% in 2011 and 15.7% in 2012) (**Figure 19**), the rate of decline was much slower than for unemployment benefits, meaning that in relative terms, the proportion of benefit-dependent children reliant on DPB recipients actually increased, from 69.0% of benefit-dependent children in 2000, to 78.1% in 2012 (**Table 4**).

### New Zealand Distribution by Age

At the end of April 2012, the proportion of children reliant on a benefit recipient was highest for those 0–4 years of age. Rates then tapered off gradually during middle to late childhood and early adolescence, then very steeply after 17 years (**Figure 20**).

## Midland Region Distribution and Trends

### Number of Children Reliant on a Benefit Recipient

At the end of April 2012, there were 54,295 children aged 0–18 years who were reliant on a benefit recipient and who received their benefits from service centres in the Midland Region (Waikato (n=23,553), Bay of Plenty (n=12,490), Lakes DHB (n=8,451), Tairāwhiti (n=4,516) and Taranaki (n=5,285)). While the majority were reliant on DPB recipients, the number reliant on unemployment benefit recipients increased between April 2008 and April 2011 (**Table 5**).

## Local Policy Documents and Evidence-Based Reviews Relevant to Benefit Reliant Families

**Table 3** on **Page 62** considers local policy documents and evidence-based reviews which are relevant to the social policy environment and the socioeconomic determinants of child and youth health.

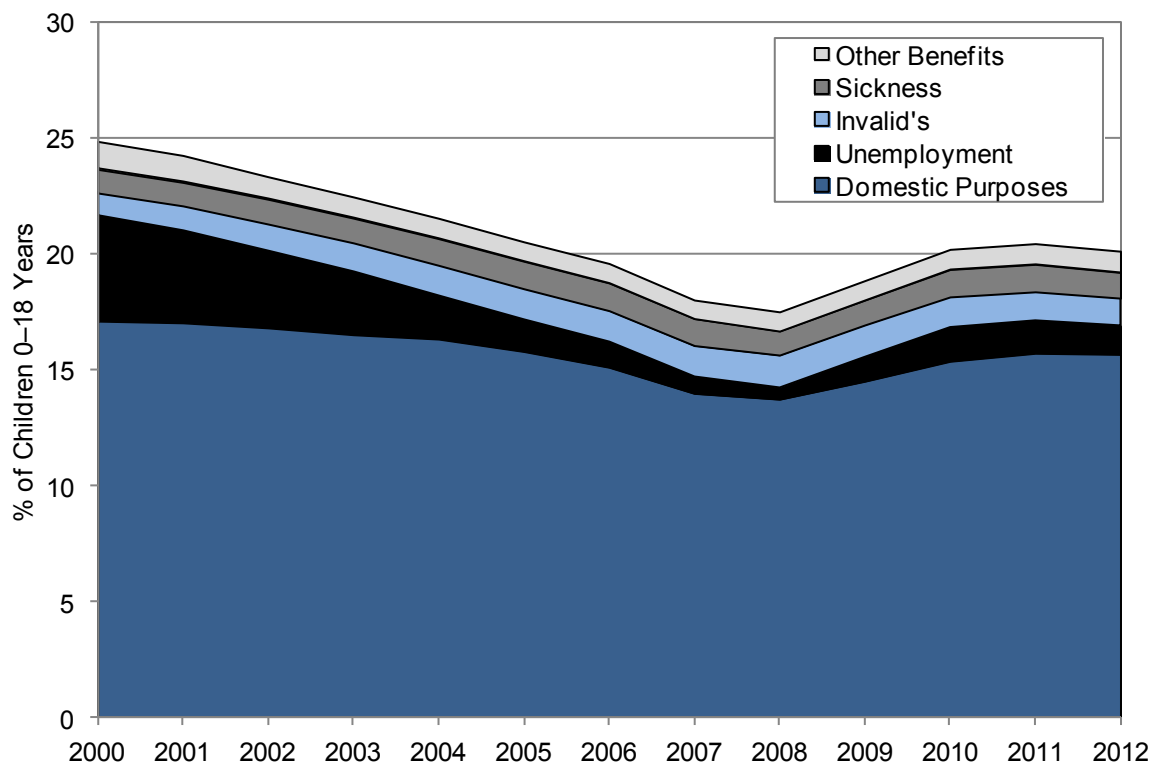


Table 4. Number of Children Aged 0–18 Years who were Reliant on a Benefit Recipient by Benefit Type, New Zealand April 2000–2012

Year	Domestic Purposes		Unemployment		Invalid's		Sickness		Other Benefits		Total
	Number	%*	Number	%*	Number	%*	Number	%*	Number	%*	Number
2000	188,216	69.0	49,499	18.2	11,120	4.1	11,295	4.1	12,483	4.6	272,613
2001	187,791	70.5	43,245	16.2	12,122	4.5	11,253	4.2	12,097	4.5	266,508
2002	187,207	72.3	36,342	14.0	13,219	5.1	11,983	4.6	10,205	3.9	258,956
2003	186,184	73.8	30,067	11.9	14,225	5.6	12,119	4.8	9,795	3.9	252,390
2004	185,610	76.0	20,663	8.5	15,053	6.2	13,182	5.4	9,566	3.9	244,074
2005	180,035	77.2	15,134	6.5	15,214	6.5	13,636	5.8	9,258	4.0	233,277
2006	172,995	77.4	12,069	5.4	15,332	6.9	13,797	6.2	9,429	4.2	223,622
2007	160,634	77.8	7,819	3.8	15,247	7.4	13,515	6.5	9,169	4.4	206,384
2008	158,173	78.7	5,289	2.6	15,962	7.9	12,128	6.0	9,531	4.7	201,083
2009	167,142	77.2	11,581	5.3	15,800	7.3	12,482	5.8	9,573	4.4	216,578
2010	177,226	76.3	16,380	7.1	15,116	6.5	13,752	5.9	9,757	4.2	232,231
2011	180,845	77.1	15,711	6.7	14,273	6.1	13,748	5.9	9,995	4.3	234,572
2012	179,204	78.1	13,669	6.0	13,552	5.9	12,774	5.6	10,244	4.5	229,443

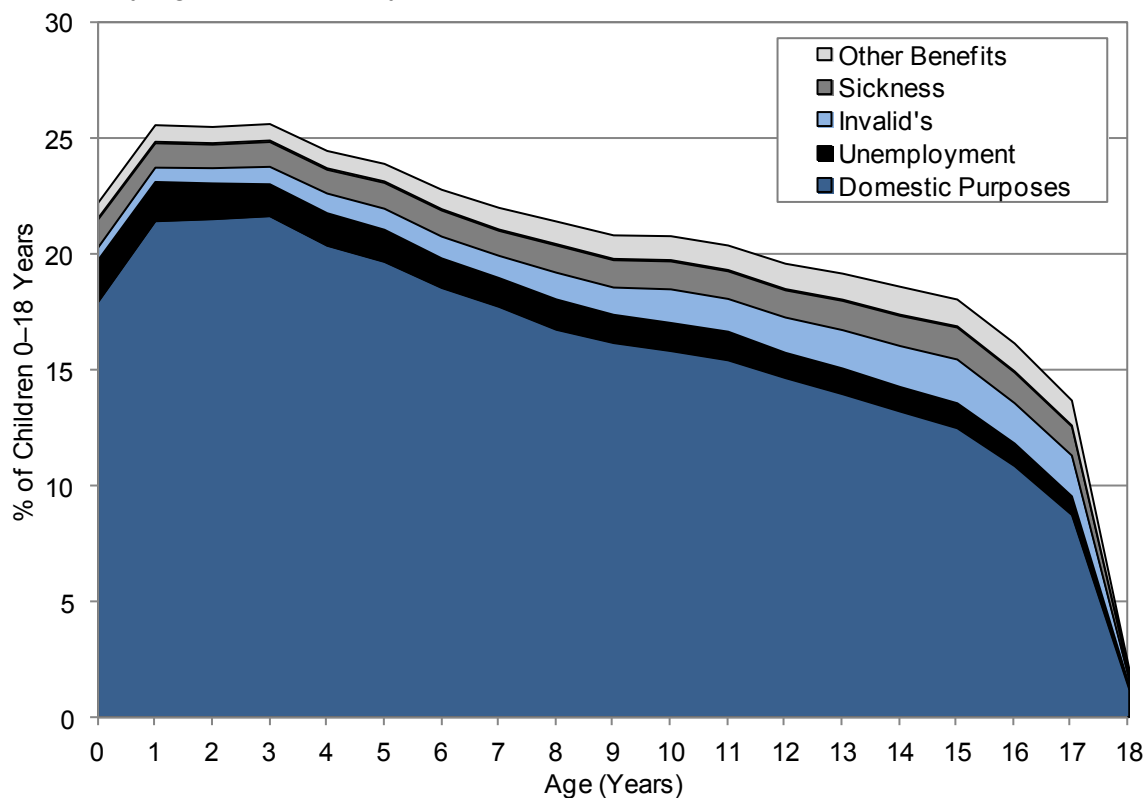
Source: MSD SWIFTT Database; Note: \*% refers to % of children relying on benefit recipients, rather than % of all children; See Methods section for compositions of "Other Benefits"; Non-benefit Assistance not included

Figure 19. Proportion of All Children Aged 0–18 Years who were Reliant on a Benefit Recipient by Benefit Type, New Zealand April 2000–2012



Source: Numerator: MSD SWIFTT Database; Denominator: Statistics NZ Estimated Resident Population; Note: For composition of "Other Benefits" see Methods Section

Figure 20. Proportion of All Children Aged 0–18 Years who were Reliant on a Benefit Recipient by Age and Benefit Type, New Zealand April 2012



Source: Numerator: Numerator: MSD SWIFTT Database; Denominator: Statistics NZ Estimated Resident Population; Note: For composition of "Other Benefits" see Methods Section

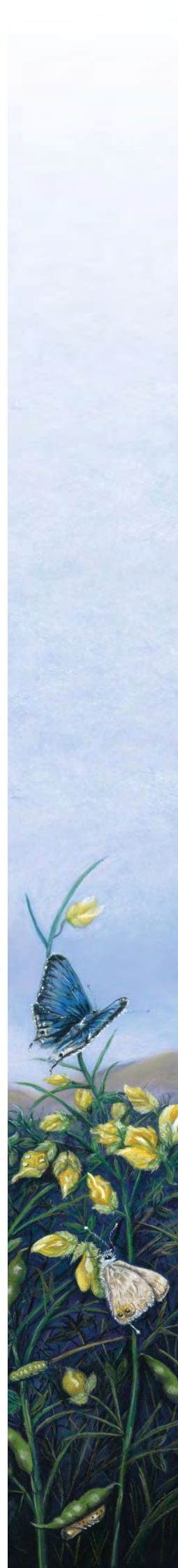


Table 5. Number of Children Aged 0–18 Years who were Reliant on a Benefit Recipient by Benefit Type, for Service Centres in the Waikato, Bay of Plenty and Lakes DHB Catchments, April 2007–2012

Year	DPB		Unemployment		Sickness		Invalid's		Other Benefits		Total
	Number	%*	Number	%*	Number	%*	Number	%*	Number	%*	
Waikato											
2007	15,875	79.3	742	3.7	987	4.9	1,685	8.4	727	3.6	20,016
2008	16,044	79.4	539	2.7	945	4.7	1,812	9.0	869	4.3	20,209
2009	16,852	78.4	1,023	4.8	968	4.5	1,774	8.3	878	4.1	21,495
2010	18,426	78.3	1,464	6.2	1,133	4.8	1,659	7.1	836	3.6	23,518
2011	19,068	80.2	1,244	5.2	1,044	4.4	1,550	6.5	880	3.7	23,786
2012	18,968	80.5	1,189	5.0	1,003	4.3	1,457	6.2	936	4.0	23,553
Bay of Plenty											
2007	8,981	80.8	315	2.8	648	5.8	740	6.7	432	3.9	11,116
2008	8,701	82.5	172	1.6	583	5.5	722	6.8	368	3.5	10,546
2009	9,498	81.4	464	4.0	643	5.5	677	5.8	391	3.3	11,673
2010	10,018	80.8	515	4.2	734	5.9	667	5.4	462	3.7	12,396
2011	10,394	81.6	447	3.5	765	6.0	583	4.6	545	4.3	12,734
2012	10,212	81.8	551	4.4	633	5.1	530	4.2	564	4.5	12,490
Lakes DHB											
2007	6,091	82.8	335	4.6	281	3.8	356	4.8	295	4.0	7,358
2008	6,206	84.8	133	1.8	325	4.4	376	5.1	281	3.8	7,321
2009	6,593	84.5	207	2.7	350	4.5	378	4.8	273	3.5	7,801
2010	7,082	84.9	342	4.1	325	3.9	353	4.2	236	2.8	8,338
2011	7,337	83.6	437	5.0	359	4.1	340	3.9	302	3.4	8,775
2012	7,189	85.1	405	4.8	294	3.5	307	3.6	256	3.0	8,451

Source: MSD SWIFTT Database; Note: \*% refers to % of children relying on benefit recipients, rather than % of all children; Other Benefits does not include Non-benefit Assistance or Orphan's/Unsupported Child's Benefits; Service Centres include: Waikato: Cambridge, Dinsdale, Five Cross Roads, Glenview, Hamilton (including Super, Contact Centre, Employment Zone, Fraud), Hamilton East, Huntly, Matamata, Morrinsville, Ngaruawahia, Paeroa, Taumarunui, Te Awamutu, Te Kuiti; Bay of Plenty: Greerton, Kawerau, Mount Maunganui, Opotiki, Tauranga (including Super), Te Puke, Whakatane, NZ Super Bay of Plenty; Lakes DHB: Rotorua (including Fraud), Taupo, Turangi



Table 6. Number of Children Aged 0–18 Years who were Reliant on a Benefit Recipient by Benefit Type, for Service Centres in the Tairāwhiti and Taranaki DHB Catchments, April 2007–2012

Year	DPB		Unemployment		Sickness		Invalid's		Other Benefits		Total
	Number	%*	Number	%*	Number	%*	Number	%*	Number	%*	
Tairarwhiti											
2007	3,394	78.8	241	5.6	178	4.1	342	7.9	151	3.5	4,306
2008	3,323	80.2	125	3.0	209	5.0	324	7.8	162	3.9	4,143
2009	3,325	79.0	152	3.6	227	5.4	316	7.5	190	4.5	4,210
2010	3,475	77.2	268	6.0	215	4.8	312	6.9	232	5.2	4,502
2011	3,596	78.7	246	5.4	231	5.1	299	6.5	200	4.4	4,572
2012	3,486	77.2	289	6.4	240	5.3	289	6.4	212	4.7	4,516
Taranaki											
2007	3,931	80.6	198	4.1	232	4.8	401	8.2	114	2.3	4,876
2008	3,746	82.3	88	1.9	172	3.8	420	9.2	127	2.8	4,553
2009	3,855	80.6	181	3.8	175	3.7	424	8.9	147	3.1	4,782
2010	4,276	81.6	232	4.4	196	3.7	399	7.6	138	2.6	5,241
2011	4,340	81.1	274	5.1	206	3.9	397	7.4	133	2.5	5,350
2012	4,284	81.1	249	4.7	235	4.4	366	6.9	151	2.9	5,285

Source: MSD SWIFTT Database; Note: \*% refers to % of children relying on benefit recipients, rather than % of all children; Other Benefits does not include Non-benefit Assistance or Orphan's/Unsupported Child's Benefits; Service Centres include: Tairāwhiti: Gisborne, Kaiti, Ruatoria; Taranaki: Hawera, New Plymouth, Stratford, Waitara

# YOUNG PEOPLE RELIANT ON BENEFITS

## Introduction

In New Zealand, young people who newly enter the benefit system comprise three main groups: those coming on to the Invalid's Benefit, many of whom have long-term disabilities; young mothers coming on to the Emergency Maintenance Allowance because they do not have financial support from their families; and young people taking up the Independent Youth Benefit because they do not have the support of their families. Research suggests that for these young people, being reliant on a benefit at a young age is linked to long-term benefit receipt. Of all young people aged 16 and 17 years who entered the benefit system in 1999, 42 per cent were on a benefit in 2009 (although most of these people had not received a benefit for all of the ten year period) [24].

In New Zealand during the September 2012 quarter, there were 34,300 unemployed young people aged 15 to 19 years, resulting in a youth unemployment rate of 25.5% [25]. This high unemployment rate (compared to the total unemployment rate of 7.3%) reflects the relative difficulty encountered by young people in making an initial transition into their first job and the increased vulnerability of young people to unemployment in times of economic recession [25] [26]. Between the December 2011 quarter and September 2011, the youth NEET rate (15 to 24 year olds not in employment, education or training, calculated as a proportion of the total youth working-age population) was between 13.1 and 13.5 percent [25]. NEET rates were higher for Māori and Pacific young people than for European and Asian young people (September 2011 quarter: Māori 22.2%, Pacific 17.6%, NZ European 9.6%, Asian 7.2%) [27].

Pathways into non-participation in work, education and training are complex and likely to arise from a multifactorial accumulation of adversity. Risk factors for unemployment and long-term benefit reliance can be divided into individual, family/demographic, peer group, school, labour market and neighbourhood/community factors [28]. Individual factors include: conduct disorders, behavioural problems and attention difficulties; lower IQ; physical health problems; early pregnancy; and substance abuse. Family/demographic factors include: low family income; parental occupation and education level; younger mother; and family conflict. Peer group factors include problems relating to peers. School factors include: lack of school involvement and attendance; transitions from primary school; and school effectiveness. Labour market factors include: the strength of the economy and experience of unemployment. Neighbourhood/community factors include: socioeconomic factors and level of early school leaving.

Non-participation in work, education or training has been associated with a variety of adverse outcomes for individuals, families and society. Young people not in work, education or training: have worse employment opportunities and lower earnings; are more likely to be reliant on long-term benefits; are more likely to be involved in crime; are more likely to have an early pregnancy; have poorer mental health in later life; are at higher risk of substance abuse, suicide and homelessness; and can perpetuate the intergenerational transfer of poverty [28]. On a more positive note, research also suggests that some of these adverse outcomes decrease once young people find permanent employment, or return to further education [19].

The following section uses data from the Ministry of Social Development's SWIFTT database to explore the number of young people aged 16–24 years who were reliant on a benefit during 2000–2012.

### Data Source and Methods

#### Definition

1. Number of young people aged 16–24 years who were reliant on a benefit

#### Data Source

Numerator: SWIFTT Database: Number of young people aged 16–24 years who were reliant on a benefit

Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

### Notes on Interpretation

Note 1: All data in this section was provided by the Ministry of Social Development (MSD) and is derived from the SWIFTT database. SWIFTT was developed by the NZ Income Support Service to calculate, provide and record income support payments and related client history [23]. It is thus able to provide information on the recipients of financial assistance through Work and Income.

Note 2: All figures refer to the number of young people reliant on a benefit at the end of April and provide no information on those receiving assistance at other times of the year.

Note 3: "Other Benefits" includes: Domestic Purposes Benefit - Women Alone and Caring for Sick or Infirm, Emergency Benefit, Independent Youth Benefit, Unemployment Benefit Training and Unemployment Benefit Training Hardship, Unemployment Benefit Student Hardship, Widows Benefit, NZ Superannuation, Veterans and Transitional Retirement Benefit. "Other Benefits" *does not include* Orphan's and Unsupported Child's Benefits, or Non-benefit assistance.

To be eligible for a benefit, clients must have insufficient income from all sources to support themselves and any dependents and meet specific eligibility criteria. The current eligibility criteria for benefits can be found at <http://www.workandincome.govt.nz/individuals/a-z-benefits/>

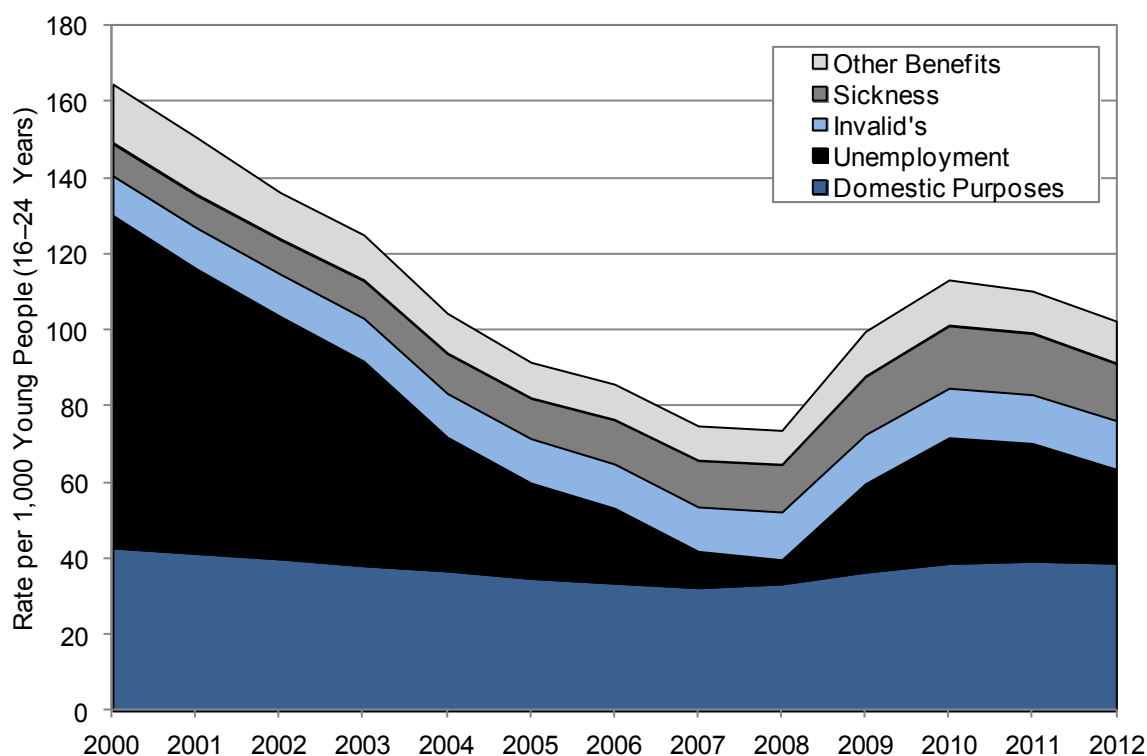
## New Zealand Distribution and Trends

### Proportion of New Zealand Young People Reliant on Benefits

In New Zealand during April 2000–2012, there were large fluctuations in the number of young people aged 16–24 years reliant on a benefit (**Table 7**), with rates falling from 164.4 per 1,000 in April 2000, to 73.8 per 1,000 in April 2008, before increasing again to 113.2 per 1,000 in April 2010. By April 2012, rates had again fallen to 102.4 per 1,000 (**Table 8**).

When broken down by benefit type, the largest initial declines were seen for those reliant on an unemployment benefit, with rates falling from 87.7 per 1,000 in April 2000, to 6.4 per 1,000 in April 2008, before increasing again to 33.2 per 1,000 in April 2010. By April 2012 rates had again fallen to 24.8 per 1,000. In contrast, the proportion reliant on a domestic purposes benefit declined much more slowly, from 42.6 per 1,000 in 2000, to 32.2 per 1,000 in 2007, before increasing again to 39.2 in 2011. The proportion reliant on invalid's and sickness benefits however, increased for the majority of 2000–2012. Thus by April 2012, 12.7 per 1,000 young people were reliant on an invalid's benefit and 14.6 per 1,000 on a sickness benefit (**Table 8, Figure 21**).

Figure 21. Proportion of Young People Aged 16–24 Years Receiving a Benefit by Benefit Type, New Zealand April 2000–2012



Source: Numerator: MSD SWIFTT database; Denominator: Statistics NZ Estimated Resident Population; Note: See Methods section for composition of "Other Benefits"; Non-Benefit Assistance not included



Table 7. Number of Young People Aged 16–24 Years Receiving a Benefit by Benefit Type, New Zealand April 2000–2012

Year	Unemployment		Domestic Purposes		Invalid's		Sickness		Other Benefits		Total
	Number	% of Benefit Recipients	Number	% of Benefit Recipients	Number	% of Benefit Recipients	Number	% of Benefit Recipients	Number	% of Benefit Recipients	Number
2000	40,732	53.3	19,812	25.9	4,866	6.4	3,892	5.1	7,090	9.3	76,392
2001	35,808	49.9	19,645	27.4	5,185	7.2	4,066	5.7	7,085	9.9	71,789
2002	31,310	47.0	19,459	29.2	5,511	8.3	4,406	6.6	5,918	8.9	66,604
2003	27,071	43.2	19,053	30.4	5,755	9.2	4,940	7.9	5,901	9.4	62,720
2004	18,135	33.8	18,830	35.1	6,035	11.2	5,369	10.0	5,336	9.9	53,705
2005	13,257	27.5	18,245	37.8	6,288	13.0	5,566	11.5	4,890	10.1	48,246
2006	10,650	23.0	18,013	38.9	6,424	13.9	6,234	13.5	4,977	10.7	46,298
2007	5,257	12.8	17,647	43.0	6,580	16.0	6,669	16.2	4,911	12.0	41,064
2008	3,533	8.7	18,370	45.0	7,132	17.5	6,872	16.8	4,903	12.0	40,810
2009	13,054	23.4	20,294	36.4	7,353	13.2	8,519	15.3	6,525	11.7	55,745
2010	18,755	29.3	21,808	34.1	7,485	11.7	9,249	14.5	6,682	10.4	63,979
2011	17,737	28.2	22,341	35.5	7,444	11.8	9,159	14.6	6,218	9.9	62,899
2012	14,087	24.2	21,973	37.8	7,416	12.7	8,499	14.6	6,226	10.7	58,201

Source: MSD SWIFTT Database; Note: \*% refers to % of young people receiving a benefit, rather than % of all young people, See Methods section for composition of “Other Benefits”; Non-Benefit Assistance not included



Table 8. Proportion of Young People Aged 16–24 Years Receiving a Benefit by Benefit Type, New Zealand April 2000–2012

Year	Unemployment		Domestic Purposes		Invalid's		Sickness		Other Benefits		Total
	Number	Rate per 1,000	Number	Rate per 1,000	Number	Rate per 1,000	Number	Rate per 1,000	Number	Rate per 1,000	Rate per 1,000
2000	40,732	87.7	19,812	42.6	4,866	10.5	3,892	8.4	7,090	15.3	164.4
2001	35,808	75.1	19,645	41.2	5,185	10.9	4,066	8.5	7,085	14.9	150.5
2002	31,310	64.0	19,459	39.8	5,511	11.3	4,406	9.0	5,918	12.1	136.1
2003	27,071	53.9	19,053	38.0	5,755	11.5	4,940	9.8	5,901	11.8	125.0
2004	18,135	35.3	18,830	36.6	6,035	11.7	5,369	10.4	5,336	10.4	104.4
2005	13,257	25.2	18,245	34.6	6,288	11.9	5,566	10.6	4,890	9.3	91.6
2006	10,650	19.8	18,013	33.4	6,424	11.9	6,234	11.6	4,977	9.2	85.9
2007	5,257	9.6	17,647	32.2	6,580	12.0	6,669	12.2	4,911	9.0	74.9
2008	3,533	6.4	18,370	33.2	7,132	12.9	6,872	12.4	4,903	8.9	73.8
2009	13,054	23.3	20,294	36.3	7,353	13.2	8,519	15.2	6,525	11.7	99.7
2010	18,755	33.2	21,808	38.6	7,485	13.2	9,249	16.4	6,682	11.8	113.2
2011	17,737	31.1	22,341	39.2	7,444	13.0	9,159	16.1	6,218	10.9	110.2
2012	14,087	24.8	21,973	38.7	7,416	13.0	8,499	15.0	6,226	11.0	102.4

Source: Numerator: MSD SWIFFT database; Denominator: Statistics New Zealand Estimated Resident Population; Note: See Methods section for composition of "Other Benefits"; Non-Benefit Assistance not included

## New Zealand Distribution by Ethnicity

### Domestic Purposes Benefits

In New Zealand during April 2000–2012, domestic purposes benefit uptake was highest for Māori young people, followed by Pacific young people, with all ethnic groups experiencing a decline in benefit uptake during the early to mid 2000s, followed by an upswing in rates after 2008. By the end of April 2012, 100.0 per 1,000 Māori young people, 46.9 per 1,000 Pacific young people and 20.5 per 1,000 European/Other young people were reliant on a domestic purposes benefit (**Figure 22**).

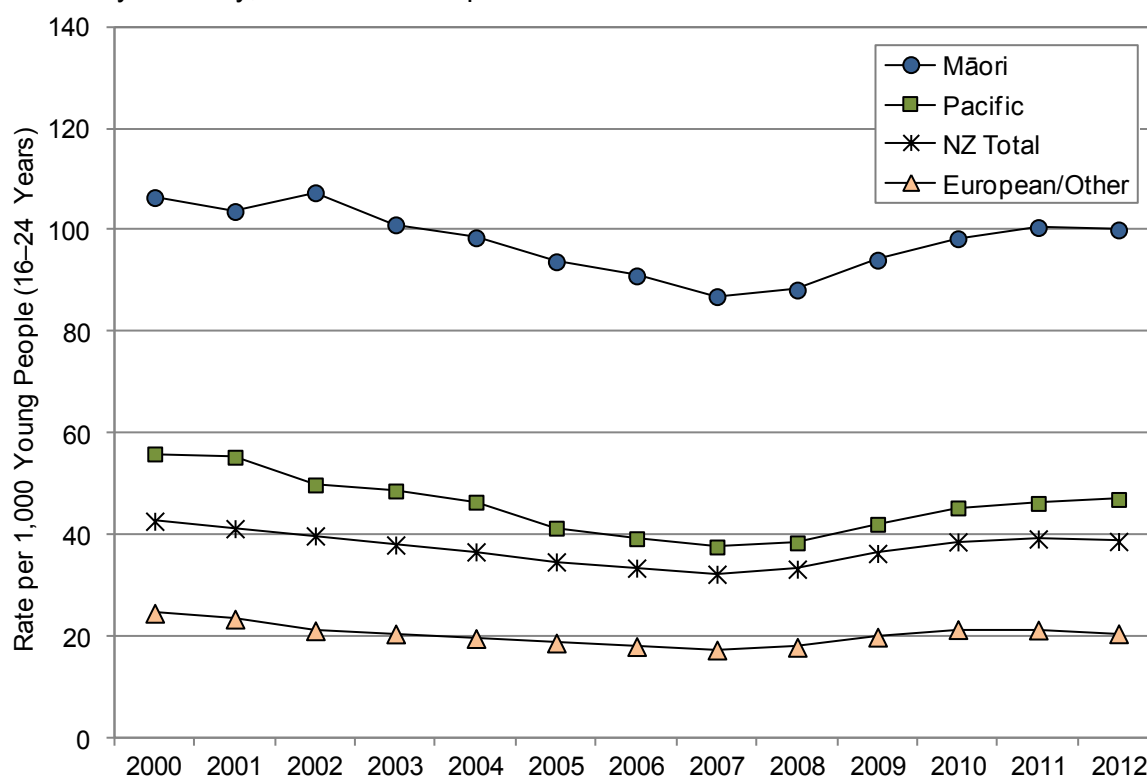
### Unemployment Benefits

In New Zealand during April 2000–2012, unemployment benefit uptake was also highest for Māori young people, followed by Pacific young people, with all ethnic groups experiencing a marked decline in unemployment benefit uptake during the early to mid 2000s, followed by an upswing in rates after 2008. By the end of April 2012 however, rates had again fallen to 47.9 per 1,000 for Māori young people, 28.7 per 1,000 for Pacific young people and 17.8 per 1,000 for European/Other young people (**Figure 23**).

### Sickness and Invalid's Benefits

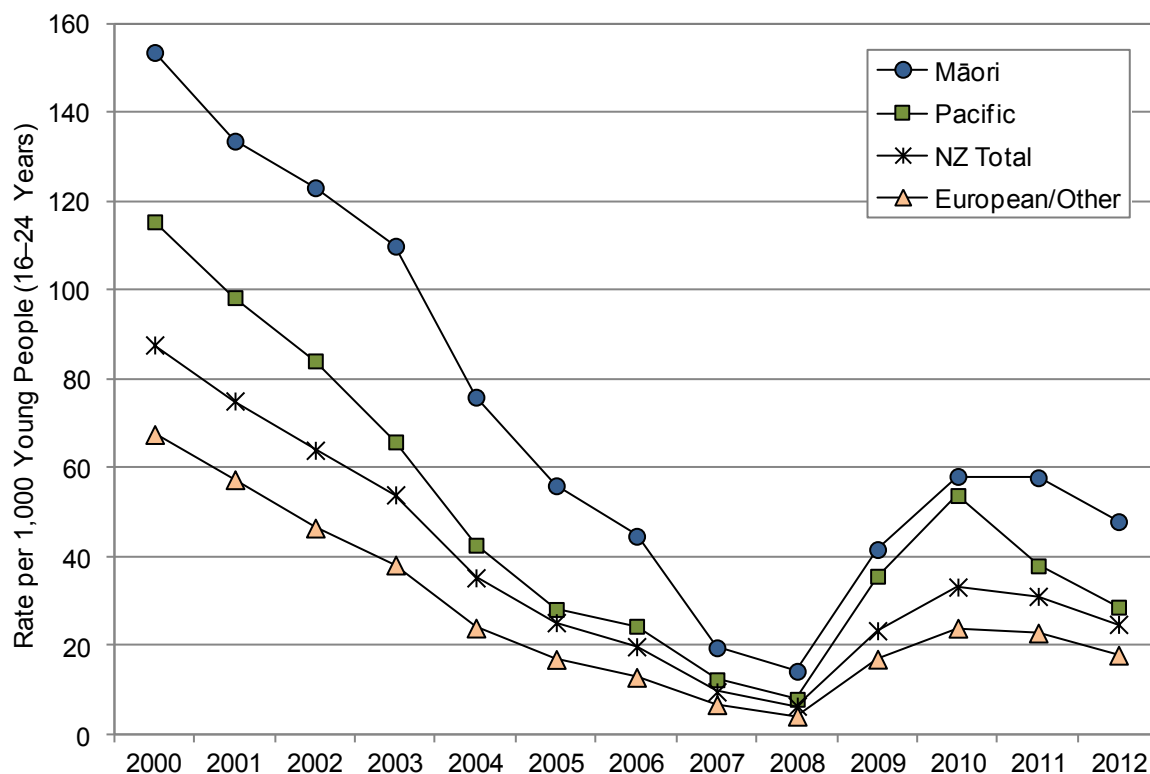
In New Zealand April 2000–2012, sickness and invalid's benefit uptake was consistently higher for Māori young people than for European/Other young people. While invalid's benefit uptake for Pacific young people was lower than for European/Other young people throughout April 2000–2012, sickness benefit uptake was only lower from April 2004 onwards. Invalid's and sickness benefit uptake increased for all ethnic groups during this period. Thus by April 2012, invalid's benefit uptake was 15.9 per 1,000 for Māori young people, 12.7 per 1,000 for European/Other young people and 9.2 per 1,000 for Pacific young people. Sickness benefit uptake was 24.6 per 1,000 for Māori young people, 12.9 per 1,000 for European/Other young people and 9.6 per 1,000 for Pacific young people (**Figure 24**).

Figure 22. Proportion of Young People Aged 16–24 Years Receiving a Domestic Purposes Benefit by Ethnicity, New Zealand April 2000–2012



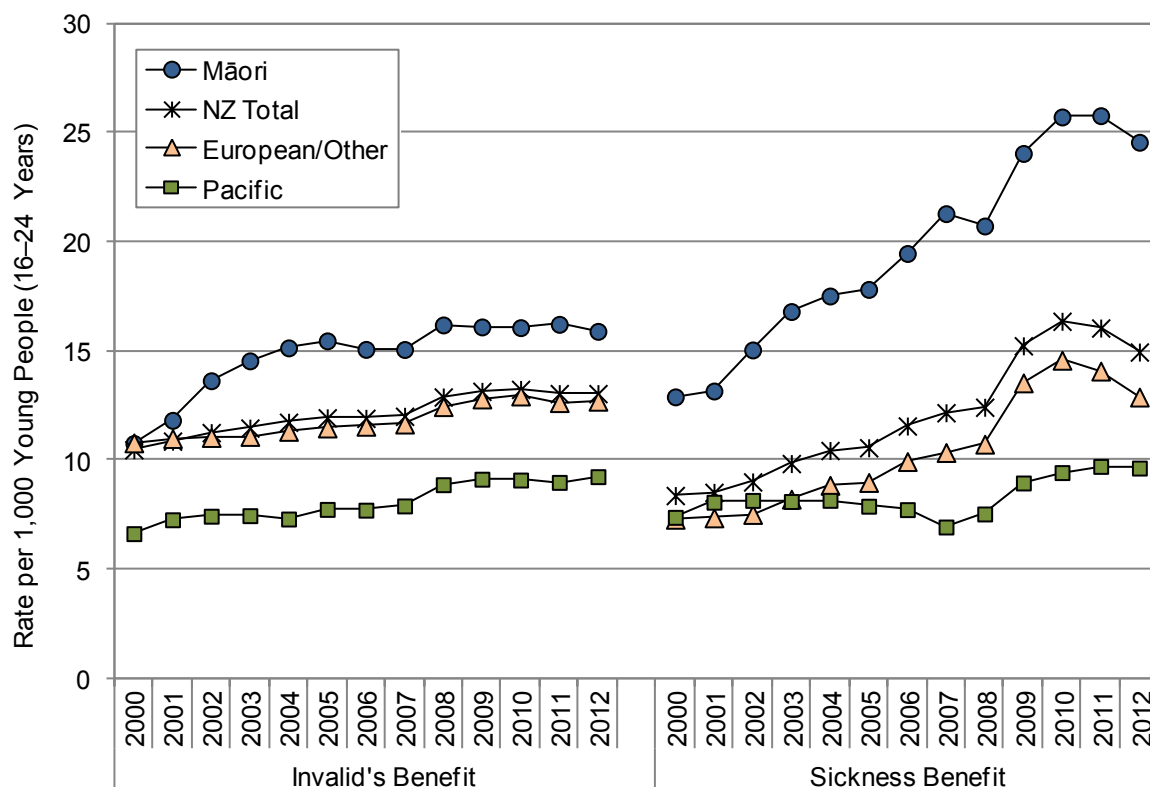
Source: Numerator: MSD SWIFFT database; Denominator: Statistics NZ Estimated Resident Population; Note: DPB includes DPB Sole Parent and Emergency Maintenance Allowance

Figure 23. Proportion of Young People Aged 16–24 Years Receiving an Unemployment Benefit by Ethnicity, New Zealand April 2000–2012



Source: Numerator: MSD SWIFFT database; Denominator: Statistics NZ Estimated Resident Population; Note: Training-Related Unemployment Benefits Excluded

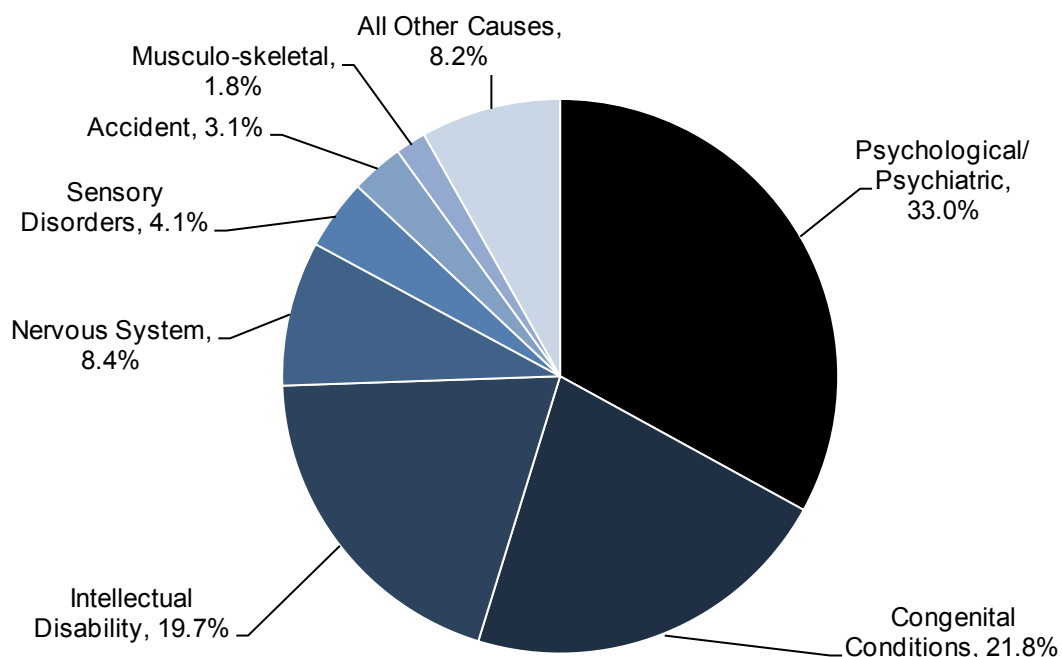
Figure 24. Proportion of Young People Aged 16–24 Years Receiving an Invalid's or Sickness Benefit by Ethnicity, New Zealand April 2000–2012



Source: Numerator: MSD SWIFFT database; Denominator: Statistics NZ Estimated Resident Population

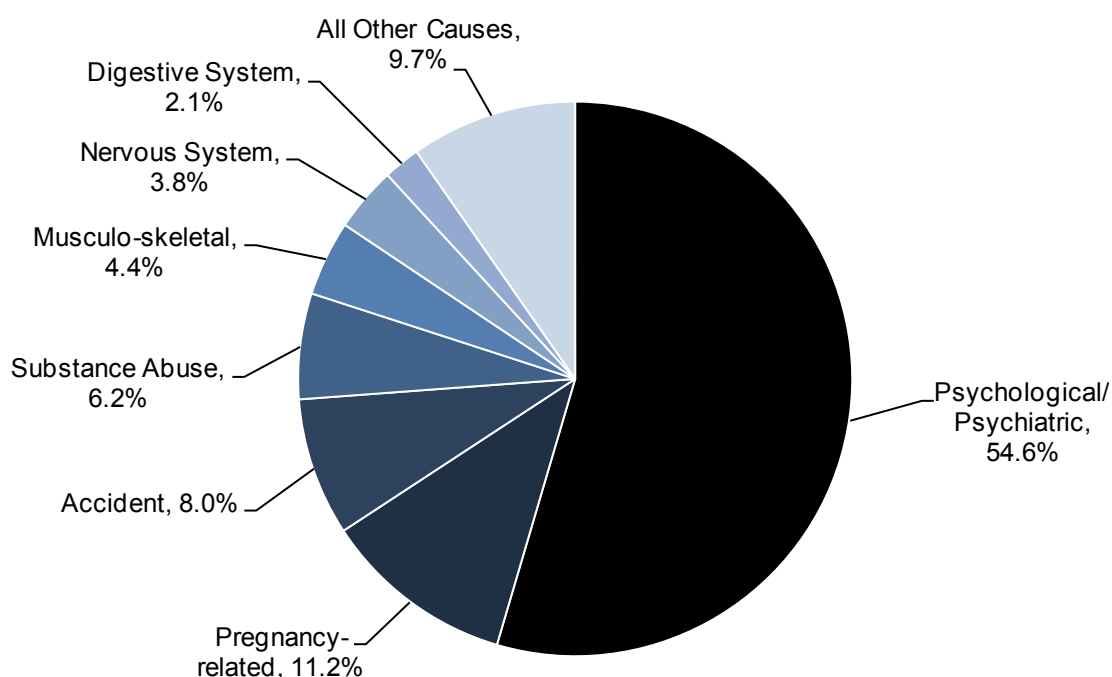


Figure 25. Young People Aged 16–24 Years Receiving an Invalid's Benefit by Cause of Incapacity, New Zealand April 2012 (n=7,416)



Source: Ministry of Social Development

Figure 26. Young People Aged 16–24 Years Receiving a Sickness Benefit by Cause of Incapacity, New Zealand April 2012 (n=8,499)



Source: Ministry of Social Development

## Distribution of Sickness and Invalid's Benefits by Cause of Incapacity

### Invalid's Benefit

In New Zealand during April 2012, 33.0% of young people receiving an invalid's benefit required financial support for psychological/psychiatric reasons, while 19.7% required support for intellectual disabilities. An additional 21.8% required support as the result of congenital conditions and 8.4% as the result of nervous system problems (**Figure 25**).



## Sickness Benefit

Similarly during April 2012, 54.6% of young people receiving a sickness benefit required financial support for psychological/psychiatric reasons while 11.2% required support as the result of a pregnancy. Accidents (8.0%), substance abuse (6.2%) and musculoskeletal problems (4.4%) also made a significant contribution (**Figure 26**).

## Midland Region Distribution and Trends

### Number of Young People Reliant on Benefits

As information on benefit recipients was not able to be mapped by domicile code, it was not possible to provide information on the number of young people resident in the Midland Regions' DHBs who were reliant on benefits during 2007–2012. Information was available however, on the number of young people receiving benefits from service centres in, or adjacent to, Midland DHBs' boundaries (although the lack of a clearly defined denominator precluded the calculation of rates).

In most of the DHBs in the Midland Region, the number of young people aged 16–24 years receiving a benefit increased between April 2007 and April 2011, with the most rapid increases occurring during 2009 and 2010. The numbers reliant on a benefit then fell slightly in most DHBs in April 2012. While the DPB was the most common benefit received in all DHBs, large increases were evident in unemployment benefit uptake between April 2008 and April 2011 (**Table 10**).

Table 9. Number of Young People Aged 16–24 Years Receiving a Benefit by Benefit Type, for Service Centres in the Waikato and Bay of Plenty DHB Catchments, April 2007–2012

Year	DPB		Unemployment		Sickness		Invalid's		Other Benefits		Total
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.
Waikato											
2007	1,846	43.3	707	16.6	572	13.4	712	16.7	425	10.0	4,262
2008	1,908	45.2	489	11.6	681	16.1	767	18.2	380	9.0	4,225
2009	2,105	37.6	1,315	23.5	788	14.1	738	13.2	654	11.7	5,600
2010	2,329	36.4	1,712	26.8	899	14.0	760	11.9	699	10.9	6,399
2011	2,427	39.3	1,375	22.3	916	14.9	771	12.5	679	11.0	6,168
2012	2,403	39.4	1,304	21.4	920	15.1	788	12.9	689	11.3	6,104
Bay of Plenty											
2007	992	53.8	75	4.1	312	16.9	278	15.1	186	10.1	1,843
2008	988	53.4	66	3.6	310	16.8	295	16.0	190	10.3	1,849
2009	1,161	46.9	369	14.9	389	15.7	311	12.6	245	9.9	2,475
2010	1,222	42.8	503	17.6	498	17.5	347	12.2	282	9.9	2,852
2011	1,286	45.0	408	14.3	547	19.2	320	11.2	295	10.3	2,856
2012	1,251	43.2	519	17.9	510	17.6	302	10.4	311	10.8	2,893

Source: Ministry of Social Development; Note: %\* refers to % of young people receiving a benefit, rather than % of all young people; See Methods section for composition of "Other Benefits"; Non-Benefit Assistance not included; Service Centres include: Waikato: Cambridge, Dinsdale, Five Cross Roads, Glenview, Hamilton (including Super, Contact Centre, Employment Zone, Fraud), Hamilton East, Huntly, Matamata, Morrinsville, Ngaruawahia, Paeroa, Taumarunui, Te Awamutu, Te Kuiti; Bay of Plenty: Greerton, Kawerau, Mount Maunganui, Opotiki, Tauranga (including Super), Te Puke, Whakatane, NZ Super Bay of Plenty



Table 10. Number of Young People Aged 16–24 Years Receiving a Benefit by Benefit Type, for Service Centres in the Lakes, Tairāwhiti and Taranaki DHB Catchments, April 2007–2012

Year	DPB		Unemployment		Sickness		Invalid's		Other Benefits		Total
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.
Lakes DHB											
2007	761	58.3	111	8.5	171	13.1	155	11.9	107	8.2	1,305
2008	822	58.4	88	6.3	203	14.4	161	11.4	133	9.5	1,407
2009	903	55.2	196	12.0	219	13.4	158	9.7	161	9.8	1,637
2010	955	52.0	340	18.5	241	13.1	162	8.8	139	7.6	1,837
2011	967	49.6	371	19.0	223	11.4	178	9.1	211	10.8	1,950
2012	945	49.8	387	20.4	220	11.6	172	9.1	173	9.1	1,897
Tairāwhiti											
2007	416	49.5	105	12.5	80	9.5	114	13.6	126	15.0	841
2008	439	53.4	58	7.1	84	10.2	108	13.1	133	16.2	822
2009	433	45.6	97	10.2	117	12.3	112	11.8	191	20.1	950
2010	461	43.8	124	11.8	110	10.4	118	11.2	240	22.8	1,053
2011	487	46.6	120	11.5	122	11.7	115	11.0	201	19.2	1,045
2012	461	45.8	124	12.3	132	13.1	108	10.7	182	18.1	1,007
Taranaki											
2007	464	43.2	125	11.6	169	15.7	192	17.9	125	11.6	1,075
2008	515	47.4	79	7.3	156	14.4	224	20.6	113	10.4	1,087
2009	540	41.1	171	13.0	184	14.0	235	17.9	183	13.9	1,313
2010	571	40.7	240	17.1	207	14.8	234	16.7	150	10.7	1,402
2011	575	37.7	344	22.5	218	14.3	243	15.9	147	9.6	1,527
2012	557	42.2	223	16.9	201	15.2	224	17.0	116	8.8	1,321

Source: Ministry of Social Development; Note: \*% refers to % of young people receiving a benefit, rather than % of all young people; See Methods section for composition of "Other Benefits"; Non-Benefit Assistance not included; Service Centres include: Lakes DHB: Rotorua (including Fraud), Taupo, Turangi; Tairāwhiti: Gisborne, Kaiti, Ruatoria; Taranaki: Hawera, New Plymouth, Stratford, Waitara

## Local Policy Documents and Evidence-Based Reviews Relevant to the Economic Environment for Young People

**Table 3 on Page 62** considers local policy documents and evidence-based reviews which are relevant to the social policy environment and the socioeconomic determinants of child and youth health.

# SOCIOECONOMIC AND CULTURAL DETERMINANTS







# HOUSEHOLD COMPOSITION





# CHILDREN IN SOLE PARENT HOUSEHOLDS

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## Introduction

Over the past 20 years, New Zealand has seen a decline in the proportion of two parent families and an increase in the proportion of one-parent families. In 1976, 10.4% of families with dependent children had one resident parent, compared to 28.1% in 2006 [29]. It is estimated that a third of New Zealand children have lived with a solo mother by the time they are 17 years old [30]. Sole-parenthood is also more common among Māori and Pacific children than NZ European children [31]. For example in 2006, 36 per cent of Māori babies and 32 per cent of Pacific babies lived with a sole mother, compared to 14 per cent of NZ European babies. One-parent families are a heterogeneous group however, that differ by their route into sole parenthood (which may result from bereavement, separation, imprisonment of a spouse, or birth outside of a live-in relationship), and by the parent's gender, age, health, and socioeconomic circumstances [31]. Many children in sole-parent families have a parent living in another household who is actively involved in their care and financial support.

Family composition however, is closely linked to the socioeconomic resources available to dependent children, an important underlying determinant of health. The proportion of sole-parent families experiencing disadvantage is consistently high, both compared to two-parent families, and in absolute terms [31]. During 2010–2011, 61 per cent of all children in sole-parent households were in the bottom quintile of equivalised household income (annual household income equivalised with respect to household composition), compared to 19 per cent of children in two-parent households [8]. In 2011, sole-parent households with dependent children had the highest income poverty rates of all household types at 58%, compared to 12% of two-parent families with dependent children. The New Zealand General Social Survey found that half of all households deemed 'high-risk' (5 or more risk factors which include cigarette smoking, living in a high deprivation area, housing problems and poor physical and mental health) were sole-parent households [32].

In addition, research suggests that parental separation is associated with a wide range of short and long term adverse effects on children's wellbeing, including: schooling, physical health, mental and emotional health, social conduct and behaviour, peer relations, cigarette smoking, substance use, early-onset sexual behaviour, early child-bearing, lone parenthood and low occupational status [33]. The Christchurch Health and Development Study found that while children whose parents separated were at increased risks of later internalizing (i.e. anxiety/depression, withdrawal, and somatic complaints) and externalizing (i.e. attention problems, aggressive and oppositional behaviour) problems, much of the increased risk was due to factors that were present before the separation or divorce [34]. These factors included socioeconomic disadvantage, elevated rates of adverse life events and higher levels of inter-parental conflict. There were small increased risks of later conduct problems, mood disorder and substance abuse in children exposed to parental separation.

As a consequence, not only do sole-parent families reflect a diversity of experience, but the impacts that changes in family composition have on children's physical and psychological wellbeing may also vary, depending on individual family circumstances and the impact parental separation has on their socioeconomic position.

The following section reviews the proportion of children living in sole parent households at the 2006 Census.



## Data Source and Methods

### Definition

*Proportion of children aged 0–14 years living in sole parent households*

### Data Source

Numerator: NZ Census: Number of children 0–14 years living in sole parent households, where the child was home on Census night.

Denominator: NZ Census: Total number of children 0–14 years who were home on Census night

### Notes on Interpretation

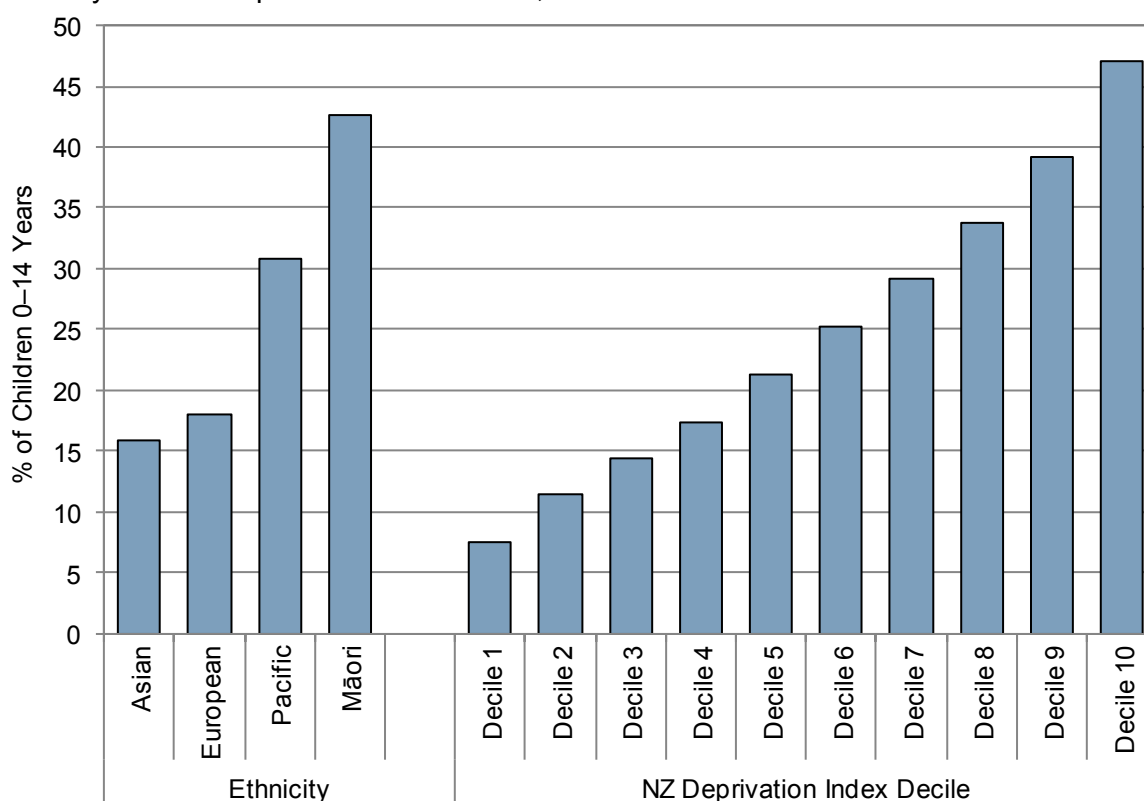
The breakdown into “Couple with Children” and “One Parent with Children” is made without regard to the relationship between the child and caregiver (e.g. a couple with children may refer to a de-facto couple, a married couple, grandparents caring for a dependent grandchild, a mother living with a partner who is not the child’s biological parent) and thus may underestimate the proportion of children who have experienced parental separation, as well as the proportion living in blended family settings.

## New Zealand Distribution

### New Zealand Distribution

In New Zealand during 2006, 25.2% of children aged 0–14 years lived in sole parent households.

Figure 27. Proportion of Children Aged 0–14 Years Living in Sole Parent Households by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census



Source: Statistics New Zealand; Note: Ethnicity is Level 1 Prioritised

### Distribution by Ethnicity

In New Zealand during 2006, 42.6% of Māori and 30.8% of Pacific children lived in sole parent households, as compared to 18.1% of European and 15.9% of Asian children (Figure 27).

### Distribution by NZ Deprivation Index Decile

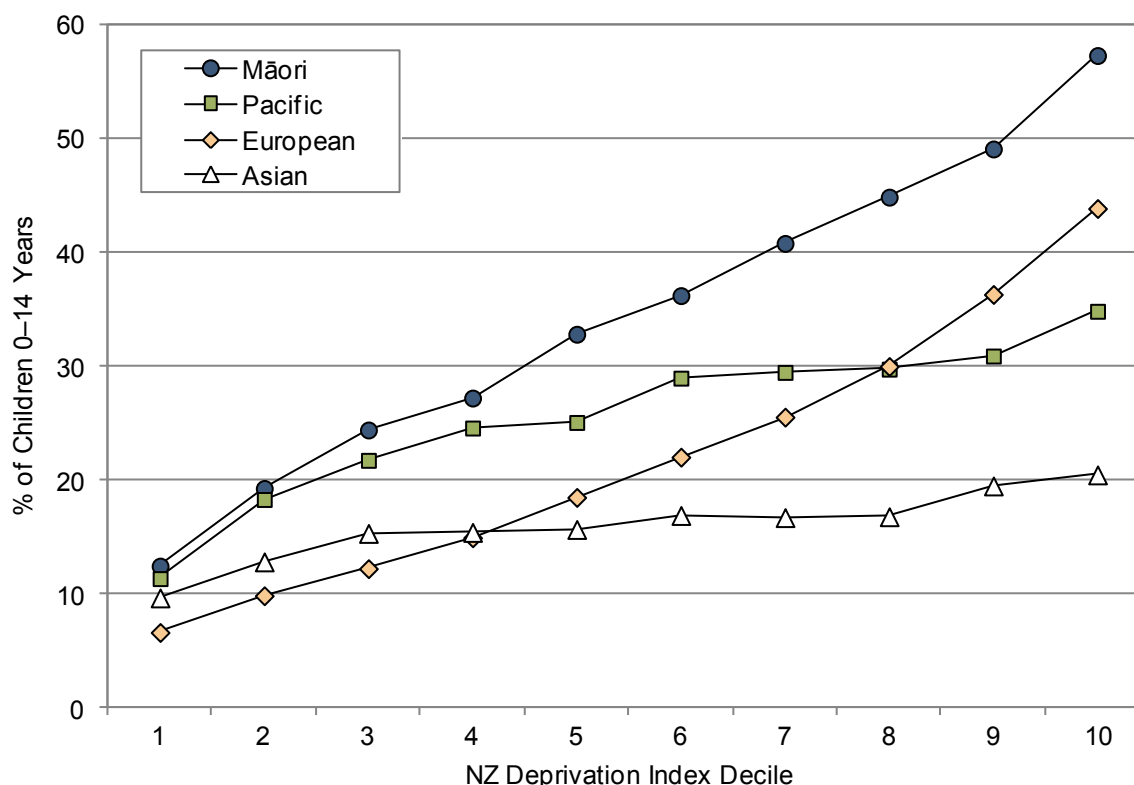
In New Zealand during 2006, the proportion of children living in sole parent households increased progressively, from 7.4% for those living in the least deprived (NZDep decile 1) areas, to 47.1% for those living in the most deprived (NZDep decile 10) areas (Figure 27).



## Distribution by Ethnicity and NZ Deprivation Index Decile

In New Zealand during 2006, while the proportion of children living in a sole parent household increased with increasing NZDep deprivation for each of New Zealand's largest ethnic groups, at each level of deprivation, the proportion living in sole parent households was higher for Māori, than for Pacific, than for Asian children. For European children, a lower proportion lived in sole parent households than Pacific or Asian children in the least deprived (NZDep deciles 1–3) areas, although a higher proportion lived in sole parent households in the most deprived (NZDep deciles 9–10) areas (**Figure 28**).

Figure 28. Proportion of Children Aged 0–14 Years Living in Sole Parent Households by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census



Source: Statistics New Zealand; Note: Ethnicity is Level 1 Prioritised

## Midland Region Distribution

### Distribution by DHB

In the Waikato during 2006, 27.0% of children aged 0–14 years lived in sole parent households, as compared to 31.4% in Lakes DHB, 29.4% in the Bay of Plenty, 36.3% in Tairāwhiti and 25.8% in Taranaki.

### Distribution by Ethnicity

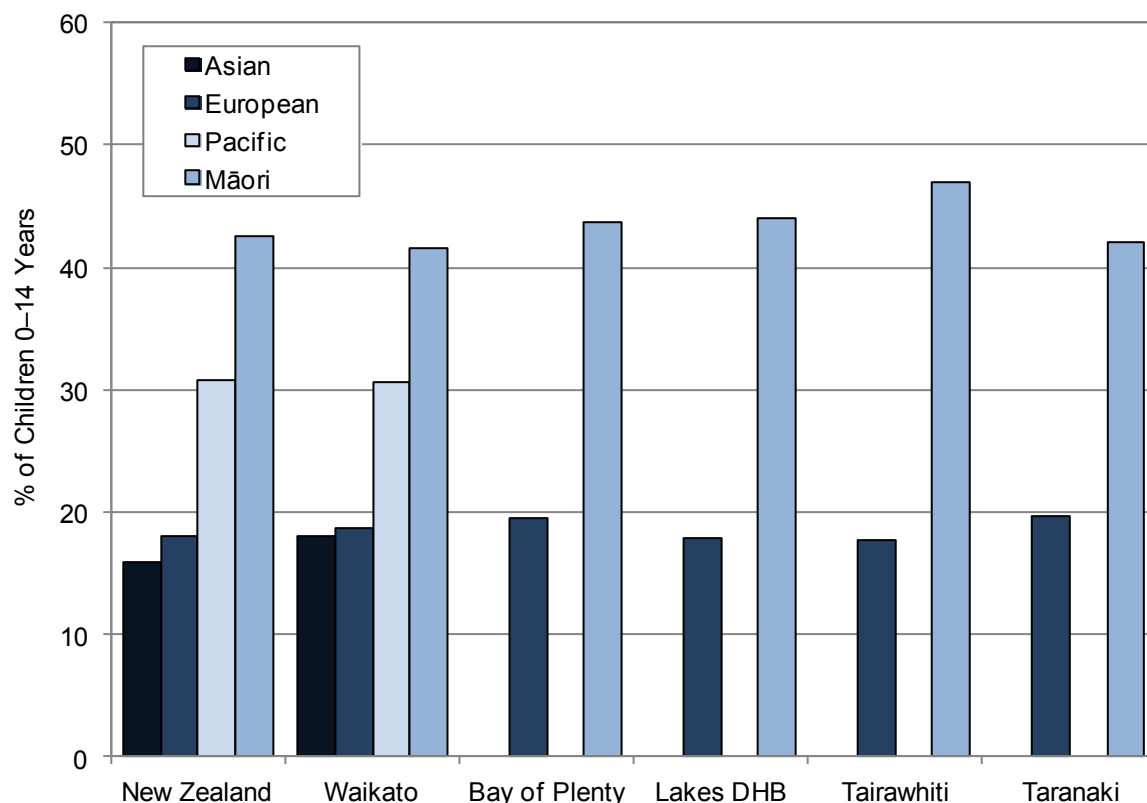
In the Waikato during 2006, a higher proportion of Māori > Pacific > European and Asian children lived in sole parent households, while in Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki, a higher proportion of Māori than European children lived in a sole parent household (**Figure 29**).

### Distribution by NZ Deprivation Index Decile

In all of the DHBs in the Midland Region during 2006, the proportion of children living in sole parent households increased with increasing NZDep deprivation, with the highest rates being seen amongst children living in the most deprived (NZDep decile 10) areas. Amongst those living in the most deprived areas, the proportion living in sole parent households was 50.0% in the Waikato, 49.9% in the Bay of Plenty, 54.4% in Lakes DHB, 53.0% in Tairāwhiti and 53.6% in Taranaki (**Figure 30**).

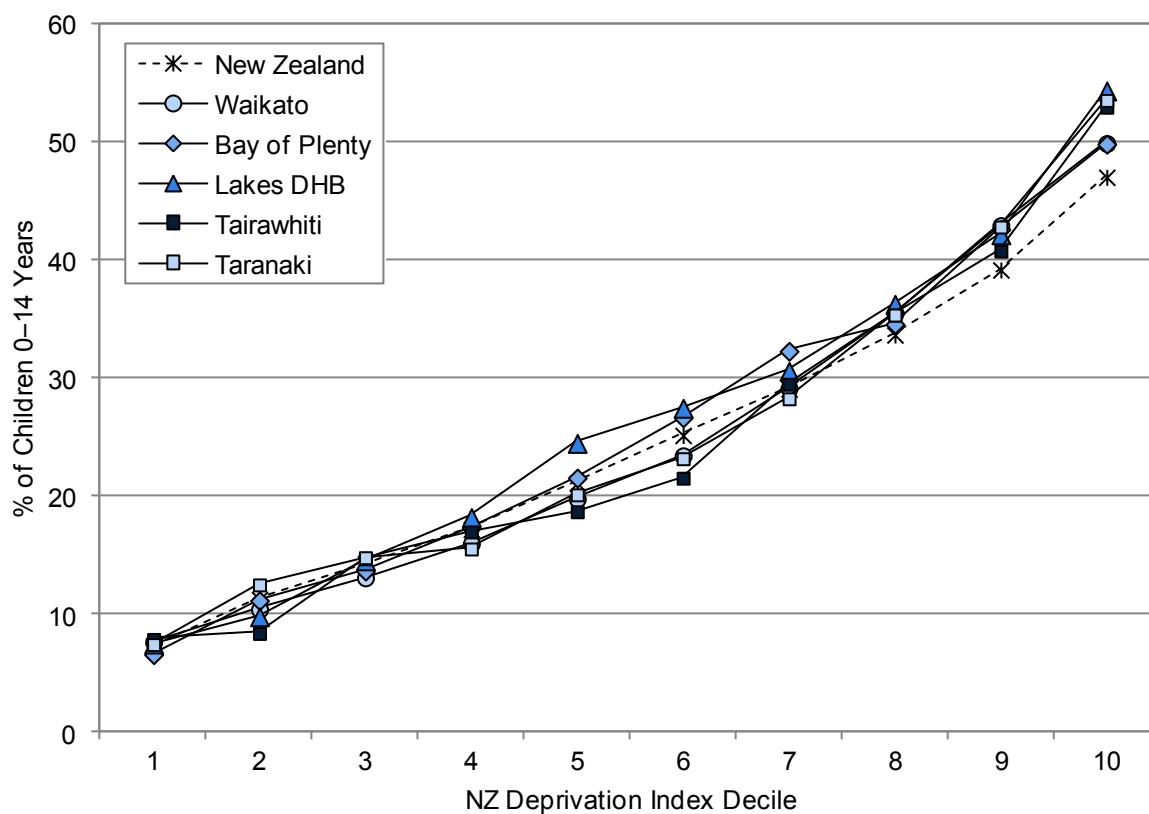


Figure 29. Proportion of Children Aged 0–14 Years Living in Sole Parent Households by Ethnicity, Midland DHBs vs. New Zealand at the 2006 Census



Source: Statistics New Zealand; Note: Ethnicity is Level 1 Prioritised

Figure 30. Proportion of Children Aged 0–14 Years Living in Sole Parent Households by NZ Deprivation Index Decile, Midland DHBs vs. New Zealand at the 2006 Census



Source: Statistics New Zealand

## Local Policy Documents and Reviews Relevant to Family Composition

There is little guidance for health professional in New Zealand on dealing with children undergoing changes in family composition. **Table 11** below provides an overview of recent Ministry of Social Development and Families Commission publications which consider family composition and resilience in separated, solo parent and step-parent families.

Table 11. Local Policy Documents and Evidence-Based Reviews Relevant to the Composition, Formation, and Dissolution of New Zealand Families

New Zealand Policy Documents and Literature Reviews
<p>Waldegrave C, et al. 2011. <b>Resilience In Sole Parent Families: A Qualitative Study Of Relational Resilience In Māori, Pacific And Pakeha Sole Parent Families</b>. Wellington: The Family Centre.  <a href="http://www.familycentre.org.nz/Publications/PDF%27s/Resilience%20Sole%20Parents%20Final%20Report%20MSD.pdf?PHPSESSID=a3aefd29a6840de3dd6ea336176b0e7c">http://www.familycentre.org.nz/Publications/PDF%27s/Resilience%20Sole%20Parents%20Final%20Report%20MSD.pdf?PHPSESSID=a3aefd29a6840de3dd6ea336176b0e7c</a></p> <p>This study aimed to identify the factors that enhance or impede successful social and economic outcomes for parents and their children. The research involved in-depth interviews with Māori, Pacific and Pākehā sole parent families, who had demonstrated resilience in their lives through their known success in having overcome difficulties and challenges. The study included 18 Māori families, 20 Pacific families and 20 Pākehā families. Positive views about work and education were common to all three groups and cultural frameworks were apparent among Pacific and Māori parents. All groups drew on external sources of support, but Māori used support relationships with whānau in preference to outside agencies much more than Pākehā and Pacific parents. Most parents were in paid employment although finding suitable work was challenging. A number of policy issues are identified including: the need for accessible healthcare and other services including drug and alcohol, education, employment, housing, and the need to invest in organisations that promote the wellbeing of children.</p>
<p>Centre for Social Research and Evaluation. 2010. <b>Sole parenting in New Zealand: An update on key trends and what helps reduce disadvantage</b>. Wellington: Ministry of Social Development. <a href="http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/sole-parenting/index.html">http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/sole-parenting/index.html</a></p> <p>This report draws together the findings from a cross-agency research programme which aimed to improve the knowledge base for public policy by increasing understanding of the vulnerability to disadvantage among some sole-parent families, identifying sources of resilience and identifying policies and interventions that are effective in reducing vulnerability and building resilience. Findings included: significantly higher poverty rates among sole parents and their children than two-parent families; higher levels of mental health problems among sole parents, associated with both socioeconomic position and not have a co-resident adult; significant associations between time spent receiving benefits in young adulthood and a range of disadvantages in childhood and adolescence. The report includes a literature review addressing approaches and interventions, focusing on measures to promote better mental health, measures to reduce disadvantage in the early life course, and measures to improve support for vulnerable young parents.</p>
<p>Families Commission. 2009. <b>Separated Parenting - What separating parents need when making care arrangements for their children</b>. Wellington: Families Commission.  <a href="http://www.familiescommission.org.nz/publications/briefs-and-statistics/issues-paper-01-separated-parenting">http://www.familiescommission.org.nz/publications/briefs-and-statistics/issues-paper-01-separated-parenting</a></p> <p>This paper discusses the challenges facing separated parents when deciding on care, contact and financial arrangements for their children. It is based on Families Commission research and a literature review, and was published to inform a review of the Child Support Scheme that was due to take place. Research confirmed that parents who were able to cooperate and make arrangements by themselves (without having these arrangements imposed by the Family Court or Inland Revenue), were more satisfied with the arrangements they made for their children than those with imposed arrangements. The importance of information and support (which is often informal) is highlighted and the development of a unified information and support strategy is suggested. The report recommends a more equitable formula for calculating child support payments to reduce perceived unfairness in the scheme.</p>
<p>Families Commission. 2008. <b>The Kiwi Nest: 60 years of change in New Zealand families</b>. Wellington: Families Commission. <a href="http://www.familiescommission.org.nz/sites/default/files/downloads/kiwi-nest.pdf">http://www.familiescommission.org.nz/sites/default/files/downloads/kiwi-nest.pdf</a></p> <p>This report aims to describe how families have changed over approximately 60 years, identify the pressures on families that influence their functioning and individual outcomes, and consider the implications of family change for New Zealand. The report describes current family forms (based on 2006 Census data), working patterns, incomes and housing and finds that family forms, sources of income, individual roles in families and the availability of housing have changed markedly over the past 60 years. However, the family's central function of bearing, raising and nurturing children remains constant. The report concludes that policies that are family centred and can reach families in all their diversity are essential for families to thrive and both produce and nurture future generations.</p>

Robertson J, et al. 2006. **Review of the Empirical Literature Assessing the Impacts of Government Policies on Family Form: A report for the Families Commission.** Wellington: Families Commission.  
<http://www.familiescommission.org.nz/sites/default/files/downloads/empirical-lit.pdf>

This systematic review considered the effects of government policies on partnership formation, dissolution and reconstitution, fertility decision-making and family size, and family living arrangements. Research published between 1990 and 2005, and judged to be relevant to New Zealand's social, economic and political context, was included in the review. A range of caveats to attempts to draw conclusions from the research were identified, including difficulties generalising findings across contexts, countries and cultures, the limited follow up periods of many studies, and the difficulties establishing cause and effect, or causal mechanisms. For example, although there is evidence that no-fault divorce laws precede a rise in divorce rates, it is unclear whether these laws cause a rise in divorce levels, or whether more separations are formalised after the advent of no-fault divorce. There is limited and conflicting evidence regarding legislation relating to custody, child welfare and adoption. Overall, the review found that government policy is not the main driver of the recent demographic changes that have occurred in many Western countries. Instead, it is likely that the broader social and economic context, and individual values, preferences and attitudes are more important influences on family form, and these factors may interact in complex ways with legislation and policy.

Pryor J. 2004. **Stepfamilies and Resilience: Final report.** Wellington: Centre for Social Research and Evaluation, Ministry of Social Development. <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/stepfamilies-resilience/index.html>

This report describes a New Zealand study in which perspectives on relationships and wellbeing in stepfamilies were obtained from children, parents, stepparents, non-resident parents and teachers. The aim was to understand the impact of the quality of relationships on resilience in these families. The findings suggested that the affective, or emotional, quality of relationships in stepfamilies is important for positive family and child functioning. The author concludes that particular attention needs to be paid to the child-stepparent relationship and the perspectives of children, which are central to assessing wellbeing at the family and individual level.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**



# HOUSEHOLD CROWDING

## Introduction

It has been known for centuries that housing and health are linked and that housing is an important determinant of health [35]. The relationship between housing and health is complex, and poor housing conditions often coexist with other socioeconomic factors, such as low income, unemployment, poor education and social isolation [36]. However, associations between housing conditions and health have been identified in a variety of epidemiological studies [37]. In children, cold and damp housing has been linked to respiratory conditions, reduced educational achievement, emotional wellbeing and resilience [38]. In New Zealand, household crowding<sup>1</sup> has been linked to meningococcal disease and acute rheumatic fever in children [40,41]. Internationally, research has suggested correlations between crowding and tuberculosis, respiratory infections, hepatitis B and other enteric disease, conjunctivitis, and poor mental health outcomes [42]. Proposed mechanisms for these associations include closer and more prolonged and increased frequency of contact between children and infectious disease carriers, and increased exposure to second-hand tobacco smoke [42].

In New Zealand there are socioeconomic and ethnic disparities in access to healthy housing. A recent report found that some children in New Zealand are currently “exposed to housing in poor condition, housing that is unaffordable, housing that has insecure tenure and households that are crowded” [43]. At the time of the 2006 Census, one in twenty households were defined as crowded and rates of crowding were consistently higher among Māori (23 per cent) and Pacific peoples (43 per cent) compared to NZ Europeans (5 per cent) [39]. Crowding is also more common among households on a low income, households in rental accommodation, particularly state owned rental accommodation, households with a younger age structure, and those that have more dependent children, contain two or more families, or a single parent family [44]. Māori and Pacific people are also more likely than NZ Europeans to live in rental properties, and home ownership between 1991 and 2006 declined more substantially for Māori (by 13.4 per cent) and Pacific peoples (by 14.5 per cent) than for NZ Europeans (by 9 per cent) [45]. Research also suggests that rental accommodation is of lower quality than owner-occupied homes, and is more likely to lack insulation and to be prone to damp and mould [46].

The following section reviews the proportion of children and young people aged 0–24 years who were living in crowded households at the 2006 Census.

### Data Source and Methods

#### Definition

*The proportion of children and young people aged 0–24 years living in crowded households, as defined by the Canadian National Occupancy Standard*

#### Data Source

**Numerator:** Census: The number of children and young people 0–24 years living in households which required one or more additional bedrooms.

**Denominator:** Census: The total number of children and young people 0–24 years at the Census for whom crowding status was known.

#### Notes on Interpretation

Information is for the usual resident population and relates to the household crowding status of individual children. Thus the number of children reported on will be greater than the number of households on Census night (i.e. the unit of reference is the child and thus 2 children from the same household will be counted twice in these statistics).

<sup>1</sup> Defined by Statistics New Zealand as a deficit of at least one bedroom, to the standard of no more than two people per bedroom; couples share a room; children under five of either gender, or under 18 of the same gender can share a room; children aged five to 17 should not share a room with a child under five of the opposite gender; single adults and unpaired children require a separate room [39].



### Canadian National Occupancy Standard

The Canadian National Occupancy Standard (CNOS), developed in Canada in the 1980s, calculates appropriate person-to-bedroom ratios for households of differing sizes and compositions. It makes judgements on appropriate age limits for bedroom sharing (e.g. using the CNOS, children aged less than 5 years of different sexes may share a room, while those aged 5–17 years may only share a room if they are of the same sex). The CNOS compares the number of bedrooms in a household with its bedroom requirements based on the age, sex, marital status and relationship of household members to one another. Households are reported as having two plus, one or no bedrooms spare, or as requiring an additional one, or two plus bedrooms. Households needing one or two plus additional bedrooms are deemed to be crowded [44].

## New Zealand Distribution

### New Zealand Distribution

In New Zealand during 2006, 16.5% of children and young people aged 0–24 years lived in a crowded household.

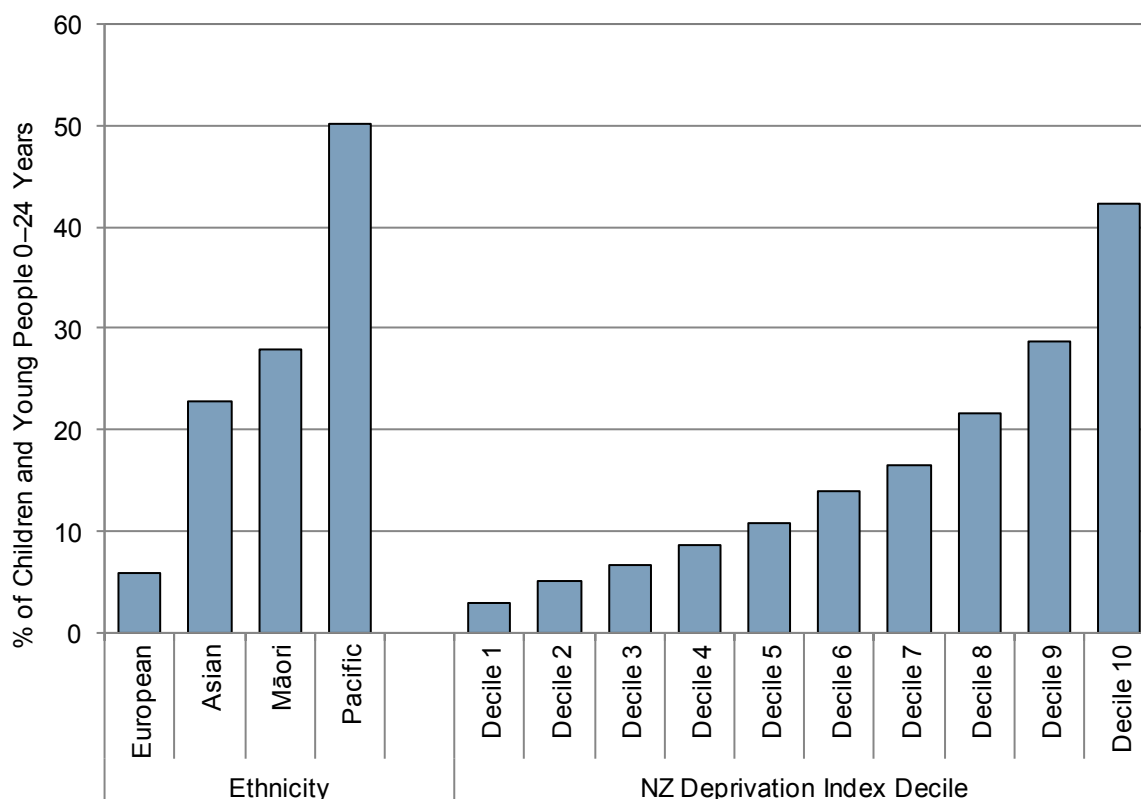
### Distribution by Ethnicity

In New Zealand during 2006, 50.1% of Pacific and 27.8% of Māori children and young people lived in crowded households, as compared to 22.8% of Asian and 5.8% of European children and young people (**Figure 31**).

### Distribution by NZ Deprivation Index Decile

In New Zealand during 2006, the proportion of children and young people living in crowded households increased progressively, from 2.8% for those living in the least deprived (NZDep decile 1) areas, to 42.4% for those living in the most deprived (NZDep decile 10) areas (**Figure 31**).

Figure 31. Proportion of Children and Young People Aged 0–24 Years Living in Crowded Households by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census

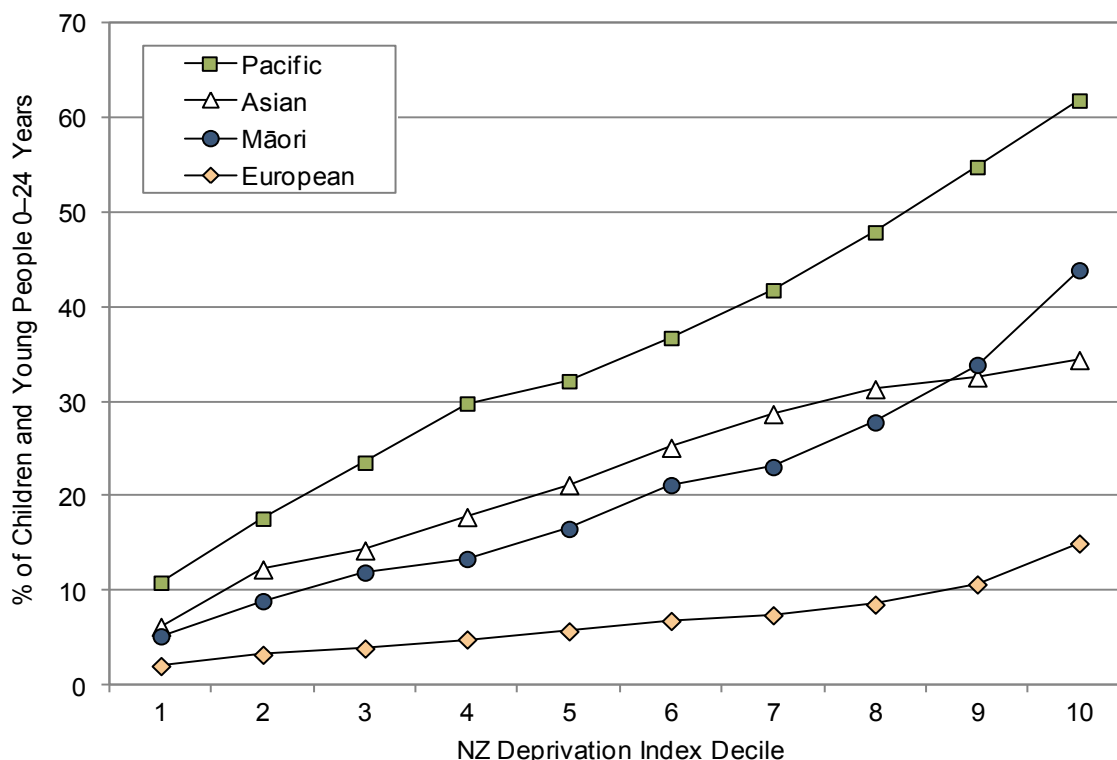


Source: Statistics New Zealand; Note: Ethnicity is Level 1 Prioritised

## Distribution by Ethnicity and NZ Deprivation Index Decile

In New Zealand during 2006, while the proportion of children and young people living in a crowded household increased with increasing NZDep deprivation for each of New Zealand's largest ethnic groups, at each level of deprivation, the proportion living in crowded households was higher for Pacific > Asian and Māori > European children and young people (**Figure 32**).

Figure 32. Proportion of Children and Young People Aged 0–24 Years Living in Crowded Households by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census



Source: Statistics New Zealand; Note: Ethnicity is Level 1 Prioritised

## Midland Region Distribution

### Distribution by DHB

In the Waikato during 2006, 15.6% of children and young people lived in crowded households, as compared to 18.8% in Lakes DHB, 16.4% in the Bay of Plenty, 23.3% in Tairāwhiti and 10.7% in Taranaki.

### Distribution by Ethnicity

In the Waikato during 2006, a higher proportion of Pacific > Māori > Asian > European children and young people lived in crowded households, while in Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki a higher proportion of Māori than European children and young people lived in crowded households (**Figure 33**).

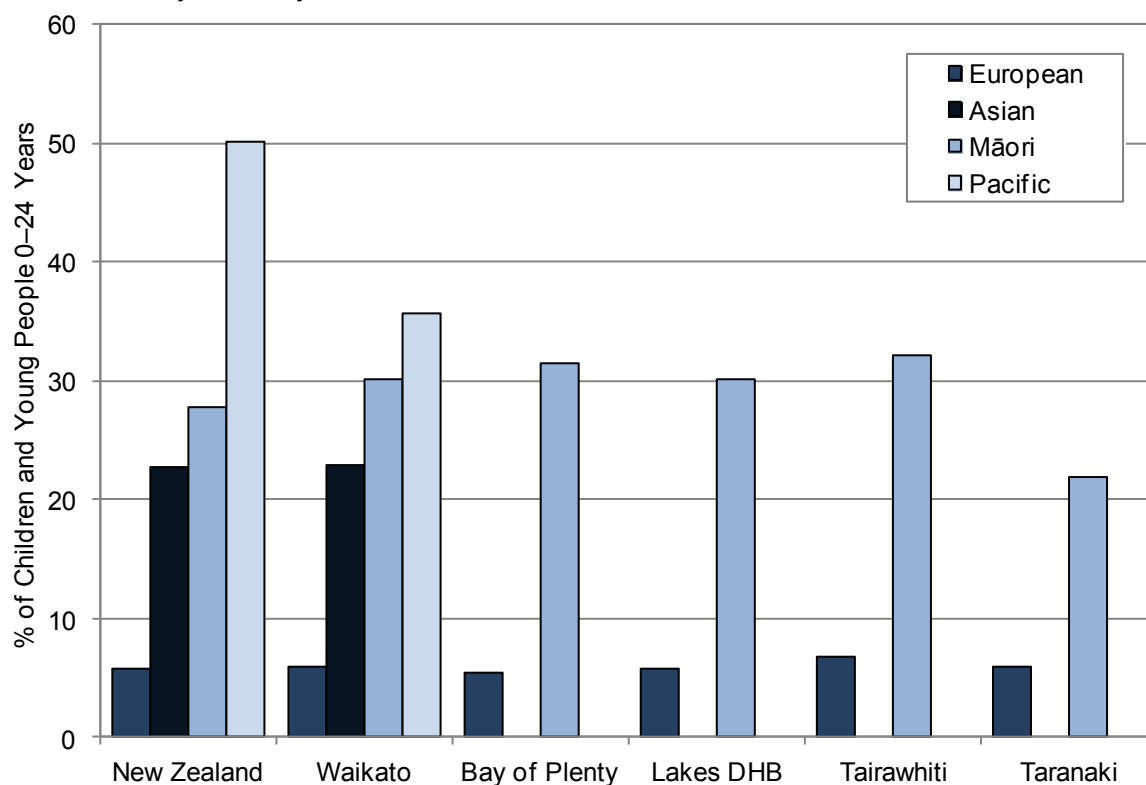
### Distribution by NZ Deprivation Index Decile

In all of the DHBs in the Midland Region during 2006, the proportion of children and young people living in crowded households increased with increasing NZDep deprivation, with the highest rates being seen in those from the most deprived (NZDep decile 10) areas. Amongst those from the most deprived areas, the proportion living in crowded households was 37.2% in the Waikato, 39.4% in the Bay of Plenty, 36.3% in Lakes DHB, 37.4% in Tairāwhiti and 26.2% in Taranaki. While similar social gradients were seen nationally, amongst those living in the more deprived (NZDep deciles 7–10) areas, household crowding in the Waikato, Bay of Plenty and Taranaki was lower than the New Zealand rate (**Figure 34**).



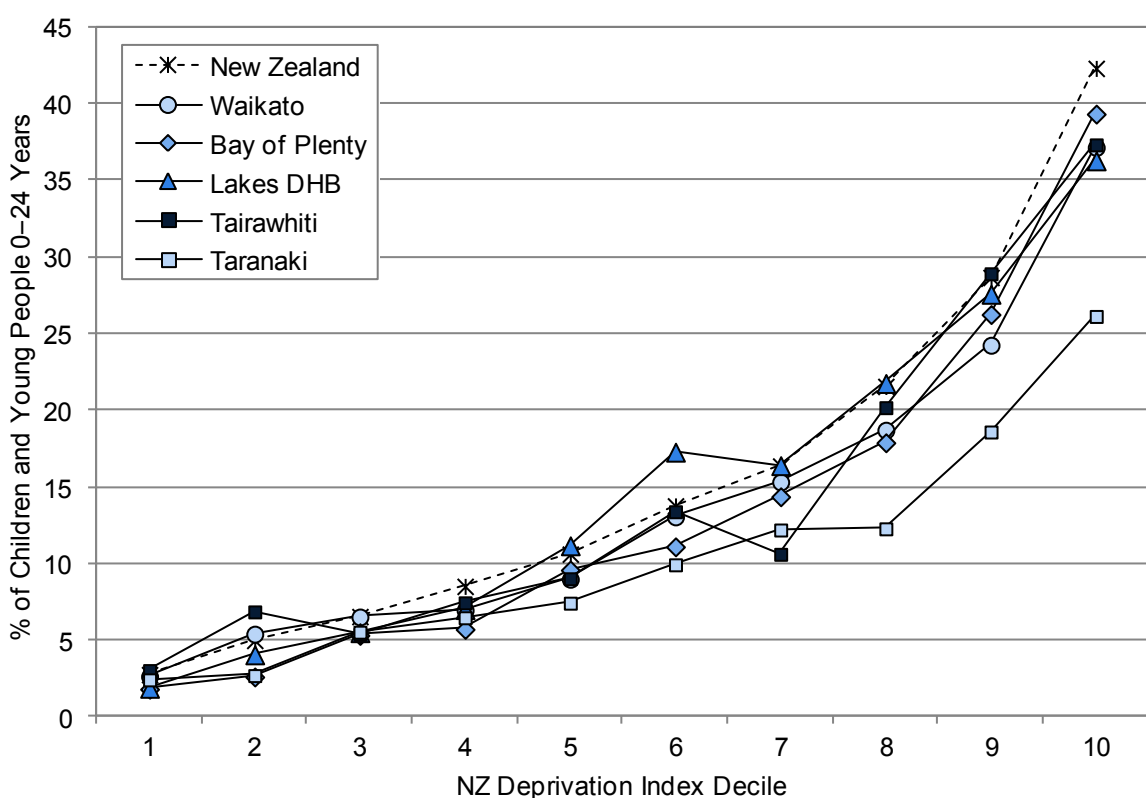


Figure 33. Proportion of Children and Young People Aged 0–24 Years Living in Crowded Households by Ethnicity, Midland DHBs vs. New Zealand at the 2006 Census



Source: Statistics New Zealand; Note: Ethnicity is Level 1 Prioritised

Figure 34. Proportion of Children and Young People Aged 0–24 Years Living in Crowded Households by NZ Deprivation Index Decile, Midland DHBs vs. New Zealand at the 2006 Census



Source: Statistics New Zealand



# Local Policy Documents and Evidence-Based Reviews Relevant to the Provision of Healthy Housing

**Table 12** below provides a brief overview of local policy documents and evidence-based reviews which consider the relationship between housing and health and the provision of healthy housing. There is a strong record of housing research in New Zealand and the table includes some local housing intervention studies.

Table 12. Local Policy Documents and Evidence-Based Reviews Relevant to the Provision of Healthy Housing

New Zealand Policy Documents
<p>Housing New Zealand Corporation. 2010. <b>Strategic Plan 2010-15: Helping New Zealanders in their time of need.</b> Wellington: Housing New Zealand Corporation. <a href="http://www.hnzc.co.nz/about-us/our-publications/housing-new-zealand-strategic-plan">http://www.hnzc.co.nz/about-us/our-publications/housing-new-zealand-strategic-plan</a></p> <p>Housing New Zealand Corporation (HNZC) provides state houses and tenancy services to those most in need. This document identifies the challenges facing HNZC and establishes the direction and framework for addressing those challenges in coming years. Challenges include: increasing demand for housing assistance; a mismatch between the current distribution, concentration and standard of the housing portfolio and the changing needs of tenants (including larger families); a need to work more collaboratively with other providers; and financial constraints. Strategic goals to address these challenge are identified and include: to effectively provide for those most in need, for the duration of need; to develop the housing portfolio to be 'fit for purpose' by type and location; to develop partnerships that strengthen social housing and communities; and to deliver economic and social value. Strategies for achieving these goals are described.</p>
Cochrane Systematic Reviews
<p>Sauni R, et al. 2011. <b>Remediating buildings damaged by dampness and mould for preventing or reducing respiratory tract symptoms, infections and asthma.</b> Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD007897.pub2 <a href="http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007897.pub2/abstract">http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007897.pub2/abstract</a></p> <p>This systematic review assessed the effectiveness of remediating buildings damaged by dampness and mould in reducing or preventing respiratory tract symptoms, infections and symptoms of asthma. Eight studies (6538 participants) including two RCTs (294 participants), one cluster RCT (4407 participants) and five controlled before and after studies (1837 participants) were included in the review. In two of the studies participants were children and three other studies reported symptoms in adults and children. For children, there was moderate quality evidence that repairing houses was associated with a decrease in the number of acute care visits (mean difference -0.45; 95% CI -0.76 to -0.14). There was very low-quality evidence that although repairing schools did not significantly change respiratory symptoms in staff or children, pupils' visits to physicians due to a common cold were less frequent after remediation of the school. The authors conclude that better research, preferably with a cluster RCT design and validated outcome measures, is needed.</p>
Other Systematic Reviews
<p>Thomson H, et al. 2009. <b>The Health Impacts of Housing Improvement: A Systematic Review of Intervention Studies From 1887 to 2007.</b> American Journal of Public Health, 99(S3), S681-92.</p> <p>This systematic review assessed the health impacts of housing improvement interventions. Forty-five studies, using a variety of methodologies, were included in the narrative synthesis, which included an assessment of study quality. Health effects varied across the studies, but improvements in general, respiratory, and mental health were most commonly reported following warmth improvement measures. There were few reports of adverse health impacts following housing improvement. The authors conclude that housing improvements, especially warmth improvements, can generate health improvements, and there is little evidence of detrimental health effects. The potential for health benefits may depend on baseline housing conditions and careful targeting of the intervention. Investigation of longer-term health effects is needed.</p>
<p>Taske N, et al. 2005. <b>Housing and public health: a review of reviews of interventions for improving health.</b> London: National Institute of Clinical Excellence. <a href="http://www.nice.org.uk/nicemedia/pdf/housing_MAIN%20FINAL.pdf">http://www.nice.org.uk/nicemedia/pdf/housing_MAIN%20FINAL.pdf</a></p> <p>This UK focused briefing paper aimed to identify and review all the relevant systematic reviews, syntheses, meta-analyses and review-level papers on public health interventions relating to housing, to inform policy and decision makers, housing officials, and public health practitioners in the widest sense. It aimed to identify what housing-related interventions work to promote health for all population groups, with particular reference to disadvantaged and vulnerable groups. Fifteen review level papers were included, assessing re-housing and neighbourhood regeneration, and housing refurbishment and renovation. Findings for re-housing included: review-level evidence that anxiety and depression scores are reduced in people who are re-housed on the basis of medical need; review-level evidence that re-housing people from slum areas can improve self-reported physical and mental health outcomes in the longer term (18 months) but can adversely affect self-reported health outcomes in the short term (9 months); and review-level evidence from the US that rental voucher programmes can improve household safety by providing families with the choice to move to neighbourhoods with reduced exposure to violence. Findings for refurbishment included: review-level evidence that housing interventions involving improvements to energy efficiency measures, such as installation of new windows, can positively affect health outcomes. A number of research recommendations are made including a need for cost-effectiveness studies.</p>

## Other Relevant Evidence

Marmot Review Team. 2011. **The Health Impacts of Cold Homes and Fuel Poverty**. London: Friends of the Earth & the Marmot Review Team. <http://www.instituteofhealthequity.org/projects/the-health-impacts-of-cold-homes-and-fuel-poverty>

This report reviewed the evidence base for the direct and indirect health effects suffered by those living in fuel poverty (defined as having to spend 10% or more of a household's net income to heat their home to an adequate standard of warmth) and cold housing (below the WHO recommendation of indoor temperatures maintained at 21 degrees in living rooms and 18 degrees in bedrooms for at least 9 hours a day). A review of the literature assessing the health effects of cold homes on children found significant negative effects on infants' weight gain, hospital admission rates, care-giver rated developmental status, and the severity and frequency of asthmatic symptoms. Among adolescents cold housing and fuel poverty was associated with a significantly increased risk of multiple mental health problems compared to adolescents who have always lived in warm homes. A variety of policy recommendations are given including: ensuring sustainable programmes to improve thermal efficiency of homes for vulnerable households, including those in rental properties; developing legislation to ensure that private rental accommodation is thermally efficient; and development of national indicators for housing quality. The co-benefits of improvements to thermal efficiency of housing on health and climate change mitigation are highlighted.

James B & Saville-Smith K. 2010. **Children's Housing Futures**. Wellington: Centre for Housing Research Aotearoa New Zealand. <http://www.chranz.co.nz/pdfs/childrens-housing-futures-report.pdf>

This research report examines the housing futures of New Zealand's children, with a view to improving New Zealand's capacity to address the housing needs of children now and into the future. The report consists of: a description of socio-demographic housing trends; a literature review on key housing issues affecting children, housing solutions workshops with key stakeholders; and identification of key priorities and recommendations. The exposure of children to unaffordable housing, houses in poor condition, crowding and insecure tenure; and the strong trend towards children to be housed in the rental market, are identified as key issues. Five key priorities are recommended: developing housing policy that treats children's housing needs as seriously as adult housing needs; developing policy and cross-sectoral services that integrate housing aware child services with child-centred housing delivery, including a standardised housing needs assessment tool; improving the quality and security of the rental market; transforming the housing stock by actively pursuing child wellbeing outcomes, for example retrofitting insulation; diversifying tenure shared ownership and non-speculative housing and housing provision and recruiting a range of different providers into the housing market. Several research priorities are identified.

Scottish Government Communities Analytical Services. 2010. **A select review of literature on the relationship between housing and health. Analytical Paper Series**. Edinburgh: Scottish Government. [www.scotland.gov.uk/Resource/Doc/1035/0104565.doc](http://www.scotland.gov.uk/Resource/Doc/1035/0104565.doc)

This pragmatic review of the relationships between housing and health found that housing conditions have been linked to a variety of health effects. Housing risk factors included cold and damp, indoor air quality, house type, overcrowding and neighbourhood effects. Studies were identified that linked housing improvements to health improvement. Local policy responses are reviewed. The report identified that housing problems were often a component of multiple disadvantage.

Clinton J, et al. 2006. **The Healthy Housing Programme: Report of the Outcomes Evaluation (year two)**. Auckland: Auckland UniServices Ltd. <http://www.cmdhb.org.nz/Funded-Services/Intersectoral/docs/HHP-finalreport-year2.pdf>

Healthy Housing is a joint project between the Housing New Zealand Corporation (HNZC) and DHBs that aims to: raise awareness of infectious diseases like meningococcal disease, rheumatic fever, tuberculosis, cellulitis and respiratory diseases; improve access to health and social services; reduce the risk of housing-related health problems; and reduce overcrowding. The programme works with HNZC tenants in selected areas by providing housing interventions (e.g. insulation and house extensions), health interventions (e.g. assessments and referrals) and joint interventions to link tenants to appropriate social services. The evaluation assessed changes in the risk of housing-related diseases, conditions and injuries, and self-assessed wellbeing as a result of participation in Healthy Housing and included case studies, surveys, and provider interviews. Overall, the programme was found to be beneficial and sustainable. Households reported improvements in health and wellbeing, with over half of the households reporting a reduction in the frequency of doctor and hospital contact. Overcrowding did not appear to have recurred and household occupancy had stabilised. Collaboration between the sectors was found to be a key to the success of the programme.

Chaudhuri N. 2004. **Interventions to improve children's health by improving the housing environment**. Reviews on Environmental Health, 19(3-4), 197-222.

This paper reviews factors shown to mediate housing and health interactions, including psychosocial, environmental, socioeconomic, behaviour-cultural, and physiological factors, and provides examples of housing-related interventions to improve child health. Examples include integrated energy-efficiency programmes to improve thermal comfort and to reduce allergens (e.g. mould, dust mites), housing and health policies, regulation and standard setting, and education and training.

Gray A. 2001. **Definitions of crowding and the effects of crowding on health: a Literature Review**. Wellington: Ministry of Social Policy. <http://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/archive/2001-definitions-of-crowding.pdf>

This literature review aimed to assess the definitions and measures of crowding in current use and to summarise the knowledge-base of the adverse effects of crowding. The review examined statistical and research definitions and regulatory and administrative measures. A need for more work to establish the validity of various measures for different groups in New Zealand was identified. The review found that the evidence base for the relationship between crowding and health is longstanding and inconclusive and complex, with a variety of potential confounding variables and difficulties in measuring crowding. Some studies have identified associations between crowding and common infectious diseases, including colds, asthma, influenza, meningococcal disease and TB but further research is required to establish causality. Overseas research on crowding and mental health revealed mixed results but it appears to be stressful for children as well as adults. Crowding in New Zealand is linked to ethnicity and immigration, and low income in high cost areas.

### Some New Zealand Housing and Health Studies

Jackson G, et al. 2011. **Reduced acute hospitalisation with the healthy housing programme**. *Journal of Epidemiology & Community Health*, 65(7), 588-93.

This study investigated the effect of the Healthy Housing Programme (see Clinton et al. 2006, above) on acute hospitalisation rates in South Auckland. The study included the 9736 residents (in 3410 homes) involved in the programme from 2001 to 2007. All of the participants lived areas of relative deprivation (NZDep 10) and most self-identified as of Pacific ethnicity. The main outcome measure was acute hospitalisation rates (collected from 1999 to 2009) before, during and after the health and housing intervention. The adjusted hazard ratios (HR) for acute hospitalisation after, compared to before the intervention were: and 0.77 (95% CI 0.70 to 0.85) people aged 5 to 34 years, 0.89 (95% CI 0.79 to 0.99) for children aged 0 to 4 years (a non-significant increase was seen in those aged 35 years and over). For housing-related causes of hospitalisation only, the HRs fell to 0.88 (95% CI 0.74 to 1.05) for 0 to 4 year olds and 0.73 (95% CI 0.58 to 0.91) for 5 to 34 year olds. The results suggested that the housing and health package was associated with significant reductions in acute hospitalisations among participants aged 0 to 34 years.

Howden-Chapman P, et al. 2008. **Effects of improved home heating on asthma in community dwelling children: randomised controlled trial**. *BMJ*, 337; doi:10.1136/bmj.a1411.

This RCT (409 children aged 6–12 years with doctor diagnosed asthma) aimed to assess whether installing non-polluting, more effective home heating (heat pump, wood pellet burner, flued gas) had a positive effect on the health of children with asthma. Homes were insulated before heater installation. The primary outcome was a change in lung function (peak expiratory flow rate and forced expiratory volume in one second, FEV<sub>1</sub>) and secondary outcomes were child reported respiratory tract symptoms and daily use of preventer and reliever drugs. Follow up occurred at one year. There was no significant improvement in lung function (difference in mean FEV<sub>1</sub> 130.7 ml, 95% CI –20.3 to 281.7) but significant improvement in days off school (1.80 fewer days off school in intervention group compared to control, 95% CI 0.11 to 3.13), healthcare utilisation (0.40 fewer visits to a doctor for asthma, 95% CI 0.11 to 0.62), visits to a pharmacist (0.25 fewer visits to a pharmacist for asthma, 95% CI 0.09 to 0.32) and symptoms of asthma were found.

Howden-Chapman P, et al. 2007. **Effect of insulating existing houses on health inequality: cluster randomised study in the community**. *BMJ*, 334(7591), 460.

This cluster RCT involving 1350 households containing 4407 participants, aimed to determine whether insulating existing houses using a standard retrofit insulation package increased indoor temperatures and improved occupants' health and wellbeing. Outcome measures included indoor temperatures and relative humidity, energy consumption, self-reported health, wheezing, days of school and work, GP visits and hospital admissions. All household members aged over 11 years completed the questionnaire and data were also collected from GPs and hospital admission data. The study found that insulating existing houses led to a significantly warmer, drier indoor environment and resulted in improved self-rated health (adjusted OR 0.50, 95% CI 0.38 to 0.68) and wheezing (adjusted OR 0.57, 95% CI 0.47 to 0.70), fewer children taking days off school (adjusted OR 0.49, 95% CI 0.31 to 0.80), less frequent visits to GPs (adjusted OR 0.73, 95% CI 0.62 to 0.87), and a non-significant trend for fewer hospitalisations for respiratory conditions at one year follow-up.

Baker M, et al. 2000. **Household crowding a major risk factor for epidemic meningococcal disease in Auckland children**. *The Pediatric Infectious Disease Journal*, 19(10), 983-90.

This case-control study compared the household and demographic characteristics of 202 meningococcal disease cases in Auckland children under eight years of age, recruited during 1997–1999, with matched 313 controls. After controlling for age, ethnicity, season and socioeconomic factors, the risk of disease was strongly associated with overcrowding (measured by the number household members aged 10 years and over per room) (OR 10.7, 95% CI 3.9 to 29.5). This indicated a doubling of risk with the addition of two adolescents or adults to an average six room house. Significant increase risk of disease was also associated with number of days at substantial social gatherings, number of smokers in the household, sharing an item of food, drink or a pacifier; and preceding symptoms of a respiratory infection in a household member, but crowding remained the strongest independent risk factor. The authors concluded that reducing overcrowding could have a marked effect on reducing the incidence of meningococcal disease in Auckland children.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**





# EDUCATION: KNOWLEDGE AND SKILLS





# EARLY CHILDHOOD EDUCATION

## Introduction

Participation in high quality early childhood education (ECE) has significant long term benefits for children's academic performance, as well as school readiness, reduced grade retention and reduced special education placement [47]. Competencies and skills that enable children to keep learning have also been found to be associated with ECE participation. The benefits appear greatest for children from low income families, those who attend ECE regularly and those who have started ECE at a younger age (e.g. 2-3 years). A number of longitudinal studies however, have suggested that the relationship between ECE and subsequent outcomes may be complex and related to the age at which the child starts ECE, the number of hours in ECE each week, the quality of the ECE service and the socioeconomic background from which the child comes [48].

The Competent Children, Competent Learners Study, conducted in New Zealand, followed a cohort of children from preschool to age 14 years. It suggests that differences in the ECE environment continue to influence performance at age 14, although in general, ECE experience made the greatest impact at the time a child started school. The contribution was still evident, however, at 14 years, even after taking into account age-5-performance and factors identified as being influential, such as family income and maternal qualifications. Differences between those with the highest or most of a particular aspect of ECE and those with lower or less was, on average, 9% [48].

In New Zealand, early childhood education is provided by a variety of services. These include those that have been in existence for decades, such as Kindergartens and Te Kōhanga Reo, and which require a degree of parent involvement, and more recently developed services that cater for the needs of working parents who will not be present during the care, such as home-based services and Education and Care Services. A considerable increase in enrolments has been noted particularly for the latter services.

The following section uses Ministry of Education data to review enrolments in early childhood education (ECE), as well as the proportion of new entrants who had participated in ECE prior to school entry.

### Data Source and Methods

#### Definitions

1. Number of enrolments in licensed early childhood education services
2. Average weekly hours attended by children at licensed early childhood education services
3. Proportion of new entrants who had previously attended early childhood education

#### Data Source

Ministry of Education <http://www.educationcounts.govt.nz/>

1. Number of enrolments in licensed early childhood education services

Numerator: Total number of enrolments in licensed early childhood education services

Denominator: Not applicable (see notes below)

2. Average weekly hours attended by children at licensed early childhood education services

The average weekly hours of attendance of regular enrolments in ECE by service type

3. Proportion of new entrants who had previously attended early childhood education

Numerator: The number of new entrants reporting participation in ECE prior to attending school

Denominator: The number of new entrants enrolled

#### Interpretation:

Note 1: Enrolment numbers overestimate participation in ECE because of double or triple counting of those children who attend more than one ECE service. This is particularly problematic for three and four year-olds, as they have fairly high rates of participation. To get a more accurate picture of the proportion of children participating in ECE, prior participation in ECE is a better indicator. Enrolment numbers however are a useful indicator of patterns of enrolment across different service types. For a description of ECE service types see

<http://www.educationcounts.govt.nz/statistics/ece>



Note 2: The number of new school entrants reporting participation in ECE prior to attending school is a useful measure of ECE participation as it overcomes some of the double counting problems associated with ECE enrolment measures. However no information is provided on the duration of, number of hours in, or the type of ECE attended prior to attending school.

*School Socioeconomic Decile:* All schools are assigned a decile ranking based on the socioeconomic status of the areas they serve. These rankings are based on Census data from families with school age children in the areas from which the school draws its students. Census variables used in the ranking procedure include equivalent household income, parent's occupation and educational qualifications, household crowding and income support payments. Using these variables, schools are assigned a decile ranking, with decile 1 schools being the 10% of schools with the highest proportion of students from low socioeconomic communities and decile 10 schools being the 10% of schools with the lowest proportion of these students. Decile ratings are used by the Ministry of Education to allocate targeted funding, as well as for analytical purposes.

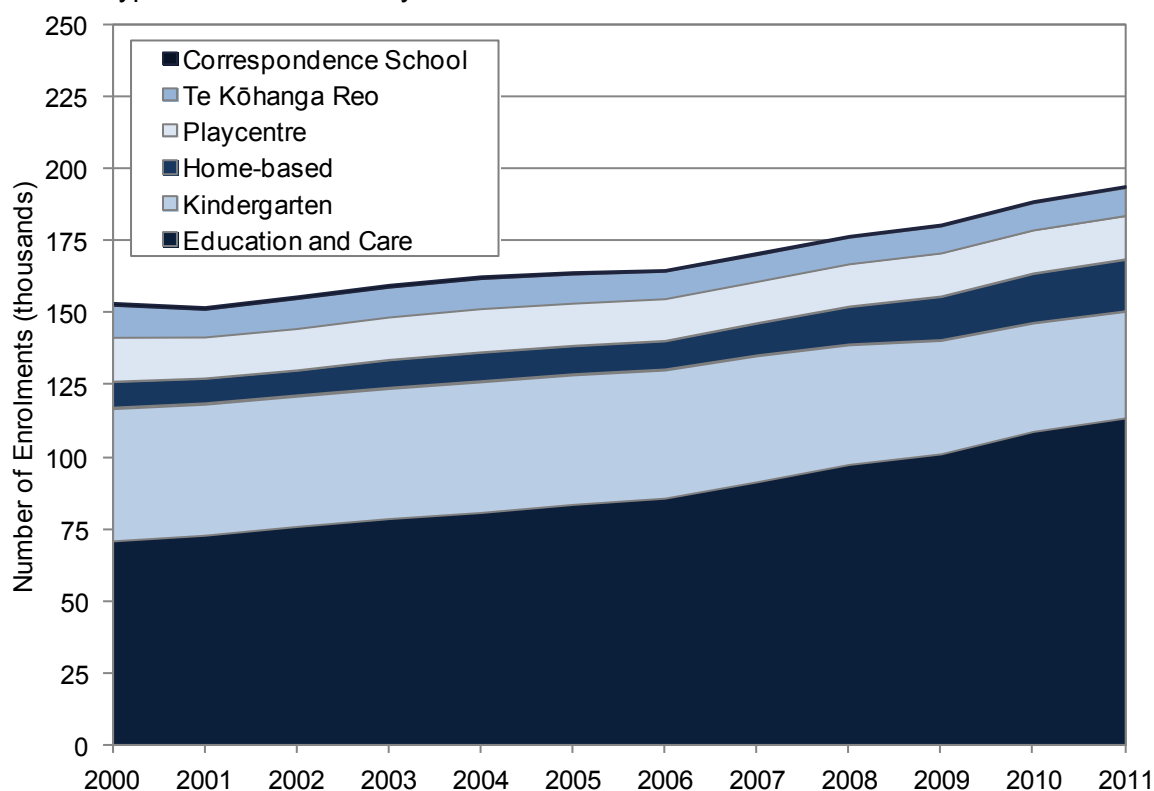
## Enrolments in Early Childhood Education

### New Zealand Distribution and Trends

#### Trends by Service Type

In New Zealand during 2000–2011, the number of enrolments in early childhood education increased by 26.1%. Changes varied markedly by service type however, with enrolments in Education and Care increasing by 59.9% and enrolments in Home Based Networks increasing by 101.0%. In contrast, enrolments in Te Kōhanga Reo decreased by 13.5%, enrolments in Kindergarten decreased by 19.4% and enrolments in Playcentre decreased by 4.4% (**Figure 35**).

Figure 35. Number of Enrolments in Licensed Early Childhood Education Services by Service Type, New Zealand July 2000–2011



Source: Ministry of Education

#### Hours Spent in Early Childhood Education

In addition to an increase in ECE enrolments, the average number of hours spent in ECE increased for all service types during 2000–2011, with the exception of Playcentres. The average number of hours spent increased from 16.2 hours in 2000 to 23.9 hours in 2011 for Education and Care facilities, from 11.2 hours to 15.5 hours for Kindergartens, and from 16.7 hours to 21.9 hours for home-based care (**Table 13**).



Table 13. Average Weekly Hours Attended by Children at Licensed Early Childhood Education Services by Service Type, New Zealand July 2000–2011

Year	Education and Care	Kindergarten	Home-Based	Playcentre
2000	16.2	11.2	16.7	4.4
2001	17.1	11.5	18.4	4.2
2002	18.3	11.8	18.1	4.3
2003	18.6	12.0	19.7	4.3
2004	19.5	12.5	21.3	4.4
2005	20.3	12.6	22.4	4.3
2006	20.8	12.6	22.0	4.4
2007	21.5	12.6	22.5	4.3
2008	22.9	13.4	22.8	4.2
2009	23.5	14.2	21.5	4.0
2010	23.7	15.1	21.9	4.0
2011	23.9	15.5	21.9	4.0

Source: Ministry of Education

## Prior Participation in Early Childhood Education

### New Zealand Distribution and Trends

#### Distribution by Ethnicity

In New Zealand, the proportion of new entrants reporting participation in ECE prior to school entry increased, from 90.3% in 2001 to 94.7% in 2011. While prior participation in ECE remained higher for European > Asian > Māori > Pacific children, prior participation increased for all ethnic groups during 2001–2011 (European children 94.9% to 97.8%; Asian children 89.8% to 95.9%; Māori children 83.6% to 90.0%; and Pacific children 76.0% to 86.2% (**Figure 36**)).

#### Distribution by School Socioeconomic Decile

In New Zealand during 2011, 18.0% of children attending schools in the most deprived (decile 1) areas had not attended ECE prior to school entry, as compared to only 1.0% of children attending schools in the least deprived (decile 10) areas. Nevertheless these figures suggest that on average, 82.0% of children attending schools in the most deprived areas had attended some form of ECE prior to school entry (**Figure 37**).

### Midland Region Distribution and Trends

#### Midland Region Trends

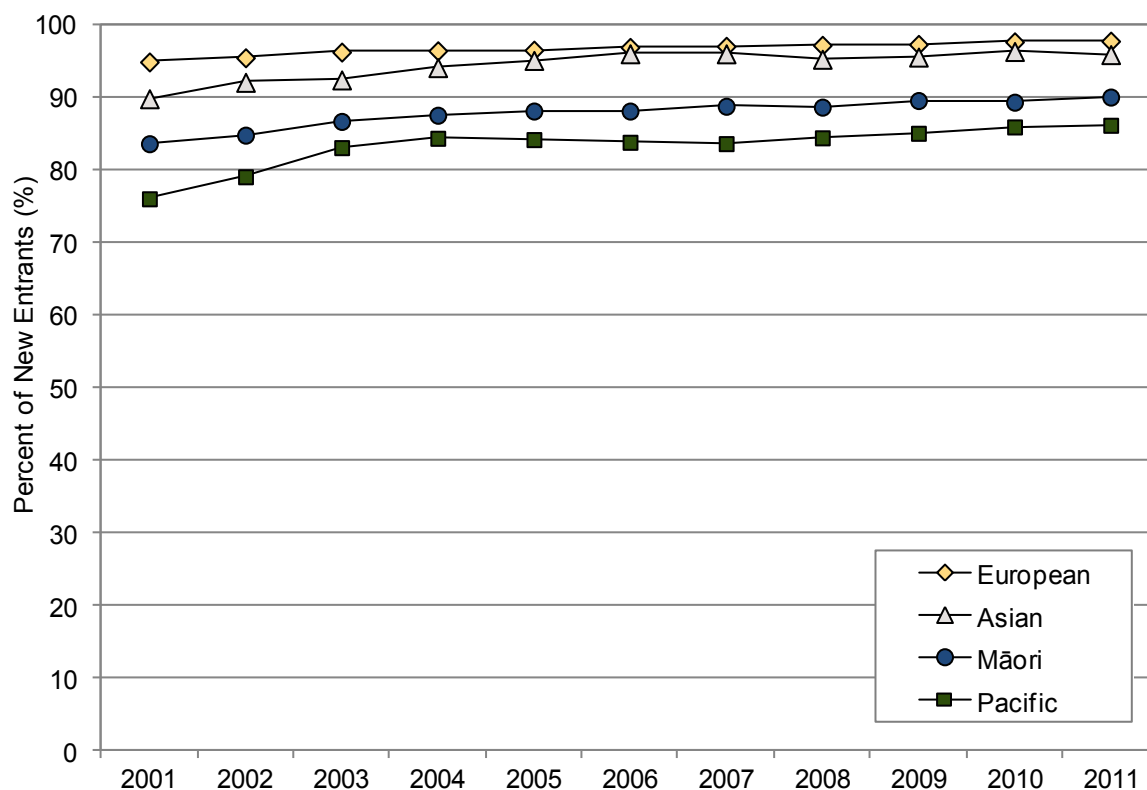
During 2001–2011, prior participation in ECE amongst school entrants increased in all DHBs in the Midland region, with prior participation rates in the Waikato and Bay of Plenty being similar to the New Zealand rate, while rates in Lakes DHB and Tairāwhiti were generally lower. Prior participation in Taranaki was slightly higher than the New Zealand rate during the mid to late 2000s (**Figure 38**).

#### Distribution by Ethnicity

In the Waikato during 2001–2011, prior participation in ECE amongst school entrants was generally higher for European children than for Māori or Pacific children, while in Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki, rates were higher for European than for Māori children (**Figure 39**).

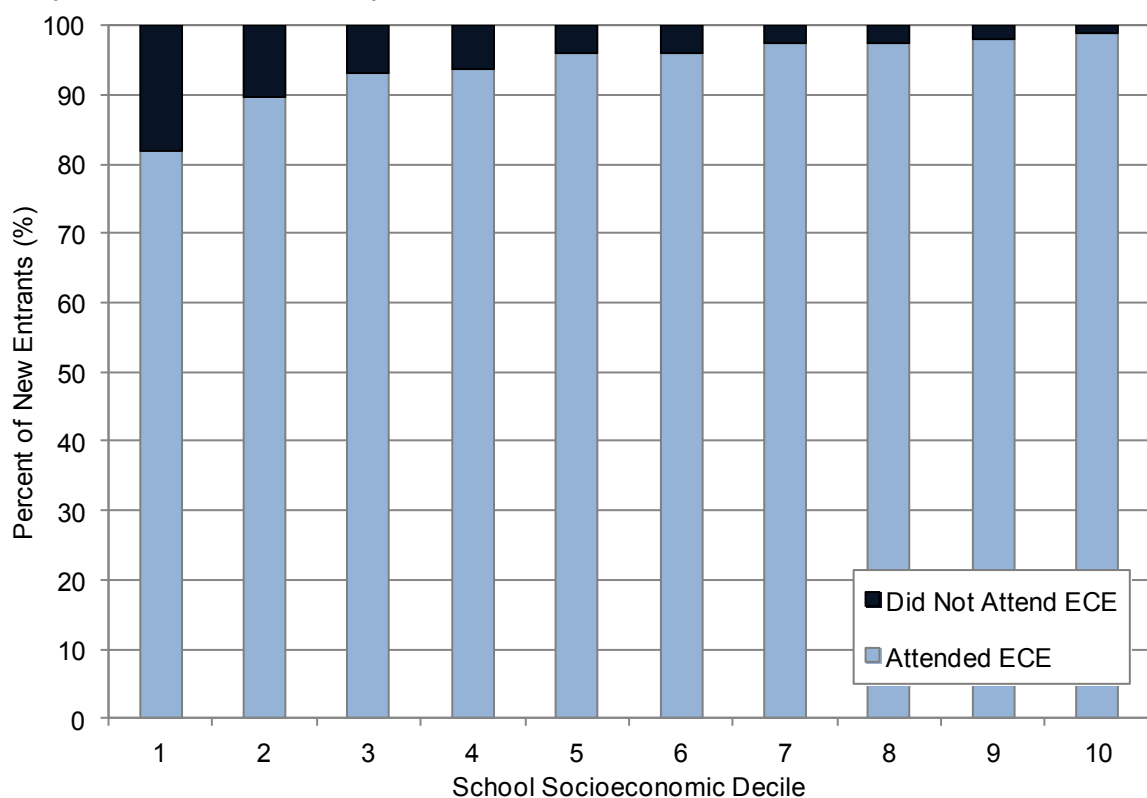


Figure 36. Proportion of New Entrants who had Previously Attended Early Childhood Education by Ethnicity, New Zealand 2001–2011



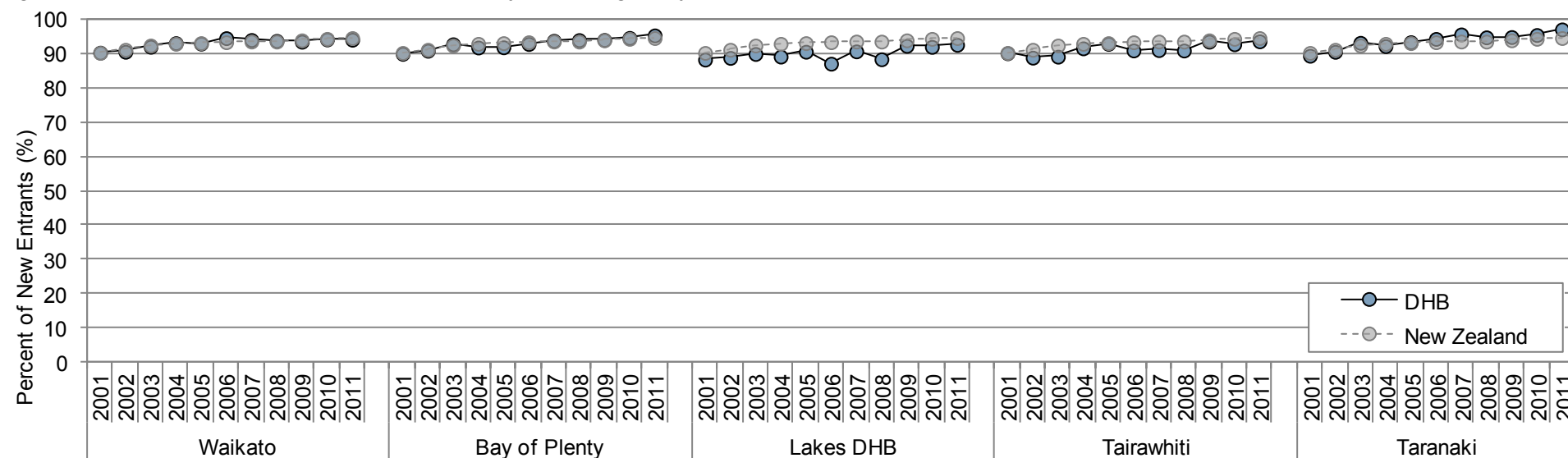
Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual children may appear in more than one ethnic group

Figure 37. Proportion of New Entrants who had Previously Attended and Not Attended Early Childhood Education by School Socioeconomic Decile, New Zealand June 2011



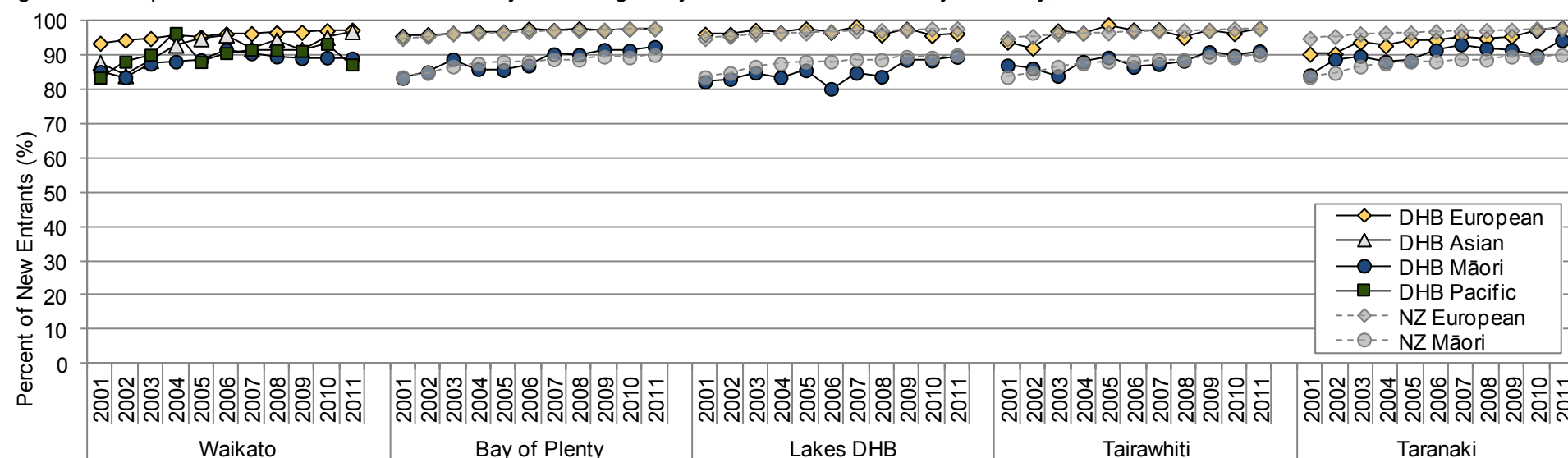
Source: Ministry of Education; Note: Decile 1 = Most deprived; Decile 10 = Least deprived

Figure 38. Proportion of New Entrants Previously Attending Early Childhood Education, Midland DHBs vs. New Zealand 2001–2011



Source: Ministry of Education

Figure 39. Proportion of New Entrants Previously Attending Early Childhood Education by Ethnicity, Midland DHBs vs. New Zealand 2001–2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual children may appear in more than one ethnic group

## Local Policy Documents and Evidence-Based Reviews Relevant to Early Childhood Education

**Table 14** below provides a brief overview of local policy documents and evidence-based reviews which are relevant to Early Childhood Education.

Table 14. Local Policy Documents and Evidence-Based Reviews Relevant to Early Childhood Education

Ministry of Education Policy Documents
<p>Ministry of Education. 2012 <b>Intent: 2012-2017</b>. Wellington: Ministry of Education.  <a href="http://www.minedu.govt.nz/~media/MinEdu/Files/TheMinistry/2012SOI/2012StatementOfIntent.pdf">http://www.minedu.govt.nz/~media/MinEdu/Files/TheMinistry/2012SOI/2012StatementOfIntent.pdf</a></p> <p>This document summarises the performance of the education sector to 2010 based on the previous strategic plan, and outlines the intent for the next five years. The strategic direction states that the learner must be the central focus of policy, funding and regulatory decisions, in order to ensure improvements in the performance of the education system as a whole. The importance of learners getting the best possible start, for the system to achieve education success is emphasised. This requires participation in high quality early childhood education, an approach that research supports. Five education targets are identified for the next five years, including: an “increase the proportion of children starting school who have participated in early childhood education” (the actual increase is not identified); and “improving outcomes for priority groups (Māori and Pasifika learners, learners with special education needs, and learners from low socioeconomic backgrounds)”.</p>
Other Government Publications
<p>Education Review Office. 2010. <b>Quality in Early Childhood Services</b>. Wellington: Education Review Office  <a href="http://www.ero.govt.nz/National-Reports/Quality-in-Early-Childhood-Services-August-2010">http://www.ero.govt.nz/National-Reports/Quality-in-Early-Childhood-Services-August-2010</a></p> <p>This report uses findings from the Education Review Office’s (ERO) national evaluations of early childhood education (ECE) and individual services’ education reviews to identify the factors that contribute to high quality early childhood education and care, and those that contribute to poor quality. National Education Review Office reports, including regular reviews of ECE services are available at: <a href="http://www.ero.govt.nz/index.php/National-Reports">http://www.ero.govt.nz/index.php/National-Reports</a>.</p>
<p>Education Review Office. 2010. <b>Success for Māori Children in Early Childhood Services</b>. Wellington: Education Review Office. <a href="http://www.ero.govt.nz/National-Reports/Success-for-Māori-Children-in-Early-Childhood-Services-May-2010">http://www.ero.govt.nz/National-Reports/Success-for-Māori-Children-in-Early-Childhood-Services-May-2010</a></p> <p>Education strategies are focused on improving the way the education system assists Māori learners to realise their potential. Early childhood services are critical to this focus. This evaluation considers how well ECEs provide care and education for Māori children. In particular, how services “responded to the aspirations and expectations of the parents and whānau of Māori children” and “focus on realising the potential of Māori children to become competent and confident learners”. The conclusions drawn relate to: consultation and communication to become more responsive to parents and whānau; integration of Māori perspectives in planning assessment and evaluation; professional development and support for improving the ECEs ability to work in partnership with parents and whānau of Māori children; and skills in evaluation.</p>
<p>Mitchell L et al. 2008. <b>Outcomes of Early Childhood Education: Literature Review. Report to the Ministry of Education</b>. Wellington: New Zealand Council for Educational Research.  <a href="http://edcounts.squiz.net.nz/ data/assets/pdf file/0003/24456/885 Outcomes.pdf">http://edcounts.squiz.net.nz/ data/assets/pdf file/0003/24456/885 Outcomes.pdf</a></p> <p>The Ministry of Education commissioned this literature review to provide a synthesis of research on the impact of early childhood education (ECE) for children and families. The review identifies benefits of ECE related to cognitive outcomes, and learning dispositions, with specific effects in relation to family income, English as an additional language, gender, and socioeconomic mix. Long duration of ECE experience was of benefit academically, particularly where the quality of ECE was high. Long duration in low quality ECE was negative for learning disposition, and poor quality ECE and early entry may be associated with higher levels of antisocial or worried behaviour around school entry. Positive outcomes have been found for parenting in parent/whānau-led ECE where parent training and involvement are core elements in the educational programme.</p>
Other New Zealand Evidence
<p>Office of the Children’s Commissioner. 2012. <b>Who gets to play? Promoting participation In ECE for all children</b>. Children Winter 2012 No 81. Wellington: Office of the Children's Commissioner.  <a href="http://www.occ.org.nz/ data/assets/pdf file/0019/9910/Children_81_web.pdf">http://www.occ.org.nz/ data/assets/pdf file/0019/9910/Children_81_web.pdf</a></p> <p>“Who gets to play” contains a series of articles by a number of New Zealand early childhood education specialists and researchers who examine the evidence, and explore the implementation and implications of decisions, policy and practice in the New Zealand early childhood education setting. Included are the rights of the child to high quality care, and how that is conceptualised and put into practice. A relationship between quality of early childhood education and child development is consistently found, with high quality services resulting in positive outcomes. Poor quality services, however, have a long-lasting negative impact. Issues such as universality and the impact of delivering high quality services to all are examined, particularly with respect to the future of a thriving society, and the definition of ‘high quality’.</p>



Carrol-Lind J & Angus J. 2011. **Through their lens: An inquiry into non-parental education and care of infants and toddlers.** Wellington: Office of the Children's Commissioner.

[http://www.occ.org.nz/\\_data/assets/pdf\\_file/0017/8108/CC\\_Through\\_their\\_lens\\_21032011.pdf](http://www.occ.org.nz/_data/assets/pdf_file/0017/8108/CC_Through_their_lens_21032011.pdf)

Increasing enrolments of infants and toddlers in formal non-parental early childhood services in New Zealand generated this inquiry by the Children's Commissioner into how these services might be delivered in the best interests of infants and toddlers. The well-being of the child is dependent on the quality of care, as high quality early childhood education and care predicts positive outcomes for young children. The report examines these as well as the risks identified in the literature such as disrupted attachment for example, from long periods away from the primary carer and the effects of greater exposure to infection and subsequent illness when immune systems are underdeveloped.

### Cochrane Systematic Reviews

Zoritch B, et al. 2009. **Day care for pre-school children.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD000564 <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD000564/abstract>

Eight trials of interventions in which non-parental day care was provided for those <5 years were included in this systematic review of day care for pre-school children. Positive effects were noted, including increases in IQ, benefits to behavioural development and school achievement. Longer term effects were noted in lower teenage pregnancy rates, higher socioeconomic status and decreased criminal behaviour. Mothers' education, employment and interaction with children also benefited. All studies were conducted in the US among disadvantaged populations, limiting their generalisability.

### Other Relevant Evidence

UNICEF. 2012. **Inequities in Early Childhood Development: What the data say. Evidence from the Multiple Indicator Cluster Surveys.** New York: United Nations Children's Fund (UNICEF).

[http://www.unicef.org/publications/files/Inequities\\_in\\_Early\\_Childhood\\_Development\\_LoRes\\_PDF\\_EN\\_02082012.pdf](http://www.unicef.org/publications/files/Inequities_in_Early_Childhood_Development_LoRes_PDF_EN_02082012.pdf)

The Multiple Indicator Cluster Surveys (MICS) were developed to provide a composite picture of the status of child development in the early years. More than 100 low and middle income countries have participated in this household survey programme since 1995. As a result, comparable estimates have been produced in the areas of health, nutrition, education, child protection and HIV/AIDS. In 2005/2006 indicators were included for early childhood development with these indicators being specifically designed to assess the quality of care in a child's home environment and access to early childhood care and education outside the home.

National Audit Office. 2012. **Delivering the free entitlement to education for three- and four-year-olds.** London: Department for Education. <http://web.nao.org.uk/search/search.aspx?Schema=&terms=early+education>

In the UK, all three- and four-year-olds are entitled to 15 hours per week of free early childhood education (ECE), for 38 weeks per year. This National Audit Office review found there was good uptake of the free education, although uptake was lower among the most disadvantaged families compared to overall uptake. There was evidence that children's development measured at five years had improved (59% achieved a good level of development in 2010–11 compared with 45% in 2005–06). It found that the quality of the ECE experience was critical to the free entitlement being of benefit to the children. However, high quality provision depended on where children lived; areas of highest deprivation were less likely to have high-quality provision. Further development of the evidence base for the long term benefits of ECE was recommended.

The National Evaluation of Sure Start (NESS) Team. 2010. **The impact of Sure Start local programmes on seven year olds and their families.** London: Institute for the Study of Children, Families and Social Issues, Birkbeck, University of London. <http://www.ness.bbk.ac.uk/impact/documents/DFE-RR220.pdf>

Sure Start is a UK scheme that aims to give "children the best possible start in life" through improvement of childcare, early education, health and family support, with an emphasis on outreach and community development. Programmes are set up locally, in areas of high deprivation. The National Evaluation of Sure Start (NESS) has evaluated Sure Start local programmes regularly, investigating the effects of the programme at difference ages. This evaluation of a subset of the 5000 children in the follow-up group at seven years indicated that mothers in the programme engage in less harsh discipline, provide a more stimulating home learning environment, and provide a less chaotic home environment (for boys). Lone parent and workless households reported having better life satisfaction. However, the evaluation did not identify any impact on child outcomes.

UNICEF. 2008. **The child care transition, Innocenti Report Card 8.** Florence: UNICEF Innocenti Research Centre. [http://www.unicef-irc.org/publications/pdf/rc8\\_eng.pdf](http://www.unicef-irc.org/publications/pdf/rc8_eng.pdf)

This UNICEF *Report Card* discusses child care transition, and proposes internationally applicable benchmarks for early childhood care and education - minimum standards for protecting the rights of children. The report identifies two main issues critical for current policy decisions being made around the wellbeing of the next generation. The generation who are children now is the first where a young group will spend, or have spent, a considerable proportion of their early years in some form of child care outside the home. Secondly, neuroscience is identifying the characteristics required of early childhood care that are critical for every aspect of a child's development: love, stability, security and stimulating relationships with caregivers. A set of ten benchmarks are identified including: minimum entitlement to paid parental leave; a national plan with priority for disadvantaged children; minimum levels of access; and minimum levels of staff training and staff to child ratios.

Sylva K, et al. 2004 **The Effective Provision of Pre-School Education (EPPE) Project**. London: University of London.  
<http://media.education.gov.uk/assets/files/pdf/e/eppe%20final%20report%202004.pdf>

This longitudinal study was funded by the UK Department for Education to investigate the effects of preschool education on children's development (for 3 to 7 year olds). It examined: the impact of the preschool on intellectual and social/behavioural development; why there could be differences in effectiveness between the preschools; the characteristics of an effective preschool; the impact of home and childcare history on development; and whether preschool affected children's development at a later age. Key finding included: pre-school experience, compared to none, enhanced all-round development in children; full time attendance led to no better gains for children than part-time provision; High quality pre-schooling is related to better intellectual and social/behavioural development for children; quality indicators include warm interactive relationships with children, having a trained teacher as manager and a good proportion of trained teachers on the staff; and for all children, the quality of the home learning environment was more important for intellectual and social development than parental occupation, education or income.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**

# MĀORI MEDIUM EDUCATION

## Introduction

Cultural identity is a critical component of positive Māori development. It has been suggested that if someone identifies as Māori but is unable to access Māori language, custom, land, marae, whānau or community networks then it is unlikely that their cultural identity will be secure. A secure identity in turn is positively linked to health status, educational achievement and emotional and social adjustment [49].

Kura kaupapa Māori schools are total immersion schools designed by Māori for Māori which follow a curriculum that validates Māori knowledge, structures, processes, learning styles and learning practices. They offer a school environment that is immersed holistically in the Māori language and culture and are regarded as a key part of the strategy to assist in revitalising the Māori language and improving the participation and achievement levels of Māori in schooling [50]. They emerged in the 1970s, when aspects of Māori language and culture began to be included in mainstream programmes, although usually delivered within the context of a westernised curriculum and in the English language.

During the 1980s, schools and bilingual units (classes within schools) became established that were expected to deliver the curriculum in Māori and English. During this period, Ngā Kōhanga Reo (Māori language and culture preschools) also began to appear in response to calls to regenerate Māori language and culture. These offered the autonomy to deliver a curriculum along cultural lines. As the number of Kōhanga Reo graduates grew, parental demand resulted in the growth of bilingual and Māori immersion units within the primary and secondary school sector [51]. While early Kōhanga Reo and kura kaupapa Māori were privately funded, the latter were officially recognised in 1989 when they were incorporated into the state education system and became eligible for state funding [51].

Currently Māori medium education takes place across the educational spectrum:

1. Kōhanga Reo and other bilingual and immersion programmes in the ECE sector
2. Kura kaupapa Māori (Years 1–8) and wharekura (Years 1–13)
3. Immersion and other bilingual programmes in mainstream schools
4. Wānanga in the tertiary sector.

The following section uses Ministry of Education data to review the number of students enrolled in Māori Medium Education.

### Data Source and Methods

#### Definition

1. Number of enrolments in Māori Medium Early Childhood Education
2. Number of Kura Kaupapa Māori and Kura Teina
3. Number of enrolments in Māori Medium Education
4. Number of students enrolled in Kura Kaupapa Māori and Kura Teina

#### Data Source

Ministry of Education <http://www.educationcounts.govt.nz/>

Kura kaupapa Māori are schools where the teaching is in the Māori language and the school's aims, purposes and objectives reflect the Te Aho Matua philosophy. Kura teina were initiatives by communities wishing to develop a kura kaupapa Māori, which had prepared a business case and been formally accepted by the Ministry of Education into the establishment process. During the establishment process, kura teina were attached to and mentored by an established high performing kura kaupapa Māori [52]. Prior to 2001, kura teina were not counted as separate schools, and after 2010 they ceased to exist.

## New Zealand Distribution and Trends

### Enrolments in Māori Medium Early Childhood Education

In New Zealand during 2002–2011, the number of enrolments in licensed Te Kōhanga Reo decreased slightly, from 10,389 in 2002 to 9,631 in 2011. A number of children also attended Ngā Puna Kōhungahunga and licence-exempt Te Kōhanga Reo during this period (Table 15).



Table 15. Enrolments in Māori Medium Early Childhood Education by Type, New Zealand 2002–2011

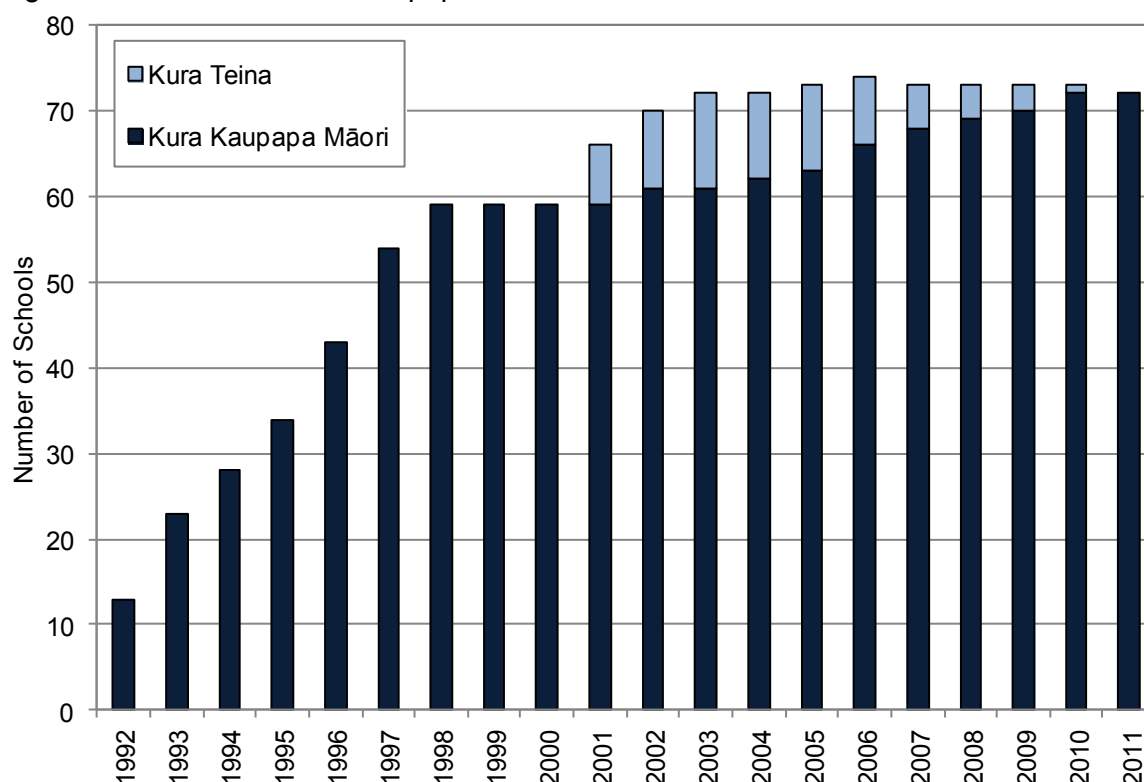
Year	Licensed Te Kōhanga Reo	Ngā Puna Kōhungahunga	Licence-Exempt Te Kōhanga Reo
2002	10,389	351	138
2003	10,319	408	130
2004	10,418	580	191
2005	10,070	519	146
2006	9,493	289	89
2007	9,236	343	69
2008	9,165	454	43
2009	9,288	277	0
2010	9,370	283	0
2011	9,631	278	0

Source: Ministry of Education

### Number of Kura Kaupapa Māori and Kura Teina

In New Zealand since 1992, there has been a 4.5-fold increase in the number of kura kaupapa Māori and kura teina, with numbers increasing from 13 in 1992, to 72 in 2011. The most dramatic increases occurred during the 1990s however, with the rate of growth flattening off since then (**Figure 40**).

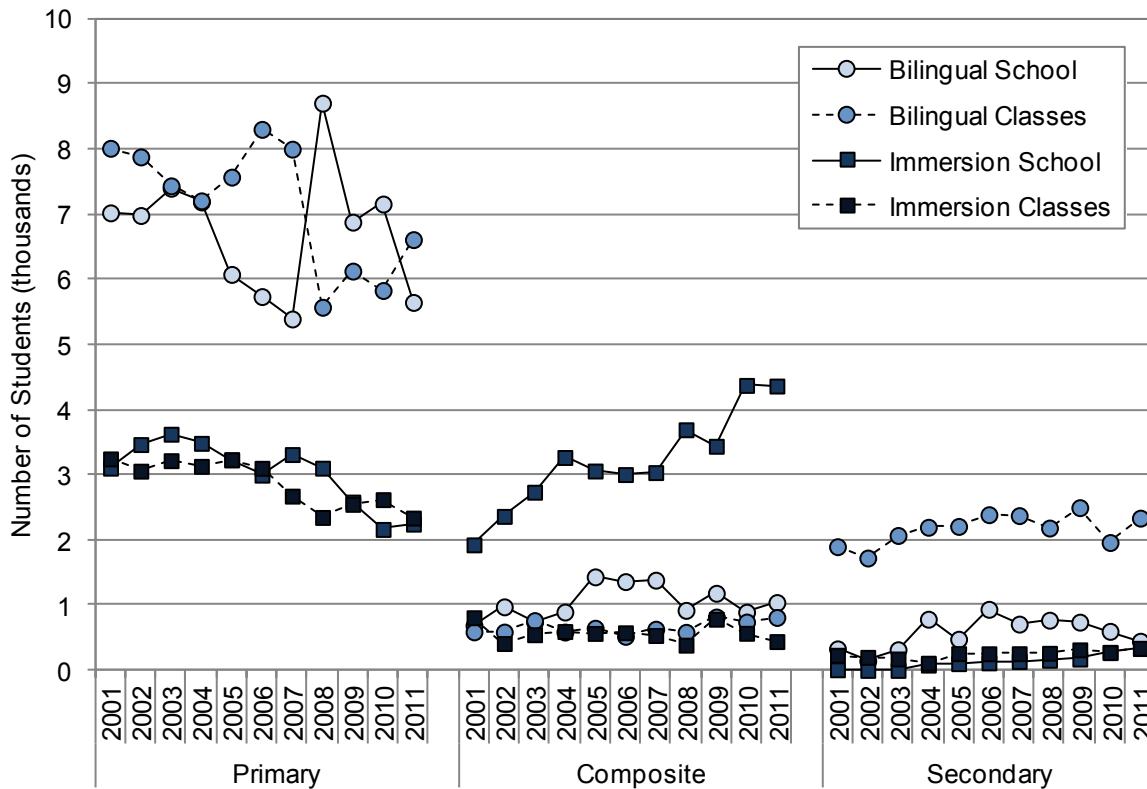
Figure 40. Number of Kura Kaupapa Māori and Kura Teina, New Zealand 1992–2011



Source: Ministry of Education; Note: Prior to 2001 Kura Teina were not counted as separate schools; Kura Teina no longer existed after 2010



Figure 41. Number of Students Involved in Māori Medium Education by School Sector and Form of Education as at 1 July, New Zealand 2001–2011



Source: Ministry of Education

## Māori Medium Education in New Zealand

While kura kaupapa Māori and kura teina offer a Māori language immersion environment, a number of other New Zealand schools offer some of their curriculum in Māori, with the degree of Māori medium learning often being divided into 4 levels: Level 1: 81–100%; Level 2: 51–80%; Level 3: 31–50%; Level 4(a): 12–30%. Thus a number of New Zealand students also have access to some of their educational curriculum in the Māori language, as a result of attending a bilingual school or an immersion/bilingual class in a primary or secondary school setting (**Figure 41** and **Table 16**).



Table 16. Number of Students (Māori and non-Māori) Involved in Māori-Medium Education by Regional Council and Highest Level of Learning, New Zealand July 2011

Regional Council	Level of Learning								Total	
	Level 1		Level 2		Level 3		Level 4(a)			
	81–100%		51–80%		31–50%		12–30%			
	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori	non-Māori	Māori
Northland	7	1,146	37	655	74	726	74	734	192	3,261
Auckland	47	2,049	57	883	154	1,126	377	552	635	4,610
Waikato	10	2,202	19	385	21	331	204	541	254	3,459
Bay of Plenty	7	2,546	50	903	56	684	466	1,321	579	5,454
Gisborne	5	736	<5	137	19	370	23	403	51	1,646
Hawke’s Bay	<5	730	15	346	5	335	17	175	40	1,586
Taranaki	<5	170	0	90	21	102	32	61	55	423
Manawatu-Wanganui	8	712	27	404	58	390	93	267	186	1,773
Wellington	13	1,065	7	146	17	138	65	142	102	1,491
Tasman	0	0	<5	47	0	0	0	0	<5	47
Nelson	0	0	38	180	0	0	0	0	38	180
Marlborough	0	0	0	0	11	12	0	0	11	12
Canterbury	5	216	25	176	63	89	6	11	99	492
West Coast	0	0	13	20	0	0	22	<5	35	23
Otago	0	7	<5	18	0	5	0	<5	<5	33
Southland	<5	131	9	33	0	0	0	48	10	212
New Zealand	108	11,710	306	4,423	499	4,308	1,379	4,261	2,292	24,702

Source: Ministry of Education

## Midland Region Distribution and Trends

### Kura Kaupapa Māori and Kura Teina in the Midland Region

In the Midland Region during 2011, there were 35 kura Kaupapa Māori, which between them enrolled a total of 2,833 students (*kura kaupapa Māori*: Waikato 11, Bay of Plenty 9, Lakes DHB 5, Tairāwhiti 7, Taranaki 3; *Students*: Waikato 1,055, Bay of Plenty 612, Lakes DHB 583, Tairāwhiti 443, Taranaki 140) (**Table 17**).

Table 17. Number of Kura Kaupapa Māori and Kura Teina Schools and Students, Midland DHBs vs. New Zealand 2000–2011

Year	Waikato		Bay of Plenty		Lakes DHB	
	No. Schools	No. Students	No. Schools	No. Students	No. Schools	No. Students
2000	8	822	8	578	4	477
2001	9	874	8	543	5	366
2002	10	975	9	610	5	356
2003	11	1,031	9	649	5	421
2004	11	1,031	9	715	5	429
2005	11	1,049	9	645	5	449
2006	11	1,059	10	554	5	503
2007	11	1,077	10	575	5	571
2008	11	1,133	9	553	5	638
2009	11	1,105	9	543	5	604
2010	11	1,118	9	544	5	608
2011	11	1,055	9	612	5	583
	Tairāwhiti		Taranaki		New Zealand	
	No. Schools	No. Students	No. Schools	No. Students	No. Schools	No. Students
2000	6	291	3	162	59	4,964
2001	6	237	3	131	66	5,018
2002	6	286	3	131	70	5,428
2003	6	306	3	173	72	5,794
2004	6	308	3	170	72	5,996
2005	7	322	3	151	73	6,181
2006	7	333	3	156	74	6,160
2007	7	350	3	143	73	6,272
2008	7	377	3	125	73	6,189
2009	7	392	3	144	73	6,015
2010	7	424	3	132	73	6,038
2011	7	443	3	140	72	6,132

Source: Ministry of Education



## Local Policy Documents which Consider Initiatives to Improve Educational Participation and Attainment for Māori Students

**Table 18** below provides a brief overview of local policy documents and other reviews which consider initiatives to improve educational participation and attainment for Māori students.

Table 18. Local Policy Documents and Evidence-Based Reviews Relevant to Improving Educational Participation and Attainment for Māori Students

Ministry of Education Documents
<p>Education Information and Analysis Group/Group Māori. 2010 <b>Ngā Haeata Mātauranga - The Annual Report on Māori Education, 2008/09</b>. Wellington: Ministry of Education  <a href="http://www.educationcounts.govt.nz/publications/Māori_education/Māori-medium-and-english-medium/5851/75954/introduction">http://www.educationcounts.govt.nz/publications/Māori_education/Māori-medium-and-english-medium/5851/75954/introduction</a></p> <p>This is the most recent in a series of annual reports that monitor the achievement of Government priorities for the educational success of Māori learners. The priorities monitored include: increasing opportunity for children to participate in quality early childhood education; every child achieves literacy and numeracy levels that enable their success; every young person has the skills and qualifications to contribute to their and New Zealand's future; relevant and efficient tertiary education provision that meets student and labour market needs; Māori enjoying education success as Māori; and the Ministry is capable, efficient and responsive to achieve education priorities.</p>
<p>Ministry of Education. 2008. <b>Ka Hikitia - Managing for Success: The Māori Education Strategy 2008-2012</b>. Wellington: Ministry of Education. <a href="http://www.minedu.govt.nz/theMinistry/PolicyAndStrategy/KaHikitia.aspx">http://www.minedu.govt.nz/theMinistry/PolicyAndStrategy/KaHikitia.aspx</a></p> <p>The Māori Education Strategy is currently being redeveloped. Documents regarding engagement with the developmental process for <b>Ka Hikitia – Accelerating Success 2013–2017</b> are available at: <a href="http://www.minedu.govt.nz/theMinistry/PolicyAndStrategy/KaHikitia/MeKoreroLetsTalk.aspx">http://www.minedu.govt.nz/theMinistry/PolicyAndStrategy/KaHikitia/MeKoreroLetsTalk.aspx</a>. Submissions closed 31 October 2012.</p>
<p>Education Review Office. 2010. <b>Success for Māori Children in Early Childhood Services</b>. Wellington: Education Review Office. <a href="http://www.ero.govt.nz/National-Reports/Success-for-Māori-Children-in-Early-Childhood-Services-May-2010">http://www.ero.govt.nz/National-Reports/Success-for-Māori-Children-in-Early-Childhood-Services-May-2010</a></p> <p>Education strategies are focused on improving the way the education system assists Māori learners to realise their potential. Early childhood services are critical to this focus. This evaluation considers how well ECEs provide care and education for Māori children. In particular, how services “responded to the aspirations and expectations of the parents and whānau of Māori children” and “focus on realising the potential of Māori children to become competent and confident learners”. The conclusions drawn relate to: consultation and communication to become more responsive to parents and whānau; integration of Māori perspectives in planning assessment and evaluation; professional development and support for improving the ECEs ability to work in partnership with parents and whānau of Māori children; and skills in evaluation.</p>
<p>Earle D. 2007. <b>Te whai i ngā taumata atakura: Supporting Māori achievement in Bachelor's Degrees</b>. Wellington. Ministry of Education. <a href="http://www.educationcounts.govt.nz/publications/Māori_education/10465">http://www.educationcounts.govt.nz/publications/Māori_education/10465</a></p> <p>This report examined what determines the success of first-time Māori students studying towards Bachelor's degrees. The report considered trends in degree attainment amongst Māori, and the key factors which contributed to success, with a view to building an understanding about how to increase the number of Māori attaining bachelor's degrees or above.</p>
<p>May S, et al. 2004. <b>Bilingual/Immersion Education: Indicators of Good Practice</b>. Wellington: Ministry of Education <a href="http://www.educationcounts.govt.nz/publications/Māori_education/5079">http://www.educationcounts.govt.nz/publications/Māori_education/5079</a></p> <p>This report provides an overview of national and international research on bilingualism and bilingual/immersion education. While the focus is on Māori-medium education, the indicators of good practice can also be applied to other bilingual contexts in Aotearoa/New Zealand, such as Pasifika bilingual education.</p>
<p>Bishop R, et al. (various years) <b>Te Kōtahitanga Series</b>. Education Counts. Wellington Ministry of Education <a href="http://www.educationcounts.govt.nz/publications/Māori_education/9977">http://www.educationcounts.govt.nz/publications/Māori_education/9977</a></p> <p>Te Kōtahitanga is a publication series that reports on an ongoing project investigating how to improve the educational achievement of Māori students in mainstream secondary school classrooms, by talking to Māori students and other participants in their education. The reports in this series are:</p> <p>Bishop R, et al. 2003. <b>Te Kōtahitanga Phase 1: The Experiences of Year 9 and 10 Māori Students in Mainstream Classrooms</b>. Wellington: Ministry of Education.</p> <p>Beginning with a short scoping exercise, narratives were gathered of the classroom experience of a range of engaged and non-engaged Māori students in four mainstream schools. Students identified the main influences on their educational achievement and explained how teachers, by changing how they related and interacted with Māori students, could create a context for learning through which students' educational achievement could improve. On the basis of these suggestions, information from the literature, and the narratives of the student's parents, principals and teachers, the research team developed an Effective Teaching Profile, which then formed the basis of a professional development intervention. When implemented with a group of 11 teachers in four schools, the intervention was associated with improved learning, behaviour and attendance for Māori students in the classrooms of the teachers who had participated.</p>



Bishop R, et al. 2007. **Te Kōtahitanga Phase 2: Towards a Whole School Approach**. Wellington. Ministry of Education

This research project built on Te Kōtahitanga Phase 1 and considered what happened when the professional development project was implemented in the whole school rather than a small number of teachers in a school.

Bishop R, et al. 2007. **Te Kōtahitanga Phase 3: Establishing a Culturally Responsive Pedagogy of Relations in Mainstream Secondary School Classrooms**. Wellington. Ministry of Education

The experiences of Phase 1 and Phase 2 were reviewed, with the conclusion that from a Kaupapa Māori perspective, and from an examination of appropriate Māori cultural metaphors, the educational achievement of Māori students in mainstream secondary schools would be improved when educators created learning contexts within their classroom; where power was shared between self-determining individuals within non-dominating relations of interdependence; where culture counted; where learning was interactive, dialogic and spirals; where participants were connected to one another through the establishment of a common vision for what constituted excellence in educational outcomes.

Bishop R, et al. 2012. **Te Kōtahitanga: Maintaining, replicating and sustaining change**. Wellington: Ministry of Education.

This review found that schools that were high implementers and high maintainers of the project and those that had previously been high implementers although they were currently low maintainers were found to be, or had been, very effective implementers of the Effective Teaching Profile in the majority of classrooms. This was through the use of the project's central strategies, induction hui, observations, feedback, co-construction meetings and shadow coaching. These schools also reported steady gains in Māori student attendance, retention, engagement and achievement.

Earle D. 2007. **Te whai i ngā taumata atakura: Supporting Māori achievement in Bachelor's Degrees**. Wellington. Ministry of Education. [http://www.educationcounts.govt.nz/publications/Māori\\_education/10465](http://www.educationcounts.govt.nz/publications/Māori_education/10465)

This report examined what determines the success of first-time Māori students studying towards Bachelor's degrees. The report considered trends in degree attainment amongst Māori, and the key factors which contributed to success, with a view to building an understanding about how to increase the number of Māori attaining bachelor's degrees or above.

May S, et al. 2004. **Bilingual/Immersion Education: Indicators of Good Practice**. Wellington: Ministry of Education [http://www.educationcounts.govt.nz/publications/Māori\\_education/5079](http://www.educationcounts.govt.nz/publications/Māori_education/5079)

This report provides an overview of national and international research on bilingualism and bilingual/immersion education. While the focus is on Māori-medium education, the indicators of good practice can also be applied to other bilingual contexts in Aotearoa/New Zealand, such as Pasifika bilingual education.

#### Other Relevant Evidence

McKinley E. 2005. **Locating the global: culture, language and science education for indigenous students**. International Journal of Science Education, 27(2), 227-241.

The author examines questions around the use of indigenous knowledge and traditional ecological knowledge in the global setting. She argues that indigenous knowledge systems do better if programmes are established and taught through indigenous languages, which directly links the language and the knowledge. The article concludes with a review of the situation in Aotearoa New Zealand.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**

# HIGHEST EDUCATIONAL ATTAINMENT AT SCHOOL LEAVING

## Introduction

In a knowledge-based society such as New Zealand, access to tertiary education and entry level jobs requires young people to have formal school qualifications. In 2011, 16.2% of students left school with no formal qualification, although there appears to be a gradual reduction in this group, with a corresponding increase in the number leaving school with National Certificate of Educational Achievement (NCEA) Level 1 and 2 qualifications, or a University Entrance Standard [53].

Research indicates a number of determinants affect children's educational attainment either positively or negatively. These influences include ethnicity, socioeconomic factors, parental occupational class, family mobility, and family income (especially during a child's pre-school years). The interaction between these factors is often complex, with examples of positive influences on children's educational attainment including higher parental education, especially maternal education, with associated facilities for studying, and easy access to computers and other resources [54].

Achieving the desired outcomes in learning relies not only on the student or the family however, but also on their interactions with the education system itself, with the recent report from the New Zealand based Iterative Best Evidence Syntheses (BES) Programme [55] identifying a number of systemic improvements which would assist national educational priorities to be met. In this context, the critical components for achieving valued learning are inter-connected and include school leadership, teacher professional learning and development, and the provision of quality teaching for diverse (all) learners. The report thus notes that *"To understand teaching, professional learning, and leadership without activating educationally powerful connections with the lives, identities, families and communities of diverse (all) learners will not be enough"* (p. 12).

The following section thus uses information from the Ministry of Education to review the highest educational attainment of school leavers during 2009–2011.

### Data Source and Methods

#### Definition

1. School leavers with no qualifications
2. School leavers with NCEA Level 1 or higher
3. School leavers with NCEA Level 2 or higher
4. School leavers with a University Entrance Standard

The National Certificate of Educational Achievement (NCEA) is part of the National Qualifications Framework and has replaced School Certificate, Sixth Form Certificate, University Entrance and University Bursaries qualifications. In 2002 all schools implemented NCEA Level 1, replacing School Certificate. In 2003 NCEA Level 2 was rolled out, however, schools were still able to offer a transitional Sixth Form Certificate Programme. From 2004, Level 3 NCEA replaced Higher School Certificate and University Entrance/University Bursaries. In 2004 a new Level 4 qualification, New Zealand Scholarship, was also offered (<http://www.educationcounts.govt.nz/indicators/definition/education-and-learning-outcomes/28879>).

There are three levels of NCEA certificate, depending on the difficulty of the standards achieved. At each level, students must achieve a certain number of credits, with credits being able to be gained over more than one year. The requirements for each level are:

NCEA Level 1: 80 credits at any level (level 1, 2 or 3) including literacy and numeracy.

NCEA Level 2: 60 credits at level 2 or above + 20 credits from any level

NCEA Level 3: 60 credits at level 3 or above + 20 credits from level 2 or above

Credits gained at one level can be used for more than one certificate and may also be used towards other qualifications. In addition, in order to attain a University Entrance standard, students must achieve 42–59 credits at NCEA Level 3 or above, or another National Certificate at Level 3 with University Entrance requirements; or an Accelerated Christian Education (ACE) or overseas award (including International Baccalaureate) at Year 13, or a NZ Scholarship or National Certificate at Level 4. For further detail see <http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/understanding-ncea/the-facts/factsheet-4/>

#### Data Source

Ministry of Education <http://www.educationcounts.govt.nz/>

**Numerator:** Number of students leaving school with no qualifications, NCEA Level 1 or higher, NCEA Level 2 or higher, or a University Entrance Standard

**Denominator:** Number of school leavers in a given year

#### Notes on Interpretation

Note 1: This data follows a new definition of school leavers, from the Ministry of Education's ENROL system and is only available from 2009 onwards. Thus comparisons with previous years are not possible.

Note 2: Ethnicity is total response and thus individual students may appear in more than one ethnic group.

Note 3: Listed qualification levels include NZ Qualifications Framework (NZQF) qualifications as well as other equivalent qualifications which are non-NZQF (such as Cambridge).

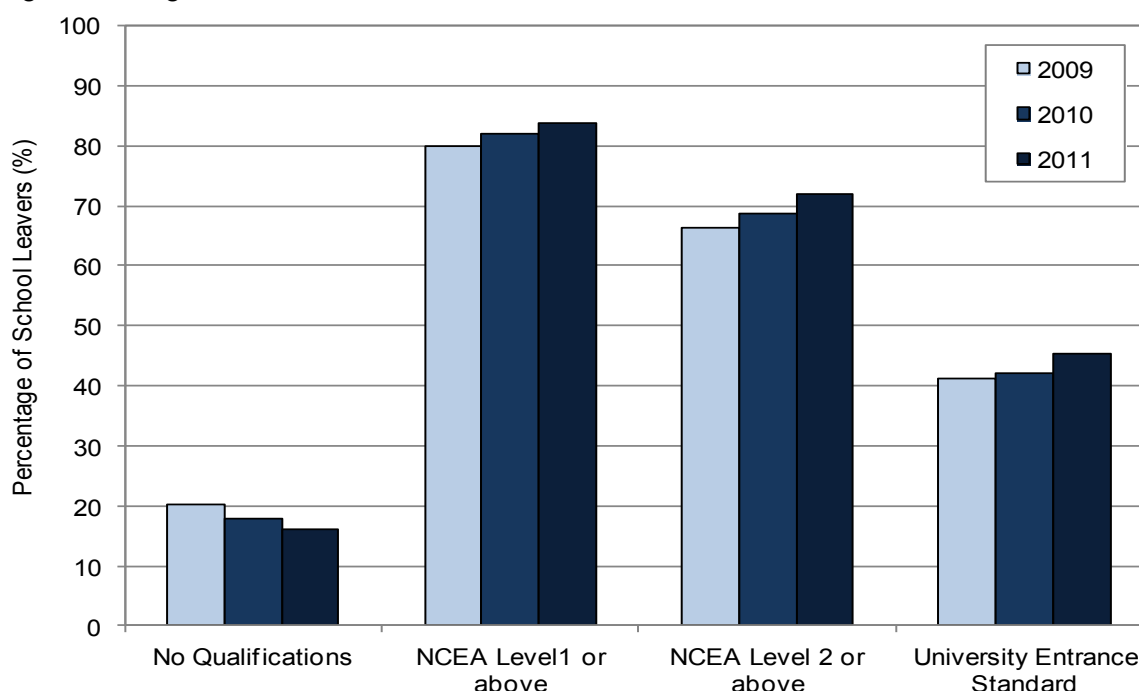
**School Socioeconomic Decile:** All schools are assigned a decile ranking based on the socioeconomic status of the areas they serve. These rankings are based on Census data from families with school age children in the areas from which the school draws its students. Census variables used in the ranking procedure include equivalent household income, parent's occupation and educational qualifications, household crowding and income support payments. Using these variables, schools are assigned a decile ranking, with decile 1 schools being the 10% of schools with the highest proportion of students from low socioeconomic communities and decile 10 schools being the 10% of schools with the lowest proportion of these students. Decile ratings are used by the Ministry of Education to allocate targeted funding, as well as for analytical purposes.

## New Zealand Distribution and Trends

### New Zealand Distribution

In New Zealand during 2011, 16.2% of students left school with no formal qualifications, while 83.8% left with NCEA Level 1 or above, 71.8% left with NCEA Level 2 or above and 45.4% attained a University Entrance standard. While the proportion of students leaving with no formal qualifications declined during 2009–2011, the proportion attaining a University Entrance standard increased (**Figure 42**).

Figure 42. Highest Educational Attainment of School Leavers, New Zealand 2009–2011



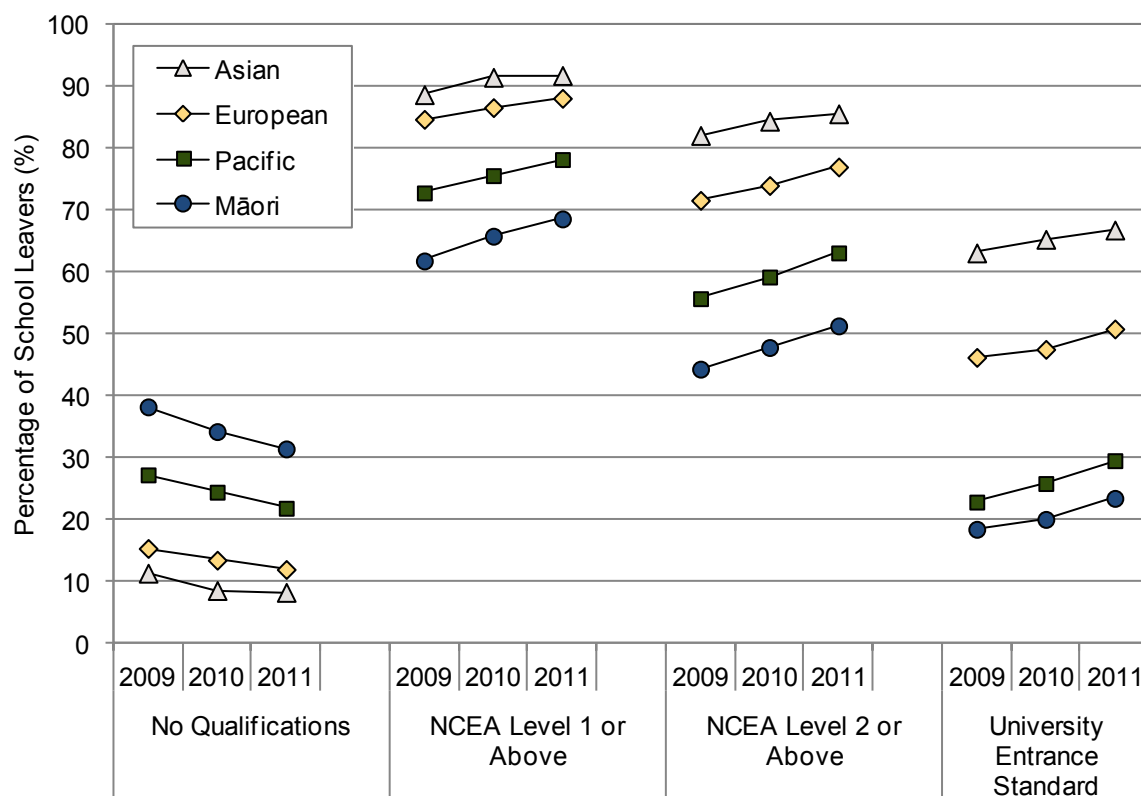
Source: Ministry of Education

### Distribution by Ethnicity

In New Zealand during 2009–2011, a higher proportion of Māori > Pacific > European > Asian students left school with no formal qualifications, while a higher proportion of Asian > European > Pacific > Māori students attained NCEA Level 1 or more, NCEA Level 2 or more, or a University Entrance standard. During this period, the proportion of students with no formal qualifications declined, while the proportion attaining a University Entrance standard increased for all ethnic groups (**Figure 43**).

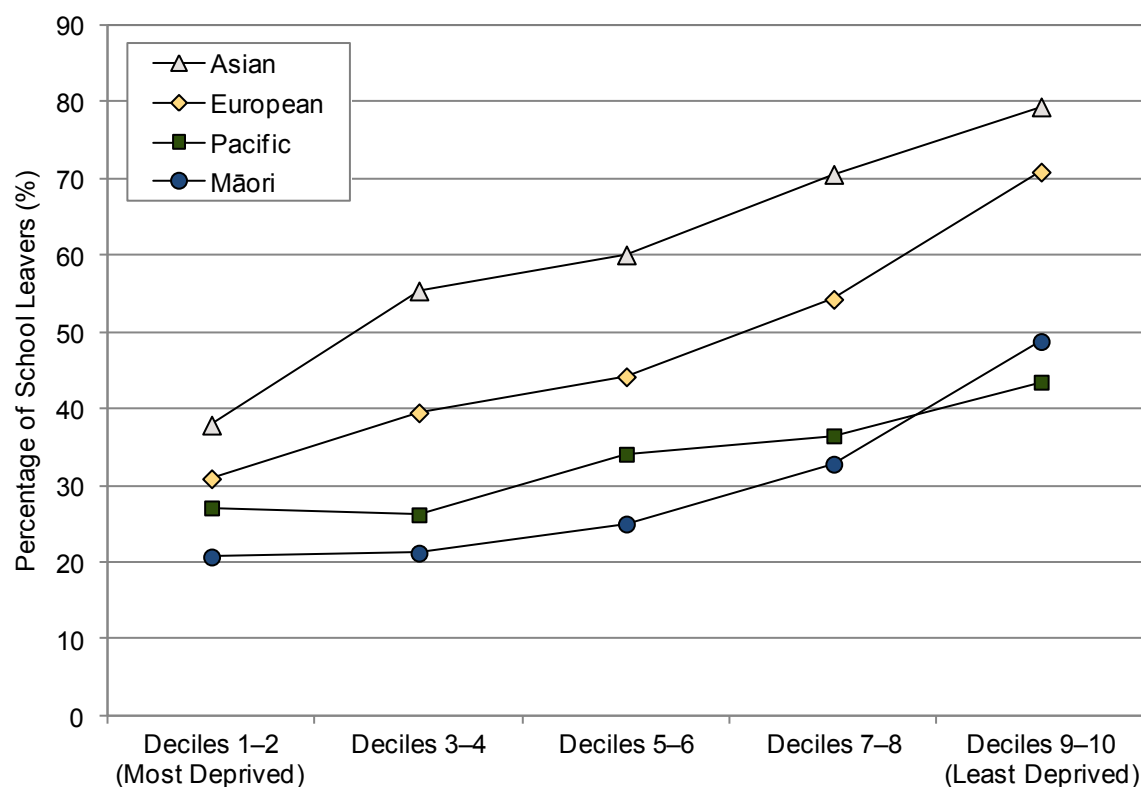


Figure 43. Highest Educational Attainment of School Leavers by Ethnicity, New Zealand 2009–2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group

Figure 44. School Leavers with a University Entrance Standard by Ethnicity and School Socioeconomic Decile, New Zealand 2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group



## Distribution by Ethnicity and School Socioeconomic Decile

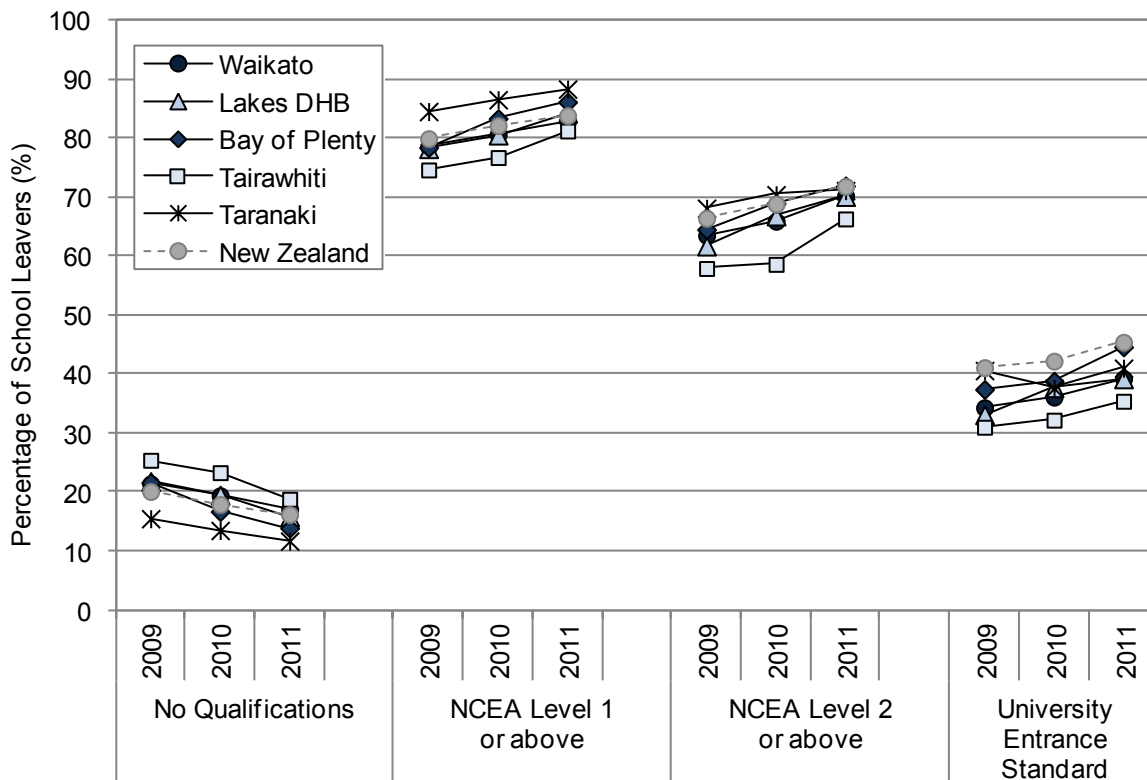
In New Zealand during 2011, while the proportion of students achieving a University Entrance standard increased with increasing school socioeconomic decile, at each level of socioeconomic deprivation a higher proportion of Asian > European > Pacific and Māori students attained a University Entrance standard (**Figure 44**).

## Midland Region Distribution and Trends

### Midland Region Distribution

In the Waikato during 2011, 17.1% of students left school with no formal qualifications, as compared to 15.8% in Lakes DHB, 13.9% in the Bay of Plenty, 18.8% in Tairāwhiti and 11.7% in Taranaki. In contrast, 39.2% of Waikato students left with a University Entrance standard, as compared to 39.2% in Lakes DHB, 44.6% in the Bay of Plenty, 35.4% in Tairāwhiti and 41.0% in Taranaki. While the proportion leaving with no formal qualifications declined in all Midland DHBs during 2009–2011, the proportion attaining a University Entrance standard increased (**Figure 45**).

Figure 45. Highest Educational Attainment of School Leavers, Midland DHBs vs. New Zealand 2009–2011



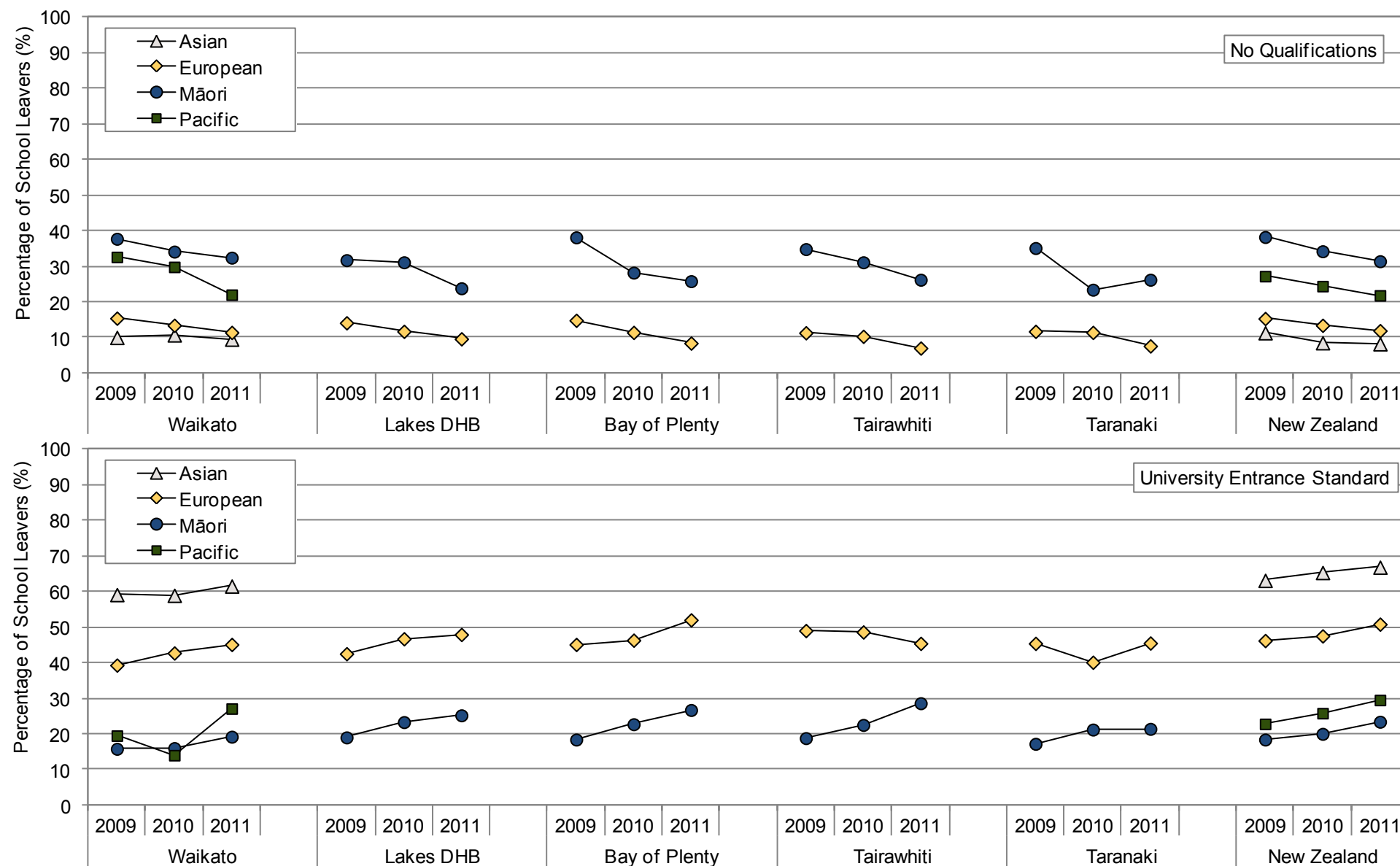
Source: Ministry of Education

### Distribution by Ethnicity

In the Waikato during 2009–2011, a higher proportion of Māori > Pacific > European > Asian students left school with no formal qualifications, while a higher proportion of Asian > European > Māori and Pacific students left with a University Entrance standard. In Lakes DHB, the Bay of Plenty, Tairāwhiti and Taranaki a higher proportion of Māori than European students left school with no formal qualifications, while a higher proportion of European than Māori students left school with a University Entrance standard (**Figure 46**, **Figure 47**).

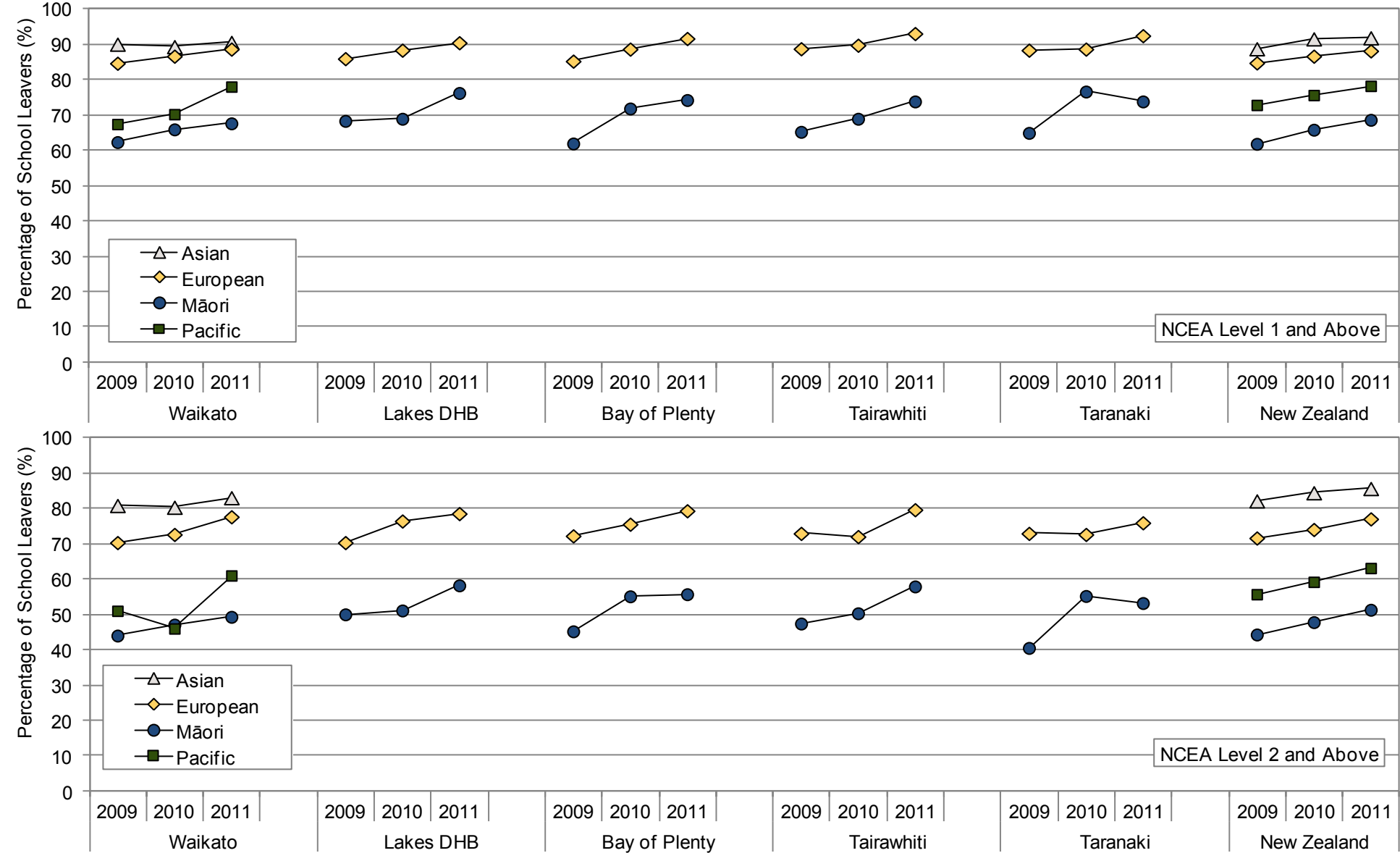


Figure 46. Highest Educational Attainment of School Leavers by Ethnicity, Midland DHBs vs. New Zealand 2009–2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group

Figure 47. Highest Educational Attainment of School Leavers by Ethnicity, Midland DHBs vs. New Zealand 2009–2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group

## Local Policy Documents and Evidence-Based Reviews Relevant to Student's Educational Attainment

**Table 19** below reviews local policy documents and evidence-based reviews which consider strategies to improve student's educational attainment. Student's attainment however, is also heavily influenced by prior participation in early childhood education, and a positive engagement with the education system. In this context, **Table 14** on **Page 114** provides an overview of publications which are relevant to early childhood education, while **Table 18** on **Page 122** reviews publications which consider initiatives to improve the educational participation and attainment of Māori students. **Table 20** on **Page 144** reviews publications relevant to the prevention of stand-downs, suspensions, exclusions and expulsions, while **Table 21** on **Page 151** considers publications relevant to improve school attendance.

Table 19. Local Policy Documents and Evidence-Based Reviews which Consider Strategies to Improve Student's Educational Attainment

New Zealand Policy Documents
<p>Alton-Lee A. 2012 <b>The use of evidence to improve education and serve the public good</b>. Wellington: Hei Kete Raukura, Ministry of Education. <a href="http://www.educationcounts.govt.nz/data/assets/pdf_file/0014/108023/Evidence-for-Improvement-and-Public-Good.pdf">http://www.educationcounts.govt.nz/data/assets/pdf_file/0014/108023/Evidence-for-Improvement-and-Public-Good.pdf</a></p> <p>This report focuses on three approaches for mobilising research to improve outcomes for diverse learners across the school system: best evidence synthesis; effective leadership, professional learning, and development and teaching; and the use of enquiry and knowledge building tools and exemplars. Its conclusions emphasise using evidence to strategically resource improvements and to focus on improving valued outcomes for all learners. Accelerated improvement for those underserved by schooling or disadvantaged, and the value of local responsiveness are discussed. Having trustworthy evidence and knowledge of effective pedagogy should address the questions of what does or does not work and, as in health, the underlying principle is to first do no harm. For success in improving learner outcomes, attention has to be paid to fostering trustworthy relationships, stakeholder ownership and capacity building. Four major areas of influence for accelerated improvement are pedagogy, educationally powerful connections, professional learning, and leadership. In times of fiscal crisis, success requires all these influences to be acting together.</p>
<p>Biddulph F, et al. 2003. <b>The Complexity of Community and Family Influences on Children's Achievement in New Zealand: Best Evidence Synthesis</b>. Wellington. Ministry of Education  <a href="http://www.educationcounts.govt.nz/publications/series/2515/5947">http://www.educationcounts.govt.nz/publications/series/2515/5947</a></p> <p>This report is one of a series of best evidence syntheses commissioned by the Ministry of Education. It considers the roles families/whānau and communities play in influencing outcomes for children. These outcomes include both social and academic achievement. The focus is on children from early childhood through to the end of secondary schooling. The synthesis is based on a wide range of New Zealand data (and cautiously informed by a number of overseas studies), with the findings being summarised into four categories: family attributes, family processes, community factors, and centre/school, family and community partnerships.</p>
<p>Alton-Lee A. 2003. <b>Quality Teaching for Diverse Students in Schooling: Best Evidence Synthesis</b>. 2003, Ministry of Education: Wellington. p. 1-103. <a href="http://www.educationcounts.govt.nz/publications/series/2515/5959">http://www.educationcounts.govt.nz/publications/series/2515/5959</a></p> <p>Quality teaching is identified as a key influence on student outcomes, with up to 59% of variance in student performance being attributable to differences between teachers and classes and up to 21% being attributable to school level variables. This review presents ten characteristics of quality teaching derived from a synthesis of research findings of evidence linked to student outcomes. These ten characteristics are generic in that they reflect principles derived from research across the curriculum and for students across the range of schooling years (from age five to eighteen). How the principles apply in practice is however, dependent on the curriculum area, and the experience, prior knowledge and needs of the learners in any particular context.</p> <p>The concept of 'diversity' is central to the synthesis, with the authors suggesting that it is fundamental that the approach taken to diversity in New Zealand honours Articles 2 and 3 of the Treaty of Waitangi. Diversity also encompasses many other characteristics including ethnicity, socio-economic background, home language, gender, special needs, disability, and giftedness. The authors suggest that teaching needs to be responsive to diversity within ethnic groups and also needs to recognise the diversity within individual students influenced by gender, cultural heritage(s), socio-economic background, and talent, with evidence showing that teaching that is responsive to student diversity can have very positive impacts on low and high achievers at the same time.</p>



#### Other Government Publications

Buckley S & Maxwell G. 2007. **Respectful schools restorative practices in education**: A summary report. Wellington: Office of the Children's Commissioner & Institute of Policy Studies, Victoria University.

[http://www.occ.org.nz/\\_data/assets/pdf\\_file/0011/3314/OCC\\_Respectful\\_Schools\\_Report.pdf](http://www.occ.org.nz/_data/assets/pdf_file/0011/3314/OCC_Respectful_Schools_Report.pdf)

Respectful Schools summarises findings from a study of New Zealand secondary schools' restorative practices. Such practices, based on restorative justice principles, have been seen as a possible approach to behaviour problems and under achieving among students. Interviews and discussions were held in fifteen schools that had introduced restorative practices, and case studies showing successful practice are presented for five of the schools, briefly explaining how the system was introduced and used. The report provides a brief summary of the New Zealand context highlighting important reasons why New Zealand has the school failure rate it does. It notes that new educational approaches and strategies are emerging that involve the use of new practices which promote values and goals built around respect, inclusion and restoration. The main audience for this report is members of school communities interested in implementing restorative approaches within their own schools and communities, but the content is relevant to other sectors working with schools and young people.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**

# SENIOR SECONDARY SCHOOL RETENTION AND TERTIARY PARTICIPATION

## Introduction

A key factor for academic achievement at secondary school level is participation. To achieve, students need to be at school, experience a sense of belonging, and stay interested and engaged in learning. Research suggests that there are strong correlations between early school leaving, unemployment and lower incomes, and that these in turn influence later socioeconomic position [56]. One indicator of continuing participation is school retention i.e. the proportion of students attending school beyond the age they are legally required to do so [56]. In New Zealand, the minimum school leaving age rose from 15 to 16 years in 1993 [57]. Parents of students aged 15 years are able, however, to apply to the Ministry of Education for an exemption on the basis of educational problems, conduct, or the unlikelihood that a student will obtain benefit from attending school. In such cases, parents are required to give details about training programmes or employment that the student will move on to, if the exemption is granted [56]. The Ministry of Education however, strengthened its early leaving application in 2007, and there was a sharp drop from about 4000 early leavers in 2006, to 388 in 2011 [58].

Not all students who leave school prior to 18 years of age, or without formal qualifications, transition directly into the workforce, with many taking part in other forms of tertiary education. The participation rate of Māori students in tertiary education has more than doubled since 1998, with Māori now participating in tertiary education at a much higher rate than non-Māori [53]. After adjusting for differences in age distribution, 16.7% of Māori aged 15 years and over participated in tertiary education in 2010, as compared to 12.1% of Asian, 11.2% of European/Pākehā and 12.3% of Pasifika peoples. When broken down by level of study, Māori students had substantially higher rates of participation at non-degree level, while non-Māori participation rates were highest at degree level and above. Proportionately more Asian peoples were studying for tertiary qualifications at degree and post-graduate level than other ethnic groups, while European/Pākehā had the second highest rates of participation at the degree and post-graduate level [53].

The following section uses Ministry of Education data to review the proportion of senior secondary school students staying on at school until at least seventeen years of age. In addition, tertiary participation rates are reviewed, in order to provide some context for interpreting ethnic differences in senior secondary school retention rates.

### Data Source and Methods

#### Definition

1. The proportion of secondary school students staying on at school until at least seventeen years of age
2. Age standardised participation rates in tertiary education

#### Data Source

1. The proportion of secondary school students staying on at school until at least seventeen years of age

Ministry of Education: ENROL

Numerator: The number of school leavers aged 17 years or above in a given year.

Denominator: The total number of school leavers in a given year.

#### Notes on Interpretation

Note 1: From 2009 a new way of categorising school leavers has been used which more accurately records school leaver numbers. Thus the data presented in this section are not comparable with previous years.

Note 2: DHB area is based on the school that students attended rather than their residential address.

Note 3: NZAID students (foreign students sponsored by the NZ Agency for International Development), and foreign fee paying students have been excluded.

Note 4: Ethnicity is total response and thus individual students may appear in more than one ethnic group.

For further detail see

<http://www.educationcounts.govt.nz/indicators/definition/student-engagement-participation/3945>

## 2. Age standardised participation rates in tertiary education

Ministry of Education

**Numerator:** The total number of students who were enrolled in a qualification, in either a public tertiary institution or publicly funded private tertiary institution, at some time during a particular year

**Denominator:** The estimated New Zealand population aged 15 years and over, as at 30 June of each year.

### Notes on Interpretation

Note 1: The age-standardised participation rate is one where all subgroups being compared are artificially given the same age distribution, with the tertiary participation rates presented here being standardised to Statistics New Zealand's 2010 national population estimates. As participation is highest in the 18–24 age-group, standardising for age removes any differences arising from one group having a different age structure to another. As such, the standardised rate is an artificial measure, but it does provide an estimate of how groups might more fairly compare if they had the same age distribution.

Note 2: Data relates to domestic students enrolled at any time during the year with a tertiary education provider in formal qualifications of greater than 0.03 EFTS. Students who were enrolled at more than one qualification level have been counted in each level, but only once in the Total.

Note 3: Data excludes all non-formal learning and on-job industry training.

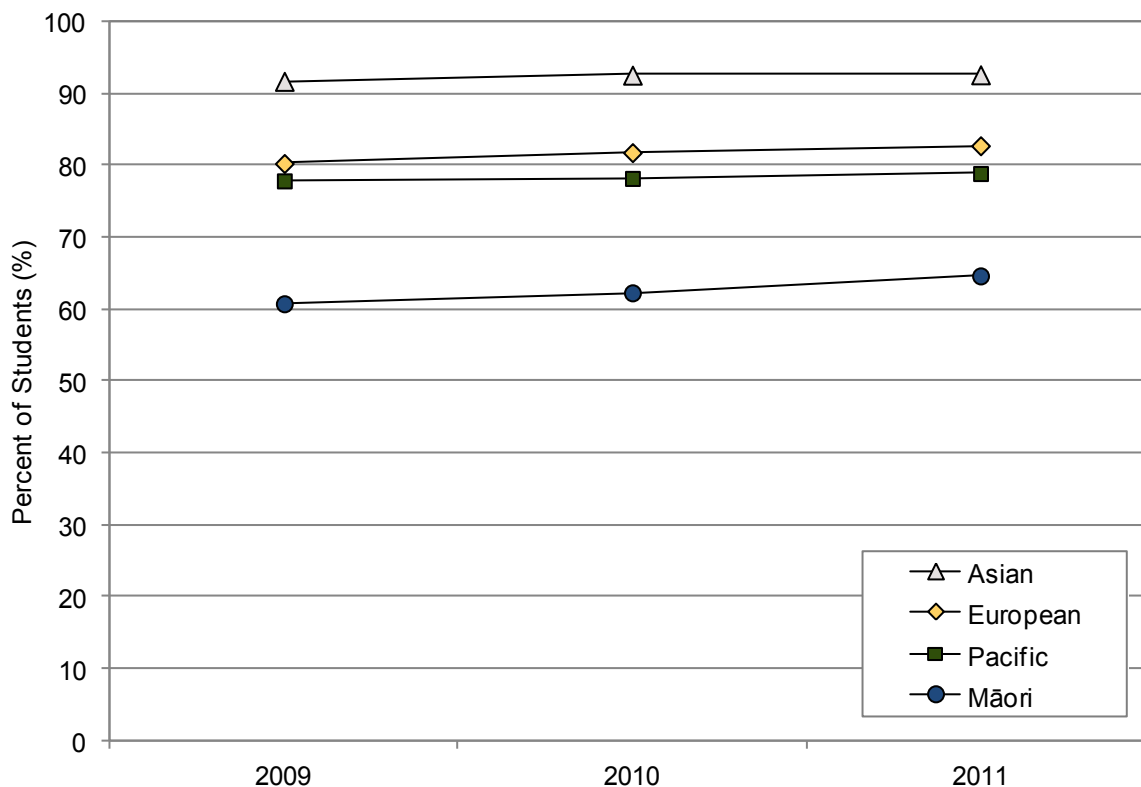
## New Zealand Distribution and Trends

### Senior Secondary School Retention

#### Distribution by Ethnicity

In New Zealand during 2009–2011, a higher proportion of Asian > European and Pacific > Māori students stayed on at school until at least 17 years of age. Thus during 2011, 92.7% of Asian students stayed on at school until at least 17 years of age, as compared to 82.8% of European, 78.9% of Pacific, and 64.7% of Māori students (**Figure 48**).

Figure 48. Proportion of Secondary School Students Staying at School Until at Least 17 Years of Age by Ethnicity, New Zealand 2009–2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group



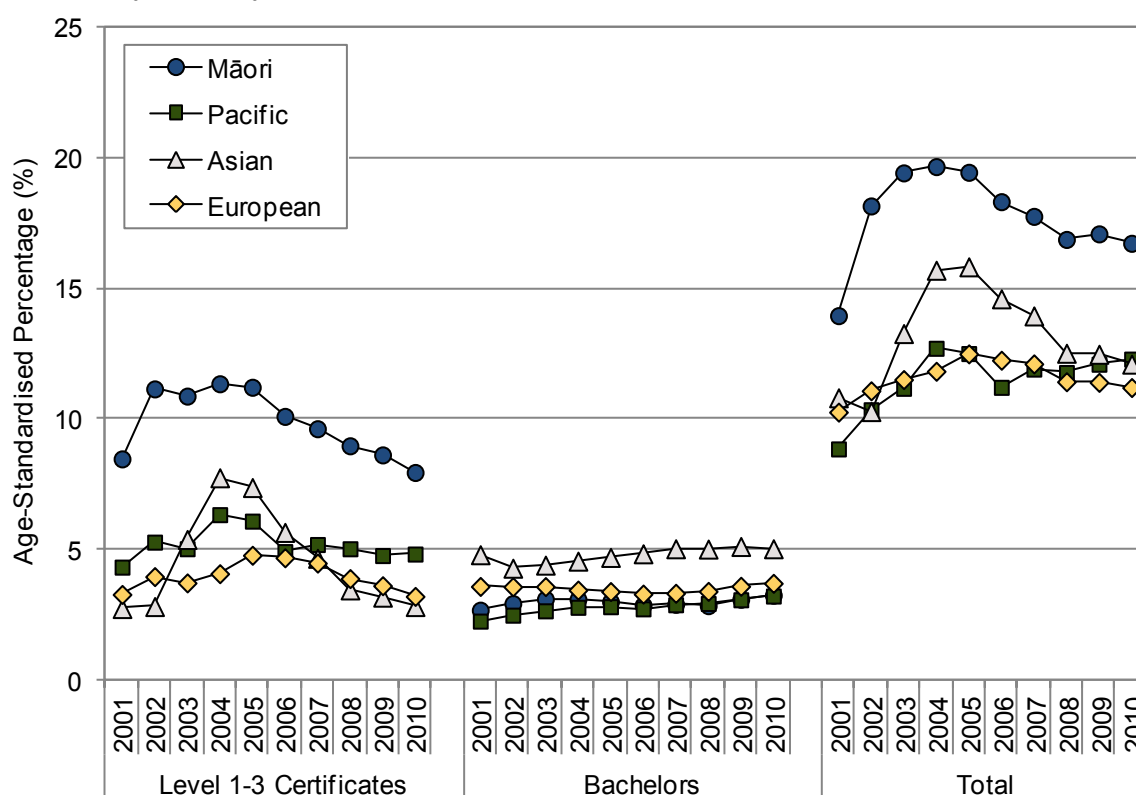
## Participation in Tertiary Education

### Distribution by Ethnicity

Ethnic differences in school retention rates at 17 years need to be viewed in the context of the alternative educational opportunities available to students. During 2001–2010, a large number of students participated in tertiary education, with participation rates for Māori students being high in Certificate Level 1–3 courses (**Figure 49**). While tertiary participation rates also include those 25+ years, such figures suggest that for many, participation in formal education does not cease at school leaving, although the income premiums achieved for completing various types of study need to be taken into consideration when assessing the longer term impacts educational participation has on economic security.

**Note:** Information on regional tertiary participation rates is not provided, due to the large shifts in the New Zealand youth population which occur after 17 years of age, when young people move from regional areas to large urban centres to take advantage of tertiary study opportunities. Thus regional participation rates are likely to reflect the number and type of tertiary institutions available in a region, rather than the participation rates of young people who have grown up in the Midland Region, and/or who return to the region during their study breaks or vacations.

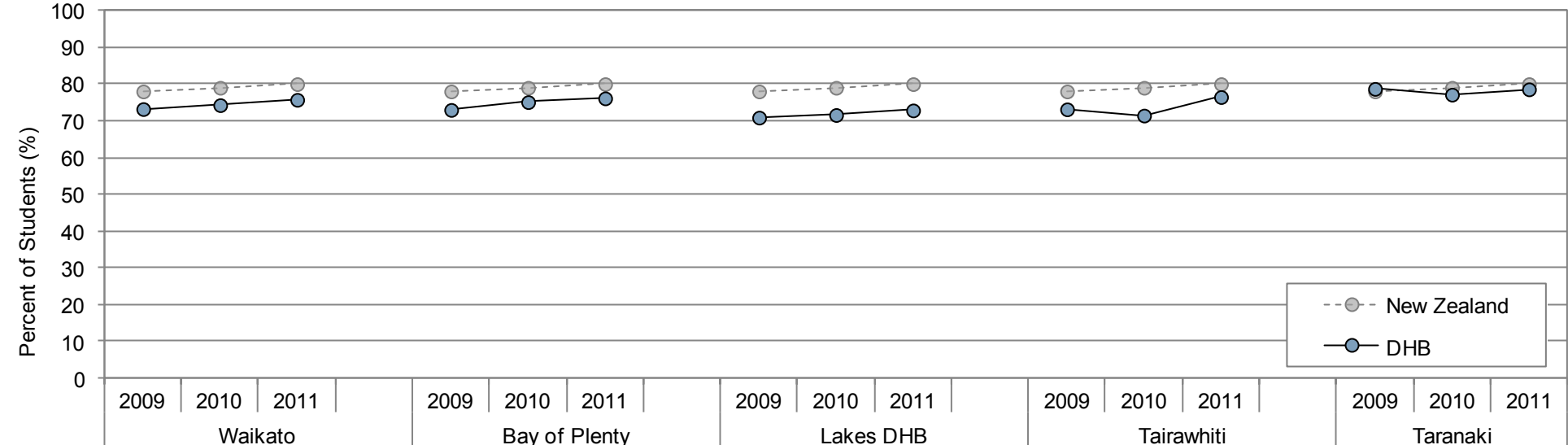
Figure 49. Age-Standardised Participation Rates in Tertiary Education for Domestic Students by Ethnicity and Selected Qualification, New Zealand 2001–2010



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group; Total also includes Level 4 Certificates, Diplomas, Level 7 Graduate Certificates/Diplomas, Level 8 Honours/ Postgraduate Certificates/Diplomas, Masters, and Doctorates

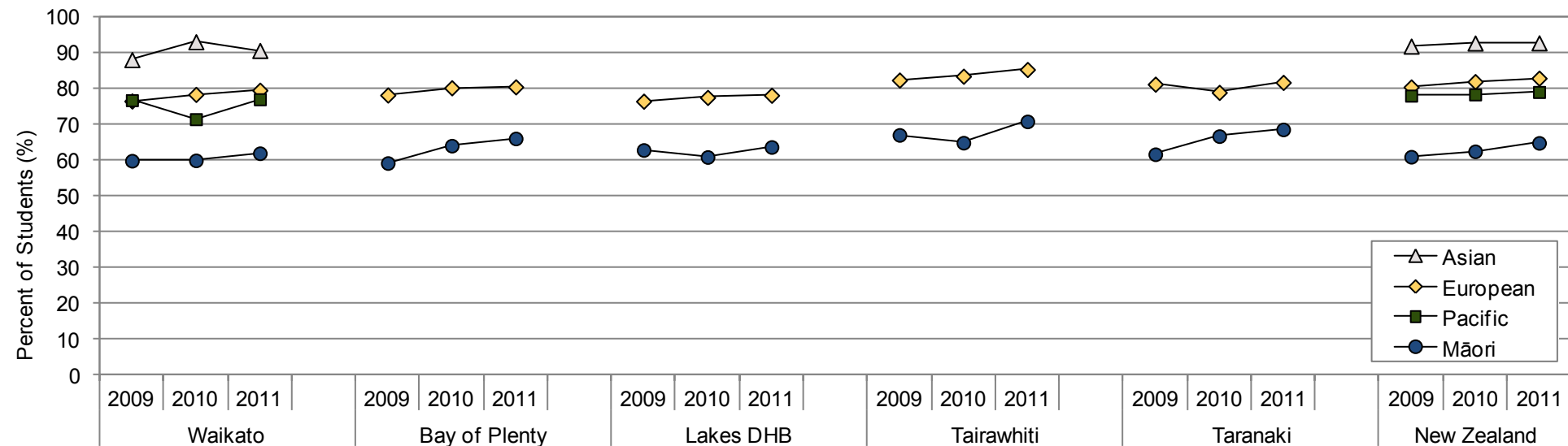


Figure 50. Proportion of Secondary School Students Staying on at School Until at Least 17 Years of Age, Midland DHBs vs. New Zealand 2009–2011



Source: Ministry of Education

Figure 51. Proportion of Secondary School Students Staying on at School Until at Least 17 Years of Age by Ethnicity, Midland DHBs vs. New Zealand 2009–2011



Source: Ministry of Education; Note: Ethnicity is Total Response and thus individual students may appear in more than one ethnic group

## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

In the Midland Region during 2009–2011, the proportion of students staying on at school until at least 17 years of age increased for students from all DHBs except Taranaki, with retention rates in the Waikato, Bay of Plenty, Lakes DHB and Tairāwhiti being generally lower than the New Zealand rate, while rates in Taranaki were similar to the New Zealand rate. By 2011, 75.7% of Waikato, 76.1% of Bay of Plenty, 72.9% of Lakes DHB, 76.5% of Tairāwhiti and 78.6% of Taranaki students stayed on at school until at least 17 years of age (**Figure 50**).

### Distribution by Ethnicity

In the Waikato during 2009–2011, a higher proportion of Asian > European and Pacific > Māori students stayed on at school until at least 17 years of age, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, retention rates at 17 years were higher for European than for Māori students (**Figure 51**).

## Local Policy Documents and Evidence-Based Reviews Relevant to Educational Participation in Young People

Educational participation is influenced by a range of factors including a student's previous educational experiences and engagement with the education system. In this context, **Table 14** on **Page 114** provides an overview of publications which are relevant to early childhood education, while **Table 18** on **Page 122** reviews publications which consider initiatives to improve the educational participation and attainment of Māori students. In addition, **Table 20** on **Page 144** reviews publications relevant to the prevention of stand-downs, suspensions, exclusions and expulsions, while **Table 21** on **Page 151** considers publications relevant to truancy and unjustified absences. Finally, **Table 19** on **Page 130** reviews publications which consider strategies to improve student's educational attainment.



# SCHOOL STAND-DOWNS, SUSPENSIONS, EXCLUSIONS AND EXPULSIONS

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## Introduction

Participation in secondary school is vital for academic achievement, with factors that interrupt participation potentially impacting on students' educational outcomes. In New Zealand schools, stand-downs, suspensions, exclusions and expulsions are ways in which the system deals with student behaviour that disrupts the learning and wellbeing of other students or staff. These approaches are not used lightly, with the intention being to help students return to productive learning and relationships within the school community [59].

The level of stand-downs, suspensions exclusions and expulsions are indicative of an absence of engagement with learning. In New Zealand in 2011, the stand-down rates fell for a fifth consecutive year, with stand-down, suspension and exclusion rates being at their lowest level in 12 years [59]. Expulsion rates were equal with the previous lowest rate (from 2004). The most common reasons for suspensions and exclusions were for issues related to student conduct, including continual disobedience, physical or verbal assaults on staff or other students, and for other harmful or dangerous behaviours. In addition, a significant number were suspended or excluded as a result of alcohol, drug use, or cigarette smoking.

While for the majority of students a stand-down or suspension was a one off event, with the time spent away from school being fairly limited (e.g. a few days–weeks), both New Zealand and overseas research suggest that adolescent conduct problems are associated with poorer long term outcomes, including educational underachievement (e.g. leaving school early and without qualifications), unemployment and occupational instability during young adulthood [60]. In exploring the determinants of conduct problems and how they impact on educational achievement, the Christchurch Longitudinal study noted that [60]:

1. Conduct problems in middle childhood were associated with a range of factors including young maternal age, lack of maternal qualifications, low parental occupational status, below average living standards, living in a sole parent household or a household with significant conflict, lower IQ and attention problems.
2. In turn, conduct problems during childhood were associated with poorer school achievement (e.g. leaving school prior to 18 years with no qualifications). Some, but not all of this association could be explained by the fact that children with conduct problems came from more disadvantaged backgrounds, which in turn was associated with poorer educational performance. Adjusting for these factors reduced the associations between conduct problems and poorer school achievement from a 4.8 fold excess risk to a 1.8 fold excess risk (i.e. a significant, albeit reduced risk remained which could not be attributed to these factors).
3. Those with conduct problems in childhood also tended to develop patterns of behaviour during adolescence (e.g. cannabis use; suspension from school; affiliation with peers who used cannabis, tobacco or alcohol, truanted or broke the law) which predisposed to poorer educational outcomes, and once these behavioural patterns were taken into account, any residual associations between conduct problems and educational achievement disappeared.

The authors thus concluded that while socioeconomic, family and individual factors contributed significantly to the onset of conduct problems during childhood and as a consequence, accounted for a large part of the association between conduct problems and poorer educational achievement in adolescence, a significant amount of the association was also due to the tendency for children with conduct disorders to develop affiliations with delinquent peers, and patterns of substance use during adolescence, which reduced their commitment to continuing with their education [60].





The following section uses information from the Ministry of Education's Stand-down and Suspension database to review the proportion of students who were stood-down, suspended, excluded or expelled from school during 2000–2011.

### Data Source and Methods

#### Definition

Information in this section is based on four Ministry of Education Student Participation Indicators which are defined as follows:

**Stand-downs:** A school principal may consider the formal removal of a student from school for a period of up to five school days. A stand-down can total no more than five school days in any term, or 10 days in a school year. Students return automatically to school following a stand-down.

**Suspensions:** A suspension is the formal removal of a student from school until the school Board of Trustees decides the outcome at a suspension meeting. Following a suspension, the Board of Trustees decides how to address the student's misbehaviour. The Board can either lift the suspension (with or without conditions), extend the suspension (with conditions), or terminate the student's enrolment at the school.

**Exclusions and Expulsions:** If a student is under 16 years, the Board of Trustees may decide to exclude them from the school, with the requirement that they enrol elsewhere. This decision is arrived at only in the most serious cases. If the student is aged 16 or over, the Board may decide to expel them from the school, and the student may enrol at another school. Exclusions and expulsions may lead to difficulties being accepted into other schools and may result in students accessing correspondence schooling, entering alternative education or dropping out of the education system altogether.

#### Data Source

Ministry of Education

<http://www.educationcounts.govt.nz/indicators/main/student-engagement-participation/80346>

**Numerator:** Total number of Stand-downs, Suspensions, Exclusions and Expulsions, per year of age

**Denominator:** Number of students on the school roll as at July 1st, per year of age

The following students were excluded from the analysis: Students from schools not receiving public funding; students at Correspondence School; adult students (older than 19); and international fee-paying students.

#### Notes on Interpretation

Note 1: Data were obtained from the Ministry of Education's Stand-down and Suspension database, which was developed in 1999, after the introduction of the Education (Suspension) Rules 1999. Rates were calculated by dividing the number of stand-downs, suspensions, exclusions or expulsions per individual year of age during the school year by the number of students on the school roll at July 1st, per individual year of age. All figures were then age standardised by the Ministry of Education, so that all subgroups in all years had the same age structure. In this process, the expected number of stand-downs, suspensions, exclusions and expulsions were calculated by looking at the age-dependence of each outcome nationally over each year, and then applying this to the age structure and population of respective schools. The age-standardised rate for each DHB was calculated by multiplying the 2011 national rate by the ratio of observed to expected outcomes for each DHB. As such, the standardised rate is an artificial measure, but does provide an estimate of how groups might compare over time if they had the same age distribution [61].

Note 2: As a number of students were stood-down, suspended, excluded or expelled on more than one occasion, the number of individual students experiencing these outcomes may be less than the number of cases reported in these figures.

Note 3: Ethnicity is Level 1 Prioritised (i.e. one ethnic group per student)

## New Zealand Distribution and Trends

### New Zealand Trends

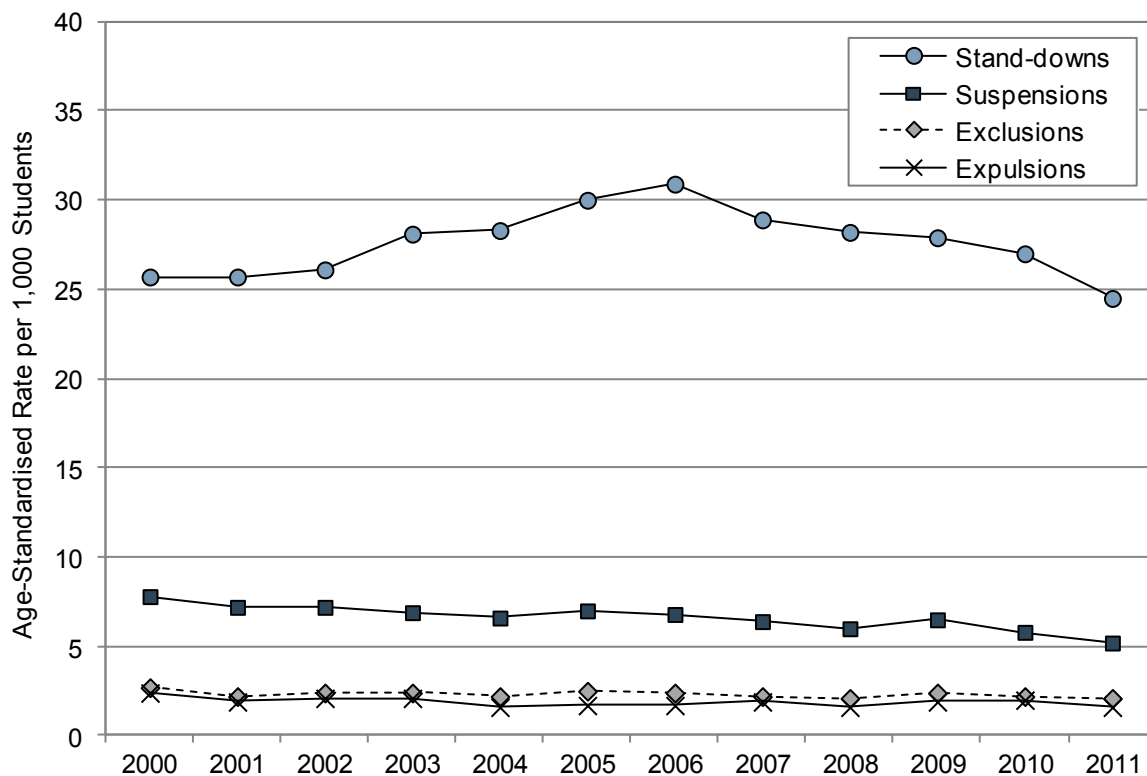
In New Zealand during 2000–2011, suspension rates gradually declined, while stand-down rates increased, reached a peak in 2006 and then declined. Exclusion and expulsion rates were more static. Throughout this period, the number of stand-downs greatly exceeded the number of suspensions, which in turn exceeded the number of exclusions and expulsions (Figure 52).

### Distribution of Stand-downs and Suspensions by Ethnicity

In New Zealand during 2000–2011, stand-down and suspension rates were higher for Māori > Pacific > European > Asian students. Stand-down rates for Māori, Pacific and European students declined after 2006, with the largest declines in absolute terms being seen for Māori and Pacific students. Suspension rates also declined for all ethnic groups during 2000–2011, with the largest declines in absolute terms again being seen for Māori students (Figure 53).

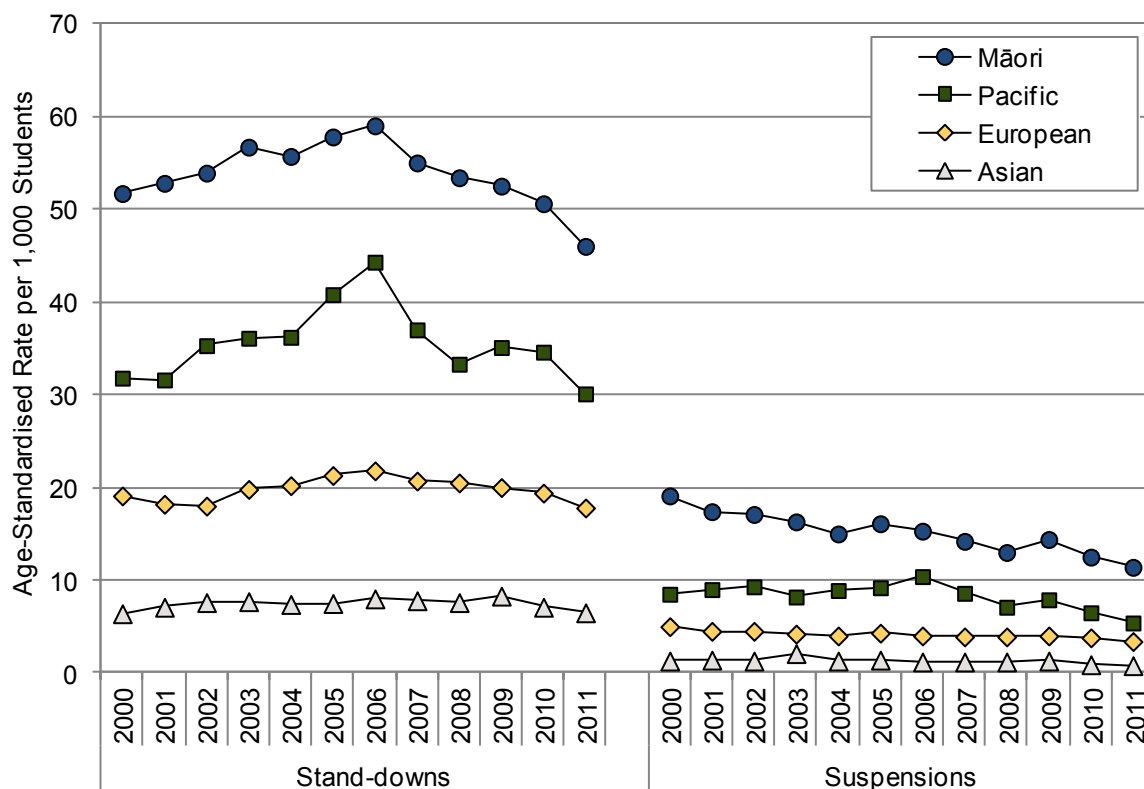


Figure 52. Age-Standardised Rates of Stand-downs, Suspensions, Exclusions and Expulsions, New Zealand 2000–2011



Source: Ministry of Education

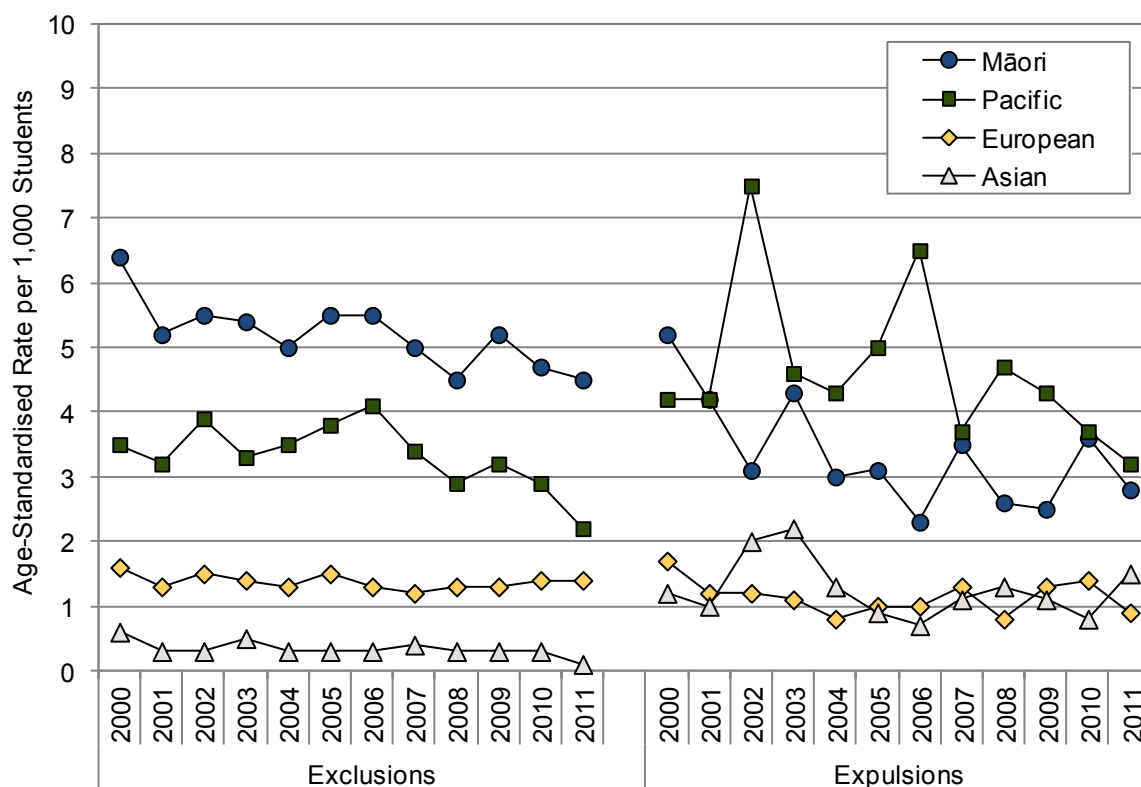
Figure 53. Age-Standardised Rates of Stand-downs and Suspensions by Ethnicity, New Zealand 2000–2011



Source: Ministry of Education; Note: Ethnicity is Level 1 Prioritised

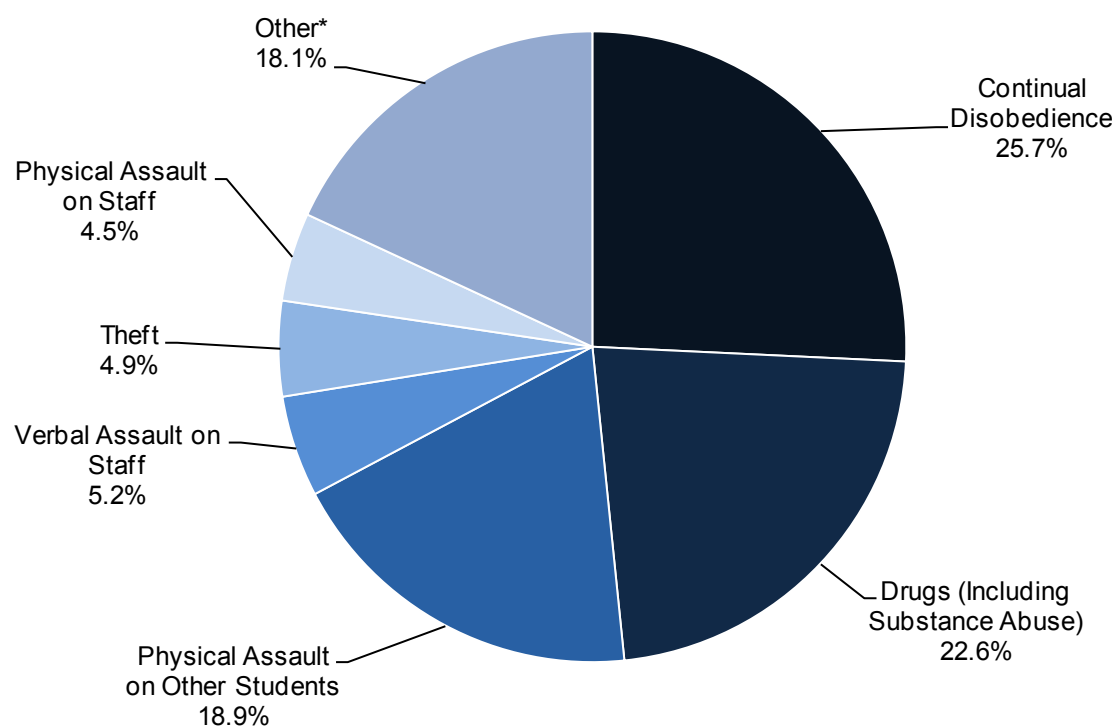


Figure 54. Age-Standardised Rates of Exclusions and Expulsions by Ethnicity, New Zealand 2000–2011



Source: Ministry of Education; Note: Ethnicity is Level 1 Prioritised

Figure 55. Distribution of Suspensions by Type of Behaviour, New Zealand 2011



Source: Ministry of Education; Note: \*Other includes Weapons, Vandalism, Alcohol, Verbal Assault on Other Students, Sexual Misconduct and Harassment, Arson, Smoking and Other Harmful or Dangerous Behaviours

## Distribution of Exclusions and Expulsions by Ethnicity

In New Zealand during 2000–2011, exclusion rates were higher for Māori > Pacific > European > Asian students, while expulsion rates were generally higher for Pacific > Māori > European and Asian students. Exclusion rates declined for Māori and Pacific students during this period, although exclusion and expulsion rates for European and Asian students were more static (**Figure 54**).

## Suspensions by Behaviour

In New Zealand during 2011, the most common reasons for a suspension were continual disobedience (25.7%), the misuse of drugs or other substances (22.6%), or a physical assault on other students (18.9%), which together accounted for 67.2% of all suspensions. Verbal assaults on staff and theft also made a smaller contribution (**Figure 55**).

## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

Amongst the DHBs in the Midland Region during 2000–2011, there were no consistent trends in stand-down rates, although rates in the Waikato and Tairāwhiti were generally higher than the New Zealand rate, while rates in Lakes DHB were lower. Rates in Taranaki were slightly higher than the New Zealand rate from 2005 onwards, while rates in the Bay of Plenty were lower from 2006 onwards. Suspension rates in the Midland DHBs varied, with rates during the late 2000s being similar to the New Zealand rate in the Bay of Plenty, Tairāwhiti and Taranaki, but higher in Lakes DHB and the Waikato (**Figure 56**).

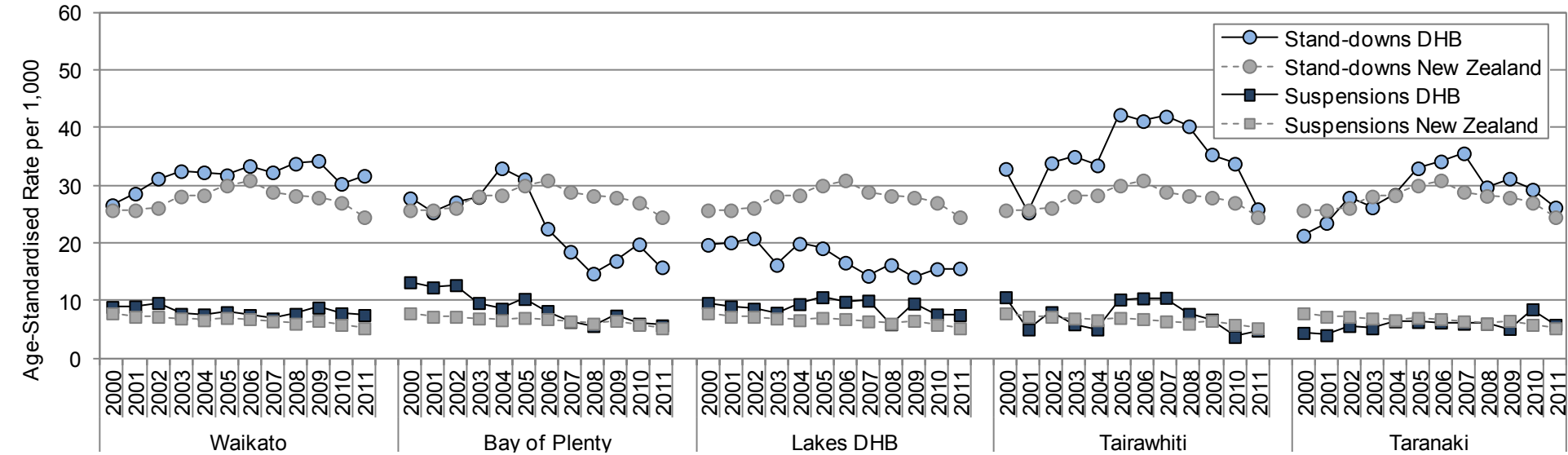
There was large year to year variability in exclusion and expulsion rates amongst the DHBs in the Midland Region during 2000–2011, making precise interpretation of trends difficult (**Figure 57**).

### Distribution of Suspensions by Ethnicity

In the Waikato during 2000–2011, suspension rates were higher for Māori > Pacific > European > Asian students, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki rates were higher for Māori than for European students (**Figure 58**).

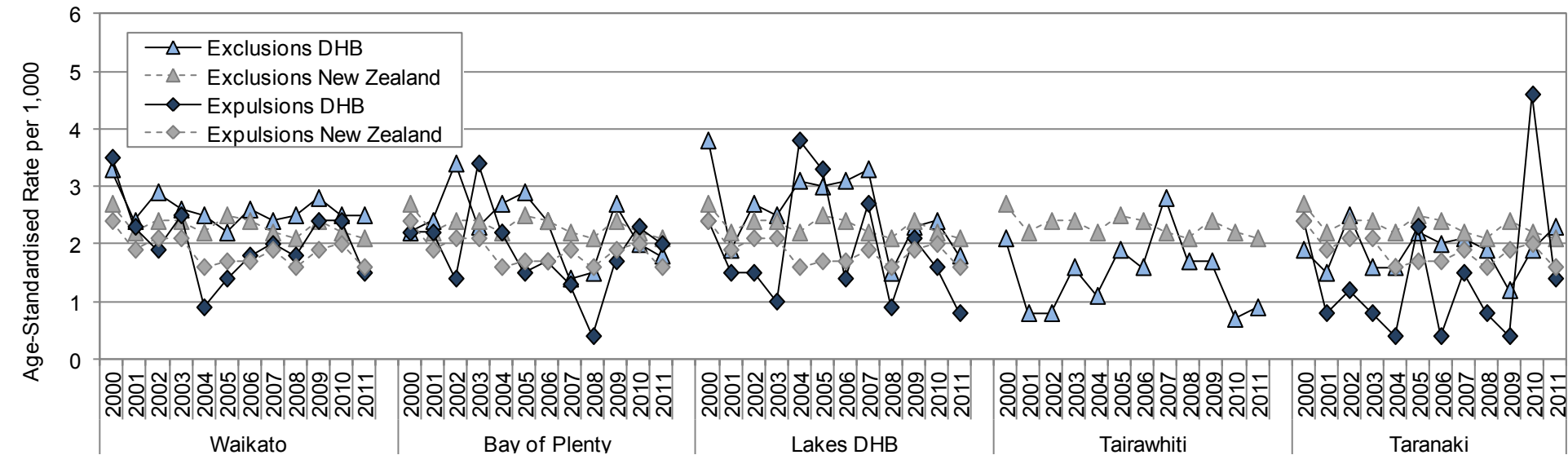


Figure 56. Age-Standardised School Stand-Down and Suspension Rates, Midland DHBs vs. New Zealand 2000–2011



Source: Ministry of Education

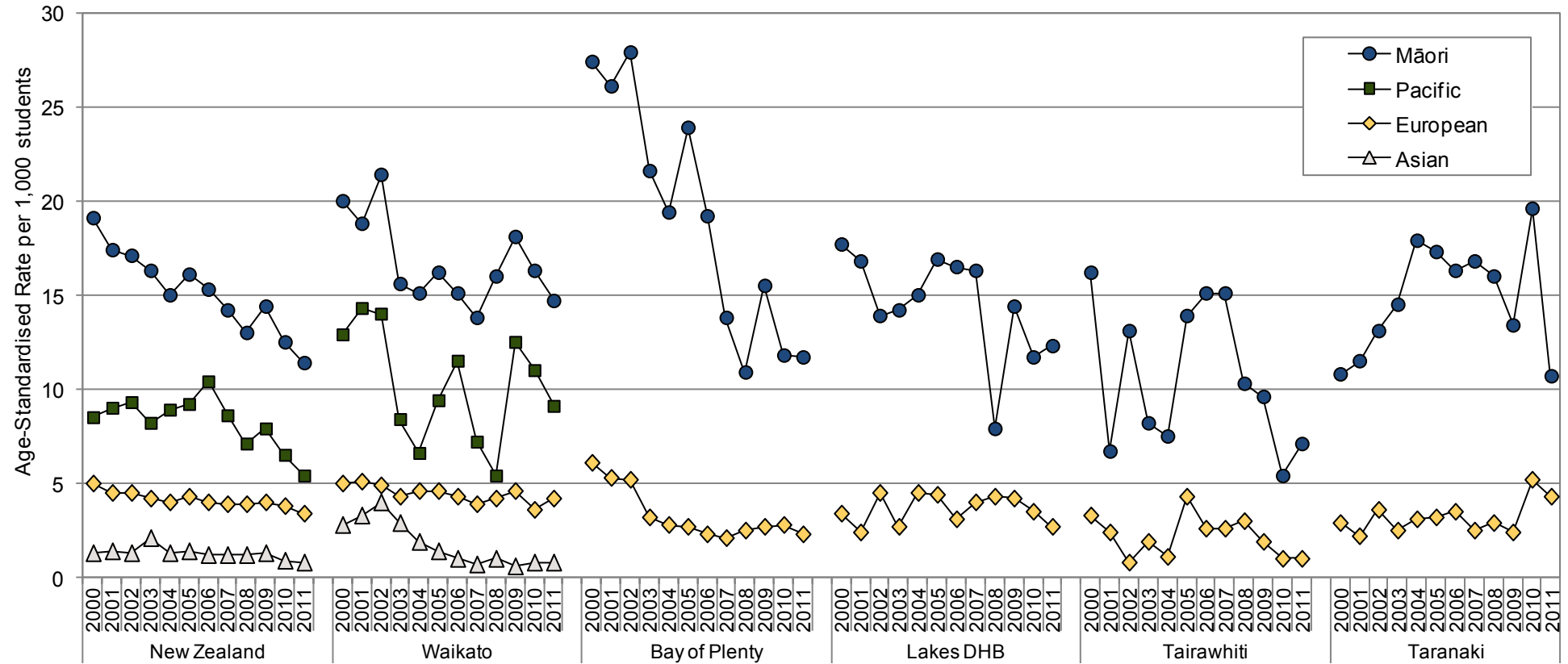
Figure 57. Age-Standardised School Exclusion and Expulsion Rates, Midland DHBs vs. New Zealand 2000–2011





Source: Ministry of Education

Figure 58. Age-Standardised School Suspension Rates by Ethnicity, Midland DHBs vs. New Zealand 2000–2011



Source: Ministry of Education; Note: Ethnicity is Level 1 Prioritised

## Local Policy Documents and Evidence-Based Reviews Relevant to Stand-Downs, Suspensions, Exclusions and Expulsions

As the section above suggests, conduct problems can significantly impair a young person's engagement with the education system. **Table 20** thus considers local policy documents relevant to the prevention of conduct problems in children and young people, as well as those which provide guidance to Boards of Trustees when considering suspending, standing down, excluding or expelling a student from school. Strategies to improve school attendance are considered in **Table 21** on **Page 151** in the Truancy and Unjustified Absences section.

Table 20. Local Policy Documents and Evidence-Based Reviews Relevant to Stand-Downs, Suspensions, Exclusions and Expulsions

Ministry of Education Policy Documents
<p>Ministry of Education. 2009. <b>Guidelines for principals and boards of trustees on stand-downs, suspensions, exclusions and expulsions. Part I Legal options and duties.</b> Wellington: Ministry of Education.  <a href="http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/StanddownsSuspensionsExclusionsExpulsions.aspx">http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/StanddownsSuspensionsExclusionsExpulsions.aspx</a></p> <p>Schools have legal requirements and defined processes with respect to suspending, standing down or excluding students from school. This set of guidelines spells out the principles of being fair and flexible, and the interpretation of the principles of natural justice to which the Education Act 1989 and Education Rules (1999) directly refer with respect to the suspension, exclusion and standing-down of students. The guidelines define the processes required, as well as the legal responsibilities of principals and boards of trustees.</p>
<p>Ministry of Education. 2009. <b>Good practice: Guidelines for principals and boards of trustees for managing behaviour that may or may not lead to stand-downs, suspensions, exclusions and expulsions. Part II.</b> Wellington: Ministry of Education.  <a href="http://www.minedu.govt.nz/~media/MinEdu/Files/EducationSectors/PrimarySecondary/StandDownSuspensionExclusionExpulsions/SuspensionGoodPracticeWEB.pdf">http://www.minedu.govt.nz/~media/MinEdu/Files/EducationSectors/PrimarySecondary/StandDownSuspensionExclusionExpulsions/SuspensionGoodPracticeWEB.pdf</a></p> <p>Complementing the previous document, the Good Practice guidelines provide guidance for schools on alternative methods of improving engagement in schooling, in preference to students being suspended or excluded. Of particular concern is the high proportion of Māori and Pasifika learners excluded or suspended.</p>
Other Government Publications
<p>Advisory Group on Conduct Problems. 2009. <b>Conduct Problems: Best Practice Report.</b> Wellington. Ministry of Social Development. <a href="http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/conduct-problems-best-practice/index.html">http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/conduct-problems-best-practice/index.html</a></p> <p>This report explores the issues relating to conduct problems and their treatment. It is presented in four parts:</p> <p>Part 1 introduces the report and addresses Treaty of Waitangi considerations, classifications and terminology, why it is important to address conduct problems, when to intervene, co-occurring conditions, and the policy implications.</p> <p>Part 2 provides a review of evidence on effective interventions, including the importance of RCTs for identifying effective programmes, the prevention of childhood conduct problems, the treatment and management of conduct problems in children and young people (including interventions for 3–12 year-olds and for adolescents and young adults), the role of medication and other treatment modalities, and makes policy recommendations.</p> <p>Part 3 examines the issues that need to be addressed in translating evidence into effective policy, the role of population screening, factors contributing to implementation fidelity and programme effectiveness, the management of co-morbid or associated childhood and adolescent problems, and the science of prevention and policy development.</p> <p>Part 4 comprises a series of sections prepared by expert Māori, Pacific and Asian authors, with a view to ensuring the voices of different ethnic groups are included in the report.</p>
<p>Ministries of Education, Health, Justice and Social Development. 2007. <b>Inter-agency Plan for Conduct Disorder/Severe Antisocial Behaviour 2007-2012.</b> Wellington: Ministry of Social Development.  <a href="http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/policy-development/anti-social-behaviour/index.html">http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/policy-development/anti-social-behaviour/index.html</a></p> <p>This inter-agency plan was developed to establish a more comprehensive and effective cross-government approach to conduct disorder/severe antisocial behaviour in children (behaviours which are defined as severe, persistent across contexts and over time, and which involve repeated violations of societal and age-appropriate norms). The report identifies key challenges facing services, including inconsistent mechanisms for identifying and determining eligibility for services, gaps in the availability of specialist services, and lack of alignment with the evidence base in some programmes. It sets out the four key proposals for 2007 to 2012: establishing leadership, co-ordination, monitoring and evaluation; transitioning existing service provision to evidence-based, best-practice interventions; establishing an intensive, comprehensive behavioural service for three to seven year-olds; and building a shared infrastructure for the delivery of specialist behavioural services.</p>

## Cochrane Systematic Reviews

Petrosino A, et al. 2009. **"Scared Straight" and other juvenile awareness programs for preventing juvenile delinquency**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD002796

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD002796/frame.html>

There are regular calls for interventions that show young people at risk of exhibiting socially undesirable behaviour the consequences of their antisocial behaviour and delinquency by, for example, visiting prisons. Nine trials, all conducted in the USA, were identified as eligible for this systematic review which covered juvenile and young adults (aged 14–20 years). These studies had to have a no-treatment arm to their study and measure at least one criminal behaviour outcome 'post-visit'. Analysis indicated that the intervention did more harm than doing nothing, regardless of whether it was based on a fixed or random effect model. In conclusion therefore, organising visits to prison facilities by young delinquents is ineffective at best, and appears more likely to lead to more offending behaviour. The authors note that despite the consistently negative consequences of the intervention, the programmes have been continued, although the evaluations of them have been stopped.

Hassiotis AA & Hall I. 2008. **Behavioural and cognitive-behavioural interventions for outwardly-directed aggressive behaviour in people with learning disabilities**. Cochrane Database of Systematic Reviews 2008, Issue 3. Art. No.: CD003406. DOI: 10.1002/14651858.CD003406.pub3

<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD003406.pub3/pdf/standard>

Outward directed aggressive behaviour in people with learning disabilities is a cause of social exclusion. This systematic review sought to find evidence of efficacious interventions to reduce the behaviour. Two types of interventions were examined: behaviour modification interventions and cognitive-behavioural treatment. No meta-analysis was possible because of the heterogeneity of the studies. Outcome measures had to include at least one of ten measures related to reduction in aggressive behaviour, improvement of mental state, reduction in care needs, and improvement in adaptive functioning. Despite being cautious because of the limitations of small studies, both types of intervention may be potentially efficacious on their own in the long term management of outwardly-directed aggression. However, while interventions for both adults and children were considered eligible for the review, the four studies included were for adults only. The conclusion is that there is a real paucity of rigorous research to identify efficacious interventions for such behaviour.

## Other Relevant Evidence

Bennett D S & Gibbons T A. 2000. **Efficacy of child cognitive-behavioural interventions for antisocial behavior: a meta-analysis** (Structured abstract). Child and Family Behaviour Therapy. 22(1):1-15.

<http://onlinelibrary.wiley.com/doi/cochrane/clare/articles/DARE-12000002485/frame.html>

These authors examine the efficacy of child cognitive behaviour therapies (CBT) for antisocial behaviour. Thirty studies were included which: used a child-based intervention for anti-social behaviour; had subjects ≤18 years, had a no-treatment, attention or wait-list control group; and utilised at least one of a number of recognised measures for antisocial behaviour. Child-based CBT interventions appear to have a small to moderate effect in decreasing antisocial behaviour. Few studies had a follow-up, but those that did suggest that the effects are maintained over time. A trend for a positive relationship between child age and effect size was found, but CBT may be more effective for older elementary school aged children and adolescents than for those younger. Most of the studies included were group based, although four were for individual training which is potentially more effective. None of the studies included girls or were too small to identify gender differences. The study concluded 'that child-based CBT interventions may be an effective part of a multimodal treatment for children, particularly older children, who exhibit antisocial behaviour.

Eyberg SM, et al. 2008. **Evidence-Based Psychosocial Treatments for Children and Adolescents with Disruptive Behavior**, Journal of Clinical Child & Adolescent Psychology, 37:1, 215-237

<http://dx.doi.org/10.1080/15374410701820117>

Twenty eight studies presenting evidence-based psychosocial treatment (EBTs) for child and adolescent disruptive behaviour from 1996–2007 were examined in this review. Included were 16 EBTs and 9 'possibly efficacious' treatments (treatments that are potentially worth implementing but do not have the same level of evidence as the EBTs). Medication treatments were not included nor interventions for behaviours associated with autism or ADHD, or isolated problems such as firelighting or truancy all of which have their own literature. Individual child, parent, and family and group treatments were eligible. The EBTs included multiple modalities: anger control management, group assertive training, helping the non-compliant child, Webster-Stratton et al's Incredible Years interventions, multidimensional treatment foster care, multisystemic therapy, parent-child interactive therapy, parent management training Oregon model, different levels of Positive Parenting Program (Triple P), problem solving skills training and a rational-emotive mental health program. Combinations of treatment components were included where these had been appropriately evaluated. In conclusion, the review indicated that, for adolescents, a range of treatments can be efficacious for particular children with disruptive behaviour disorders. It also noted a variety of direct treatment providers being used in the EBTs, including teachers, foster parents, and peers as well as mental health professionals.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**

# TRUANCY AND UNJUSTIFIED ABSENCES

## Introduction

Research suggests that sustained truancy significantly affects educational attainment, with student attendance being one of the most important predictors of educational achievement in senior secondary school [62]. Longitudinal studies in Dunedin and Christchurch also suggest that truancy is a strong predictor of substance abuse, suicidal risk, unemployment, early parenting and violence in later life [60] [63].

The Ministry of Education intermittently undertakes Surveys of School Attendances. The most recent School Attendance Survey for which data is available occurred in June 2011 [64]. The following section uses data from the Ministry of Education's School Attendance Survey to explore truancy and unjustified absences in New Zealand secondary school students.

### Data Source and Methods

#### Definitions

##### 1. Total Unjustified Absence Rate

##### 2. Frequent Truancy Rate

Absences were classified using the following definitions:

**Justified Absences:** Absences recorded in the register and marked as having being satisfactorily explained. As the school principal has to make a judgement as to which explanations they will accept, the balance of justified and unjustified absences may vary slightly from school to school.

**Unjustified Absences:** Absences which are not explained, or not explained to the satisfaction of the school. For schools with an electronic Attendance Register (eAR), students who attended less than 120 minutes of their classes and had at least one unjustified absence were counted as an unjustified absence.

**Intermittent Unjustified Absences:** Where a student is absent for part of a morning (or afternoon) or part of a period without justification (e.g. arriving 15 minutes late to school without a reason, or with a reason that is not acceptable to the principal). For schools with eAR data, students who attended classes for more than 120 minutes and had two or more unjustified absences were counted as an intermittent unjustified absence.

**Total Unjustified Absences:** The sum of unjustified and intermittent unjustified absences.

**Frequent Truants:** Students were classified as frequent truants if they had three or more unjustified absences during the survey week.

Absence data was collected for each student for each day of the week. The rate for each absence type was calculated based on the total school rolls for the participating schools and relates to an average (mean) daily absence for the week per 100 students. It should be noted that this does not tell us whether it is the same students that are absent, or whether different students are involved each day.

#### Data Source

Ministry of Education Student Attendance Surveys (2006, 2009 and 2011)

##### 1. Total Unjustified Absence Rate

**Numerator:** Number of unjustified absences and intermittent unjustified absences per week

**Denominator:** Total number of enrolled students in participating schools

The rate was calculated by dividing the number of absences, by the total rolls of participating schools and is expressed as an average (mean) daily absence for the week per 100 students.

##### 2. Frequent Truancy Rate

**Numerator:** Number of students with three or more unjustified absences during the survey week

**Denominator:** Total number of enrolled students in participating schools

#### Notes on Interpretation

The 2011 Ministry of Education Attendance Survey gathered data on student attendance during the week of 13–17 June 2011. Of the 2470 schools invited to participate, completed returns were received from 2180, a response rate of 88%. The responding schools had approximately 625,000 students on their rolls, equating to 87% of the student population in all state and state integrated schools on 1 July 2011. In the 2009 Survey, to reduce compliance costs, a representative sample of 768 schools was invited to participate, with the response rate being 85%. All state and state integrated schools were invited to participate in the 2006 survey. Two forms of data collection were used. Schools that use a module in their Student Management Systems to enter their attendance records electronically were asked to provide an extract from the electronic Attendance Register (eAR). Schools that do not use eAR were invited to take part in the paper version of the survey.



The schools recording absences on the paper form were required to make their own judgement of whether a student was absent for all or part of a day, and whether that absence was justified based on the definitions and instructions supplied. For further detail see

<http://www.educationcounts.govt.nz/publications/series/2503/attendance-in-new-zealand-schools-2011>

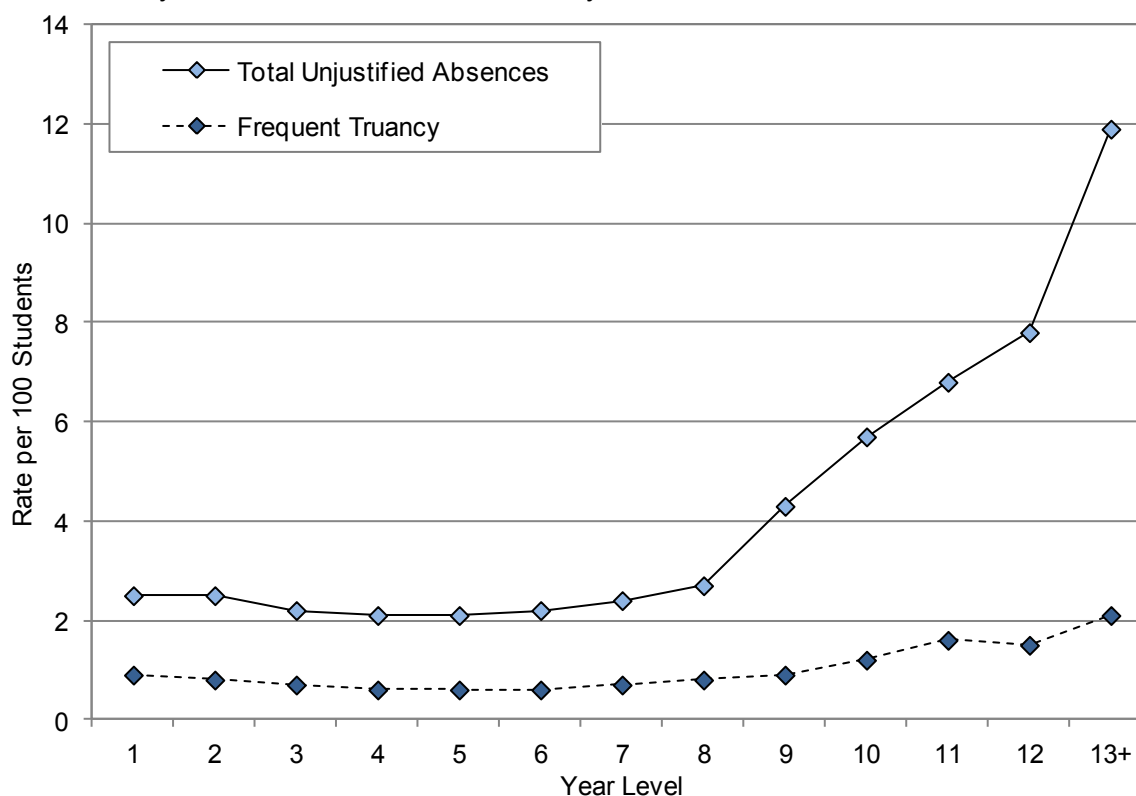
Note: All ethnic groups across each year have been standardised to 2011 year-level rates to allow for comparison between survey years and ethnic groups

## New Zealand Distribution

### Distribution by Year of Schooling

In New Zealand during 2011, total unjustified absences were relatively infrequent during the primary school years (Years 1–6), but increased progressively during secondary school (Years 9–13), with the highest rates being seen in those in Year 13+. While frequent truancy rates also increased during the secondary school years, the rate of increase was less marked than for total unjustified absences (**Figure 59**).

Figure 59. Total Unjustified Absences and Frequent Truancy by Year Level, New Zealand 2011 Ministry of Education Attendance Survey



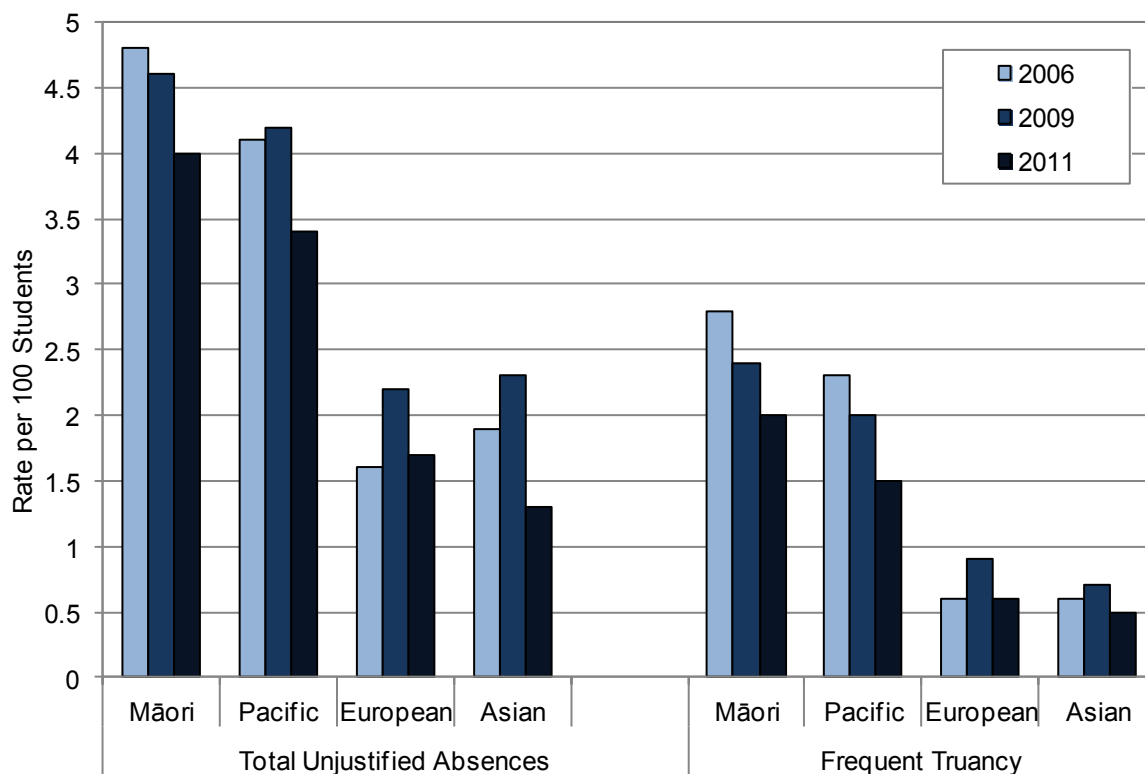
Source: Ministry of Education Attendance Survey 2011; Note: Total Unjustified Absence Rate is the mean number of daily absences per week per 100 students; Frequent Truant Rate is the number of students with 3+ unjustified absences per week per 100 student

### Distribution by Ethnicity

In New Zealand during each of the years surveyed (2006, 2009 and 2011), total unjustified absences and frequent truancy were higher for Māori and Pacific students than for European and Asian students. Total unjustified absences were lower in 2011 than they were in 2006 for Māori, Pacific and Asian students, although rates for European students were more similar. Similarly frequent truancy rates were lower in 2011 than in 2006 for Māori and Pacific students, although rates for European and Asian students were similar during the two periods (**Figure 60**).

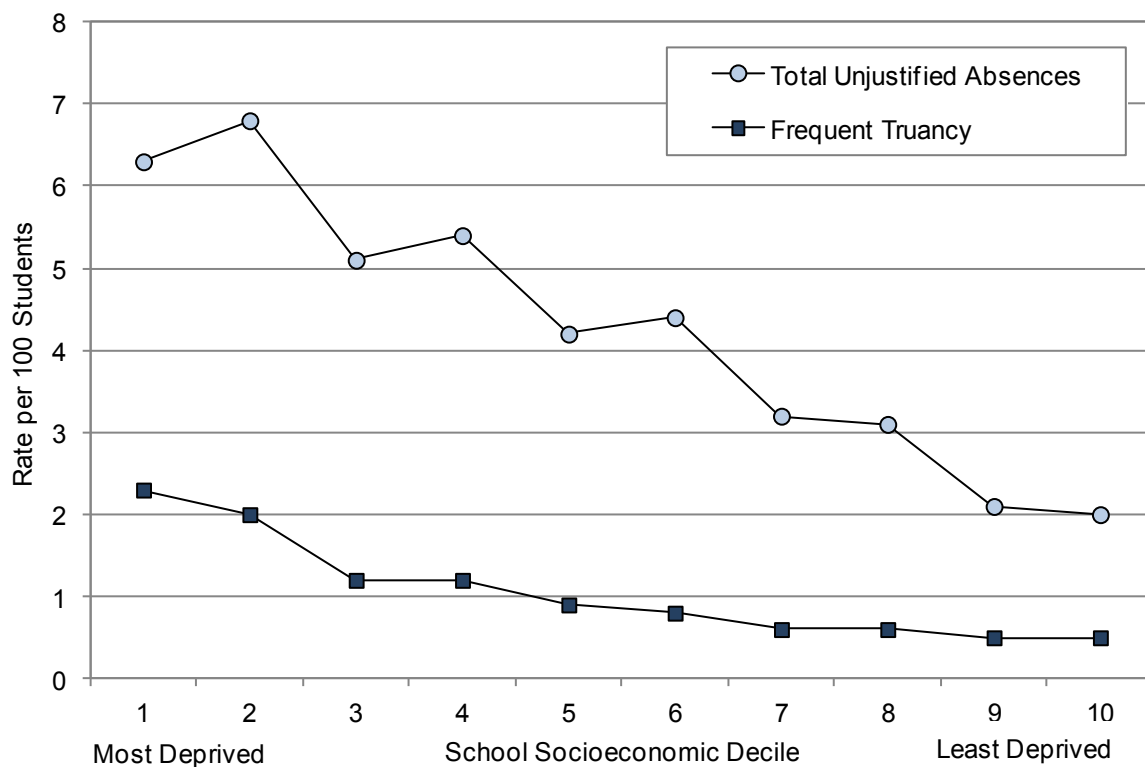


Figure 60. Total Unjustified Absences and Frequent Truancy by Ethnicity, New Zealand 2006, 2009 and 2011 Ministry of Education Attendance Surveys



Source: Ministry of Education Attendance Surveys; Note: Total Unjustified Absence Rate is the mean number of daily absences per week per 100 students; Frequent Truant Rate is the number of students with 3+ unjustified absences per week per 100 students

Figure 61. Total Unjustified Absences and Frequent Truancy by School Socioeconomic Decile, New Zealand 2011 Ministry of Education Attendance Survey



Source: Ministry of Education Attendance Survey 2011; Note: Total Unjustified Absence Rate is the mean number of daily absences per week per 100 students; Frequent Truant Rate is the number of students with 3+ unjustified absences per week per 100 students

## Distribution by School Socioeconomic Decile

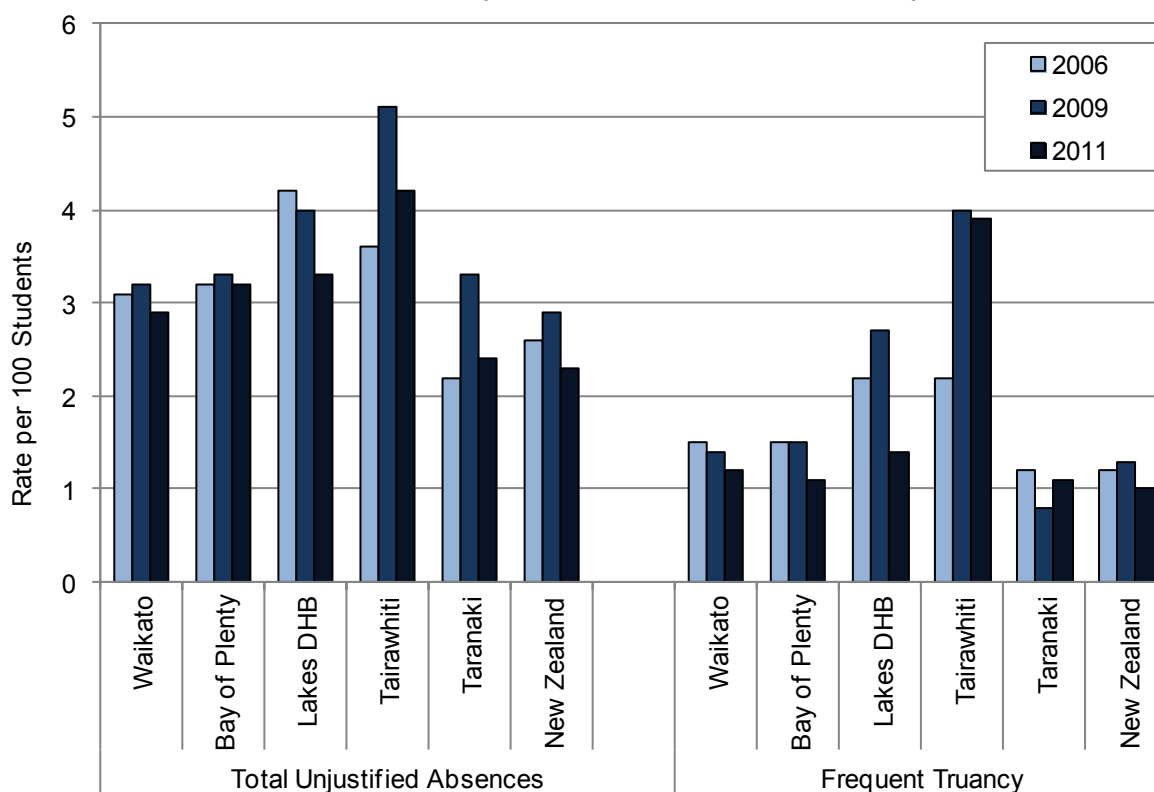
In New Zealand during 2011, total unjustified absences and frequent truancy decreased as the degree of deprivation of the school catchment decreased, with the lowest rates for both outcomes being seen in those in the least deprived (deciles 9–10) areas (**Figure 61**).

## Midland Region Distribution

### Midland Region vs. New Zealand

In the Waikato during 2011, the total unjustified absence rate was 2.9 days per week per 100 students, as compared to 3.2 days in the Bay of Plenty, 3.3 days in Lakes DHB, 4.2 days in Tairāwhiti, 2.4 days in Taranaki and 2.3 days for New Zealand as a whole. Similarly, the frequent truancy rate in the Waikato in 2011 was 1.2 per 100 students, as compared to 1.1 in the Bay of Plenty, 1.4 in Lakes DHB, 3.9 in Tairāwhiti, 1.1 in Taranaki and 1.0 per 100 students for New Zealand as a whole (**Figure 62**).

Figure 62. Total Unjustified Absences and Frequent Truancy, Midland DHBs vs. New Zealand 2006, 2009 and 2011 Ministry of Education Attendance Surveys



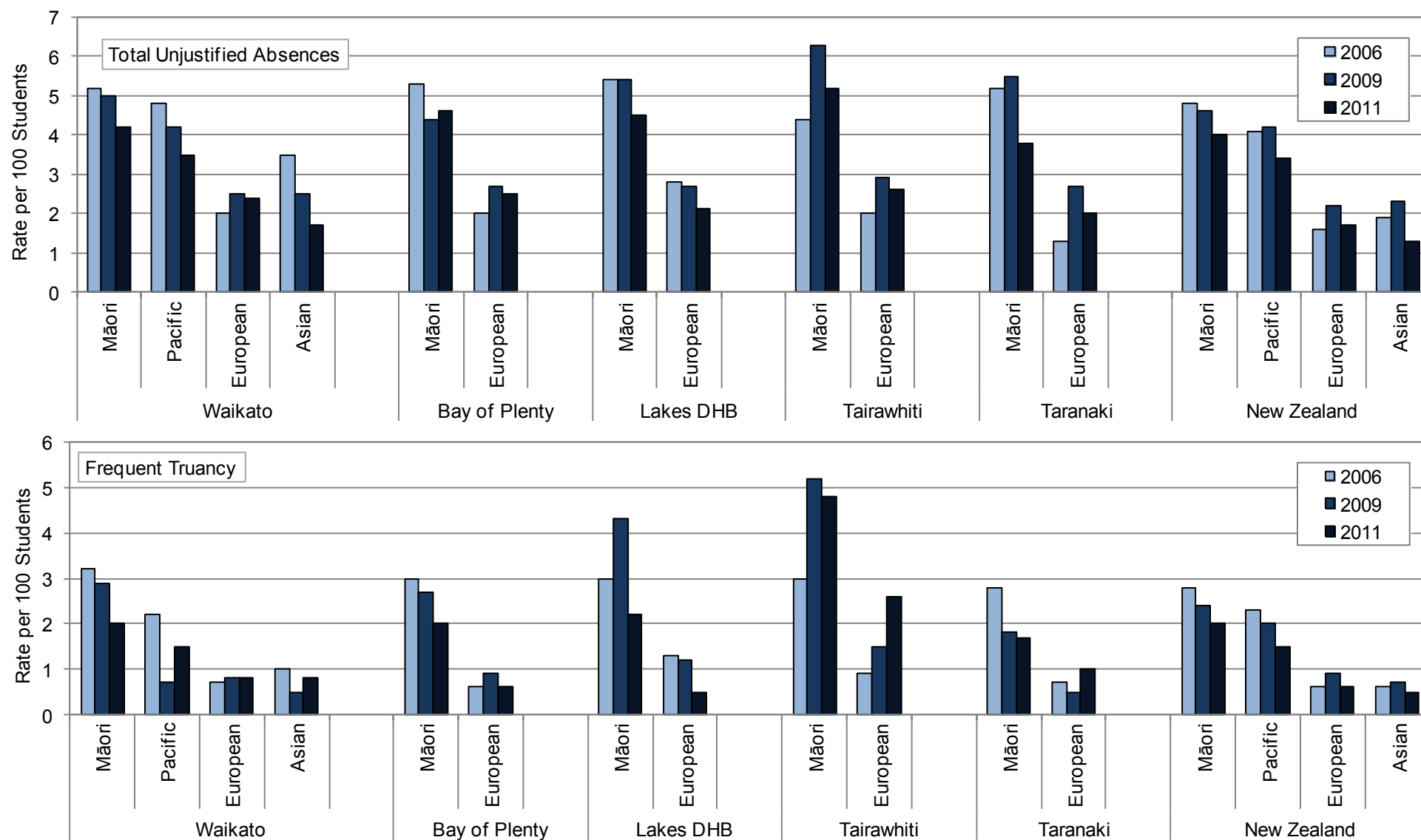
Source: Ministry of Education Attendance Surveys; Note: Total Unjustified Absence Rate is the mean number of daily absences per week per 100 students; Frequent Truant Rate is the number of students with 3+ unjustified absences per week per 100 students

## Distribution by Ethnicity

In the Waikato during 2011, total unjustified absences and frequent truancy were higher for Māori and Pacific students than for European and Asian students, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, rates were higher for Māori students than for European students (**Figure 63**).



Figure 63. Total Unjustified Absences and Frequent Truancy by Ethnicity, Midland DHBs vs. New Zealand 2006, 2009 and 2011 Ministry of Education Attendance Surveys



Source: Ministry of Education Attendance Surveys; Note: Total Unjustified Absence Rate is the mean number of daily absences per week per 100 students; Frequent Truant Rate is the number of students with 3+ unjustified absences per week per 100 students



## Local Policy Documents and Evidence-Based Reviews Which Consider Interventions to Improve School Attendance

**Table 21** below considers overseas publications relevant to the improvement of school attendance. Educational participation however is also influenced by a range of other factors including a student's previous educational experiences and engagement with the education system. Thus **Table 14** on **Page 114** provides an overview of publications which are relevant to early childhood education, while **Table 18** on **Page 122** reviews publications which consider initiatives to improve the educational participation and attainment of Māori students. In addition, **Table 20** on **Page 144** reviews publications relevant to the prevention of stand-downs, suspensions, exclusions and expulsions, while **Table 19** on **Page 130** reviews publications which consider strategies to improve student's educational attainment.

Table 21. Policy Documents Relevant to the Improvement of School Attendance

Publication Relevant to Improving School Attendance
<p>National Audit Office. 2005. <b>Improving School Attendance in England</b>. London: National Audit Office.  <a href="http://www.nao.org.uk/publications/0405/improving_school_attendance.aspx?alreadysearchfor=yes">http://www.nao.org.uk/publications/0405/improving_school_attendance.aspx?alreadysearchfor=yes</a></p> <p>The Department for Education and Skills has overall responsibility for school attendance in England and also sets national policy and funds local authorities and schools. Reducing total absence and unauthorised absence from school are among the Department's highest priorities. This report examines attendance in state schools in England for children of compulsory school age. It examines the factors associated with absence from school, and considers whether initiatives undertaken by the Department, local authorities and schools to reduce absence have been successful. In order to achieve this aim, the authors carried out statistical analysis of school absence in 2002–03, visited 17 schools, and through surveys and discussions obtained the views of head teachers, local authority staff, school inspectors and policymakers.</p>

Note: The above publication was identified using the search methodology outlined in **Appendix 1**



# RISK AND PROTECTIVE FACTORS







# WELL CHILD SERVICES





# IMMUNISATION COVERAGE

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## Introduction

Immunisation is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. It provides both individual protection and population-wide protection by reducing the incidence of infectious diseases and preventing their spread to vulnerable people (also known as herd immunity) [65].

The 20th Century saw dramatic declines in vaccine-preventable diseases worldwide and vaccination has been identified as a cost-efficient means of reducing inequalities in health [66,67]. In New Zealand, vaccination rates have improved in recent years [68]. In the 12 months to June 2012, 92 per cent of two year olds were fully immunised by their second birthday, as compared to 67 per cent in 2007 [68,69]. However, vaccine preventable diseases persist and vaccination coverage remains below the thresholds required to provide the population-wide benefits of herd immunity for some diseases, including measles and pertussis [65,70,71]. In addition, a survey of New Zealand general practices, found that immunisation coverage and timeliness varied widely [72]. Both immunisation coverage ( $p < 0.001$ ) and timeliness ( $p < 0.001$ ) decreased with increased social deprivation. Three practice characteristics were significantly associated with improved coverage and timeliness: younger age at registration, use of one of four available practice management systems, and not having staff shortages.

The Ministry of Health thus remains committed to improving immunisation coverage rates and the timeliness of immunisation [69], with increased immunisation being one of six 2012/2013 Health Targets [73]. If this target is achieved, by July 2013, 85 per cent of eight months olds should have had their primary course of immunisation (at six weeks, three months and five months) on time, increasing to 90 per cent by July 2014 and 95 per cent by December 2014.

The following section provides a brief overview of New Zealand's current immunisation schedule, along with a summary of recent changes, before reviewing immunisation coverage rates at five key milestone ages: 6, 12, 18 and 24 months and 5 years.

## New Zealand's Current Immunisation Schedule

The New Zealand Immunisation Schedule offers publicly funded vaccination aimed at ten vaccine preventable diseases: diphtheria, tetanus, pertussis, poliomyelitis, hepatitis B, *Haemophilus influenzae* type b, measles, mumps, rubella and pneumococcal disease, to children aged between six weeks and 11 years (**Table 22**) [74]. In addition, human papillomavirus (HPV) vaccination is offered to girls aged 12 years. Publicly funded vaccinations for influenza, Meningococcal A, C Y and W135 and tuberculosis (BCG vaccination) are offered to those at risk.

While the majority of these vaccinations have been part of the Immunisation Schedule for some time, vaccinations for pneumococcal disease and human papillomavirus in girls are recent additions. The text box below thus provides a brief overview of these new additions to the Immunisation Schedule, as well as the likely impact they will have on the burden of infectious disease in New Zealand moving forward.





Table 22. The National Immunisation Schedule for Babies, Children and Adolescents

Age	Antigen	Vaccine Brand Name
6 weeks	diphtheria/tetanus/acellular pertussis/inactivated polio vaccine/ hepatitis B/ <i>Haemophilus influenzae</i> type b	1 injection (INFANRIX® -hexa)
	10-valent pneumococcal conjugate	1 injection (SYNFLORIX®)
3 months	diphtheria/tetanus/acellular pertussis/inactivated polio vaccine/ hepatitis B/ <i>Haemophilus influenzae</i> type b	1 injection (INFANRIX® -hexa)
	10-valent pneumococcal conjugate	1 injection (SYNFLORIX®)
5 months	diphtheria/tetanus/acellular pertussis/inactivated polio vaccine/ hepatitis B/ <i>Haemophilus influenzae</i> type b	1 injection (INFANRIX® -hexa)
	10-valent pneumococcal conjugate	1 injection (SYNFLORIX®)
15 months	<i>Haemophilus influenzae</i> type b	1 injection (Act-HIB)
	measles/mumps/rubella	1 injection (M-M-R® II)
	10-valent pneumococcal conjugate	1 injection (SYNFLORIX®)
4 years	diphtheria/tetanus/acellular pertussis/inactivated polio vaccine	1 injection (INFANRIX™-IPV)
	measles/mumps/rubella	1 injection (M-M-R® II)
11 years	diphtheria/tetanus/acellular pertussis	1 injection (BOOSTRIX™)
12 years girls only	human papillomavirus	3 doses given over 6 months (GARDASIL®)

Source: Ministry of Health, New Zealand Immunisation Schedule [74]

#### Recent Changes to the New Zealand Immunisation Schedule

The **10-valent pneumococcal conjugate vaccine (PCV-10)** was added to the schedule in 2011, a change from the previously used 7-valent vaccine (PCV-7) (introduced in June 2008) [71]. In New Zealand, the incidence of invasive pneumococcal disease (IPD), which became notifiable to Medical Officers of Health in 2008, among children under two years has reduced 70.9% since the introduction of PCV-7, from 100.4 cases per 100 000 in 2006/2007 to 29.2 per 100 000 in 2010 [75]. Between 2009 and 2010 IPD rates among children under two years decreased 52.6% in Europeans, 27.6% in Māori, and 37.4% in Pacific Peoples, however, these differences were not statistically significant. An ecological study in the US found that rates of antibiotic-resistant invasive pneumococcal infection among children under two years fell from 70.3 to 13.1 cases per 100,000 (a decline of 81%; 95% CI 80 to 82%) after the introduction of PCV-7 in 2000 [76]. There was an increase in infections caused by non-vaccine serotypes. A Dutch cost effectiveness analysis found that PCV-7 vaccination was not cost effective due to increases in invasive disease caused by non-vaccine serotypes, reducing the overall direct effects of vaccination and offsetting potential herd immunity in unvaccinated individuals [77]. The authors predicted that introduction of 10 or 13-valent vaccines could have better net health benefits and improved cost-effectiveness compared to PCV-7 through less replacement disease and increased herd protection.

**HPV vaccination** with Gardasil, a quadrivalent vaccine against HPV types 16 and 18 (responsible for approximately 70% of cervical cancer) and 6 and 11 (responsible for most genital warts) was added to the immunisation schedule for girls in 2008 [71]. The purpose of the vaccination programme is to reduce the incidence of HPV infection and the subsequent development of cervical cancer and to reduce inequalities in cervical cancer [78]. Overseas, pooled results from two large randomised controlled trials and two smaller trials providing data for 20,583 women, with a mean follow up of 3 years, found that in women negative for HPV16 or HPV18 infection during the vaccination regimen (n=17,129), vaccine efficacy was 99% (95% CI 93 to 100) for the primary endpoint of CIN2/3 or adenocarcinoma *in situ* (surrogate markers for cervical cancer) [79]. The intention to treat analysis of all the randomised women (including those who were HPV16/18-infected at baseline) revealed no protection for women infected with HPV 16 or 18 at baseline, supporting the benefit of giving the vaccine before the onset of sexual activity, and possible exposure to HPV16/18. Surveys of sexual behaviour conducted in New Zealand guided the decision to offer the vaccine to 12 year old girls [71]. An ecological study in Australia that compared the incidence of high grade cervical abnormalities before and after the introduction of the HPV vaccination programme identified a significant absolute decrease in the incidence of high grade abnormalities of 0.38% (95% CI 0.61 to 0.16) [80]. However, individual-level vaccine status was not considered and linkage between vaccination and screening registers is needed to confirm these findings independently of possible bias by screening policy or practice changes [81]. A second Australian ecological study identified declines in the diagnosis of genital warts in young women and heterosexual men attending the Melbourne Sexual Health clinic in the four years after the commencement of the vaccination programme for girls [82]. No significant declines were seen in older women and heterosexual men, or homosexual men. While these studies suggest benefits from the vaccination programme, it will take several decades to demonstrate a reduction in the burden of cervical cancer, the main goal of vaccination [81].



## Immunisation Coverage Rates

The following section uses the National Immunisation Register to review immunisation coverage rates for children at 6, 12, 18 and 24 months and 5 years of age.

### Data Source and Methods

#### Indicator

*Proportion of Children Fully Immunised at 6, 12, 18 and 24 months and 5 years of age*

**Numerator:** National Immunisation Register (NIR): The number of children who turned the milestone age during the reporting period and who had completed their age appropriate immunisations by the time they turned that milestone age.

**Denominator:** NIR: The number of children who turned the milestone age during the reporting period.

#### Notes on Interpretation

During pregnancy and after birth, parents are informed about the NIR, with Lead Maternity Carers playing a key role in information provision. Following delivery, all of the relevant information about each child is added to the NIR, with parents being able to 'opt off' having their child's immunisation information stored in the NIR. In this case the child's National Health Index number, date of birth, District Health Board and any immunisations already recorded in the NIR are retained, so that immunisation coverage can be accurately calculated. Parents may also choose not to immunise their children and this is recorded on the NIR as a declined immunisation event to prevent recalls.

The NIR was implemented by the Ministry of Health and District Health Boards in 2005. The rollout occurred in a staged fashion commencing with the Greater Auckland region in April 2005 and finishing in Nelson Marlborough in December 2005. Thus only children born from 2005 onwards have their details recorded in the NIR. However, all children immunised with the MeNZB vaccine as part Meningococcal B Immunisation Programme had their details recorded in the NIR, along with any other immunisations given at the same time (although no further vaccinations are recorded on the NIR for these older children). For further details on the NIR see <http://www.health.govt.nz/our-work/preventative-health-wellness/immunisation/national-immunisation-register/questions-and-answers-national-immunisation-register>.

## New Zealand Distribution and Trends

### Distribution by Milestone Age

In New Zealand during 2009 (Q2) to 2012 (Q2), immunisation coverage rates were highest for children aged 12 and 24 months, followed by 18 months, and then five years, with coverage being lowest for children aged 6 months. Immunisation coverage rates however, increased for all age groups during this period (**Figure 64**).

### Distribution by Ethnicity

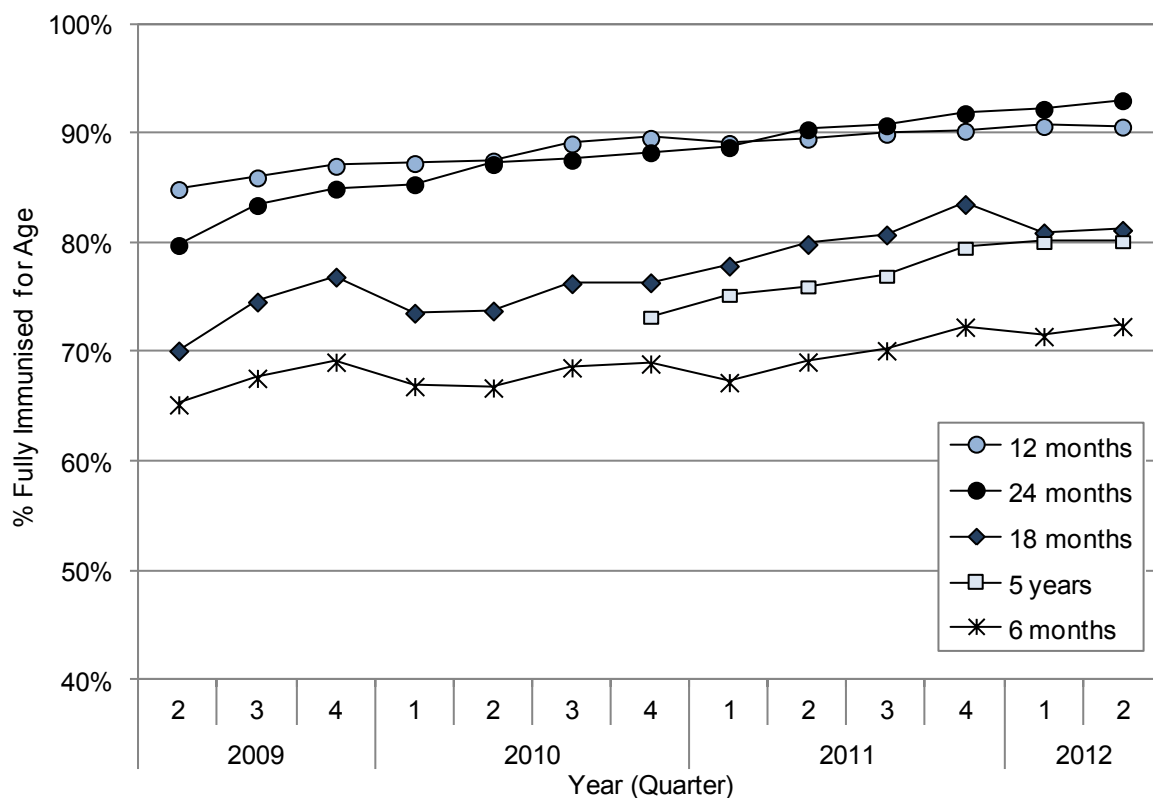
In New Zealand during 2009 (Q2) to 2012 (Q2), immunisation coverage rates at 6 and 18 months were higher for Asian > European > Pacific > Māori children. While similar ethnic differences were evident at 24 months during early 2009, by early 2012, coverage rates were higher for Asian and Pacific > European > Māori children. Immunisation coverage rates for all ethnic groups increased during this period (**Figure 66**). Thus by 2012 (Q2) immunisation coverage at 24 months was 97.6% for Asian, 96.8% for Pacific, 93.3% for European and 92.2% for Māori children (**Figure 65**).

### Distribution by NZ Deprivation Index Decile

In New Zealand during 2009 (Q2) to 2012 (Q2), immunisation coverage rates at 6, 12 and 18 months and five years remained higher for children from the least deprived (NZDep deciles 1–2) > average (NZDep deciles 5–6) > most deprived (NZDep deciles 9–10) areas. While similar socioeconomic gradients were evident at 24 months during early 2009, these lessened, so that by the first two quarters of 2012, coverage rates were very similar for those from the most and least deprived areas (**Figure 66**). Thus by 2012 (Q2) immunisation coverage at 24 months was 93.8% for children from the least deprived (NZDep deciles 1–2) areas, 92.1% for children from average (NZDep deciles 5–6) areas, and 94.1% for children from the most deprived (NZDep deciles 9–10) areas (**Figure 67**).

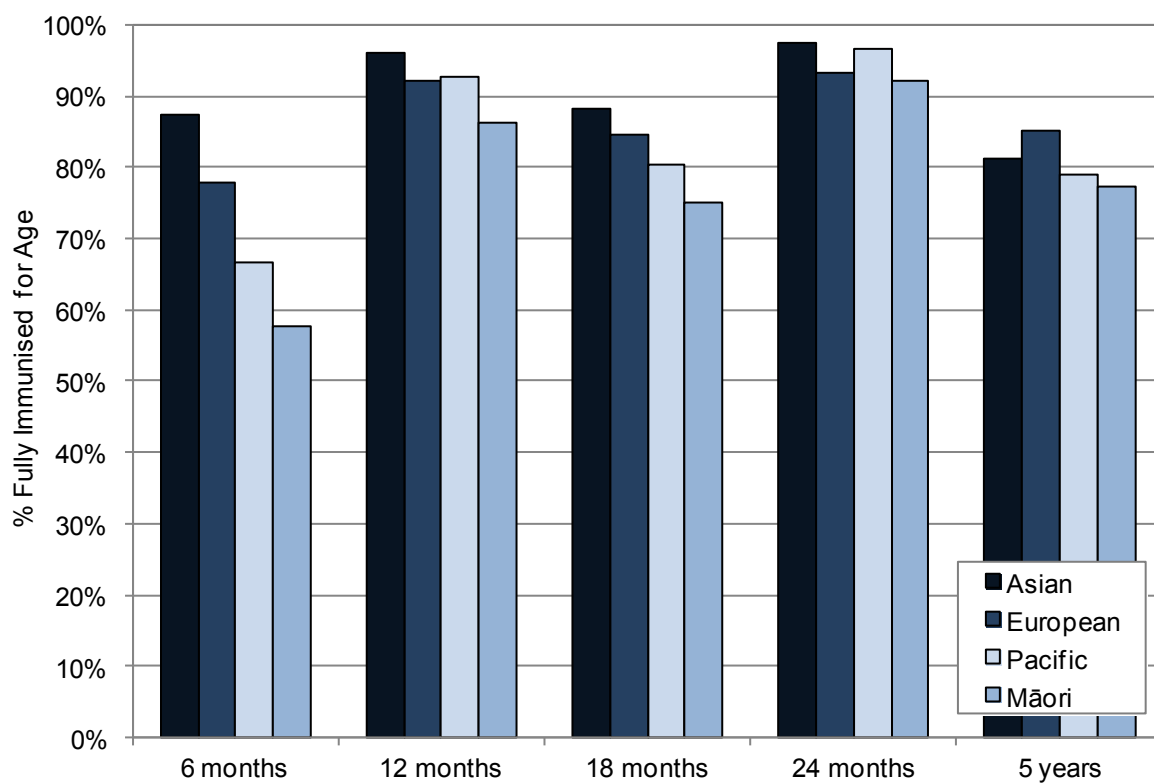


Figure 64. Immunisation Coverage by Milestone Age, New Zealand 2009 (Quarter 2) – 2012 (Quarter 2)



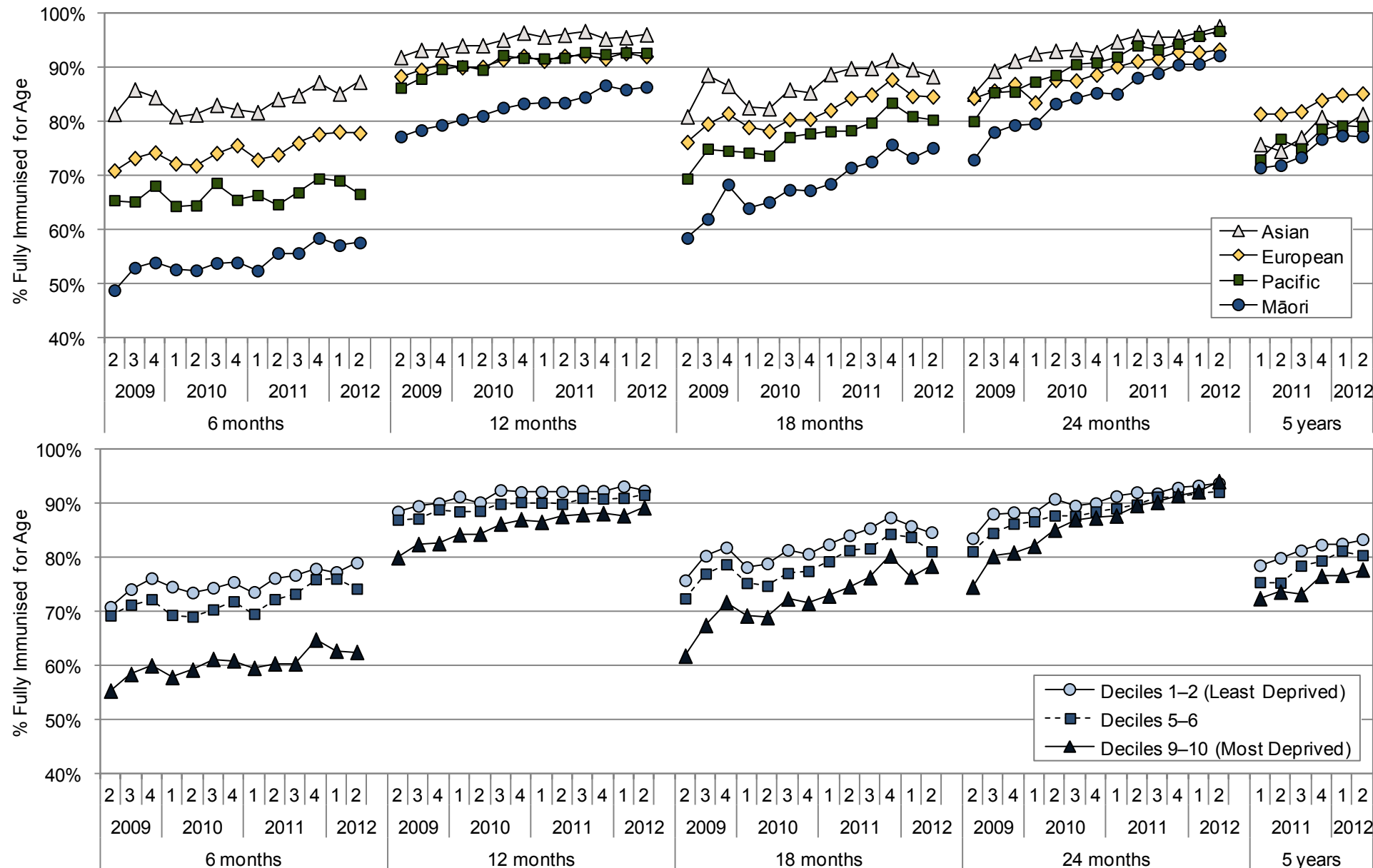
Source: National Immunisation Register

Figure 65. Immunisation Coverage by Milestone Age and Ethnicity, New Zealand 2012 (Quarter 2)



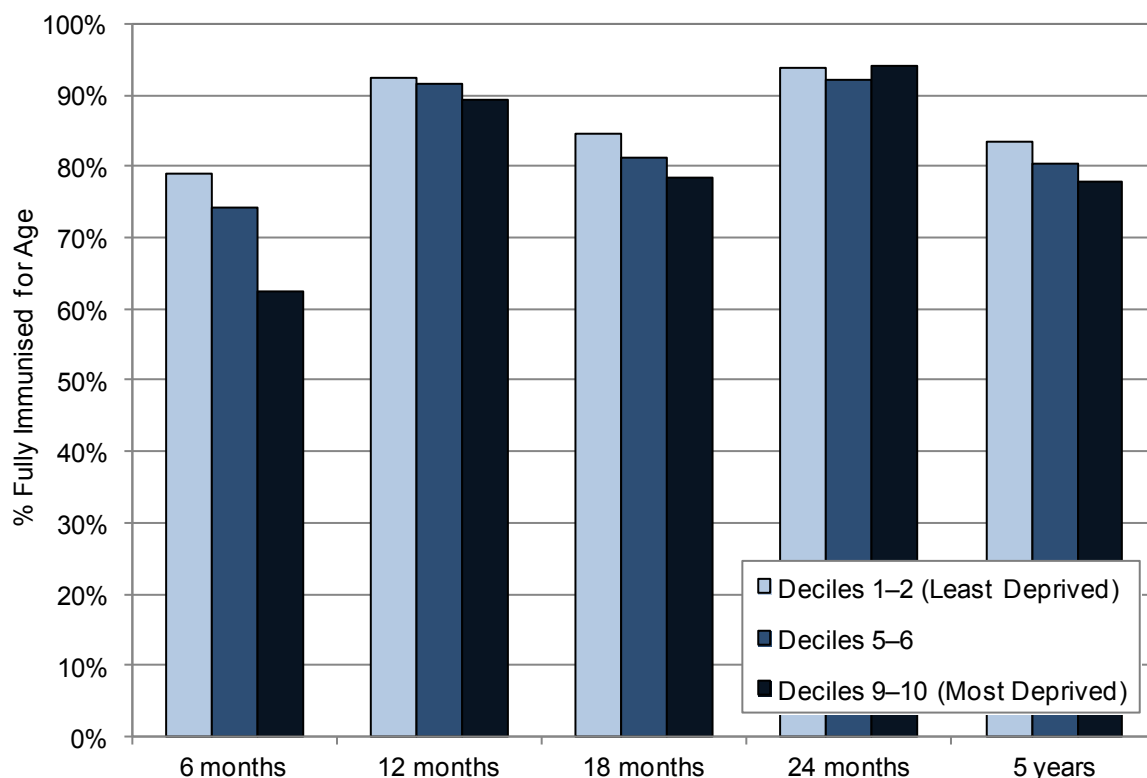
Source: National Immunisation Register; Note: Ethnicity is Level 1 Prioritised

Figure 66. Immunisation Coverage by Milestone Age, Ethnicity and NZ Deprivation Index Decile, New Zealand 2009 (Quarter 2) – 2012 (Quarter 2)



Source: National Immunisation Register; Note: Ethnicity is Level 1 Prioritised

Figure 67. Immunisation Coverage by Milestone Age and NZ Deprivation Index Decile, New Zealand 2012 (Quarter 2)



Source: National Immunisation Register

## Midland Region Distribution and Trends

### Distribution by Milestone Age

Amongst the DHBs in the Midland Region during 2009(Q2) to 2012(Q2), immunisation coverage rates were highest for children aged 12 months and 24 months, followed by 18 months and five years, with coverage being lowest for children 6 months of age. Immunisation coverage rates however increased for all age groups and in all Midland DHBs during this period. Thus by 2012(Q2), immunisation coverage at 24 months was 91.6% in the Waikato, 90.5% in the Bay of Plenty, 94.1% in Lakes DHB, 94.9% in Tairāwhiti and 91.2% in Taranaki, as compared to 93.1% for New Zealand as a whole (**Figure 68, Figure 69, Figure 70**).

### Distribution by Ethnicity

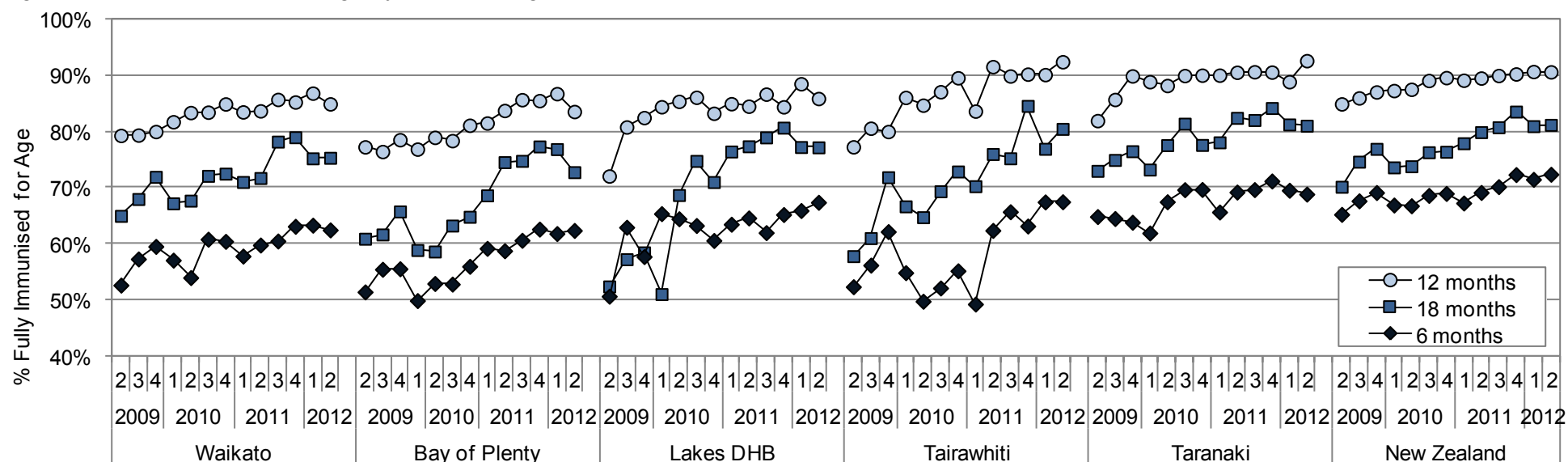
In the Waikato during 2009(Q2) to 2012(Q2), immunisation coverage rates at 24 months were generally higher for Pacific and Asian children than for European and Māori children. In the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki while immunisation coverage rates at 24 months was generally higher for European children than for Māori children during 2009, by 2011, with the exception of Taranaki, these ethnic differences had disappeared (**Figure 71**).

### Distribution by NZ Deprivation Index Decile

Amongst the DHBs in the Midland region during 2009(Q2) to 2012(Q2), there were no consistent socioeconomic gradients (as measured by NZDep Index decile) evident in immunisation coverage rates at 24 months of age (**Figure 72**).

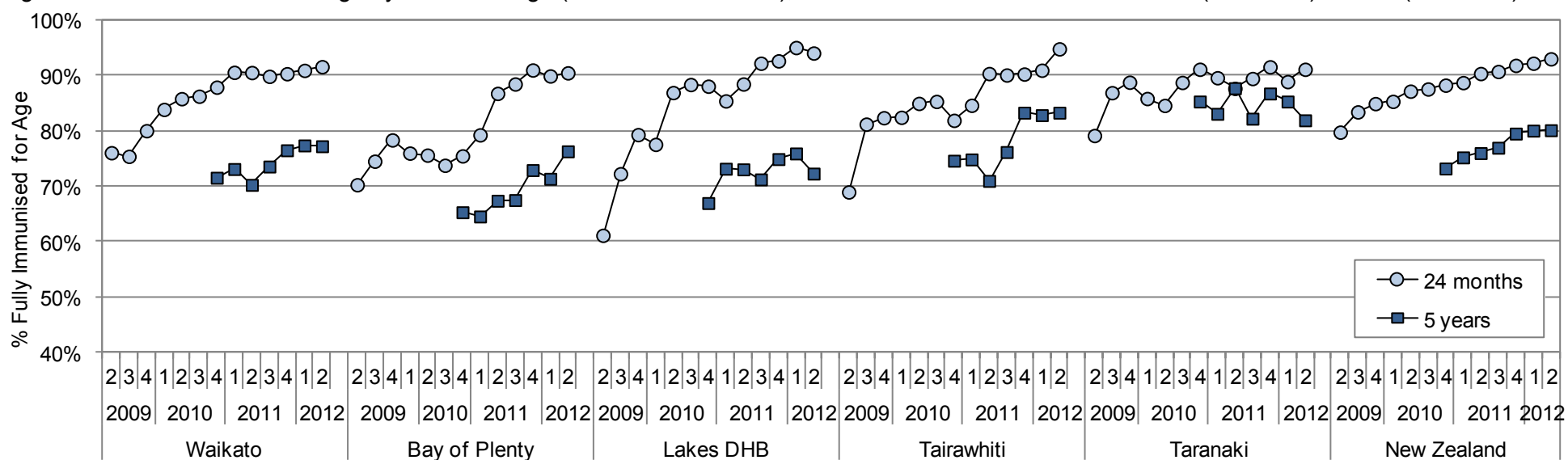


Figure 68. Immunisation Coverage by Milestone Age (6, 12 and 18 Months), Midland DHBs vs. New Zealand 2009 (Quarter 2) – 2012 (Quarter 2)



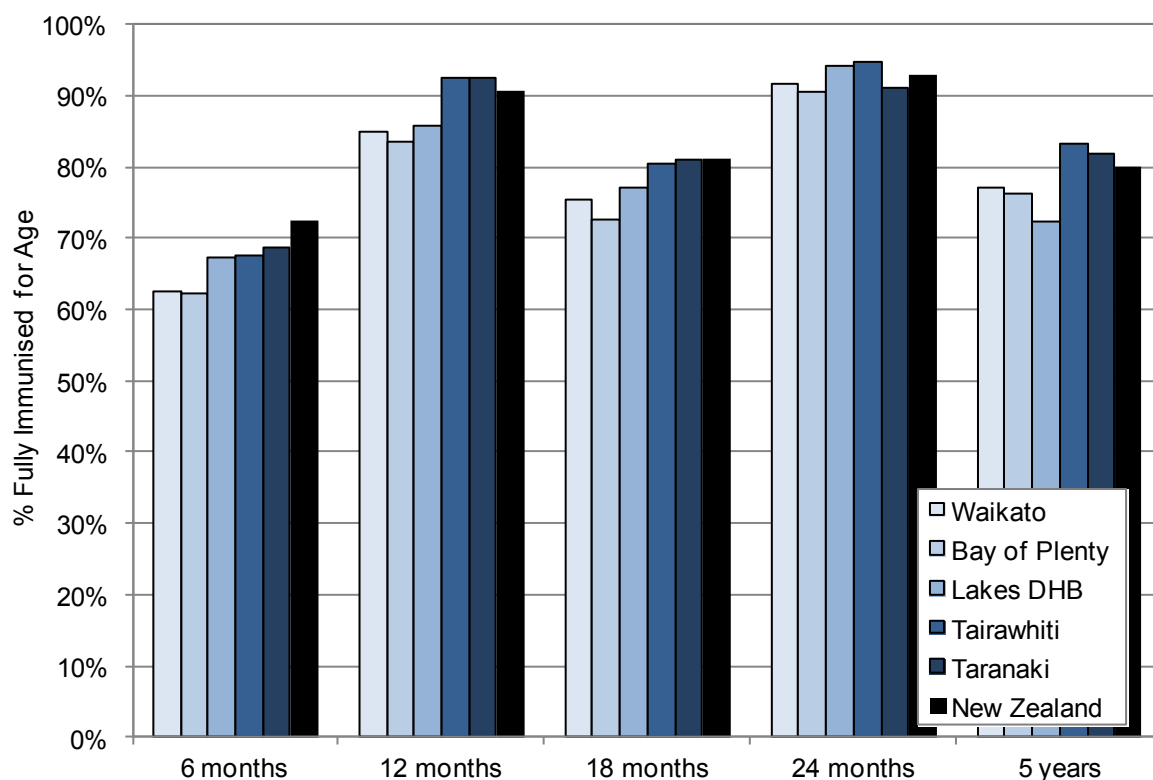
Source: National Immunisation Register

Figure 69. Immunisation Coverage by Milestone Age (Two and Five Years), Midland DHBs vs. New Zealand 2009 (Quarter 2) – 2012 (Quarter 2)



Source: National Immunisation Register

Figure 70. Immunisation Coverage by Milestone Age, Midland DHBs vs. New Zealand 2012 (Quarter 2)

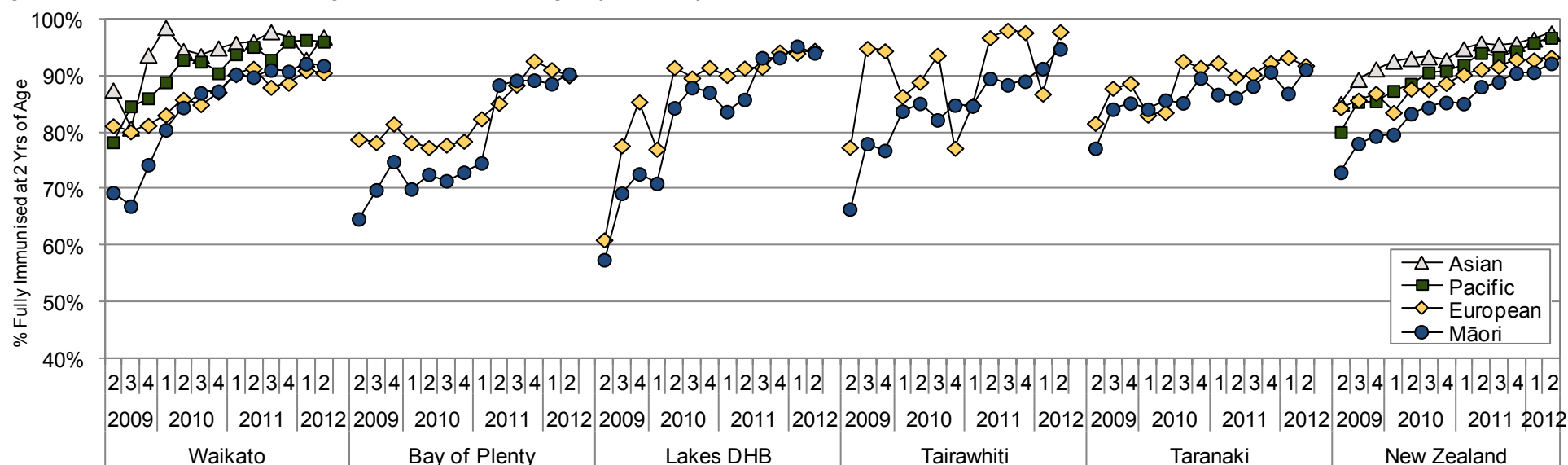


Source: National Immunisation Register

## Local Policy Documents and Evidence-Based Reviews Relevant to Immunisation and Immunisation Coverage

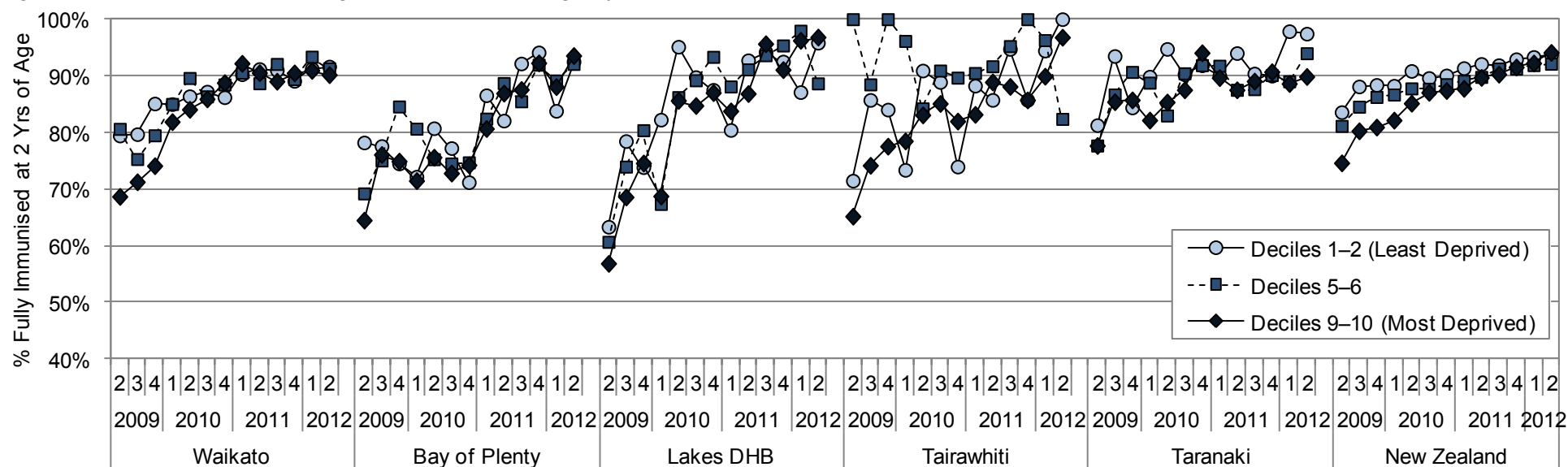
**Table 23** below provides a brief overview of local policy documents and evidence-based reviews which consider immunisation and interventions aimed at increasing immunisation coverage.

Figure 71. Immunisation Coverage at Two Years of Age by Ethnicity, Midland DHBs vs. New Zealand 2009 (Quarter 2) – 2012 (Quarter 2)



Source: National Immunisation Register; Note: Ethnicity is Level 1 Prioritised

Figure 72. Immunisation Coverage at Two Years of Age by NZ Deprivation Index Decile, Midland DHBs vs. New Zealand 2009 (Qtr 2) – 2012 (Qtr 2)



Source: National Immunisation Register

Table 23. Local Policy Documents and Evidence-Based Reviews Relevant to Immunisation and Increasing Immunisation Coverage

Ministry of Health Policy Documents
<p>Ministry of Health. 2011. <b>Immunisation Handbook 2011</b>. Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/immunisation-handbook-2011">http://www.health.govt.nz/publication/immunisation-handbook-2011</a></p> <p>The Immunisation Handbook provides clinical guidance for health professionals on the effective and safe use of vaccines. The Handbook contains information on eligibility for vaccines and the diseases covered by the National Immunisation Schedule, as well as other vaccine preventable diseases.</p>
<p>Ministry of Health. 2011. <b>Targeting Immunisation: increased immunisation</b>. Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/targeting-immunisation-increased-immunisation">http://www.health.govt.nz/publication/targeting-immunisation-increased-immunisation</a></p> <p>Increased immunisation has been a national health target since 2007. The 2012/2013 immunisation target (available at: <a href="http://www.health.govt.nz/new-zealand-health-system/health-targets/2012-13-health-targets">http://www.health.govt.nz/new-zealand-health-system/health-targets/2012-13-health-targets</a>) is that 85 per cent of eight-month-olds will have their primary course of immunisation at six weeks, three months and five months on time by July 2013, increasing to 90 per cent by July 2014 and 95 per cent by December 2014. This report provides a summary of the reasons behind this target, including improvements in child health and reductions in ethnic inequalities in health, and a series of case studies illustrating best practice in increasing immunisation uptake. Three recommendations are identified:</p> <ul style="list-style-type: none"> <li>• All children should be enrolled with a general practice as soon as possible after birth.</li> <li>• Parents should be contacted before each immunisation is due.</li> <li>• Immunisation appointments should be made at a time that suits the parents.</li> </ul>
<p>Ministry of Health. <b>Review of Neonatal BCG Immunisation Services in New Zealand</b>. 2007, Ministry of Health: Wellington. <a href="http://www.health.govt.nz/publication/review-neonatal-bcg-immunisation-services-new-zealand">http://www.health.govt.nz/publication/review-neonatal-bcg-immunisation-services-new-zealand</a></p> <p>This review evaluated the neonatal BCG immunisation programme. Its objectives were: to describe the neonatal BCG immunisation services; review tuberculosis (TB) surveillance data and service monitoring; identify any imbalance between current policy and services; and make recommendations on the future monitoring of the service. The incidence of TB over the previous 20 years was found to be stable although increasing rates had been identified in immigrants and refugees from high-risk Asian and African countries, and recent arrivals from Pacific countries and their contacts. A survey of all 21 DHBs indicated a wide variability in how the service was offered in New Zealand. Monitoring was patchy and only a few DHBs collected data on the number of TB risk assessments performed on babies, meaning that coverage rates could not be calculated because the total number of eligible babies was unknown. Three priorities for improving the effectiveness of service were identified: to institute a systematic approach to delivering the BCG immunisation service in all DHBs; to improve the quality of the monitoring of the BCG immunisation service; and to improve the completeness of notification data. The review made a number of recommendations in the areas of contracts, monitoring, new resources and surveillance.</p>
Cochrane Systematic Reviews
<p>Jefferson T, et al. 2012. <b>Vaccines for preventing influenza in healthy children</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004879.pub4  <a href="http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004879.pub4/abstract">http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004879.pub4/abstract</a></p> <p>This review assessed the effects of influenza vaccines in healthy children, with the aims of assessing vaccine efficacy (prevention of confirmed influenza) and effectiveness (prevention of influenza-like illness (ILI)), and documenting adverse events associated with vaccination. Seventy-five studies (approximately 300,000 observations) were included in the review. The analysis of vaccine efficacy and effectiveness included 17 RCTs, 19 cohort studies and 11 case-control studies. Evidence from RCTs found that live attenuated vaccines had an overall efficacy 80% (RR 0.20; 95% CI 0.13 to 0.32). The overall risk difference (RD) for those aged 2 to 16 years was -0.16 (95% CI -0.20 to -0.11) indicating that six children aged two to 16 need to be vaccinated with live attenuated vaccine to prevent one case of influenza (infection and symptoms). There was no usable data for those aged two years or younger. Inactivated vaccines had lower efficacy, and in children aged two years or younger were not significantly more efficacious than placebo. The RD for children aged six or older was -0.35 (95% CI -0.54 to -0.15), indicating that 28 need to be vaccinated to prevent one case of influenza. There was no evidence of effect of vaccination on secondary cases, lower respiratory tract disease, drug prescriptions, otitis media and its consequences or socioeconomic impact. There was weak single-study evidence of the effect of vaccination on school absenteeism. Meta-analysis of safety outcome data was not feasible due to variability in study design and presentation of data and safety comparisons could not be made. Specific brands and situations have been associated with serious side effects (cataplexy, narcolepsy and febrile convulsions). The authors conclude that while influenza vaccines are efficacious in preventing cases of influenza in children older than two years of age, there is little evidence available those aged under two years, making current recommendations to vaccinate healthy children from six months of age in the USA, Canada, parts of Europe and Australia surprising. The authors also caution that trials included in the review are industry funded, and their content and conclusion should be interpreted with this knowledge. Such trials were found to be published in more prestigious journals and cited more than other studies independently from methodological quality and size while studies funded from public sources were significantly less likely to report conclusions favourable to the vaccine in a systematic review of 274 influenza vaccine studies published up to 2007 [83].</p>



Soares-Weiser K, et al. 2012. **Vaccines for preventing rotavirus diarrhoea: vaccines in use.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD008521.pub2  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008521.pub2/abstract>

Rotavirus is the commonest cause of diarrhoea-related deaths in children under five years, and is a common cause of diarrhoea-related hospital admissions in high-income countries. The World Health Organization (WHO) recommends vaccination for all children, as deaths due to diarrhoea account for more than 10% of all deaths. This review assessed the effectiveness of rotavirus vaccines approved for use for preventing rotavirus diarrhoea. Secondary objectives were to assess the efficacy of rotavirus vaccines on all-cause diarrhoea, hospital admission, death, and safety profiles. Forty-three trials were included in the review (190,551 participants), 31 of which assessed RV1 (Rotarix, GlaxoSmithKline Biologicals) and 12 assessed RV5 (RotaTeq, Merck & Co., Inc.). Compared to placebo, RV1 was associated with a 70 per cent reduction in all cases of rotavirus diarrhoea in the first (RR 0.30, 95% CI 0.18 to 0.50) and second year of life (RR 0.30, 95% CI 0.21 to 0.43), and an 80 per cent reduction in severe episodes during the first (RR 0.20, 95% CI 0.11 to 0.35) and second year of life (RR 0.16, 95% CI 0.12 to 0.21). RV5 was associated with reductions of over 70 per cent in any rotavirus diarrhoea (RR 0.27, 95% CI 0.22 to 0.33) or severe cases (RR 0.23, 95% CI 0.08 to 0.71) in the first year, and approximately 50 per cent (RR 0.51, 95% CI 0.36 to 0.72 for all rotavirus diarrhoea and RR 0.44, 95% CI 0.22 to 0.88 for severe cases) in the second year. Both vaccines were associated with reductions in severe diarrhoea from all causes in the first year of life (RV1: RR 0.58, 95% CI 0.40 to 0.84; RV5 RR 0.49, 95% CI 0.40 to 0.60 (one trial only)) and RV1 was associated with a reduction in second year of life (RR 0.49, 95% CI 0.40 to 0.60). RV5 showed no difference with placebo in the second year of life. When tested against placebo the vaccines gave similar numbers of adverse events, including intussusception, and other events that required discontinuation of the vaccination schedule. The authors conclude that the data support the WHO recommendations to include rotavirus vaccination in immunisation schedules, particularly if there is a high burden of diarrhoeal deaths in children younger than five years.

Jacobson Vann JC & Szilagyi P. 2009. **Patient reminder and recall systems to improve immunization rates.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003941.pub2  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD003941.pub2/abstract>

This review assessed the effectiveness of patient reminder and recall systems in improving immunisation rates, and compared the effects of various types of reminders in different settings or patient populations. The review included 47 RCTs, 16 of which examined routine vaccinations for children and four which examined influenza vaccinations in high risk children. Overall increases in immunisation rates ranged from 1 to 20 percentage points. Reminders were effective for childhood vaccinations (OR 1.47, 95% CI 1.28 to 1.68) and childhood influenza vaccinations (OR 2.18, 95% CI 1.29 to 3.70). The one study assessing the effect of reminders on adolescent vaccinations in an urban setting found they were ineffective (OR 1.14, 95% CI 0.98 to 1.31). Unstable telephone numbers were problematic in this study, which used autodialed calls. All types of reminders (postcards, letters, telephone or autodialed calls) were effective. Person-to-person telephone reminders were the most effective (OR 1.92, 95% CI 1.20 to 3.07), but also the most costly.

Scott A, et al. 2011. **The effect of financial incentives on the quality of health care provided by primary care physicians.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD008451.pub2  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008451.pub2/abstract>

This review expanded on the review below (Guiffrida et al., 1999) by including the effect of target payments and all other types of incentive payments, including pay-for-performance schemes and multifaceted schemes, on primary health care. Such schemes are popular internationally (for example the Quality and Outcomes Framework in the UK) despite little evidence of their success in improving the quality of primary health care. Seven studies were included in the review, two of which (controlled interrupted time series analyses) included childhood immunisation among their outcomes. Overall, the different financial interventions had modest and variable effects on the quality of health care provided by primary care physicians (PCPs). One of the studies which assessed childhood immunisation rates identified a statistically significant improvement in rates but this was due to a sharp fall in rates in the control group. The authors conclude that there is insufficient evidence to support or not support financial incentives. More rigorous trials are needed which also examine unintended consequences.

Uman LS, et al. 2009. **Psychological interventions for needle-related procedural pain and distress in children and adolescents.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD005179.pub2  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005179.pub2/abstract>

This reviewed examined the efficacy of cognitive-behavioural (CB) psychological interventions for needle-related procedural pain and distress in children and adolescents. Twenty-eight trials (1951 participants aged 2 to 19 years), mostly studying vaccinations and injections, were included in the review. The largest effect sizes for treatment improvement over control conditions were found for distraction (self-reported pain: SMD = -0.24, 95% CI -0.45 to -0.04), hypnosis (self-reported pain: SMD -1.47, 95% CI -2.67 to -0.27; self-reported distress: SMD -2.20, 95% CI -3.69 to -0.71; and behavioural measures of distress: SMD -1.07, 95% CI -1.79 to -0.35), and combined CB interventions (other-reported distress: SMD -0.88, 95% CI -1.65 to -0.12; and behavioural measures of distress: SMD -0.67, 95% CI -0.95 to -0.38). Although there is preliminary support for use of CB interventions to reduce distress associated with needle-related procedures, many of the studies failed to describe randomisation procedures and participants withdrawals/drop-outs and further research is required.

Giuffrida A, et al. 1999. **Target payments in primary care: effects on professional practice and health care outcomes.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD000531  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD000531/abstract>

This review examined the effect of target payments on the professional practice of primary care physicians (PCPs) and health care outcomes. Only two RCTs (involving 149 practices) were included in the review, both of which assessed the effect of target payments on immunisation rates. One study (313 PCPs, 6,600 2 year olds and 6,400 5 year olds) assessed the effect of target payments on immunisation rates using an interrupted time series design. Before 1 April 1990 GPs received a fee for each immunisation made. After 1 April 1990, a lump sum payment was made if GPs immunised at least 70 per cent of the eligible population (a higher rate of payment was paid to the GPs that reached a 90 per cent target), but nothing was paid if they immunised less than the lower target. Immunisation rates improved after the introduction of target payment, however, a logistic regression model of the trend found that there was no evidence that the overall linear trend had changed as a result of the introduction of target payments.

#### Other Systematic Reviews

Glenton C, et al. 2011. **Can lay health workers increase the uptake of childhood immunisation? Systematic review and typology.** Tropical Medicine & International Health, 16(9), 1044-53.

This review assessed the effects of lay health workers (LHWs) on childhood immunisation uptake. Twelve studies, (including 10 RCTs) were included in the review, mostly comparing LHWs with no intervention or standard care. Seven of the studies were conducted among economically disadvantaged populations in high-income countries (LHWs made home visits to parents to promote routine childhood immunisations and encourage clinic visits for vaccination), and the remaining five studies were conducted in low and middle income countries (in some of which LHWs gave vaccinations). Most of the studies showed that LHWs increased immunisation coverage. The diversity of settings meant the meta-analysis was possible for only four of the studies, all in high income settings (3568 participants). These LHW programmes were associated with a statistically significant increased the number of children whose immunisations were up to date (RR 1.19, 95% CI 1.09 to 1.30). The authors conclude that while LHWs show promise in improving vaccination coverage, further high quality studies are need in low and middle income countries.

National Collaborating Centre for Women's and Children's Health. 2009. **Reducing differences in the uptake of immunisations (including targeted vaccines) in children and young people aged under 19 years: systematic review of effectiveness and cost effectiveness evidence.** London: National Collaborating Centre for Women's and Children's Health. <http://www.nice.org.uk/PH21>

This review provides the evidence base for the NICE guidance (available at <http://www.nice.org.uk/PH21>) on reducing differences in uptake of immunisations. The review is focussed on what interventions are effective and cost effective in reducing differences in immunisation uptake in children and young people aged under 19 years. The effectiveness review included 142 studies and the cost-effectiveness review included 10 studies. Three key themes were identified: issues relevant to all childhood vaccines; issues relevant to MMR as an exemplar of a universal vaccine; issues relevant to neonatal Hep B as an exemplar of a targeted vaccine. Interventions assessed included: recipient reminder/recall systems; home visits; client or family incentives/disincentives; interventions in school or day care settings; provider based interventions (including education, reminders and incentives); national immunisation programmes; and multi-component interventions. A review of studies examining barriers to immunisation and the views and experiences of children, young people, parents/carers, and health professionals is included. Only one study included evaluated differential uptake of immunisations across population subgroups, although numerous studies assessed targeted interventions. The executive summary provides 66 effectiveness evidence statements and three cost-effectiveness evidence statements. The quality of included studies was variable and while there were some RCTs included, only 16 intervention studies had the highest quality rating. Evidence-based recommendations include:

- improve access to immunisation services, for example, by extending clinic times and making sure clinics are 'child-friendly'
- provide parents and young people with tailored information and support and an opportunity to discuss any concerns
- check children and young people's immunisation status during health appointments and when they join nurseries, playgroups, schools and further education colleges, and offer them vaccinations
- ensure babies born to hepatitis B-positive mothers are given all recommended doses of the vaccine on time, a blood test to check for infection and, where appropriate, hepatitis B immunoglobulin.

Falagas ME & Zarkadoulia E. 2008. **Factors associated with suboptimal compliance to vaccinations in children in developed countries: a systematic review.** Current Medical Research and Opinion, 24(6), 1719-41.

This review evaluated factors associated with suboptimal compliance to vaccinations, focussed on children and adolescents in developed countries. Thirty-nine original studies were included in the review. Factors influencing compliance with vaccinations were divided into parental-childhood characteristics and healthcare structure-health professionals characteristics. Parent-childhood characteristics that were statistically significantly associated with suboptimal compliance were: non-white race, low socioeconomic status, paying for vaccination, lack of health insurance, low parental education, older age of the child, younger maternal age, large family size, late birth order, lack of knowledge about disease and vaccination, negative beliefs/attitudes towards vaccination, fear of side-effects/risks/contraindications, not remembering vaccination schedules and appointments, sick child delays, and delayed well child visits. Factors related to healthcare structures and health professionals that were statistically significant associated with suboptimal compliance included: scepticism/doubts regarding provided medical information, inadequate support from healthcare providers, lack of available health structures, and problems concerning transportation and accessibility to vaccination clinics. The authors suggest that by understanding factors associated with suboptimal compliance, efforts to improve compliance can be better targeted.

Briss PA, et al. 2000. **Reviews of evidence regarding interventions to improve vaccination coverage in children, adolescents, and adults. The Task Force on Community Preventive Services.** American Journal of Preventive Medicine, 18(1 Suppl), 97-140.

This publication reports on a series of systematic reviews that examined the effectiveness, applicability, economic impact, and barriers to use of population-based interventions to improve universal vaccination coverage, and provides a set of evidence-based recommendations. Three categories of interventions were addressed: increasing community demand for vaccination, enhancing access to vaccination services, and provider-based interventions. Recommendations include: use of client Reminder/recall interventions; multi-component interventions that include education; vaccination requirements for childcare, school, and college attendance; reducing out-of-pocket costs; expanding access in health care settings as part of multi-component interventions expanding access; vaccination programmes in women, infants, and children settings; home visits, although home visiting can be highly resource intensive relative to other options when applied only to improve vaccination coverage; assessment and feedback for vaccination providers There was insufficient evidence to support community-wide, education-only interventions, clinic-based, education-only interventions, client or family incentives, client-held medical records, vaccination programmes in schools or childcare centres, or provider education only. The reviews were used to inform the Community Guide to interventions to increase the use of universally recommended vaccines (<http://www.thecommunityguide.org/vaccines/universally/index.html>) which continues to be updated.

#### Other Relevant Evidence

Health Committee. 2011. **Inquiry into how to improve completion rates of childhood immunisation, and Briefings from the Chief Coroner on the coronial process, from Dr Michael Tatley on the adverse reaction process, and from Professor Sir Peter Gluckman on how to improve completion rates of childhood immunisation.** 49th Parliament: March. [http://www.parliament.nz/en-NZ/PB/SC/Documents/Reports/8/c/a/49DBSCH\\_SCR5060\\_1-Inquiry-into-how-to-improve-completion-rates-of.htm](http://www.parliament.nz/en-NZ/PB/SC/Documents/Reports/8/c/a/49DBSCH_SCR5060_1-Inquiry-into-how-to-improve-completion-rates-of.htm)

This parliamentary Health Committee inquiry into improving rates of childhood immunisation examined: statistics on timeliness and completion of vaccination in New Zealand, and international comparisons; the National Immunisation Register; relevant literature on optimising timeliness and completion rates; information on community concerns, informed consent and conscientious objection; and an assessment of the benefits of immunisation. Key informants inform the report. A large number of recommendations are made regarding what methods could be applied at minimal cost to improve immunisation coverage in New Zealand. Recommendations include an expansion of targets to older age groups, improvements in the National Immunisation Register, exploration of provider and parent incentives, and improved information resources targeted at parents. Dr Nikki Turner's "six start" plan to improve rates of childhood immunisation, covering enhanced business as usual, contractual/legislative aspects, responsibilities and support for primary care and parents, communication and safety surveillance, is included in the appendices.

On 22 June 2011, the Government, led by the Ministry of Health, issued its response to the Health Select Committee's Report, noting that the Ministry had met, or that work was underway to meet, the majority (24) of the Report's 30 recommendations ([http://www.parliament.nz/en-NZ/PB/Presented/Papers/6/d/4/49DBHOH\\_PAP21651\\_1-Government-Response-to-Report-of-the-Health-Committee.htm](http://www.parliament.nz/en-NZ/PB/Presented/Papers/6/d/4/49DBHOH_PAP21651_1-Government-Response-to-Report-of-the-Health-Committee.htm)). A briefing paper, released by the Ministry of Health in August 2012 outlines the Ministry's progress on implementation of the six remaining recommendations, including ongoing exploration of incentives for parents and providers and improved immunisation information for pregnant women (<http://www.health.govt.nz/our-work/preventative-health-wellness/immunisation/immunisation-programme-decisions/progress-report-inquiry-how-improve-completion-rates-childhood-immunisation>).

Kaplan DW. 2010. **Barriers and Potential Solutions to Increasing Immunization Rates in Adolescents.** Journal of Adolescent Health, 46(2, Supplement 2), S24-S33.

This paper discusses the barriers and potential solutions to increasing vaccination rates in adolescents from a US point of view. While many barriers such as cost are common to all children, adolescents have changing emotional and cognitive development which may shape their receptivity to vaccination, and adolescents have lower rates of contact with acute and preventive health care, resulting in fewer vaccination opportunities. The solutions identified after review of the literature include: accessible electronic immunisation information systems that contain a complete vaccination history and flag recommended vaccines; offering alternative sites for vaccination such as schools; compulsory or mandated vaccines for middle and high school entry; and a review of consent procedures.

Bonanni P, et al. 2009. **Varicella vaccination in Europe - taking the practical approach.** BMC Medicine, 7(1), 26.

This report, by members of the Working Against Varicella in Europe (WAVE) group, funded by GlaxoSmithKline Biologicals, considers the practicalities of introducing routine childhood varicella vaccination in Europe, and discusses the benefits and challenges of different vaccination options. The authors argue that the epidemiology of varicella in Europe, and evidence of the effectiveness of routine varicella vaccination in Germany (preliminary reports only), support the adoption of routine vaccination in Europe, particularly now that the combined measles, mumps, rubella and varicella vaccine is available. Barriers to routine vaccination are assessed, including costs, perceptions that varicella is not a serious disease, and the need to achieve high coverage rates. The authors all have industry connections.

Note: the publications listed were identified using the search methodology outlined in **Appendix 1**



# WELL CHILD/TAMARIKI ORA SERVICES

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## Introduction

The Well Child/Tamariki Ora (WC/TO) Framework was introduced in 2002 with the aim of reducing fragmentation and inconsistencies in the delivery of the WC/TO programme [84]. The programme provides a universal health assessment, and a health promotion and support service for children and their families from birth to five years. WC/TO services are provided by Plunket, DHB-funded providers, primary health organisations and Māori and Pacific non-government organisations [85]. A review of the 2002 framework, commencing in 2006, led to the phasing in of a new framework from July 2010.

The current WC/TO Framework consists of a series of initial contacts carried out by the lead maternity carer (LMC), a six-week check carried out by the baby's general practice, and eight core contacts, from four to six weeks to five years (see Methods box below) carried out by a WC/TO provider [86,87]. Contacts consist of health and development/clinical assessments, interventions and support, and promotion of health and development/health education. Health and development/clinical assessments include a review of maternal, family and child health and wellbeing, child growth and development, vision and hearing, developmental assessments (Parental Evaluation of Developmental Status PEDS), oral health (Lift the Lip), and a behavioural assessment at the B4 School Check. Interventions and support includes clinical evaluations, immunisations, ABC smoking cessation, family violence screening, response to assessments and additional contacts as required. Promotion of health and development/health education includes breastfeeding and nutrition, sudden unexpected death in infancy (SUDI) prevention, parenting support, injury prevention and childhood illness and child development education.

The recent review of the WC/TO Framework sought to determine which types of activities can help improve child health outcomes and reduce inequalities among children aged 0 to 5 years, based on evidence and best practice [85]. There is good evidence to support a range of health promotions activities in early childhood, including prevention of infectious diseases by vaccination and other means, reducing the risk of SUDI, supporting breastfeeding, encouraging better dental care, and informing and advising parents about the risk of accidents [88]. The evidence base for universal screening programmes is more limited [88,89]. However, several evidence-based screening tests, such as newborn hearing screening, are included in the Framework, and the recent review has led to the phasing out of those screening tests that do not appear to be effective, such as routine tympanometry for glue ear at three years [85].

With these issues in mind, the following section reviews the proportion of Plunket clients receiving each of their Core 1–7 Well Child contacts, as well as the proportion of four year old children receiving their B4 School Check.

## Plunket Children Receiving Core Well Child Contacts

In New Zealand, Well Child/Tamariki Ora services are provided by a range of providers including Plunket, Māori and Pacific health providers and public health services. Of these, Plunket is the largest provider of Well Child Services. It sees over 91% of New Zealand's newborn babies during their first six weeks of life, with contacts including home visits, clinic based contacts, and visits at other locations such as marae, family centres, Kōhanga Reo and mobile buses [90]. In addition to its wide coverage, Plunket has a central database which allows it to assess the proportion of active clients receiving their core WC/TO contacts. The following section thus uses Plunket data to assess the proportion of Plunket children receiving their core WC/TO contacts during 2007–2012.





## Data Sources and Methods

### Indicator

Proportion of active Plunket clients who received their core Well Child contacts

**Numerator:** Plunket Database: Number of active Plunket clients who received their core Well Child contacts by scheduled core contact.

**Denominator:** Plunket Database: Total active clients in the Plunket database

### Notes on Interpretation

Note 1: This data is based on clients who were active in the Plunket Database on 12 October 2012, when the data was extracted. Any clients discontinued by that date are not included in these figures. Contacts that took place up to and including the 21st September 2012 are included. This date is earlier than the date of data extraction as there is a three week lag from a contact taking place to it being entered in the Plunket database.

Note 2: In this analysis, data is presented for five birth cohorts; those born in the years ending June 2008, 2009, 2010, 2011 and 2012. Because the Core 7 contact is not scheduled until 2–3 years of age, not all birth cohorts had reached the age of eligibility for Core 7 by the time the data were extracted. Thus this section focuses on two age cohorts, with the oldest cohort (born in the year ending June 2008), providing the most up-to-date snapshot of Plunket children receiving their Core 1–7 visits. Given that the data for this earlier cohort is now somewhat dated, a second cohort, those born in the year ending June 2011, has been selected to provide the most up-to-date data on the proportion of Plunket children receiving their Core 1–5 contacts.

Note 3: The age bands used by Plunket for the Core Well Child Visits are outlined below:

Core Visit	Well Child/Tamariki Ora Age	Plunket Age Band
Core 1	4–6 weeks	2 weeks – 5 weeks 6 days
Core 2	8–10 weeks	6 weeks – 9 weeks 6 days
Core 3	3–4 months	10 weeks – 15 weeks 6 days
Core 4	5–7 months	16 weeks – 7 months 4 weeks
Core 5	9–12 months	7 months 4 weeks 1 day – 13 months 4 weeks
Core 6	15–18 months	13 months 4 weeks 1 day – 20 months 4 weeks
Core 7	2–3 years	20 months 4 weeks 1 day – 47 months 4 weeks

Note 4: Plunket data for the Core 8, B4 School Check is not presented in this section due to variations in the contractual arrangements for the provision of this core contact by DHB.

Note 5: Ethnicity is Māori and the Pacific prioritised

## New Zealand Distribution and Trends

### Trends in Proportion Receiving Core 1–7 Contacts

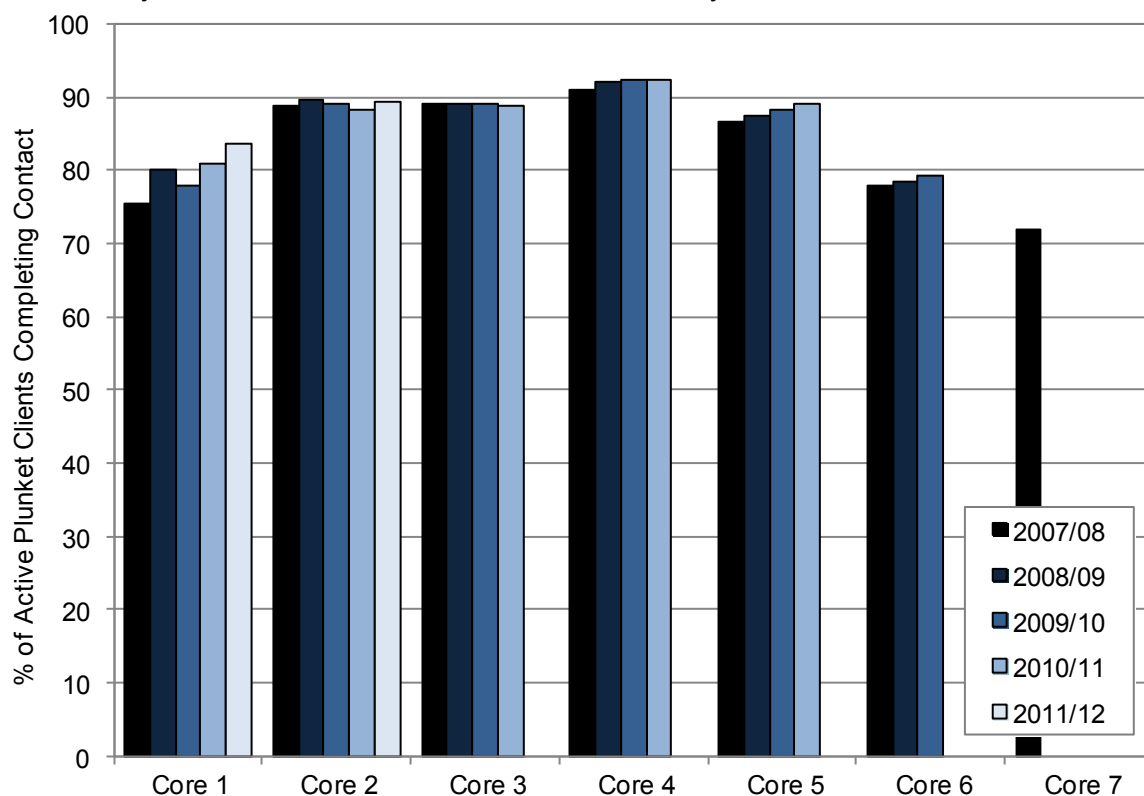
In New Zealand during July 2007–June 2012, the proportion of Plunket children receiving their Core 1 contact increased from 75.5% to 83.5%. In contrast, the proportions receiving their Core 2, Core 3 and Core 4 contacts were more static, although less data was available to assess trends from the Core 3 contact onwards (**Figure 73**).

### Trends in Core 1 Contact by Ethnicity and NZDep Index Decile

In New Zealand during July 2007–June 2012, the proportion of Plunket babies (aged 2 weeks to 5 weeks 6 days) receiving their Core 1 contact increased for all ethnic groups, with rates increasing from 77.6% to 85.0% for European/Other babies, from 73.6% to 82.8% for Pacific babies, and from 69.0% to 78.6% for Māori babies. When broken down by NZ Deprivation Index decile, the proportion receiving their Core 1 contact increased from 77.8% to 84.4% for those living in the least deprived (NZDep decile 1) areas, from 76.8% to 84.8% for those living in average (NZDep decile 5) areas, and from 70.0% to 79.3% for those living in the most deprived (NZDep decile 10) areas (**Figure 74**).

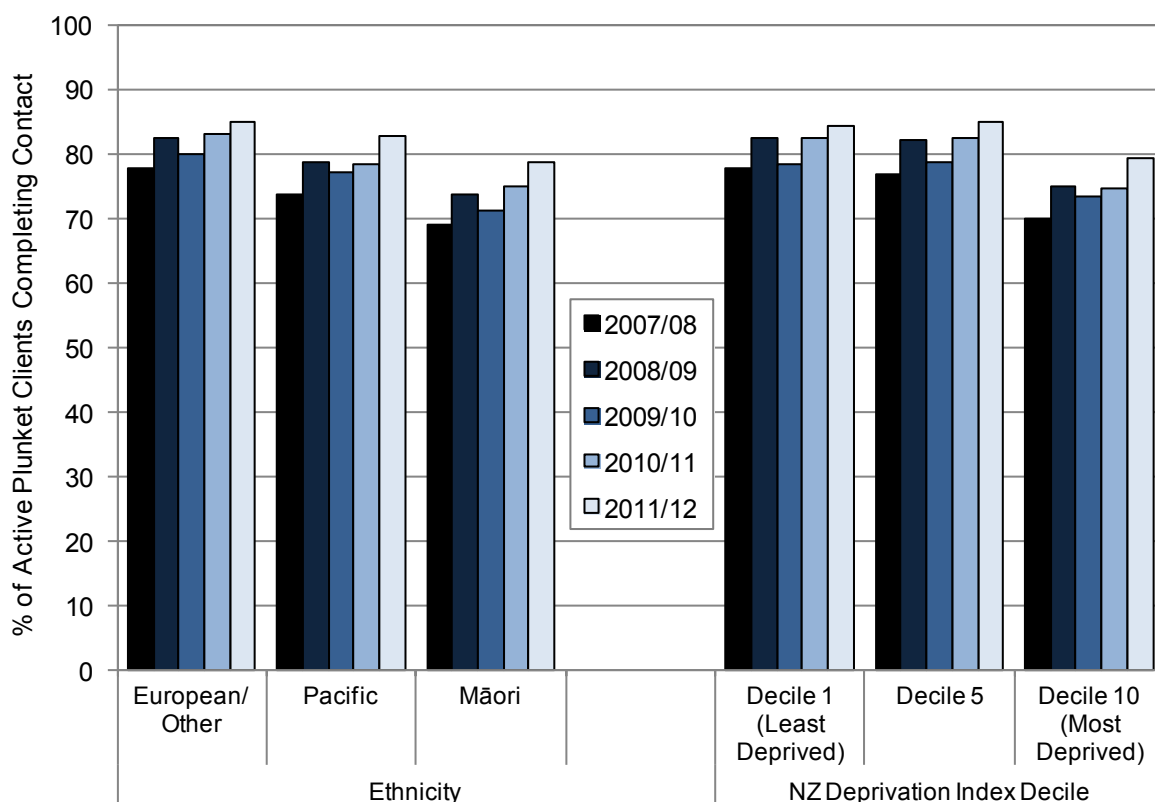


Figure 73. Proportion of New Zealand Children who Received their Core 1–7 Well Child Contacts by Birth Year, Active Plunket Clients Born July 2007 to June 2012



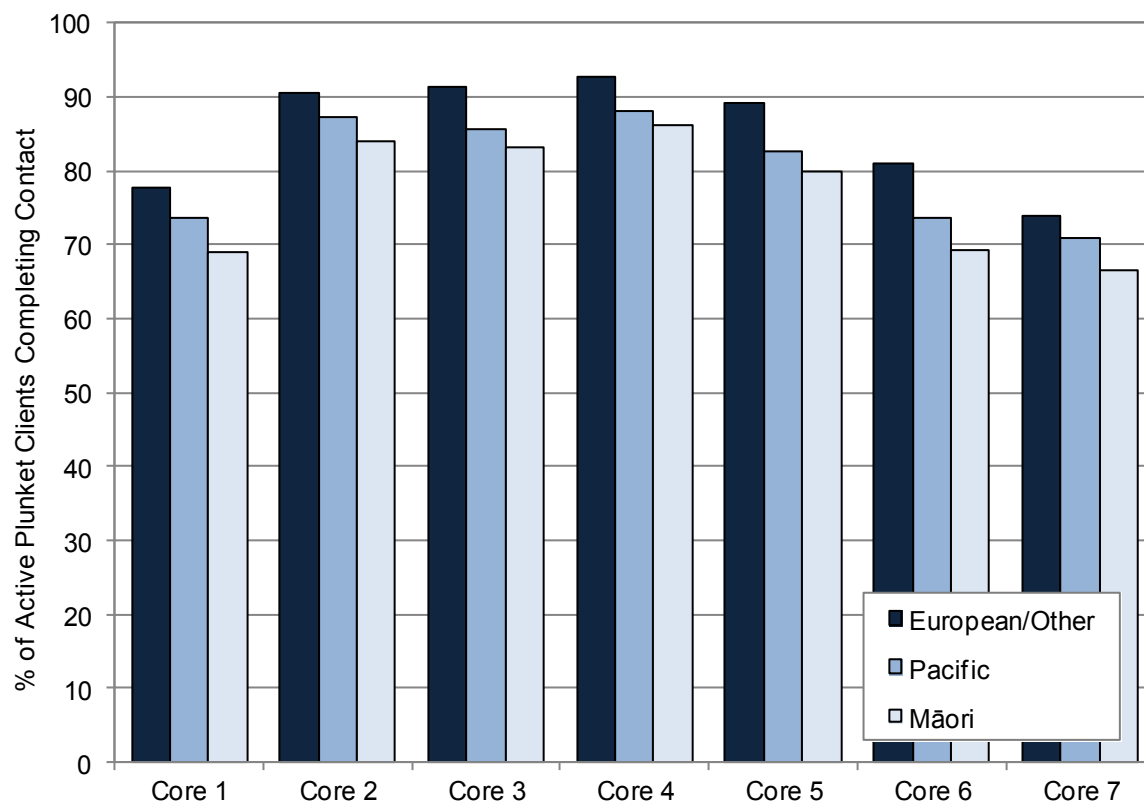
Source: Plunket

Figure 74. Proportion of New Zealand Babies who Received their Core 1 Well Child Contact by Ethnicity and NZ Deprivation Index Decile, Active Plunket Clients Born July 2007 to June 2012



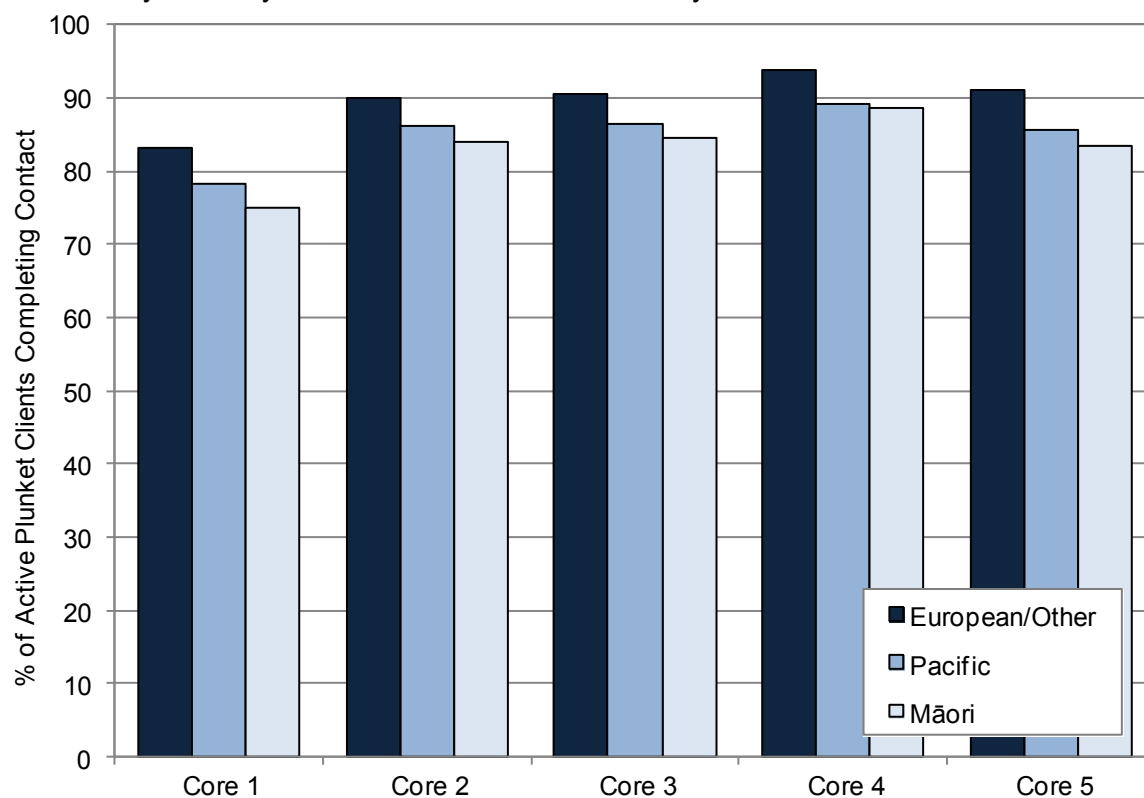
Source: Plunket; Note: Ethnicity is Prioritised

Figure 75. Proportion of New Zealand Children who Received their Core 1–7 Well Child Contacts by Ethnicity, Active Plunket Clients Born July 2007 to June 2008



Source: Plunket; Note: Ethnicity is Prioritised

Figure 76. Proportion of New Zealand Children who Received their Core 1–5 Well Child Contacts by Ethnicity, Active Plunket Clients Born July 2010 to June 2011



Source: Plunket; Note: Ethnicity is Prioritised; Birth cohort not yet old enough for Core 6 and 7

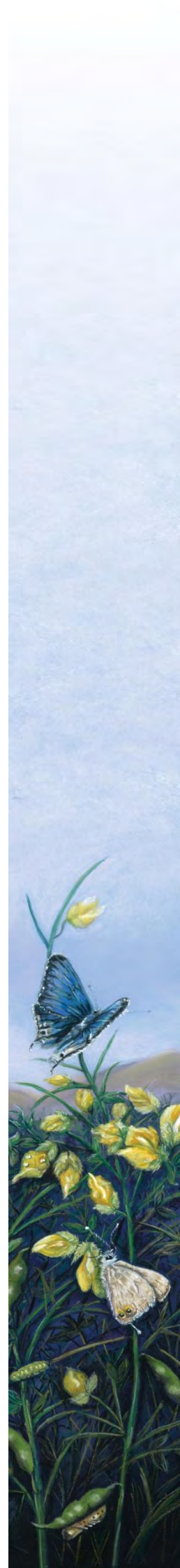
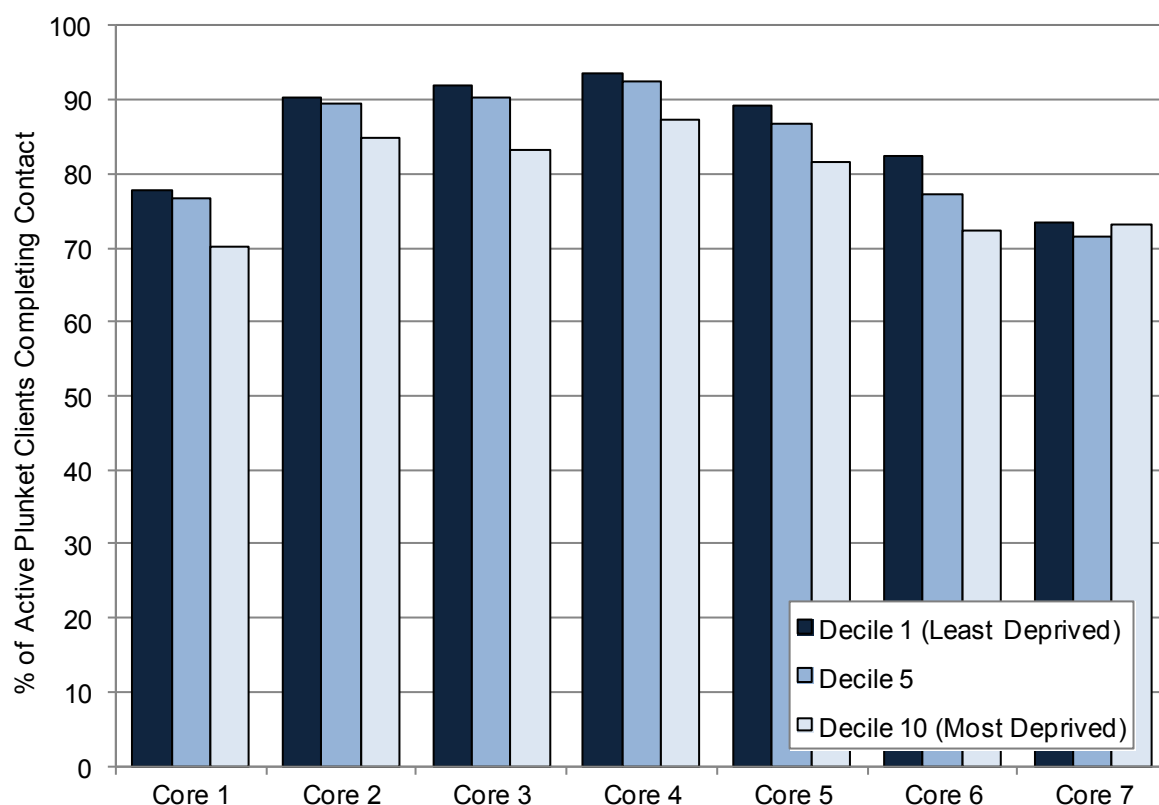
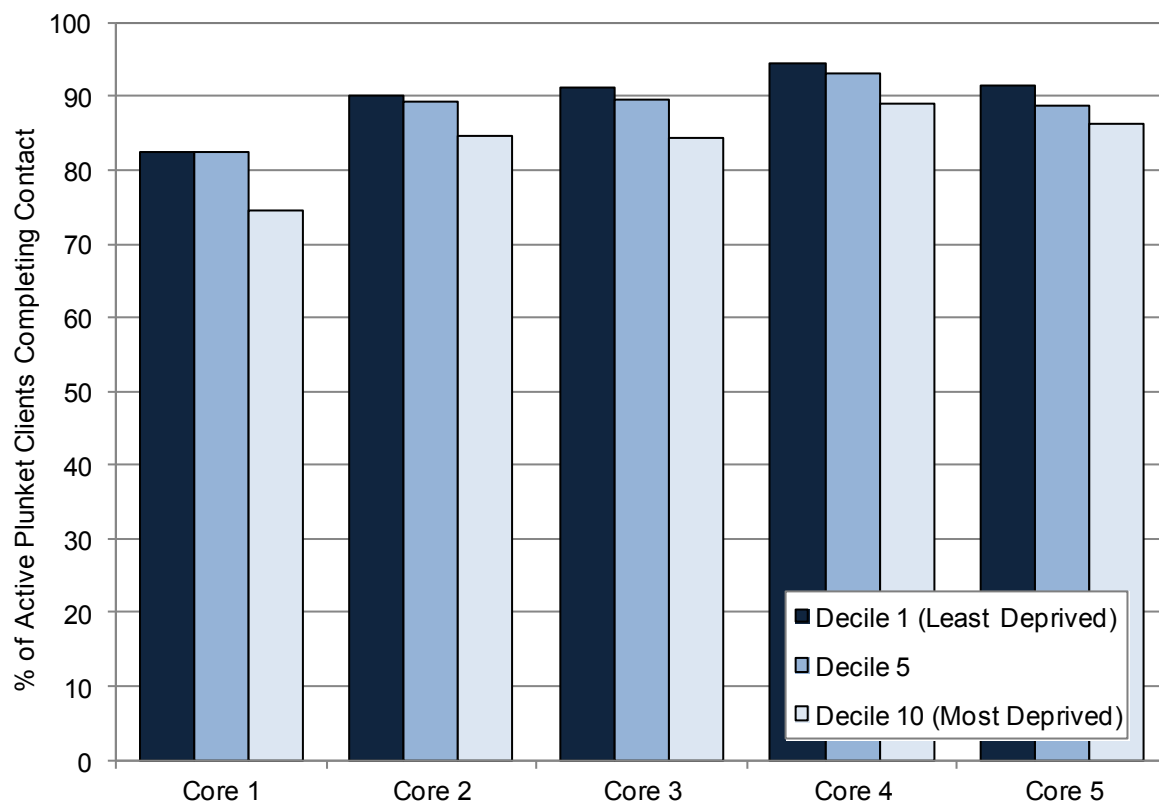


Figure 77. Proportion of New Zealand Children who Received their Core 1–7 Well Child Contacts by NZ Deprivation Index Decile, Active Plunket Clients Born July 2007 to June 2008



Source: Plunket

Figure 78. Proportion of New Zealand Children who Received their Core 1–5 Well Child Contacts by NZ Deprivation Index Decile, Active Plunket Clients Born July 2010 to June 2011



Source: Plunket; Note: Birth cohort not yet old enough for Core 6 and 7



## Proportion Receiving Core Contacts by Ethnicity

In the cohort of Plunket children born during July 2007–June 2008, a higher proportion of European/Other > Pacific > Māori children received their Core 1–7 contacts. For this cohort, the Core 1 and 7 contacts were the least likely to be received, while the Core 2–5 contacts were the most likely to be received by children of all ethnic groups (**Figure 75**).

Similarly, in the cohort of Plunket children born during July 2010–June 2011, the proportion receiving their Core 1–5 contacts remained higher for European/Other > Pacific > Māori children. When compared to the 2007/2008 birth cohort however, the proportion receiving their Core 1 contact had increased for all ethnic groups (**Figure 76**).

## Proportion Receiving Core Contacts by NZDep Index Decile

In the cohort of Plunket children born during July 2007–June 2008, a higher proportion of children from the least deprived and average (NZDep deciles 1 and 5) areas received their Core 1–6 contacts than did children from the most deprived (NZDep decile 10) areas. Differences by NZDep decile were less evident for the Core 7 contact (**Figure 77**).

Similarly, in the cohort of Plunket children born during July 2010–June 2011, a higher proportion of children from the least deprived and average (NZDep deciles 1 and 5) areas received their Core 1–5 contacts than did children from the most deprived (NZDep decile 10) areas. When compared to the 2007/2008 birth cohort however, the proportion receiving their Core 1 contact had increased for children from all three NZDep deciles (NZDep deciles 1, 5 and 10) (**Figure 78**).

## Midland Region Distribution and Trends

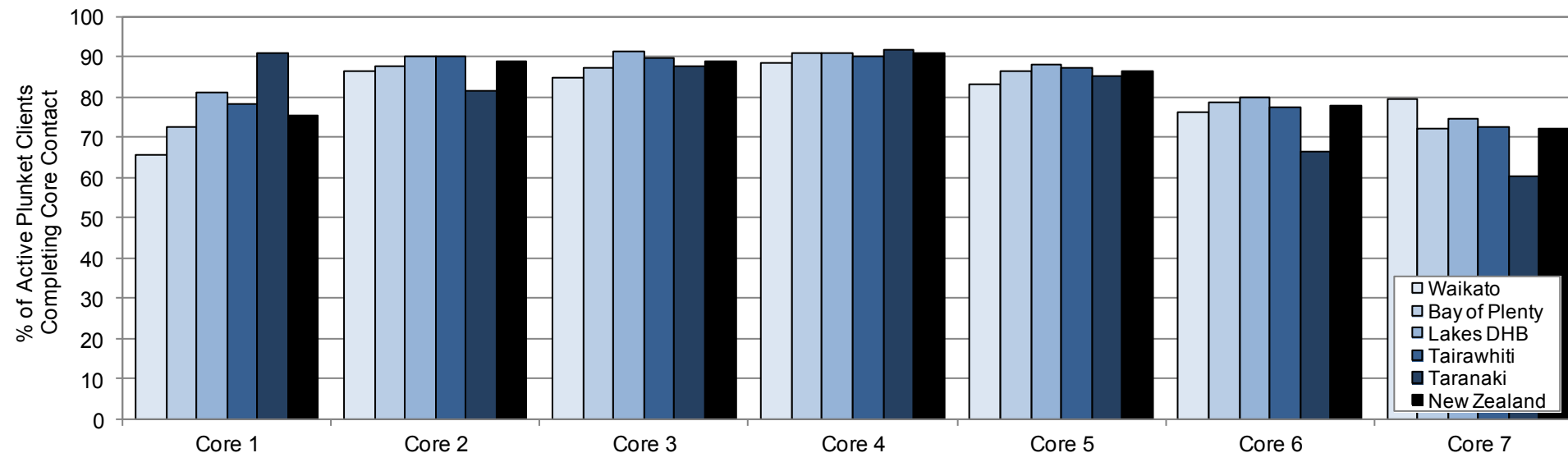
### Proportion Receiving Core Contacts

Of the Waikato Plunket cohort born during July 2007–June 2008, 65.6% had received their Core 1 contact, as compared to 72.6% in the Bay of Plenty, 81.2% in Lakes DHB, 78.4% in Tairāwhiti and 90.9% in Taranaki. The Core 2–4 contacts were the most likely to be received by children in all DHBs, while the Core 6 and 7 contacts were the least likely to be received (**Figure 79**).

In the Plunket cohort born during July 2010–June 2011 however, the proportion receiving their Core 1 contact in the Waikato had increased to 81.6%, and in the Bay of Plenty to 79.2%. For the other Midland DHBs however, the proportion receiving their Core 1 Contact had either remained the same, or decreased (**Figure 79, Figure 80, Figure 81**).

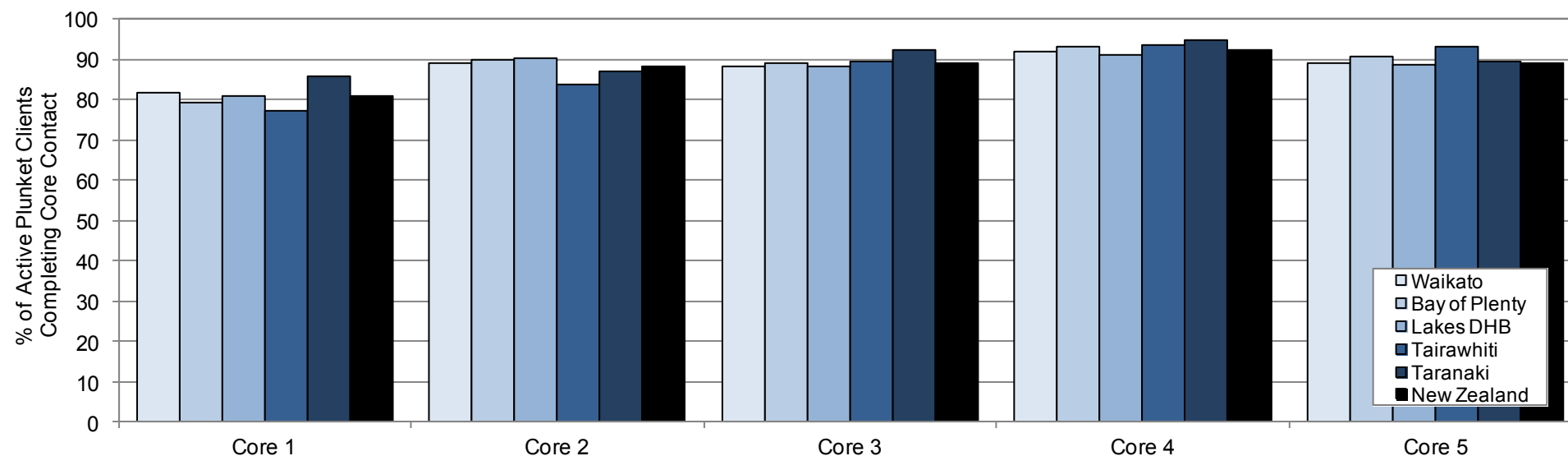


Figure 79. Proportion of Children who Received their Core 1–7 Well Child Contacts, Midland DHBs vs. New Zealand, Active Plunket Clients Born July 2007 to June 2008



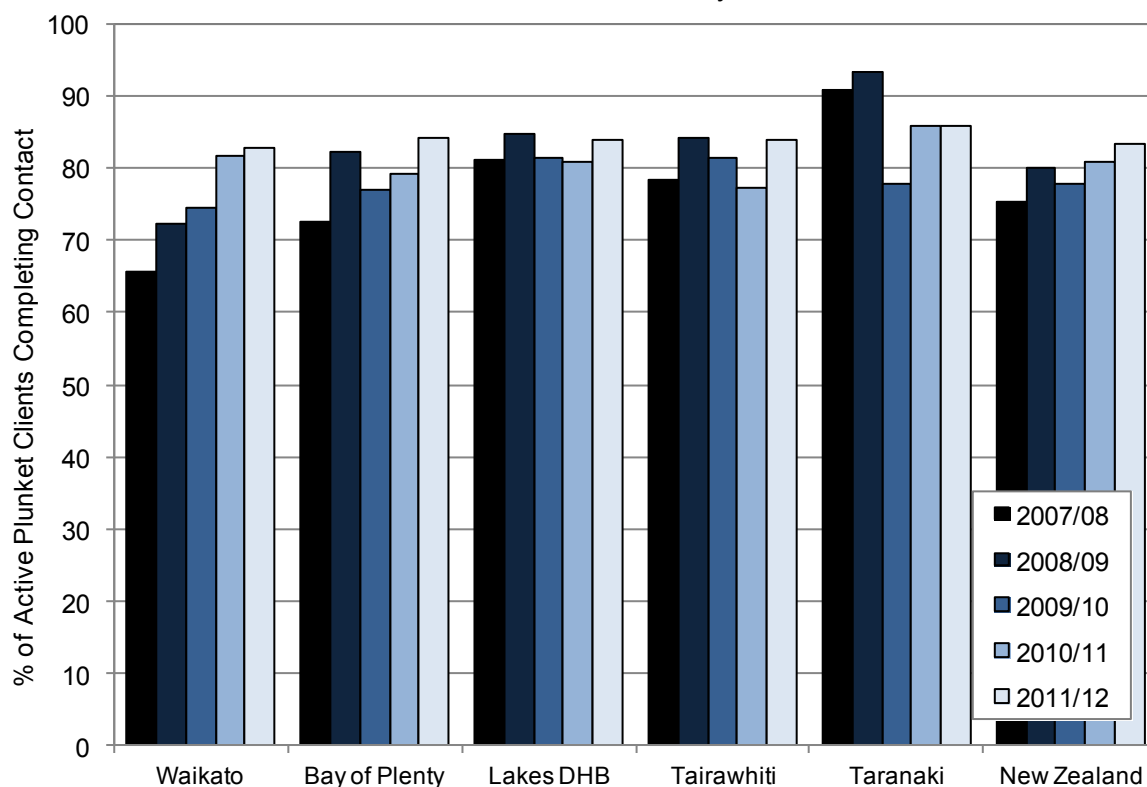
Source: Plunket

Figure 80. Proportion of Children who Received their Core 1–5 Well Child Contacts, Midland DHBs vs. New Zealand, Active Plunket Clients Born July 2010 to June 2011



Source: Plunket; Note: Birth cohort not yet old enough for Core 6 and 7

Figure 81. Proportion of Babies who Received their Core 1 Well Child Contact, Midland DHBs vs. New Zealand, Active Plunket Clients Born July 2007 to June 2012



Source: Plunket

### Proportion Receiving Core Contacts by Ethnicity

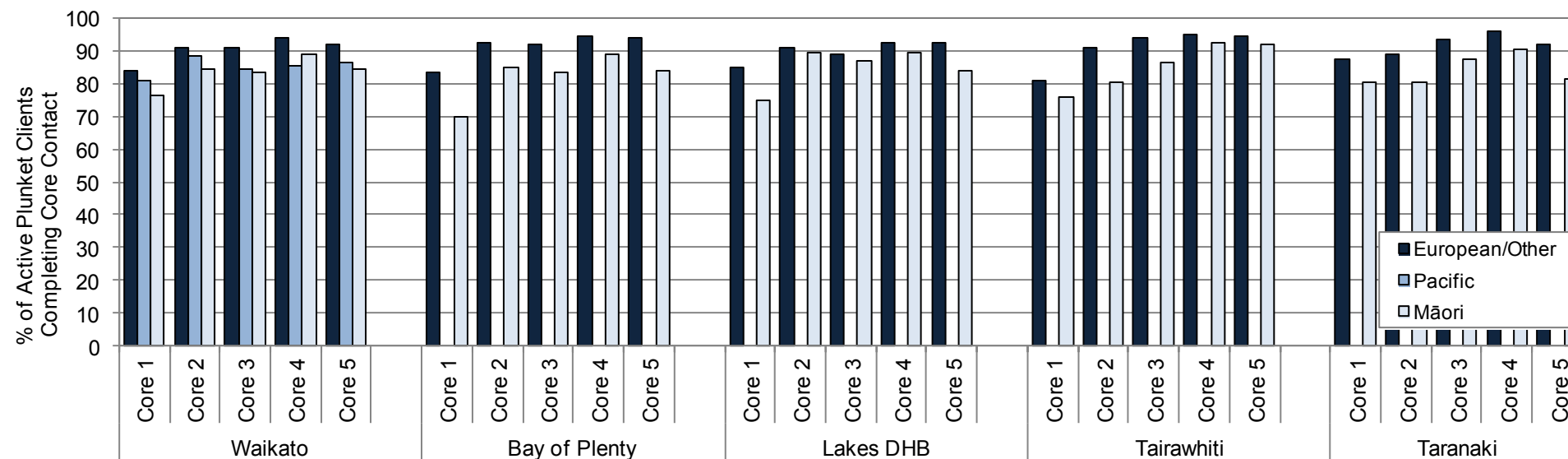
Of the Waikato DHB Plunket cohort born during July 2010–June 2011, a higher proportion of European/Other children received their Core 1–5 contacts than did Pacific or Māori children. In the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki a higher proportion of European/Other children received their Core 1–5 contacts than did Māori children (**Figure 82**).

### Proportion Receiving Core Contacts by NZDep Index Decile

Of the Plunket cohort born during July 2010–June 2011, a higher proportion of children from the least deprived (NZDep decile 1) areas received their Core 1–5 contacts, than did children from the most deprived (NZDep decile 10) areas in all Midland DHBs. Rates for children from average (NZDep decile 5) areas were more variable however, with rates for some core contacts being similar to those from the least deprived areas, and rates for others being similar to those from the most deprived areas (**Figure 83**).

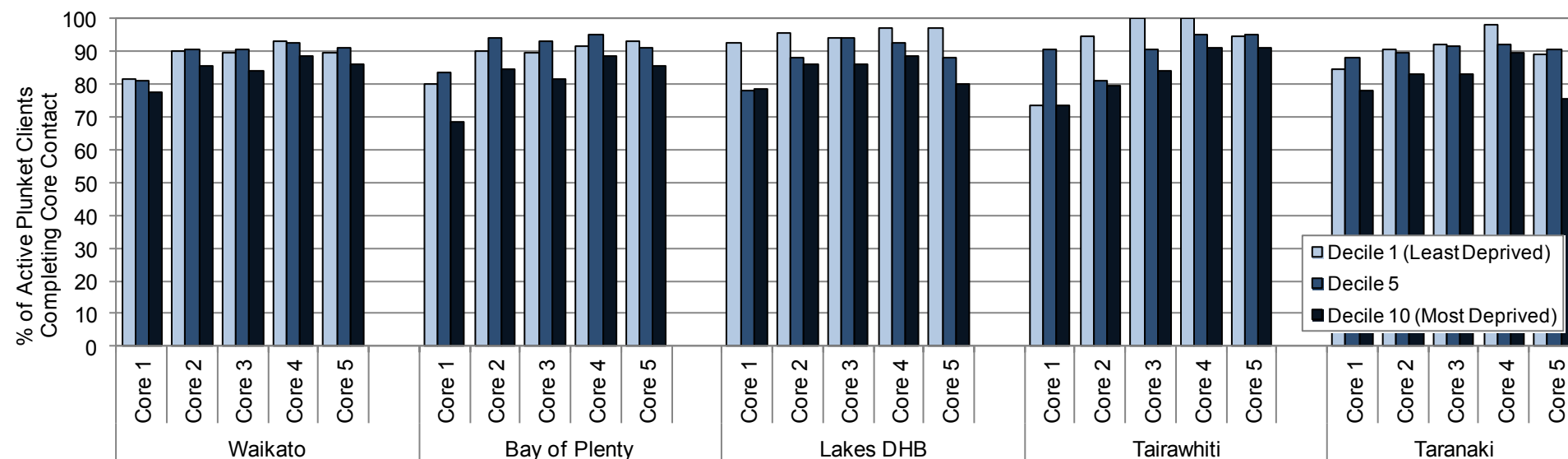


Figure 82. Proportion of Children who Received Core 1–5 Well Child Contacts by Ethnicity and DHB, Active Plunket Clients Born July 10–June 11



Source: Plunket; Note: Ethnicity is Prioritised; Birth cohort not yet old enough for Core 6 and 7

Figure 83. Proportion of Children who Received Core 1–5 Well Child Contacts by NZ Deprivation Index Decile and DHB, Active Plunket Clients Born July 10–June 11



Source: Plunket; Note: Birth cohort not yet old enough for Core 6 and 7



## The B4 School Check

The B4 School Check is the eighth core contact in the Well Child Tamariki Ora Schedule and has been offered to the families of four year old children nationally since September 2008. Registered nurses undertake the checks in a variety of settings including preschools, Kōhanga Reo, doctor's clinics and other community venues, with children missing out on their check usually being assessed at school at five years of age [91].

The aim of the B4 School Check is to identify any health, behavioural, developmental or social concerns which may affect a child's ability to do well at school (e.g. hearing problems, communication difficulties) and to make timely referrals that ensure that children arrive at school ready to participate. The check itself usually takes 45–60 minutes and includes advice and support for parents about child health and development, a child health questionnaire, hearing, vision and oral health screens, a questionnaire to identify developmental and behavioural problems, height and weight measurements, and referrals to specialist services if problems are identified that need further investigation [91].

The following section reviews the proportion of children who received their B4 School Checks during the years ending June 2011 and June 2012.

### Data Sources and Methods

#### Indicator

1. Proportion of all eligible children receiving B4 School Checks
2. Proportion of children from the most deprived areas receiving B4 School Checks

Numerator: Number of children receiving B4 School Checks

Denominator: Number of children eligible for B4 School Checks

Estimated for the total population, as well as those living in the most deprived (NZDep deciles 9–10) areas

#### Notes on Interpretation

The data in this section were sourced from the Ministry of Health's B4 School Check website <http://www.health.govt.nz/our-work/life-stages/child-health/b4-school-check/b4-school-check-information-health-sector>

## Midland Region Distribution

In the Waikato in the year ending June 2012, 80.9% of all eligible children received their B4 School Check, as compared to 83.0% in the Bay of Plenty, 89.1% in Lakes DHB, 77.8% in Tairāwhiti and 84.2% in Taranaki. In all Midland DHBs except Lakes DHB, coverage was higher for children from the most deprived (NZDep deciles 9–10) areas (compared to all eligible children), with rates being 94.7% in the Waikato, 88.2% in the Bay of Plenty, 88.5% in Lakes DHB, 87.6% in Tairāwhiti and 94.1% in Taranaki (**Table 24, Figure 84**).

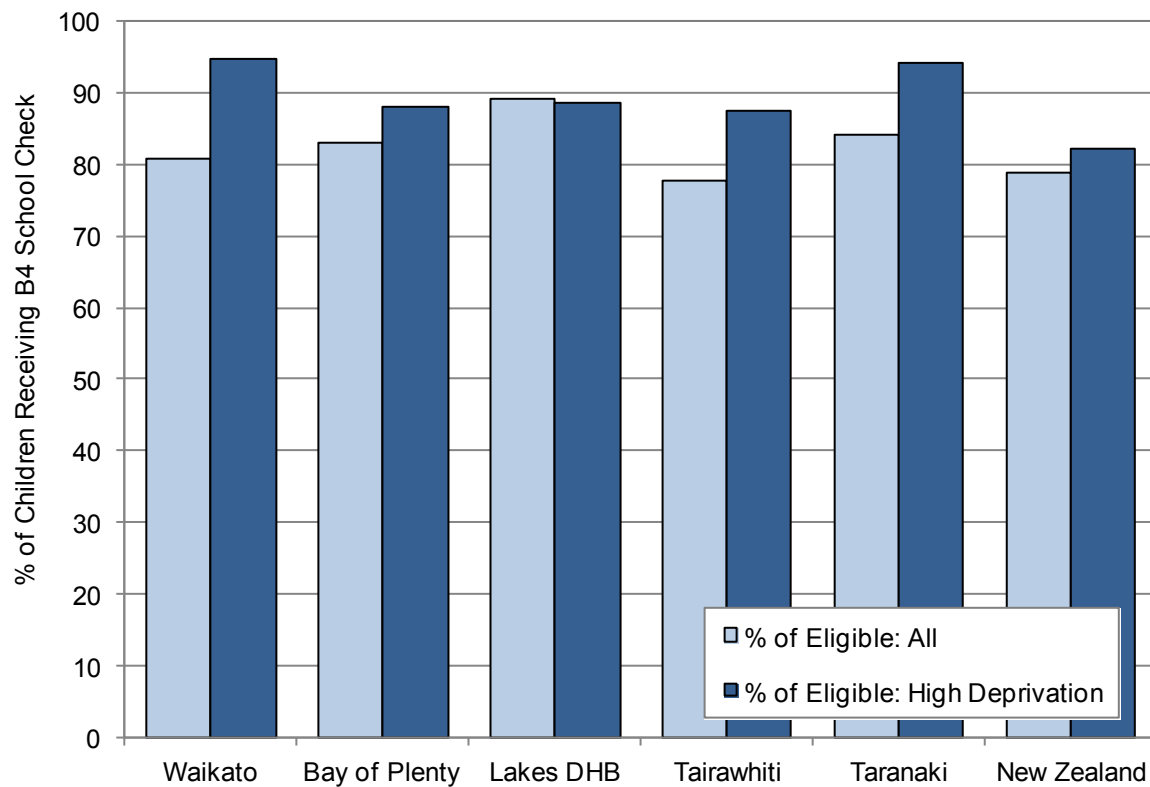


Table 24. Proportion of Eligible Children Receiving B4 School Checks, Midland DHBs vs. New Zealand in the Years Ending June 2011 and June 2012

DHB	Number of Checks: Excluding Unpaid	Number of Checks: High Deprivation	Number of Checks: Including Unpaid	% of Eligible: All	% of Eligible: High Deprivation
Year Ending June 2012					
Waikato	4,803	1,263	5,056	80.9	94.7
Bay of Plenty	2,512	619	2,588	83.0	88.2
Lakes	1,589	561	1,684	89.1	88.5
Tairāwhiti	618	289	633	77.8	87.6
Taranaki	1,357	240	1,362	84.2	94.1
New Zealand	51,461	11,920	53,022	79.0	82.2
Year Ending June 2011					
Waikato	5,391	1,360	5,502	92.2	84.9
Bay of Plenty	2,425	658	2,496	79.5	80.3
Lakes	1,594	565	1,605	89.1	82.7
Tairāwhiti	664	358	677	88.5	93.7
Taranaki	1,441	256	1,445	89.7	89.8
New Zealand	45,855	11,349	46,915	72.1	75.3

Source: Ministry of Health

Figure 84. Proportion of Eligible Children Receiving B4 School Checks, Midland DHBs vs. New Zealand in the Year Ending June 2012



Source: Ministry of Health

## Local Policy Documents and Evidence-Based Reviews Relevant to Well Child/Tamariki Ora Services

**Table 25** below provides a brief overview of local policy documents and evidence-based reviews relevant to Well Child/Tamariki Ora Services. In addition **Table 23** on **Page 166** provides an overview of publications which consider immunisation and interventions aimed at increasing immunisation coverage.

Table 25. Local Policy Documents and Evidence-Based Reviews Relevant to Well Child/Tamariki Ora Services

Ministry of Health Policy Documents
<p>Ministry of Health. 2010. <b>Well Child/Tamariki Ora Schedule: Birth, to four to six weeks</b>. Wellington: Ministry of Health.</p> <p>Ministry of Health. 2010. <b>Well Child/Tamariki Ora National Schedule: Four to six weeks, to five years</b>. Wellington: Ministry of Health.</p> <p><a href="http://www.health.govt.nz/our-work/life-stages/child-health/well-child-services/well-child-publications/well-child-national-schedule">http://www.health.govt.nz/our-work/life-stages/child-health/well-child-services/well-child-publications/well-child-national-schedule</a></p> <p>The Well Child/Tamariki Ora (WC/TO) Schedules describe the assessment, prevention and early intervention activities undertaken in the WC/TO setting. The birth to four to six weeks schedule encompasses the postnatal care provided to mother and baby by the Lead Maternity Carer, the handover to WC/TO services at four to six weeks and the six week GP check and vaccinations. Health and development assessments include maternal wellbeing, family and child health and wellbeing, hearing screening and metabolic screening. Interventions and support include ABC smoking cessation, postnatal depression screening and family violence response. Promotion of health and development includes breastfeeding, maternal nutrition, immunisation, SUDI prevention and parenting support and advice. The four to six weeks to five years schedule outlines the clinical assessment, intervention and health education activities for each of the eight universal core contacts delivered in the WC/TO programme, to children aged up to five years, and their families. Core contacts occur at 4–6 weeks, 8–10 weeks, 3–4 months, 5–7 months, 9–12 months, 15–18 months, 2–3 years and 4–4.5 years (the B4 School Check). Recent changes to the schedule are outlined in the documents below.</p>
<p>Ministry of Health. 2010. <b>Changes to the Well Child/Tamariki Ora Framework</b>. Wellington: Ministry of Health.</p> <p><a href="http://www.health.govt.nz/publication/changes-well-child-tamariki-ora-framework">http://www.health.govt.nz/publication/changes-well-child-tamariki-ora-framework</a></p> <p>This document sets out the key changes to the Well Child/Tamariki Ora (WC/TO) Framework introduced in 2010 following a review of the 2002 framework. Key changes to the Framework and National Schedule include: changes to the content, timing and flexibility of core contacts to better address emerging issues for children and their families/whānau; additional WC/TO contacts to be allocated and referrals to be made on the basis of need (assessed by a needs assessment and care-planning process and tool); an increased focus on the identification and management of family violence and child abuse and neglect; routine use of the Patient Health Questionnaire (PHQ3) (a validated tool to assess the possibility of postnatal depression); introduction of the Parental Evaluation of Developmental Status (PEDS) questionnaire, a well-validated, evidence-based questionnaire for identifying child development issues from the three-month core contact through to the B4 School Check; additional contacts if breastfeeding issues are identified and the introduction of WHO growth charts; introduction of an oral health screen (Lift the Lip), risk assessment and completion of enrolment for dental services at the 9–12-month core contact, and Lift the Lip assessments at subsequent core contacts; phasing out of the tympanometry check for otitis media with effusion at three years and introduction of routine preschool vision and hearing screening at the B4 School Check; and development of an evidence-based quality framework.</p>
<p>Ministry of Health. 2010. <b>Supporting Evidence for Changes to the Content of the Well Child/Tamariki Ora Framework: Background Paper 2007</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/supporting-evidence-changes-content-well-child-tamariki-ora-framework">http://www.health.govt.nz/publication/supporting-evidence-changes-content-well-child-tamariki-ora-framework</a></p> <p>This report summarises the findings from the review of Well Child/Tamariki Ora (WC/TO) Framework and provides background information and evidence for the proposed changes to the Framework. The review included a literature review and consultation process and sought to: identify/confirm the health outcomes the Government should seek for children from birth to five years of age; determine the best way to improve child health outcomes and reduce inequalities; determine which types of activities can assist in achieving these outcomes within the framework; assess the extent to which the clinical content and processes underpinning the current framework will achieve these outcomes and meet current evidence of best practice; make recommendations for any changes to the current framework, including service delivery, the contracting framework and infrastructural requirements; and identify opportunities for reprioritising existing funding and priorities for any new funding. The review did not identify a need for radical change, supporting ongoing provision of a universal service, but found that several important areas were not well covered, including maternal postnatal depression, nutrition, dental care, infant and child mental health, and developmental delay. A number of proposals for revisions to the Framework are made including the introduction of the B4 School Check after the fourth birthday.</p>

Ministry of Health. 2008. **The B4 School Check: A handbook for practitioners**. Wellington: Ministry of Health.  
<http://www.health.govt.nz/publication/b4-school-check-handbook-practitioners>

This handbook provides guidance to clinicians on the standard protocols for each component of the B4 School Check, and can be used for planning services, training nurses and vision and hearing technicians, and improving quality. Clinical pathways and referral processes for the screening and surveillance aspects of the B4 School Check are provided. The purpose of the B4 School Check is to promote health and wellbeing in preschool children and identify behavioural, developmental or other health concerns that may adversely affect the child's ability to learn in the school environment. The check includes: advice and support for parents about child health and development; a child health questionnaire; a hearing screen; a vision screen; an oral health screen; questionnaires to identify developmental and behavioural problems (completed by parents and teachers in discussion with health professionals using the Strengths and Difficulties Questionnaire and the Parental Evaluation of Developmental Status questionnaire); height and weight measurement; and referral of the child to specialist services if the child appears to have problems that need further investigation.

### Cochrane Systematic Reviews

Powell C & Hatt SR. 2009. **Vision screening for amblyopia in childhood**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD005020.pub3 <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005020.pub3/abstract>

This systematic review aimed to assess the effectiveness of vision screening in reducing the prevalence of amblyopia, a reversible deficit of vision that has to be treated within the sensitive period for visual development. No RCTs or cluster RCTs comparing the prevalence of amblyopia in screened versus unscreened populations were identified. The authors conclude that there is currently insufficient evidence to determine whether or not screening programmes reduce the proportion of older children and adults with amblyopia, and some robust evaluation of screening programmes that are in place is required.

Simpson SA, et al. 2007. **Identification of children in the first four years of life for early treatment for otitis media with effusion**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004163.pub2  
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004163.pub2/abstract>

This systematic review assessed the effectiveness of screening and treating children with clinically important otitis media with effusion (OME or 'glue ear') in the first four years of their life on language and behavioural outcomes. No RCTs comparing outcomes for children randomised to be screened for OME with outcomes for children randomised to not be screened for OME were identified. Three RCTs (668 participants) evaluating interventions for OME in children identified through screening were included in the review. Children with OME were randomised either to treatment with ventilation tube insertion or 'no treatment', 'watchful waiting' or 'late treatment with ventilation tubes'. No evidence of a clinically important benefit in language development from screening and treating children with clinically important OME was found in any of the studies.

### Other Systematic Reviews

Oberklaid F, et al. 2002. **Child Health Screening and Surveillance: a critical review of the evidence**. Canberra: National Health and Medical Research Council. <http://www.nhmrc.gov.au/guidelines/publications/ch42>

This extensive review of child health screening and surveillance examined the evidence base for specific screening and surveillance activities in childhood (birth to 18 years) and provides a summary of the evidence, recommendations and a research agenda for each child health topic identified. Topics covered include: congenital adrenal hyperplasia, cardiac disease, congenital hypothyroidism, cystic fibrosis, hearing loss, hip dysplasia, undescended testes, vision, dental health, development, height and weight. Relatively few topics could be recommended for formal screening programmes (congenital hypothyroidism – good evidence, cystic fibrosis – fair evidence, hip dysplasia – fair evidence for ultrasound screening, insufficient evidence for examination, universal neonatal hearing – fair evidence, phenylketonuria – fair evidence). Formal screening programmes could not be recommended for many conditions, for a variety of reasons including: multidimensional conditions on a continuum of normality-abnormality that do not lend themselves to pass/fail criteria; available screening tests not considered sufficiently acceptable to the target population, based on reported uptake rates of either the screening test or definitive referral; sensitivity could not readily be balanced against specificity (very large numbers of false positives a by-product of capturing all or most of those with the target condition); the target condition itself was too variable over time to justify screening at a single time point, but evidence to support periodic screening (surveillance) was not available; management for those detected by screening has not shown to significantly alter outcomes or there was not an agreed therapy.



### Other Relevant Evidence

The Scottish Government. 2011. **A New Look at Hall 4 – the Early Years: Good Health for Every Child**. Edinburgh: The Scottish Government. <http://www.scotland.gov.uk/Resource/Doc/337318/0110676.pdf>

Scottish Executive. 2005. **Health for all Children 4: Guidance on implementation in Scotland**. Edinburgh: Scottish Executive. <http://www.scotland.gov.uk/Publications/2005/04/15161325/13269>

The 2011 guidance document supplements the 2005 guidance, setting out the way forward for the successful delivery of Health for All Children (Hall 4) in the early years. It focuses on three main aspects of health service delivery to children and their families in the early years: the allocation of the Health Plan Indicator (HPI); the 24–30 month review; and the delivery of health improvement information and advice. It discusses the role of the Public Health Nurse – Health Visitor, the 'Named Person', who acts as the first point of contact and provider of universal services for children and families in the early years (to primary school entry), focusing on early intervention, prevention and health promotion, promoting social inclusion and reducing inequalities in health; addressing key public health priorities, and supporting the capacity of families to parent within their local communities. The guidance recommends that all children should have an HPI by six months, carried out using the model available at:

<http://www.scotland.gov.uk/Publications/2011/03/22145900/2> and local tools. There are two categories of HPI – 'Core' (receiving the universal health visiting service) and 'Additional' (receiving additional health visiting support and/or support from other disciplines/agencies). The re-introduction of the 24–30 month review for all children is discussed and the guidance discusses the role of the Public Health Nurse – Health Visitor in delivering health improvement.

Shribman S & Billingham K. 2009. **Healthy Child Programme: Pregnancy and the first five years of life**. London: Department of Health.

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_107563](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_107563)

This guide is for commissioners and providers of services in pregnancy and the first years of life and provides updated guidance, and core requirements of the Health Child Programme (HCP). The HCP is a universal programme of screening tests, immunisations, developmental reviews, and information and guidance to support parenting and healthy choices, and opportunities to identify families that are in need of additional support and children who are at risk of poor outcomes. The guidance is based on evidence set out in Health for All Children. An increased emphasis on parenting support, evidence-based child development, integration of services and the progressive nature of the universal service, i.e. a universal service with additional services for those with specific needs and risks is discussed. The early years HCP schedule, beginning antenatally at the booking visiting and finishing at school entry aged five years, is described.

Council on Children With Disabilities, et al. 2006. **Identifying Infants and Young Children With Developmental Disorders in the Medical Home: An Algorithm for Developmental Surveillance and Screening**. *Pediatrics*, 118(1), 405-20.

This American Academy of Pediatrics statement provides an algorithm to support health care professionals in addressing developmental concerns in children from birth to three years of age. It is recommended that developmental surveillance be incorporated at every well-child preventive care visit and concerns raised should be promptly addressed with standardised developmental screening tests. Administration of screening tests is recommended at 9, 18, and 24 or 30-month routine visits. A variety of screening tools are described. Medical evaluation is advised for all those with positive tests.

Note: the publications listed were identified using the search methodology outlined in **Appendix 1**



## SUBSTANCE USE







# SMOKING IN PREGNANCY

## Introduction

Tobacco smoking during pregnancy is linked to adverse health effects for women and babies. It is the most important potentially preventable cause of a range of adverse pregnancy outcomes [92]. For example, it is associated with placental abruption, miscarriage, stillbirth, preterm birth and low birthweight [93,94]. Maternal smoking also affects foetal growth and neurodevelopment and is associated with an increased risk of a number of congenital birth defects [95]. Prenatal smoke exposure is associated with an increased risk of infant irritability, inattention, increased tone, and decreased responsiveness to inanimate sounds [96], and is a significant risk factor for Sudden Infant Death Syndrome (SIDS) [97]. In addition, the prevalence of obesity in preschool children is also higher for those whose mother smoked during pregnancy and male and female sub fertility/infertility in adult life has been linked to maternal smoking [96]. Further, studies on the association between parental smoking and childhood cancer correlate paternal smoking with a higher risk of cancers in early life, especially cancers of the blood forming organs [96]. Finally, second-hand tobacco smoke exposure during pregnancy is associated with an increased risk of adverse birth outcomes [98].

While the 2009 New Zealand Tobacco Use Survey suggested that the prevalence of smoking in New Zealand had decreased significantly, from 24.4% in 2006 to 21.8% in 2009, the prevalence of smoking, or exposure to second-hand smoke amongst pregnant women is not known [99]. However, an analysis of the New Zealand College of Midwives database revealed a reduction in reported smoking at booking visit from 22.9% in 2004 to 19.2% in 2007 [100]. Similarly, a New Zealand cohort study of 829 women published in 2003 found 22.2% of pregnant women reported smoking at conception. Of these women 67.2% (14.9% of the original cohort) continued to smoke beyond the first trimester [101]. This is likely to have been an underestimate given that smokers, women from socioeconomically deprived areas and single women were underrepresented among survey responders. In this study, smoking rates at conception were higher amongst women with a partner who smoked, Māori women, those with a community services card and those in receipt of income support, with these women also being less likely to stop smoking in the first trimester. Research also suggests that those most likely to smoke during pregnancy are those that find it most difficult to quit, emphasising the need to address wider socioeconomic factors linked to smoking [102].

The following section uses data from the National Maternity Collection to assess the proportion of women who smoked at first registration with a Lead Maternity Carer (LMC), as well as the proportion not registered with a LMC at the time of delivery (in order to assess any potential biases introduced by the use of a LMC registration based cohort).

### Data Sources and Methods

#### Indicator

##### 1. *Proportion of babies born to mothers not registered with a lead maternity carer at the time of delivery*

Numerator: National Maternity Collection: Number of babies born to mothers who were flagged as not being registered with a LMC at the time of delivery.

Denominator: National Maternity Collection: Number of babies born.

##### 2. *Distribution of the number of cigarettes smoked at first registration with a lead maternity carer, by the mothers of newborn babies*

Numerator: National Maternity Collection: Number of cigarettes smoked per day at first registration with a lead maternity carer, by the mothers of newborn babies

Denominator: National Maternity Collection: Number of babies born

##### 3. *Proportion of babies born to mothers who smoked at first registration with a lead maternity carer*

Numerator: National Maternity Collection: Number of babies born to mothers who smoked at first registration with a lead maternity carer

Denominator: National Maternity Collection: Number of babies born



### Notes on Interpretation

Note 1: The National Maternity Collection (MAT) contains information on selected publicly funded maternity services from nine months before to three months after a birth. It integrates information from two data sources: LMC claims for payment for Primary Maternity Services provided under Section 88 of the NZ Public Health and Disability Act 2000; and data from the National Minimum Dataset (NMDS) on hospital admissions during pregnancy, birth and the postnatal period for mother and baby.

Up until June 2007, Section 88 claims data coverage was 95% of known births. However in July 2007, due to a funding change, DHB-employed midwifery teams ceased to submit claims to the Ministry of Health for their services. Thus no LMC registration data (including smoking status) is currently available in MAT for women who opt for DHB-based primary maternity care. In this dataset it is thus difficult to distinguish between those who were not registered with a LMC at the time of delivery because they accessed their primary maternity care through DHB services and those who received no antenatal care at all.

Note 2: In this analysis, the baby's hospital admission (birth) data from the NMDS was linked with maternal Section 88 claims data using a de-identified pregnancy key, with the unit of analysis being the baby rather than the mother (e.g. maternal information for twins is included twice in the analysis). Of the 129,635 babies born during 2009–2010, 1,113 (0.86%) were not able to be matched to their mother's MAT record.

Note 3: A relatively high proportion of babies (15.5%) had missing information on maternal smoking status at first LMC registration, with the majority of these babies having mothers who were not registered with a LMC. The proportion with missing information was thus not randomly distributed, but rather was higher for Pacific babies, those with younger mothers and those from more deprived areas. Large variations between DHBs were also evident. As a result, all of the data in this section have been presented both with missing smoking status included and excluded from the analysis. In interpreting these data, maternal smoking rates with missing responses included should be viewed as providing an absolute minimum estimate of the number of babies whose mother's smoked at first LMC registration. While maternal smoking rates with missing responses excluded may provide a closer approximation of the true rate, they may still be an underestimate. For example, a higher proportion of babies with younger mothers and those from more deprived areas had missing smoking status data, as well as higher smoking rates amongst those for whom maternal smoking status was known.

Note 4: MAT does not contain details on stillborn babies as they are not assigned a NHI number at birth and are thus not reported to the National Minimum Dataset.

## Babies Born to Mothers Not Registered with a LMC at Delivery

### New Zealand Distribution

In New Zealand during 2009–2010, 16.2% of babies were born to mothers who were not registered with a LMC at the time of delivery. However many of these babies' mothers may have accessed hospital-based maternity services, making it difficult to estimate the proportion who received no antenatal care at all during pregnancy (**Table 26**).

Table 26. Status of Maternal Registration with a Lead Maternity Carer at the Time of Delivery for New Zealand Babies Born 2009–2010

Maternal LMC Registration at Delivery	No. of Babies: Total 2009–2010	No. of Babies: Annual Average	Percent of Babies (%)
New Zealand			
Registered with a LMC	107,524	53,762	82.9
Not Registered with a LMC	20,997	10,499	16.2
LMC Registration Status Not Known	1,114	557	0.9
Total	129,635	64,818	100.0

Source: National Maternity Collection; Note: Information is for live born babies only

### New Zealand Distribution by Maternal Age, Ethnicity and NZDep Decile

In New Zealand during 2009–2010, Pacific, Asian/Indian and Māori babies (vs. European babies) were *significantly* more likely to have mothers who were not registered with a LMC at delivery, as were the babies of younger mothers (less than 30 years vs. 30 or more years). A *significantly* higher proportion of babies from average to more deprived areas (NZDep06 deciles 3–10 vs. deciles 1–2) also had mothers who were not registered with a LMC at delivery (**Table 27**).

Table 27. Proportion of Babies Born to Mothers Not Registered with a Lead Maternity Carer at Delivery by Maternal Age, Ethnicity and NZDep Index Decile, New Zealand 2009–2010

Variable	No. of Babies: Annual Average			Mother Not Registered: Rate per 100 Babies (%)	Rate Ratio	95% CI
	Mother Not Registered with LMC	Mother Registered with LMC	Total			
Maternal Age						
<20 Years	988	3,664	4,652	21.2	1.39	1.32–1.45
20–24 Years	2,285	9,644	11,928	19.2	1.25	1.20–1.30
25–29 Years	2,613	13,291	15,904	16.4	1.07	1.03–1.11
30–34 Years	2,463	15,295	17,758	13.9	0.90	0.87–0.94
35+ Years	2,149	11,867	14,015	15.3	1.00	
Baby's Ethnicity						
Asian/Indian	1,526	5,219	6,745	22.6	2.48	2.39–2.59
European	2,912	29,072	31,984	9.1	1.00	
Māori	2,750	14,119	16,869	16.3	1.79	1.73–1.85
Pacific	2,876	4,390	7,266	39.6	4.35	4.21–4.49
NZ Deprivation Index Decile						
Deciles 1–2	863	8,289	9,152	9.4	1.00	
Deciles 3–4	1,139	9,106	10,245	11.1	1.18	1.11–1.25
Deciles 5–6	1,388	10,780	12,167	11.4	1.21	1.14–1.28
Deciles 7–8	2,156	12,249	14,404	15.0	1.59	1.51–1.67
Deciles 9–10	4,834	13,013	17,847	27.1	2.87	2.74–3.01

Source: National Maternity Collection; Note: Information is for live born babies only

## Midland Region Distribution

In all of the DHBs in the Midland Region during 2009–2010, the proportion of babies whose mother was not registered with a LMC at delivery was *significantly* lower than the New Zealand rate (**Table 28**). Of those who were un-registered however, many may have accessed hospital-based maternity services, making it difficult to estimate the proportion who received no antenatal care at all during pregnancy.

Table 28. Status of Maternal Registration with a Lead Maternity Carer at the Time of Delivery for Babies Born 2009–2010, Midland DHBs vs. New Zealand

DHB	No. of Babies: Annual Average			Mother Not Registered: Rate per 100 Babies (%)	Rate Ratio	95% CI
	Mother Not Registered with LMC	Mother Registered with LMC	Total			
Waikato	491	5,137	5,628	8.7	0.53	0.50–0.57
Lakes	145	1,521	1,666	8.7	0.53	0.48–0.60
Bay of Plenty	21	3,002	3,023	0.7	0.04	0.03–0.06
Tairāwhiti	12	770	781	1.5	0.09	0.06–0.14
Taranaki	37	1,574	1,610	2.3	0.14	0.11–0.17
New Zealand	10,499	53,762	64,261	16.3	1.00	

Source: National Maternity Collection; Note: Information is for live born babies only





## Maternal Smoking at First Registration with a LMC

### New Zealand Distribution Number of Cigarettes Smoked

In New Zealand during 2009–2010, 15.3% of babies did not have their mother's smoking status at first LMC registration recorded in the National Maternity Collection, with the majority of omissions being for babies whose mothers were not registered with a LMC at delivery. Of those babies whose mother's smoking status was known, 83.5% had a non-smoking mother, while 10.5% had a mother who smoked less than 10 cigarettes per day and 6.0% had a mother who smoked 10 or more cigarettes per day (**Table 29**).

Table 29. Number of Cigarettes Smoked Daily, at First Registration with a Lead Maternity Carer, by the Mothers of Babies Born in New Zealand 2009–2010

No. of Cigarettes Smoked per Day	No. of Babies: Total 2009–2010	No. of Babies: Annual Average	Percent of Babies (%)	
			Unknown Smoking Status Included	Unknown Smoking Status Excluded
New Zealand				
Non-Smoker	91,425	45,713	70.5	83.5
<10	11,474	5,737	8.9	10.5
10–20	5,850	2,925	4.5	5.3
>20	757	379	0.6	0.7
Unknown	20,129	10,065	15.5	
Total	129,635	64,818	100.0	100.0

Source: National Maternity Collection; Note: Information is for live born babies only

### New Zealand Distribution by Maternal Age, Ethnicity and NZDep Decile

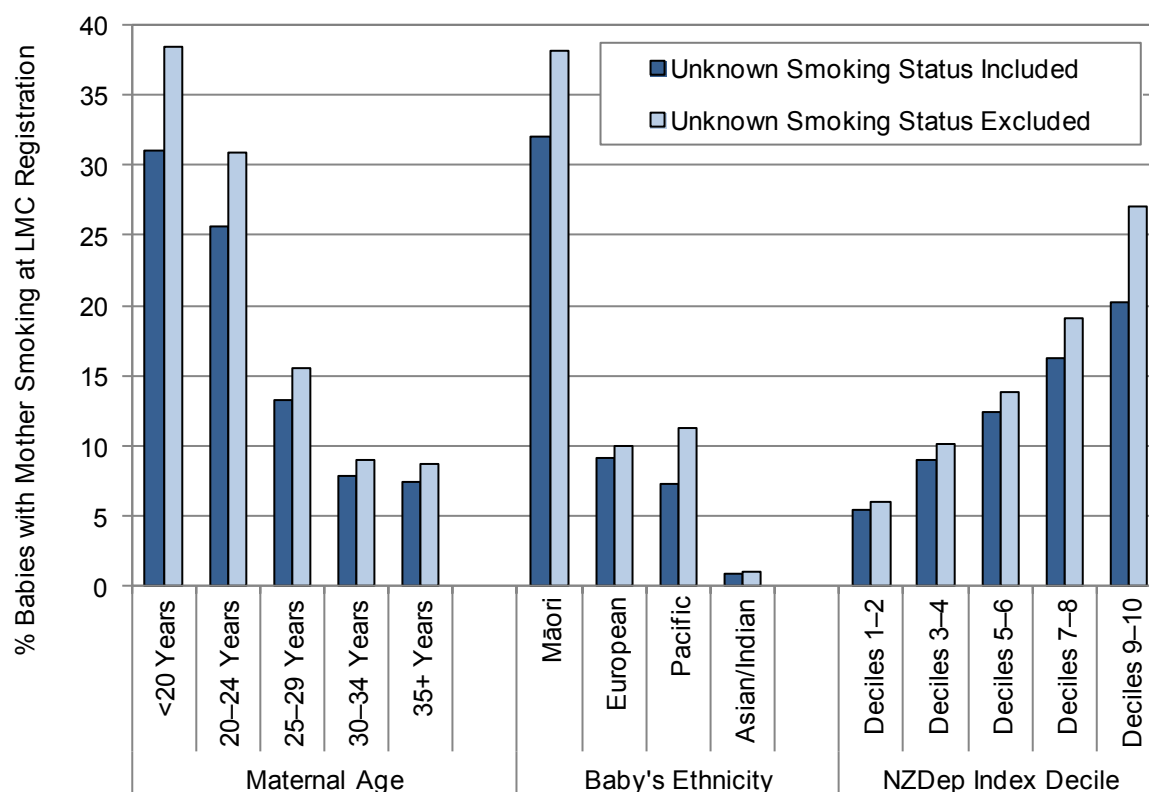
In New Zealand during 2009–2010, Māori and Pacific babies (vs. European and Asian/Indian babies), and the babies of younger mothers (less than 30 years vs. 30 or more years), were *significantly* more likely to have mothers who smoked at first LMC registration. A *significantly* higher proportion of babies from average to more deprived areas (NZDep06 deciles 3–10 vs. deciles 1–2) also had mothers who smoked at first LMC registration (**Figure 85, Table 30**).

### New Zealand Distribution by Maternal Age and Ethnicity

In New Zealand during 2009–2010, when broken down by maternal age and baby's ethnicity, the mothers of Māori babies, regardless of maternal age, had higher smoking rates at first LMC registration than the mothers of European or Pacific babies, while the maternal smoking rates of Asian/Indian babies were lower. In addition, maternal smoking rates for European babies were higher than for Pacific babies with younger mothers (less than 27 years), although differences were less marked for those with older mothers (**Figure 86**).



Figure 85. Proportion of Babies Born to Mothers who Smoked at First Registration with a Lead Maternity Carer by Maternal Age, Baby's Ethnicity and NZ Deprivation Index Decile, New Zealand 2009–2010



Source: National Maternity Collection; Note: Information is for live born babies only; Ethnicity is Level 1 Prioritised; Decile is NZDep06

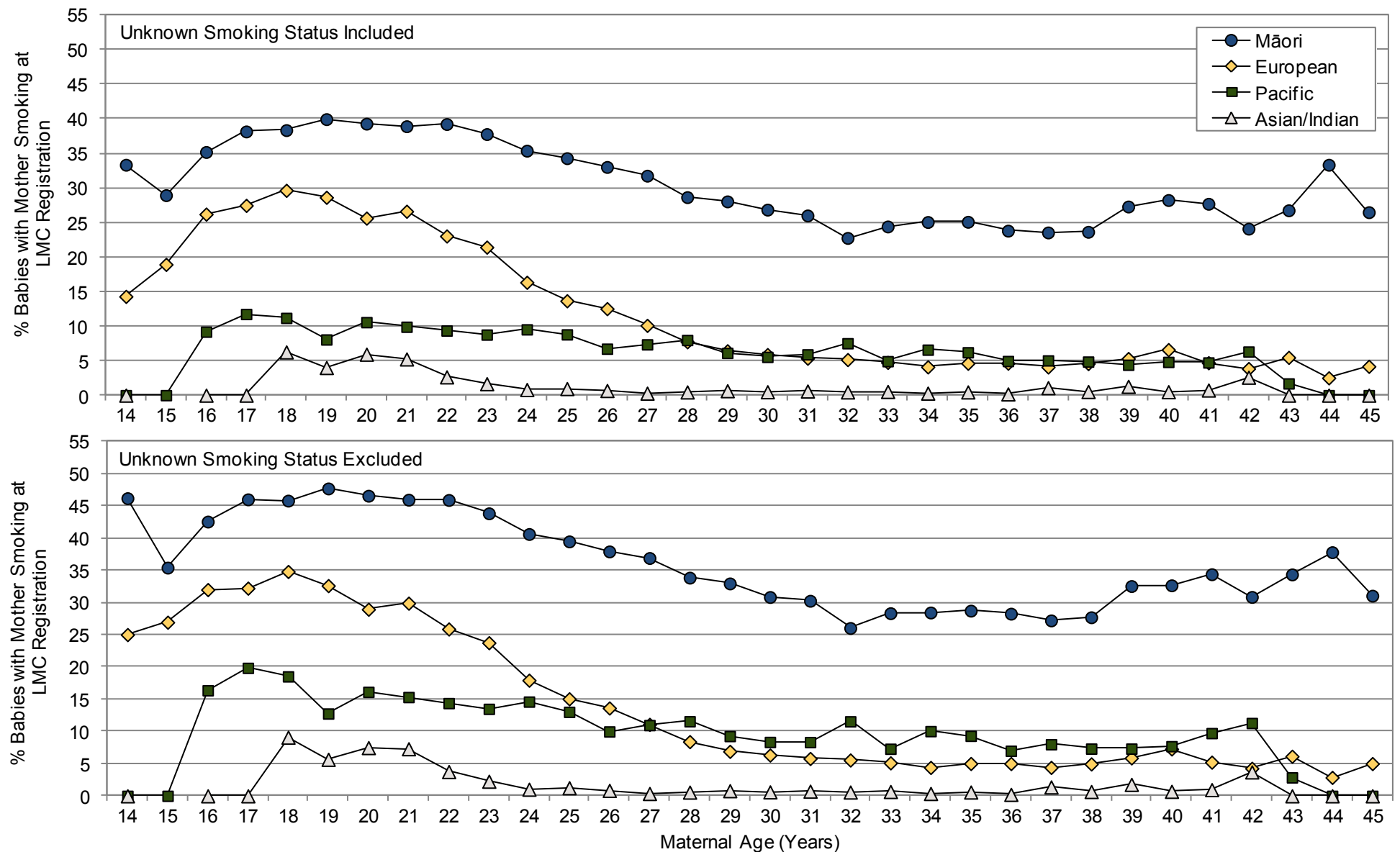
Table 30. Proportion of Babies Born to Mothers who Smoked at First Registration with a Lead Maternity Carer by Maternal Age, Baby's Ethnicity and NZ Deprivation Index Quintile, New Zealand 2009–2010

Variable	Rate	Rate Ratio	95% CI	Rate	Rate Ratio	95% CI
	Maternal Smoking at LMC Registration					
	Unknown Smoking Status Included			Unknown Smoking Status Excluded		
Maternal Age						
<20 Years	31.00	4.15	3.95–4.37	38.50	4.44	4.22–4.67
20–24 Years	25.66	3.44	3.28–3.60	30.95	3.57	3.41–3.74
25–29 Years	13.23	1.77	1.69–1.86	15.56	1.79	1.71–1.89
30–34 Years	7.81	1.05	0.99–1.11	8.94	1.03	0.98–1.09
35+ Years	7.46	1.00		8.67	1.00	
Baby's Prioritised Ethnicity						
Asian/Indian	0.80	0.09	0.07–0.11	1.02	0.10	0.08–0.12
European	9.05	1.00		9.92	1.00	
Māori	32.02	3.54	3.44–3.64	38.12	3.84	3.74–3.95
Pacific	7.28	0.80	0.76–0.86	11.30	1.14	1.07–1.21
NZ Deprivation Index Quintile						
Deciles 1–2	5.45	1.00		5.98	1.00	
Deciles 3–4	9.01	1.65	1.53–1.78	10.10	1.69	1.57–1.82
Deciles 5–6	12.32	2.26	2.11–2.42	13.85	2.31	2.16–2.48
Deciles 7–8	16.29	2.99	2.80–3.19	19.05	3.18	2.98–3.40
Deciles 9–10	20.24	3.71	3.48–3.96	27.04	4.52	4.24–4.81

Source: National Maternity Collection; Note: Information is for live born babies only; Rate is per 100 babies



Figure 86. Proportion of Babies Born to Mothers who Smoked at First Registration with a Lead Maternity Carer by Baby's Ethnicity and Maternal Age, New Zealand 2009–2010



Source: National Maternity Collection; Note: Information is for live born babies only; Ethnicity is Level 1 Prioritised

## Midland Region Distribution

### Midland Region Number of Cigarettes Smoked

During 2009–2010, the proportion of babies who did not have their mother's smoking status at first LMC registration recorded in the National Maternity Collection varied from 0.7% in the Bay of Plenty to 9.2% in the Waikato, with the majority of omissions being for babies whose mothers were not registered with a LMC at delivery. Of those babies whose mother's smoking status was known, the proportion with a non-smoking mother varied from 65.4% in Tairāwhiti to 78.5% in the Waikato, while the proportion who had a mother who smoked 10 or more cigarettes per day varied from 8.2% in Taranaki to 13.3% in Tairāwhiti (**Table 31**, **Table 32**).

Table 31. Number of Cigarettes Smoked Daily at First Registration with a Lead Maternity Carer by the Mothers of Waikato, Lakes DHB and Bay of Plenty Babies Born 2009–2010

Number of Cigarettes Smoked per Day	Number of Babies: Total 2009–2010	Number of Babies: Annual Average	Percent of Babies (%)	
			Unknown Smoking Status Included	Unknown Smoking Status Excluded
Maternal Smoking at LMC Registration				
Waikato				
Non-Smoker	8,083	4,042	71.3	78.5
<10	1,340	670	11.8	13.0
10 to 20	789	395	7.0	7.7
>20	81	41	0.7	0.8
Unknown	1,044	522	9.2	
Waikato Total	11,337	5,669	100.0	100.0
Lakes DHB				
Non-Smoker	2,269	1,135	67.8	71.7
<10	551	276	16.5	17.4
10 to 20	302	151	9.0	9.5
>20	41	21	1.2	1.3
Unknown	185	93	5.5	
Lakes DHB Total	3,348	1,674	100.0	100.0
Bay of Plenty				
Non-Smoker	4,380	2,190	72.3	72.9
<10	970	485	16.0	16.1
10 to 20	595	298	9.8	9.9
>20	66	33	1.1	1.1
Unknown	45	23	0.7	
Bay of Plenty Total	6,056	3,028	100.0	100.0

Source: National Maternity Collection; Note: Information is for live born babies only

Table 32. Number of Cigarettes Smoked Daily at First Registration with a Lead Maternity Carer by the Mothers of Tairāwhiti and Taranaki Babies Born 2009–2010

Number of Cigarettes Smoked per Day	Number of Babies: Total 2009–2010	Number of Babies: Annual Average	Percent of Babies (%)	
			Unknown Smoking Status Included	Unknown Smoking Status Excluded
Maternal Smoking at LMC Registration				
Tairawhiti				
Non-Smoker	1,010	505	64.3	65.4
<10	330	165	21.0	21.4
10 to 20	180	90	11.5	11.7
>20	25	13	1.6	1.6
Unknown	26	13	1.7	
Tairawhiti Total	1,571	786	100.0	100.0
Taranaki				
Non-Smoker	2,480	1,240	76.7	78.6
<10	416	208	12.9	13.2
10 to 20	225	113	7.0	7.1
>20	34	17	1.1	1.1
Unknown	79	40	2.4	
Taranaki Total	3,234	1,617	100.0	100.0

Source: National Maternity Collection; Note: Information is for live born babies only

## Midland Region vs. New Zealand

In all of the DHBs in the Midland Region during 2009–2010, maternal smoking rates at first LMC registration were *significantly* higher than the New Zealand rate amongst babies whose maternal smoking status was known (Waikato 21.5%, Lakes DHB 28.3%, Bay of Plenty 27.1%, Tairāwhiti 34.6% and Taranaki 21.4% vs. New Zealand 16.5%). These differences remained significant even when those with missing smoking data were included in the denominator (**Table 33, Figure 87**).

## Midland Region Distribution by Ethnicity

In the Waikato during 2009–2010, maternal smoking rates at first LMC registration were higher for Māori > European > Pacific > Asian/Indian babies, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, rates were higher for Māori babies than for European babies (**Figure 88**).

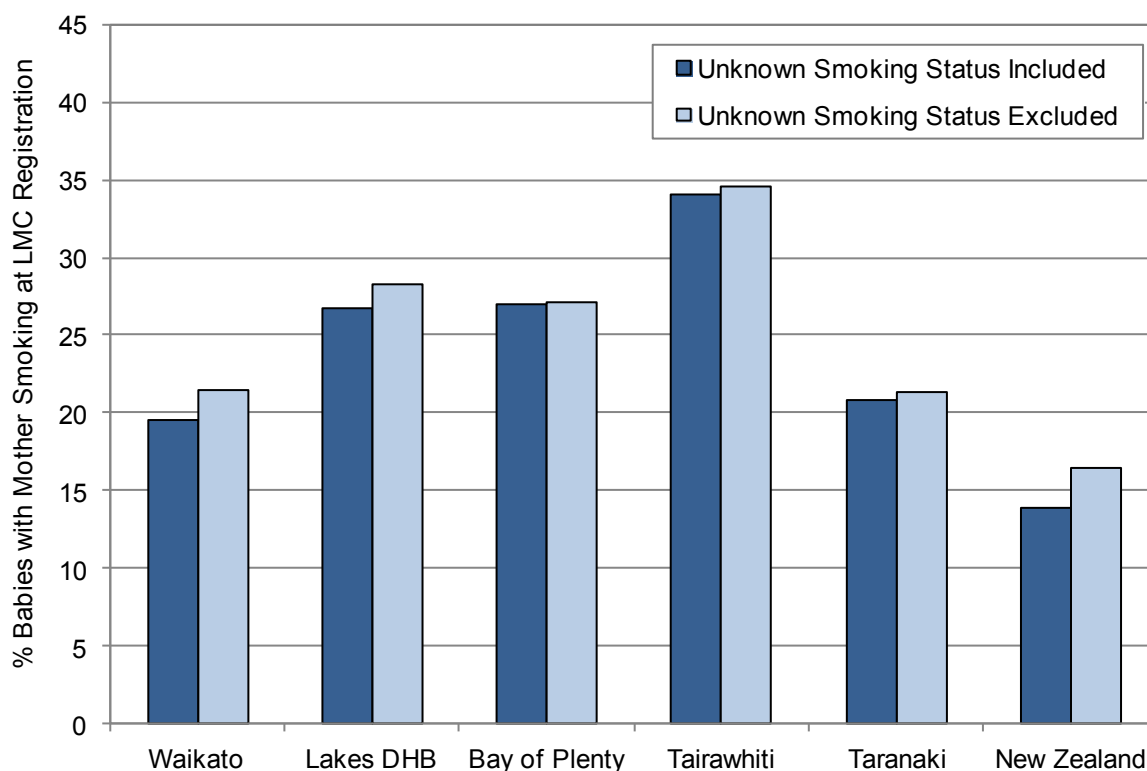


Table 33. Proportion of Babies Born to Mothers who Smoked at First Registration with a Lead Maternity Carer, Midland DHBs vs. New Zealand 2009–2010

DHB	Number of Babies: Annual Average 2009–2010			% Babies with Maternal Smoker	Rate Ratio	95% CI
	Maternal Smoker	Non- Smoker	Total			
Maternal Smoking at LMC Registration						
Unknown Smoking Status Included						
Waikato	1,105	4,564	5,669	19.5	1.40	1.34–1.45
Lakes	447	1,227	1,674	26.7	1.91	1.81–2.03
Bay of Plenty	816	2,213	3,028	26.9	1.93	1.85–2.02
Tairawhiti	268	518	786	34.1	2.44	2.28–2.62
Taranaki	338	1,280	1,617	20.9	1.50	1.40–1.60
New Zealand	9,041	55,777	64,818	13.9	1.00	
Unknown Smoking Status Excluded						
Waikato	1,105	4,042	5,147	21.5	1.30	1.25–1.35
Lakes	447	1,135	1,582	28.3	1.71	1.62–1.81
Bay of Plenty	816	2,190	3,006	27.1	1.64	1.57–1.72
Tairawhiti	268	505	773	34.6	2.10	1.96–2.25
Taranaki	338	1,240	1,578	21.4	1.30	1.21–1.39
New Zealand	9,041	45,713	54,753	16.5	1.00	

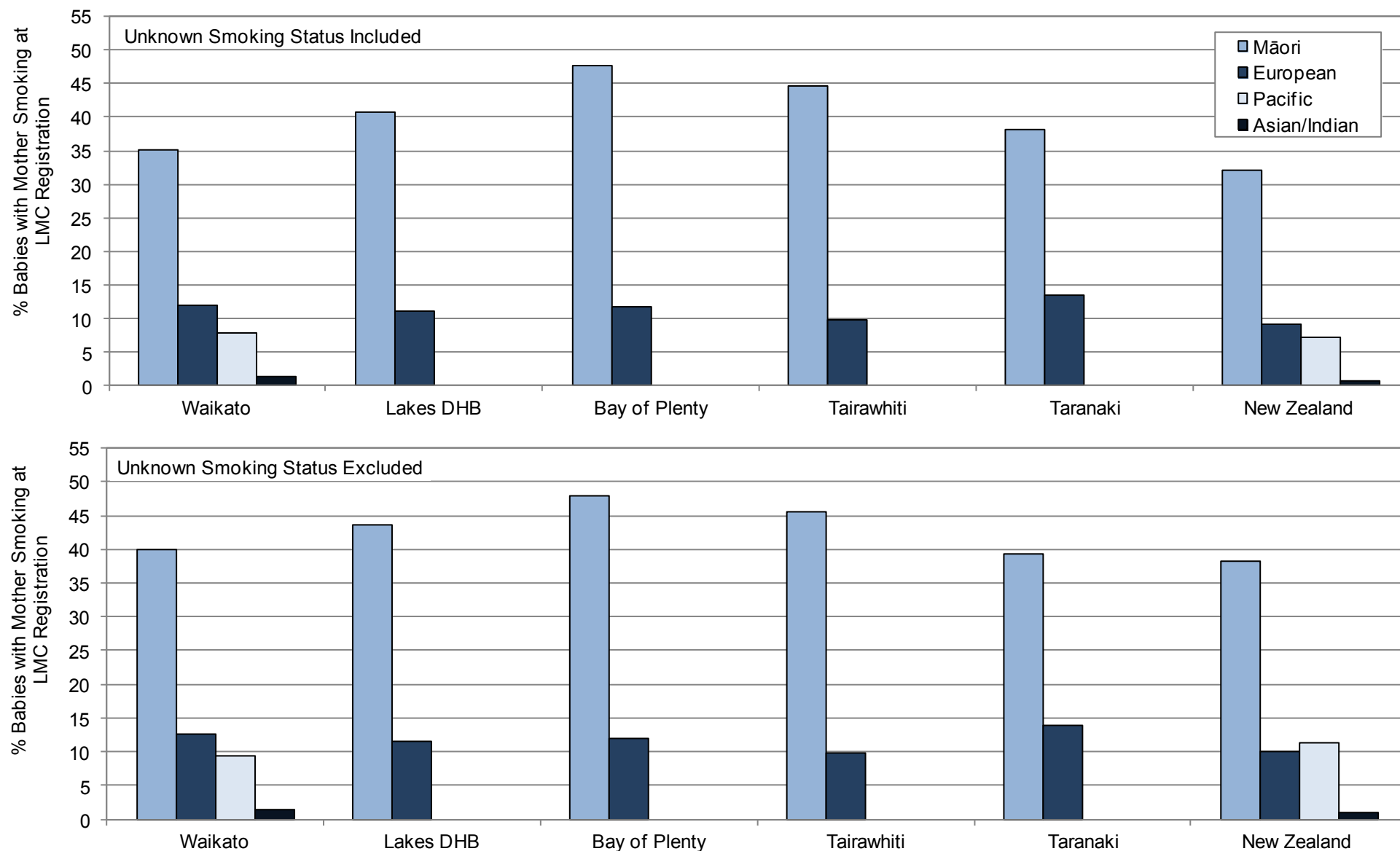
Source: National Maternity Collection; Note: Information is for live born babies only

Figure 87. Proportion of Babies Born to Mothers who Smoked at First Registration with a Lead Maternity Carer, Midland DHBs vs. New Zealand 2009–2010



Source: National Maternity Collection; Note: Information is for live born babies only

Figure 88. Proportion of Babies Born to Mothers who Smoked, at First Registration with a Lead Maternity Carer, by Ethnicity, Midland DHBs vs. New Zealand 2009–2010



Source: National Maternity Collection; Note: Information is for live born babies only; Ethnicity is Level 1 Prioritised

## Local Policy Documents and Evidence-Based Reviews Relevant to the Cessation of Smoking in Pregnancy

**Table 34** below provides a brief overview of local policy documents and evidence-based reviews which consider interventions to promote smoking cessation during pregnancy. Given that smoking during pregnancy has been shown to be highest amongst younger mothers, **Table 42 (Page 219)** and **Table 43 (Page 222)**, which provide an overview of publications on smoking prevention and cessation in young people are relevant.

Table 34. Local Policy Documents and Evidence-Based Reviews Relevant to the Cessation of Smoking in Pregnancy

Ministry of Health Policy Documents
<p>Ministry of Health. 2007. <b>New Zealand Smoking Cessation Guidelines</b>. Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/new-zealand-smoking-cessation-guidelines">http://www.health.govt.nz/publication/new-zealand-smoking-cessation-guidelines</a></p> <p>These guidelines identify pregnant and breastfeeding women as priority population groups for cessation throughout pregnancy and the post-partum period. While recognising that there is limited evidence for the effectiveness of nicotine replacement therapy (NRT) in pregnancy, following analysis of the risks and benefits known at the time, the guidelines support the use of NRT in pregnancy and breastfeeding.</p>
Cochrane Systematic Reviews
<p>Hajek P, et al. 2009. <b>Relapse prevention interventions for smoking cessation</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003999.pub3  <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003999/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003999/frame.html</a></p> <p>This updated review assessed the effectiveness of relapse prevention interventions aimed at reducing the proportion of recent quitters who return to smoking. It included 14 RCTs of behavioural interventions designed to assist pregnant and postpartum ex-smokers to remain abstinent throughout their pregnancy and/or after the delivery. The pooled analysis failed to identify any significant benefits at the end of pregnancy or in the postpartum period (n = 3273, RR 1.07; 95% CI 0.98 to 1.18). The authors conclude that there is currently insufficient evidence to support the use of behavioural interventions for relapse prevention.</p>
<p>Coleman T, et al. 2012. <b>Pharmacological interventions for promoting smoking cessation during pregnancy</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD010078  <a href="http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010078/abstract">http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010078/abstract</a></p> <p>This review of nicotine replacement therapy (NRT) in pregnancy identified six RCTs (1745 pregnant regular smokers) where NRT was used with or without behavioural support. No statistically significant difference was seen for smoking cessation after using NRT compared to control (RR 1.33, 95% CI 0.93 to 1.91, six studies, 1745 women). Subgroup analysis comparing placebo-RCTs with those which did not use placebos found that efficacy estimates for cessation varied with trial design (placebo RCTs, RR 1.20, 95% CI 0.93 to 1.56, four studies, 1524 women; non-placebo RCTs, RR 7.81, 95% CI 1.51 to 40.35, two studies, 221 women). There were no statistically significant differences in rates of miscarriage, stillbirth, premature birth, birthweight, low birthweight, admissions to neonatal intensive care or neonatal death between NRT or control groups. The authors conclude that there is insufficient evidence to demonstrate that NRT for pregnant women is effective or safe, or to determine whether or not using NRT has positive or negative effects on birth outcomes. Further research, ideally from placebo-controlled RCTs is needed.</p>
<p>Lumley J, et al. 2009. <b>Interventions for promoting smoking cessation during pregnancy</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001055.pub3  <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001055/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001055/frame.html</a></p> <p>This updated review assessing the effectiveness of smoking cessation interventions during pregnancy on smoking behaviour and neonatal outcomes identified 72 studies. The meta-analysis included 56 RCTs and nine cluster-RCTs (25,000 women) and found that smoking cessation interventions in pregnancy reduced the proportion of women continuing to smoke in late pregnancy (RR 0.94, 95% CI 0.93 to 0.96), an absolute difference of 6% more women stopping smoking in the intervention groups compared to controls. Intervention was associated with a significant improvement in birth outcomes with reductions in low birth weight (RR 0.83, 95% CI 0.73 to 0.95) and pre-term births (RR 0.86, 95% CI 0.74 to 0.98). The most effective intervention appeared to be providing incentives, although the trials were small-scale. Eight trials of smoking relapse prevention (over 1000 women) showed no statistically significant reduction in relapse. The authors recommend the implementation of smoking cessation interventions in all maternity care settings.</p>
Other Systematic Reviews
<p>Baxter S, et al. 2011. <b>The effectiveness of interventions to establish smoke-free homes in pregnancy and in the neonatal period: a systematic review</b>. Health Education Research, 26(2), 265-82.</p> <p>This systematic review assessed the effectiveness of interventions aimed at establishing smoke-free homes in pregnancy and the neonatal period. Seventeen heterogeneous trials were included, 12 of which were RCTs. Interventions included counselling, counselling with additional elements, motivational interviewing and individual programmes. Sample sizes were small and the evidence inconclusive with few significant effects. While the evidence remains unclear the authors argue that pregnancy and early infancy may be an optimal time to target interventions.</p>

National Institute for Health and Clinical Excellence. 2010. **How to stop smoking in pregnancy and following childbirth (NICE public health guidance 26)**. London: National Institute for Health and Clinical Excellence.  
<http://www.nice.org.uk/guidance/PH26>

This NICE public health guidance provides comprehensive evidence-based guidance on providing smoking cessation services to pregnant women. It includes a systematic review and cost-benefit analysis to identify effective cessation interventions for women who smoke before or during pregnancy (12 studies and a Cochrane review), interventions to improve partner support and partner cessation during pregnancy (18 studies) and interventions to prevent women who quit smoking during pregnancy and after childbirth to relapse (35 studies and a Cochrane review). While there was good evidence to support smoking cessation interventions (including financial incentives and self-help), there was a lack of evidence on how to prevent relapse after giving birth and limited evidence of the effectiveness of interventions to help partners to quit or establish smoke-free homes.

Bauld L, et al. 2010. **The effectiveness of NHS smoking cessation services: a systematic review**. Journal of Public Health, 32(1), 71-82.

This systematic review assessing the effectiveness of UK NHS smoking cessation services identified 20 studies, four of which were RCTs. The review included a 2005 national evaluation of NHS stop smoking services which found a 53% reduction in carbon monoxide validated quit rates at 4 weeks, falling to 15% at 1 year. Overall, the review suggested that group interventions appeared to be more successful than individual interventions although they may be more difficult to deliver and less acceptable to patients. Pregnant women had lower quit rates than other groups and may suspend their smoking rather than quit altogether, suggesting the need for further research in this subpopulation.

Baxter S, et al. 2010. **Factors relating to the uptake of interventions for smoking cessation among pregnant women: A systematic review and qualitative synthesis**. Nicotine & Tobacco Research, 12(7), 685-94.

This systematic review assessed factors enabling or discouraging the uptake of smoking cessation services among pregnant smokers, to identify ways of improving services. Twenty-three studies met the inclusion criteria (10 qualitative studies, 10 cross-sectional studies and 3 narrative reports) for analysis and qualitative synthesis. A number of aspects of service delivery that could affect the uptake of smoking cessation interventions were identified, including whether or not the subject of smoking was routinely broached; staff perceptions of ineffectiveness including lack of patient motivation and lack of effectiveness of interventions; and contradicting advice regarding complete cessation of cutting back. The authors suggest strengthening staff support through training and/or protocols and using the evidence-base to challenge perceptions of ineffectiveness amongst staff.

Naughton F, et al. 2008. **Self-help smoking cessation interventions in pregnancy: a systematic review and meta-analysis**. Addiction, 103(4), 566-79.

This review examined the efficacy of self-help interventions for pregnant smokers, and whether the type and intensity of self-help materials (e.g. written, electronic) was important. The primary meta-analysis of 12 studies comparing usual care with self-help indicated that self-help interventions increased cessation rates over usual care (median quit rate 4.9% for usual care vs. 13.2% for self-help, odds ratio 1.83, 95% CI 1.23 to 2.73). There was insufficient evidence to indicate whether more sophisticated or intensive approaches were more effective.

Ruger JP & Emmons KM. 2008. **Economic Evaluations of Smoking Cessation and Relapse Prevention Programs for Pregnant Women: A Systematic Review**. Value in Health, 11(2), 180-90.

This review examined economic evaluations of smoking cessation and relapse prevention programmes for pregnant women. The review identified eight studies, three of which used cost-benefit analyses. All the studies found a favourable cost-benefit ratio of up to three to one (for every \$1 invested \$3 are saved in downstream health-related costs) for smoking cessation interventions. The true benefit of smoking cessation programmes may be greater when societal gains and incremental health gains are included.

Levitt C, et al. 2007. **Systematic Review of the Literature on Postpartum Care: Effectiveness of Interventions for Smoking Relapse Prevention, Cessation, and Reduction in Postpartum Women**. Birth, 34(4), 341-47.

This review examined the evidence for the efficacy of postpartum interventions aiming to prevent relapse, improve smoking cessation, and reduce the number of cigarettes smoked. Only three RCTs were identified. Despite some evidence of attitudinal change there were no statistically significant benefits of advice materials or counselling interventions on smoking outcomes.

#### Other Related Articles

Public and Population Health Unit and Service Development and Funding. 2009. **Encouraging Auahi Kore (Smokefree) Pregnancies in Northland: Report of a formative evaluation**. Whangarei: Northland District Health Board.

[http://www.northlanddnhb.org.nz/Portals/0/Communications/Publications/Northland Smoking in Pregnancy Report.pdf](http://www.northlanddnhb.org.nz/Portals/0/Communications/Publications/Northland%20Smoking%20in%20Pregnancy%20Report.pdf)

This evaluation of smoking cessation support for pregnant women in Northland found that while Northland DHB had prioritised smoking cessation support for pregnant women few women accessed smoking cessation support during pregnancy. Strengthening support for Aukati Kai Paipa services for pregnant women, supporting Māori role models, considering the creation of a regional 'Pregnancy Smoking Cessation Coordinator' position and strengthening Smokefree systems in Maternity and Primary care were recommended.

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**



# SECOND-HAND CIGARETTE SMOKE EXPOSURE

## Introduction

Children living in households with smokers are at risk of the adverse effects of second-hand smoke [103]. For example, children exposed to second-hand smoke are at increased risk of sudden infant death syndrome, lower respiratory illnesses, middle ear illnesses, and respiratory symptoms including asthma and impaired lung function [103,104]. It has also been estimated that second-hand smoke exposure contributes to approximately 15,000 episodes of childhood asthma, more than 27,000 medical consultations for childhood respiratory problems and 1,500 operations to treat glue ear annually in New Zealand [105]. Household smoking, particularly by parents, also significantly increases the risk of uptake of smoking amongst children [106]. While total home smoking bans appear to have some effect on children's exposure to cigarette smoke, if carers continue to smoke, children remain at risk of second-hand smoke exposure in other settings including in vehicles [103].

In the 2009 New Zealand Tobacco Use Survey (5,222 people aged 15 to 64 years), approximately 10% of Households with a child aged 0 to 14 years reported smoking inside the home [99]. Households with Māori respondents (21.3%, 95% CI 17.4–25.2) were *significantly* more likely to report smoking in the home than those with European/Other (8.9%, 95% CI 7.2–10.6) respondents. Households in the most deprived areas were over five times more likely to have a smoker than those in the least deprived areas. Similarly in the 2010 National Year 10 ASH Snapshot Survey, 38.1% of 32,605 year 10 students (14 to 15 year olds) reported that one or both parents smoked and 19.1% reported that people smoked inside their home [107]. During 2006–2010 however, there was a significant decrease in the proportion of Māori, Pacific, European and Asian students reporting smoking in their home, with the greatest reductions being for Pacific students (adjusted OR 0.64, 95% CI 0.57– 0.73).

Although smoking rates in New Zealand appear to be falling, research suggests that smoking is increasingly concentrated in socioeconomically disadvantaged communities [108]. Further a 2002 study estimated that tobacco expenditure accounted for almost 14% of non-housing related household spending in some low income households [109]. Thus while increasing the price of cigarettes through increases in taxation is effective in reducing smoking prevalence, it also risks increasing financial hardship among socioeconomically disadvantaged groups where smoking persists, emphasising the need for comprehensive tobacco control strategies [108].

The following section uses data from the National Maternity Collection to review the proportion of babies with mothers who smoked at two weeks after delivery. A later section uses Action on Smoking and Health (ASH) survey data to review the proportion of Year 10 students with parents who smoked, or who lived in homes where people smoked inside.

## Maternal Smoking at Two Weeks After Delivery

The National Maternity Collection (MAT) collates Lead Maternity Carer (LMC) claims data, with information being available on maternal smoking status at two weeks after delivery for around 80% of all New Zealand births.

### Data Sources and Methods

#### Indicator

1. *Distribution of the number of cigarettes smoked at two weeks after delivery by the mothers of babies born 2009–2010*

Numerator: National Maternity Collection: Number of cigarettes smoked at two weeks after delivery, by the mothers of babies born 2009–2010

Denominator: National Maternity Collection: Number of babies born.



## 2. Proportion of babies born to mothers who smoked at two weeks after delivery

**Numerator:** National Maternity Collection: Number of babies born to mothers who smoked at two weeks after delivery

**Denominator:** National Maternity Collection: Number of babies born.

### Notes on Interpretation

Note 1: The National Maternity Collection (MAT) contains information on selected publicly funded maternity services from nine months before to three months after a birth. It integrates information from two data sources: LMC claims for payment for Primary Maternity Services provided under Section 88 of the NZ Public Health and Disability Act 2000; and data from the National Minimum Dataset (NMDS) on hospital admissions during pregnancy, birth and the postnatal period for mother and baby.

Up until June 2007, Section 88 claims data coverage was 95% of known births. However in July 2007, due to a funding change, DHB employed midwifery teams ceased to submit claims to the Ministry of Health for their services. Thus no LMC registration data (including smoking status) is currently available in MAT for women who opt for DHB based primary maternity care.

Note 2: In this analysis, the baby's hospital admission (birth) data from the NMDS was linked with maternal Section 88 claims data using a de-identified pregnancy key, with the unit of analysis being the baby rather than the mother (e.g. maternal information for twins is included twice in the analysis). Of the 129,635 babies born during 2009–2010, 1,113 (0.86%) were not able to be matched to their mother's MAT record.

Note 3: A relatively high proportion of babies (19.4% during 2009–2010) had missing information on maternal smoking status at two weeks after delivery, with the majority of these babies having mothers who were not registered with a LMC. The proportion with missing information was thus not randomly distributed, but rather was higher for Pacific babies, those with younger mothers and those from more deprived areas. Large DHB variations were also evident (see Smoking in Pregnancy Section for further details). As a result, all of the data in this section have been presented with missing smoking status both included and excluded from the analysis. In interpreting these data, maternal smoking rates with missing responses included should be viewed as providing an absolute minimum estimate of the number of babies whose mother's smoked at two weeks after delivery. While maternal smoking rates with missing responses excluded may provide a closer approximation of the true rate, they may still be an underestimate, as a higher proportion of babies with younger mothers and those from more deprived areas, for example, had missing smoking status data as well as higher smoking rates amongst those for whom maternal smoking status was known.

Note 4: MAT does not contain details on stillborn babies as they are not assigned a NHI number at birth and are thus not reported to the National Minimum Dataset.

## New Zealand Distribution Number of Cigarettes Smoked

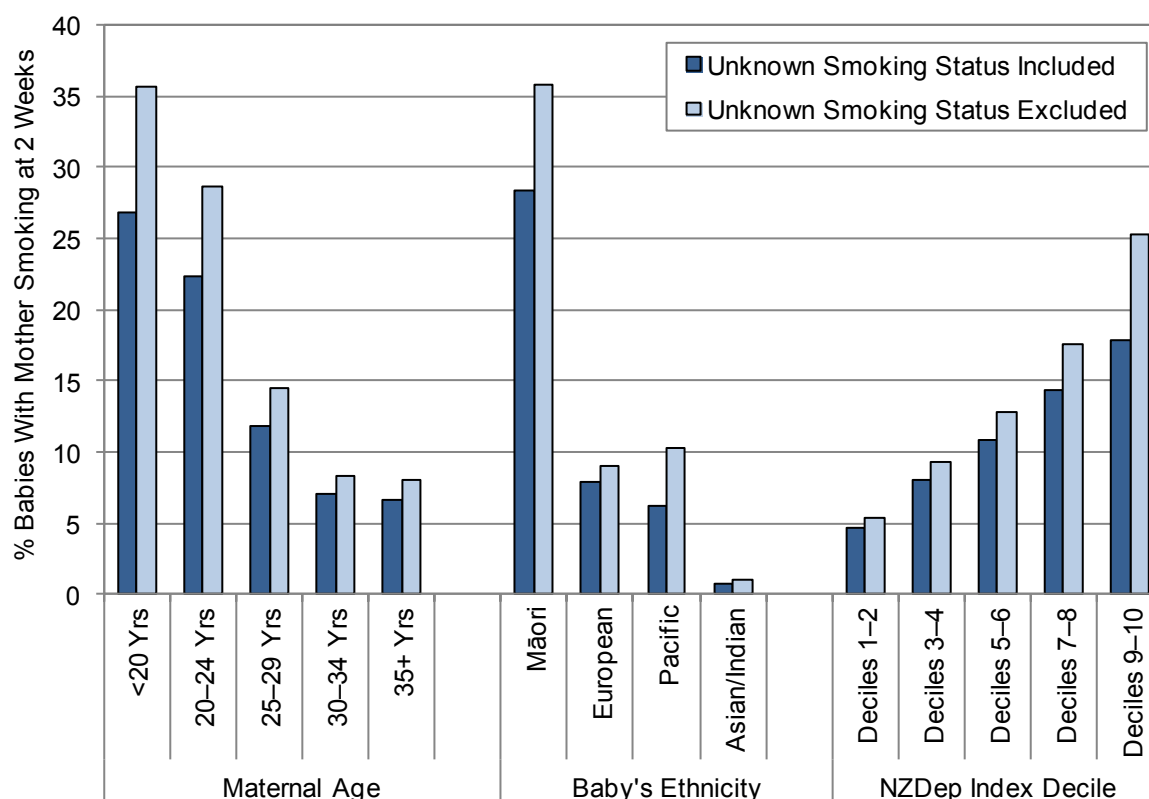
In New Zealand during 2009–2010, 19.4% of babies did not have their mother's smoking status at two weeks after delivery recorded in the National Maternity Collection, with the majority of omissions being for babies whose mothers were unregistered with a LMC at delivery. Of those babies whose mother's smoking status was known, 84.8% had a non-smoking mother, while 9.7% had a mother who smoked less than 10 cigarettes per day and 5.6% had a mother who smoked 10 or more cigarettes per day (**Table 35**).

Table 35. Number of Cigarettes Smoked at Two Weeks After Delivery, by the Mothers of New Zealand Babies Born 2009–2010

No. of Cigarettes per Day at Two Weeks After Delivery	No. of Babies: Total 2009–2010	No. of Babies: Annual Average	Percent of Babies (%)	
			Unknown Smoking Status Included	Unknown Smoking Status Excluded
New Zealand				
Non-Smoker	88,584	44,292	68.3	84.8
<10	10,093	5,047	7.8	9.7
10 to 20	5,097	2,549	3.9	4.9
>20	723	362	0.6	0.7
Unknown	25,138	12,569	19.4	
Total	129,635	64,818	100.0	100.0

Source: National Maternity Collection

Figure 89. Proportion of Babies Born to Mothers who Smoked at Two Weeks After Delivery by Maternal Age, Baby's Ethnicity and NZ Deprivation Index Decile, New Zealand 2009–2010



Source: National Maternity Collection; Note: Ethnicity is Level 1 Prioritised; Decile is NZDep06

Table 36. Proportion of Babies Born to Mothers who Smoked at Two Weeks After Delivery by Maternal Age, Baby's Ethnicity and NZ Deprivation Index Quintile, New Zealand 2009–2010

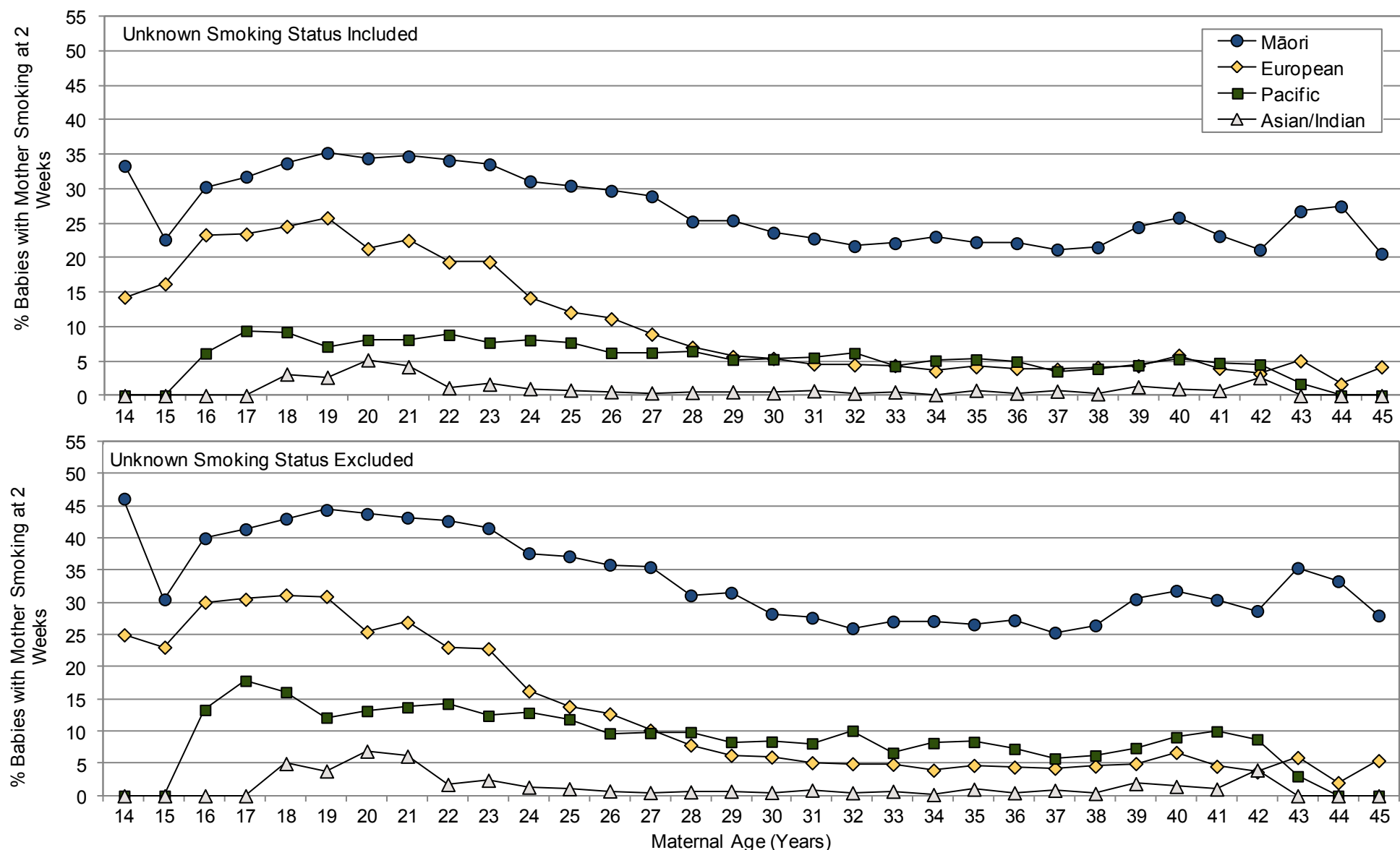
Variable	Rate (%)	Rate Ratio	95% CI	Rate (%)	Rate Ratio	95% CI
	Maternal Smoking at 2 Weeks					
	Unknown Smoking Status Included			Unknown Smoking Status Excluded		
	Maternal Age					
<20 Years	26.85	4.03	3.82–4.26	35.74	4.43	4.20–4.68
20–24 Years	22.37	3.36	3.20–3.53	28.66	3.55	3.38–3.73
25–29 Years	11.79	1.77	1.68–1.87	14.49	1.80	1.71–1.89
30–34 Years	7.00	1.05	0.99–1.11	8.32	1.03	0.97–1.09
35+ Years	6.66	1.00		8.06	1.00	
	Baby's Prioritised Ethnicity					
Asian/Indian	0.72	0.09	0.07–0.11	0.95	0.11	0.09–0.13
European	7.93	1.00		9.05	1.00	
Māori	28.43	3.58	3.47–3.70	35.76	3.95	3.83–4.08
Pacific	6.24	0.79	0.74–0.84	10.25	1.13	1.06–1.21
	NZ Deprivation Index Quintile					
Deciles 1–2	4.66	1.00		5.31	1.00	
Deciles 3–4	7.99	1.71	1.58–1.86	9.31	1.75	1.62–1.90
Deciles 5–6	10.87	2.33	2.17–2.51	12.75	2.40	2.23–2.59
Deciles 7–8	14.36	3.08	2.87–3.31	17.62	3.32	3.09–3.56
Deciles 9–10	17.87	3.83	3.58–4.11	25.34	4.77	4.46–5.11

Source: National Maternity Collection; Note: Rate is per 100 live born babies; Ethnicity is Level 1 Prioritised; Decile is NZDep06





Figure 90. Proportion of Babies Born to Mothers who Smoked at Two Weeks After Delivery by Baby's Ethnicity and Maternal Age, New Zealand 2009–2010



Source: National Maternity Collection; Note: Ethnicity is Level 1 Prioritised



## New Zealand Distribution by Maternal Age, Ethnicity and NZDep Decile

In New Zealand during 2009–2010, Māori and Pacific babies (vs. European and Asian/Indian babies) were *significantly* more likely to have mothers who smoked at two weeks after delivery, as were the babies of younger mothers (less than 30 years vs. 30 or more years). A *significantly* higher proportion of babies from average to more deprived areas (NZDep06 deciles 3–10 vs. deciles 1–2) also had mothers who smoked at two weeks after delivery (**Figure 89, Table 36**).

## New Zealand Distribution by Maternal Age and Ethnicity

In New Zealand during 2009–2010, when broken down by maternal age and baby's ethnicity, the mothers of Māori babies had higher smoking rates at two weeks after delivery than European or Pacific babies at all ages from 14 to 45 years. The maternal smoking rates of Asian/Indian babies however, were lower in most age groups. In addition, maternal smoking rates for European babies were higher than for Pacific babies for those with younger mothers (less than 27 years), although differences were less marked for those with older mothers (**Figure 90**).

## Midland Region Distribution

### Midland Region Number of Cigarettes Smoked

During 2009–2010, the proportion of babies who did not have their mother's smoking status at two weeks after delivery recorded in the National Maternity Collection varied from 3.3% in the Bay of Plenty to 11.7% in the Waikato, with the majority of omissions being for babies whose mothers were not registered with a LMC at delivery. Of those babies whose mother's smoking status was known, the proportion with a non-smoking mother varied from 64.5% in Tairāwhiti to 80.5% in the Waikato, while the proportion who had a mother who smoked 10 or more cigarettes per day varied from 7.2% in the Waikato to 13.9% in Tairāwhiti (**Table 37**).

### Midland Region vs. New Zealand

In all of the DHBs in the Midland Region during 2009–2010, maternal smoking rates at two weeks after delivery were *significantly* higher than the New Zealand rate amongst babies whose maternal smoking status was known (Waikato 19.5%, Bay of Plenty 24.2%, Lakes DHB 25.8%, Tairāwhiti 35.6% and Taranaki 21.4% vs. New Zealand 15.2%). These differences remained significant even when those with missing smoking data were included in the denominator (**Table 38, Figure 91**).

### Midland Region Distribution by Ethnicity

In the Waikato during 2009–2010, maternal smoking rates at two weeks after delivery were higher for Māori > European > Pacific > Asian/Indian babies, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki, rates were higher for Māori babies than for European babies (**Figure 92**).



Table 37. Number of Cigarettes Smoked at Two Weeks After Delivery, by the Mothers of Midland DHBs Babies Born 2009–2010

Number of Cigarettes Smoked per Day	Number of Babies: Total 2009–2010	Number of Babies: Annual Average	Percent of Babies (%)	
			Unknown Smoking Status Included	Unknown Smoking Status Excluded
Maternal Smoking at 2 Weeks				
Waikato				
Non-Smoker	8,055	4,028	71.1	80.5
<10	1,230	615	10.8	12.3
10 to 20	644	322	5.7	6.4
>20	77	39	0.7	0.8
Unknown	1,331	666	11.7	
Waikato Total	11,337	5,669	100.0	100.0
Bay of Plenty				
Non-Smoker	4,441	2,221	73.3	75.8
<10	824	412	13.6	14.1
10 to 20	519	260	8.6	8.9
>20	73	37	1.2	1.2
Unknown	199	100	3.3	
Bay of Plenty Total	6,056	3,028	100.0	100.0
Lakes DHB				
Non-Smoker	2,226	1,113	66.5	74.2
<10	468	234	14.0	15.6
10 to 20	266	133	7.9	8.9
>20	42	21	1.3	1.4
Unknown	346	173	10.3	
Lakes DHB Total	3,348	1,674	100.0	100.0
Tairawhiti				
Non-Smoker	939	470	59.8	64.4
<10	315	158	20.1	21.6
10 to 20	176	88	11.2	12.1
>20	27	14	1.7	1.9
Unknown	114	57	7.3	
Tairawhiti Total	1,571	786	100.0	100.0
Taranaki				
Non-Smoker	2,291	1,146	70.8	78.6
<10	381	191	11.8	13.1
10 to 20	211	106	6.5	7.2
>20	32	16	1.0	1.1
Unknown	319	160	9.9	
Taranaki Total	3,234	1,617	100.0	100.0

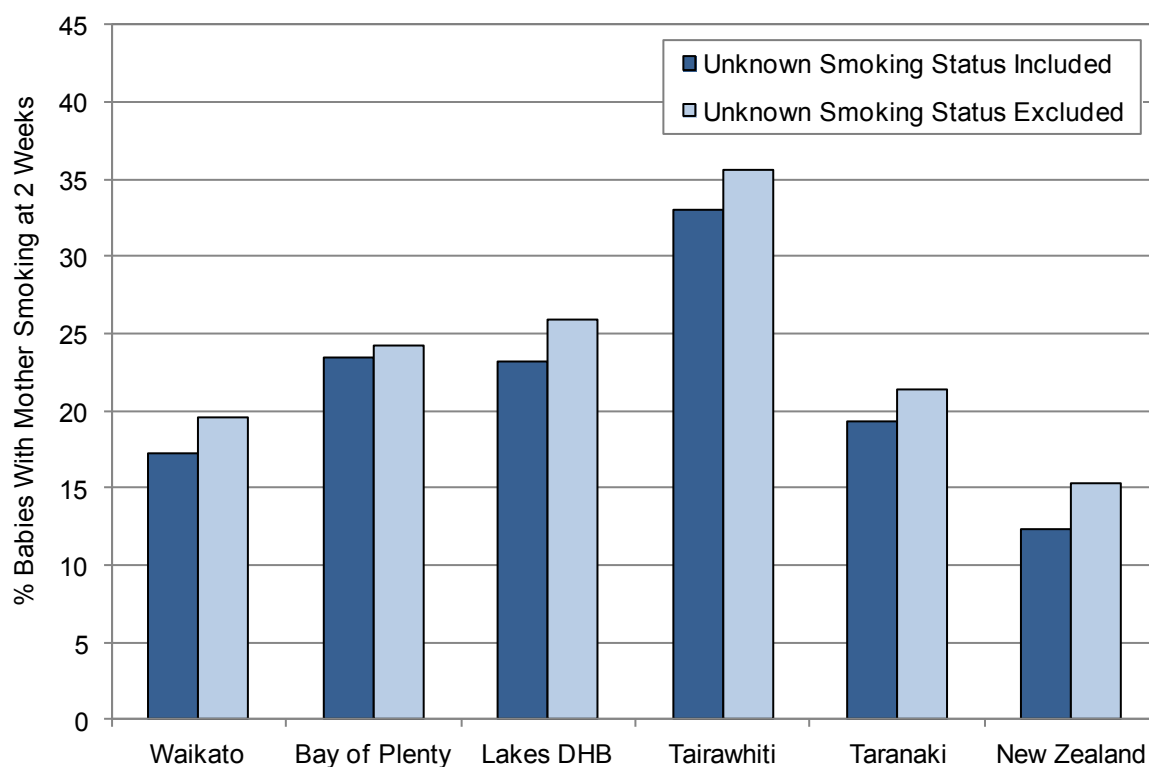
Source: National Maternity Collection

Table 38. Proportion of Babies Born to Mothers who Smoked at Two Weeks After Delivery, Midland DHBs vs. New Zealand 2009–2010

DHB	Number of Babies: Annual Average 2009–2010			Percent of Babies with Maternal Smoker	Rate Ratio	95% CI
	Maternal Smoker	Maternal Non- Smoker	Total Number of Babies			
Maternal Smoking at 2 Weeks						
Unknown Smoking Status Included						
Waikato	977	4,692	5,669	17.2	1.40	1.34–1.46
Bay of Plenty	710	2,319	3,028	23.4	1.91	1.82–2.00
Lakes	388	1,286	1,674	23.2	1.89	1.77–2.01
Tairawhiti	259	527	786	33.0	2.68	2.50–2.88
Taranaki	312	1,305	1,617	19.3	1.57	1.46–1.69
New Zealand	7,969	56,849	64,818	12.3	1.00	
Unknown Smoking Status Excluded						
Waikato	977	4,028	5,004	19.5	1.28	1.23–1.34
Bay of Plenty	710	2,221	2,930	24.2	1.59	1.51–1.67
Lakes	388	1,113	1,501	25.8	1.70	1.59–1.80
Tairawhiti	259	470	729	35.6	2.33	2.17–2.50
Taranaki	312	1,146	1,458	21.4	1.40	1.31–1.51
New Zealand	7,969	44,292	52,261	15.2	1.00	

Source: National Maternity Collection

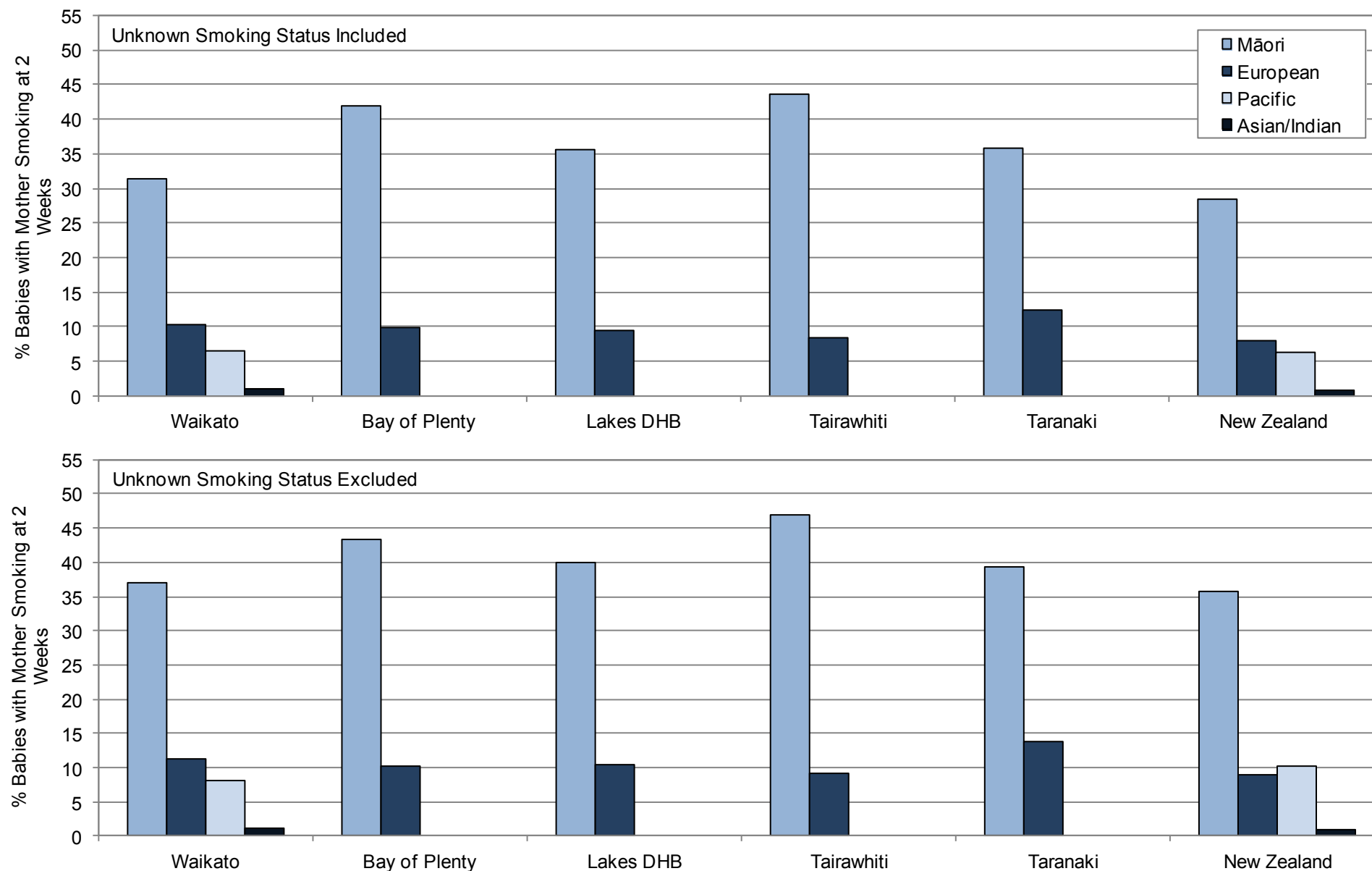
Figure 91. Proportion of Babies Born to Mothers who Smoked at Two Weeks After Delivery, Midland DHBs vs. New Zealand 2009–2010



Source: National Maternity Collection



Figure 92. Proportion of Babies Born to Mothers who Smoked at Two Weeks After Delivery by Baby's Ethnicity, Midland DHBs vs. New Zealand 2009–2010



Source: National Maternity Collection; Note: Ethnicity is Level 1 Prioritised



## Exposure to Second-Hand Cigarette Smoke in the Home

Action on Smoking and Health (ASH) was established in 1982 with the aim of reducing smoking and smoking-related premature deaths. Since 1997, ASH has conducted annual surveys of smoking behaviour in Year 10 students, and since 1999 has collected information from over 30,000 students annually. The following section uses ASH Survey data to review the proportion of Year 10 students with parents who smoke, or who live in homes where people smoke inside.

### Data Source and Methods

#### Definition

##### 1. Proportion of Year 10 students with parents who smoke

Numerator: ASH Surveys: Number of Year 10 students who report that one or both parents smoke

Denominator: ASH Survey: Number of Year 10 Students surveyed

##### 2. Proportion of Year 10 students or who live in a home where people smoke inside

Numerator: ASH Surveys: Number of Year 10 students living in a home where people smoke inside

Denominator: ASH Survey: Number of Year 10 Students surveyed

#### Notes on Interpretation

Note 1: Action on Smoking and Health (ASH) was established in 1982 with the aim of reducing smoking and smoking-related premature deaths. While the Ministry of Health provides funding for the annual Year 10 (14 to 15 years) Smoking Survey, ASH manages the data collection and oversees its analysis [110]. Since 1997, ASH has conducted annual surveys of smoking behaviour in Year 10 students, and since 1999 has collected information from over 30,000 students annually. All schools with Year 10 students (except correspondence schools) are invited to participate, with survey packs being sent to consenting schools. Teachers supervise the completion of the questionnaires in class, with questions covering a range of demographic factors and smoking-related topics. While it has been suggested that this design means it is not always clear how the sample has been selected and how consistently the survey has been administered, the large sample size and annual frequency makes the survey useful for monitoring the smoking behaviour of Year 10 students and for understanding trends and risk factors for smoking initiation [111].

Note 2: Since 2001 participation rates have fluctuated, with school response rates of 67% in 2002 falling to 47% in 2007, before increased again to 54% in 2008, and 58% in 2010 (in 2010 the sample comprised 54% of the Year 10 population). Such variable participation rates however may potentially introduce a fluctuating bias into each year's results. For example, the 2008 survey was under-representative of Māori students and those from low decile schools, with this underrepresentation potentially leading to an underestimates of smoking rates in the 2008 sample [112]. However the 2010 survey had a very similar gender and ethnicity distribution to the national Year 10 population [107].

## New Zealand Distribution and Trends

### Trends in Parental and Household Smoking Behaviour

In New Zealand during 2001–2010, the proportion of Year 10 students with a parent(s) who smoked did not change *significantly*, being 40.2% in 2001 and 38.1% in 2010. In contrast, the proportion of students who lived in homes where smoking occurred inside declined *significantly*, from 30.5% in 2001 to 19.1% in 2010 (**Figure 95**).

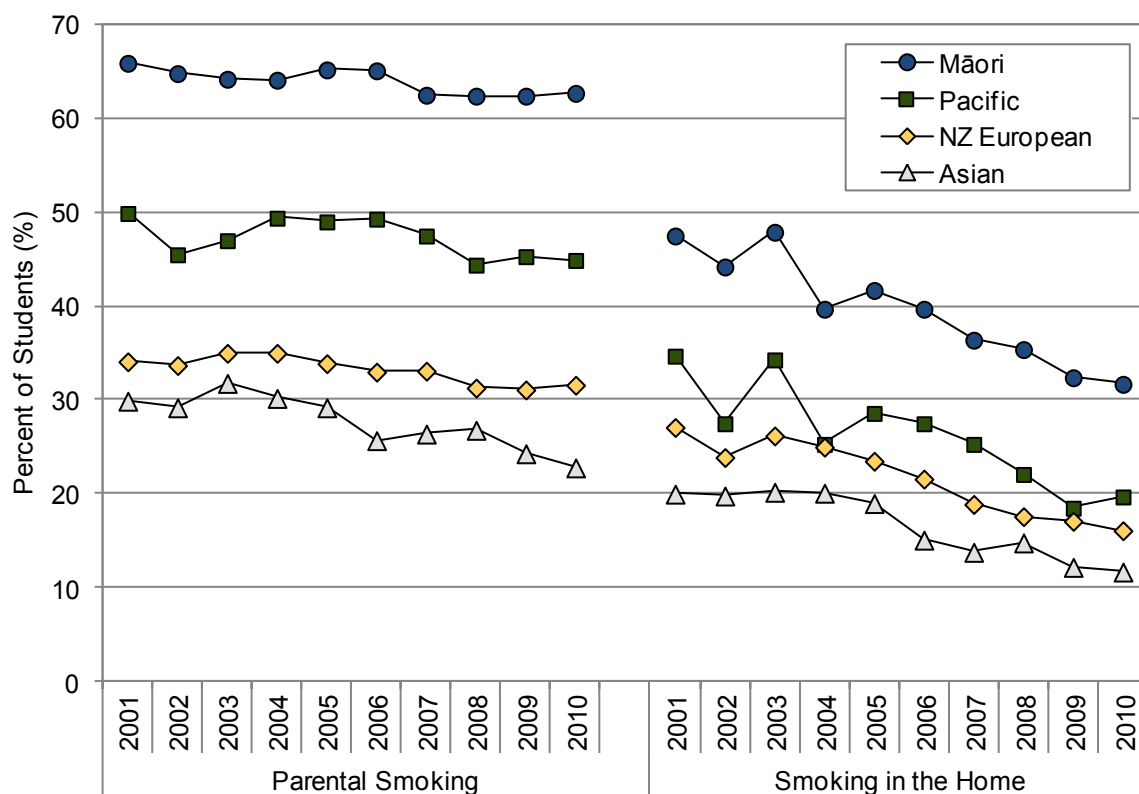
### Ethnic Differences in Parental and Household Smoking Behaviour

In New Zealand during 2001–2010, there were no *significant* changes in parental smoking rates for European students (34.1% in 2001 vs. 31.6% 2010), although rates for Māori students (65.9% in 2001 to 62.7% in 2010), Pacific students (49.9% in 2001 to 44.9% 2010) and Asian students (29.9% in 2001 to 22.8% to 2010) did decline *significantly* during 2006–2010. Throughout this period, parental smoking rates remained higher for Māori > Pacific > European > Asian students (**Figure 93**).

Ethnic differences were also evident in exposure to cigarette smoke in the home. During 2001–2010, the proportion of 14–15 year olds living in homes where people smoked inside declined for all ethnic groups, with rates falling from 47.5% to 31.7% for Māori, from 34.7% to 19.7% for Pacific, from 27.1% to 16.1% for European and from 20.0% to 11.7% for Asian students. These declines were *significant* for all four ethnic groups during 2006–2010 (**Figure 93**).

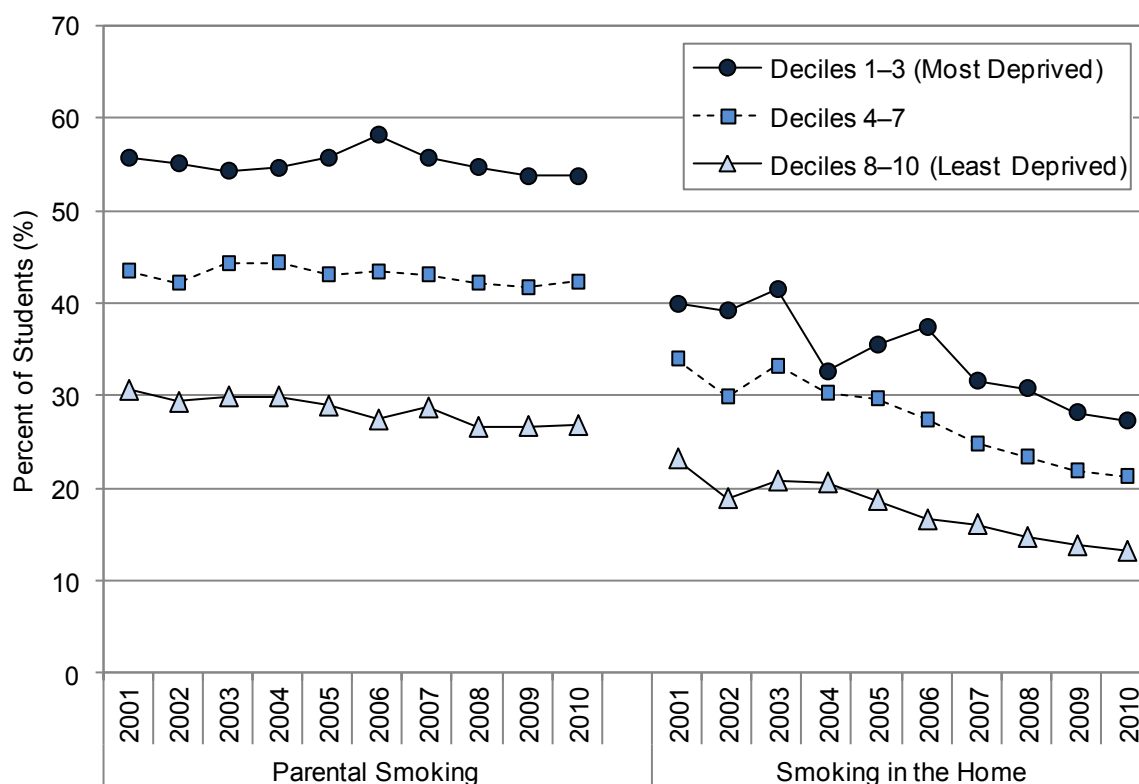


Figure 93. Proportion of Year 10 Students with Parents who Smoke or who Live in a Home with Smoking Inside by Ethnicity, New Zealand ASH Surveys 2001–2010



Source: ASH Year 10 Surveys [107]; Note: Ethnicity is prioritised

Figure 94. Proportion of Year 10 Students with Parents who Smoke or who Live in a Home with Smoking Inside by School Socioeconomic Decile, New Zealand ASH Surveys 2001–2010



Source: ASH Year 10 Surveys [107]

## Socioeconomic Differences in Parental and Household Smoking

In New Zealand during 2001–2010, parental smoking rates declined *significantly* for students from schools in the least deprived (deciles 8–10) areas, with rates falling from 30.6% in 2001 to 26.8% in 2010. However, rates for students from schools in average (deciles 4–7) areas were relatively static (43.5% in 2001 vs. 42.3% in 2010), as were rates for students from schools in the most deprived (deciles 1–3) areas (55.7% in 2001 vs. 53.7% in 2010). Throughout this period, parental smoking rates were higher for students from schools in the most deprived > average > least deprived areas (**Figure 94**).

Exposure to smoking in the home was also higher for those from schools in the most deprived > average > least deprived areas, although exposures were lower than parental smoking rates might predict, suggesting that a proportion of families with household members who smoked did not permit smoking inside the home. During 2001–2010, exposure to smoking in the home declined *significantly* for all socioeconomic groups (deciles 8–10, from 23.2% in 2001 to 13.2% in 2010; deciles 4–7, from 34.0% in 2001 to 21.3% in 2010; and deciles 1–3, from 39.9% in 2001 to 27.3% in 2010) (**Figure 94**).

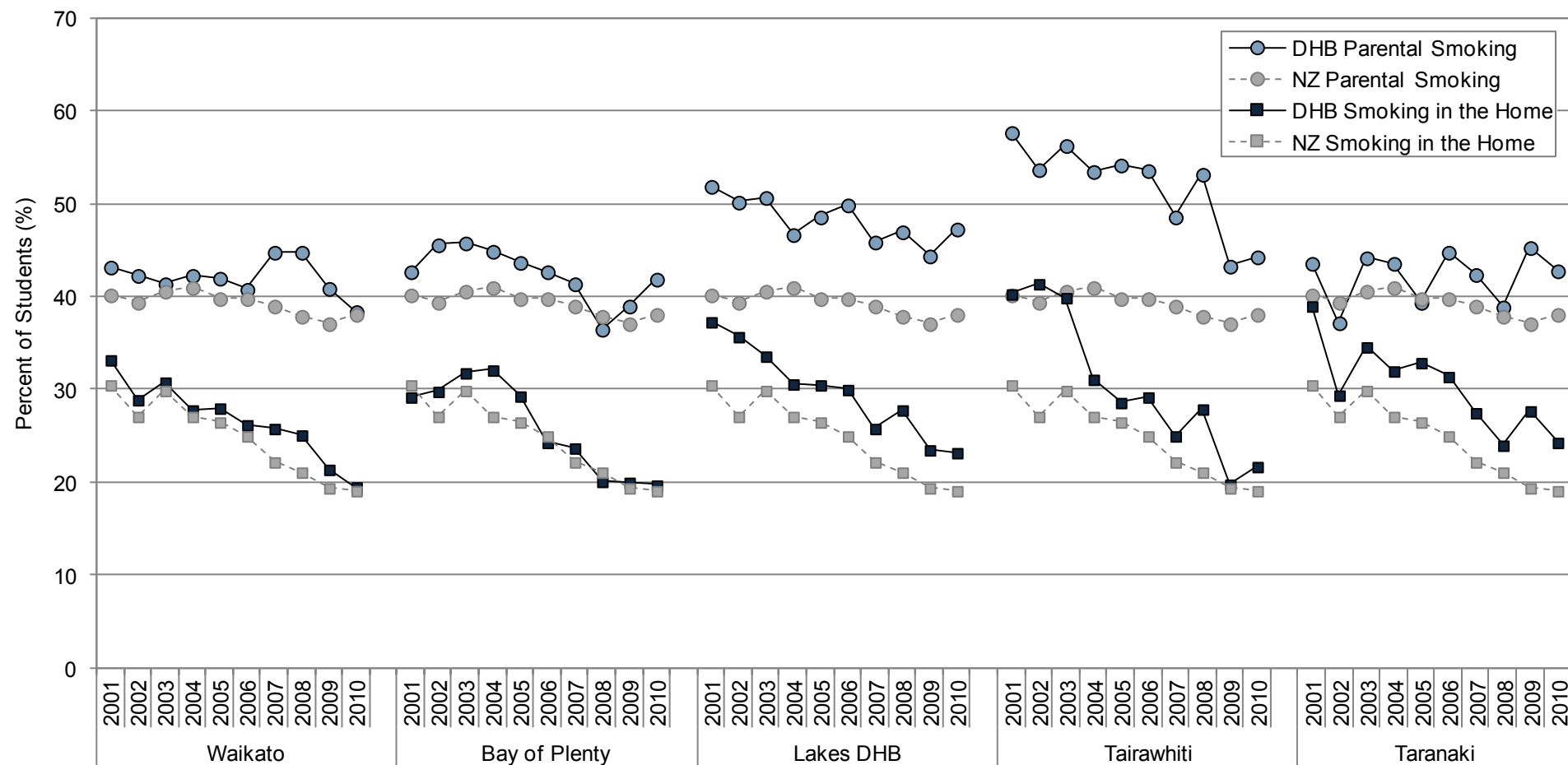
## Midland Region Distribution and Trends

### Parental and Household Smoking in the Midland Region

During 2001–2010, the proportion of Year 10 students who reported at least one parent smoking declined in Lakes DHB and Tairāwhiti, while the proportion who reported living at home where people smoked inside declined in all five DHBs. Rates for both measures were higher than the New Zealand rate in all Midland DHBs, with the exception of the Bay of Plenty, where the proportion who lived in a home where people smoked inside was similar to the New Zealand rate during 2006–2010 (**Figure 95**).



Figure 95. Proportion of Year 10 Students with Parents who Smoke or who Live in Homes with Smoking Inside, Midland DHBs vs. New Zealand, ASH Surveys 2001–2010



Source: ASH Year 10 Surveys [107]



# Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Second-Hand Cigarette Smoke Exposure in Children

In New Zealand, there is no national strategy focussed on the prevention of second-hand cigarette exposure in children. Any local strategies developed will thus need to incorporate evidence from a variety of sources. **Table 39** (below) provides an overview of a range of New Zealand policy documents and evidence-based reviews which may be useful in this context. In addition, **Table 34 (Page 197)** provides an overview of publications relevant to the cessation of smoking in pregnancy, and **Table 42 (Page 219)** and **Table 43 (Page 222)** address the prevention and cessation of smoking in young people.

Table 39. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Exposure to Second-Hand Cigarette Smoke in Children

Ministry of Health Policy Documents
<p>Ministry of Health. 2007. <b>New Zealand Smoking Cessation Guidelines</b>. Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/new-zealand-smoking-cessation-guidelines">http://www.health.govt.nz/publication/new-zealand-smoking-cessation-guidelines</a></p> <p>The smoking cessation guidelines recommend that all health workers should be aware of the risks of second-hand smoke to children and young people exposed to smoking in their families and homes. Brief advice and cessation support to should be offered to all family members who smoke.</p>
<p>Ministry of Health. 2010. <b>Well Child/Tamariki Ora National Schedule: Four to six weeks, to five years</b>. Wellington: Ministry of Health.</p> <p>Ministry of Health. 2010. <b>Well Child/Tamariki Ora National Schedule: Birth, to four to six weeks</b>. Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/our-work/life-stages/child-health/well-child-services/well-child-publications/well-child-national-schedule">http://www.health.govt.nz/our-work/life-stages/child-health/well-child-services/well-child-publications/well-child-national-schedule</a></p> <p>The Well child/Tamariki Ora schedule outlines the assessment, intervention, and health education activities for each of the Lead Maternity Carer postnatal contacts, the GP six week visit and the eight universal core contacts delivered in the Well Child programme, to children aged between four to six weeks, and five years and their families. ABC smoking cessation advice, as described in the New Zealand Smoking Cessation Guidelines, is recommended at each contact.</p>
Cochrane Systematic Reviews
<p>Priest N, et al. 2008. <b>Family and carer smoking control programmes for reducing children's exposure to environmental tobacco smoke</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001746.pub2  <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001746/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001746/frame.html</a></p> <p>This review examined the effectiveness of interventions aimed at reducing environmental smoke exposure in children. Thirty-six controlled trials were included, 30 of which random allocation. The majority of trials targeted parents in 'well-child' or 'ill-child' healthcare settings, and including educational and counselling interventions. There was insufficient evidence to clearly demonstrate the effectiveness a particular intervention. Eleven studies identified a statistically significant effect of the intervention on children's smoke exposure, four of which delivered intensive counselling in healthcare settings.</p>
Other Systematic Reviews
<p>Rosen LJ, et al. 2012. <b>Parental Smoking Cessation to Protect Young Children: A Systematic Review and Meta-analysis</b>. Pediatrics, 129(1), 141-52.</p> <p>This recent systematic review of interventions aimed at parental smoking cessation identified 18 controlled trials (7053 participants). Interventions included self-help, counselling and medication and took place in a range of settings. Meta-analysis revealed a significant improvement in overall quit rates for intervention groups compared to controls (RR 1.34, 95% CI 1.05 to 1.71) and a risk difference of 0.04 (95% CI 0.01 to 0.07), suggesting that an additional 4% of parents in the intervention groups stopped smoking. The subgroups with significantly increased quit rates were those with children aged 4 to 17 years, interventions whose primary goal was cessation, interventions that offered medications and interventions with high follow-up rates (over 80%). While interventions significantly increased quit rates the authors note that the majority of parents continued to smoke, necessitating additional strategies.</p>

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**

# TOBACCO USE IN YOUNG PEOPLE

## Introduction

Cigarette smoking in young people is associated with addiction to nicotine, reduced lung function, reduced lung growth, asthma, and early abdominal aortic atherosclerosis [113]. The average age for smoking initiation among young people in New Zealand is 14.6 years, and the majority of adult smokers started smoking in adolescence [114,115]. Those who do not smoke before the age of 20 are significantly less likely to start as adults [116].

The prevalence of smoking amongst young people appears to be declining, in line with national smoking prevalence [99]. The Action on Smoking and Health (ASH) New Zealand national surveys of 14 and 15 year olds revealed a significant decline in smoking between 2006 and 2010 (adjusted OR for regular smoking 0.65, 95% CI 0.62–0.69) [107]. In the 2010 survey of 32,605 14 and 15 year old students, 10.0% reported regular smoking (at least daily, weekly or monthly) and 64.4% reported they had never smoked, a significant increase in those that reported they had never smoked since 2006 (adjusted OR 1.61, 95% CI 1.56–1.66). The highest prevalence of smoking was reported by Māori females and by students from low decile schools. Overall, smoking rates were significantly higher for Māori, Pacific and Asian students than for European/other students, after adjustment for age and sex. Students were also significantly more likely to smoke if both parents smoked than if neither parent smoked, and if they had a best friend who smoked. Adolescent smoking in New Zealand has also been linked to the amount of pocket money received and to smoking at home [117].

Despite the apparent decline in cigarette smoking, young people continue to smoke and disparities remain. Smoking control programmes in young people must therefore focus on both prevention of smoking initiation and smoking cessation.

The following section reviews smoking prevalence in 14 to 15 year olds using data from the ASH New Zealand Smoking Surveys, as well as smoking in young people aged 15–24 years using data from the 2009 New Zealand Tobacco Use Survey.

## ASH Year 10 Survey Data

The Year 10 ASH Smoking Survey has been used to monitor smoking in 14 and 15 year old students since 1999. The Survey samples around half of the secondary schools with Year 10 students in New Zealand, with sample sizes exceeding 25,000 students each year [118]. The results thus reflect the smoking behaviour of 14 to 15 year old secondary school students and are useful in understanding trends and risk factors for smoking initiation.

### Data Source and Methods

#### Definition

1. Proportion of Year 10 Students who are daily smokers
2. Proportion of Year 10 Students who have never smoked

#### Data Source

Numerator: ASH Surveys      Number of Year 10 students who are daily smokers  
Number of Year 10 students who have never smoked

Denominator: ASH Survey      Number of Year 10 Students surveyed

#### Notes on Interpretation

Note 1: Action on Smoking and Health (ASH) was established in 1982 with the aim of reducing smoking and smoking-related premature deaths. While the Ministry of Health provides funding for the annual national Year 10 Smoking Survey, ASH manages the data collection and oversees its analysis [110]. Since 1997, ASH has conducted annual surveys of smoking behaviour in Year 10 (14 to 15 year old) students, and since 1999 has collected information from more than 25,000 students annually.

Note 2: Questionnaires are self-administered and cover demographic variables as well as smoking-related issues. Survey forms with instructions are mailed to all secondary schools and teachers supervise the completion of the questionnaires by students. It has been suggested that such a design means it is not always clear how the sample has been selected and how consistently the survey has been administered, however, the large sample size and annual frequency makes the survey useful for monitoring smoking behaviour of Year 10 students in New Zealand, and a useful tool for understanding trends and risk factors for smoking initiation [111].

Note 3: In 2000 and 2001, over 70% of schools in NZ participated and of these, 70% of enrolled students took part [119]. Since then however, participation rates have declined, with school response rates being 67% in 2002, 66% in 2003, 65% in 2004, 58% in 2005, 57% in 2006, 47% in 2007 and 54% in 2008. In 2008, compared to the national Year 10 population, Māori, and low decile schools were underrepresented. This underrepresentation is likely to systematically bias the results of later surveys, with the proportion of young people living with parents who smoke, or in a home with smoking inside, likely to be increasingly under-represented in these figures [112].

All of the data in this section was downloaded from <http://www.ash.org.nz/?t=157>

## New Zealand Distribution and Trends

### New Zealand Trends

In New Zealand during 1999–2011 the proportion of Year 10 students who were daily smokers declined, from 15.6% in 1999 to 4.1% in 2011. Similarly, the proportion who had never smoked increased, from 31.6% in 1999 to 70.4% in 2011 (**Figure 98**).

### Gender and Ethnicity

In New Zealand during 1999–2011, daily smoking rates for Māori and Pacific students were higher for females, while rates for Asian students were higher for males. There were also marked ethnic differences in daily smoking during this period, with rates being consistently higher for Māori > Pacific > European and Asian students (**Figure 96**). Daily smoking rates declined for students of all ethnic groups during 1999–2011 however, with rates falling from 30.3% to 10.3% for Māori students, 19.9% to 5.9% for Pacific students, from 12.9% to 2.4% for European students and from 7.0% to 1.2% for Asian students.

### Gender and Socioeconomic Status

In New Zealand during 1999–2011, daily smoking rates were higher for students attending schools in the most deprived (deciles 1–3) > average (deciles 4–7) > least deprived (deciles 8–10) areas. While gender differences were again evident, these diminished as the level of deprivation decreased, with the higher female smoking rates seen in the most deprived schools, virtually disappearing in the least deprived schools (**Figure 97**). Daily smoking rates declined for students of all socioeconomic groups during 1999–2011 however, with rates falling from 23.5% to 9.6% for students from schools in the most deprived areas, from 16.2% to 4.6% for schools in average areas, and from 11.8% to 1.9% for students from schools in the least deprived areas.

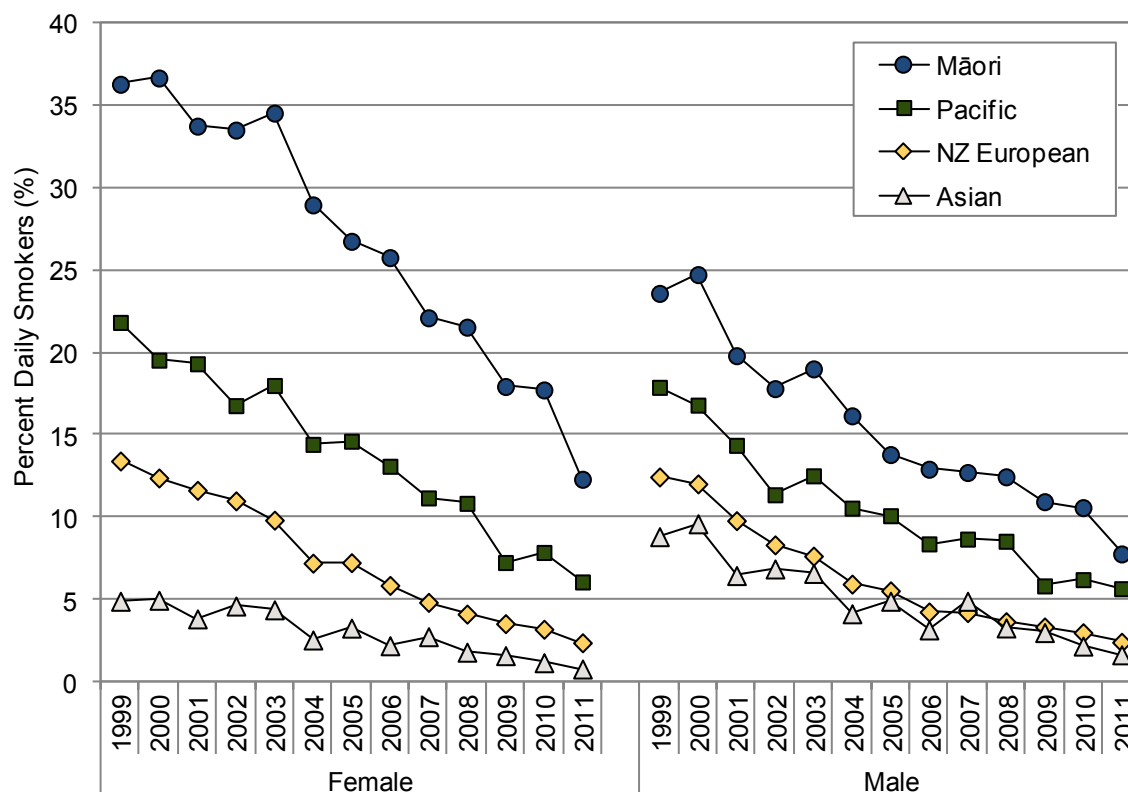
## Midland Region Distribution and Trends

In all of the DHBs in the Midland Region during 1999–2011, the proportion of Year 10 students who were daily smokers declined, while the proportion who had never smoked increased. In the Bay of Plenty, Lakes DHB and Tairāwhiti, the proportion of students who were daily smokers was generally higher than the New Zealand rate, while the proportion who had never smoked was lower. In the Waikato and Taranaki, rates for both measures were more similar to the New Zealand rate (**Figure 98**).



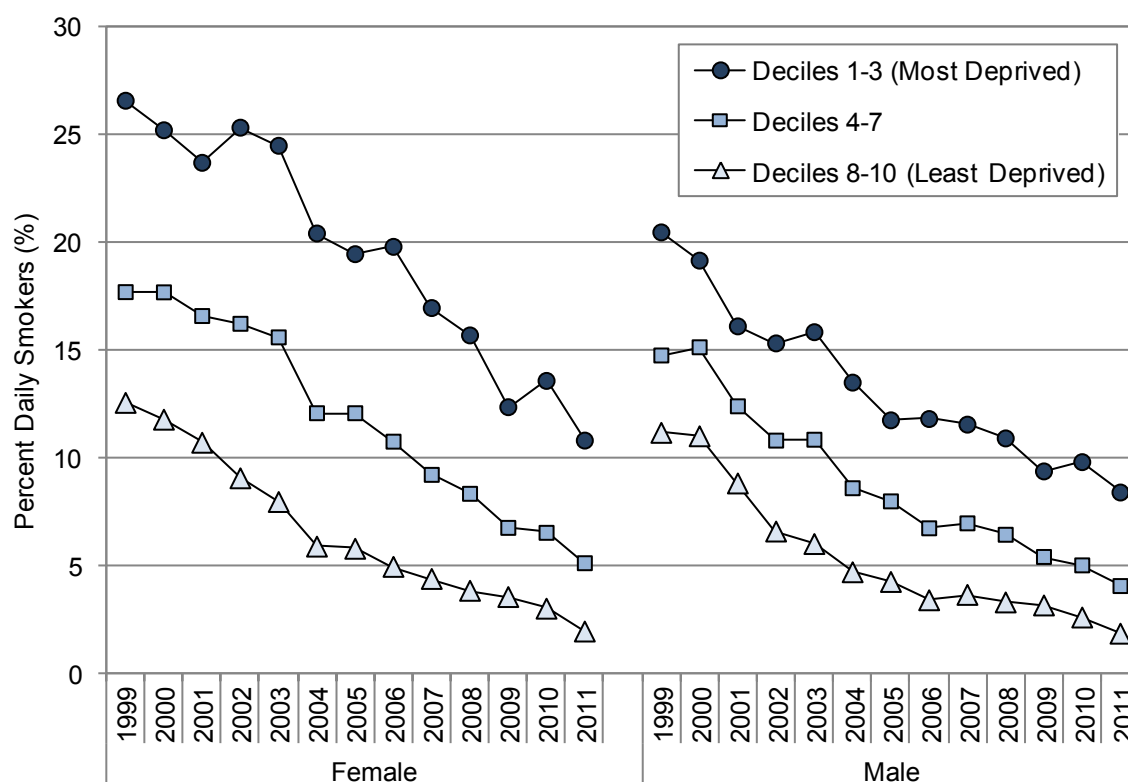


Figure 96. Daily Smoking Rates in Year 10 Students by Gender and Ethnicity, New Zealand ASH Surveys 1999–2011



Source: ASH Year 10 Surveys [120]; Note: Ethnicity is prioritised

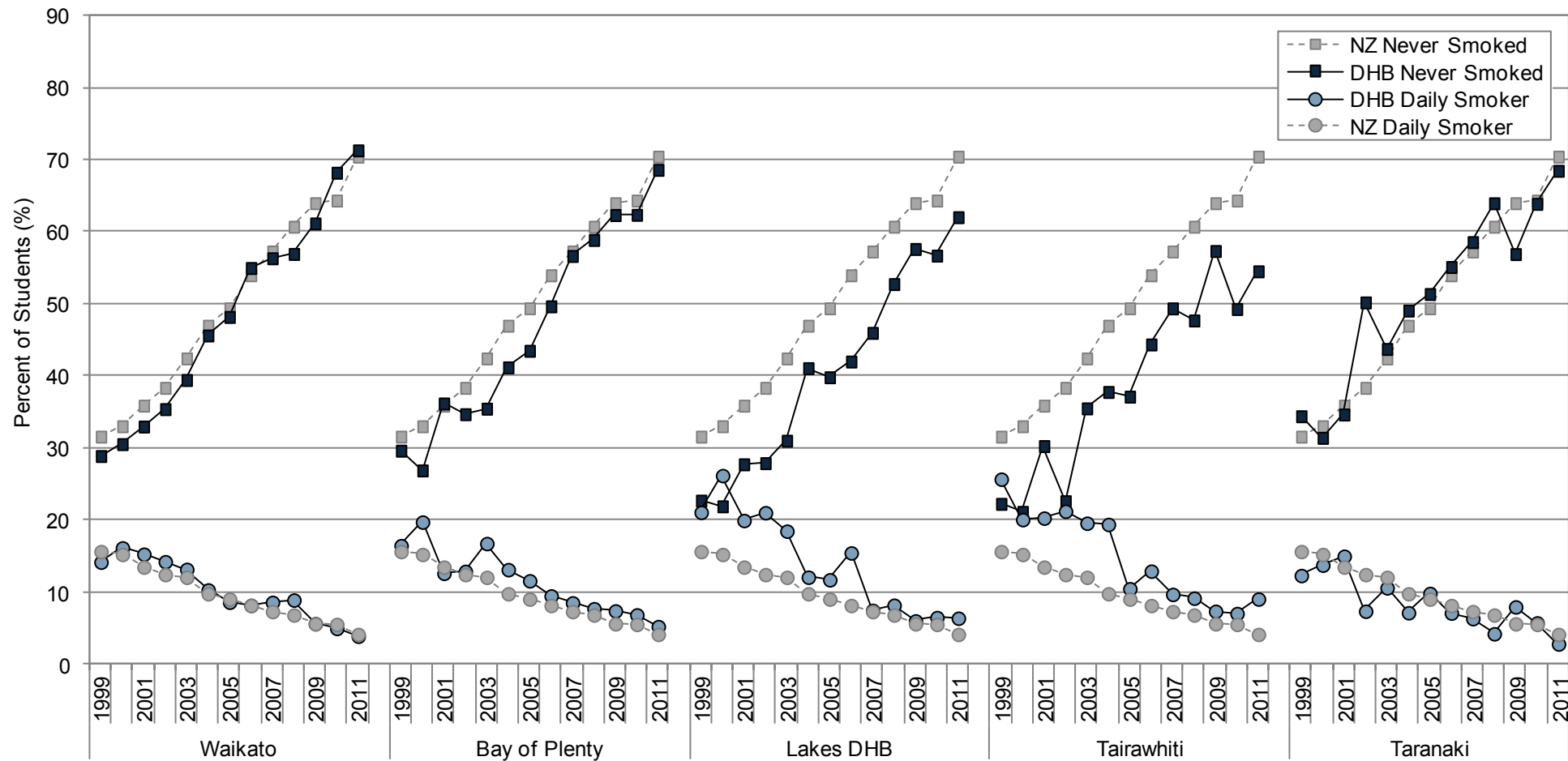
Figure 97. Daily Smoking Rates in Year 10 Students by Gender and School Socioeconomic Decile, New Zealand ASH Surveys 1999–2011



Source: ASH Year 10 Surveys [120]



Figure 98. Daily vs. Never Smoking Rates in Year 10 Students, Midland DHBs vs. New Zealand ASH Surveys 1999–2011



Source: ASH Year 10 Surveys [120]

## 2009 New Zealand Tobacco Use Survey

The New Zealand Tobacco Use Surveys are part of the New Zealand Health Monitor, an integrated programme of household surveys managed by the Ministry of Health. There have been three comprehensive national tobacco use surveys conducted in New Zealand: in 2006, 2008 and 2009. This section reviews tobacco use in young people aged 15–19 years and 20–24 years using data from the 2009 New Zealand Tobacco Use Survey [121].

### Data Source and Methods

#### Definition

1. The proportion of young people aged 15–19 and 20–24 years who were current smokers
2. The proportion of young people aged 15–19 and 20–24 years who were non-smokers

#### Data Source

2009 New Zealand Tobacco Use Survey (NZTUS)

#### Numerator

Number of young people who were current smokers (current is defined as someone who has smoked more than 100 cigarettes in their lifetime and at the time of the survey was smoking at least once a month)

Number of young people who were non-smokers (including ex-smokers and those who have never smoked)

#### Denominator

Number of young people surveyed

#### Notes on Interpretation

The target population for the 2009 NZTUS was the usually resident population aged 15–64 years living in private dwellings in New Zealand. A multi-stage, stratified, probability-proportional-to-size sampling design was used. The design included a Pacific stratum, as well as sampling by District Health Board area and a screen sample to boost the proportions of Māori, Pacific people and those aged 15–24 years.

Participation in the 2009 NZTUS was voluntary, with the survey being carried out by trained interviewers from January to May 2009 using a face-to-face computer-assisted personal interview system. A total sample size of 5222 people aged 15–64 years was achieved, with a weighted response rate of 71.3%. The total sample included 980 Māori, 522 Pacific people, 560 Asian people and 3202 European/Other people. The survey data were weighted so that estimates of population totals, averages and proportions were representative of the total resident population of New Zealand [121].

In the 2009 NZTUS ethnicity was self-defined with participants being able to report affiliation with multiple ethnicities, using the Statistics NZ's standard ethnicity question. Ethnicity was then outputted into four ethnic groups: European/Other, Māori, Pacific, Asian. The 'Other' ethnic group (comprising mainly Middle-Eastern, Latin-American and African ethnicities) was combined with 'European' to avoid small number problems. Because participants could be counted in one or more of the four ethnic groups, direct comparisons between ethnic groups are not possible, with all rate ratios being calculated by comparing each ethnic group to the total population [121].

## New Zealand Distribution

### Distribution by Age and Gender

In the 2009 NZ Tobacco Use Survey, while the proportion of females (19.1% and 31.2%) who were current smokers was higher than for males (16.9% and 30.1%) at both 15–19 years and 20–24 years, in neither case did these differences reach statistical significance. The proportion of young people aged 20–24 years (30.7%) who were current smokers however, was *significantly* higher than for those aged 15–19 years (18.0%) (**Table 40**).

### Distribution by Gender and Ethnicity

In the 2009 NZ Tobacco Use Survey, while current smoking rates for Māori, Pacific and Asian females aged 15–19 years were higher than for males, these differences did not reach statistical significance (**Figure 99**). When compared to the total population rate, current smoking rates for Māori young people (RR 2.15 95% CI 1.62–2.67) were *significantly* higher, while rates for Asian young people were *significantly* lower (RR 0.24 95% CI 0.00–0.70). Rates for Pacific (RR 1.56 95% CI 0.88–2.24) and European/Other young people (RR 0.93 95% CI 0.83–1.04) were not *significantly* different from the total population rate for those aged 15–19 years.



Table 40. Smoking Status of Young People Aged 15–24 Years by Gender and Age Group, 2009 NZ Tobacco Use Survey

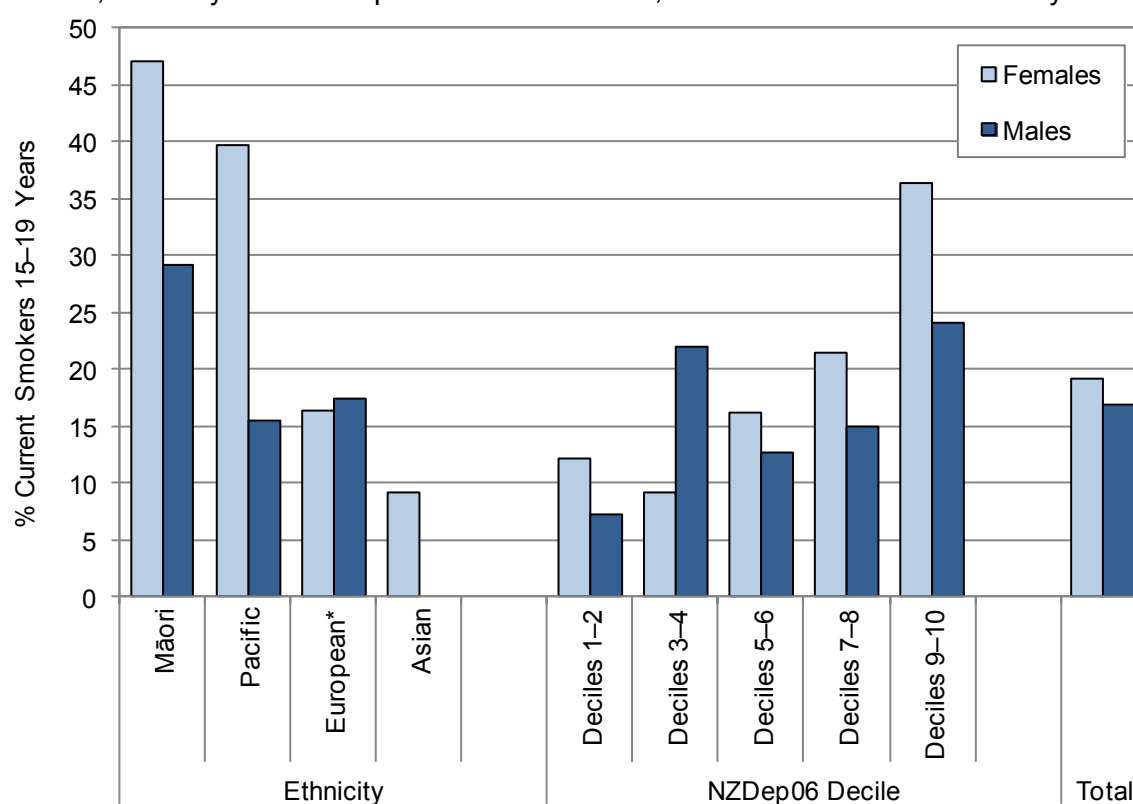
Gender	15–19 Years		20–24 Years	
	Prevalence Estimate	95% CI	Prevalence Estimate	95% CI
Current Smokers				
Males	16.9	12.0–21.9	30.1	23.2–36.9
Females	19.1	14.5–23.8	31.2	23.8–38.5
Total	18.0	14.9–21.2	30.7	25.5–35.8
Non-Smokers				
Males	82.7	77.7–87.6	66.6	59.4–73.8
Females	79.8	75.2–84.4	68.3	61.0–75.6
Total	81.3	78.2–84.3	67.5	62.1–72.8

Source: 2009 New Zealand Tobacco Use Survey [121]

### Distribution by Gender and NZ Deprivation Index Decile

In the 2009 NZ Tobacco Use Survey, while current smoking rates for females aged 15–19 years in some NZDep06 deciles were higher than for males, in no cases did these differences reach statistical significance (**Figure 99**). Current smoking rates for young people from the most deprived (NZDep deciles 9–10) areas (30.9% 95% CI 22.6–39.3) however, were *significantly* higher than for those from the least deprived (NZDep deciles 1–2) areas (10.0% 95% CI 4.2–19.2).

Figure 99. Proportion of Young People Aged 15–19 Years who were Current Smokers by Gender, Ethnicity and NZ Deprivation Index Decile, 2009 NZ Tobacco Use Survey



Source: 2009 New Zealand Tobacco Use Survey [121]; Note: Ethnicity is Total Response Ethnicity; \* European also includes Other



## Source of Tobacco in the Last Month

In the 2009 NZ Tobacco Use Survey, current smokers aged 15–19 years indicated that the most common way of sourcing tobacco in the past month was to buy it themselves (79.3% 95% CI 70.7–87.9), although other sources of tobacco were friends (27.6% 95% CI 18.9–36.2) or family (22.9% 95% CI 14.7–31.1) (**Table 41**).

Table 41. Source of Tobacco in the Last Month for Current Smokers Aged 15–19 Years by Gender, 2009 New Zealand Tobacco Use Survey

Males		Females		Total	
Prevalence Estimate	95% CI	Prevalence Estimate	95% CI	Prevalence Estimate	95% CI
In the last month I got my cigarettes from: Family					
23.2	12.4–37.3	22.6	11.9–36.7	22.9	14.7–31.1
In the last month I got my cigarettes from: Friends					
35.5	21.6–51.6	20.3	10.6–33.4	27.6	18.9–36.2
In the last month I got my cigarettes from: I bought them					
81.4	70.5–92.3	77.3	63.8–90.9	79.3	70.7–87.9
In the last month I got my cigarettes from: Somewhere else					
0	0.0–7.1	2.6	0.1–14.2	1.4	0.0–7.5

Source: 2009 New Zealand Tobacco Use Survey [121]; Note: Multiple responses were possible so columns do not sum to 100%

## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention or Cessation of Smoking in Young People

In New Zealand, there is no national strategy focused on the prevention of youth smoking. There are several policy documents addressing the prevention or cessation of cigarette smoking in general. In addition, a large number of evidence-based reviews consider smoking prevention and cessation in adolescents. **Table 42** below provides an overview of local policy documents and evidence-based reviews addressing the prevention of smoking in young people, and **Table 43 (page 222)** addresses smoking cessation. **Table 34 (page 197)** summarises publications addressing the cessation of smoking in pregnancy, and **Table 39 (page 211)** summarises publications which consider the prevention of exposure to second-hand cigarette smoke in children.





Table 42. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Smoking in Young People

Ministry of Health Policy Documents
<p>Ministerial Committee on Drug Policy. 2007. <b>National Drug Policy 2007–2012</b>. Wellington: Ministry of Health. <a href="http://www.ndp.govt.nz/moh.nsf/indexcm/ndp-publications-nationaldrugpolicy20072012">http://www.ndp.govt.nz/moh.nsf/indexcm/ndp-publications-nationaldrugpolicy20072012</a></p> <p>This document sets out Government policy on tobacco, alcohol and other drugs and provides guidance for policies and practices aimed at minimising drug-related harm in the community. The overarching goal is to prevent and reduce the health, social and economic harms linked to tobacco, alcohol and other drug use, by means of supply control, demand reduction and problem limitation. Objectives include preventing or delaying the uptake of tobacco, particularly in Māori, Pacific peoples and young people; and decreasing the harm caused by tobacco by reducing the prevalence of tobacco smoking, the consumption of tobacco products and exposure to second-hand smoke. The policy aims to help governmental and nongovernmental agencies develop strategies consistent with the national direction.</p>
<p>Ministry of Health. 2004. <b>Clearing the Smoke: A Five-Year Plan for Tobacco Control in New Zealand (2004-2009)</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/clearing-smoke-five-year-plan-tobacco-control-new-zealand-2004-2009">http://www.health.govt.nz/publication/clearing-smoke-five-year-plan-tobacco-control-new-zealand-2004-2009</a></p> <p>This document provides the action plan for tobacco control developed under the National Drug Policy. The goals of the plan are to: significantly reduce levels of tobacco consumption and smoking prevalence; reduce inequalities in health outcomes; reduce the prevalence of smoking among Māori to at least the same level as among non-Māori; and reduce New Zealanders' exposure to second-hand smoke. The objectives to achieve these goals are to: prevent smoking initiation; promote smoking cessation; prevent harm to non-smokers from second-hand smoke; improve support for monitoring, surveillance and evaluation; improve infrastructural support and co-ordination for tobacco control activities.</p>
Cochrane Systematic Reviews
<p>Johnston V, et al. 2012. <b>Incentives for preventing smoking in children and adolescents</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD008645.pub2 <a href="http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008645.pub2/abstract">http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008645.pub2/abstract</a></p> <p>This review examined whether incentives prevent children and adolescents from starting to smoke. Seven controlled studies (age range 11 to 14 years) met inclusion criteria, five of which had analysable data and contributed to the meta-analysis (6362 participants, non-smokers at baseline). All but one of the studies were trials of the Smokefree Class Competition (SFC), widely implemented throughout Europe. Classes in the SFC commit to being smoke-free for a six month period. They report regularly on their smoking status; if 90% or more of the class is non-smoking at the end of the six months, the class goes into a competition to win prizes. One non-randomised controlled trial of SFC reported a significant effect of the competition on the prevention of smoking at the longest follow-up, but after adjustment by the reviewers the result was no longer statistically significant. The pooled RR for the more robust RCTs (3 studies, n = 3056) did not identify a significant difference in smoking initiation in the long term (RR 1.00, 95% CI 0.84 to 1.19). There was little robust evidence to suggest that unintended consequences (such as youth making false claims about their smoking status and bullying of smoking students) were consistently associated with the interventions, although this was not a focus of the research. The authors conclude that incentive programmes have not yet been shown to prevent smoking initiation among youth, and further robust research in different population groups is required.</p>
<p>Lovato C, et al. 2011. <b>Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003439.pub2 <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003439/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003439/frame.html</a></p> <p>This review identified 19 longitudinal studies that assessed individuals' smoking behaviour and exposure to advertising, receptivity or attitudes to tobacco advertising, or brand awareness at baseline, and assessed smoking behaviour at follow ups. The studies followed over 29,000 baseline non-smokers aged 18 and under. In 18 of studies participants who were more aware of or receptive to tobacco advertising, were more likely to have experimented with cigarettes or become smokers at follow up, supporting a causal link between advertising and tobacco use in young people.</p>
<p>Carson KV, et al. 2012. <b>Interventions for tobacco use prevention in Indigenous youth</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD009325.pub2 <a href="http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD009325.pub2/abstract">http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD009325.pub2/abstract</a></p> <p>This review assessed the effectiveness of intervention programmes to prevent tobacco use initiation or progression to regular smoking amongst young indigenous populations. Two RCTs (1505 participants) met inclusion criteria. Both studies were based in Native American populations and employed multi-component community-based interventions tailored to the specific cultural aspects of the population. No difference was observed in weekly smoking at 42 months follow up in the one study assessing this outcome (skills-community group versus control: RR 0.95, 95% CI 0.78 to 1.14; skills only group versus control: RR 0.86, 95% CI 0.71 to 1.05). Positive change found in the second study at post-test was not maintained at six month follow up. Given the paucity of evidence the authors conclude that methodologically rigorous trials are needed to investigate interventions aimed at preventing the uptake of tobacco use amongst indigenous youth and to assist in bridging the gap between tobacco-related health disparities in indigenous and non-indigenous populations.</p>

Carson KV, et al. 2011. **Community interventions for preventing smoking in young people**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001291.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001291/frame.html>

This 2011 update reviewed trials comparing the effectiveness of multi-component community interventions with single component or school-based only interventions in influencing smoking behaviour in young people, including preventing uptake. The interventions used co-ordinated, widespread, multi-component programmes which aimed to influence behaviour. The programmes included education of retailers, mass media, school and family-based components, and there was often community involvement in planning and/or implementation. Twenty-five studies (15 RCTs and 10 non-randomised controlled trials) were included in the review, ten of which were associated with a reduction in smoking uptake in the intervention group. Changes in intentions to smoke, knowledge, attitudes and perceptions about smoking did not generally appear to affect long-term smoking behaviour. Overall there was some evidence to support the effectiveness of community interventions. The authors identify the strong influence of local factors and likely difficulties with replication of interventions but suggest the principles and methods on which successful interventions are based may be useful in programme implementation in similar settings.

Brinn MP, et al. 2010. **Mass media interventions for preventing smoking in young people**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001006.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001006/frame.html>

This updated review evaluated the effectiveness of mass media interventions to prevent smoking in young people. The primary outcome was reduced smoking uptake, and secondary outcomes included improved attitudes and behaviours. Seven studies (approximately 49,398 participants), all of which had a controlled trial design, met the inclusion criteria. Three studies were associated with a reduction in smoking behaviour in young people. Common features of successful campaigns included multiple channels for media delivery, combined school and media components and repeated exposure to campaign messages delivered to the same cohort of students for a minimum of three years. The authors provide recommendations for planning and evaluating campaigns.

Stead LF & Lancaster T. 2008. **Interventions for preventing tobacco sales to minors**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001497.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001497/frame.html>

This review assessed the effect of interventions aimed at reducing underage access to tobacco by deterring retailers from making illegal sales. Outcomes included both changes in retailer compliance assessed by test purchasing, and changes in young people's smoking behaviour and their perceived ease of access. Thirty-five studies, thirteen of which had a control group, were included in the review. Active enforcement and/or multi-component educational strategies were more effective than information alone. While sales were reduced, none of the communities studied achieved complete, sustained compliance. There was limited evidence for an effect of retailer interventions on youth perceptions of ease of access to tobacco, or on smoking behaviour.

Thomas RE, et al. 2007. **Family-based programmes for preventing smoking by children and adolescents**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004493.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004493/frame.html>

This review examined the effectiveness of interventions to help family members strengthen non-smoking attitudes and promote non-smoking by children and other family members. Twenty-two RCTs, of variable quality, were included in the narrative synthesis. Some well-executed RCTs showed family interventions may prevent adolescent smoking, but RCTs which were less well executed had mostly neutral or negative results and it was not possible to draw firm conclusions. Implementer training and the fidelity of implementation were related to positive outcomes, but the number of sessions was not.

Thomas RE & Perera R. 2006. **School-based programmes for preventing smoking**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001293.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001293/frame.html>

This review identified 23 randomised controlled trials of behavioural interventions (information-giving, social influence approaches, social skills training, and community interventions) in schools to prevent children and adolescents starting smoking. There was little evidence that information-giving alone is effective. The majority of trials used social influence type interventions, about half of which had a short-term effect on children's smoking behaviour. There was limited support for interventions that included developing generic social competence and community initiatives.

#### Other Systematic Reviews

U.S. Department of Health and Human Services. 2012. **Preventing tobacco use among youth and young adults: A report of the Surgeon General**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health

This recent report includes a review of the effectiveness of interventions to prevent and reduce tobacco use in young people. The review found sufficient evidence to conclude that mass media campaigns, comprehensive community programmes, comprehensive control programmes, and price increases can both prevent the initiation and reduce the prevalence of tobacco use in young people. The review identified short-term beneficial effects from school-based programmes based on the social influences model but programmes that were implemented in combination with other interventions produced larger and more sustained effects.

Sutcliffe K, et al. 2011. **Young people's access to tobacco: a mixed-method systematic review**. London: EPPI Centre, Social Science Research Unit, Institute of Education, University of London.

This report sought to identify the retail and non-retail sources of tobacco used by young people and included a review of international evidence assessing the effect of interventions aimed at reducing non-retail access to cigarettes by young people. Four types of intervention have been evaluated (possession laws; retail interventions measuring the impact on social access; school policies; and home access restrictions) using a mixture of RCTs (possession law interventions) and observational studies. None of the interventions specifically targeted proxy purchasing, identified as an important source of non-retail tobacco. The overall evidence base was limited.

National Institute for Health and Clinical Excellence. 2010. **School-based interventions to prevent the uptake of smoking among children and young people (NICE public health guidance 23)**. London: National Institute for Health and Clinical Excellence. <http://www.nice.org.uk/guidance/PH23>.

This NICE public health guidance provides comprehensive evidence-based guidance on school-based interventions to prevent smoking uptake by children and young people. It includes a systematic review assessing the effectiveness of interventions. The review included 64 RCTs, with between 500 and 17,446 participants and follow up of up to 13 years. Meta-analysis of 27 RCTs demonstrated a significant intervention effect. There was moderate evidence indicating that multi-component interventions incorporating both school and community components were ineffective in preventing uptake compared to usual education. There was no clear evidence to favour a particular conceptual model (social influence, social competence, information giving and combined interventions). Adverse or unintentional effects were not specifically examined in any of the studies. Despite 62 large RCTs there was little evidence about what works for whom besides weak evidence indicating that school-based interventions starting soon after primary school entry may be effective in reducing the uptake of smoking up to age of 14, and strong evidence that booster sessions enhance effectiveness of main programmes.

Emory K, et al. 2010. **The association between home smoking restrictions and youth smoking behaviour: a review**. Tobacco Control, 19(6), 495-506.

This review assessed the association between home smoking restrictions and the prevention of youth smoking. Nineteen studies met the inclusion criteria, two of which were longitudinal studies and the remainder cross-sectional. Sixteen studies, including the two longitudinal studies, showed some association between restrictions and reduced adolescent smoking behaviours. Completely smoke-free homes appear to be more effective than partial restrictions and the benefits of smoke-free policies were less clear in homes where at least one adult smoked.

National Institute for Health and Clinical Excellence. 2008. **Mass-media and point-of-sales measures to prevent the uptake of smoking by children and young people**. London: National Institute for Health and Clinical Excellence. <http://www.nice.org.uk/PH014>.

This public health guidance provides as set of evidence-based recommendations on mass-media and point-of-sales measures to prevent the uptake of smoking by children and young people. The guidance includes a systematic review, an economic appraisal, stakeholder comments and the results of fieldwork. The review included 61 studies (40 mass media and 21 access restriction studies). There was sufficient evidence to support mass media interventions in smoking prevention and interventions were more effective when combined with broader tobacco control strategies and when campaigns were long lasting with higher exposure levels. Although there was evidence that access restriction interventions affect young people's ability to access cigarettes only two studies addressed the impact of interventions on smoking behaviour. It is recommended that mass-media and point-of-sales measures should be combined with other prevention activities as part of a comprehensive tobacco control strategy.

Kavanagh J, et al. 2006. **A systematic review of the evidence for incentive schemes to encourage positive health and other social behaviours in young people**. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

This systematic review assessed the effectiveness of incentive schemes in encouraging positive health behaviour in young people. The review identified two school-based anti-smoking competitions whose combined results were associated with significant reductions in daily smoking rates immediately after the intervention and at one year follow-up. The results should be interpreted with caution given the small number of studies and the authors recommend that classroom-based incentive schemes which aim to delay the onset of or reduce levels of smoking should be piloted and evaluated in RCTs.

Other Relevant Publications
<p>Māori Affairs Committee. 2010. <b>Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori. Report of the Māori Affairs Committee.</b> 49th Parliament: November.</p> <p>New Zealand Parliament. 2011. <b>Government Response to the Report of the Māori Affairs Committee on its Inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori (Final Response).</b>  <a href="http://www.parliament.nz/NR/rdonlyres/3AAA09C2-AD68-4253-85AE-BCE90128C1A0/188520/DBHOH_PAP_21175_GovernmentFinalResponsetoReportoft.pdf">http://www.parliament.nz/NR/rdonlyres/3AAA09C2-AD68-4253-85AE-BCE90128C1A0/188520/DBHOH_PAP_21175_GovernmentFinalResponsetoReportoft.pdf</a>.</p> <p>The report details the findings of the 2009-2010 Māori Select Committee inquiry into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori. The committee received 260 written submissions, 1,715 form letters and heard 96 oral submissions. The aim of the inquiry was to develop an effective approach to reducing smoking rates amongst Māori, and all other New Zealanders. The goal is for tobacco consumption and smoking prevalence to be halved by 2015 across all demographics, and for New Zealand to be a smoke-free nation by 2025. Stopping children from getting addicted to smoking is identified as an area requiring particular attention. The report includes a comprehensive list of recommendations.</p> <p>In its response, the government has agreed to examine further options for measures to limit tobacco supply including: restricting the number and location of tobacco retailers, to reduce the exposure of children and young people to tobacco; continuing to prioritise advertising campaigns directed at preventing children from taking up smoking; and considering options to extend smoke-free restrictions to protect children.</p>

Note: The publications listed above were identified using the search methodology outlined in **Appendix 1**

**Table 43. Local Policy Documents and Evidence-Based Reviews Relevant to Smoking Cessation in Young People**

Ministry of Health Policy Documents
<p>Ministry of Health. 2011. <b>Targeting Smokers: Better Help for Smokers to Quit.</b> Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/targeting-smokers-better-help-smokers-quit">http://www.health.govt.nz/publication/targeting-smokers-better-help-smokers-quit</a></p> <p>The health target "Better Help for Smokers to Quit" was introduced in 2009, requiring DHBs to ensure that 95% of hospitalised smokers will be provided with advice and help to quit by July 2012. From July 2011 the target was extended to the primary care sector, where 90% of enrolled patients who smoke and are seen in general practice should be provided with advice and help to quit by July 2012.</p>
<p>Ministry of Health. 2007. <b>New Zealand Smoking Cessation Guidelines.</b> Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/new-zealand-smoking-cessation-guidelines">http://www.health.govt.nz/publication/new-zealand-smoking-cessation-guidelines</a></p> <p>Ministry of Health. 2007. <b>Smoking Cessation Competencies for New Zealand.</b> Wellington: Ministry of Health.  <a href="http://www.health.govt.nz/publication/smoking-cessation-competencies-new-zealand">http://www.health.govt.nz/publication/smoking-cessation-competencies-new-zealand</a></p> <p>The New Zealand smoking cessation guidelines, and their associated competencies for delivery, identify young people as a priority population for cessation and suggest that it is likely that interventions need to be different, given differences in lifestyle and attitudes to smoking and quitting. The guidelines are structured around the 'ABC' approach (asking about smoking status and documenting the response; providing brief advice to stop smoking to all those who smoke, regardless of their desire or motivation to quit; and providing evidence-based cessation treatment). The guidelines state that nicotine replacement therapy (NRT) can be considered but there is insufficient evidence to support the effectiveness of NRT in young people.</p>
<p>Ministry of Health. 2009. <b>Implementing the ABC Approach for Smoking Cessation: Framework and Work Programme.</b> Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/implementing-abc-approach-smoking-cessation-framework-and-work-programme">http://www.health.govt.nz/publication/implementing-abc-approach-smoking-cessation-framework-and-work-programme</a></p> <p>This document contains the framework for implementing the ABC approach for smoking cessation. The ABC approach is based on the premise that initiating multiple quit attempts with supported treatment is associated with higher numbers of smokers who cease smoking in the long term. The aim is to integrate the ABC approach into routine care, so that the health sector can approach smoking cessation in a systematic and continuous way.</p>
Cochrane Systematic Reviews
<p>Whittaker R, et al. 2012. <b>Mobile phone-based interventions for smoking cessation.</b> Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD006611.pub3  <a href="http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006611.pub3/abstract">http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006611.pub3/abstract</a></p> <p>This reviewed assessed whether mobile phone-based interventions are effective at helping smokers of any age who wanted to quit, to stop smoking. Five randomised trials (over 9000 participants) with at least six month cessation outcomes were included in the review. Three studies involved a purely text messaging intervention that has been adapted over the course of these three studies for different populations and contexts (first developed in New Zealand, including Māori participants). One multi-arm study assessed a text messaging intervention and an internet QuitCoach separately and in combination. The final study involved a video messaging intervention delivered via the mobile phone. Pooled results revealed that mobile phone interventions increased the long term quit rates compared with control programmes (RR 1.71, 95% CI 1.47 to 1.99). The authors conclude that the current evidence supports the use of text-messaging interventions to help smokers to quit.</p>



Carson KV, et al. 2012. **Interventions for smoking cessation in Indigenous populations**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD009046.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD009046/frame.html>

This review sought to evaluate the effectiveness of smoking cessation interventions in indigenous populations, who carry a disproportionate burden of smoking-related morbidity and mortality. Four studies met eligibility criteria, two of which were New Zealand studies (mobile phone text messaging and bupropion, both in adults), highlighting the paucity of available evidence. The limited but available evidence reported indicated that smoking cessation interventions specifically targeted at Indigenous populations can produce smoking abstinence but further research is needed.

Carson KV, et al. 2012. **Training health professionals in smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD000214.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000214/frame.html>

This review assessed the effectiveness of training health professionals in the delivery of smoking cessation interventions to their patients. Seventeen RCTs and cluster RCTs (28,531 participants assessed at baseline, 21,031 at final follow up, 1,434 individual health professionals) were included in the review. Thirteen found no evidence of an effect for continuous smoking abstinence following the intervention. Meta-analysis of 14 studies for point prevalence of smoking produced a statistically and clinically significant effect in favour of the intervention (OR 1.36, 95% CI 1.20 to 1.55). Meta-analysis of eight studies that reported continuous abstinence was also statistically significant (OR 1.60, 95% CI 1.26 to 2.03,  $p=0.03$ ). Health professionals who had received training were significantly more likely to perform smoking cessation tasks, including: asking patients to set a quit date, make follow-up appointments, counselling of smokers, and provision of self-help material. No evidence of an effect was observed for the provision of nicotine gum/replacement therapy. The authors conclude that training health professionals to provide smoking cessation interventions had a measurable effect on smoking prevalence and abstinence and professional performance.

Grimshaw G & Stanton A. 2010. **Tobacco cessation interventions for young people**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003289.pub4  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003289/frame.html>

While there are multiple Cochrane reviews for smoking cessation interventions in adults, this updated report reviewed studies aimed specifically at young people. Twenty-four trials (11 RCTs, 11 cluster RCTs and 2 controlled trials), involving 5000 participants (regular smokers aged under 20 years) met inclusion criteria. Most of the trials involved a form of motivational enhancement with psychological support. Programmes that combine a variety of approaches, including taking into account the young person's preparation for quitting, supporting behavioural change and enhancing motivation show promise with some persistence of abstinence (30 days point prevalence abstinence or continuous abstinence at six months). The three trials with evidence about pharmacological interventions (nicotine replacement and bupropion) did not demonstrate effectiveness for adolescent smokers.

Civiljak M, et al. 2010. **Internet-based interventions for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD007078.pub3  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD007078/frame.html>

This systematic review of trials assessing the effectiveness of internet-based interventions for smoking cessation identified 20 trials, three of which recruited adolescents. Limited meta-analysis was possible due to the heterogeneity of the populations, interventions and outcomes. Results suggested that some Internet-based interventions can assist smoking cessation, especially if the information is appropriately tailored to the users and frequent automated contacts with the users are ensured, however evidence for long term benefit was limited. Of the adolescent trials, two small trials did not detect an effect on cessation compared to control, and one small trial detected a benefit of a web-based adjunct to a group programme.

### Other Cochrane Systematic Reviews of interest

The large body of literature on smoking cessation for adults is reflected in the number of Cochrane reviews published. The reviews listed below focus on adults but may provide useful background information.

- Ussher MH, et al. 2012. **Exercise interventions for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD002295.pub4  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD002295/frame.html>
- White AR, et al. 2011. **Acupuncture and related interventions for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD000009.pub3  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000009/frame.html>
- Cahill K & Perera R. 2011. **Competitions and incentives for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004307.pub4  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004307/frame.html>
- Lancaster T & Stead LF. 2009. **Self-help interventions for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001118.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001118/frame.html>
- Lancaster T & Stead LF. 2008. **Individual behavioural counselling for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001292.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001292/frame.html>
- Cahill K, et al. 2008. **Workplace interventions for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003440.pub3  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003440/frame.html>
- Secker-Walker R, et al. 2008. **Community interventions for reducing smoking among adults**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001745  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001745/frame.html>
- Stead LF, et al. 2008. **Nicotine replacement therapy for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD000146.pub3  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000146/frame.html>
- Hughes JR, et al. 2007. **Antidepressants for smoking cessation**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD000031.pub3  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000031/frame.html>

### Other Systematic Reviews

U.S Department of Health and Human Services. 2012. **Preventing tobacco use among youth and young adults: A report of the Surgeon General**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

This recent report includes an extensive review of the effectiveness of interventions to promote smoking cessation in adolescents. Cognitive behavioural strategies and achieving sufficient dosage of programming (number of sessions) appeared to be important. There was little evidence of the efficacy of pharmacological adjuncts in youth smoking cessation and gaps in the evidence include longer term follow up and how to effectively recruit young smokers to intervention programmes.

Kim Y, et al. 2011. **Effectiveness of pharmacologic therapy for smoking cessation in adolescent smokers: Meta-analysis of randomized controlled trials**. American Journal of Health-System Pharmacy, 68(3), 219-26.

This meta-analysis evaluating the effectiveness of pharmacologic therapy (bupropion and nicotine replacement therapy) for smoking cessation in adolescent smokers included six RCTs, involving 816 smokers aged 12–20 years. No significant increase in abstinence rates was detected with pharmacologic therapy (RR 1.38, 95% CI 0.92–2.07). Subgroup meta-analysis found no significant increases in abstinence rates in short-term (≤12 weeks) or mid-term (26 weeks) follow-up periods. Few adverse events were reported. While current evidence does not support the effectiveness of pharmacologic interventions for adolescents, the authors note the small number of trials and participants.

Bryant J, et al. 2011. **A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups**. Addiction, 106(9), 1568-85.

This review assessed the effectiveness of behavioural interventions (including verbal advice, self-help, incentives and psychological interventions) in disadvantaged groups. Meta-analysis of four studies of behavioural interventions for at-risk youth did not reveal a significant effect on smoking cessation, (RR 1.55, CI 0.74–3.26) but sample sizes and the number of well-controlled RCTs pooled for analysis were small.

<p>Heckman CJ, et al. 2010. <b>Efficacy of motivational interviewing for smoking cessation: a systematic review and meta-analysis.</b> Tobacco Control, 19(5), 410-16.</p> <p>This systematic review and meta-analysis of interventions incorporating motivational interviewing (MI) for smoking cessation identified 31 trials, including eight trials in adolescents. The meta-analysis of all 31 trials (9485 individual participants) showed an overall odds ratio (OR) comparing likelihood of abstinence in the MI versus control condition of 1.45 (95% CI 1.14 to 1.83). For adolescents the OR for the MI effect was 2.29 (95% CI 1.34 to 3.89), suggesting that current MI smoking cessation approaches can be effective for adolescents.</p>
<p>Sussman S &amp; Sun P. 2009. <b>Youth tobacco use cessation: 2008 update.</b> Tobacco Induced Diseases, 5(1), 3.</p> <p>This updated review included 64 controlled trials assessing teen smoking cessation interventions. Meta-analysis found an overall absolute advantage in quitting of 4.26% in intervention groups compared to control (an improvement in the 2.90% absolute risk reduction, 95% CI 1.47 to 4.35, in the 2006 meta-analysis of 48 studies). Studies using programmes based on social influences, cognitive-behavioural theory, or programming to enhance motivation were more effective and the strongest effects were found in classroom-based educational programs, school-based clinics, and computer-based programmes. Programmes consisting of at least 5 sessions were more effective.</p>
<p><b>Other Related Articles and Reviews</b></p>
<p>Brinson D. 2009. <b>How to Increase the Delivery of Effective Smoking Cessation Treatments in Primary Care Settings: Guidance for doctors, nurses, other health professionals and healthcare organisations: Summary Report.</b> Wellington: Ministry of Health and HSAC, University of Canterbury. <a href="http://www.health.govt.nz/publication/how-increase-delivery-effective-smoking-cessation-treatments-primary-care-settings">http://www.health.govt.nz/publication/how-increase-delivery-effective-smoking-cessation-treatments-primary-care-settings</a></p> <p>This report includes a review of evidence assessing the effectiveness of smoking cessation services in primary care and guidance on the delivery of ABC smoking cessation services in the primary care setting. The review includes five systematic reviews and 37 studies using a variety of methods to assess training, multi-component interventions, reminders, financial incentives and audit and feedback. The author suggests that the evidence supports a comprehensive package, including providing all health care professionals with adequate training and resources, implementation of a system to record smoking status, provision of prompts, feedback and incentives to health care professionals. There was some evidence to support a team approach, in which the different ABC tasks are shared amongst different health professionals and organisations.</p>
<p>National Institute for Health and Clinical Excellence. 2008. <b>Smoking cessation services in primary care, pharmacies, local authorities and workplaces, particularly for manual working groups, pregnant women and hard to reach communities (NICE public health guidance 10).</b> London: National Institute for Health and Clinical Excellence. <a href="http://www.nice.org.uk/PH010">http://www.nice.org.uk/PH010</a>.</p> <p>These guidelines provide a set of evidence-based recommendations for delivering smoking cessation services in hard to reach populations. The guidance includes a systematic review and cost-benefit analysis. Young people aged 12 to 17 who show a commitment to quit smoking are identified as a target group. Information, advice and support should be offered and NRT can be prescribed as part of a supervised regime if there is evidence of nicotine dependence.</p>
<p>Note: The publications listed above were identified using the search methodology outlined in <b>Appendix 1</b></p>

# ALCOHOL-RELATED HOSPITAL ADMISSIONS

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## Introduction

New Zealand does not have a legal drinking age, but it is illegal for people under the age of 18 years to purchase alcohol (lowered from 20 to 18 in 1999) [122]. However, research indicates that drinking alcohol is common under the age of 18, and young people were identified as a key at-risk population group in the National Drug Policy 2007–2012 [123]. A number of national surveys have examined the prevalence of alcohol use among young people in New Zealand. The 2007/2008 New Zealand Alcohol and Drug Use survey of 6784 New Zealanders aged 16 to 64 years found that 79.6% (95% CI 71.2 to 88.0) of people aged 16 to 17 years had consumed alcohol in the past year, mostly at home (74.3%, 95% CI 66.6–82.0) or in someone else's home (79.1%, 95% CI 72.4–85.9). One in three (32.3%, 95% CI 24.3 to 40.3) past-year drinkers aged 16 to 17 years had consumed a large amount of alcohol at least monthly in the past year. Past-year drinkers aged 16 to 17 experienced significantly more harmful effects due to their own alcohol use than those aged 18–65 years [122]. In another survey of 1203 12 to 17 year olds by the Alcohol Advisory Council (ALAC) in 2010, 15% of young people were classified as “binge drinkers” (consumed five or more standard drinks on the last occasion they drank alcohol), 17% as “moderate drinkers” (currently drinks alcohol, but did not consume five or more standard drinks on their last drinking occasion) and 68% as “non-drinkers” (self-reported not drinking alcohol at the time of the survey) [124]. Seventy per cent of ‘drinkers’ (those that self-reported drinking alcohol at the time of the survey) reported that they had started having more than an occasional sip of alcohol by the time they were 15 years old and 21% by the time they were 13 years old.

In addition, the Youth '07 survey of 9107 secondary school students from across New Zealand, found that 71.6% of students reported having ever drunk alcohol, and 60.6% were current drinkers (defined as those who noted they had drunk alcohol at some time and in a subsequent key indicator, did not respond “I don't drink alcohol now”) [125]. Current drinking was more common in students from less deprived areas (high deprivation 56.2%, medium deprivation 61.3%; low deprivation 62.6 %). Asian and Pacific students were less likely than Māori and NZ European students to have ever drunk, or to be currently drinkers. Nearly half (46.1%) of current drinkers reported that they usually consume five or more alcoholic drinks within a four hour session (binge drinking). Older children, those living in socioeconomically more deprived neighbourhoods, and those who were Māori or Pacific were more likely to report binge drinking in the previous four weeks.

Research suggests that alcohol use in young people is associated with a wide range of adverse short and long term effects, including increased risk of motor vehicle and other accidents; risky sexual behaviour, sexually transmitted infections (STIs) and pregnancy; victimisation by or perpetration of violence and sexual assaults; obesity and increased risk of other substance use [126]. The earlier a young person starts drinking, and the higher the level of alcohol use, the higher the risk of adverse outcomes. In New Zealand, the Youth '07 survey found that students reported several types of harm associated with drinking alcohol, including being injured (21.7% of current drinkers), doing things that could have resulted in serious trouble (24.0% of male current drinkers, and 15.3% of females), and having unsafe sex (14.4%). Almost a quarter (23.8%) of all students reported that within the previous month they had been a passenger in a car driven by someone who was potentially drunk (had consumed more than 2 drinks in the 2 hours prior to driving).

The following section explores alcohol-related hospital admissions in young people aged 15–24 years. Note: As alcohol is often coded as a secondary cause (e.g. in a traffic crash, alcohol will only be listed after the primary diagnosis (e.g. fractured femur) and external cause (e.g. vehicle occupant in transport accident) have been recorded), the following section includes all admissions where alcohol was listed in any of the first 15 diagnoses or 10 external causes of injury. Further, because of regional inconsistencies in the uploading of emergency department (ED) cases to the National Minimum Dataset, all admissions





with an ED specialty code on discharge have been excluded. While it is likely that such an approach will result in a significant undercount (due to regional variations in coding and the fact that many alcohol-related issues are dealt with in the ED setting), it is nevertheless hoped that it will serve to identify “the tip of the iceberg” in terms of the contribution alcohol makes to hospital admissions in this age group.

## Data Source and Methods

### Definition

1. *Alcohol-related hospital admissions in young people aged 15–24 years*

### Data Source

**Numerator:** National Minimum Dataset (NMDs): Hospital admissions with an ICD-10-AM alcohol-related diagnosis in any of their first 15 diagnostic codes (F10 Mental and behavioural disorders due to alcohol, T51 Toxic effects of alcohol) or first 10 external cause codes (X45 Accidental poisoning by/ exposure to alcohol, X65 Intentional self-poisoning by/exposure to alcohol, Y15 Poisoning by/exposure to alcohol of undetermined intent, Y90–91 Evidence of alcohol involvement determined by blood alcohol level or level of intoxication).

**Denominator:** Statistics NZ Estimated Resident Population (projected from 2007)

### Notes on Interpretation

Note 1: It is likely that the figures presented reflect a significant undercount as a result of regional differences in the extent to which: 1) clinicians document alcohol as a contributory cause of admission; 2) coders code alcohol-related diagnoses over and above those associated with the primary diagnosis and first external cause of injury code. In this context, a 2000 study of the role alcohol played in injury attendances at an Auckland emergency department noted 35% of injured patients had consumed alcohol prior to their injury [127]. In contrast, an analysis of New Zealand ED cases for the period 2000–2005 using the NMDs found that only 10.3% of injury cases in young people 15–24 years had any mention of alcohol, while 4.5% of injury cases admitted beyond the ED (the group reviewed in this section) had alcohol as a listed cause. This suggests that the figures in this section are likely to significantly underestimate the contribution alcohol makes to hospital admissions in this age group.

Note 2: Due to inconsistent uploading of ED cases to the NMDs, all admissions with an ED specialty code on discharge have been excluded (see **Appendix 3** for a more detailed discussion of this issue). While this filtering is likely to remove a large number of alcohol-related cases, it has been undertaken with a view to enhancing the comparability of admission rates across DHBs.

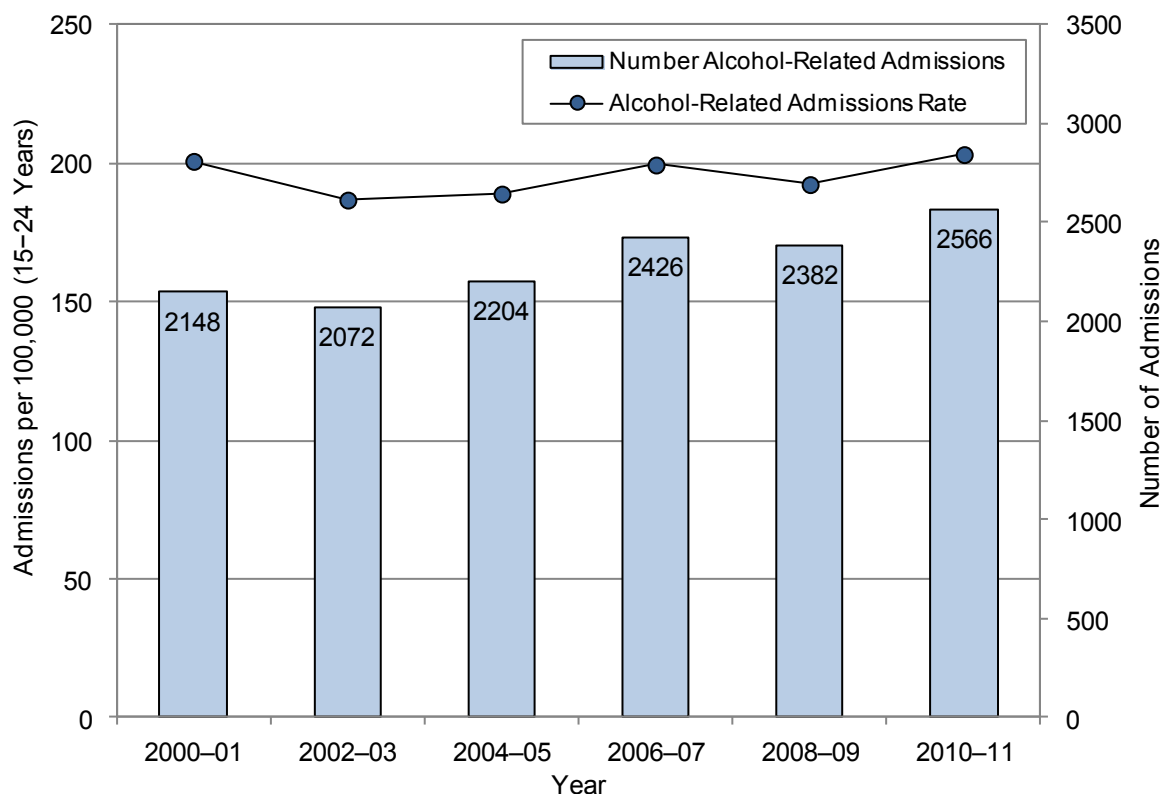
## New Zealand Distribution and Trends

### New Zealand Trends

In New Zealand during 2000–2011, alcohol-related hospital admissions in young people were relatively static. While on average 1,150 admissions occurred per year, it is likely that this reflects a significant undercount, as identification relies on hospital staff at the time of discharge listing alcohol as a contributory cause, as well as coders assigning alcohol-related diagnoses in cases where alcohol contributed to, but was not the sole reason for admission (**Figure 100**).



Figure 100. Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years, New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed; Numbers are per 2-year period

### New Zealand Distribution by Primary Diagnosis

In New Zealand during 2007–2011, alcohol was listed as a contributory cause in a large number of hospital admissions. However only 8.8% of these admissions had acute intoxication or the toxic effects of alcohol listed as the primary diagnosis. In 36.5% of cases an injury was the primary diagnosis, with head and upper limb injuries playing a particularly prominent role. In addition, 32.2% of admissions had a mental health condition (including alcohol dependence) listed as the primary diagnosis, with schizophrenia being the most frequent mental health diagnosis recorded. Finally, 11.8% of admissions had poisoning by other drugs or substances listed as the primary reason for admission (**Table 44**). In interpreting these figures however, it must be remembered that as a result of inconsistent uploading of emergency department cases to the National Minimum Dataset, ED cases have been removed. These figures thus reflect the more severe end of spectrum, as it is likely that many cases of acute intoxication or minor injury were dealt with in the ED setting.

Table 44. Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years by Primary Diagnosis, New Zealand 2007–2011

Primary Diagnosis	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	% of Admissions
Mental and Behavioural Disorders				
Alcohol: Acute Intoxication	424	84.8	13.62	6.8
Alcohol: Dependence	130	26.0	4.18	2.1
Alcohol: Other Mental/Behavioural Disorders	153	30.6	4.91	2.5
Schizophrenia	401	80.2	12.88	6.5
Other Schizotypal and Delusional Disorders	274	54.8	8.80	4.4
Bipolar Effective Disorder	117	23.4	3.76	1.9
Depression/Other Mood Disorders	393	78.6	12.62	6.3
Reaction to Stress/Adjustment Disorder	201	40.2	6.46	3.2
Other Mental and Behavioural Disorders	332	66.4	10.66	5.3
Gastrointestinal System				
Gastritis/Upper Gastrointestinal Bleeding	124	24.8	3.98	2.0
Other Gastrointestinal Conditions	102	20.4	3.28	1.6
Injury and Poisoning				
Head Injury	788	157.6	25.31	12.7
Neck Injury	73	14.6	2.34	1.2
Shoulder/Upper Arm Injuries	100	20.0	3.21	1.6
Elbow/Forearm Injuries	290	58.0	9.32	4.7
Wrist/Hand Injuries	335	67.0	10.76	5.4
Lower Limb Injuries	321	64.2	10.31	5.2
Poisoning*	731	146.2	23.48	11.8
Toxic Effect of Alcohol	121	24.2	3.89	1.9
Other Injuries	360	72.0	11.56	5.8
All Other Diagnoses				
Other Conditions	440	88.0	14.13	7.1
Total Alcohol-Related Admissions	6,210	1,242.0	199.48	100.0

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed; \*Poisoning includes drugs, medicines, and biological substances

## New Zealand Distribution by External Cause of Injury

In New Zealand during 2007–2011, 59.3% of alcohol-related hospital admissions in young people had an external cause of injury (e-code) recorded. Of all alcohol-related admissions, 13.5% were associated with an episode of self-harm and 8.7% with an assault. A further 6.4% were for injuries sustained while the young person was the occupant of a car, with the majority occurring as the result of a car colliding with a stationary object, or overturning. Finally 8.3% were associated with a fall and 8.1% with inanimate mechanical forces (**Table 45**).





Table 45. Listed External Causes of Injury for Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years, New Zealand 2007–2011

Primary External Cause of Injury	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	% of Admissions
Young People Aged 15–24 Years				
Alcohol-Related Hospital Admissions				
Intentional Self-Harm	840	168.0	26.98	13.5
Assault	542	108.4	17.41	8.7
Falls	515	103.0	16.54	8.3
Inanimate Mechanical Forces	500	100.0	16.06	8.1
Undetermined Intent	220	44.0	7.07	3.5
Transport: Car Occupant Collide Stationery Object	172	34.4	5.53	2.8
Transport: Car Occupant Overturning	126	25.2	4.05	2.0
Transport: Car Occupant, Other Injury	97	19.4	3.12	1.6
Transport: Pedestrian	68	13.6	2.18	1.1
Transport: Cyclist	22	4.4	0.71	0.4
Transport: Motorbike	59	11.8	1.90	1.0
Transport: Other Land Transport	41	8.2	1.32	0.7
Accidental Poisoning: Alcohol	62	12.4	1.99	1.0
Accidental Poisoning: Other Substances	81	16.2	2.60	1.3
Other External Causes	337	67.4	10.83	5.4
No External Cause of Injury Listed*	2,528	505.6	81.21	40.7
Total Alcohol-Related Admissions	6,210	1,242.0	199.48	100.0

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed; \*includes non-injury admissions

## New Zealand Distribution by Age and Gender

In New Zealand during 2007–2011, alcohol-related hospital admissions were relatively infrequent in children, but rose rapidly during the teenage years. While gender differences were less marked for those in their early teens (13–15 years), a marked male predominance was evident from 16 years of age onwards (**Figure 101**).

## New Zealand Distribution by Ethnicity and Gender

In New Zealand during 2007–2011, alcohol-related hospital admissions were *significantly* higher for males. Rates were also *significantly* higher for Māori young people than for Pacific or European/Other young people (**Table 46**). Similar ethnic differences were seen during 2000–2011 (**Figure 102**).

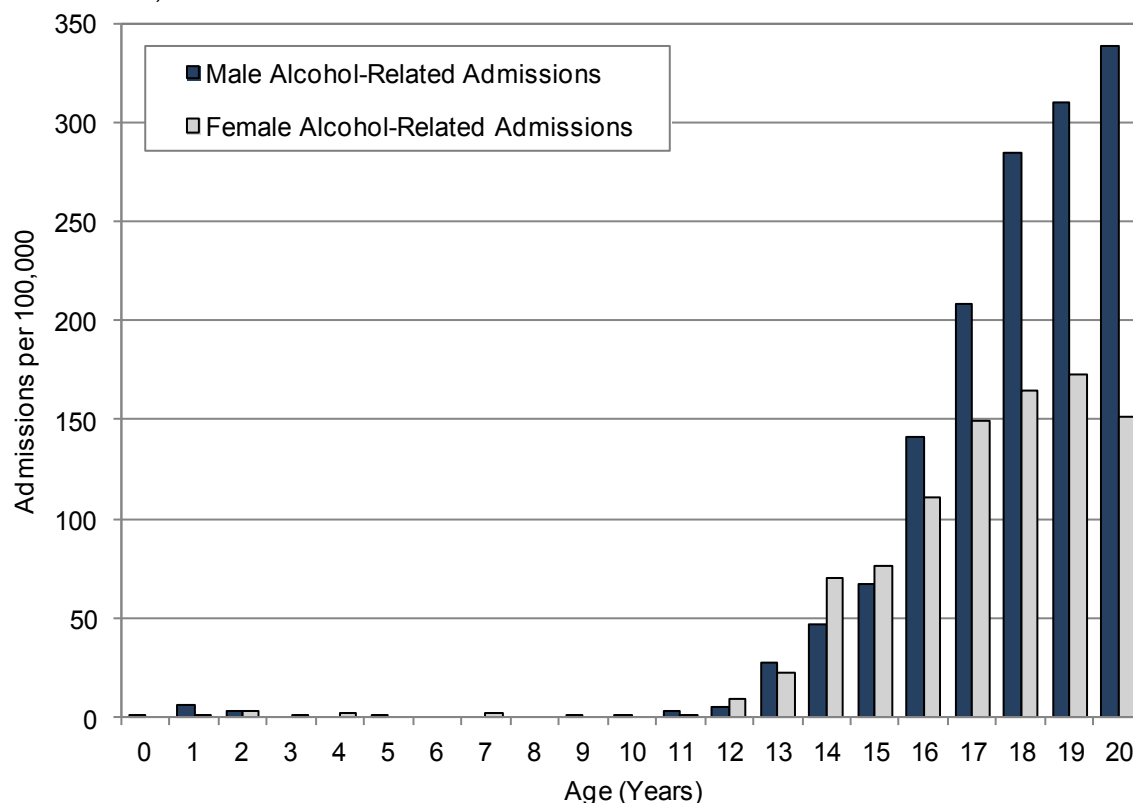
Table 46. Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years by Ethnicity and Gender, New Zealand 2007–2011

Alcohol-Related Hospital Admissions							
Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
European/Other	162.7	1.00		Female	147.3	1.00	
Māori	343.5	2.11	2.00–2.23	Male	249.6	1.69	1.61–1.78
Pacific	172.2	1.06	0.96–1.17				

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Rates are per 100,000; Rate Ratios are unadjusted; Ethnicity is Level 1 Prioritised; Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed

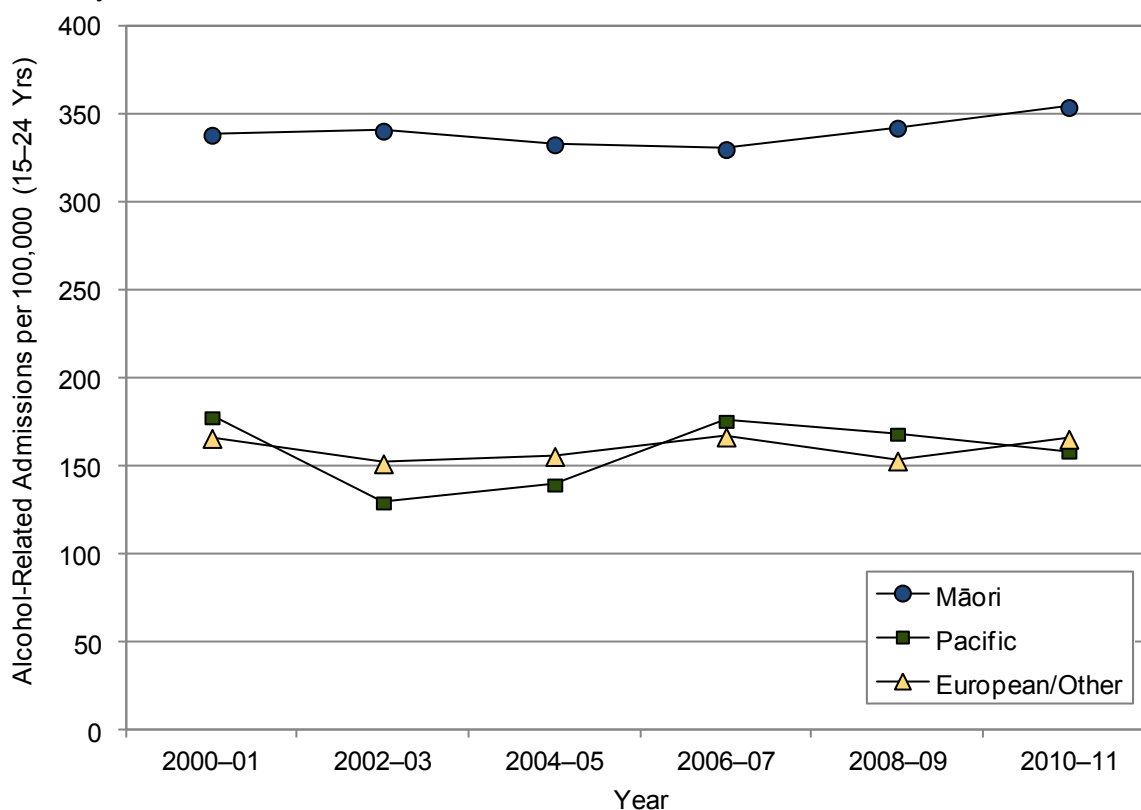


Figure 101. Alcohol-Related Hospital Admissions in Children and Young People by Age and Gender, New Zealand 2007–2011

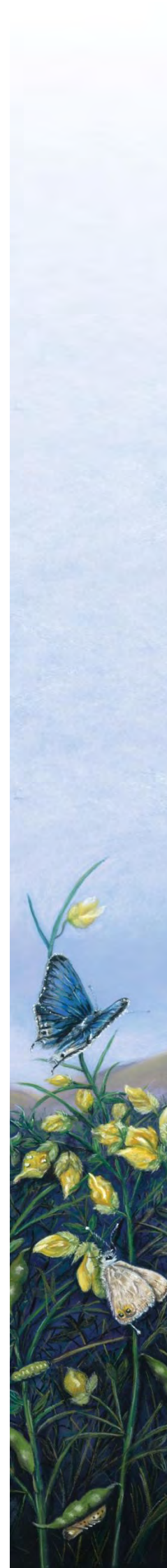


Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed

Figure 102. Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years by Ethnicity, New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised; Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed



## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

In the Midland Region during 2007–2011, alcohol-related hospital admissions in young people were *significantly* higher than the New Zealand rate in all DHBs except the Waikato DHB, where rates were similar to the New Zealand rate (**Table 47**). While the average number of alcohol-related admissions per year varied from 32.0 in Tairāwhiti to 107.6 in the Waikato, in reality it is likely that the number was much higher due to the limitations of the National Minimum Dataset in identifying alcohol-related admissions in this age group.

Table 47. Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2007–2011

DHB	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Young People Aged 15–24 Years					
Alcohol-Related Hospital Admissions					
Waikato	538	107.6	203.4	1.02	0.93–1.11
Lakes	171	34.2	252.5	1.27	1.09–1.47
Bay of Plenty	354	70.8	278.2	1.39	1.25–1.55
Tairāwhiti	160	32.0	506.3	2.54	2.17–2.97
Taranaki	163	32.6	247.3	1.24	1.06–1.45
New Zealand	6,210	1,242.0	199.5	1.00	

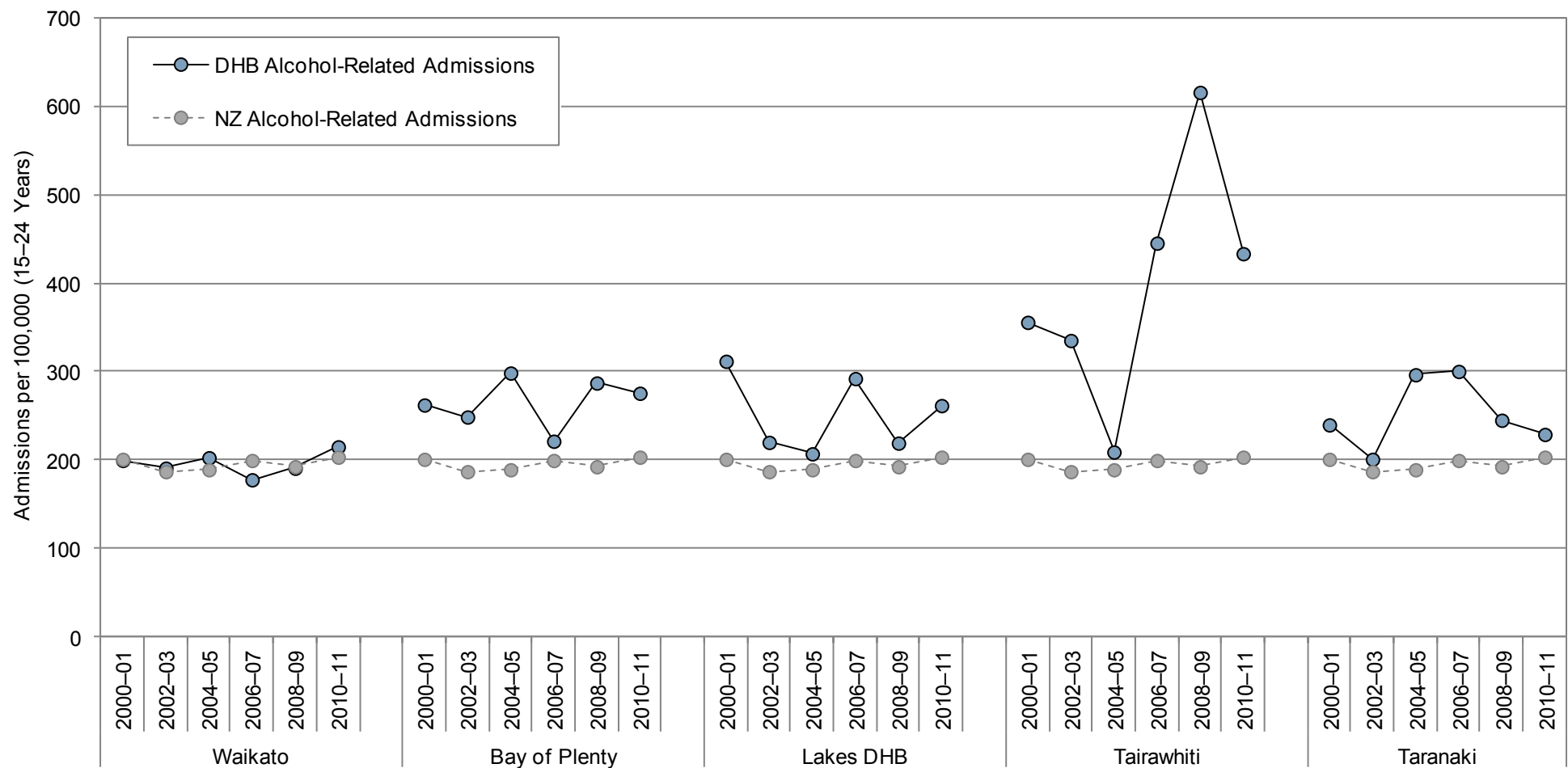
Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed

### Midland Region Trends

In the Midland Region during 2000–2011, while there was considerable year to year variation in alcohol-related hospital admissions in young people, rates were consistently higher than the New Zealand rate in all DHBs except the Waikato DHB, where rates were similar to the New Zealand rate (**Figure 103**).



Figure 103. Alcohol-Related Hospital Admissions in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed

## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Alcohol-Related Harm

**Table 48** below provides an overview of New Zealand alcohol and addiction policy documents and international evidence-based reviews and guidelines that address reducing alcohol use and alcohol-related harm in young people. In addition, **Table 112 (Page 414)** provides an overview of publications relevant to the prevention of drug use in young people, which frequently encompass alcohol and other drug use.

Table 48. Local Policy Documents and Evidence-Based Reviews Relevant to the Reduction of Alcohol-Related Harm in Young People

Ministry of Health Policy Documents
<p>Ministry of Health. 2010. <b>Mental Health and Addiction Action Plan 2010</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/mental-health-and-addiction-action-plan-2010">http://www.health.govt.nz/publication/mental-health-and-addiction-action-plan-2010</a></p> <p>This document builds on Te Tāhuhu and Te Kōkiri, the national strategy and action plan for mental health and addictions to 2015, identifying the key priorities for Ministry-led activities. Tackling alcohol and other drug-related harm is one of four prioritised actions and includes increasing the number of community youth alcohol and other drug (AOD) treatment places available to give young offenders access to court directed community AOD treatment programmes.</p>
<p>Ministry of Health. 2007. <b>Te Raukura. Mental health and alcohol and other drugs: Improving outcomes for children and youth</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/te-raukura-mental-health-and-alcohol-and-other-drugs-improving-outcomes-children-and-youth">http://www.health.govt.nz/publication/te-raukura-mental-health-and-alcohol-and-other-drugs-improving-outcomes-children-and-youth</a></p> <p>This report identifies continued improvement in child and adolescent mental health (CAMHS) and alcohol and other drug (AOD) specialist services as a priority for the mental health and addiction sector. The key issues are identified, including inequalities, access to services, child and youth AOD services, intersectoral collaboration and primary mental health care. Priorities for action are defined, including improvement in understanding and recognition of AOD issues in CAMHS; improvement in these gaps availability of AOD service provision within CAMHS; and identification by DHBs of gaps in AOD service provision for children and youth, and development and implementation of plans to address improvement in understanding and recognition of AOD issues in CAMHS.</p>
<p>Ministry of Health. 2005. <b>Te Tāhuhu – Improving Mental Health 2005–2015: The Second New Zealand Mental Health and Addiction Plan</b> Wellington: Ministry of Health.</p> <p>Ministry of Health. 2006. <b>Te Kōkiri: The Mental Health and Addiction Action Plan 2006–2015</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/our-work/mental-health-and-addictions/mental-health/mental-health-strategic-direction">http://www.health.govt.nz/our-work/mental-health-and-addictions/mental-health/mental-health-strategic-direction</a></p> <p>Te Tāhuhu set out Government policy and priorities for mental health and addiction for 2005–2015. Te Kōkiri set out the action plan and includes a mixture of high level initiatives and specific operational actions. Addiction is identified as one of ten leading challenges and a number of actions to improving access to and quality of addiction services and broaden the range of services available are included. Young people are identified as at increasing risk of substance abuse and specific attention to services for this group is recommended.</p>
Cochrane Systematic Reviews
<p>Foxcroft DR &amp; Tsertsvadze A. 2011. <b>Universal family-based prevention programs for alcohol misuse in young people</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD009308 <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD009308/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD009308/frame.html</a></p> <p>This reviewed assessed the effectiveness of universal family-based prevention programs in preventing alcohol misuse in children aged up to 18 years. Twelve heterogeneous RCTs, with 202 to 3,496 participants, were included in the review. The majority of trials assessed the effectiveness of interventions to promote the awareness and skills in parents and adolescents. Nine trials showed some evidence of effectiveness compared to a control or other intervention group, with persistence of effects over the medium and longer-term (up to 36 months), four of which were gender-specific, focusing on young females. Two studies with large sample sizes found no effects.</p>
<p>Foxcroft DR &amp; Tsertsvadze A. 2011. <b>Universal multi-component prevention programs for alcohol misuse in young people</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD009307 <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD009307/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD009307/frame.html</a></p> <p>This review assessed the effectiveness of universal multi-component prevention programs in preventing alcohol misuse in children up to 18 years of age. Twenty RCTs, with 361 to 12,022 participants, assessing combinations of school, community, and/or family-based programmes, were included. The aims of the evaluated interventions in the majority of trials were the promotion of awareness in parents and adolescents. It was unclear whether the majority of trials used adequate randomisation of programme allocation concealment. Twelve of the trials showed some evidence of effectiveness compared to a control or other intervention group, with persistence of effects ranging from 3 months to 3 years. Assessment of the additional benefit of multiple versus single component interventions was possible in 7 trials with multiple arms, only one of which showed a clear benefit for components delivered in more than one setting. Although there is some evidence to support the effectiveness of multi-component interventions there is little evidence to support multiple components being more effective than interventions with single components.</p>



Foxcroft DR & Tsertsvadze A. 2011. **Universal school-based prevention programs for alcohol misuse in young people.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD009113  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD009113/frame.html>

This review assessed the effectiveness of school-based programmes aimed at preventing alcohol misuse in young people aged up to 18 years. The review included 53, mostly cluster-randomised, controlled trials. Interventions included alcohol awareness education, social and peer resistance skills, normative feedback, and development of behavioural norms and positive peer affiliations aimed at reducing alcohol consumption or problem drinking. Eleven trials focussed exclusively on alcohol, with the remainder focussing on multiple factors or alcohol and other drugs. The results were mixed, six of the 11 alcohol exclusive studies and 14 of the remaining interventions found significantly greater reductions in alcohol use in the intervention groups compared to a standard curriculum. There were no easily discernible patterns in programmes associated with positive results compared to those with no effect. The authors concluded that there is currently evidence to support some generic psychosocial and developmental prevention programmes.

Thomas RE, et al. 2011. **Mentoring adolescents to prevent drug and alcohol use.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD007381.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD007381/frame.html>

This review assessed the effectiveness of structured mentoring programmes to prevent alcohol and drug use. The review included 4 RCTs with 1,994 participants (aged 12 years in two trials and 9–16 years in two trials), conducted among deprived populations in the US. Two RCTs found mentoring reduced the rate of initiation of alcohol (pooled RR for mentoring compared to no intervention 0.71, 95% CI 0.57 to 0.90) A third trial found no significant difference and the fourth trial did not assess alcohol use. One RCT found significantly less “illegal” drug usage (RR 0.54, 95%CI 0.35 to 0.83). No adverse effects were detected. There was limited scope for the interventions to be effective due to low rates of commencing alcohol and drug use during the intervention period, probably reflecting the relative youth of the samples.

Stade BC, et al. 2009. **Psychological and/or educational interventions for reducing alcohol consumption in pregnant women and women planning pregnancy.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004228.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004228/frame.html>

This review assessed the effectiveness of psychological and educational interventions (such as supportive counselling and brief education) aimed at reducing alcohol consumption during pregnancy in pregnant women or women planning pregnancy. Four RCTs (715 pregnant women) met inclusion criteria for the review. For most outcomes there were no significant differences between groups; and results relating to abstaining or reducing consumption were mixed. Although individual studies suggested that interventions may increase abstinence and reduce alcohol consumption in pregnancy, the paucity of good quality RCTs limited the ability of the review to determine which type of intervention would be most effective.

Kaner EFS, et al. 2007. **Effectiveness of brief alcohol interventions in primary care populations.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004148.pub3  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004148/frame.html>

This review assessed the effectiveness of brief alcohol interventions of up to four sessions, in adult patients presenting to primary care for reasons other than specific alcohol treatment. Twenty-two RCTs (7,619 participants) were included in the meta-analysis. Participants receiving brief intervention had lower alcohol consumption than the control group after follow-up of one year or longer (average difference 38 grams/week, range 23 to 54 grams). Subgroup analysis confirmed a benefit in men but not in women. While brief interventions appear to be effective in men, the benefit in women is unclear and it is not known whether such interventions are useful for young people.

#### Other Systematic Reviews

Newton AS, et al. 2011. **Instruments to Detect Alcohol and Other Drug Misuse in the Emergency Department: A Systematic Review.** Pediatrics, 128(1), e180-e92.

This review assessed the effectiveness of screening instruments aimed at identifying alcohol and other drug (AOD) misuse in paediatric patients presenting to emergency departments (ED) for other reasons. Six prospective diagnostic studies, with 100 to 200 participants aged 12 to 21 years, were included. Meta-analysis was not possible due to heterogeneity but instruments based on diagnostic criteria for AOD disorders appeared to be the most effective in detecting alcohol abuse and dependence (sensitivity: 0.88; specificity: 0.90; LR+: 8.80, LR-0.13) and cannabis use disorder (sensitivity: 0.96; specificity: 0.86; LR+: 6.83, LR-:0.05), indicating that they approached usefulness in ruling in AOD disorders and were useful in ruling in them out. The authors recommend that ED clinicians use a 2-question instrument for detecting youth alcohol misuse and a 1-question instrument for detecting cannabis misuse. These recommendations are based on a small number of US studies and may not be transferrable and it is not yet known whether screening should be targeted or universal, or the effect of identification on outcomes.

Shults RA, et al. 2009. **Effectiveness of Multicomponent Programs with Community Mobilization for Reducing Alcohol-Impaired Driving.** American Journal of Preventive Medicine, 37(4), 360-71.

This systematic review assessed the effectiveness and economic efficiency of multicomponent programmes with community mobilisation in reducing alcohol-impaired driving. Six U.S. based trials (two group randomised trials) were included in the review. The review found evidence that carefully planned, well-executed multicomponent programmes were effective in reducing alcohol-related crashes with associated cost savings, although the possibility of publication bias is acknowledged. Effective programmes included most or all of the following features: sobriety checkpoints; responsible beverage service training; efforts to limit access to alcohol, particularly among young people; public education campaigns; and media advocacy efforts to gain the support of policymakers and the public. The authors emphasise the fact that the results can only be generalised to similarly well planned and executed programmes which are likely to require substantial resources.

Smit E, et al. 2008. **Family interventions and their effect on adolescent alcohol use in general populations; a meta-analysis of randomized controlled trials.** Drug and Alcohol Dependence, 97(3), 195-206.

This meta-analysis assessed the effectiveness of family interventions (children age 9 to 13.9 at pre-test) aimed at reducing adolescent drinking. Eighteen RCTs were included. Pooled results identified an overall effect of family interventions in reducing alcohol initiation (OR 0.71; 95% CI: 0.54 to 0.94) and frequency of alcohol use (Cohen's *d*: -0.25; 95% CI: -0.37 to -0.12). The most successful interventions continued to be effective in reducing alcohol initiation at 48 months follow-up (pooled estimate OR: 0.53; 95% CI: 0.38, 0.75). However, the effectiveness of the interventions may have been overestimated by the lack of intention-to-treat analysis, if high-risk families were selectively more likely to drop out of the study, and despite promising results a strengthening of the evidence base is recommended.

Elder RW, et al. 2005. **Effectiveness of School-Based Programs for Reducing Drinking and Driving and Riding with Drinking Drivers: A Systematic Review.** American Journal of Preventive Medicine, 28(5, Supplement), 288-304.

This review examined the effectiveness of school-based programmes in reducing the number of young people who drink drive or ride with drink drivers. Three types of intervention were reviewed: school-based instructional programmes, peer organisations and social norming programmes. Nine studies were included, of variable quality (five randomised or group randomised trials). Only one included study provided sufficient evidence to demonstrate that a school-based instructional programme was effective in reducing riding with drink drivers, but there was insufficient evidence to demonstrate effectiveness in reducing drink driving.

#### Other Relevant Evidence

Ministry of Health. 2010. **Alcohol and Pregnancy: A practical guide for health professionals.** Wellington: Ministry of Health. <http://www.health.govt.nz/publication/alcohol-and-pregnancy-practical-guide-health-professionals>

This short resource is aimed at encouraging and promoting good practice among primary care health professionals. It provides a summary of the potential consequences of drinking alcohol in pregnancy, including foetal alcohol spectrum disorder; and a three-step guide (in pregnant women and those planning pregnancy: ask about alcohol; provide brief advice; assist those having difficulty stopping including information on referrals to specialist services).

National Institute for Health and Clinical Excellence. 2011. **Alcohol-use disorders: Diagnosis, assessment and management of harmful drinking and alcohol dependence (NICE clinical guideline 115).** London: National Institute for Health and Clinical Excellence. <http://guidance.nice.org.uk/CG115>.

These evidence-based guidelines include guidance on assessment and interventions for children and young people aged 10 to 17 years who misuse alcohol. If alcohol misuse is identified as a potential problem in children and young people an initial brief assessment of the duration and severity of the alcohol misuse should be made, followed by referral to a specialist child and adolescent mental health service (CAMHS) for a comprehensive assessment for all those aged 10 to 15 years. Children and young people who misuse alcohol should be offered individual cognitive behavioural therapy for those with limited co-morbidities and good social support or multicomponent programmes (such as multidimensional family therapy, brief strategic family therapy, functional family therapy or multi-systemic therapy) for those with significant co-morbidities and/or limited social support. Diagnostic instruments are poorly developed or not available for children and young and the guidelines highlight the need for further research in this area.

National Institute for Health and Clinical Excellence. 2010. **Alcohol-use disorders: preventing the development of hazardous and harmful drinking (NICE public health guidance 24).** London: National Institute for Health and Clinical Excellence. <http://guidance.nice.org.uk/PH24/>.

These evidence-based guidelines contain high level recommendations on alcohol pricing, availability and marketing and a number of health sector recommendations. It is recommended that children aged 10 to 15 years thought to be at risk from their alcohol use should be assessed and referred to specialist services. Assessment should include identification of underlying family, school or other difficulties. Young people aged 16 and 17 years thought to be at risk from their alcohol use should be screening using the Alcohol-use Disorders Identification Test (AUDIT), the 'gold standard' screening questionnaire for detecting hazardous and harmful drinking in adults. Groups for targeted screening are identified. Extended brief interventions are recommended for those identified via screening as drinking hazariously or harmfully.

Thomas J, et al. 2008. **Targeted youth support: Rapid Evidence Assessment of effective early interventions for youth at risk of future poor outcomes.** In: **Research Evidence in Education Library.** London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

This systematic rapid evidence assessment sought to identify the risk and protective factors associated with Targeted Youth Support (an initiative aimed at vulnerable young people which involves ensuring that agencies work together to meet young people's needs) outcomes, and to review the systematic reviews examining what services and interventions work to reduce poor outcomes in young people. The report identified a variety of risk factors associated with drug and alcohol misuse, including poor parental supervision, low income and poor housing, family conflict and school exclusion. The systematic reviews examining interventions to reduce alcohol misuse identified few proven effective interventions and the authors highlight the need for further research exploring the distinction between universal versus targeted interventions, parental attitudes towards alcohol and drug use and peer-led interventions.

National Institute for Health and Clinical Excellence. 2007. **Interventions in schools to prevent and reduce alcohol use among children and young people (NICE public health guidance 7).** London: National Institute for Health and Clinical Excellence. <http://www.nice.org.uk/PH007>.

These evidence-based guidelines provide recommendations on school-based interventions to reduce alcohol use in children and young people. Recommendations on alcohol education and partnerships with other agencies are made. While the systematic review identified some effective programmes, sufficient to make recommendations, the evidence was not extensive and most of it was U.S. based. It was not possible to determine the differential effectiveness of interventions in relation to disadvantaged and minority groups or determine what impact the recommendations may have on health inequalities.

Note: the publications listed were identified using the search methodology outlined in **Appendix 1**





# HEALTH OUTCOMES AS DETERMINANTS





# SOCIOECONOMICALLY SENSITIVE HOSPITAL ADMISSIONS AND MORTALITY







# HOSPITAL ADMISSIONS AND MORTALITY WITH A SOCIAL GRADIENT IN CHILDREN

## Introduction

In New Zealand, there are currently large disparities in child health status, with Māori and Pacific children and those living in more deprived areas experiencing a disproportionate burden of morbidity and mortality [128]. These disparities were present even in the mid 2000s when New Zealand experienced some of its lowest unemployment rates in recent decades. The macroeconomic environment began to change in 2008, however, with the country officially entering a recession at the end of June 2008 after two consecutive quarters of negative growth. While New Zealand technically left the recession at the end of June 2009 (when quarterly growth reached +0.1% [129]) progress since then has been variable, with unemployment rates and the number of children reliant on benefit recipients remaining higher than in the mid 2000s.

The effects of these economic changes on socially sensitive health outcomes for children remain unclear. Research suggests that the impacts may vary, not only with the magnitude and duration of any economic downturn, but also as a result of the Government's social policy responses and the extent to which it maintains an effective social safety net for those most affected. Further, the adaptations families make to their economic circumstances (e.g. cutting back on heating and doctor's visits vs. reductions in cigarettes and takeaways) are also important, with the net impact of such positive/negative adaptations on health outcomes for children being difficult to predict. For a more detailed review see Craig 2009 [130].

Given this uncertainty, it would seem prudent to monitor a basket of socioeconomically sensitive conditions in children during the next few years, so that if any adverse effects do occur, they can be detected early and proactive policy responses can be put in place should the need arise. With these issues in mind, the following section uses the National Minimum Dataset and Mortality Collection to review hospital admissions and mortality from a basket of socioeconomically sensitive conditions commonly seen in children 0–14 years.

### Data Source and Methods

#### Definition

1. Hospital admissions for medical conditions with a social gradient in children aged 0–14 years
2. Hospital admissions for injuries with a social gradient in children aged 0–14 years
3. Mortality from conditions with a social gradient in children aged 0–14 years

#### Data Source

##### Numerator:

**Hospital Admissions for Medical Conditions with a Social Gradient:** Acute and arranged (arranged = within 7 days of referral) hospital admissions (waiting list cases and neonates <29 days excluded) with the following ICD-10-AM primary diagnoses: A00–A09, R11, K52.9 (Gastroenteritis); A15–A19 (Tuberculosis); A33, A34, A35, A36, A37, A80, B05, B06, B16, B26, B18.0, B18.1, P35.0 or M01.4 (Vaccine Preventable Diseases); A39 (Meningococcal Disease); B34 (Viral Infection of Unspecified Site); E40–E64 or D50–D53 (Nutritional Deficiencies/Anaemias); J00–J03 or J06 (Acute Upper Respiratory Infections); J04 (Croup/Laryngitis/Tracheitis/Epiglottitis); J12, J10.0 or J11.0 (Viral Pneumonia); J13–J16 or J18 (Bacterial/Non-Viral Pneumonia); J21 (Acute Bronchiolitis); J45–J46 (Asthma); J47 (Bronchiectasis); G00–G01 (Bacterial Meningitis); A87, G02 or G03 (Viral/Other/NOS Meningitis); G40 or G41 (Epilepsy/Status Epilepticus); H65, H66 or H67 (Otitis Media); I00–I09 (Rheumatic Fever/Heart Disease); K40 (Inguinal Hernia); L00–L08, H00.0, H01.0, J34.0 or L98.0 (Skin Infections); L20–L30 (Dermatitis and Eczema); M86 (Osteomyelitis); N10, N12, N13.6, N30.0, N30.9 or N39.0 (Urinary Tract Infection); R56.0 (Febrile Convulsions).

**Injury Admissions with a Social Gradient:** Hospital admissions (emergency department cases, neonates <29 days excluded), with a primary diagnosis of injury (ICD-10-AM S00–T79) and an ICD-10-AM primary external cause code in the following range: V01–V09 (Transport: Pedestrian); V10–V19 (Transport: Cyclist); V40–V79 (Transport: Vehicle Occupant); W00–W19 (Falls); W20–W49 (Mechanical Forces: Inanimate); W50–W64 (Mechanical Forces: Animate); W85–X19 (Electricity/Fire/Burns); X40–X49 (Accidental Poisoning). In order to ensure comparability over time, all injury cases with an Emergency Department Specialty Code (M05–M08) on discharge were excluded.



*Mortality from conditions with a social gradient:* All deaths (neonates <29 days excluded) with a main underlying cause of death in the ICD-10-AM medical and injury categories outlined above. In addition, post-neonatal Sudden Unexpected Deaths in Infancy (SUDI) were included if the child was aged between 29 days and 1 year and their main underlying cause of death was SUDI (ICD-10-AM R95, R96, R98, R99, W75).

Denominator:

Children aged 0–14 years: NZ Statistics NZ Estimated Resident Population (projected from 2007)

**Notes on Interpretation**

Note 1: Because of the cancellation of the 2011 Census and concerns about extrapolating Census derived population estimate denominators beyond five years, in this section Statistics NZ population projections have been used to calculate rates from 2007 onwards. Because these projections are only available for a limited range of ethnic groups (Māori, Pacific and European/Other) and are unavailable for NZDep, the analyses in this section are more limited than in previous years.

Note 2: Hospital admissions in neonates (<29 days) were excluded from both indicators. These admissions are more likely to reflect issues arising prior to/at the time of birth (e.g. preterm infants may register multiple admissions as they transition from intensive care (NICU), through special care nurseries (SCBU) to the postnatal ward) and respiratory infections and/or other medical conditions arising in these contexts are likely to differ in their aetiology from those arising in the community.

Note 3: For medical conditions, only acute and arranged admissions have been included, as waiting list admissions tend to reflect service capacity rather than actual health need (e.g. inclusion of these admissions would result in a large number of children with otitis media with effusion (OME) and chronic tonsillitis being included (for grommets and tonsillectomies), whose demographic profile is very different from children attending hospital acutely for similar diseases). For injury admissions however, filtering by admission type was not undertaken, with all injury cases with an Emergency Department Specialty Code (M05–M08) on discharge being excluded (see **Appendix 3** for rationale).

Note 4: Hospital admissions were considered to have a social gradient if rates for those in the most deprived (NZDep deciles 9–10) areas were  $\geq 1.8$  times higher than for those in the least deprived (NZDep deciles 1–2) areas, or where rates for Māori, Pacific or Asian/Indian children were  $\geq 1.8$  times higher than for European children. In addition, a small number of conditions were included where rates were  $\geq 1.5$  times higher, they demonstrated a consistent social gradient, and the association was biologically plausible.

Note 5: When considering the magnitude of social gradients between medical and injury admissions it must be remembered that these differences are not strictly comparable, as for technical reasons, emergency department cases have been removed from injury admissions (and social differences in attendance at the Emergency Department vs. primary care for minor medical conditions may have accounted for some (but not all) of the social gradients in medical admission seen). No such differential filtering was applied to mortality data however, and thus the magnitude of the social differences seen in mortality data is more readily comparable.

Note 6: SUDI rates are traditionally calculated per 1,000 live births. For this analysis rates for those aged 0–14 years have been calculated, so that the relative contribution SUDI makes to mortality in this age group (as compared to other causes of death) is more readily appreciated. As a result, the SUDI rates in this section are not readily comparable to traditional SUDI mortality rates for those <1 year reported elsewhere.

For details of the methodology used to derive these indicators see **Appendix 9**

## New Zealand Distribution and Trends

### New Zealand Distribution by Cause

*Hospital Admissions:* In New Zealand during 2007–2011, gastroenteritis, bronchiolitis, and asthma made the largest individual contributions to hospitalisations for medical conditions with a social gradient, although infectious and respiratory diseases collectively were responsible for the majority of admissions. Similarly, falls, followed by inanimate mechanical forces' were the leading causes of injury admissions with a social gradient, although transport injuries as a group also made a significant contribution (**Table 49**).

*Mortality:* In New Zealand during 2005–2009, SUDI made the single largest contribution to mortality with a social gradient in children aged 0–14 years. This occurred despite the fact that, by definition, all of these deaths occurred during the first year of life. Vehicle occupant-related deaths made the largest contribution to injury-related deaths, followed by pedestrian injuries and drowning, while bacterial/non-viral pneumonia was the leading cause of mortality from medical conditions (**Table 50**).

Table 49. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Primary Diagnosis, New Zealand 2007–2011

Primary Diagnosis	New Zealand			
	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	% of Total
Medical Conditions				
Acute Bronchiolitis	27,420	5,484.0	6.13	15.1
Gastroenteritis	26,230	5,246.0	5.86	14.4
Asthma	24,003	4,800.6	5.36	13.2
Acute Upper Respiratory Infections Excl Croup	19,580	3,916.0	4.38	10.8
Viral Infection of Unspecified Site	19,050	3,810.0	4.26	10.5
Skin Infections	15,926	3,185.2	3.56	8.7
Pneumonia: Bacterial, Non-Viral	14,606	2,921.2	3.26	8.0
Urinary Tract Infection	6,918	1,383.6	1.55	3.8
Croup/Laryngitis/Tracheitis/Epiglottitis	5,686	1,137.2	1.27	3.1
Epilepsy/Status Epilepticus	4,070	814.0	0.91	2.2
Febrile Convulsions	3,514	702.8	0.79	1.9
Dermatitis and Eczema	3,317	663.4	0.74	1.8
Otitis Media	3,258	651.6	0.73	1.8
Pneumonia: Viral	1,997	399.4	0.45	1.1
Inguinal Hernia	1,332	266.4	0.30	0.7
Osteomyelitis	1,175	235.0	0.26	0.6
Rheumatic Fever/Heart Disease	963	192.6	0.22	0.5
Meningitis: Viral, Other, NOS	765	153.0	0.17	0.4
Bronchiectasis	706	141.2	0.16	0.4
Vaccine Preventable Diseases	534	106.8	0.12	0.3
Meningococcal Disease	433	86.6	0.10	0.2
Nutritional Deficiencies/Anaemias	292	58.4	0.07	0.2
Meningitis: Bacterial	214	42.8	0.05	0.1
Tuberculosis	55	11.0	0.01	<0.1
New Zealand Total	182,044	36,408.8	40.68	100.0
Injury Admissions				
Falls	23,935	4,787.0	5.35	49.2
Mechanical Forces: Inanimate	12,543	2,508.6	2.80	25.8
Mechanical Forces: Animate	2,873	574.6	0.64	5.9
Transport: Cyclist	2,716	543.2	0.61	5.6
Accidental Poisoning	2,417	483.4	0.54	5.0
Electricity/Fire/Burns	2,018	403.6	0.45	4.1
Transport: Vehicle Occupant	1,056	211.2	0.24	2.2
Transport: Pedestrian	918	183.6	0.21	1.9
Drowning/Submersion	174	34.8	0.04	0.4
New Zealand Total	48,650	9,730.0	10.87	100.0

Source: Numerator: National Minimum Dataset (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed





Table 50. Mortality from Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Main Underlying Cause of Death, New Zealand 2005–2009

Cause of Death	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000	Percent of Category
Medical Conditions				
Pneumonia: Bacterial, Non-Viral	39	7.8	0.88	28.1
Epilepsy/Status Epilepticus	19	3.8	0.43	13.7
Meningococcal Disease	17	3.4	0.38	12.2
Pneumonia: Viral	13	2.6	0.29	9.4
Asthma	12	2.4	0.27	8.6
Gastroenteritis	10	2.0	0.22	7.2
Meningitis: Bacterial	9	1.8	0.20	6.5
Acute Bronchiolitis	5	1.0	0.11	3.6
Bronchiectasis	3	0.6	0.07	2.2
Other Conditions	12	2.4	0.27	8.6
Total Medical Conditions	139	27.8	3.12	100.0
Injuries				
Transport: Vehicle Occupant	91	18.2	2.05	37.6
Transport: Pedestrian	45	9.0	1.01	18.6
Drowning/Submersion	41	8.2	0.92	16.9
Electricity/Fire/Burns	21	4.2	0.47	8.7
Transport: Cyclist	12	2.4	0.27	5.0
Mechanical Forces: Inanimate and Animate	13	2.6	0.29	5.4
Falls	11	2.2	0.25	4.5
Accidental Poisoning	8	1.6	0.18	3.3
Total Injuries	242	48.4	5.44	100.0
Post Neonatal SUDI				
Post Neonatal SUDI	270	54.0	6.07	100.0
Total Mortality New Zealand	651	130.2	14.63	100.0

Source: Numerator: National Mortality Collection (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: SUDI death numerators are for infants aged 29–364 days only

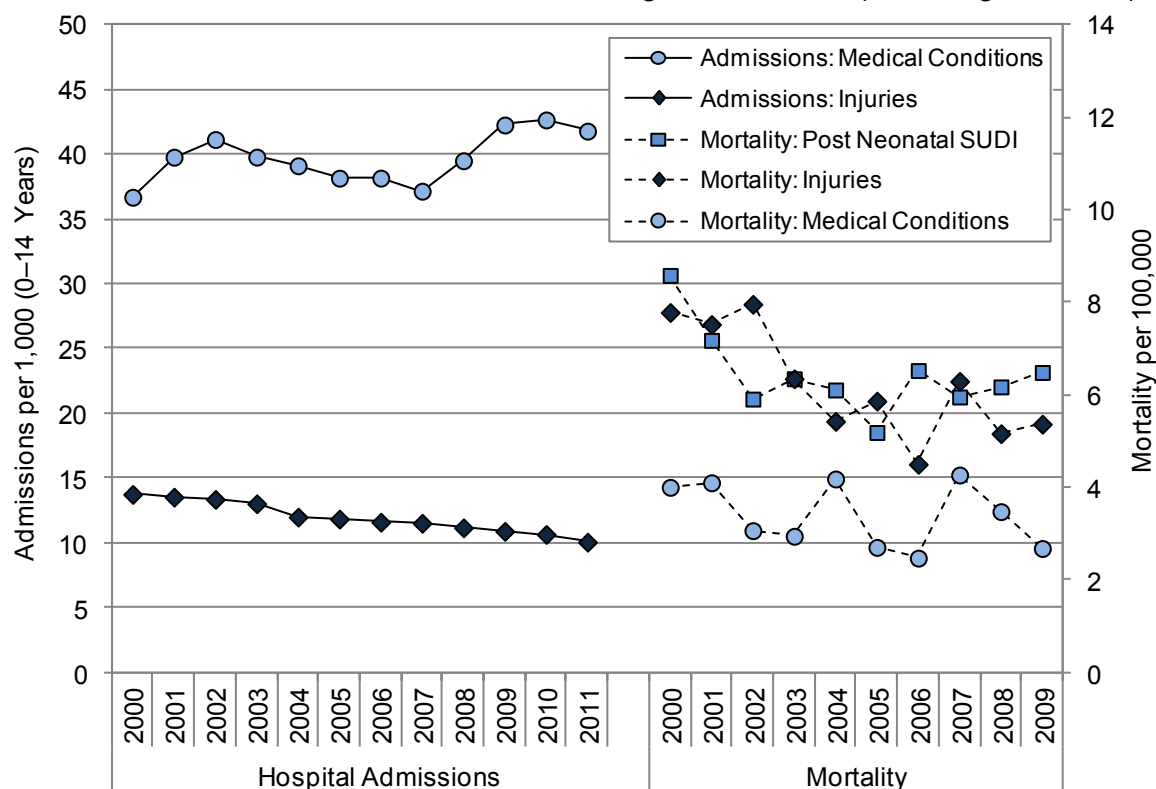
### New Zealand Trends

**Hospital Admissions:** In New Zealand, medical admissions with a social gradient increased during the early 2000s, reached a peak in 2002, and then declined, with an upswing in rates again being evident during 2007–2009. In contrast, injury admissions with a social gradient declined throughout 2000–2011 (**Figure 104**).

**Mortality:** In New Zealand, mortality from injuries with a social gradient decreased between 2000 and 2004, but fluctuated thereafter. Similarly, post-neonatal SUDI decreased between 2000 and 2002 and thereafter remained relatively static, while mortality from medical conditions with a social gradient fluctuated throughout 2000–2009 (**Figure 104**).



Figure 104. Hospital Admissions (2000–2011) and Mortality (2000–2009) from Conditions with a Social Gradient in New Zealand Children Aged 0–14 Years (Excluding Neonates)



Source: Numerator Admissions: National Minimum Dataset (neonates removed); Numerator Mortality: National Mortality Collection (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007) Note: Medical Conditions Admissions: Acute and arranged admissions only; Injury Admissions: Emergency Department cases removed

### New Zealand Trends by Ethnicity

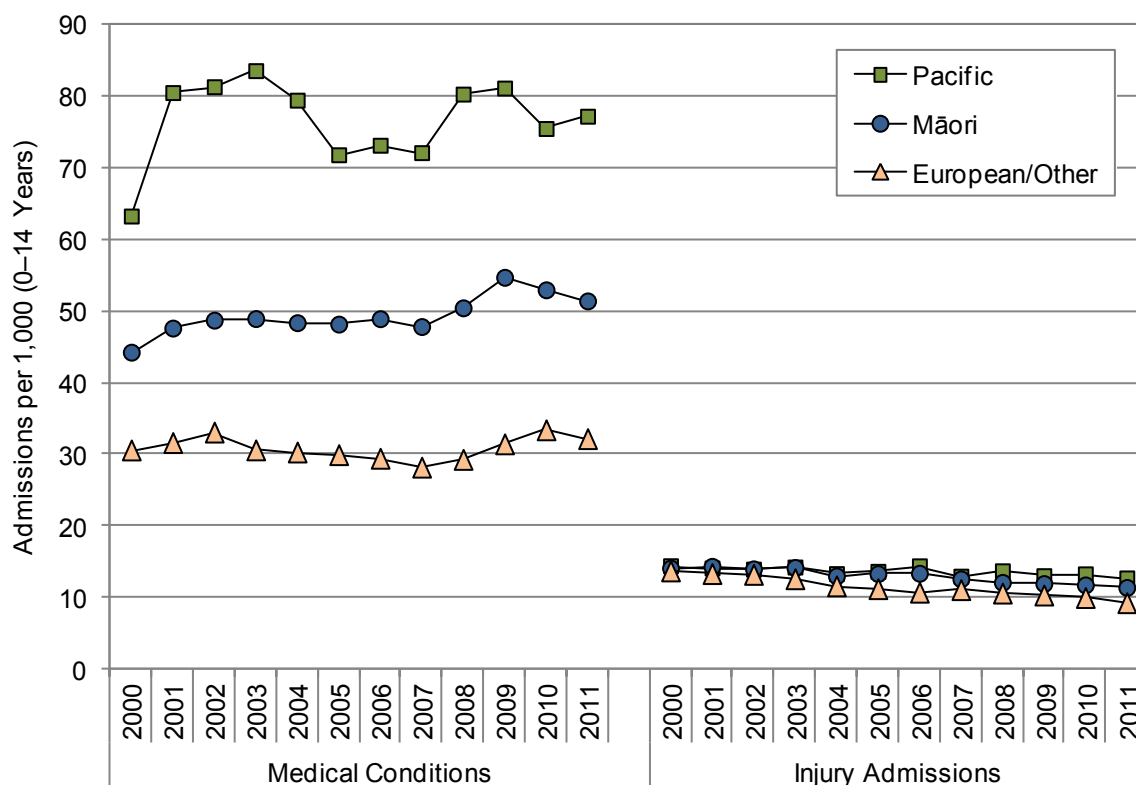
**Hospital Admissions for Medical Conditions:** In New Zealand during 2000–2011, hospitalisations for medical conditions with a social gradient were consistently higher for Pacific, than for Māori, than for European/Other children. For Pacific children, admissions increased during the early 2000s, reached a peak in 2003 and then declined. An upswing in rates was again evident during 2007–2009, with rates then declining again during 2010. For Māori children, rates were static during the mid 2000s, but then increased between 2007 and 2009 before declining again, while for European/Other children rates were static during the mid 2000s but increased during 2007–2010 (**Figure 105**).

**Hospital Admissions for Injuries:** In New Zealand during 2000–2011, injury admissions with a social gradient were also higher for Pacific and Māori children than for European/Other children. While admission rates declined for all ethnic groups during 2000–2011, the rate of decline was faster for European/Other, followed by Māori children. Thus ethnic differences were greater in 2011 than they were in 2000. While in absolute terms, the magnitude the ethnic differences seen appeared to be less marked than for medical conditions, for technical reasons, comparisons between these categories is not strictly possible (see Note 4 in Methods section) (**Figure 105**).

**Mortality:** In New Zealand during 2000–2009, SUDI mortality was consistently higher for Māori, than for Pacific, than for European/Other infants, while mortality from medical conditions with a social gradient was generally higher for Māori and Pacific children than for European/Other children. Mortality from injuries with a social gradient was also consistently higher for Māori than for European/Other children, while rates for Pacific children were more variable (**Figure 106**).

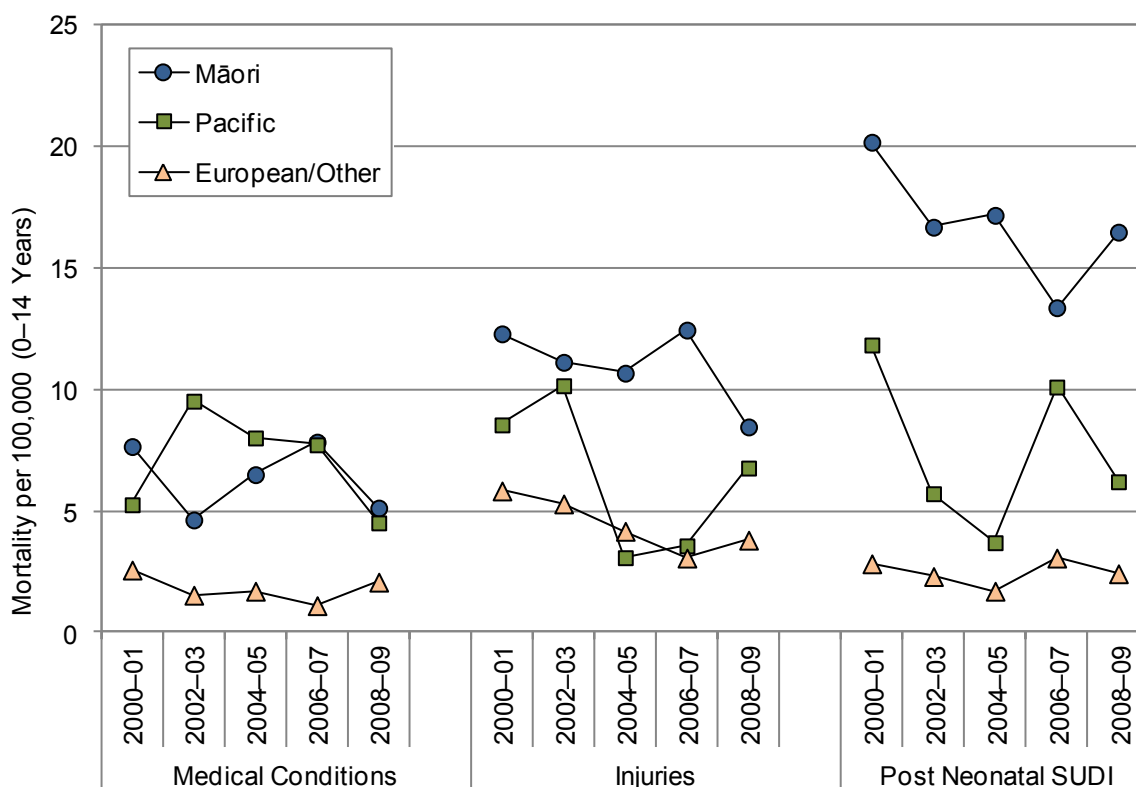


Figure 105. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Ethnicity, New Zealand 2000–2011



Source: Numerator: National Minimum Dataset (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed; Ethnicity is Level 1 Prioritised

Figure 106. Mortality from Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Ethnicity, New Zealand 2000–2009



Source: Numerator: National Mortality Collection (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: SUDI deaths are for infants aged 29–364 days only; Ethnicity is Level 1 Prioritised

## New Zealand Distribution by Ethnicity and Gender

**Hospital Admission for Medical Conditions:** In New Zealand during 2007–2011, hospital admissions for medical conditions with a social gradient were *significantly* higher for Pacific > Māori > European/Other children and were also *significantly* higher for males (**Table 51**).

**Hospital Admission for Injuries:** Similarly during 2007–2011, hospital admissions for injuries with a social gradient were *significantly* higher for Pacific children, than for Māori children, than for European/Other children and were also *significantly* higher for males. While the magnitude of these social differences appeared smaller for injury admissions, it must be remembered that that for technical reasons (See Note 4 in Methods Section) these categories are not strictly comparable (**Table 51**).

Table 51. Distribution of Hospital Admissions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Ethnicity and Gender, New Zealand 2007–2011

Hospital Admissions in Children 0–14 Years							
Medical Conditions							
Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
European/Other	30.81	1.00		Female	36.71	1.00	
Māori	51.44	1.67	1.65–1.69	Male	44.47	1.21	1.20–1.22
Pacific	77.23	2.51	2.48–2.54				
Injury Admissions							
Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
European/Other	10.16	1.00		Female	8.75	1.00	
Māori	11.84	1.17	1.14–1.19	Male	12.89	1.47	1.45–1.50
Pacific	13.04	1.28	1.25–1.32				

Source: Numerator: National Minimum Dataset (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed; Rates are per 1,000; Rate Ratios are unadjusted; Ethnicity is Level 1 Prioritised

**Mortality:** In New Zealand during 2005–2009, mortality from medical conditions with a social gradient was *significantly* higher for Pacific and Māori children than for European/Other children. Mortality from injuries with a social gradient was *significantly* higher for Māori children than for European/Other children and for males (**Table 52**). Differences in SUDI mortality are considered in the Infant Mortality section.

Table 52. Distribution of Mortality with a Social Gradient in Children Aged 0–14 Years by Ethnicity and Gender, New Zealand 2005–2009

Mortality in Children 0–14 Years							
Medical Conditions							
Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
European/Other	1.54	1.00		Female	2.44	1.00	
Māori	6.10	3.96	2.71–5.78	Male	3.77	1.54	1.10–2.17
Pacific	6.32	4.10	2.55–6.61				
Injuries							
Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
European/Other	3.76	1.00		Female	4.33	1.00	
Māori	10.10	2.68	2.06–3.49	Male	6.49	1.50	1.16–1.94
Pacific	4.91	1.31	0.82–2.08				

Source: Numerator: National Mortality Collection (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Rates are per 100,000; Rate Ratios are unadjusted; Ethnicity is Level 1 Prioritised





## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

*Hospital Admissions:* In Lakes DHB, the Bay of Plenty and Tairāwhiti during 2007–2011, hospital admissions for medical conditions with a social gradient were *significantly* higher than the New Zealand rate, while in the Waikato and Taranaki rates were *significantly* lower. Similarly hospital admissions for injuries with a social gradient were *significantly* higher than the New Zealand rate in the Bay of Plenty and Tairāwhiti, while rates in the Waikato and Taranaki were significantly lower. Injury admissions in Lakes DHB however, were similar to the New Zealand rate (**Table 53**).

Table 53. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates), Midland DHBs vs. New Zealand 2007–2011

DHB	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	Rate Ratio	95% CI
Children 0–14 Years					
Medical Conditions					
Waikato	12,533	2,507	31.59	0.78	0.76–0.79
Lakes	6,101	1,220	51.32	1.26	1.23–1.29
Bay of Plenty	11,741	2,348	52.87	1.30	1.28–1.32
Tairāwhiti	3,147	629	54.39	1.34	1.29–1.38
Taranaki	3,464	693	30.29	0.74	0.72–0.77
New Zealand	182,044	36,409	40.68	1.00	
Injury Admissions					
Waikato	3,728	746	9.40	0.86	0.84–0.89
Lakes	1,349	270	11.35	1.04	0.99–1.10
Bay of Plenty	2,832	566	12.75	1.17	1.13–1.22
Tairāwhiti	885	177	15.30	1.41	1.32–1.50
Taranaki	1,020	204	8.92	0.82	0.77–0.87
New Zealand	48,650	9,730	10.87	1.00	

Source: Numerator: National Minimum Dataset (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed

### Midland Region Distribution by Cause

*Hospital Admissions for Medical Conditions:* In all of the DHBs in the Midland Region during 2007–2011, asthma, bronchiolitis, gastroenteritis and acute upper respiratory tract infections were in the top four reasons for hospitalisations for medical conditions with a social gradient. Infectious and respiratory diseases collectively were responsible for the majority of medical admissions during this period (**Table 54 –Table 58**).

*Hospital Admissions for Injuries:* In all of the DHBs in the Midland Region during 2007–2011, falls, followed by inanimate mechanical forces, were the most frequent reasons for injury admissions with a social gradient, although transport injuries as a group also made a significant contribution (**Table 54 –Table 58**).



Table 54. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Primary Diagnosis, Waikato 2007–2011

Primary Diagnosis	Waikato			
	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	% of Total
Children 0–14 Years				
Medical Conditions				
Acute Bronchiolitis	2,427	485.4	6.12	19.4
Gastroenteritis	1,838	367.6	4.63	14.7
Acute Upper Respiratory Infections Excl Croup	1,537	307.4	3.87	12.3
Asthma	1,396	279.2	3.52	11.1
Skin Infections	1,094	218.8	2.76	8.7
Viral Infection of Unspecified Site	981	196.2	2.47	7.8
Pneumonia: Bacterial, Non-Viral	766	153.2	1.93	6.1
Urinary Tract Infection	462	92.4	1.16	3.7
Otitis Media	358	71.6	0.90	2.9
Epilepsy/Status Epilepticus	319	63.8	0.80	2.5
Croup/Laryngitis/Tracheitis/Epiglottitis	312	62.4	0.79	2.5
Febrile Convulsions	228	45.6	0.57	1.8
Dermatitis and Eczema	175	35.0	0.44	1.4
Pneumonia: Viral	137	27.4	0.35	1.1
Osteomyelitis	103	20.6	0.26	0.8
Inguinal Hernia	100	20.0	0.25	0.8
Rheumatic Fever/Heart Disease	69	13.8	0.17	0.6
Meningitis: Viral, Other, NOS	60	12.0	0.15	0.5
Bronchiectasis	53	10.6	0.13	0.4
Vaccine Preventable Diseases	33	6.6	0.08	0.3
Meningitis: Bacterial	31	6.2	0.08	0.2
Meningococcal Disease	29	5.8	0.07	0.2
Nutritional Deficiencies/Anaemias	25	5.0	0.06	0.2
Waikato Total	12,533	2,506.6	31.59	100.0
Injury Admissions				
Falls	1,838	367.6	4.63	49.3
Mechanical Forces: Inanimate	921	184.2	2.32	24.7
Transport: Cyclist	276	55.2	0.70	7.4
Mechanical Forces: Animate	226	45.2	0.57	6.1
Electricity/Fire/Burns	157	31.4	0.40	4.2
Transport: Vehicle Occupant	103	20.6	0.26	2.8
Transport: Pedestrian	100	20.0	0.25	2.7
Accidental Poisoning	96	19.2	0.24	2.6
Drowning/Submersion	11	2.2	0.03	0.3
Waikato Total	3,728	745.6	9.40	100.0

Source: Numerator: National Minimum Dataset (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed



Table 55. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Primary Diagnosis, Bay of Plenty 2007–2011

Primary Diagnosis	Bay of Plenty			
	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	% of Total
Children 0–14 Years				
Medical Conditions				
Acute Bronchiolitis	1,836	367.2	8.27	15.6
Gastroenteritis	1,694	338.8	7.63	14.4
Acute Upper Respiratory Infections Excl Croup	1,647	329.4	7.42	14.0
Asthma	1,542	308.4	6.94	13.1
Viral Infection of Unspecified Site	1,191	238.2	5.36	10.1
Skin Infections	929	185.8	4.18	7.9
Pneumonia: Bacterial, Non-Viral	775	155.0	3.49	6.6
Otitis Media	356	71.2	1.60	3.0
Croup/Laryngitis/Tracheitis/Epiglottitis	348	69.6	1.57	3.0
Urinary Tract Infection	335	67.0	1.51	2.9
Dermatitis and Eczema	266	53.2	1.20	2.3
Epilepsy/Status Epilepticus	251	50.2	1.13	2.1
Osteomyelitis	92	18.4	0.41	0.8
Febrile Convulsions	87	17.4	0.39	0.7
Rheumatic Fever/Heart Disease	80	16.0	0.36	0.7
Inguinal Hernia	75	15.0	0.34	0.6
Pneumonia: Viral	67	13.4	0.30	0.6
Vaccine Preventable Diseases	38	7.6	0.17	0.3
Meningitis: Viral, Other, NOS	36	7.2	0.16	0.3
Meningococcal Disease	28	5.6	0.13	0.2
Nutritional Deficiencies/Anaemias	25	5.0	0.11	0.2
Bronchiectasis	25	5.0	0.11	0.2
Meningitis: Bacterial	15	3.0	0.07	0.1
Tuberculosis	3	0.6	0.01	<0.1
Bay of Plenty Total	11,741	2,348.2	52.87	100.0
Injury Admissions				
Falls	1,422	284.4	6.40	50.2
Mechanical Forces: Inanimate	524	104.8	2.36	18.5
Accidental Poisoning	208	41.6	0.94	7.3
Transport: Cyclist	197	39.4	0.89	7.0
Mechanical Forces: Animate	187	37.4	0.84	6.6
Transport: Vehicle Occupant	111	22.2	0.50	3.9
Electricity/Fire/Burns	105	21.0	0.47	3.7
Transport: Pedestrian	59	11.8	0.27	2.1
Drowning/Submersion	19	3.8	0.09	0.7
Bay of Plenty Total	2,832	566.4	12.75	100.0

Source: Numerator: National Minimum Dataset (Neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed

Table 56. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Primary Diagnosis, Lakes DHB 2007–2011

Primary Diagnosis	Lakes DHB			
	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	% of Total
Children 0–14 Years				
Medical Conditions				
Acute Bronchiolitis	1,033	206.6	8.69	16.9
Asthma	894	178.8	7.52	14.7
Acute Upper Respiratory Infections Excl Croup	729	145.8	6.13	11.9
Gastroenteritis	659	131.8	5.54	10.8
Viral Infection of Unspecified Site	604	120.8	5.08	9.9
Skin Infections	500	100.0	4.21	8.2
Pneumonia: Bacterial, Non-Viral	477	95.4	4.01	7.8
Urinary Tract Infection	194	38.8	1.63	3.2
Epilepsy/Status Epilepticus	191	38.2	1.61	3.1
Croup/Laryngitis/Tracheitis/Epiglottitis	160	32.0	1.35	2.6
Otitis Media	139	27.8	1.17	2.3
Dermatitis and Eczema	116	23.2	0.98	1.9
Febrile Convulsions	87	17.4	0.73	1.4
Pneumonia: Viral	78	15.6	0.66	1.3
Bronchiectasis	50	10.0	0.42	0.8
Inguinal Hernia	47	9.4	0.40	0.8
Osteomyelitis	40	8.0	0.34	0.7
Rheumatic Fever/Heart Disease	33	6.6	0.28	0.5
Meningitis: Viral, Other, NOS	22	4.4	0.19	0.4
Vaccine Preventable Diseases	20	4.0	0.17	0.3
Meningococcal Disease	14	2.8	0.12	0.2
Meningitis: Bacterial	7	1.4	0.06	0.1
Nutritional Deficiencies/Anaemias	6	1.2	0.05	0.1
Tuberculosis	<3	s	s	s
Lakes DHB Total	6,101	1,220.2	51.32	100.0
Injury Admissions				
Falls	694	138.8	5.84	51.4
Mechanical Forces: Inanimate	263	52.6	2.21	19.5
Transport: Cyclist	104	20.8	0.87	7.7
Accidental Poisoning	78	15.6	0.66	5.8
Mechanical Forces: Animate	78	15.6	0.66	5.8
Electricity/Fire/Burns	65	13.0	0.55	4.8
Transport: Vehicle Occupant	32	6.4	0.27	2.4
Transport: Pedestrian	31	6.2	0.26	2.3
Drowning/Submersion	4	0.8	0.03	0.3
Lakes DHB Total	1,349	269.8	11.35	100.0

Source: Numerator: National Minimum Dataset (Neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed; s: suppressed due to small numbers





Table 57. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Primary Diagnosis, Tairawhiti 2007–2011

Primary Diagnosis	Tairawhiti			
	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	% of Total
Children 0–14 Years				
Medical Conditions				
Acute Bronchiolitis	548	109.6	9.47	17.4
Asthma	383	76.6	6.62	12.2
Gastroenteritis	378	75.6	6.53	12.0
Acute Upper Respiratory Infections Excl Croup	376	75.2	6.50	11.9
Viral Infection of Unspecified Site	329	65.8	5.69	10.5
Skin Infections	296	59.2	5.12	9.4
Pneumonia: Bacterial, Non-Viral	266	53.2	4.60	8.5
Croup/Laryngitis/Tracheitis/Epiglottitis	135	27.0	2.33	4.3
Dermatitis and Eczema	109	21.8	1.88	3.5
Urinary Tract Infection	64	12.8	1.11	2.0
Otitis Media	57	11.4	0.99	1.8
Epilepsy/Status Epilepticus	37	7.4	0.64	1.2
Inguinal Hernia	36	7.2	0.62	1.1
Febrile Convulsions	34	6.8	0.59	1.1
Rheumatic Fever/Heart Disease	26	5.2	0.45	0.8
Osteomyelitis	21	4.2	0.36	0.7
Meningococcal Disease	11	2.2	0.19	0.3
Meningitis: Viral, Other, NOS	11	2.2	0.19	0.3
Vaccine Preventable Diseases	10	2.0	0.17	0.3
Meningitis: Bacterial	7	1.4	0.12	0.2
Nutritional Deficiencies/Anaemias	5	1.0	0.09	0.2
Bronchiectasis	4	0.8	0.07	0.1
Pneumonia: Viral	3	0.6	0.05	0.1
Tuberculosis	<3	s	s	s
Tairawhiti Total	3,147	629.4	54.39	100.0
Injury Admissions				
Falls	433	86.6	7.48	48.9
Mechanical Forces: Inanimate	180	36.0	3.11	20.3
Mechanical Forces: Animate	73	14.6	1.26	8.2
Transport: Cyclist	69	13.8	1.19	7.8
Accidental Poisoning	39	7.8	0.67	4.4
Electricity/Fire/Burns	35	7.0	0.60	4.0
Transport: Vehicle Occupant	26	5.2	0.45	2.9
Transport: Pedestrian	26	5.2	0.45	2.9
Drowning/Submersion	4	0.8	0.07	0.5
Tairawhiti Total	885	177.0	15.30	100.0

Source: Numerator: National Minimum Dataset (Neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed; s: suppressed due to small numbers



Table 58. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Primary Diagnosis, Taranaki 2007–2011

Primary Diagnosis	Taranaki			
	Number: Total 2007–2011	Number: Annual Average	Rate per 1,000	% of Total
Children 0–14 Years				
Medical Conditions				
Asthma	584	116.8	5.11	16.9
Gastroenteritis	501	100.2	4.38	14.5
Acute Bronchiolitis	498	99.6	4.35	14.4
Pneumonia: Bacterial, Non-Viral	319	63.8	2.79	9.2
Acute Upper Respiratory Infections Excl Croup	304	60.8	2.66	8.8
Viral Infection of Unspecified Site	282	56.4	2.47	8.1
Skin Infections	264	52.8	2.31	7.6
Croup/Laryngitis/Tracheitis/Epiglottitis	158	31.6	1.38	4.6
Epilepsy/Status Epilepticus	128	25.6	1.12	3.7
Urinary Tract Infection	123	24.6	1.08	3.6
Dermatitis and Eczema	86	17.2	0.75	2.5
Febrile Convulsions	58	11.6	0.51	1.7
Otitis Media	49	9.8	0.43	1.4
Inguinal Hernia	28	5.6	0.24	0.8
Osteomyelitis	18	3.6	0.16	0.5
Pneumonia: Viral	14	2.8	0.12	0.4
Meningococcal Disease	12	2.4	0.10	0.3
Rheumatic Fever/Heart Disease	10	2.0	0.09	0.3
Bronchiectasis	10	2.0	0.09	0.3
Meningitis: Viral, Other, NOS	8	1.6	0.07	0.2
Vaccine Preventable Diseases	4	0.8	0.03	0.1
Nutritional Deficiencies/Anaemias	3	0.6	0.03	0.1
Meningitis: Bacterial	3	0.6	0.03	0.1
Taranaki Total	3,464	692.8	30.29	100.0
Injury Admissions				
Falls	515	103.0	4.50	50.5
Mechanical Forces: Inanimate	197	39.4	1.72	19.3
Transport: Cyclist	78	15.6	0.68	7.6
Mechanical Forces: Animate	67	13.4	0.59	6.6
Accidental Poisoning	55	11.0	0.48	5.4
Electricity/Fire/Burns	54	10.8	0.47	5.3
Transport: Vehicle Occupant	31	6.2	0.27	3.0
Transport: Pedestrian	17	3.4	0.15	1.7
Drowning/Submersion	6	1.2	0.05	0.6
Taranaki Total	1,020	204.0	8.92	100.0

Source: Numerator: National Minimum Dataset (Neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged admissions only; *Injury Admissions*: Emergency Department cases removed



### Midland Region Distribution by Cause

**Mortality:** In the Midland DHBs during 2005–2009, 66 children died from injuries and 36 from medical conditions with a social gradient, while 70 (post neonatal) infants died as a result of SUDI (**Table 59**).

Table 59. Mortality from Conditions with a Social Gradient in Children Aged 0–14 Years (Excluding Neonates) by Main Underlying Cause of Death, Midland DHBs 2005–2009

Cause of Death	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000
<b>Waikato</b>			
Medical Conditions	19	3.8	4.81
Injuries	29	5.8	7.35
SUDI (Infant)	32	6.4	8.11
Waikato Total	80	16.0	20.27
<b>Bay of Plenty</b>			
Medical Conditions	9	1.8	4.06
Injuries	18	3.6	8.12
SUDI (Infant)	11	2.2	4.96
Bay of Plenty Total	38	7.6	17.15
<b>Lakes DHB</b>			
Medical Conditions	<3	s	s
Injuries	9	1.8	7.48
SUDI (Infant)	12	2.4	9.97
Lakes DHB Total	22	4.4	18.28
<b>Tairāwhiti</b>			
Medical Conditions	0	0.0	0.00
Injuries	5	1.0	8.54
SUDI (Infant)	7	1.4	11.95
Tairāwhiti Total	12	2.4	20.49
<b>Taranaki</b>			
Medical Conditions	7	1.4	6.08
Injuries	5	1.0	4.35
SUDI (Infant)	8	1.6	6.95
Taranaki Total	20	4.0	17.38

Source: Numerator: National Mortality Collection (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: s: suppressed due to small numbers

## Midland Region Trends

*Hospital Admissions for Medical Conditions:* In the Midland Region during 2000–2011, while trends varied from DHB to DHB, hospital admissions for medical conditions with a social gradient were consistently higher than the New Zealand rate in the Bay of Plenty, Lakes DHB and Tairāwhiti and generally lower than the New Zealand rate in the Waikato and Taranaki (**Figure 107**).

*Hospital Admissions for Injuries:* In all of the DHBs in the Midland Region during 2000–2011, hospital admissions for injuries with a social gradient exhibited a general downward trend, with rates in the Bay of Plenty and Tairāwhiti being generally higher the New Zealand rate and rates in the Waikato and Taranaki (from 2006 onwards) being generally lower (**Figure 107**).

## Midland Region Distribution by Ethnicity

*Hospital Admissions for Medical Conditions:* In the Waikato during 2000–2011, hospital admissions for medical conditions with a social gradient were generally higher for Pacific and Māori children than for European/Other children, while in the Bay of Plenty, Lakes DHB, Tairāwhiti and Taranaki admissions were higher for Māori than for European/Other children (**Figure 108**).

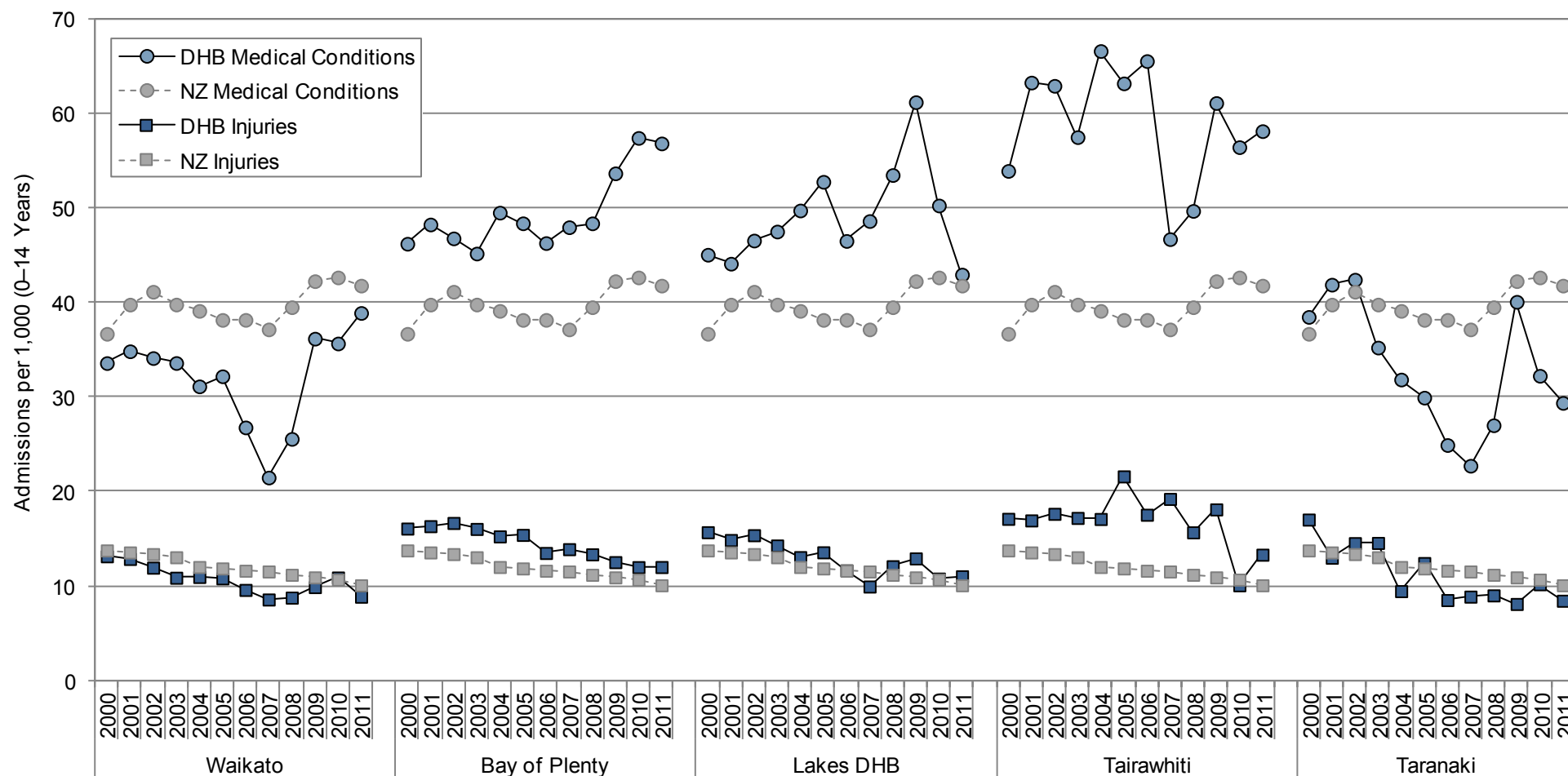
*Hospital Admissions for Injuries:* In the Bay of Plenty and Lakes DHB during 2000–2011, hospital admissions for injuries with a social gradient were generally higher for Māori than for European children, although in the Waikato, Tairāwhiti and Taranaki ethnic differences were less consistent (**Figure 108**).

## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Socioeconomically Sensitive Hospital Admissions and Mortality in Children

Given the complex causal pathways leading to socioeconomic gradients in hospital admissions and mortality during childhood, it is likely that an integrated policy framework covering a range of areas (e.g. housing, income support, reductions in exposure to second-hand cigarette smoke, immunisation) will be required, if reductions in admissions and mortality are to be achieved. **Table 3** on **Page 62** thus provides a brief overview of local policy documents and evidence-based reviews which consider policies to address the social determinants of health, while **Table 12** on **Page 103** reviews documents which consider the relationship between housing and health. In addition **Table 39** on **Page 197** reviews publications focused on the prevention of second-hand cigarette exposure in children, while **Table 34** on **Page 197** considers publications relevant to the cessation of smoking in pregnancy. Finally **Table 23** on **Page 166** reviews publications relevant to immunisation and interventions aimed at increasing immunisation coverage.



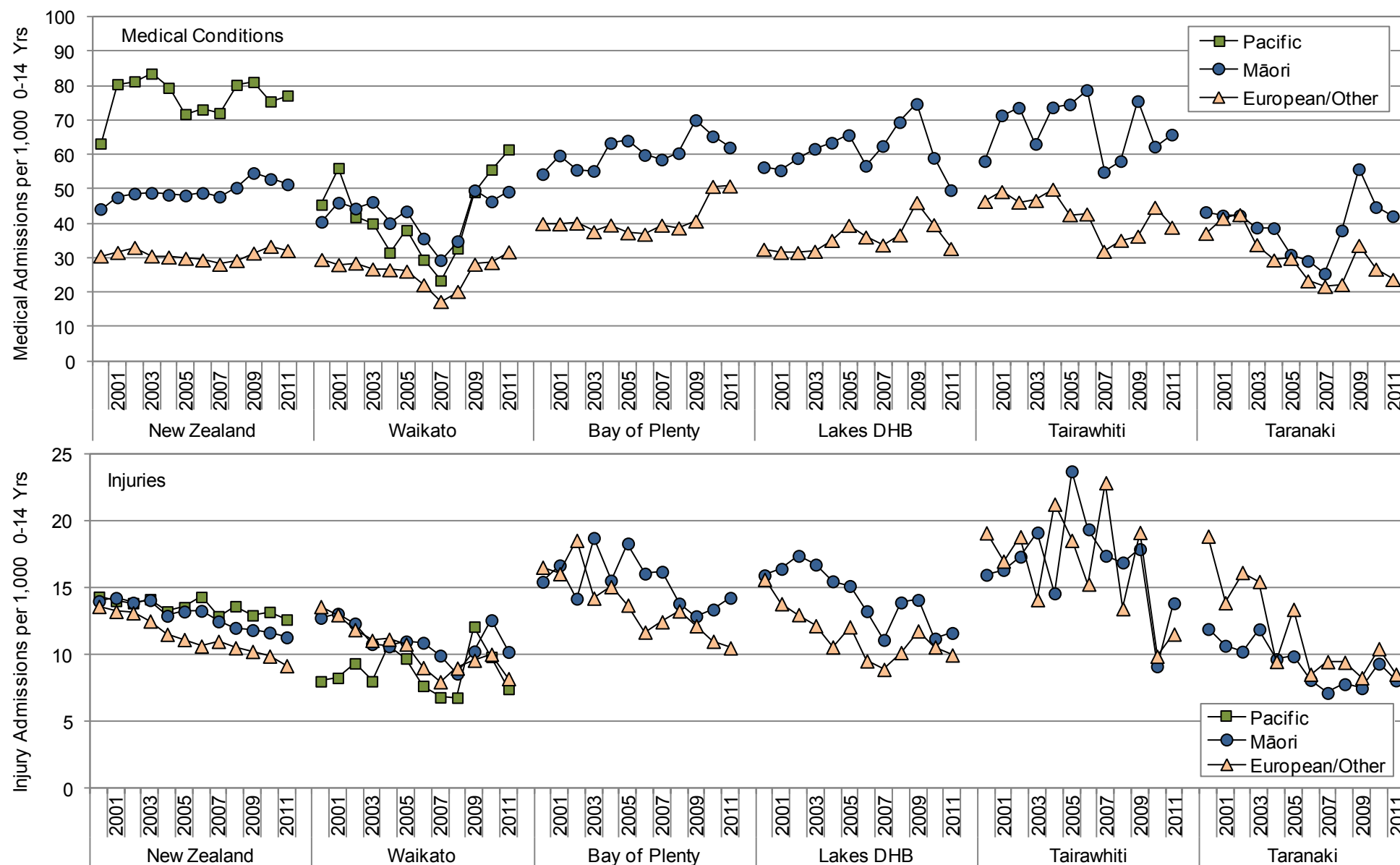
Figure 107. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0–14 Years, Midland DHBs vs. New Zealand 2000–2011



Source: Numerator: National Minimum Dataset (neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: *Medical Conditions*: Acute and arranged only; *Injuries*: Emergency Department cases removed



Figure 108. Hospital Admissions for Medical Conditions and Injuries with a Social Gradient in Children Aged 0–14 Years by Ethnicity, Midland DHBs vs. New Zealand 2000–2011



Source: Numerator: National Minimum Dataset (acute and arranged admissions only, neonates removed); Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised

# INFANT MORTALITY AND SUDDEN UNEXPECTED DEATH IN INFANCY

## Introduction

Infant mortality is often used as a barometer of the social wellbeing of a country [131]. New Zealand's infant mortality rates are middling by international standards<sup>2</sup>, being lower than those of the USA and some Eastern European countries, but higher than those of Central and Northern Europe [133]. However, mortality during the first year of life remains much higher than at any other point during childhood or adolescence, with 308 New Zealand infants dying prior to their first birthday during 2009 [134]. Further, ethnic and socioeconomic disparities, remain with infant mortality rates in 2008 (provisional data) being 6.9 per 1,000 live births for Māori babies, 5.9 for Pacific babies, and 3.8 for non-Māori non-Pacific babies [132].

Despite the relatively high number of deaths, New Zealand's infant mortality rates have declined during the past 40 years, with rates falling from 16.9 per 1,000 live births in 1969, to 4.9 per 1,000 in March 2009 [134]. However, while total infant mortality rates are generally higher for Pacific and Māori babies, for males, and those in the most deprived areas [135], total infant mortality is of limited utility in guiding population health interventions, as the causes of mortality differ markedly with the age of the infant. During the neonatal period (birth–28 days) extreme prematurity, congenital anomalies and intrauterine/birth asphyxia are the leading causes of mortality, while in the post neonatal period (29–364 days) sudden unexpected death in infancy (SUDI) and congenital anomalies make the greatest contribution [128]. Thus any interventions aimed at reducing New Zealand's infant mortality rates must, in the first instance, be based on an understanding of their component causes.

The following section uses information from the National Mortality Collection to review neonatal, post neonatal and total infant mortality, as well as SUDI rates since 1990.

### Data Source and Methods

#### Definition

1. *Total Infant Mortality: Death of a live born infant prior to 365 days of life*
2. *Neonatal Mortality: Death of a live born infant in the first 28 days of life*
3. *Post Neonatal Mortality: Death of a live born infant after 28 days but prior to 365 days of life*
4. *Sudden Unexpected Death in Infancy (SUDI): Death of a live born infant <365 days of life, where the cause of death is Sudden Infant Death Syndrome (SIDS), Accidental Suffocation/Strangulation in Bed or Ill-Defined/Unspecified Causes*

#### Data Sources

**Numerator:** National Mortality Collection: All deaths in the first year of life, using the definitions for total infant, neonatal and post neonatal mortality outlined above. Cause of death is derived from the ICD-10-AM main underlying cause of death as follows: Congenital Anomalies: CVS (Q20); Congenital Anomalies: CNS (Q00–Q07); Congenital Anomalies: Other (Q00–Q99); Intrauterine/Birth Asphyxia (P20–P21); Extreme Prematurity (P07.2); Other Perinatal Conditions (P00–P96); SUDI: SIDS (R95); SUDI: Unspecified (R96, R98, R99); SUDI: Suffocation/Strangulation in Bed (W75); Injury/Poisoning (V01–Y36).

**Denominator:** Birth Registration Dataset (Live Births Only)

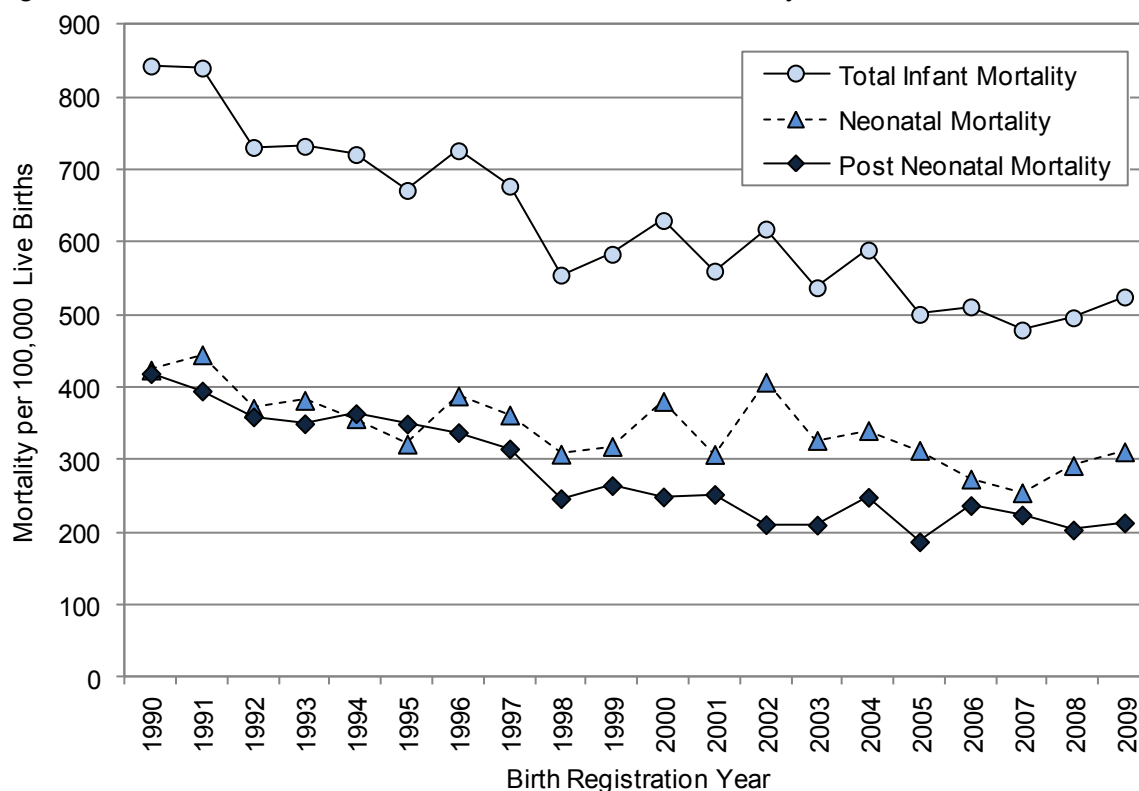
#### Notes on Interpretation

Note 1: See **Appendix 5** for an overview of the National Mortality Collection

<sup>2</sup> In New Zealand, the infant mortality rate in 2009 was 4.7 per 1,000 live births, compared to the OECD average of 4.4. By comparison the mortality rate was 3.1 in Finland and 6.5 in the USA (2008 data) [132].

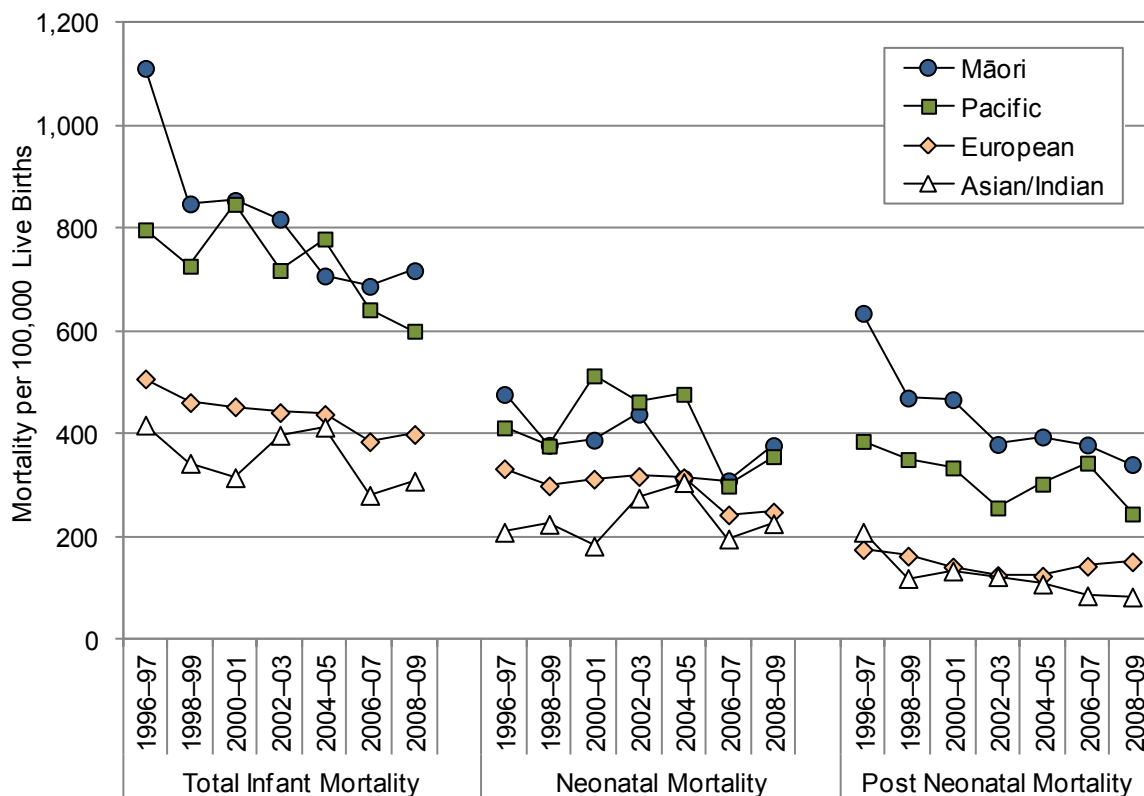
# Total Infant, Neonatal and Post Neonatal Mortality

Figure 109. Total Infant, Neonatal and Post Neonatal Mortality, New Zealand 1990–2009



Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

Figure 110. Total Infant, Neonatal and Post Neonatal Mortality by Ethnicity, New Zealand 1996–2009



Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset; Note: Ethnicity is Level 1 prioritised



## New Zealand Distribution and Trends

### New Zealand Trends

In New Zealand during the 1990s, neonatal and post neonatal mortality both declined, although rates were more static during the mid to late 2000s. An upswing in neonatal mortality was evident during 2007–2009. However it is too early to say whether this is a random fluctuation or the beginning of an upward trend (**Figure 109**).

### Trends by Ethnicity

In New Zealand during 1996–2009, while there was some year to year variation, neonatal mortality was generally higher for Pacific and Māori infants than for European and Asian/Indian infants. Post neonatal mortality however was consistently higher for Māori > Pacific > European and Asian/Indian infants during this period (**Figure 110**).

### Distribution by Cause

In New Zealand during 2005–2009, extreme prematurity and congenital anomalies were the leading causes of neonatal mortality, although intrauterine/birth asphyxia and other perinatal conditions also made a significant contribution. In contrast, SUDI was the leading cause of post neonatal mortality, followed by congenital anomalies (**Table 60**).

Table 60. Neonatal and Post Neonatal Mortality Cause of Death, New Zealand 2005–2009

Cause of Death	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000	Percent of Deaths
New Zealand				
Neonatal Mortality				
Extreme Prematurity	213	42.6	68.11	23.6
Congenital Anomalies: CVS	68	13.6	21.74	7.5
Congenital Anomalies: CNS	34	6.8	10.87	3.8
Congenital Anomalies: Other	131	26.2	41.89	14.5
Intrauterine/Birth Asphyxia	46	9.2	14.71	5.1
Other Perinatal Conditions	327	65.4	104.56	36.2
SUDI: Suffocation/Strangulation in Bed	26	5.2	8.31	2.9
SUDI: SIDS/Unspecified	17	3.4	5.44	1.9
Injury/Poisoning	10	2.0	3.20	1.1
Other Causes	31	6.2	9.91	3.4
Total Neonatal Mortality	903	180.6	288.74	100.0
Post Neonatal Mortality				
SUDI: SIDS	174	34.8	55.64	26.1
SUDI: Suffocation/Strangulation in Bed	88	17.6	28.14	13.2
SUDI: Unspecified	8	1.6	2.56	1.2
Congenital Anomalies: CVS	55	11.0	17.59	8.2
Congenital Anomalies: CNS	8	1.6	2.56	1.2
Congenital Anomalies: Other	57	11.4	18.23	8.5
Other Perinatal Conditions	82	16.4	26.22	12.3
Injury/Poisoning	21	4.2	6.72	3.1
Other Causes	174	34.8	55.64	26.1
Total Post Neonatal Mortality	667	133.4	213.28	100.0
New Zealand Total	1,570	314.0	502.02	100.0

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset; Note: CVS = Cardiovascular system; CNS = Central Nervous System



## Distribution by Ethnicity, NZ Deprivation Index Decile and Gender

In New Zealand during 2005–2009, neonatal mortality was *significantly* higher for Pacific and Māori infants than for European infants, for males and for those from average to more deprived (NZDep deciles 5–10) areas. During the same period, post neonatal mortality was also *significantly* higher for Māori and Pacific infants than for European and Asian/Indian infants, for males and for those from more deprived (NZDep deciles 7–10) areas (**Table 61**).

Table 61. Distribution of Neonatal and Post Neonatal Mortality by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005–2009

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
Neonatal Mortality							
NZ Deprivation Index Decile				Ethnicity			
Deciles 1–2	175.12	1.00		Asian/Indian	219.03	0.86	0.67–1.12
Deciles 3–4	198.74	1.13	0.85–1.51	European	253.38	1.00	
Deciles 5–6	267.82	1.53	1.17–1.99	Māori	341.65	1.35	1.16–1.56
Deciles 7–8	315.99	1.80	1.40–2.32	Pacific	352.98	1.39	1.14–1.71
Deciles 9–10	404.58	2.31	1.82–2.93	Gender			
				Female	256.91	1.00	
				Male	318.91	1.24	1.09–1.42
Post Neonatal Mortality							
NZ Deprivation Index Decile				Ethnicity			
Deciles 1–2	127.17	1.00		Asian/Indian	88.26	0.63	0.42–0.94
Deciles 3–4	119.25	0.94	0.66–1.33	European	139.59	1.00	
Deciles 5–6	153.78	1.21	0.87–1.67	Māori	354.67	2.54	2.14–3.02
Deciles 7–8	204.89	1.61	1.19–2.17	Pacific	279.45	2.00	1.57–2.55
Deciles 9–10	367.25	2.89	2.19–3.80	Gender			
				Female	181.35	1.00	
				Male	243.54	1.34	1.15–1.57

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset; Note: Rates are per 100,000 live births; Rate Ratios are unadjusted; Ethnicity is Level 1 prioritised

## Midland Region Distribution and Trends

### Midland Region Trends

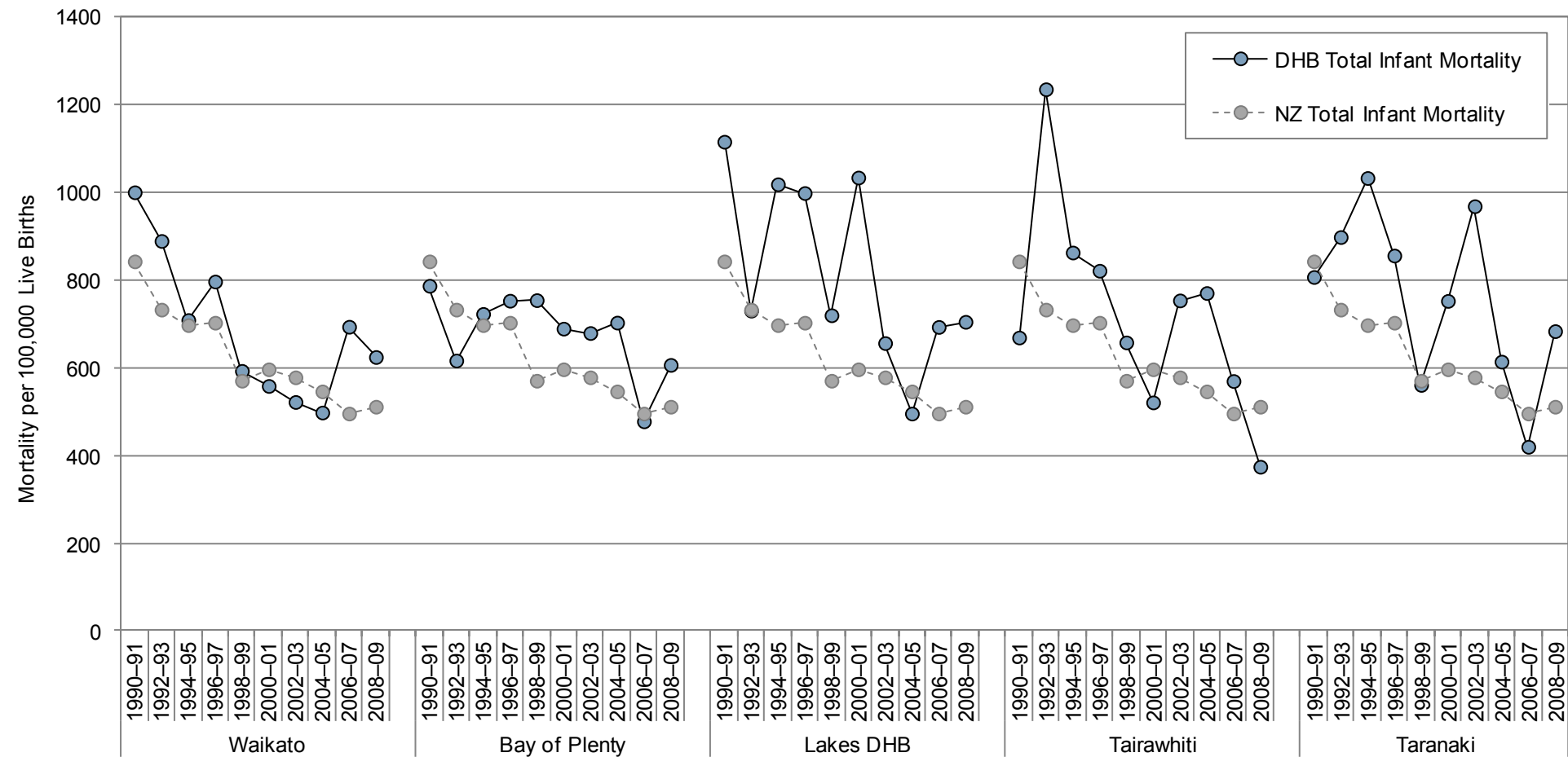
In all of the DHBs in the Midland Region during 1990–2009, while there were large year to year fluctuations in rates (possibly as a result of small numbers), total infant mortality exhibited a general downward trend. While neonatal mortality rates were relatively static, post neonatal mortality exhibited a general downward trend in all Midland DHBs except Taranaki (**Figure 111, Figure 112**).

### Midland Region vs. New Zealand

In all of the DHBs in the Midland Region during 2005–2009, while neonatal mortality rates were higher than the New Zealand rate, in no case did these differences reach statistical significance. Similarly while post neonatal mortality rates in the Waikato, Lakes DHB, Tairāwhiti and Taranaki were all higher than the New Zealand rate, in no Midland DHB did these differences reach statistical significance (**Table 62**).

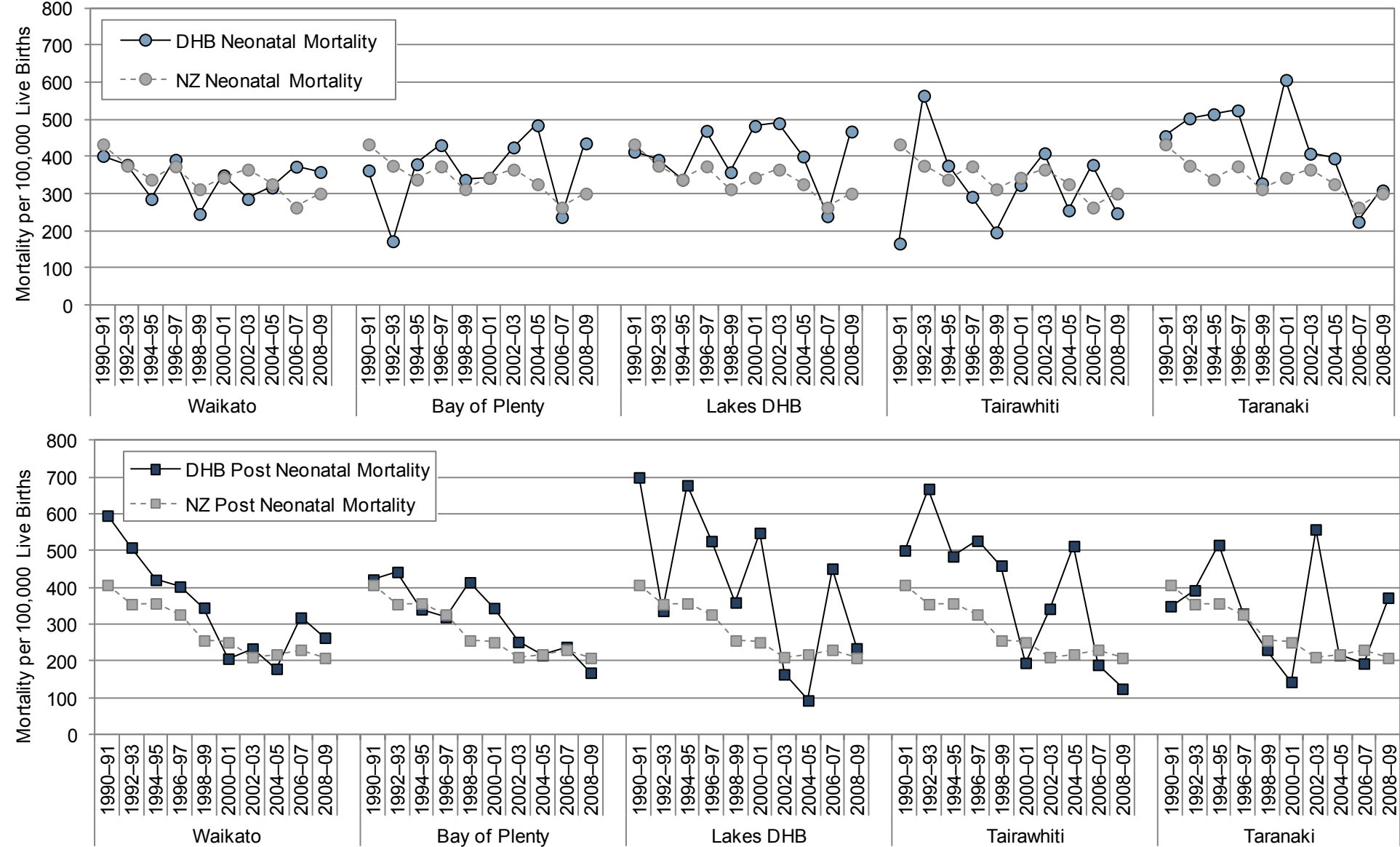


Figure 111. Total Infant Mortality, Midland DHBs vs. New Zealand 1990–2009



Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

Figure 112. Neonatal and Post Neonatal Mortality, Midland DHBs vs. New Zealand 1990–2009



Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

Table 62. Neonatal and Post Neonatal Mortality, Midland DHBs vs. New Zealand 2005–2009

DHB	Total No. Deaths 2005–2009	No. Deaths Annual Average	Rate per 100,000	Rate Ratio	95% CI
Neonatal Mortality					
Waikato	96	19.2	353.08	1.22	0.99–1.51
Lakes	32	6.4	384.99	1.33	0.94–1.90
Bay of Plenty	53	10.6	362.64	1.26	0.95–1.66
Tairāwhiti	13	2.6	325.73	1.13	0.65–1.95
Taranaki	25	5.0	321.88	1.11	0.75–1.66
New Zealand	903	180.6	288.74	1.00	
Post Neonatal Mortality					
Waikato	72	14.4	264.81	1.24	0.97–1.58
Lakes	24	4.8	288.74	1.35	0.90–2.03
Bay of Plenty	27	5.4	184.74	0.87	0.59–1.27
Tairāwhiti	9	1.8	225.51	1.06	0.55–2.04
Taranaki	20	4.0	257.50	1.21	0.77–1.88
New Zealand	667	133.4	213.28	1.00	

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

Table 63. Neonatal and Post Neonatal Mortality by Cause of Death, Waikato 2005–2009

Cause of Death	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000	Percent of Deaths
Waikato				
Neonatal Mortality				
Extreme Prematurity	23	4.6	84.59	24.0
Congenital Anomalies: CVS	8	1.6	29.42	8.3
Congenital Anomalies: CNS	3	0.6	11.03	3.1
Congenital Anomalies: Other	10	2.0	36.78	10.4
Intrauterine/Birth Asphyxia	4	0.8	14.71	4.2
Other Perinatal Conditions	37	7.4	136.08	38.5
SUDI: All Types	5	1.0	18.39	5.2
Other Causes	6	1.2	22.07	6.3
Total Neonatal Mortality	96	19.2	353.09	100.0
Post Neonatal Mortality				
SUDI: SIDS	25	5.0	91.95	34.7
SUDI: Suffocation/Strangulation in Bed	7	1.4	25.75	9.7
Congenital Anomalies: CVS	3	0.6	11.03	4.2
Congenital Anomalies: All Other	8	1.6	29.42	11.1
Other Perinatal Conditions	9	1.8	33.10	12.5
Injury/Poisoning	3	0.6	11.03	4.2
Other Causes	17	3.4	62.53	23.6
Post Neonatal Mortality	72	14.4	264.81	100.0
Waikato Total	168	33.6	617.90	100.0

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset



## Midland Region Distribution by Cause

In all of the DHBs in the Midland Region during 2005–2009, congenital anomalies and extreme prematurity were the most frequent causes of neonatal mortality, while SUDI was the most frequent cause of post neonatal mortality (**Table 63, Table 64, Table 65**).

Table 64. Neonatal and Post Neonatal Mortality by Cause of Death, Bay of Plenty and Lakes DHBs 2005–2009

Cause of Death	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000	Percent of Deaths
<b>Bay of Plenty</b>				
<b>Neonatal Mortality</b>				
Extreme Prematurity	13	2.6	88.95	24.5
Congenital Anomalies: CVS	4	0.8	27.37	7.5
Congenital Anomalies: Other	7	1.4	47.90	13.2
Intrauterine/Birth Asphyxia	4	0.8	27.37	7.5
Other Perinatal Conditions	22	4.4	150.53	41.5
Other Causes	3	0.6	20.53	5.7
Total Neonatal Mortality	53	10.6	362.64	100.0
<b>Post Neonatal Mortality</b>				
SUDI: SIDS	7	1.4	47.90	25.9
SUDI: All Other Types	4	0.8	27.37	14.8
Congenital Anomalies: CVS	3	0.6	20.53	11.1
Congenital Anomalies: All Other	4	0.8	27.37	14.8
All Other Perinatal Conditions	3	0.6	20.53	11.1
Other Causes	6	1.2	41.05	22.2
Total Post Neonatal Mortality	27	5.4	184.74	100.0
Bay of Plenty Total	80	16.0	547.38	100.0
<b>Lakes DHB</b>				
<b>Neonatal Mortality</b>				
Extreme Prematurity	7	1.4	84.22	21.9
Congenital Anomalies: CVS	3	0.6	36.09	9.4
Congenital Anomalies: All Other	5	1.0	60.15	15.6
All Other Perinatal Conditions	15	3.0	180.46	46.9
Other Causes	<3	s	s	s
Total Neonatal Mortality	32	6.4	384.99	100.0
<b>Post Neonatal Mortality</b>				
SUDI: SIDS	7	1.4	84.22	29.2
SUDI: Suffocation/Strangulation in Bed	5	1.0	60.15	20.8
Congenital Anomalies/Other Perinatal Conditions	5	1.0	60.15	20.8
Injury/Poisoning	3	0.6	36.09	12.5
Other Causes	4	0.8	48.12	16.7
Total Post Neonatal Mortality	24	4.8	288.74	100.0
Lakes DHB Total	56	11.2	673.73	100.0

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset; Note: s: suppressed due to small numbers



Table 65. Neonatal and Post Neonatal Mortality by Cause of Death, Tairāwhiti and Taranaki DHBs 2005–2009

Cause of Death	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000	Percent of Deaths
<b>Tairāwhiti</b>				
<b>Neonatal Mortality</b>				
Extreme Prematurity	4	0.8	100.23	30.8
Congenital Anomalies/Other Perinatal Conditions	8	1.6	200.45	61.5
Other Causes	<3	s	s	s
Total Neonatal Mortality	13	2.6	325.73	100.0
<b>Post Neonatal Mortality</b>				
SUDI: All Types	7	1.4	175.40	77.8
Congenital Anomalies/Other Perinatal Conditions	<3	s	s	s
Total Post Neonatal Mortality	9	1.8	225.51	100.0
Tairāwhiti Total	22	4.4	551.24	100.0
<b>Taranaki</b>				
<b>Neonatal Mortality</b>				
Congenital Anomalies	9	1.8	115.88	36.0
Extreme Prematurity	5	1.0	64.38	20.0
All Other Perinatal Conditions	11	2.2	141.63	44.0
Total Neonatal Mortality	25	5.0	321.88	100.0
<b>Post Neonatal Mortality</b>				
SUDI: SIDS	8	1.6	103.00	40.0
Congenital Anomalies	5	1.0	64.38	25.0
Other Causes	7	1.4	90.13	35.0
Total Post Neonatal Mortality	20	4.0	257.50	100.0
Taranaki Total	45	9.0	579.38	100.0

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset; Note: s: suppressed due to small numbers

## Sudden Unexpected Death in Infancy (SUDI)

### New Zealand Distribution and Trends

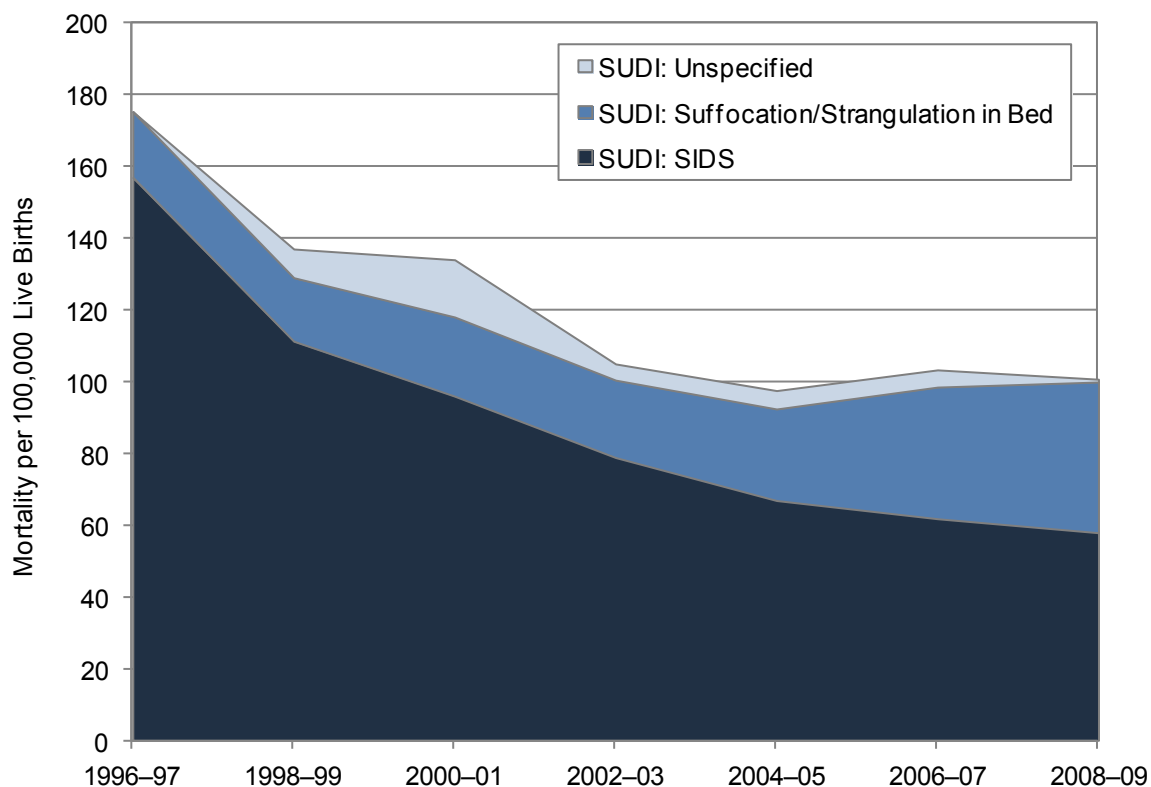
#### New Zealand Trends

In New Zealand, SUDI rates declined during the late 1990s and early 2000s, but became more static after 2002–03. When broken down by SUDI sub-type, deaths attributed to SIDS continued to decline throughout 1996–2009, while deaths due to suffocation or strangulation in bed became more prominent as the period progressed. It is unclear however, whether this represented a diagnostic shift in the coding of SUDI, or whether the sleeping environment made an increasingly greater contribution to SUDI as the period progressed (**Figure 113**).

#### Distribution by Age

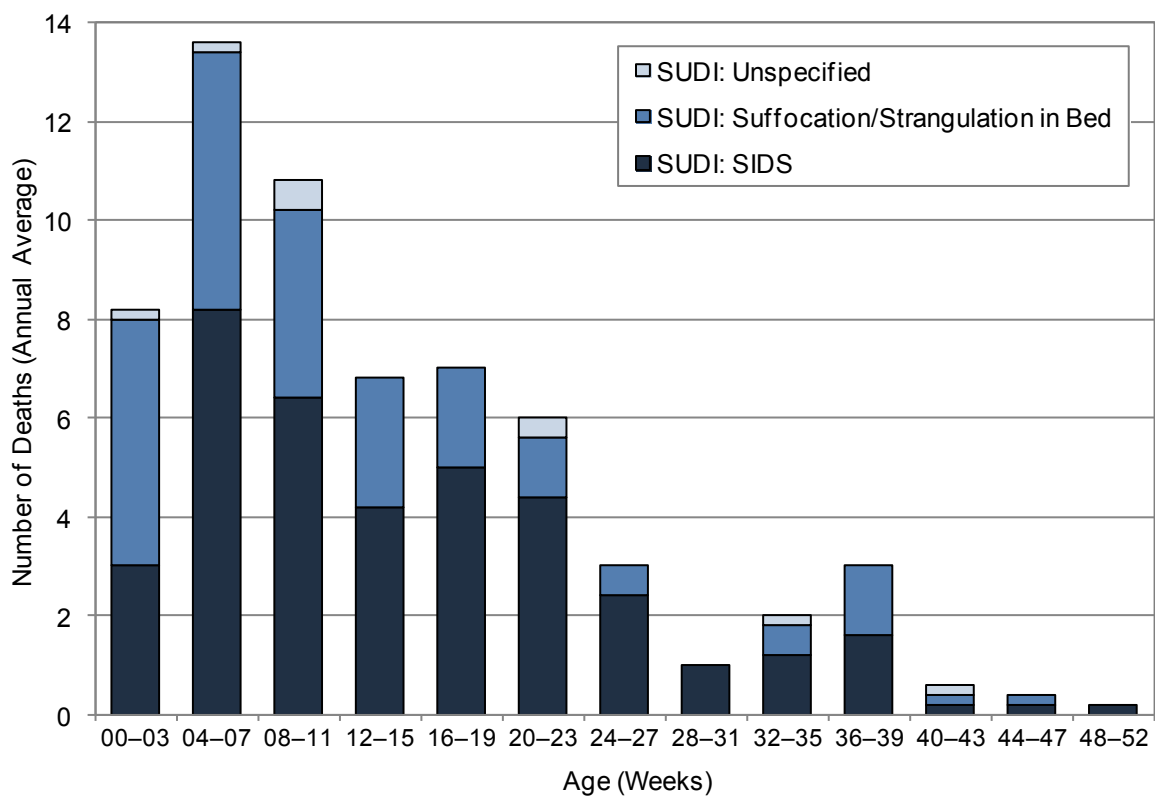
In New Zealand during 2005–2009, SUDI mortality was highest in infants 4–7 weeks, followed by those aged 8–11 weeks and then those 0–3 weeks of age. SUDI: Suffocation/Strangulation in Bed accounted for 61.0% of all SUDI deaths in those aged 0–3 weeks and 38.2% of SUDI deaths in those aged 4–7 weeks (**Figure 114**).

Figure 113. Sudden Unexpected Death in Infancy by Type, New Zealand 1996–2009

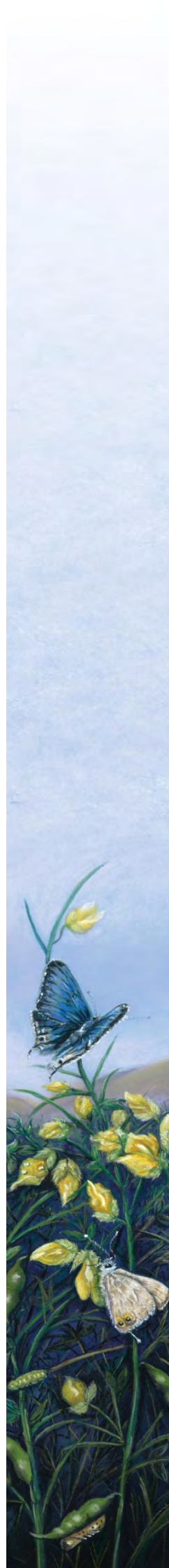


Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

Figure 114. Sudden Unexpected Death in Infancy by Type and Age in Weeks, New Zealand 2005–2009



Source: National Mortality Collection



## Distribution by Ethnicity, NZ Deprivation Index Decile and Gender

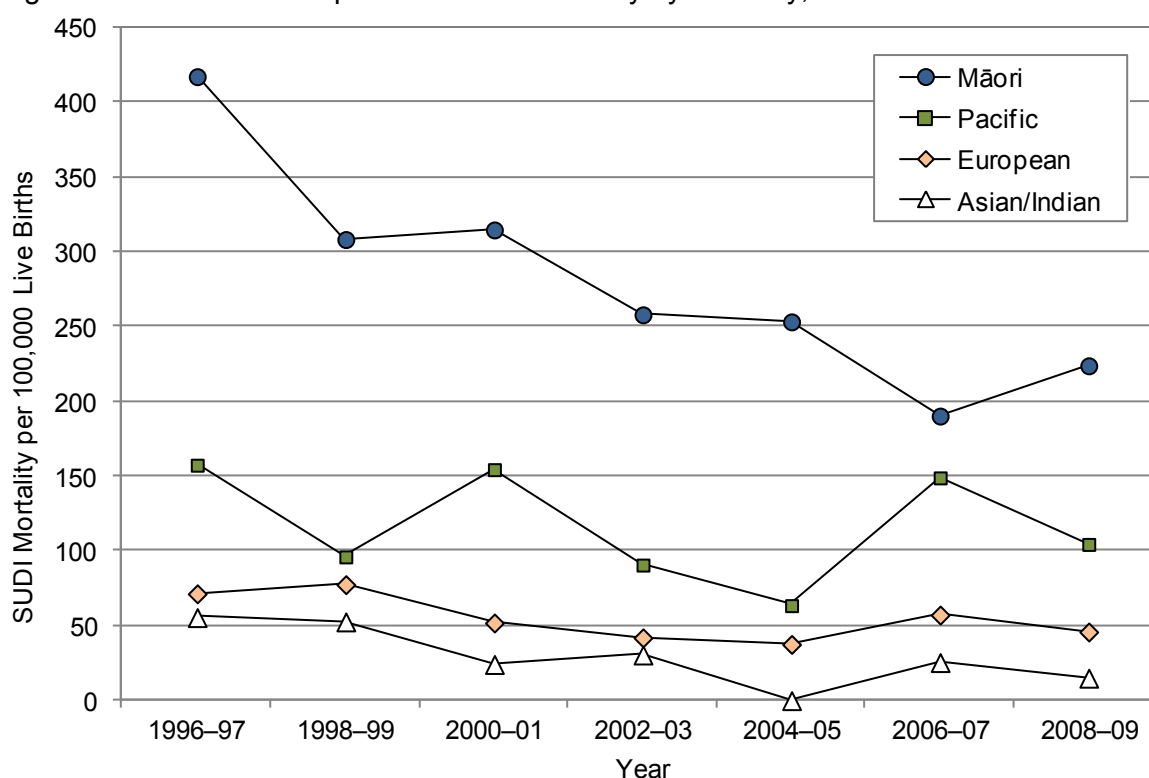
In New Zealand during 2005–2009, mortality from SUDI was *significantly* higher for Māori > Pacific > European > Asian/Indian infants and those from more deprived (NZDep deciles 7–10) areas (**Table 66**). Similar ethnic differences were seen during 1996–2009 (**Figure 115**).

Table 66. Distribution of Sudden Unexpected Death in Infancy by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005–2009

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
Sudden Unexpected Death in Infancy (SUDI)							
NZ Deprivation Index Decile				Ethnicity			
Deciles 1–2	33.36	1.00		Asian/Indian	16.35	0.34	0.14–0.84
Deciles 3–4	53.00	1.59	0.86–2.94	European	48.29	1.00	
Deciles 5–6	58.75	1.76	0.97–3.19	Māori	211.50	4.38	3.35–5.73
Deciles 7–8	92.34	2.77	1.60–4.79	Pacific	114.72	2.38	1.61–3.50
Deciles 9–10	204.70	6.14	3.68–10.24	Gender			
				Female	89.36	1.00	
				Male	110.25	1.23	0.99–1.54

Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset; Note: Rates are per 100,000 live births; Rate Ratios are unadjusted; Ethnicity is Level 1 prioritised

Figure 115. Sudden Unexpected Death in Infancy by Ethnicity, New Zealand 1996–2009



Source: National Mortality Collection; Note: Ethnicity is Level 1 Prioritised



## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

In the Midland Region during 2005–2009, while SUDI rates were higher than the New Zealand rate in the Waikato, Lakes DHB and Tairāwhiti, in none of these DHBs did these differences reach statistical significance (**Table 67**).

Table 67. Sudden Unexpected Death in Infancy, Midland DHBs vs. New Zealand 2005–2009

DHB	Total No. Deaths 2005–2009	No. Deaths Annual Average	Rate per 100,000	Rate Ratio	95% CI
SUDI					
Waikato	37	7.4	136.08	1.36	0.97–1.91
Lakes	12	2.4	144.37	1.44	0.81–2.57
Bay of Plenty	12	2.4	82.11	0.82	0.46–1.46
Tairāwhiti	7	1.4	175.40	1.75	0.83–3.70
Taranaki	8	1.6	103.00	1.03	0.51–2.08
New Zealand	313	62.6	100.08	1.00	

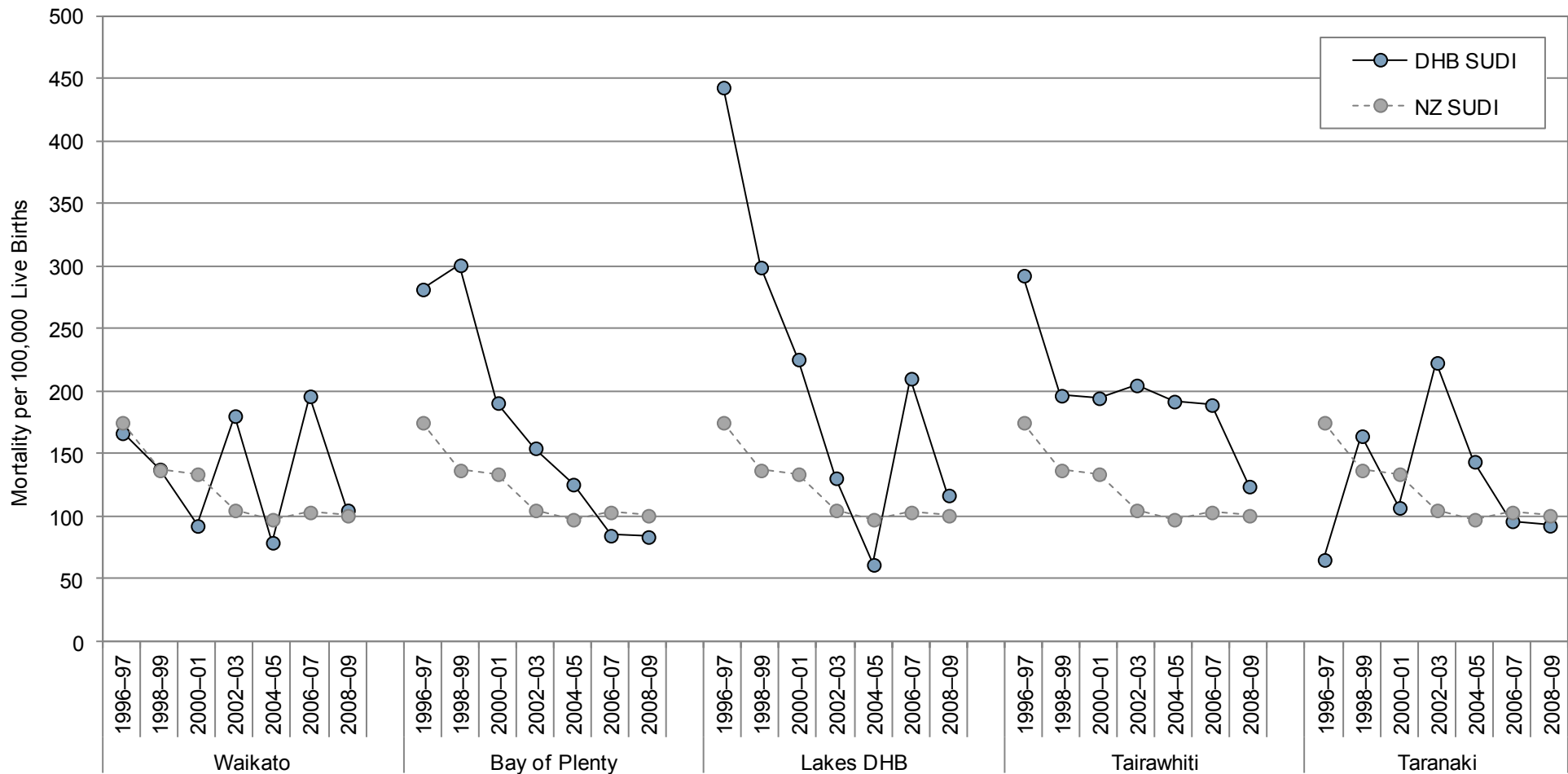
Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

### Midland Region Trends

In the Bay of Plenty, Lakes DHB and Tairāwhiti during 1996–2009, SUDI rates declined. While rates in Lakes DHB and the Bay of Plenty remained higher than the New Zealand rate for the majority of this period, in the Bay of Plenty, while initially higher, rates became similar to the New Zealand rate after 2006. In the Waikato and Taranaki, while there was considerable year to year volatility, SUDI rates were relatively static overall (**Figure 116**).



Figure 116. Sudden Unexpected Death in Infancy, Midland DHBs vs. New Zealand 1996–2009



Source: Numerator: National Mortality Collection; Denominator: Birth Registration Dataset

## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Sudden Unexpected Death in Infancy (SUDI)

The causes of infant mortality differ markedly with the age of the infant and reflect different causal pathways arising from conception to the first year of life. A review of interventions to address all the causes of infant mortality is beyond the scope of this review. **Table 68** below therefore provides a brief overview of local policy documents and evidence-based reviews relevant to the prevention of sudden unexpected death in infancy, a relatively discrete cause of infant mortality, but a cause that is both amenable to prevention and characterised by marked inequalities in New Zealand. Maternal smoking, a risk factor for SUDI, is addressed in **Table 34, page 197**.

In addition, social adversities in pregnancy have been linked to adverse pregnancy outcomes, including increased risk of infant mortality. The in-depth topic on **Page 277** discusses services and interventions for women experiencing multiple adversities in pregnancy.

Table 68. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Sudden Unexpected Death in Infancy (SUDI)

Ministry of Health Policy Documents
<p>Ministry of Health and the Child and Youth Mortality Review Committee. 2010. <b>Preventing Sudden Unexpected Death in Infancy (SUDI): Information for parents and caregivers</b>. <a href="https://www.healthed.govt.nz/resource/preventing-sudden-unexpected-death-infancy-sudi">https://www.healthed.govt.nz/resource/preventing-sudden-unexpected-death-infancy-sudi</a></p> <p>This website provides recommendations to parent and carers on reducing the risk of SUDI. Recommendations include: no smoking during pregnancy; putting babies to sleep on their backs; creating a safe sleeping environment; and breastfeeding. The recommended sleeping environment is having the baby sleeping in a cot or bassinette near the parents' bed. It advises that co-sleeping (a parent who sleeps with their baby in bed) is dangerous when: the baby's mother smoked during pregnancy; the adult in bed with the baby has been drinking, or taking drugs or medicines that might reduce their awareness; and the co-sleeping adult is excessively tired.</p>
Systematic Reviews
<p>Strehle E-M, et al. 2012. <b>Can home monitoring reduce mortality in infants at increased risk of sudden infant death syndrome? A systematic review</b>. <i>Acta Paediatrica</i>, 101(1), 8-13.</p> <p>This review assessed the effectiveness of home monitoring devices in the prevention of SIDS. The 11 studies identified included only one controlled trial, a feasibility study (for a proposed RCT) that compared outcomes for 100 infants born to parents who had had a previous SIDS death, allocated to weighing scales or home monitors and assessed over six months. No differences were identified. Of the 10 cohort studies, of variable quality, included in the review, two suggested that home monitoring may help to reduce SIDS rates in at risk infants. The authors concluded that there was no high-level evidence that home monitoring is useful in preventing SIDS, with the wide variety of monitoring devices used making comparison between studies difficult.</p>
<p>Hauck FR, et al. 2011. <b>Breastfeeding and Reduced Risk of Sudden Infant Death Syndrome: A Meta-analysis</b>. <i>Pediatrics</i>, 128(1), 103-10.</p> <p>This meta-analysis measured the association between breastfeeding and sudden infant death syndrome (SIDS), with the aim of identifying whether breastfeeding specifically lowers the risk of SIDS. Eighteen original case-control studies from Europe, North America and Australasia, were included. For infants who received any amount of breast milk for any duration, the univariable summary odds ratio (SOR) was 0.40 (95% CI 0.35 to 0.44), and the multivariable SOR was 0.55 (95% CI 0.44 to 0.69), suggesting that breastfeeding itself is protective and not merely a marker of other potentially protective factors. For any breastfeeding at two months of age or older, the univariable SOR was 0.38 (95% CI: 0.27 to 0.54). The effect was strongest for exclusive breastfeeding of any duration (univariable SOR 0.27, 95% CI 0.24 to 0.31). While the findings are based on observational studies, the consistency of the results leads the authors conclude that mothers should be recommended to breastfeed their infants as a potential way to reduce the risk of SIDS.</p>
<p>Task Force On Sudden Infant Death Syndrome. 2011. <b>Policy Statement. SIDS and Other Sleep-Related Infant Deaths: Expansion of Recommendations for a Safe Infant Sleeping Environment</b>. <i>Pediatrics</i>, 128 (5), 1030-39.</p> <p>Task Force on Sudden Infant Death Syndrome. 2011. <b>Technical Report. SIDS and Other Sleep-Related Infant Deaths: Expansion of Recommendations for a Safe Infant Sleeping Environment</b>. <i>Pediatrics</i>, 128(5), e1341-e67.</p> <p>This policy statement and background technical report from the American Academy of Pediatrics (AAP) provides an updated set of evidence-based recommendations on SIDS prevention and safe sleep environments that can reduce the risk of all sleep-related infant deaths including suffocation, asphyxia and entrapment. Recommendations include placing the baby in a supine position to sleep, using a firm sleeping surface, breastfeeding, room-sharing without bed-sharing, routine immunisations, considering the use of a pacifier, and avoiding soft bedding, overheating and exposure to tobacco smoke, alcohol and illicit drugs. The technical report provides a review on which the recommendations are based.</p>

<p>Vennemann M, et al. 2007. <b>Do immunisations reduce the risk for SIDS? A meta-analysis.</b> Vaccine, 25(26), 4875-79.</p> <p>This meta-analysis, aimed at examining the relationship between immunisation and SIDS, identified nine case-control studies, four of which were adjusted for potential confounders. The summary OR was 0.58 (95% CI 0.46 to 0.73) in the univariate analysis, suggesting that immunisations were protective, but the presence of heterogeneity made it difficult to combine these studies. The summary OR for the four studies that reported multivariate ORs was 0.54 (95% CI 0.39 to 0.76) with no evidence of heterogeneity. The authors conclude that immunisations are associated reduced risk of SIDS. A number of explanations are offered, including infection as a risk factor for SIDS, and the healthy vaccinee effect (vaccination may be avoided during illness), making the reduction in SIDS with immunisations a marker of the wellbeing of the infant, and not causally linked. It is recommended that immunisations be part of SIDS prevention campaigns.</p>
<p>Mitchell EA, et al. 2006. <b>Should Pacifiers Be Recommended to Prevent Sudden Infant Death Syndrome?</b> Pediatrics, 117(5), 1755-58.</p> <p>This report aimed to review the evidence for a reduction in the risk of SIDS with pacifier use, discuss possible mechanisms for the reduction in SIDS risk, and assess other possible effects of pacifiers on infants and children. It is reported that in New Zealand pacifier use is low overall (approximately 10%) but there is wide variation within the country from three per cent in the far south to 30 per cent in the northern North Island. The pooled the results of 7 case-control studies and one prospective study revealed a pooled OR of 0.83 (95% CI 0.75 to 0.93) for routine pacifier use. Eight case-control studies also examined pacifier use for the last sleep, with a pooled OR of 0.48 (95% CI 0.43 to 0.54), supporting consistent evidence of a reduction in SIDS with pacifier use. Possible mechanisms for this effect are discussed. Potential negative effects were reviewed, including: a possible reduction in the duration of breastfeeding (3 RCTs, conflicting results): and an increased risk of infection, particularly otitis media, although this may result from reverse causality. The authors conclude that the evidence supports an association between pacifier use and a reduced risk of SIDS and their use should therefore not be discouraged, although they do not support active recommendation. It is suggested that discussion of pacifier use should include advice to offer a pacifier only when breastfeeding is established, after the neonatal period and that they should only be used for sleeping periods in the first year of life.</p>
<p>Hauck FR, et al. 2005. <b>Do Pacifiers Reduce the Risk of Sudden Infant Death Syndrome? A Meta-analysis.</b> Pediatrics, 116(5), e716-e23.</p> <p>This meta-analysis measured the association between pacifier use and sudden infant death syndrome (SIDS), with the aim of identifying whether pacifier use lowers the risk of SIDS. Seven case-control studies were included. The calculated summary odds ratios (SORs) identified a reduction in SIDS risk associated with pacifier use, suggesting that pacifier use is protective for SIDS. For usual pacifier use the univariate SOR was 0.90 (95% CI 0.59–0.85) and the multivariate SOR was 0.71 (95% CI 0.59–0.85). For pacifier use during the last sleep the univariate SOR was 0.47 (95% CI 0.40-0.55) and multivariate SOR was 0.39 (95% CI 0.31-0.50). The authors recommend pacifier use for infants up to 1 year of age (introduced after breastfeeding has been well established in breastfed infants). Concerns about possible adverse effects, including on breastfeeding, and otitis media, led to a further review in 2006 (see above).</p>
<p><b>Other Relevant Publications and Resources</b></p>
<p>Hauck F &amp; Tanabe K. 2010. <b>International Trends in Sudden Infant Death Syndrome and Other Sudden Unexpected Deaths in Infancy: Need for Better Diagnostic Standardization.</b> Current Pediatric Reviews, 6(1), 95-101.</p> <p>This study compared international trends in SIDS and post neonatal mortality (PNM) since the introduction of SIDS risk reduction and safe sleep campaigns for 15 countries (including New Zealand) from 1990 to the year for which most the recent data were available (2005 to 2008). SIDS rates had declined in all countries, with reductions of over 50% for most countries. These declines are attributed to SIDS risk reduction campaigns, which achieved success primarily in reducing rates of prone sleeping among infants. The largest declines generally occurred in the first few years after initiation of national campaigns. The authors highlight the need for diagnostic accuracy in comparing trends and recommend that national and local campaigns are re-energised to continue the early successes made in reducing SIDS incidence.</p>
<p>McManus V, et al. 2010. <b>Narratives of deprivation: Women's life stories around Māori sudden infant death syndrome.</b> Social Science &amp; Medicine, 71(3), 643-9.</p> <p>This qualitative study provides a thematic analysis of life story interviews conducted between 2002 and 2004 with nineteen Māori mothers whose infants died of SIDS. Common themes of alienation, marginalisation and exclusion and lives lived with serious deprivation within an affluent society were identified. The authors argue that constructing the risk factors as non-modifiable is unhelpful and new approaches that build on the WHO Social Determinants of Health framework are needed to address the high SIDS mortality rate among Māori babies.</p>
<p>Child and Youth Mortality Review Committee, Te Rōpū Arotake Auau Mate o te Hunga Tamariki, Taiohi. 2009. <b>Chapter 1: Sudden Unexpected Death in Infancy (SUDI) in Fifth Report to the Minister of Health: Reporting mortality 2002–2008.</b> Wellington: Child and Youth Mortality Review Committee.  <a href="http://www.hqsc.govt.nz/assets/CYMRC/Publications/cymrc-5th-report-chp1-sudi.pdf">http://www.hqsc.govt.nz/assets/CYMRC/Publications/cymrc-5th-report-chp1-sudi.pdf</a></p> <p>This report includes an analysis of SUDI mortality data from 2003-2007, including an assessment of risk factors for SUDI, recommendations from local mortality review groups, and observations and recommendations from the Child and Youth Mortality Review Committee on how to reduce incidents of SUDI in New Zealand.</p>
<p>Hymel K. 2006. <b>Distinguishing sudden infant death syndrome from child abuse fatalities.</b> Pediatrics 118(1) 421-7.</p> <p>This clinical report from the American Academy of Pediatrics provides guidance for professionals regarding procedures to help avoid stigmatizing families of sudden infant death syndrome victims while allowing accumulation of appropriate evidence in potential cases of infanticide.</p>



Schluter PJ, et al. 2007. **Infant care practices associated with sudden infant death syndrome: findings from the Pacific Islands Families study.** Journal of Paediatrics & Child Health, 43(5), 388-93.

The Pacific Islands Families Study followed a cohort of Pacific infants born at Middlemore Hospital in 2000. Mothers (1376 in total) were interviewed about infant care practices at around six weeks after the birth of their infant. Bed sharing was found to be common (50% of infants) and mostly occurred in the parents' bed. Most infants (95%) wholly or partly shared a bedroom with their parents. The authors note that despite these practices, and the socio-economic disadvantage of many Pacific families, the rate of SIDS among Pacific families was substantially lower than the Māori SIDS rate. It is recommended that mothers should receive adequate information antenatally about the risks and benefits of room-sharing, bed-sharing and safe-sleeping practices and environments.

<http://www.hqsc.govt.nz/our-programmes/mrc/cymrc/publications-and-resources/sudi/>

This website provides links to SUDI prevention publications and resources developed by the Child and Youth Mortality Review Committee (CMYRC), a statutory committee accountable to the Health Quality and Safety Commission. Resources include safe sleeping guidelines, links to CMYRC mortality reports, and examples of DHB safe sleeping policies.

<http://www.whakawhetu.co.nz/>

Whakawhetu National SUDI Prevention for Māori (previously known as Māori SIDS) is a national kaupapa Māori organisation dedicated to reducing the rate of SUDI for Māori. The organisation provides policy advice, disseminates evidence-based information, and delivers training, education and workforce development with the aim of strengthening SUDI prevention services that engage with whānau. The website includes safe sleeping advice, news, resources and information. It provides information on the wahakura, a woven flax baby bed designed to protect baby by providing a safe sleeping space in an adult bed, and the pēpi-pod, a plastic baby bed, providing a cheaper alternative to a wahakura.

<http://www.taha.org.nz/>

TAHA Well Pacific Mother and Infant Service works collaboratively in the health sector on key areas of health and wellbeing for Pacific mothers and infants with the purpose of reducing a range of maternal and infant morbidity and mortality. The website provides links to a variety of resources, including SUDI prevention resources.

<http://www.changeforourchildren.co.nz/>

Change for our Children is a 'social innovation company' that aims to build a culture of respect for children. The website includes a variety of resources related to SUDI prevention, including information on the pēpi-pod project in Christchurch, which provides a cheap plastic baby bed that aims to create a safe sleeping space

(<http://www.changeforourchildren.co.nz/files/docs/usingpepi-podsreport.pdf>).

Note: the publications listed were identified using the search methodology outlined in **Appendix 1**



# IN-DEPTH TOPIC: SERVICES AND INTERVENTIONS FOR WOMEN EXPERIENCING MULTIPLE ADVERSITIES IN PREGNANCY

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## Introduction

Pregnancy and the early years lay critical foundations for the health and development of a child's entire lifecourse [136,137]. Adverse social conditions during pregnancy have been linked to adverse outcomes for women and their babies, including increased risks of both maternal mortality and perinatal mortality [138,139,140]. In New Zealand, the 2012 Perinatal Mortality and Maternal Review Committee (PMMRC) report demonstrated a socioeconomic gradient in perinatal mortality: women living in the most deprived areas (NZDep quintile 5) had significantly higher rates of stillbirth and neonatal death than those in less deprived areas [138]. Perinatal mortality rates were also higher for Māori and Pacific mothers compared to European mothers. A variety of factors have been implicated in this increased risk including: poverty, unemployment, homelessness, young age, underlying mental illness, substance abuse and domestic violence; and vulnerable pregnant women may experience several such factors at once [140].

Investment in the early childhood and the prenatal period has been identified as having one of the greatest potentials to reduce health inequities [136]. In New Zealand, recent reports have called for improvements in services to address the socioeconomic and ethnic disparities in maternal and child health [137,138,141]. The Child and Youth Mortality Review Committee has recommended that families under significant social and economic stress, for example those coping with several children in difficult economic circumstances, should be identified and provided with support [141]. While it is recognised that these families may be involved with a number of agencies, the committee recommended that one agency should take the lead in coordinating services. The 2012 PMMRC report made a number of recommendations regarding identifying and addressing barriers to antenatal care for at risk women and improving services for teenage mothers [138].

Antenatal care is generally considered an effective method of improving outcomes for pregnant women and their babies, although there has been little rigorous evaluation of routine antenatal care [140,142]. Non-attendance and under-attendance at free antenatal care have been linked to adverse pregnancy outcomes including low birthweight, and fetal and neonatal deaths [143]. Barriers to accessing or engaging with antenatal care were identified as the most common contributory factor to perinatal related deaths in 2010 by the PMMRC [138]. This in-depth topic considers services and interventions for pregnant women who experience multiple adversities.

## Aims and Objectives

This in-depth topic aims to review the extent to which New Zealand women are exposed to multiple adversities during pregnancy, and the impact such adversities have on their pregnancy outcomes. The evidence base for services and interventions that have been developed to address these adversities, and the poorer pregnancy outcomes they are linked to, is also reviewed, with a particular focus on meeting the needs of younger women. In addressing these aims, this in-depth topic is divided into three main sections:

1. Section one reviews a range of social adversities affecting women during pregnancy and the adverse pregnancy outcomes that have been associated with them.
2. Section two provides a brief overview of maternity services in New Zealand, including potential barriers to accessing services, the pregnancy–early childhood continuum, and some examples of local services for women experiencing adversity in pregnancy.
3. Section three reviews the evidence base for interventions that aim to address adverse social factors during pregnancy and improve pregnancy outcomes. This section starts



with a review of interventions aimed at socially disadvantaged and vulnerable women in general and then reviews interventions for a number of specific risk factors (young maternal age, alcohol, other drug and tobacco use in pregnancy, family violence and women with mental illness). The publications included in the review were identified using the search methodology outlined in **Appendix 1**, and as a consequence the content reflects interventions for which higher quality published evidence (e.g. systematic reviews of multiple studies) was available.

## Adversities During Pregnancy and Pregnancy Outcome

In New Zealand a range of factors have been identified which may increase the risk of adverse outcomes for women and their young children. Family Start, an intensive support programme targeted at families vulnerable to adverse outcomes, has developed a range of referral criteria including: young parental age with additional challenges, mental health issues, family violence issues, and difficulties with drugs, alcohol or gambling [144,145]. A variety of social adversities are also identified as indicators of potential need, such as a lack of support networks, a lack of financial and material resources and frequent changes of address.

The sections which follow consider a selected group of these factors and their potential impact on pregnancy outcome. The issues reviewed are: socioeconomic deprivation, young maternal age, family violence, substance use and mental illness. The adverse pregnancy outcomes discussed in this chapter are defined in box 1. While it is recognised that this is not a comprehensive list of all adversities experienced by pregnant women and their babies, the sections which follow aim to provide an overview of some of the factors more commonly associated with poorer pregnancy outcome. Each section begins with a discussion of definitions and any available information on the prevalence of the adverse factor in the New Zealand context. The literature on the associations between the factor and birth outcomes is then reviewed, before the section concludes with a brief discussion on the pathways linking the factor with adverse pregnancy outcomes.

### Box 1. Adverse pregnancy and infant outcomes [138,141,146,147,148]

**Stillbirth:** the death of a fetus at 20 weeks gestation or beyond, or weighing at least 400g if the gestation is unknown. Stillbirth does not include termination of pregnancy.

**Fetal death:** the death of a fetus at 20 weeks gestation or beyond, or weighing at least 400g if the gestation is unknown, includes stillbirth and termination of pregnancy.

**Neonatal mortality:** the death of any baby showing signs of life at 20 weeks gestation or beyond, or weighing at least 400g if the gestation is unknown, within the first 28 days after birth.

**Perinatal mortality:** fetal deaths and early neonatal deaths, within 7 days of birth, of any baby born alive or born dead at 20 weeks gestation or beyond, or weighing at least 400g if the gestation is unknown.

**Preterm birth:** gestational age at birth of less than 37 completed gestational weeks. Preterm birth is the leading cause of infant mortality in industrialized countries and is associated with neurocognitive, pulmonary, and ophthalmologic morbidity. Caring for preterm infants incurs substantial healthcare costs.

**Low birthweight (LBW):** birth weight of less than 2500 g. LBW is associated with an increased risk of neonatal morbidity and mortality, neurodevelopmental disabilities, and cardiovascular disease at adulthood.

**Intra-uterine growth retardation (IUGR)/fetal growth retardation (FGR):** failure to reach growth potential

**Small for gestational age (SGA):** birthweight below the 10<sup>th</sup> percentile using sex adjusted population growth charts (includes 'constitutionally small' babies, i.e. not growth restricted). SGA is associated with stillbirth, preterm labour and neonatal morbidity and mortality.

**Sudden infant death syndrome (SIDS):** the sudden death of an infant under one year of age, which is unexplained after the review of the clinical history, examination of the circumstances of death, and post-mortem examination.

**Sudden Unexpected Death in Infancy (SUDI):** an umbrella term that includes both explained and unexplained causes of sudden unexpected death in infants under one year of age.



## Socioeconomic Deprivation

### Definitions and New Zealand Distribution

Socioeconomic status, measured by indicators such as level of income, education, wealth, housing, occupation, neighbourhood deprivation and access to resources, is a key determinant of health, including the health and life chances of unborn and new born babies [136,149]. In economically developed countries such as New Zealand, deprivation is a matter of relative disadvantage, or inequalities [8]. Income inequality increased significantly in New Zealand from 1990 to 2011 [8]. There is also a significant disparity in the distribution of deprivation in New Zealand. The proportion of Māori living in very deprived areas is significantly higher than the proportion for non-Māori, and the proportion of Māori and Pacific babies born in the most deprived areas is consistently higher than for other ethnic groups [150,151].

### Associations between socioeconomic deprivation and pregnancy outcomes

Children born into poverty are at increased risk of IUGR, neonatal or infant death, delayed cognitive development and poor school performance [152]. In common with other countries, perinatal mortality and other adverse pregnancy outcomes in New Zealand are linked to socioeconomic disadvantage. Women, babies and whānau/families in the most socioeconomically deprived circumstances consistently experience the worst outcomes [138,141]. In 2010 rates of stillbirth and neonatal death (see box 1 above for definitions) were significantly higher for mothers living in the most socioeconomically deprived areas (NZDep quintile 5: perinatal related death rate 13.26 per 1000) compared to those in the least deprived areas (NZDep quintile 1: 8.34 per 1000) [138]. Stillbirths and neonatal deaths were also more common among Māori and Pacific women and women under twenty years, compared to those aged 20 to 39 years [8]. Rates of SUDI also demonstrate a social gradient [153]. For example, during 2004 to 2008, the rate of SUDI among those in the most deprived areas (NZDep quintile 5) was 202.5 per 100,000, compared to 27.4 per 100,000 for those in the least deprived areas (NZDep quintile 1) (RR 7.4, 95% CI 4.21 to 13.01).

While a higher proportion of Pacific and Māori babies than European babies are born into the most deprived NZDep areas, their higher perinatal mortality rates may also reflect differing distributions of more proximal risk factors such as maternal smoking [151]. Stillbirth rates are higher for Pacific women (8.48 per 1000 births) than for European women (4.84 per 1000 births in 2007–2010) but a recent case control study found this disparity was explained by confounding factors such as high parity and maternal obesity [154]. Māori babies experience much higher rates of SUDI (223.8 per 100,000 in 2004–2008) than NZ European babies (45.1 per 100,000, RR 4.96, 95% CI 3.77–6.53) [153]. Differences in the distribution of proximal risk factors such as maternal smoking in pregnancy and bed-sharing practices may account for some of the differences seen [155]. A report published by Whakawhetu National SUDI Prevention for Māori (<http://www.whakawhetu.co.nz/>) found that Māori mothers were on average younger, less likely to access antenatal education, more likely to book late for antenatal care and more likely to receive fewer antenatal visits [156]. Understanding these different pathways to SUDI is essential in developing culturally appropriate prevention strategies.

Internationally, several studies have examined the relationship between deprivation and adverse birth outcomes. A recent meta-analysis of 28 studies found that women who lived in low income neighbourhoods had significantly higher odds of having a low birthweight infant (pooled OR 1.11, 95% CI 1.02 to 1.20) [157]. Similarly, Weightman et al. found consistent links between social deprivation and adverse birth outcomes and infant mortality in the UK [149]. This systematic review and meta-analysis of 36 prospective and retrospective observational studies with socioeconomic data and health outcomes identified an OR of 1.81 (95% CI 1.71 to 1.92) for adverse birth outcomes in the highest versus lowest area deprivation quintiles. For infant mortality, the ORs were 1.72 (95% CI 1.37 to 2.15) overall, 1.61 (95% CI 1.08 to 2.39) for neonatal mortality and 2.31 (95% CI 2.03 to 2.64) for post neonatal mortality. Significantly increased odds were also identified for stillbirth, low birthweight and prematurity. While prematurity has been linked to



deprivation in some parts of the world, this relationship was not identified in a New Zealand study, although in this study it was not possible to differentiate between spontaneous and induced preterm births [158].

### **Understanding the link between deprivation and adverse pregnancy outcomes**

The link between socioeconomic deprivation and adverse pregnancy and subsequent child health outcomes is likely to represent the cumulative effect of individual, familial, community and societal forces [149]. Risk factors such as smoking, poor dietary habits, higher fertility, teenage pregnancy and alcohol use are associated with both socioeconomic status and adverse birth outcomes, acting as steps in the causal pathway linking deprivation and adverse pregnancy outcomes [152]. Lower socioeconomic status has also been linked to reduced access to antenatal care [143]. Barriers to accessing or engaging with care (identified as substance abuse, family violence, lack of recognition or complexity or seriousness of condition, maternal mental illness, cultural barriers, language barriers, ineligibility to access free care and 'other', which included late booking and non-attendance) were identified as the most common contributory factors to perinatal related deaths in New Zealand in 2010 [138].

## **Young Maternal Age**

### **Definitions and New Zealand Distribution**

New Zealand has a high teenage birth rate by OECD standards: in 2008 the number of births per 1,000 women aged 15 to 19 years was 22.05, compared to the OECD average of 16.34 per 1,000 [159,160]. Teenage pregnancy is strongly linked to social disadvantage, which acts as both a contributing factor and consequence of teenage pregnancy and parenthood [161,162,163]. Nationally, there is a clear social gradient in rates of teenage childbirth [164]. From 2006 to 2010 the teenage childbirth rate was 51 per 1000 live births among those living in the most deprived areas and 10 per 1000 live births among those in the least deprived areas (RR 5.31, 95% CI 5.03 to 5.61). The teenage birth rate also varies by ethnicity. The average annual rate of live births for women aged 15 to 19 years during 2005 to 2007 was higher for Māori (63 per 1,000 women) and Pacific (43 live births per 1,000 women) women than for European/Other (22 per 1000 women) and Asian (7 per 1,000 women) women [165]. However, these differences should be viewed in the context of the higher birth rates for Māori and Pacific women at all ages up to 30 years. It has also been suggested that young Māori women who become pregnant are less likely to have a termination of pregnancy than European women [166].

Internationally, research indicates that a combination of access to skills and services and the chance to gain the education and employment needed to succeed in society is associated with lower rates of teenage pregnancy [162]. Factors related to teenage pregnancy operate at a number of levels and include: individual factors such as self-esteem and age at first intercourse; family factors such as a mother who was pregnant as a teenager, or being in care; education factors such as truancy and lack of qualifications; community factors such as social norms related to sexual activity; and social factors such as childhood poverty, employment prospects and housing and social conditions [162]. However, the relationship between these factors is complex.

### **Associations between young maternal age and pregnancy outcomes**

Teenage pregnancy and parenthood are linked to a variety of adverse social and health outcomes, including low birthweight, higher infant and child mortality, postnatal depression, a higher rate of childhood accidents, lower levels of education, reduced employment opportunities, longer-term welfare dependency and the intergenerational transfer of poverty [162,167,168]. In New Zealand between 2007 and 2010, teenage mothers were at higher risk of stillbirth and neonatal mortality due to preterm birth, fetal growth restriction and perinatal infection, compared to mothers aged 20 to 39 years (perinatal related mortality 14 per 1000, compared to 10.4 per 1000) [138]. A similar pattern was also seen for rates of SUDI, which were highest among mothers aged under 20 years, followed by those aged 20 to 24 years between 2004 and 2008 (RR 4.96, 95% CI 3.43 to 7.17 for women under 20 years, and RR 3.29, 95% CI 2.35 to 4.62 for women aged 20 to 24 years compared to women aged 30 to 34 years). Teenage pregnancy has also been associated





with an increase in the risk of both preterm birth and small for gestational age, however, after controlling for socioeconomic status, this association disappears for Māori women [153,168,169]. Young maternal age has also been linked to lower rates of breastfeeding [162,170]. Breastfeeding has many benefits for babies, including improved resistance to infections, lower mortality in the first year of life and reduced risk of developing type 1 and type 2 diabetes and childhood obesity, and has been linked to improved bonding and lower rates of breast and ovarian cancer in mothers [170]. Research has identified a number of common barriers to breastfeeding among teenage parents include lack of supportive social networks, pain and embarrassment about feeding in public [171].

Pregnant young people may be at increased risk of a variety of other adversities linked to poorer pregnancy outcomes, including alcohol use, smoking (see **page 187**) and inter-partner violence [172,173]. The Christchurch Health and Development Study, which has followed a cohort of 515 women born in 1977 to age 25 years, found that early motherhood (having a baby <21 years and not adopting it out) was associated with poorer mental health outcomes (depression, anxiety, suicidal ideation and suicide attempts), educational outcomes (the attainment of any qualifications, tertiary qualifications, or a university degree) and economic circumstances (welfare dependency, paid employment and family income) [174]. Young motherhood was in turn influenced by previous family circumstances (e.g. having parents without formal qualifications, low family living standards during childhood) and once these factors were taken into account, the associations between early motherhood and poorer mental health outcomes disappeared. Significant associations remained between early motherhood and poorer educational outcomes and economic circumstances at age 25. The associations between young maternal age and poorer educational outcomes and economic circumstances increase the potential for the intergenerational transfer of disadvantage. This link between educational outcomes and economic circumstances emphasises the importance of ensuring that all young mothers can realise their full educational potential to facilitate a more secure economic base for themselves and their children.

Although societal attitudes towards teenage pregnancy and parenthood are negative in many countries, such negative attitudes are not necessarily shared by all population groups living in a particular country [161]. In addition to the adverse outcomes associated with young maternal age, a number of positive outcomes have been linked to teenage parenthood, both in New Zealand and internationally [162,163]. Teenage motherhood has been linked to improved family relationships, and reductions in risk-taking and self-destructive behaviour [163]. Pihama discusses the significance and centrality of being hapū – being pregnant and giving birth to the next generation, in te Ao Māori (the Māori world) [175]. In her review of the literature she found that teenage pregnancy in general, and Māori teenage pregnancy in particular, is frequently viewed as a problem, although research with young Māori parents has found positive outcomes. Collins, in her follow up study of a group of teenage mothers, found that both the informal support networks of family and whānau, partners and peers, and the formal support of teen parent units or community based services, were important in providing social support and developing of skills [167].

### **Understanding the link between young maternal age and adverse pregnancy outcomes**

Social disadvantage and young maternal age are closely related and it is likely that many of the causal pathways between young parenthood and adverse outcomes are linked to socioeconomic disadvantage. Internationally, the evidence is contradictory regarding whether the increased risks of adverse pregnancy outcomes are related to young age itself, or the mother's socioeconomic position [144,162]. Higher rates of adolescent conception and lower rates of termination occur in areas of socioeconomic deprivation and young women requiring maternity care are therefore more likely to come from a disadvantaged background and have associated risk factors that may independently affect maternal and perinatal morbidity and mortality [176]. Young women who have had one unintended pregnancy are vulnerable to subsequent unintended pregnancies, with the potential to perpetuate the cycle of poverty [161]. Research suggests that young women



who delay a second pregnancy by two years tend to avoid many of the negative consequences of early childbearing that can lead to chronic poverty and welfare dependence [161]. The Families Commission has identified the prevention of repeat teenage pregnancy and improving the support for teenage parents as priority areas [163].

As described above, young women who become pregnant in their teenage years are more likely to be exposed to risk factors associated with adverse pregnancy outcomes, such as smoking, and these risk factors are also linked to socioeconomic disadvantage. Studies have also suggested that young women may be less likely to access antenatal care [139]. A large Finnish study found that young maternal age was associated with under-attendance and non-attendance for free antenatal care [143]. Internationally, common barriers to antenatal care among young women, include: treatment by staff and attitude of staff; not wanting to recognise the pregnancy, embarrassment about an unplanned pregnancy or being afraid to tell parents; having social problems that are more important to focus on than healthcare; waiting times at appointments; transportation difficulties; and attending clinics with older women [139]. In New Zealand the Youth'07 Survey of 9,107 secondary school students found that students who self-reported pregnancy reported greater difficulty accessing health care (41.7%) than their pregnancy-inexperienced peers (20.6%,  $p < 0.001$ ). Barriers to access identified included concerns about privacy, uncertainty as to how to access healthcare and a lack of transport. Given the increased risks of stillbirth and neonatal death associated with young maternal age, the PMMRC has recommended that research should be undertaken to determine the best model of care for young women [138]. International research addressing this question is discussed in the final section.

## **Alcohol, Other Drugs and Tobacco**

### **Definitions and New Zealand Distribution**

Substance use, including alcohol, smoking and illicit drug use during pregnancy has been linked to a variety of adverse pregnancy outcomes. Alcohol use is widespread in New Zealand society and several studies have identified that while most women reduce or stop drinking alcohol during pregnancy, some continue to drink [177,178]. The 2007/2008 New Zealand Drug Use survey found that recreational drug use was common among women of childbearing age [179]. The survey found that self-reported drug (other than tobacco, alcohol and BZP party pills) use in the past 12 months peaked in the 18 to 24 age group (29.8%, 95% CI 24.2 to 35.4), that use was high among 16 to 17 year olds (27.9%, 95% CI 15.5 to 40.3) but then fell to 9.9% (95% CI 16.7 to 23.2) among 25 to 34 year olds. However, the prevalence of drug use during pregnancy is unknown. Smoking in pregnancy in New Zealand is strongly associated with socioeconomic deprivation and young maternal age, and is highest among young Māori mothers (see **page 190**). The links between substance use and adverse pregnancy outcomes are discussed below.

### **Associations between alcohol use in pregnancy and pregnancy outcomes**

The damage caused by alcohol on the developing foetus depends on the amount of alcohol consumed, the pattern of drinking, and the stage pregnancy [180]. Alcohol use in pregnancy is linked to miscarriage, reduced fetal growth and impaired neurodevelopment, pre-term labour and stillbirth [180,181]. Fetal alcohol spectrum disorder (FASD) is an umbrella term that includes a range of effects, including structural anomalies, and behavioural and neurocognitive impairments, associated with alcohol exposure in utero [182]. Fetal Alcohol Syndrome (FAS) is the most recognisable form for FASD and is characterised by central nervous system (CNS) dysfunction, facial dysmorphism and pre and post natal growth deficiency [180]. Other forms of FASD are less well defined, making incidence and prevalence uncertain [180,182]. The incidence of FAS in the USA has been estimated to be between 0.5 and 2 per 1,000 live births [183]. Based on this incidence rate there would be 30 to 120 children with FAS born in New Zealand each year (based on approximately 60,000 live births per year).

Heavy use of alcohol during pregnancy has been linked to the development of FAS [180]. The pattern and duration of drinking appear to be important – FASD is associated with binge drinking, and women who binge drink are more likely to have children with





abnormalities than women who drink the same total amount of alcohol over an extended period of time [180]. The stage of pregnancy during which alcohol is consumed determines the cells that are affected in the developing foetus. Animal studies suggest that the first and third trimesters are critical. Evidence for the effects of lower levels of alcohol consumption on fetal growth and infant development is inconclusive and it is uncertain whether there is a clear threshold below which alcohol is non-teratogenic [180,181]. However, there is emerging evidence that low to moderate levels of drinking is associated with increased risk and the British Medical Association Board of Science has recommended that given this uncertainty, current drinking guidelines should recommend no alcohol during pregnancy [180]. New Zealand Ministry of Health guidance and the New Zealand College of Midwives consensus statement on alcohol in pregnancy support this position [184,185,186].

### **Associations between other drug use in pregnancy and pregnancy outcomes**

In the 2007/2008 New Zealand Drug Use Survey, the prevalence of reported drug use among 16 to 17 year olds was 27.9% (95% CI 15.5 to 40.3) and fell to 9.9% (95% CI 16.7 to 23.2) among 25 to 34 year olds [179]. The use of illicit drugs (opiates and amphetamines) has been linked to a higher risk of adverse obstetric and perinatal outcomes than for women in the general population [187]. Maternal use of a variety of drugs, including opiates and non-opiates such as benzodiazepines, caffeine, alcohol, and SSRIs, during pregnancy can result in transient neonatal signs consistent with withdrawal or acute toxicity, or cause sustained signs consistent with a lasting drug effect [188]. Fetal exposure to cannabis, the illicit drug most commonly used in New Zealand, is not associated with clinically important neonatal withdrawal and does not appear to be linked to an increased risk of perinatal mortality or morbidity [188,189]. However, cannabis may have subtle effects on long-term neurobehavioral outcomes [190].

A survey of women attending an opiate treatment programme in Sydney found high rates of pregnancy and poor use of contraception among sexually active women not wanting to get pregnant [191]. Women who use substances during pregnancy are likely to face a complex array of family, social, relationship, legal, and psychiatric problems which may impair their ability to parent their new born child [192]. However, little is known about their engagement with antenatal services. A recent New Zealand and United States based case-control study found that unlike in the US, where antenatal care is not free and there is mandatory reporting of drug-using mothers to child protection services, methamphetamine use was not associated with inadequate antenatal care [193].

### **Understanding the link between alcohol and other drug use and adverse pregnancy outcomes**

While alcohol and some illicit drugs have specific harmful effects on the developing fetus, the associations between substance misuse and pregnancy outcomes are likely to be complex. Some studies have found that women who are drug dependent have higher rates of chaotic lifestyles with increased psychosocial problems and polydrug use [192]. It has been suggested that women experiencing these adversities appear to be less likely to access or maintain contact with antenatal services [139].

### **Smoking in pregnancy**

Tobacco smoking during pregnancy is considered the most important potentially preventable cause of a range of adverse pregnancy outcomes [92]. Smoking in pregnancy is associated with placental abruption, miscarriage, stillbirth, preterm birth and low birthweight [93,94]. It affects both fetal growth and neurodevelopment and is a significant risk factor for Sudden Infant Death Syndrome (SIDS) [95,96,97]. Smoking in pregnancy is linked to a range of other factors, including socioeconomic deprivation and young maternal age [164]. For a further discussion on tobacco use in pregnancy please see **page 187**.



## Family Violence

### Definitions and New Zealand Distribution

Family violence is defined as:

*“a broad range of controlling behaviours commonly of a physical, sexual and/or psychological nature, which typically involve fear, intimidation and emotional deprivation. It occurs within close interpersonal relationships.” [194]*

Family violence encompasses violence between any members of a family group or whānau and includes both intimate partner violence (IPV) and child maltreatment. IPV has been linked to a variety of adverse pregnancy outcomes [172]. The presence of IPV within a family increases the risk of child maltreatment [195]. Pregnancy and the contact pregnant women have with health services, represent an opportunity to identify and address IPV and intervene to prevent child maltreatment. Whether pregnancy increases the risk of IPV has been widely debated. A comprehensive review in 2004 concluded that while some hospital and clinic based studies had found that women were at higher risk of IPV during pregnancy, national and international population-based studies have identified significant increases in risk associated with pregnancy [172]. A population-based study in New Zealand identified a prevalence of IPV during pregnancy of six per cent (95% CI 4.8 to 8.0) in urban regions and nine per cent (95% CI 7.5 to 44.1) in rural regions [196]. Most women who report violence during pregnancy also report a history of violence preceding the pregnancy [197]. This section focuses primarily on IPV in pregnancy. The prevention of assault, neglect and maltreatment in children and the prevention of family violence in general is considered in more detail on **page 309** and **page 339**. The evidence base for interventions to address family violence during pregnancy is reviewed later in this section.

### Associations Between Family Violence and Pregnancy Outcomes

Intimate partner violence (IPV) during pregnancy has been associated with later entry into antenatal care, adverse pregnancy outcomes, maternal behaviours such as smoking and alcohol use, and maternal physical and psychological morbidity [172,196,198]. The care sought by women during pregnancy provides an opportunity for early identification and appropriate referral of victims of IPV [199,200]. The Ministry of Health recommends that all females aged 16 years and older should be screened routinely for physical and sexual partner abuse, and screening should occur at every prenatal and post-partum visit [199]. Pregnancy is identified as a potential sign of child abuse in children and screening for abuse is therefore recommended for all those under 16 years.

Maternal exposure to domestic violence is associated with increased risk of early pregnancy loss, low birthweight and preterm birth [201,202]. In their systematic review of 30 studies with low to moderate risk of bias (5 cross-sectional, 15 prospective cohort, 6 retrospective cohort and 4 case-control studies with nearly 500,000 participants), Shah et al. found significantly increased risks of low birthweight (adjusted OR 1.53, 95% CI 1.28 to 1.82) and preterm birth (adjusted OR 1.46, 95% CI 1.27 to 1.67) among women exposed to domestic violence [201]. In a cross-sectional sample of 2,391 New Zealand women, those that reported ever having experienced intimate partner violence (IPV) were significantly more likely to report having had a miscarriage (OR 1.41 95% CI 1.10 to 1.81) or a termination of pregnancy (OR 2.49, 95% CI 1.81 to 3.42) [203]. Unplanned pregnancy was found to be more common among those that identified themselves as being victims of IPV (68.7% among victims of IPV compared to 55.1% non-victims, OR 1.78, 95% CI 1.32 to 2.40) in a cohort of Pacific women in Auckland [204].

There is significant overlap between the occurrence of child abuse and partner abuse in families and these issues cannot be addressed in isolation [199]. Addressing intimate partner violence benefits children by stopping the negative effects of the adult violence on children, and reducing the risk of physical maltreatment of children directly [195]. Pregnancy, and the contact women have with health services antenatally, represents an opportunity for the primary and secondary prevention of child maltreatment. Primary prevention may be universal, such as child birth education, or targeted at women and families at high risk. Secondary prevention involves identifying women who have had



previous involvement with child protection services with older children, for example those that have had a child removed through a care and protection intervention.

### **Understanding the Link Between Family Violence and Adverse Pregnancy Outcome**

Violence during pregnancy can have direct physical effects, including miscarriage, fetal fractures and rupture of the uterus, and psychological effects including depression, anxiety and post-traumatic stress disorder [139]. Women exposed to violence in pregnancy are at increased risk of suicide and attempted suicide, severe mental illness, and alcohol and drug misuse, reflecting the complex nature of the relationship between exposure to this adversity, and adverse pregnancy outcomes [139].

## **Serious Mental Illness**

### **Definitions and New Zealand Distribution**

Women with serious mental illness, such as schizophrenia and bipolar disorder, experience higher rates of morbidity and mortality, and suboptimal access to healthcare compared to the general population [205]. Te Rau Hinengaro, the New Zealand Mental Health Survey, estimated a 12 month prevalence of serious mental disorder (defined by the level of impairment, and the presence of bipolar I disorder or substance dependence or a suicide attempt in conjunction with any disorder) of 5.4% (95% CI 4.7 to 6.1) for women, compared to 3.9% (95% CI 3.3 to 4.6) for men [206]. The prevalence was higher among younger people (16–24 years: 7.2%, 95% CI 5.7 to 9.0; 25–44 years: 5.8%, 95% CI 5.0 to 6.6; 45–64 years: 3.8%, 95% CI 3.1 to 4.5; 65 years and over: 1.1%, 95% CI 0.5 to 2.0), suggesting that serious mental disorders are more common among women of childbearing age.

### **Associations Between Serious Mental Illness and Pregnancy Outcomes**

Women with serious mental illness appear to be at increased risk of adverse pregnancy and birth outcomes, and subsequent impaired neurodevelopment in the child [207]. A number of studies have identified increased risks of perinatal death in babies of women with psychiatric illness [205,208]. A Danish cohort study of 1.45 million live births and 7,021 stillbirths during 1973 to 1998, identified from national registers, found that risks of stillbirth and neonatal death were raised for virtually all causes of death for all of the maternal psychiatric diagnostic categories [208]. This lack of specificity suggests that the association between maternal mental illness and adverse outcomes is likely to be linked with maternal mental illness in general, rather than the illnesses themselves. Women with serious mental illness are more likely to experience a range of other risk factors for adverse outcomes, including smoking, alcohol and illicit drug use, exposure to psychotropic medication, poor compliance with folate supplementation, poor nutrition and failure to access antenatal care [205,207].

Maternal mental illness has also been linked to poorer outcomes for women. The 2012 PMMRC report found that in New Zealand between 2006 and 2010, suicide was the most frequent cause of maternal death, accounting for 13 of the 57 recorded deaths in this time period [138]. While the small number of deaths makes it difficult to draw firm conclusions, the Maternal Mortality Review Working Group (MMRWG) identified a number of common features including: a history of mental illness and contact with mental health services in the perinatal period in seven of the women who died, all of whom had experienced worsening pre-existing illness in the perinatal period; the presence of alcohol or drug use in over half the women who died; and a known history of family violence in approximately half the cases. Barriers to accessing and engaging with care was the most commonly identified contributing factor (9 of 13 cases) and a lack of coordination and information sharing between services was also identified as a contributory cause [138,209].

### **Understanding the Link Between Serious Mental Illness and Adverse Pregnancy Outcomes**

The links between exposure to serious mental illness and adverse pregnancy outcomes are complex. Research suggests that adverse outcomes are not linked to specific mental disorders, but instead represent complex causal pathways involving exposure to a variety of risk factors linked to mental illness in general [205,207,208]. These pathways suggest a



need for multidisciplinary interventions during pregnancy that can address women's complex physical, social and mental health needs.

## **Adversities During Pregnancy and Pregnancy Outcome Conclusions**

This section has identified a number of adverse outcomes, including increased rates of infant mortality, and poorer health and development in children, associated with adversities in pregnancy. The underlying causal pathways appear to be complex, involving exposure to a variety of risk factors, as well as poorer access to antenatal care. Adversities such as socioeconomic deprivation, family violence, alcohol and drug exposure and mental illness are linked, supporting integrated approaches that can address complex needs over approaches that address specific risk factors.

Before considering the evidence from the international literature on the effectiveness of programmes and services aimed at addressing these complex issues, the section which follows provides an overview of maternity services in New Zealand, including a brief review of issues associated with access to services, as well as examples of some local services which aim to meet the needs of women experiencing multiple adversities in pregnancy.

## **Maternity Services in New Zealand**

This section begins with a brief overview of maternity services in New Zealand, before considering issues associated with the transition from maternity to Well Child/Tamariki Ora services. Access and uptake of antenatal services in New Zealand are then reviewed, and potential barriers to antenatal care discussed. The section then considers culturally appropriate maternity services, before concluding with a brief overview of some local antenatal and postnatal services which have been developed to meet the needs of women experiencing multiple adversities in pregnancy.

## **The Development of Maternity Services in New Zealand**

Publicly funded maternity care in New Zealand provides free or subsidised care to all eligible pregnant women, with the aim of providing antenatal, labour and birth, and postnatal care, to ensure that the baby will be as healthy as possible [210]. The lead maternity care model of maternity services - maternity services delivered in the community by a Lead Maternity Carer (LMC), was established in the mid 1990s under Section 51 of the Health and Disability Act (1993) (now Section 88, Primary Maternity Service Notice 2007), issued in 1996, with the aim of providing continuity of care for the woman and her baby [211]. The LMC can be a midwife, obstetrician or a general practitioner with a Diploma in Obstetrics, selected by the woman to provide her lead maternity care [211]. In practice, most GPs and obstetricians do not practice as LMCs [211,212]. Primary maternity services may also be provided directly by DHBs, and the configuration of these services varies around the country.

In 2010 54,213 (84.1%) women (out of total of 64,485 women who completed a pregnancy that reached 20 weeks or more gestation and resulted in a stillborn or a liveborn baby in 2010) were registered with an LMC at the time of delivery, of whom 91.6% were registered with a midwife, 6.6% with an obstetrician, and 1.7% with a GP, suggesting that for the majority of women in New Zealand, maternity services are community-based and midwifery led [213]. Among women registered with a LMC, younger women, Māori and Pacific women and those from more deprived areas were more likely to register with a midwife than another type of practitioner. However, caution must be applied when interpreting these findings, as the cohort of women registered with a LMC are not representative of all women giving birth in New Zealand [213]. The remaining women either received care through DHB provided services or did not receive primary maternity care.

In the lead maternity care model, the LMC is responsible for providing continuity of care for women and their babies, including assessing their needs, planning their care and facilitating the provision of additional care as required, throughout the pregnancy, during labour and birth, and up to six weeks postpartum [211]. LMC midwives work in the





community to provide antenatal, birth (including accompanying women into secondary and tertiary facilities under a national access agreement set out in the Primary Maternity Services Notice 2007) and postnatal care [212]. A relationship of partnership between the LMC midwife and women aims to enhance informed decision making through shared information and negotiation [212]. The Primary Maternity Services Notice 2007 sets out the fees that will be paid to LMCs for each module of care (group of services for a phase of pregnancy). The Ministry of Health publishes guidelines for LMCs on consultations with other clinicians, transferring clinical responsibility for care to specialists and transferring care in emergencies [214]. Ministry of Health Maternity Consumer Surveys suggest that the majority of women are satisfied with their maternity care overall with 78% of women being 'very satisfied' or 'quite satisfied' and 89% being 'very satisfied' or 'quite satisfied' with the overall care provided by the their LMC in the 2011 survey [215]. Response rates for the survey were low (41%) and the results are discussed further below.

There have been several reviews of maternity services in New Zealand since 1990, which have made several recommendations, including improving the relationships and communication between providers, a need for national leadership and a maternity strategy, and the introduction of an agreed set of maternity standards [216,217]. In 2011 the Ministry of Health published the New Zealand Maternity Standards (box 2), to provide guidance for the provision of equitable, safe and high-quality maternity services; and established the New Zealand Maternity Clinical Indicators, as part of the Maternity Quality Initiative [218]. At this stage twelve clinical indicators, focused on the labour and birth period, have been developed [219].

#### **Box 2. The New Zealand Maternity Standards [218]**

**Standard 1** Maternity services provide safe, high-quality services that are nationally consistent and achieve optimal health outcomes for mothers and babies.

**Standard 2** Maternity services ensure a woman-centred approach that acknowledges pregnancy and childbirth as a normal life stage.

**Standard 3** All women have access to a nationally consistent, comprehensive range of maternity services that are funded and provided appropriately to ensure there are no financial barriers to access for eligible women.

### **Guidelines on the Provision of Antenatal Care**

The Ministry of Health and the New Zealand College of Midwives provide guidance on the services that should be provided by the LMC during each stage of pregnancy, labour, birth and the postnatal period [220,221]. While the frequency or timings of antenatal care is not defined, monthly visits in the first and second trimester, fortnightly visits in the third trimester and weekly visits in the final month are generally accepted [222]. The PMMRC has recommended that all women should commence maternity care before ten weeks, to enable screening to be offered, education to be given, at risk women to be identified and appropriate referrals to be made [138]. This recommendation assumes that early booking for antenatal care is associated with improved outcomes, through mechanisms such as early dating ultrasound scanning and early screening [139].

Similarly, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) "Standards of Maternity Care in Australia and New Zealand" recommends that all pregnant women should have had their first full booking visit completed by 12 weeks of pregnancy [223]. The RANZCOG standards include a number of recommendations for developing services to ensure access, early engagement and continuing support and care for women with social factors linked to poor outcomes for mothers and babies, for example: inter-agency protocols for information sharing and a lead professional to ensure that women from disadvantaged groups have adequate support; flexible, accessible and culturally sensitive services; that women with significant drug and/or alcohol problems should receive their care from a multi-agency team; and specialist services for pregnant teenagers [223].

In the UK the 2008 Antenatal Care National Institute for Health and Clinical Excellence (NICE) guidelines recommend that the booking visit should occur ideally occur by ten weeks and an ultrasound scan should be offered between 10 weeks 0 days and 13 weeks



6 days to determine gestational age and to identify multiple pregnancies [224]. A schedule of ten appointments is considered adequate for nulliparous women with uncomplicated pregnancies, or seven appointments for parous women with uncomplicated pregnancies. NICE has also published a set of evidence-based guidelines on service provision for pregnant women with complex social factors ([www.nice.org.uk/guidance/CG110](http://www.nice.org.uk/guidance/CG110)), which are discussed in more detail below.

### **LMC to Well Child/Tamariki Ora transition**

While early booking is encouraged to improve the quality of maternity care, the transition from maternity care to early childhood services has also been recognised as an important area. Early childhood development has a determining influence on subsequent health and opportunity for children to fulfil their potential [136,137]. Increasing investment in the early years has been identified as having one of the greatest potentials to reduce health inequities [136]. The World Health Organization has called for a continuum of care from pre-pregnancy, through pregnancy and childbirth, to the early years for mothers and children, emphasising the importance of the transition from LMC care to Well Child services [225]. This increasing international interest in integration of services is reflected in the prioritisation of service integration by the Ministry of Health [226].

In New Zealand, LMCs are responsible for ensuring that women receive a daily visit while receiving inpatient postnatal care, five to ten home visits including one within the first 24 hours of discharge from postnatal care, and a minimum of seven postnatal visits [227]. The Section 88 Maternity Notice sets out the contractual arrangements and obligations for the transfer of care of babies from the LMC to Well Child/Tamariki Ora (WC/TO) services. The LMC must give a written referral to a WC/TO provider before the end of the fourth week following birth and transfer of care must take place before the baby is six weeks old [227]. Concurrent WC/TO services can be arranged from two weeks if the baby has high needs.

The postnatal period is of critical importance, for example, in New Zealand between 2004 and 2008 SUDI mortality was highest among infants aged four to seven weeks [164]. Plunket data from July 2007 to June 2012 revealed that the proportion of Plunket children receiving their Core 1 contact (before six weeks of age) had increased from 75.5% to 83.5%, with improvements across all ethnic groups (see **page 171**). However, a Ministry of Health review of the WC/TO Framework, published in 2010, found that a range of Well Child providers indicated that there were problems with delayed referrals from LMCs in some areas [84]. As a result of this review, a pilot project was commissioned to evaluate the new needs assessment and care planning process (NACP) [84]. The NACP involves enhanced communication of information gathered during pregnancy by LMCs to WC/TO providers to help guide decisions about the need for additional contacts and referrals to other services [228]. The pilot project was completed in 2011, but as yet a report has not been published.

### **Culturally Appropriate Services**

In New Zealand, ethnic disparities in adverse birth outcomes emphasise the need for culturally appropriate maternity services. Culturally competent care has been defined as a system of care that “acknowledges and incorporates, at all levels, the importance of culture, the assessment of cross-cultural relations, vigilance towards the dynamics that result from cultural differences, the expansion of cultural knowledge, and the adaptation of services to culturally unique needs.” [Cross, et al., 1999, cited in 229]. Durie argues that cultural competence “focuses on the capacity of the health worker to improve health status by integrating culture into the clinical context” [230]. Unequal access to healthcare is recognised as one of the underlying inequalities in health between Māori and non-Māori [231]. Barriers to healthcare among Māori include organisational barriers such as: timing and availability of services, universal Western approaches, the under-representation of Māori in the health professions, and the lack of appropriate educational and promotional material; human resource barriers such as: perceptions of non-Māori staff about Māori patients; and communication difficulties; and individual and community level barriers such as: the socioeconomic position of many Māori and affordability of healthcare; and patient



attitudes, beliefs and preferences which may make healthcare inappropriate, feared or not a priority [231].


A qualitative study examining perceptions of health and interactions with 'mainstream' health services among a group of 38 Māori women, aged between 24 and 61 years, found that women's beliefs and practices were frequently ignored and devalued by 'mainstream' health care providers, and generally not included as part of their health care [232]. Encounters with health services and health care providers were frequently problem-based with a biomedical focus, neglecting the socio-cultural dimensions influencing health and wellbeing. A systematic review in 2003 identified five interventions to improve cultural competence in healthcare systems: programmes to recruit and retain staff members who reflect the cultural diversity of the community served, use of interpreter services or bilingual providers for clients with limited English proficiency, cultural competency training for healthcare providers, the use of linguistically and culturally appropriate health education materials, and culturally specific healthcare settings [233]. However, the effectiveness of these interventions could not be established due to a lack of comparative studies, or a failure of the studies to examine outcome measures of interest, defined as: client satisfaction with care, improvements in health status, and inappropriate racial or ethnic differences in use of health services or in received and recommended treatment.

Cultural competence is integrated into the Midwifery Council of New Zealand competencies for entry into the register of midwives and a statement on cultural competence is available on their website (<http://www.midwiferycouncil.health.nz>) [234]. Other organisations in New Zealand that provide resources which may enhance the culturally appropriate provision of care for pregnant Māori and Pacific women include Nga Maia O Aotearoa Me Te Wai Pounamu (<http://www.ngamaia.co.nz/>), and TAHA, the Well Pacific Mother and Infant Service (<http://www.taha.org.nz/page/5-Home>). Nga Maia O Aotearoa Me Te Wai Pounamu was established by a group of Māori midwives in 1993, and is a national organisation that promotes mātauranga Māori, or traditional Māori knowledge, in pregnancy and childbirth. The organisation provides training for health professionals working with Māori whānau, including a tool for use by health professionals and whānau to consider aspects of Māoritanga (Māori culture) that they may wish to encompass in their care plan, and a set of guidelines for cultural competence adopted by the New College of Midwives [235,236]. TAHA aims to improve the health and wellbeing of Pacific mothers and infants during pregnancy and the first year of life. The organisation provides resources for parents and health professionals, including a training programme designed to assist health professionals to better understand SUDI and stillbirth within Pacific families, and a range of information to support health professionals who work with Pacific mothers, babies and their families.

## Barriers to Maternity Services

Access to antenatal care encompasses both physical access to services, and effective communication between women and care providers to ensure that women benefit from the care they receive [139]. Good communication, between agencies and between care providers and the women in their care, is essential for effective maternity care. Women feeling awkward or ill at ease, or fearing being judged, and staff being judgemental or having a poor attitude, having a lack of knowledge of support or services available, or having a lack of understanding of issues faced by the woman, have commonly been identified as barriers to services [139]. Internationally, a 2009 review of qualitative (mainly North American) studies exploring the views of marginalised women living in high income countries who had failed to attend any antenatal care, or did so late or irregularly, identified factors influencing initial access to care and continuation of care [237]. Late pregnancy recognition, and subsequent denial or non-acceptance of pregnancy, were associated with late initial access to antenatal care. Continuing access appeared to depend on a weighing up of the perceived gains and losses, and was influenced by personal resources such as time, money and social support, as well as perceptions of quality of care, trustworthiness and cultural sensitivity of staff and feelings of mutual respect.





In New Zealand, information on factors influencing access to antenatal care is more difficult to ascertain. Since July 2007 funding changes under the new section 88 Primary Maternity Services Notice mean that DHB employed midwifery teams no longer submit claims to the Ministry of Health for their services. Information on the antenatal care received by women who access DHB midwifery services is therefore not captured in the National Maternity Collection (MAT). In the MAT during 2009 to 2010, 16% of babies born in New Zealand were born to mothers who were not registered with a LMC at the time of delivery (see **page 188**). Many of these women are likely to have accessed DHB based maternity services although some may not have accessed antenatal care at all during pregnancy. Registration with a LMC was not evenly distributed in the population. Pacific, Asian/Indian and Māori babies were significantly more likely than European babies to have mothers who were not registered with a LMC at delivery, as were the babies of younger mothers, and those from more deprived areas. There was also large variation by DHB, reflecting local organisation of services. Of those women that were registered with an LMC at the time of delivery in 2010, 58.5% had initially registered during the first trimester (before 15 weeks), while 34.2% had registered during the second trimester (15 to 28 weeks) [213]. Having registered in the first trimester was more common among European/other (70.0%) and Asian (58.0%) women than Māori (42.2%) and Pacific (32.7%) women, suggesting the Māori and Pacific women were more likely to have registered late [213]. An audit based on the PMMRC dataset of the 137 women whose babies had died result of congenital anomalies in 2010, found that 114 (83%) were seen by a health professional before 14 weeks completed gestation [238]. However, only 90 of these women (66%) actually booked with a LMC before 14 weeks.

There is however, a limited literature addressing barriers to antenatal care in New Zealand. The Maternity Consumer Survey 2011 found that over three-quarters (78%) of women who responded to the survey reported they were satisfied with the overall maternity care they received [215]. However, almost one in five women (19%) found it difficult to find a LMC to provide care for them, compared with 11% in 2002. Satisfaction among young women, and Māori and Pacific women was similar to the average satisfaction among all women. However, response rates were low (41% overall), particularly among young women (15.8% for women under 20 years of age and 21.8% for women aged 20–24) and Māori and Pacific women were under-represented. Although weighting was used to account for this under-representation, the survey remains prone to selection bias. Similarly, Low et al. found that the majority (99.1%) of mothers in the Pacific Island Family cohort study had attended at least one antenatal appointment [239]. However, 26.6% of these women initiated their antenatal care late (defined as first antenatal visit at 15 weeks or later) and 10.7% of the mothers attended fewer than the recommended number of visits (defined as at least six visits). Maternal factors associated with late initiation of antenatal care included lack of formal qualifications (OR 1.82, 95% CI 1.34 to 2.47), lack of fluency in English (OR 1.68, 95% CI 1.32 to 2.15), and not being employed before pregnancy (OR 1.74, 95% CI 1.36 to 2.22). A recent review on maternity services at Counties Manukau DHB found that many women could not access co-ordinated lead maternity care through a self-employed LMC midwife or a specific allocated DHB midwife and concluded that gaps in maternity services (including insufficient numbers of midwives offering LMC services) and a lack of knowledge about how to access care left some vulnerable women at risk of avoidable harm [240]. The review also identified that the current funding mechanism for LMC services, with set fees paid for each module of care, was a disincentive to providing care to women with complex needs.

### **Current Services for Vulnerable Women in New Zealand**

A number of DHB and community providers provide antenatal services for women with specific needs, for example teenage pregnancy services and services for women at risk of family violence. There are very few published trials or evaluations of these services. Some examples of such services are described in box 3 below. Antenatal parent education, with a focus on young parents, is discussed in the section which follows.



### Box 3. Local of examples of services for women with specific needs in pregnancy

**Extended WC/TO Service for Teenage Mothers in Hawke's Bay** commenced as a one year pilot in 2011, with the aim of improving the engagement of teenage mothers in the WC/TO service and better meeting their parenting needs [241]. The service provides early contact, with the addition of two antenatal visits and one early postnatal visit, and additional needs-based visits delivered in the home by a dedicated Plunket nurse. An evaluation published in June 2012 found that young women in the intervention group received an average of 9.7 postnatal contacts compared with an average of 4.0 for the control group of teenage parents. Higher rates of referrals and recommendations to other health services and agencies, breastfeeding and completed immunisations were identified in the intervention group. The qualitative component of the evaluation identified high levels of satisfaction with the service and relationships with the Plunket WC/TO nurse, as well as strong continued engagement with the service, among the nine Māori and six NZ European teenage mothers interviewed. Challenges included: sustainability of funding; importance of the nurse's personal characteristics in maintaining relationships with mothers; a need for strong organisational structures; well developed and nurtured relationships with other services, including midwives, Ministry of Social Development (MSD) and Child, Youth and Family Services (CYFS); and managing the caseload.

**The National Women's Vulnerable Pregnant Women's multidisciplinary team** provides a midwifery led weekly forum for midwifery, maternal mental health and health social workers to plan and coordinate clinical and social care, including statutory child protection services, for pregnant women with complex social needs [242]. A review of the team found that the increased coordination of services had resulted in outcomes such as; less (sic) traumatic uplifts of new born babies from the hospital; increasing numbers of babies remaining in their parents' care with intensive social service support in place at the time of birth; increasing numbers of babies being placed in kin care without the disruption to attachment inherent in protracted foster placements, and reduced interdisciplinary and interagency conflict.

**Teen Parent Intensive Case Workers**, funded through the Ministry of Social Development and provided by 18 NGO providers around the country, aim to help teen parents in high needs communities stay in education and prepare for future employment. They link teen parents and their children to services and supports including: antenatal care, housing, budgeting and parenting services, Well Child services and early childhood education; and also aim to prevent further unplanned pregnancies. An evaluation of the service in 2009 (then known as Teen Parent Service Coordinators) found that the service was well implemented and operating in accordance with the policy intent. Young parents, predominantly women aged between 14 and 19 years old, appeared to be well engaged with the service, and coordinators in all sites were working directly with young people and networking with other relevant agencies. Young parents participating in this service had been supported to access many services that were expected to improve their health, education and social outcomes. Participants in the evaluation identified a need for the service and its benefits. It was noted that many coordinators carried caseloads greater than recommended in the original policy, and therefore were not always able to focus on the most vulnerable teen parents. In Budget 2010, funding for coordinators was increased from nine to 19. For further information on teen parent intensive case workers see <http://www.familyservices.govt.nz/working-with-us/programmes-services/early-intervention/teen-parent-initiatives.html> and <http://www.msd.govt.nz/about-msd-and-our-work/newsroom/factsheets/budget/2010/teen-parents.html>

### Parent Education Services

Several DHBs run pregnancy and parent education sessions aimed at young parents. An extensive literature review assessing the effectiveness of antenatal education sessions found that there was good evidence that antenatal education can improve bonding or attachment, breastfeeding rates, parenting self-efficacy and parenting knowledge [243]. The narrative review, which included 67 studies of varied methodology, found no consistent evidence of benefits in terms of nutrition, or reduction in the number of premature or low birthweight babies. It also identified that several vulnerable groups, including teenage parents, were much less likely to attend antenatal classes. An evaluation of pregnancy and parent education sessions by Nelson Marlborough DHB found that providers reported that teenagers often did not attend their classes [244]. The evaluation included a survey of parents, although only two of the 44 responses were from women aged under 20, neither of whom attended classes. No responses were received from women attending the specific 'young parents' classes funded by the DHB.

### Teen Parent Units

Teenage parents are recognised to be at high risk of under-achievement in education, due to a combination of limited prior learning, social disadvantage and parenting responsibilities [245]. Educational and career development interventions have been linked to an increased number of young parents in education or training in the short-term [162]. Most of the studies failed to demonstrate longer term effects at follow up two to four years



post intervention. Engagement in education appears to be important in reducing repeat teenage pregnancy: continuous connection to the education system after the birth of a first child has been linked to a reduction in the risk of a second teenage pregnancy [163].

In New Zealand, school age pregnant women and parents are eligible to attend one of the Teen Parent Units (TPUs) located around the country. However, only a small proportion (estimated 5%) of teenage parents currently attends a TPU [246]. TPUs aim to provide educational support for young parents, for example through providing individualised education plans, a suitable environment for feeding and changing babies, help with transport and peer support. Each unit is linked to an Early Childhood Education provider to ensure accessible child care. The 2011 Education Review Office evaluation of TPUs found that units could offer individualised programmes and supportive environment, although attendance was problematic at most units [246]. Most of the students valued their time at their unit and felt they were progressing towards their goals. Many were motivated by a desire to make their children proud of them and most students achieved NCEA credits while at the TPU.

A 2006 survey of 220 teenage parents (overall response rate 49%), attending 19 of the 21 TPUs in New Zealand, found that most teenage parents attending the units were well connected to their families and felt supported within the unit. However, a number of areas of concern were also identified, including sexual health issues, nutrition and physical activity, and mental health. A more recent Families Commission report found that young parents who had access to TPUs value them highly and have aspirations and goals that they otherwise might not have [163]. The report highlighted supporting pathways into further education, training and employment as a priority area to help support teenage parents and prevent repeat pregnancies [163]. It identified that teenage parents need easy access to a range of differing educational opportunities that link to post-secondary school courses, employment or apprenticeships and affordable and accessible childcare.

## **Systematic Reviews and Guidelines Addressing Services for Pregnant Women Experiencing Adversity**

As the previous sections have shown, New Zealand women and their families/whānau may be exposed to a range of adversities during pregnancy. Services currently exist locally to assist women and their babies during this critical period. However, recent local reviews highlight the need for the health sector to continue to identify barriers to care and effective interventions to address these barriers, as well as to prioritise antenatal care for “high needs” and vulnerable women [138,240]. In this context, there is a wealth of information in the international literature on interventions and services aimed at improving outcomes for women and their babies exposed to adversity, which is of relevance to New Zealand. However, when reviewing the information presented, the reader must remember that models of maternity care vary between countries, and thus that the utility of the findings presented should be viewed in the context of New Zealand’s LMC based model of primary maternity care.

The review of the international literature which follows is primarily based on the findings of systematic reviews and guidelines and was undertaken using the methodology outlined in **Appendix 1**. As a result of the structure of the underlying literature, it considers antenatal interventions from a number of different perspectives: with some reviews focusing on specific types of intervention, some focusing on specific population groups and some focusing on specific outcomes. The section thus begins by reviewing interventions aimed at socioeconomically disadvantaged and vulnerable women in general, before considering interventions which aim to meet the needs of the specific groups of pregnant women identified in the previous section, namely: women who use alcohol and other drugs, teenage parents, women exposed to family violence, and women experiencing mental illness in pregnancy. When reading these sections, it is important to remember that vulnerable women often have multiple needs and may experience a number of adversities, necessitating an approach that crosses population groups and requires intervention from a range of services and agencies [139].





## Interventions Aimed at Socially Vulnerable Women in General

The following section reviews a range of interventions aimed at meeting the needs of socially vulnerable women more generally. While the interventions themselves vary, the common theme which unites them is the desire to provide services and supports for women experiencing social or economic adversity during pregnancy.

### Provision of Social Support during Pregnancy

There is limited evidence that increasing social support during pregnancy improves birth outcomes. Hodnett et al. assessed the effectiveness of programmes offering additional social support (delivered by a professional or trained lay-person) compared with routine care, for pregnant women believed to be at high risk for giving birth to babies that were preterm and/or low birthweight (less than 2500 grams) [247]. Seventeen RCTs (12,264 women) were included in the review. There was a reduction in the likelihood of antenatal hospital admission (three trials;  $n = 737$ ; RR 0.79, 95% CI 0.68 to 0.92) and caesarean birth (nine trials;  $n = 4522$ ; RR 0.87, 95% CI 0.78 to 0.97). However, no significant improvements in perinatal outcomes, including preterm birth (11 trials;  $n = 10,429$ ; RR 0.92, 95% CI 0.83 to 1.01) low birthweight babies, (11 trials;  $n = 8681$ ; RR 0.92, 95% CI 0.83 to 1.03), and perinatal mortality (11 trials,  $n = 7522$ ; RR 0.96, 95% CI 0.74 to 1.26), were identified.

### Antenatal Care

The National Perinatal Epidemiology Unit at the University of Oxford has published a series of systematic reviews focused on interventions to reduce inequalities in infant mortality [140,248,249]. Oakley et al. found insufficient high quality evidence to make firm recommendations about interventions aimed at increasing the early initiation of comprehensive antenatal care in socially disadvantaged and vulnerable women [249]. Fourteen studies were included in the review, most of which were observational cohort studies focussed on specific disadvantaged or vulnerable subgroups of the population, including teenagers and ethnic minority women. Of the 11 studies that evaluated interventions that involved outreach or other community-based services, only one (a paraprofessional home visiting intervention for pregnant teenagers) was assessed as having adequate internal validity in relation to the estimated effect on the timing of initiation of antenatal care. The evaluation reported a small but statistically significant increase in the proportion of intervention teenagers initiating antenatal care before the fourth month of pregnancy relative to both comparator groups (intervention group vs. geographical comparator group adjusted OR 1.48, 95% CI 1.32 to 1.66, intervention group vs. 'pre-intervention' comparator group adjusted OR 1.39, 95% CI 1.16 to 1.66). All five studies relating to interventions involving alternative models of clinic based antenatal care were of poor quality.

In a further review, Hollowell et al. found insufficient evidence of adequate quality to recommend routine implementation of specific antenatal programmes as a means of reducing infant mortality (or one of its three major causes: pre-term birth (PTB), congenital anomalies, and sudden infant death syndrome/sudden unexpected death in infancy) in disadvantaged or vulnerable women [140,248]. The systematic review included 36 studies, assessing comprehensive antenatal care programmes (including targeted and enhanced antenatal programmes for socioeconomically disadvantaged women without specific clinical risk factors for PTB/low birth weight (LBW) or other at risk groups), and programmes provided as an adjunct to comprehensive antenatal care (including interventions aimed at socioeconomically disadvantaged women in general and those with additional risk factors for PTB/LBW or other vulnerable/at risk groups). The overall quality of the evidence was poor, although seven interventions indicated a possible beneficial effect on PTB or on infant mortality and were deemed worthy of more rigorous evaluation. Four models of comprehensive antenatal care were considered promising including group antenatal care (where a group of 8 to 12 women meet regularly with a stable group leader, usually a midwife, for antenatal care, education and relationship building) and broad, multifaceted clinic based interventions addressing a broad range of risk factors in disadvantaged women identified as being at higher risk of PTB. The adjuncts to standard



antenatal care, including two nutritional programmes for teenagers, were considered promising.

### Home Visiting

Home visiting has been identified as an intervention with potential for reducing inter-generational health inequalities [250]. A 2004 'review of reviews' published by NICE assessed the effectiveness of antenatal and post natal home-visiting programmes for improving child and maternal outcomes [250]. The authors note that home visiting encompasses a wide variety of interventions, with diverse goals, target recipients, content, theory, mode and timing of delivery. This diversity makes demonstrating effectiveness of such programmes difficult. Nine reviews were included in the report. The benefits of home-visiting programmes to parents of young children included: improvements in parenting and some child behavioural problems; improved cognitive development, especially among some sub-groups of children such as those born prematurely or born with low birth weight; a reduction in accidental injury among children; and improved detection and management of post-natal depression. There was either no evidence or inconclusive evidence for the impact of home visiting on the other outcomes, including child abuse, increased uptake of immunisation, reduced hospital admissions or maternal participation in education or in the workforce. Some of these reviews addressing interventions with particular target recipients and goals are considered individually below.

### Provision of Financial Support

The association between poverty and adverse pregnancy outcomes raises the question of the value of providing financial support during pregnancy. In Europe, antenatal care has emphasised primary prevention, by providing social and financial support to all pregnant women, although this support has not been tested in RCTs [251]. In the United States, a state-level analysis examined the temporal relationships between welfare reforms and the incidence of reported and substantiated cases of maltreatment [252]. The study found that the incidence of specific types of substantiated maltreatment (physical abuse and neglect) and the number of children living in out-of-home care increased between 1990 and 1998, following reductions in state welfare benefit levels, tightening of lifetime benefit restrictions and tougher sanctions for non-compliance. The study found that higher welfare benefits to mothers were associated with fewer cases of child neglect and out of home placement. Parental employment among single-parent families was also associated with lower rates of child maltreatment.

#### Box 4. Key points emerging from the literature on interventions aimed at socially vulnerable women in general

- RCTs assessing the benefit of additional social supports in pregnancy have failed to demonstrate significant improvements in perinatal outcomes.
- The evidence base for interventions that aim to increase the early initiation of comprehensive antenatal care is limited with very few RCTs. One paraprofessional home visiting intervention for pregnant teenagers was associated with a statistically significant increase in the uptake of early antenatal care.
- There is a limited evidence base for specific antenatal interventions aimed at reducing infant mortality among disadvantaged groups, but group antenatal care, enhanced clinic based care for at risk women and nutritional programmes provided to teenagers as an adjunct to routine care, have shown promise.

### Services for Teenage Parents

A number of studies and reviews have considered interventions aimed at supporting young parents during pregnancy and the postnatal period.

#### Clinical guidelines

The UK government has published guidance on providing maternity services for pregnant teenagers and young fathers [253,254]. "Getting maternity services right for pregnant teenagers and young fathers" provides a practical guide for midwives, doctors and maternity support workers and receptionists [253]. "Teenage parents: who cares? A guide



to commissioning and delivering maternity services for young parents” provides the evidence base for the guidelines [254]. It provides a review of evidence linking teenage pregnancy with poorer health outcomes for mothers and their babies, social exclusion, and higher levels of risk factors such as smoking in pregnancy, poor diet and reduced rates of breastfeeding compared to older mothers. Access to maternity care is reviewed, including delayed booking and missed appointments, and the benefits of high quality care and involving fathers in maternity care. The report summarises UK government policy and guidance. Evidence-based guidelines on designing high quality maternity services for teenage mothers and young fathers include: ensuring early and sustained access to services, providing sessions specifically tailored to young parents, a multi-agency approach ensuring clear referral pathways between agencies, prevention of repeat unplanned conception, smoking cessation and addressing alcohol and other drug use, encouragement and support for breastfeeding and addressing mental health. A variety of emerging models of care are reviewed. A framework for reviewing, planning and delivering local services is provided.


### **Antenatal care for young pregnant women**

The NICE guidance on pregnancy and complex social factors includes a systematic review addressing service provision for young women under the age of 20 [139]. The report emphasises that young women are a diverse group, for example the needs of 14 year olds may differ from those of 19 year olds. The review examined access to antenatal services, barriers to care, maintaining contact, additional supports and information requirement for young women. Nine retrospective studies assessed the effectiveness of interventions to improve access to antenatal services. Interventions included targeted hospital based services, school based services and home visiting. The small number of studies, which were mainly based in the US, made it difficult to generalise the findings and the multifaceted nature of the interventions made it difficult to identify which components were critical in improving care, although continuity of care was supported. School-base antenatal care was not supported by the evidence. Ten qualitative studies, based in the US and UK, examined barriers to care. Key barriers to care included staff attitudes, not wanting to recognise a pregnancy or tell parents, feeling embarrassed, having other social problems, transport difficulties and age discrepancies between young women and other service users. Twenty-one, mainly American studies examined interventions aimed at improving contact with antenatal services throughout the pregnancy. Age-appropriated antenatal classes were associated with increased uptake of antenatal care.

Although some studies of home-visiting found it to be effective, some of the effects were only achieved during the pilot stage and not replicated when the programme was adopted on a wider scale. Studies assessing the effectiveness of additional consultations and support (mainly assessing comprehensive, multidisciplinary support including: antenatal care; benefits advice; health, nutrition and childcare education; counselling; home visiting; a one-to-one relationship with a key worker; a case manager to coordinate input from a range of agencies; opportunity to form friendships; opportunity to continue with education; transport to appointments; and material or financial incentives to attend) provided inconclusive evidence. None of the studies were longitudinal so the long term effects on maternal and child health are unknown. The review concludes with recommendations for healthcare providers and service organisations including: offering age-appropriate services and help with other social problems, transport to and from appointments, providing opportunities for the father to be involved, working in partnership with other agencies, providing antenatal care in a variety of settings, offering antenatal education in peer groups at the same time and location as clinic appointments.

In another review, Allen et al. sought to identify whether the way maternity care is provided affects maternal and neonatal outcomes for young women [176]. Nine studies were identified in this systematic review including one RCT, three prospective cohort studies, two comparative studies with concurrent controls, two comparative studies with historical controls, and one case series (3,971 young women). Three models of care were identified: Midwifery Group Practice (MGP), Group Antenatal Care, and Young Women’s Clinic. MGP (one study) refers to a group of two to three midwives providing continuity of carer





throughout pregnancy, birth and the postpartum period. In group antenatal care (4 studies), a model developed in the USA, a group of eight to twelve women of similar gestation meet regularly at a hospital or community venue for antenatal care and education. One stable group leader, usually a midwife, facilitates discussion according to an overall session plan and a second midwife simultaneously performs antenatal clinical assessments. A Young Women's Clinic (4 studies) is a variant of standard antenatal care and consists of a community or hospital-based multidisciplinary team including obstetricians, midwives and social workers. The narrative review found that there was insufficient evidence to assess the effectiveness of a MGP model of care for young women. The Group Antenatal Care model was associated with increases in antenatal visit attendance and breastfeeding initiation, and decreases in the risk of preterm birth. A Young Women's Clinic model may also increase antenatal visit attendance and decrease the incidence of preterm birth.

### **Addressing barriers to maternity services among teenage mothers**

Loxton et al. examined barriers to antenatal care among young women in Australia through qualitative interviews with service providers and a review of the literature [255]. Common barriers across service types included a lack of knowledge, literacy problems, cost, transport, previous negative experiences with service providers, a lack of social and family support and absence of services such as supported accommodation and child care. Barriers occurred in complex relationships with each other. The more barriers a young woman faced, and/or the more adversities she experienced, the more difficult it was for her to access services, and the more difficult it was for service providers to accommodate her needs. A wide variety of facilitators to access were identified and best practice recommendations made, including the provision of a 'one stop shop' incorporating group support, classes, referral and drop-in services for young women and providing a focal point for local service networking; peer support programmes that decreased social isolation and increased confidence among young women; healthcare services; an integrated home visiting service for multiple types of service; and education programmes. Given the complexity of young women's lives the authors advised that services should take account of individual circumstances and no single service model was recommended.

### **Programmes for teenage parents**

In their recent Cochrane review, Barlow et al. evaluated the effectiveness of programmes for teenage parents in improving psychosocial outcomes for the parents and developmental outcomes in their children [256]. It included eight RCTs with 513 participants, providing 47 comparisons of outcome between intervention and control conditions. Statistically significant differences in favour of the intervention group were identified in 19 of these outcomes, including important infant and child outcomes such as the infant's response to the parent, the clarity of the infant's cues and the child's ability to understand and respond to language. The diversity of programmes in terms of their duration and content meant that only four of the studies could be combined in the meta-analysis. Statistically significant findings in favour of the intervention were found for: parent responsiveness to the child (standard mean difference (SMD) -0.91, 95% CI -1.52 to -0.30,  $p=0.04$ ); infant responsiveness to mother at follow-up (SMD -0.65, 95% CI -1.25 to -0.06,  $p=0.03$ ); and an overall measure of parent-child interactions post-intervention (SMD -0.71, 95% CI -1.31 to -0.11,  $p=0.02$ ), and at follow-up (SMD -0.90, 95% CI -1.51 to -0.30,  $p=0.004$ ). The authors concluded that, due to variations in the study populations, the interventions and the measures used, there were limits to the conclusions that could be drawn, however they considered that there was some evidence that parenting programmes may be effective in improving a number of aspects of parent-child interaction.

In another study, Harden et al. systematically reviewed the literature relating to teenage pregnancy, parenthood and social exclusion, with the aims of identifying research to inform policy and practice, and assessing the effectiveness on interventions that target the social exclusion associated with teenage pregnancy and parenting [162]. The report includes an in-depth review of parenting support interventions and their effectiveness in improving social inclusion. The review included 38 studies: 18 evaluations of interventions and 20 qualitative studies of young people's views. Ten of these parenting support studies



provided sound evidence for the value of particular interventions: two looking at welfare sanctions or bonuses, four looking at the effects of educational and career development programmes, three examining holistic, multi-agency support, and one on the effects of day-care. A meta-analysis using a random effects model suggested that educational and career development interventions were associated with a 213% increase in the number of young parents in education or training in the short term (RR 3.13, 95% CI 1.49 to 6.56). Welfare sanction/bonuses programmes and day-care also had positive short term effects but none of these interventions identified long term effects. The authors concluded that the provision of day-care appeared to be the most promising approach for the prevention of repeat pregnancy.

In the same review, the qualitative research highlighted the diversity of needs and preferences among teenage parents, the struggles against negative stereotypes, the heavy reliance on family support, the continuation of problems that existed before parenthood, and the wider costs and benefits of education and employment. Three recurrent themes in the experiences of young parents were identified: dislike of school; poor material circumstances and unhappy childhoods; and low expectations for the future.

### **Preventing repeat teenage pregnancy**

The Families Commission has identified preventing repeat teenage pregnancy as a priority area [163]. Corcoran and Pillai examined the effectiveness of secondary pregnancy prevention programmes [257]. Sixteen controlled trials were included in the meta-analysis, all conducted in the United States. Most of the studies assessed 'comprehensive' programmes which offered an array of services, including case management and referral; education about pregnancy, labour and delivery, contraception, and infant health; and individual counselling. A quarter involved home visiting. The mean age of participants was 16.75 years. At the first follow-up period at which outcome (repeat pregnancy rate) was assessed (average 19.13 months), interventions produced a 50% reduction in the odds of pregnancy compared to comparison-control conditions (random effects model OR 0.47 95% CI 0.32 to 0.70), but by second follow-up (average 31 months, 8 of 16 studies), the effect had waned (random effects model OR 0.66, 95% CI 0.43 to 1.02). No single type of intervention (home visits, school-based interventions, support groups or peer-based incentives) emerged as more effective. Similarly, a 2010 review identified a number of programme components that demonstrated some effectiveness in reducing rapid repeat pregnancy: multi-session home visiting by a nurse; a multidisciplinary youth-oriented approach; contraception teaching; easy access to services; targeting young women at antenatal and postnatal consultations in relation to their first pregnancy; combined mother/infant care; and integrated clinical and social services [161].

#### **Box 5. Key points emerging from the literature on interventions aimed at supporting teenage parents during pregnancy and the postnatal period**

- Promoting early and sustained access to services, providing sessions specifically tailored to young parents, a multi-agency approach ensuring clear referral pathways between agencies, prevention of repeat unplanned conception, smoking cessation and addressing alcohol and other drug use, encouragement and support for breastfeeding and addressing mental health problems and other social problems are recommended.
- The Group Antenatal Care model has been associated with increases in antenatal visit attendance and breastfeeding initiation, and decreases in the risk of preterm birth.
- Educational and career development interventions are associated with significant increases in the number of young parents in education or training in the short term.
- The provision of day care appears to be associated with reductions in repeat teenage pregnancy.
- Comprehensive repeat teenage pregnancy prevention programmes have been effective in trials, although the effect appears to wane. No single model emerges as the most effective.
- Parenting programmes may be effective in improving a number of aspects of parent-child interaction.



## Alcohol and Other Drugs

National and international guidelines recommend that alcohol, tobacco and recreational drug use is discussed with pregnant women at first contact with a health professional, and advice given; and that this is repeated through the pregnancy [185,224,258,259]. This section discusses interventions aimed at pregnant women with alcohol and or other drug problems.

### Antenatal care for women who misuse substances

The NICE guidance on pregnancy and complex social factors includes a systematic review addressing service provision for women who misuse substances [139]. The review examined access to antenatal services, barriers to care, maintaining contact, additional supports and information requirements for young women. Evidence from retrospective studies supported the use of a drug liaison midwife to case manage and coordinate care and the provision of substance misuse and support services. Common barriers were: the attitudes of staff; the lack of integrated care from different services; women's feelings of guilt about their misuse of substances and the potential effects on their baby; and women's concern about the potential involvement of children's services. Staff training was recommended to help address these barriers. No good quality evidence was identified that investigated the effects on pregnancy outcomes of providing additional consultations and support to pregnant women misusing substances, their partners and families. However, good liaison between different agencies, with good inter-agency communication and joint care planning, was recommended.

### Routine screening for alcohol and other drug use

Alcohol use is widespread in society and a number of universal prevention strategies have been used, including media advertising campaigns, school and community-based programmes, warning posters, and labelling of alcoholic beverages, although the evidence-base for their effectiveness is limited [180]. Among pregnant women, a combination of verbal guidance and printed information may reduce alcohol consumption levels during pregnancy [180,260]. However, there are a number of barriers to ascertaining an accurate alcohol history, including under-reporting due to embarrassment and shame and a lack of reliable biological markers [180]. Two screening tools, the T-ACE and TWEAK questionnaires have been recommended for detecting alcohol misuse among pregnant women [259,261,262]. In prenatal settings, brief interventions have been shown to be an effective method of reducing or stopping alcohol consumption during pregnancy in women who are nondependent and who consume alcohol at low to moderate levels [263].

### Interventions for alcohol and drug use in pregnancy

Interventions to improve outcomes for pregnant women with established alcohol and other drug problems have been assessed in a number of systematic reviews, but the evidence-base for effective interventions remains limited. Two Cochrane reviews, examining the effectiveness of pharmacologic interventions and psychosocial interventions aimed at improving birth and neonatal outcomes, maternal abstinence and treatment retention in pregnant women enrolled in alcohol treatment programmes, failed to identify any eligible RCTs for inclusion [264,265]. Terplan and Lui examined the effectiveness of psychosocial interventions for pregnant women enrolled in illicit drug treatment programmes on a variety of outcomes including retention in treatment and birth outcomes [266]. Nine RCTs were included in the review, with 546 participants, assessing contingency management (CM) or manual-based interventions such as motivational interviewing (MI). CM is based on the principle of positive reinforcement and uses reinforcement techniques in an attempt to modify behaviour in a positive and supportive manner. Most of the studies included applied CM in the form of monetary vouchers. CM was associated with better retention in treatment, although results could not be pooled due to heterogeneity, while MI was associated with a non-significant reduction in treatment retention (RR 0.93, 95% CI 0.81 to 1.06). There was a minimal reduction in illicit drug use with CM. Birth outcomes were only reported in two studies, which found no differences in birth or neonatal outcomes. While there is some support for CM in retaining pregnant women in treatment, the numbers are small, and it was not possible to assess the effects on obstetric and neonatal outcomes.



### **Integrated care for pregnant women with alcohol and drug use problems**

The UK NICE guidelines for pregnant women who misuse substances (alcohol and/or other drugs) recommend that those responsible for the organisation of local antenatal services should work with other agencies that provide substance misuse services (including social care and third-sector agencies), to coordinate antenatal care [139]. Co-location of services, and joint, cross-agency care plans which include information about opiate replacement therapy and other locally available services, are suggested. A number of such integrated programmes, incorporating substance abuse treatment and pregnancy, parenting and child-related services, have been developed [267].

In their systematic reviews Niccols et al. and Milligan et al. assessed the effectiveness of such integrated programmes on parenting and child outcomes [267,268,269,270]. Milligan et al. examined the impact of integrated treatment programmes on maternal substance use [267]. Three RCTs (n=250 participants), nine quasi-experimental studies (n=2,105) and nine cohort studies (n=856) were included in the review. Compared to no treatment, integrated programmes were significantly more effective in terms of negative urine toxicology screens and reduced alcohol and drug use (2 studies) and statistically significant standardised mean differences in maternal substance use in the ten studies examining pre- and post-intervention data. However, comparison of integrated versus non-integrated programmes showed no statistically significant differences in urine toxicology or self-reported abstinence (10 studies). Niccols et al. found that limited available evidence supported the integrated programmes on parenting outcomes, although the effect size in the three RCTs comparing integrated programmes to treatment-as-usual (419 participants) that examined parenting outcomes was small [269]. Outcomes did not include maternal custody. Niccols et al. also examined the effectiveness of integrated programmes on child outcomes [268]. Thirteen studies (2 randomised trials, 3 quasi-experimental studies, 8 cohort studies; n=775 children) were included in the review. Most of the studies assessing pre-post effects on child development and emotional and behavioural functioning indicated small to large improvements following the intervention. The one quasi-experimental study and 2 RCTs that compared integrated programmes with non-integrated treatment found favourable effects for integrated treatment, although the effect sizes were small. A further meta-analysis examining the effect of integrated programmes on maternal mental health identified a small advantage in improvement in maternal mental health [270]. While the available evidence appears to support the use of integrated programmes, there is a lack of high quality studies, limiting the conclusions that can be drawn, and highlighting the need for high-quality randomised studies with larger sample sizes.

### **Home visiting**

A recent Cochrane review found insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem [181]. Seven RCTs (reporting 803 mother-infant pairs) comparing home visits (mostly after birth), by community health nurses, paediatric nurses, trained counsellors, paraprofessional advocates, midwives and lay African-American women, with no home visits, were included in the review. Several studies had significant methodological limitations. Meta-analysis identified no significant differences in a wide range of outcomes including: continued illicit drug use (three studies, 384 women; RR 1.05, 95% CI 0.89 to 1.24); continued alcohol use (three studies, 379 women; RR 1.18, 95% CI 0.96 to 1.46); failure to enrol in a drug treatment programme (two studies, 211 women; RR 0.45, 95% CI 0.10 to 1.94); not breastfeeding at six months (two studies, 260 infants; RR 0.95, 95% CI 0.83 to 1.10); incomplete six-month infant vaccination schedule (two studies, 260 infants; RR 1.09, 95% CI 0.91 to 1.32); infants not in care of biological mother (two studies, 254 infants; RR 0.83, 95% CI 0.50 to 1.39); and infant death (three studies, 288 infants; RR 0.70, 95% CI 0.12 to 4.16). While individual studies identified some benefit, given the study limitations further high-quality research is required to establish whether routine home visiting should be recommended.

### **Maintenance treatment**

A draft protocol for methadone maintenance treatment published by the Ministry of Health in 2001 identified pregnant women as a priority group for treatment [271]. At the time, New



Zealand had a number of specialist methadone in pregnancy multidisciplinary services. Methadone maintenance treatment for opiate dependent women during pregnancy has been linked to a reduction in maternal illicit opiate use and fetal exposure, enhanced compliance with antenatal care, and improved neonatal outcomes, and a potential reduction in drug-seeking behaviours, including commercial sex to raise money for drug purchases [272]. A Cochrane review assessed the effectiveness of any opioid agonist maintenance treatment alone, or in combination with psychosocial interventions, on child health status, neonatal mortality, retaining pregnant women in treatment, and reducing the use of substances [272]. Only three RCTs, involving 96 women, were identified, all of which compared methadone with other forms of maintenance treatment (buprenorphine or oral slow release morphine). No significant differences were identified in the number of women who dropped out from treatment and the use of primary substances. There was insufficient evidence to draw any conclusions about the benefits of one treatment over another.

### **Drug withdrawal in infants**

The American Academy of Pediatrics has published a statement that includes a review of the clinical presentation of infants exposed to intrauterine drugs and the therapeutic options for treatment of withdrawal and an evidence-based guide to the management of infants that require weaning from analgesics or sedatives in hospital [188].

#### **Box 6. Key points emerging from the literature on interventions to address alcohol and other drug use in pregnancy**

- Brief interventions are effective in reducing or stopping alcohol consumption during pregnancy in women who are nondependent and who consume alcohol at low to moderate levels
- Coordination of antenatal care, drug treatment services and social services is recommended, including consideration of the co-location of such services, although there is a limited evidence base for their effects.
- There is insufficient evidence to support the use of home visits for pregnant and postpartum women with alcohol and drug problems
- There is some support for contingency management, a positive reinforcement technique usually involving monetary vouchers, in retaining women in drug treatment during pregnancy, but trials are small.

### **Smoking in pregnancy**

**Table 34** on **page 197** provides an overview of the evidence base for promoting the cessation of smoking in pregnancy. Key points identified by the research are summarised below.

#### **Box 7. Key points emerging from the literature on interventions to address smoking in pregnancy**

- There is evidence that smoking cessation interventions during pregnancy reduce the number of women smoking in pregnancy and can improve birth outcomes, supporting the implementation of smoking cessation interventions in all antenatal settings.
- Providing incentives may be the most effective intervention, but trials are small in scale.
- There is insufficient evidence to demonstrate the efficacy of nicotine replacement therapy during pregnancy.
- Trials of interventions aimed at preventing relapse, helping partners to quit or establishing smoke-free homes are inconclusive.
- Strengthening staff support and training in smoking cessation may help challenge perceptions of ineffectiveness and improve uptake of cessation services.



## Family Violence

This section reviews the evidence base for interventions aimed at addressing family violence in pregnancy, while **Table 72 on Page 316** and **Table 90 on Page 344** provide a brief overview of interventions aimed at addressing child abuse and family violence in general.

### Antenatal care for women who experience family violence

The NICE guidance on pregnancy and complex social factors includes a systematic review addressing service provision for women who experience intimate partner violence [139]. The review examined access to antenatal services, barriers to care, maintaining contact, additional supports and information requirements for young women. No studies were found that investigated interventions aimed at improving access to services. Common barriers to care were: women's fear of the potential involvement of social services; women's anxiety that her partner will find out she has disclosed the abuse; insufficient time for healthcare professionals to deal with the issue appropriately; and insufficient support and training for healthcare professionals in asking about domestic abuse. Two before and after studies showed that education and training for health professionals on responding to domestic abuse, and how to provide care to women who are victims of domestic abuse, were effective in improving staff attitudes. There was a lack of good quality evidence to support the benefits of any specific intervention, including counselling, outreach or use of police. However, the studies identified suggested that a combination of education, advocacy, counselling (not necessarily conducted by professional counsellors) and/or community referral increases adoption of safety behaviour and reduces the risk of domestic abuse.

### Home visiting

The evidence base for home visiting interventions aimed at addressing intimate partner violence and the prevention of family violence in pregnancy is limited. Sharps et al. reviewed the evidence for perinatal home visiting with a specific focus on intimate partner violence [203]. Eight studies (4 RCTs, 2 studies linked to RCTs, one pre-post test intervention study without control group and one cross-sectional study) were identified, all of which included assessment for IPV although none of the interventions was designed to address IPV specifically. One study found that the presence of IPV limited the ability of the intervention to improve maternal and child outcomes. The interventions using paraprofessional home visitors identified difficulties communicating, responding and making appropriate referrals where IPV was identified. The effectiveness of nurse home visitors in addressing IPV was not demonstrated but lack of education and training were identified as barriers across all the studies. The authors identify a need for trials of home visiting interventions that include components addressing IPV.

### Treatment

In their review of IPV treatment studies Stover et al. (see **page 346**) found limited evidence of the effectiveness of interventions on reducing repeat violence [273]. Most interventions showed minimal benefit above arrest alone, and consistent recidivism rates of approximately 30% within six months. The lowest recidivism rates were found in a trial of behavioural couples therapy (BCT), an integrated treatment that simultaneously addresses problems with substance abuse and aggression within couples (18% recidivism rate for BCT versus 43% for individual substance misuse treatment at 12-month follow-up). The review identified one antenatal clinic intervention in which 329 Hispanic victims of IPV were randomly assigned to: provision of wallet-sized resource cards; or unlimited access to supportive, nondirective counselling; or unlimited counselling plus support from a "mentor mother." Follow up at two, six, 12, and 18 months postnatally found that women who received both counselling and mentorship, and women who received the resource card only, reported less violence at two months post-delivery than the counselling-only group. However, there were no significant differences among the groups at 12 or 18 months post-delivery.

### Advocacy interventions

Advocacy interventions, which aim to help abused women by providing them with information and support to facilitate access to community resources, have been assessed



in one Cochrane review [274] (see **page 344**). Intensive advocacy (12 hours or more duration) was associated with a reduction in physical abuse more than one to two years after the intervention for women already in refuges, and brief advocacy was associated with an increase in the use of safety behaviours by abused women. However, the findings for the good quality study which took place in an antenatal setting were more equivocal. Brief 30 minute sessions of advocacy were not associated with any reduction in severe abuse (measured at 16 to 34 weeks post-intervention: change-score SMD 0.09, 95% CI -0.29 to 0.46) but a significant reduction in minor abuse was observed (change-score SMD -0.45, 95% CI -0.83 to -0.07). Significant improvements in emotional abuse and postnatal depression were also observed in this Hong Kong based study. It is not known whether these benefits were sustained over time.

### **Prevention**

Care provided to pregnant women that have lost custody of a child through a care and protection intervention represents an opportunity address the prevention of abuse of subsequent children. Kerslake Hendricks and Stevens reviewed the international literature examining what can be done to assist such families so that subsequent children are not at risk, and prevent subsequent children coming into families while parents are still addressing complex problems [275]. A companion document examined the issue from a Māori perspective, recognising that Māori children belong to whānau, hapū and iwi and responsibility for raising children is shared beyond the immediate family [276]. No studies assessing interventions during pregnancy were identified in the review. Two studies identified an association between a lack of antenatal care and children being removed from their parents but were unable to identify whether antenatal care was associated with the prevention of initial or repeat maltreat. Overall the review found that becoming aware of subsequent children entering families where children have previously been removed is challenging. No evidence was identified to demonstrate the effectiveness of systems to improve identification and referral pathways, including alert systems, mandatory reporting, improved interagency relationships and information sharing, and public and professional education. One small-scale study focusing on families who had previously had children removed found that neglect was a key characteristic but further research on identifying and addressing neglect is needed. While the evidence base for interventions was mixed the report makes a number of recommendations regarding effective practice, including multiagency assessments, tailored interventions to meet individual family needs, and multi-component programmes that address parenting issues and systemic problems such as housing and poverty. The review recommends that engaging more fully with extended family and communities to support at-risk families, including during the prenatal period, should be considered. The authors suggest that more information about the reasons why initial and subsequent children have been removed would be useful to help develop and target assistance for these families and further research on effective interventions is needed.

Similarly, in their 'review of reviews' Bull et al. found that review-level studies of home visiting aimed at prevention of child abuse presented an incomplete and complex picture [250]. Where positive effects have been found, they tended to be in measures of parenting rather than in direct measures of abuse. Methodological problems with measuring child abuse in the trials presented a serious risk of outcome report and surveillance bias, threatening the validity of studies. A meta-analysis (including 19 controlled studies) published in 1999 found that universal, population based early intervention home visiting programmes were likely to be more effective in the prevention of maltreatment than screening-based programmes [277]. A further review published in 2009 assessed the effectiveness of early childhood interventions in the primary prevention of child maltreatment [278]. Fifteen controlled studies assessing 14 programmes, completed from 1990 to 2007, were included. Most of the programmes intervened from birth to age three (seven programmes began antenatally for some participants and two began antenatally for all participants) through home visits (10 interventions), parent education classes, or the provision of health services. Most of the studies evaluated effects during or immediately after the intervention, although two (Nurse–Family Partnership (NFP) and Child Parent





Centers (CPC) included long term follow-up of 15 and 17 years. The weighted average effect size of programme participation was a 2.9 percentage-point reduction in maltreatment (6.6% vs. 9.5%). Five programmes showed significant reductions in substantiated rates of child maltreatment, and three provided strong evidence of preventive effects (the Parent Education Program, NFP and CPC). Common elements of the effective programmes included implementation by professional staff, relatively high dosage and intensity, and comprehensiveness of scope. The authors conclude that longer term studies of a variety of intervention types are needed.

**Box 8. Key points emerging from the literature on interventions to address family violence in pregnancy**

- There are few trials of interventions aimed at addressing intimate partner violence or family violence in pregnancy.
- Studies suggest that interventions aimed at reducing child maltreatment should also be able to address intimate partner violence.
- Advocacy interventions may help women in abusive relationships but the evidence base for interventions in pregnancy is limited
- Integrating substance abuse treatments with family violence interventions may improve outcomes.

## **Mental Health Services for Pregnant Women**

The Ministry of Health has published guidance for DHBs and other health planners, funders and providers of perinatal and infant mental health and alcohol and other drug (AOD) services, on ways to address the mental health and AOD needs of mothers and infants [279]. A range of international guidelines and reviews is also available. The key publications in this area are briefly reviewed below. Please see **page 382** for a discussion of infant mental health.

### **Clinical guidelines**

NICE has published evidence-based guidance on clinical management and service provision for antenatal and postnatal mental health [280]. The recommendations cover prediction and detection; rapid access to psychological treatments (within 1 month of initial assessment, and no longer than 3 months afterwards) due to the changing risk-benefit ratio of psychotropic medication in pregnancy; explaining risks; managing depression; and the establishment of clinical networks providing specialist multidisciplinary perinatal services. The use of psychotropic drugs during pregnancy and the postnatal period is reviewed and guidance is provided on the management of specific disorders in pregnancy.

The Western Australian Department of Health has also published guidance on caring for women with mental illness in pregnancy [207]. The report provides a framework aimed at assisting mental health clinicians to manage the reproductive and pregnancy needs of these women, focussing on factors amenable to intervention such as early and ongoing compliance with antenatal care attendance, smoking moderation or cessation, nutritional advice and links to appropriate support services at the earliest opportunity. It encourages mental health clinicians to be 'client advocates' by initiating referrals to appropriate antenatal and/or family planning services.

### **Managing mental illness in pregnancy**

Several systematic reviews have also addressed the management of mental illness in pregnancy, although the very small number of trials identified makes the results inconclusive. Dennis et al. assessed the effects, on mothers and their families, of psychosocial and psychological interventions compared with usual antepartum care in the treatment of antenatal depression [281]. Only one trial, involving 38 outpatient antenatal women, was included in the review. While interpersonal psychotherapy, compared to a parenting education programme, was associated with a reduction in the risk of depressive symptomatology immediately post-treatment, the very small number of participants means that is not possible to draw conclusions or make specific recommendations. Dennis and Allen examined the effectiveness of non-pharmacological/psychosocial/psychological



interventions to treat antenatal depression, which again included only one trial [282]. This three-armed RCT, incorporating 61 outpatient antenatal women compared maternal massage and acupuncture. No significant differences were identified between the treatment arms immediately post-treatment or at 10 weeks postpartum.

### **Psychosocial assessment**

In their Cochrane review, Austin et al. examined the impact of antenatal psychosocial assessment on perinatal mental health morbidity [283]. Two RCTs met the inclusion criteria for the review. One study reported a RCT of 600 women identified as at significant risk (on the basis of a set of psychosocial risk items) before being allocated antenatally to either: the “intervention”, consisting of an Edinburgh Depression Scale (EDS) and a discussion of their likely risk of postnatal depression based on their EDS score, an information booklet about postnatal depression and available local resources, and a letter sent back to the referring GP and Child Health Nurse, advising of their likely risk of postnatal depression; or “standard care”, including midwifery case management and referral to social work or psychiatry as required. Follow up at four months postpartum using the EDS found no significant differences (RR 0.86, 95% CI 0.61 to 1.21). A large loss to follow up (at least 27.1%) may have biased the results. The second study, focussed on providers, reported a cluster RCT of 60 providers comparing the presence of psychosocial risk factors in the early postnatal period in two groups of women: those with an antenatal health care provider administering the Antenatal Psychosocial Health Assessment (ALPHA), and those receiving “usual care”. The providers who assessed psychosocial factors were more likely than those giving routine care to identify psychosocial concerns and to rate the level of concern as high and to detect concerns about family violence, however, none of these differences was statistically significant. The trial did not look at the development of anxiety or depression in these women. The authors concluded that while the use of an antenatal psychosocial assessment may increase the clinician’s awareness of psychosocial risk, neither of these small studies provided sufficient evidence that routine antenatal psychosocial assessment by itself leads to improved perinatal mental health outcomes. Further research, which includes assessment of the longer term outcomes for the both mother and family, is required.

### **Psychosocial and psychological interventions**

Dennis et al. included 15 RCTs, involving over 6,700 women in their review assessing the effectiveness of psychosocial and psychological interventions compared with usual antepartum, intrapartum, or postpartum care to reduce the risk of developing postpartum depression [284]. Overall, women who received a psychosocial intervention were equally likely to develop postpartum depression as those receiving standard care (RR 0.81, 95% CI 0.65 to 1.02). The provision of intensive postpartum support involving home visits provided by public health nurses or midwives appeared promising (2 trials, RR 0.68, 95% CI 0.55 to 0.84) and identifying mothers ‘at-risk’ was associated with a significant reduction in postpartum depression (7 trials, RR 0.67, 95% CI 0.51 to 0.89). Interventions with only a postnatal component appeared to be more beneficial (10 trials, RR 0.76, 95% CI 0.58 to 0.98) than interventions that also incorporated an antenatal component. While individually-based interventions may be more effective (11 trials, RR 0.76, 95% CI 0.59 to 1.00) than those that are group-based, women who received multiple-contact intervention were just as likely to experience postpartum depression as those who received a single-contact intervention. The authors conclude that while overall psychosocial interventions do not reduce the numbers of women who develop postpartum depression, the provision of intensive, professionally-based postpartum support appears promising.

#### **Box 9. Key points emerging from the literature on interventions aimed at supporting women with mental illness in pregnancy**

- UK and Australian guidelines have addressed caring for women with mental illness during pregnancy. Specialist multidisciplinary services involving maternity services, mental health services and community services are recommended.
- The small number of trials assessing the management of mental illness in pregnancy makes it difficult to draw conclusions.



- Antenatal psychosocial assessments, while improving awareness of psychosocial problems, have not been linked to improved outcomes.
- Overall, psychosocial interventions aimed at reducing the risk of developing postnatal depression do not reduce the risk of postnatal depression. However, postnatal interventions for at risk women may be more effective.

## Conclusions

Being exposed to a range of social adversities during pregnancy is associated with a variety of adverse pregnancy outcomes which can affect the health and longer term development of the child. New Zealand has clear social gradients in a number of adverse pregnancy outcomes including fetal and infant deaths and babies being born small for gestational age. Ethnic disparities persist, and young women are also at increased risk of some adverse outcomes when compared to older women. However, New Zealand has a limited evidence base concerning effective interventions, and the barriers to antenatal care that need to be overcome, in order to address these disparities. The information that is available suggests that some women do not access antenatal care, or that they access care late, that some women struggle to find a midwife, and that issues remain with the transition from LMC care to early childhood services.

High quality maternity care, with early booking and good continuity of care through the pregnancy to early childhood however, is widely recognised as being important in improving outcomes for women and their babies [139]. Internationally, a large number of reviews and guidelines have examined the effectiveness of interventions aimed at meeting the needs of pregnant women experiencing adversity. Although services offered in pregnancy are unlikely to be powerful enough to overcome the cumulative effects of a lifetime lived with multiple social adversities, a number of interventions show promise in improving outcomes for vulnerable pregnant women and their babies [247]. The review above suggests that these may include:

- Group antenatal care for socioeconomically disadvantaged women and young women, in which groups of eight to 12 women meet regularly with a stable group leader, usually a midwife, for antenatal care, education and relationship building.
- For young women: multi-agency approaches targeted at young parents; nutritional programmes as an adjuncts to routine care; educational and career development interventions; parenting programmes; and the provision of accessible child care.
- For women who use alcohol and/or other drugs during pregnancy coordination and co-location of antenatal care, drug treatment services and social services; brief interventions in pregnant women who are not dependent on alcohol or consume alcohol at low to moderate levels; and smoking cessation interventions.
- For women exposed to family violence: integration of substance misuse treatment; advocacy interventions; and staff training.

However, a number of interventions were not supported by the current literature, including:

- The provision of additional social supports with the aim of improving pregnancy outcomes
- Home visits for pregnant or postpartum women with alcohol and/or other drug problems
- Nicotine replacement therapy in pregnancy
- Antenatal psychosocial interventions aimed at reducing the risk of postnatal depression.



## In Conclusion

While it is hoped that the information presented above will provide a useful starting point for those planning services for pregnant women and their babies, it is likely that further local research is required to ensure that current and future services best meet the needs of women experiencing multiple adversities in pregnancy. Internationally, research has suggested that non-threatening, non-judgemental antenatal services run by culturally sensitive staff are essential in improving access [237]. In New Zealand, the persistence of ethnic inequalities in pregnancy outcome emphasises the importance of ensuring such culturally appropriate services. Finally, a clear understanding of barriers in access to care and recognition of the influence of differing proximal risk pathways is required, if we are to develop antenatal services that that can help to reduce inequalities in pregnancy and child health outcomes in New Zealand.





# SAFETY AND FAMILY VIOLENCE





# INJURIES ARISING FROM THE ASSAULT, NEGLECT OR MALTREATMENT OF CHILDREN

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## Introduction

Child maltreatment has been defined as any act of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child [285]. It includes neglect, physical, sexual and emotional abuse, and fabricated or induced illness, and is linked to harmful short-term and long-term effects [286]. Physical abuse can result in disability and death.

The psychological effects of maltreatment, which can persist into adulthood, include anxiety, depression, substance misuse, and self-destructive, oppositional or antisocial behaviours. In adulthood, childhood exposure to maltreatment has been linked to difficulties in forming or sustaining close relationships, sustaining employment and parenting capacity. There is significant overlap between the occurrence of child abuse and partner abuse in families and these issues cannot be addressed in isolation [199].

Child maltreatment is associated with a complex interaction of predisposing, perpetuating and precipitating risk factors [195]. Predisposing factors relate to the parent or caregivers early history and include parental exposure to a violent or abusive environment as a child. Perpetuating factors include the wider social context, such as poor housing and overcrowding, socioeconomic inequality, social and cultural norms that promote violence and physical punishment of children, and social isolation; the family context, such as unintended pregnancy, lack of attachment, large family size, financial deprivation, and intimate partner conflict; parent or caregiver characteristics, such as alcohol and substance abuse, mental health problems, and poor parenting skills; the characteristics and behaviour of the child, such as being unwanted, disabled or high needs. Precipitating factors are events that directly trigger abuse, including incessant crying, soiling, aggressiveness by the child, or a crisis event for the parent.

A UNICEF report on child maltreatment deaths, from 1994 to 1998, placed New Zealand near the bottom for deaths in the OECD, at number 24 out of 27 countries [287]. The mortality rate for New Zealand was 1.2 deaths per 100,000 children under the age of 15 years, compared to the OECD median of 0.6 deaths per 100,000 children. A recent study published in the *Lancet* found no clear evidence of a decrease in child maltreatment in New Zealand over the past two decades [288]. Between 2006 and 2010 there were 36 deaths due to assault among children aged 28 days to 14 years [289]. Between 2006 and 2010 there were 13.9 per 100,000 hospital admissions for injuries arising from assault, neglect or maltreatment of girls aged 0 to 14 years, and 24.3 per 100,000 for boys [153]. The rate of hospitalisation increased with increasing socioeconomic deprivation (RR 5.59, 95% CI 4.22–7.41 for NZDep deciles 9–10 vs. deciles 1–2), with rates of hospitalisation for Māori (39.1 per 100,000) and Pacific children (24.4 per 100,000) being significantly higher than for NZ European children (11.8 per 100,000).

The following section reviews hospital admissions and mortality from injuries arising from the assault, neglect or maltreatment of children aged 0–14 years using information from the National Minimum Dataset and the National Mortality Collection.



## Data Source and Methods

### Definition

1. Hospitalisations for injuries arising from the assault, neglect or maltreatment of children aged 0–14 years
2. Deaths from injuries arising from the assault, neglect or maltreatment of children aged 0–14 years

### Data Source

#### 1. Hospital Admissions

**Numerator:** National Minimum Dataset: Hospital admissions for children (0–14 years) with a primary diagnosis of injury (ICD-10-AM S00–T79) and an external cause code of intentional injury (ICD-10-AM X85–Y09) in any of the first 10 External Cause codes. As outlined in **Appendix 3**, in order to ensure comparability over time, all cases with an Emergency Department Specialty Code (M05–M08) on discharge were excluded.

**Denominator:** NZ Statistics NZ Estimated Resident Population (projected from 2007)

#### 2. Mortality

**Numerator:** National Mortality Collection: Deaths in children (0–14 years) with a clinical code (cause of death) of Intentional Injury (ICD-10-AM X85–Y09).

**Denominator:** NZ Statistics NZ Estimated Resident Population (projected from 2007)

### Interpretation

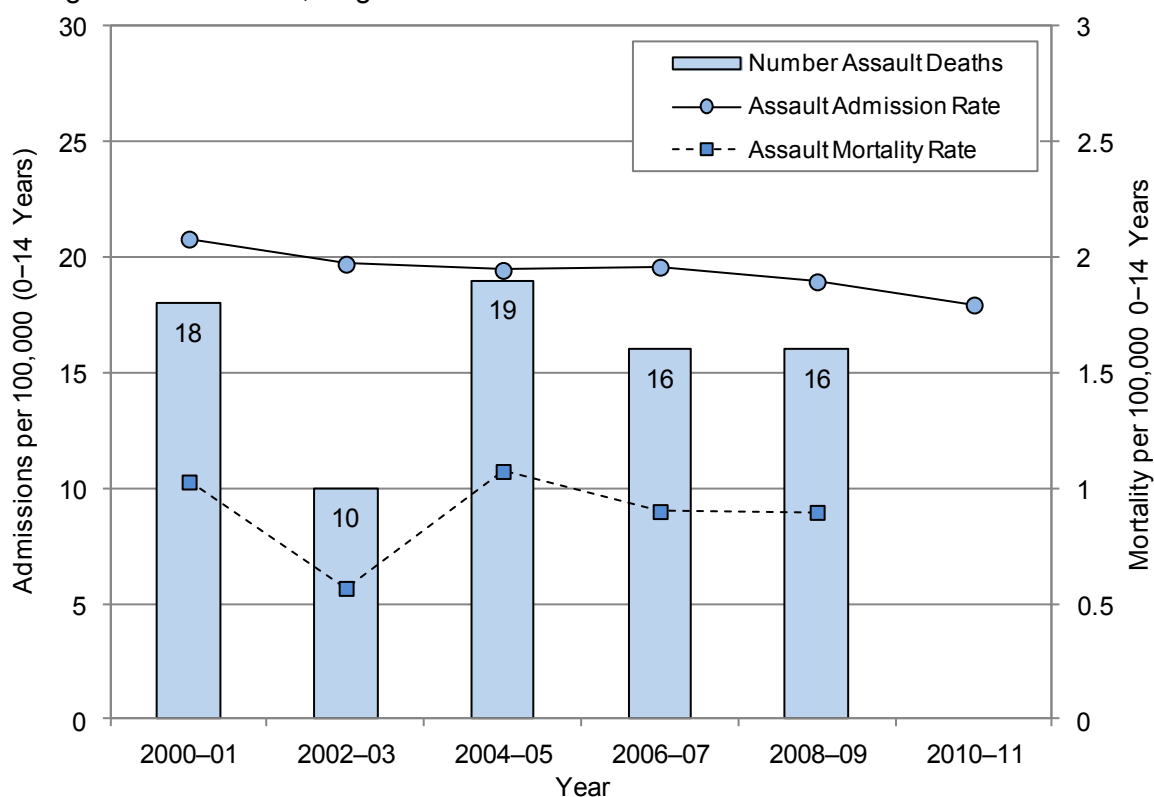
The limitations of the National Minimum Dataset are discussed at length in **Appendix 3**. The reader is urged to review this Appendix before interpreting any trends based on hospital admission data.

## New Zealand Distribution and Trends

### New Zealand Trends

In New Zealand during 2000–2011, hospital admissions for injuries arising from the assault, neglect or maltreatment of children declined gradually, while mortality during 2000–2009 remained relatively static. On average during 2000–2009, eight children per year died as a result of injuries arising from assault, neglect or maltreatment (**Figure 117**).

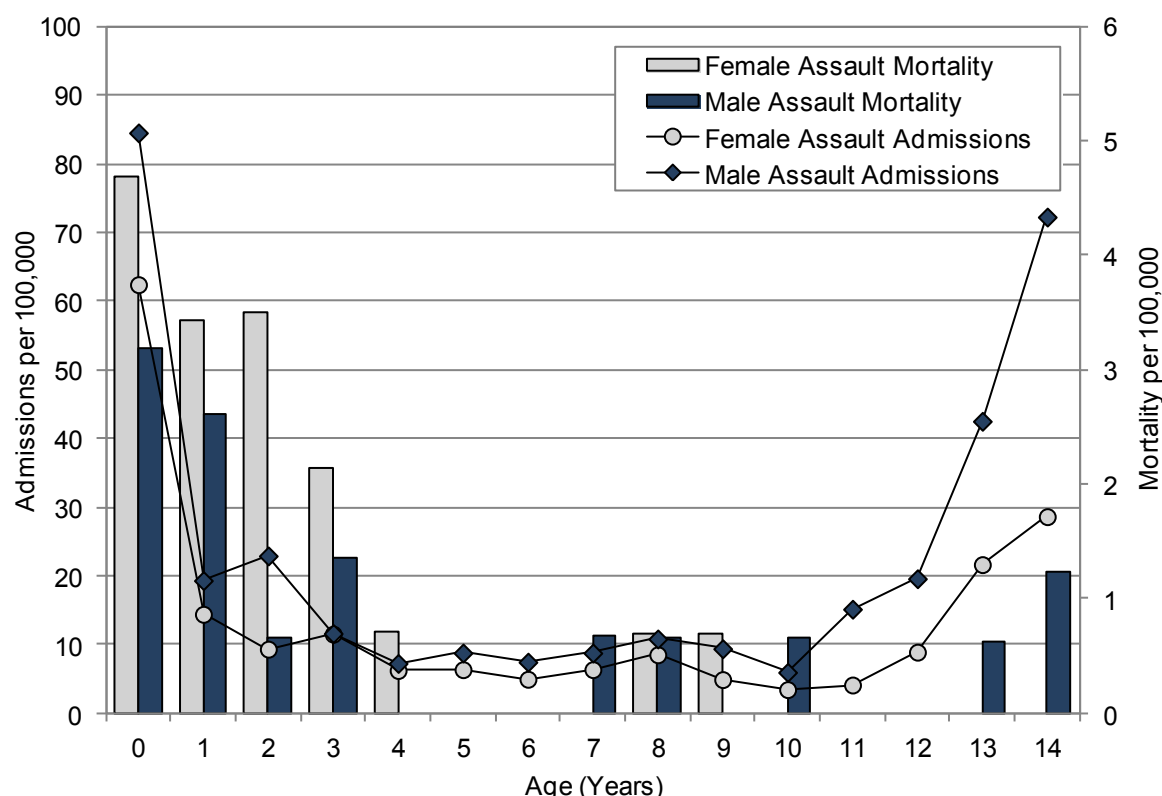
Figure 117. Hospital Admissions (2000–2011) and Deaths (2000–2009) due to Injuries Arising from the Assault, Neglect or Maltreatment of New Zealand Children 0–14 Years



Source: Numerator: Admissions: National Minimum Dataset; Mortality: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Death Numbers are per two year period



Figure 118. Hospital Admissions (2007–2011) and Deaths (2005–2009) due to Injuries Arising from the Assault, Neglect or Maltreatment of New Zealand Children by Age and Gender



Source: Numerator: Admissions: National Minimum Dataset; Mortality: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

### New Zealand Distribution by Age and Gender

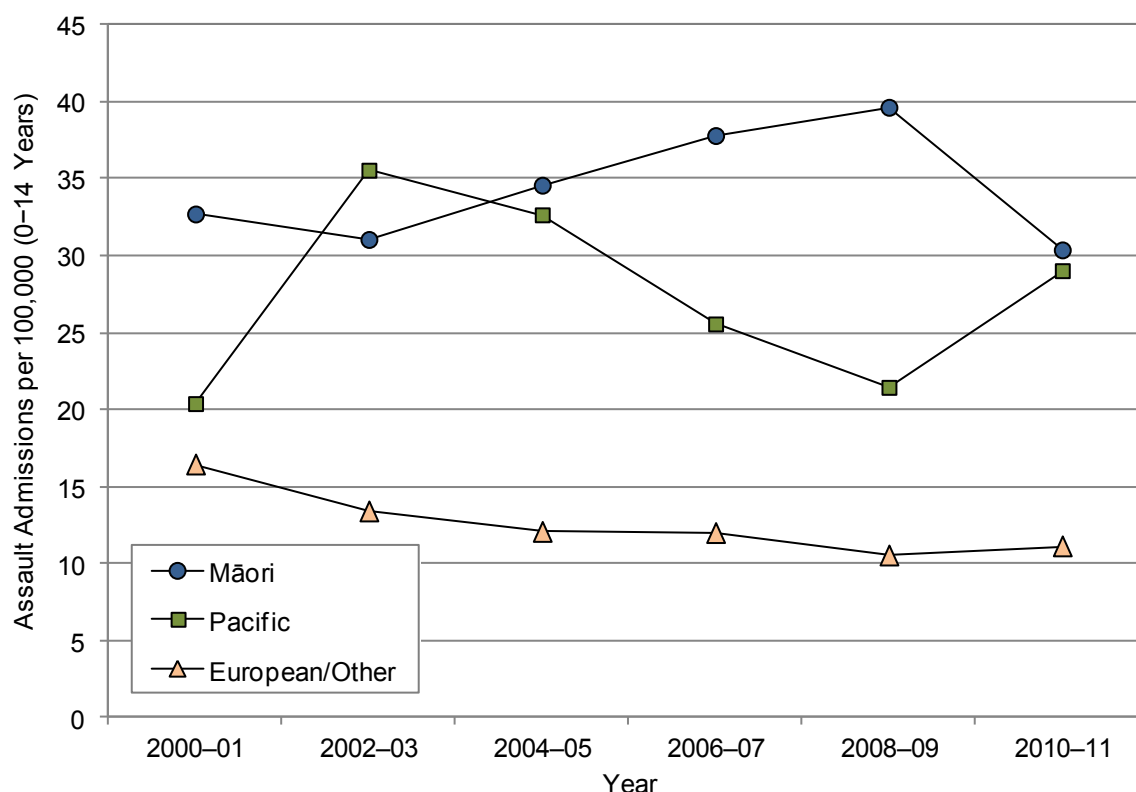
In New Zealand during 2007–2011, hospital admissions for injuries arising from the assault, neglect or maltreatment of children exhibited a U-shaped distribution with age, with rates being higher for infants less than one year and those over eleven years of age. In contrast, mortality was highest for infants less than one year, followed by those aged one and two years. While the gender balance for admissions was relatively even during infancy and early childhood, admissions for males became more predominant as adolescence approached (**Figure 118**).

### New Zealand Trends by Ethnicity

In New Zealand during 2000–2011, hospital admissions for injuries arising from assault, neglect or maltreatment were consistently higher for Māori and Pacific children than for European/Other children. While rates for European/Other children declined during this period, rates for Māori children increased during the early–mid 2000s, but declined during 2010–2011. In contrast, admissions for Pacific children declined during the early–mid 2000s, but increased during 2010–2011 (**Figure 119**).



Figure 119. Hospital Admissions for Injuries Arising from the Assault, Neglect or Maltreatment of Children Aged 0–14 Years by Ethnicity, New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised

Table 69. Hospital Admissions for Injuries Arising from the Assault, Neglect or Maltreatment of Children 0–14 Years by Ethnicity and Gender, New Zealand 2007–2011

Assault, Neglect or Maltreatment Admissions							
Children 0–14 Years							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
European/Other	11.13	1.00		Female	13.80	1.00	
Māori	36.03	3.24	2.80–3.75	Male	23.64	1.71	1.49–1.97
Pacific	25.18	2.26	1.83–2.80				

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Rate is per 100,000; Rate Ratios are unadjusted; Ethnicity is Level 1 Prioritised

## New Zealand Distribution by Ethnicity and Gender

In New Zealand during 2007–2011, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were *significantly* higher for males. Admissions were also *significantly* higher for Māori and Pacific children than for European/Other children (Table 69).

## Nature of the Injury Sustained

During 2007–2011, the most common specific injury types sustained as the result of the assault, neglect or maltreatment of children aged 0–4 years were traumatic subdural haemorrhages and superficial head injuries, followed by fractures of the skull and face, and fractures of the femur. For children aged 5–12 years head, upper limb and abdominal/spinal/pelvic injuries predominated (Table 70).

Table 70. Nature of Injuries Arising from Assault, Neglect or Maltreatment in Hospitalised Children 0–12 Years by Age Group, New Zealand 2007–2011

Primary Diagnosis	New Zealand		
	Number: Total 2007–2011	Number: Annual Average	% of Total
Assault, Neglect or Maltreatment			
Children 0–4 Years			
Traumatic Subdural Haemorrhage	101	20.2	25.8
Superficial Head Injury	68	13.6	17.4
Fracture Skull or Facial Bones	16	3.2	4.1
Other Head Injuries	50	10.0	12.8
Injuries to Abdomen, Spine and Pelvis	31	6.2	7.9
Injuries to Thorax (including Rib Fractures)	11	2.2	2.8
Injuries to Upper Limb	27	5.4	6.9
Fracture of Femur	15	3.0	3.8
Other Injuries to Lower Limb	15	3.0	3.8
Maltreatment	36	7.2	9.2
Other Injuries	21	4.2	5.4
Total	391	78.2	100.0
Children 5–12 Years			
Superficial Head Injury	34	6.8	17.3
Fracture Skull or Facial Bones	14	2.8	7.1
Concussion	17	3.4	8.6
Other Head Injuries	30	6.0	15.2
Injuries to Abdomen, Spine and Pelvis	25	5.0	12.7
Injuries to Upper Limb	26	5.2	13.2
Injuries to Lower Limb	12	2.4	6.1
Maltreatment	11	2.2	5.6
Other Injuries	28	5.6	14.2
Total	197	39.4	100.0

Source: National Minimum Dataset



## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

In Lakes DHB, the Bay of Plenty and Tairāwhiti during 2007–2011, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were *significantly* higher than the New Zealand rate, while in the Waikato rates were *significantly* lower. Rates in Taranaki, while lower, were not significantly different from the New Zealand rate (**Table 71**).

Table 71. Hospital Admissions for Injuries Arising from the Assault, Neglect or Maltreatment of Children Aged 0–14 Years, Midland DHBs vs. New Zealand 2007–2011

DHB	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Children 0–14 Years					
Assault, Neglect or Maltreatment Admissions					
Waikato	50	10.0	12.60	0.67	0.50–0.89
Lakes	34	6.8	28.60	1.52	1.08–2.14
Bay of Plenty	78	15.6	35.12	1.86	1.48–2.35
Tairāwhiti	18	3.6	31.11	1.65	1.04–2.63
Taranaki	18	3.6	15.74	0.84	0.52–1.33
New Zealand	843	168.6	18.84	1.00	

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

### Midland Region Trends

In the Midland Region during 2000–2011, while there large year to year variability, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were generally higher than the New Zealand rate in the Bay of Plenty, Lakes DHB and Tairāwhiti and consistently lower in the Waikato (**Figure 120**).

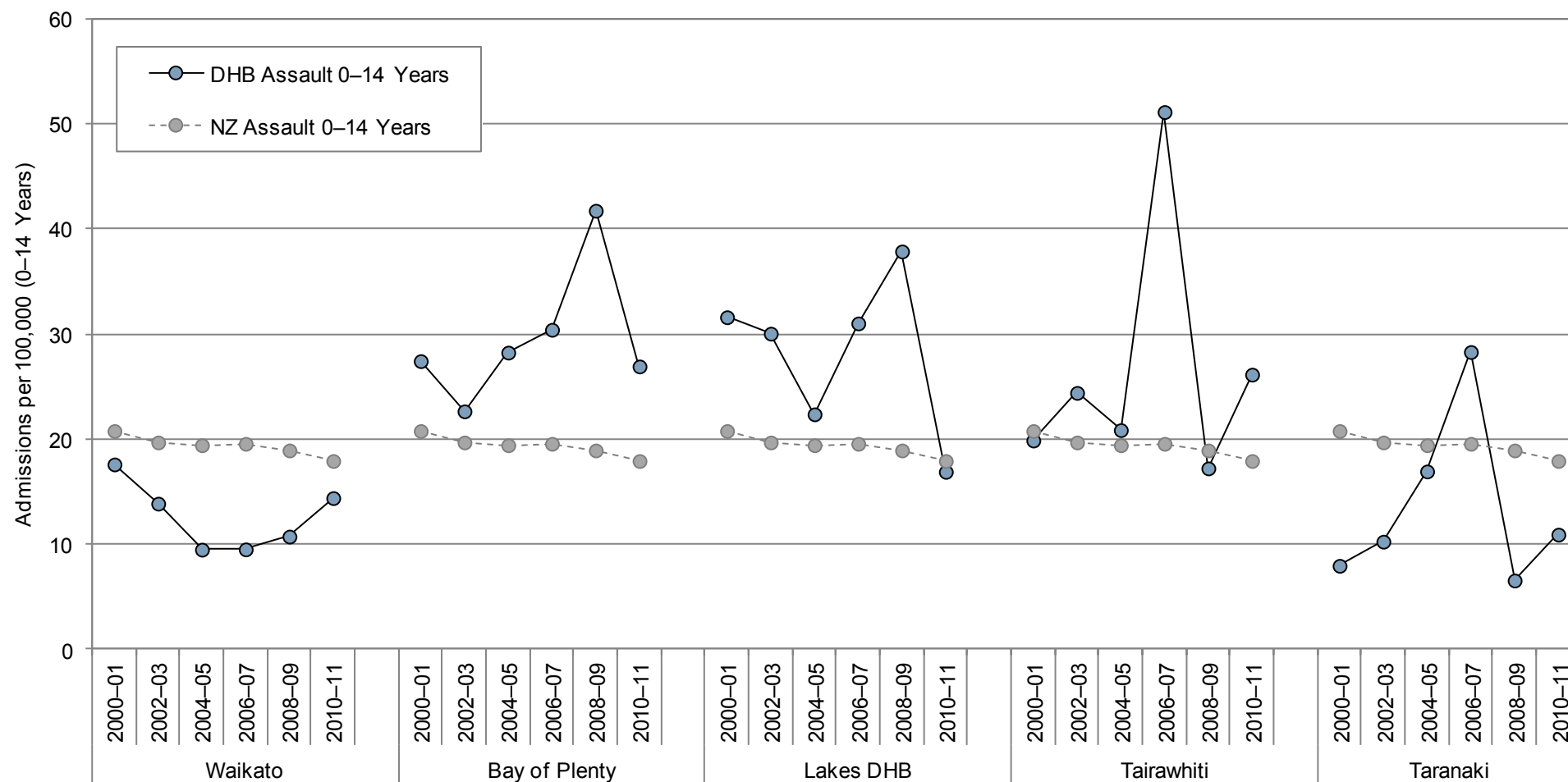
### Midland Region Mortality

In the Waikato during 2000–2009, four children died as the result of injuries arising from assault, neglect or maltreatment, as compared to two in Lakes DHB, three in the Bay of Plenty and three in Taranaki.





Figure 120. Hospital Admissions for Injuries Arising from the Assault, Neglect or Maltreatment of Children Aged 0–14 Years, Midland DHBs vs. New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of the Assault, Neglect or Maltreatment of Children

In New Zealand there are a range of publications focussed on child abuse and family violence, and a large number of international reviews have also explored this issue. **Table 72** below summarises publications that focus primarily on child maltreatment, while **Table 90** on **Page 344** considers those publications which focus on family violence more broadly.

Table 72. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of the Assault, Neglect or Maltreatment of Children

Ministry of Health Policy Documents
<p>Ministry of Health. 2002. <b>Family Violence Intervention Guidelines Child and Partner Abuse</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/family-violence-intervention-guidelines-child-and-partner-abuse">http://www.health.govt.nz/publication/family-violence-intervention-guidelines-child-and-partner-abuse</a></p> <p>These guidelines are aimed at all health care professionals and provide a framework for safe and effective interventions to assist victims of violence and abuse. The report identifies health care providers as being in an ideal position to assist in the early identification of family violence because they come into contact with the majority of children. Guidance on identification, assessment and response to suspected child abuse is provided.</p>
<p>Ministry of Health. 2001. <b>Suspected child abuse and neglect: Recommended referral process for General Practitioners</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/recommended-referral-process-general-practitioners-suspected-child-abuse-and-neglect">http://www.health.govt.nz/publication/recommended-referral-process-general-practitioners-suspected-child-abuse-and-neglect</a></p> <p>This document, developed by the Ministry of Health and Child, Youth and Family with significant input from the Royal New Zealand College of General Practitioners, provides a set of guiding principles and key points for general practitioners in assessing suspected child abuse. A table and flowchart summarising the process for recognition of child abuse and neglect are provided. A set of appendices include body diagram sheets, a referral facsimile, Child, Youth and Family referral procedures, recommended procedures for general practices and relevant legal issues.</p>
Other Government Publications
<p>Bennett P. 2012. <b>The White Paper for Vulnerable Children. Volume I</b>. Wellington: New Zealand Government.</p> <p>Bennett P. 2012. <b>The White Paper for Vulnerable Children. Volume II</b>. Wellington: New Zealand Government.</p> <p>New Zealand Government. 2012. <b>Children's Action Plan: Identifying, Supporting and Protecting Vulnerable Children</b>. Wellington: New Zealand Government. <a href="http://www.childrensactionplan.govt.nz/the-white-paper">http://www.childrensactionplan.govt.nz/the-white-paper</a></p> <p>The White Paper on Vulnerable children sets out the government's programme for addressing child maltreatment by identifying the most vulnerable children and targeting services to them. Volume I sets out the actions the Government will take to improve outcomes for the most at-risk children and Volume II contains the evidence and detailed policy rationale for each of the proposals. The White Paper outlines a set of reforms that aim to: help ensure that parents, caregivers, family/whānau, and communities understand and fulfil their responsibilities towards children; give professionals new tools to identify vulnerable children and act earlier; build a new community-based approach to meeting the needs of children at risk of maltreatment as early as possible; reinforce joint responsibility and action across government to improve outcomes for children within target populations, develop a new direction for the way that Child, Youth and Family, justice, health, education and welfare agencies, professionals and other organisations work together, and an information platform through which they can record and share information; develop a new cross-agency Strategy for Children and Young People in Care; build a children's workforce that is responsive to the needs of vulnerable children; and introduce a range of new measures to manage adults at high risk of abusing children. An action plan is also provided.</p>
<p>Minister for ACC. 2003. <b>New Zealand Injury Prevention Strategy</b>. Wellington: Accident Compensation Corporation. <a href="http://www.nzips.govt.nz/">http://www.nzips.govt.nz/</a></p> <p>This strategy establishes a framework for injury prevention activity in New Zealand, across government agencies, local government, non-government organisations, communities and individuals. It aims to provide clear direction for policy development and service delivery in the prevention of intentional and unintentional injuries. The objectives include: to design and develop safe environments, systems and products; advance injury prevention knowledge and information; develop and implement effective injury prevention interventions; ensure appropriate resourcing for injury prevention; and develop, implement and monitor national injury prevention strategies for priority areas, which include assault.</p>

## Cochrane Systematic Reviews

Macdonald G, et al. 2012. **Cognitive-behavioural interventions for children who have been sexually abused.**

Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001930.pub3

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001930/frame.html>

This review assessed the efficacy of cognitive-behavioural approaches (CBT) in addressing the immediate and longer-term sequelae of sexual abuse on children and young people up to 18 years of age. Ten randomised trials (847 participants; 1 waiting list control, 9 treatment as usual control), were included, examining CBT programmes provided to children or children and a parent not implicated in the abuse. All the studies were prone to bias. Depression, post-traumatic stress disorder, anxiety and child behaviour problems, were the primary outcomes. Results suggested that CBT may have a positive impact on the primary outcomes of depression, post-traumatic stress disorder anxiety and child behaviour problems, but most results were not statistically significant. None of the studies reported adverse effects. The authors conclude that the review confirms the potential of CBT to address the adverse consequences of child sexual abuse, but the evidence base is limited and more carefully conducted and better reported trials are needed.

Winokur M, et al. 2009. **Kinship care for the safety, permanency, and well-being of children removed from the home for maltreatment.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD006546.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD006546/frame.html>

This systematic review assessed the effect of kinship care placement (placing children who cannot live at home with other family members or with friends) on the safety, placement stability, and well-being of children removed from the home for maltreatment. The review included 62, mostly US based, quasi-experimental studies, in which children placed in kinship care were compared cross-sectionally or longitudinally with children placed in foster care. Children in kinship foster care appeared to experience better behavioural development, mental health functioning, and placement stability than children in non-kinship foster care. No differences were found in reunification rates, but children in non-kinship foster care were more likely to be adopted and those in kinship care were more likely to be in guardianship. Children in non-kinship foster care were more likely to access mental health services. Study quality was poor overall but the authors concluded that evidence supports treating kinship care as a viable out-of-home placement option.

Dinh-Zarr TB, et al. 2009. **Interventions for preventing injuries in problem drinkers.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001857.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001857/frame.html>

This review assessed the effect of interventions for problem drinking on subsequent injury risk. Twenty-three RCTs were identified. Results could not be combined due to the diversity of interventions, populations, and outcomes. The most common intervention was brief counselling by health workers. One trial assessed the effect of a motivational interview administered to injured problem drinkers on instances of arrest for assault, battery, and/or child abuse. Overall, the trials suggested that action with problem drinkers was effective in reducing both injuries and events that lead to injury but the small size of the trials resulted in imprecise, non-significant individual effect sizes and further research is needed.

Zwi K, et al. 2007. **School-based education programmes for the prevention of child sexual abuse.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004380.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004380/frame.html>

This review assessed the effectiveness of school-based programmes in improving knowledge about sexual abuse and self-protective behaviours, increasing disclosure of sexual abuse and/or whether such programmes produce any harm. Fifteen trials (5 RCTs and 10 cluster-randomised) measuring knowledge and behaviour change were included in the review. For self-protective behaviour change (assessed by 'simulated stranger test'), two studies had data suitable for meta-analysis; the results of which favoured intervention (OR 6.76, 95% CI 1.44, 31.84). Meta-analysis of nine studies evaluating questionnaire-based knowledge, and four studies evaluating vignette-based knowledge, identified significant increases in knowledge (SMD 0.59, 95% CI 0.44 to 0.74 and SMD 0.37, 95% CI 0.18 to 0.55 respectively). However, the results should be interpreted with caution as knowledge and behaviour change were tested only a short time period after the programme, the studies were conducted in North America and may not apply to other cultures, and several studies reported harms, such as increased anxiety in children. The authors suggest that such programmes should, at best, be seen as part of a community approach to the prevention of child sexual abuse and closely monitored for potential harms.

Barlow J, et al. 2006. **Individual and group-based parenting programmes for the treatment of physical child abuse and neglect.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD005463.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005463/frame.html>

This review assess the effectiveness of parenting programmes (relatively brief and structured interventions that are aimed at changing parenting practices) in treating physically abusive or neglectful parenting. Seven controlled trials, of variable quality, were included, of which only three assessed the effectiveness of parenting programmes on objective measures of abuse (e.g. the incidence of child abuse, number of injuries, or reported physical abuse). Only one of these found significant differences between the intervention and control groups. Improved outcomes were found for a variety of outcomes used as predictive measures of abusive parenting but few reached statistical significance. Overall there was insufficient evidence to support the use of parenting programmes to treat physical abuse or neglect and further research is needed.

Other Systematic Reviews
<p>Louwens ECFM, et al. 2010. <b>Screening for child abuse at emergency departments: a systematic review</b>. Archives of Disease in Childhood, 95(3), 214-18.</p> <p>This review assessed the effectiveness of interventions applied at emergency departments on increasing the detection rate of confirmed cases of child abuse. Four observational trials were included in the review (n = 8907). After implementation of the screening tool, the rate of detected cases of suspected child abuse increased by 180% (weighted mean in three studies). However, there were no significant increases in the number of confirmed cases of child abuse, reported in two out of four studies. In one study, 11 of the 36 cases (30%) were found to be true accidents after a full assessment, and the other study reported 58 (26%) confirmed cases out of 220 suspected cases. The authors conclude that there is no conclusive evidence to confirm that screening interventions at EDs result in increased detection of cases of confirmed abuse.</p>
<p>National Collaborating Centre for Women's and Children's Health. 2009. <b>When to suspect child maltreatment (Clinical Guideline)</b>. London: Royal College of Obstetricians and Gynaecologists. <a href="http://guidance.nice.org.uk/CG89/">http://guidance.nice.org.uk/CG89/</a></p> <p>This guidance provides a summary of the clinical features associated with maltreatment that may be observed when a child presents to healthcare professionals. It aims to raise awareness and help healthcare professionals who are not specialists in child protection to identify children who may be being maltreated. The guidance is based on a systematic review. The alerting features of possible child maltreatment are reviewed, including: injuries; anogenital symptoms, signs and infections; clinical presentations; neglect; emotional, behavioural, interpersonal and social functioning; and parent-child interactions. Guidance is provided on what healthcare professionals should do on encountering an alerting feature of possible child maltreatment: listen and observe; seek an explanation; record; and consider, suspect or exclude child maltreatment as a possible explanation. Priorities for research are identified.</p>
<p>Mikton C &amp; Butchart A. 2009. <b>Child maltreatment prevention: a systematic review of reviews</b>. Bulletin of the World Health Organization, 87, 353-61.</p> <p>This review synthesised evidence from systematic and comprehensive reviews on the effectiveness of universal and selective child maltreatment prevention interventions, including an evaluation of the methodological quality. The review included: two review of reviews, six meta-analyses, seven systematic reviews, ten 'comprehensive reviews' and one 'other'. Seven main types of interventions were assessed: home visiting, parent education, child sex abuse prevention, abusive head trauma prevention, multi-component interventions, media-based interventions, and support and mutual aid groups. Home-visiting, parent education, abusive head trauma prevention and multi-component interventions showed promise in the prevention of child maltreatment. Home visiting, parent education and child sexual abuse prevention appeared to be effective in reducing risk factors for child maltreatment. The conclusions were tentative due to the methodological shortcomings of the reviews and outcome evaluation studies they were draw on.</p>
<p>Silverman WK, et al. 2008. <b>Evidence-based psychosocial treatments for children and adolescents exposed to traumatic events</b>. Journal of Clinical Child &amp; Adolescent Psychology, 37(1), 156-83.</p> <p>This review assessed the effectiveness of psychosocial treatments for children and adolescents who have been exposed to traumatic events. Twenty-one RCTs, assessing mostly cognitive behavioural therapies (CBT), were included, targeting sexual abuse (11 studies), physical abuse/neglect (3 studies), community violence (3 studies), marital violence, motor vehicle accidents and a hurricane (one study each). Average effect sizes (ES) for treatment versus controls were 0.43 for post-traumatic stress symptoms (PTSS), 0.24 for depression, 0.09 for anxiety and 0.22 for externalising behaviour problems, which suggested moderate clinical effects for these outcomes. Significant improvements were identified in PTSS for CBT interventions (ES 0.50, 95% CI 0.03 to 0.98; n=1,320) and sexual abuse interventions (ES 0.46, 95% CI 0.14 to 0.79; n=1,052). Results for other outcomes were not significant. While the review provides modest support for the use of CBT in children exposed to childhood trauma, the heterogeneity of the studies limits the conclusions that should be drawn from the pooled results.</p>
Other Relevant Publications
<p>Mardani J. 2010. <b>Preventing child neglect in New Zealand: A public health assessment of the evidence, current approach, and best practice guidance</b>. Wellington: Office of the Children's Commissioner. <a href="http://www.occ.org.nz/data/assets/pdf_file/0007/7882/CC_Preventing_child_neglect_122010.pdf">http://www.occ.org.nz/data/assets/pdf_file/0007/7882/CC_Preventing_child_neglect_122010.pdf</a></p> <p>This report reviews the nature and consequences of child neglect; and the effectiveness of interventions to prevent the recurrence of neglect. The report describes the prevalence of neglect in New Zealand, using Child Youth and Family (CYF) data from 2009. It summarises government agencies' responses to neglect and compares these responses to best-practice. The report includes findings from a series of stakeholder interviews with professionals from CYF, Police, and the health and education sectors. The report provides a number of recommendations aimed at key government agencies to strengthen the prevention of recurrent neglect in New Zealand.</p>



MacMillan HL, et al. 2009. **Interventions to prevent child maltreatment and associated impairment.** The Lancet, 373(9659), 250-66.

This review considered high-quality research evidence for preventing child maltreatment (physical abuse, sexual abuse, psychological abuse, neglect, and exposure to intimate-partner violence) and interventions to reduce the adverse effects of such exposures. The programme with the best evidence for preventing child physical abuse and neglect was the Nurse–Family Partnership (home-visiting provided by nurses to low-income first-time mothers prenatally and during infancy), which has shown reductions in objective measures of child maltreatment or associated outcomes when administered to high-risk families prenatally and in the first 2 years of a child’s life in three RCTs. One trial showed positive effects of the Early Start programme (intensive home-visiting targeted to families facing stress) but further evaluation, at other sites, is required. The common features of these two interventions are identified, including their development as research programmes and their use of workers with tertiary qualifications. However, most home-visiting programmes failed to show benefits. Several interventions have shown promise in single trials: the Triple P–Positive Parenting Program (a comprehensive population-level system of parenting and family support involving professional training to the existing workforce alongside universal media and communication strategies) found positive effects on maltreatment and associated outcomes; hospital-based educational programmes to prevent abusive head trauma (shaken impact syndrome) and enhanced paediatric care for families of children at risk of physical abuse and neglect, but further assessment and replication are needed. School-based educational programmes improve children’s knowledge and protective behaviours but whether they prevent sexual abuse is unknown. Parent-child interaction therapy has shown benefits in preventing recurrence of child physical abuse but no interventions have shown positive effects in preventing recidivism of neglect. Cognitive-behavioural therapy has shown benefits for sexually abused children with post-traumatic stress symptoms. There is some evidence for child-focused therapy for neglected children and for mother-child therapy in families with intimate-partner violence.

Centre for Social Research and Evaluation Te Pokapū Rangahau Arotake Hapori. 2008. **Preventing physical and psychological maltreatment of children in families. Review of research for Campaign for Action on Family Violence.** [http://www.areyouok.org.nz/research\\_evaluation\\_and\\_statistics.php](http://www.areyouok.org.nz/research_evaluation_and_statistics.php)

This report summarises the findings from a literature review of selected research on the physical and psychological abuse of children and on child maltreatment prevention. The report discusses the harmful effects of abuse, including the effects on the developing brain. Predisposing, precipitating and perpetuating factors are discussed. The report identifies six approaches for primary prevention efforts: establishing a positive view of children, changing attitudes to physical punishment, reducing adult partner violence, addressing adult alcohol and substance abuse, creating accessible and responsive support systems and providing parent education programmes. The characteristics of effective parent education programmes and ways to increase the likelihood that witnesses and bystanders will intervene to stop maltreatment or to report abuse are identified.

Note: The publications listed were identified using the search methodology outlined in **Appendix 1**

# INJURIES ARISING FROM ASSAULT IN YOUNG PEOPLE

## Introduction

In 2007, the Youth'07 survey of 9,107 secondary school students from across New Zealand, assessed self-reported experiences of violence [290]. It found that while violent and anti-social behaviours had reduced since an earlier 2001 survey, experiences of violence were common. Overall, 47.9% of male students and 33.2% of female students reported having been deliberately hit or physically harmed, and 40.9% of male students and 26.8 % of female students reported having hit or physically harmed someone else. Being exposed to violence in the home, at school, or in the community, was strongly associated with instigating violence against others and being a victim of violence, both of which in turn were linked to binge drinking.

Viewed from a different perspective, the rate of Police apprehensions for violent offending increased for all age groups from 14 to 50 years between 1997 and 2007 [291]. The most marked increases were seen among those aged 14 to 16 years, with the rate peaking at 194 per 10,000 population in 2007, compared to 167 per 10,000 population in 1995 [292]. However, it is unclear whether this increase represents a true increase in violence, changes in reporting and policing practices, or a combination of these factors. Further, apprehension data represents the number of apprehensions, rather than the number of offenders, and excludes violence that is not officially reported or recorded [291].

With these issues in mind, the following section explores hospital admissions and mortality from injuries arising from assault in young people aged 15–24 years using information from the National Minimum Dataset and the National Mortality Collection.

### Data Source and Methods

#### Definition

1. Hospitalisations for injuries arising from assault in young people aged 15–24 years
2. Deaths from injuries arising from assault in young people aged 15–24 years

#### Data Source

##### 1. Hospital Admissions

**Numerator:** National Minimum Dataset: Hospital admissions in young people aged 15–24 years with a primary diagnosis of injury (ICD-10-AM S00–T79) and an external cause code of intentional injury (ICD-10-AM X85–Y09) in any of the first 10 External Cause codes. As outlined in **Appendix 3**, in order to ensure comparability over time, all cases with an Emergency Department Specialty Code (M05–M08) on discharge were excluded.

**Denominator:** NZ Statistics NZ Estimated Resident Population (projected from 2007)

##### 2. Mortality

**Numerator:** National Mortality Collection: Deaths in young people aged 15–24 years with a clinical code (cause of death) of Intentional Injury (ICD-10-AM X85–Y09).

**Denominator:** NZ Statistics NZ Estimated Resident Population (projected from 2007)

#### Interpretation

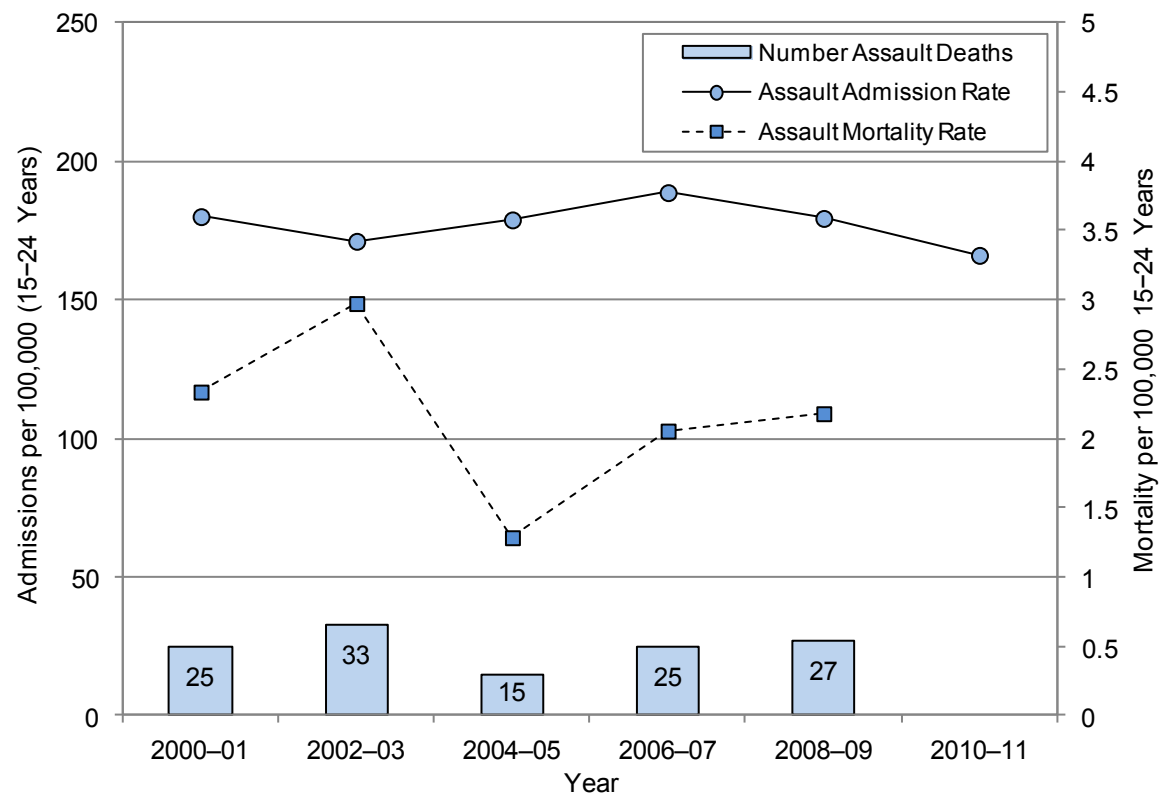
The limitations of the National Minimum Dataset are discussed at length in **Appendix 3**. The reader is urged to review this Appendix before interpreting any trends based on hospital admission data.

## New Zealand Distribution and Trends

### New Zealand Trends

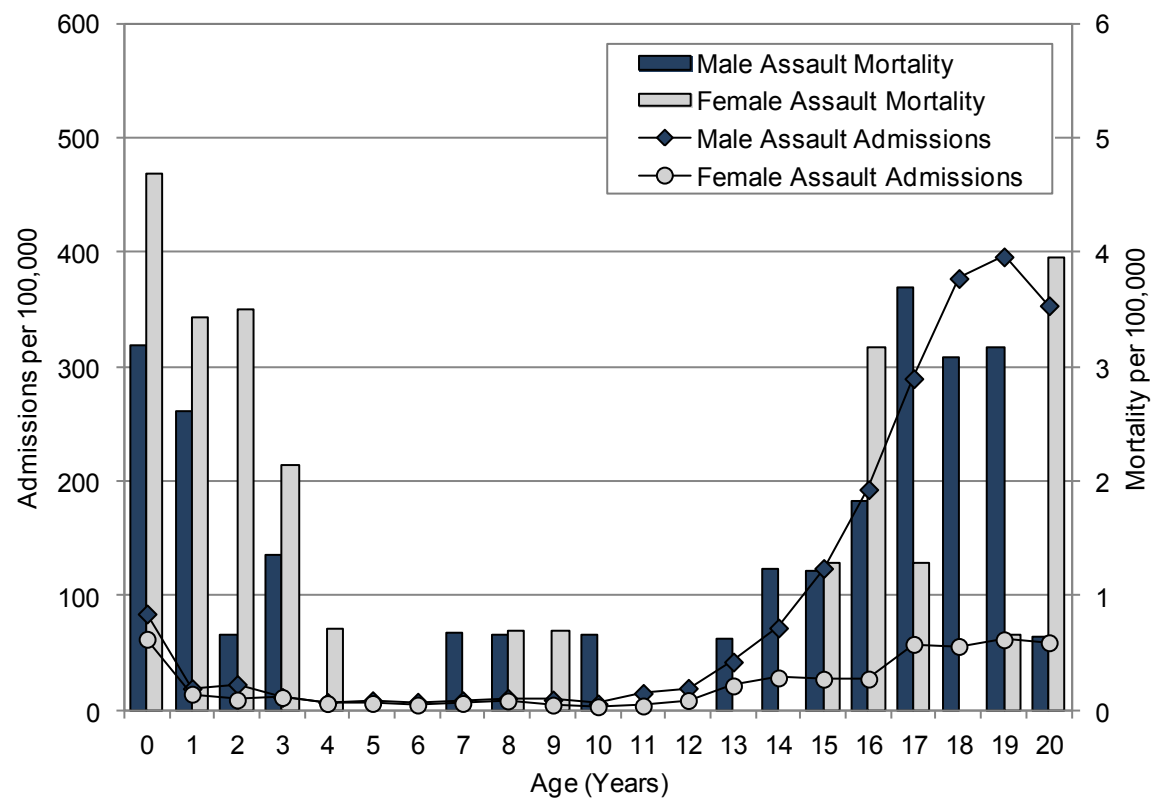
In New Zealand during 2000–2011, hospital admissions for injuries arising from assault in young people remained relatively static, while mortality during 2000–2009 fluctuated from year to year. On average during 2000–2009, 12.5 young people per year died from injuries arising from an assault (**Figure 121**).

Figure 121. Hospital Admissions (2000–2011) and Deaths (2000–2009) due to Injuries Arising from Assault in New Zealand Young People Aged 15–24 Years



Source: Numerator: Admissions: National Minimum Dataset; Mortality: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Number of deaths are per two year period

Figure 122. Hospital Admissions (2007–2011) and Deaths (2005–2009) due to Injuries Arising from Assault in New Zealand Children and Young People by Age and Gender



Source: Numerator: Admissions; National Minimum Dataset; Mortality: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)



## New Zealand Distribution by Age and Gender

In New Zealand during 2007–2011, hospital admissions for injuries arising from assault in males increased rapidly during the mid to late teens, reaching a peak at 19 years of age. While assault admissions for females also increased during the teenage years, rates were lower than for males at all ages. Assault mortality during 2005–2009 was also highest for males during their mid to late teens, although patterns for females were more variable (**Figure 122**).

## New Zealand Distribution by Ethnicity and Gender

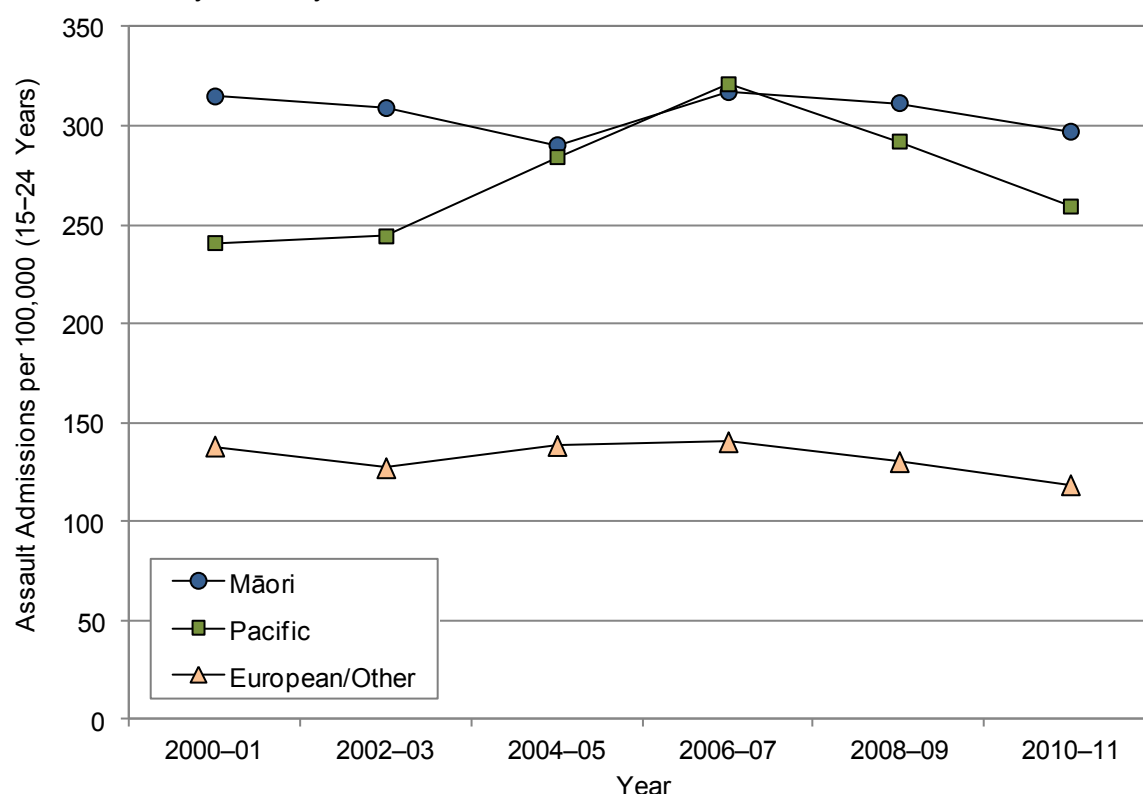
In New Zealand during 2007–2011, hospital admissions for injuries arising from assault were *significantly* higher for young men than for young women. Admissions were also *significantly* higher for Māori and Pacific young people than for European/Other young people (**Table 73**). Similar ethnic differences were seen throughout 2000–2011 (**Figure 123**).

Table 73. Hospital Admissions for Injuries Arising from Assault in Young People Aged 15–24 Years by Ethnicity and Gender, New Zealand 2007–2011

Assault Admissions							
Young People 15–24 Years							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
European/Other	126.94	1.00		Female	51.49	1.00	
Māori	306.53	2.41	2.28–2.56	Male	295.09	5.73	5.31–6.18
Pacific	284.87	2.24	2.07–2.43				

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Rate is per 100,000; Rate Ratios are unadjusted; Ethnicity is Level 1 Prioritised

Figure 123. Hospital Admissions for Injuries Arising from Assault in Young People Aged 15–24 Years by Ethnicity, New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised



## Nature of the Injury Sustained

In New Zealand during 2007–2011, the most common types of injuries sustained as the result of an assault in young people were head injuries, with fractures of the lower jaw, nose and facial bones being particularly prominent. Upper limb (including hand and wrist) injuries were also common (**Table 74**).

Table 74. Nature of Injury Arising from Assault in Hospitalised Young People Aged 15–24 Years, New Zealand 2007–2011

Primary Diagnosis	New Zealand		
	Number: Total 2007–2011	Number: Annual Average	% of Total
Assault Admissions, Young People 15–24 Years			
Head Injuries			
Fracture of the Lower Jaw	1,289	257.8	23.6
Fracture of the Nasal Bones	316	63.2	5.8
Fracture of Malar and Maxillary Bones	302	60.4	5.5
Concussion	270	54.0	4.9
Fracture of the Orbital Floor	244	48.8	4.5
Superficial Head Injury	145	29.0	2.7
Other Fractures Skull or Facial Bones	160	32.0	2.9
Other Head Injuries	895	179.0	16.4
Other Injuries			
Injuries to Wrist and Hand	681	136.2	12.5
Other Injuries to Upper Limb	326	65.2	6.0
Injuries to Abdomen, Spine and Pelvis	308	61.6	5.6
Injuries to Lower Limb	175	35.0	3.2
Injuries to Thorax (including Rib Fractures)	169	33.8	3.1
Other Injuries	188	37.6	3.4
Total Injuries	5,468	1,093.6	100.0

Source: National Minimum Dataset



## Midland Region Distribution and Trends

### Midland Region vs. New Zealand

In Lakes DHB, the Bay of Plenty and Tairāwhiti during 2007–2011, hospital admissions for injuries arising from assault in young people were *significantly* higher than the New Zealand rate, while in the Waikato and Taranaki rates were *significantly* lower (**Table 75**).

Table 75. Hospital Admissions for Injuries Arising from Assault in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2007–2011

DHB	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Young People Aged 15–24 Years					
Assault Admissions					
Waikato	354	70.8	133.8	0.76	0.68–0.85
Lakes	208	41.6	307.2	1.75	1.52–2.01
Bay of Plenty	314	62.8	246.7	1.40	1.25–1.57
Tairāwhiti	151	30.2	477.8	2.72	2.32–3.20
Taranaki	93	18.6	141.1	0.80	0.65–0.99
New Zealand	5,468	1,093.6	175.6	1.00	

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

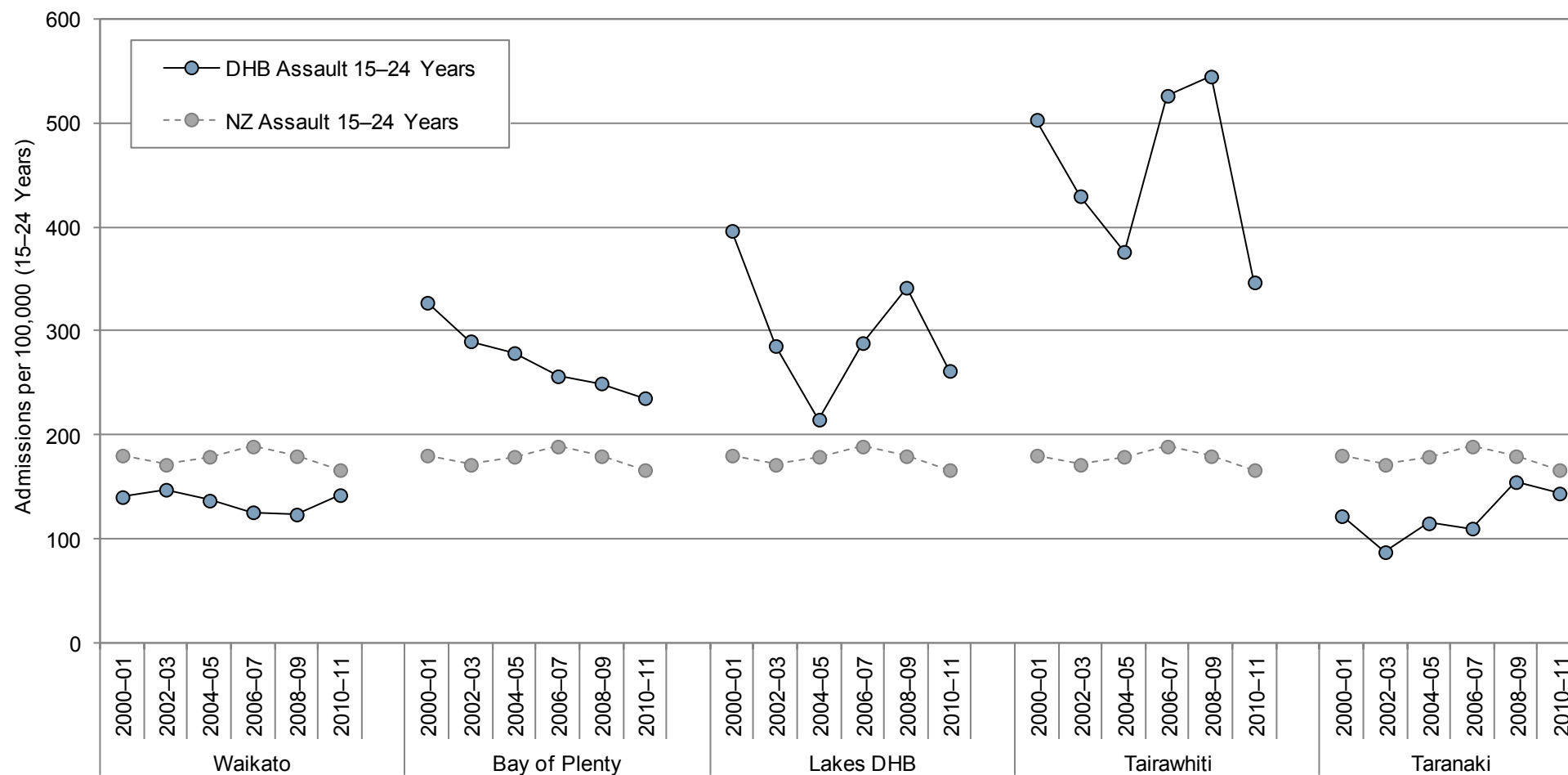
### Midland Region Trends

In the Midland Region during 2000–2011, hospital admissions for injuries arising from assault in young people were consistently higher than the New Zealand rate in the Bay of Plenty, Lakes DHB and Tairāwhiti, and consistently lower in the Waikato and Taranaki. While large year to year variability made the interpretation of trends difficult in most DHBs, rates in the Bay of Plenty exhibited a consistent downward trend during this period (**Figure 124**).

### Midland Region Mortality

In the Waikato during 2000–2009, eleven young people died as the result of an assault, as compared to five in the Bay of Plenty, five in Lakes DHB and two in Tairāwhiti.

Figure 124. Hospital Admissions for Injuries Arising from Assault in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2000–2011



Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Assault in Young People

In New Zealand, there is no single strategy focussed on the prevention of assault in young people. Evidence from a variety of sources will therefore need to be incorporated into the development of local strategies. **Table 76** (below) provides an overview of a range of evidence-based reviews which may be useful in this context. In addition, **Table 72** on **Page 316** summarises publications addressing the prevention of assault in the context of child abuse, while **Table 90** on **Page 344** considers those publications which focus on family violence more broadly.

Table 76. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Assault in Young People

Government Publications
<p>Crawford R &amp; Kennedy P. 2008. <b>Improving interventions to reduce violent offending by young people in New Zealand</b>. Wellington: Ministry of Justice. <a href="http://www.justice.govt.nz/publications/global-publications//improving-interventions-to-reduce-violent-offending-by-young-people-in-new-zealand">http://www.justice.govt.nz/publications/global-publications//improving-interventions-to-reduce-violent-offending-by-young-people-in-new-zealand</a></p> <p>This paper addressed concerns about the perceived increase in the level of youth violence and interventions to reduce violent offending by young people aged 14 to 16 years. Police apprehensions for violent offending among 14 to 16 year olds increased sharply between 2005 and 2006 but it was unclear whether this represented a true increase in violence or changes in reporting and policing. New Zealand interventions are reviewed against research evidence and a number of recommendations are made.</p>
<p>Ministries of Education, Health, Justice and Social Development. 2007. <b>Inter-agency Plan for Conduct Disorder/Severe Antisocial Behaviour 2007-2012</b>. Wellington: Ministry of Social Development. <a href="http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/policy-development/anti-social-behaviour/index.html">http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/policy-development/anti-social-behaviour/index.html</a></p> <p>This inter-agency plan was developed to establish a more comprehensive and effective cross-government approach to conduct disorder/severe antisocial behaviour in children (behaviours which are defined as severe, persistent across contexts and over time, and which involve repeated violations of societal and age-appropriate norms). The report identifies key challenges facing services, including inconsistent mechanisms for identifying and determining eligibility for services, gaps in the availability of specialist services, and lack of alignment with the evidence base in some programmes. It sets out the four key proposals for 2007 to 2012: establishing leadership, co-ordination, monitoring and evaluation; transitioning existing service provision to evidence-based, best-practice interventions; establishing an intensive, comprehensive behavioural service for three to seven year-olds; and building a shared infrastructure for the delivery of specialist behavioural services.</p>
Cochrane Systematic Reviews
<p>Mytton JA, et al. 2006. <b>School-based secondary prevention programmes for preventing violence</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004606.pub2 <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004606/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004606/frame.html</a></p> <p>This review assessed the effectiveness of school based violence prevention programmes for children identified as aggressive or at risk of being aggressive. The review identified 56 RCTs, 34 of which had data suitable for inclusion in the meta-analysis. None of the studies reported data on violent injuries. Aggressive behaviour was significantly reduced in intervention groups compared to no intervention groups immediately post intervention (SMD -0.41, 95% CI -.56 to -.26). The seven studies reporting 12 month follow-up maintained the reduction in aggressive behaviour (SMD -0.40, 95% CI -0.73 to -0.06). School or agency disciplinary actions in response to aggressive behaviour were non-significantly reduced in intervention groups for nine trials with data (SMD -0.48, 95% CI -1.16 to 0.19) and were not maintained, based on two studies reporting follow-up to two to four months. Interventions designed to improve relationship or social skills appeared to be more effective than interventions designed to teach skills of non-response to provocative situations. Improvements in behaviour were achieved in primary and secondary schools, and for groups of mixed sex versus boys alone, but the longer term benefit and the effects on injury remain uncertain.</p>
Other Systematic Reviews
<p>Snider C &amp; Lee J. 2009. <b>Youth violence secondary prevention initiatives in emergency departments: a systematic review</b>. Canadian Journal of Emergency Medicine, 11(2), 161-8.</p> <p>This review assessed the effectiveness of hospital-based secondary prevention programmes for violently injured youth identified in emergency departments. Seven articles, evaluating four interventions (two RCTs and two retrospective studies), were included. Beneficial effects were identified in one RCT (significant reduction in reinjury rates: treatment group 8.1% versus control group 20.3%, <math>p = 0.05</math>) and two retrospective studies. A second smaller RCT found no significant effects. Despite some promising results it is difficult to draw conclusions from these studies due to their small size and large loss to follow up. The authors recommend further research to capitalise on the opportunity to intervene in a setting where young people are considered to be in a reflective and receptive state of mind.</p>



Park-Higgerson HK, et al. 2008. **The evaluation of school-based violence prevention programs: a meta-analysis.** Journal of School Health, 78(9), 465-79.

This review assessed the effectiveness and characteristics of school-based violence prevention programmes. Five programme characteristics (the application of theory, the type of programme such as universal or selective, the number of programmes such as single- or multiple approach interventions, the characteristics of the target population, and the type of instructor) which could explain programme success were identified and used to generate hypotheses tested in the meta-analysis. Twenty-six RCTs were included in the meta-analysis. Overall, the intervention groups did not have significant effects in reducing aggression and violence compared to the control groups (ES -0.09, 95% CI -0.23 to 0.05). There was no significant difference between interventions but programmes that used non-theory-based interventions, focused on at-risk and older children, and employed intervention specialists had slightly stronger effects in reducing aggression and violence. Interventions using a single approach had a mild positive effect compared to multi-component interventions (effect size -0.15, 95% CI -0.29 to -0.02), contrary to expectation. Small sample sizes and heterogeneity of the studies may have contributed to the lack of significant effects.

Limbo MA, et al. 2007. **Effectiveness of interventions to prevent youth violence a systematic review.** American Journal of Preventive Medicine, 33(1), 65-74.

This review assessed the effectiveness of primary (implemented universally to prevent the onset of violence), secondary (implemented selectively with youth at increased risk for violence), and tertiary (focused on youth who had already engaged in violent behaviour) youth violence interventions. Forty-one studies (15 RCTs and 26 other) were included in the review. The heterogeneity of the studies did not allow the authors to pool results and the studies were assessed by 'vote-counting' to identify significant (one or more violence outcome indicators significantly different at the  $p < 0.05$  level) and non-significant results. Half (49%) of interventions were identified as effective. Tertiary-level interventions were more likely to report effectiveness than primary or secondary-level interventions. Several interventions assessed by RCT are discussed in more detail but the authors call for increased standardisation of evaluations to allow assessment of differences between interventions and within subpopulations.

Hahn RA, et al. 2007. **Effectiveness of Universal School-Based Programs to Prevent Violent and Aggressive Behaviour: A Systematic Review.** American Journal of Preventive Medicine, 33(2), S114-S29.

This review examined the effectiveness of universal school-based interventions (delivered to all children in a school-based setting) in preventing aggressive and violent behaviour in pre-school and school aged children. The primary outcomes were violence by youths and victimisation of youths. Fifty-three studies (39 prospective and controlled, 5 retrospective or multiple pre-test post-test, 9 single pre-test post-test), with median follow-up of six months, were included in the review. The median overall effect showed a 15% reduction (interquartile range for effect sizes between the 25th and 75th quartiles -44.2 to -2.3) in violence-related outcomes at all school grades examined in intervention groups compared to controls. There was no significant relationship between intervention duration and effect size but the effectiveness of the interventions reduced slightly over time once the intervention had ended. This review forms the basis for the US government Guide to Community Preventive Services "Violence prevention focused on children and youth: school-based programs" available at <http://www.thecommunityguide.org/violence/school.html>.

Hahn RA, et al. 2005. **The effectiveness of therapeutic foster care for the prevention of violence: A systematic review.** American Journal of Preventive Medicine, 28(2), 72-90.

This review assessed the effectiveness of therapeutic foster care (TFC) for violence prevention among children with severe emotional disturbance and among adolescents with chronic delinquency. In TFC programmes children who cannot live at home are placed with foster parents trained to provide a structured environment for learning social and emotional skills, and monitored at home, school, and leisure activities by programme personnel. Only five studies were included in the review, three prospective trials with a comparison group and two before and after studies with no comparison group. The two studies of TFC for children with severe emotional disturbance yielded inconsistent results. The three studies of TFC for adolescents with chronic delinquency by one research team indicated a reduction in subsequent violent crime (median effect size -71.9%). This review formed the basis for the US government Guide to Community Preventive Services "Therapeutic foster care to reduce violence" available at <http://www.thecommunityguide.org/violence/therapeuticfostercare/index.html>, which recommends TFC for the reduction of violence among adolescents with chronic delinquency.

#### Other Relevant Evidence

Alliston L. 2012. **Alcohol-related injury: An evidence-based literature review.** Wellington: Research New Zealand. [http://www.alac.org.nz/sites/default/files/research-publications/pdfs/alcohol-related%20injury%20lit%20review%20FEB2012\\_0.pdf](http://www.alac.org.nz/sites/default/files/research-publications/pdfs/alcohol-related%20injury%20lit%20review%20FEB2012_0.pdf).

This report assesses evidence for the relationship between alcohol and injury and includes a review of interventions to address alcohol-related injury. Multi-component programmes are identified as the approach showing the clearest evidence of effectiveness to date in reducing harm in drinking environments, including violence and traffic crashes, but the report concludes that the development of interventions to reduce the impact of alcohol consumption on the incidence of injury is in its infancy.

Flood M & Fergus L. 2008. **An Assault on Our Future: The impact of violence on young people and their relationships**. Sydney: White Ribbon Foundation. <http://www.whiteribbon.org.au/resources/research>

This Australian report on the impact of violence on young people and their relationships includes an assessment of dating and relationship violence among young people and the causes of violence against girls and young women, and a review of prevention among children and young people. A number of recommendations are made.

Mercy JA, et al. 2002. **Chapter 2. Youth violence**. In Krug E et al. (Eds.), World Report on Violence and Health. Geneva: World Health Organization. [http://www.who.int/violence\\_injury\\_prevention/violence/youth/en/index.html](http://www.who.int/violence_injury_prevention/violence/youth/en/index.html)

The goal of the World Report on Violence and Health was to raise awareness about the problem of violence globally, and to make the case that violence is preventable and that public health has a crucial role to play in addressing its causes and consequences. The chapter on youth violence includes a review of the epidemiology of youth violence globally, a description of key risk factors, a review of the effectiveness of interventions and policy responses that have been tried and recommendations for action at local, national and international levels.

Note: the publications listed were identified using the search methodology outlined in **Appendix 1**.

# CHILD YOUTH AND FAMILY NOTIFICATIONS

## Introduction

In New Zealand, Child, Youth and Family (CYF), a service of the Ministry of Social Development, has responsibility, under the Children, Young Persons and their Families Act, 1989, for protecting children and young people who are at risk of being or who have been abused or neglected [293]. When CYF receive a report of concern, for example from the education or health sectors, families/whānau or the general public, its staff are legally bound to follow it up [294]. CYF works closely with the New Zealand Police, whose primary duties are to protect victims and consider questions of criminal liability for perpetrators.

In New Zealand, the total number of reports of concern received by CYF increased from 71,927 in 2006/2007 to 152,800 in 2011/2012, with these increases being thought to reflect an increased public awareness of the need for the care and protection of children and a growing willingness by communities to contact CYF where there are concerns for a child's welfare [26,295]. The proportion of reports of concern requiring further action declined during this period however, from 61 per cent in 2006/2007 to 38 per cent in 2010/2011 [26]. Emotional abuse (which includes witnessing family violence) was the most common finding from investigations completed during June 2011–2012 (12,114 investigations), followed by neglect (4,766 investigations), physical abuse (3,249 investigations) and sexual abuse (1,396 investigations) [295]. Between 2006 and 2010 there were 36 deaths due to assault among children aged 28 days to 14 years [289].

In interpreting these trends, it is also important to recognise that at each point in the referral pathway, from the notifier, to the telephone operator, to the intake social worker, a decision has to be made about whether to escalate the concern further, with these decisions often being made in the context of insufficient or conflicting information, time pressures and an increasing intolerance within the community of child abuse. The consequences of errors in child protection decisions however (which may be unavoidable given the conditions of inherent uncertainty), can be damaging to children and their whānau/families [296]. In the worst case scenario missing a concern could result in an avoidable child death, while a false alarm, an investigation where no harm or abuse is substantiated, can result in humiliation, anger and fear for parents and misdirected resources.

The following section reviews the number of care and protection notifications received by Child Youth and Family offices in the Midland DHBs during 2004–2011, as well as the distribution of care and protection notifications for New Zealand as a whole.

### Data Source and Methods

#### Definition

1. Number of care and protection notifications received by Child, Youth and Family
2. Proportion of care and protection notifications where further assessment was required
3. Outcome of assessments for children and young people notified to Child, Youth and Family

#### Data Source

Numerator: Care and protection notifications received by Child, Youth and Family

Denominator: Not applicable (see notes below)

#### Notes on Interpretation

Note 1: The number of notifications and the number requiring further assessment do not represent the number of distinct clients, as some clients have multiple notifications and assessments during any given year. Similarly, the number of assessment findings does not represent the number of client assessments, as some clients have multiple assessment records during a given year. In addition, as some clients have more than one type of finding during an assessment, they may appear across several categories depending on the type of finding.

Finally the number of assessment findings in a year does not directly relate to the number of notifications or assessments in a year, as there is a time lag between the need for an assessment being identified and the assessment being completed. As a consequence, the figures presented in this section may overestimate the number of children referred to CYF, or the total number found to have experienced abuse in any given year. For similar reasons, no rate data have been provided in this section.



Note 2: The numbers in this section may differ from those presented in previous NZCYES Reports as Child, Youth and Family no longer include the intakes received under court order (S19 of the Children, Young Persons, and Their Families Act 1989 and s132 of the Care of Children Act 2004) in routine reporting, as they are not considered to be care and protection notifications.

Note 3: Since July 2010, Police family violence referrals that require no assessment by Child, Youth and Family have been received separately in the CYF database. However in this section, they have been included in the main analysis in order to preserve continuity with previous years.

Note 4: CYF notification data does not include any information on the ethnicity of individual children and young people, although this information is available for those requiring further assessment. Thus in this section, ethnicity data is presented only for those for whom further assessment was required.

## New Zealand Distribution and Trends

### Number of Notifications and Proportion Requiring Further Assessment

In New Zealand during 2011, a total of 150,747 care and protection notifications were received by CYF offices, with 38.4% being thought to require further assessment. While these figures reflect a progressive increase in notifications since 2004, when 40,939 were received, the proportion requiring further assessment declined (86.3% required further assessment in 2004). The absolute number of notifications requiring further assessment however continued to increase, from 35,350 in 2004 to 57,949 in 2011, an increase of 63.9% over this period (**Table 77, Figure 125**).

### Notifications Requiring Further Assessment by Ethnicity

In New Zealand during 2004–2011, the number of care and protection notifications received by CYF that required further assessment increased for children and young people of all ethnic groups (**Table 78**). During the 2011 financial year, 45.6% of notifications requiring further assessment were for Māori children and young people, while 32.0% were for European, 11.4% were for Pacific, and 1.9% were for Asian children and young people (**Figure 126**).

### Source of CYF Care and Protection Notifications

In New Zealand during 2004, family members and the police were the most frequent sources of CYF care and protection notifications, followed by the education and health sectors. While the number of notifications received from all referral sources rose during 2004–2011, the largest increases were seen for Police family violence referrals. Thus by 2011, Police family violence referrals were the most frequent source of CYF notifications, followed by the Police (other referral types) and the health sector. However, the proportion of Police family violence referrals which required further assessment declined, from 70.5% in 2004 to 15.4% in 2011. While similar trends were seen for other referral sources, the magnitude of these declines was much less marked (**Table 79**).

### Assessment Findings for Cases Requiring Further Investigation

Of those notifications which were assessed further during 2004–2011, a large proportion resulted in no abuse being found. Where abuse was found however, physical and emotional abuse, and neglect were prominent. Behavioural and relationship difficulties were the most frequent non-abuse findings (**Table 80**). Because of the nature of the reporting system however, and the fact that a single child may appear in a number of categories, it is difficult to determine what proportion of cases related predominantly to a particular type of abuse (e.g. physical, emotional, sexual).

In interpreting these figures, it must also be remembered that a single child may have been the subject of multiple notifications and that there were also significant changes to the notification system during this period.

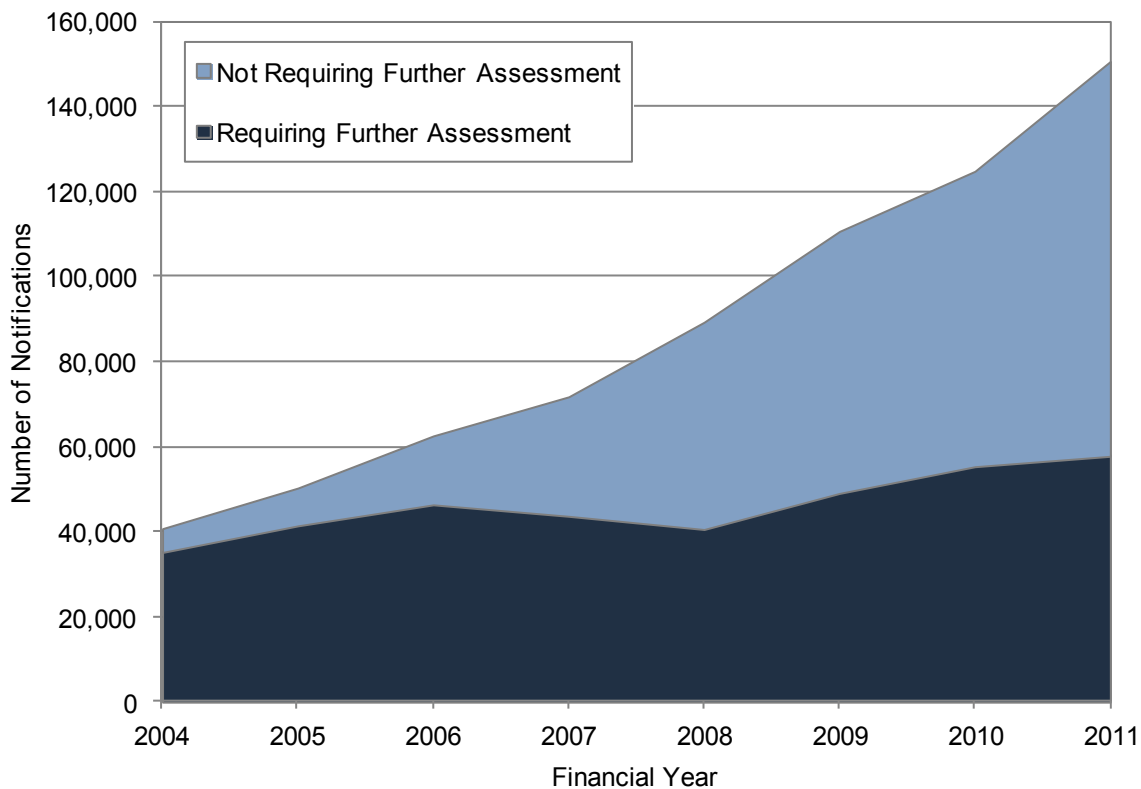


Table 77. Number of Notifications Received by Child Youth and Family Offices, New Zealand 2004–2011 Financial Years

	Total Number of Notifications	Number Requiring Further Assessment	% Notifications Requiring Further Assessment
New Zealand			
2004	40,939	35,350	86.3
2005	50,488	41,599	82.4
2006	62,739	46,541	74.2
2007	71,927	43,845	61.0
2008	89,461	40,739	45.5
2009	110,797	49,224	44.4
2010	124,921	55,494	44.4
2011	150,747	57,949	38.4

Source: Child Youth and Family

Figure 125. Number of Notifications Received by Child Youth and Family Offices by Outcome, New Zealand 2004–2011 Financial Years



Source: Child Youth and Family

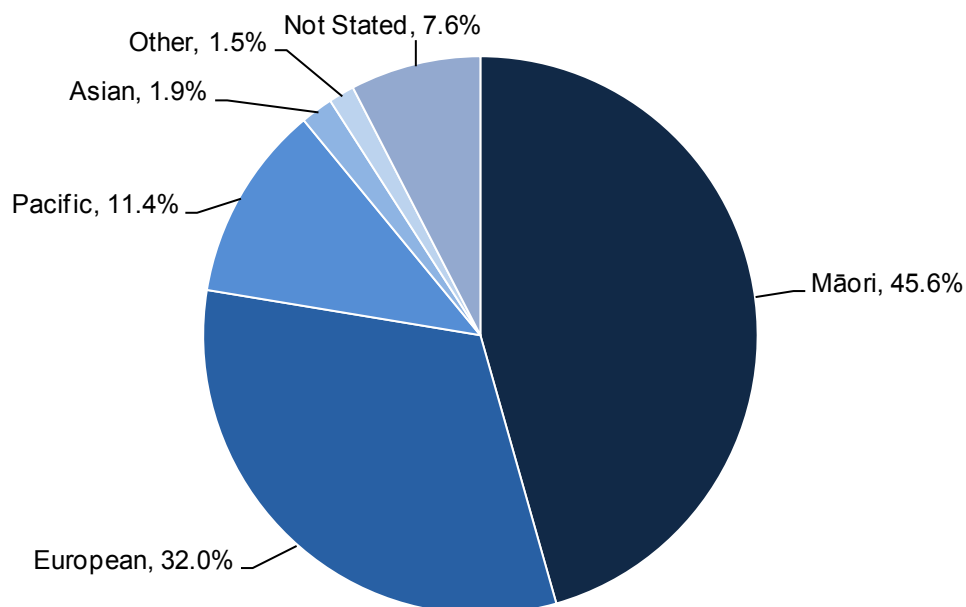


Table 78. Number of Notifications to Child, Youth and Family Requiring Further Assessment by Ethnicity, New Zealand 2004–2011 Financial Years

Year	Number Requiring Further Assessment						
	New Zealand						
	Māori	European	Pacific	Asian	Other	Not Stated	Total
2004	12,001	13,318	3,092	572	629	5,738	35,350
2005	15,456	14,186	3,767	763	712	6,715	41,599
2006	17,730	14,676	4,964	877	810	7,484	46,541
2007	18,791	13,707	4,927	901	750	4,769	43,845
2008	18,438	14,201	5,016	835	662	1,587	40,739
2009	23,220	15,963	5,857	1,008	709	2,467	49,224
2010	25,676	18,103	6,912	1,100	682	3,021	55,494
2011	26,405	18,555	6,599	1,094	873	4,423	57,949

Source: Child Youth and Family

Figure 126. Proportion of Notifications to Child, Youth and Family Requiring Further Assessment by Ethnicity, New Zealand 2011 Financial Year (n=57,949)



Source: Child Youth and Family

Table 79. Number of Notifications to Child, Youth and Family and Proportion Requiring Further Assessment by Referrer, New Zealand 2004–2011 Financial Years

New Zealand									
Number of Notifications									
Year	Police Family Violence	Family	Police	Health	Education	Court	Others	Unknown	Total
2004	3,389	7,192	7,311	4,739	4,888	685	12,721	14	40,939
2005	9,238	7,576	7,645	5,417	5,586	744	14,271	11	50,488
2006	19,535	7,252	8,189	5,980	5,733	772	15,265	13	62,739
2007	26,609	7,286	8,720	6,711	5,775	897	15,904	25	71,927
2008	35,445	8,360	12,737	7,851	6,845	909	17,294	20	89,461
2009	51,135	9,019	14,430	8,636	7,345	678	19,542	12	110,797
2010	57,472	9,814	17,779	9,955	7,832	838	21,214	17	124,921
2011	82,240	10,383	14,903	10,995	8,115	807	23,177	127	150,747
Number Requiring Further Assessment									
2004	2,389	6,086	6,125	4,230	4,550	629	11,329	12	35,350
2005	6,367	6,313	6,105	4,752	5,055	679	12,319	9	41,599
2006	10,605	5,953	6,196	5,205	5,121	714	12,736	11	46,541
2007	10,872	5,093	5,668	5,113	4,608	790	11,685	16	43,845
2008	8,994	4,663	5,747	4,928	4,947	777	10,672	11	40,739
2009	12,280	5,358	6,601	5,838	5,525	583	13,031	8	49,224
2010	12,781	5,947	9,162	6,656	5,867	744	14,326	11	55,494
2011	12,686	6,006	10,226	6,937	6,061	692	15,274	67	57,949
% Requiring Further Assessment									
2004	70.5	84.6	83.8	89.3	93.1	91.8	89.1	85.7	86.3
2005	68.9	83.3	79.9	87.7	90.5	91.3	86.3	81.8	82.4
2006	54.3	82.1	75.7	87.0	89.3	92.5	83.4	84.6	74.2
2007	40.9	69.9	65.0	76.2	79.8	88.1	73.5	64.0	61.0
2008	25.4	55.8	45.1	62.8	72.3	85.5	61.7	55.0	45.5
2009	24.0	59.4	45.7	67.6	75.2	86.0	66.7	66.7	44.4
2010	22.2	60.6	51.5	66.9	74.9	88.8	67.5	64.7	44.4
2011	15.4	57.8	68.6	63.1	74.7	85.7	65.9	52.8	38.4

Source: Child Youth and Family



Table 80. Outcome of Assessment for Children and Young People Notified to Child Youth and Family, New Zealand 2004–2012 Financial Years

Year	Abuse				Non-Abuse		Abuse Not Found
	Emotional Abuse	Physical Abuse	Sexual Abuse	Neglect	Behavioural/ Relationship Difficulties	Self-Harm/ Suicidal	
New Zealand							
2004	2,571	1,864	1,149	2,878	3,325	100	15,860
2005	4,592	2,351	1,424	4,074	4,355	173	23,388
2006	6,142	2,336	1,291	4,199	4,657	172	26,011
2007	8,256	2,274	1,194	4,486	4,461	138	22,921
2008	8,664	2,321	1,003	4,302	4,154	116	19,334
2009	10,938	2,855	1,126	4,677	4,256	106	25,486
2010	12,535	2,886	1,201	4,403	5,007	137	29,313
2011	12,595	3,225	1,505	4,762	4,908	147	30,286
2012	12,114	3,249	1,396	4,766	4,840	153	31,583

Source: Child Youth and Family

## Midland Region Distribution and Trends

### Number of Notifications and Proportion Requiring Further Assessment

During the 2011 financial year, CYF offices in the Midland Region received 40,198 care and protection notifications, with 33.0% being thought to require further assessment. While the number of notifications had increased from 9,415 in 2004, the proportion requiring further assessment declined (84.9% required further assessment in 2004). Nevertheless, the number of notifications requiring further assessment increased, from 7,997 in 2004 to 13,268 in 2011, an increase of 65.9% over this period (**Table 81**, **Table 82**).

### Assessment Findings for Cases Requiring Further Investigation

Of the notifications received by CYF Offices in the Midland Region during 2004–2012 which were investigated further, a large proportion resulted in no abuse being found. Where abuse was found, physical and emotional abuse, and neglect were prominent. Behavioural and relationship difficulties were the most common non-abuse finding (**Table 83**, **Table 84**). Because of the nature of the reporting system however, and the fact that a single child may appear in a number of categories, it is difficult to determine what proportion of cases related predominantly to a particular type of abuse.



Table 81. Number of Notifications Received by Child Youth and Family Offices in Waikato DHB 2004–2011

Year	Notifications	Requiring Further Assessment		Notifications	Requiring Further Assessment	
	Number	Number	%	Number	Number	%
	Waikato					
	Hauraki			Taumarunui		
2004	911	779	85.5	170	157	92.4
2005	974	799	82.0	269	241	89.6
2006	846	693	81.9	324	249	76.9
2007	1,042	842	80.8	437	188	43.0
2008	1,250	899	71.9	475	223	46.9
2009	1,683	939	55.8	477	277	58.1
2010	1,844	1,085	58.8	834	439	52.6
2011	1,704	1,250	73.4	977	363	37.2
2004	Tokoroa			Waikato East*		
	402	340	84.6	1,233	1,109	89.9
2005	406	362	89.2	1,497	1,264	84.4
2006	393	366	93.1	1,782	1,245	69.9
2007	441	275	62.4	2,022	1,101	54.5
2008	440	232	52.7	4,106	1,318	32.1
2009	940	462	49.1	3,188	2,096	65.7
2010	1,037	652	62.9	3,526	1,729	49.0
2011	1,421	795	55.9	7,503	1,542	20.6
2004	Waikato West*					
	1,461	1,313	89.9			
2005	1,906	1,665	87.4			
2006	2,562	1,587	61.9			
2007	2,468	1,511	61.2			
2008	3,687	1,224	33.2			
2009	2,785	1,982	71.2			
2010	3,475	1,975	56.8			
2011	6,518	1,641	25.2			

Source: Child Youth and Family; Note: \*Includes Youth Justice



Table 82. Number of Notifications Received by Child Youth and Family Offices in the Bay of Plenty, Lakes, Tairāwhiti, and Taranaki DHBs 2004–2011

Year	Notifications	Requiring Further Assessment		Notifications	Requiring Further Assessment	
	Number	Number	%	Number	Number	%
	Bay of Plenty					
	Tauranga*			Whakatane		
2004	1,410	1,243	88.2	612	581	94.9
2005	1,726	1,460	84.6	564	514	91.1
2006	1,970	1,721	87.4	825	721	87.4
2007	2,021	1,342	66.4	961	717	74.6
2008	2,293	870	37.9	1,466	512	34.9
2009	3,389	1,126	33.2	2,075	1,077	51.9
2010	3,752	2,089	55.7	2,400	1,187	49.5
2011	5,374	2,085	38.8	2,893	1,497	51.7
	Lakes DHB					
	Rotorua*			Taupo		
2004	881	752	85.4	237	198	83.5
2005	1,051	910	86.6	314	273	86.9
2006	1,098	1,005	91.5	338	295	87.3
2007	1,326	1,005	75.8	472	399	84.5
2008	1,647	1,009	61.3	795	327	41.1
2009	3,099	1,436	46.3	1,362	594	43.6
2010	3,232	1,413	43.7	1,955	933	47.7
2011	4,884	1,352	27.7	1,329	574	43.2
	Tairāwhiti			Taranaki		
	Gisborne*			Taranaki*		
2004	636	574	90.3	1,462	951	65.0
2005	818	723	88.4	1,593	939	58.9
2006	772	669	86.7	1,626	905	55.7
2007	798	591	74.1	1,804	384	21.3
2008	1,287	553	43.0	1,424	220	15.4
2009	2,461	678	27.5	2,596	1,128	43.5
2010	2,304	638	27.7	3,346	1,228	36.7
2011	3,720	842	22.6	3,875	1,327	34.2

Source: Child Youth and Family; Note: \*Includes Youth Justice

Table 83. Outcome of Assessment for Children Notified to Child Youth and Family Offices in the Waikato, Bay of Plenty and Lakes DHBs, 2004–2012 Financial Years

Year	Abuse				Non-Abuse		Abuse Not Found
	Emotional Abuse	Physical Abuse	Sexual Abuse	Neglect	Behavioural/ Relationship Difficulties	Self-Harm/ Suicidal	
Waikato							
2004	432	230	158	416	230	10	1,758
2005	626	297	185	498	377	15	2,442
2006	761	242	149	551	442	21	2,367
2007	586	220	142	457	314	14	2,251
2008	611	251	129	426	262	17	2,018
2009	1,453	330	154	586	314	8	3,027
2010	1,617	360	137	476	438	30	2,959
2011	1,359	323	171	474	461	18	2,831
2012	1,194	328	154	537	442	23	3,444
Bay of Plenty							
2004	99	83	57	78	182	6	908
2005	183	96	79	116	172	14	1,279
2006	319	116	58	215	225	12	1,423
2007	412	137	53	169	204	6	1,279
2008	362	107	47	159	86	<5	541
2009	602	124	73	188	174	8	868
2010	1,040	184	85	252	288	14	1,503
2011	1,123	219	101	314	206	<5	1,664
2012	1,137	195	83	356	207	7	1,471
Lakes DHB							
2004	74	36	26	102	75	<5	436
2005	233	71	30	247	90	8	667
2006	233	68	27	169	121	6	610
2007	223	68	39	223	103	<5	845
2008	261	80	12	247	84	<5	689
2009	437	128	42	270	109	<5	1,041
2010	861	124	74	268	139	<5	1,042
2011	596	129	58	211	121	<5	909
2012	422	149	50	203	103	7	892

Source: Child Youth and Family



Table 84. Outcome of Assessment for Children Notified to Child Youth and Family Offices in Tairāwhiti and Taranaki DHBs, 2004–2012 Financial Years

Year	Abuse				Non-Abuse		Abuse Not Found
	Emotional Abuse	Physical Abuse	Sexual Abuse	Neglect	Behavioural/ Relationship Difficulties	Self-Harm/ Suicidal	
Tairawhiti							
2004	52	16	14	66	49	0	290
2005	97	45	32	110	65	6	360
2006	111	49	28	59	51	<5	373
2007	141	61	14	76	59	<5	321
2008	125	35	10	63	36	<5	293
2009	145	44	9	98	29	0	316
2010	162	48	15	92	48	<5	330
2011	207	61	26	109	43	0	385
2012	186	59	22	117	46	0	516
Taranaki							
2004	106	28	31	67	130	0	543
2005	101	41	29	85	125	<5	636
2006	92	36	18	79	115	5	583
2007	52	30	7	50	53	0	151
2008	47	25	6	34	40	<5	132
2009	127	50	18	89	86	0	696
2010	113	44	16	65	123	0	800
2011	123	38	23	104	126	<5	856
2012	93	45	23	95	160	<5	1,034

Source: Child Youth and Family

## Local Policy Documents and Evidence-Based Reviews Relevant to Child Abuse and Family Violence

In New Zealand there are a range of publications which consider child abuse and family violence, and a large number of international reviews have also explored this issue in detail. **Table 72** on **Page 316** considers those publications which focus primarily on child abuse and neglect, while **Table 90** on **Page 344** considers those publications which focus on family violence more broadly.



# FAMILY VIOLENCE

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## Introduction

Te Rito, the New Zealand Family Violence Prevention Strategy defines family violence as:

*“a broad range of controlling behaviours commonly of a physical, sexual and/or psychological nature, which typically involve fear, intimidation and emotional deprivation. It occurs within close interpersonal relationships.”*[194]

Family violence encompasses violence between any members of a family group or whānau. Children exposed to inter-partner violence (violence between adult partners) are at increased risk of behavioural and emotional problems, including childhood trauma symptoms, and also experience higher rates of other types of child maltreatment [297,298,299]. There has also been concern that exposure to inter-parental violence may encourage the development of later violence in children [300]. For example, a meta-analysis published in 2000 found a weak to moderate association between exposure to inter-parental violence during childhood and subsequent inter-partner violence [301]. However, after controlling for confounding factors such as socioeconomic background, associations between childhood exposure to inter-parental violence and subsequent increased risks of inter-partner violence perpetration and victimization and violent crime, were reduced to statistical non-significance in a New Zealand prospective cohort [300].

In terms of the prevalence of family violence in New Zealand, 24% of the 980 children in the Dunedin Multidisciplinary Health and Development Study reported seeing or hearing violence or threats of violence between parents or parental figures [302]. Regardless of who carried out the violence, 64% of young people witnessing family violence described themselves as being upset “a lot” or “extremely” and a further 23% reported being “a bit” upset. A more recent survey of 2,077 New Zealand children aged 9 to 13 years found that 27% reported having witnessed violence against an adult [303]. Similarly, the Youth’07 survey of 9,107 secondary school students found that 48.2% of students reported witnessing adults yelling or swearing at each other in the previous 12 months, and 10.4% reported witnessing adults hitting or physically hurting each other (an increase from 5.6% in the 2001 survey) [290]. Students that had experienced or witnessed violence in their home reported depressive symptoms than those who had not (males 12.6% compared to 5.7%; and females 25.9% compared to 11.3%).

Both males and females may be victims and perpetrators of family violence, although male perpetrators are more likely to seriously injure or kill the women and children they are violent towards [300,304]. Family violence can affect families from all socioeconomic backgrounds, but higher rates of inter-partner violence have been identified among young, cohabiting adults of low socioeconomic status, particularly when they have children [305]. Internationally, inter-partner violence has also been linked to poverty and heavy alcohol consumption [306]. An analysis of data from the New Zealand National Survey of Crime Victims 2001 found that the strongest predictors of being a victim of inter-partner violence over a lifetime were being Māori, aged 25 to 39 years, female, a solo parent, living in an over-crowded household, on social welfare benefits, and being divorced or separated [307]. A secure attachment to a non-violent parent or other significant carer has been cited consistently as an important protective factor for children exposed to family violence [308].

The following section reviews the number of Police family violence investigations occurring during 2009–2011. In interpreting these figures, it must be remembered that research suggests that Police are only involved in around 10% of the family violence incidents occurring in New Zealand each year [309]. Thus these figures need to be viewed as the “tip of the iceberg” in terms of prevalence. Further, trends may also be sensitive to public awareness campaigns and changes in the way the Police recognise and record family violence incidents. Despite this, it is hoped that these figures will provide some insights into the context surrounding family violence in New Zealand.



## Data Source and Methods

### Definition

#### 1. Number of Police family violence investigations

Family violence investigations are jobs Police deal with as family violence. A given family violence investigation may relate to one or more offences and/or non-offence incidents. Only one of these (usually the most severe) is used to categorise the investigation.

### Data Source

Numerator: Family violence investigations as recorded in the police's operational database

### Notes on Interpretation

Note 1: Police policy defines family violence as “*violence which is physical, emotional, psychological and sexual and includes intimidation or threats of violence*”. The term “family” includes parents, children, extended family members, whānau, or any other person involved in a relationship (e.g. partners, caregivers, boarders and flatmates), but does not include neighbours.

Note 2: It is likely that family violence-related offending is significantly under-reported to Police, and that recent publicity campaigns, combined with an increased Police focus on family violence, have driven increases in police statistics for family violence. Therefore, inferences about trends in the prevalence of family violence should not be made from these statistics.

Note 3: Changes in the way in which the Police produce statistics mean that some of the data presented here differs from that provided to DHBs in 2009. For example, the Police now do not routinely produce statistics on role types for those involved in family violence investigations and thus information on the ethnicity of the victims of family violence incidents is no longer available. In addition, in July 2010 the Police adapted the Australia New Zealand Standard Offence Classification (ANZSOC) to align with wider Justice Sector reporting. The offence groupings used in this report are thus based on the ANZSOC Group Description, rather than the old TPOC Offence Types reported previously. Finally, Police in recent months have made changes to the Police Area boundaries resulting in the aggregation of Lower Hutt and Upper Hutt into the Hutt Valley Area; the aggregation of Hastings and Napier into the Hawke's Bay Area; and the renaming of Wanganui and Gisborne as the Whanganui and Tairāwhiti Areas, respectively.

Note 4: All of the data in this section were extracted from the Police's dynamic operational database on 29 June 2012. Data in this database are subject to change as new information is continually recorded. The lack of a clearly defined denominator for the reported Police Areas however precluded the calculation of rates.

## New Zealand Distribution

### Family Violence Investigations Where Children Were Present

Of the 86,704 Police family violence investigations which occurred in New Zealand during 2011, children were reported as being present or usually residing with the victim in 54.0% of cases (**Table 85**).

Table 85. Number and Proportion of Police Family Violence Investigations where Children were Present or Usually Residing with the Victim, New Zealand 2009–2011

Year	Number of Family Violence Investigations		% Family Violence Investigations where Children were Present*
	Children Present*	Total	
2009	40,852	77,863	52.5%
2010	45,588	84,618	53.9%
2011	46,860	86,704	54.0%

Source: NZ Police; Note: \*Children were present or usually residing with the victim

### Relationship Between the Offender and the Victim

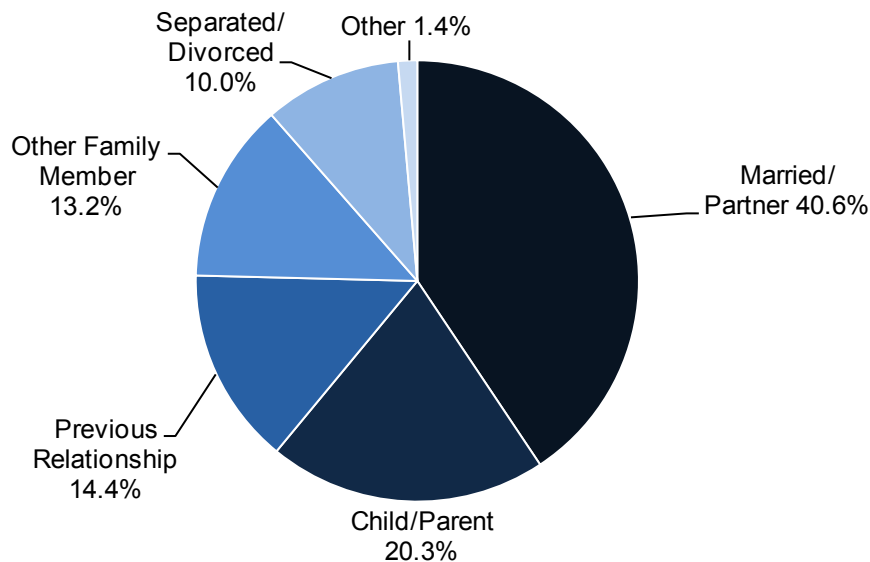
In New Zealand during 2011, there were 35,536 Police family violence investigations where an offence occurred, and where the relationship between the offender and the victim or complainant was recorded. In 40.6% of cases the victim/complainant was the spouse or partner of the offender, with a further 24.4% having been either previously married or in a relationship. In 20.3% of cases there was a parent/child relationship between the offender and the victim or complainant (**Table 86, Figure 127**).

Table 86. Relationship Between the Offender and the Victim in Police Family Violence Investigations where an Offence Occurred, New Zealand 2009–2011

Relationship	2009		2010		2011	
	Number	%	Number	%	Number	%
Married/Partner	16,193	42.9%	16,623	42.0%	14,445	40.6%
Child/Parent	6,582	17.5%	7,218	18.2%	7,219	20.3%
Previous Relationship	5,287	14.0%	5,616	14.2%	5,129	14.4%
Other Family Member	4,455	11.8%	4,819	12.2%	4,679	13.2%
Separated/Divorced	3,778	10.0%	3,900	9.8%	3,566	10.0%
Other	1,415	3.8%	1,419	3.6%	498	1.4%
Total	37,710	100.0%	39,595	100.0%	35,536	100.0%

Source: NZ Police

Figure 127. Relationship Between the Offender and the Victim in Police Family Violence Investigations where an Offence Occurred, New Zealand 2011



Source: NZ Police

Table 87. Police Family Violence Investigations Where Injuries were Reported by Injury Type, New Zealand 2009–2011

Injury Reported	2009		2010		2011	
	Number	%	Number	%	Number	%
None	15,473	19.87%	17,037	20.13%	17,684	20.40%
Minor Bruising	8,556	10.99%	8,758	10.35%	8,264	9.53%
Cuts	2,749	3.53%	3,003	3.55%	2,949	3.40%
Serious Bruising	1,062	1.36%	1,132	1.34%	1,026	1.18%
Medical Assistance	854	1.10%	931	1.10%	939	1.08%
Hospital	783	1.01%	874	1.03%	893	1.03%
Death	45	0.06%	31	0.04%	20	0.02%
Not Applicable/Null	48,341	62.08%	52,852	62.46%	54,929	63.35%
Total	77,863	100.00%	84,618	100.00%	86,704	100.00%

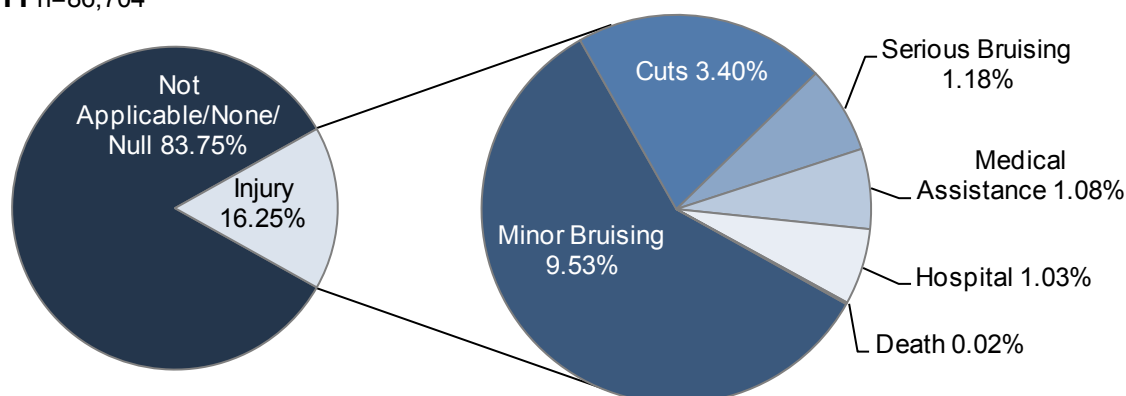
Source: NZ Police



## Family Violence Investigations Where Injuries Were Reported

In New Zealand during 2011, injuries were reported in 16.3% of Police family violence investigations. The most common injuries reported were minor bruising (9.5%), cuts (3.4%) and serious bruising (1.2%). In 893 cases (1.0%) a hospital attendance was required, and in 20 cases (0.02%) the incident resulted in a death (**Table 87, Figure 128**).

Figure 128. Police Family Violence Investigations where Injuries were Reported by Injury Type  
2011 n=86,704



Source: NZ Police

## Family Violence Investigations Where an Offence Occurred

Police family violence investigations during 2011 resulted in 39,935 offences being disclosed. While not all family violence investigations identified an offence and some investigations identified more than one offence, the nature of the offences disclosed gives some indication as to the types of incidents occurring. In this context, a very high proportion of the offences related to assaults, with property damage, breach of violence orders, and threatening behaviour also making a significant contribution (**Table 88**).

Table 88. Police Family Violence Investigations where an Offence Occurred by Offence Group, New Zealand 2009–2011

Offence Type	2009		2010		2011	
	Number	%	Number	%	Number	%
Assault Not Further Defined	12,012	30.5%	11,785	28.0%	11,307	28.3%
Common Assault	9,594	24.3%	10,824	25.7%	10,217	25.6%
Property Damage, NEC	4,071	10.3%	4,383	10.4%	4,308	10.8%
Breach of Violence Order	3,715	9.4%	3,983	9.5%	3,808	9.5%
Threatening Behaviour	3,842	9.7%	3,854	9.2%	3,590	9.0%
Trespass	1,771	4.5%	2,092	5.0%	1,849	4.6%
Disorderly Conduct, NEC	1,612	4.1%	1,941	4.6%	1,795	4.5%
Aggravated Sexual Assault	543	1.4%	593	1.4%	592	1.5%
Misuse Weapons/Explosives	440	1.1%	474	1.1%	404	1.0%
Harassment and Private Nuisance	355	0.9%	399	0.9%	352	0.9%
Other Offences	1,464	3.7%	1,716	4.1%	1,713	4.3%
Total	39,419	100.0%	42,044	100.0%	39,935	100.0%

Source: NZ Police



## Midland Region Distribution

### Family Violence Investigations in the Midland Region

During 2011, a large number of family violence investigations occurred in the 11 Police Areas which most overlapped the Midland Region catchments (**Table 89**). While these figures cannot be used to comment on trends in the prevalence of family violence during this period, they suggest that a large number of family violence incidents are occurring in the Midland Region each year, and that (based on NZ level figures) children are likely to be present at a large proportion of these.

Table 89. Family Violence Investigations for Police Areas Overlapping the Midland DHBs Catchments 2009–2011

Waikato			
Waikato Police District			
Police Area	2009	2010	2011
Hamilton City	4,629	5,184	4,847
Waikato East	1,058	1,200	1,365
Waikato West	1,841	2,110	2,158
Central Police District			
Police Area	2009	2010	2011
Ruapehu	460	575	548
Bay of Plenty			
Bay of Plenty Police District			
Police Area	2009	2010	2011
Eastern Bay of Plenty	1,219	1,301	1,546
Western Bay of Plenty	2,774	3,233	3,261
Lakes DHB			
Bay of Plenty Police District			
Police Area	2009	2010	2011
Taupo	1,690	1,639	1,726
Rotorua	2,046	2,081	2,310
Tairāwhiti			
Eastern Police District			
Police Area	2009	2010	2011
Tairāwhiti	2,028	2,470	2,765
Taranaki			
Central Police District			
Police Area	2009	2010	2011
New Plymouth	1,364	1,467	1,559
Taranaki Rural	533	606	705

Source: NZ Police; Note: See **Appendix 8** for Police Area Boundaries

## Local Policy Documents and Evidence-Based Reviews Relevant to Family Violence

In New Zealand there are a range of publications which address the prevention of child abuse and family violence. A large number of international reviews have also explored this issue. **Table 90** below summarises publications and evidence-based reviews which address family violence, while **Table 72** on **Page 316** summarises publications which focus primarily on child abuse and neglect.



Table 90. Local Policy Documents and Evidence-Based Reviews Relevant to Family Violence

Ministry of Health Policy Documents
<p>Ministry of Health. 2002. <b>Family Violence Intervention Guidelines Child and Partner Abuse</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/family-violence-intervention-guidelines-child-and-partner-abuse">http://www.health.govt.nz/publication/family-violence-intervention-guidelines-child-and-partner-abuse</a></p> <p>These guidelines are aimed at all health care professionals and provide a framework for safe and effective interventions to assist victims of violence and abuse. The report identifies health care providers as being in an ideal position to assist in the early identification of family violence because they come into contact with the majority of the population. Guidance on identification, assessment and response to suspected child abuse is provided. It is recommended that: all females aged 16 years and older should be screened routinely for physical and sexual abuse by a partner, using validated screening tools which are provided; all females aged 12 to 15 years who present with signs and symptoms indicative of abuse should be questioned, preferably in the context of a general psychosocial assessment; and males aged 16 years and older who present with signs and symptoms indicative of abuse by a partner should be questioned.</p>
Other Government Publications
<p>Carswell S, et al. 2010. <b>Evaluation of the Family Violence Interagency Response System (FVIARS). Summary of Findings</b>. Wellington: Ministry of Social Development. <a href="http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/family-violence-interagency-response-system/index.html">http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/family-violence-interagency-response-system/index.html</a></p> <p>The Family Violence Interagency Response System (FVIARS) is an interagency initiative (Child, Youth and Family, New Zealand Police and the National Collective of Independent Women's Refuges plus other government and community agencies) designed to more effectively manage cases of family violence reported to the Police with a key objective to enable collaborative, co-ordinated interagency responses to family violence. FVIARS was found to have improved relationships between agencies and allowed for local adaptability, efficient use of resources and a more accurate picture of individual cases and the possible risks of further violence. The evaluation identified the need for developing a results-based database to test outcomes, an interagency national-level monitoring and evaluation framework, success indicators across agencies, and a common risk assessment framework.</p>
<p>Martin J &amp; Levine M. 2010. <b>Safe@home Evaluation</b>. Wellington: Ministry of Social Development. <a href="https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/safe-at-home/evaluation-of-the-safe-at-home-project.html">https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/evaluation/safe-at-home/evaluation-of-the-safe-at-home-project.html</a></p> <p>Safe@home is a service provided by shine* (Safer Homes in New Zealand Everyday), an Auckland NGO that works with women and child victims of family violence identified as being at high risk from further domestic violence, to make homes safer from attack. The aim is to enable women and children to stay in their own homes, as an alternative to a refuge stay or relocation, by providing whatever security work or devices are deemed necessary. Thirty of the 50 women in the evaluation completed client information sheets before and after the security upgrade and were asked "On a scale of 1 to 7 where would you rate your current fear of risk of harm from the offender?" The average fear of harm score before the safety upgrade was 6.23 and 2.70 following the safety upgrade. The evaluation found that the project was well supported by all involved and there was good progress towards the goal of reducing participants' fear of continued violence. It recommends longer term follow up to assess whether this reduction in fear is maintained and whether it leads to longer term housing stability.</p>
Cochrane Systematic Reviews
<p>Ramsay J, et al. 2009. <b>Advocacy interventions to reduce or eliminate violence and promote the physical and psychosocial well-being of women who experience intimate partner abuse</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD005043.pub2 <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005043/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005043/frame.html</a></p> <p>This systematic review assessed the effects of advocacy interventions, conducted outside and within health care settings, on women experiencing intimate partner abuse. Advocacy interventions aim to help abused women by providing them with information and support to facilitate access to community resources. Ten trials, involving 1,527 participants (aged 15 to 61 years), were included, differing in duration (from 30 minutes to 80 hours), outcomes measures, and length of follow up. Intensive advocacy (12 hours or more duration) may help terminate physical abuse in women leaving domestic violence refuges at 12 to 24 months follow-up (OR 0.43, 95% CI 0.23 to 0.80), but not at up to 12 months follow-up. There were no significant changes in quality of life, psychological distress or depression measures. Meta-analyses of brief advocacy interventions (less than 12 hours duration) found an increased use of safety behaviours was consistent with the receipt of brief advocacy both at up to 12 months (WMD 0.60, 95% CI 0.14 to 1.06) and at 12 to 24 months (WMD 0.48, 95% CI 0.04 to 0.92) follow up. The evidence supports intensive advocacy decreasing physical abuse more than one to two years after the intervention for women already in refuges, and brief advocacy increasing the use of safety behaviours by abused women, but it is unknown whether less intensive interventions in healthcare settings are effective for women who still live with abusive partners.</p>

## Other Systematic Reviews

Nelson HD, et al. 2012. **Screening women for intimate partner violence: a systematic review to update the U.S. Preventive Services Task Force recommendation.** *Annals of Internal Medicine*, 156(11), 796-808.

This review assessed the effectiveness of screening (one large cluster RCT) and interventions for women in health care settings (6 RCTs) in reducing intimate partner violence (IPV) and related health outcomes, the diagnostic accuracy of screening instruments (15 studies evaluating 13 screening instruments), and adverse effects of screening and interventions (reported in 3 trials, 11 descriptive studies and 2 systematic reviews). Data were synthesised narratively. Six of the screening instruments were found to be a highly accurate. One large cluster RCT assessing the effectiveness of screening versus usual care indicated reduced IPV and improved health outcomes for both groups, but no statistically significant differences between the groups. Four trials of counselling reported reduced IPV and improved birth outcomes for pregnant women, reduced IPV for new mothers, and reduced pregnancy coercion and unsafe relationships for women attending family-planning clinics. Minimal adverse effects were identified with screening, but some women experienced discomfort, loss of privacy, emotional distress, and concerns about further abuse. The authors conclude that screening instruments designed for health care settings can accurately identify women experiencing IPV, although further evaluation of computerised screening, which may be more acceptable to women, is required. Effectiveness trials were limited by heterogeneity, lack of true control groups and use of self-reported measures but indicated that screening could reduce IPV and improve health outcomes, depending on the population screened and outcomes measured.

O'Campo P, et al. 2011. **Implementing successful intimate partner violence screening programs in health care settings: Evidence generated from a realist-informed systematic review.** *Social Science & Medicine*, 72(6), 855-66.

This realist-informed systematic review (involving the assessment of contextual characteristics of programmes to help explain programme success or failure) aimed to determine why and how universal intimate partner violence (IPV) screening programmes in health care settings are effective. Twenty-three studies of varying methodologies, assessing 17 programmes, were included. Programmes that took a comprehensive approach (incorporated multiple programme components, including institutional support, training and immediate access to support services) were successful in increasing IPV screening and disclosure/identification rates. The authors did not assess whether screening is effective in reducing IPV, arguing that it is not the best outcome to examine given the complexity of the screening process and numerous mediating factors between screening and a change or reduction in violence. A conceptual framework for IPV screening in health care settings is provided.

Murphy CM & Ting L. 2010. **The effects of treatment for substance use problems on intimate partner violence: A review of empirical data.** *Aggression and Violent Behaviour*, 15(5), 325-33.

This review assessed whether, and to what extent, treatment for substance use problems is associated with a reduction in intimate partner violence (IPV). Seven uncontrolled studies (approximately 600 participants), that assessed abusive behaviour before and after the intervention, and two small RCTs were included in the review. Overall, the prevalence of IPV was higher before substance use treatment than after treatment, and the risk for IPV after treatment was higher for relapsed versus remitted cases. Small to moderate effect sizes were observed for reductions in the frequency of IPV after substance use treatment, and large effects observed for reductions in psychological aggression. Reduced alcohol consumption and improved relationship functioning appeared to account for the observed reductions in partner abuse. Although generally supportive of substance use treatments, the findings are limited by the observational nature of most of the studies.

Feder G, et al. 2009. **How far does screening women for domestic (partner) violence in different health-care settings meet criteria for a screening programme? Systematic reviews of nine UK National Screening Committee criteria.** *Health Technology Assessment*, 13(16), 1-113.

This extensive review assessed whether the evidence base fulfilled selected UK National Screening Committee (NSC) criteria to support the implementation of screening for partner violence in health-care settings. Evidence was reviewed for seven criteria: the lifetime prevalence was sufficient for partner violence to be a significant public health problem; a valid screening tool for use in healthcare settings was identified ([the Hits, Insults, Threatens and Screams scale](#)); most women patients considered screening acceptable (range 35 to 99%), although potential harms were identified; evidence for effectiveness of advocacy is growing, and psychological interventions may be effective, although not necessarily for women identified through screening; no trials of screening programmes measured morbidity and mortality; acceptability screening among health-care professionals ranged from 15% to 95%; there were no cost-effectiveness studies. The reviewers found insufficient evidence to implement a screening programme for partner violence against women either in health services generally, or in specific clinical settings and recommendations for further research were made.

Rabin RF, et al. 2009. **Intimate Partner Violence Screening Tools: A Systematic Review.** *American Journal of Preventive Medicine*, 36(5), 439-45.e4.

This review assessed the data on screening tools for intimate partner violence tested in healthcare settings. Thirty-three articles, evaluating 21 intimate partner violence screening tools, were included. Sensitivities and specificities varied widely within and between the screening tools and no single IPV screening tool had well-established psychometric properties. The authors recommend that individual providers must determine the optimal balance between brevity and comprehensiveness and identify a need for further testing and validation in diverse populations using a universally accepted comparison measure.

Stover CS, et al. 2009. **Interventions for Intimate Partner Violence: Review and Implications for Evidence-Based Practice.** Professional Psychology - Research & Practice, 40(3), 223-33.

This review assessed intimate partner violence (IPV) treatment studies that used randomised case assignment, and had at least 20 participants per group. Studies were classified according to primary treatment focus: perpetrator (7 RCTs, 6,390 participants), victim (5 RCTs, approximately 1,306 participants), couples (5 studies, approximately 887 couples), or child-witness (3 RCTs, involving 75 pre-schoolers, 181 children aged 6 to 12 years, and 237 sexually abused children) interventions. There was limited evidence of the effectiveness of interventions on reducing repeat violence. Most interventions showed minimal benefit above arrest alone, and consistent recidivism rates of approximately 30% within six months. Couples treatment approaches that simultaneously addressed problems with substance abuse and aggression yielded the lowest recidivism rates (18% for Behavioural Couple Therapy versus 43% for individual substance misuse treatment at 12-month follow-up), supporting the benefit of integrating substance abuse treatments into interventions. The child witness to IPV intervention studies assessed reductions in symptoms of children exposed to violence. Several treatments showed promising effectiveness data, treatments involving the caregiver and child were the most effective. However, the generalisability of these findings is limited because continued residence with the perpetrator and maternal substance abuse were exclusion criteria.

Robinson L & Spilsbury K. 2008. **Systematic review of the perceptions and experiences of accessing health services by adult victims of domestic violence.** Health and Social Care in the Community, 16(1), 16-30.

This review qualitatively synthesised evidence on the perceptions and experiences of adult victims of domestic violence when accessing healthcare services. Ten qualitative studies were included. The data were thematically analysed to identify recurrent themes and to answer four questions: what factors enabled and/or discouraged participants to disclose abuse to health professionals; what responses from healthcare professionals did participants define as particularly helpful and/or unhelpful in accessing services; what barriers deterred participants from accessing services in a healthcare environment and what would help them gain access to health care; and in situations where abuse was disclosed, did participants feel that appropriate support and referral was provided. The studies identified that victims of domestic violence experienced difficulties when accessing healthcare services. Common themes included inappropriate responses by healthcare professionals; discomfort in the healthcare environment; perceived barriers to disclosing domestic violence, with many participants indicating they would like domestic violence to be proactively and routinely raised by healthcare professional; and a lack of confidence in the outcomes of disclosure to a health professional. The authors make a number of recommendations regarding staff training and service provision.

Whitaker DJ, et al. 2006. **A critical review of interventions for the primary prevention of perpetration of partner violence.** Aggression and Violent Behaviour, 11(2), 151-66.

This review assessed primary prevention programmes targeting partner violence. Eleven studies, comprising of five cluster RCTs, one randomised trial with no control group, three quasi-experimental and one pre-post test non-experimental study, were included. Interventions were mostly brief, universal, school-based programmes targeted middle or high-school aged students. Study quality was limited by short follow-up (only two studies collected data beyond six months), high attrition rates (retention ranged from 37.8% to 84%) and a lack of behavioural measures. Two of the four studies that measured behaviour found a positive intervention impact. The two effective trials had the most comprehensive interventions, using both individual-level curricula and other community-based interventions, and the most rigorous designs. The authors conclude that while primary prevention programmes show promise, further research is needed to assess their overall efficacy.

Wathen C & MacMillan HL. 2003. **Interventions for violence against women: Scientific review.** JAMA: The Journal of the American Medical Association, 289(5), 589-600.

This review assessed the effectiveness of interventions to detect and prevent violence against women from a primary care perspective, including screening to detect abuse or risk of abuse, and intervention programmes for women or their partners which can be accessed from primary care. Sixteen studies (approximate overall n=5084), made up of one systematic review, six RCTs, three quasi-randomised RCTs, one controlled clinical trial, four cohort studies and one non-equivalent control group study, were identified. No studies examining the effectiveness of screening where the end point was improved outcomes for women, as opposed to identification of abuse status, were identified. No high-quality studies assessing the effectiveness of a shelter stay in decreasing the incidence of violence were identified. One RCT identified that for women who had spent at least one night in a shelter, those who received a specific programme of advocacy counselling reported a decreased rate of re-abuse and improved quality of life during the 2-year follow-up in comparison with those receiving normal care (76% versus 89%). Only one high-quality intervention programme RCT was identified which did not show significant benefits. Most of the studies did not assess potential harms.

#### Other Relevant Publications

Koziol-McLain J, et al. 2009. **Hospital Responsiveness to Family Violence: 48 month follow-up evaluation report.** Auckland: Auckland University of Technology. <http://www.health.govt.nz/our-work/preventative-health-wellness/family-violence/reports-family-violence>

The Ministry of Health's Violence Intervention Programme (VIP) in DHBs seeks to reduce and prevent the health effects of violence and abuse through early identification, assessment and referral of victims presenting to health services. This report documents the development of DHB family violence systems responses based on four rounds of hospital audits from 2004 to 2008. The evaluation found that Partner Abuse Intervention Programme scores and Child Abuse and Neglect Intervention Programme scores had increased substantially over time, suggesting programme maturation and institutional change. The authors found that improvement was strongly linked to support and resources provided by the Ministry of Health and DHBs.



Flood M & Fergus L. 2008. **An Assault on Our Future: The impact of violence on young people and their relationships**. Sydney: White Ribbon Foundation. <http://www.whiteribbon.org.au/resources/research>

This Australian report on the impact of violence on young people and their relationships includes an assessment of the effects of living with adult violence on children and young people and the causes of violence against girls and young women, and a review of prevention among children and young people. A number of recommendations are made.

Graham-Bermann SA & Hughes HM. 2003. **Intervention for Children Exposed to Interparental Violence (IPV): Assessment of Needs and Research Priorities**. Clinical Child and Family Psychology Review, 6(3), 189-204.

This paper reviewed interventions aimed at reducing the negative outcomes in children exposed to interparental violence. The paper provides an overview of the development of interventions from the 1980s and reviews three more recent randomised intervention studies, with a treatment as usual or waiting list controls, in more detail. All three studies, which assessed well planned, intensive interventions that included parenting support for mothers, reported positive outcomes for mothers and children. Further research is required to confirm these findings and assess interventions in different populations.

Note: The publications listed were identified using the search methodology outlined in **Appendix 1**.



# MENTAL HEALTH







# ACCESS TO MENTAL HEALTH SERVICES: INTRODUCTION, METHODS AND EVIDENCE- BASED REVIEW TABLES

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## Introduction

### The Prevalence of Mental Health Issues in Children and Young People

Evidence suggests that prevention and early intervention programmes in child and youth mental health can result in better outcomes and financial benefits in terms of reduced long term mental health and addiction costs [310,311]. While specialist mental health services data reflect the severe end of the spectrum, there may also be important psychological problems at a subclinical level which would benefit from intervention, and may be precursors to adult disorders [311]. Minimising rates of psychiatric disorders and addressing the risk factors and life pathways that lead to these disorders has also been identified as a vital component of suicide prevention efforts [312].

In New Zealand, the community prevalence of mental health disorders in children is uncertain. The Dunedin Multidisciplinary Health and Development Study suggested that the prevalence of mental health problems increases as children move through adolescence [313]. The Youth '07 survey of 9,107 secondary school students in 2007 found that 11.2% of female students and 7.6% of male students showed indications of an underlying mental health problem and 14.7% of female students and 6.9% of male students reported significant symptoms of depression [314]. A recent review of international community surveys found that anxiety disorders were the most frequent conditions in children, followed by behavioural disorders, mood disorders, and substance use disorders [315]. Those with the most severe disorders tended to receive mental health services, but fewer than half of young people with current mental disorders received mental health specialty treatment. Among younger children, the type of mental health problem also varies by age and gender. For example, there are differential peak periods of specific subtypes of anxiety: separation anxiety and specific phobias in middle childhood; overanxious disorder in late childhood; social phobia in middle adolescence; and panic disorder in late adolescence. ADHD, conduct disorder and oppositional defiant disorder are all more common in boys.

Te Rau Hinengaro, The New Zealand Mental Health Survey, also found that the twelve month prevalence for any mental disorder was highest among the 16–24 year age group (28.6%, 95% CI 25.1–32.3) and declined across the age groups [316]. The lifetime prevalence of any psychiatric disorder was 41.6% (95% CI 37.4–45.9) for 16–24 year olds and half of all those with any psychiatric disorder reported the age of onset as 18 years or younger. Major depressive disorder and anxiety disorders (except obsessive compulsive disorder) were more common in females and alcohol and drug abuse and dependence were more common in males. The 12 month prevalence of any mental disorder was highest for Māori (29.5%, 95% CI 26.6–32.4), followed by Pacific people (24.4%, 95% CI 21.2–27.6) and non-Māori non-Pacific peoples (19.3%; 95% CI 18.0–20.6), although these differences reduced after adjustment for age, sex, education and household income [317]. Pacific peoples and Māori were significantly less likely than non-Māori non-Pacific peoples to have had a visit to any service for a mental health problem, suggesting that, relative to need, Pacific people and Māori are less likely than non-Māori non-Pacific peoples to have contact with services [317].

Risk factors for the development of mental disorders in children can be divided into child characteristics and family characteristics [34,315,318]. Child characteristics include gender, age, ethnicity, sexual orientation, physical health, alcohol, drugs, lifetime history of environmental exposures to toxins (lead), social environment and stressful life events. Family characteristics include parental education, age, social class, employment, psychiatric and medical history, family function and structure, and neighbourhood and



broader contextual influences on the health of children and their families. A parental history of mental disorders is one of the most consistent risk factors for the development of mental disorders in children.

## Contents of Access to Mental Health Services Chapters

The following three sections use data from the Project for the Integration of Mental Health Data (PRIMHD) to explore access to mental health outpatient, community and inpatient services for children and young people with specific mental health diagnoses. The diagnoses reviewed have been grouped into three clusters, which are loosely based on the age groups most commonly experiencing these conditions:

1. *Children 0–14 years*: Attention deficit hyperactivity disorder (ADHD), conduct/disruptive behaviour disorders, parent-child relational problems, autism/pervasive developmental disorders, learning disorders and intellectual disabilities.
2. *Children and young people 0–24 years*: Anxiety disorders, stress reaction/adjustment disorders, and eating disorders.
3. *Young people 15–24 years*: Schizophrenia and other psychotic disorders, personality disorders; depression, bipolar disorder and other mood disorders; and substance-related disorders (alcohol, cannabis, and other substances). This section also includes a small subsection which uses the National Minimum Dataset to explore hospital admissions for young people with mental health diagnoses.

In addition the In-Depth Topic commencing on **Page 368** reviews *Mental Health Issues in Children* in more detail, while the *Suicide and Intentional Self-Harm* section commencing on **Page 417** considers suicide and self-harm in young people.

## Cautions Relating to the Methodology Used

Because PRIMHD data is configured in a very different way to that contained in the National Minimum Dataset (hospital admissions) the reader is urged to review the methods section below, in order to become familiar with the strengths and limitations of PRIMHD, as well as the methodology used in the sections which follow.

Further, the information presented in this year's report differs from that presented in the NZCYES' 2009 Reports, because of differences in the data collections (PRIMHD vs. the Mental Health Information National Collection (MHINC)) and the coding systems used to code mental health diagnoses (in PRIMHD the data received were coded in DSM-IV, whereas in MHINC diagnoses were coded using ICD-10-AM).

### Data Source and Methods

#### Definition

1. *Number of Children and Young People Accessing Mental Health Services by Mental Health Diagnosis*
2. *Contacts with Mental Health Services for Children and Young People by Mental Health Diagnosis*
3. *Inpatient Bed Nights for Children and Young People by Mental Health Diagnosis*

#### Data Source

**Numerator:** Project for the Integration of Mental Health Data (PRIMHD)

**Individuals:** Number of individuals accessing mental health services who ever received a specified mental health diagnosis. Diagnoses included DSM-IV Alcohol-Related Disorders (305.00, 303.90, 291.89, 291.1, 291.2, 291.5, 291.3, 303.00, 291.0, 291.9, 291.81); Cannabis-Related Disorders (305.20, 304.30); Other Substance-Related Disorders (305.70, 304.40, 292.11, 292.12, 292.81, 292.9, 292.0, 292.89, 305.60, 304.20, 292.84, 305.30, 304.50, 305.90, 292.82, 305.50, 304.00, 304.60, 305.40, 304.10, 292.83, 304.80, 304.90); Schizophrenia (295.20, 295.10, 295.30, 295.60, 295.90); Other Psychotic Disorders (295.40, 295.70, 297.1, 298.8, 297.3, 293.81, 293.82, 298.9); Bipolar Disorders (296.80, 296.56, 296.55, 296.51, 296.52, 296.53, 296.54, 296.50, 296.40, 296.46, 296.45, 296.41, 296.42, 296.43, 296.44, 296.40, 296.66, 296.65, 296.61, 296.62, 296.63, 296.64, 296.60, 296.7, 296.06, 296.05, 296.01, 296.02, 296.03, 296.04, 296.00, 296.89); Depression (296.36, 296.35, 296.31, 296.32, 296.33, 296.34, 296.30, 296.26, 296.25, 296.21, 296.22, 296.23, 296.24, 296.20, 311); Other Mood Disorders (300.4, 301.3, 293.83, 296.90); Anxiety Disorders (300.02, 300.21, 300.01, 300.22, 300.29, 300.23, 300.3, 309.81, 308.3, 293.84, 300.00); Adjustment Disorders (309.9, 309.24, 309.0, 309.3, 309.28, 309.4); Eating Disorders (307.1, 307.51, 307.50); Personality Disorders (301.0, 301.20, 301.22, 301.7, 301.83, 301.50, 301.81, 301.82, 301.6, 301.4, 301.9); Mental Retardation (317, 318.0, 318.1, 318.2, 319); Autism/Pervasive Developmental Disorders (299.00, 299.80, 299.10); Attention Deficit Hyperactivity Disorder (314.01, 314.00, 314.9); Conduct/Disruptive Behaviour Disorders (312.81, 312.82, 312.89, 313.81, 312.9); Learning Disorders (315.00, 315.1, 315.2, 315.9); Parent-Child Relational Problem (V612.0).



**Contacts:** Individual contacts, attendances, groups or day programmes reported to PRIMHD. Examples of contacts include mental health crisis attendances, individual treatment or group program attendances, healthcare coordination contacts, support needs assessment attendances, court liaison attendances, day program attendances, home based care contacts, and contacts with family/Whānau.

**Bed Nights:** Where a client occupies a bed at midnight in a ward or residential facility. Examples of bed nights include acute, sub-acute and respite mental health inpatient bed nights; mental health maximum, medium and minimum secure inpatient bed nights; community mental health residential bed nights.

**Denominator:** Statistics NZ Projected Population

#### Notes on Interpretation

**Note 1:** PRIMHD is the Ministry of Health's national database covering the provision of publicly funded secondary mental health and alcohol and drug services. Commencing on July 1 2008, it integrates information from the previous Mental Health Information National Collection (MHINC) and the MH-SMART data collection. It includes secondary inpatient, outpatient and community care provided by hospitals and non-Government organisations (although data from NGOs is incomplete). It does not include information on outpatient visits to paediatricians, and in the context where local referral pathways result in children seeing a paediatrician rather than a mental health professional for behavioural or emotional problems, this may significantly underestimate the prevalence of mental health issues (e.g. autism, ADHD, learning disorders) in the community. Referral pathways (i.e. the relative balance between paediatrics vs. mental health services) are likely to vary both by region (depending on the availability of specialist child and youth mental health services) and by age (with the role of the paediatrician decreasing as adolescence approaches). As paediatric outpatient data is currently not coded by diagnosis, the workload of community/developmental paediatricians in this context remains invisible, making it difficult to assess for children in particular, the underlying prevalence of mental health conditions in the community. For adolescents/young adults however, the PRIMHD may provide a better reflection of access to secondary services for mental and behavioural issues.

**Note 2:** The PRIMHD records principal, secondary and provisional diagnoses for clients at each contact, although in a large number of cases the diagnosis was either missing or deferred. In this section, children/young people have been assigned a diagnosis, if they ever received this diagnosis (principal/secondary/provisional) in the period under review (i.e. numbers = total number of individuals receiving the diagnosis; rates = total number of individuals with the diagnosis divided by the number in the population at the mid-point of this period (i.e. 2010)). Contacts and bed-nights have then been ascribed to individuals with a particular diagnosis, irrespective of the reason the person sought care (e.g. contacts for ADHD = number of contacts for children ever diagnosed with ADHD (including those where the consultation related to another diagnoses), rather than the number of contacts specifically addressing ADHD issues. Where individuals were assigned multiple diagnoses (e.g. ADHD and a conduct disorder), they appear twice in the analysis. As a result, the figures in the tables which follow do not add to 100%, making it difficult to assess the contribution each diagnoses made to the total volume of services accessed during this period.

**Note 3:** In PRIMHD each diagnosis has a specified start and finish date. A number of children and young people accessing services during 2009–2011 however had a diagnosis with a specified start date which began in 2008, but which continued through the period under review. In addition, it is likely that a number of children and young people accessing services during 2009–2011 had their diagnosis deferred until early 2012, even though their care during 2009–2011 related to this diagnosis. Thus in this analysis, all children and young people have been included if they accessed mental health services during 2009–2011 (with year being determined by the service start date rather than the finish date). However, the diagnoses assigned to these children and young people have been drawn from PRIMHD diagnostic data with diagnosis start dates extending from mid 2008 to mid 2012.

**Note 4:** Where an individual accessed services on multiple occasions, and was thus recorded as having multiple ages, the mean age (averaged across the 3-year period) has been used, with the age being taken as the age of the patient at the activity start date. All activities for patients where their age at the activity start date was 25+ years have been excluded.

Further detail on the methodology used is available from the NZCYES on request.

## Local Policy Documents and Evidence-Based Reviews Relevant to Mental Health Issues in Children and Young People

In New Zealand, there are number of publications which address mental health issues in children and young people. These include publications which focus on specific mental health conditions, as well as those which consider the delivery of mental health services more generally. These are summarised in **Table 91**, along with a range of guidelines and reviews which consider the effectiveness of interventions in the overseas context. While a large number of international reviews have considered the effectiveness of individual drug and psychological therapies, it is beyond the scope of the table below to provide a comprehensive coverage of this literature.



In addition, **Table 112** on **Page 414** provides an overview of the literature on the prevention of drug use in young people, while **Table 48** on **Page 234** addresses alcohol use, and **Table 116** on **Page 423** considers suicide prevention in young people. Finally, the In-Depth Topic **Mental Health Issues in Children** commencing on **Page 368** provides a more detailed review of the literature as it relates to children aged 0–14 years.

Table 91. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention or Management of Mental Health Issues in Children and Young People

Ministry of Health Policy Documents
<p>Ministry of Health. 2010. <b>Mental Health and Addiction Action Plan 2010</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/mental-health-and-addiction-action-plan-2010">http://www.health.govt.nz/publication/mental-health-and-addiction-action-plan-2010</a></p> <p>This document builds on Te Tāhuhu and Te Kōkiri, the national strategy and action plan for mental health and addictions to 2015, identifying the key priorities for Ministry-led activities. Integrating efforts across government for better mental health outcomes in children is one of four prioritised actions. The aims are for more families and whānau of children with conduct and behavioural problems to have access to effective interventions through child and adolescent mental health services (CAMHS); more vulnerable families and whānau to have access to effective positive parenting advice through a range of primary care settings to reduce children's behavioural, emotional and mental health problems; and provision for Māori to access parenting programmes which have been adapted to reflect Māori cultural concepts and values to reduce their children's behavioural, emotional and mental health problems. Several implementation milestones have been developed.</p>
<p>Ministry of Health. 2007. <b>Te Raukura: Mental health and alcohol and other drugs: Improving outcomes for children and youth</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/te-raukura-mental-health-and-alcohol-and-other-drugs-improving-outcomes-children-and-youth">http://www.health.govt.nz/publication/te-raukura-mental-health-and-alcohol-and-other-drugs-improving-outcomes-children-and-youth</a></p> <p>This report highlights the issues for child and youth mental health and alcohol and other drug (AOD) services in New Zealand. It identifies the key priorities for action with the aim of increasing the pace of development and improving outcomes for child and youth mental health and reducing inequalities and improving access to services for Māori and Pacific peoples from primary to tertiary care.</p>
<p>Ministry of Health. 2005. <b>Te Tāhuhu: Improving Mental Health 2005–2015: The Second New Zealand Mental Health and Addiction Plan</b> Wellington: Ministry of Health.</p> <p>Ministry of Health. 2006. <b>Te Kōkiri: The Mental Health and Addiction Action Plan 2006–2015</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/our-work/mental-health-and-addictions/mental-health/mental-health-strategic-direction">http://www.health.govt.nz/our-work/mental-health-and-addictions/mental-health/mental-health-strategic-direction</a></p> <p>The Te Tāhuhu report sets out Government policy and priorities for mental health and addiction for 2005 to 2015. Te Kōkiri sets out the action plan and includes a mixture of high level initiatives and specific operational actions. Building mental health services including increasing services that are funded for children and young people is identified as a key challenge. A number of priority actions are identified including reviewing and updating the framework for child and youth mental health and addiction service provision; improving access; contributing to intersectoral projects; and implementing initiatives to develop child/youth/whānau participation in service development and evaluation.</p>
<p>Ministry of Health. 2008. <b>Te Puāwaiwhero: The Second Māori Mental Health and Addiction National Strategic Framework 2008–2015</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/te-puawaiwhero-second-māori-mental-health-and-addiction-national-strategic-framework-2008-2015">http://www.health.govt.nz/publication/te-puawaiwhero-second-māori-mental-health-and-addiction-national-strategic-framework-2008-2015</a></p> <p>Te Puāwaiwhero provides the framework to guide the mental health and addiction sector towards the overall aim of the strategy, which is whānau ora – Māori families supported to reach their maximum health and wellbeing. It can be used to inform those implementing the Te Kōkiri action plan. The report identifies three key principles: prioritise Māori; build on gains; and responsiveness to Māori. Priorities are identified as: promotion and prevention; early intervention and primary health care; and specialist services. Prioritised actions for 2008 to 2015 are described.</p>
Cochrane Systematic Reviews
<p>Merry SN, et al. 2011. <b>Psychological and educational interventions for preventing depression in children and adolescents</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003380.pub3 <a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003380/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003380/frame.html</a></p> <p>This review assessed the effectiveness of psychological and/or educational interventions (mostly based on cognitive behavioural therapy) in preventing the onset of depressive disorder in children and adolescents. Fifty-three RCTs (14,406 participants) were included in the analysis, 16 (3,240 participants) of which reported outcomes on depressive diagnosis. Allocation concealment was unclear in most of the studies. There was some evidence supporting targeted and universal depression prevention programmes in preventing the onset of depressive disorders compared with no intervention (risk difference (RD) -0.09; 95% CI -0.14 to -0.05 immediately post-intervention for 15 studies). Differences were sustained at 12 months but less clear on longer term follow-up. Further research is recommended to determine the most effective programmes.</p>



Shepperd S, et al. 2009. **Alternatives to inpatient mental health care for children and young people**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD006410.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsystrev/articles/CD006410/frame.html>

This review assessed the effectiveness, acceptability and cost of mental health services that provide an alternative to inpatient care for children and young people, and to identify the range and prevalence of different services that seek to avoid inpatient care. Seven RCTs (799 participants) evaluating four models of care: multisystemic therapy (MST) at home, specialist outpatient service, intensive home treatment and intensive home-based crisis intervention ('Homebuilders' model for crisis intervention) were included. The control groups received care in inpatient or equivalent settings. MST at home was associated with some behavioural improvement, sustained at four month follow up, and fewer days off school and in hospital. Small improvements were identified in the 'Homebuilders' crisis intervention study but no significant differences were found for specialist outpatient services or intensive home treatment. No evidence assessing several service models was identified, including intensive day treatment, and the authors make suggestions on evaluating service models with prospective audits with baseline measurements if RCTs are not feasible.

Larun L, et al. 2009. **Exercise in prevention and treatment of anxiety and depression among children and young people**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD004691.pub2  
<http://www.mrw.interscience.wiley.com/cochrane/clsystrev/articles/CD004691/frame.html>

This review assessed the effectiveness of exercise interventions in reducing or preventing anxiety or depression in children and young people up to 20 years of age. Sixteen studies (1,191 participants) comparing vigorous exercise with no intervention or low-intensity exercise, or exercise with psychosocial interventions were included. While there were small, non-significant effects in favour of exercise compared to no intervention (five trials) in reducing depression and anxiety scores in the general population of children and adolescents, no differences were identified in comparing the intensity of exercise or exercise in comparison to psychosocial interventions. The heterogeneity and small number of studies limited the ability to draw conclusions. The effect of exercise for children in treatment for anxiety and depression is unknown due to the scarce evidence base.

Pratt BM & Woolfenden S. 2009. **Interventions for preventing eating disorders in children and adolescents**. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD002891  
<http://www.mrw.interscience.wiley.com/cochrane/clsystrev/articles/CD002891/frame.html>

This review assessed the effectiveness of interventions aimed at preventing eating disorders in children and adolescents by promoting healthy eating attitudes and behaviours; promoting protective psychological factors; promoting satisfactory physical health; having a long-term, sustainable, and positive impact on mental and physical health; and ensuring safety in relation to possible harmful consequences on mental or physical health. Twelve RCTs (3,092 children and adolescents) met inclusion criteria. Only two programmes involving training in media literacy and advocacy skills showed a significant pooled effect. Pooled results of interventions addressing eating attitudes and behaviours, improvement in self-esteem and eating disorder awareness indicated no significant effects. It was not possible to draw firm conclusions about the effect of prevention programmes although none of the pooled comparisons indicated evidence of harm.

#### Other Systematic Reviews

Farruggia S, et al. 2010. **The Effectiveness of Youth Mentoring Programmes in New Zealand**. Auckland: University of Auckland, Ministry of Youth Development, Health Research Council of New Zealand.  
<http://www.myd.govt.nz/documents/policy-and-research/mentoring-syst-rev-final.pdf>.

This systematic review assessing the effectiveness of youth mentoring programmes identified 26 studies. Study methodology varied and quality was mostly poor and susceptible to bias. Few studies included a control group. Only 35% of the 23 schemes active at the time of the review had conducted an evaluation. Overall, 88% of the programmes included in the review showed some level of effectiveness but conclusions were tentative due to the varied quality of the research. Programmes that focused on psychological and interpersonal goals were more effective than programmes focused on educational, behavioural, vocational or cultural goals and a variety of more effective programme features were identified. Half of the 14 programmes with Māori mentees had ignored Māori cultural frameworks.

Kavanagh J, et al. 2009. **Inequalities and the mental health of young people: a systematic review of secondary school-based cognitive behavioural interventions**. London: University of London, Institute of Education, Social Science Research Unit, EPPI-Centre. <http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2418&>

This systematic review assessed the effectiveness of health promotion interventions, based on cognitive behavioural therapy (CBT) techniques, in secondary schools for preventing and reducing suicidality, depression and anxiety, and reducing inequalities in mental health in young people (aged 11 to 19 years). Seventeen RCTs (n=5,385, range 17 to 1,266) were included in the review. There was a statistically significant reduction in depression symptoms for all time periods up to three months post intervention (SMD -0.21, 95% CI -0.35 to -0.07; 14 RCTs assessed the period up to four weeks). The trend remained positive, but non-significant at six and 12 months. Removal of heterogeneous studies showed reductions in anxiety up to four weeks (SMD -0.23, 95% CI -0.45 to -0.02; five RCTs) and at six months follow-up (SMD -0.18, 95% CI -0.35 to -0.01; three RCTs). None of the included studies reported on suicidality outcomes. Few studies provided data that could be used to examine the impact of interventions on inequalities. The authors conclude that CBT delivered to young people in secondary schools can reduce the symptoms of depression and anxiety but there is no evidence to assess the impact on suicidal thinking or behaviour. It is recommended that providers: consider using adequately trained and supported school staff to provide interventions; consider providing programmes of 10 or more weeks duration; be aware of, and consider monitoring, potential adverse effects are made.

Williams SB, et al. 2009. **Screening for Child and Adolescent Depression in Primary Care Settings: A Systematic Evidence Review for the US Preventive Services Task Force.** Pediatrics, 123(4), e716-e35.

This systematic review assessed the health effects of routine primary care screening for major depressive disorder among children and adolescents aged seven to 18 years. No studies that directly examined the health outcomes of screening children and adolescents for depression were identified, and it is therefore unknown whether the use of systematic screening improves identification, treatment, and outcomes of depression over standard identification methods. Eighteen RCTs assessed the efficacy of SSRIs and or psychotherapy in screen-detected children and adolescents. Pooled analysis of nine SSRI RCTs was undertaken, indicating higher response rates among those treated with SSRIs (absolute risk difference in the response rate between treatment and intervention groups 12%, 95% CI 7 to 16). Nine of the 10 psychotherapy trials found that treated patients had higher short-term response rates or a greater reduction in depression symptoms after interventions compared with a variety of control conditions. SSRI treatment was associated with a small absolute increase in risk of suicidality (suicidal ideation, preparatory acts, or attempts), and the authors advise that this treatment should only be considered when appropriate clinical monitoring is possible.

#### Evidence-Based Guidelines

Best Practice: Special Edition. 2010. **Depression in young people.** Best Practice Journal.  
<http://www.bpac.org.nz/magazine/2010/youngdep/youngdep.asp?section=1>.

These evidence-based guidelines focus on the identification and management of depression in children and adolescents in primary care and are based on the New Zealand Guidelines Group 2008 guidelines for the management of depression in primary care. The guidelines include a section on the recognition and assessment of common mental disorders in young people, highlighting the importance of assessment of suicide risk at initial presentation and ongoing monitoring; recognition of severe depression; immediate referral to secondary care for all those with serious suicidal intent, psychotic symptoms or severe self-neglect; assessing psychosocial as well as physical wellbeing at each interaction; and endeavouring to build a supportive and collaborative relationship with the young person and their family/whānau, recognising cultural identity and health care preferences. The HEEADSSS and HEARTS structured clinical assessments are recommended and outlined. It is recommended that mild or moderate depression should typically be managed in primary care; a strength-based approach should be used; involvement of support services such as school guidance counsellors should be considered; those with mild depression can be directed to <http://www.thelowdown.co.nz/>; antidepressant treatment in a young person (less than 18 years) should not be initiated in primary care without consultation with a child and adolescent psychiatrist. Referral should be made if there is no improvement after six to eight weeks of treatment, or at any stage if there is serious suicidal intent, psychotic symptoms or severe self-neglect.

Ministries of Health and Education. 2008. **New Zealand Autism Spectrum Disorder Guideline.** Wellington: Ministry of Health. <http://www.health.govt.nz/publication/new-zealand-autism-spectrum-disorder-guideline>

This guideline provides evidence-based guidance to all those involved in the care of adults and children with autism spectrum disorders (ASD) in New Zealand, including health and education professionals, funders and carers. It covers the identification and diagnosis of ASD, and the ongoing assessment and access to services and interventions for individuals with ASD, with the aim of assisting informed decision-making to improve the health, educational and social outcomes for individuals with ASD.

Ministry of Health. 2001. **New Zealand Guidelines for the Assessment and Treatment of Attention-Deficit/Hyperactivity Disorder.** Wellington: Ministry of Health. <http://www.health.govt.nz/publication/new-zealand-guidelines-assessment-and-treatment-attention-deficit-hyperactivity-disorder>

This evidence-based guideline aims to assist New Zealand health professionals in the assessment and treatment of patients with ADHD. It has not been reviewed since initial publication in 2001. It contains sections on clinical assessment (including assessment and management in schools), and treatment options (medication, psychosocial interventions, support services and other therapies). The guideline highlights the importance of incorporating relevant whānau/cultural aspects, using a multidisciplinary approach, and addressing co-morbidities.

#### Other Relevant Documents

Ministry of Health. 2012. **Healthy Beginnings: Developing Perinatal and Infant Mental Health Services in New Zealand.** Wellington: Ministry of Health. <http://www.health.govt.nz/publication/healthy-beginnings-developing-perinatal-and-infant-mental-health-services-new-zealand>

This report provides evidence informed guidance on ways to address the mental health and alcohol and other drug (AOD) service needs of mothers and infants and their families, for planners, funders and provider of perinatal and infant mental health and AOD services. The aims are to promote good practice; assist, over time, with the achievement of greater consistency in the quality and delivery of services; and provide guidance on cost-effective models of care. The need for intersectoral collaboration; and a whānau ora approach for Māori, is recognised.

<p>Mental Health Commission. 2011. <b>A literature review: Prevention and possibilities. A focus on children and youth.</b> Wellington: Mental Health Commission. <a href="http://www.mhc.govt.nz/">http://www.mhc.govt.nz/</a>.</p> <p>This report sought to influence planners and funders in targeting funding at programmes aimed at achieving wellbeing for at risk children and young people, and reducing long-term mental health and addiction costs. The report included a brief literature review on prevention in mental health in New Zealand and internationally, with a focus on cost-effectiveness. Findings included that there were financial benefits to prevention and early intervention; prevention initiatives were underdeveloped; and the determinants of mental distress, such as unemployment, poor housing and poverty, should be considered in prevention activities. The Commission makes a number of recommendations for establishing a 'prevention culture' within District Health Boards including: maternal mental health and addiction services; developing expertise in primary health to ensure early identification; 'wraparound' community-based services which strengthen whānau/family resilience; and collaboration with other agencies to address the determinants of mental distress.</p>
<p>Ministry of Health. 2010. <b>Let's get real: Implementation plan.</b> Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/lets-get-real-implementation-plan">http://www.health.govt.nz/publication/lets-get-real-implementation-plan</a></p> <p>Ministry of Health. 2008. <b>Let's get real: Real Skills for people working in mental health and addiction.</b> Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/lets-get-real-real-skills-people-working-mental-health-and-addiction">http://www.health.govt.nz/publication/lets-get-real-real-skills-people-working-mental-health-and-addiction</a></p> <p>The <i>Let's Get Real</i> framework and implementation plan describes the knowledge, skills and attitudes required by those working in mental health and addiction treatment services. <i>Let's Get Real</i> aims to strengthen shared understanding; affirm best practice; complement the HPCA Act 2003; improve transferability of knowledge, skills and attitudes; enhance effective workforce development; and increase accountability. The implementation roll out from 2009–2013 is described and a variety of implementation resources are available at <a href="http://www.tepou.co.nz/supporting-workforce/lets-get-real">http://www.tepou.co.nz/supporting-workforce/lets-get-real</a>.</p>
<p>Office of the Prime Minister's Science Advisory Committee. 2011. <b>Improving the Transition: Reducing Social and Psychological Morbidity During Adolescence. A report from the Prime Minister's Chief Science Advisor.</b> Auckland: Office of the Prime Minister's Science Advisory Committee. <a href="http://www.pmcsc.org.nz/">http://www.pmcsc.org.nz/</a>.</p> <p>This report to the Prime Minister, by a multidisciplinary panel of experts, focused on how to improve outcomes for young people in New Zealand in their transition from childhood to adulthood. It consists of a review of relevant peer-reviewed scientific literature on a range of topics, including transitions in the life course, life skills education and depression in young people, and a set of key recommendations. Recommendations include: a primary prevention or 'life-course' approach to reducing the morbidity associated with adolescence, applied early in life; additional capacity in the mental health work force, particularly those specifically trained to work with children and adolescents, to provide both screening and treatment; and a strategic national approach to reducing depression in adolescence. The report found that although the application of the evidence base to policy formation and programme development would lead to better outcomes for young people, many programmes that have been introduced are unlikely to succeed as they were not supported by the evidence-base. The authors identify the appropriate monitoring of effectiveness and cost effectiveness of all programmes within New Zealand, as a key challenge.</p>
<p>Dowell A, et al. 2009. <b>Evaluation of the Primary Mental Health Initiatives: Summary report 2008.</b> Wellington: University of Otago and Ministry of Health. <a href="http://www.health.govt.nz/publication/evaluation-primary-mental-health-initiatives-summary-report">http://www.health.govt.nz/publication/evaluation-primary-mental-health-initiatives-summary-report</a></p> <p>This report describes the evaluation of the Ministry of Health-funded Primary Mental Health Initiatives (PMHIs). The evaluation found that up to 80% of patients benefitted from the PMHIs. Improvement was sustained at six months in initiatives that collected sufficient data. Although the evaluation found that mental health needs arising from mild to moderate common mental health conditions, including those involving social complexity, could be addressed by primary care, the needs of children and young people were not sufficiently met by the PMHIs, as over half did not offer services to this group.</p>
<p>MEDSAFE. 2009. <b>Selective serotonin re-uptake inhibitors (SSRI) in children and adolescents.</b> Prescriber Update, 30(1), 1.</p> <p>Royal Australian and New Zealand College of Psychiatrists. 2005. <b>Clinical Guidance on the use of Antidepressant Medications in Children and Adolescents.</b> <a href="http://www.ranzcp.org/Files/ranzcp-attachments/Resources/College_Statements/Practice_Guidelines/Clinical_Guidance_on_the_use_of_Antidepressant_med.aspx">http://www.ranzcp.org/Files/ranzcp-attachments/Resources/College_Statements/Practice_Guidelines/Clinical_Guidance_on_the_use_of_Antidepressant_med.aspx</a></p> <p>Brief MEDSAFE guidance on the use of SSRI medication in children and adolescents was published in 2009 following a review of their use. The guidance highlights that all SSRIs have consistently been associated with an increase in suicidality in meta-analyses of clinical trials of the use of SSRIs to treat major depressive disorder (MDD) in children and adolescents, and that the only antidepressant with overall data indicating efficacy better than placebo in children and adolescents is fluoxetine. Informed consent must be obtained before initiating an SSRI for MDD in children or adolescents. All patients diagnosed with MDD should be monitored closely for suicidality, and antidepressant treatment should only be considered in consultation with specialist services. Particular care should be taken in the period shortly after initiating antidepressant treatment, after a change in dosage, and after discontinuing treatment. The Royal Australian and New Zealand College of Psychiatrists guidance provides a general summary of the use of antidepressants in children and adolescents, which endorsed MEDSAFE advice.</p>

Ministries of Education, Health, Justice and Social Development. 2007. **Inter-agency Plan for Conduct Disorder/Severe Antisocial Behaviour 2007-2012**. Wellington: Ministry of Social Development.

<http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/policy-development/anti-social-behaviour/index.html>

This inter-agency plan was developed to establish a more comprehensive and effective cross-government approach to conduct disorder/severe antisocial behaviour in children (behaviours which are defined as severe, persistent across contexts and over time, and which involve repeated violations of societal and age-appropriate norms). The report identifies key challenges facing services, including inconsistent mechanisms for identifying and determining eligibility for services, gaps in the availability of specialist services, and lack of alignment with the evidence base in some programmes. It sets out the four key proposals for 2007 to 2012: establishing leadership, co-ordination, monitoring and evaluation; transitioning existing service provision to evidence-based, best-practice interventions; establishing an intensive, comprehensive behavioural service for three to seven year-olds; and building a shared infrastructure for the delivery of specialist behavioural services.

Ministry of Health. 1999. **Better Times: Contributing to the mental health of children and young people**. Wellington: Ministry of Health. <http://www.health.govt.nz/publication/better-times-contributing-mental-health-children-and-young-people>

This document was developed as part of the Strengthening Families strategy - an intersectoral initiative led by the Ministries of Health and Education and the Department of Social Welfare in consultation with other key government and community agencies, aimed at achieving better outcomes for children and improving the wellbeing of families. The report aims to assist all those working with children and young people to recognise and support children with mild and moderate mental health problems and make appropriate referrals to specialists when necessary.

Note: The publications listed were identified using the search methodology outlined in **Appendix 1**



# ACCESS TO MENTAL HEALTH SERVICES IN CHILDREN AGED 0–14 YEARS

## Introduction

The following section use data from the Project for the Integration of Mental Health Data (PRIMHD) to explore access to mental health outpatient, community and inpatient services for children aged 0–14 years with the following mental health diagnoses:

- Attention deficit hyperactivity disorder (ADHD)
- Conduct/ disruptive behaviour disorders
- Parent-child relational problems
- Autism/pervasive developmental disorders
- Learning disorders and intellectual disabilities

These diagnoses were selected as they were the most commonly assigned to children who were recorded as accessing mental health services in the PRIMHD. In addition, the In-depth Topic commencing on **Page 368** reviews mental health issues for children aged 0–14 years in more detail.

### Data Source and Methods

Information on the Project for the Integration of Mental Health Data (PRIMHD) and the DSM-IV codes used in this analysis is provided in the *Access to Mental Health Services: Introduction* section on **Page 351**.

Note 1: Because PRIMHD data is configured in a very different way to that contained in the National Minimum Dataset (hospital admissions) the reader is urged to review the methods section on **Page 351**, in order to become familiar with the strengths and limitations of PRIMHD.

Note 2: The information presented in this year's report differs from that presented in the NZCYES' 2009 Reports, because of differences in the data collections (PRIMHD vs. the Mental Health Information National Collection (MHINC)) and the coding systems used to code mental health diagnoses (in PRIMHD the data received were coded in DSM-IV, whereas in MHINC diagnoses were coded using ICD-10-AM).

## New Zealand Distribution

### Numbers Accessing Services

In New Zealand during 2009–2011, attention deficit hyperactivity disorder (ADHD) was the most frequent diagnosis assigned to children accessing mental health services, followed by conduct/disruptive behaviour disorders and parent-child relational problems. In interpreting these figures it must be remembered that many children with these diagnoses access paediatric outpatient services, and that this workload is not captured by PRIMHD. Thus the rates given in **Table 95** are likely to underestimate the prevalence of these conditions in the community.

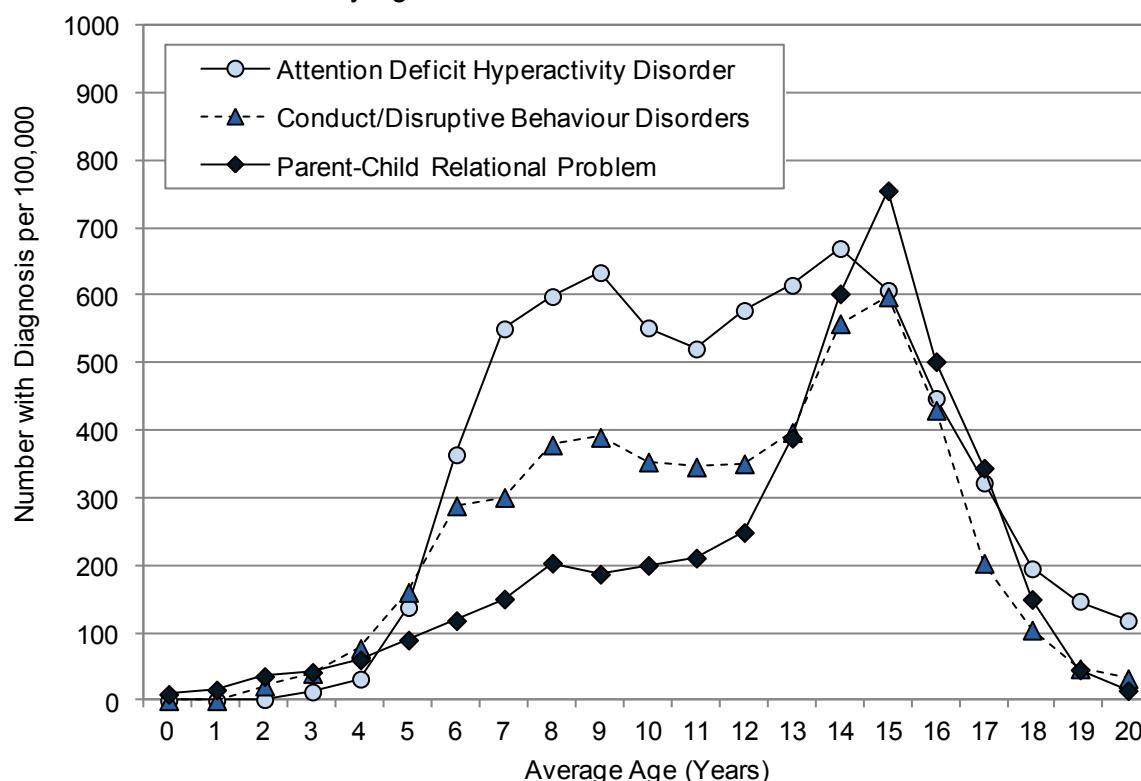
### Numbers Accessing Services by Diagnosis and Age

*Attention Deficit Hyperactivity Disorder:* In New Zealand during 2009–2011, the number of children accessing mental health services with a diagnosis of ADHD increased rapidly during early to mid childhood (four to eight years), reached a peak at nine years of age and then declined briefly, before increasing again to reach a second peak at 14 years. Numbers then tapered off rapidly during the mid to late teens (**Figure 129**).

*Conduct/Disruptive Behaviour Disorders and Parent-Child Relational Problems:* During 2009–2011, the number of children accessing mental health services with a conduct/disruptive behaviour disorder increased rapidly between three and nine years of age and then remained relatively static until 12 years. Numbers then rose relatively rapidly to reach a peak at 15 years, before tapering off again during the late teenage years. Similar patterns were seen for those with parent-child relational problems (**Figure 129**).

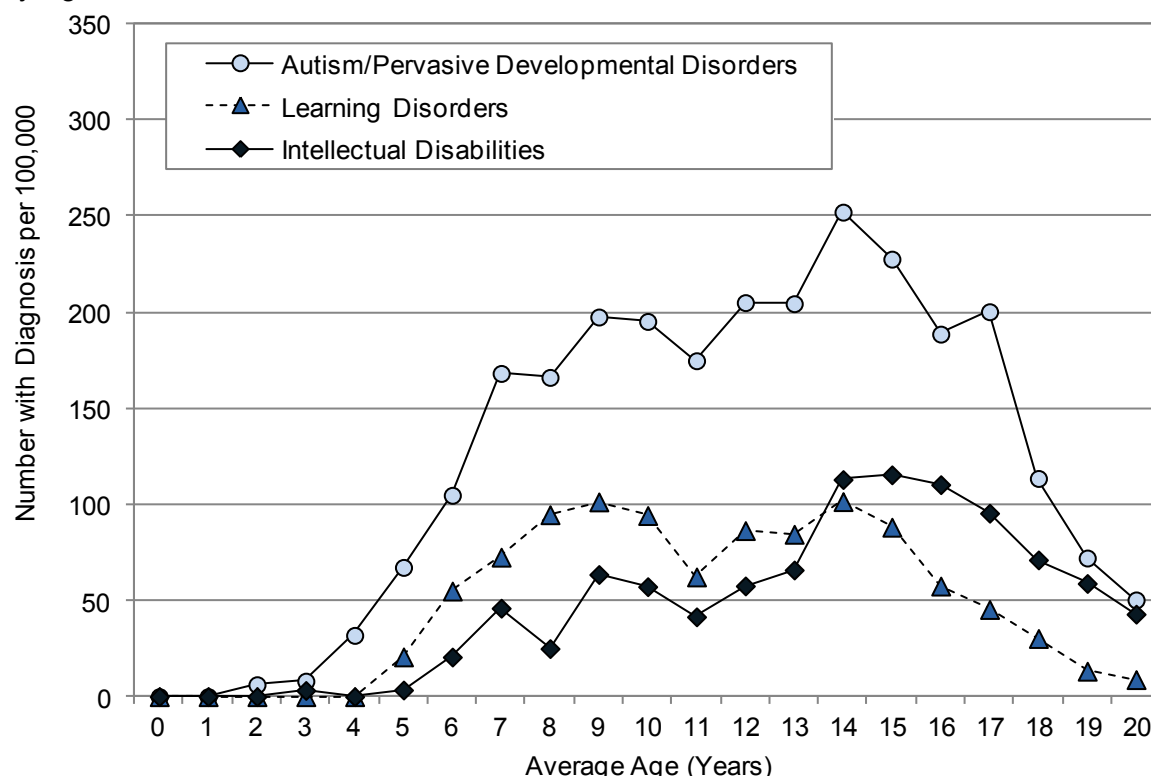


Figure 129. Children and Young People Accessing Mental Health Services with Attention Deficit Hyperactivity Disorder, Conductive/Disruptive Behaviour Disorders, or a Parent-Child Relational Problem by Age, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)

Figure 130. Children and Young People Accessing Mental Health Services with Autism/Pervasive Developmental Disorders, Learning Disorders, or Intellectual Disabilities by Age, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)

*Autism/Pervasive Developmental Disorders:* During 2009–2011, the number of children accessing mental health services with autism/pervasive developmental disorders increased rapidly between three and nine years of age. Rates then remained relatively static during late childhood, but increased to a second peak at 14 years of age, before declining again during the mid to late teens (**Figure 130**).

*Learning Disorders and Intellectual Disabilities:* During 2009–2011, the number of children accessing mental health services with learning disorders or intellectual disabilities increased during mid to late childhood, with rates for those with learning disabilities being relatively static between nine and fourteen years, and then declining during the mid to late teens. The number accessing services with intellectual disabilities however gradually increased until fourteen years of age, before declining again (**Figure 130**).

### **Numbers Accessing Services by Diagnosis, Ethnicity and Gender**

*Attention Deficit Hyperactivity Disorder:* In New Zealand during 2009–2011, the number of children accessing mental health services with a diagnosis of ADHD was *significantly* higher for males and for European/Other > Māori > Pacific children. While similar patterns were seen for mental health service contacts and inpatient bed nights, no Pacific children were admitted overnight with ADHD during this period (**Table 92**).

*Conduct/Disruptive Behaviour Disorders:* During 2009–2011, a *significantly* higher number of males accessed mental health services with conduct/disruptive behaviour disorders. While rates were similar for European/Other and Māori children accessing services, rates were *significantly* lower for Pacific children. While a similar pattern was seen for inpatient bed nights, Māori children had a *significantly* higher number of mental health service contacts than European/Other or Pacific children (**Table 92**).

*Autism/Pervasive Developmental Disorders:* During 2009–2011, the number of children accessing mental health services with autism/pervasive developmental disorders was *significantly* higher for males and for European/Other > Māori > Pacific children. While a similar pattern was seen for mental health service contacts and inpatient bed nights, less than three Pacific children were admitted overnight with autism/pervasive developmental disorders during this period (**Table 93**).

*Intellectual Disabilities:* During 2009–2011, a *significantly* higher number of males accessed mental health services with intellectual disabilities. While rates were similar for European/Other and Māori children accessing services, rates were *significantly* lower for Pacific children. In contrast, the number of mental health service contacts was *significantly* higher for Māori > European/Other > Pacific children. While a similar pattern was seen for inpatient bed nights, less than three Pacific children were admitted overnight with intellectual disabilities during this period (**Table 93**).

*Learning Disorders:* During 2009–2011, the number of children accessing mental health services with learning disorders was *significantly* higher for males and for European/Other > Māori > Pacific children. While a similar pattern was seen for mental health service contacts and inpatient bed nights, no Pacific children were admitted overnight with learning disorders during this period (**Table 94**).

*Parent-Child Relational Problems:* During 2009–2011, the number of children accessing mental health services with parent-child relational problems was *significantly* (albeit only marginally) higher for males and for European/Other children, than for Māori or Pacific children. Similar patterns were seen for mental health service contacts and inpatient bed nights (**Table 94**).





Table 92. Children Aged 0–14 Years Accessing Mental Health Services with Attention Deficit Hyperactivity Disorder or Conduct/Disruptive Behaviour Disorders by Ethnicity and Gender, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Attention Deficit Hyperactivity Disorder												
Ethnicity												
European/Other	2,306	400.2	1.00		27,622	4,793.6	1.00		1,215	210.9	1.00	
Māori	691	299.9	0.75	0.69–0.82	9,267	4,021.8	0.84	0.82–0.86	92	39.8	0.19	0.15–0.23
Pacific	81	88.0	0.22	0.18–0.27	802	871.8	0.18	0.17–0.20	0	0.0	–	–
Gender												
Female	561	128.1	1.00		6,941	1,584.9	1.00		197	44.9	1.00	
Male	2,517	546.3	4.26	3.89–4.67	30,750	6,674.4	4.21	4.10–4.32	1,110	241.0	5.37	4.61–6.25
Conduct/Disruptive Behaviour Disorders												
Ethnicity												
European/Other	1,482	257.2	1.00		19,415	3,369.3	1.00		567	98.4	1.00	
Māori	571	247.8	0.96	0.87–1.06	8,205	3,560.7	1.06	1.03–1.08	218	94.6	0.96	0.82–1.12
Pacific	95	103.2	0.40	0.33–0.49	936	1,016.7	0.30	0.28–0.32	37	40.6	0.41	0.30–0.57
Gender												
Female	484	110.5	1.00		7,724	1,763.7	1.00		419	95.8	1.00	
Male	1,664	361.2	3.27	2.95–3.62	20,831	4,521.4	2.56	2.50–2.63	403	87.5	0.91	0.80–1.05

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 children 0–14 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0–14 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 children 0–14 years



Table 93. Children Aged 0–14 Years Accessing Mental Health Services with Autism/Pervasive Developmental Disorders or Intellectual Disabilities by Ethnicity and Gender, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Autism/Pervasive Developmental Disorders												
Ethnicity												
European/Other	896	155.5	1.00		11,152	1,935.3	1.00		580	100.6	1.00	
Māori	126	54.7	0.35	0.29–0.42	1,501	651.3	0.34	0.32–0.36	67	29.2	0.29	0.23–0.37
Pacific	22	23.9	0.15	0.10–0.23	269	291.9	0.15	0.13–0.17	<3	s	s	s
Gender												
Female	167	38.1	1.00		2,168	495.0	1.00		43	9.9	1.00	
Male	877	190.4	4.99	4.23–5.89	10,753	2,334.0	4.72	4.50–4.94	605	131.4	13.28	9.76–18.07
Intellectual Disabilities												
Ethnicity												
European/Other	201	34.9	1.00		1,944	337.4	1.00		44	7.6	1.00	
Māori	76	33.0	0.95	0.73–1.23	1,041	451.9	1.34	1.24–1.44	40	17.2	2.27	1.48–3.49
Pacific	16	17.4	0.50	0.30–0.83	159	172.8	0.51	0.44–0.60	<3	s	s	s
Gender												
Female	79	18.0	1.00		937	213.9	1.00		14	3.3	1.00	
Male	214	46.4	2.58	1.99–3.33	2,208	479.2	2.24	2.08–2.42	71	15.3	4.69	2.66–8.27

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 children 0–14 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0–14 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 children 0–14 years; s: rate suppressed due to small sample size

Table 94. Children Aged 0–14 Years Accessing Mental Health Services with Learning Disorders or Parent-Child Relational Problems by Ethnicity and Gender, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Learning Disorders												
Ethnicity												
European/Other	351	60.91	1.00		3,476	603.2	1.00		145	25.16	1.00	
Māori	86	37.32	0.61	0.48–0.78	706	306.3	0.51	0.47–0.55	9	3.91	0.16	0.08–0.30
Pacific	15	16.30	0.27	0.16–0.45	227	247.0	0.41	0.36–0.47	0	0.00	–	–
Gender												
Female	99	22.61	1.00		908	207.2	1.00		43	9.74	1.00	
Male	353	76.62	3.39	2.71–4.24	3,501	759.9	3.67	3.41–3.94	111	24.17	2.48	1.74–3.53
Parent-Child Relational Problem												
Ethnicity												
European/Other	1,046	181.52	1.00		14,134	2,452.8	1.00		707	122.69	1.00	
Māori	340	147.56	0.81	0.72–0.92	4,431	1,923.0	0.78	0.76–0.81	44	18.95	0.15	0.11–0.21
Pacific	130	141.26	0.78	0.65–0.93	1,086	1,180.4	0.48	0.45–0.51	21	23.18	0.19	0.12–0.29
Gender												
Female	696	158.92	1.00		9,369	2,139.3	1.00		288	65.84	1.00	
Male	820	177.98	1.12	1.01–1.24	10,282	2,231.7	1.04	1.01–1.07	484	104.98	1.59	1.38–1.84

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 children 0–14 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0–14 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 children 0–14 years

## Midland Region Distribution

### Children Accessing Mental Health Services by Diagnosis

Amongst the DHBs in the Midland Region during 2009–2011, ADHD, conduct/disruptive behaviour disorders and autism/pervasive developmental disorders were the most frequent diagnosis assigned to children accessing mental health services. While rates in most Midland DHBs (Waikato, Lakes DHB, Tairāwhiti, and Taranaki) were *significantly* lower than the New Zealand rate for most diagnoses, it must be remembered that many children with these diagnoses access paediatric outpatient services, and that this workload is not captured by PRIMHD. Thus the rates given in **Table 95** and **Table 96** are likely to significantly underestimate the prevalence of these conditions in the community. Further, regional differences in the proportion of cases managed by mental health services vs. paediatric outpatients are also likely to account for some of the differences seen.

### Local Policy Documents and Evidence-Based Reviews Relevant to Mental Health Issues in Children

Local policy documents and evidence-based reviews relevant to the management of mental health issues in children and young people are reviewed in the **Access to Mental Health Services: Introduction** section commencing on **Page 351**. In addition, **Table 112** on **Page 414** provides an overview of the literature on the prevention of drug use in young people, while **Table 116** on **Page 423** considers suicide prevention in young people. Finally, the In-Depth Topic **Mental Health Issues in Children** commencing on **Page 368** provides a more detailed review of the literature as it relates to children aged 0–14 years.



Table 95. Children Aged 0–14 Years Accessing Mental Health Services with Selected Diagnoses, Waikato, Bay of Plenty and Lakes DHBs 2009–2011

DSM-IV Diagnosis	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Annual Contacts per Individual	Annual Bed Nights per Individual
Children 0–14 Years						
Waikato						
Attention Deficit Hyperactivity Disorder	185	232.18	0.68	0.58–0.79	14.7	1.96
Conduct/Disruptive Behaviour Disorders	92	115.46	0.48	0.39–0.60	16.5	0.36
Parent Child Relational Problem	20	25.10	0.15	0.10–0.23	18.4	0.22
Autism/Pervasive Developmental Disorders	27	33.89	0.29	0.20–0.43	24.9	8.07
Learning Disorders	20	25.10	0.50	0.32–0.78	6.8	0.00
Intellectual Disability	5	6.28	0.19	0.08–0.47	30.2	1.13
Bay of Plenty						
Attention Deficit Hyperactivity Disorder	239	537.80	1.57	1.38–1.79	14.1	0.05
Conduct/Disruptive Behaviour Disorders	179	402.79	1.69	1.45–1.96	13.4	0.01
Parent Child Relational Problem	56	126.01	0.75	0.57–0.98	10.5	0.00
Autism/Pervasive Developmental Disorders	139	312.78	2.69	2.26–3.21	12.9	0.13
Learning Disorders	26	58.51	1.16	0.78–1.73	10.4	0.10
Intellectual Disability	15	33.75	1.04	0.62–1.74	18.7	0.00
Lakes DHB						
Attention Deficit Hyperactivity Disorder	48	202.11	0.59	0.44–0.78	16.8	0.03
Conduct/Disruptive Behaviour Disorders	13	54.74	0.23	0.13–0.39	14.2	1.13
Parent Child Relational Problem	12	50.53	0.30	0.17–0.53	9.8	0.00
Autism/Pervasive Developmental Disorders	22	92.63	0.80	0.52–1.22	17.0	0.00
Learning Disorders	5	21.05	0.42	0.17–1.01	20.3	0.00
Intellectual Disability	<3	s	s	s	s	s

Source: PRIMHD; Note: *Total* = total number of individuals with diagnosis accessing services during 2009–2011; *Annual Contacts per Individual* = number of contacts each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; *Annual Bed Nights per Individual* = number of bed nights each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%; Table does not include all children with mental health diagnoses accessing services, but rather provides an overview of the most common diagnoses only; s: suppressed due to small numbers



Table 96. Children 0–14 Aged Years Accessing Mental Health Services with Selected Diagnoses, Tairāwhiti and Taranaki DHBs vs. New Zealand 2009–2011

DSM-IV Diagnosis	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Annual Contacts per Individual	Annual Bed Nights per Individual
Children 0–14 Years						
Tairāwhiti						
Attention Deficit Hyperactivity Disorder	7	60.79	0.18	0.08–0.37	17.4	0.00
Conduct/Disruptive Behaviour Disorders	4	34.74	0.15	0.05–0.39	7.9	0.00
Parent Child Relational Problem	4	34.74	0.21	0.08–0.55	11.3	0.00
Autism/Pervasive Developmental Disorders	3	26.05	0.22	0.07–0.70	3.6	0.00
Learning Disorders	<3	s	s	s	s	s
Taranaki						
Attention Deficit Hyperactivity Disorder	18	78.65	0.23	0.14–0.36	17.5	0.00
Conduct/Disruptive Behaviour Disorders	5	21.85	0.09	0.04–0.22	19.9	0.00
Parent Child Relational Problem	5	21.85	0.13	0.05–0.31	12.7	0.00
Autism/Pervasive Developmental Disorders	<3	s	s	s	s	s
Intellectual Disability	4	17.48	0.54	0.20–1.44	18.3	0.00
New Zealand						
Attention Deficit Hyperactivity Disorder	3,078	342.50	1.00		12.2	0.42
Conduct/Disruptive Behaviour Disorders	2,148	239.02	1.00		13.3	0.38
Parent Child Relational Problem	1,516	168.69	1.00		13.0	0.51
Autism/Pervasive Developmental Disorders	1,044	116.17	1.00		12.4	0.62
Learning Disorders	452	50.30	1.00		9.8	0.34
Intellectual Disability	293	32.60	1.00		10.7	0.29

Source: PRIMHD; Note: *Total* = total number of individuals with diagnosis accessing services during 2009–2011; *Annual Contacts per Individual* = number of contacts each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; *Annual Bed Nights per Individual* = number of bed nights each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%; Table does not include all children with mental health diagnoses accessing services, but rather provides an overview of the most common diagnoses only; s: suppressed due to small numbers

# IN-DEPTH TOPIC: MENTAL HEALTH ISSUES IN CHILDREN

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## Introduction

Good mental health is essential to overall good health and wellbeing for people of all ages. Mental illness is a major contributor to the burden of ill health in New Zealand and in other developed countries [319,320]. In the widely cited 2004 World Health Organization report: *The Global Burden of Disease: 2004 Update*, unipolar depression was listed as the leading cause of lost years of healthy life in high income countries [320]. A 2007 review of the evidence from epidemiological surveys found that about half of all lifetime mental disorders begin by the mid-teens and three-quarters by the mid-20s [321].

The 2011 report from the Prime Minister's Chief Science Advisor, *Improving the Transition: Reducing Social and Psychological Morbidity During Adolescence*, noted that early childhood is a critical period for the development of executive functions and self-control and that evidence from longitudinal studies, including the Christchurch Health and Development Study and the Dunedin Multidisciplinary Health and Development Study, indicates that young children who exhibit antisocial, defiant, dishonest, disruptive or aggressive behaviour are at risk of poor outcomes in adult life including criminality, substance abuse, mental, physical and dental health problems, teen parenthood, poor parenting practices and domestic violence [322]. The Royal College of Psychiatrists has stated that improving mental health early in life would improve physical health, reduce health-risk behaviour and inequalities, and increase life expectancy, economic productivity, social functioning and quality of life [323].

With these issues in mind, this in-depth topic explores mental health issues for children aged 0–14 years. It begins with a brief overview of the history of child psychiatry and concepts of child mental disorder. It then reviews the provision of child mental health services in New Zealand and considers some of the mental health and other issues associated with children in out of home care. The following sections cover the epidemiology and the evidence base for the management of some of the most common paediatric mental health diagnoses: attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder/conduct disorder. The final section offers an overview of the developing field of infant mental health.

## Historical Background to Child Mental Health

Child Psychiatry has been a recognised specialty since the mid-20<sup>th</sup> century [324]. Child psychiatry, like general psychiatry, has its intellectual and scientific foundations in several disciplines: psychology, paediatrics, education and social work [325]. The debate about the relative importance of biological determinism (nature) and environment (nurture) for child mental health has continued from the beginnings of the profession to the present.

The scientific study of normal child development was pioneered in the United States by G. Stanley Hall [326]. Once normal child development was well described and there was an understanding of the normal capabilities of children at different stages, it became possible to more accurately recognise and describe deviations from normal childhood emotions and behaviour.

Bowlby's work on the effects of maternal deprivation led to an awareness of the importance of children developing selective attachments in early life and the ways in which these provide the foundation for all kinds of later social relationships [327,328,329]. The classic longitudinal study *Deviant Children Grown Up*, a 30-year follow up of 536 youngsters seen in a child guidance clinic in St Louis in the 1920s, plus a control group of 100 chosen from school records of the same period, demonstrated the links between conduct problems in childhood and antisocial personality disorder in adulthood [330]. Later longitudinal studies including two New Zealand studies in Dunedin [331] and Christchurch



[34] have made further contributions to the understanding of the operation of risk and protective factors for child and adult mental disorders.

The development of classification systems, including the American Psychiatric Association's DSM-III (published in 1980) and the World Health Organization's ICD-9 (published in 1978) have improved clinicians' abilities to make diagnostic distinctions, [324] but there is continuing debate about the validity of some diagnostic criteria and the many diagnostic sub-categories in the current DSM-IV and ICD-10 classifications (which result in a significant proportion of patients seeming to have multiple disorders) [332].

Since the 1970s there has been an increasing recognition of the relationship between brain development and mental disorders. Both schizophrenia [333] and autism [334] are now considered to be neurodevelopmental disorders. Much research has been done on the genetics of mental disorders. A large number of twin, adoptee and family studies have shown that genetic influences operate in almost all forms of mental disorder albeit to varying degrees [335]. The development of technology to identify individual susceptibility genes has made it possible to study gene-environment interactions [336,337] and there are increasing numbers of studies finding evidence of gene-environment interactions in psychiatry and in other branches of medicine.

An example of gene-environment interaction is provided by the Dunedin longitudinal study which found that a functional polymorphism in the promoter region of the gene encoding the neurotransmitter metabolising enzyme monoamine oxidase A (MAOA) moderated the effect of child maltreatment on the chances of the child becoming a violent adult. Maltreated children whose genotype conferred low levels of MAOA expression developed conduct disorder and anti-social personality more often and were more likely to commit violent crimes as adults than children who were maltreated but had a high-activity MAOA genotype [337,338].

Bronfenbrenner's ecological theory of human development has led to the appreciation that there are influences beyond the family which have effects on child development and psychopathology [339]. This has led to new directions in research and findings about the elements in larger social structures and societies that are vital for children to fulfil their developmental potential.

In the last few decades there have been innovations in psychotherapy [340], cognitive behavioural therapy [341], parenting programmes [342,343] and family therapies [344]. The beneficial effects of pharmacological treatment for ADHD, first reported in 1937 [345], have been confirmed by numerous studies (including many randomised controlled trials) since methylphenidate was released for commercial use in 1957 [337,346].

The advances in the understanding of the causes and treatments of childhood mental disorders have come from research in many different fields, including psychology, sociology, genetics and other non-psychiatric disciplines [324]. It is hoped that as the general public becomes more aware of these advances there will be less stigmatisation of those with mental disorders and so a major barrier to mental health service access and utilisation will be removed [347].

## Child Mental Health Services in New Zealand

### Background

In New Zealand, in the later decades of the 20<sup>th</sup> century, child and youth mental health services (CAMHS) were not seen as a high priority and service development occurred in an ad hoc fashion throughout the country. Two key reports commissioned by the Ministry of Health in 1995, the *McGeorge Report* [348] and the *Stocktake of Services* [349] noted a significant shortage of child and youth mental health services and considerable variability in regard to how services were provided and who received them [350].

The Mental Health Commission's 1999 review of child and youth mental health services found a shortage of staff with experience in child and youth mental health across all professional disciplines and noted that there was no coordinated national plan to address





this [350]. The review stated that there was, at that time, no good evidence to indicate what range and mix of services led to the best outcomes for young people with serious mental health problems.

The first *Blueprint for Mental Health Services in New Zealand* [351], published by the Mental Health Commission in 1998, noted that the Government's National Mental Health Strategy required that mental health services be delivered to the 3% of the population who, at any one time, were most severely affected by mental illness. Ministry of Health benchmarks for access to specialist mental health services for different age groups were set at 1% for 0–9 year olds, 3.9% for 10–14 year olds and 5.5% for 15–19 year olds [352].

In 2005, *Te Tāhuhu – Improving Mental Health 2005–2015: The Second New Zealand Mental Health and Addiction Plan* noted that while the number of specialist services for children and young people had increased, there were still gaps in access, and that the provision of services for children still lagged well behind services for adults [353].

*Te Raukura – Mental health and alcohol and other drugs: Improving outcomes for children and youth* [354] reported that, overall, access to child and youth mental health services was still below expectations, with access rates in 2005/06 being 0.69% for 0–9 year olds, 2.45% for 10–14 year olds and 3.44% for 15–19 year olds. Key access issues identified in *Te Raukura* were barriers to access for Māori and Pacific children and youth, lack of culturally appropriate services, waiting times, inconsistency in how the severity criterion for access to CAMHS was applied, and workforce shortages and vacancy rates. Gaps in child and youth service provision were highlighted: youth forensic services, severe behaviour services, alcohol and drug services, and services for low prevalence disorders (including autism spectrum disorders and eating disorders), children of parents with a mental illness, and maternal and infant mental health. Other nationally identified problem areas were stated to be: implementation of evidence-based best practice, inter-sectoral collaboration, workforce, and increasing the role of primary care in mental health service provision.

The *Mental Health and Addiction Action Plan 2010* [355] signalled the Government's intention to move resources to primary care (to improve access to mental health and addiction services) and to integrate efforts across sectors (Health, Special Education, Child, Youth and Family and other providers) to divert children from negative pathways that impact on their life chances. The Plan sets out a number of actions to improve access to parenting programmes intended to reduce children's behavioural, emotional and mental health problems. Primary care practitioners are being trained to deliver the Triple P – Positive Parenting Programme, some new CAMHS clinicians are being employed and CAMHS staff are being trained to deliver the Incredible Years programme to families/whānau of children with behavioural or conduct problems, and it is intended that parenting programmes which reflect Māori cultural values will be developed and provided.

In response to increasing recognition of the importance of early mother-infant relationships for emotional and social development, in 2011 the Ministry of Health published *Healthy Beginnings: Developing perinatal and infant mental health services in New Zealand* [356] to provide guidance for DHBs and other service providers on ways to address the mental health and alcohol and drug service needs of mothers and infants.

The Mental Health Commission has recently published *Blueprint II* highlighting the need to broaden the focus of mental health services and take a life course approach to mental health. *Blueprint II* promotes a stepped care model of mental health care in which services are delivered to people with less severe mental health conditions in primary care and community settings as well to “the 3%”.

## **The Provision of Specialist Child and Youth Mental Health Services**

### **Community Specialist Child and Adolescent Mental Health Services**

Community Child and Adolescent Mental Health Services (CAMHS) provide the majority of specialist mental health services to children. All 20 DHBs provide CAMHS and alcohol and drug (AoD) services. Regional child and adolescent inpatient services are provided in Auckland, Capital and Coast (Wellington) and Canterbury (Christchurch). In areas without





child and adolescent mental health inpatient services some DHBs have child and adolescent beds allocated in adult units. Some DHBs have separate services for younger children and youth while others have services which cover the whole 0–19 year age range. Services are staffed by a range of professionals including mental health nurses, psychologists, social workers, psychiatrists, occupational therapists and alcohol and drug workers [357]. Not all staff who work in CAMHS are members of health or social service professional bodies.

In addition to DHB-provided services, there are over 80 NGOs providing DHB-funded CAMHS and AoD services. Many of these NGOs also receive funding from a range of other sources including the Ministry of Social Development, the Accident Compensation Corporation and Youth Justice [357].

In recent years funding for CAMHS and AoD services has increased (up 16% from 2007 to 2010) and there has been development of new services, in line with the Government's priorities set out in *Te Raukura* [354], *Te Tāhuhu* [353] and *Te Kōkiri* [357]. Auckland and Counties Manukau DHBs now have dedicated maternal and infant mental health services and MidCentral DHB CAMHS has collaborated with Group Special Education in the provision of a Conduct Disorder Service. There have been increases in services for children of parents with a mental illness, youth forensic services, eating disorder services, and services for Māori and Pacific peoples and migrants and refugees [357].

Ministry of Health service specifications state that Community CAMHS services include, but are not limited to:

- Specialist assessment and diagnosis
- Provision of medication and psychotherapies
- On-going monitoring of symptoms and periodic reviews of progress and treatments
- Attention to mental health prevention and promotion matters including early intervention, health maintenance and relapse prevention
- Provision of consultation and liaison services to primary care providers and other relevant agencies (including health, education and welfare agencies)

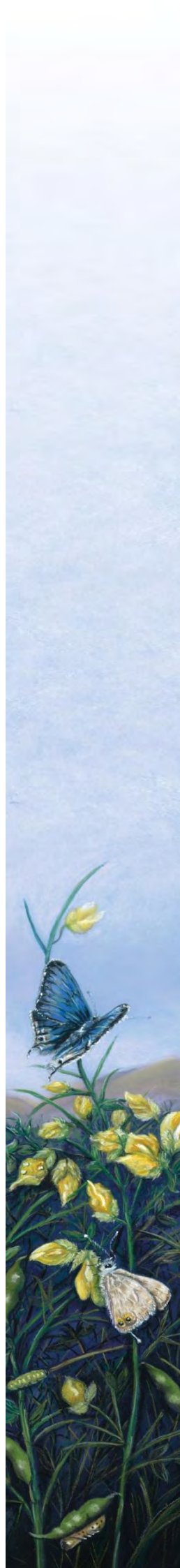
They are required to make provision for specialist mental health assessments for particular sub-groups including those with attention deficit hyperactivity disorders, eating disorders, autism, those with mental illness in association with drug and alcohol use, intellectual disability or brain injury, and refugees. CAMHS for these groups are required to provide specialist advice and information to primary care providers, to respond to acute mental health problems and to collaborate with other health, education and welfare agencies that have responsibilities for providing services to children and adolescents. In the provision of services to these groups it is expected that CAMHS will focus on addressing specific mental health problems that require specialist intervention [358].

The Ministry of Health expects that, where funding for specialist mental health and addiction services does not support coverage for all target populations, DHBs will prioritise the provision of services to people with the greatest level of need [359]. The Mental Health Commission has stated that: "An unfortunate effect of this policy is that mental health service providers have tended to practice diagnostic rationing and prioritise acute and emergency services over early intervention services which could potentially prevent the need for crisis intervention" [360].

### **Access criteria for specialist Child and Adolescent Mental Health Services**

The moderate to severe mental health issues that CAMHS clients may have include [361]:

- behavioural and developmental disorders including attention deficit hyperactivity disorder and autism spectrum disorders
- anxiety, depression and post-traumatic stress disorders
- eating disorders



- psychotic disorders including first episode psychosis, schizophrenia and bipolar disorders
- alcohol and other drug disorders including abuse and dependence
- Tourette syndrome.

DHB provided/funded CAMHS are not contracted to provide services to children with conduct disorder as a sole presenting problem as other providers, among them the Youth Horizons Trust [362], are contracted to provide these. Disability services are funded directly by the Ministry of Health, not DHBs. For this reason, children with behavioural problems secondary to intellectual disability are normally excluded from DHB funded/provided CAMHS (unless they also have another diagnosis). These children can access Ministry of Health funded Behaviour Support Services via a referral from a Needs Assessment and Service Coordination (NASC) agency [363].

### **Access rates and service use for DHB mental health services**

Over the years from 2004 to 2009 there was a steady increase in access rates to mental health services for the 0–19 years age group, from 1.15% in 2004 to 1.49% in 2009 [357].

Provisional data from the Ministry of Health's Programme for the Integration of Mental Health Data (PRIMHD), indicated that in 2009/10, DHB mental health service access rates were 0.136% in the 0–4 years age group, 1.38% in the 5–9 years age group, and 2.52% in the 10–14 years age group [364]. Access rates for boys were over twice those of girls in the 5–9 years age group, but access rates for girls climbed steeply from age 14 and were similar to rates for boys in the 15–19 years age group.

When broken down by ethnicity, access rates were slightly higher for European children aged 0–9 years than for Māori children, but Māori access rates were higher from 14 years [364]. The vast majority of 0–9 year olds who accessed DHB services in 2009/10 were seen by child, adolescent and family teams. For older children (10–14 years) child, adolescent and family teams were the most common team type seen, but significant number of older children were also seen by youth specialty teams and community teams. The next most frequently seen teams were, in decreasing order of frequency, Kaupapa Māori teams, Kaupapa Māori tamariki and rangatahi mental health services, needs assessment and coordination teams and Pacific Island teams[364].

2007/08 data from the Mental Health Information National Collection indicated that most referrals to child and youth teams came from general practitioners. Referrals also came from the education sector, self/relative referral, other hospital services (non-psychiatric and psychiatric inpatient), social welfare services, and paediatric services [365].

The 2011 Mental Health Commission report, *Child and youth mental health and addiction* [366], aimed to assess the need for mental health services among children and youth, and how well this need was being met. Mental Health Commission (MHC) staff visited DHB services and also undertook qualitative research involving youth. Some of the issues identified by the MHC were: difficulties accessing services due to not being considered to have a serious disorder (although a person might have multiple moderate issues), lack of local child/youth inpatient beds, a need for prevention and early intervention services, a need for intersectoral collaboration (between health, education, justice and social welfare), the importance of schools as a first point of contact for children with mental illness, a need for addiction services, and difficulties with recruitment and retention of staff. The MHC did, however, identify some positive developments including the establishment of services in schools (such as health clinics and GP services) and youth one-stop shops which lessen the stigma associated with seeking care for mental health issues.

### **The Provision of Child Mental Health Services in Primary Care**

There are a number of good reasons to provide child mental health services in primary care: psychological and/or behavioural problems in children are relatively common, secondary services are under-resourced and may have long waiting lists, and there is resistance to attending specialist "mental health services" due to perceived social stigma [367,368]. Primary care providers usually see other members of a child's family and thus



gain an appreciation of the wider family issues that may be relevant to a child's mental health difficulties, and they have often built up a rapport with the child and his or her family through previous consultations for other health concerns.

The Government has recognised that the traditional fee-for-service model of primary care provision is not suited to the provision of mental health services in primary care by multi-disciplinary teams. Through the Primary Mental Health Initiatives (PMHIs) DHBs are funded to purchase primary mental health services including primary mental health coordinators, extended GP consultations, and packages of care such as brief interventions and talking therapies [355]. The 2009 report of the evaluation of the first 26 PMHIs stated that the 25 initiatives which supplied data for the evaluation did not sufficiently address the needs of children and young people. Very few children under the age of 14 accessed services funded through the PMHIs [369].

There are beginning to be some child mental health services provided in primary care. The Triple P Positive Parenting Programme, for families/whānau with children aged 3–7 years with mild to moderate behaviour concerns (older siblings up to 12 years can be included), is being offered free in one-to-one and small group sessions in the Bay of Plenty [370], Counties Manukau, Waitemata and MidCentral DHB regions [371].

## **Child Mental Health Services in the Education Sector**

### **Resources Teachers of Learning and Behaviour**

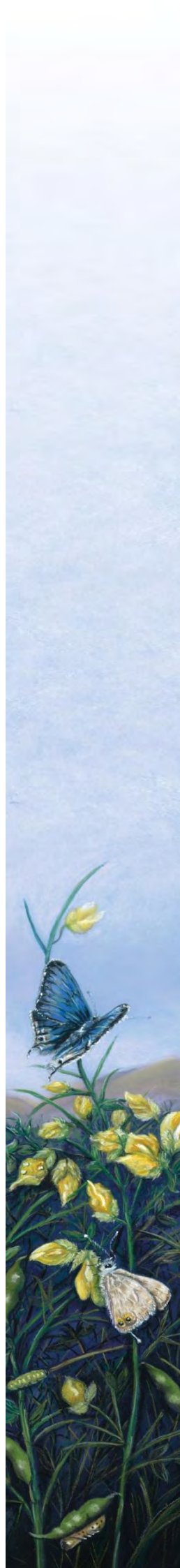
Resources Teachers of Learning and Behaviour (RTLBs) work as itinerant teachers serving clusters of schools. They provide specialist support to Years 1 to 10 students and their teachers to improve the educational outcomes of students with moderate learning and/or behaviour difficulties [372]. They have a particular focus on Māori and Pasifika students and children and young people moving into Child, Youth and Family care [373]. RTLBs often work in conjunction with other agencies, particularly Special Education Behaviour Support teams, mental health agencies, other health agencies, and Child, Youth and Family [374].

### **Positive Behaviour for Learning**

The Ministry of Education's 2011 Positive Behaviour for Learning Action Plan [375] includes a number of initiatives for parents, teachers and schools aimed at reducing problem behaviour in children and young people and encouraging pro-social behaviour. The Incredible Years – Parent Programme is being delivered to around 15,000 parents/caregivers over five years using reprioritized funding from the Ministry of Education (\$45 million) and \$15 million of new funding announced in the 2009 Budget. The Incredible Years – Teacher programme is being delivered to 7,240 primary and early childhood education teachers. Positive Behaviour for Learning School-wide involves Ministry of Education staff providing training to schools' leadership teams to assist them to implement School-wide, an approach that focuses on preventing problem behaviour, developing students' social skills, reinforcing desired behaviour, consistency when addressing inappropriate behaviour, and using data-based assessment and problem solving to deal with behaviour concerns.

### **Special Education**

Students with more severe behaviour difficulties, including pre-schoolers, may be referred to Special Education which employs a range of professionals including psychologists, special education advisors and early intervention teachers to provide the Severe Behaviour Service [376]. A few students aged eight to twelve years who have especially severe and complex behaviour support needs, sometimes in association with intellectual disability, may be referred to the Intensive Behaviour Service [377]. They may then attend a special residential school or receive "wraparound services" in their local school. Following the Minister of Education's recent decision to close Salisbury School in Nelson and McKenzie Residential School in Christchurch, from 2013 there will be two remaining special residential schools, Westbridge Residential School in Auckland and Halswell Residential School in Christchurch, which will together cater for 100 students [378].





## **Social Workers in Schools**

In 2011 the Government announced additional funding to extend the Social Workers in Schools (SWiS) Service to all decile 1–3 primary schools [379,380]. The SWiS service is aimed at children who are poorly engaged with school and/or frequently absent, children who are experiencing grief and loss, children with behavioural and/or social problems, families who are struggling financially and/or in other ways, and children and families known to CYFS [381]. The social workers are employed by various NGO social service providers, including a number of Iwi social service providers, Presbyterian Support and Barnados, under contract to the Ministry of Education, and they work in partnership with school staff as part of the school community [382]. They provide help to children and their families in situations where social or family circumstances are leading to a child having difficulties in education, health or social development. Referrals to SWiS may be made by children and families (self-referral), the school, the community or Government agencies such as CYFS and can only be made with the family's consent. There are three key components to the work of SWiS: individual casework with children and their families, group programmes, and service coordination and community liaison [381,383].

## **Conduct Disorders Services Funded by the Ministry of Social Development**

The Ministry of Social Development contracts various providers to deliver Multi-Systemic Therapy (MST), Functional Family Therapy (FFT), Multidimensional Treatment Foster Care (MTFC), and Residential Care to Young People from 10–16 years of age who have been diagnosed as having a severe conduct disorder, and to other Young People who have been assessed as having significant conduct problems [384]. Referrals to these services are made by Child, Youth and Family Social Workers.

Multi-Systemic Therapy [385] is an intensive home- and community-based family/whānau treatment method which uses an ecological approach to supporting and up-skilling the Young Person and their family/whānau in order to reduce violence, criminal offending and drug and alcohol abuse, and reduce the need for out-of-home placements. It can include structural family/whānau therapy, strategic family/whānau therapy, behavioural parent training, and cognitive behaviour therapies. Treatment typically lasts about four months. A team of three clinicians providing MST would see up to 30 Young People and their family/whānau per year [384].

Functional Family Therapy is manualised intervention that has been used in a number of countries. The intervention focuses on strengthening relationships within families/whānau through improving communication, reducing negativity and blame, improving parenting skills and identifying community resources the family might access. FTT typically involves 8 to 12 one-hour family/whānau therapy sessions for mild cases, and up to 30 hours for more complex/severe cases, delivered over around three months [384].

Multidimensional Treatment Foster Care (MTFC) involves placing the Young Person with specialised foster parents who provide a highly-structured and supervised environment where positive and negative behaviours are translated into points (gained or lost) which can be traded for privileges. A MTFC Family Therapist works with the family to reduce conflict and increase parenting skills to create a favourable environment for the Young person after they leave MTFC. A MTFC home has one placement at any one time [384]. Residential care is for Young People who have extreme behaviours which mean that they cannot be contained in a less restrictive placement. A Residential care home has four to five high needs Young People in it [384].

## **Other Child and Family Services Funded by the Ministry of Social Development**

Family and Community Services manages and/or funds over 600 organisations to provide a range of programmes and services to support families and communities. These include, among others, Te Punanga Haumarū which provides funding for community action that encourages positive social behaviour and reduces bullying of children and young people [386], Family Start (a home visiting programme for at-risk parents and children) [387],



HIPPY (Home Interaction Programme for Parents & Youngsters) which is a home-based programme that supports parents in becoming actively involved in their four- and five-year-old children's learning to promote school readiness [388], services for teen parents and their children, and Parents as First Teachers.

## **Behaviour Support Services for Children and Young People with an Intellectual Disability**

The Ministry of Health plans and funds long term disability services for children and adults with physical, intellectual and/or sensory disabilities. Behaviour support services (BSS) for people with intellectual disabilities (including those with autism spectrum disorders associated with intellectual disabilities) are included in these services and the Ministry contracts a range of organisations to provide BSS. The main activity of BSS is to deal with clients' challenging behaviours by developing, implementing, monitoring and reviewing plans to minimise the impact of the challenging behaviours [389]. Challenging behaviour is considered to be behaviour that is "of such an intensity, frequency or duration as to threaten the quality of life and/or the physical safety of the individual or others and is likely to lead to responses that are restrictive, aversive or result in exclusion" [390].

The 2011 report of a project undertaken by Split Ridge Associates Ltd on the provision and funding of specialist behaviour support services highlighted several issues relevant to the provision of these services to children [389]. Data from the needs assessment and service coordination (NASC) organisations indicated that there were 2,917 NASC clients ages 0–17 years with a primary diagnosis of intellectual disability. The report authors state that there is no New Zealand data on the proportion of children or adults with intellectual disabilities who have behaviour that would warrant referral to BSS.

To access BSS a referral from a NASC is required. The report authors stated that children with disabilities should be able to access behavioural support through Child Development Services. The report noted that relationships between BSS and DHB Child Development Services or Child Mental Health Services were variable and, if they existed at all, were informal. The report also noted that there was significant and unacceptable variation in waiting times for access to BSS, ranging from nil to 18 months, and that children and young people and people in rural areas tended to experience longer waiting times.

## **Children in Care: Mental Health, Legal Issues and Service Provision**

### **The mental health of children in care**

Children who have suffered abuse and neglect, and those who have suffered inadequate and disrupted attachment to their primary caregiver are at risk of developing mental health problems. It is recognised both internationally and in New Zealand that children in care have higher rates of mental health problems than the general child population [391,392]. Up to 65% of children and young people entering Child, Youth and Family's care have behavioural or mental health problems and around 40% have a mental health disorder of sufficient severity to warrant a referral to specialist CAMHS [392].

Child, Youth and Family established a mental health database in 1999. Analysis of the 1999 data base indicated that, of the mental health diagnoses recorded in the database (which mostly applied to children 10 years and over), 30% were alcohol and drug disorders, 11% conduct disorder or oppositional defiant disorder, 10% ADHD, and 8.6% severe behavioural disorders. Suicidal behaviour and depression accounted for 7% and post-traumatic stress disorder for 6% [393].

### **Legal Issues relating to the mental health of children in care**

Children may come into Child, Youth and Family care under section 14 of the Children, Young Persons, and Their Families Act 1989 (CYP&F Act ) in need of care and protection for a number of reasons: because of abuse and neglect (Section 14 (1) (a) and (b)), because their behaviour is likely to be harmful to themselves or others and their parents and caregivers are either unwilling or unable to control them (Section 14 (1)(d)), or because their parents are unable or unwilling to care for them, which may be because of mental health or disability issues (Section 14 (1)(f)) [394].



Children or young people with severe mental health problems who, in the judgement of a psychiatrist, require specialist compulsory treatment come under the provisions of the Mental Health (Compulsory Assessment and Treatment) Act 1992 [395].

Young people (10–16 years) may also come in contact with Child, Youth and Family through the youth justice provisions of the CYP&F Act because they have committed an offence [394]. Conduct Disorder and alcohol and drug problems are common in youth offenders [396].

Under the CYP&F Act, if a child or young person is involved in any proceedings and the Court believes that a medical, psychological or psychiatric report is required, then the Court may order that the child or young person undergo a medical, psychological or psychiatric examination (at which the child or young person is entitled to have one adult present with them). Such a psychiatric examination must be done by a specialist psychiatrist [394].

### **Mental health services provided by Child, Youth and Family for children in care**

As announced in the 2011 Budget, the Government has increased funding for Gateway Assessments of education, health and care and protection needs for children entering Child, Youth and Family care (c. 2,200 per year) [397]. Assessments are also available to children already in care who have significant behavioural and health needs (c. 500 per year), and those considered to be at high risk when they present at a Family Group Conference (c. 1,500 p.a.). Gateway assessments are overseen by Gateway Assessment Coordinators employed by DHBs. The health assessment is usually undertaken by a paediatrician and the child's teachers provide a profile of the child's education engagement and achievement, which includes a Strengths and Difficulties Questionnaire (a screening tool for emotional and behavioural difficulties). The Gateway Assessment Coordinator gathers together information from the health assessor, other healthcare providers, teachers, the social worker and the family to seek agreement on the Interagency Services Agreement, which sets out what part each agency will play in meeting the needs of the child or young person [398]. Gateway Assessments done between July 2011 and March 2012 indicated that 49% of children in care had emotional, behavioural or mental health needs [399].

The 2011 budget also included \$14.5 million over 4 years to provide more mental health services for children in care and \$2.4 million for specialized parenting support interventions for families struggling with behaviour and other social problems [400]. The Ministry of Social Development has contracted The Parenting Place (the new name for Parents Inc.) to provide their Toolbox parenting programme to foster parents, whānau caregivers, Home for Life carers, grandparents raising grandchildren and adoptive parents [401].

The new mental health services, for children whose mental health needs have been identified through Gateway Assessment, include primary mental health services for mild to moderate mental health needs, serving around 1,600 children per year at an average cost of \$1,550 per child, and intensive clinical support services for children and young people with high and complex mental health/behaviour needs, serving 175 young people per year at an average cost of \$14,300 [399].

The primary mental health services will include Watch, Wait and Wonder™ for caregivers of 0–4 year olds, and, for children older than 3 years and/or their caregivers, Parent and Child Interaction Therapy, trauma and abuse focused Cognitive Behavioural Therapy, and the Triple P and Incredible Years parenting programmes. The intensive mental health services for 10–17 year olds are Functional Family Therapy and Multi-systemic Therapy [399].



## Common Mental Health Disorders in Children 0–14 Years

The following sections consider the features, epidemiology and treatment of three of the most commonly seen disorders in CAMHS: Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder and Conduct Disorder. They also provide an overview of infant mental health, an area receiving increasing attention as a result of research highlighting the importance of the mother-infant relationship for the development of social and emotional wellbeing and the prevention of behaviour disorders that may lead to school failure followed by unemployment, mental illness, chronic health problems and criminality in adult life.

### Attention Deficit Hyperactivity Disorder (ADHD)

#### Features

The core symptoms of Attention deficit Hyperactivity disorder (ADHD) are hyperactivity, inattention and impulsivity. The DSM-IV criteria for a diagnosis of ADHD are grouped into these three categories and three subtypes of ADHD are defined [402]:

1. *Combined Type*: having at least 6 inattentiveness items plus at least 6 hyperactivity/impulsivity items
2. *Inattentive Type*: at least 6 inattentiveness items
3. *Hyperactive/Impulsive Type*: at least 6 hyperactivity/impulsivity items

Symptoms must have been present for at least six months and be causing significant Impairment in social, academic or occupational functioning and be present in two or more settings and inappropriate to the child's developmental level and not better accounted for by another mental disorder. At least some symptoms causing impairment must have been present before the age of seven years.

The DSM-IV criteria are:

#### Inattention:

- Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- Often has trouble sustaining attention on tasks or play activities
- Often does not seem to listen when spoken to directly
- Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions).
- Often has trouble organizing activities
- Often avoids, dislikes, or does not want to do things require sustained mental effort for a long period of time (such as schoolwork or homework)
- Often loses things needed for tasks or activities (such as toys, school assignments, pencils, books, or tools)
- Is often easily distracted by extraneous stimuli
- Is often forgetful in daily activities.

#### Hyperactivity:

- Often fidgets with hands or feet or squirms in seat
- Often gets up from seat when remaining in seat is expected, in the classroom or other situations
- Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless)
- Often has trouble playing or enjoying leisure activities quietly
- Is often "on the go" or often acts as if "driven by a motor"
- Often talks excessively

#### Impulsiveness:

- Often blurts out answers before questions have been finished
- Often has trouble waiting his/her turn
- Often interrupts or intrudes on others (example: butts into conversations or game)

Other children often perceive children with ADHD to be irritating or immature and often avoid them or tease them because of their socially inappropriate behaviour, low frustration tolerance, difficulty following rules, bossiness and intrusiveness [403].





## Epidemiology

The 2009 review by Merikangas et al. reported on the prevalence rates of ADHD (according to DSM-IV criteria) in recent community surveys in the U.K. and the U.S. [315]. More recent studies have found that the point prevalence of ADHD in 5–15 year olds was 2.23% [404] and that 12-month prevalence for 4–17 year olds ranged from 2% to 8.7% [405,406,407]. Population surveys have consistently found a higher prevalence of ADHD in boys than girls as follows: 11.8% in boys and 5.4% in girls [406], 3.62% in boys and 0.85% in girls [404], 2.0% for boys and 0.5% for girls [407], and 1.5% for boys and 0.3% for girls [408]. There is conflicting evidence on whether or not ADHD is linked with socio-economic status [404,405,406,407].

## Comorbidity

Comorbidity (having more than one disorder) is common in children with ADHD. Between 25% and 50% of children diagnosed with ADHD also meet the criteria for Oppositional Defiant Disorder or Conduct Disorder, 25% have an anxiety disorder, 20% a mood disorder, and 20% a specific developmental disorder (such as a specific learning disorder, language-based difficulties or motor coordination problems). Academic and school failure is common. Many children with Tourette's syndrome also meet the criteria for ADHD [409].

## Treatment

There is a vast literature on the treatment of ADHD and numerous published guidelines, including a New Zealand one published in 2001 [410]. The National Guideline Clearinghouse in the U.S. offers a brief synthesis [411] of the recent guidelines from the American Academy of Child and Adolescent Psychiatry (AACAP) [412], and the Scottish Intercollegiate Guidelines Network (SIGN) [409].

## Pharmacological Treatment

The primary treatment for the core symptoms of ADHD is medication and most children with ADHD respond positively to one or more drugs. SIGN, and, according to the AACAP, the American Academy of Pediatrics, an international consensus statement and the Texas Children's Medication Project, all recommend psychostimulants as the first line treatment for ADHD. These agents include methylphenidate (Rubifen<sup>TM</sup> and Ritalin<sup>TM</sup>) and dexamphetamine (Dexedrine<sup>TM</sup>). These agents have been the subjects of numerous RCTs and their efficacy and safety is well established [413].

SIGN does not recommend medication for pre-schoolers but the AACAP states that stimulants are widely prescribed in this age group despite the limited number of published controlled trials and it cites research suggesting that dosages should be more conservative in pre-schoolers than school age children. Both SIGN and AACAP agree that amoxetine (a noradrenergic reuptake inhibitor) is superior to placebo, but inferior to psychostimulants, for the treatment of core symptoms of ADHD. SIGN suggests amoxetine for children in whom psychostimulants are not tolerated, ineffective or inappropriate, and AACAP suggests that amoxetine may be considered as a primary medication in individuals with substance abuse problems, comorbid anxiety or who experience severe side effects from psychostimulants (such as mood lability or tics). Both guidelines agree that patients taking amoxetine should be monitored for suicidal ideation, worsening mood or unusual behaviour changes.

Both guidelines cover the use of unlicensed medications for ADHD, including clonidine and guanfacine (alpha agonists) and tricyclic antidepressants, all of which may be appropriate in certain circumstances, and bupropion (for which there is little evidence of effectiveness). SIGN found insufficient evidence on which to base a recommendation for either reboxetine or selegiline.

## Behavioural Interventions

While medication is generally more effective than psychological treatments for ADHD, both SIGN and AACAP agree that behaviour therapy alone is appropriate in some circumstances, including mild ADHD, diagnostic uncertainty and parental rejection of medication. SIGN recommends behavioural parent training alone for parents of pre-schoolers.



A 2005 Cochrane review on whether or not family therapy without medication can reduce the core symptoms of ADHD identified only two high quality RCTS addressing this issue [414]. One found that family therapy was slightly superior to placebo medication and the other found no difference between the efficacy of family therapy and that of treatment as usual.

AACAP states that psychosocial treatment is a helpful adjunct to pharmacological treatment if a patient with ADHD has a sub-optimal response to medication, a comorbid disorder such as Oppositional Defiant Disorder or Conduct Disorder, or stressors in family life. Both SIGN and AACAP recommend parent behaviour management training for comorbid problems in conjunction with medication to treat the core symptoms of ADHD. A 2011 Cochrane review of parent training studies found that while there have been many studies (the reviewers evaluated over 100) only five RCTs met Cochrane review quality criteria by including only specialist-diagnosed children with ADHD (meeting DSM-III/DSM-IV or ICD-10 criteria and over five years old), and comparing parent training with no treatment, a waiting list or treatment as usual (adjunctive or otherwise) [415]. The review authors concluded that parent training may improve the behaviour of children with ADHD, reduce parental stress and enhance parental confidence but there were risks of bias in the studies' results and a lack of data on many important outcomes including school achievement and adverse effects.

There have been a number of studies investigating social skills training for children with ADHD. Such training typically focuses on teaching children how to pick up the nuances of social communication in order to be able to wait for their turn to speak, know when to shift topics during a conversation, be able to recognise the emotional expressions of others, and conform to social 'rules', and the expectations of others. A 2011 Cochrane review found even the RCTs among these studies had methodological flaws leading to high risks of bias which limited the reliability of their conclusions and that, at present, it is not possible to either recommend or discourage social skills training for children with ADHD [416].

### **Alternative Treatments**

A number of alternative treatments have been the subject of Cochrane reviews which have not found any evidence for their efficacy: acupuncture [417], homeopathy [418], meditation [419], and polyunsaturated fatty acids (PUFA) [420].

## **Oppositional Defiant Disorder and Conduct Disorder**

### **Features**

Oppositional behaviour and conduct problems are very common reasons for referral to CAMHS [421,422]. The essential features of Oppositional Defiant Disorder (ODD) are a persistent pattern of defiant, negativistic and hostile behaviour, and disobedience to authority figures. The DSM-IV criteria are set out in the text box below.

To qualify for a diagnosis of ODD according to DSM-IV the behaviour must have been present for at least six months, be causing impairment in social, academic or occupational functioning, and include at least four of the following eight:

- often loses temper
- often argues with adults
- often actively defies or refuses to comply with adults' requests or rules
- often deliberately annoys people
- often blames others for his or her mistakes or behaviour
- is often touchy or easily annoyed by others
- is often angry and resentful
- is often spiteful or vindictive

The behaviours must occur more often and/or be of greater severity than is usual for individuals of the child's age and developmental level and not occur as part of a psychotic or mood disorder. If the diagnostic criteria for Conduct Disorder are also met, then that diagnosis takes precedence [402].

Conduct Disorder (CD) is characterised by more serious aggressive and anti-social behaviour. The DSM-IV criteria are listed in the text box below.



A diagnosis of conduct disorder according to DSM-IV requires the presence of at least three of the following in the previous year and at least one in the previous six months:

- often lies to obtain goods or favours or to avoid obligations (i.e. “cons” others)
- often bullies, threatens, or intimidates others
- often initiates physical fights
- has broken into someone else’s house, building, or car
- has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery)
- has used a weapon that can cause serious physical harm to others (e.g. a bat, broken bottle, knife, gun)
- has been physically cruel to people
- has been physically cruel to animals
- has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery)
- has forced someone into sexual activity
- has deliberately engaged in fire setting with the intention of causing serious damage
- has deliberately destroyed others’ property (other than by fire setting)
- often stays out at night despite parental prohibitions, beginning before age 13 years
- has run away from home overnight at least twice while living in a parental or parental surrogate home (or once without returning for a lengthy period)
- is often truant from school, beginning before age of 13 years

The same provisos regarding frequency, severity and developmental age apply as they do to ODD and, if a young person is over 18, they must not meet the criteria for Anti-social personality disorder.

Conduct disorders can be divided into two sub-types, based on age of onset: A childhood-onset type (if at least one criterion characteristic of Conduct Disorder was present prior to age 10 years) and an adolescent-onset Type (absence of any criteria characteristic of Conduct Disorder prior to age 10 years) [402].

The prognosis for early-onset conduct disorders is generally poor, with outcomes in adulthood including alcoholism, drug abuse, criminality, domestic abuse and psychiatric disorders (including anti-social personality disorder) [423,424].

### **Epidemiology**

There have now been a number of community surveys of mental disorders in children and youth in the U.K. and the U.S. which may be considered methodologically rigorous because they applied DSM-IV criteria and included both direct structured interviews with children and reports about children’s symptoms and functioning from parents or primary caregivers. A recent review of these studies found a median 12-month prevalence of disruptive behaviour disorders (i.e. ODD or CD) of 6% with a range from 5 to 14 % [315]. Conduct disorder has consistently been found to be much more prevalent in boys with many studies finding prevalence 3–4 times higher in boys than in girls. Some, but not all, studies have found a higher prevalence of ODD in boys.

In New Zealand, the Christchurch longitudinal study (of children born in 1977) reported the prevalence of Conduct Disorder at 14–15 years as being 14.1% for Māori and 3.5% for non-Māori while the Dunedin longitudinal study (of children born between April 1972 and March 1973) reported the prevalence of conduct disorder at 17–18 years as being 13.6% for Māori and 7.7% for non-Māori [425].

Earlier onset of disruptive behaviour disorders is associated with more aggressive behaviours and worse outcomes. Youths with CD commonly also have ADHD and boys who have a diagnosis of ADHD are more likely to have early onset behaviour disorders. There is also a strong association between mood and anxiety disorders and disruptive behaviour disorders [315].

### **Treatment**

Poor quality parenting is an important precursor of childhood-onset conduct problems. It is characterised by low levels of parental involvement and supervision, and inconsistent and punitive discipline, and it interacts with parental risk factors such as mental illness, substance abuse, disrupted family life, unemployment and low socio-economic status and with risk factors in children including difficult temperament, low verbal intelligence, impulsivity and deficits in processing social information. Despite the cumulative effects of



multiple risk factors, there is increasing evidence that improving parenting skills can result in improvements in children's behaviour and parental mental health [426].

In general, treatment programmes are more effective for children under the age of 12 and parent management training programmes for 3–7 year olds are the interventions most likely to produce substantial reductions in rates of child conduct problems [427].

### **Parenting programmes**

There is now a very considerable literature relating to parenting programmes for the prevention and treatment of conduct disorders. As an entry point into this literature, readers who require more detailed information than is provided here might like to use the *Conduct Problems Best Practice Report* by the Advisory Group on Conduct problems for the Ministry of Social Development [427].

There are two main varieties of parenting programmes: behavioural and relationship, although many combine elements of both. The aim of relationship programmes is to assist parents to understand both their own and their child's emotions and behaviour, and to improve parent-child communication. Behavioural programmes aim to teach parents the skills to address the causes of problem behaviour and strategies such as ignoring bad behaviour and praising co-operative behaviour, building a relationship with their child through child-led play, and setting boundaries with 'time out' for infringements [428].

A 2009 systematic review by Dretzke et al. reviewed 57 randomised controlled trials of parenting programmes for the treatment of children with conduct problems [424]. Most interventions included in the trials were focussed on the parents alone and were delivered over 10 or fewer sessions. Only four trials were considered to be of good quality. The review authors performed a meta-analysis of 24 trials which found that parenting programmes significantly reduced parent-reported intensity and frequency of behaviour problems (intensity SMD -0.67, 95% CI -0.91 to -0.42; frequency SMD -0.62, 95% CI -0.85 to -0.40) and they concluded that parenting programmes are an effective treatment for children with conduct problems. However, they reported that there was insufficient evidence to determine which types of programme were most likely to be effective, mainly because the studies that compared programmes tended to compare programmes that were different in several key characteristics making it impossible to determine which particular programme features might be associated with better outcomes.

A 2012 Cochrane review assessed the effectiveness and cost-effectiveness of behavioural and cognitive-behavioural group-based parenting interventions for improving child conduct problems (in children aged 3–12 years), parenting skills and parental mental health [426]. Noting that previous reviews had combined results from both group-based and individual-based programmes and included programmes that were delivered to children with comorbidities (other disorders in addition to conduct problems) as well as to children with conduct disorders alone, the authors of this review elected to use more stringent criteria in determining which studies to include in their review. Thirteen trials (10 RCTs and 3 quasi-randomised trials) were included together with two economic evaluations based on two of the trials. The review authors concluded that behavioural and cognitive-behavioural group-based parenting interventions were both effective and cost effective in the short term for improving child conduct problems, parenting skills and parental mental health but that further research is needed on long term outcomes.

Nine of the thirteen studies in the 2012 Cochrane review evaluated the Incredible Years Intervention which is being widely used in New Zealand in programmes delivered by Group Special Education, CAMHS and contracted NGOs [429].

A preliminary evaluation of the efficacy and cultural acceptability of these programmes in the New Zealand context has been carried out by Fergusson et al., using data provided by the Ministry of Education [430]. This study used data gathered from 214 parents (of children aged from 2½ to 8 years) who had attended an Incredible Years Basic Parent Programme for at least nine sessions and it compared pre- and post-test scores on the Eyberg Child Behaviour Inventory (ECBI) Problem and Intensity Scales [431] and the Social Competence Scale [432] and also assessed parent satisfaction with the



programme using a questionnaire. Significant improvements were measured on all three scales ( $p < 0.001$ ) and the size of the effects, as indicated by values of Cohen's  $d$  values in the range 0.56 to 0.7 [433], were moderate to large. Parents' satisfaction was high. Effects and parent satisfaction were similar for Māori and non-Māori parents.

### **Issues relating to the delivery of parenting programmes**

Concerns have been expressed that parenting programmes may not be reaching those who need them most [434]. A recent Ministry of Justice report reviewed the available New Zealand data on hard-to-reach or vulnerable children and families in the provision of maternity, Well Child and early parenting support services and concluded that there was little data available on the extent to which vulnerable and hard-to-reach families engage in maternity, Well Child and family support services [144]. The report noted that it is important to consider the barriers that lead to non-engagement with services and how they can be addressed. Barriers can occur either at the service or structural level or at the level of individual children, parents and their situation. A useful review of this issue is the Victorian Government Department of Human Services publication *Breaking Cycles, Building Futures. Promoting Inclusion of vulnerable families in antenatal and universal early childhood services* [435].

The Families Commission review of parenting programmes in New Zealand pointed out that "A culture where it is the norm to seek help with parenting may lead to greater engagement in parent education programmes and services". It also noted that parenting programmes need to be part of a broader social development strategy since parents who are struggling to meet basic needs for food and accommodation may find it hard to focus on supporting their children's learning and development [436].

### **Drug therapy**

There are no pharmacological treatments for conduct disorders (ODD or CD) specifically but drugs may be used to treat conditions that are common comorbidities with ODD and CD, particularly ADHD. In recent years in the U.S., the U.K. and Canada, there has been a marked increase in the use of second-generation antipsychotics (including risperidone, quetiapine and olanzapine), in children and adolescents with a number of mental health disorders including disruptive behaviour disorders such as ODD, CD and ADHD as well as autism [437].

A 2012 Cochrane review assessed the effect and safety of atypical antipsychotics for treating disruptive behaviour disorders in children and youths [438]. The review included eight RCTs, seven of which assessed risperidone and one quetiapine. The review authors concluded that there was some limited evidence for the efficacy of risperidone in reducing aggression and conduct problems in children with disruptive behaviours in the short term (4–10 weeks). Weight gain was the most significant adverse outcome reported on. Meta-analysis of data from two trials indicated that the trial participants gained, on average, over 2.3 kg in weight over treatment periods of 6–10 weeks. A nine-month RCT of risperidone in 5–17 year olds with disruptive behaviour disorders reported a mean weight gain of 5.3kg, 3.2 kg in the first 12 weeks and 2.1 kg in the following six months [439].

## **Infant Mental Health**

### **Introduction**

"Infant Mental Health" is the internationally accepted term for the interdisciplinary field of research, public policy and clinical practice concerned with the emotional, social, cognitive and physical health of children from birth until the fourth birthday [356]. The Zero to Three Infant Mental Health Taskforce, a non-profit organisation in the U.S. dedicated to training and supporting professionals, parents and policy makers to improve the lives of infants and toddlers, has described infant mental health as "the developing capacity of infants and toddlers to experience, regulate, and express emotions; form close and secure interpersonal relationships; and explore the environment and learn — all in the context of family, community and cultural expectations for young children" [440].



From a services perspective, infant mental health is about strategies to promote the emotional and social wellbeing of all young children, to strengthen the emotional and social well-being of children whose development is at risk for biological or environmental reasons so that these risks are minimised and these children enter school with appropriate skills, and to help the families of young children to overcome their difficulties so that children's emotional development is not compromised because of parental problems [441].

The relationships that a child builds with the primary caregiver and other family members are critical to the development of the child's social and emotional competence. These relationships are based on the child's continuous give-and-take with the person close to them [442]. A child normally develops selective attachment to one or more primary caregivers at between 7 and 9 months of age. This is indicated by the onset of stranger wariness and by distress on anticipation of separation from attachment figures [443].

Infant mental health disorders result from disruptions to the secure attachment between parent and child. They belong to the parent-child relationship in its social and environmental context, not to the child alone [444].

### **Epidemiology of infant mental health disorders**

#### **Cross-sectional studies of the general child population 1967–2007**

Anne Mette Skovgaard, the principal investigator of the Copenhagen Child Cohort 2000 study, a longitudinal study of child mental health (involving 6090 children born in 2000), reviewed the literature on the epidemiology of mental health problems and psychopathology in children 0–3 years from the period 1967–2007. She found 13 studies in clinical populations, 2 longitudinal studies, neither of which collected data on mental health or psychopathology before the age of three, and 12 which were cross-sectional studies of the general child population [445].

The studies involving clinical populations were methodologically diverse which made it impossible to compare diagnostic distributions between studies. However, Skovgaard noted that, in several of these studies, many children did not receive any mental health diagnosis, and that, across several studies the most commonly assigned diagnosis was adjustment disorder, a condition of non-specific manifestations.

Of the 12 studies involving community or general population samples, nine defined cases based on parent-reported child behaviour in questionnaires or checklists. Prevalence rates for behavioural and emotional syndromes or deviant behaviour ranged from 7.3% [446] to 12–16 % [447]. Three studies investigated DSM diagnoses and one ICD-10 diagnoses. The only one of these four to report explicitly on diagnoses in children as young as 2–3 years was done by Lavigne et al. in Chicago [448]. This study recruited 2,262 children who were aged 2–3 years from primary care paediatric clinics and studied them using a 2-stage process involving initial screening with the Child Behaviour Checklist (CBCL) followed by specialist evaluation by a child psychologist for participants who screened high on the CBCL (above the 90th percentile) and a matched group of low-screen children (matched on age, sex and race). Prevalence rates for behaviour problems (scores  $\geq$  90% on the CBCL) were 4.7% (95% CI 3.5–5.9) for 2 year olds and 7.3% (95% CI 5.7–8.9) for 3 year olds. Weighted prevalence rates for Axis 1 DSM-III-R disorders were calculated on the basis of second stage evaluations and clinicians' ratings. Overall prevalence rates of any Axis I disorder(s) of any severity were 13.6% (95% CI 11.6–15.6) for 2 year olds and 26.5% (95% CI 24.2–28.8) for 3 year olds. For severe disorder rates were 7.1 % (95% CI 5.6–8.6) for 2 year olds and 14.0% (95% CI 11.9–16.1) for 3 year olds.

#### **The Copenhagen Child Cohort 2000 study**

The Copenhagen Child Cohort 2000 study investigated the prevalence of mental health problems measured as ICD-10 and DC: 0-3 diagnoses in a random sample of 211 children at 1½ years. DC: 0–3 is an alternative age-specific classification scheme developed by ZERO TO THREE which is designed to complement ICD-10 and DSM-IV by using



developmentally appropriate diagnostic categories and diagnostic guidelines and making it possible to classify disordered parent-child relations in a multi-axial framework [449].

The prevalence of axis I diagnoses of a primary child psychiatric syndrome was found to be 16% (95% CI 11.9–22.1) with ICD-10 and 18% (95% CI 13.5–24.4) with DC: 0–3. The DC: 0–3 diagnosis of regulatory disorder was the most frequent child diagnosis (7.1%, 95% CI 4.0–11.5) and the most frequent diagnosis of all was parent-child relationship disturbances (8.5%, 95% CI 5.1–13.2) [445].

The Copenhagen study found significant associations between high psychosocial risk and a mental health disorder in the child (Odds ratio 3.1, 95% CI 1.2–8.1) and between high psychosocial risk and a parent-child relationship disorder (OR 11.6, 95% CI 3.8–370.5). High psycho-social risk was defined as two or more of: low parental education, overcrowding, parental psychiatric disorder, parental history of institutional care/delinquency/more than two changes of caregiver, marital discord, teenage parents, solo parent, unwanted pregnancy, poor social integration and support for parents, and poor parental coping skills [445].

The Copenhagen study also reported on problems of health and development identified by child health nurses at home visits in the first ten months of life. On average the nurses made four visits per child over this time. The most common mental health related problems noted by the nurses were feeding problems (30% of children over the 10 months), sleeping problems (20%), concern about overall development (13%), abnormal development of verbal and non-verbal communication (11.7%), and mother-child relations (10.1%) [445].

#### **Parent-reported mental health in a community sample of three year olds in New York**

Sarah J. Bufferd et al. recently (2011) reported the results of telephone interviews with the parents of 541 three year olds living in the vicinity of Stony Brook, NY which used the Preschool Age Psychiatric Assessment (PAPA) to determine rates of DSM-IV disorders [450]. Just over one quarter of the children (27.4%) met the criteria for a PAPA/DSM-IV diagnosis, and 9.2% met the criteria for two or more diagnoses. The most common diagnoses were Oppositional Defiant Disorder (ODD) (9.4%), specific phobia (9.1%), and Separation Anxiety Disorder (5.4%). There was significant comorbidity between ODD and ADHD, and between depression, anxiety and ODD. With a few exceptions, demographic variables were not associated with diagnoses in this sample.

#### **The importance of secure attachments for infant mental health**

Numerous studies have shown that insecurely attached children, particularly those showing disorganised patterns of behaviour, are at greater risk for psychopathology, behaviour problems, poor cognitive development and inability to cope with stress [451,452].

The development of secure attachment seems to be impaired more by factors external to the child than physical or neurological abnormalities in the child but risk factors in the child (such as difficult temperament or mental or physical disability) may amplify the effects of external risk factors. Children raised in orphanages may fail to develop attachments, and children of depressed mothers may have impaired attachments, but children who are deaf or who have Down syndrome or autism can still form secure attachments [453].

The “gold standard” test for assessing infant-parent attachment is the “Strange Situation Procedure” (SSP) which involves monitoring a series of interactions between a 12 to 20 month old child, a caregiver and a female “stranger” [454]. Two brief separations from the caregiver are arranged to provide a moderate level of stress in order to activate the child’s need for caregiver support. Based on differences in how infants organise their attachment and exploratory behaviours, and how they behave on reunion with their caregiver, infant attachments can be classified as being secure, avoidant, resistant or disorganised.

Children with secure attachments show distress on separation from their primary caregiver, and when reunited, display active comfort seeking, resolution of distress, and resumption of exploration. Those with avoidant attachments show little response to





separation from their caregiver, although they may reduce their exploration somewhat, and either ignore or actively avoid the caregiver on reunion. Children with resistant attachments show intense distress on separation, followed by attempts to obtain comfort that are limited, awkward or interrupted, and show little or incomplete resolution of distress on reunion with resistance to caregivers' attempts to soothe them. Children whose attachment is classified as disorganised show anomalous reactions to their caregiver which may include chaotic mixtures of proximity-seeking, avoidance and resistance, being fearful of their parent, and failing to use the parent as an attachment figure (e.g. preferring the stranger, trying to get out the door). Children who had disorganised attachment as infants may become pre-schoolers who show controlling/punitive or solicitous/caring behaviours towards their parent or they may continue to show disorganised attachment behaviours [453]. In low-risk populations, the prevalence of disorganised attachment has been found to be around 15% [452] but much higher rates have been found in children clinically referred for disruptive behaviour disorders [455] and in maltreated pre-schoolers [456].

Along with insensitive caregiving behaviours, high-risk ecological contexts such as poverty, solo parenthood, low parental education, parental substance abuse and belonging to an ethnic minority are important precursors of insecure attachments. A recent meta-analytic study by Chantal Cyr et al. of 55 studies (which yielded 59 samples with non-maltreated high-risk children and 10 samples with maltreated children) sheds some light on the relative contributions of various risk factors for insecure attachment [457]. The maltreatment studies showed large effects: maltreated children were less secure and more disorganised than other high-risk children. However, children exposed to five socio-economic risk factors were not significantly less likely to have disorganised attachments than maltreated children showing that the accumulation of multiple socioeconomic risks seems to have a similar effect to maltreatment.

Over recent years there has been increasing evidence that the hormones involved in attachment and in stress responses have lasting effects on brain biology via epigenetic processes and may thus result in intergenerational effects. These hormones appear to affect how individuals respond to each other and whether they tend to create cooperative and trusting relationships or display aggressive tendencies [322,458].

### **Applying findings from infant mental health research in early childhood education and childcare**

The development of secure relationships between a child and his or her parents, caregivers and teachers is important for the child's emotional and social wellbeing. Ways in which childcare and early childhood education services can support the development and maintenance of secure relationships include: assigning primary caregivers to care for specific infants and toddlers, ensuring continuity of caregiving by allowing the same caregiver to remain with a child from infancy to the late toddler years, providing low child: caregiver ratios and small group sizes, supporting professional development so staff can learn more about the importance of relationships and responsive practice, helping to build families' social support networks to enhance parental wellbeing, and being aware of cultural differences in communication styles and in the meanings assigned to particular behaviours or expressions of emotion [459,460]. Early childhood service providers need the knowledge and skills to be able to recognise infants and young children whose behaviour indicates mental health difficulties or possible neglect and take appropriate action [461].

### **Recognition and assessment of attachment and infant mental health disorders**

Signs in children indicating a potential infant mental health disorder vary with the age of the child. A baby may: resist being held, be difficult to console or have prolonged inconsolable crying, have feeding or sleeping difficulties, fail to thrive, fail to seek eye contact or avoid eye contact, appear unresponsive to efforts to engage him/her, rarely coo, babble or vocalise, or seem to have limited ability to regulate his/her emotions. A toddler or pre-schooler may: show either little preference for or excessive dependence on the parent(s)/primary caregiver, not be apprehensive with strangers, be excessively irritable or fearful, have limited/inappropriate expression of feelings, lack curiosity about people,



playthings or the environment, appear sad or withdrawn, show inappropriate sexual behaviour or inappropriate impulsive or aggressive behaviour, have excessive fears that don't respond to reassurance or frequent night terrors, have frequent tantrums, have significant language delay, or have an unusual need for order and cleanliness [249].

Clinical assessment of attachment in young children should involve both an assessment of caregiver-child interaction and a narrative interview with the caregiver [443]. Observing the parent-child interaction following a brief separation, as in the "Strange Situation Procedure", is useful.

Securely attached children show affection to their caregiver, seek closeness when needing comfort, rely on the caregiver for help and cooperate with the caregiver. Atypical parenting behaviours associated with disorganised attachment include withdrawal (not greeting the child on being reunited), being frightened/hesitant/uncertain, role confusion (pleading with the child, threatening to cry, speaking as if the child were an adult partner), affective communication errors (sending contradictory signals e.g. laughing at a child's distress, using a positive tone of voice to put the child down or tease, expressing distress when the child smiles) and intrusiveness or negativity (mocking, withholding a toy, pushing the child away).

Clinically concerning features of parent narrative attachment interviews include expressions of anger about the child's needs, indifference to the child's needs, showing little capacity to imagine what the child feels or needs, blaming the child for difficulties like crying or not sleeping, limited memories about the child, talking about previous experiences of loss or trauma even if not asked about these, and irritation with the interviewer [443].

## **Parenting Programmes for Enhancing Infant Mental Health and Parent-Child Relationships**

Parent-child relationships are critical for infant mental health so interventions for enhancing infant mental health focus on working with parents. The U.K. Department of Education commissioned researchers at the National Academy of Parenting Research (NAPR) at King's College London to evaluate parenting programmes against standards of best practice [462]. Programmes were rated from 1-star (requires further development) to four stars (strong). The highly-rated parent programmes the NAPR evaluated that applied to children 0–3 years were:

### **Family Nurse Partnership (4☆): A targeted programme for young, poor, single mothers**

Family Nurse Partnership (FNP) is for young mothers (19 years and younger) expecting their first child. Mothers are enrolled in the programme during pregnancy and receive weekly or fortnightly visits from a Family Nurse until their child's second birthday (on average a total of 59–64 visits, each lasting c. 1.5 hours). The nurse establishes a supportive relationship with the mother and together they develop strategies for understanding the mother's and the child's needs, and identify resources in the community that may support the health and development of mother and child, to which the mother is likely to be referred. Advice and support is provided in six domains: personal health, environmental health (especially housing), life course development (encouraging the mother to continue her education, find a job and postpone the birth of a second child), maternal role, managing relationships with friends, family and the baby's father, connections with health and human services, and pregnancy advice.

There have been three randomised controlled trials of FNPs with young, single, low income mothers in various parts of the United States: Elimara NY (400 mothers) [463], Memphis TN (734 mothers) [464] and Denver CO (490 mothers) [465]. The Elimara trial found that, compared to the control group, the mothers in the intervention group had significantly fewer subsequent births, days receiving welfare and arrests and convictions while their children were less likely to be abused or neglected, or be arrested or convicted for a crime. The Memphis mothers participating in FNPs showed significant improvements in time on welfare benefits, number of children born while they were in their late





teens/early twenties, their sense of efficacy as mothers, and the length and quality of their relationship with a romantic partner. The Memphis children showed significantly lower rates of cigarette and alcohol use and depression and anxiety. The Denver mothers in the FNP programme were significantly more likely to wait longer before having a second child and to experience less domestic violence. For the Denver children overall there were no significant differences between the intervention and control groups but for the subsample of children whose mothers had low psychological resources, the FNP children were significantly more likely to show improved intellectual and behavioural functioning.

A large RCT of FNP is currently underway in the U.K. involving 1,645 women from 18 FNP sites [462]. The first results are expected in 2013. There have been several cost studies of FNPs in the U.S. suggesting that these programmes return four to six dollars for every dollar invested [466]

### **Family Foundations (3☆): A universal programme for expectant couples**

Family Foundations (FF) is for cohabiting couples expecting their first child. Couples attend five weekly group sessions in the final three months of pregnancy where they learn how to support each other as parents after the baby is born. Six months after the birth the parents return for four more weekly sessions to learn about communicating effectively as parents and supporting their child's development. The programme is based on research linking improved couple relationships to parental wellbeing and on research linking co-parenting behaviours to children's behaviour.

The evidence for the effectiveness of Family Foundations comes from one RCT involving 169 heterosexual middle class couples who were randomly assigned to receive FF plus childbirth training or childbirth training only [467]. Assessments before and after the programmes indicated the following significant outcomes for the FF group: decreased maternal depression and anxiety, increased co-parenting support and increased infant soothability. At twelve-month follow up (93% of mother and 88% if fathers participated) the FF group demonstrated reduced parental competition, reduced negative communication (mothers only) increased parental warmth and increased child self-soothing [468]. At Three Year follow up (85% of original mothers, 77% of original fathers) the FF group showed improved co-parenting, reduced parental stress, improved child social competence for both boys and girls, and reduced externalising and internalising behaviours, hyperactivity and aggression in boys only [469].

### **New Beginnings (3☆): For Mothers and infants in prison with parent-child relationship difficulties**

In this programme mothers, who may be depressed, anxious or have other mental health issues, attend 12 weekly small group sessions, with their babies, at which they learn how to understand their baby's needs and respond sensitively to them, and also reflect on their own childhood and life experiences. The effectiveness of this programme has been demonstrated in one cluster RCT carried out in seven mother-baby units within U.K. prisons [470]. Three units (88 mothers and babies) were randomly assigned to receive New Beginnings while four units (75 mothers and babies) acted as a control group. The mothers in the New Beginnings group showed significant improvements in their sensitivity to their child and in their reflective functioning.

### **Pathways Triple P (3☆): For parents on the child protection register or at risk of maltreating their child**

Pathways Triple P is a level five intervention within the five-tiered Triple P system of care. There is on-going research and evaluation of various combinations of Triple P interventions in diverse settings and populations. A meta-analysis of 55 evaluations of Triple P found that it had consistent positive effects for parents and children [471]. Community-wide implementation of the entire Triple P system has been the subject of a RCT in the U.S. which suggests that it results in significant reductions in child maltreatment [472]. An Australian cost-effectiveness study concluded that implementation of the entire five-tiered Triple P system on a population basis in Queensland would be cost-effective for reducing the prevalence of conduct disorder (i.e. that it would save the



state more than it cost) provided that it reduced the prevalence of conduct disorder by 7% or more and that therefore it would be a worthwhile use of limited health funds [473].

Pathways Triple P (PTP) participants are identified by social services or by practitioners leading a less intensive Triple P Programme. They are likely to be using overly harsh or inappropriate discipline, have highly unrealistic expectations of their child's behaviour, make inappropriate attributions about the intentions behind their child's behaviour and have difficulty managing their own anger and moods. Pathways Triple P involves parents attending between 10 and 12 weekly individual or group sessions at which they learn how to have appropriate expectations for their child's behaviour, manage their own moods and anger, increase their self-efficacy as parents and better manage their child's unwanted behaviour.

There is evidence for the effectiveness of PTP from two RCTs, one involving the parents of 60 children (aged from four to ten) who had concerns about their relationship with their child [474] and one involving the parents of 98 children (aged 2 to seven) who were known to child protection services [475]. In the trial involving the parents of the older children the parents who participated in PTP (compared to the wait-list group) were significantly more likely to report improvements in their parenting practices, their confidence as parents, their child's behaviour and the quality of parent child relationships, both immediately after completion of the programme and three months later. The trial involving younger children compared parents who received PTP to a control group of parents who received a standard behavioural family intervention. Both groups of parent showed significant improvements after intervention in their parenting practices, the parents' attributions of their child's behaviour and their child's behaviour, both immediately after the intervention and six months later.

### **Other interventions**

Other interventions for young children which were evaluated by the National Academy of Parenting Research and given a 2-star rating are: The Anna Freud Centre Parent Infant Project, Family Transitions Triple P, Mellow Parenting, Parents as First Teachers and Noughts to Sixes – From Pram to Primary School [462].

## **Postnatal Depression and Infant Mental Health**

### **Post natal depression and its effects on mother-infant relationships**

Postnatal depression is relatively common, affecting around 13% of mothers [476]. Risk factors commonly reported in published studies include a previous history of depression, depression during pregnancy, difficulties in the marital relationship, a lack of social support and stressful life events. Probable risk factors, reported in some, but not all, studies include family history of psychopathology, personality characteristics, single parenthood, a difficult birth experience and infant temperament [477].

It appears that characteristics of the infant may contribute to maternal depression. Women who perceive their babies as being fussy or difficult to care for are more likely to be depressed [477]. Disabled infants tend to provide fewer and less readable cues to their mothers, show more withdrawal from or avoidance of social interactions, display more negative affect and less positive affect and have difficulties in turn-taking during social exchanges [478].

There is considerable evidence that mother-infant interactions may be impaired if the mother is suffering from postnatal depression and that the infant's social, emotional and cognitive development may be harmed as a result, particularly if the depression is prolonged and/or there are adverse socio-economic circumstances [479]. Male babies appear to be more vulnerable to the effects of maternal depression [480]. Depressed mothers have been observed to touch their infants less often, handle them more roughly, smile and talk to their child less often and coordinate their communication with their child's less well than non-depressed mothers [481]. Studies on parenting practices have reported that mothers with postpartum depression are more likely to discontinue breastfeeding [482].





## Interventions for postnatal depression

Interventions for postnatal depression include psychotherapy, psycho-social interventions and medication.

Drug treatments for postnatal depression include anti-depressants, St. John's Wort and hormone treatment. Selective serotonin reuptake inhibitors (SSRIs, e.g. fluoxetine, paroxetine, and sertraline) and other antidepressants (e.g. nortriptyline) are effective for the treatment of depression in general and, for this reason, the reviewers at *clinicalevidence.bmj.com* stated that, although there have been very few RCTs assessing the effects of SSRIs or other antidepressants for the treatment of post-natal depression, they are likely to be beneficial for post-natal depression [483]. They found that there was insufficient evidence to draw any conclusions about hormones or St. John's Wort.

Regarding non-drug treatments, a 2009 Cochrane review assessed psychosocial and psychological interventions for treating postpartum depression [484]. The review reported on nine RCTs or quasi-RCTs which reported outcomes for 956 women. The psychological interventions in the reviewed studies included cognitive behavioural therapy, interpersonal psychotherapy, and psychodynamic therapy. The psychosocial interventions included peer support and non-directive counselling, provided either by trained health workers or peer volunteers. The review authors concluded that, overall, psychological and psychosocial interventions are effective treatments for postnatal depression although they reported that the methodological quality of the studies was, in general, not strong and it was unclear what the long term effects of these types of interventions were.

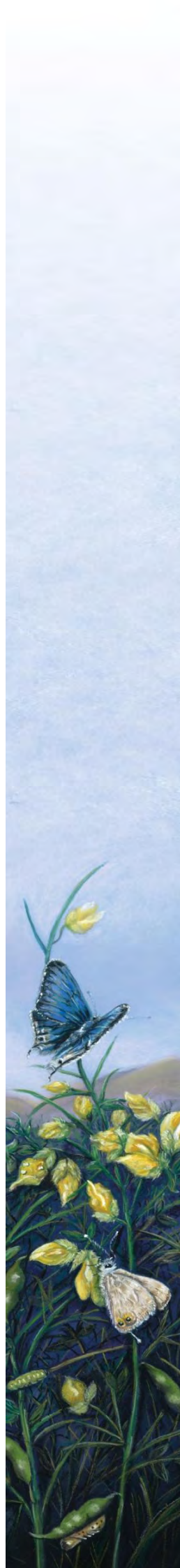
A number of Cochrane reviews have examined preventive interventions for postnatal depression. These reviews found that there was insufficient evidence to draw any conclusions about the benefits of hypnosis, antidepressant medication or psychological or psychosocial interventions [485,486,487]. A review of two trials (229 women) found that synthetic progestogens do not prevent postnatal depression and that, because they have a significant negative effect on maternal mood, it is questionable whether they should be prescribed for other indications, such as contraception, in the postnatal period [488].

## Conclusion

Children with mental health disorders are less able than adults with mental disorders to talk about their distress. They indicate their impaired mental health by their behaviour and they do not usually choose to seek help from mental health services. Adults close to them notice differences from normal age-appropriate behaviour and/or social and emotional competence and seek help on their behalf.

Parent-child relationships are critical to children's social and emotional wellbeing and their development of self-esteem, empathy, conscience, social and cooperative skills and the capacity to manage their emotions and form successful adult relationships and become competent nurturing parents. Poor quality parenting characterised by neglect, inappropriate expectations of child behaviour, harsh discipline and inadequate supervision is associated with the development of conduct problems in children. Chronic stress in early life as a result of poverty, parental mental illness or substance abuse, domestic violence and teen pregnancy can have lasting effects on a child's developing brain and lead to poor mental and physical health in later life. Children who exhibit anti-social behaviour early in life are at risk of poor social and educational outcomes, mental illness, criminality, and substance abuse in later life. Compared to other OECD countries New Zealand has high rates of child abuse and neglect and children who have been abused or neglected are likely to have persistent mental health problems.

Around half of lifetime mental health disorders begin by the mid-teens. Prevention and intervention services are more effective in younger children but older children make up the vast majority of CAMHS clients. There are beginning to be some infant mental health services for very young children and their caregivers and there is increasing provision of child mental health services in primary care but there remains considerable unmet need for services. When services focus only on those with the most severe disorders opportunities for prevention and early intervention are lost.



# ACCESS TO MENTAL HEALTH SERVICES: LATE CHILDHOOD AND ADOLESCENCE

The following section uses data from the Project for the Integration of Mental Health Data (PRIMHD) to explore access to mental health outpatient, community and inpatient services for children and young people with the following mental health diagnoses:

- Anxiety disorders
- Stress reaction/adjustment disorders
- Eating disorders

These diagnoses were selected as they were the most commonly assigned in late childhood and early adolescence to those recorded as accessing mental health services in the PRIMHD. In addition, the In-depth Topic commencing on **Page 368** reviews mental health issues for children aged 0–14 years in more detail.

## Data Source and Methods

Information on the Project for the Integration of Mental Health Data (PRIMHD) and the DSM-IV codes used in this analysis is provided in the *Access to Mental Health Services: Introduction* section on **Page 351**.

Note 1: Because PRIMHD data is configured in a very different way to that contained in the National Minimum Dataset (hospital admissions) the reader is urged to review the methods section on **Page 351**, in order to become familiar with the strengths and limitations of PRIMHD.

Note 2: The information presented in this year's report differs from that presented in the NZCYES' 2009 Reports, because of differences in the data collections (PRIMHD vs. the Mental Health Information National Collection (MHINC)) and the coding systems used to code mental health diagnoses (in PRIMHD the data received were coded in DSM-IV, whereas in MHINC diagnoses were coded using ICD-10-AM).

## New Zealand Distribution

### Numbers Accessing Services

In addition to the diagnoses reviewed in the section on access to mental health services for children, a number of mental health diagnoses became increasingly common during late childhood and early adolescence. During 2009–2011, these included anxiety disorders, stress reaction/adjustment disorders and eating disorders (**Table 99**). While it is likely that a number of children and young people with these diagnoses would still have their care managed in the paediatric outpatient setting (with this workload not being captured by PRIMHD) the extent to which PRIMHD undercounts access to services for these children and young people may be less than in the previous section, due to the older age cohort involved (and the likelihood that mental health services rather than paediatric outpatients would be primarily responsible for their care).

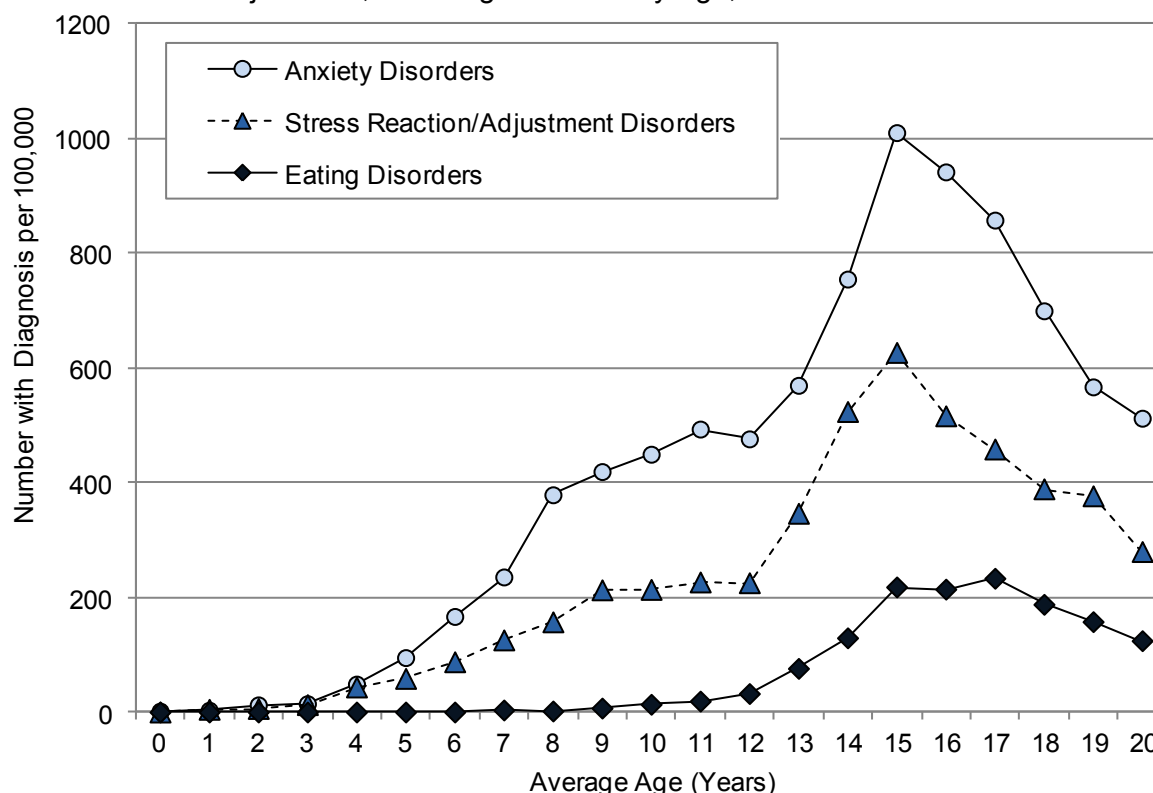
### Numbers Accessing Services by Diagnosis and Age

*Anxiety and Stress Reaction/Adjustment Disorders:* In New Zealand during 2009–2011, the number accessing mental health services with anxiety and stress reaction/adjustment disorders increased steadily between four and twelve years of age. Numbers then increased more rapidly, to reach a peak at fifteen years, before declining again during the late teens. At each age from five years onwards, the number accessing services with anxiety disorders was higher than the number accessing services with stress reaction/adjustment disorders (**Figure 131**).

*Eating Disorders:* In New Zealand during 2009–2011, very few children accessed mental health services with eating disorders prior to ten years of age. Numbers then increased gradually during adolescence, to reach a plateau between fifteen and seventeen years, before declining again in the late teens (**Figure 131**).



Figure 131. Children and Young People Accessing Mental Health Services with Anxiety, Stress Reaction/Adjustment, or Eating Disorders by Age, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)

## Numbers Accessing Services by Diagnosis, Ethnicity and Gender

**Anxiety Disorders:** In New Zealand during 2009–2011, the number of children and young people accessing mental health services with an anxiety disorder was *significantly* higher for females and for European/Other > Māori > Pacific children and young people. A similar pattern was seen for mental health service contacts and inpatient bed nights (**Table 97**).

**Stress Reaction/Adjustment Disorders:** In New Zealand during 2009–2011, the number of children and young people accessing mental health services with a stress reaction/adjustment disorder was *significantly* higher females and for European/Other > Māori > Pacific children and young people. While similar gender differences were seen for mental health service contacts and inpatient bed nights, both measures were *significantly* higher for Māori > European/Other > Pacific children and young people (**Table 97**).

**Eating Disorders:** In New Zealand during 2009–2011, the number of children and young people accessing mental health services with eating disorders was *significantly* higher for females and for European/Other > Māori and Pacific children and young people. Similar patterns were seen for mental health service contacts and inpatient bed nights, although for these measures, access rates were *significantly* higher for European/Other > Māori > Pacific children and young people (**Table 98**).



Table 97. Children and Young People Aged 0–24 Years Accessing Mental Health Services with Anxiety Disorders or Stress Reaction/Adjustment Disorders, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Anxiety Disorders												
Ethnicity												
European/Other	5,629	548.26	1.00		92,763	9,034.9	1.00		15,274	1,487.6	1.00	
Māori	1,120	314.06	0.57	0.54–0.61	24,550	6,884.2	0.76	0.75–0.77	4,798	1,345.3	0.90	0.88–0.93
Pacific	189	131.10	0.24	0.21–0.28	3,576	2,480.2	0.27	0.27–0.28	634	439.8	0.30	0.27–0.32
Gender												
Female	3,873	519.67	1.00		72,530	9,731.8	1.00		13,703	1,838.6	1.00	
Male	3,065	391.84	0.75	0.72–0.79	48,359	6,182.3	0.64	0.63–0.64	7,003	895.2	0.49	0.47–0.50
Stress Reaction/Adjustment Disorders												
Ethnicity												
European/Other	2,740	266.87	1.00		32,739	3,188.8	1.00		4,774	465.0	1.00	
Māori	832	233.30	0.87	0.81–0.94	12,067	3,383.6	1.06	1.04–1.08	1,967	551.7	1.19	1.13–1.25
Pacific	186	129.01	0.48	0.42–0.56	2,196	1,523.2	0.48	0.46–0.50	251	174.3	0.37	0.33–0.43
Gender												
Female	2,132	286.07	1.00		28,801	3,864.4	1.00		4,722	633.6	1.00	
Male	1,626	207.87	0.73	0.68–0.78	18,201	2,326.9	0.60	0.59–0.61	2,271	290.3	0.46	0.44–0.48

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 children and young people 0–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children and young people 0–24 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 children and young people 0–24 years

Table 98. Children and Young People Aged 0–24 Years Accessing Mental Health Services with Eating Disorders, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Eating Disorders												
Ethnicity												
European/Other	1,118	108.89	1.00		27,037	2,633.3	1.00		7,095	691.0	1.00	
Māori	74	20.75	0.19	0.15–0.24	1,759	493.3	0.19	0.18–0.20	477	133.8	0.19	0.18–0.21
Pacific	14	9.71	0.09	0.05–0.15	261	181.3	0.07	0.06–0.08	81	56.2	0.08	0.07–0.10
Gender												
Female	1,119	150.14	1.00		27,505	3,690.5	1.00		7,166	961.6	1.00	
Male	87	11.12	0.07	0.06–0.09	1,552	198.5	0.05	0.05–0.06	486	62.2	0.06	0.06–0.07

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 children and young people 0–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children and young people 0–24 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 children and young people 0–24 years

## Midland Region Distribution

### Children and Young People Accessing Mental Health Services by Diagnosis

In addition to the diagnoses reviewed in the section on access to mental health services for children, a number of mental health diagnoses became increasingly common during late childhood and early adolescence. In the Midland Region during 2009–2011, these included anxiety disorders, stress reaction/adjustment disorders and eating disorders.

In the Waikato, Lakes DHB, Tairāwhiti and Taranaki during 2009–2011, the number of children and young people accessing mental health services with anxiety disorders, stress reaction/adjustment disorders and eating disorders was *significantly* lower than the New Zealand rate. In the Bay of Plenty, while the number accessing mental health services with anxiety disorders and stress reaction/adjustment disorders was *significantly* higher than the New Zealand rate, the number accessing services with eating disorders was similar to the New Zealand rate (**Table 99**).

In interpreting these differences, it must be remembered that these figures reflect access to services rather than the underlying prevalence of these conditions in the community. Further regional differences in the proportion of cases managed by paediatric outpatient services (which are not captured in PRIMHD) vs. child and youth mental health services may account for some of the differences seen.

### Local Policy Documents and Evidence-Based Reviews Relevant to Mental Health Issues in Children and Young People

Local policy documents and evidence-based reviews relevant to the management of mental health issues in children and young people are reviewed in the **Access to Mental Health Services: Introduction** section commencing on **Page 351**. In addition, **Table 112** on **Page 414** provides an overview of the literature on the prevention of drug use in young people, while **Table 116** on **Page 423** considers suicide prevention in young people. Finally, the In-Depth Topic **Mental Health Issues in Children** commencing on **Page 368** provides a more detailed review of the literature as it relates to children aged 0–14 years.





Table 99. Children and Young People Aged 0–24 Years Accessing Mental Health Services with Anxiety, Stress Reaction/Adjustment or Eating Disorders, Midland DHBs vs. New Zealand 2009–2011

DSM-IV Diagnosis	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Annual Contacts per Individual	Annual Bed Nights per Individual
Children and Young People 0–24 Years						
Waikato						
Anxiety Disorders	374	281.10	0.62	0.56–0.69	18.7	5.27
Stress Reaction/Adjustment Disorders	257	193.16	0.79	0.69–0.89	17.1	3.47
Eating Disorders	72	54.12	0.69	0.54–0.87	35.9	7.65
Bay of Plenty						
Anxiety Disorders	446	633.16	1.39	1.27–1.53	14.5	0.68
Stress Reaction/Adjustment Disorders	272	386.14	1.57	1.39–1.77	13.1	1.39
Eating Disorders	56	79.50	1.01	0.77–1.32	25.9	1.85
Lakes DHB						
Anxiety Disorders	98	261.54	0.58	0.47–0.70	29.5	3.58
Stress Reaction/Adjustment Disorders	44	117.43	0.48	0.35–0.64	15.9	2.77
Eating Disorders	11	29.36	0.37	0.21–0.67	37.3	4.15
Tairāwhiti						
Anxiety Disorders	24	134.30	0.30	0.20–0.44	10.7	1.17
Stress Reaction/Adjustment Disorders	11	61.56	0.25	0.14–0.45	11.9	0.18
Eating Disorders	1	5.60	0.07	0.01–0.50	10.0	2.67
Taranaki						
Anxiety Disorders	46	128.06	0.28	0.21–0.38	32.0	7.01
Stress Reaction/Adjustment Disorders	35	97.44	0.40	0.28–0.55	8.9	1.05
Eating Disorders	7	19.49	0.25	0.12–0.52	58.8	13.24
New Zealand						
Anxiety Disorders	6,938	454.21	1.00		17.4	2.98
Stress Reaction/Adjustment Disorders	3,758	246.02	1.00		12.5	1.86
Eating Disorders	1,206	78.95	1.00		24.1	6.35

Source: PRIMHD; Note: *Total* = total number of individuals with diagnosis accessing services during 2009–2011; *Annual Contacts per Individual* = number of contacts each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; *Annual Bed Nights per Individual* = number of bed nights each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%

# ACCESS TO MENTAL HEALTH SERVICES: LATE ADOLESCENCE

The following section uses the National Minimum Dataset to explore the most common reasons for hospitalisation with a mental health diagnosis in young people aged 15–24 years. In this section, the unit of analysis is the number of hospital admissions, rather than the number of individuals accessing services, with the coding system used to assign diagnoses being ICD-10-AM.

In addition, data from the Project for the Integration of Mental Health Data (PRIMHD) is used to explore access to mental health outpatient, community and inpatient services in young people with the following diagnoses:

- Schizophrenia and other psychotic disorders
- Personality disorders
- Depression, bipolar disorder and other mood disorders
- Substance-related disorders (alcohol, cannabis, and other substances).

These diagnoses were selected as they were the most commonly assigned to young who were recorded as accessing mental health services in the PRIMHD. In this second section, the units of analysis are the number of young people accessing services, and the annual number of contacts and inpatient bed nights per individual, with the coding system used to assign diagnoses being DSM-IV.

## Data Source and Methods

Information on the Project for the Integration of Mental Health Data (PRIMHD) and the DSM-IV codes used in this analysis is provided in the Access to Mental Health Services: Introduction section on **Page 286**.

Note 1: Because PRIMHD data is configured in a very different way to that contained in the National Minimum Dataset (hospital admissions) the reader is urged to review the methods section on **Page 286**, in order to become familiar with the strengths and limitations of PRIMHD.

Note 2: The information presented in this year's report differs from that presented in the NZCYES' 2009 Reports, because of differences in the data collections (PRIMHD vs. the Mental Health Information National Collection (MHINC)) and the coding systems used to code mental health diagnoses (in PRIMHD the data received were coded in DSM-IV, whereas in MHINC diagnoses were coded using ICD-10-AM).

In addition, the section below provides additional information on the National Minimum Dataset, which has been used to review mental health inpatient admissions for those aged 15–24 years.

### Definition

*Hospital admissions for young people aged 15–24 years with an ICD-10-AM mental health diagnosis*

### Data Source

**Numerator:** National Minimum Dataset: Hospital admissions in young people aged 15–24 years with a *primary diagnosis* of a Mental or Behavioural Disorder (ICD-10-AM F00–F99). Admissions with an Emergency Medicine specialty code in the range M05–M08 on discharge were excluded. Specific diagnoses included ICD-10-AM F10 or Z72.1 (Mental Health Issues due to Alcohol or Alcohol Use); F12 (Mental Health Issues due to Cannabis Use); F17 or Z72.0 (Mental Health Issues due to Tobacco or Tobacco Use); F11, F13, F14, F15, F16, F18, F19 or Z72.2 (Mental Health Issues due to Other Specified Drugs); F20 (Schizophrenia); F21–F29 (Schizotypal/Delusional Disorders); F31 (Bipolar Affective Disorder); F32 or F33 (Depression); F30, F34, F38, or F39 (Other Mood Disorders); F40 or F41 (Anxiety Disorders); F42 (Obsessive Compulsive Disorder); F43 (Stress Reaction/Adjustment Disorder); F50 (Eating Disorders); F60–F69 (Personality/Behaviour Disorders).

**Denominator:** Statistics NZ Projected Population

### Notes on Interpretation

Note 1: The limitations of the National Minimum Dataset are discussed in **Appendix 3**. The reader is urged to review this Appendix before interpreting any analyses based on hospital admission data. In particular, due to inconsistent uploading of Emergency Department (ED) cases to the NMDS, all admissions with an ED health specialty code on discharge have been excluded (see **Appendix 3** for a more detailed discussion).

Note 2: Whereas the inpatient data derived from PRIMHD refers to the number of bed nights utilised by young people with various mental health diagnoses, the section on mental health inpatient admissions uses hospital admissions as the unit of analysis (i.e. a hospital admission is counted only once, irrespective of the number of bed nights utilised, with the same client potentially being counted several times, if they are admitted on a number of occasions with a mental health diagnosis).

Note 3: For hospital admission data, only the primary diagnosis has been used (vs. PRIMHD data, where a client with more than one diagnosis may appear several times in conjunction with each of the diagnoses received). In addition, in the National Minimum Dataset, all mental health diagnoses were coded in ICD-10-AM, whereas PRIMHD data was provided by the Ministry with diagnoses coded in DSM-IV. Thus the two analyses are not strictly comparable.

# Hospital Admissions for Young People with ICD-10-AM Mental Health Diagnoses

## New Zealand Distribution

In New Zealand during 2007–2011, the most common reasons for hospital admissions with a mental health diagnoses in young people were for schizophrenia, followed by depression and stress reaction/adjustment disorders. Composite categories such as schizotypal/delusional disorders and drug and alcohol-related conditions also made a significant contribution (**Table 100**).

Table 100. Hospital Admissions for Mental Health Conditions in Young People Aged 15–24 Years by Primary Diagnosis, New Zealand 2007–2011

ICD-10-AM Diagnosis	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Percent of Admissions (%)
Young People 15–24 Years				
New Zealand				
Schizophrenia	2,640	528.0	84.80	18.5
Schizotypal/Delusional Disorders	2,302	460.4	73.95	16.1
Depression	2,174	434.8	69.83	15.2
Alcohol/Drug Mental Health Effects	1,553	310.6	49.89	10.9
Stress Reaction/Adjustment Disorder	1,248	249.6	40.09	8.7
Bipolar Affective Disorder	1,145	229.0	36.78	8.0
Other Mental Health Issues	999	199.8	32.09	7.0
Eating Disorders	755	151.0	24.25	5.3
Personality Disorders	703	140.6	22.58	4.9
Other Mood Disorders	405	81.0	13.01	2.8
Anxiety Disorders	292	58.4	9.38	2.0
Obsessive Compulsive Disorder	47	9.4	1.51	0.3
New Zealand Total	14,263	2,852.6	458.16	100.0

Source: Numerator: NMDS; Denominator: Statistics NZ Projected Population; Note: ED cases removed

## Midland Region Distribution

Amongst the DHBs in the Midland Region during 2007–2011, the commonest reasons for hospital admissions with mental health diagnoses in young people were schizophrenia, schizotypal/delusional disorders, depression, the mental health effects of drugs and alcohol and stress reaction/adjustment disorders (**Table 101** and **Table 102**).

While admission rates for a number of diagnoses differed from the New Zealand rate, such figures are difficult to interpret, as many mental health services are offered on an outpatient/community basis, and thus access to inpatient mental health services may fail to accurately reflect the true burden of disease, or access to services in an ambulatory care setting (Note: The unit of analysis here is the number of hospital admissions, as compared to the number of inpatient bed nights in the sections based on PRIMHD data).





Table 101. Hospital Admissions for Mental Health Conditions in Young People Aged 15–24 Years by Primary Diagnosis, Waikato, Bay of Plenty and Lakes DHBs 2007–2011

ICD-10-AM Diagnosis	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Percent of Admissions (%)
Young People 15–24 Years				
Waikato				
Depression	247	49.4	93.37	17.5
Schizophrenia	246	49.2	92.99	17.5
Schizotypal/Delusional Disorders	232	46.4	87.70	16.5
Stress Reaction/Adjustment Disorder	180	36.0	68.04	12.8
Bipolar Affective Disorder	148	29.6	55.95	10.5
Alcohol/Drug Mental Health Effects	128	25.6	48.39	9.1
Personality Disorders	54	10.8	20.41	3.8
Eating Disorders	43	8.6	16.26	3.1
Other Mood Disorders	36	7.2	13.61	2.6
Anxiety Disorders	17	3.4	6.43	1.2
Other Mental Health Issues	78	15.6	29.49	5.5
Waikato Total	1,409	281.8	532.62	100.0
Bay of Plenty				
Schizophrenia	152	30.4	119.44	18.5
Schizotypal/Delusional Disorders	141	28.2	110.80	17.2
Alcohol/Drug Mental Health Effects	117	23.4	91.94	14.3
Bipolar Affective Disorder	66	13.2	51.86	8.0
Eating Disorders	65	13.0	51.08	7.9
Personality Disorders	61	12.2	47.93	7.4
Depression	54	10.8	42.43	6.6
Stress Reaction/Adjustment Disorder	37	7.4	29.07	4.5
Other Mood Disorders	27	5.4	21.22	3.3
Anxiety Disorders	17	3.4	13.36	2.1
Other Mental Health Issues	84	16.8	66.01	10.2
Bay of Plenty Total	821	164.2	645.14	100.0
Lakes DHB				
Schizophrenia	97	19.4	143.26	30.4
Schizotypal/Delusional Disorders	55	11.0	81.23	17.2
Alcohol/Drug Mental Health Effects	44	8.8	64.98	13.8
Depression	22	4.4	32.49	6.9
Bipolar Affective Disorder	22	4.4	32.49	6.9
Stress Reaction/Adjustment Disorder	19	3.8	28.06	6.0
Personality Disorders	18	3.6	26.58	5.6
Eating Disorders	8	1.6	11.82	2.5
Other Mood Disorders	6	1.2	8.86	1.9
Anxiety Disorders	5	1.0	7.38	1.6
Other Mental Health Issues	23	4.6	33.97	7.2
Lakes DHB Total	319	63.8	471.13	100.0

Source: Numerator: NMDS; Denominator: Statistics NZ Projected Population; Note: ED cases removed



Table 102. Hospital Admissions for Mental Health Conditions in Young People Aged 15–24 Years by Primary Diagnosis, Tairāwhiti and Taranaki DHBs 2007–2011

ICD-10-AM Diagnosis	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Percent of Admissions (%)
Young People 15–24 Years				
Tairāwhiti				
Schizophrenia	92	18.4	291.14	30.3
Alcohol/Drug Mental Health Effects	57	11.4	180.38	18.8
Depression	36	7.2	113.92	11.8
Schizotypal/Delusional Disorders	29	5.8	91.77	9.5
Bipolar Affective Disorder	17	3.4	53.80	5.6
Other Mood Disorders	17	3.4	53.80	5.6
Stress Reaction/Adjustment Disorder	16	3.2	50.63	5.3
Personality Disorders	12	2.4	37.98	3.9
Anxiety Disorders	7	1.4	22.15	2.3
Eating Disorders	5	1.0	15.82	1.6
Other Mental Health Issues	16	3.2	50.63	5.3
Tairāwhiti Total	304	60.8	962.03	100.0
Taranaki				
Depression	110	22.0	166.89	22.1
Stress Reaction/Adjustment Disorder	70	14.0	106.21	14.1
Alcohol/Drug Mental Health Effects	67	13.4	101.65	13.5
Schizotypal/Delusional Disorders	64	12.8	97.10	12.9
Schizophrenia	40	8.0	60.69	8.0
Bipolar Affective Disorder	28	5.6	42.48	5.6
Personality Disorders	22	4.4	33.38	4.4
Eating Disorders	19	3.8	28.83	3.8
Anxiety Disorders	16	3.2	24.28	3.2
Other Mood Disorders	9	1.8	13.66	1.8
Other Mental Health Issues	52	10.4	78.90	10.5
Taranaki Total	497	99.4	754.06	100.0

Source: Numerator: NMDS; Denominator: Statistics NZ Projected Population; Note: ED cases removed

## Access to Mental Health Services (PRIMHD Data)

### New Zealand Distribution

#### Numbers Accessing Services

In addition to the diagnoses reviewed in the earlier sections on access to mental health services during childhood and early adolescence, a number of mental health diagnoses became increasingly common during late adolescence. During 2009–2011, these included schizophrenia and other psychotic disorders, depression, bipolar disorder and other mood disorders and personality disorders (**Table 106**). When compared to the paediatric population, it is likely that very few young people with these diagnoses would have their care managed primarily in the paediatric outpatient setting (which is not captured by PRIMHD) and thus the extent to which PRIMHD undercounts access to services for young people with these diagnosis is likely to be less than in the previous sections.



## Numbers Accessing Services by Diagnosis and Age

*Schizophrenia, Other Psychotic Disorders and Personality Disorders:* In New Zealand during 2009–2011, the number of young people accessing mental health services with psychotic disorders (other than schizophrenia) increased rapidly after 13 years of age, with numbers continuing to increase up until 20 years. While the number diagnosed with schizophrenia and personality disorders followed a similar pattern, the age distribution was shifted to the right by two to three years (i.e. the average age of diagnosis for these disorders was two to three years later than for other psychotic disorders (**Figure 132**)).

*Depression, Bipolar Disorders and Other Mood Disorders:* In New Zealand during 2009–2011, the number of young people accessing mental health services with a diagnosis of depression increased gradually between eight and thirteen years, with numbers then rising very rapidly thereafter, to reach a peak at 16–17 years of age. Rates then decreased again during the late teens. While a similar pattern was seen for other mood disorders, numbers were lower than for those with depression at every age from eight years onwards. In contrast, the number accessing mental health services with a diagnosis of bipolar disorder increased gradually from twelve years of age onwards (**Figure 133**).

## Numbers Accessing Services by Diagnosis, Ethnicity and Gender

*Schizophrenia and Other Psychotic Disorders:* In New Zealand during 2009–2011, the number of young people accessing mental health services with schizophrenia or other psychotic disorders was *significantly* higher for males and for Māori > Pacific > European/Other young people. Similar patterns were seen for mental health service contacts and inpatient bed nights (**Table 103**).

*Depression and Other Mood Disorders:* In New Zealand during 2009–2011, the number of young people accessing mental health services with depression or other mood disorders was *significantly* higher for females and for European/Other > Māori > Pacific young people. While similar patterns were seen for mental health service contacts, inpatient bed nights for those with depression were *significantly* higher for Māori > European/Other > Pacific young people (**Table 104**, **Table 105**).

*Bipolar Disorder:* In New Zealand during 2009–2011, the number of young people accessing mental health services with bipolar disorder was *significantly* higher for females and for Māori > European/Other > Pacific young people. While similar ethnic differences were seen for mental health service contacts and inpatient bed nights, the number of inpatient bed nights for males with bipolar disorder was *significantly* higher than for females (**Table 104**).

*Personality Disorders:* In New Zealand during 2009–2011, the number of young people accessing mental health services with a personality disorder was *significantly* higher for females and for European/Other and Māori > Pacific young people. While similar gender and ethnic differences were seen for the number of mental health service contacts, the number of inpatient bed nights was *significantly* higher for Māori > European/Other > Pacific young people (**Table 105**).

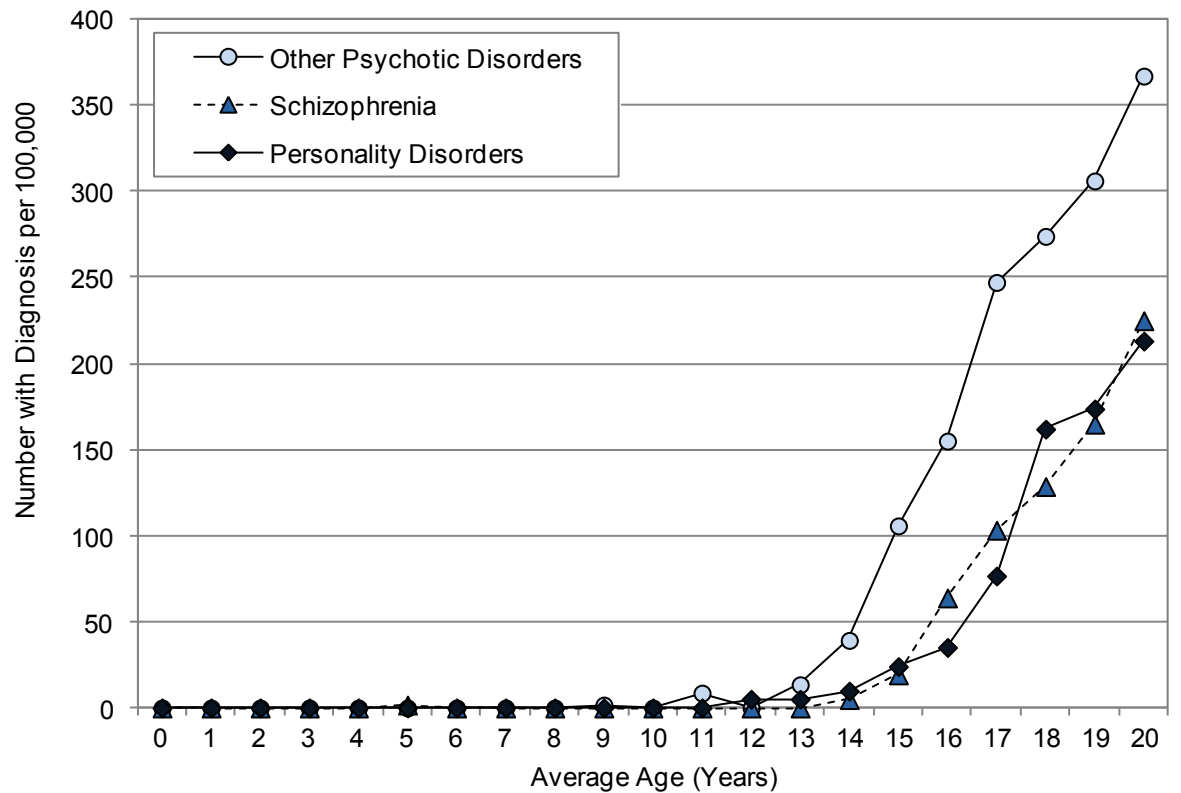
## Midland Region Distribution

### Young People Accessing Mental Health Services by Diagnosis

Amongst the DHBs in the Midland Region during 2009–2011, depression and other mood disorders and schizophrenia and other psychotic disorders were the most frequent diagnoses assigned to young people accessing mental health services (**Table 106**, **Table 107**). While rates for a number of conditions differed *significantly* from the New Zealand rate, it must be remembered these figures reflect young people's access to mental health services rather than the underlying health need in the community, with the figures presented thus being likely to underestimate the prevalence of these conditions in the region.

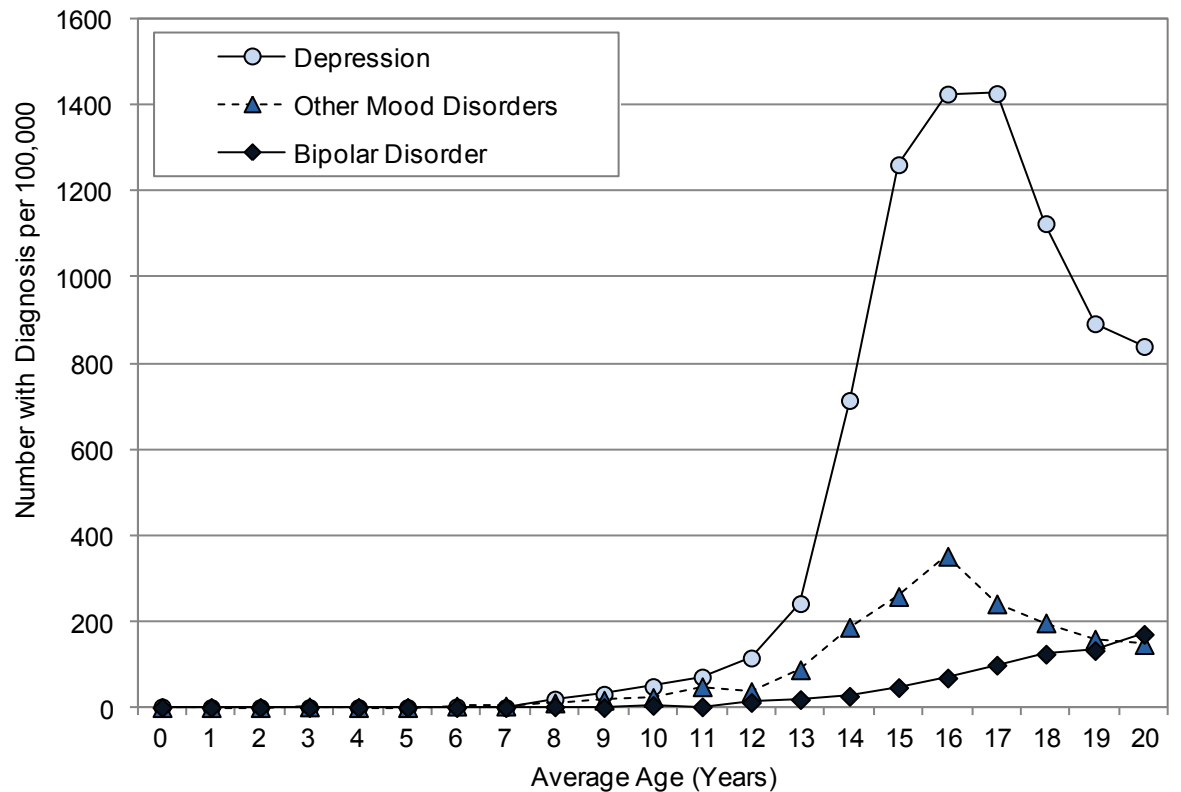


Figure 132. Children and Young People Accessing Mental Health Services with Schizophrenia, Other Psychotic Disorders or Personality Disorders by Age, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)

Figure 133. Children and Young People Accessing Mental Health Services with Depression, Bipolar Disorder or Other Mood Disorders by Age, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)





Table 103. Young People Aged 15–24 Years Accessing Mental Health Services with Schizophrenia or Other Psychotic Disorders, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Schizophrenia												
Ethnicity												
European/Other	564	125.2	1.00		32,965	7,317.8	1.00		21,314	4,731.5	1.00	
Māori	695	550.7	4.40	3.94–4.91	45,982	36,435.8	4.98	4.92–5.04	28,644	22,697.6	4.80	4.72–4.88
Pacific	151	289.6	2.31	1.93–2.77	10,934	20,971.1	2.87	2.81–2.92	5,489	10,528.1	2.23	2.16–2.29
Gender												
Female	342	111.3	1.00		22,014	7,163.0	1.00		11,729	3,816.4	1.00	
Male	1,068	332.2	2.99	2.64–3.37	67,868	21,110.1	2.95	2.91–2.99	43,719	13,598.8	3.56	3.49–3.63
Other Psychotic Disorders												
Ethnicity												
European/Other	1,106	245.5	1.00		45,814	10,170.1	1.00		20,908	4,641.3	1.00	
Māori	772	611.7	2.49	2.27–2.73	44,203	35,025.9	3.44	3.40–3.48	21,004	16,643.7	3.59	3.52–3.65
Pacific	166	318.4	1.30	1.10–1.53	10,619	20,366.3	2.00	1.96–2.04	3,719	7,133.4	1.54	1.49–1.59
Gender												
Female	671	218.3	1.00		33,731	10,975.7	1.00		14,771	4,806.3	1.00	
Male	1,373	427.1	1.96	1.78–2.14	66,905	20,810.6	1.90	1.87–1.92	30,861	9,599.1	2.00	1.96–2.04

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 young people 15–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 young people 15–24 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 young people 15–24 years



Table 104. Young People Aged 15–24 Years Accessing Mental Health Services with Depression or Bipolar Disorder, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Depression												
Ethnicity												
European/Other	5,500	1,220.9	1.00		90,907	20,180.0	1.00		17,598	3,906.5	1.00	
Māori	1,239	981.8	0.80	0.76–0.85	24,583	19,479.7	0.97	0.95–0.98	7,335	5,812.5	1.49	1.45–1.53
Pacific	209	400.8	0.33	0.29–0.38	4,235	8,121.7	0.40	0.39–0.41	594	1,138.6	0.29	0.27–0.32
Gender												
Female	4,517	1,469.8	1.00		79,494	25,866.4	1.00		15,701	5,109.0	1.00	
Male	2,431	756.2	0.51	0.49–0.54	40,231	12,513.7	0.48	0.48–0.49	9,826	3,056.2	0.60	0.58–0.61
Bipolar Disorder												
Ethnicity												
European/Other	800	177.6	1.00		22,872	5,077.2	1.00		8,537	1,895.2	1.00	
Māori	275	217.9	1.23	1.07–1.41	10,672	8,456.2	1.67	1.63–1.70	6,349	5,030.6	2.65	2.57–2.74
Pacific	43	82.5	0.46	0.34–0.63	1,975	3,788.5	0.75	0.71–0.78	605	1,160.3	0.61	0.56–0.66
Gender												
Female	601	195.6	1.00		18,606	6,054.3	1.00		7,014	2,282.4	1.00	
Male	517	160.8	0.82	0.73–0.92	16,912	5,260.5	0.87	0.85–0.89	8,477	2,636.6	1.16	1.12–1.19

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 young people 15–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 young people 15–24 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 young people 15–24 years

Table 105. Young People Aged 15–24 Years Accessing Mental Health Services with Other Mood Disorders or Personality Disorders, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Other Mood Disorders												
Ethnicity												
European/Other	1,062	235.8	1.00		20,817	4,621.0	1.00		5,681	1,261.2	1.00	
Māori	224	177.5	0.75	0.65–0.87	4,805	3,807.7	0.82	0.80–0.85	1,213	961.2	0.76	0.72–0.81
Pacific	25	48.0	0.20	0.14–0.30	326	625.9	0.14	0.12–0.15	56	107.4	0.09	0.07–0.11
Gender												
Female	825	268.5	1.00		18,137	5,901.6	1.00		5,354	1,742.1	1.00	
Male	486	151.2	0.56	0.50–0.63	7,811	2,429.7	0.41	0.40–0.42	1,596	496.5	0.29	0.27–0.30
Personality Disorders												
Ethnicity												
European/Other	905	200.9	1.00		34,240	7,600.8	1.00		10,892	2417.8	1.00	
Māori	226	179.1	0.89	0.77–1.03	9,563	7,577.4	1.00	0.98–1.02	4,784	3791.1	1.57	1.52–1.62
Pacific	24	46.0	0.23	0.15–0.34	1,128	2,164.1	0.28	0.27–0.30	150	287.1	0.12	0.10–0.14
Gender												
Female	760	247.3	1.00		32,224	10,485.4	1.00		10,859	3533.4	1.00	
Male	395	122.9	0.50	0.44–0.56	12,707	3,952.4	0.38	0.37–0.38	4,967	1544.9	0.44	0.42–0.45

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 young people 15–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 young people 15–24 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 young people 15–24 years

Table 106. Young People Aged 15–24 Years Accessing Mental Health Services with Selected Diagnoses, Waikato, Bay of Plenty and Lakes DHBs 2009–2011

DSM-IV Diagnosis	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Annual Contacts per Individual	Annual Bed Nights per Individual
Young People 15–24 Years						
Waikato						
Schizophrenia	163	305.4	1.36	1.16–1.60	40.3	43.59
Other Psychotic Disorders	175	327.9	1.01	0.86–1.18	34.1	26.73
Personality Disorders	93	174.3	0.95	0.77–1.17	34.7	11.66
Depression	492	921.9	0.83	0.76–0.91	15.7	5.26
Bipolar Disorders	115	215.5	1.21	1.00–1.47	23.0	14.84
Other Mood Disorders	77	144.3	0.69	0.55–0.87	24.8	6.15
Bay of Plenty						
Schizophrenia	49	188.5	0.84	0.63–1.12	44.8	21.72
Other Psychotic Disorders	96	369.2	1.14	0.93–1.39	36.1	17.87
Personality Disorders	45	173.1	0.94	0.70–1.27	36.8	9.64
Depression	222	853.9	0.77	0.68–0.88	15.3	0.91
Bipolar Disorders	37	142.3	0.80	0.58–1.11	30.8	8.19
Other Mood Disorders	112	430.8	2.07	1.70–2.50	19.3	1.15
Lakes DHB						
Schizophrenia	63	459.2	2.05	1.59–2.63	78.0	22.77
Other Psychotic Disorders	60	437.3	1.35	1.04–1.74	60.5	24.47
Personality Disorders	11	80.2	0.44	0.24–0.79	55.1	12.15
Depression	147	1,071.4	0.97	0.82–1.14	19.6	2.56
Bipolar Disorders	25	182.2	1.02	0.69–1.52	46.5	16.72
Other Mood Disorders	14	102.0	0.49	0.29–0.83	25.0	0.64

Source: PRIMHD; Note: Total = total number of individuals with diagnosis accessing services during 2009–2011; Annual Contacts per Individual = number of contacts each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; Annual Bed Nights per Individual = number of bed nights each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%

Table 107. Young People Aged 15–24 Years Accessing Mental Health Services with Selected Diagnoses, Tairāwhiti and Taranaki DHBs vs. New Zealand 2009–2011

DSM-IV Diagnosis	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Annual Contacts per Individual	Annual Bed Nights per Individual
Young People 15–24 Years						
Tairāwhiti						
Schizophrenia	33	519.3	2.32	1.64–3.27	43.6	37.42
Other Psychotic Disorders	25	393.4	1.21	0.82–1.79	39.1	32.20
Personality Disorders	11	173.1	0.94	0.52–1.71	33.6	9.27
Depression	36	566.5	0.51	0.37–0.71	21.7	11.69
Bipolar Disorders	13	204.6	1.15	0.67–1.99	28.3	11.51
Other Mood Disorders	12	188.8	0.91	0.51–1.60	24.4	6.67
Taranaki						
Schizophrenia	14	107.4	0.48	0.28–0.81	109.1	84.81
Other Psychotic Disorders	28	214.8	0.66	0.46–0.96	68.0	22.57
Personality Disorders	20	153.4	0.84	0.54–1.30	31.9	4.33
Depression	81	621.4	0.56	0.45–0.70	22.9	3.72
Bipolar Disorders	23	176.4	0.99	0.66–1.50	43.0	15.23
Other Mood Disorders	18	138.1	0.66	0.42–1.05	31.3	6.46
New Zealand						
Schizophrenia	1,410	224.2	1.00		63.7	39.32
Other Psychotic Disorders	2,044	325.1	1.00		49.2	22.32
Personality Disorders	1,155	183.7	1.00		38.9	13.70
Depression	6,948	1,104.9	1.00		17.2	3.67
Bipolar Disorders	1,118	177.8	1.00		31.8	13.86
Other Mood Disorders	1,311	208.5	1.00		19.8	5.30

Source: PRIMHD; Note: Total = total number of individuals with diagnosis accessing services during 2009–2011; Annual Contacts per Individual = number of contacts each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; Annual Bed Nights per Individual = number of bed nights each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%



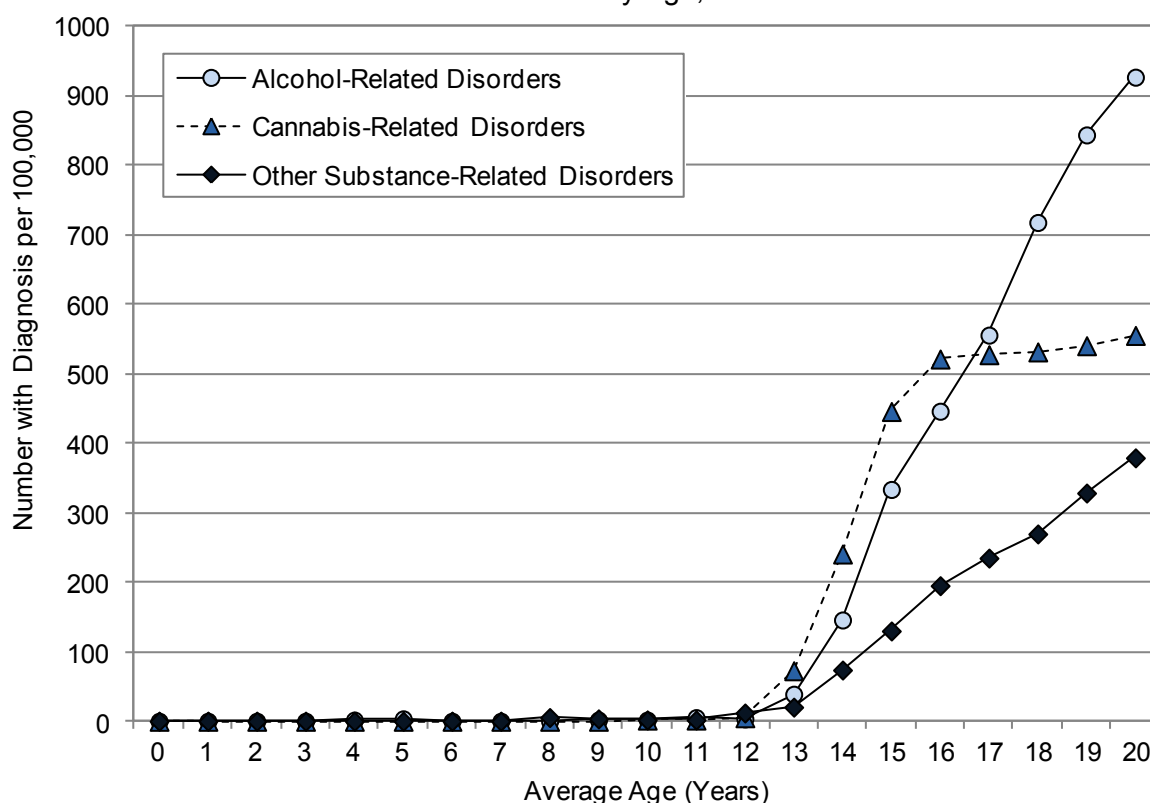
# Mental Health Issues Associated with Substance Use

## New Zealand Distribution

### Access to Services by Age

In New Zealand during 2009–2011, the number of young people accessing mental health services for mental health issues associated with substance use, or where substance use was recorded as a co-diagnosis, increased rapidly after 12 years of age. Alcohol and cannabis were the substances most frequently documented in those accessing services, although other substance use was also relatively common (**Figure 134**).

Figure 134. Children and Young People Accessing Mental Health Services with Mental Health Issues Associated with Substance Use by Age, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)

### Mental Health Issues with Substance Use as a Co-Diagnosis

In New Zealand during 2009–2011, substance use was a very frequent co-diagnosis for children and young people accessing mental health services. Personality disorders, followed by schizophrenia and other psychotic disorders were the most frequent diagnoses to have an alcohol-related disorder listed as a co-diagnosis, while schizophrenia, other psychotic disorders, and then personality disorders, were the most frequent diagnoses to have cannabis use, or other substance use listed as a co-diagnosis. Amongst those with schizophrenia 19.8% had an alcohol-related disorder listed as a co-diagnosis, while 26.6% had a cannabis-related disorder, and 21.3% had other substance use listed as a co-diagnosis (**Table 108**).

Note: As a result of the considerable overlap between mental health diagnoses and substance use, it is likely that a proportion of the mental health contacts and inpatient bed nights presented in the tables which follow actually occurred in the context of care for other diagnoses, rather than primarily for the management of a substance-related disorder.



Table 108. Proportion of Young People Aged 15–24 Years with a Mental Health Diagnosis who had a Substance-Related Disorder Listed as a Co-Diagnosis, New Zealand 2009–2011

DSM-IV Diagnosis	Number with Diagnosis	Number with Substance Disorder Listed as Co-Diagnosis	% With Substance Disorder Listed as Co-Diagnosis
Alcohol-Related Disorders			
Personality Disorders	1,155	272	23.5
Schizophrenia	1,410	279	19.8
Other Psychotic Disorders	2,044	339	16.6
Bipolar Disorders	1,118	150	13.4
Other Mood Disorders	1,311	185	14.1
Depression	6,948	691	9.9
Anxiety Disorders	4,517	469	10.4
Adjustment Disorders	2,433	237	9.7
Eating Disorders	1,037	63	6.1
Cannabis-Related Disorders			
Schizophrenia	1,410	375	26.6
Other Psychotic Disorders	2,044	482	23.6
Personality Disorders	1,155	242	21.0
Bipolar Disorders	1,118	179	16.0
Other Mood Disorders	1,311	157	12.0
Depression	6,948	626	9.0
Anxiety Disorders	4,517	433	9.6
Adjustment Disorders	2,433	198	8.1
Eating Disorders	1,037	34	3.3
Other Substance-Related Disorders			
Schizophrenia	1,410	300	21.3
Other Psychotic Disorders	2,044	420	20.5
Personality Disorders	1,155	201	17.4
Bipolar Disorders	1,118	153	13.7
Other Mood Disorders	1,311	107	8.2
Anxiety Disorders	4,517	323	7.2
Depression	6,948	355	5.1
Adjustment Disorders	2,433	122	5.0
Eating Disorders	1,037	32	3.1

Source: PRIMHD; Note: Number with Diagnosis = total number of individuals with diagnosis accessing services during 2009–2011; As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%

### Distribution by Ethnicity and Gender

*Alcohol-Related Disorders:* In New Zealand during 2009–2011, the number of young people accessing mental health services with alcohol-related disorders was *significantly* higher for males and for Māori young people than for European/Other or Pacific young people. While similar gender differences were seen for mental health contacts and inpatient bed nights, both contacts and inpatient bed nights were *significantly* higher for Māori > Pacific > European/Other young people (**Table 109**).

Table 109. Young People Aged 15–24 Years Accessing Mental Health Services with Alcohol or Cannabis-Related Disorders, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Alcohol-Related Disorders												
Ethnicity												
European/Other	2,800	621.6	1.00		37,880	8,408.7	1.00		11,597	2,574.4	1.00	
Māori	1,837	1,455.6	2.34	2.21–2.48	31,438	24,911.3	2.96	2.92–3.00	12,048	9,547.0	3.71	3.62–3.80
Pacific	335	642.5	1.03	0.92–1.16	4,998	9,585.1	1.14	1.11–1.17	1,725	3,309.0	1.29	1.22–1.35
Gender												
Female	1,536	499.8	1.00		29,325	9,542.0	1.00		8,400	2,733.3	1.00	
Male	3,436	1,068.8	2.14	2.01–2.27	44,990	13,994.1	1.47	1.45–1.49	16,971	5,278.8	1.93	1.88–1.98
Cannabis-Related Disorders												
Ethnicity												
European/Other	2,004	444.9	1.00		34,651	7,691.9	1.00		12,471	2,768.4	1.00	
Māori	1,313	1,040.4	2.34	2.18–2.51	34,513	27,347.9	3.56	3.51–3.60	17,716	14,037.8	5.07	4.96–5.18
Pacific	145	278.1	0.63	0.53–0.74	4,160	7,977.9	1.04	1.01–1.07	2,035	3,902.3	1.41	1.35–1.48
Gender												
Female	960	312.4	1.00		22,366	7,277.6	1.00		8,027	2,611.8	1.00	
Male	2,502	778.2	2.49	2.31–2.68	50,957	15,850.1	2.18	2.15–2.21	24,195	7,525.7	2.88	2.81–2.95

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 young people 15–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 young people 15–24 years; *Inpatient Bed Nights*: Annual Average = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 young people 15–24 years; **Substance use may be a comorbidity rather than primary reason for accessing services**

Table 110. Young People Aged 15–24 Years Accessing Mental Health Services with Other Substance-Related Disorders, New Zealand 2009–2011

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Other Substance-Related Disorders												
Ethnicity												
European/Other	1,412	313.4	1.00		33,492	7,434.8	1.00		10,514	2,334.0	1.00	
Māori	758	600.6	1.92	1.75–2.09	27,271	21,609.6	2.91	2.86–2.95	13,903	11,016.6	4.72	4.61–4.84
Pacific	90	172.6	0.55	0.45–0.68	3,162	6,063.8	0.82	0.79–0.84	1,377	2,641.6	1.13	1.07–1.20
Gender												
Female	874	284.4	1.00		25,120	8,173.7	1.00		8,234	2,679.4	1.00	
Male	1,386	431.1	1.52	1.39–1.65	38,806	12,070.4	1.48	1.45–1.50	17,560	5,462.0	2.04	1.99–2.09

Source: PRIMHD; Note: *Individuals*: Total = total number of individuals with diagnosis accessing services during 2009–2011; Rate = number with diagnosis per 100,000 young people 15–24 years (at midpoint of period (i.e. 2010)); *Contacts*: Annual Average = number of contacts each year (averaged over 2009–2011) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 young people 15–24 years; *Inpatient Bed Nights*: Annual Number = number of bed nights each year (averaged over 2009–2011) for clients with this diagnosis; Rate = average number of bed nights for clients with this diagnosis each year, per 100,000 young people 15–24 years; **Substance use may be a comorbidity rather than primary reason for accessing services**



## Distribution by Ethnicity and Gender

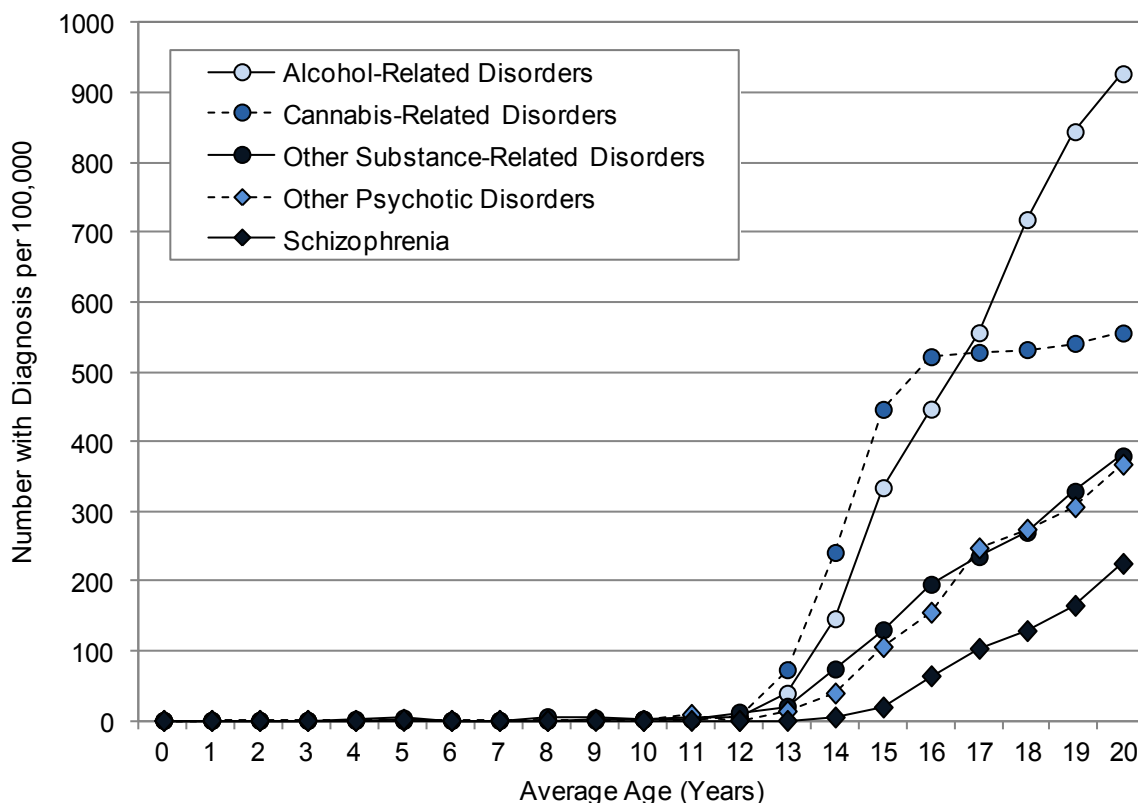
**Cannabis-Related Disorders:** In New Zealand during 2009–2011, the number of young people accessing mental health services with cannabis-related disorders was *significantly* higher for males and for Māori > European/Other > Pacific young people. While similar gender differences were seen for mental health contacts and inpatient bed nights, both contacts and inpatient bed nights were *significantly* higher for Māori > Pacific > European/Other young people (**Table 109**).

**Other Substance-Related Disorders:** In New Zealand during 2009–2011, the number of young people accessing mental health services with other substance-related disorders was *significantly* higher for males and for Māori > European/Other > Pacific young people. While similar gender and ethnic differences were seen for mental health contacts, inpatient bed nights were *significantly* higher for Māori > Pacific > European/Other young people (**Table 110**).

## Age Distribution of Those Accessing Services with Substance-Related Disorders and Schizophrenia and Other Psychotic Disorders

While there was considerable overlap in the number of young people diagnosed with substance-related disorders and schizophrenia and other psychotic disorders, the age-related increases in the numbers diagnosed with alcohol and cannabis-related disorders occurred around two to three years earlier than the age-related increase in the number of young people diagnosed with schizophrenia (**Figure 135**).

Figure 135. Comparison of Age Distribution of Children and Young People Accessing Mental Health Services with Substance-Related Disorders and Schizophrenia and Other Psychotic Disorders, New Zealand 2009–2011



Source: Numerator: PRIMHD (individuals attending Mental Health Services who had ever been assigned these diagnoses); Denominator: Statistics NZ Projected Population (2010 = mid-point of 2009–2011)



## Midland Region Distribution

Amongst the DHBs in the Midland Region during 2009–2011, alcohol-related disorders, cannabis-related disorders, and other drug-related disorders were all relatively frequent diagnosis for young people accessing mental health services, with there being considerable variation in access to services for these diagnoses across DHBs (**Table 111**).



Table 111. Young People Aged 15–24 Years Accessing Mental Health Services with Substance-Related Disorders, Midland DHBs vs. New Zealand 2009–2011

DSM-IV Diagnosis	Number: Total 2009–2011	Rate per 100,000	Rate Ratio	95% CI	Annual Contacts per Individual	Annual Bed Nights per Individual
Young People 15–24 Years						
Waikato						
Alcohol-Related Disorders	157	294.2	0.37	0.32–0.44	16.1	11.68
Cannabis-Related Disorders	129	241.7	0.44	0.37–0.52	23.7	22.97
Other Substance-Related Disorders	164	307.3	0.86	0.73–1.00	21.9	19.29
Bay of Plenty						
Alcohol-Related Disorders	310	1,192.3	1.51	1.35–1.69	9.6	1.96
Cannabis-Related Disorders	237	911.5	1.66	1.45–1.89	12.2	2.45
Other Substance-Related Disorders	120	461.5	1.28	1.07–1.54	23.2	7.11
Lakes DHB						
Alcohol-Related Disorders	36	262.4	0.33	0.24–0.46	40.0	13.02
Cannabis-Related Disorders	39	284.3	0.52	0.38–0.71	47.2	24.40
Other Substance-Related Disorders	40	291.5	0.81	0.59–1.11	66.0	9.92
Tairāwhiti						
Alcohol-Related Disorders	56	881.2	1.11	0.86–1.45	12.0	9.27
Cannabis-Related Disorders	53	834.0	1.51	1.16–1.98	16.3	10.00
Other Substance-Related Disorders	25	393.4	1.09	0.74–1.62	22.4	11.71
Taranaki						
Alcohol-Related Disorders	49	375.9	0.48	0.36–0.63	33.6	12.21
Cannabis-Related Disorders	27	207.1	0.38	0.26–0.55	43.5	22.96
Other Substance-Related Disorders	32	245.5	0.68	0.48–0.97	59.5	11.57
New Zealand						
Alcohol-Related Disorders	4,972	790.7	1.00		14.9	5.10
Cannabis-Related Disorders	3,462	550.6	1.00		21.2	9.31
Other Substance-Related Disorders	2,260	359.4	1.00		28.3	11.41

Source: PRIMHD; Note: Total = total number of individuals with diagnosis accessing services during 2009–2011; Annual Contacts per Individual = number of contacts each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; Annual Bed Nights per Individual = number of Bed Nights each year (averaged over 2009–2011) for individuals with diagnosis ÷ number of individuals with diagnosis; As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%; **Substance use may be a comorbidity rather than primary reason for accessing services**

## Local Policy Documents and Evidence-Based Reviews Relevant to Substance Use in Young People

Local policy documents and evidence-based reviews relevant to the management of mental health issues in children and young people are reviewed in the **Access to Mental Health Services: Introduction** section commencing on **Page 351**. In addition, **Table 112** (below) provides an overview of New Zealand policy documents and evidence-based reviews which focus on preventing drug use in young people, while **Table 48** on **Page 234** provides an overview of publications relevant to the prevention of alcohol-related harm in young people (which also frequently address alcohol and other drug use in the same publication). Finally, the In-Depth Topic **Mental Health Issues in Children** commencing on **Page 368** provides a more detailed review of the literature as it relates to children aged 0–14 years.

Table 112. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention and Management of Drug Use in Young People

Ministry of Health Policy Documents
<p>Ministry of Health. 2010. <b>Mental Health and Addiction Action Plan 2010</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/mental-health-and-addiction-action-plan-2010">http://www.health.govt.nz/publication/mental-health-and-addiction-action-plan-2010</a></p> <p>This document builds on policy documents Te Tāhuhu (2005) and Te Kōkiri, (2006), the national strategy and action plan for mental health and addictions to 2015. It identifies the key priorities for Ministry-led activities. Tackling alcohol and other drug-related harm is one of four prioritised actions and includes increasing the number of community youth alcohol and other drug (AOD) treatment places available to give young offenders access to court directed community AOD treatment programmes.</p>
<p>Ministry of Health. 2007. <b>Te Raukura. Mental health and alcohol and other drugs: Improving outcomes for children and youth</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/te-raukura-mental-health-and-alcohol-and-other-drugs-improving-outcomes-children-and-youth">http://www.health.govt.nz/publication/te-raukura-mental-health-and-alcohol-and-other-drugs-improving-outcomes-children-and-youth</a></p> <p>This report identifies continued improvement in child and adolescent mental health (CAMHS) and alcohol and other drug (AOD) specialist services as a priority for the mental health and addiction sector. The key issues are identified, including inequalities, access to services, child and youth AOD services, intersectoral collaboration and primary mental health care. Priorities for action are defined, including improvement in understanding and recognition of AOD issues in CAMHS; improvement in the gaps in availability of AOD service provision within CAMHS; and identification by DHBs of gaps in AOD service provision for children and youth, and development and implementation of plans to address improvement in understanding and recognition of AOD issues in CAMHS.</p>
<p>Ministry of Health. 2005. <b>Te Tāhuhu – Improving Mental Health 2005–2015: The Second New Zealand Mental Health and Addiction Plan</b> Wellington: Ministry of Health.</p> <p>Ministry of Health. 2006. <b>Te Kōkiri: The Mental Health and Addiction Action Plan 2006–2015</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/our-work/mental-health-and-addictions/mental-health/mental-health-strategic-direction">http://www.health.govt.nz/our-work/mental-health-and-addictions/mental-health/mental-health-strategic-direction</a></p> <p>Te Tāhuhu sets out Government policy and priorities for mental health and addiction for 2005 to 2015. Te Kōkiri sets out the action plan and includes a mixture of high level initiatives and specific operational actions. Addiction was identified as one of ten leading challenges, and a number of actions to improve access to, and quality of, addiction services and broaden the range of services available are included. Young people are identified as at increasing risk of substance abuse and specific attention to services for this group is recommended.</p>
<p>Todd F. 2010. <b>Te Ariari o te Oranga: the Assessment and Management of People with Co-existing Mental Health and Substance Use Problems</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/te-ariari-o-te-oranga-assessment-and-management-people-co-existing-mental-health-and-drug-problems">http://www.health.govt.nz/publication/te-ariari-o-te-oranga-assessment-and-management-people-co-existing-mental-health-and-drug-problems</a></p> <p>This clinical framework aims to assist health professionals working with people with co-existing substance use and mental health problems (CEP) and is a companion document to 'Service Delivery for People with Co-existing Mental Health and Addiction Problems - Integrated Solutions 2010'.</p>
<p>Ministry of Health. 2010. <b>Service Delivery for People with Co-existing Mental Health and Addiction Problems: Integrated Solutions</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/service-delivery-people-co-existing-mental-health-and-addiction-problems-integrated-solutions-2010">http://www.health.govt.nz/publication/service-delivery-people-co-existing-mental-health-and-addiction-problems-integrated-solutions-2010</a></p> <p>This service delivery guidance document provides advice to assist mental health and addiction services to enable the provision of more integrated care for people with co-existing mental health and addiction problems. It is designed as a companion to the clinical guidance document Te Ariari o te Oranga: The Assessment and Management of People with Co-existing Mental Health and Addiction Problems.</p>



## Cochrane Systematic Reviews

Thomas RE, et al. 2011. **Mentoring adolescents to prevent drug and alcohol use.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD007381.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD007381/frame.html>

This review assessed the effectiveness of structured mentoring programmes to prevent alcohol and drug use. The review included 4 RCTs with 1,994 participants (aged 12 years in two trials and 9–16 years in two trials), conducted among deprived populations in the US. Two RCTs found mentoring reduced the rate of initiation of alcohol (pooled RR for mentoring compared to no intervention 0.71, 95% CI 0.57 to 0.90). A third trial found no significant difference and the fourth trial did not assess alcohol use. One RCT found significantly less “illegal” drug usage (RR 0.54, 95%CI 0.35 to 0.83). No adverse effects were detected. There was limited scope for the interventions to be effective due to low rates of commencing alcohol and drug use during the intervention period, probably reflecting the relative youth of the samples.

Gates S, et al. 2009. **Interventions for prevention of drug use by young people delivered in non-school settings.**

Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD005030.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005030/frame.html>

This review assessed the effectiveness of interventions delivered in non-school settings intended to prevent or reduce drug use by young people under 25. Seventeen studies were included (8 RCTs with 1,230 participants and 9 cluster RCTs, with 253 clusters), evaluating four types of intervention: motivational interviewing or brief intervention, education or skills training, family interventions and multicomponent community interventions. The small number of studies, and methodological problems including high loss-to-follow-up, limited the ability to draw conclusions. One study of motivational interviewing suggested that it was beneficial on cannabis use, identifying a large and statistically significant decrease in the frequency of self-reported cannabis use in the intervention group. Three family interventions assessed in single studies, suggested that they may be beneficial in preventing cannabis use. The studies of multi-component community interventions did not find any strong effects, and the two studies of education and skills training did not find any differences between the intervention and control groups. The authors conclude that while motivational interviewing and some family interventions may have some benefit, cost-effectiveness has not yet been addressed in any studies, and further research is needed to determine whether any of these interventions can be recommended.

Faggiano F, et al. 2005. **School-based prevention for illicit drugs' use.** Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD003020.pub2

<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003020/frame.html>

This review evaluated the effectiveness of school-based interventions to improve knowledge, develop skills, promote change and prevent or reduce drug use. The review included 29 RCTs and three controlled prospective studies (46,539 participants in total), the majority of which were conducted in the USA. Three programmes focussed on improvement in drug knowledge found non-significant improvements in drug knowledge post-test (standardised mean difference (SMD) 0.91; 95% CI 0.42 to 1.39). Social skills based interventions were assessed in 25 RCTs and associated with improvement in drug knowledge (weighted mean difference (WMD) 2.60; 95% CI 1.17 to 4.03), decision making skills (SMD 0.78; 95% CI 0.46 to 1.09), self-esteem (SMD 0.22; 95% CI 0.03 to 0.40), peer pressure resistance (RR 2.05; 95% CI: 1.24 to 3.42), drug use (RR 0.81; 95% CI 0.64 to 1.02), marijuana use (RR 0.82; 95% CI 0.73 to 0.92) and heroin use (RR 0.45; 95% CI 0.24 to 0.85). The authors concluded that skills based programmes appear to be effective in deterring early-stage drug use. However, the authors comment that the results may not be generalisable to non-US populations with differing social contexts and drug policies.

## Other Systematic Reviews

Tanner-Smith EE, et al. 2012. **The comparative effectiveness of outpatient treatment for adolescent substance abuse: A meta-analysis.** Journal of Substance Abuse Treatment, in press, available online 2 July 2012.

This review which assessed the effectiveness of different outpatient treatments for adolescents with substance use disorders identified 45 experimental or quasi-experimental studies for meta-analysis. Treatment types were divided into four groups: no treatments and placebo control conditions; psychoeducational therapy (PET), group/mixed counselling and practice as usual (PAU); cognitive behavioural therapy, motivational interviewing and other individual therapies and pharmacological treatment; and family therapy. Family therapy programmes were found to be consistently more effective than their comparison conditions, and no treatment programmes were generally less effective. PET/group counselling/PAU compared unfavourably with most comparator treatments. A second analysis, measuring changes in substance use, found that almost all types of treatment showed reductions in substance use. The greatest improvements were for family therapy and mixed and group counselling. The authors conclude that while family therapy is the treatment with the strongest evidence of comparative effectiveness, most types of treatment appear to be beneficial in helping adolescents reduce their substance use.

Jensen CD, et al. 2011. **Effectiveness of motivational interviewing interventions for adolescent substance use behaviour change: A meta-analytic review.** Journal of Consulting and Clinical Psychology, 79(4), 433-40.

This review evaluated the effectiveness of motivational interviewing (MI) in promoting behavioural change in adolescent substance use. Twenty-one controlled trials (randomisation not specified), assessing mainly single treatments and a variety of substance use outcomes, were identified (5,471 participants). Meta-analysis found a small but statistically significant effect size (mean difference 0.173, 95% CI 0.094 to 0.252), maintained at follow-up (maximum follow-up 24 months). While further research is needed, the authors suggest that these findings support the use of MI for adolescents, at least as part of a treatment programme.

Fletcher A, et al. 2008. **School Effects on Young People's Drug Use: A Systematic Review of Intervention and Observational Studies**. Journal of Adolescent Health, 42(3), 209-20.

The aim of this review was to determine if school institutional factors can influence young peoples' drug use. Four studies were included in the review. They generally found associations between disengagement from school, poor teacher-student relationships and subsequent drug use. The authors concluded that interventions that encourage a positive school ethos and that reduce student disaffection may be an effective addition to drug prevention programmes, however, more evidence is required to support this.

National Institute for Health and Clinical Excellence. 2007. **Community-based interventions to reduce substance misuse among vulnerable and disadvantaged children and young people (NICE public health intervention guidance 4)**. London: National Institute for Health and Clinical Excellence. <http://guidance.nice.org.uk/PH4>.

This evidence-based guidance on community-based interventions to reduce substance abuse among vulnerable children and young people aged under 25 years provides recommendations for all those with direct and indirect responsibility for reducing substance misuse. Recommendations include: the development of local strategic partnerships; use of existing screening and assessment tools to identify those misusing, or at risk of misusing, substances and the provision of support and referral; offering a family-based programme of structured support over 2 or more years, for children aged 11 to 16 years assessed to be at high risk of substance misuse; offering children aged 10 to 12 who are persistently aggressive or disruptive and assessed to be at high risk of substance misuse group-based behavioural therapy over 1 to 2 years, before and during the transition to secondary school; and offering motivational interviews to young people under 25 years who are problematic substance misusers. A number of limitations to the evidence base were identified, including short follow-up periods (up to two years) when most of the desired outcomes persist over many years, little examination of possible iatrogenic effects of interventions, and little evidence on whether interventions aimed at parents or carers who misuse substances help to reduce, prevent or delay the onset of substance misuse among their children.

Owen DM & Werch CE. 2002. **Iatrogenic effects of alcohol and drug prevention programs**. Journal of Studies on Alcohol, 63(5), 581-90.

In addition to positive or neutral outcomes, prevention programmes may have unintended negative outcomes. This systematic review sought to assess published studies evaluating youth substance use prevention programmes, to determine whether iatrogenic effects have occurred, and if so, what types of harmful effects resulted and under what circumstances. Negative programme effects were found in 17 evaluation studies. The most common type of negative outcome was behavioural effects, mainly increases in consumption, particularly alcohol use. Drug prevention programmes resulted in greater increases in alcohol use, cigarette use, marijuana use and multiple drug use than did alcohol prevention programmes. Negative programme outcomes occurred most commonly in the context of mixed positive and negative effects, usually with a subgroup of youth or particular component of the intervention, followed by negative outcomes in the context of non-significant programme effects. The importance of measuring, monitoring and reporting negative outcomes is highlighted, to improve understanding of which programme elements interact with which contextual factors to cause harm to which groups of youth.

#### Other Relevant Evidence

Allen & Clarke Policy and Regulatory Specialists Ltd. 2003. **Effective Drug Education for Young People: An overview of the literature review and analysis**. Wellington: Ministry of Youth Development. <http://www.myd.govt.nz/about-mydp/publications/effective-drug.html>

Ministry of Youth Development. 2004. **Strengthening Drug Education in School Communities: Best practice handbook for design, delivery and evaluation, years 7-13**. Wellington: Ministry of Youth Development. <http://www.myd.govt.nz/about-mydp/publications/strengthening-drug-education-in-school-communities.html>

This Ministry of Youth Development report sought to review the literature on drug education and make recommendations and led to the publication of the Strengthening Drug Education in School Communities handbook. The full literature review is no longer available but the overview document reports on the findings. The review found that drug use is shaped by social, cultural and economic contexts which are important in developing effective education about drugs; effective drug education requires coordinated messages and active government and community support; young people with poor family, community, school and peer relationships are at increased risk of drug-related harm; the development of young people's strengths is likely to reduce the risk of drug-related harm; drug education is most effective when it reflects the needs and attitudes of young people, and when it is delivered in an interactive manner; and information about drug use is essential for developing effective drug education programmes. A number of best practice recommendations are also made.

Note: The publications listed were identified using the search methodology outlined in **Appendix 1**

# SUICIDE AND INTENTIONAL SELF-HARM

## Introduction

In New Zealand during 2009, suicide was the second most common cause of death after motor vehicle accidents for young people aged 15 to 24 years [489]. Although rates have declined since the late 1990s, youth suicide rates remain high compared to other OECD countries and prevention of youth suicide remains an important focus [490]. For example, in 2009, New Zealand's suicide rate for those aged 15 to 19 years was 16.7 deaths per 100,000 population, as compared to the OECD average of 6.4 per 100,000 population [489,491]. Among those aged 15 to 19 years there were 42 male suicide deaths (25.4 per 100,000 population) and 12 female suicide deaths (7.6 per 100,000 population) [489].

Suicidal behaviour in young people most often results from an accumulation of risk factors which may include childhood and family adversity, individual vulnerabilities, mental disorders including depression and substance abuse, non-heterosexual sexual orientation, exposure to suicidal behaviour by others, and exposure to stressors and adverse circumstances [492,493]. Te Rau Hinengaro, The New Zealand Mental Health Survey found that the risk of suicidal ideation, a suicide plan, or a suicide attempt were also significantly higher in young people, compared to those aged over 25 years [316]. The risk of suicidal behaviours was also increased in those with low household incomes and those living in deprived areas [316]. Māori ethnicity, socioeconomic disadvantage and child welfare care are also associated with higher suicide rates among young people in New Zealand [312,494]. A caring parent or other family member and a fair, safe school environment appear to be protective against suicide attempts [493].

Research also suggests that the risk factor profiles for suicide mortality and hospital admissions for intentional self-harm differ [489]. In 2009, hospitalisation rates were highest for young women aged 15 to 19 years (181.1 per 100,000 female population, vs. 78 per 100,000 male population [489]). The Youth '07 survey of 9,107 secondary school students in 2007 also found that 26.0% (95% CI 24.4–27.6) of female students and 15.5% (95% CI 14.1–16.8) of male students reported deliberately harming themselves in the preceding 12 months [314]. Suicidal thoughts, plans and attempts were all more common among female compared to male students. Reports of suicidal behaviours were more common among Māori and Pacific youth compared to NZ Europeans, and those living in more socioeconomically deprived areas compared to those in less deprived areas.

The following section uses information from the National Minimum Dataset and the National Mortality Collection to review hospital admissions for intentional self-harm and mortality from suicide in young people aged 15–24 years.

### Data Source and Methods

#### Definition

1. Hospital admissions for injuries arising from intentional self-harm in young people aged 15–24 years
2. Mortality from suicide in young people aged 15–24 years

#### Data Source

1. Hospital Admissions

**Numerator:** National Minimum Dataset: Hospital admissions for young people aged 15–24 years with a primary diagnosis of injury (ICD-10-AM S00–T79) and an external cause code (e-code) of intentional self-harm (ICD-10-AM X60–X84); Admissions with an Emergency Medicine specialty code (M05–M08) on discharge were excluded (see **Appendix 3**).

2. Mortality

**Numerator:** National Mortality Collection: Deaths of young people aged 15–24 years with a main underlying cause of death of intentional self-harm (ICD-10-AM X60–X84)

**Denominator:** Statistics NZ Estimated Resident Population (projected from 2007)

#### Notes on Interpretation

The limitations of the National Minimum Dataset are discussed at length in **Appendix 3**





## New Zealand Distribution and Trends

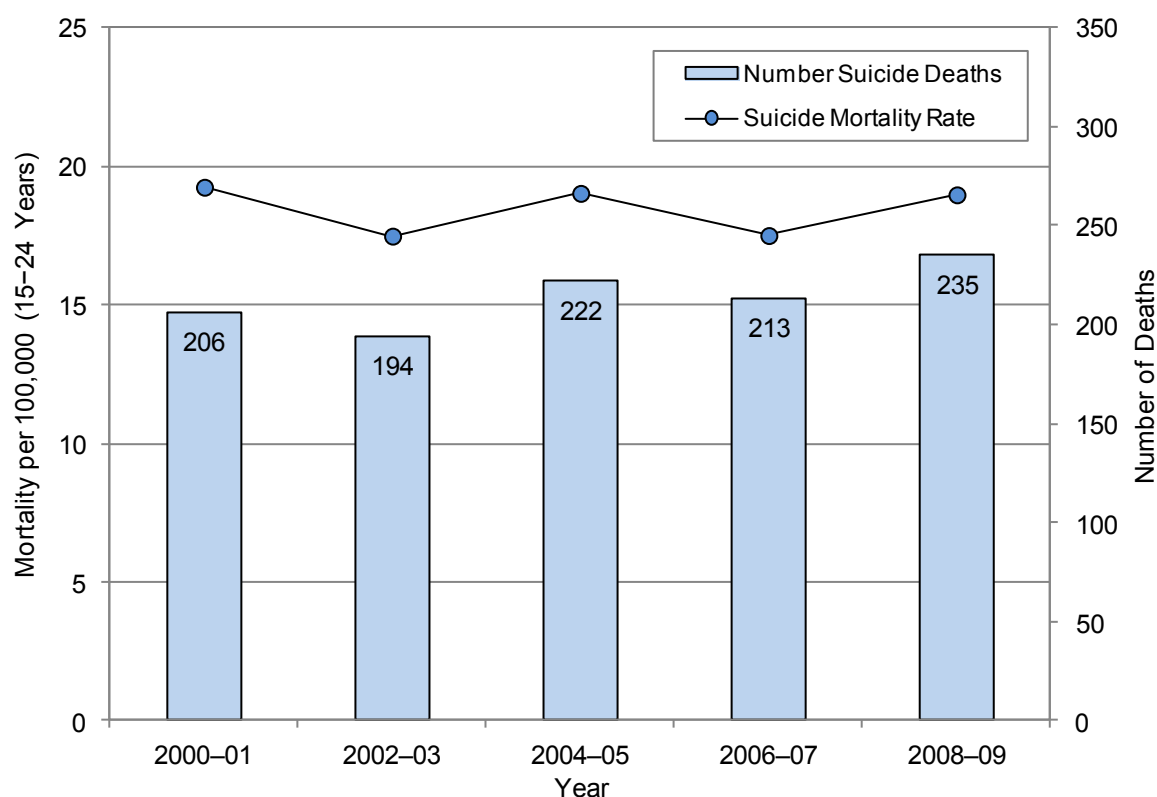
### New Zealand Suicide Mortality Trends

In New Zealand during 2000–2009, suicide rates in young people aged 15–24 years remained relatively static. On average during this period, 107 New Zealand young people each year died as the result of suicide (**Figure 136**).

### New Zealand Distribution by Age and Gender

In New Zealand during 2007–2011, hospital admissions for intentional self-harm in females increased rapidly after 12 years of age, reached a peak at 16 years and then declined. Admission rates for males increased more slowly during the teenage years, and were lower than for females at all ages from 12 years onwards. In contrast, while mortality from suicide during 2005–2009 also increased during the teenage years, rates were higher for males than for females from 15 years of age onwards (**Figure 137**).

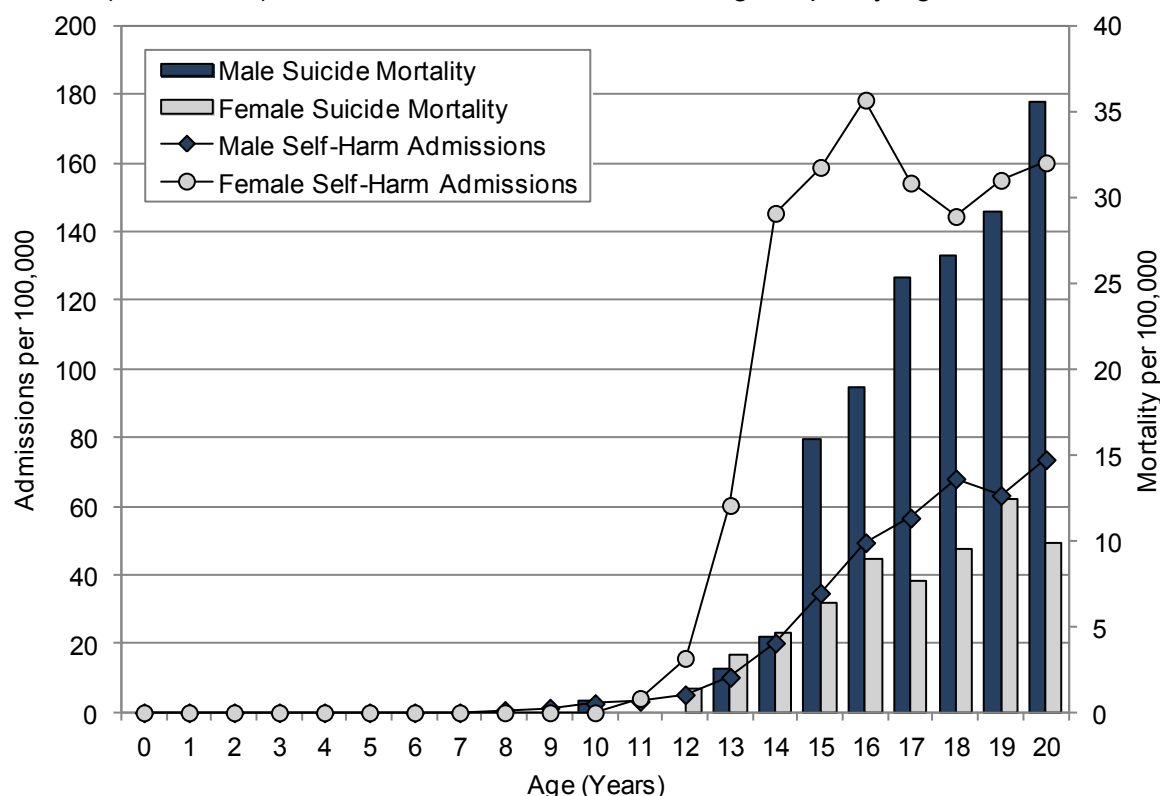
Figure 136. Mortality from Suicide in Young People Aged 15–24 Years, New Zealand 2000–2009



Source: Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Number of deaths is per two year period



Figure 137. Hospital Admissions for Intentional Self-Harm (2007–2011) and Mortality from Suicide (2005–2009) in New Zealand Children and Young People by Age and Gender



Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

### New Zealand Distribution by Ethnicity and Gender

In New Zealand during 2007–2011, hospital admissions for intentional self-harm were *significantly* higher for Māori than for European/Other young people, while rates for Pacific young people were *significantly* lower. Admission rates were also *significantly* higher for females than for males. In contrast, during 2005–2009 suicide mortality rates were *significantly* higher for males than for females. Mortality was also *significantly* higher for Māori and Pacific young people than for European/Other young people (**Table 113**).

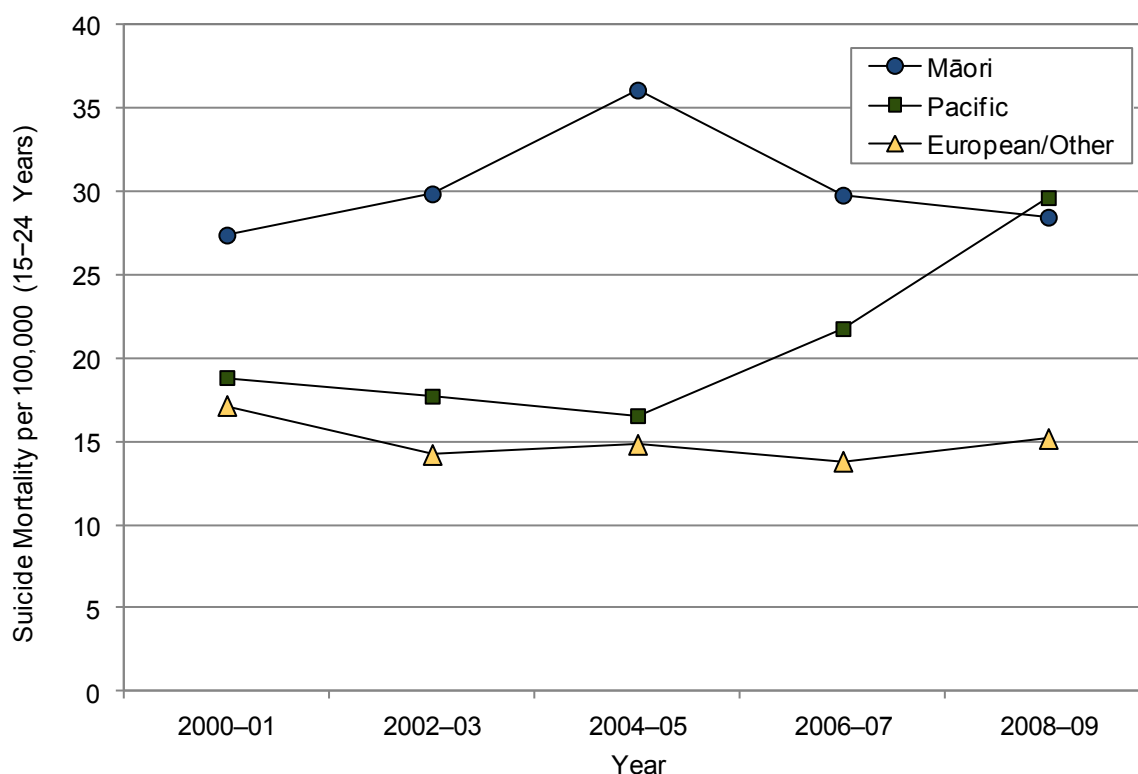
Table 113. Hospital Admissions for Intentional Self-Harm (2007–2011) and Mortality from Suicide (2005–2009) in New Zealand Young People 15–24 Years by Ethnicity and Gender

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
Intentional Self-Harm Admissions							
European/Other	103.31	1.00		Female	145.30	1.00	
Māori	115.25	1.12	1.03–1.21	Male	60.06	0.41	0.38–0.45
Pacific	56.74	0.55	0.46–0.65				
Suicide Mortality							
European/Other	14.37	1.00		Female	8.72	1.00	
Māori	30.25	2.11	1.75–2.53	Male	27.60	3.16	2.60–3.85
Pacific	24.59	1.71	1.30–2.25				

Source: Numerators: National Minimum Dataset and National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised; Rate Ratios are unadjusted



Figure 138. Mortality from Suicide in Young People Aged 15–24 Years by Ethnicity, New Zealand 2000–2009



Source: Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised

## New Zealand Trends by Ethnicity

In New Zealand during 2000–2009, suicide mortality was consistently higher for Māori young people than for European/Other young people. Large increases in rates for Pacific young people after 2004–05 saw rates becoming similar to those of Māori young people by 2008–09 (**Figure 138**).

## Midland Region Distribution and Trends

### Midland Region Distribution

**Hospital Admissions:** In the Bay of Plenty and Tairāwhiti during 2007–2011, hospital admissions for intentional self-harm were *significantly* higher than the New Zealand rate, while in the Waikato rates were *significantly* lower. In Lakes DHB and Taranaki, rates were not *significantly* different from the New Zealand rate (**Table 114**).

Table 114. Hospital Admissions for Intentional Self-Harm in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2007–2011

DHB	Number: Total 2007–2011	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Young People Aged 15–24 Years					
Intentional Self-Harm Admissions					
Waikato	200	40.0	75.60	0.74	0.64–0.86
Lakes	83	16.6	122.58	1.20	0.97–1.50
Bay of Plenty	167	33.4	131.23	1.29	1.10–1.51
Tairāwhiti	59	11.8	186.71	1.83	1.42–2.37
Taranaki	66	13.2	100.14	0.98	0.77–1.25
New Zealand	3,171	634.2	101.86	1.00	

Source: Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

**Mortality:** In Tairāwhiti during 2005–2009, suicide mortality was *significantly* higher than the New Zealand rate, while in the remaining four Midland DHBs rates were not *significantly* different from the New Zealand rate. In total, 36 Waikato, 11 Lakes DHB, 31 Bay of Plenty, 15 Tairāwhiti, and 14 Taranaki young people died as the result of suicide during this period (**Table 115**).

Table 115. Mortality from Suicide in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2005–2009

DHB	Number: Total 2005–2009	Number: Annual Average	Rate per 100,000	Rate Ratio	95% CI
Young People Aged 15–24 Years					
Suicide Mortality					
Waikato	36	7.2	13.87	0.76	0.54–1.06
Lakes	11	2.2	16.58	0.91	0.50–1.65
Bay of Plenty	31	6.2	25.38	1.39	0.97–1.99
Tairāwhiti	15	3.0	48.33	2.64	1.58–4.41
Taranaki	14	2.8	20.77	1.14	0.67–1.93
New Zealand	557	111.4	18.29	1.00	

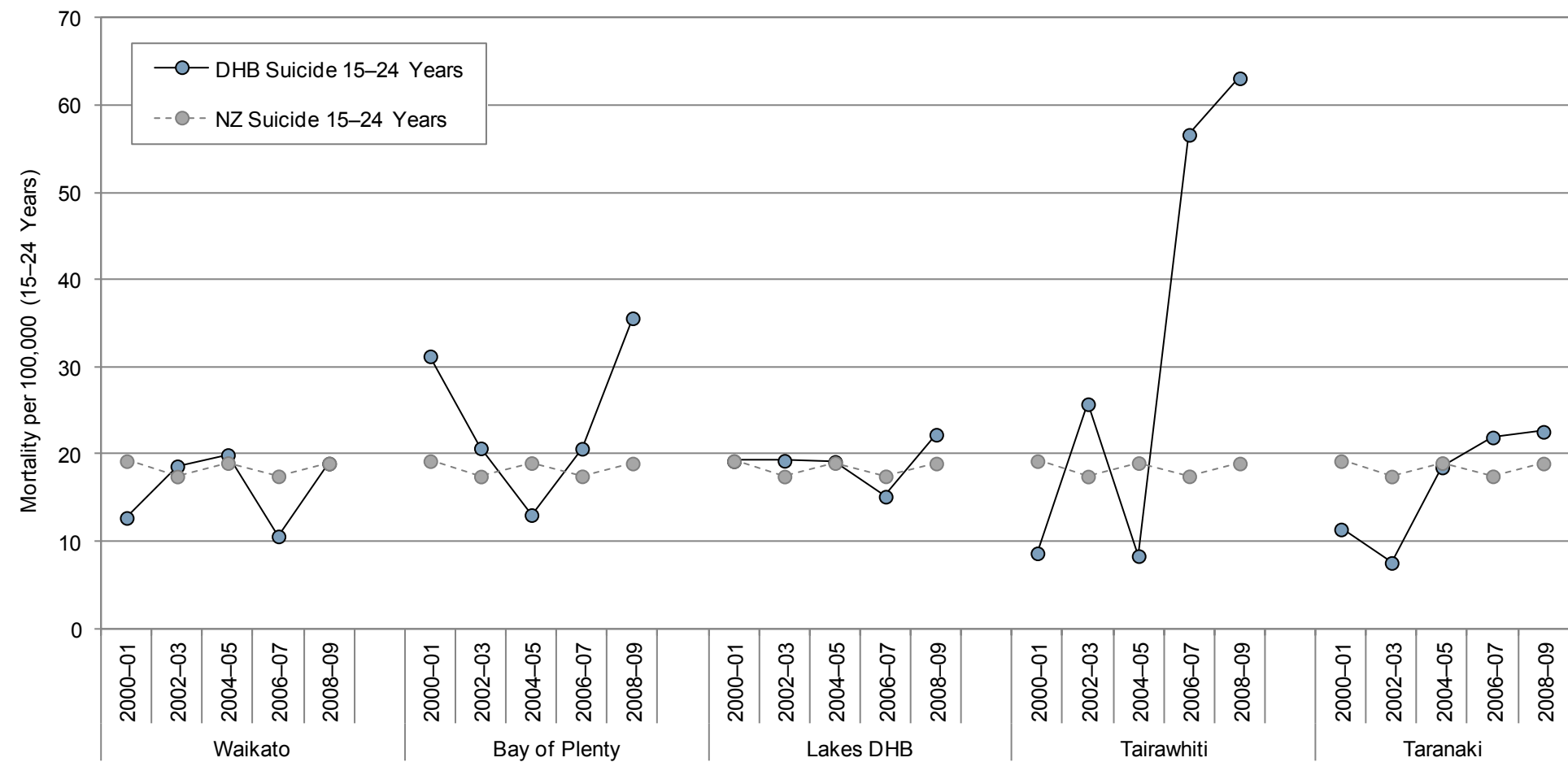
Source: Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

## Midland Region Trends

Amongst the Midland Region DHBs during 2000–2009, there was considerable year to year variation in youth suicide rates, although in most DHBs rates were similar to the New Zealand rate. In Tairāwhiti however, rates increased dramatically after 2004–05, with rates during 2006–2009 being much higher than the New Zealand rate (**Figure 139**).



Figure 139. Mortality from Suicide in Young People Aged 15–24 Years, Midland DHBs vs. New Zealand 2000–2009



Source: Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)



## Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Suicide and Intentional Self-Harm

In New Zealand, the New Zealand Suicide Prevention Strategy provides a framework for suicide prevention among young people and the wider population. A number of local and international reviews also address the prevention of suicide and self-harm in young people and these are summarised in **Table 116** below. In addition, a range of publications focus on mental health issues in young people more generally, and these are summarised in **Table 91** on **Page 354**.

Table 116. Local Policy Documents and Evidence-Based Reviews Relevant to the Prevention of Suicide and Intentional Self-Harm

Ministry of Health Policy Documents
<p>Associate Minister of Health. 2006. <b>The New Zealand Suicide Prevention Strategy 2006–2016</b>. Wellington: Ministry of Health. <a href="http://www.health.govt.nz/publication/new-zealand-suicide-prevention-strategy-2006-2016">http://www.health.govt.nz/publication/new-zealand-suicide-prevention-strategy-2006-2016</a></p> <p>The New Zealand Suicide Prevention Strategy provides a framework for suicide prevention in all ages, for the period 2006 to 2016. Its aim is to reduce the rate of suicidal behaviour and its effects on New Zealanders, while recognising that suicide affects some groups more than others, including young people aged 15 to 24 years. The strategy identifies seven goals: to promote mental health and wellbeing, and prevent mental health problems; to improve the care of people who are experiencing mental disorders associated with suicidal behaviour; to improve the care of people who make non-fatal suicide attempts; to reduce access to the means of suicide; to promote the safe reporting and portrayal of suicidal behaviour by the media; to support families/whānau, friends and others affected by a suicide or a suicide attempt; and to expand the evidence about the rates, causes and effective interventions</p>
<p>Ministry of Health. 2008. <b>New Zealand Suicide Prevention Action Plan 2008–2012: The Summary for Action</b>. Wellington: Ministry of Health.</p> <p>Ministry of Health. 2008. <b>New Zealand Suicide Prevention Action Plan 2008–2012: The Evidence for Action</b>. Wellington: Ministry of Health.</p> <p><a href="http://www.health.govt.nz/publication/new-zealand-suicide-prevention-action-plan-2008-2012">http://www.health.govt.nz/publication/new-zealand-suicide-prevention-action-plan-2008-2012</a></p> <p>These companion documents provide the 2008–2012 action plan for the New Zealand Suicide Prevention Strategy 2006–2016. The Evidence for Action document provides the evidence base for the goals of the strategy and the Summary for Action identifies outcomes, actions, milestones, whānau ora considerations, timeframes and the lead agencies responsible for implementing the actions.</p>
Cochrane Systematic Reviews
<p>Hawton KKE, et al. 1999. <b>Psychosocial and pharmacological treatments for deliberate self harm</b>. Cochrane Database of Systematic Reviews doi:10.1002/14651858.CD001764</p> <p><a href="http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001764/frame.html">http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001764/frame.html</a></p> <p>This review, published in 1999 and reviewed (with no change to the findings) in 2009, assessed the effectiveness of psychosocial and/or psychopharmacological treatments versus standard or less intensive types of aftercare for patients who have deliberately harmed themselves by self-poisoning or self-injury. Twenty-three RCTs (3,014 participants) were included. A non-significant trend toward reduced repetition of deliberate self-harm (DSH) was observed for problem-solving therapy, and for provision of a card to allow emergency contact with services. Significant improvements were identified in a single trial of depot flupenthixol for recurrent repeaters of self-harm (OR 0.09, 95% CI 0.02 to 0.50) and a single trial of intensive dialectical behavioural therapy for female patients with borderline personality disorder and recurrent self-harm (OR 0.24, 95% CI 0.06 to 0.93) but numbers were small and the trials should be interpreted with caution. Overall, insufficient numbers of patients in nearly all trials limited the conclusions that could be reached about which forms of treatment are most effective and the authors call for larger trials.</p>
Other Systematic Reviews
<p>Robinson J, et al. 2011. <b>Preventing suicide in young people: systematic review</b>. Australian and New Zealand Journal of Psychiatry, 45(1), 3–26.</p> <p>This study aimed to review RCTs of interventions for adolescents and young adults who had presented to a clinical setting with a suicide attempt (SA), suicidal ideation or deliberate self-harm (DSH). The analysis included 15 published and six ongoing RCTs, the majority of which recruited young people from inpatient or community mental health services following a SA or DSH and most interventions were delivered in outpatient settings. Overall study reporting quality was poor and only a few study results could be combined in meta-analysis, which did not find any significant differences. Only one study, assessing individual cognitive behavioural therapy (CBT) found a significant difference between the intervention and treatment as usual. The authors concluded that although individual CBT based interventions may show some promise, the evidence base for effective interventions was very limited.</p>

<p>Ougrin D &amp; Latif S. 2011. <b>Specific Psychological Treatment Versus Treatment as Usual in Adolescents with Self-Harm</b>. Crisis: The Journal of Crisis Intervention and Suicide Prevention, 32(2), 74-80.</p> <p>This systematic review identifies disengagement from follow-up as a marker of poorer outcomes for adolescents following self-harm, and assessed whether offering specific psychological treatment (SPT) led to better engagement than treatment as usual (TAU) in adolescents who had self-harmed. Seven RCTs were included, of which six were suitable for meta-analysis (498 participants). There was no statistically significant difference between the number of subjects not completing four or more sessions of an SPT (27.7%) than TAU (43.3%), RR 0.71 (95% CI 0.49 to 1.05). The authors acknowledge that a number of other factors could affect treatment engagement and suggest that further research is needed to assess a range of factors, such as family barriers and site of treatment.</p>
<p>van der Feltz-Cornelis CM, et al. 2011. <b>Best Practice Elements of Multilevel Suicide Prevention Strategies</b>. Crisis: The Journal of Crisis Intervention and Suicide Prevention, 32(6), 319-33.</p> <p>This review of systematic reviews sought to identify effective interventions for the prevention of suicidal behaviour for incorporation into optimal multilevel interventions for suicide prevention. Six reviews were included. Qualitative synthesis identified best practice interventions: training general practitioners (GPs) to recognise and treat depression and suicidality, improving accessibility of care for at-risk people, and restricting access to means of suicide. No outcomes were reported for multilevel interventions or for synergistic effects of multiple interventions applied together. Prevention programmes for children and adolescents appeared to have mixed results, and while knowledge about suicide improves, there are both beneficial and harmful effects in relation to help-seeking, attitudes, and peer support. There was insufficient evidence to support school curriculum-based programmes, which may promote harmful behaviours in at-risk individuals. While awareness raising combined with easier access to care may have synergistic effects, this has not been confirmed in children and adolescents.</p>
<p>Tarrier N, et al. 2008. <b>Cognitive-Behavioural Interventions to Reduce Suicide Behaviour</b>. Behaviour Modification, 32(1), 77-108.</p> <p>This systematic review assessed the effectiveness of cognitive behavioural therapy (CBT) in reducing suicidal behaviour (completed suicides, suicide attempts, suicide intent and/or plans, and suicide ideation). Twenty-eight RCTs, comparing CBT type treatments to treatment as usual were included, seven of which described their participants as adolescents. Meta-analysis, using a random effects model due to the heterogeneity of the studies, identified a highly significant effect for CBT reducing suicidal behaviour. However, subgroup analysis identified the treatment effect in adults but not adolescents. Despite optimism about the potential for CBT in reducing suicidal behaviour, the authors found evidence of publication bias (non-significant results not being published).</p>
<p>Mann J, et al. 2005. <b>Suicide prevention strategies: a systematic review</b>. JAMA, 294(16), 2064-74.</p> <p>This review assessed the effectiveness of specific suicide-preventive interventions with the aim of making recommendations for future prevention programmes and research. Ten systematic reviews and meta-analyses, 18 RCTs, 24 cohort studies and 41 population based studies were included in the narrative synthesis. Physician education in depression recognition and treatment and restricting access to lethal methods were found to be effective in reducing suicide rates. There was insufficient evidence to support other methods including public education, screening programmes, and media education.</p>
<p><b>Evidence-based Guidelines</b></p>
<p>National Institute for Health and Clinical Excellence. 2011. <b>Self-harm: longer-term management (NICE clinical guideline 133)</b>. Manchester: National Institute for Health and Clinical Excellence. <a href="http://guidance.nice.org.uk/CG133">http://guidance.nice.org.uk/CG133</a>.</p> <p>This clinical guideline offers evidence-based advice on the longer-term psychological treatment and management of people who self-harm, aged eight years and older. It includes guidance on single and recurrent episodes of self-harm, in primary and secondary care. Guidance on working with people who self-harm, offering a psychosocial assessment of needs, undertaking a risk assessment, developing a care plan and risk management plan, treating associated mental conditions, and consideration of three to 12 sessions of a psychological intervention that is specifically structured for people who self-harm, with the aim of reducing self-harm, is included.</p>
<p>National Institute for Health and Clinical Excellence. 2004. <b>Self-harm: The short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care (NICE clinical guideline 16)</b>. Manchester: National Institute for Health and Clinical Excellence. <a href="http://www.nice.org.uk/CG16">http://www.nice.org.uk/CG16</a>.</p> <p>This evidence-based clinical guidance provides advice on the psychosocial and physical treatment of self-harm, in emergency departments and primary care, within the first 48 hours of an incident. It includes guidance on staff training, triage, physical treatments and assessment of needs and risks. It is recommended that decisions to refer for further treatment are based upon a comprehensive assessment. A small number of trials assessed the accuracy of screening instruments among adolescents but there were no trials examining the harms of screening.</p>
<p>New Zealand Guidelines Group. 2003. <b>The Assessment and Management of People at Risk of Suicide</b>. Wellington: New Zealand Guidelines Group and Ministry of Health. <a href="http://www.nzgg.org.nz/library_resources/24_suicide_summary">http://www.nzgg.org.nz/library_resources/24_suicide_summary</a></p> <p>This guideline aims to provide a resource for emergency department (ED) staff and mental health clinicians when assessing and working with people who have made a suicide attempt, or are at risk of suicide. It provides guidance for both individual clinicians and systems of care. It makes recommendations on assessment by EDs and mental health services, initial management and implementation and includes specific advice on children and adolescents. Many of the recommendations are based on a synthesis of expert opinion.</p>

#### Other Relevant Publications

Beautrais A, et al. 2005. **Suicide Prevention: A review of evidence of risk and protective factors, and points of effective intervention**. Wellington: Ministry of Health. <http://www.health.govt.nz/publication/suicide-prevention-review-evidence-risk-and-protective-factors-and-points-effective-intervention>

This report was commissioned to inform the development of the NZ Suicide Prevention Strategy and includes a review of the epidemiology of suicide and attempted suicide in New Zealand, risk factors, resiliency and protective factors for suicide and attempted suicide and points of effective intervention to reduce and prevent suicide and attempted suicide. Cultural issues in the development and implementation of a culturally relevant suicide prevention strategy are discussed. The report found that while suicide was complex and multifactorial, the largest contribution comes from mental health disorders. The authors concluded that minimising rates of psychiatric disorders and addressing the risk factors and life pathways that lead to these disorders should be the major focus of suicide prevention efforts.

Note: the publications listed were identified using the search methodology outlined in **Appendix 1**





## APPENDICES AND REFERENCES





# APPENDIX 1: SEARCH METHODS FOR POLICY DOCUMENTS AND EVIDENCE-BASED REVIEWS

One of the features of this reporting series is the inclusion of sections which briefly review local policy documents (e.g. Ministry of Health Strategies and Toolkits) and international evidence-based reviews that are relevant to the prevention and or management of child and youth health issues. The approaches taken in these sections borrow heavily from the principles of the Evidence-Based Medicine (EBM) movement, which has emerged in recent years as a means of providing busy clinicians with up to date overviews of the evidence in particular areas [23,495]. Such overviews generally rely on reviewers collating all of the available evidence (published and unpublished trials, observational studies etc.), evaluating it in a rigorous manner, and then publishing the resulting synthesis of the evidence in a format which allows clinicians to evaluate quickly the effectiveness of the intervention(s) reviewed. While the evidence base for population level interventions is much less developed than that for individual patient therapies (as such interventions often have longer follow up times, more diffuse outcomes, and less readily identifiable “control” groups [496]), there is nevertheless a reasonable body of evidence emerging about the effectiveness of specific population level interventions.

The brief overviews presented in this report therefore aim to provide busy DHB staff with a logical starting point from which to consider the types of interventions available to address particular child and youth health issues. In preparing these overviews the methodology used was not exhaustive but rather involved searching a number of EBM journals and databases (e.g. the Cochrane Library) as well as Ovid MEDLINE and PubMed for systematic reviews of population level interventions in child and youth health (see Text Box below).

## Methodology Used in Preparing Policy/Evidence-Based Review Sections

### New Zealand (Health) Policy Documents

Each review section aims to provide an overview of Ministry of Health (or where appropriate, other Government Agency) policy documents and strategies relevant to the area. The Ministry of Health's website (<http://www.moh.govt.nz/moh.nsf>) was searched for key documents. All identified documents were then scanned and the most relevant summarised, focussing on those which provided strategic guidance to DHBs on the prevention/population level management of the issues in question.

### Evidence-Based and Other Reviews

The five databases listed below were searched for reviews considering the effectiveness of population level interventions to prevent and/or manage each of the issues in question. While this list is not exhaustive, the databases were selected on the basis of the calibre of the institutions publishing the reviews. In addition, the search strategy concentrated on publications which attempted to synthesise all of the available evidence, thereby providing as broad as possible coverage of the relevant literature. In general, only literature from 2000 onwards was searched, although earlier publications were included if there was a paucity of more recent information. While individual trials and protocols were not specifically sought, if there was no other relevant information available, an attempt was made to locate individual research reports or recommendations. While they are not totally comprehensive, it is nevertheless hoped that these brief overviews will provide a useful starting point for DHBs wishing to explore strategies to address particular child and youth health issues.

**Evidence-Based Medicine Reviews:** This database allows seven EBM resources to be searched at once including The Database of Reviews of Effects (DARE), Health Technology Assessments (HTA) and the NHS Economic Evaluation Database (NHSEED) all produced by National Health Services' Centre for Reviews and Dissemination at the University of York, U.K., The Cochrane Database of Systematic Reviews, and the ACP Journal Club.

**National Guideline Clearinghouse:** <http://www.guideline.gov/> This is a searchable database of evidence-based clinical practice guidelines maintained by the Agency for Healthcare Research and Quality in the United States.

**Centre for Reviews and Dissemination (CRD):** This is a Department of the University of York and is part of the National Centre for Health Research (NCHR) (<http://www.york.ac.uk/inst/crd/>). While CRD produces the database of Review Effects (DARE), captured in the Evidence-Based Medicine Review Database, searching the CRD site identifies other reviews not captured by DARE. This database is available through most local library services.

**National Institute for Health and Clinical Excellence (NICE):** This is an independent organisation based in the United Kingdom which provides national guidance on the promotion of good health and the prevention and treatment of ill health. (<http://www.nice.org.uk/>)



Guide to Community Preventive Services: Systematic Reviews and Evidence-Based Recommendations: This guide was developed by the non-federal Task [Force on Community Preventive Services](#) whose members are appointed by the Director of the Centre for Disease Control and Prevention (CDC). The Community Guide summarises what is known about the effectiveness, economic efficiency, and feasibility of interventions to promote community health and prevent disease.  
(<http://www.thecommunityguide.org/about/>)

While undertaking this task it quickly became apparent that the quality of evidence varied considerably depending on the issue reviewed. In addition, in many cases, the research provided reasonably strong guidance about what did not work (for example, current evidence suggests additional social support is ineffective in preventing preterm birth in high-risk women), but little advice on effective interventions.

Thus in many cases these brief overviews serve to highlight the current paucity of evidence on population level interventions to address child and youth health needs (although the absence of systematic/other reviews does not rule out the existence of individual studies in particular areas). In this context, the search strategy utilised did not primarily aim to identify individual studies or reviews of individual patient therapies. In cases where such studies were identified and where no other systematic reviews were available, they were included under the heading of “Other Relevant Publications”. In such cases the reader needs to be aware that these studies were identified in a non-systematic manner and that their findings should therefore not be given the same weight as systematic reviews (e.g. Cochrane reviews) where all of the available evidence has been rigorously evaluated. The evidence-based review tables also include some topical New Zealand research publications.





## APPENDIX 2: STATISTICAL SIGNIFICANCE TESTING AND ITS USE IN THIS REPORT

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### Understanding Statistical Significance Testing

Inferential statistics are used when a researcher wishes to use a sample to draw conclusions about the population as a whole (e.g. weighing a class of 10 year old boys, in order to estimate the average weight of all 10 year old boys in New Zealand). Any measurements based on a sample however, even if drawn at random, will always differ from that of the population as a whole, simply because of chance. Similarly, when a researcher wishes to determine whether the risk of a particular condition (e.g. lung cancer) is truly different between two groups (smokers and non-smokers), they must also consider the possibility that the differences observed arose from chance variations in the populations sampled.

Over time, statisticians have developed a range of measures to quantify the uncertainty associated with random sampling error (e.g. to quantify the level of confidence we can have that the average weight of boys in our sample reflects the true weight of all 10 year old boys, or that the rates of lung cancer in smokers are really different to those in non-smokers). Of these measures, two of the most frequently used are:

**P values:** The p value from a statistical test tells us the probability that we would have seen a difference at least as large as the one observed, if there were no real differences between the groups studied (e.g. if statistical testing of the difference in lung cancer rates between smokers and non-smokers resulted in a p value of 0.01, this tells us that the probability of such a difference occurring if the two groups were identical is 0.01 or 1%. Traditionally, results are considered to be statistically significant (i.e. unlikely to be due to chance) if the probability is  $<0.05$  (i.e. less than 5%) [497].

**Confidence Intervals:** A 95% Confidence Interval suggests that if you were to repeat the sampling process 100 times, 95 times out of 100 the confidence interval would include the true value. In general terms, if the 95% confidence intervals of two samples overlap, there is no significant difference between them (i.e. the p value would be  $\geq 0.05$ ), whereas if they do not overlap, they can be assumed to be statistically different at the 95% confidence level (i.e. the p value would be  $<0.05$ ) [497].

### The Use of Statistical Significance Testing in this Report

In the preparation of this report a large range of data sources were used. For the purposes of statistical significance testing however, these data sources can be considered as belonging to one of two groups: Population Surveys and Routine Administrative Datasets. The relevance of statistical testing to each of these data sources is described separately below:

**Population Surveys:** A number of indicators in this report utilise data derived from national surveys (e.g. the 2009 New Zealand Tobacco Use Survey), where information from a sample has been used to make inferences about the population as a whole. In this context statistical significance testing is appropriate, and where such information is available in published reports, it has been incorporated into the text accompanying each graph or table (i.e. the word *significant* in italics is used to imply that a test of statistical significance has been applied to the data and that the significance of the associations is as indicated). In a small number of cases however information on statistical significance was not available in published reports, and in such cases any associations described do not imply statistical significance.

**Numbers and Rates Derived from Routine Administrative Data:** A large number of the indicators in this report are based on data derived from New Zealand's administrative datasets (e.g. National Minimum Dataset, National Mortality Collection), which capture



information on all of the events occurring in a particular category. Such datasets can thus be viewed as providing information on the entire population, rather than a sample and as a consequence, 95% confidence intervals are not required to quantify the precision of the estimate (e.g. the number of leukaemia deaths in 2003–2007 although small, is not an estimate, but rather reflects the total number of deaths during this period). As a consequence, 95% confidence intervals have not been provided for any of the descriptive data (numbers, proportions, rates) presented in this report, on the basis that the numbers presented are derived from the total population under study.

**Rate Ratios Derived from Routine Administrative Data:** In considering whether statistical significance testing is ever required when using total population data Rothman [498] notes that if one wishes only to consider descriptive information (e.g. rates) relating to the population in question (e.g. New Zealand), then statistical significance testing is probably not required (as per the argument above). If, however, one wishes to use total population data to explore biological phenomena more generally, then the same population can also be considered to be a sample of a larger super-population, for which statistical significance testing may be required (e.g. the fact that SIDS in New Zealand is 10 times higher in the most deprived NZDep areas might be used to make inferences about the impact of the socioeconomic environment on SIDS mortality more generally (i.e. outside of New Zealand, or the 5 year period concerned)). Similarly, in the local context the strength of observed associations is likely to vary with the time period under study (e.g. in updating 5-year asthma admission data from 2004–2008 to 2005–2009, rate ratios for Pacific children are likely to change due to random fluctuations in annual rates, even though the data utilised includes all admissions recorded for that particular 5-year period). Thus in this report, whenever measures of association (i.e. rate ratios) are presented, 95% confidence intervals have been provided on the assumption that the reader may wish to use such measures to infer wider relationships between the variables under study [498].

### **The Signalling of Statistical Significance in this Report**

In order to assist the reader to identify whether tests of statistical significance have been applied in a particular section, the significance of the associations presented has been signalled in the text with the words *significant*, or *not significant* in italics. Where the words *significant* or *not significant* do not appear in the text, then the associations described do not imply statistical significance or non-significance.



# APPENDIX 3: THE NATIONAL MINIMUM DATASET

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## Mode of Data Collection

The National Minimum Dataset (NMDS) is New Zealand's national hospital discharge data collection and is maintained by the Ministry of Health. The information contained in the dataset has been submitted by public hospitals in a pre-agreed electronic format since 1993. Private hospital discharges for publicly funded events (e.g. births, geriatric care) have been submitted since 1997. The original NMDS was implemented in 1993, with public hospital information back loaded to 1988 [499]. Information contained in the NMDS includes principal and additional diagnoses, procedures, external causes of injury, length of stay and sub-specialty code and demographic information such as age, ethnicity and usual area of residence.

## Dataset Quality and Changes in Coding Over Time

There are a number of key issues which must be taken into account when interpreting information from the NMDS. Many of these issues arise as a result of regional differences in the way in which data are coded and uploaded to the NMDS. These include:

1. Inconsistencies in the way in which different providers upload day cases to the NMDS, and how this has changed over time.
2. The changeover from the ICD-9 to ICD-10 coding system, and irregularities in the way in which diagnoses and procedures are allocated ICD codes.
3. Changes in the way in which ethnicity information has been collected over time and across regions (**Appendix 6**).

The following sections discuss the first two of these issues, while the third is discussed in **Appendix 6**, which reviews the way in which ethnicity information is collected and coded within the health sector.

### 1. Inconsistencies in the Uploading of Day-Cases to the NMDS

One of the key issues with time series analysis using hospital discharge data is the variability with which different providers upload day cases to the NMDS. Day cases are defined as cases that are admitted and discharged on the same day, with the "three hour rule" (treatment time >3 hours) traditionally being utilised to define an admission event. In contrast, patients who spend at least one (mid)night in hospital are classified as inpatients irrespective of their length of stay [500].

In the past, there have been significant regional variations in the way in which different providers have uploaded their day cases to the NMDS, leading to problems with both time series analysis and regional comparisons. These inconsistencies have included

1. During the mid 1990's, a number of providers began to include A&E events as day cases if the total time in the Emergency Department (including waiting time) exceeded 3 hours, rather than uploading only those whose actual treatment time exceeded 3 hours [500]. NZHIS provided feedback which rectified this anomaly and since January 1995 the correct procedure has been used (these additional cases were coded using medical and surgical sub-specialty codes and are thus difficult to filter out using traditional Emergency sub-specialty filters).
2. Over time, a number of providers have become more efficient at recording the time of first treatment within the Emergency Department (rather than time of attendance) and thus during the late 1990s and early 2000s have become more efficient in identifying emergency department cases which meet the 3-hour treatment rule and are thus eligible to be uploaded to the NMDS. This has resulted in a large number of additional cases being uploaded to the NMDS, particularly in the upper North Island.





3. In addition, some providers admit cases to their short stay observation units while other providers do not, leading to regional variations in the appearance of day cases in the NMDS [501].

### **Previous Attempts to Address Inconsistent Uploading at the Analytical Stage**

When producing their annual Hospital Throughput reports, the Ministry of Health has adopted the following filter to ensure regional and time series comparability with respect to day patient admissions [501]. In its analyses it excludes all cases where:

1. the admission and discharge date are the same (length of stay = 0), and
2. the patient was discharged alive, and
3. the health specialty code on discharge is that of Emergency Medicine (M05, M06, M07, and M08).

While this coding filter succeeds in ensuring a degree of comparability between regions and across time (although it fails to correct the anomalies occurring during the mid 1990s when A&E cases were uploaded using medical sub-specialty codes), the exclusion of emergency day cases from time series analysis has a number of limitations including:

1. Exclusion of only those with a length of stay of 0 days means that those emergency cases who begin their treatment late at night and are discharged in the early hours of the following morning (up to a quarter of emergency cases have a length of stay of 1 day in some DHBs) are included as genuine hospital admissions, whereas those who begin their treatment early in the morning and are discharged late in the afternoon or the evening of the same day are excluded.
2. With a move towards the development of specialist paediatric emergency departments in larger urban centres (e.g. Auckland), there remains the possibility that some larger DHBs are now seeing and treating a number of acute medical patients within the emergency setting, while in regional centres similar patients continue to be assessed on the paediatric medical ward/assessment unit and thus receive a paediatric medical specialty code. The exclusion of all emergency presentations from time series and sub-regional analysis may thus differentially exclude a large portion of the workload occurring in large urban centres where access to specialist advice and treatment is available within the Emergency Department setting.

The potential impact of inconsistent uploading of day cases to the NMDS is likely to be greatest for those conditions most commonly treated in the emergency department setting. Analysis of 2001–2003 hospital admission data suggests that more than a third of NMDS emergency department discharges for those aged 0–24 years were due to injury, with another third due to ambulatory sensitive conditions (e.g. asthma, gastroenteritis, respiratory infections). In contrast, only 2% of those presenting with bacterial meningitis and 4% of those with septic arthritis were discharged with an emergency sub-specialty code.

Further sub-analysis of these two admission categories however demonstrated that inclusion/exclusion of emergency department admissions had quite different effects depending on the category of admission under study (injury vs. ambulatory sensitive admissions) and whether the region had access to a specialist Paediatric Emergency Department. In this analysis the Wider Auckland Region, (comprising one third of the NZ population and whose residents have access to specialist Paediatric Emergency Departments) was compared to the rest of NZ. For ambulatory sensitive admissions, exclusion of emergency department cases resulted in Auckland's admission rates being consistently lower than in the rest of New Zealand. It was only when emergency cases were included in this analysis that Auckland's admission rates began to approximate those of the rest of NZ. In contrast for injuries, inclusion of emergency department cases resulted in hospital admissions in the Auckland Region consistently exceeding the rest of New Zealand. It was only when emergency cases were excluded from the analysis that Auckland's injury admission rates began to approximate those of the rest of NZ. (These findings occurred despite Auckland having a similar proportion of children living in the most deprived NZDep small areas as the rest of NZ).



Loosely interpreted, the findings of this analysis suggest that the workload of large specialist Paediatric Emergency Departments must not be discounted when examining trends in ambulatory sensitive or other medical admissions, as it is only when emergency cases are included in the analysis that the admission rates of the Wider Auckland Region (with its access to specialist Paediatric Emergency care) begin to approximate the rest of NZ. In contrast, it is possible that specialist Paediatric Emergency Departments have much less of an influence on admission thresholds for injury, with these being handled in a similar manner by different emergency departments across the country. Thus for injury data, the greater tendency for some emergency departments to upload their cases to the NMDS must be taken into account in any analysis.

### **Implications for Interpreting Time Series Analyses in these Reports**

Throughout this report, analysis of time series and other information has been undertaken using unfiltered hospital admission data. The exceptions are the injury and poisoning sections where emergency department discharges have been filtered out of the dataset in an attempt to address some of the inconsistencies discussed above. Despite such an approach, there remains the potential for the inconsistent uploading of day cases to significantly influence the time series analyses presented in this report. In particular, such practices may lead to an over estimate of the number of medical admissions commonly treated in the emergency department setting (e.g. asthma, skin infections, respiratory tract infections), while at the same time the filtering out of injury and poisoning emergency cases may lead to undercounting for a number of more minor types of injury. Nevertheless, the filtering processes used in this report are thought to provide the best balance when considering hospital admissions amongst those 0–24 years. Despite this, the reader must bear in mind that a potential for significant residual bias remains, when interpreting the time series analyses presented in this report.

## **2. Data Quality and Coding Changes over Time (ICD-9 and ICD-10)**

### **Change Over from ICD-9 to ICD-10 Coding**

From 1988 until June 1999, clinical information in the NMDS was coded using versions of the ICD-9 classification system (ICD-9 CM until June 1995, then ICD-9-CM-A until June 1999). From July 1999 onwards, the ICD-10-AM classification system has been used, although for time series analysis, back and forward mapping between the two classification systems is possible using pre-defined algorithms [499].

The introduction of ICD-10-AM represents the most significant change in the International Classification of Diseases (ICD) in over 50 years and uses an alphanumeric coding system for diseases in which the first character of the code is always a letter followed by several numbers. This has allowed for the expansion of the number of codes to provide for recently recognised conditions and to provide greater specificity about common diseases (there are about 8,000 categories in ICD-10-AM as compared to 5,000 in ICD-9). While for most conditions there is a reasonable 1:1 correspondence between ICD-9 and ICD-10 codes, for some this may lead to some irregularities in time series analysis [502]. Where possible such irregularities will be highlighted in the text, although care should still be taken when interpreting time series analysis across the 1999–2000 period as some conditions may not be directly comparable between the two coding systems.

### **Accuracy of ICD Coding**

In recent years the Ministry of Health has undertaken a number of reviews of the quality of ICD coding in the NMDS. In the latest audit 2,708 events were audited over 10 sites during a 3 month period during 2001/2002. Overall the audit found that 22% of events required a change in coding, although this also included changes at the fourth and fifth character level. The average ICD code change was 16%, with changes to the principal diagnosis being 11%, to additional diagnoses being 23% and to procedure coding being 11%. There were 1625 external causes of injury codes, of which 15% were re-coded differently [503]. These findings were similar to an audit undertaken a year previously.

While the potential for such coding errors must be taken into consideration when interpreting the findings of this report, it may be that the 16% error rate is an overestimate,



as in the majority of the analyses undertaken in this report, only the principal diagnosis (with an error rate of 11%) is used to describe the reason for admission. In addition, for most admissions the diagnostic category (e.g. lower respiratory tract infections) is assigned using information at the 3 digit level (with the 16% error rate also including issues with coding at the 4th or 5th digit level).

### 3. Ethnicity Information in the NMDS

The reader is referred to **Appendix 6** for a discussion of this issue.

## Conclusion

In general the inconsistencies outlined above tend to make time series and (regional) comparative analyses based on the NMDS less reliable than those based on Mortality or Birth Registration data (where legislation dictates inclusion criteria and the type of information collected). While hospital discharge data still remains a valuable and reasonably reliable proxy for measuring the health outcomes of children and young people in this country, the reader is cautioned to take into consideration the biases discussed above, when interpreting the findings outlined in this report.



## APPENDIX 4: THE BIRTH REGISTRATION DATASET

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### Mode of Data Collection

Since 1995 all NZ hospitals and delivering midwives have been required to notify Internal Affairs (within 5 working days of delivery), of the birth of a live or stillborn baby 20+ weeks gestation or weighing >400g. Prior to 1995, only stillborn babies reaching 28+ weeks of gestation required birth notification. Information on the hospital's notification form includes maternal age, ethnicity, multiple birth status, and baby's sex, birth weight and gestational age. In addition, parents must complete a Birth Registration Form within two years of delivery, duplicating the above information with the exception of birth weight and gestational age, which are supplied only on hospital notification forms. Once both forms are received by Internal Affairs, the information is merged into a single entry. This two-stage process it is thought to capture 99.9% of births occurring in New Zealand and cross-checking at the receipting stage allows for the verification of birth detail [504].

### Interpretation of Information Derived from the Birth Registration Dataset

Because of the two-stage birth registration process, the majority of variables contained within the birth registration dataset are >98% complete, and cross-checking at the receipting stage (with the exception of birth weight and gestational age) allows for the verification of birth details. In addition, the way in which ethnicity is collected in this dataset confers a number of advantages, with maternal ethnicity being derived from the information supplied by parents on their baby's birth registration form. This has the advantage of avoiding some of the ambiguities associated with hospital and mortality data, which at times have been reported by third parties. Changes in the way ethnicity was defined in 1995 however make information collected prior to this date incomparable with that collected afterwards. For births prior to 1995, maternal ethnicity was defined by ancestry, with those having half or more Māori or Pacific blood meeting ethnic group criteria, resulting in three ethnic groups, Māori, Pacific and non-Māori non-Pacific. For births after 1995 maternal ethnicity was self-identified, with an expanded number of ethnic categories being available and parents being asked to tick as many options as required to show which ethnic group(s) they belonged to. For those reporting multiple ethnic affiliations a priority rating system was introduced, as discussed **Appendix 6** of this report.

Because this dataset captures 99.9% of births occurring in NZ, is >98% complete for most variables, collects self-reported ethnicity in a standard manner and is collated and coded by a single agency, information derived from this dataset is likely to be of higher quality than that derived from many of NZ's other data sources. Limitations however include the relatively restricted number of variables contained within the dataset (e.g. it lacks information on maternal smoking, BMI or obstetric interventions) and the lack of cross-checking for birth weight and gestational age (which is supplied only on the hospital notification form). The changeover in ethnicity definition during 1995 also prohibits time series analysis by ethnicity over the medium to long term. Finally, since the last report, the Ministry of Health has stopped providing stillbirth data in the Birth Registration Dataset, and thus all analyses based on this set are restricted to live births only. Each of these factors must thus be taken into account when interpreting information in this report that has been derived from the Birth Registration Dataset.





## APPENDIX 5: THE NATIONAL MORTALITY COLLECTION

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### Mode of Data Collection

The National Mortality Collection is a dataset managed by the Ministry of Health which contains information on the underlying cause(s) of death as well as basic demographic data for all deaths registered in New Zealand since 1988. Data pertaining to fetal and infant deaths are a subset of the Mortality Collection, with cases in this subset having additional information on factors such as birth weight and gestational age [505].

Each month the Births, Deaths and Marriages service of the Department of Internal Affairs sends the Ministry of Health electronic death registration information, Medical Certificates of Cause of Death, and Coroner's reports. Additional information on the cause of death is obtained from the National Minimum Dataset (NMDS), private hospital discharge returns, the NZ Cancer Registry (NZCR), the Department of Courts, the Police, the Land Transport Authority (LTSA), Water Safety NZ, Media Search and from writing letters to certifying doctors, coroners and medical records officers in public hospitals. Using information from these data sources, an underlying cause of death (ICD-10-AM) is assigned by Ministry of Health staff using the World Health Organisation's rules and guidelines for mortality coding [505].

### Data Quality Issues Relating to the National Mortality Collection

Unlike the NMDS, where information on the principal diagnosis is coded at the hospital level and then forwarded electronically to the Ministry of Health, in the National Mortality Collection each of the approximately 28,000 deaths occurring in New Zealand each year is coded manually by Ministry of Health staff. For most deaths the Medical Certificate of Cause of Death provides the information required, although coders also have access to the information contained in the NMDS, NZ Cancer Registry, LSTA, Police, Water Safety NZ and ESR [506]. As a consequence, while coding is still reliant on the accuracy of the death certificate and other supporting information, there remains the capacity for a uniform approach to the coding which is not possible for hospital admissions data.

While there are few published accounts of the quality of coding information contained in the National Mortality Collection, the dataset lacks some of the inconsistencies associated with the NMDS, as the process of death registration is mandated by law and there are few ambiguities as to the inclusion of cases over time. As a consequence, time series analyses derived from this dataset are likely to be more reliable than that provided by the NMDS. One issue that may affect the quality of information derived from this dataset however is the collection of ethnicity data, which is discussed in more detail in **Appendix 6** of this report.





## APPENDIX 6: THE MEASUREMENT OF ETHNICITY

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The majority of rates calculated in this report rely on the division of numerators (e.g. hospital admissions, mortality data) by Statistics NZ Estimated Resident Population denominators. Calculation of accurate ethnic-specific rates relies on the assumption that information on ethnicity is collected in a similar manner in both the numerator and the denominator, and that a single child will be identified similarly in each dataset. In New Zealand this has not always been the case, and in addition the manner of collecting information on ethnicity has varied significantly over time. Since 1996 however, there has been a move to ensure that ethnicity information is collected in a similar manner across all administrative datasets in New Zealand (Census, Hospital Admissions, Mortality, Births). The following section briefly reviews how information on ethnicity has been collected in national data collections since the early 1980s and the implications of this for the information contained in this report.

### 1981 Census and Health Sector Definitions

Earlier definitions of ethnicity in official statistics relied on the concept of fractions of descent, with the 1981 census asking people to decide whether they were fully of one ethnic origin (e.g. Full Pacific, Full Māori) or if of more than one origin, what fraction of that ethnic group they identified with (e.g. 7/8 Pacific + 1/8 Māori). When prioritisation was required, those with more than 50% of Pacific or Māori blood were deemed to meet the ethnic group criteria of the time [507]. A similar approach was used to record ethnicity in health sector statistics, with birth and death registration forms asking the degree of Pacific or Māori blood of the parents of a newborn baby/the deceased individual. For hospital admissions, ancestry-based definitions were also used during the early 1980s, with admission officers often assuming ethnicity, or leaving the question blank [508].

### 1986 Census and Health Sector Definitions

Following a review expressing concern at the relevance of basing ethnicity on fractions of descent, a recommendation was made to move towards self-identified cultural affiliation. Thus the 1986 Census asked the question “What is your ethnic origin?” and people were asked to tick the box or boxes that applied to them. Birth and death registration forms however, continued to use the “fractions of blood” question until 1995, making comparable numerator and denominator data difficult to obtain [507]. For hospital admissions, the move from an ancestry-based to a self-identified definition of ethnicity began in the mid 80s, although non-standard forms were used and typically allowed a single ethnicity only [508].

### 1991 Census and Health Sector Definitions

A review suggested that the 1986 ethnicity question was unclear as to whether it was measuring ancestry or cultural affiliation, so the 1991 Census asked two questions:

1. Which ethnic group do you belong to? (tick the box or boxes which apply to you)
2. Have you any NZ Māori ancestry? (if yes, what iwi do you belong to?)


As indicated above however, birth and death registrations continued with ancestry-based definitions of ethnicity during this period, while a number of hospitals were beginning to use self-identified definitions in a non-standard manner [508].

### 1996 Census and Health Sector Definitions

While the concepts and definitions remained the same as for the 1991 census, the ethnicity question in the 1996 Census differed in that:

- The NZ Māori category was moved to the top of the ethnic categories
- The 1996 question made it more explicit that people could tick more than one box
- There was a new “Other European” category with 6 subgroups





As a result of these changes, there was a large increase in the number of multiple responses, as well as an increase in the Māori ethnic group in the 1996 Census [507]. Within the health sector however, there were much larger changes in the way in which ethnicity information was collected. From late 1995, birth and death registration forms incorporated a new ethnicity question identical to that in the 1996 Census, allowing for an expansion of the number of ethnic groups counted (previously only Māori and Pacific) and resulting in a large increase in the proportion of Pacific and Māori births and deaths. From July 1996 onwards, all hospitals were also required to inquire about ethnicity in a standardised way, with a question that was compatible with the 1996 Census and that allowed multiple ethnic affiliations [508]. A random audit of hospital admission forms conducted by Statistics NZ in 1999 however, indicated that the standard ethnicity question had not yet been implemented by many hospitals. In addition, an assessment of hospital admissions by ethnicity over time showed no large increases in the proportions of Māori and Pacific admissions after the 1996 “change-over”, as had occurred for birth and death statistics, potentially suggesting that the change to a standard form allowing for multiple ethnic affiliations in fact did not occur. Similarities in the number of people reporting a “sole” ethnic group pre- and post-1996 also suggest that the way in which information on multiple ethnic affiliations was collected did not change either. Thus while the quality of information available since 1996 has been much better than previous, there remains some concern that hospitals continue to undercount multiple ethnic identifications and as a result, may continue to undercount Pacific and Māori peoples [508].

### **2001 Census and Health Sector Definitions**

The 2001 Census reverted back to the wording used in the 1991 Census after a review showed that this question provided a better measure of ethnicity based on the current statistical standard [507]. The health sector also continued to use self-identified definitions of ethnicity during this period, with the *Ethnicity Data Protocols for the Health and Disability Sector* providing guidelines which ensured that the information collected across the sector was consistent with the wording of the 2001 Census (i.e. *Which ethnic groups do you belong to (Mark the space or spaces that apply to you)?*)

### **2006 Census and Health Sector Definitions**

In 2004, the Ministry of Health released the *Ethnicity Data Protocols for the Health and Disability Sector* [509] with these protocols being seen as a significant step forward in terms of standardising the collection and reporting of ethnicity data in the health sector [510]. The protocols stipulated that the standard ethnicity question for the health sector was the 2001 Census ethnicity question, with respondents being required to identify their own ethnicity, and with data collectors being unable to assign this on respondent's behalf, or to transfer this information from another form. The protocols also stipulated that ethnicity data needed to be recorded to a minimum specificity of Level 2 (see below) with systems needing to be able to store, at minimum, three ethnicities, and to utilise standardised prioritisation algorithms, if more than three ethnic groups were reported. In terms of outputs, either sole/combination, total response, or prioritised ethnicity needed to be reported, with the methods used being clearly described in any report [509].

The following year, Statistics New Zealand's Review of the Measurement of Ethnicity (RME), culminated in the release of the *Statistical Standard for Ethnicity 2005* [511], which recommended that:

1. The 2006 Census ethnicity question use identical wording to the 2001 Census
2. Within the “Other” ethnic group, that a new category be created for those identifying as “New Zealander” or “Kiwi”. In previous years these responses had been assigned to the European ethnic group
3. All collections of official statistics measuring ethnicity have the capacity to record and report six ethnicity responses per individual, or at a minimum, three responses when six could not be implemented immediately
4. The practice of prioritising ethnicity to one ethnic group should be discontinued.



At the 2006 Census however, a total of 429,429 individuals (11.1% of the NZ population) identified themselves as a New Zealander, with further analysis suggesting that 90% of the increase in those identifying as New Zealanders in 2006, had arisen from those identifying as New Zealand European at the 2001 Census [512]. In 2009 Statistics NZ amended the Standard to reflect these issues [513] with the current recommendation being that future Censuses retain the current ethnicity question (i.e. that New Zealander tick boxes not be introduced) but that alongside the current standard outputs where New Zealander responses are assigned to the Other Ethnicity category, an alternative classification be introduced which combines the European and New Zealander ethnic groups into a single European and Other Ethnicity category for use in time series analysis (with those identifying as both European and New Zealanders being counted only once in this combined ethnic group [513]).

## **The Current Recording of Ethnicity in New Zealand's National Datasets**

In New Zealand's national health collections (e.g. National Minimum Dataset, Mortality Collection and NZ Cancer Registry), up to three ethnic groups per person are stored electronically for each event, with data being coded to Level 2 of Statistics New Zealand's 4-Level Hierarchical Ethnicity Classification System [499]. In this Classification System increasing detail is provided at each level. For example [509]:

- Level 1 (least detailed level) e.g. code 1 is European
- Level 2 e.g. code 12 is Other European
- Level 3 e.g. code 121 is British and Irish
- Level 4 (most detailed level) e.g. code 12111 is Celtic

Māori however, are identified similarly at each level (e.g. Level 1: code 2 is Māori...vs Level 4: code 21111 is Māori).

For those reporting multiple ethnic affiliations, information may also be prioritised according to Statistics New Zealand's protocols, with Māori ethnicity taking precedence over Pacific > Asian/Indian > Other > European ethnic groups [509]. This ensures that each individual is counted only once and that the sum of the ethnic group sub-populations equals the total NZ population [508]. The implications of prioritisation for Pacific groups however are that the outcomes of those identifying as both Māori and Pacific are only recorded under the Māori ethnic group.

For those reporting more than 3 ethnic affiliations, the ethnic groups recorded are again prioritised (at Level 2), with Māori ethnicity taking precedence over Pacific > Asian/Indian > Other > European ethnic groups (for further details on the prioritisation algorithms used see [509]. In reality however, less than 0.5% of responses in the National Health Index database have three ethnicities recorded, and thus it is likely that this prioritisation process has limited impact on ethnic-specific analyses [509].

## **Undercounting of Māori and Pacific Peoples in National Collections**

Despite significant improvements in the quality of ethnicity data in New Zealand's national health collections since 1996, care must still be taken when interpreting the ethnic-specific rates presented in this report, as the potential still remains for Māori and Pacific children and young people to be undercounted in our national data collections. In a review that linked hospital admission data to other datasets with more reliable ethnicity information (e.g. death registrations and Housing NZ Corporation Tenant data), the authors of Hauora IV [514] found that on average, hospital admission data during 2000–2004 undercounted Māori children (0–14 years) by around 6%, and Māori young people by around 5–6%. For cancer registrations, the undercount was in the order of 1–2% for the same age groups. While the authors of Hauora IV developed a set of adjusters which could be used to minimise the bias such undercounting introduced when calculating population rates and rate ratios, these (or similar) adjusters were not utilised in this report for the following reasons:

1. Previous research has shown that ethnicity misclassification can change over time, and thus adjusters developed for one period may not be applicable to other periods [515].



2. Research also suggests that ethnic misclassification may vary significantly by DHB [515], and thus that adjusters developed using national level data (as in Hauora IV) may not be applicable to DHB level analyses, with separate adjusters needing to be developed for each DHB.

Further, as the development of adjusters requires the linkage of the dataset under review with another dataset for which more reliable ethnicity information is available, and as this process is resource-intensive and not without error (particularly if the methodology requires probabilistic linkage of de-identified data), the development of a customised set of period and age specific adjusters was seen as being beyond the scope of the current project. The reader is thus urged to bear in mind that the data presented in this report may undercount Māori and Pacific children to a variable extent (depending on the dataset used) and that in the case of the hospital admission dataset for Māori, this undercount may be as high as 5–6%.

### **Ethnicity Classifications Utilised in this Report and Implications for Interpretation of Results.**

Because of inconsistencies in the manner in which ethnicity information was collected prior to 1996, all ethnic-specific analysis presented in this report are for the 1996 year onwards. The information thus reflects self-identified concepts of ethnicity. In order to ensure that each health event is only counted once, prioritised ethnic group has been used unless otherwise specified.





## APPENDIX 7: THE NZ DEPRIVATION INDEX

The NZ Deprivation Index (NZDep) is a small area index of deprivation, which has been used as a proxy for socioeconomic status in this report. The main concept underpinning small area indices of deprivation is that the socioeconomic environment in which a person lives can confer risks/benefits which may be independent of their own social position within a community [516]. They are thus aggregate measures, providing information about the wider socioeconomic environment in which a person lives, rather than about their individual socioeconomic status.

The NZDep was first created using information from the 1991 census, but has since been updated following each census. The NZDep2006 combines 9 variables from the 2006 census which reflect 8 dimensions of deprivation (**Table 117**). Each variable represents a standardised proportion of people living in an area who lack a defined material or social resource (e.g. access to a car, income below a particular threshold), with all 9 variables being combined to give a score representing the average degree of deprivation experienced by people in that area. While the NZDep provides deprivation scores at meshblock level (Statistics NZ areas containing approx 90 people), for the purposes of mapping to national datasets, these are aggregated to Census Area Unit level (≈1,000–2,000 people). Individual area scores are then ranked and placed on an ordinal scale from 1 to 10, with decile 1 reflecting the least deprived 10% of small areas and decile 10 reflecting the most deprived 10% of small areas [517].

Table 117. Variables used in the NZDep2006 Index of Deprivation [518]

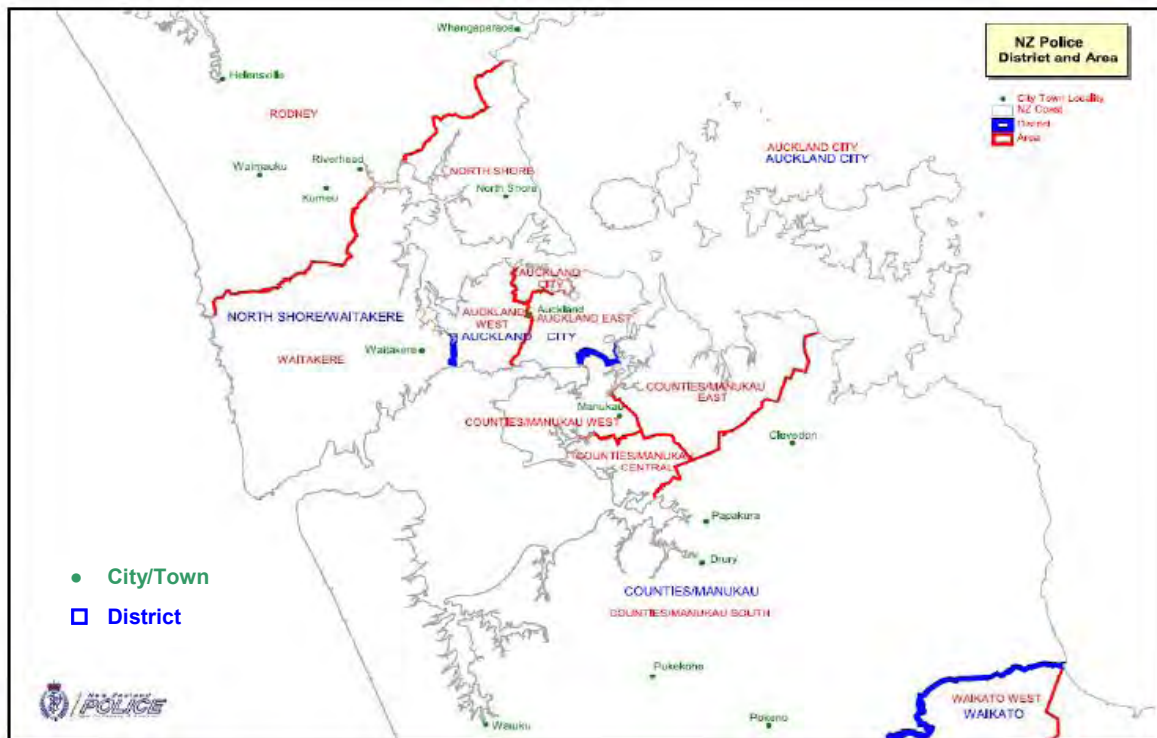
No	Factor	Variable in Order of Decreasing Weight in the Index
1	Income	People aged 18–64 receiving means tested benefit
2	Employment	People aged 18–64 unemployed
3	Income	People living in households with income below an income threshold
4	Communication	People with no access to a telephone
5	Transport	People with no access to a car
6	Support	People aged <65 living in a single parent family
7	Qualifications	People aged 18–64 without any qualifications
8	Owned Home	People not living in own home
9	Living Space	People living in households below a bedroom occupancy threshold

The advantage of NZDep is its ability to assign measures of socioeconomic status to the elderly, the unemployed and to children (where income and occupational measures often don't apply), as well as to provide proxy measures of socioeconomic status for large datasets when other demographic information is lacking. Small area indices have limitations however, as not all individuals in a particular area are accurately represented by their area's aggregate score. While this may be less of a problem for very affluent or very deprived neighbourhoods, in average areas, aggregate measures may be much less predictive of individual socioeconomic status [516]. Despite these limitations, the NZDep has been shown to be predictive of mortality and morbidity from a number of diseases in New Zealand.



## APPENDIX 8: POLICE AREA BOUNDARIES

Figure 140. New Zealand Police Area Boundaries in the Auckland Region



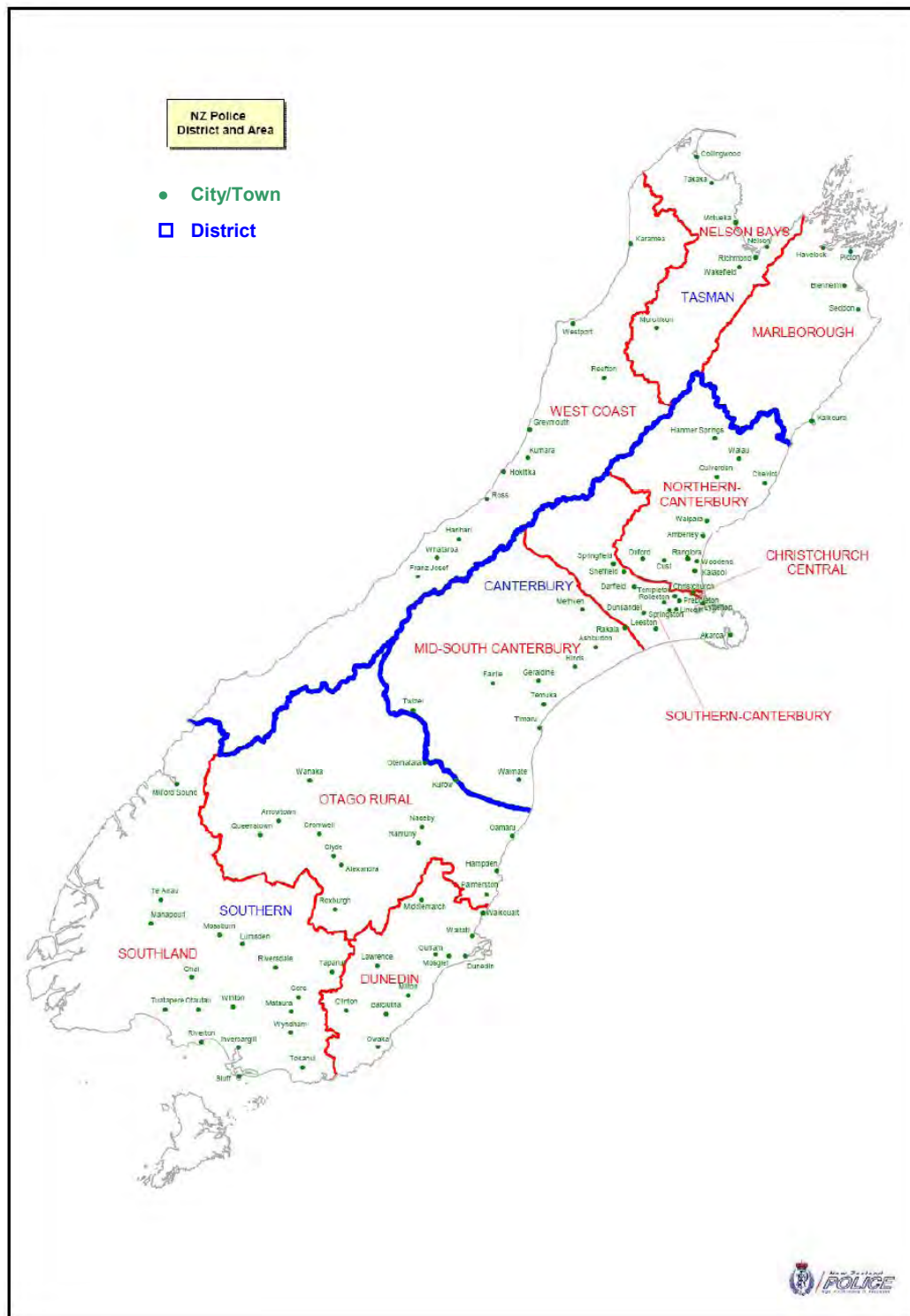
Source: <http://www.stats.govt.nz/products-and-services/table-builder/crime-tables/maps.htm>

A vertical painting depicting a garden scene. In the upper half, a vibrant blue butterfly with black markings on its wings is shown in flight against a soft, light blue sky. Below it, a cluster of yellow flowers and buds is visible. A brown butterfly with orange spots is perched on a green stem amidst the foliage. The bottom of the painting shows more green stems and buds, suggesting a lush garden environment.





Figure 142. Police Area Boundaries in the South Island



For further information see <http://koordinates.com/layer/3825-nz-police-area-boundaries/>



# APPENDIX 9: METHODS USED TO DEVELOP THE CHILDREN'S SOCIAL HEALTH MONITOR

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## Introduction

In response to deteriorating economic conditions in New Zealand and Australia in the late 2000s, a Working Group of health professionals from a range of organisations<sup>3</sup> with an interest in child health was formed in early 2009. Over the course of the year, this Working Group discussed the conceptualisation of an indicator set to monitor the impact of the recession on child wellbeing, the types of indicators which might be included, and the criteria by which individual indicators should be selected. As a result of these discussions, it was proposed that a Children's Social Health Monitor be developed, which comprised the following:

1. *A Basket of Indicators to Monitor Prevailing Economic Conditions:* Ideally, indicators would capture different facets of economic wellbeing (e.g. in a recession several quarters of negative growth (GDP) may precede upswings in Unemployment Rates, which in turn will influence the number of Children Reliant on Benefit Recipients).
2. *A Basket of Indicators to Monitor Children's Wellbeing:* Ideally indicators would respond relatively quickly (e.g. months–small number of years) to family's adaptations to deteriorating economic conditions (e.g. hospitalisations for poverty-related conditions) and would provide an overview of family wellbeing from a variety of different perspectives.

## Indicator Selection Criteria

In selecting these indicators, it was decided that only routinely collected data sources which were of good quality, and which provided complete population coverage would be used, in order to ensure the indicator set was methodologically robust and could be consistently monitored over time. In order to achieve this aim, the Working Group developed a set of selection criteria, against which candidate indicators were scored. These selection criteria included:

### Conceptual Criteria

#### *Criteria for Indicators to Monitor Prevailing Macroeconomic Conditions*

1. Internationally recognised and reported measure of economic performance/wellbeing
2. Should impact on at least one facet of children's wellbeing (i.e. the pathway(s) via which it impacts on children's wellbeing should be relatively well understood, or an association between the indicator and wellbeing documented in the literature).
3. Likely to change in response to a recession (i.e. months–small number of years)


#### *Criteria for Indicators to Monitor Children's Health and Wellbeing*

1. The condition is likely to be influenced by family's physical adaptations to worsening economic conditions (e.g. saving on heating to pay for food, moving in with family to save on rent).
2. The condition is likely to be influenced by family's psychological adaptations to worsening economic conditions (e.g. increased family conflict in response to financial stress).

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<sup>3</sup>The Paediatric Society of New Zealand, the Population Child Health Special Interest Group of the Royal Australasian College of Physicians, the New Zealand Child and Youth Epidemiology Service, TAHA (the Well Pacific Mother and Infant Service), the Māori SIDS Programme, the Kia Mataara Well Child Consortium, the New Zealand Council of Christian Social Services, and academics from the Universities of Auckland and Otago



- 
3. The condition exhibits a socioeconomic gradient (e.g. rates are higher in more deprived areas)
  4. The condition is likely to respond to changing economic conditions in the short to medium term (e.g. months to 1–2 years)

### **Data Quality Criteria**

*Data Quality Criteria (for either of the above indicator categories)*

1. Needs to be routinely collected
2. Available at the national level i.e. complete coverage of target population
3. Updated at least annually (although quarterly preferable)
4. Availability of consistent time series data going back several years (i.e. standard and stable method of data collection)
5. Distribution can be broken down by e.g. ethnicity, socioeconomic status, region

## **Selection of the Baseline Indicator Set**

In mid 2009 a long list of candidate indicators (selected by means of a scan of the available literature, email consultation with child health networks, and the suggestions of Working Group members) were then scored against each of these criteria by Working Group members and other health professionals (n=20). Those scoring the indicators were also asked to select a Top Five Economic and Top Five Health and Wellbeing Indicators for inclusion in the Children's Social Health Monitor. The resulting Top Five Economic and Wellbeing indicators (as determined both by criteria scoring and priority ranking) were:

### **Economic Indicators:**

- Gross Domestic Product
- Income Inequality
- Child Poverty
- Unemployment Rates
- The Number of Children Reliant on Benefit Recipients

### **Child Health and Wellbeing Indicators:**

- Hospital Admissions with a Social Gradient
- Mortality with a Social Gradient
- Infant Mortality
- Hospital Admissions and Mortality from Non-Accidental Injury
- Ambulatory Sensitive Hospital Admissions

## **Methodology for Developing the Hospital Admissions and Mortality with a Social Gradient Indicator**

While all of the Top Five Economic Indicators, and a number of the Child Health and Wellbeing indicators already had established methodologies, the hospital admissions and mortality with a social gradient indicator had to be developed specifically for the Children's Social Health Monitor. The methodology used to develop this indicator is outlined below:

### **Hospital Admissions**

In considering which conditions should be included in the analysis of hospital admissions with a social gradient, the 40 most frequent causes of hospital admission in children aged 0–14 years (excluding neonates) were reviewed, and those exhibiting a social gradient (a rate ratio of  $\geq 1.8$  for NZDep deciles 9–10 vs. deciles 1–2; or for Māori, Pacific or Asian vs. European children) were selected. A small number of conditions with rate ratios in the 1.5–1.8 range were also included, if they demonstrated a consistent social gradient (i.e. rates increased in a stepwise manner with increasing NZDep deprivation) and the association

was biologically plausible (the plausibility of the association was debated by Working Group members).

### **Inclusion and Exclusion Criteria**

Neonatal hospital admissions (<29 days) were excluded on the basis that these admissions are more likely to reflect issues arising prior to/at the time of birth (e.g. preterm infants may register multiple admissions as they transition from intensive care (NICU) → special care nurseries (SCBU) → the postnatal ward), and respiratory infections/other medical conditions arising in these contexts are likely to differ in their aetiology from those arising in the community.

For medical conditions, only acute and arranged hospital admissions were included, as Waiting List admissions are likely to reflect service capacity, rather than the burden of health need (e.g. the inclusion of Waiting List admissions would result in a large number of children with otitis media and chronic tonsillitis (who were being admitted for grommets and tonsillectomies) being included, and the demographic profile of these children may be very different from children attending hospital acutely for the same conditions).

For injury admissions, filtering by admission type was not possible, as a number of DHBs admitted injury cases under (now discontinued) ACC admission codes, making it difficult to distinguish between acute and waiting list admissions in this context. As with other NZCYES reports, all injury cases with an Emergency Department Specialty Code (M05–M08) on discharge were excluded as a result of inconsistent uploading of Emergency Department cases across DHBs (see **Appendix 3** for further detail). This differential filtering however means that it is not possible to accurately compare the magnitude of the social gradients between the medical condition and injury categories, as they were derived using different methodologies (and social differences in Emergency Department vs. primary care attendances for minor medical conditions may have accounted for some of the social gradients seen). No such differential filtering occurred for mortality data however (see below), and thus the magnitude of the social differences seen in this context is more readily comparable.

### **Mortality**

In the case of mortality, because in many instances, the number of deaths from a particular condition was insufficient to calculate reliable rate ratios by NZDep and ethnicity, the rate ratios derived from the analysis of hospital admission data were used to denote category membership. The most frequent causes of mortality in those 0–14 years (excluding neonates) were reviewed however, in order to ensure that no additional conditions making a large contribution to mortality had been missed by the analysis of hospital admission data. This identified two further conditions (which by analysis of mortality of data met rate ratio criteria); deaths from drowning and Sudden Unexpected Death in Infancy, which were then included in the coding algorithms (for both hospital admissions and mortality data). A number of deaths were also identified, which were attributed to issues arising in the perinatal period (e.g. extreme prematurity, congenital anomalies), but in order to preserve consistency with previous exclusion criteria (i.e. the exclusion of conditions arising in the perinatal period) these were not included in coding algorithms.

### **In Conclusion**

While it is hoped that over time this indicator set will be expanded and further refined, it is intended that the NZ Child and Youth Epidemiology Service will monitor this core minimum indicator set on an annual basis, until the economic position of New Zealand children improves appreciably.





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