THE DETERMINANTS OF HEALTH
FOR CHILDREN AND YOUNG PEOPLE
IN TARANAKI

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This Report was prepared for Taranaki DHB by Elizabeth Craig, Gabrielle McDonald, Anne Reddington and Andrew Wicken on behalf of the New Zealand Child and Youth Epidemiology Service, November 2009

This report was produced as a result of a contract between the DHB and the Paediatric Society of New Zealand, on behalf of the New Zealand Child and Youth Epidemiology Service (NZCYES). The NZCYES is located in the Department of Women's and Children's Health at the University of Otago's Dunedin School of Medicine. While every endeavour has been made to use accurate data in this report, there are currently variations in the way data is collected from District Health Boards and other agencies that may result in errors, omissions or inaccuracies in the information in this report. The NZCYES does not accept liability for any inaccuracies arising from the use of this data in the production of these reports, or for any losses arising as a consequence thereof.

Cover Artwork: *Tui and Chicks*, by Kiri Gillespie

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EXECUTIVE SUMMARY

The early years of life provide a crucial foundation for future health and wellbeing. *The Determinants of Child and Youth Health in Taranaki* is the second report in a three part series on the health of children and young people in the region. It aims to provide an overview of the determinants shaping children and young people's lives during their crucial early years, and to assist the DHB consider some of the other agencies influencing the wellbeing of children and young people in the region.

New Indicators

As previously, this report is based on the Indicator Framework developed during the first three year cycle, 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, a number of new sections have been added, as new data has become available, or the environment for children and young people has changed. These include:

1. **The New Zealand Children's Social Health Monitor**: During the past 18 months, New Zealand's economic environment has deteriorated markedly, with 6 quarters of negative / minimal growth and rising unemployment. Given that large disparities in health status are evident even during periods of prosperity, it is possible that as more families become reliant on Government assistance, some of the adaptations they make to meet their basic needs will have health consequences for children. Thus during 2009, a Working Group was formed to develop an indicator set to monitor the impact of the recession on child wellbeing. This indicator set, the *New Zealand Children's Social Health Monitor*, is presented for the first time in this report. It is divided into two main parts: indicators to monitor prevailing economic conditions; and indicators to monitor child health and wellbeing. The NZ Child and Youth Epidemiology Service will monitor these indicators annually, until the economic environment for children improves.
2. **Truancy and Unjustified Absences**: Educational attainment is a key determinant of health and wellbeing, and this year's report updates the education indicators monitored in previous years. In addition, information on *Truancy and Unjustified Absences* is presented for the first time, using data from the 2006 Attendance Survey.
3. **Tobacco Use in Women Giving Birth**: This year's report updates previous sections on children's exposure to second hand smoke and youth smoking. In addition, it uses hospital admission data to estimate the proportion of women smoking during pregnancy. While there are some limitations with using hospitalisation data for this purpose (see methods section), this section fills a large information gap in this area.
4. **Children and Young People's Access to Mental Health Services**: This section uses the Mental Health Information National Collection to review mental health service utilisation by children and young people. It is divided into three parts, with the first part reviewing common mental health diagnoses in children (e.g. ADHD, conduct and attachment disorders, autism) and the second considering conditions in late childhood / adolescence (e.g. depression; bipolar disorder; anxiety, adjustment and eating disorders). The third part considers conditions in late adolescent (e.g. schizophrenia; schizotypal / delusional, personality and organic mental disorders), and access to services for mental health issues arising from substance use. There are a number of limitations of the data used however, and the reader is strongly urged to read the methodology section(s) before considering the information in these sections.

In Depth Topics

As in last year's report, two topics have been selected for more in depth review. They are:

1. **Early Intervention Programmes for Socially Vulnerable Children**: Recently, there has been a growing awareness of the crucial role the first five years play in future health and wellbeing. This review considers the impacts of socioeconomic adversity on long term outcomes, and the role early intervention programmes play in mitigating

these detrimental effects. Evidence for the effectiveness of various types of early intervention programme is considered, before the range of programmes available in New Zealand is reviewed. The section concludes by highlighting the issues New Zealand will need to consider, if it is to substantially increase its investment in this area.

2. **Shifting Services from Secondary to Primary Care**: In the context of the current Government's directive that a greater proportion of services should be delivered in primary care, this review considers the evidence that such a move will result in cost savings, or a higher quality of care. It also presents a number of examples where services have been shifted in such a manner, and the likely implications of this for children and young people.

Evidence Based Approaches to Intervention

As previously, each of the sections in this year's report concludes with an overview of New Zealand policy documents and local / international evidence based reviews which consider the effectiveness of population level approaches to prevention / management. **Appendix 2** provides an overview of the methodology used to develop these reviews.

Data Quality Issues and the Signalling of Statistical Significance

As previously **Appendix 1** outlines the rationale for the use of statistical significance testing in this report and **Appendices 4-10** 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 the information contained in this report.

The Determinants of Health for Children and Young People in Taranaki

Table 1 provides a brief overview of the indicators in this year's report. While the issues associated with each vary, a number of common themes emerge. Firstly, the deteriorating economic conditions seen nationally are not as yet reflected in Taranaki's data, with the number of children reliant on benefit recipients remaining fairly constant during April 2007-2009. Secondly, Taranaki has lower rates of hospitalisations for medical conditions with a social gradient (although injury admissions are more consistent with national averages, and an upswing in rates for medical conditions was evident during 2008). Educational attainment at school leaving improved during 2002-2008, although the proportion of students leaving with a University Entrance standard remained higher for European than for Māori students. Similarly, exposure to cigarette smoke in-utero and during childhood remains higher for Taranaki Māori > Pacific > European > Asian children. Finally, patterns of access to mental health services for children and young people are complex, with disparities in children attending mental health services for conditions such as ADHD and conduct disorders being less marked than for young people attending services for conditions such as schizophrenia. For children particularly however, such figures should not be taken as indicating the absence of disparities in need, but rather as reflecting patterns in access to mental health services in this age group. (*Note: Rates for a number of childhood diagnoses appear unusually high, and thus the possibility of irregularities in the way in which data was uploaded to the MHINC cannot be ruled out*).

Concluding Comments

This report provides an overview of the key determinants of child and youth health in Taranaki, and aims to assist the DHB consider some of the other agencies influencing child and youth wellbeing in the region. Such an intersectoral focus is necessary, as while addressing the large burden of avoidable morbidity and mortality highlighted in last year's report might at first seem a formidable task, collaborations with e.g. housing to improve the quality of housing stock may provide more tangible starting points. On a wider scale, while addressing broader issues such as child poverty may be beyond of the scope of the health sector alone, some of the coordinated intersectoral policy responses highlighted in this year's report, if implemented in New Zealand, would likely result in significant health gains for children and young people. As a consequence, one of the key roles of the health sector remains ongoing advocacy on behalf of children and young people, in order to ensure that they can access the resources they require to ensure their long term health and wellbeing.

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

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Wider Macroeconomic and Policy Context			
Children's Social Health Monitor: Economic Indicators	GDP	New Zealand entered a recession at the end of June 2008 (after 2 quarters of -ve growth), and technically left the recession at the end of June 2009. Because June's growth of 0.1% was close to zero (and thus may be subject to revisions (including downwards) in future quarters), Statistics NZ indicated that no significant conclusions could be drawn regarding this being a turning point in economic activity [1].	
	Income Inequality: P80/P20 Ratio and Gini Coefficient	In New Zealand during 1984-2008 income inequality, as measured by the P80/P20 Ratio and Gini Coefficient, was higher after adjusting for housing costs than prior to this adjustment. The most rapid rises in income inequality occurred during the late 1980s-early 1990s. During the early-mid 2000s however, income inequality declined, a change Perry attributes largely to the Working for Families package. Rises in income inequality were again evident during 2007-2008, with Perry attributing this increase to the rising proportion of low-income households with high housing costs [18].	
	Child Poverty	In New Zealand during 1988-1992, child poverty 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 rates declined, following the roll out of Working for Families. During this period, child poverty was higher for younger children (0-11 vs. 12-17 yrs); larger households (3+ vs. 1-2 children); sole parent households and those where adults were workless, or none worked full time.	
	Living Standards	In the 2004 Living Standards Survey, 30% of economic family units contained dependent children. While only 10% of family units without children lived in severe / significant hardship, this rose to 22% for families with dependent children. In addition, a much higher % of sole-parent families lived in severe / significant hardship than two-parent families, although these differences were attributed to sole-parent families' greater reliance on benefits as their main source of family income. Pacific and Māori families were also significantly more likely to live in severe hardship than European or other families.	

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Children's Social Health Monitor: Economic Indicators	Unemployment Rates	In the quarter ending September 2009, the seasonally adjusted unemployment rate rose to 6.5%, its seventh consecutive quarterly rise. Seasonally adjusted unemployment numbers also increased by 12,000 (9.0%), to 150,000, the highest since March 1994. Over the longer term (September 1987-2009), while no marked gender differences were evident, unemployment rates were higher for younger people (15-19 years > 20-24 years > 25-29 years > 35-39 years and 45-49 years) and those with no qualifications. During 2007(Q4)-2009(Q3), unemployment rates were also higher for Māori and Pacific > Asian > European people.	In Taranaki during the years ending September 1987-2009, unemployment trends were similar to those occurring nationally, with the highest rates being seen in the year ending September 1992, when they peaked at 12.2%. During the 2000s, rates reached their lowest point, at 3.2% in the year ending September 2008, before increasing slightly to 3.5% in the year ending September 2009. On a quarterly basis, unemployment rates during 2004(Q1)-2009(Q3) remained relatively static. Thus rates were similar to the New Zealand average during 2004-2007, but became lower than the New Zealand average as rates increased elsewhere during 2008 and 2009.
	Children Reliant on Benefits / Benefit Recipients	In New Zealand the % of children (0-17 years) reliant on a benefit recipient, fell from 27.7% in 2000 → 19.6% in 2008, before increasing again to 20.9% in 2009. A large proportion of this decline was due to a fall in children reliant on unemployment benefit recipients, although this trend reversed in 2009. While the % reliant on DPB recipients also fell, 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 up until 2008.	At the end of April 2009, there were 5,093 children aged 0-18 years who were reliant on a benefit or benefit recipient and who received their benefits from Service Centres in the Taranaki catchment. The majority of these children were reliant on DPB recipients, and in contrast to the increases seen elsewhere, the overall number of children on a benefit remained relatively static during 2006-2008 (although numbers declined slightly between 2006 and 2007, and then increased again between 2008 and 2009).
	Young People Reliant on Benefits	In New Zealand during 2000-2008, there were large declines in young people aged 16-24 years receiving benefits, with rates falling from 167.2 per 1,000 in April 2000, to 77.1 per 1,000 in April 2008. By April 2009 however, rates had increased again to 103.1 per 1,000, with the largest increases being in those receiving unemployment benefits. In contrast, rates for those on domestic purposes benefits declined more slowly during 2000-2008, while the proportion on invalid's and sickness benefits increased.	In the Taranaki catchment during 2007-2009, domestic purposes benefits were the predominant type of income support received by young people 16-24 years. While there were modest declines in unemployment benefit uptake between April 2007 and 2008, the number of young people reliant on unemployment benefits increased again between April 2008 and 2009. This, along with small increases in other benefit types, increased the overall benefit uptake among young people in the region.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Children's Social Health Monitor: Child Health and Wellbeing	Hospital Admissions and Mortality with a Social Gradient	In New Zealand during 2004-2008, infectious and respiratory diseases were the leading causes of hospitalisations for medical conditions with a social gradient, while falls and inanimate mechanical forces were the leading causes of injury admissions. For mortality during 2002-2006, SUDI made the single largest contribution, followed by vehicle occupant deaths, pedestrian injuries and drowning. Bacterial / non viral pneumonia was the leading cause of death from medical conditions. During 2004-2008, hospitalisations with a social gradient were higher for males, Pacific > Māori > European and Asian children and those in more deprived areas. Similarly, during 2002-2006, mortality was higher for Pacific and Māori > European and Asian children and those in more deprived areas.	In Taranaki, hospitalisations for medical conditions with a social gradient increased during the early 2000s, reached a peak in 2002 and then declined, with a small upswing in rates being evident in 2008. For the majority of this period, admissions in Taranaki were lower than the New Zealand average. In contrast, injury admissions declined more gradually, with rates being closer to the New Zealand average during this period. During 2000-2008, hospital admissions for medical conditions were higher for Māori than for European children, although (with the exception of 2008) rates for both ethnic groups declined during this period. Rates for Māori children were lower than the NZ Māori average throughout 2000-2008, while rates for European children were lower than the NZ European average during 2004-2008. Ethnic differences in injury admissions were not marked. During 2000-2006, 12 Taranaki children died from injuries and 9 from medical conditions with a social gradient, while 14 (post neonatal) infants died as a result of SUDI.
	Infant Mortality	In New Zealand, while neonatal and post neonatal mortality both declined during the early-mid 1990s, declines during the 2000s were less marked. Neonatal mortality was higher for Pacific and Māori > European > Asian infants during the late 1990s, although ethnic differences were less consistent during the 2000s. Post neonatal mortality was higher for Māori > Pacific > European and Asian infants throughout 1996-2006. Extreme prematurity and congenital anomalies were the leading causes of neonatal mortality during 2002-2006. In contrast, SUDI was the leading cause of post-neonatal mortality, followed by congenital anomalies. During this period, neonatal and post neonatal mortality were both significantly higher for Pacific and Māori > European and Asian infants, males and those in more deprived areas, while SUDI was significantly higher for Māori > Pacific > European and Asian infants, and those in average to more deprived areas.	In Taranaki during 1990-2006, while there were large year to year fluctuations, total infant, neonatal and post neonatal mortality all exhibited a general downward trend, with rates for all three outcomes being similar to / higher than the New Zealand average. During 2002-2006, perinatal conditions and congenital anomalies were the most frequent causes of neonatal mortality, while SUDI was the most frequent cause of post neonatal mortality.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Socioeconomic and Cultural Determinants			
Household Composition	Family Composition	**Sole Parent Families:** In New Zealand during 2006, 25.2% of children lived in sole parent households. Overall 42.6% of Māori, 30.8% of Pacific, 18.1% of European and 15.9% of Asian children lived in sole parent households, with the proportion also rising from 7.4% for those in NZDep Decile 1 areas, to 47.1% for those in NZDep Decile 10 areas. **Divorces:** In New Zealand during 1981-2008, while there was a large decline in the general marriage rate, divorce rates per 1,000 existing marriages changed little. While the median age at both marriage and divorce increased for men and women during 1987-2008, the average duration of marriage ending in divorce increased only slightly, from 12.5 to 13.5 years.	**Sole Parent Families:** In Taranaki during 2006, 25.8% of children lived in a sole parent household, with 42.1% of Māori and 19.6% of European children living in a sole parent household, and the proportion rising from 7.5% for those in the most affluent (Decile 1) areas, to 53.6% for those in the most deprived (Decile 10) areas. **Divorce Rates:** During 1998-2008 a large number of divorces were granted by Family Courts in the Taranaki region, to parents with children under 17 years, although data limitations precluded the calculation of rates for the DHB as a whole.
	Household Crowding	In New Zealand during 2006, 16.5% of children and young people lived in crowded households, with 50.1% of Pacific and 27.8% of Māori children and young people living in crowded households, as compared to 22.8% of Asian and 5.8% of European children and young people. Crowding rates also rose from 2.8% for those in NZDep Decile 1 areas, to 42.4% for those in NZDep Decile 10 areas.	In Taranaki during 2006, 10.7% of children and young people lived in crowded households, with 21.9% of Māori and 6.0% of European children and young people living in crowded households, and the proportion rising from 2.5% for those in the most affluent (Decile 1) areas, to 26.2% for those in the most deprived (Decile 10) areas. While similar socioeconomic differences were seen nationally, at each level of NZDep deprivation, household crowding in Taranaki was lower than the New Zealand average.
Education: Knowledge and Skills	Early Childhood Education	In New Zealand, ECE is provided in a variety of contexts ranging from Kindergartens and Te Kōhanga Reo, to services that cater for the needs of working parents. During 1990-2008, the number of children enrolled in ECE increased by 67.9%, with the largest increases being in Education and Care Services, Home Based Services and License Exempt Playgroups. In addition, during 1997-2008 the number of hours children spent in ECE increased for all Service types, with the exception of PlayCentres and Te Kōhanga Reo. In New Zealand, new entrants (Year 1) reporting regular participation in ECE prior to attending school increased, from 91.0% in 2000, to 94.7% in 2008. During this period, prior participation remained higher for European > Asian > Māori > Pacific children and those in the least deprived areas.	In Taranaki, prior participation in ECE amongst school entrants increased from 91.4% in 2000 to 96.8 % in 2008. For the majority of this period, prior participation in Taranaki was similar to the New Zealand average. Prior participation in ECE in Taranaki was generally higher for European than for Māori children, although differences were not as marked as those occurring nationally.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Education: Knowledge and Skills	Enrolments in Kura Kaupapa Māori	In New Zealand, Kura Kaupapa Māori are total immersion schools which follow a curriculum that validates Māori knowledge, learning styles and practices. They are key to revitalising the Māori language and improving the achievement levels of Māori students. Since 1992, there has been a 4.6-fold increase in the number of Kura Kaupapa Māori and Kura Teina, with numbers increasing from 13 in 1992, to 73 in 2008.	In Taranaki during 2008, there were 3 Kura Kaupapa Māori, which between them enrolled a total of 125 students.
	Educational Attainment at School Leaving	In New Zealand, the % of students leaving school with a University Entrance Qualification rose during the mid-late 1990s, peaked in 1997-1998 and then declined. Following the introduction of the NCEA in 2002, rates rose again, reaching a high of 43.4% in 2008. Similarly, the % of students with little or no formal educational attainment rose during the early 1990s, reached a peak in 1996, and then declined. This decline became more rapid after the introduction of the NCEA in 2002, with only 5.4% of students leaving school with little or no formal attainment in 2008. During this period, a higher % of Māori > Pacific > European and Asian students left school with little or no formal attainment, while a higher % of Asian > European > Pacific and Māori students left school with a University Entrance Qualification.	In Taranaki during 1995-2008, the % of students leaving school with little or no formal attainment was similar to the NZ average, while the % leaving with a University Entrance (UE) Standard was lower during 2003-2008. During this period, the % leaving with little or no formal attainment declined, with the most rapid declines occurring after 2003, while the % leaving with a UE Standard increased. Both trends were consistent with those occurring nationally. A higher % of Māori than European students left school with little or no formal attainment, while a higher % of European than Māori students acquired a UE Standard. While for Māori students, rates for both outcomes were similar to the NZ Māori average, a lower % of European students left school with a UE standard than the NZ European average during 2003-2008.
	Senior Secondary School Retention	In New Zealand, while school retention at 16.5 and 17.5 years has remained relatively static since 2004, rates remain higher for Asian > Pacific and European > Māori students and those in more affluent areas. Ethnic differences in school retention need to be viewed within the context of the alternative educational opportunities available to students. During 2001-2008, a large number of students participated in tertiary education, with participation for Māori being particularly high in Certificate Level 1-3 courses. While tertiary participation also includes 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.	In Taranaki during 2002-2008, school retention rates at 16.5 and 17.5 years were lower than the New Zealand average. During this period, retention rates were higher for Taranaki European than for Māori students, although retention rates for European students were lower than the NZ European average.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Education: Knowledge and Skills	Stand-Downs, Suspensions, Exclusions and Expulsions	In New Zealand schools, stand-downs, suspensions, exclusions and expulsions are ways the educational system deals with student behaviour that disrupts the wellbeing of other students or staff. In New Zealand during 2007, there were 4,679 suspensions, with these events being most likely among those in Secondary / Composite schools, males, Māori and Pacific students and those in average, or more deprived areas. The most common reasons for a suspension were continual disobedience, a physical assault on other students or staff, or the misuse of drugs, which together accounted for 71.4% of all suspension cases.	In Taranaki during 2000-2008, stand-downs increased, reached a peak in 2007 and then declined, while suspensions increased during the early 2000s and then remained more static. Exclusions were relatively static throughout 2000-2008. While suspension rates were generally lower than the New Zealand average (particularly during the early 2000s), stand-downs were higher during 2005-2008. During this period, suspensions were higher for Māori than for European students. While rates for European students were lower than the NZ European average, rates for Māori students were higher than the NZ Māori average during 2004-2008.
	Truancy and Unjustified Absences	In New Zealand during 2006, unjustified absences were relatively infrequent during primary school (Years 1-6), but increased progressively during secondary school (Years 9-13). When broken down by ethnicity, unjustified absences and frequent truancy were both higher for Māori > Pacific > European and Asian students. Both outcomes decreased as the affluence of the school catchment increased. At each level of school socioeconomic deprivation however, unjustified absences and infrequent truancy were higher for Māori > Pacific > European and Asian students.	In Taranaki during 2006, the unjustified absence rate was 2.2%, as compared to 2.3% for New Zealand as a whole, while the frequent truancy rate was 1.0%, as compared to 1.1% nationally. Unjustified absences and frequent truancy were higher for Māori than for European students. Rates for European students however, were lower than the NZ European average.
Risk and Protective Factors			
Substance Use	Tobacco Use in Pregnancy	In New Zealand during 2004-2008, tobacco use was highest for women giving birth in their teens > 20-24 yrs > 25-29 yrs > 30+ yrs. In contrast, at the 2006 Census smoking rates were lowest for women in their teens. Tobacco use in women giving birth was higher for Māori > Pacific > European > Asian women. While tobacco use declined with increasing age for European, Pacific and Asian women, the drop off with age was less marked for Māori women. Tobacco use also increased with NZDep deprivation, with rates being highest for those in the most deprived (NZDep Decile 9-10) areas. Even once NZDep deprivation was taken into account however, tobacco use was higher for those in their teens > 20-24 yrs >25-29 yrs >30+ yrs.	In Taranaki during 2004-2008, 23.7% of women giving birth had tobacco use recorded, as compared to 15.8% nationally. Tobacco use was higher for those in their teens >20-24 years >25-29 years >30+ years and for Māori > Pacific > European > Asian women. Tobacco use in European women giving birth was highest for those <20 years, with rates declining as maternal age increased. For Māori women however, the drop off in tobacco use with increasing maternal age was less steep. Care must be taken when interpreting these figures however, as in addition to real differences in tobacco use during pregnancy, regional differences in the way tobacco use is recorded by hospital coders may have contributed to the patterns seen.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Substance Use	Exposure to Cigarette Smoke in the Home	**ASH Survey Data:** ASH Surveys suggest that in 2008, 38.0% of Year 10 students had a parent who smoked and that parental smoking was higher for Māori > Pacific > European / Other > Asian students, and those attending schools in the most deprived areas. While socioeconomic and ethnic differences were also seen for exposure to smoke in the home, rates were lower than parental smoking rates might predict, suggesting the presence of in-house non-smoking policies for families of all socioeconomic and ethnic groups. **2006 Census Data:** Data from the 2006 Census suggested that 35.3% of New Zealand children 0-14 years lived in a household with a smoker and that exposures were higher for Māori > Pacific > European > Asian children and those in the most deprived NZDep areas.	**ASH Survey Data:** In Taranaki during 2001-2008, the proportion of Year 10 students who reported at least one parent smoking remained relatively static (44% in 2001 to 39% in 2008), while the proportion who reported living in homes where people smoked inside declined significantly (39% in 2001 to 24% in 2008). Parental smoking was similar to / higher than the New Zealand average during this period, while the proportion living in homes where people smoked inside was consistently higher. **2006 Census Data:** During 2006, 38.3% of Taranaki children lived in a household with a smoker, with socioeconomic and ethnic differences being similar to those seen nationally.
	Cigarette Smoking in Young People	**ASH Survey Data:** In New Zealand during 1999-2008, ASH Survey data suggested that daily smoking rates in Year 10 students were higher for females, Māori > Pacific > European / Other > Asian students, those attending schools in the most deprived areas, and those for whom one or both parents smoked. **2006 Census Data:** Data from the 2006 Census suggested that 21.8% of New Zealand young people aged 15-24 years were regular smokers. Smoking rates were higher for Māori > Pacific > European > Asian young people and those living in the most deprived areas.	**ASH Survey Data:** In Taranaki during 1999-2008, the % of Year 10 students who were daily smokers declined significantly (12.3% in 1999 to 4.2% in 2008), while the % who had never smoked increased significantly (34.4% in 1999 to 63.9% in 2008). Throughout this period, daily smoking rates in Taranaki were similar to the NZ average, as was the % of students who had never smoked. **2006 Census Data:** During 2006, 24.4% of Taranaki young people aged 15-24 years were regular smokers, with smoking rates being higher for Māori than for European young people, and for those living in the most deprived areas
	Alcohol Related Harm	In New Zealand during 2004-2008, alcohol related hospital admissions were highest for males, those in their late teens / early 20s, Māori young people and those in more deprived areas. Reasons for admission included acute intoxication, mental health issues and injuries (e.g. self harm, assault, motor vehicle crashes). Significant data limitations must be taken into consideration, as with the removal of emergency department cases, these figures reflect the more severe end of the spectrum. In addition, it is likely that these figures represent an undercount, as they rely on hospital staff listing alcohol use as a contributory cause, something which may be reported inconsistently over time and across the country.	

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Individual and Whānau Health and Wellbeing			
Safety	Injuries Arising from the Assault, Neglect or Maltreatment of Children	In New Zealand during 2004-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children exhibited a J-shaped distribution, with rates being highest for infants < 1 year and those > 11 years of age. In contrast, mortality was highest for infants < 1 year. While the gender balance was even during infancy and early childhood, hospital admissions for males became more predominant as adolescence approached. Admissions were significantly higher for males, Māori and Pacific > European > Asian children, and those in the most deprived areas.	In Taranaki during 1990-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children fluctuated markedly, making precise interpretation of trends difficult. Despite this, during 1990-2006 a total of 5 Taranaki children died as the result of assault, neglect or maltreatment.
	Injuries Arising from Assault in Young People	In New Zealand during 2004-2008, hospital admissions for injuries arising from assault in young men increased with age, reached a peak in the mid-late teens and then declined. While admissions for young women also increased in their teenage years, rates were lower than for young men at all ages from 12-24 years. Admissions were also higher for Māori and Pacific > European > Asian young people and those in more deprived areas. Assault mortality during 2002-2006 was higher for young men in their teens, although during the early twenties, gender differences in mortality were less marked.	In Taranaki, hospital admissions for injuries sustained as the result of an assault in young people decreased during the 1990s, reached a nadir in 2002-03 and then increased again. Throughout the 2000s, youth assault admissions in Taranaki were lower than the New Zealand average. During 1990-2006 a total of 3 Taranaki young people died as the result of an assault.
	CYF Notifications	In New Zealand, the agency with the statutory responsibility for protecting children from recurrent abuse is Child Youth and Family (CYF), who receive notifications from the police, the education and health sectors, families / Whānau and the general public. Since 2001, notifications to CYF have doubled and while it is often assumed this reflects an increase in child abuse, research suggests that changes in the behaviour of the child protection system itself may also have played a role.	In Taranaki during 2008, 2,320 notifications were recorded by CYF Offices, with 40.2% requiring further investigation. While this reflects an increase since 2004, when 1,680 notifications were recorded, the proportion requiring further investigation declined (67.3% required further investigation in 2004). Similarly, the number of notifications requiring further investigation declined, from 1,130 in 2004 to 933 in 2008.
	Family Violence	In New Zealand during 2008, children were present at 50.4% of family violence incidents attended by Police. In 43.7% of cases the victim was the spouse / partner of the offender, with a further 25.8% having been in a previous relationship and in 16.6% of cases, the conflict was between a parent and child. Overall, 35.3% of victims were Māori, 38.7% were Caucasian, 9.1% were Pacific, 1.4% were Asian and 2.1% were Indian. While in 81.2% of cases injuries were not reported, in 698 cases a hospital attendance was required, and in 16 cases the incident resulted in a death.	While it is difficult to use Police data to comment on trends in the prevalence of family violence due to changes in the way in which the Police have recognised and recorded family violence over time, what Police data does suggest is that a large number of family violence incidents are occurring in Taranaki each year, and that children are likely to be present at a large proportion of these.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Mental Health	Issues Experienced by Callers to Telephone Counselling Services	In New Zealand, the need for child and youth mental health services spans a continuum, with the issues being dealt with by telephone counselling services at one end potentially reflecting the everyday concerns experienced by children and young people. Analysis of calls received by 0800WHATSUP (a telephone counselling service) during 2008 suggest that many of these concerns relate to peer relationships and bullying, or relationships with family and partners. Supporting children and young people in dealing with these issues is vital, as peer relationships contribute substantially to social and cognitive development. The large number of calls which were unable to be answered also potentially suggests that there may be considerable unmet need in this area.	
	Access to Mental Health Services in Childhood	In New Zealand during 2005-2007, hyperkinetic disorders (including ADHD) and conduct / mixed conduct emotional disorders were the most frequent diagnoses given to children accessing mental health services. Pervasive developmental disorders (including autism) and learning problems also made a contribution. While the distribution by gender, ethnicity and NZDep deprivation varied by diagnosis, the majority of interactions with mental health services occurred on an outpatient / community basis, with very few children being managed as inpatients. When considering these figures however, it must be remembered that many children with these diagnoses access paediatric outpatient services, and that this workload is not captured by the MHINC.	In Taranaki during 2005-2007, hyperkinetic disorders (including ADHD) and pervasive developmental disorders (including autism) were the most frequent diagnoses given to children accessing mental health services. The majority of children with these diagnoses were seen on an outpatient / community basis, with very few being admitted to hospital for management. (*Note: Rates for a number of conditions appear unusually high, and thus the possibility of irregularities in the way in which data was uploaded to the MHINC cannot be ruled out*).
	Access to Mental Health Services: Late Childhood and Early Adolescence	In New Zealand during 2005-2007, in addition to conditions emerging during childhood, a number of mental health diagnoses became increasingly common during late childhood and early adolescence. These included stress reaction / adjustment disorders, anxiety disorders, eating disorders and obsessive compulsive disorder. While the distribution by gender, ethnicity and NZDep deprivation varied by diagnosis, when compared to mental health issues in childhood, a higher proportion of children and young people with these diagnoses were managed on an inpatient basis (although outpatient and community contacts still predominated, with 6-10 mental health service contacts occurring for every inpatient bed night during this period).	In Taranaki during 2005-2007, a number of children and young people with stress reaction / adjustment disorders, anxiety disorders, eating disorders and obsessive compulsive disorder also accessed mental health services. A higher proportion of children and young people with these diagnoses were managed on an inpatient basis (vs. common childhood conditions), although outpatient and community contacts still far exceeded the number of inpatient bed nights seen.

Stream	Indicator	New Zealand Distribution and Trends	Taranaki Distribution and Trends
Mental Health	Access to Mental Health Services: Late Adolescence	In New Zealand during 2005-2007, schizophrenia, schizotypal / delusional disorders, personality / behaviour disorders, and organic mental disorders became increasingly common during late adolescence. While the majority of care still occurred in the ambulatory care setting, the number of annual contacts and in-patient bed nights were higher than for mental health diagnoses occurring in younger age groups. In addition alcohol, cannabis, tobacco and other drug related co-diagnoses were common in this age group, with >20% of those diagnosed with schizophrenia, schizotypal / delusional disorders, personality / behaviour disorders and organic mental disorders having alcohol, cannabis or other drug use listed as a co-diagnosis.	In Taranaki during 2005-2007, schizophrenia, schizotypal / delusional disorders, personality / behaviour disorders and organic mental disorders were also common in young people accessing mental health services, with a higher contact and inpatient service load for these diagnoses being evident, when compared to diagnoses more commonly managed in younger age groups. In addition, a large number of young people accessed mental health services with depression, bipolar affective disorder, or other mood disorders.
	Self Harm and Suicide	In New Zealand, suicide rates for males increased during the early 1990s, reached a peak in 1994-95 and then declined. Rates reached a nadir in 2002-03, and since then have increased. For females, rates increased during the mid-late 1990s, fluctuated during 1998-2002, and since then have gradually declined. Throughout this period, suicide rates were higher for males. During 2004-2008, self inflicted injury admissions were significantly higher for European and Māori > Pacific and Asian young people and those in more deprived areas, while suicide mortality during 2002-2006 was significantly higher for Māori > Pacific and European > Asian young people and those in the most deprived areas.	In Taranaki during 1990-2006, suicide mortality fluctuated markedly, although rates were lower than the New Zealand average for the majority of the late 1990s and 2000s. Despite this, during 1990-2006, a total of 43 Taranaki young people aged 15-24 years died as the result of suicide.

INTRODUCTION

INTRODUCTION

The early years of life provide a crucial foundation for future health and wellbeing. *The Determinants of Child and Youth Health in Taranaki* is the second report in a three part series on the health of children and young people in the region, and fits into the reporting cycle as follows:

1. Year 1 (2008): Health Outcomes for Children and Young People
2. **Year 2 (2009): The Determinants of Health for Children and Young People**
3. Year 3 (2010): Disabilities and Chronic Conditions in Children and Young People

The report aims to provide a broad overview of the determinants shaping children and young people's lives during their crucial early years, and to assist the DHB consider some of the other agencies influencing the wellbeing of children and young people in the region.

New Indicators

As previously, this report is based on the Indicator Framework developed during the first three year reporting cycle, 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, a number of new indicators have been added / sections have been expanded, as new data has become available, or as the macroeconomic environment for children and young people has changed. New elements not present in earlier reports include:

1. **The New Zealand Children's Social Health Monitor**: During the past 18 months, New Zealand's macroeconomic environment has deteriorated markedly, with 6 consecutive quarters of negative / minimal growth and rising unemployment. Given that large disparities in health status are evident for socially vulnerable children, even during periods of economic prosperity, it is possible that as more families become reliant on Government assistance, some of the adaptations families make in order to meet their basic household needs (e.g. house downsizing, deferring heating costs to pay for groceries) may have unintended health consequences for children.

   During 2009, a Working Group of health professionals from a range of organisations was formed to develop an indicator set to monitor the impact of the recession on child wellbeing. This indicator set, called the *New Zealand Children's Social Health Monitor* (NZCSHM), is presented for the first time in this report. The NZCSHM is divided into two main parts: a set of indicators to monitor prevailing economic conditions, and a set of indicators to monitor child health and wellbeing. The NZ Child and Youth Epidemiology Service will monitor these indicators annually, until the economic environment for children improves appreciably.

2. **Truancy and Unjustified Absences**: Educational attainment is a key determinant of subsequent health and wellbeing, and this year's report updates all of the education indicators monitored previously. In addition, information on *Truancy and Unjustified Absences* is presented for the first time, using data from the 2006 Attendance Survey.

3. **Tobacco Use in Women Giving Birth**: This year's report updates previous sections on children's exposure to second hand smoke and youth smoking. In addition, a new section uses hospital admission data (women admitted to hospital for childbirth with current tobacco use as a co-diagnosis) to estimate the proportion of women smoking during pregnancy. While there are limitations with using hospitalisation data for this purpose (see methods section), this section fills a large information gap in this area

4. **Children and Young People's Access to Mental Health Services**: It is also the first year that the Mental Health Information National Collection (MHINC) has been used to review mental health service utilisation by children and young people. This section is presented in three parts, with the first focusing on common mental health diagnoses in children (e.g. attention deficit hyperactivity disorder (ADHD), conduct disorders, attachment disorders, autism). The second part considers conditions beginning in late

childhood / early adolescence (e.g. anxiety disorders, depression, bipolar disorder, eating disorders, adjustment disorders), while the third reviews conditions originating in late adolescent (e.g. schizophrenia, schizotypal and delusional disorders, personality disorders and organic mental disorders), as well as access to services for young people with mental health issues arising from substance use (e.g. alcohol, cannabis, tobacco, and other drugs). There are however, a number of limitations which must be taken into account when interpreting the data in these sections, and the reader is strongly urged to read the methodology section(s) before embarking on these.

In Depth Topics

As in last year's report, two topics have been selected for more in depth review. They are:

1. **Early Intervention Programmes for Socially Vulnerable Children**: There has been an increasing awareness of the crucial role the first five years play in establishing a foundation for future health and wellbeing. This review considers the impact of early exposure to socioeconomic adversity on child, youth and adult outcomes, and the role early intervention programmes play in mitigating their detrimental effects. In this review, evidence for the effectiveness of home visiting and centre based early intervention programmes is considered, before the range of programmes available in New Zealand is briefly reviewed. The section concludes by highlighting the issues New Zealand will need to consider, if it is to substantially increase its investment in this area.
2. **Shifting Services from Secondary to Primary Care**: In the context of the current Government's directive that, where possible, a greater proportion of services should be delivered in primary care, this review considers the evidence that such a move will result in cost savings, or a higher quality of care for those receiving services. It also presents a number of examples where services have been shifted in such a manner, and the likely implications of these for children and young people.

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 the effectiveness of population level approaches to prevention / management. **Appendix 2** provides an overview of the methodology used to develop these reviews. As previously, the quality and depth of evidence available varied from indicator to indicator (e.g. a large number of reviews were available on smoking, alcohol and drug problems, but few were available on the role of the health sector in improving young people's educational attainment).

Data Quality Issues and the Signalling of Statistical Significance

As previously **Appendix 1** outlines the rationale for the use of statistical significance testing in this report and **Appendices 4-10** 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 the information contained in this report.

Concluding Comments

This report aims to provide an overview of the key determinants of child and youth health in Taranaki, and to assist the DHB consider some of the other agencies influencing child and youth wellbeing in the region. Such an intersectoral focus is necessary, as while addressing the large burden of avoidable morbidity and mortality highlighted in last year's report might at first seem a formidable task, collaborations with e.g. housing to improve the quality of housing stock, may provide more tangible starting points. On a wider scale, while addressing broader issues such as child poverty may be beyond of the scope of the health sector alone, some of the coordinated intersectoral policy responses highlighted in this year's report (see page 14), if implemented in New Zealand would likely result in significant health gains for children and young people. As a consequence, one of the key roles of the health sector (and the health professionals working within it) remains ongoing advocacy on behalf of children and young people, in order to ensure that they can access the resources they require to ensure their long term health and wellbeing.

WIDER MACROECONOMIC AND POLICY CONTEXT

THE CHILDREN'S SOCIAL HEALTH MONITOR: INTRODUCTION

INTRODUCTION TO THE CHILDREN'S SOCIAL HEALTH MONITOR

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 [2]. Such disparities have persisted, despite one of the longest periods of economic growth in recent decades, as well as historically low unemployment rates.

During the past 18 months, New Zealand's macroeconomic environment has changed rapidly, with current projections being for a significant economic downturn, followed by a slow and fragile recovery [3]. Given that large disparities in health status are evident for socioeconomically vulnerable children, even during periods of economic prosperity, it is possible that as the downturn progresses, and more families become reliant on Government assistance (e.g. unemployment benefits), some of the adaptations families make in order to meet their basic household needs (e.g. house downsizing / increasing the number of occupants to meet rent payments, deferring heating costs to pay for groceries) may result in unintended health consequences for children (e.g. increases in infectious and respiratory diseases, exposure to family conflict).

During 2009, a Working Group made up of health professionals from a range of organisations[1] came together to develop a suite of indicators to monitor the impact of the recession on child wellbeing. The section which follows briefly describes the rationale for the development of this indicator suite, before reviewing the distribution of its indicators in New Zealand and Taranaki (data permitting) over time. The section is divided into three main sub-sections as follows:

1. **Rationale for Monitoring Child Health During a Recession:** This section reviews the impact of previous international economic crises on child wellbeing and the potential pathways via which these effects might occur. It also considers the extent to which New Zealand children were exposed to low family incomes during the last major recession (the 1990s) and the effect this may have had on their living standards. It concludes with a brief discussion on the impact the current downturn might have on child health during the next 2-5 years.
2. **The Children's Social Health Monitor:** This section introduces the indicator suite developed to monitor the impact of the current economic downturn on child wellbeing. The indicators reviewed are divided into two main clusters:
    - *Economic Indicators* likely to impact on child wellbeing (i.e. GDP, income inequality, children living in families below the poverty line, unemployment rates, and the number of children reliant on benefit recipients);
    - *Indicators Measuring Aspects of Child / Whānau Wellbeing* (i.e. hospital admissions and mortality from conditions with a social gradient, infant mortality, and injuries arising from the assault, neglect or maltreatment of children).
3. **Local Policy Documents and Evidence Based Reviews which Consider Policies to Address the Socioeconomic Determinants of Child and Youth Health**: This section provides a brief overview of publications which consider policies to address the socioeconomic determinants of child and youth wellbeing (e.g. family tax credits, benefit levels, accommodation supplements). Interventions which might be

[1] 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 Program, the Kia Mataara Well Child Consortium, the New Zealand Council of Christian Social Services, and academics from the Universities of Auckland and Otago.

implemented at the DHB level are considered separately in the in-depth review on *Early Childhood Interventions for Socioeconomically Vulnerable Children*, which appears at the end of the Economic Standard of Living section of this report.

Rationale for Monitoring Child Health During a Recession

Cross Sectional Associations Between Family Resources and Child Wellbeing

In New Zealand, children and young people living in more deprived areas experience significantly worse health outcomes across a range of measures (e.g. infant mortality, hospital admissions for infectious and respiratory diseases, non-accidental injuries) [2]. Growing up in a low income family also increases the risk of longer term negative outcomes, such as leaving school without formal qualifications and economic inactivity. While adjusting for baseline family characteristics (e.g. maternal age, parental education, sole parent status) weakens these associations somewhat, they do not disappear completely [4]. The relationship between low family income and adverse outcomes also varies with the duration of family poverty, as well as the child's age when the family is poor. In addition, the presence of social safety nets (e.g. free education and healthcare, unemployment benefits and others forms of income support) may buffer the effects of low family income, with social gradients in health being much less marked in countries with robust social security provisions [5].

Yet while a large body of evidence supports the cross-sectional associations between reduced socioeconomic resources and poor childhood outcomes, the potential health consequences of a large increase in the number of low income families (e.g. via rising unemployment in the context of a significant recession) are much less well understood. This is because more enduring measures of family socioeconomic position (e.g. parental education, occupation, access to cultural resources), often remain constant during the course of a typical recession, as do the social safety nets which potentially buffer the impacts of worsening economic conditions on child wellbeing [6].

The literature however, does provide some plausible pathways via which reductions in family income might lead to adverse outcomes for children. In the late 1980s, McLyod [7] noted that a number of studies had linked sudden economic loss (e.g. unemployment) to negative psychological outcomes, although it was often the effects of ongoing chronic poverty (e.g. difficulty paying bills, worrying about money) that had the greatest impact. In her view, the greater the adaptations required to make ends meet (e.g. to reduce consumption, sell possessions, apply for loans, withdraw savings to pay bills), the greater the psychological distress produced. Further, the making of such difficult choices within the context of inadequate resources often fuelled spousal conflict, which often then spilled over into parenting, with anger against a spouse often being displaced onto a child(ren), particularly if the child aligned themselves with one of the parents (typically the mother) [7].

Similarly in Finland during the 1990s, a severe recession saw unemployment rise from 3.4% in 1990 to 18% in 1994. A study of child mental health during this period found that a quarter of families cut back on children's clothes, while a third cut back on trips, amusements and extra food (e.g. pizzas, hamburgers). Perhaps as a result of Finland's robust social security system however, only 2% cut back on basic food and only 3% moved to cheaper accommodation. Despite this, increased economic pressure was associated with a cascade of associations which linked declines in parental mental health → hostile and non-supportive marital interaction → compromised parenting → children's internalising (e.g. withdrawal, anxiety, depression) and externalising (e.g. aggressive or delinquent behaviour, substance abuse) behaviour [8].

The Impact of Economic Crises on Child Wellbeing: Longitudinal Studies

While such studies provide plausible pathways linking reductions in family income to adverse outcomes for children, the evidence that an increase in the number of low income families in a society leads to population level shifts in child health outcomes is more mixed. In Sweden, a country with a particularly robust social safety net, a significant recession during the early-mid 1990s saw the proportion of children (0-6 years) living in low income

families rise from 7.5% in 1991 to 20% in 1996. Despite this, there were no significant increases in infant mortality, low birth weight, abortions or childhood hospital admissions for infectious and respiratory diseases, with the authors concluding that the maintenance of investments in education, social insurance, and universal access to free health care may have mitigated the impacts of the recession on children during this period [6].

In contrast, in Peru an economic crisis during the late 1980s saw GDP fall by almost 30% during 1987-1990, with real wages in Lima falling by 80%. During this period, infant mortality increased by 2.5%, an increase which equated to an additional 17,000 infant deaths. While food purchasing behaviour did not change, families' spending on medicines, healthcare and durable items (e.g. cars) fell dramatically. In addition, public health care expenditure declined by 58%, and while the authors were unable to determine whether it was these cuts, or families' inability to afford co-payments that caused large declines in health service utilisation during this period, they concluded that from a policy perspective increases, rather than decreases, in social expenditure during future economic crises would be the most useful in minimising the impact of recessions on child wellbeing [9].

Paradoxically, in the USA, one study suggested that rising unemployment may actually lead to improvements low birth weight and infant mortality, via its impacts on lowered fertility, cigarette and alcohol consumption, and attendance at antenatal care. The authors noted that less educated single black women tended to opt out of fertility during periods of high unemployment, and that those who became pregnant tended to drink and smoke less, and to attend antenatal care more frequently. For white women however, the pattern was reversed, with fertility for less-educated white women increasing during periods of high unemployment [10]. To add further complexity, studies of child health during other economic crises have found either no differences (e.g. in the USSR during the 1990s there were large increases in adult mortality (particularly from suicide and alcohol) but no increases in child mortality [11]; or a modest deterioration (e.g. a 1.4% increase in infant mortality during Indonesia's 1998 financial crisis [12].

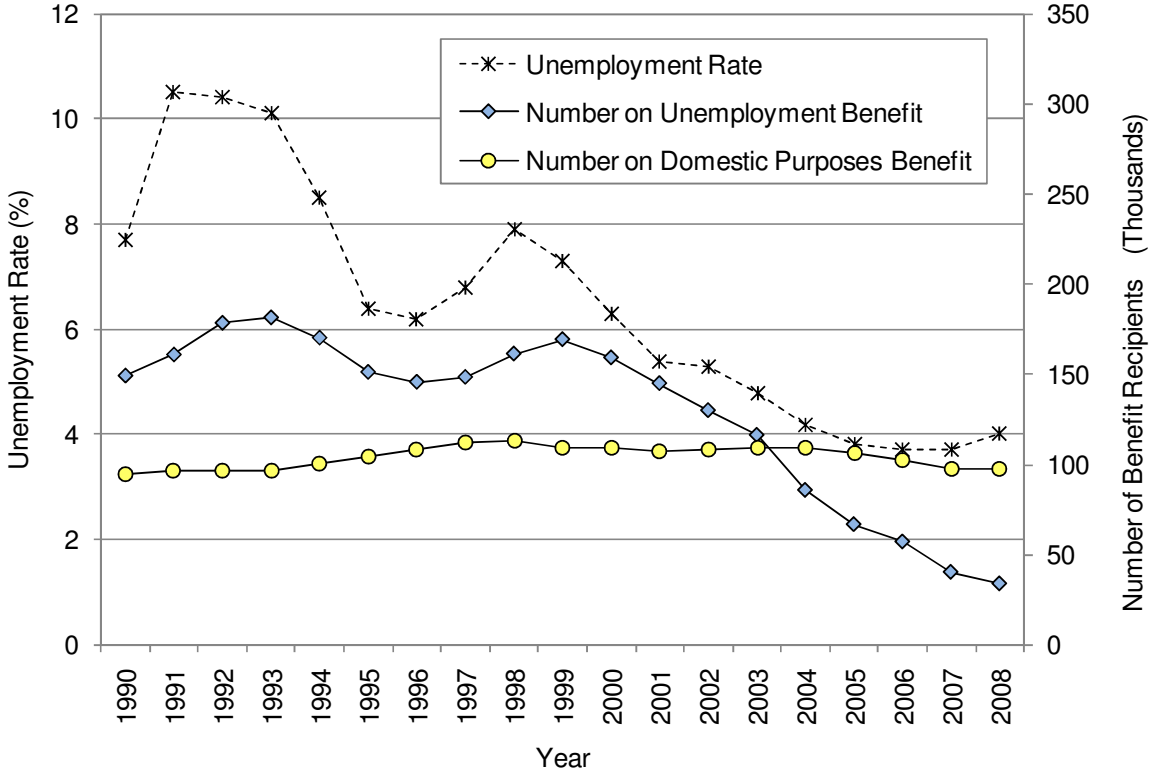
Potential Impacts of Recessions on Children: Lessons from New Zealand's Past

The research above suggests that the impacts of economic crises on child wellbeing may vary, depending on the length and severity of the crisis, the adaptations families make to reduced resources, the availability of social safety nets, and the extent to which Governments preserve, or cut social spending during the course of a recession. For New Zealand, it thus remains unclear what impact the current economic downturn will have on child wellbeing, as while New Zealand's social safety nets are not as comprehensive as those of Finland or Sweden, access to basic health services is unlikely to break down, as it did in Peru during the 1980s. Further, it is difficult to determine whether families positive adaptations to the recession (e.g. cutting back on takeaways, alcohol, and cigarettes), will outweigh more negative behaviours (e.g. cutting back on clothing, shoes, heating and doctor's visits). Despite this uncertainty it is still possible, using existing research, to estimate the number of New Zealand children who may be exposed to low family incomes, should unemployment reach the levels seen during the mid-1990s, as well as the impact this exposure may have on their living standards.

In terms of the number of children likely to be exposed to low family incomes, one recent study followed the entire cohort of New Zealand children born in 1993 (n=58,866), through to age 7 in 2000 (during this period unemployment was in the 6-8% range, as is expected during the current downturn). Using benefit reliance as a proxy for low household income, the authors found that 53.9% of children had lived with a caregiver who was reliant on a benefit at some point during their first 7 years, with 24.5% having their first contact with a benefit at birth, and 38.7% by one year of age. Of the birth cohort, 20.8% had spent 5+ of their first 7 years with a caregiver reliant on a benefit, with the risk of prolonged benefit contact being increased if the child was reliant on: a benefit recipient from birth; a sole parent; a benefit recipient who was female, Māori, <20 years of age, or on the Domestic Purposes Benefit (DPB). Of those reliant on a benefit from birth, ≈ ¾ remained on a benefit after their 1st year, ≈ ½ remained at 3 years and ≈ ¼ remained for the entire 7 years (6.1% of the entire 1993 cohort spent all of their first 7 years reliant on a benefit recipient) [13].

In interpreting these figures however, it must be remembered that not all children in this cohort were reliant on a beneficiary as the result of prevailing macroeconomic conditions. As **Figure 1** suggests, while the number of people receiving unemployment benefits during this period fluctuated in line with headline unemployment, the number receiving the domestic purposes benefit (DPB) was much less responsive to labour market changes. Thus even in 2007, when seasonally adjusted unemployment rates were at their lowest (range 3.5-3.8%) [14], 15.1% of New Zealand children <18 years remained reliant on a DPB recipient [2]. Such figures potentially suggest that in the context of the current recession, New Zealand is already starting from a relatively high baseline, in terms of the number of children exposed to low family incomes during their crucial early years.

Figure 1. Seasonally Adjusted Unemployment Rates vs. Numbers of Unemployment and Domestic Purposes Benefit Recipients, New Zealand 1990-2008



Source: Seasonally Adjusted Unemployment Rates: Household Labour Force Survey (Quarter 2); Benefit Recipients: Ministry of Social Development for Years Ending June (via Statistics NZ)

In terms of the living standards likely to be experienced by children who become reliant on benefit recipients during the next few years, the New Zealand Living Standards Surveys provide some valuable insights. The 2000 Living Standards Survey, found that even once the level of family income was taken into account, families whose main source of income was Government benefits were more likely to be living in severe or significant hardship and as a consequence, more likely to buy cheaper cuts of meat, go without fruit and vegetables, put up with feeling cold to save on heating costs, make do without enough bedrooms, have children share a bed, postpone a child's visit to the doctor or dentist, go without a computer or internet access and limit their child's involvement in school trips, sports and extracurricular activities [15]. The 2004 Living Standards Survey, while replicating many of the findings of the 2000 Survey, suggested that the picture may have worsened during 2000-2004, with the proportion of benefit dependent families living in severe or significant hardship increasing from 39% to 58% [16].

Thus while it is difficult to predict with any certainty the impact the current recession will have on child health outcomes, the available evidence would suggest that one in five New Zealand children (see *Children Reliant on a Beneficiary* section) are already exposed to low family incomes as a result of their parent's benefit status, and that if unemployment reaches the levels seen during the 1990s, a similar number will spend at least 5 of their

first 7 years of life reliant on a beneficiary. Further, the Living Standards surveys suggest that New Zealand's current benefit provisions will be unable to protect these children from severe or significant hardship, and that some of the adaptations families make in response to their inadequate resources, may have detrimental health consequences for their children. Thus, even though the international literature provides no clear picture as to what New Zealand might expect in terms of child health outcomes during the course of the current downturn, it would seem prudent to prospectively monitor a basket of key child health indicators, in order to ensure that any deterioration in child health can be identified early, and so that proactive and co-ordinated responses put in place, should the need arise. In addition, if it does appear that child wellbeing is deteriorating, then broader social policy measures to ameliorate the impact of the downturn on child health may need to be considered, so that effective policy responses can be implemented in a timely manner.

The Children's Social Health Monitor

In response to deteriorating economic conditions in New Zealand and Australia over the past 18 months, a Working Group of health professionals 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 suite to monitor the impact of the recession on child wellbeing, the range of indicators which might be included, and the criteria by which these 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 Families with Children Reliant on Government Benefits).
2. *A Basket of Indicators to Monitor Children's Health and Wellbeing*; Ideally indicators would responded 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 perspectives.

The Children's Social Health Monitor indicator set was finalised in September 2009, with **Appendix 9** providing an overview of the methodology used. The Monitor currently comprises 5 Economic and 5 Health and Wellbeing Indicators, with further detail on each of these indicators being provided in the sections which follow:

Economic Indicators:	Gross Domestic Product (Page 19)
	Income Inequality (Page 21)
	Child Poverty (Page 24)
	Unemployment Rates (Page 33)
	Children Reliant on Benefit Recipients (Page 40)
Health and Wellbeing Indicators:	Hospital Admissions with a Social Gradient (Page 57)
	Mortality with a Social Gradient (Page 57)
	Infant Mortality (Page 69)
	Hospital Admissions and Mortality from Non-Accidental Injury (Page 179)
	Ambulatory Sensitive Hospitalisations (2008 Report)

While it is hoped that over time this indictor 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. It is also hoped that further adaptations to this indicator set will be made, so that it can also be used in the Australian context.

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

In New Zealand at present, there is no overarching policy or legislative framework which addresses the social determinants of child and youth health, with different aspects being covered by a range of legislation and Government policies (e.g. income support, housing, health, education and child protection are covered variously by the Ministries of Social Development (including CYF), Health, Education and Housing). A number of local commentators however, have considered what such a policy framework might look like, or how health inequalities might be addressed in the broader sense. These are considered **Table 2**, which also summarises overseas policy documents (mainly from the UK), which outline how other countries have attempted to address these issues. In addition, **Table 11** on **Page 54** considers local policy documents which relate specifically to youth development, or improving the participation of young people in work, education and training.

Table 2. Local Policy Documents and Evidence Based Reviews Which Consider Policies to Address the Social Determinants of Child and Youth Health

New Zealand Policy Documents
Fletcher M. and Dwyer M, **A Fair Go for All Children: Actions to Address Child Poverty in New Zealand**. A Report for the Children's Commissioner and Barnardos. 2008, Office of the Children's Commissioner and Barnardos: Wellington. p. 1-74. http://www.occ.org.nz/publications/reports_documents This report reviews child poverty rates in New Zealand and the detrimental effects poverty has on long term outcomes for children. It then considers a range of policy options to reduce child poverty and ensure that all children have a good start in life. These include an expansion of the funding of, and period covered by, paid parental leave, improved access to low cost or free early childhood education, reviewing the adequacy of core benefit payments, adjusting the family tax credit to provide more support for younger children, and the setting of child poverty goals and targets.
Public Health Advisory Committee. 2004. **The Health of People and Communities. A Way Forward: Public Policy and the Economic Determinants of Health**. Wellington. Public Health Advisory Committee. http://www.phac.health.govt.nz/moh.nsf/indexcm/phac-public-policy-economic-determinants?Open#availability This report considers the relationship between socioeconomic status and health. It focuses on the role public policy can play in reducing health inequalities. It begins with a review of socioeconomic and ethnic disparities in health, with the challenge being to improve the health of all, to the same level as those with optimal health outcomes. The report builds on a 1998 National Health Committee report, focusing on more recent evidence for the effect of economic policies on the socioeconomic determinants of health, and the links with health outcomes. It is based on three information strands: 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.
New Zealand Treasury, **Investing in Wellbeing: An Analytical Framework, New Zealand Treasury Working Paper** 02/23. 2002, New Zealand Treasury: Wellington. p. 1-49. http://www.treasury.govt.nz/publications/research-policy/wp/2002/02-23 In 2002 the Treasury engaged in a 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. This paper aims to provide a framework to compare interventions across social sectors. It has two key components. The first is a life-course view of child development that emphasises that experiences in childhood affect well-being throughout life. The second involves viewing social expenditures as investments to achieve particular outcomes, typically directed at enhancing well-being. The paper reviews the literature on how childhood experiences can impact on 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 provide evidence on what interventions work using key findings from the literature.
Ministry of Health. 2002. **Reducing Inequalities in Health**. Ministry of Health: Wellington p. 1-31. http://www.moh.govt.nz/moh.nsf/ea6005dc347e7bd44c2566a40079ae6f/523077dddeed012dcc256c550003938b?OpenDocument Addressing socioeconomic, ethnic, gender and geographic inequalities in health requires a population health approach that takes into account all the influences on health. It also requires intersectoral action that addresses the social and economic determinants of health, as well as action within health and disability services themselves. This document 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. 1. Structural – tackling the root causes of health inequalities (social, economic, cultural and historical determinants) 2. Intermediary pathways – targeting the material, psychosocial and behavioural factors that mediate health impacts 3. Health and disability services – undertaking specific actions within health and disability services. 4. 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. It also highlights the importance of factors outside the direct control of the health sector in shaping the health of our population.

Systematic and Other Reviews from the International Literature

Lucas P, McIntosh K, Petticrew M, Roberts H, Shiell A. **Financial Benefits for Child Health and Wellbeing in Low Income or Socially Disadvantaged Families in Developed World Countries**. Cochrane Database of Systematic Reviews 2008, Issue 2. Art. No.: CD006358. DOI: 10.1002/14651858.CD006358.pub2.

The association between low income and poor child health outcomes is strong and consistent across countries and time. This review assessed whether additional money provided to socially or economically disadvantaged families could affect children's health, well-being and educational attainment. Nine studies were identified that met inclusion criteria. There was tentative evidence of benefit in early language development, but given lack of effect on all other outcomes the authors concluded that the evidence did not show an effect on child outcomes in the short to medium term in response to direct financial benefits to families. The relatively low monetary value of the interventions, and the conditions placed on the recipients led the authors to conclude that there was "no evidence of effect" rather than of "evidence of no effect".

Other Related Articles and Reviews

HM Treasury, **Child Poverty Review**. 2004, HM Treasury: London. p. 1-102. www.hm-treasury.gov.uk

In the 1990s, the UK suffered higher child poverty than many other industrialised nations. The Government thus set a goal to halve child poverty by 2010 and eradicate it by 2020. As a first step, the Government sought to reduce the number of children in low-income households by ¼ by 2004-05. To achieve this, the Government increased financial support for children through tax credits, Child Benefit and other benefits by £10.4 billion, a real terms rise of 72%. As a result, between 1998-99 and 2002-03, the number of children in poverty fell by 500,000, and the Government was on track to achieve its target of reducing child poverty by ¼ by 2004-05. The Government however was determined to make progress beyond 2004-05 and in the 2003 Budget announced a Child Poverty Review to examine the welfare and public service changes necessary to achieve the eradication of child poverty. The review recommended a range of policy options including ensuring parents had access to work and financial support (e.g. work focused interviews, work search premiums, job-seekers allowances, access to high quality childcare, ensuring access to benefits), improving the availability of decent housing and high quality education (e.g. equitable resources for high needs schools) and extending coverage of child and adolescent mental health services. The child poverty review also outlined the need for continued collaboration between central and local government and government and the voluntary and community sector.

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

The report beings with a review of theories regarding 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 concludes with a discussion of policy insights that might be gleaned from the research literature in this area.

Macintyre S. **Inequalities in Health in Scotland: What are they and what can we do about them?** 2007, MRC Social and Public Health Sciences Unit: Glasgow. http://www.sphsu.mrc.ac.uk/unit_reports.php?rptID=32&pageID=0

This Scottish report considers the basis for social inequalities in health and the current evidence for interventions and strategies to address them. It considers 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); starting young (e.g. pre and post natal support pre-school day care)

Department of Work and Pensions. 2006. **Opportunity for All: Eighth Annual Report 2006 Strategy Document**. London. Department of Work and Pensions. http://www.official-documents.gov.uk/document/cm69/6915/6915.asp

Opportunity For All was first published in the UK in 1999. It outlined a strategy for tackling poverty and social exclusion and established the indicators against which success would be measured. Indicators were selected that would demonstrate achievements and not disguise poor performance. In subsequent annual reports, progress against these indicators was reported and the strategy continued to develop as progress started to bed in. The strategy is now well established and in the eighth Opportunity For All report, the authors take stock of the progress made to date, and look ahead to how to build on this. One particular focus is child poverty, with chapter two looking in depth at the problems faced by children and their families, the strategy for tackling child poverty and the progress that has been made.

Department of Health. 2003. **Tackling Inequalities in Health: A Program for Action**. London. Department of Health (UK). http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4008268

This Programme for Action outlines how the UK Government planned to tackle health inequalities over 3 years, with a 2010 target of reducing social gradients in infant mortality and life expectancy. The programme had four key themes:
- supporting families, mothers and children: to ensure the best start in life and break the inter-generational cycle of health
- engaging communities and individuals – to ensure relevance, responsiveness and sustainability
- preventing illness and providing effective treatment and care
- addressing the underlying determinants of health – dealing with the long-term underlying causes of health inequalities.

THE CHILDREN'S SOCIAL HEALTH MONITOR: ECONOMIC 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*" [17]. 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 [17], with a recession typically being defined as two consecutive quarters of negative growth [18]. Recessions are often characterised by high unemployment, stagnant wages and a fall in retail sales, and though usually not lasting longer than a year [18], they may have significant implications for child wellbeing (see previous section).

New Zealand entered a recession at the end of June 2008 (after 2 consecutive quarters of negative growth), and technically left the recession at the end of June 2009 (although growth in the June quarter (0.1%) was extremely close to zero, leading Statistics New Zealand to comment that no significant conclusions could be drawn regarding this being a turning point in economic activity [1]).

The following section briefly reviews changes in New Zealand's GDP since March 2005.

Data Source and Methods

Definition

Gross Domestic Product: 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 2 consecutive quarters of negative growth (as measured by GDP).

Data Source

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

Indicator Category: Ideal B

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 [19]

New Zealand Trends

Production Based Measure of GDP

In New Zealand, GDP decreased for 5 consecutive quarters from March 2008-March 2009. GDP then increased by 0.1% in the June 2009 quarter. Economic activity for the year ending June 2009 contracted 1.8%, as compared to growth of 2.5% for the year ending June 2008. This was the largest annual contraction in activity since the series began in June 1987 [1] (**Figure 2**).

During the June 2009 quarter, activity in the primary industries increased by 1.5%, an increase mainly driven by fishing, forestry and mining. Activity in goods producing industries contracted 0.5%, with the decrease being driven by manufacturing (down 1.3%) and construction (down 1.9%). A 5.9% increase in electricity, gas and water partly offset

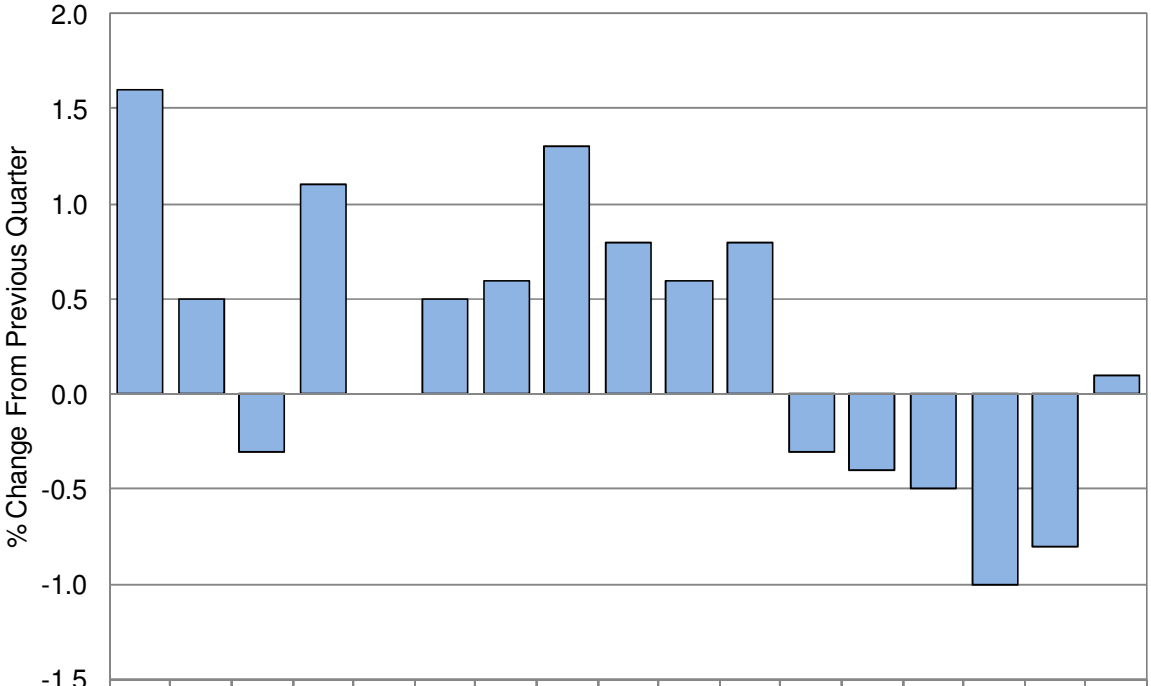
these decreases. Service industries were largely flat, with increases in real estate and business services, and communications being offset by declines in wholesale trade, transport and storage, and government administration and defence [1].

Thus New Zealand entered a recession at the end of June 2008 (after 2 consecutive quarters of negative growth), and technically left the recession at the end of June 2009. Because growth of 0.1% is extremely close to zero (and thus may be subject to revisions (including downwards) in future quarters), Statistics NZ indicated that no significant conclusions could be drawn regarding this being a turning point in economic activity [1].

Expenditure Based Measure of GDP

The expenditure based measure of GDP, released concurrently with the production based measure, increased by 0.4% in the June 2009 quarter. During this period, household consumption expenditure increased by 0.4%, with expenditure on services increasing 0.6% and expenditure on non-durable goods increasing 0.8%. Expenditure on durable items however, decreased by 0.9%. On an annual basis, in the year ended June 2009, household consumption expenditure decreased 1.1% [1].

Figure 2. Gross Domestic Product (GDP): Percentage Change from Previous Quarter, New Zealand June 2005-June 2009



	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun	Sep	Dec	Mar	Jun
	2005			2006				2007				2008				2009	
GDP	1.6	0.5	-0.3	1.1	0.0	0.5	0.6	1.3	0.8	0.6	0.8	-0.3	-0.4	-0.5	-1.0	-0.8	0.1

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

Summary

New Zealand entered a recession at the end of June 2008 (after 2 consecutive quarters of negative growth), and technically left the recession at the end of June 2009. Because growth of 0.1% is extremely close to zero (and thus may be subject to revisions (including downwards) in future quarters), Statistics NZ indicated that no significant conclusions could be drawn regarding this being a turning point in economic activity [1].

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

Table 2 on **Page 14** 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 in recent years regarding the influence of income inequalities on population health. While it is widely acknowledged that poverty plays a crucial role in shaping health disparities, authors such as Wilkinson and Marmot [20] 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, where 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 [20].

Others such as Lynch [21] 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 reduce inequalities and improve population health [22].

The following section explores income inequalities in New Zealand since 1984 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's Household Economic Survey (NZHES n=3,000 households) via Perry 2009 [23].
Note: The P80/P20 Ratio and Gini coefficient are reported on by the Ministry of Social Development using NZHES data [23], which was available 2-yearly from 1982-1998, and 3-yearly thereafter. Since 2007-2008, 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 used see Perry 2009 [23].

Indicator Category Proxy B

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 20th percentile is denoted P20 and the income at the top of the 80th percentile is called P80. The ratio of the value at the top of the 80th percentile to the value at the top of the 20th 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 80th percentile have incomes 3.0x higher than those at the top of the 20th percentile). In general, the higher the ratio, the greater is the level of inequality [23].

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) [24]. 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 [23].

New Zealand Trends

Income Inequality: P80/P20 Ratio

In New Zealand during 1984-2008, income inequality as measured by the P80/P20 ratio, was higher after adjusting for housing costs than prior to this adjustment. 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 2004-2008, the P80/P20 ratio fell, a decline in income inequality which Perry attributes largely to the Working for Families package [23]. The rise in after housing costs income inequality during 2007-2008 however, Perry attributes to the rising proportion of low-income households with high housing costs [23] (**Figure 3**).

Income Inequality: Gini Coefficient

In New Zealand during 1984-2008, income inequality as measured by the Gini Coefficient, was also higher after adjusting for housing costs than prior to this adjustment. The most rapid rises in income inequality during this period also occurred between the late 1980s and early 1990s. Using both the Before and After Housing Cost measures, the Gini Coefficient declined between 2001-2007, a decline which Perry again attributes to the impact of the Working for Families Package. Perry notes however, that another year's data is required, before it is possible to determine whether the rise in income inequality seen between 2007-2008 is real, or just a statistical blip [23] (**Figure 4**).

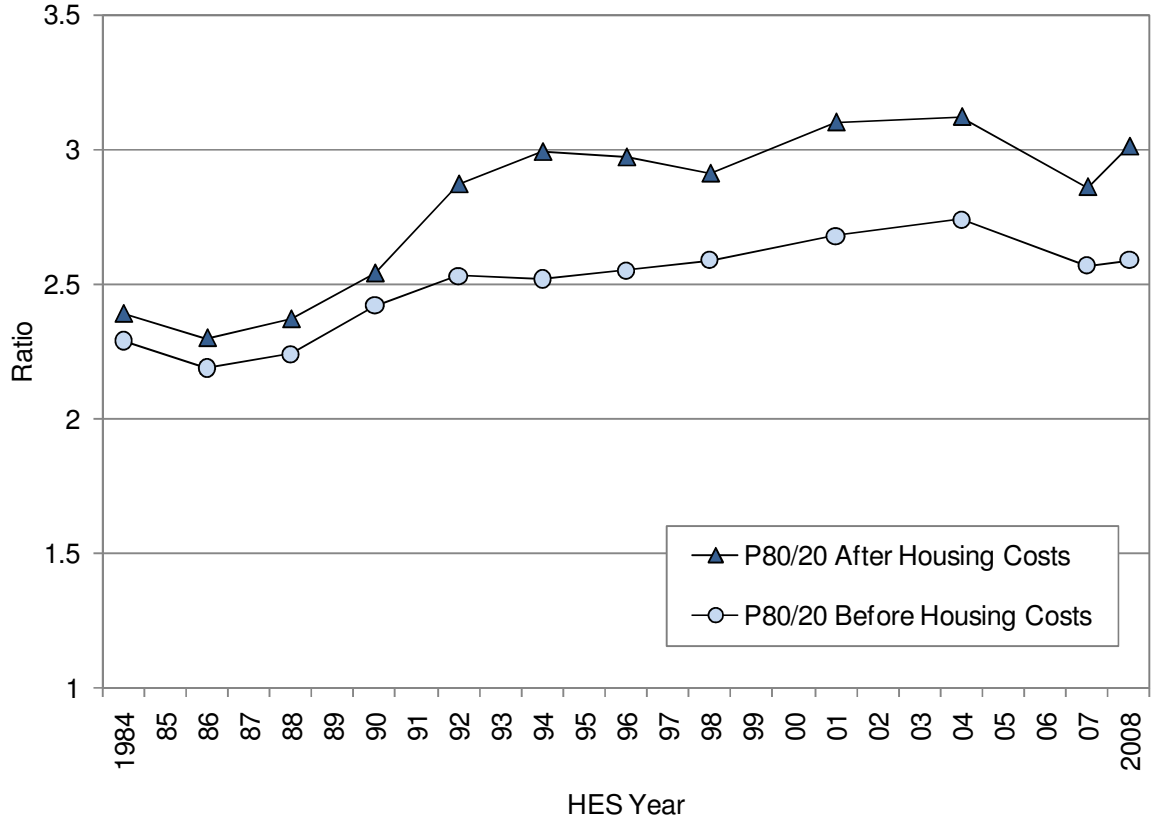
Summary

In New Zealand during 1984-2008 income inequality, as measured by the P80/P20 ratio and Gini coefficient, was higher after adjusting for housing costs than prior to this adjustment. The most rapid rises in income inequality occurred between the late 1980s and early 1990s. During the early-mid 2000s however, income inequality declined, a change Perry attributes largely to the Working for Families package. Rises in income inequality were again evident between 2007-2008, with Perry attributing some of this increase to the rising proportion of low-income households with high housing costs [23].

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

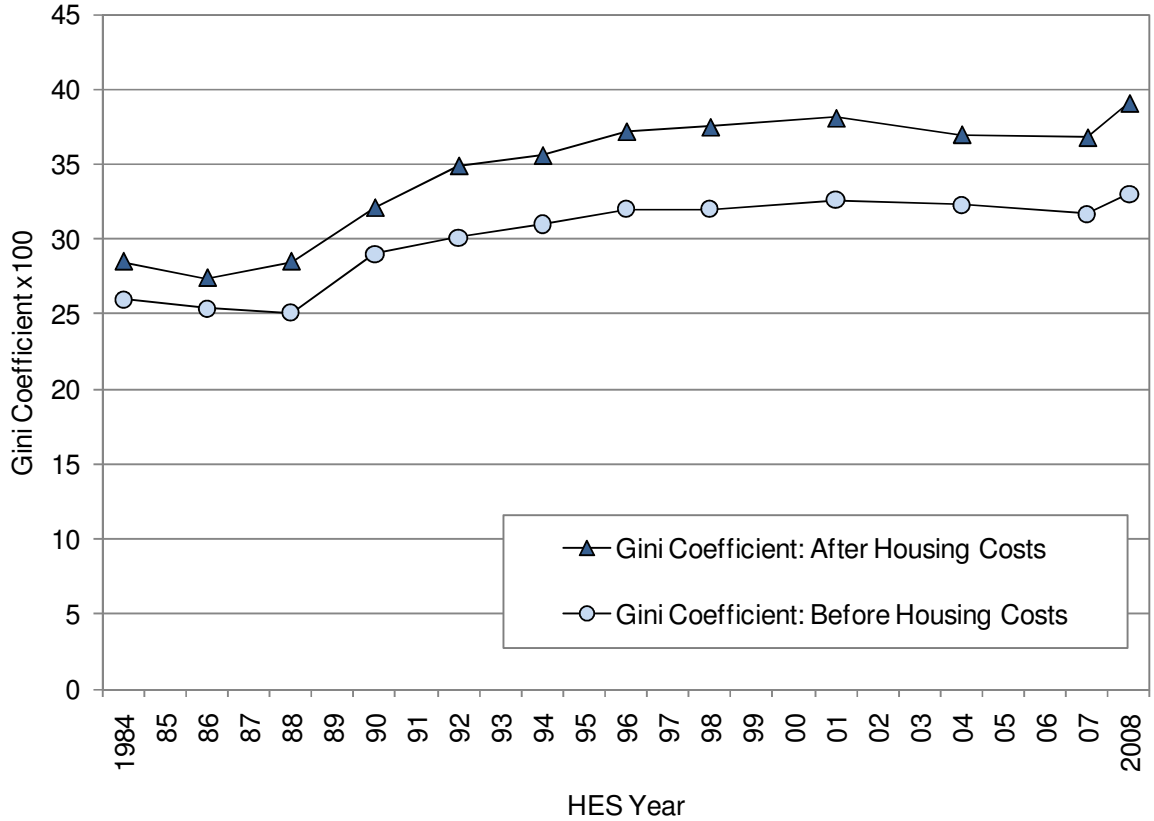
Table 2 on **Page 14** considers local policy documents and evidence based reviews which are relevant to the social policy environment and the socioeconomic determinants of child and youth health.

Figure 3. Income Inequality in New Zealand: P80/P20 Ratio for the 1984-2008 HES Years



Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (1984-2008)

Figure 4. Income Inequality in New Zealand: Gini Coefficient for the 1984-2008 HES Years



Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (HES) 1984-2008

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 [26]. Further, the Christchurch Health and Development Study suggests 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 criminal activity. 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, suggesting that the pathways linking low family income to long term outcomes are complex, and in part may be mediated by other socioeconomic variables [4]. Yet 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 [5].

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 New Zealand Household Economic Survey, which can be used to assess the proportion of families with children who live below the income poverty line [23].
2. The New Zealand Living Standards Survey, which uses the Economic Living Standards Index (NZELSI) to assess the proportion of families with children who live in severe or significant hardship [16]

The following section uses information from these two data sources to assess the proportion of New Zealand children living in poverty, or exposed to severe or significant hardship in recent years.

Children Living in Households Below the Poverty Line

Data Source and Methods

Definition

1. *Percentage of children with equivalised disposable household income < 50% or <60% current median*
2. *Percentage of children with equivalised disposable household income < 50% or <60% 1998 median (adjusted for movements in consumer prices)*

Data Source

Statistics New Zealand's Household Economic Survey (NZHES n=3,000 households) via Perry 2009 [23].
Note: Child Poverty measures are reported on by the Ministry of Social Development using NZHES data [23], which was available 2-yearly from 1982-1998, and 3-yearly thereafter. Since 2007-2008, 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 used see Perry 2009 [23].

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 society). Constant-value poverty measures select a median at a set point in time (e.g. 1998) 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). 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 2009 [23].

Child Poverty Trends Using Different Poverty Measures

Relative Poverty (Compared to Contemporary Median)

Before Housing Costs: In New Zealand, relative child poverty rose rapidly during 1990-1992, a rise which Perry [23] attributes to rising unemployment and the 1991 Benefit Cuts (which reduced incomes for beneficiaries to a greater extent than the median fell during this period). During 1992-1998, relative child poverty rates then declined, a trend which Perry attributes to falling unemployment, occurring in a context where median incomes did not increase. 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 relative child poverty up until 2004. From 2004 to 2007 relative poverty rates again declined, a decline which Perry attributes to the roll out of the Working for Families Package. A further rise was again seen in 2008, as the result of rapidly rising median incomes outweighing the final stage of the Working for Families roll out [23] (**Figure 5**).

After Housing Costs: In New Zealand during 1982-2008, while trends in relative child poverty after adjustment for housing costs (AHC), were broadly similar to before housing cost (BHC) measures, one key difference was evident: that AHC child poverty rates in 2008 remained higher than in the 1980s, while BHC measures (for those <60% threshold) were closer to 1980s levels. Perry [23] attributes these differences to the fact that housing costs in 2008 accounted for a higher proportion of household expenditure for low-income households, than they did in the 1980s (in 1988 16% of households in the bottom income quintile spent >30% of their income on housing; in 2008 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 2007-2008 however, with maximum rates of assistance remaining fixed, as housing costs continued to increase. As a result, net housing expenditure rose, especially for low income households and this resulted in increases in AHC child poverty rates during 2007-2008 [23] (**Figure 6**).

Fixed Line Poverty (Compared to 1998 Median)

Before Housing Costs: In New Zealand during the late 1980s and 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. During 1998-2004, child poverty fell a little (60% threshold), or remained static (50% threshold), suggesting that there were no real improvements for the poorest children during this period. During 2004-2008 however, child poverty rates fell (using both thresholds), with fixed line child poverty rates in 2008 being lower than they were in the 1980s [23] (**Figure 5**).

After Housing Costs: In New Zealand during 1982-2008, while trends in fixed line child poverty after adjustment for housing costs (AHC), were broadly similar to before housing cost (BHC) measures, the same key difference seen with relative poverty measures was evident: that AHC child poverty rates in 2008 remained higher than in the 1980s, while BHC measures generally returned to / were lower than 1980s levels [23] (**Figure 6**).

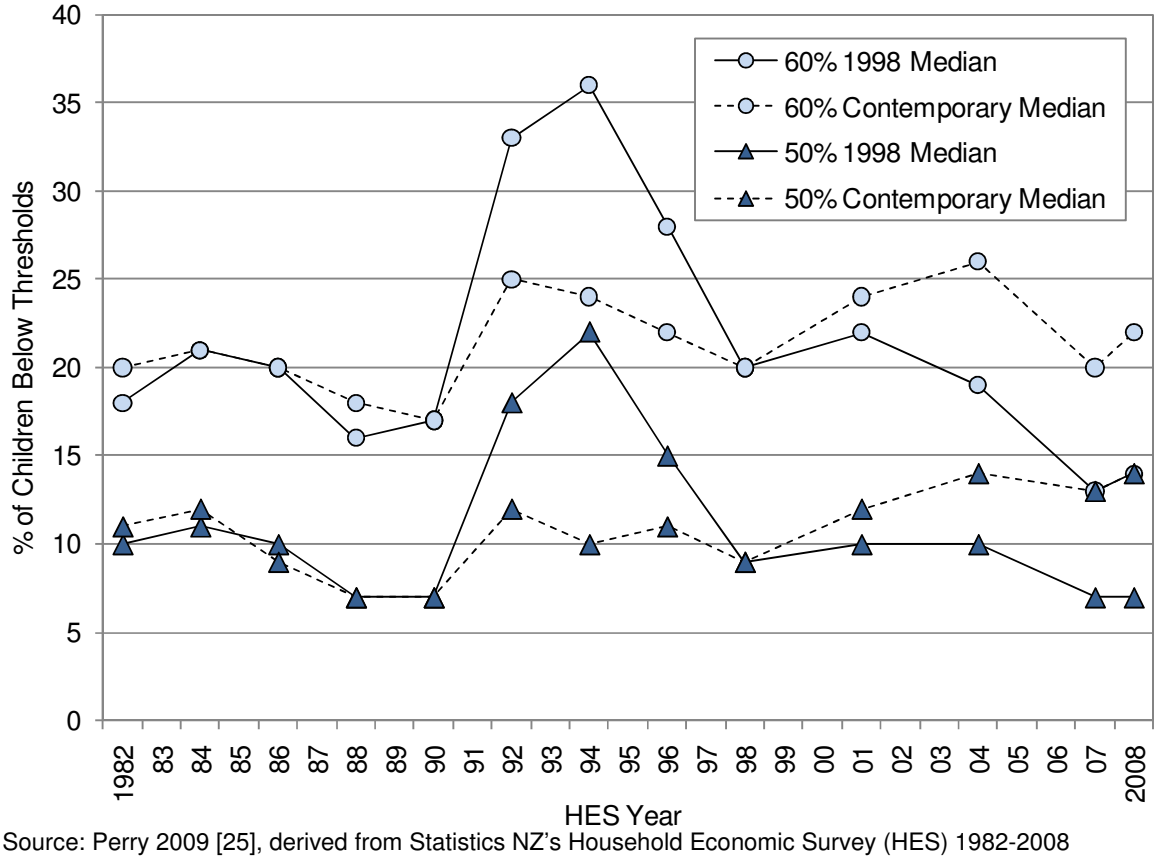
Child Poverty Trends: <60% of 1998 Median, After Housing Costs

Child Poverty by Number of Children in Household and Child's Age

Number of Children: In New Zealand during 1986-2008, child poverty rates for households with 3+ children were consistently higher than for households with 1-2 children (**Figure 7**). (Comment: Perry notes that in 2008, children from these larger households made up 47% of all poor children, a decline from 57% in 2004 [23])

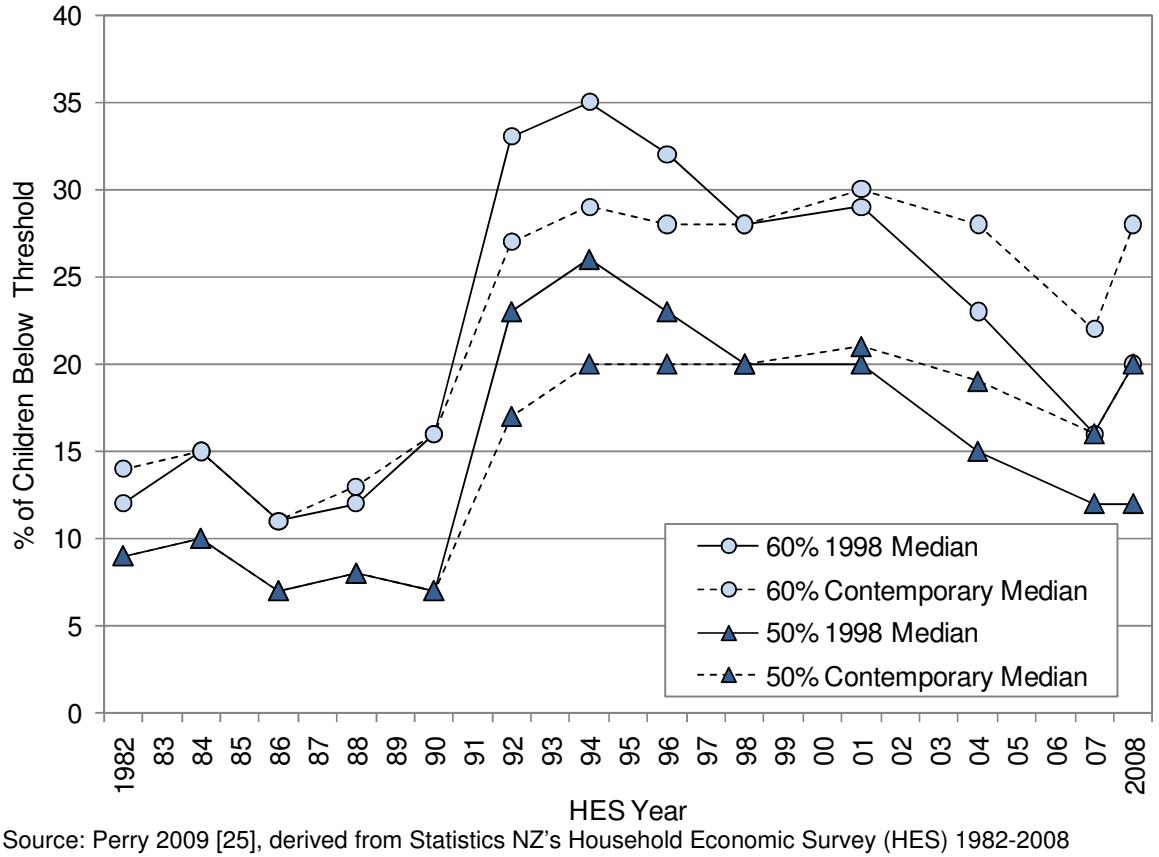
Age of Children: In New Zealand during 1986-2001, poverty rates for younger children (0-6 years and 7-11 years) were higher than for older children (12-17 years). Differences after 2001 were less consistent [23] (**Figure 7**).

Figure 5. Proportion of Dependent Children Aged 0-17 Years Living Below the Income Poverty Threshold (Before Housing Costs), New Zealand 1982-2008 HES Years



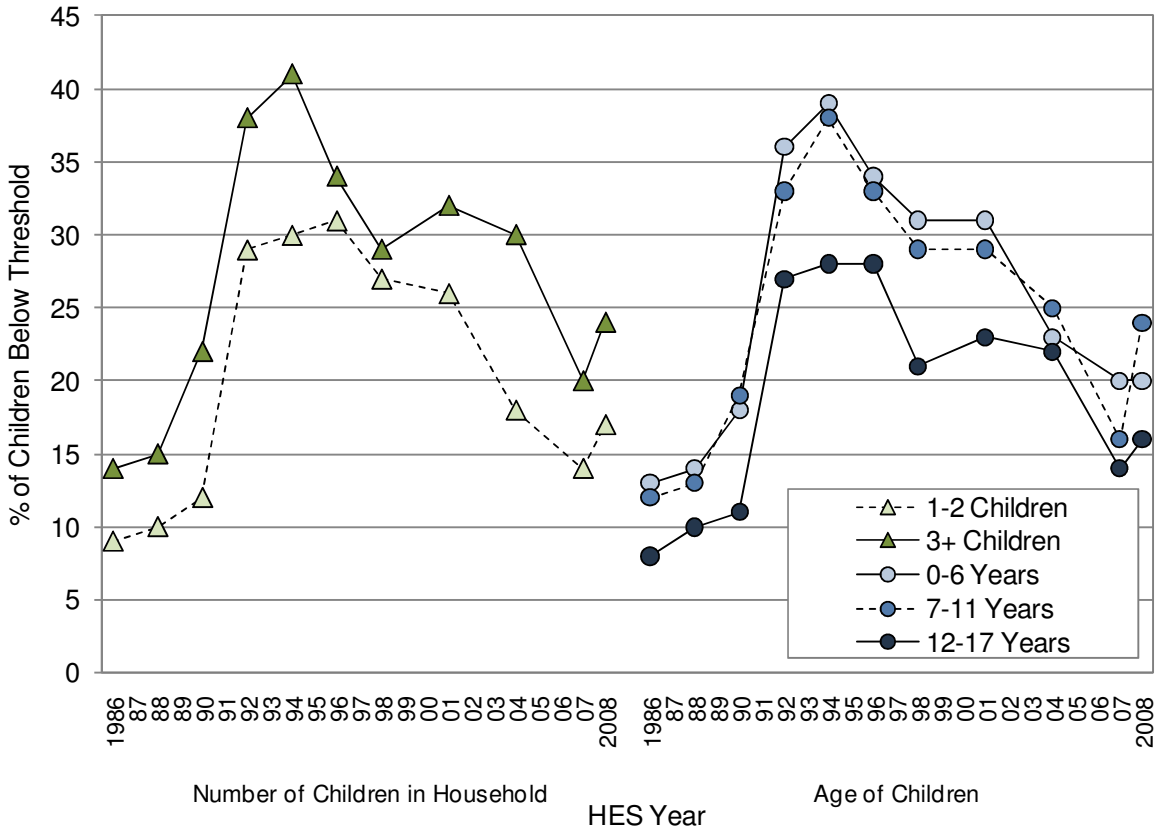
Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (HES) 1982-2008

Figure 6. Proportion of Dependent Children Aged 0-17 Years Living Below the Income Poverty Threshold (After Housing Costs), New Zealand 1982-2008 HES Years



Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (HES) 1982-2008

Figure 7. Proportion of Dependent Children Living Below the 60% Income Poverty Threshold (1998 Median, After Housing Costs) by Age and Number of Children in Household, New Zealand 1986-2008 HES Years



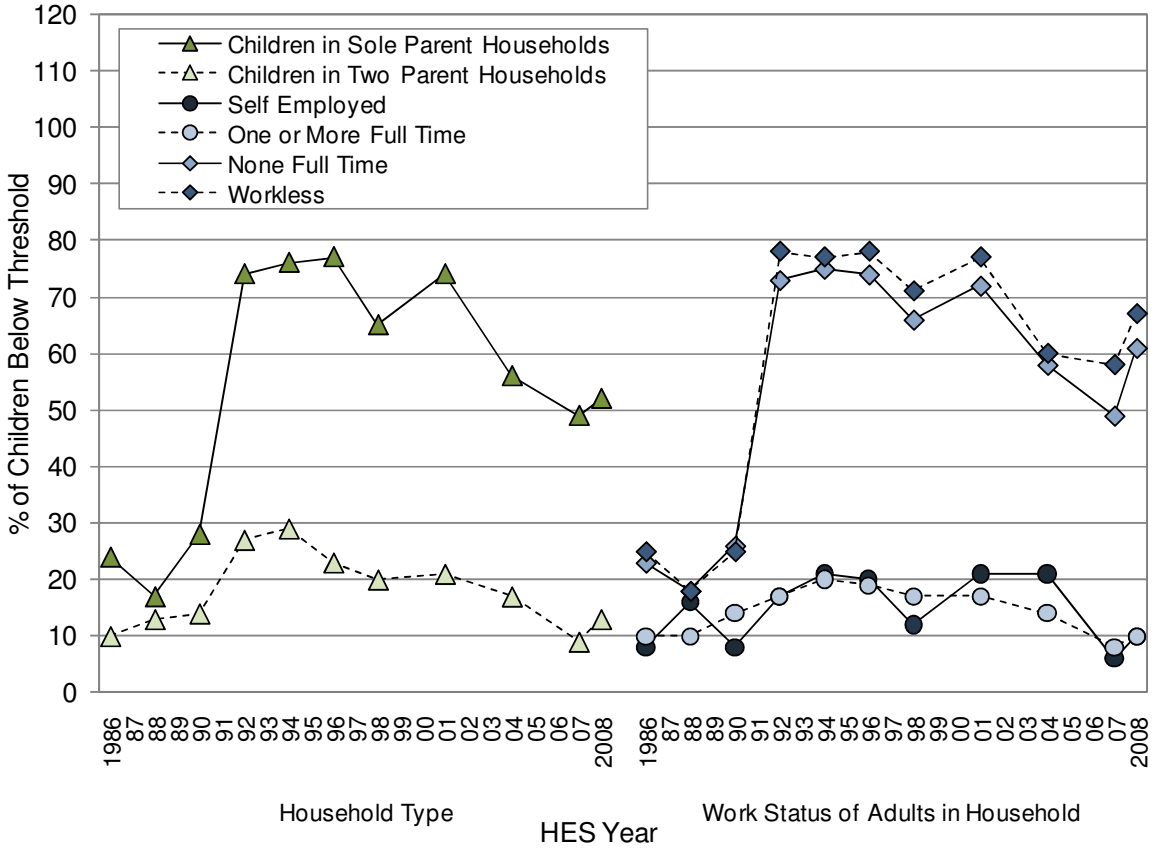
Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (HES) 1986-2008

Child Poverty Trends by Household Type and Work Status of Adults in Household

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, poverty rose most rapidly for children in sole-parent households, with rates reaching a peak of 77% in 1996 (two-parent: rates peaked at 29% in 1994). While rates for both household types declined between 2001 and 2007, during 2007-2008 child poverty rates for those in sole-parent households remained much higher than their 1980s levels, while rates for two-parent households were similar (**Figure 8**). (Comment: Perry notes that ≈1/3 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 to them [23]).

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 2007-2008 being similar to those in the 1980s (**Figure 8**). (Comment: Perry notes that during the 1980s, children in workless households were ≈2x as likely to be in poor households; during 1992-2004 this had risen to ≈ 3-4x higher, and by 2007-2008 it was ≈ 7x higher [23]).

Figure 8. Proportion of Dependent Children Living Below the 60% Income Poverty Threshold (1998 Median, After Housing Costs) by Household Type and Work Status of Adults in the Household, New Zealand 1986-2008 HES Years



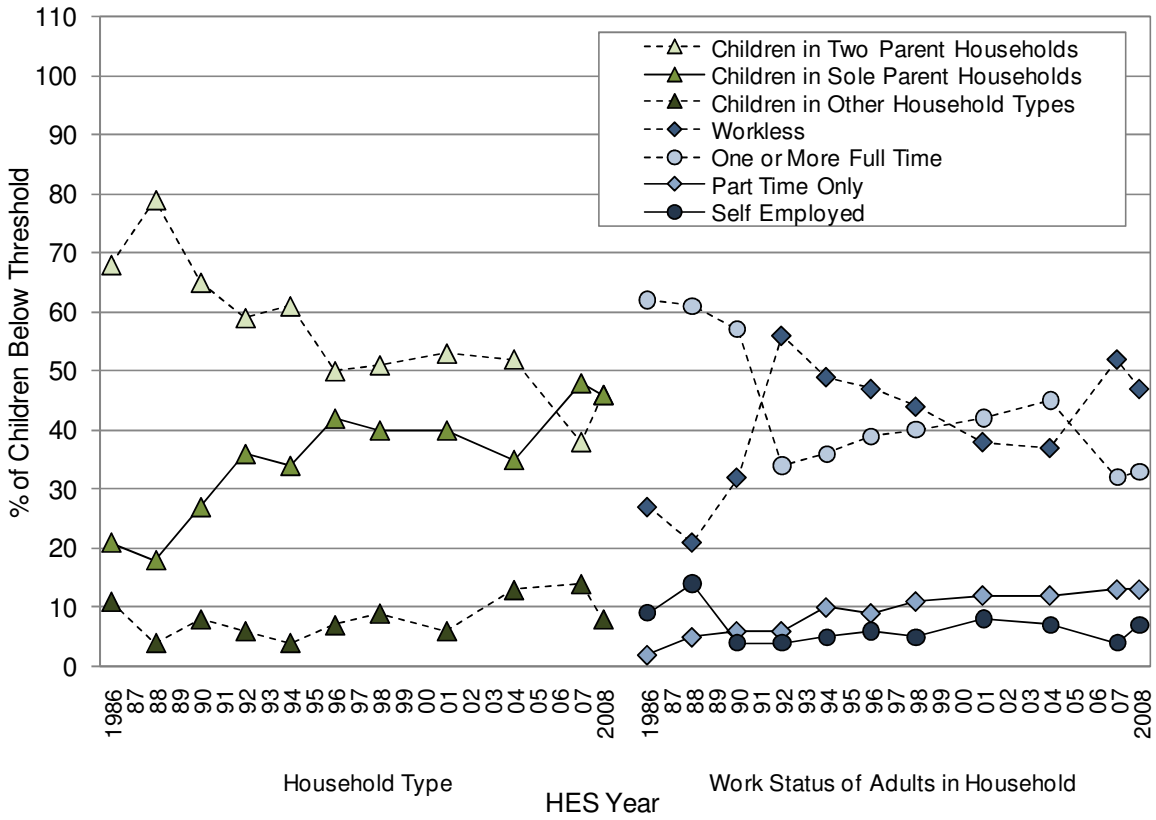
Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (HES) 1986-2008

Composition of Children Living in Poverty by Household Type and Work Status of Adults in Household

Household Type: In New Zealand during 1988-2007, the proportion of children living in poverty who were from two-parent households steadily declined, while the proportion who were in one-parent households increased. Thus by 2008, 46% of all children living in poverty were in one-parent households, as compared to 18% in 1988 (**Figure 9**).

Work Status of Adults in Household: In New Zealand during 1986, the highest proportion of children living in poverty came from families where at least one adult worked full time. During 1988-1992 however, the proportion of children living in poverty who were from households where at least one adult worked full time declined markedly, while the proportion of children from workless households increased, so that by 1992 children from workless families made the greatest contribution to those living in poverty. During the 1990s however, these trends reversed, so that by 2004 a greater proportion of children living in poverty again came from households where at least one adult worked. Following the introduction of the Working for Families package, these trends reversed yet again. Thus during 2008, the highest proportion of children living in poverty came from workless households (**Figure 9**).

Figure 9. Composition of Dependent Children Who Were Living Below the 60% Income Poverty Threshold (1998 Median, After Housing Costs) by Household Type and Work Status of Adults in the Household, New Zealand 1986-2008 HES Years



Source: Perry 2009 [25], derived from Statistics NZ's Household Economic Survey (HES) 1986-2008: Note: Totals in Each Category Sum to 100% of Children Living Below Poverty Line

Summary: Child Poverty

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 however, rates declined, as economic conditions improved and unemployment fell. During 1998-2004, child poverty trends varied, depending on the measure used, but between 2004 and 2007 they again declined, following the roll out of the Working for Families package. For the majority of this period, child poverty rates were higher for younger children (0-11 vs. 12-17 years), larger households (3+ children vs. 1-2 children), sole parent households and households where the adults were either workless, or where none worked full time.

Families with Reduced Living Standards

Data Source and Methods

Definition

Distribution of Families with Dependent Children by the NZ Economic Living Standards Index (NZELSI)

Data Source

The Ministry of Social Development's 2004 Living Standards Report [16]

Interpretation

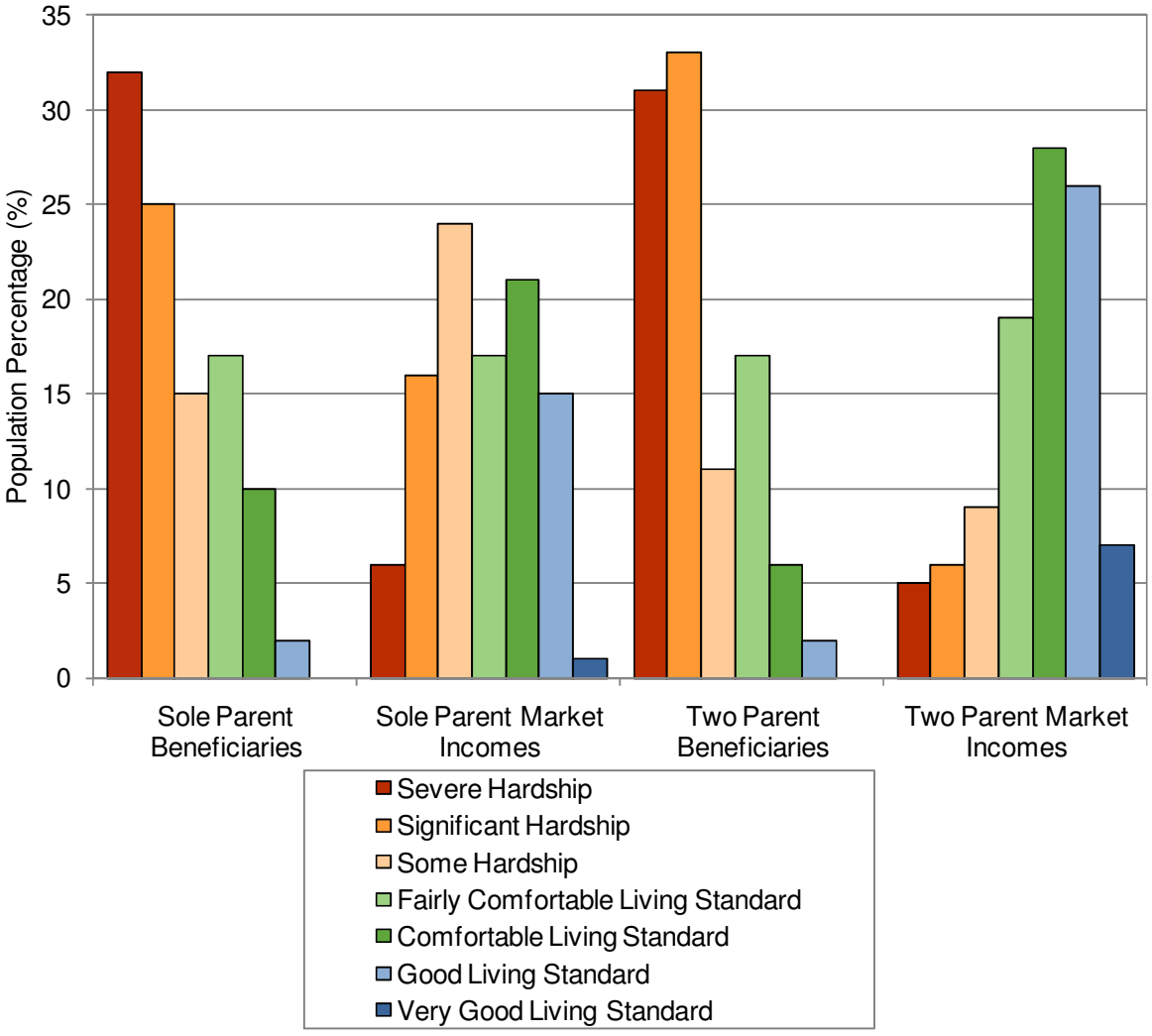
The Economic Living Standard Index (ELSI) uses information on 40 items, which individually have a strong relationship with living standards (e.g. household amenities, personal possessions, access to services, and adequacy of income to meet everyday needs). The 2004 Living Standards Survey used the ELSI to survey a probabilistic sample of New Zealand residents aged 18+ years in March and June 2004. A total of 4,989 respondents answered on behalf of their family units, giving a response rate of 62.2%. The results in this section relate to the living standards of families with dependent children, with the level of analysis being the economic family unit, rather than the individual child. A more detailed discussion of the methodology used and the limitations of this survey can be found in the New Zealand Living Standards 2004 Report [16].

Living Standards by Family Type and Income Source

In the 2004 Living Standards Survey, 30% of all economic family units contained dependent children. While only 10% of family units without children were living in severe or significant hardship, this figure rose to 22% for families with dependent children.

The proportion living in severe or significant hardship also varied with family type and income source, with 42% of sole-parent families being classified as living in severe or significant hardship, as compared to only 14% of two–parent families. Similarly, 58% of families who relied on income tested benefits were classified as living in severe or significant hardship, as compared to 12% of families receiving their income from market sources. Further analysis however, suggested that the difference in living standards between sole and two-parent families was largely due to the former's greater reliance on benefits as their main source of family income [16] (**Figure 10**).

Figure 10. Living Standards Distribution of Families with Dependent Children by Family Type and Income Source, New Zealand Living Standards Survey 2004

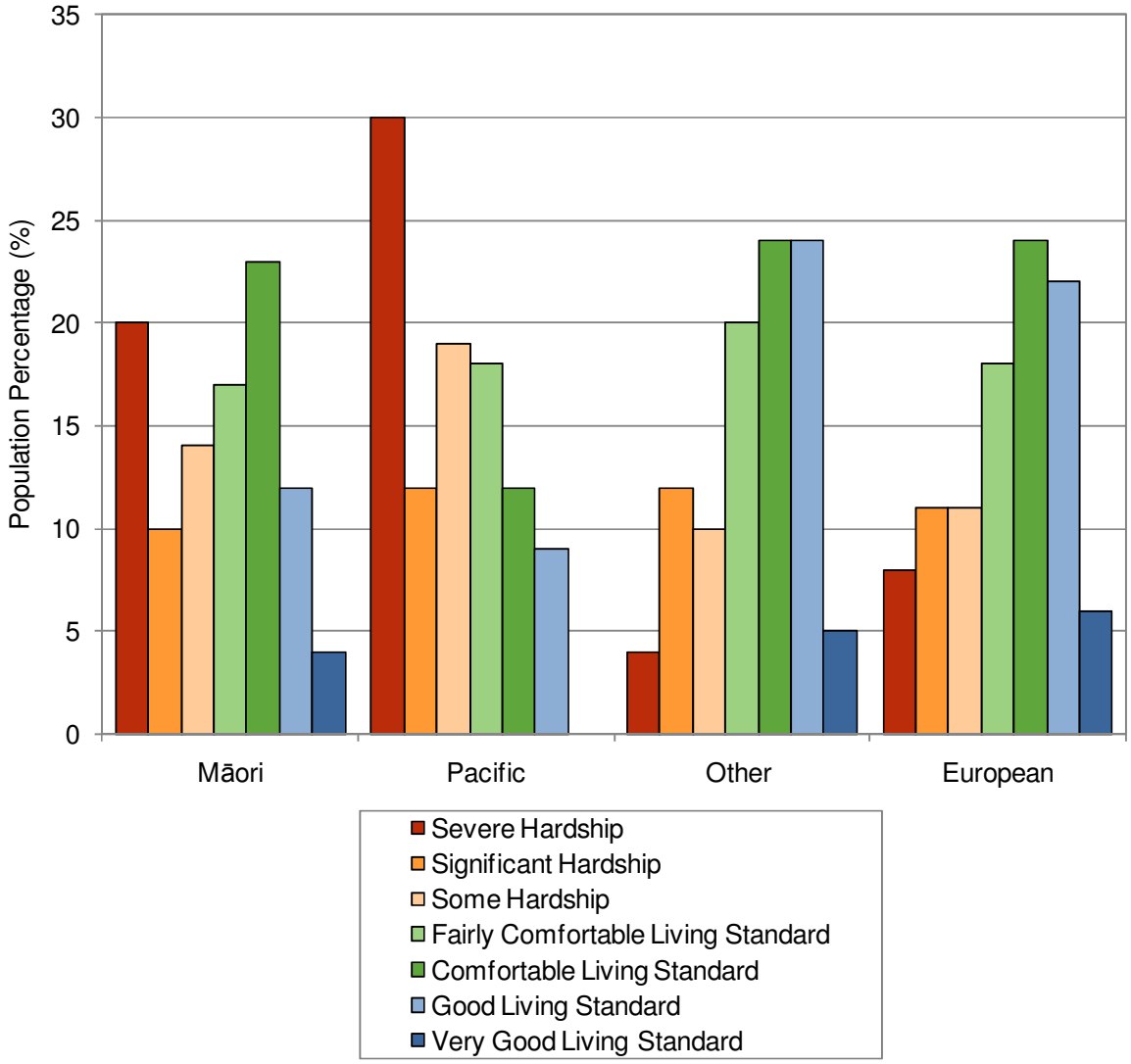


Source: NZ Living Standards Survey [16].

Living Standards by Ethnicity of Family Members

The 2004 Living Standards Survey also noted that European and Other families with dependent children had higher average living standards (37.6 and 38.4 respectively) than Pacific and Māori families with dependent children (25.3 and 31.6 respectively). Of note, 30% of all Pacific families with dependent children in the 2004 Survey reported living in severe hardship, as compared to 20% of Māori families, 8% of European families and 4% of Other families (**Figure 11**).

Figure 11**.** Living Standards Distribution of Families with Dependent Children by Family Ethnicity, New Zealand Living Standards Survey 2004



Source: NZ Living Standards Survey [16]; Family Ethnicity is based on total responses to the ethnicity question e.g. if any adult or child specified Pacific as one of their ethnicities, the family is counted as Pacific – thus these ethnic groupings are not mutually exclusive.

Constraints Placed on Children's Consumption by their Families Living Standards

The 2004 Living Standards Survey also explored the constraints placed on children's consumption arising from their families living standards and noted that of children living in severe hardship, 51% had to go without suitable wet weather gear, 38% were unable to have a friend over for a meal, and 34% were unable to have friends over for a birthday party because of the cost. In addition, 46% of parents had postponed a child's doctor's visit and 36% had postponed a child's dentist's visit because of cost, and in 40% of cases children had to share a bed [16] (**Table 3**).

Table 3. Constraints on Children's Consumption by their Family's Standard of Living, New Zealand Living Standards Survey 2004

Category	Severe Hardship (Level 1)	Some Hardship (Level 3)	Good / Very Good Living Standards (Level 6 & 7)
Items Not Obtained / Not Participated in Because of Cost (% of Respondents)			
Suitable Wet Weather Clothing for Each Child	51	13	2
A Pair of Shoes in Good Condition	35	5	0
Child's Bike	45	10	1
Play Station or Xbox	37	10	1
Personal Computer	55	23	1
Internet Access'	51	23	0
Pay for Childcare	35	15	2
Have Child's Friends Over for a Meal	38	6	0
Enough Room for Child's Friends to Stay the Night	35	9	0
Have Child's Friends to a Birthday Party	34	11	1
Items of Consumption Cut Back on (a Little or a Lot) Because of Cost (% of Respondents)			
Not Gone on School Outings	66	26	0
Not Brought School Books / Supplies	49	19	0
Not Brought Books for Home	61	33	1
Postponed Child's Visit to Doctor Because of Cost	46	20	1
Postponed Child's Visit to Dentist Because of Cost	36	20	1
Child Went Without Glasses	15	10	0
Child Went Without Cultural Lessons	55	40	4
Child's Involvement in Sports Limited	66	40	1
Child Wore Poorly Fitting Clothes or Shoes	65	33	1
Children Share a Bed	40	7	0
Limited Space for Child to Study or Play	72	34	1

Source: NZ Living Standards Survey [16].

Summary: Living Standards

In the 2004 Living Standards Survey, 30% of economic family units contained dependent children. While only 10% of family units without children lived in severe or significant hardship, this figure rose to 22% for families with dependent children. In addition, a much higher proportion of sole-parent families lived in severe or significant hardship than two parent families, although these differences were largely attributed to sole-parent families' greater reliance on benefits as their main source of family income. Pacific and Māori families were also significantly more likely to live in severe hardship, than European or Other families.

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

Table 2 on **Page 14** considers local policy documents and evidence based reviews relevant to the social determinants of health, including policies which might reduce poverty rates in families with children.

UNEMPLOYMENT RATES

Introduction

In the quarter ending September 2009, the seasonally adjusted unemployment rate rose to 6.5%, the seventh consecutive quarterly rise [27]. During this period, unemployment rates were higher for Māori and Pacific people, young people (particularly those 15-19 years) and those without formal qualifications [28]. Such increases are of concern for New Zealand children and young people 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 [29], 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 parent's emotional state [29]. 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 [8].

Secondly, for young people 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 [30]. 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 [30]). On a more positive note, research also suggests that this psychological distress decreases once young people find permanent employment, or return to further education [30].

The following section uses information from Statistics New Zealand's Quarterly Household Labour Force Surveys, to review unemployment rates during the past two decades.

Data Source and Methods

Definition
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

Indicator Category: Proxy B

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 [31]:

(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

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.

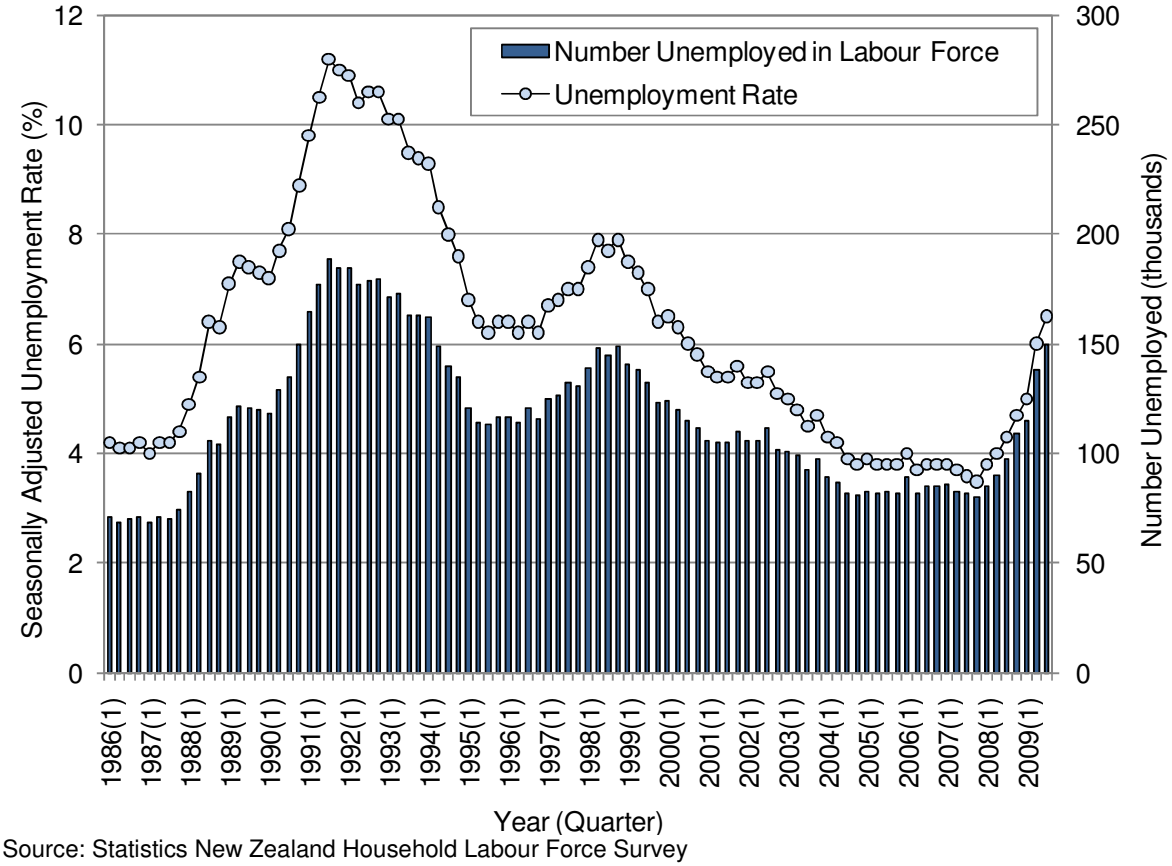
Note 2: Seasonal adjustment makes data for adjacent quarters more comparable by smoothing out the effects of any regular seasonal events. This ensures the underlying movements in time series are more visible. Each quarter, the seasonal adjustment process is applied to the latest and all previous quarters. This means that seasonally adjusted estimates for previously published quarters may change slightly [31].

New Zealand Distribution and Trends

Seasonally Adjusted Unemployment Rates

In the quarter ending September 2009, the seasonally adjusted unemployment rate rose to 6.5%, the seventh consecutive quarterly rise (**Figure 12**). Seasonally adjusted unemployment numbers also increased by 12,000 (9.0%), to 150,000, the highest since March 1994. This increase was largely driven by male unemployment, which rose by 9,000. In contrast, employment continued to decline, with seasonally adjusted employment numbers falling by 17,000 (0.8%). This fall was largely driven by male-full time employment, which fell by 14,000 (1.3%). In contrast, female employment increased during the quarter [27].

Figure 12. Seasonally Adjusted Unemployment Rates, New Zealand 1986 (Quarter 1)-2009 (Quarter 3)



Source: Statistics New Zealand Household Labour Force Survey

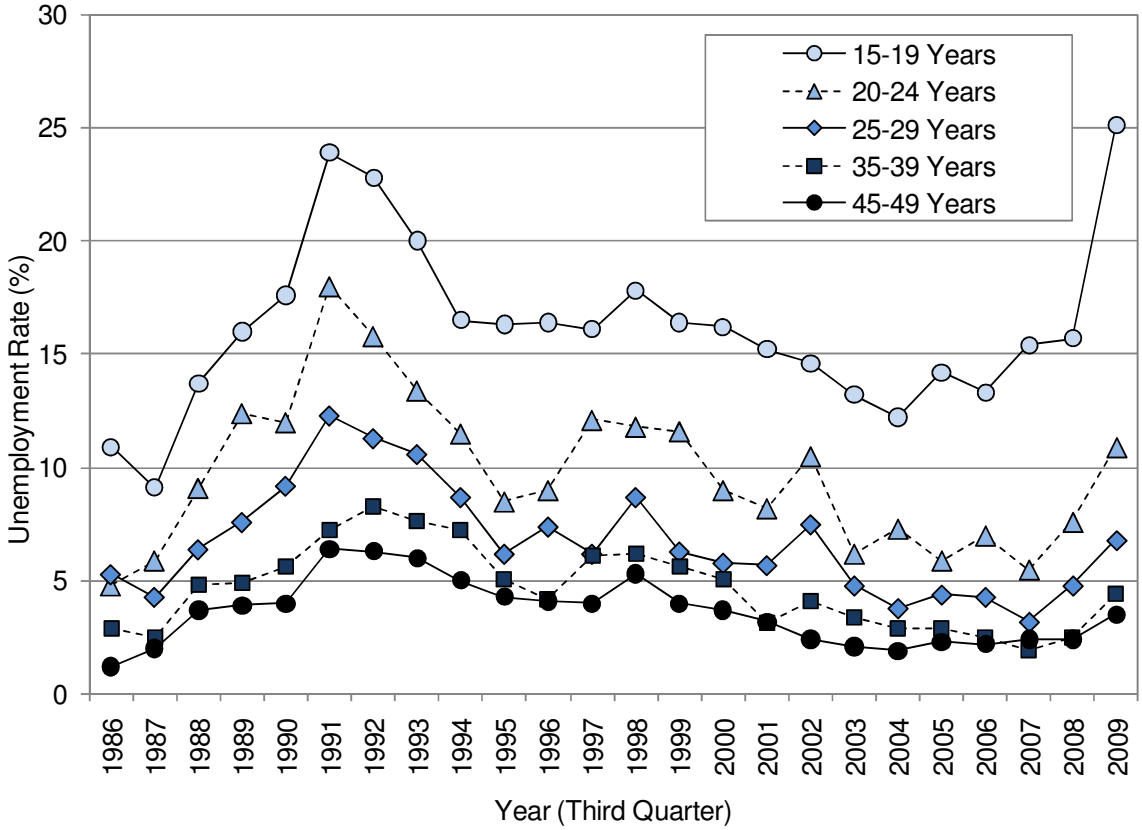
Unemployment Rates by Age

In New Zealand during the third quarters of 1986-2009, unemployment rates were consistently higher for younger people (i.e. those 15-19 years >20-24 years > 25-29 years > 35-39 years and 45-49 years). During the quarter ending September 2009, unemployment rates were 25.1% for those aged 15-19 years, and 10.9% for those aged 20-24 years (**Figure 13**).

Unemployment Rates by Age and Gender

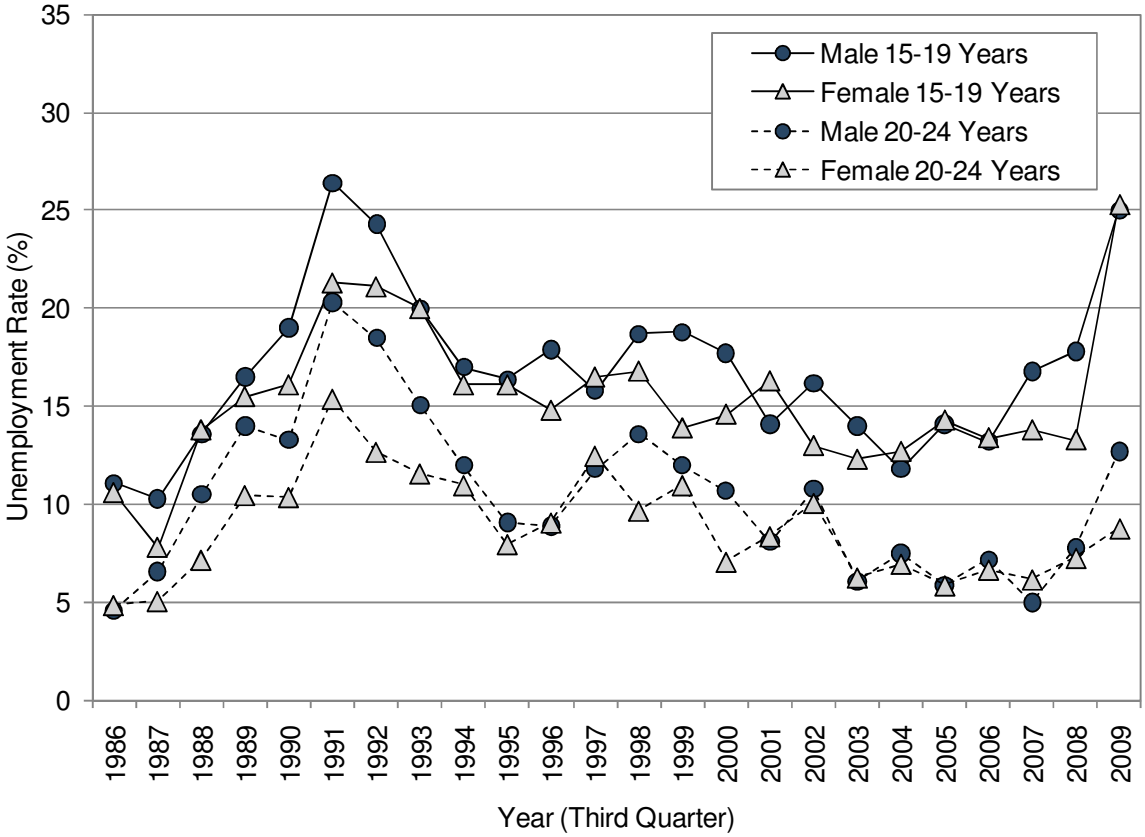
In New Zealand during the third quarters of 1986-2009, there were no consistent gender differences in unemployment rates amongst young people aged 15-24 years. During the quarter ending September 2009, unemployment rates for those aged 15-19 years were 25.3% for females and 25.0% for males, while for those aged 20-24 years, rates were 8.8% for females and 12.7% for males (**Figure 14**).

Figure 13. Unemployment Rates by Age (Selected Age Groups), New Zealand Third Quarters 1986-2009



Source: Statistics New Zealand Household Labour Force Survey

Figure 14. Unemployment Rates by Age and Gender in New Zealand Young People 15-24 Years, Third Quarter 1986-2009



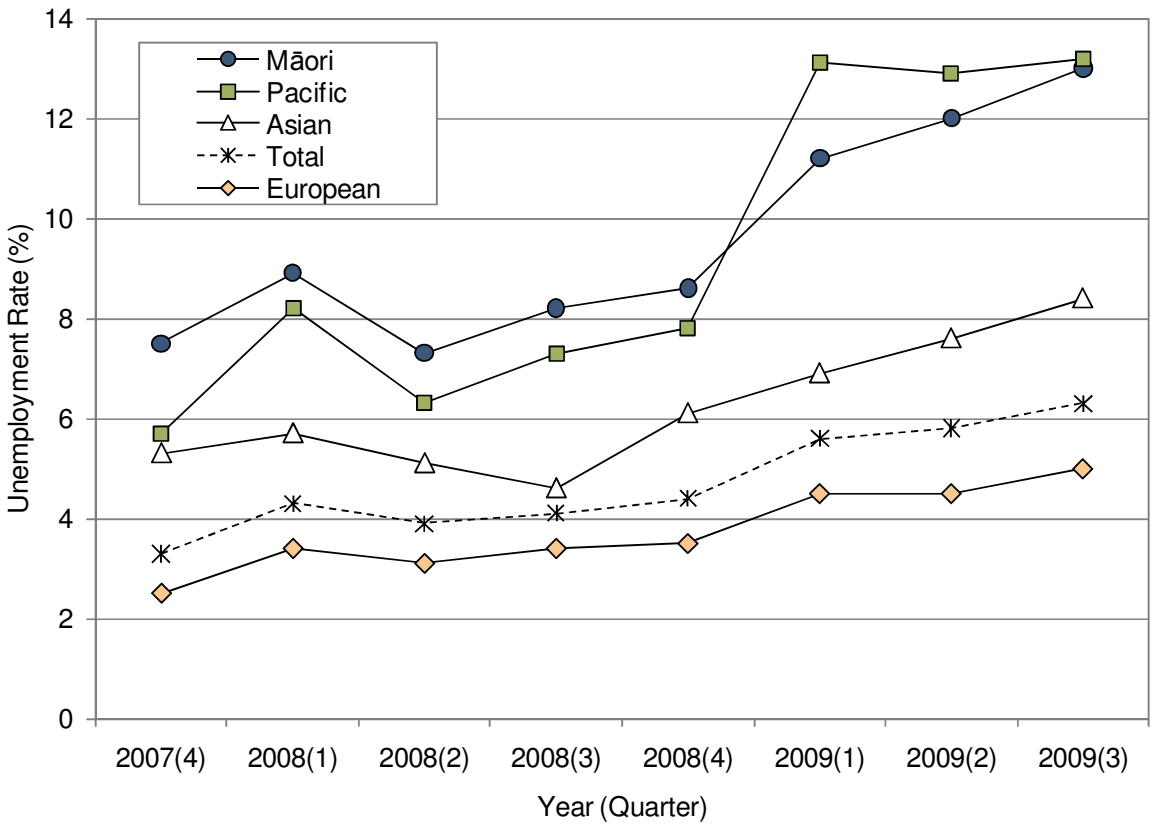
Source: Statistics New Zealand Household Labour Force Survey

Unemployment Rates by Ethnicity
In New Zealand during 2007(Q4)-2009(Q3), unemployment rates were consistently higher for Māori and Pacific > Asian > European people. While unemployment rates increased for all ethnic groups between 2008(Q3) and 2009(Q3), in absolute terms, increases were greatest for Māori and Pacific people. Thus by 2009(Q3), unemployment rates were 13.2% for Pacific, 13.0% for Māori, 8.4% for Asian and 5.0% for European people (**Figure 15**).

Unemployment Rates by Qualification
In New Zealand during the years ending September 1987-2009, unemployment rates were higher for those with no qualifications > school qualifications, or post school but no school qualifications > both post school and school qualifications. In the year ending September 2009, unemployment rates were 9.2% for those with no qualifications, 6.7% for those with a school qualification, 5.6% for those with post school but no school qualifications and 3.6% for those with both post school and school qualifications (**Figure 16**).

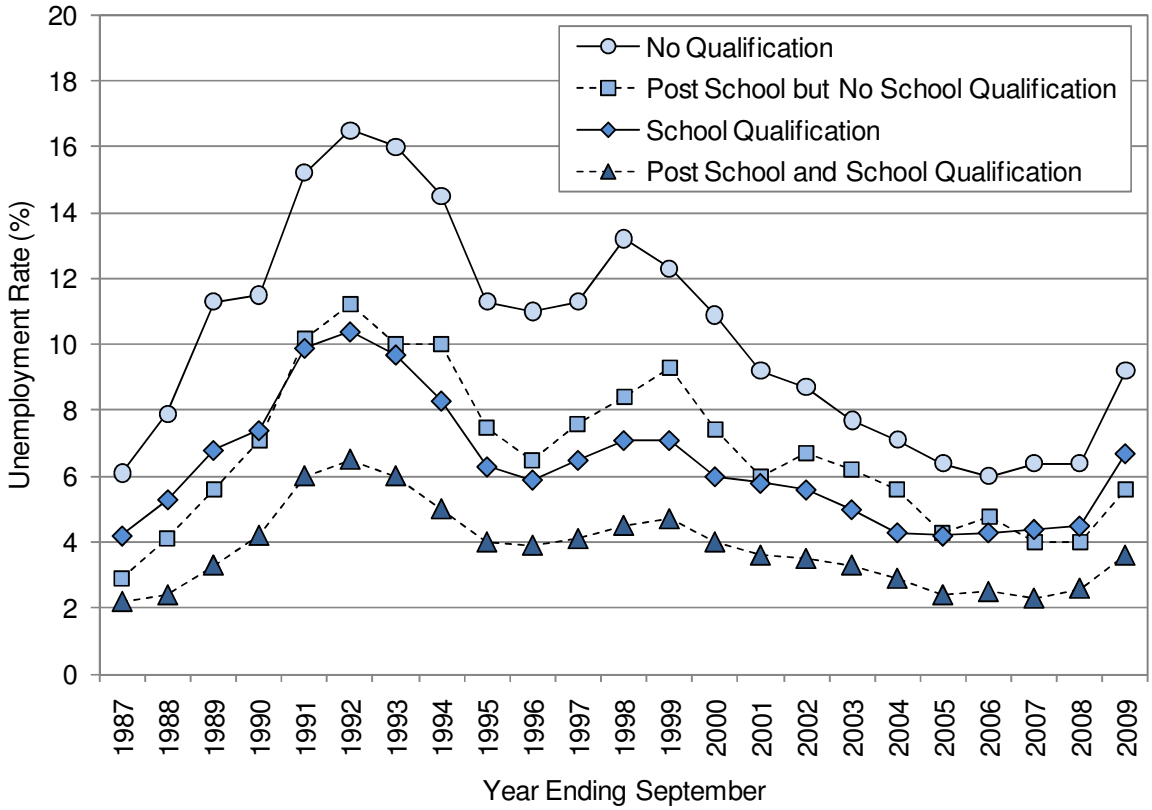
Duration of Unemployment
In New Zealand during the years ending September 1987-2009, duration of unemployment varied markedly, and in a manner consistent with prevailing unemployment rates. Thus the highest proportion of people unemployed for 53+ weeks occurred during the early / mid 1990s, when unemployment rates were at their peak, while the highest proportion unemployed for only 1-4 weeks occurred in the mid-2000s, when unemployment rates were at their lowest (**Figure 17**).

Figure 15. Unemployment Rates by Total Response Ethnicity, New Zealand 2007 (Quarter 4) - 2009 (Quarter 3)



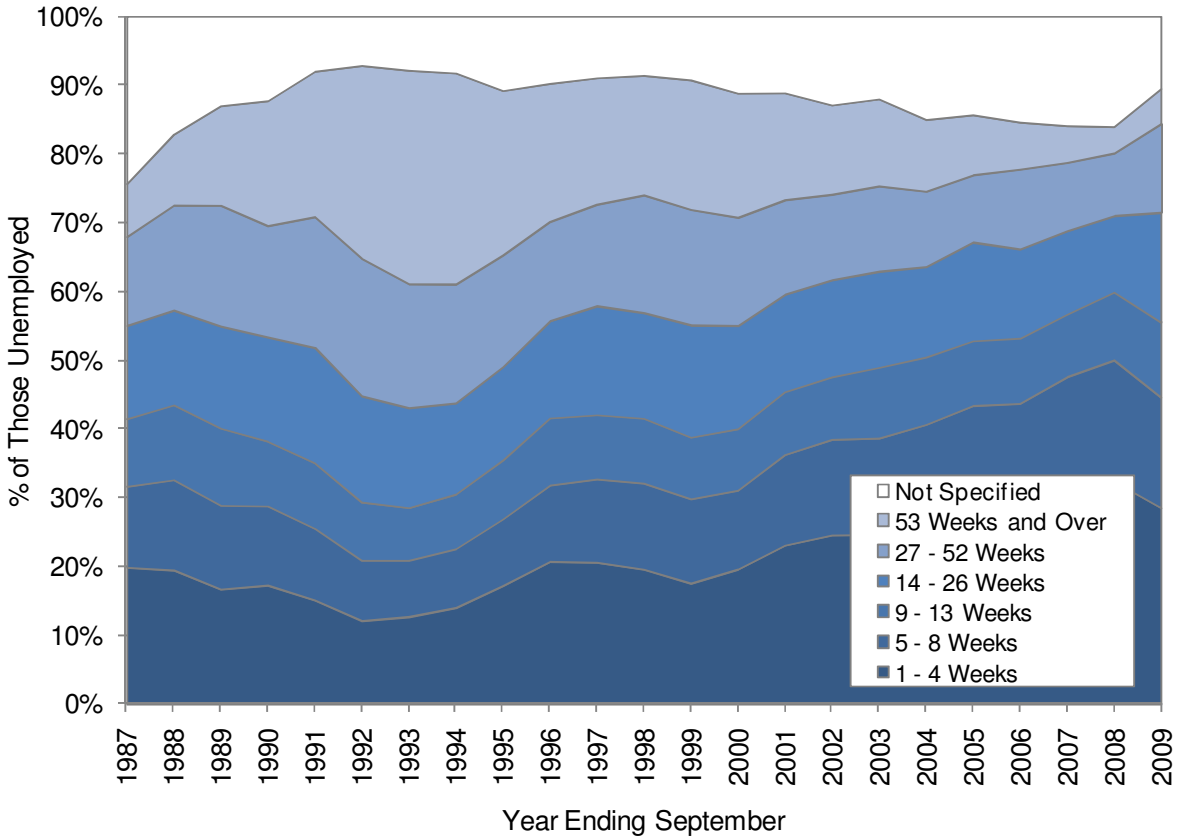
Source: Statistics New Zealand Household Labour Force Survey. Note: Ethnicity is Total Response

Figure 16. Unemployment Rates by Qualification, New Zealand September 1987-2009



Source: Statistics New Zealand Household Labour Force Survey

Figure 17. Proportion of Those Unemployed by Duration of Unemployment, New Zealand September 1987-2009



Source: Statistics New Zealand Household Labour Force Survey

Regional Trends

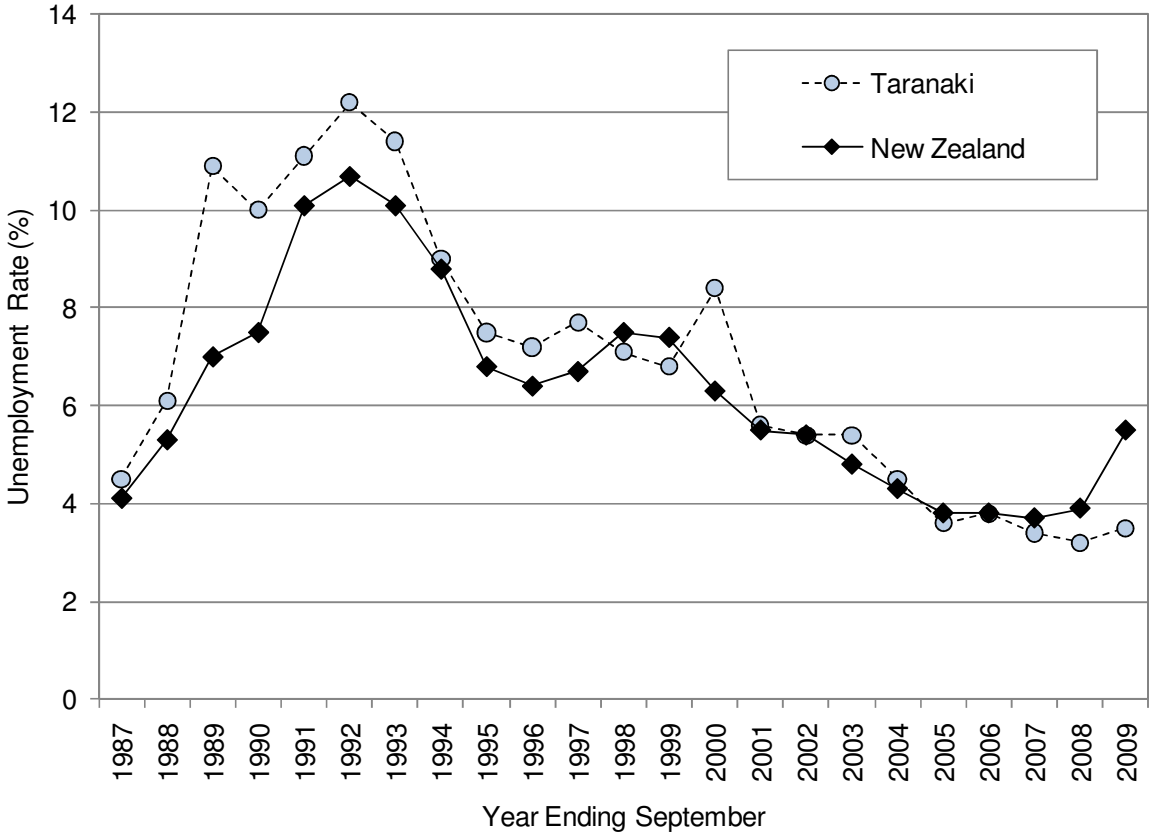
Regional Unemployment Rates: Annual

In the Taranaki Region during the years ending September 1987-2009, unemployment trends were similar to those occurring nationally, with the highest rates being seen in the year ending September 1992, when they peaked at 12.2%. During the 2000s, rates reached their lowest point, at 3.2% in the year ending September 2008, before increasing slightly to 3.5% in the year ending September 2009 (**Figure 18**).

Regional Unemployment Rates: Quarterly

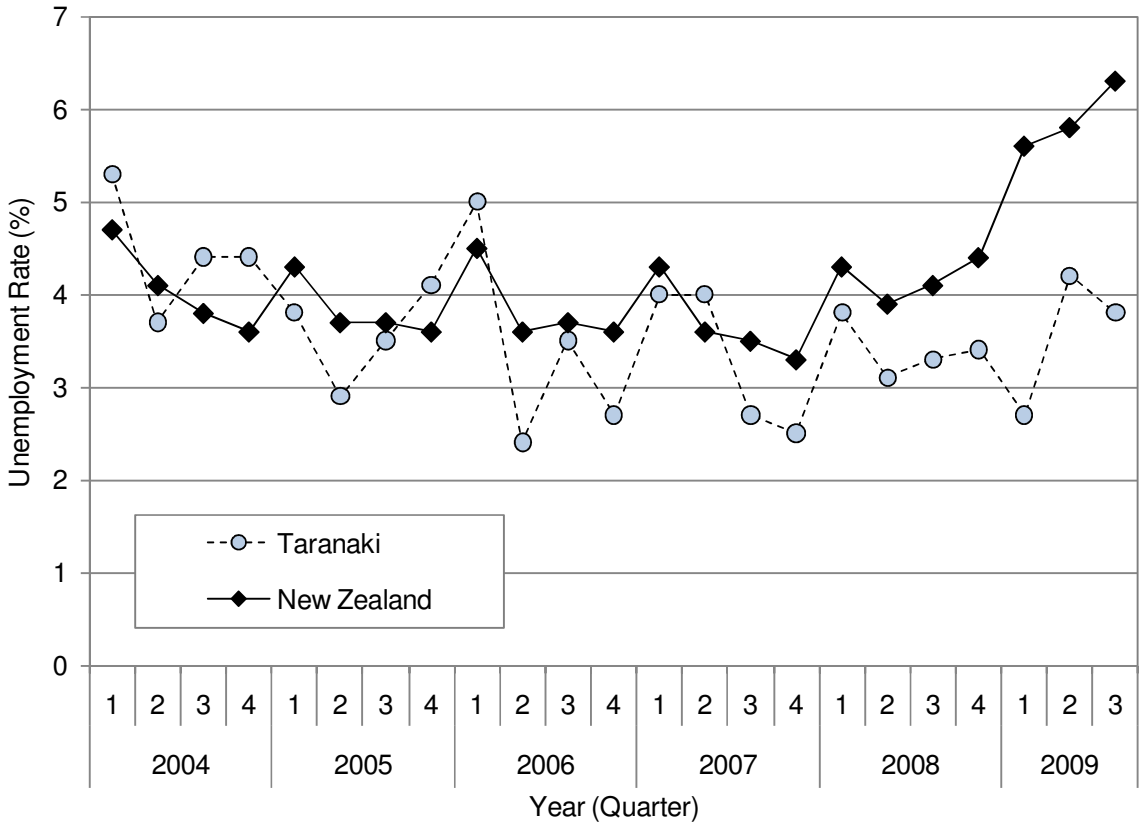
In the Taranaki Region during 2004(Q1)-2009(Q3) unemployment rates remained relatively static. Thus rates were similar to the New Zealand average during 2004-2007, but became lower than the New Zealand average as rates increased elsewhere during 2008 and 2009 (**Figure 19**).

Figure 18. Annual Unemployment Rates by Regional Council, Taranaki vs. New Zealand
Years Ending September 1987-2009



Source: Statistics New Zealand Household Labour Force Survey

Figure 19. Quarterly Unemployment Rates by Regional Council, Taranaki vs. New Zealand 2004-2009



Source: Statistics New Zealand Household Labour Force Survey

Summary

In the quarter ending September 2009, the seasonally adjusted unemployment rate rose to 6.5%, its seventh consecutive quarterly rise. Seasonally adjusted unemployment numbers also increased by 12,000 (9.0%), to 150,000, the highest since March 1994. Over the longer term (September 1987-2009), while no marked gender differences were evident, unemployment rates were higher for younger people (15-19 years > 20-24 years > 25-29 years > 35-39 years and 45-49 years) and those with no qualifications. During 2007(Q4)-2009(Q3), unemployment rates were also higher for Māori and Pacific > Asian > European people.

In the Taranaki Region during the years ending September 1987-2009, unemployment trends were similar to those occurring nationally, with the highest rates being seen in the year ending September 1992, when they peaked at 12.2%. During the 2000s, rates reached their lowest point, at 3.2% in the year ending September 2008, before increasing slightly to 3.5% in the year ending September 2009. On a quarterly basis, unemployment rates during 2004(Q1)-2009(Q3) remained relatively static. Thus rates were similar to the New Zealand average during 2004-2007, but became lower than the New Zealand average as rates increased elsewhere during 2008 and 2009.

Local Policy Documents and Evidence Based Reviews Relevant to the Social Policy Environment for Children

Table 2 on **Page 14** considers local policy documents and evidence based reviews relevant to the social determinants of health, including policies which might reduce the impact of unemployment on families with children.

CHILDREN RELIANT ON BENEFIT RECIPIENTS

Introduction

In New Zealand, children who are reliant on benefit recipients are a particularly vulnerable group. During 2008, 63% of all households (including those with and without children) relying on benefits as their main source of income were living below the poverty line (housing adjusted equivalent disposable income <60% median) [23]. This proportion has fluctuated markedly over the past two decades, rising from 24% of benefit dependent households in 1990, to a peak of 66% in 1994 and then gradually falling back again to 54% in 2007 [23], with these fluctuations 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 [15]. Further, benefit dependent children account for the majority of those living in poverty, with ~60% of children living below the poverty line in 2004, relying on Government benefits as their main source of family income [32].

The vulnerability of benefit dependent children was further highlighted by the 2000 Living Standards Survey, which noted that even once the level of family income was taken into account, families whose main source of income was Government benefits were more likely to be living in severe or significant hardship and as a consequence, more likely to buy cheaper cuts of meat, go without fruit and vegetables, put up with feeling cold to save on heating costs, make do without enough bedrooms, have children share a bed, postpone a child's visit to the doctor or dentist, go without a computer or internet access and limit their child's involvement in school trips, sports and extracurricular activities [15]. The 2004 Living Standards Survey suggested that the picture may have worsened between 2000 and 2004, with the proportion of benefit dependent families living in severe or significant hardship increasing from 39% in 2000 to 58% in 2004 [16].

The following section reviews the number of children aged 0-17 years who were dependent on benefit recipients during April 2000-2009, using information from the Ministry of Social Development's SWIFTT database. While the number of children reliant on benefit recipients does not correlate precisely with the number living below the poverty line (in 2004 they comprised 60% of those in poverty [32]), in the context of New Zealand's rising unemployment rates, they nevertheless reflect a particularly vulnerable group, who may have higher health needs, and as a consequence, may impact increasingly on future health service demand.

Data Source and Methods

Definition

Children Reliant on a Benefit or a Benefit Recipient by Benefit Type

Data Source

Numerator: Number of Children Aged 0-17 years (NZ Level) or 0-18 years (Service Centre Level) who were reliant on a Benefit, or Benefit Recipient as recorded in the Ministry of Social Development's SWIFTT database
Denominator: NZ Census

Indicator Category Ideal B-C

Notes on Interpretation

Data was provided by the MSD from their SWIFTT database which records information on recipients of financial assistance through Work and Income for 2000-2009. All figures unless stated otherwise, refer to the number of children who were dependent on a benefit or benefit recipient as at the end of April and provide no information on those receiving assistance at other times of the year. Note: New Zealand level trend data is for children 0-17 years, whereas Service Centre Data is for children 0-18 years.

To be eligible for a benefit, clients must have insufficient income from all sources to support themselves and any dependents and meet the eligibility criteria for benefits. These are:

Domestic Purposes Benefit – Sole Parent (DPB-SP) and Emergency Maintenance Allowance: This benefit provides income support for sole parents living with their dependent children under 18 years, who meet an income test and are New Zealand citizens or permanent residents. To be eligible, a parent must be 18 years or older OR have been legally married or in a civil union. A 16 or 17 year old sole parent who has never

been married may be eligible to receive an Emergency Maintenance Allowance. This emergency benefit can also be paid to sole parents aged 18 and over who do not meet specific criteria for DPB-SP or other benefits.

Unemployment Benefits: Unemployment benefits are available to people who are available for and actively seeking full time work. Clients must be aged 18+ years or 16-17 years and living with a spouse or partner and dependent children. Those receiving unemployment benefits are subject to a full time work test, as are their spouses or partners if they have no dependent children, or if their youngest dependent child is aged 14+ years. Applicants must have continuously lived in New Zealand for 2 years or more. An Unemployment Benefit-Hardship is available to those who do not meet these criteria but who are not successfully able to support themselves through paid employment or by other means.

Sickness Benefit: To be eligible for a Sickness Benefit people need to be 18 years of age, or 16-17 years of age and either 27+ weeks pregnant or living with a partner and children they support. They must have had to stop working or reduce their hours because of sickness, injury, pregnancy or disability OR, if unemployed or working part time, find it hard to look for or do full time work for the same reasons. To qualify, a person's (and their partner's) income must be below a certain level and they must have a medical certificate, the first of which can last for only up to 4 weeks. For pregnant women, payments may continue for up to 13 weeks after the birth of their child. At least 2 years' residence is required, though a benefit may be granted in cases of hardship.

Invalid's Benefit: To be eligible for an Invalid's Benefit, people need to be 16+ years of age and unable to work 15+ hours a week because of a sickness, injury or disability which is expected to last at least 2 years OR their life expectancy is <2 years and they are unable to regularly work 15+ hours a week OR they are blind with a specified level of visual impairment. A doctor's certificate is required and an applicant must be a New Zealand citizen or permanent resident and have lived in New Zealand for 10 years or more.

Other Benefits: In this section, Other Benefits includes DPB Women Alone and Caring for Sick or Infirm, NZ Superannuation, Veterans and Transitional Retirement Benefit, Emergency Benefits and Widows Benefit, Independent Youth Benefit, Unemployment Benefit Training and Unemployment Benefit Training Hardship, Unemployment Benefit Student Hardship, Orphan's Benefit and Unsupported Child's Benefit.

New Zealand Distribution and Trends

Total Number of Children Reliant on a Benefit or Benefit Recipient

In New Zealand, the number of children aged 0-17 years who were reliant on a benefit, or benefit recipient, fell from 278,788 in 2000, to 226,195 in 2009. A large proportion of this fall was due to declines in children relying on unemployment benefit recipients, with numbers in this category falling from 49,214 in 2000, to 5,254 in 2008, before increasing again to 11,499 in 2009. Similarly the number of children reliant on DPB recipients fell from 187,685 in 2000, to 157,622 in 2008, before increasing again to 166,513 in 2009 (**Table 4**).

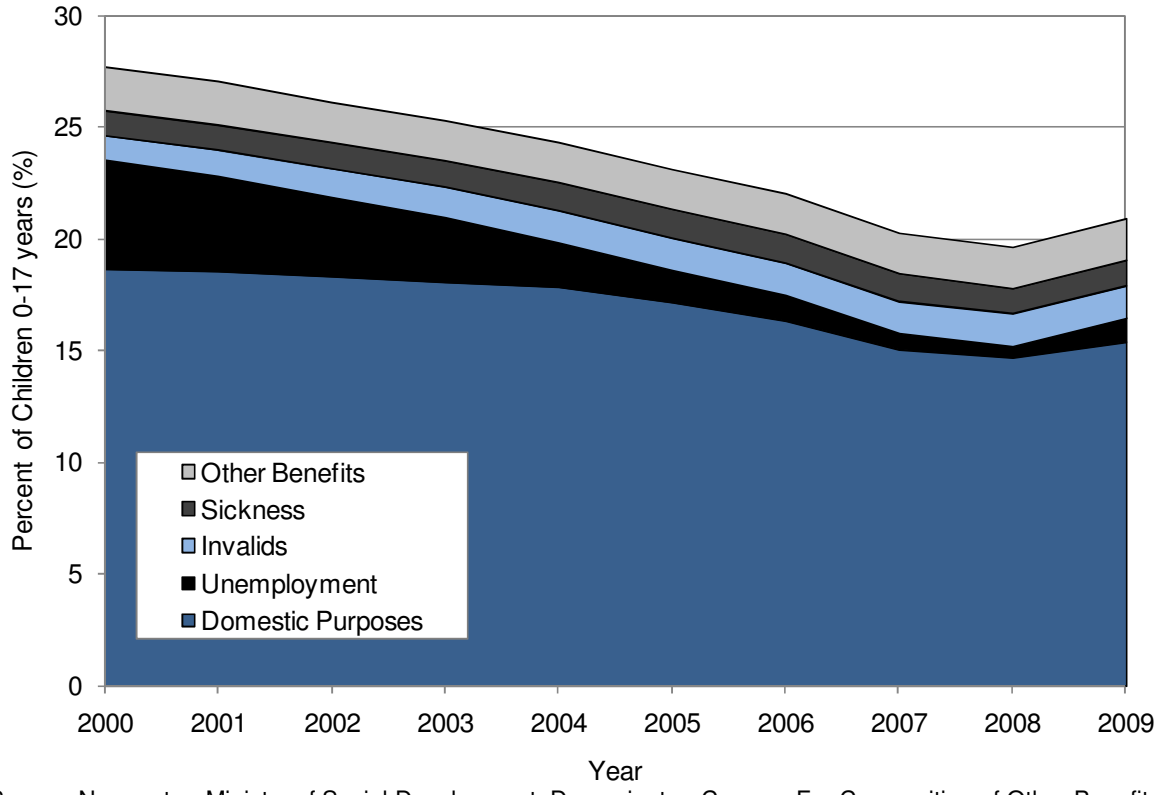
Proportion of All New Zealand Children Reliant on a Benefit Recipient

In New Zealand the proportion of children aged 0-17 years who were reliant on a benefit, or benefit recipient, fell from 27.7% in 2000 → 19.6% in 2008, before increasing again to 20.9% in 2009. A large proportion of the initial decline was due to a fall in the number of children reliant on unemployment benefit recipients (4.9% of children in 2000 → to 0.5% in 2008 → to 1.1% in 2009). While the proportion of children reliant on DPB recipients also fell (18.7% of children in 2000 → 14.7% in 2008 → 15.4% in 2009) (**Figure 20**), 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 67.3% of benefit dependent children in 2000, to 73.6% in 2009 (**Table 4**).

Age Distribution

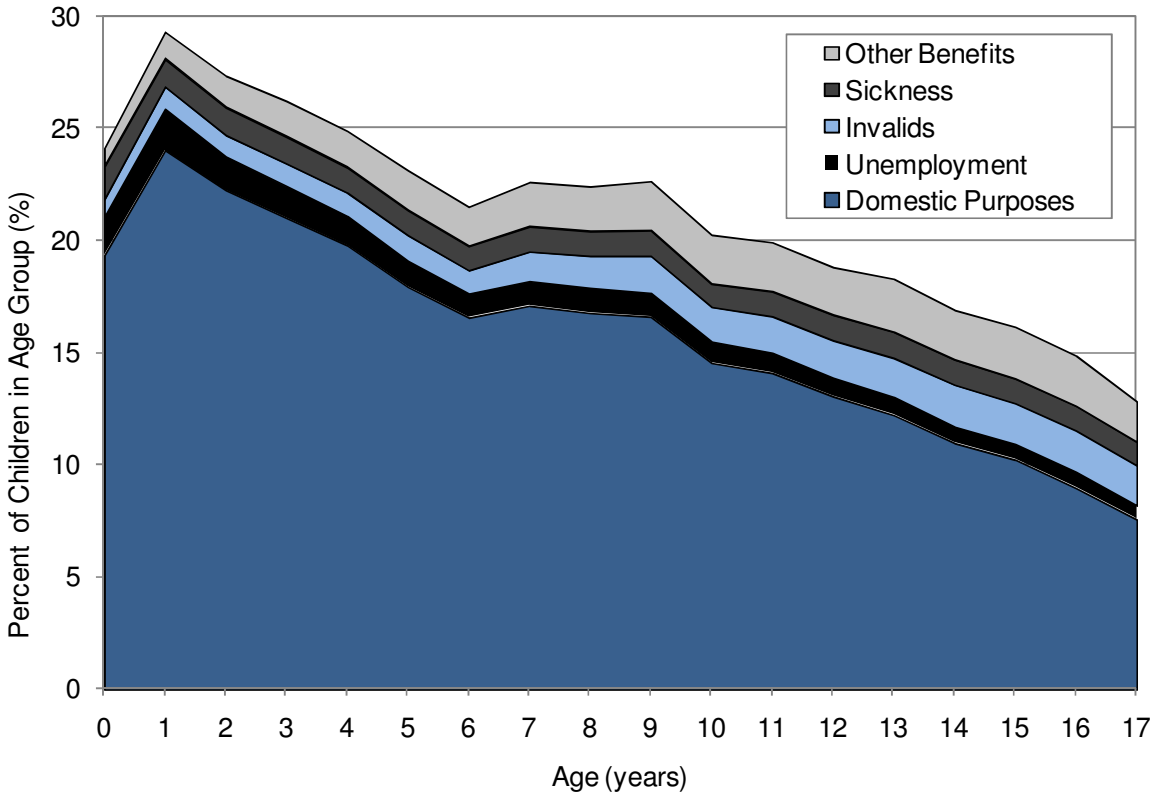
During 2009, the proportion of children reliant on a benefit, or benefit recipient, was highest amongst those 0-2 years of age. Rates then tapered off rapidly, reaching a plateau in middle childhood (6-9 years). After 9 years of age however, rates again declined, reaching their lowest point at 17 years of age (**Figure 21**).

Figure 20. Proportion of All Children Aged 0-17 Years Who Were Reliant on a Benefit Recipient by Benefit Type, New Zealand April 2000-2009



Source: Numerator: Ministry of Social Development; Denominator: Census; For Composition of Other Benefits, see Methods Section; Non Benefit Assistance not included.

Figure 21. Proportion of All Children Aged 0-17 Years Who Were Reliant on a Benefit Recipient by Age and Benefit Type, New Zealand April 2009



Source: Numerator: Ministry of Social Development; Denominator: Census; For Composition of Other Benefits, see Methods Section; Non Benefit Assistance not included.

Table 4. Number of Children Aged 0-17 Years Who Were Reliant on a Benefit Recipient by Benefit Type, New Zealand April 2000-2009

Year	Domestic Purposes		Unemployment		Invalid's		Sickness		All Other Benefits		Total
	Number	%*	Number	%*	Number	%*	Number	%*	Number	%*	Number
2000	187,685	67.3	49,214	17.7	11,028	4.0	11,191	4.0	19,670	7.1	278,788
2001	187,334	68.6	42,965	15.7	12,029	4.4	11,160	4.1	19,728	7.2	273,216
2002	186,712	70.2	36,111	13.6	13,110	4.9	11,896	4.5	18,194	6.8	266,023
2003	185,649	71.4	29,825	11.5	14,089	5.4	12,009	4.6	18,418	7.1	259,990
2004	185,087	73.4	20,517	8.1	14,931	5.9	13,040	5.2	18,549	7.4	252,124
2005	179,443	74.2	15,028	6.2	15,083	6.2	13,503	5.6	18,634	7.7	241,691
2006	172,349	74.2	11,977	5.2	15,172	6.5	13,625	5.9	19,172	8.3	232,295
2007	160,010	74.3	7,757	3.6	15,081	7.0	13,368	6.2	19,188	8.9	215,404
2008	157,622	74.9	5,254	2.5	15,777	7.5	11,979	5.7	19,871	9.4	210,503
2009	166,513	73.6	11,499	5.1	15,622	6.9	12,342	5.5	20,219	8.9	226,195

Source: Ministry of Social Development; *Note: % refers to % of children relying on benefit recipients, rather than % of all children. For Composition of Other Benefits, see Methods Section; Non Benefit Assistance not included.

Table 5. Number of Children Aged 0-18 Years Who Were Reliant on a Benefit Recipient by Benefit Type, for Service Centres in the Taranaki Region, April 2007- 2009 (Non-Benefits Excluded)

Year	DPB		Unemployment		Sickness		Invalid's		Other Benefits		Total
	Number	%*	Number	%*	Number	%*	Number	%*	Number	%*	Number
2007	3,931	75.9	198	3.8	232	4.5	401	7.7	415	8.0	5,177
2008	3,746	77.1	88	1.8	172	3.5	420	8.6	435	8.9	4,861
2009	3,855	75.7	181	3.6	175	3.4	424	8.3	458	9.0	5,093

Source: Ministry of Social Development; Service Centres include Hawera, New Plymouth, Stratford and Waitara; *Note: % refers to % of children relying on benefit recipients, rather than % of all children; For Composition of *Other Benefits*, see Methods Section; Non Benefit Assistance not included.

Table 6. Number of Children Aged 0-18 Years Who Were Reliant on a Benefit, Benefit Recipient or Other Form of Income Support by Benefit Type, for Service Centres in the Taranaki Region, April 2007- 2009 (Non-Benefits Included)

Service Centre	Year	DPB	Unemp	Sickness	Invalid's	Other Benefits	Non Benefits	Total
Hawera	2007	854	44	40	73	119	165	1,295
	2008	815	36	15	68	95	196	1,225
	2009	787	45	23	91	103	172	1,221
New Plymouth	2007	2,156	105	109	225	178	889	3,662
	2008	2,044	25	100	246	222	913	3,550
	2009	2,131	89	108	218	230	865	3,641
Stratford	2007	432	18	19	51	56	84	660
	2008	408	13	15	48	64	85	633
	2009	426	26	13	54	64	77	660
Waitara	2007	489	31	64	52	62	165	863
	2008	479	14	42	58	54	136	783
	2009	511	21	31	61	61	156	841
Taranaki Total	2007	3,931	198	232	401	415	1,303	6,480
	2008	3,746	88	172	420	435	1,330	6,191
	2009	3,855	181	175	424	458	1,270	6,363

Source: Ministry of Social Development; For Composition of *Other Benefits*, see Methods Section.

Taranaki Distribution and Trends

Total Number of Children Reliant on a Benefit or Benefit Recipient

At the end of April 2009, there were 5,093 children aged 0-18 years who were reliant on a benefit or benefit recipient and who received their benefits from Service Centres in the Taranaki catchment. The majority of these children were reliant on DPB recipients, and in contrast to the increases seen elsewhere, the overall number of children on a benefit remained relatively static during 2006-2008 (although numbers declined slightly between 2006 and 2007, and then increased again between 2008 and 2009) (**Table 5**, **Table 6**).

Summary

In New Zealand the proportion of children (0-17 years) who were reliant on a benefit, or benefit recipient, fell from 27.7% in 2000 → 19.6% in 2008, before increasing again to 20.9% in 2009. A large proportion of this decline was due to a fall in the number of children reliant on unemployment benefit recipients, although this trend appears to have reversed in the past year. While the proportion reliant on DPB recipients also fell, 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 during this period.

At the end of April 2009, there were 5,093 children aged 0-18 years who were reliant on a benefit or benefit recipient and who received their benefits from Service Centres in the Taranaki catchment. The majority of these children were reliant on DPB recipients, and in contrast to the increases seen elsewhere, the overall number of children on a benefit remained relatively static during 2006-2008 (although numbers declined slightly between 2006 and 2007, and then increased again between 2008 and 2009).

Local Policy Documents and Evidence Based Reviews Relevant to the Social Policy Environment for Children

Table 2 on **Page 14** considers local policy documents and evidence based reviews relevant to the social determinants of health, including policies which might enhance the wellbeing of families with children who are reliant on Government benefits.

YOUNG PEOPLE RELIANT ON BENEFITS

Introduction

While adolescence is for many young people a time for investing in learning and acquiring new skills, it is also a time of vulnerability. While the majority of young people successfully complete their years of secondary education and continue on to further training and employment, a significant minority are unable to support themselves financially for a variety of reasons. For those who meet certain eligibility criteria, the Government offers a range of benefits. Those most commonly used by people 16-24 years are:

1. **Domestic Purposes Benefit – Sole Parent (DPB-SP)**: This benefit provides income support for sole parents living with dependent children <18 years, who meet eligibility criteria.
2. **Unemployment Benefits**: Unemployment benefits are available to those who are available for and actively seeking full time work. Young people must be aged 18+ years or 16-17 years and living with a spouse or partner and dependent children**.**
3. **Sickness Benefit**: Sickness Benefits are available to those 18+ years, or 16-17 years and either 27+ weeks pregnant, or living with a partner and dependent children. They must have had to stop working, or reduce their hours because of sickness, injury, pregnancy or disability OR, if unemployed or working part time, find it hard to look for or do full time work for the same reasons.
4. **Invalid's Benefit**: Invalid's Benefits are available to those 16+ years who are unable to work 15+ hours a week because of a sickness, injury or disability which is expected to last at least 2 years OR their life expectancy is <2 years and they are unable to regularly work 15+ hours a week OR they are legally blind.

The diversity of these criteria suggests that young people reliant on benefits form a particularly heterogeneous group, comprising those temporarily out of work, those caring for young children, and those unable to participate in the workforce for a variety of medical or other reasons. Such diversity is also reflected in the diverging trends for benefit uptake in recent years, with the proportion of young people reliant on sickness and invalid's benefits increasing, while the proportion relying on the DPB has decreased slightly [33]. In contrast, the proportion of young people reliant on unemployment benefits has tended to move with prevailing economic conditions, with the large declines in unemployment benefit uptake seen during the early-mid 2000s [33], reversing during the current year.

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 benefits during 2000-2009.

Data Source and Methods

Definition

Young People Aged 16-24 Years Reliant on a Core Benefit by Benefit Type.

Data Source

Numerator: Number of Young People Aged 16-24 Years Receiving a Core Benefit, as recorded in the Ministry of Social Development's SWIFTT database [34]

Denominator: NZ Census

Indicator Category Ideal B-C

Notes on Interpretation

Note 1: Data was provided by the Ministry of Social Development from their SWIFTT database, which records information on the recipients of financial assistance through Work and Income for the period April 2000 – April 2009. All figures, unless stated otherwise, refer to the number of young people aged 16-24 years in receipt of a core benefit at the end of April and thus provide no information on those receiving assistance from Work and Income at other times of the year.

Note 2: For Benefit Eligibility Criteria see the Data Sources and Methods section commencing on **Page 40**

Other Benefits: In this section, Other Benefits includes DPB Women Alone and Caring for Sick or Infirm, NZ Superannuation, Veterans and Transitional Retirement Benefit, Emergency Benefits and Widows Benefit, Independent Youth Benefit, Unemployment Benefit Training and Unemployment Benefit Training Hardship, Unemployment Benefit Student Hardship, Orphan's Benefit and Unsupported Child's Benefit.

New Zealand Distribution and Trends

Number of New Zealand Young People on Benefits

In New Zealand during 2000-2008, there were large declines in the number of young people aged 16-24 years receiving benefits, with overall numbers falling from 76,392 in April 2000 to 40,810 in April 2008. By April 2009 however, this had increased again to 55,745, with the largest absolute increases being in those receiving unemployment benefits (40,732 in April 2000 → 3,533 in April 2008 → 13,054 in April 2009). In contrast, the number receiving domestic purposes benefits declined much less rapidly, while the number receiving sickness and invalid's benefits increased. Thus while in 2000, unemployment benefits were the most frequent form of income support received by New Zealand young people, by 2009 the domestic purposes benefit was the predominant benefit type received (**Table 7**).

Table 7. Number of Young People Aged 16-24 Years Receiving a Benefit by Benefit Type, New Zealand April 2000-2009

Year	Unemployment		Domestic Purposes		Invalid's		Sickness		Other Benefits		Total
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.
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

Source: Ministry of Social Development; *Note: % refers to % of young people reliant on a benefit, rather than % of all young people. For Composition of Other Benefits, see Methods Section; Non Benefit Assistance not included.

Proportion of New Zealand Young People on Benefits

In New Zealand during 2000-2008, there were also large declines in the proportion of young people aged 16-24 years receiving benefits, with rates falling from 167.2 per 1,000 in April 2000, to 77.1 per 1,000 in April 2008. By April 2009 however, rates had increased again to 103.1 per 1,000, with the largest absolute increases again being in those receiving unemployment benefits (89.1 per 1,000 in April 2000 → 6.7 per 1,000 in April 2008 → 24.1 per 1,000 in April 2009). In contrast, the proportion reliant on domestic purposes benefits declined more slowly (43.4 per 1,000 in 2000 → 34.7 per 1,000 in 2008 → 37.5% per 1,000 in April 2009), while the proportion on invalid's and sickness benefits increased (**Table 8**).

Table 8. Rates per 1,000 for Young People Aged 16-24 Years Receiving a Benefit by Benefit Type, New Zealand April 2000-2009

Year	Unemployment		Domestic Purposes		Invalid's		Sickness		Other Benefits		Total Rate
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
2000	40,732	89.1	19,812	43.4	4,866	10.6	3,892	8.5	7,090	15.5	167.2
2001	35,808	79.4	19,645	43.6	5,185	11.5	4,066	9.0	7,085	15.7	159.2
2002	31,310	67.8	19,459	42.1	5,511	11.9	4,406	9.5	5,918	12.8	144.1
2003	27,071	57.2	19,053	40.3	5,755	12.2	4,940	10.4	5,901	12.5	132.5
2004	18,135	37.4	18,830	38.9	6,035	12.5	5,369	11.1	5,336	11.0	110.8
2005	13,257	26.7	18,245	36.8	6,288	12.7	5,566	11.2	4,890	9.9	97.3
2006	10,650	21.0	18,013	35.5	6,424	12.7	6,234	12.3	4,977	9.8	91.3
2007	5,257	10.1	17,647	34.0	6,580	12.7	6,669	12.9	4,911	9.5	79.2
2008	3,533	6.7	18,370	34.7	7,132	13.5	6,872	13.0	4,903	9.3	77.1
2009	13,054	24.1	20,294	37.5	7,353	13.6	8,519	15.8	6,525	12.1	103.1

Source: Numerator: Ministry of Social Development; Denominator: Census; Rate is per 1,000. For Composition of Other Benefits, see Methods Section; Non Benefit Assistance not included.

Domestic Purposes Benefits (Including Emergency Maintenance Allowance)
During 2000-2008, the proportion of young people reliant on domestic purposes benefits (DPB) fell, from 43.4 per 1,000 in 2000 to 34.7 per 1,000 in 2008, before rates increased again to 37.5 per 1,000 in April 2009. During this period, ethnic differences in DPB uptake were evident, with rates being consistently higher for Māori > Pacific > European young people (**Table 8**, **Figure 23**).

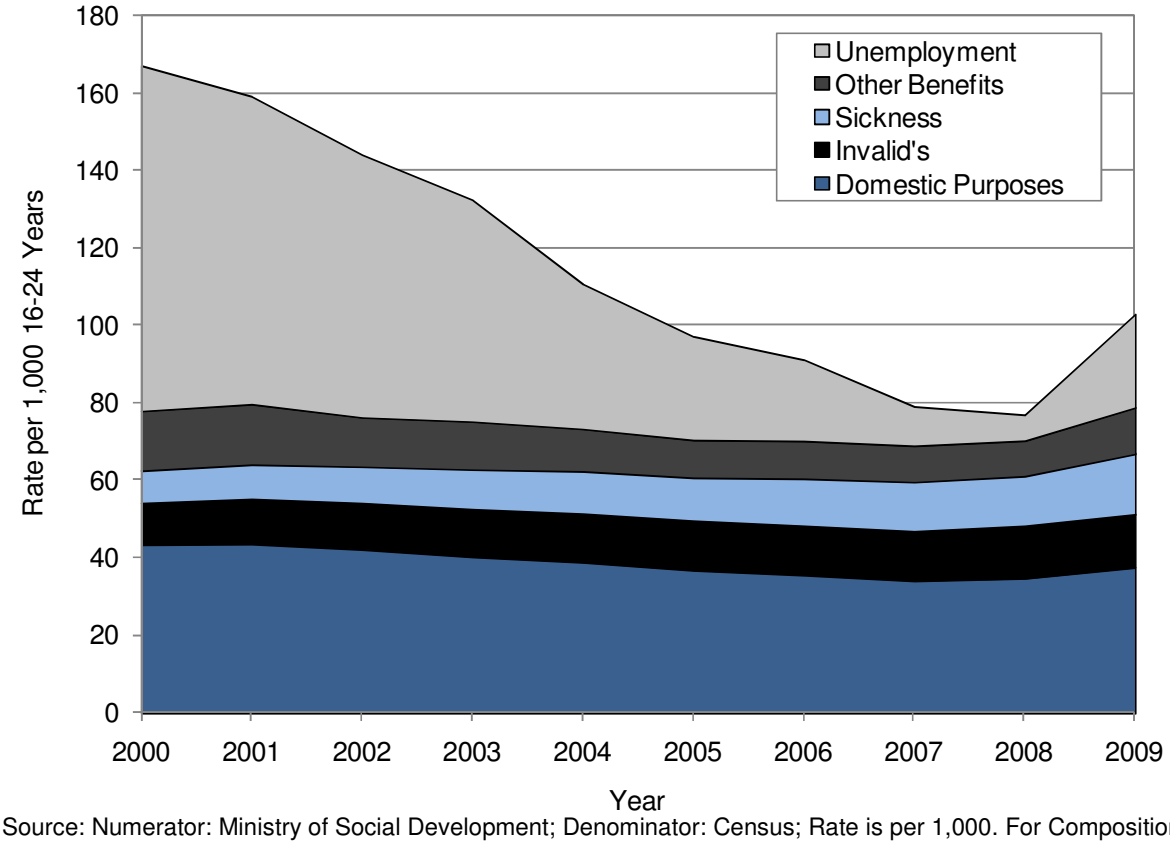
Unemployment Benefits
During 2000-2008, the proportion of young people reliant on unemployment benefits fell, from 89.1 per 1,000 in April 2000, to 6.7 per 1,000 in April 2008, before rates increased again to 24.1 per 1,000 in April 2009. During this period, ethnic differences in unemployment benefit uptake were also evident, with rates being consistently higher for Māori > Pacific > European young people (**Table 8**, **Figure 24**).

Sickness and Invalid Benefits
In New Zealand during 2000-2009, there was a gradual increase in the number of young people reliant on sickness and invalid's benefits, with the proportion of young people reliant on sickness benefits increasing from 8.5 per 1,000 in 2000, to 15.8 per 1,000 in 2009. Similarly the proportion of young people reliant on invalid's benefits increased from 10.6 per 1,000 in 2000, to 13.6 per 1,000 in 2009 (**Table 8**).

In New Zealand, sickness and invalid's benefit uptake for Māori young people was higher than for European or Pacific young people throughout 2000-2009. While invalid's benefit uptake for European young people was higher than for Pacific young people throughout this period, sickness benefit uptake for European young people was only higher than for Pacific young people during 2005-2009 (**Figure 25**).

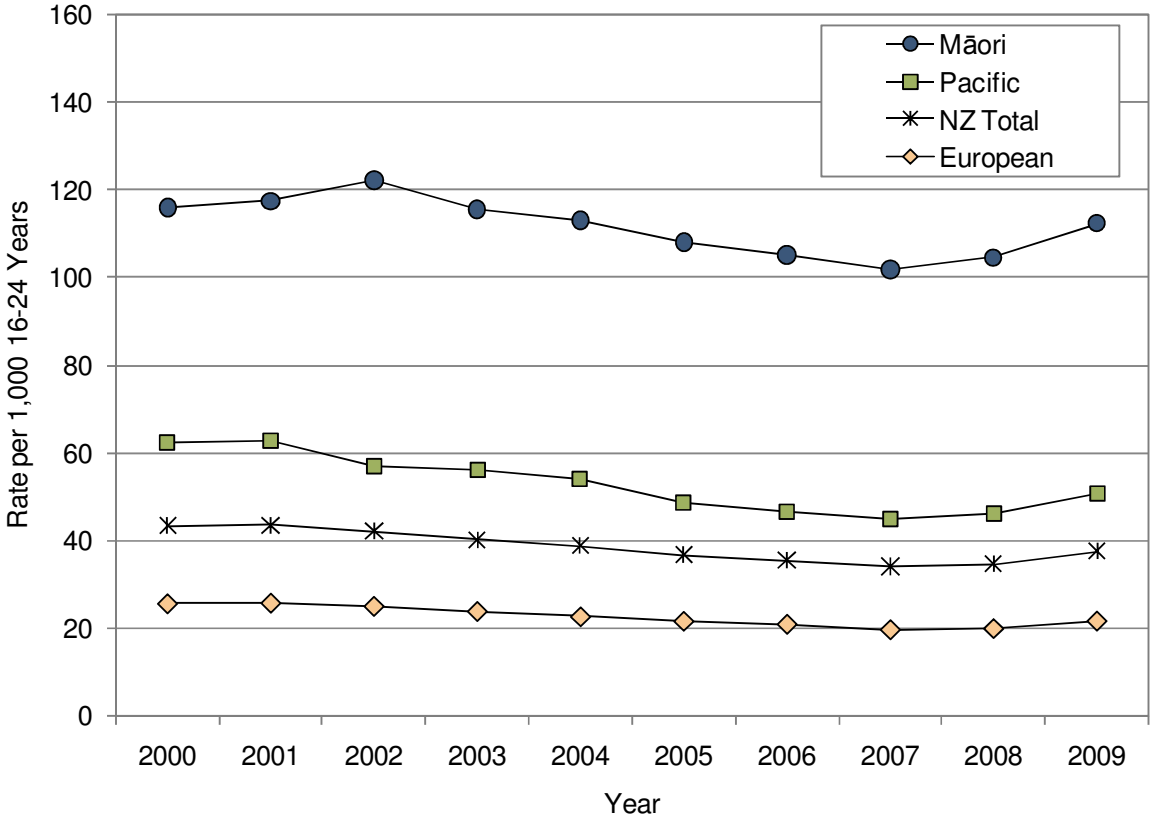
During April 2009, 52% of young people receiving a sickness benefit required financial support for psychological / psychiatric reasons and 13% required support as the result of a pregnancy. Accidents (8%), substance use (8%) and musculoskeletal problems (5%) also made a significant contribution (**Figure 26**). In contrast, 28% of invalid's benefit recipients required financial support for psychological / psychiatric reasons, while 22% required support for intellectual disabilities. An additional 21% required support as the result of congenital conditions and 10% as the result of nervous system problems (**Figure 27**).

Figure 22. Young People Aged 16-24 Years Receiving a Benefit by Benefit Type, New Zealand April 2000-2009



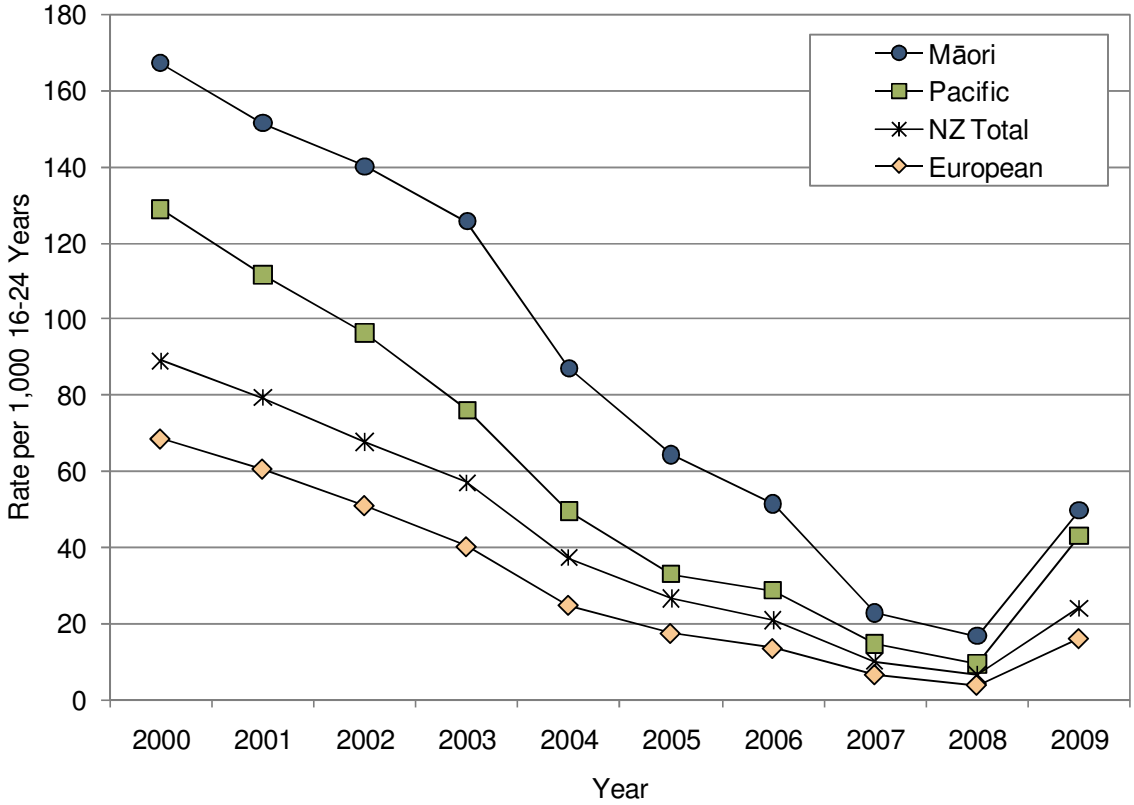
Source: Numerator: Ministry of Social Development; Denominator: Census; Rate is per 1,000. For Composition of Other Benefits, see Methods Section; Non Benefit Assistance not included

Figure 23. Young People 16-24 Years Receiving a Domestic Purposes Benefit or Emergency Maintenance Allowance by Ethnicity, New Zealand April 2000-2009



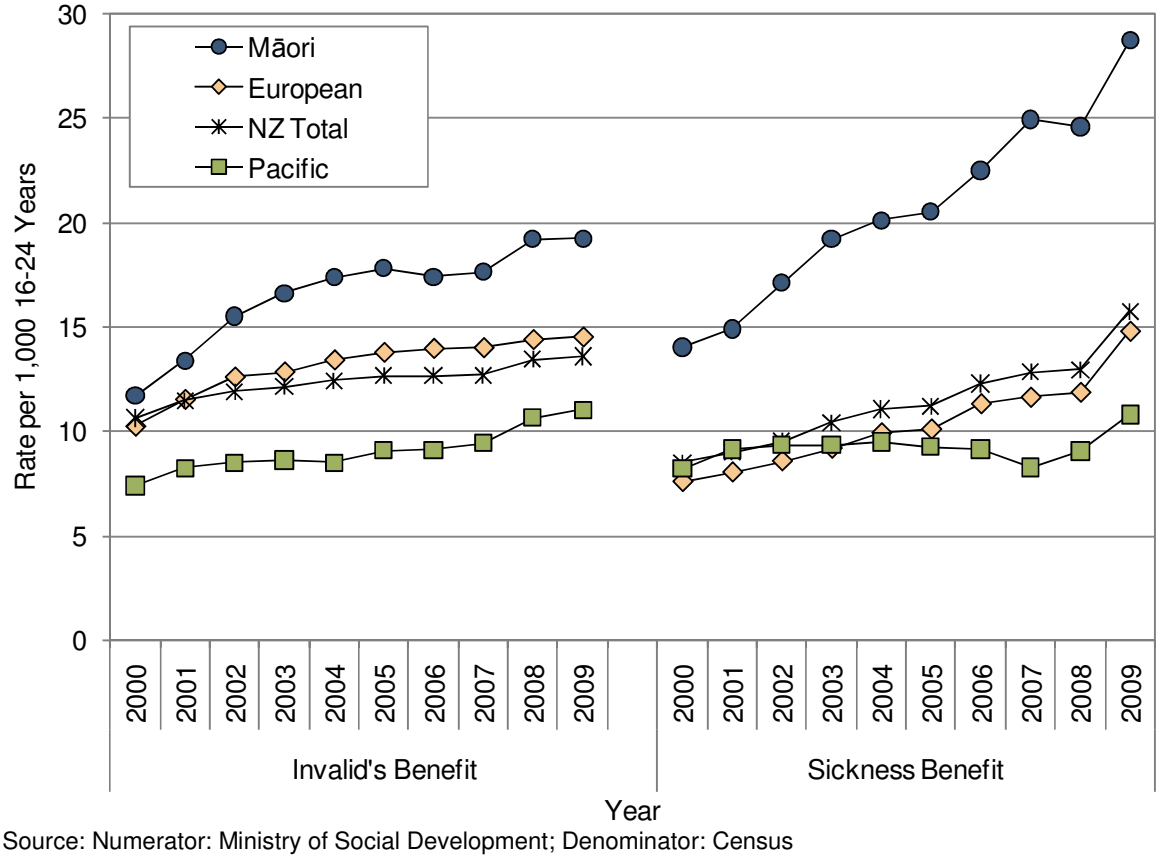
Source: Numerator: Ministry of Social Development; Denominator: Census; DPB includes DPB Sole Parent and Emergency Maintenance Allowance

Figure 24. Young People 16-24 Years Receiving an Unemployment Benefit by Ethnicity, New Zealand April 2000-2009



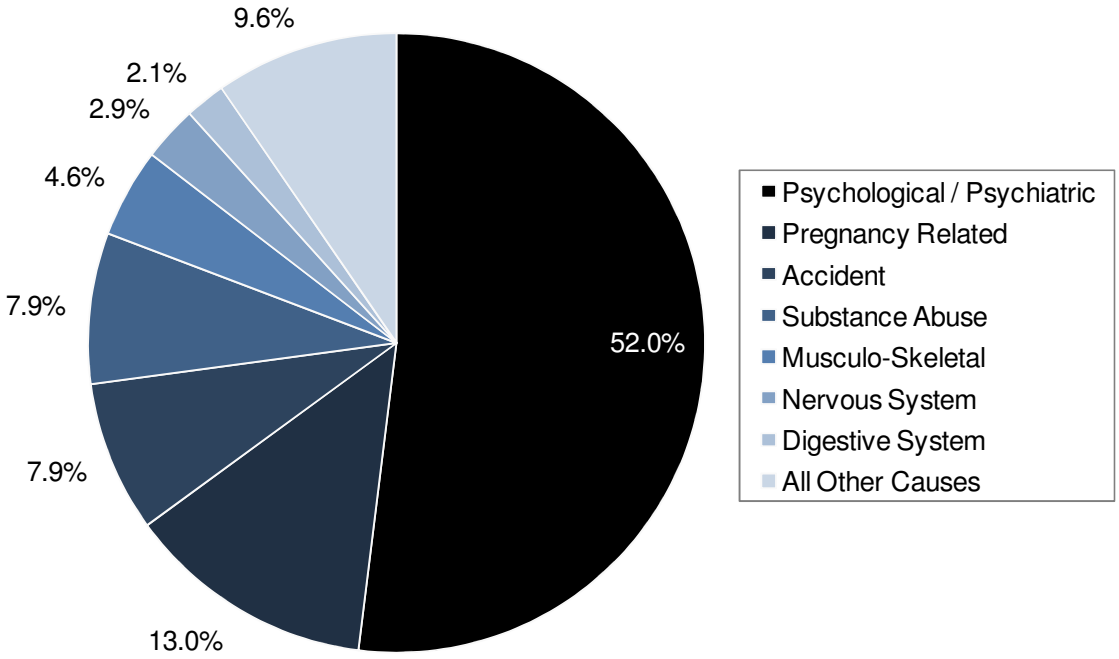
Source: Numerator: Ministry of Social Development; Denominator: Census; Training Related Unemployment Benefits Excluded

Figure 25. Young People 16-24 Years Receiving an Invalid's or Sickness Benefit by Ethnicity, New Zealand April 2000-2009



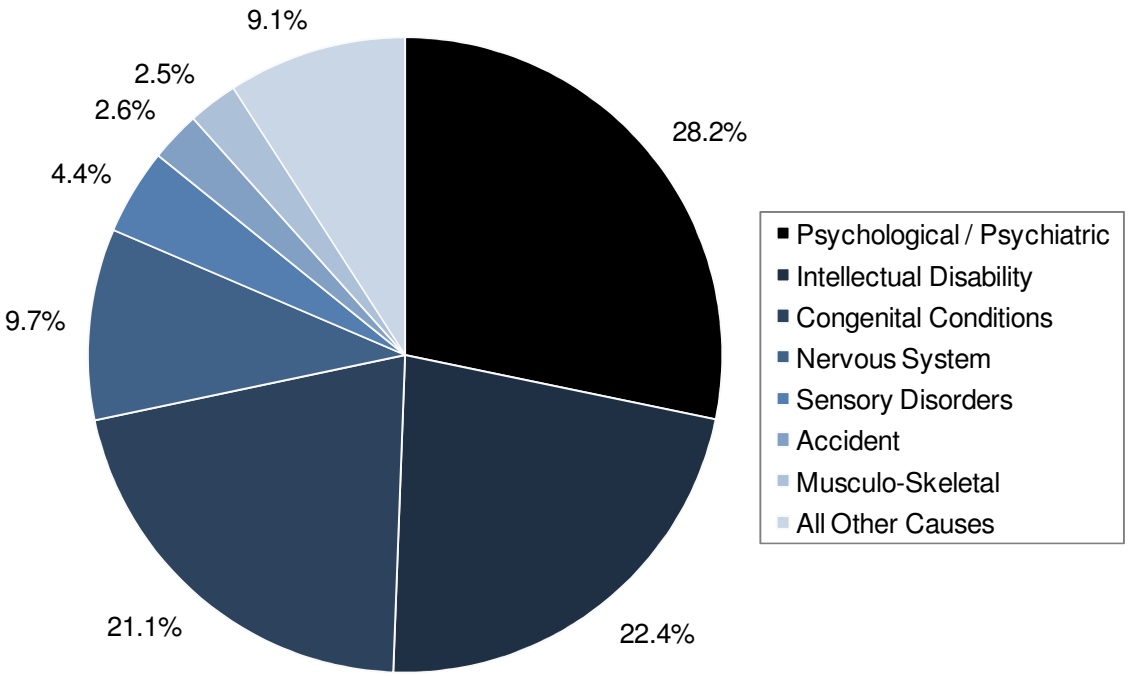
Source: Numerator: Ministry of Social Development; Denominator: Census

Figure 26. Young People Aged 16-24 Years Receiving a Sickness Benefit by Cause of Incapacity, New Zealand April 2009 (n=8,519)



Source: Ministry of Social Development

Figure 27. Young People 16-24 Years Receiving an Invalid's Benefit by Cause of Incapacity, New Zealand April 2009 (n=7,353)



Source: Ministry of Social Development

Taranaki Distribution and Trends

Number of Young People Reliant on Benefits in Taranaki

As information on benefit recipients is not linked to domicile code, it was not possible to provide information on the number of young people resident in Taranaki DHB who were reliant on benefits during 2007-2009. Information was available however, on the number of young people receiving benefits from Service Centres in or adjacent to, the DHB's boundaries (although lack of a clearly delineated denominator precluded the calculation of rates).

In the Taranaki catchment during 2007-2009, domestic purposes benefits were the predominant type of income support received by young people 16-24 years. While there were modest declines in unemployment benefit uptake between April 2007 and 2008, the number of young people reliant on unemployment benefits increased again between April 2008 and 2009. This, along with small increases in other benefit types, increased the overall benefit uptake among young people in the region (**Table 9, Table 10**).

Table 9. Number of Young People Aged 16-24 Years Who Were Reliant on a Benefit by Benefit Type, for Service Centres in the Taranaki Region, April 2007-April 2009 (Non Benefits Included)

Service Centre	Year	DPB	Unempl	Sickness	Invalid's	Other Benefits	Non Benefits	Total
Hawera	2007	125	14	21	32	49	20	261
	2008	139	30	27	36	40	25	297
	2009	126	16	30	45	53	22	292
New Plymouth	2007	218	88	110	123	45	113	698
	2008	256	26	95	146	48	108	679
	2009	269	90	111	145	75	111	801
Stratford	2007	61	8	17	17	18	11	132
	2008	61	14	18	18	24	10	145
	2009	79	32	16	18	40	9	194
Waitara	2007	60	15	21	20	19	13	148
	2008	59	9	16	24	7	16	131
	2009	66	33	27	27	24	14	191
Taranaki Total	2007	464	125	169	192	131	157	1,239
	2008	515	79	156	224	119	159	1,252
	2009	540	171	184	235	192	156	1,478

Source: Ministry of Social Development; For Composition of *Other Benefits*, see Methods Section

Table 10. Number of Young People Aged 16-24 Years Who Were Reliant on a Benefit by Benefit Type, for Service Centres in the Taranaki Region, April 2007-April 2009 (Non Benefits Excluded)

Year	DPB		Unemployment		Sickness		Invalid's		Other Benefits		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.
2007	464	42.9	125	11.6	169	15.6	192	17.7	131	12.1	1,082
2008	515	47.1	79	7.2	156	14.3	224	20.5	119	10.9	1,093
2009	540	40.8	171	12.9	184	13.9	235	17.8	192	14.5	1,322

Source: Ministry of Social Development; Service Centres Include Hawera, New Plymouth, Stratford and Waitara ; Note: % refers to % of young people on benefits, rather than % of all young people; For Composition of *Other Benefits*, see Methods Section; Non Benefit Assistance not included.

Summary

In New Zealand during 2000-2008, there were large declines in the proportion of young people aged 16-24 years receiving benefits, with rates falling from 167.2 per 1,000 in April 2000, to 77.1 per 1,000 in April 2008. By April 2009 however, rates had increased again to 103.1 per 1,000, with the largest absolute increases being in those receiving unemployment benefits. In contrast, the proportion reliant on domestic purposes benefits declined more slowly during 2000-2008, while the proportion on invalid's and sickness benefits increased.

In the Taranaki catchment during 2007-2009, domestic purposes benefits were the predominant type of income support received by young people 16-24 years. While there were modest declines in unemployment benefit uptake between April 2007 and 2008, the

number of young people reliant on unemployment benefits increased again between April 2008 and 2009. This, along with small increases in other benefit types, increased the overall benefit uptake among young people in the region.

Such figures potentially suggest that young people receiving income tested benefits are a heterogeneous group, comprising those temporarily out of work, those caring for young children and those unable to participate in the workforce for a variety of medical or other reasons. In the context of the current economic downturn however, the recent increases young people reliant on unemployment benefits are concerning, as these young people potentially reflect a high needs group, who may warrant consideration in future planning and strategy development.

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

Table 2 on **Page 14** considers local policy documents and evidence based reviews relevant to the socioeconomic determinants of child and youth health, including policies which might enhance the wellbeing of young people reliant on Government benefits. In addition, **Table 11** below considers local policy documents which relate specifically to youth development, or improving the participation of young people in work, education and training.

Table 11. Local Policy Documents Relating to Youth Development, or Improving the Participation of Young People in Work, Education and Training

New Zealand Policy Documents
The Ministry of Social Development's Youth Transitions Series http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/initiatives/youth-transitions/youth-transitions.html#ReconnectingYoungPeopleAReviewoftheRisksRemediesandConsequencesofYouthInactivity6 During the early 2000s, a key Government Goal was to have all 15 to 19 year olds in work, education, training, or other activities that contributed to their long term economic independence and wellbeing. As part of its contribution towards achieving this goal, the Ministry of Social Development produced the Youth Transitions Series, a series of reports which consider the most effective means of increasing the participation of young people in these areas.
McLaren K. 2003. **Reconnecting Young People: A Review of the Risks, Remedies and Consequences of Youth Inactivity,** in Youth Transitions Series. Ministry of Social Development: Wellington. This report reviews the consequences of young people not participating in work, education or training, and considers why young people become inactive and what is effective in increasing their participation. The report is divided into three parts, with the first reviewing the consequences of non participation in work, education and training, and the second reviewing a range of research (mainly longitudinal studies) which consider the pathways via which non-participation might occur. The third part (mainly based on outcome evaluation studies of interventions) focuses on effective interventions to increase the participation of young people in work, education or training.
Higgens J. 2003. **Labour Market Programs for Young People**, in the Youth Transitions Series. 2003, Ministry of Social Development: Wellington. This report examines the effectiveness of a range of labour market programmes for young people including: case management; training programmes; job subsidies; job search assistance; direct job creation and measures to encourage retention in, and return to, education and training. The report also reviews what interventions are most effective for young people from indigenous and ethnic minority communities.
Ministry of Youth Affairs. 2002. **Youth Development Strategy Aotearoa: Action for Child and Youth Development**. Wellington Ministry of Youth Affairs. http://www.myd.govt.nz/Publications/youthdevelopment/youthdevelopmentstrategyaotearoa20.aspx The Strategy outlines how government and society can support young women and men (aged 12 to 24 years) to develop the skills and attitudes they need to take part positively in society, now and in the future. The Strategy consists of a vision, principles, aims and goals, and also suggests actions that can be taken to support the positive development of young people. The principles of "youth development" outline what the youth development approach is all about. They can be used as a checklist and a tool for developing youth policies and programmes and in working alongside young people.
McLaren K. 2002. **Youth Development Literature Review: Building Strength**. Ministry of Youth Development: Wellington. http://www.myd.govt.nz/Publications/youthdevelopment/buildingstrengthyouthdevelopmentli1.aspx This literature review was undertaken to support the implementation of the Ministry of Youth Development's Youth Development Strategy Aotearoa. The report considers key stages in young people's development, and the factors which lead to good outcomes for young people (including family, peer, school, work / career, and neighbourhood / community influences), with a view to informing discussion on youth development and assisting policy, programme and service development.

THE CHILDREN'S SOCIAL HEALTH MONITOR: CHILD HEALTH AND WELLBEING INDICATORS

HOSPITAL ADMISSIONS AND MORTALITY WITH A SOCIAL GRADIENT IN CHILDREN

In New Zealand, many child health outcomes exhibit a social gradient, with hospital admissions and mortality from socioeconomically sensitive conditions being several times higher for Māori and Pacific children, and those living in the most deprived areas [2]. Such disparities have persisted, despite one of the longest periods of economic growth in recent decades, as well as historically low unemployment rates.

As earlier sections of this report have demonstrated, New Zealand's macroeconomic environment is changing rapidly, with unemployment rates rising and the number of children reliant on benefit recipients increasing during the past year. The impact these changes will have on socially sensitive health outcomes remains unclear however, as international evidence suggests that the effects may vary, not only with the magnitude and duration of any economic downturn, but also with the Government's social policy responses, and the extent to which New Zealand can maintain an effective social safety net (e.g. in housing, health, education, income support) 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 **Page 10**).

While the likely impact of the current economic downturn on child wellbeing remains unclear, it would nevertheless seem prudent to prospectively monitor a basket of key child health outcomes, in order to ensure that any deterioration in child health can be identified early, and so that proactive and co-ordinated responses can be put in place, should the need arise. Thus, in order to establish a baseline for future monitoring (it is unlikely that the full impact of the downturn will be evident in this year's data), the following section uses data from the National Minimum Dataset and the National Mortality collection to explore hospital admissions and mortality from a basket of socially sensitive conditions during 2000-2008. It is intended that this basket of conditions will be monitored annually in NZCYES reports, until New Zealand's macroeconomic outlook has improved.

Data Source and Methods

Definition

1. Hospital Admissions for Medical Conditions with a Social Gradient in Children Aged 0-14 Years
2. Injury Admissions with a Social Gradient in Children Aged 0-14 Years
3. Mortality with a Social Gradient in Children Aged 0-14 Years

Data Source

For details of the methodology used to derive these indicators see **Appendix 9**

Numerator:

Hospital Admissions for Medical Conditions with a Social Gradient: Acute and Arranged Hospital Admissions (Waiting List, ACC Cases and neonates <29 days excluded) in children aged 0-14 years with the following ICD-10 primary diagnoses: A00-A09 or R11 (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 or J46 (Asthma); J47 (Bronchiectasis); G00 or 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) in children 0-14 years, with a primary diagnosis of injury (ICD9 800-995: ICD 10 S00-T79) and an ICD-10 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 with a Social Gradient: All deaths in children 0-14 years, (neonates <29 days excluded) with a main underlying cause of death in the ICD-10 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 R95, W75, R99).

Denominator: NZ Census

Indicator Category Proxy B-C

Notes on Interpretation (For Further Detail See **Appendix 9**)

Note 1: Hospital admissions in neonates (<29 days) were excluded from both indicators, as 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 / other medical conditions arising in these contexts are likely to differ in their aetiology from those arising in the community.

Note 2: 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 could not occur, 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 injury data in these reports however, all injury cases with an Emergency Department Specialty Code (M05-M08) on discharge were excluded (see **Appendix 4** for rationale).

Note 3: Hospital admissions were considered to have a social gradient if rates for those in the most deprived (NZDep Decile 9-10) areas were ≥1.8 times higher than for those in the least deprived (NZDep Decile 1-2) areas, or where ethnic differences (Māori, Pacific or Asian vs. European children) met these criteria. In addition, a small number of conditions were included where rates were ≥1.5 times higher, they demonstrated a consistent social gradient, and the association was biologically plausible.

Note 4: 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 occurred for mortality data however, and thus the magnitude of the social differences seen is more readily comparable.

Note 5: 95% confidence intervals have been provided for the rate ratios in this section and where appropriate, the terms significant or not significant have been used to communicate the significance of the observed associations. Tests of statistical significance have not been applied to other data in this section, and thus (unless the terms *significant* or *non-significant* are specifically used) the associations described do not imply statistical significance or non-significance (see Appendix 1 for further discussion of this issue).

New Zealand Distribution and Trends

Distribution by Cause

Hospital Admissions: In New Zealand during 2004-2008, asthma, bronchiolitis and gastroenteritis 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 accidents as a group also made a significant contribution (**Table 12**).

Mortality: In New Zealand during 2002-2006, 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 second largest contribution, followed by pedestrian injuries and drowning, while bacterial / non viral pneumonia was the leading cause of mortality from medical conditions (**Table 13**).

Table 12. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0-14 Years (excluding Neonates) by Cause, New Zealand 2004-2008

Diagnosis	New Zealand			
	Number: Total 2004-2008	Number: Annual Average	Rate per 1,000	% of Total
Medical Conditions				
Asthma	23,471	4694.2	5.41	13.93
Acute Bronchiolitis	22,948	4589.6	5.29	13.62
Gastroenteritis	22,893	4578.6	5.28	13.59
Acute Upper Respiratory Infections	18,813	3762.6	4.34	11.16
Viral Infection of Unspecified Site	17,318	3463.6	3.99	10.28
Bacterial / Non-Viral Pneumonia	14,875	2975.0	3.43	8.83
Skin Infections	14,094	2818.8	3.25	8.36
Urinary Tract Infection	6,044	1208.8	1.39	3.59
Croup / Laryngitis / Tracheitis / Epiglottitis	5,367	1073.4	1.24	3.19
Epilepsy / Status Epilepticus	3,919	783.8	0.90	2.33
Febrile Convulsions	3,677	735.4	0.85	2.18
Otitis Media	3,607	721.4	0.83	2.14
Dermatitis and Eczema	2,759	551.8	0.64	1.64
Inguinal Hernia	1,615	323.0	0.37	0.96
Viral Pneumonia	1,579	315.8	0.36	0.94
Osteomyelitis	1,251	250.2	0.29	0.74
Rheumatic Fever / Heart Disease	845	169.0	0.19	0.50
Viral / Other / NOS Meningitis	817	163.4	0.19	0.48
Bronchiectasis	742	148.4	0.17	0.44
Meningococcal Disease	693	138.6	0.16	0.41
Vaccine Preventable Diseases	525	105.0	0.12	0.31
Nutritional Deficiencies / Anaemias	304	60.8	0.07	0.18
Bacterial Meningitis	273	54.6	0.06	0.16
Tuberculosis	78	15.6	0.02	0.05
Total	168,507	33701.4	38.85	100.00
Injury Admissions				
Falls	23,844	4,768.8	5.50	47.95
Mechanical Forces: Inanimate	14,297	2,859.4	3.30	28.75
Transport: Cyclist	3,296	659.2	0.76	6.63
Accidental Poisoning	2,537	507.4	0.58	5.10
Electricity / Fire / Burns	2,047	409.4	0.47	4.12
Transport: Vehicle Occupant	1,337	267.4	0.31	2.69
Mechanical Forces: Animate	1,102	220.4	0.25	2.22
Transport: Pedestrian	1,074	214.8	0.25	2.16
Drowning / Submersion	197	39.4	0.05	0.40
Total	49,731	9,946.2	11.46	100.00

Source: Numerator-National Minimum Dataset (Neonates Removed); Denominator-Census; Medical Conditions: Acute and Arranged Admissions only; Injury Admissions: Emergency Department Cases removed

Table 13. Mortality from Conditions with a Social Gradient in Children Aged 0-14 Years (excluding Neonates) by Cause, New Zealand 2002-2006

Diagnosis	Number: Total 2002-2006	Number: Annual Average	Rate per 100,000	Percent of Category
Medical Conditions				
Bacterial/Non-Viral Pneumonia	41	8.2	0.95	30.60
Meningococcal Disease	21	4.2	0.49	15.67
Bacterial Meningitis	12	2.4	0.28	8.96
Epilepsy/ Status	12	2.4	0.28	8.96
Viral Pneumonia	11	2.2	0.26	8.21
Acute Bronchiolitis	6	1.2	0.14	4.48
Asthma	6	1.2	0.14	4.48
Gastroenteritis	6	1.2	0.14	4.48
Other Medical Conditions	19	3.8	0.44	14.18
Total Medical Conditions	134	26.8	3.12	100.00
Injuries				
Transport: Vehicle Occupant	77	15.4	1.79	28.95
Transport: Pedestrian	63	12.6	1.47	23.68
Drowning / Submersion	56	11.2	1.30	21.05
Electricity / Fire / Burns	28	5.6	0.65	10.53
Falls	13	2.6	0.30	4.89
Transport: Cyclist	13	2.6	0.30	4.89
Mechanical Forces: Inanimate	9	1.8	0.21	3.38
Other Injuries	7	1.4	0.16	2.63
Total Injuries	266	53.2	6.19	100.00
Post Neonatal SUDI				
Post Neonatal SUDI	268	53.6	6.24	100.00
Total	668	133.6	15.54	100.00

Source: Numerator-National Mortality Collection (Neonates Removed); Denominator-Census: Note SUDI deaths 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 peak in 2002 and then declined, with a small upswing in rates again being evident during 2007-2008. In contrast, injury admissions with a social gradient declined throughout 2000-2008. *Mortality*: In New Zealand, injury mortality with a social gradient declined consistently throughout 2000-2006. Mortality from medical conditions also exhibited a general downward trend, although post-neonatal SUDI declined during 2000-2002, and thereafter remained relatively static (**Figure 28**).

Trends by Ethnicity

Hospital Admissions: In New Zealand during 2000-2008, hospitalisations for medical conditions with a social gradient were consistently higher for Pacific > Māori > European and Asian children. For Pacific children, admissions increased during the early 2000s, reached a peak in 2003 and then declined, with a small upswing in rates again being evident during 2007-2008. For Māori, European and Asian children these changes were less marked. Injury admissions with a social gradient were also higher for Pacific and Māori > European > Asian children, and while in absolute terms the magnitude of these differences appeared to be less marked than for medical conditions, for technical reasons, comparisons between these admission categories is not strictly possible (see Note 4 in Methods section) (**Figure 29**).

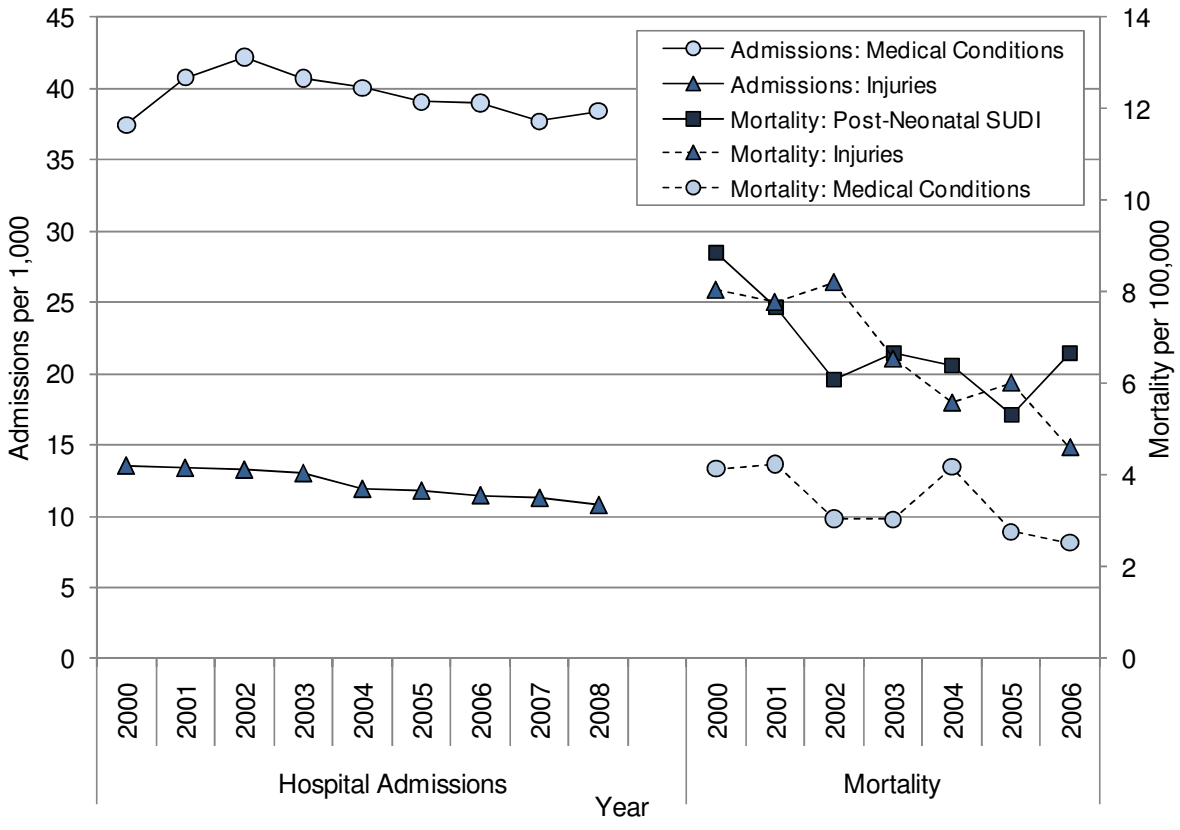
Mortality: In New Zealand during 2000-2006, SUDI mortality was consistently higher for Māori > Pacific > European and Asian infants, while mortality from medical conditions with a social gradient was generally higher for Māori and Pacific > European and Asian children. While mortality from injuries with a social gradient was also consistently higher for Māori than for European and Asian children, rates for Pacific children were more variable (**Figure 30**).

Trends by NZ Deprivation Index Decile

Hospital Admissions: In New Zealand during 2000-2008, medical admissions with a social gradient were consistently higher for those living in Decile 9-10 > Decile 7-8 > Decile 5-6 > Decile 3-4 > Decile 1-2 areas. Injury admissions with a social gradient also demonstrated a consistent socioeconomic gradient over time, and while in absolute terms these differences were less marked than for medical conditions, for technical reasons comparisons between these admission categories is not strictly possible (see Note 4 in Methods section) (**Figure 31**).

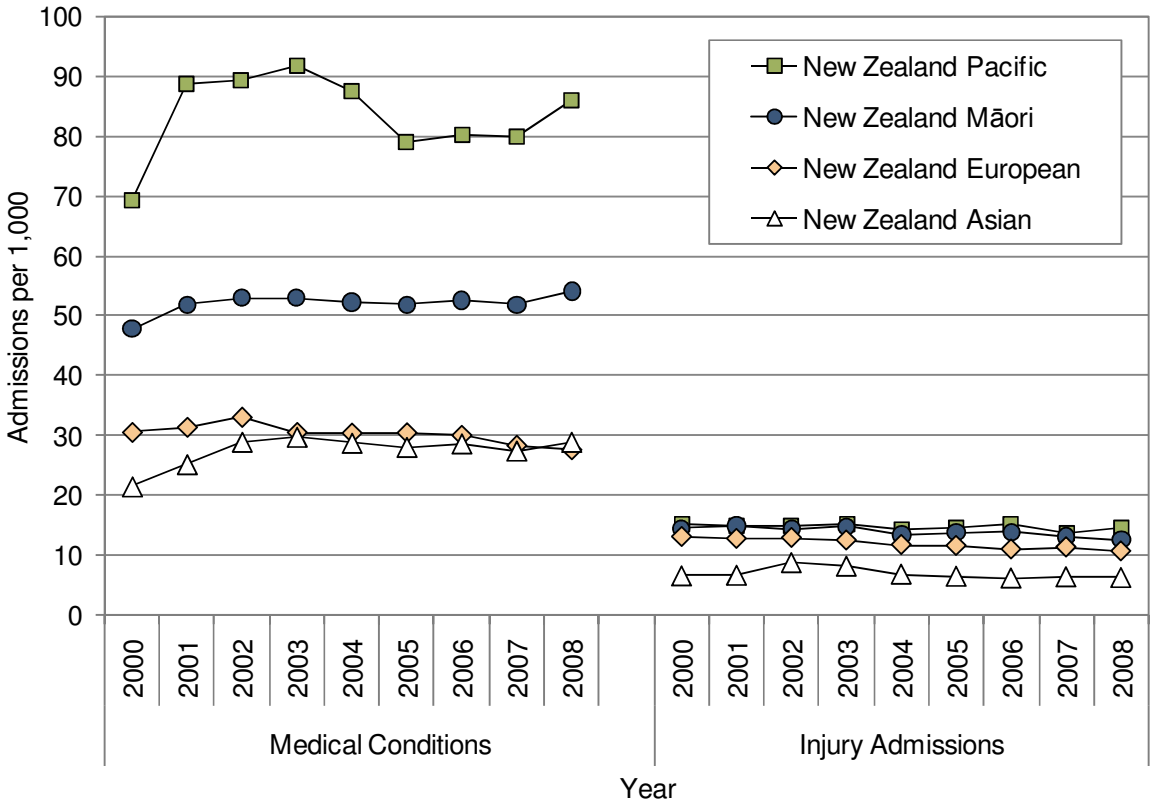
Mortality: In New Zealand during 2000-2006, medical conditions and injuries with a social gradient, and post neonatal SUDI were all consistently higher for those in the most deprived (Decile 9-10) areas, than for those in the least deprived (Decile 1-2) areas, with the greatest absolute differences being seen for post neonatal SUDI (**Figure 32**).

Figure 28. Hospital Admissions (2000-2008) and Mortality (2000-2006) from Conditions with a Social Gradient in New Zealand Children Aged 0-14 Years (excluding Neonates)



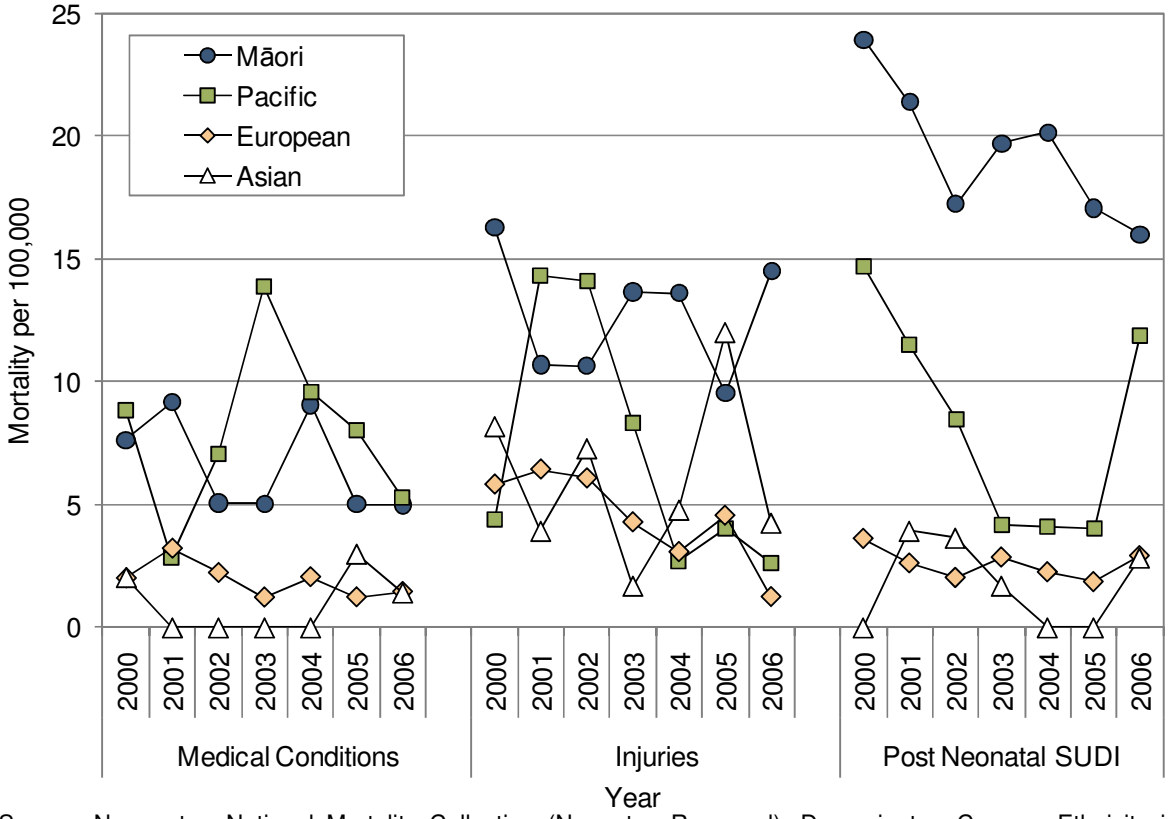
Source: Admissions: Numerator-National Minimum Dataset (Neonates Removed); Denominator-Census; Medical Conditions: Acute and Arranged Admissions only; Injury Admissions: Emergency Department Cases removed; Mortality: Numerator National Mortality Collection (Neonates Removed); Denominator: Census

Figure 29. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0-14 Years by Ethnicity, New Zealand 2000-2008



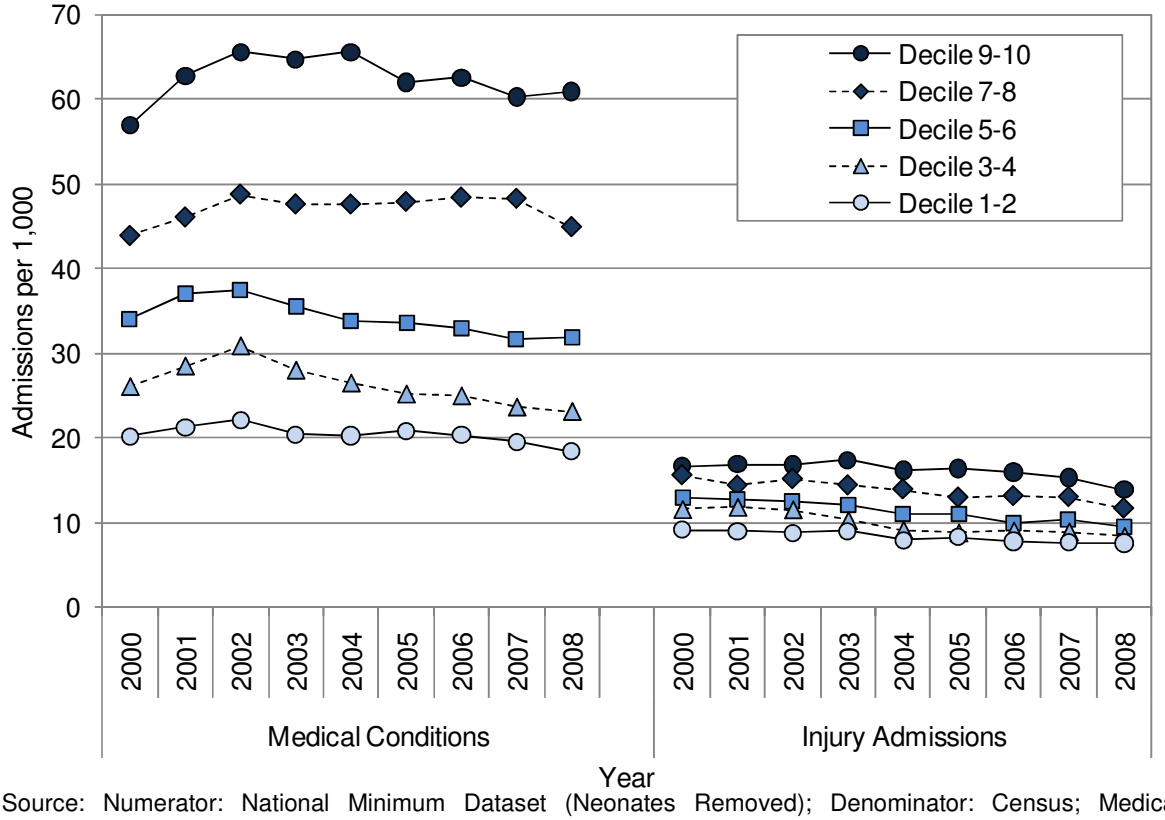
Source: Numerator-National Minimum Dataset (Neonates Removed); Denominator-Census; Medical Conditions: Acute and Arranged Only; Injury Admissions: Emergency Department Cases Removed; Ethnicity is Level 1 Prioritised

Figure 30. Mortality from Conditions with a Social Gradient in Children Aged 0-14 Years (excluding Neonates) by Ethnicity, New Zealand 2000-2006



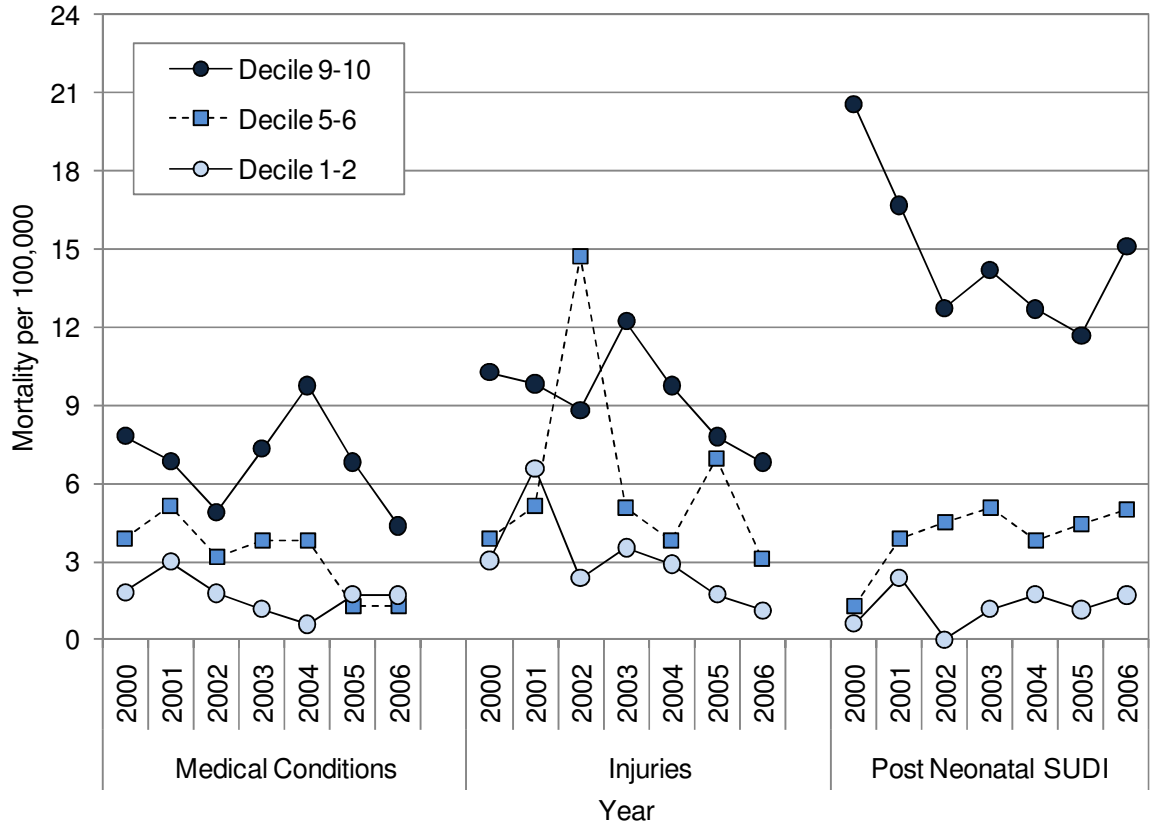
Source: Numerator: National Mortality Collection (Neonates Removed); Denominator: Census; Ethnicity is Level 1 Prioritised; Note SUDI deaths are for infants aged 29-364 days only.

Figure 31. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0-14 Years by NZ Deprivation Index Decile, New Zealand 2000-2008



Source: Numerator: National Minimum Dataset (Neonates Removed); Denominator: Census; Medical Conditions: Acute and Arranged only; Injury Admissions: Emergency Department Cases removed

Figure 32. Mortality from Conditions with a Social Gradient in Children Aged 0-14 Years (excluding Neonates) by NZ Deprivation Index Decile, New Zealand 2000-2006



Source: Numerator: National Mortality Collection (Neonates Removed); Denominator: Census; Note SUDI deaths are for infants aged 29-364 days only.

Distribution by Ethnicity, Gender and NZDep Deprivation

Hospital Admissions: In New Zealand during 2004-2008, hospital admissions for medical conditions with a social gradient were *significantly* higher for Pacific > Māori > European > Asian children, males and those in the more deprived areas. Similarly, injury admissions with a social gradient were *significantly* higher for Pacific > Māori > European > Asian children, males and those in the more deprived areas. While the magnitude of the 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 14**).

Table 14. Risk Factors for Hospital Admissions with a Social Gradient in Children Aged 0-14 Years, New Zealand 2004-2008

Medical Conditions							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	20.1	1.00		Decile 1-2	19.9	1.00	
Decile 2	19.7	0.98	0.95 - 1.01	Decile 3-4	24.7	1.24	1.22 - 1.27
Decile 3	22.3	1.11	1.08 - 1.14	Decile 5-6	32.8	1.65	1.62 - 1.68
Decile 4	27.1	1.35	1.32 - 1.39	Decile 7-8	47.4	2.38	2.34 - 2.42
Decile 5	28.5	1.42	1.38 - 1.46	Decile 9-10	62.3	3.13	3.08 - 3.18
Decile 6	37.2	1.85	1.81 - 1.90	Ethnicity			
Decile 7	40.6	2.02	1.97 - 2.07	Asian	28.5	0.97	0.95 - 0.99
Decile 8	53.9	2.68	2.62 - 2.75	European	29.5	1.00	
Decile 9	58.8	2.93	2.86 - 3.00	Māori	52.5	1.78	1.76 - 1.80
Decile 10	65.1	3.24	3.17 - 3.32	Pacific	82.5	2.80	2.76 - 2.84
Gender							
Female	35.1	1.00		Male	42.5	1.21	1.20 - 1.22
Injuries							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	8.1	1.00		Decile 1-2	7.9	1.00	
Decile 2	7.6	0.94	0.90 - 0.98	Decile 3-4	8.9	1.13	1.09 - 1.17
Decile 3	8.3	1.02	0.97 - 1.07	Decile 5-6	10.4	1.31	1.27 - 1.36
Decile 4	9.6	1.18	1.12 - 1.23	Decile 7-8	13.0	1.64	1.59 - 1.69
Decile 5	9.4	1.15	1.10 - 1.20	Decile 9-10	15.6	1.97	1.92 - 2.03
Decile 6	11.4	1.40	1.34 - 1.46	Ethnicity			
Decile 7	11.8	1.45	1.38 - 1.51	Asian	6.5	0.58	0.55 - 0.60
Decile 8	14.1	1.73	1.66 - 1.80	European	11.3	1.00	
Decile 9	15.8	1.94	1.87 - 2.02	Māori	13.4	1.19	1.16 - 1.21
Decile 10	15.4	1.89	1.82 - 1.96	Pacific	14.6	1.29	1.25 - 1.33
Gender							
Female	9.2	1.00		Male	13.6	1.48	1.46 - 1.51

Source: Numerator: National Minimum Dataset (Neonates Removed); Denominator: Census; 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 2002-2006, mortality from medical conditions with a social gradient was *significantly* higher for Pacific and Māori > European and Asian children, and those in more deprived (Decile 7-10) areas. Similarly mortality from injuries with a social gradient was *significantly* higher for Māori and Pacific > Asian and European

children, males and those in average-more deprived (Decile 3-10) areas (**Table 15**). Differences in SUDI mortality are considered in the Infant Mortality section.

Table 15. Risk Factors for Mortality with a Social Gradient in Children Aged 0-14 Years, New Zealand 2002-2006

Medical Conditions							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				Ethnicity			
Decile 1-2	1.39	1.00		Asian	0.96	0.58	0.18 - 1.88
Decile 3-4	0.86	0.61	0.24 - 1.56	European	1.65	1.00	
Decile 5-6	2.67	1.91	0.94 - 3.89	Māori	5.84	3.55	2.37 - 5.31
Decile 7-8	3.10	2.22	1.12 - 4.42	Pacific	8.75	5.32	3.34 - 8.46
Decile 9-10	6.64	4.76	2.58 - 8.80	Gender			
				Female	2.91	1.00	
				Male	3.32	1.14	0.81 - 1.60
Injuries							
NZ Deprivation Index Decile				Ethnicity			
Decile 1-2	2.32	1.00		Asian	6.06	1.57	0.96 - 2.57
Decile 3-4	4.29	1.84	1.06 - 3.19	European	3.87	1.00	
Decile 5-6	6.73	2.89	1.73 - 4.84	Māori	12.39	3.20	2.45 - 4.19
Decile 7-8	7.18	3.09	1.86 - 5.14	Pacific	6.29	1.63	1.03 - 2.57
Decile 9-10	9.09	3.91	2.41 - 6.34	Gender			
				Female	5.10	1.00	
				Male	7.22	1.42	1.11 - 1.81
SUDI: See Infant Mortality Section							

Source: Numerator: National Mortality Collection; Denominator Census; Rates are per 100,000; Rate Ratios are Unadjusted; Ethnicity is Level 1 Prioritised.

Taranaki Distribution and Trends

Trends: New Zealand vs. Taranaki

Hospital Admissions: In Taranaki, hospitalisations for medical conditions with a social gradient increased during the early 2000s, reached a peak in 2002 and then declined, with a small upswing in rates again being evident in 2008. For the majority of this period, admissions in Taranaki were lower than the New Zealand average. In contrast, injury admissions declined more gradually, with rates being closer to the New Zealand average during this period (**Figure 33**).

Mortality: In Taranaki during 2000-2006, while numbers were too small for trend analysis, 12 children died from injuries and 9 from medical conditions with a social gradient, while 14 (post neonatal) infants died as a result of SUDI.

Distribution by Cause

Hospital Admissions: In Taranaki during 2004-2008 asthma, gastroenteritis and bronchiolitis made the largest individual contributions to hospitalisations for medical conditions with a social gradient, with infectious and respiratory diseases collectively being responsible for the majority of admissions. During the same period falls, followed by inanimate mechanical forces, were the most frequent causes of injury admissions with a social gradient, although transport accidents as a group also made a significant contribution (**Table 16**).

Mortality: In Taranaki during 2002-2006, 7 children died from injuries with a social gradient, with transport deaths (pedestrian, vehicle occupant, cyclist) (n=5) making the greatest contribution. A further 8 children died from medical conditions with a social gradient, with

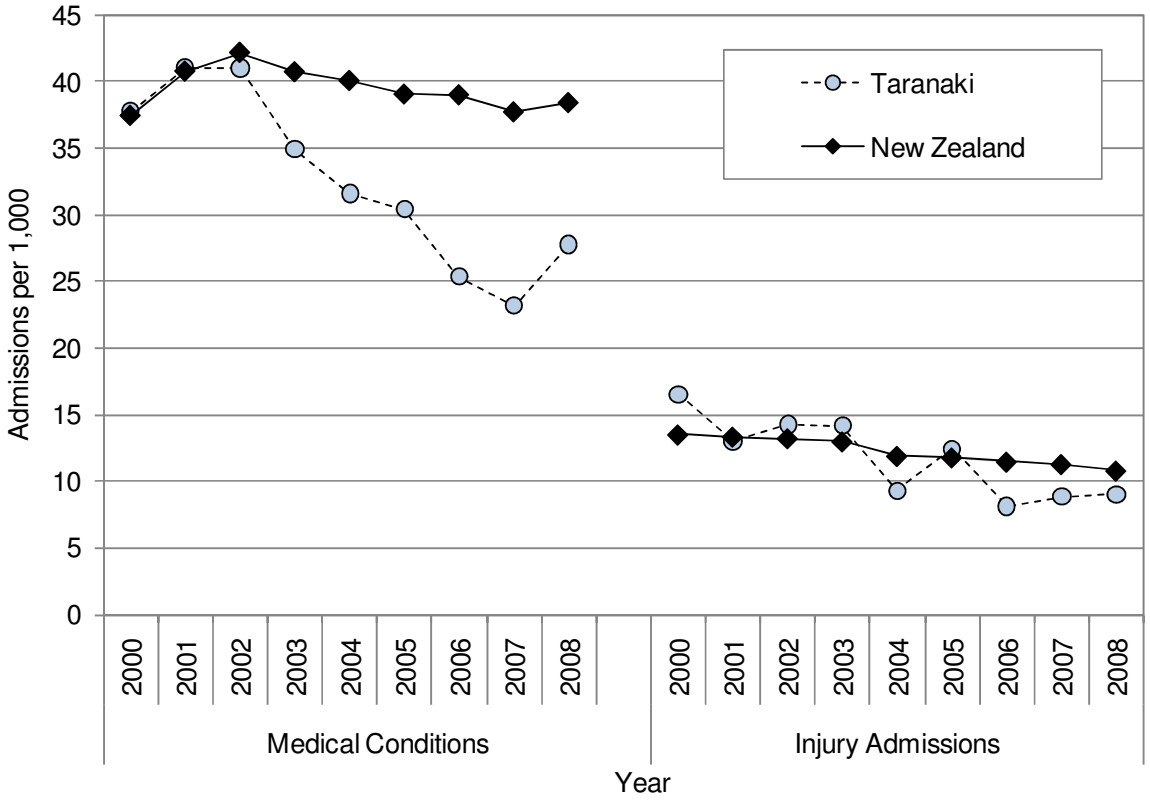
pneumonia (bacterial / viral / non-viral) (n=6) making the largest contribution. In addition, 12 infants died of (post neonatal) SUDI.

Table 16. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0-14 Years, Taranaki 2004-2008

Diagnosis	Taranaki			
	Number: Total 2004-2008	Number: Annual Average	Rate per 1,000	% of Total
Medical Conditions				
Asthma	517	103.4	4.55	16.43
Gastroenteritis	439	87.8	3.87	13.95
Bronchiolitis	428	85.6	3.77	13.60
Viral Infection of Unspecified Site	330	66.0	2.91	10.49
Acute Upper Respiratory Infections	312	62.4	2.75	9.91
Bacterial / Non-Viral Pneumonia	257	51.4	2.26	8.17
Skin Infections	200	40.0	1.76	6.36
Urinary Tract Infection	109	21.8	0.96	3.46
Epilepsy / Status Epilepticus	106	21.2	0.93	3.37
Croup / Laryngitis / Tracheitis / Epiglottitis	104	20.8	0.92	3.30
Dermatitis and Eczema	90	18.0	0.79	2.86
Otitis Media	57	11.4	0.50	1.81
Febrile Convulsions	53	10.6	0.47	1.68
Inguinal Hernia	45	9.0	0.40	1.43
Osteomyelitis	20	4.0	0.18	0.64
Meningococcal Disease	17	3.4	0.15	0.54
Viral / Other / NOS Meningitis	15	3.0	0.13	0.48
Viral Pneumonia	15	3.0	0.13	0.48
Bronchiectasis	10	2.0	0.09	0.32
Rheumatic Fever / Heart Disease	9	1.8	0.08	0.29
Bacterial Meningitis	6	1.2	0.05	0.19
Nutritional Deficiencies / Anaemias	6	1.2	0.05	0.19
Vaccine Preventable Diseases	<5	s	s	s
Total	3,147	629.4	27.72	100.00
Injury Admissions				
Falls	560	112.0	4.93	51.52
Mechanical Forces: Inanimate	238	47.6	2.10	21.90
Transport: Cyclist	77	15.4	0.68	7.08
Electricity / Fire / Burns	72	14.4	0.63	6.62
Accidental Poisoning	63	12.6	0.55	5.80
Transport: Vehicle Occupant	31	6.2	0.27	2.85
Mechanical Forces: Animate	24	4.8	0.21	2.21
Transport: Pedestrian	17	3.4	0.15	1.56
Drowning / Submersion	5	1.0	0.04	0.46
Total	1,087	217.4	9.57	100.00

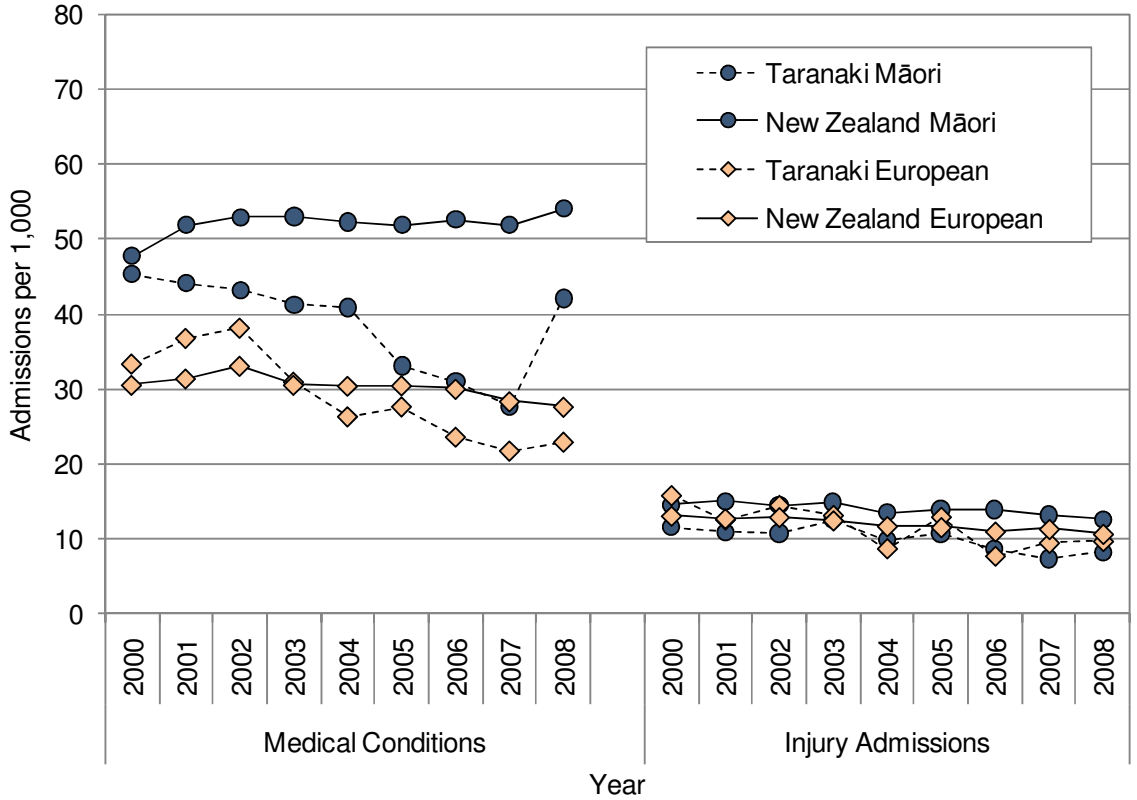
Source: Numerator National Minimum Dataset (Neonates Removed); Denominator: Census; Medical Conditions Acute and Arranged Admissions Only; Injuries Emergency Department Cases Removed.

Figure 33. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0-14 Years, Taranaki vs. New Zealand 2000-2008



Source: Numerator-National Minimum Dataset (Neonates Removed); Denominator-Census; Medical Conditions: Acute and Arranged only; Injury Admissions: Emergency Department Cases removed

Figure 34. Hospital Admissions for Conditions with a Social Gradient in Children Aged 0-14 Years by Ethnicity, Taranaki 2000-2008



Source: Numerator-National Minimum Dataset (Neonates Removed); Denominator-Census; Medical Conditions: Acute and Arranged only; Injury Admissions: Emergency Department Cases removed; Ethnicity is Level 1 Prioritised.

Trends by Ethnicity

Hospital Admissions: In Taranaki during 2000-2008, hospital admissions for medical conditions with a social gradient were higher for Māori than for European children, although (with the exception of 2008) rates for both ethnic groups declined during this period. Rates for Māori children were lower than the NZ Māori average throughout 2000-2008, while rates for European children were lower than the NZ European average during 2004-2008. Ethnic differences in injury admissions were not marked (**Figure 34**). Small numbers precluded an analysis of mortality trends by ethnicity.

Summary

In New Zealand during 2004-2008, infectious and respiratory diseases were responsible for the majority of hospitalisations for medical conditions with a social gradient, while falls, followed by inanimate mechanical forces were the leading causes of injury admissions. In contrast, during 2002-2006 SUDI made the single largest contribution to mortality with a social gradient. Vehicle occupant deaths were the second leading cause, followed by pedestrian injuries and drowning, while bacterial / non viral pneumonia was the leading cause of death from medical conditions. During 2004-2008, hospital admissions with a social gradient were higher for males, Pacific > Māori > European and Asian children and those in more deprived areas. Similarly, during 2002-2006, mortality with a social gradient was higher for Pacific and Māori > European and Asian children and those in more deprived areas.

In Taranaki, hospitalisations for medical conditions with a social gradient increased during the early 2000s, reached a peak in 2002 and then declined, with a small upswing in rates being evident in 2008. For the majority of this period, admissions in Taranaki were lower than the New Zealand average. In contrast, injury admissions declined more gradually, with rates being closer to the New Zealand average during this period. During 2000-2008, hospital admissions for medical conditions were higher for Māori than for European children, although (with the exception of 2008) rates for both ethnic groups declined during this period. Rates for Māori children were lower than the NZ Māori average throughout 2000-2008, while rates for European children were lower than the NZ European average during 2004-2008. Ethnic differences in injury admissions however, were not marked. During 2000-2006, 12 Taranaki children died from injuries and 9 from medical conditions with a social gradient, while 14 (post neonatal) infants died as a result of SUDI.

Local Policy Documents and Evidence Based Reviews Relevant to the Social Policy Environment for Children

Table 2 on **Page 14** considers local policy documents and evidence based reviews relevant to the socioeconomic determinants of health, including policies which might reduce the impact of these factors on child wellbeing.

INFANT MORTALITY

Introduction

Infant mortality is often used as a barometer of the social wellbeing of a country [35]. New Zealand's infant mortality rates are middling by international standards, being lower than those of the USA and some Eastern European countries, but higher than those of Central and Northern Europe [36]. Despite this, mortality during the first year of life in New Zealand remains much higher than at any other point during childhood or adolescence. In the year to March 2008, a total of 330 New Zealand infants died prior to their first birthday [37].

Despite these relatively high numbers, New Zealand's infant mortality rates have declined during the past 40 years, with rates falling from 18.2 per 1,000 in 1968, to 5.3 per 1,000 in March 2008 [37]. While infant mortality rates are generally higher for Pacific > Māori > European / Other babies, males, and those in the most deprived areas [38], total infant mortality rates are 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) SIDS and congenital anomalies make the greatest contribution [2]. 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 infant mortality since 1990. In addition, because of the large contribution Sudden Unexpected Deaths in Infancy (SUDI) make to post neonatal mortality, interventions to address SUDI will be reviewed at the end of this section.

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 prior to 29 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 attributed to 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, neonatal and post neonatal mortality outlined above. Cause of death was derived from the main underlying cause of death (clinical code) as follows: Extreme Prematurity (ICD-10 P072), Congenital Anomalies (ICD-10 Q00-Q99), Perinatal Conditions (ICD-10 P00-P96); SIDS (ICD-10 R95); SUDI (ICD-10 R95, W75, R99).
Denominator: Birth Registration Dataset: All live births 20+ weeks gestation.

Notes on Interpretation

Note 1: See *Appendix 5: National Mortality Collection* for an overview of the dataset used.
Note 2: 95% confidence intervals have been provided for the rate ratios in this section and where appropriate, the terms significant or not significant have been used to communicate the significance of the observed associations. Tests of statistical significance have not been applied to other data in this section, and thus (unless the terms *significant* or *non-significant* are specifically used) the associations described do not imply statistical significance or non-significance (see **Appendix 1** for further discussion of this issue).

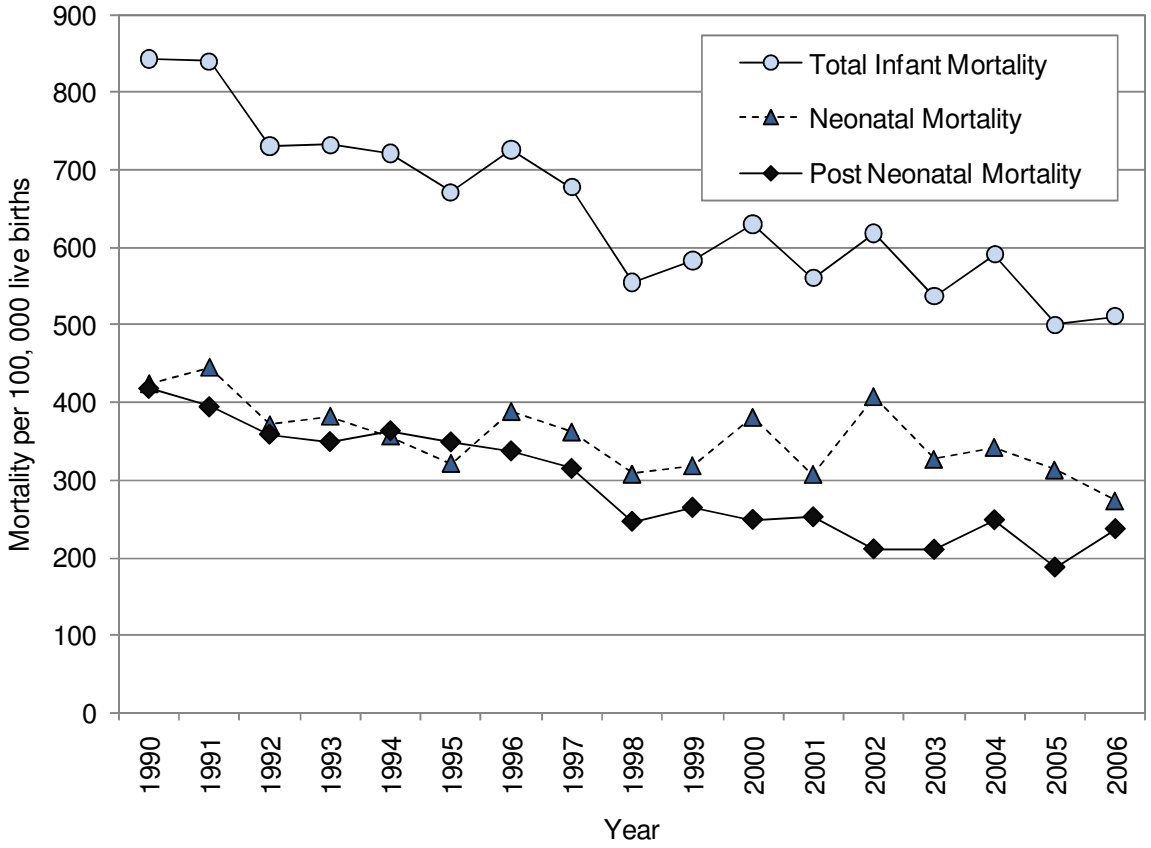
Indicator Category Ideal B

New Zealand Distribution and Trends

New Zealand Trends

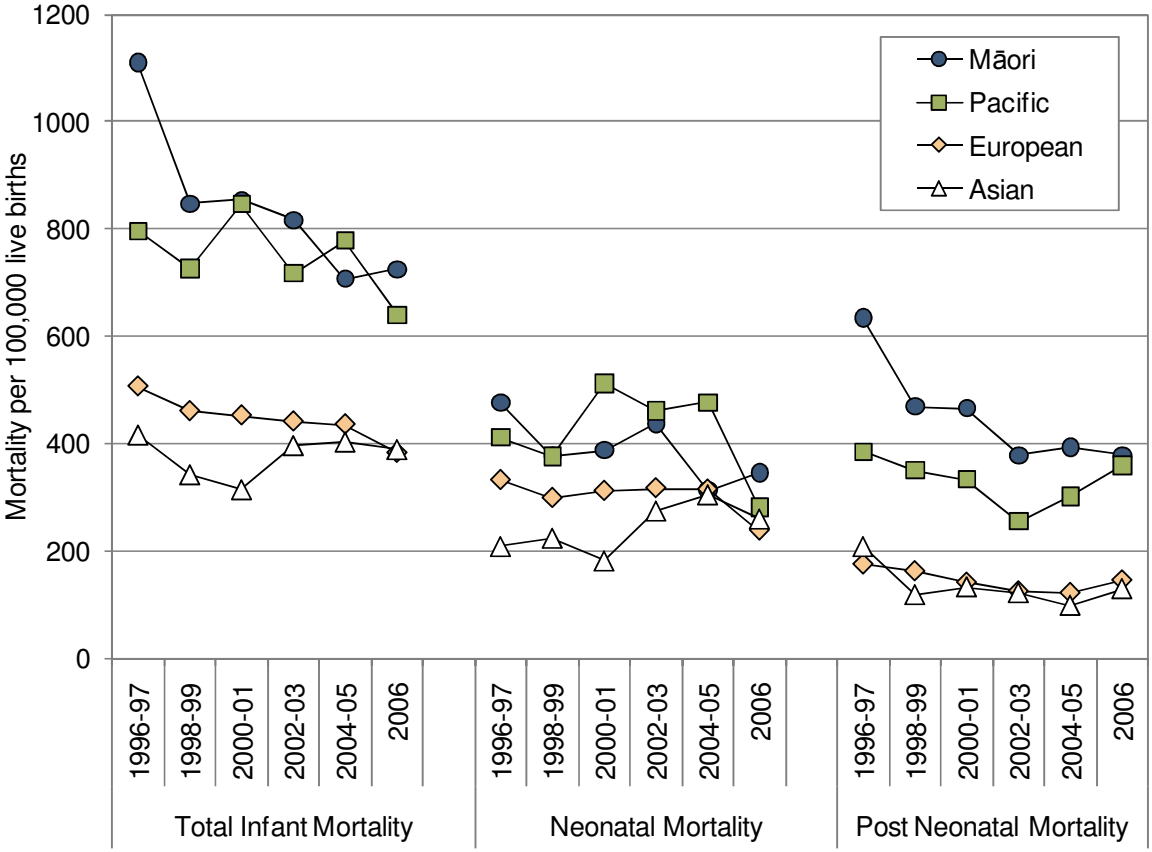
In New Zealand, while neonatal and post neonatal mortality both declined during the early-mid 1990s, declines during the 2000s were less marked. During the 2000s, neonatal mortality exceeded post neonatal mortality (**Figure 35**).

Figure 35. Total, Neonatal and Post Neonatal Mortality, New Zealand 1990-2006



Source: Numerator National Mortality Collection; Denominator Birth Registration Dataset

Figure 36. Total, Neonatal and Post Neonatal Mortality by Ethnicity, New Zealand 1996-2006



Source: Numerator National Mortality Collection; Denominator Birth Registration Dataset; Ethnicity is Level 1 Prioritised

New Zealand Trends by Ethnicity

In New Zealand during the late 1990s, neonatal mortality was generally higher for Pacific and Māori > European > Asian infants, although ethnic differences were less consistent during the 2000s. In contrast, post neonatal mortality was higher for Māori > Pacific > European and Asian infants throughout 1996-2006 (**Figure 36**).

Distribution by Cause

In New Zealand during 2002-2006, extreme prematurity and congenital anomalies were the leading causes of neonatal mortality, although intrauterine / birth asphyxia also made a significant contribution. In contrast, SUDI was the leading cause of post-neonatal mortality, followed by congenital anomalies (**Table 17**).

Table 17. Neonatal and Post Neonatal Mortality by Cause, New Zealand 2002-2006

Cause of Death	Number: Total 2002-2006	Number: Annual Average	Rate per 100,000	Percent of Deaths
Neonatal Mortality				
Extreme Prematurity	232	46.4	80.3	24.2
Congenital Anomalies: CVS	64	12.8	22.2	6.7
Congenital Anomalies: CNS	32	6.4	11.1	3.3
Congenital Anomalies: Other	140	28.0	48.5	14.6
Intrauterine / Birth Asphyxia	52	10.4	18.0	5.4
Other Perinatal Conditions	369	73.8	127.8	38.6
SUDI: SIDS	15	3.0	5.2	1.6
SUDI: Suffocation / Strangulation in Bed	13	2.6	4.5	1.4
SUDI: Unspecified	<5	0.8	1.4	0.4
Injury / Poisoning	7	1.4	2.4	0.7
Other Causes	29	5.8	10.0	3.0
Total Neonatal Mortality	957	191.4	331.4	100.0
Post Neonatal Mortality				
SUDI: SIDS	187	37.4	64.7	29.5
SUDI: Suffocation / Strangulation in Bed	60	12.0	20.8	9.5
SUDI: Unspecified	21	4.2	7.3	3.3
Congenital Anomalies: CVS	50	10.0	17.3	7.9
Congenital Anomalies: CNS	16	3.2	5.5	2.5
Congenital Anomalies: Other	58	11.6	20.1	9.2
Other Perinatal Conditions	56	11.2	19.4	8.8
Injury / Poisoning	29	5.8	10.0	4.6
All Other Causes	156	31.2	54.0	24.6
Total Post Neonatal Mortality	633	126.6	219.2	100.0

Source: Numerator National Mortality Collection; Denominator Birth Registration Dataset

Distribution by Ethnicity, Gender and NZ Deprivation Index

In New Zealand during 2002-2006, neonatal and post neonatal mortality were both *significantly* higher for Pacific and Māori > European and Asian infants, males and those in more deprived areas, while SUDI was *significantly* higher for Māori > Pacific > European and Asian infants, and those in average to more deprived areas (**Table 18**).

Table 18. Risk Factors for Neonatal and Post Neonatal Mortality, and Sudden Unexpected Death in Infancy (SUDI), New Zealand 2002-2006

Neonatal Mortality							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Quintile				Ethnicity			
Decile 1-2	251.2	1.00		Asian	284.6	0.95	0.74 - 1.21
Decile 3-4	258.1	1.03	0.80 - 1.32	European	300.1	1.00	
Decile 5-6	314.5	1.25	0.99 - 1.59	Māori	366.9	1.22	1.06 - 1.42
Decile 7-8	330.6	1.32	1.05 - 1.65	Pacific	430.7	1.44	1.18 - 1.74
Decile 9-10	438.8	1.75	1.41 - 2.16	Gender			
				Female	302.2	1.00	
				Male	358.5	1.19	1.04 - 1.35
Post Neonatal Mortality							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Quintile				Ethnicity			
Decile 1-2	106.7	1.00		Asian	113.8	0.89	0.61 - 1.32
Decile 3-4	131.1	1.23	0.84 - 1.79	European	127.2	1.00	
Decile 5-6	167.6	1.57	1.11 - 2.23	Māori	385.2	3.03	2.52 - 3.63
Decile 7-8	217.7	2.04	1.47 - 2.83	Pacific	295.7	2.32	1.81 - 2.98
Decile 9-10	375.0	3.51	2.59 - 4.77	Gender			
				Female	194.4	1.00	
				Male	242.8	1.25	1.07 - 1.46
Sudden Unexpected Death in Infancy (SUDI)							
Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Quintile				Ethnicity			
Decile 1-2	24.5	1.00		Asian	19.0	0.44	0.18 - 1.10
Decile 3-4	65.5	2.68	1.35 - 5.32	European	42.9	1.00	
Decile 5-6	71.6	2.93	1.50 - 5.72	Māori	246.2	5.74	4.32 - 7.63
Decile 7-8	98.5	4.03	2.12 - 7.65	Pacific	93.2	2.17	1.40 - 3.38
Decile 9-10	204.4	8.36	4.54 - 15.4	Gender			
				Female	100.7	1.00	
				Male	106.9	1.06	0.85 - 1.33

Source: Numerator National Mortality Collection; Denominator Birth Registration Dataset; Rates are per 100,000, Rate Ratios are Unadjusted, Ethnicity is Level 1 Prioritised. SUDI is neonatal AND post neonatal.

Taranaki Distribution and Trends

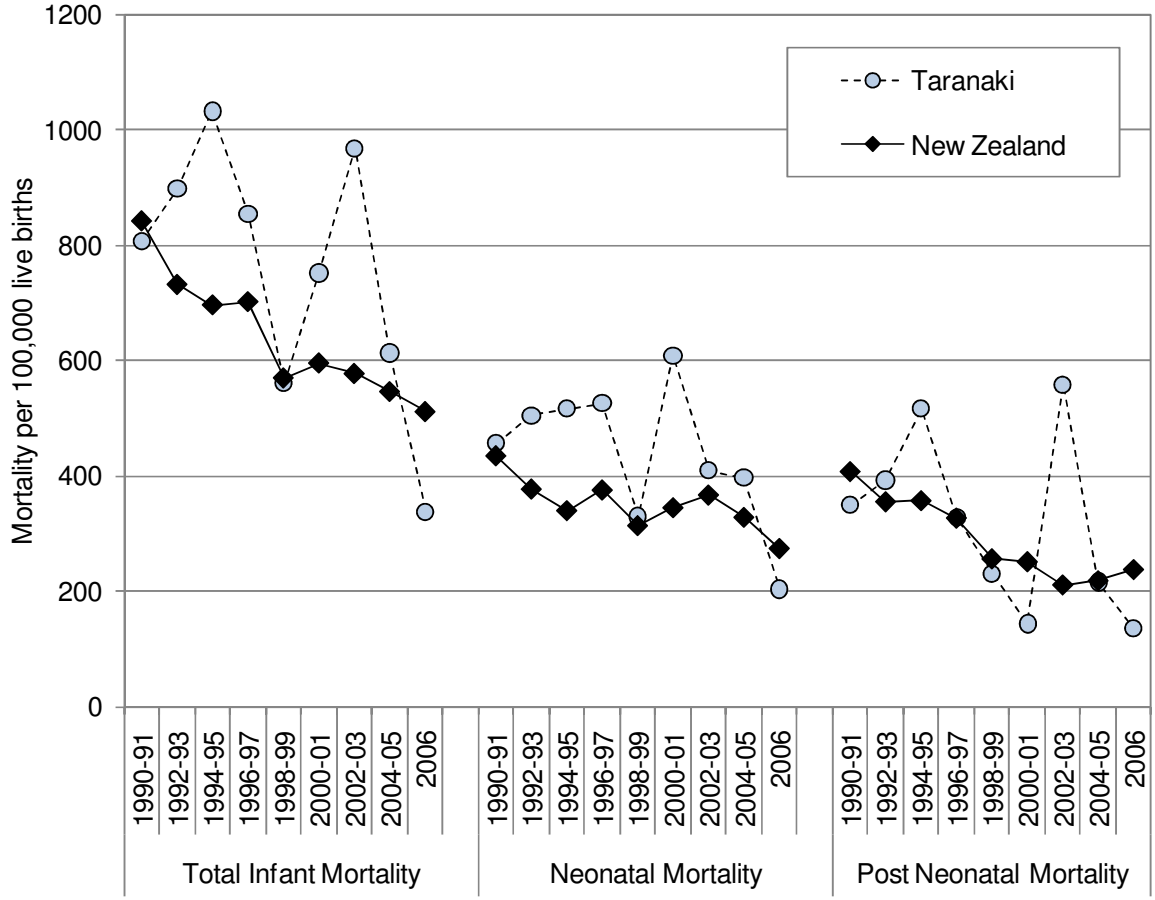
Taranaki Trends

In Taranaki during 1990-2006, while there were large year to year fluctuations, total infant, neonatal and post neonatal mortality all exhibited a general downward trend, with rates for all three outcomes being similar to / higher than the New Zealand average (**Figure 37**).

Distribution by Cause

In Taranaki during 2002-2006, perinatal conditions and congenital anomalies were the most frequent causes of neonatal mortality, while SUDI was the most frequent cause of post neonatal mortality (**Table 19**).

Figure 37. Total, Neonatal and Post Neonatal Mortality, Taranaki vs. New Zealand 1990-2006



Source: Numerator National Mortality Collection; Denominator Birth Registration Dataset

Table 19. Neonatal and Post Neonatal Mortality by Cause, Taranaki 2002-2006

Cause of Death	Number: Total 2002-06	Number: Annual Average	Rate per 100,000	Percent of Deaths
Taranaki Neonatal Mortality				
Extreme Prematurity / Birth Asphyxia / Other Perinatal	20	4.0	288.1	80.0
Congenital Anomalies	5	1.0	72.0	20.0
Total	25	5.0	360.2	100.0
Taranaki Post Neonatal Mortality				
SUDI	12	2.4	172.9	52.2
Congenital Anomalies	5	1.0	72.0	21.7
Extreme Prematurity / Birth Asphyxia / Other Perinatal	<5	s	s	s
Other Causes	5	1.0	72.0	21.7
Total	23	4.6	331.4	100.0

Source: Numerator National Mortality Collection; Denominator Birth Registration Dataset

Summary

In New Zealand, while neonatal and post neonatal mortality both declined during the early-mid 1990s, declines during the 2000s were less marked. When broken down by ethnicity, neonatal mortality was higher for Pacific and Māori > European > Asian infants during the late 1990s, although ethnic differences were less consistent during the 2000s. In contrast, post neonatal mortality was higher for Māori > Pacific > European and Asian infants throughout 1996-2006.

When broken down by cause, extreme prematurity and congenital anomalies were the leading causes of neonatal mortality in New Zealand during 2002-2006. In contrast, SUDI was the leading cause of post-neonatal mortality, followed by congenital anomalies. During this period, neonatal and post neonatal mortality were both *significantly* higher for Pacific and Māori > European and Asian infants, males and those in more deprived areas, while SUDI was *significantly* higher for Māori > Pacific > European and Asian infants, and those in average to more deprived areas.

In Taranaki during 1990-2006, while there were large year to year fluctuations, total infant, neonatal and post neonatal mortality all exhibited a general downward trend, with rates for all three outcomes being similar to / higher than the New Zealand average. During 2002-2006, perinatal conditions and congenital anomalies were the most frequent causes of neonatal mortality, while SUDI was the most frequent cause of post neonatal mortality.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Sudden Expected Death in Infancy (SUDI)

Infant mortality has a heterogeneous causality, which reflects issues arising any time from conception, through to the first year of life. Because any review of interventions to address infant mortality would encompass the entire spectrum of obstetric and neonatal care, it remains beyond the scope of this section. The following table thus focuses on one relatively discrete cause of infant mortality, Sudden Unexpected death in Infancy (SUDI).

During the past two decades, a large number of risk factors for SUDI have been identified and a range of local research projects [39] and international reviews have considered interventions to reduce SUDI at the population level. In addition, the National Cot Death Campaign, based on four *modifiable* risk factors from the New Zealand Cot Death Study, resulted in a large decline in SUDI rates during the early 1990s [40]. As a consequence, there is now a reasonable evidence base regarding the types of interventions required to address SUDI at the population level. In the context of New Zealand's currently large ethnic and socioeconomic disparities in SUDI however, the most appropriate vehicles for implementation require further consideration.

While in New Zealand at present, there is no national strategy for the prevention of SUDI, the Child and Youth Mortality Review Committee released a position paper entitled *Preventing Sudden Unexpected Death in Infancy* [41], which outlines the evidence in this area. **Table 20** summarises a range of publications which may be useful for those wishing to develop local strategies for SUDI prevention. In addition **Table 34** on **Page 146** provides a brief overview of local policy documents and evidence based reviews which considers interventions to promote smoking cessation during pregnancy. (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be viewed as providing an overview of the issues for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any local SUDI strategy).

Table 20. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Sudden Unexpected Death in Infancy (SUDI)

Ministry of Health Policy Documents
Child and Youth Mortality Review Committee. 2008. **Preventing Sudden Unexpected Death in Infancy**. Wellington, Ministry of Health. http://www.cymrc.health.govt.nz/MOH.nsf/pagescm/ 6805/$File/sudi-infoforhealthpractitioners-2008.pdf This position paper provides background information on SUDI, as well as advice to medical practitioners on the type of information they can give to parents and caregivers to reduce SUDI risk (e.g. smoking, bed-sharing, pacifier use).
Systematic and Other Reviews from the International Literature
Hauck F, Omojokun O, Siadaty M. **Do Pacifiers Reduce the Risk of Sudden Infant Death Syndrome? A Meta-Analysis**. Pediatrics, 2005. 116(5):e716-23. Pacifiers have been associated with a reduced risk of SIDS, but many countries have been reluctant to recommend their use because of concerns about possible adverse effects. This meta-analysis evaluated the protective effects of pacifier use on SIDS and recommended that: pacifiers be offered to infants as a potential method to reduce SIDS risk; that pacifiers be offered to infants when being placed for all sleep episodes, including daytime naps and night time sleeps; that they recommended for infants up to 1 year of age (which includes the peak age for SIDS risk). For breastfed infants, pacifiers should be introduced after breastfeeding has been well established.
American Academy of Pediatrics Policy Statement. **The Changing Concept of Sudden Infant Death Syndrome: Diagnostic Coding Shifts, Controversies Regarding the Sleeping Environment, and New Variables to Consider In Reducing Risk**. Pediatrics, 2005. 116(5): 1245–1255. Since the AAP's last statement on SIDS in 2000, several issues have become relevant, including the significant risk of side sleeping position; the AAP thus no longer recognizes side sleeping as an alternative to fully supine sleeping and also stresses the need to avoid redundant soft bedding and objects in the infant's sleeping environment. In addition the hazards of adults sleeping with an infant in the same bed are highlighted. The reduction in risk associated with having infants sleeping independently in the same room as adults was noted, as well as the use of pacifiers at the time of sleep. This statement reviews the evidence associated with these and other SIDS related issues and proposes new recommendations for further reducing SIDS risk.
Lumley J, Oliver S, Chamberlain C, Oakley L. 2004. **Interventions for Promoting Smoking Cessation During Pregnancy**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD001055. DOI: 10.1002/14651858.CD001055.pub2. Maternal smoking is an important modifiable risk factor for preterm birth, low birth weight and perinatal death. This review examined the effectiveness of smoking cessation programmes in pregnancy. The studies reviewed included some specifically undertaken in adolescents. The review showed that there was a significant reduction in maternal smoking in the intervention groups. The smoking cessation interventions were associated with less low birth weight babies, and fewer preterm deliveries. The authors conclude that smoking cessation programmes in pregnancy are worthwhile to improve both pregnancy and infant outcomes, and to reduce maternal complications in pregnancy.
Other Relevant Articles
Finau E, Finau S, Fuamatu N, Tukuitonga C. **SIDS or Sitisi: Plight and Response of Pacificans in New Zealand (Aotearoa).** Pacific Health Dialog, 2003. 10(2):182-92. This paper reports on Pacificans' experience with Sitisi (SIDS). The response includes research, community consultation, and training of culturally appropriate Community SIDS Educators. The importance of community-based strategies is central to the Pacificans' response to Sitisi and its determinants. The success of this approach provides a model for intervention and health promotion among Pacificans globally.
Tipene-Leach D, Able S, Haretuku R, Everard C. **The Māori SIDS Prevention Programme; Challenges and Implications for Māori Health Service Development**. 2000. Social Policy Journal of New Zealand.14: 65-77. This paper traces the development of the Māori SIDS programme. It describes the community consultation process, appointment of regional co-ordinators and extension of the programme to the general population. It also describes the effect that structural reform had on the programme and discusses issues related to the Treaty of Waitangi.
Tipene-Leach, D, Everard C, Haretuku R. **Taking a Strategic Approach to SIDS Prevention in Māori Communities- An Indigenous Perspective**, in SIDS Monograph, H. Kraus and R. Byard, Editors. 1999. This book chapter outlines aspects of the public health campaign to prevent SIDS in the Māori community. Why SIDS rates were so high amongst Māori infants is discussed, as well as the reasons why they remained high after the National Cot Death Campaign of 1991. The chapter outlines the strategic approach taken by the Māori SIDS Prevention Programme and examines some of the issues pivotal to the public health application of research findings to people in local communities.

SOCIOECONOMIC AND CULTURAL DETERMINANTS

HOUSEHOLD COMPOSITION

FAMILY COMPOSITION AND DIVORCE

Introduction

In New Zealand during the past 25 years, there has been a marked shift away from two-parent families, with an increase in the proportion of families headed by single parents. While the majority of single parent families are headed by women (84% in 2001), Census data suggests that sole parents are not a homogeneous group, but reflect a diversity of experience including those who have never been married (more commonly in their teens-20s), those who are separated or divorced (more commonly in their 30s-40s), those who are widowed (more commonly in their 50s-60s) and those who remain married but who do not live together for a variety of reasons (e.g. partner living overseas). In addition, for many children in sole parent families, both parents maintain an active parenting role through shared custody arrangements [42].

Family composition and the number of children growing up in sole parent families are important for several reasons. Firstly, the role family composition plays in the socioeconomic resources available to dependent children was recently highlighted by the 2004 Living Standards Survey, which suggested that 42% of sole parent families lived in significant or severe hardship, as compared to only 14% of two parent families [16]. Such hardship resulted in families postponing children's doctors or dentists visits, children sharing a bed, wearing poorly fitting clothes or shoes, or going without wet weather clothing. In addition, the survey noted that sole parent families were more likely to be reliant on Benefits (sole-parent 62% vs. two-parent 6%) and that much of the differences in living standards between sole and two parent families was due to the formers greater reliance on benefits as their primary source of income [16].

Secondly, for a significant number of children, living in a sole-parent family has arisen out of parental separation. A large body of literature now suggests that children who experience parental separation during childhood do less well across a range of outcomes (e.g. educational attainment, mental and emotional health, social conduct, substance use, early onset sexual behaviour) [43] [44]. Others would argue however, that the magnitude of these differences is not large and that many children are not adversely affected [44], with those who are being influenced by additional exacerbating factors (e.g. a decline in family income, or the mental health of custodial parents; exposure to inter-parental conflict and compromised parenting). Further, it is likely that many of these factors interact to influence children's wellbeing (e.g. income declines after separation → increased risk of economic hardship → negative impacts on mental health → compromised parenting).

In addition, these associations are not always straight forward, with a number of studies suggesting that where parental relationships are highly conflicted and children are drawn into the conflict, or where a child's relationship with a parent is poor, children may actually benefit from parental separation [43] [44]. Further adding to this complexity is the finding that in situations where a sole parent remarries, the outcome for their children often differs little from those remaining in a sole parent family, even if their economic circumstances improve [44]. 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 considers two aspects of family composition:

1. The proportion of children living in sole parent households at the 2006 Census.
2. The number of divorces involving children, as recorded by Family Courts during 1998-2008.

Data Source and Methods

Definition
Proportion of Children Aged 0-14 Years Living in One Parent Households

Data Source
Numerator: NZ Census: Number of children 0-14 years living in one 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

Indicator Category Proxy C

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.

Definition
Number of Divorces Involving Children Aged 0-17 Years

Data Source
Numerator: Statistics New Zealand: Number of orders for dissolution of marriage granted by New Zealand Family Courts which involve children aged 0-17 years

Indicator Category Ideal C

Notes on Interpretation
Note 1: The *Family Proceedings Act* became effective on 1 October 1981, and removed divorce from the High Court to the Family Court. Under the Act, an application for marriage dissolution could be made by either the husband or wife on grounds that the marriage had broken down irreconcilably, provided a two-year separation requirement was satisfied, and that one or both marriage partners lived in New Zealand. The passing of the Act marked the final transition from a religious to social contracts based law. As a result, the number of divorces jumped from 6,493 in 1980, to 8,590 in 1981, and to 12,395 in 1982, but then fell to 8,607 in 1985.

Note 2: In New Zealand no information is available on the residence of applicants for dissolution of marriage. Thus the regional data in this section is based on dissolutions awarded by Family Courts located within the DHB's boundaries, rather than the usual residential address of children at the time of their parent's divorce.

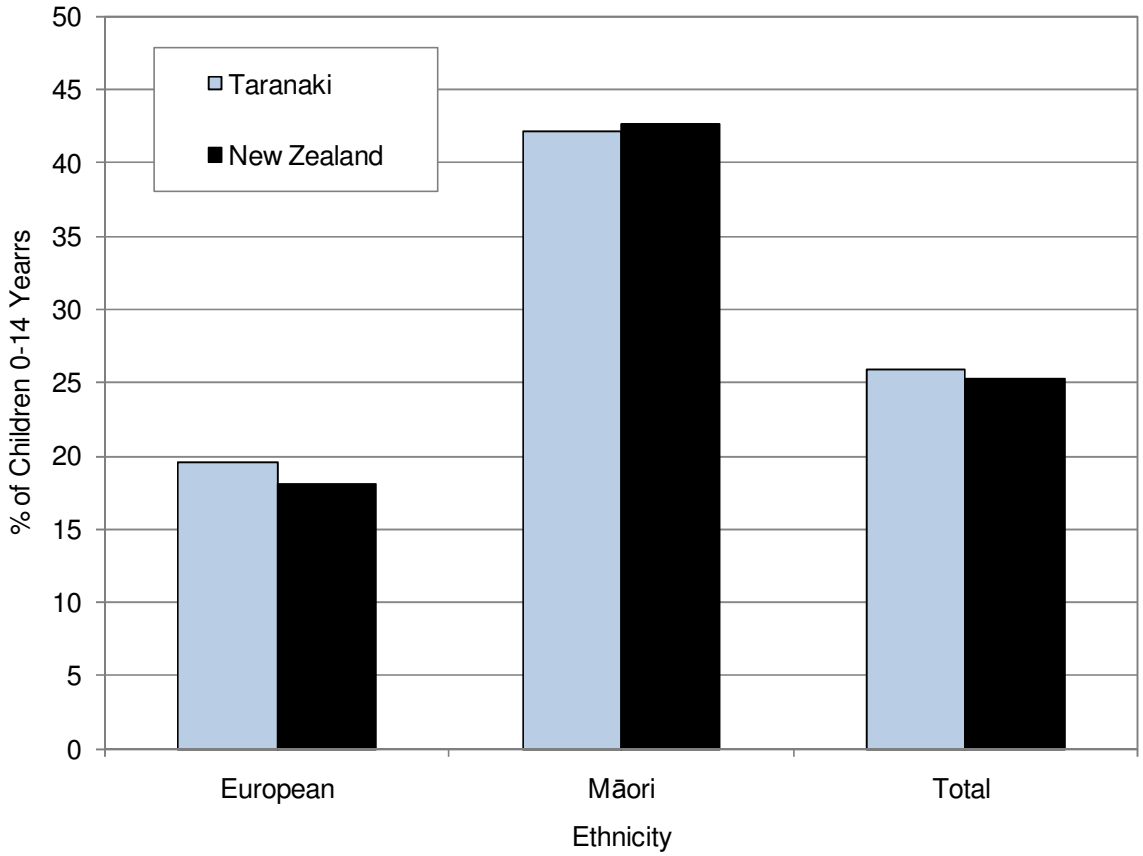
Proportion of Children Living in Sole Parent Households

Total Population and Ethnic Differences: Taranaki vs. New Zealand
In Taranaki during 2006, 25.8% of children aged 0-14 years lived in a sole parent household, as compared to 25.2% of children nationally. During this period, 42.1% of Māori and 19.6% of European children lived in a sole parent household, as compared to 42.6% of Māori and 18.1% of European children nationally (**Figure 38**).

Socioeconomic Differences: Taranaki vs. New Zealand
In Taranaki during 2006, the proportion of children living in sole parent households rose progressively, from 7.5% amongst those living in the most affluent (Decile 1) areas, to 53.6% amongst those living in the most deprived (Decile 10) areas. Similar socioeconomic differences were seen for New Zealand as a whole (NZ Decile 1, 7.4% vs. Decile 10, 47.1% **Figure 39**).

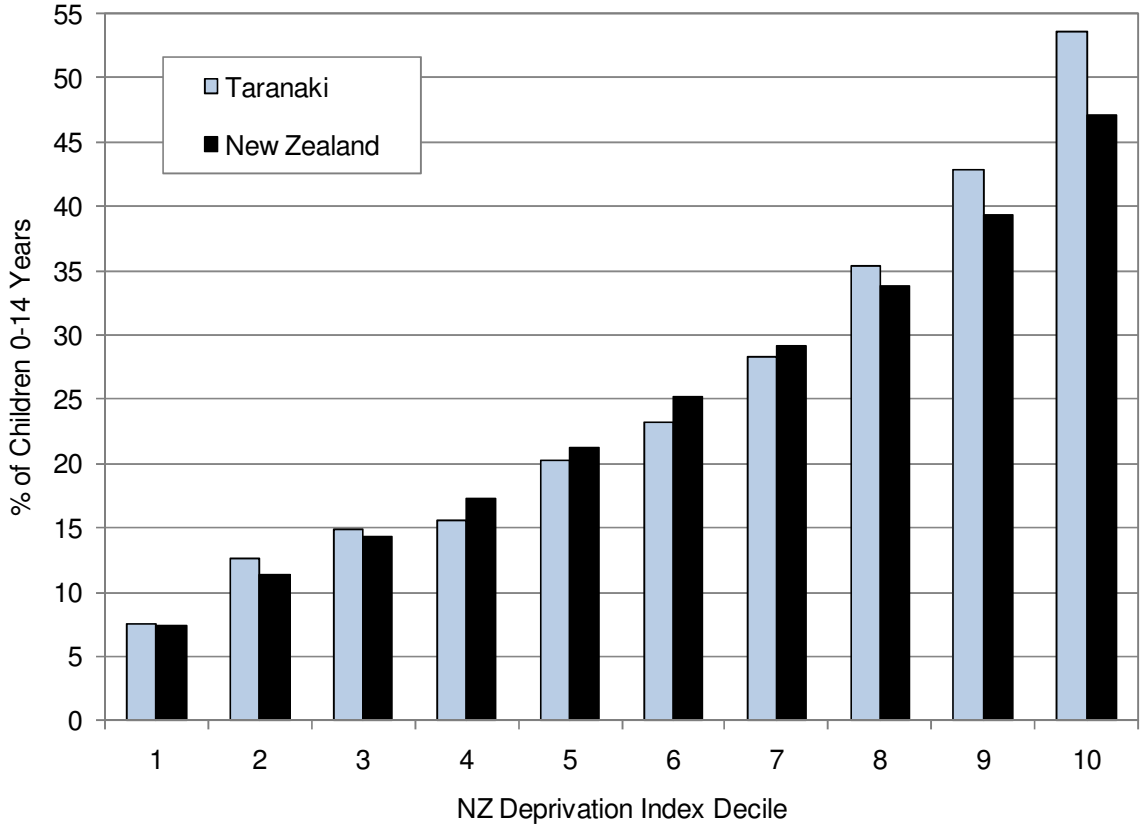
Relationship Between Socioeconomic Status and Ethnicity: New Zealand
During 2006, while the proportion of children living in a sole parent household increased with increasing NZDep deprivation for each of New Zealand's largest ethnic groups, at most levels of deprivation, the proportion living in a sole parent household was higher for Māori > European and Pacific ≥ Asian children (**Figure 40**).

Figure 38. Proportion of Children Aged 0-14 Years Living in Sole Parent Households by Ethnicity, Taranaki vs. New Zealand at the 2006 Census



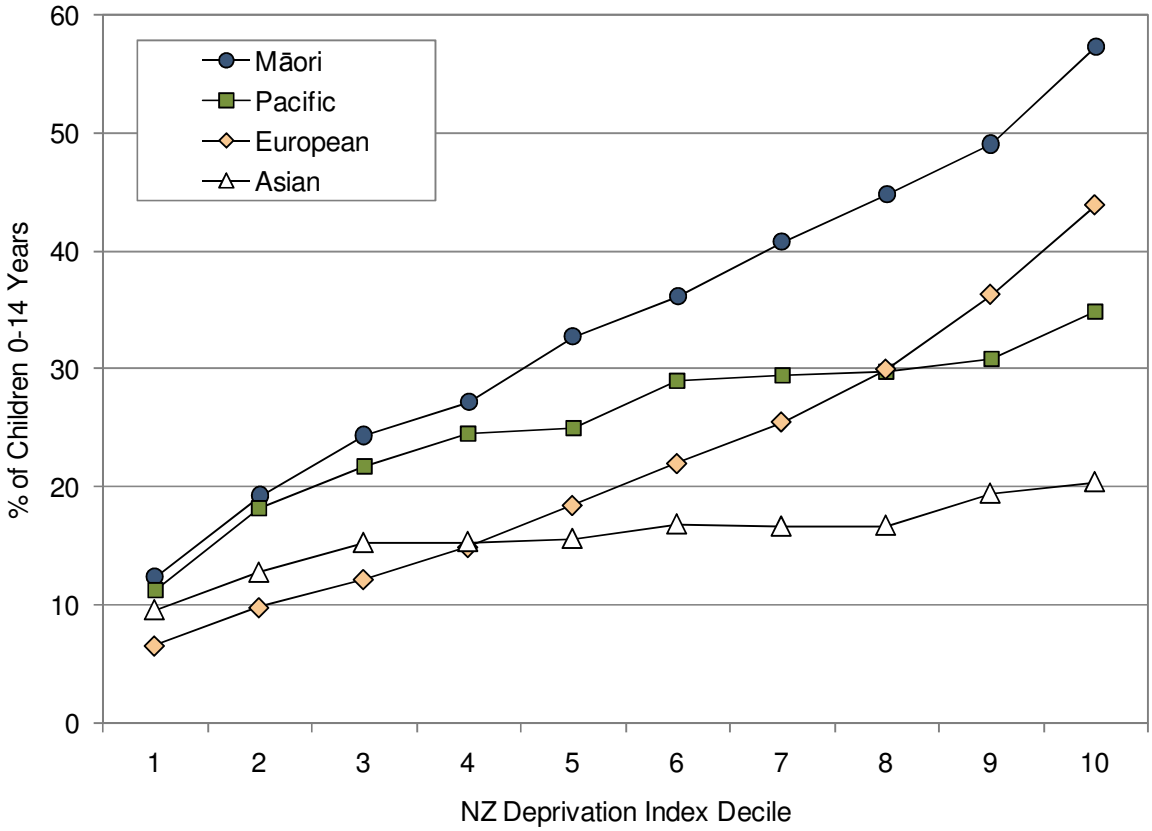
Source: Statistics New Zealand. Ethnicity is Level 1 Prioritised

Figure 39. Proportion of Children Aged 0-14 Years Living in Sole Parent Households by NZ Deprivation Index Decile, Taranaki vs. New Zealand at the 2006 Census



Source: Statistics New Zealand.

Figure 40. 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. Ethnicity is Level 1 Prioritised

Number of Divorces Involving Children Aged 0-17 Years

New Zealand Marriage and Divorce Trends

In New Zealand during 1981-2008, the general marriage rate (marriages per mean unmarried population aged 16+ years) declined, with rates falling from 29.4 per 1,000 in 1981, to 13.7 per 1,000 in 2008. In contrast, divorce rates (marriage dissolutions per 1,000 estimated existing marriages) remained relatively static, being 11.9 per 1,000 in 1981 vs. 11.3 per 1,000 in 2008. The only exception was a large spike in divorces which followed the introduction of the *Family Proceedings Act* on 1 October 1981 (this Act changed the way in which marriage dissolutions were granted in New Zealand) (**Figure 41**).

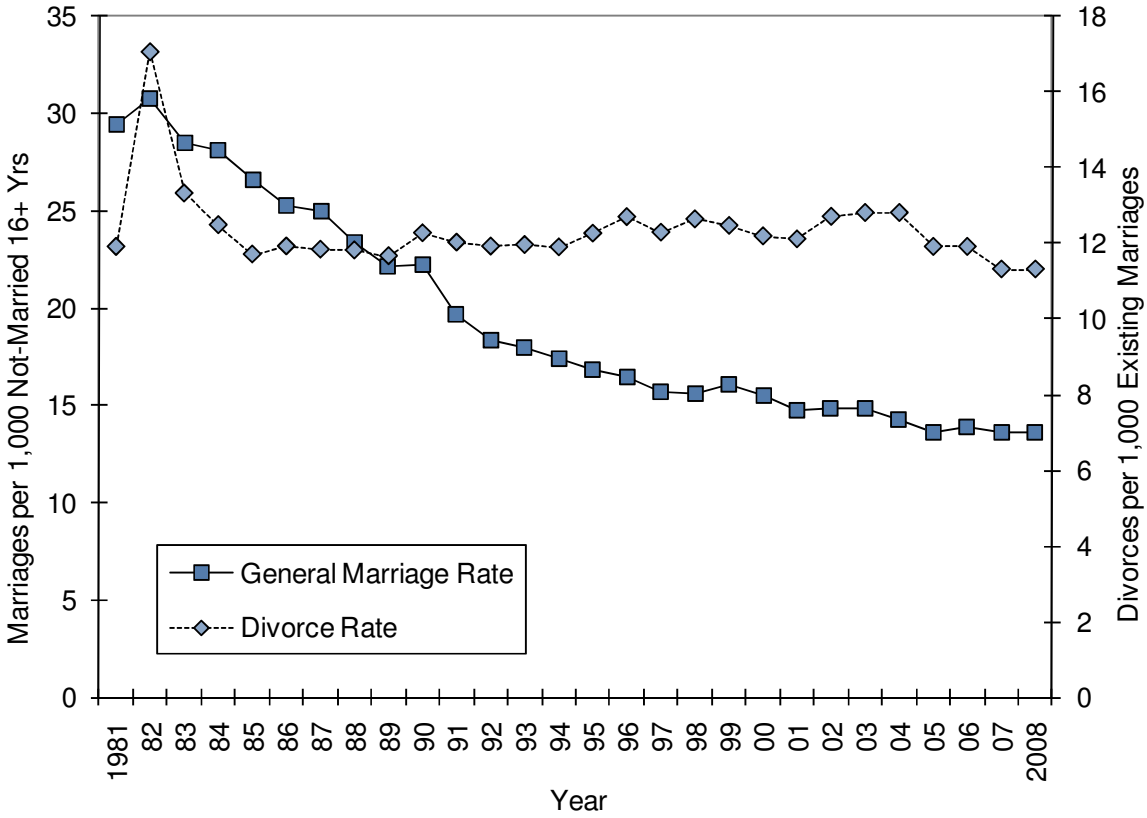
Age at Marriage and Divorce and Duration of Marriages Ending in Divorce

In New Zealand during 1987-2008, the median age of marriage for men increased from 27.6 years in 1987, to 32.5 years in 2008, while the median age of marriage for women increased from 25.2 years in 1987, to 30.2 years in 1980. Similarly, the median age at divorce for men increased from 37.7 years in 1987 to 44.5 years in 2008, while the median age at divorce for women increased from 35.0 years in 1987 to 41.9 years in 2008. In contrast, the median duration of marriage ending in divorce increased slightly, from 12.5 years in 1987, to 13.5 years in 2008 (**Figure 42**).

Divorces Involving Children for Courts in the Taranaki Region

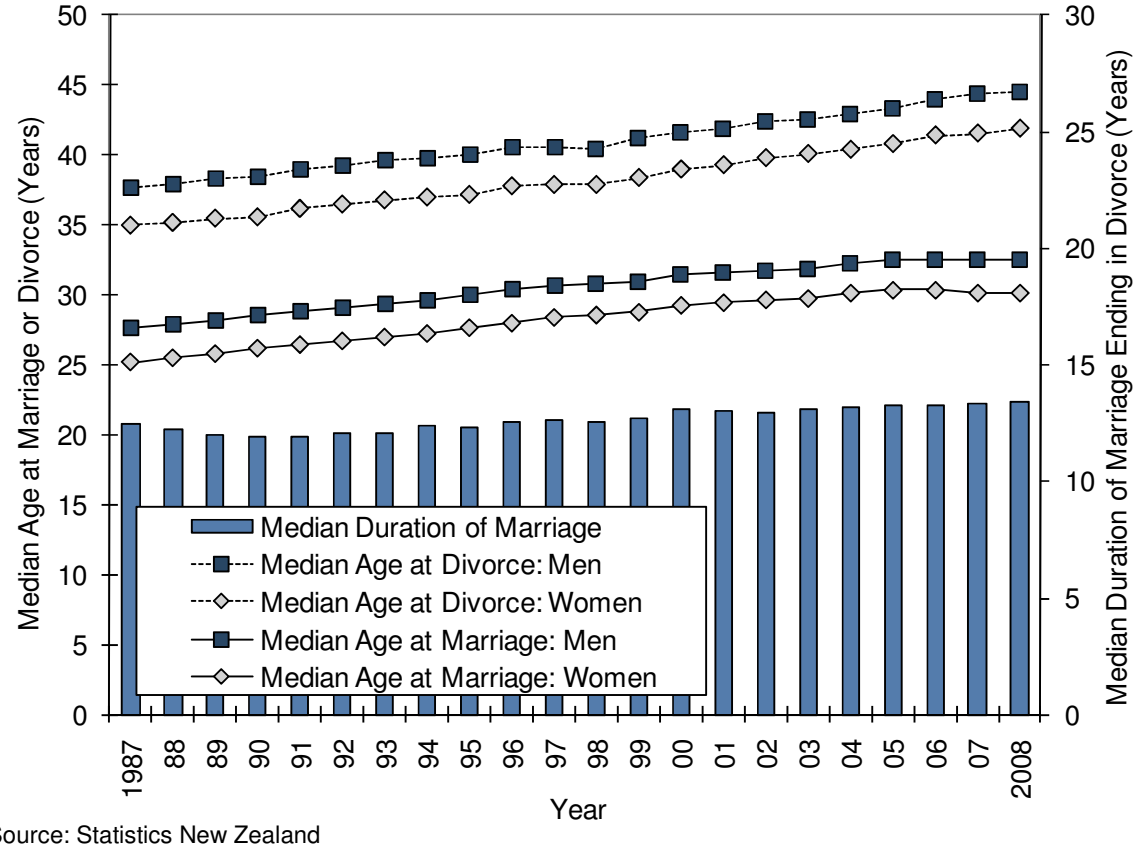
During 1998-2008, Family Courts within the Taranaki region granted a large number of orders for the dissolution of marriage, with a significant proportion of these involving children. Unfortunately lack of a suitable denominator precluded the calculation of rates (i.e. the proportion of Taranaki children who were affected by the divorce of their parents during this period remains unclear) (**Table 21, Table 22**).

Figure 41. Marriage and Divorce Rates in New Zealand 1981-2008



Source: Statistics New Zealand: General Marriage Rate: Marriages per 1,000 mean not-married estimated population 16+ yrs. Divorce Rate: Dissolutions of marriage granted per 1,000 estimated existing marriages; See comments in Methods Section regarding large spike in divorces during 1982.

Figure 42. Median Age at Marriage and Divorce by Gender, and Median Duration of Marriage Ending in Divorce, New Zealand 1987-2008



Source: Statistics New Zealand

Table 21. Number of Divorces Involving Children 0-16 Years by Court, for Family Courts in the Taranaki Region 1998-2008

Family Court	Year	No. of Divorces	No. of Divorces Involving Children	No. of Children Involved	No. of Children 0-9 Yrs	No. of Children 10-16 Yrs	Average No. of Children per Divorce*
Hawera	1998	60	40	81	36	45	2.03
	1999	56	29	55	26	29	1.90
	2000	79	44	94	41	53	2.14
	2001	11	6	12	<5	10	2.00
	2002	37	20	41	23	18	2.05
	2003	111	57	124	42	82	2.18
	2004	79	44	79	32	47	1.80
	2005	61	31	58	21	37	1.87
	2006	49	24	45	21	24	1.88
	2007	53	23	45	19	26	1.96
	2008	47	26	54	30	24	2.08
New Plymouth	1998	234	132	288	116	172	2.18
	1999	209	114	207	105	102	1.82
	2000	199	108	227	104	123	2.10
	2001	201	103	207	102	105	2.01
	2002	181	84	153	75	78	1.82
	2003	250	130	233	106	127	1.79
	2004	240	122	224	95	129	1.84
	2005	211	107	200	82	118	1.87
	2006	226	125	240	100	140	1.92
	2007	195	105	189	71	118	1.80
	2008	197	98	179	70	109	1.83

Source; Statistics New Zealand; *average number of children per divorce, for divorces involving children

Table 22. Number of Divorces Involving Children 0-16 Years, for Family Courts in the Taranaki Region vs. New Zealand 1998-2008

Family Court	Year	No. of Divorces	No. of Divorces Involving Children	No. of Children Involved	No. of Children 0-9 Yrs	No. of Children 10-16 Yrs	Average No. of Children per Divorce Involving Children
Taranaki Total	1998	294	172	369	152	217	2.15
	1999	265	143	262	131	131	1.83
	2000	278	152	321	145	176	2.11
	2001	212	109	219	104	115	2.01
	2002	218	104	194	98	96	1.87
	2003	361	187	357	148	209	1.91
	2004	319	166	303	127	176	1.83
	2005	272	138	258	103	155	1.87
	2006	275	149	285	121	164	1.91
	2007	248	128	234	90	144	1.83
	2008	244	124	233	100	133	1.88
New Zealand	1998	10,067	4,902	9,429	4,847	4,582	1.92
	1999	9,931	4,748	8,905	4,462	4,443	1.88
	2000	9,699	4,571	8,776	4,256	4,520	1.92
	2001	9,679	4,527	8,744	4,183	4,561	1.93
	2002	10,292	4,732	8,946	4,180	4,766	1.89
	2003	10,491	4,838	9,121	4,231	4,890	1.89
	2004	10,609	4,972	9,185	4,226	4,959	1.85
	2005	9,972	4,513	8,338	3,738	4,600	1.85
	2006	10,065	4,428	8,075	3,613	4,462	1.82
	2007	9,650	4,318	7,824	3,618	4,206	1.81
	2008	9,713	4,169	7,576	3,566	4,010	1.82

Source; Statistics New Zealand; For a list of the Courts included see Table 21.

Summary

Sole Parent Families: In Taranaki during 2006, 25.8% of children aged 0-14 years lived in a sole parent household, as compared to 25.2% of children nationally. During this period, 42.1% of Māori and 19.6% of European children lived in a sole parent household, as compared to 42.6% of Māori and 18.1% of European children nationally. Similarly, the proportion rose from 7.5% for those in the most affluent (Decile 1) areas, to 53.6% for those in the most deprived (Decile 10) areas. Care must be taken when interpreting these figures, as the breakdown into *Couple with Children* / *One Parent with Children* is made without regard to the relationship between the child and caregiver (e.g. a couple with children includes married and de-facto couples, grandparents caring for grandchildren, a mother living with a partner who is not a child's father) and thus these figures may underestimate the number of children experiencing parental separation, or living in blended family settings.

Divorce Rates: In New Zealand during 1981-2008, while there was a large decline in the general marriage rate, divorce rates per 1,000 existing marriages changed little. While the median age at both marriage and divorce increased for both men and women during 1987-2008, the average duration of marriage ending in divorce increased only slightly, from 12.5 to 13.5 years. Despite this, during 1998-2008 a large number of divorces were granted by Family Courts in the Taranaki region, to parents with children under 17 years, although data limitations precluded the calculation of divorce rates for the DHB as a whole.

Local Policy Documents and Reviews Relevant to the Composition, Formation, and Dissolution of New Zealand Families

In New Zealand at present, there is little guidance for health professionals, as to what they might do to promote family resiliency, or the issues which should be addressed when dealing with children undergoing changes in family composition. **Table 23** provides an overview of publications produced by the Families Commission and the Ministry of Social Development which consider these issues.

Table 23. Local Policy Documents and Reviews Relevant to the Composition, Formation, and Dissolution of New Zealand Families

New Zealand Policy Documents and Literature Reviews
Families Commission. 2009. **What Separating Parents Need When Making Care Arrangements for Their Children**. Wellington. Families Commission. http://www.familiescommission.govt.nz/act/separation/issues-paper-01 This Families Commission issues paper was developed to provide broader family perspectives in the context of the upcoming review of the New Zealand child support scheme. It discusses the importance of promoting cooperative parenting and looks at options for change that would provide more equity, flexibility and information for separating parents. The paper provides a brief overview of the New Zealand system of support arrangements for the care of children after parental separation, as well as some family's experiences of separation and the child support scheme.
Robertson J, Pryor J. 2006. **Review of the Empirical Literature Assessing the Impacts of Government Policies on Family Form**. Wellington. Families Commission. http://www.familiescommission.govt.nz/resources/publications?page=8 Policymakers need to consider the impacts on families when designing and implementing policies and services. This Families Commission report contains a systematic review of the impacts of government policies on partnership formation, dissolution and reconstitution; fertility decision-making and family size; and family living arrangements.
Pryor J. 2004. **Stepfamilies and Resilience**. Centre for Social Research and Evaluation: Wellington 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 authors conclude that the affective quality of relationships in stepfamilies is important for positive family and child functioning. In particular, attention needs to be paid to the child-stepparent relationship and that the perspectives of children are central to assessing wellbeing at the family and individual level.
Dharmalingam A, et al. 2004. **Raising Children in New Zealand: Patterns of Family Formation and Change in New Zealand**. Centre for Social Research and Evaluation, Ministry of Social Development: Wellington. http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/patterns-family-formation/index.html Over the past 50 years, there have been major changes across the developed world in the processes that shape families – the formation, dissolution and reconstitution of adult unions, and the patterns of childbearing that occur within and outside these unions. This report provides a detailed account of how these changes have occurred in New Zealand, drawing on data from the 1995 survey New Zealand Women: Family, Education and Employment.
Kalil A. 2003. **Family Resilience and Good Child Outcomes: A Review of the Literature**. Centre f or Social Research and Evaluation, Ministry of Social Development: Wellington. http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/publications-index-2003-2005.html This report focuses on factors that contribute to good children's outcomes, with an emphasis on family characteristics and processes. It considers the issue of family resilience i.e. why some families manage to cope well when facing adversity, while others in similar circumstances do not. It considers how the concept of family resilience has been defined and documents the research findings on how family resilience manifests itself. As there is little empirical evidence in New Zealand on this issue, the report largely draws on overseas studies, especially longitudinal research projects. While the lack of New Zealand data limits the understanding of how resilience manifests itself in New Zealand families, the high-level findings are likely to have considerable relevance to New Zealand.

HOUSEHOLD CROWDING

Introduction

The associations between substandard housing and poor health have been known for several centuries, with reports from as early as the 1830s attributing high rates of infectious disease to overcrowded, damp, and poorly ventilated housing [45]. In New Zealand, crowding is strongly correlated with childhood meningococcal disease, with the risk increasing progressively with the addition of each additional adult into a household [46]. While there is less local information for other infectious diseases, overseas research has also demonstrated correlations between crowding and rheumatic fever, TB, bronchiolitis, croup, childhood pneumonia, hepatitis B, head lice and conjunctivitis [47]. In addition, it has been suggested that crowding impacts negatively on mental health, leading to interpersonal aggression, withdrawal, socially deviant behaviour and psychological distress [48].

While the relationship between crowding and poorer health outcomes has been known for some time, uncertainty still remains about how much of the association is due to crowding itself and how much is due to other factors which often accompany crowding, such as poor quality housing (e.g. damp, mould, temperature extremes), low income, unemployment, fewer material resources, living in run-down neighbourhoods and lack of control over stress [47]. Supporters for a direct role for crowding have proposed a number of pathways including:

For Infectious Diseases [47, 48]:

- Increased frequency of contact between children and infectious disease carriers.
- Closer and more prolonged physical contact between children and carriers.
- Increased exposure to second hand tobacco smoke.
- Children sharing a bed or bedroom.
- Lack of ability to adequately care for sick household members.
- Difficulties in maintaining good hygiene practices.

For Poorer Mental Wellbeing [48]:

- An increased number of social contacts and unwanted interactions.
- Decreases in privacy and the ability to achieve simple goals (e.g. watching TV)
- Reduced ability of parents to monitor children's behaviour.
- The need to co-ordinate activities such as using the bathroom with others.

While there has been a gradual decline in household crowding in New Zealand during the past 40 years, marked disparities remain, with crowding being of particular concern for Māori and Pacific households; those on low incomes, benefits or with no qualifications; those living in rental housing; extended family groups, or those with dependent children; and those who are recent migrants [49]. That crowding potentially plays a major role in the health and wellbeing of these families was highlighted by participants in the Māori Women's Housing Research Project [50] who, when asked to comment on the role crowding played in their lives noted:

> "…*Crowding and homelessness do not help to provide a stable environment for Māori women and their families...it creates extremely stressful situations that become very volatile and often explode. The result of this can be seen clearly in the number of Māori women and children who become survivors of family violence, which in itself becomes repetitive"*.

The following section explores the proportion of children and young people (aged 0-24 years) who lived in crowded households at the 2006 Census.

Data Source and Methods

Definition
The proportion of children and young people 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 require 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.

Indicator Category Ideal B

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).

Canadian National Occupancy Standard
The Canadian National Occupancy Standard (CNOS), developed in Canada in the 1980s, calculates appropriate person-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 <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 2+, 1 or 0 bedrooms spare, or as requiring an additional 1 or 2+ bedrooms; households needing 1 or 2+ additional bedrooms are deemed crowded [49].

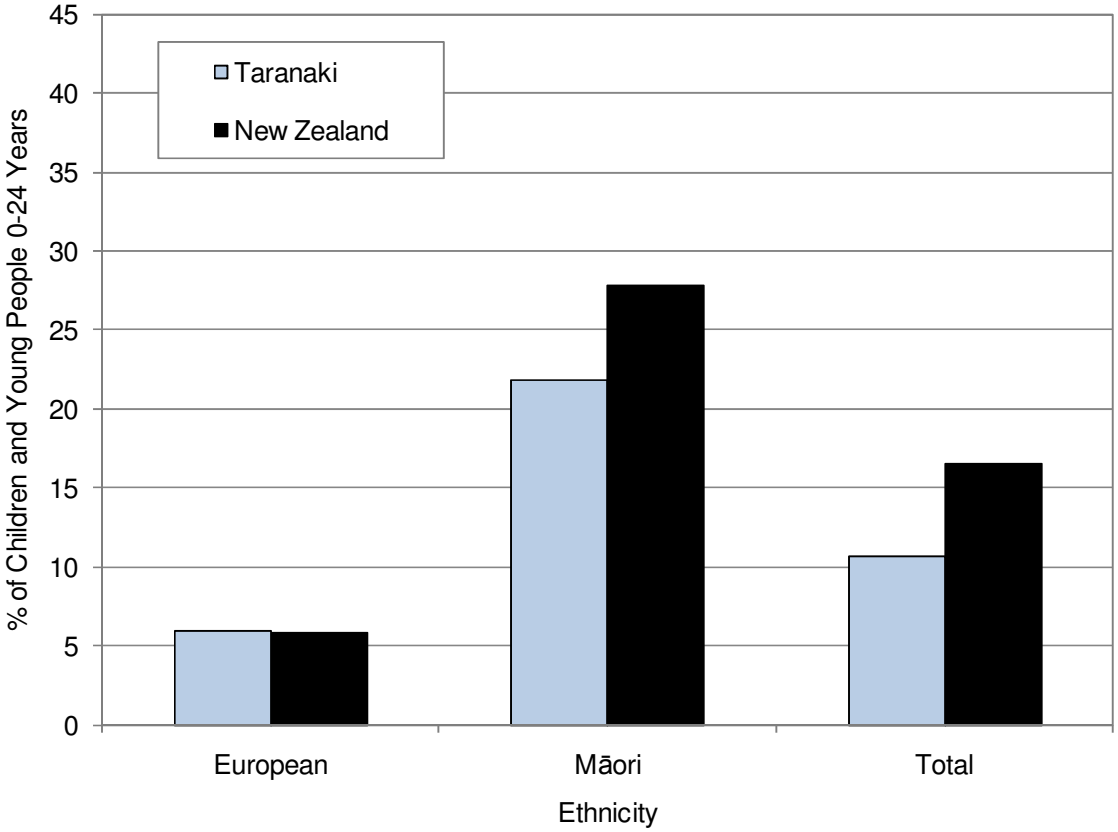
Household Crowding

Total Population and Ethnic Differences: Taranaki vs. New Zealand
In Taranaki during 2006, 10.7% of children and young people (0-24 yrs) lived in crowded households, as compared to 16.5% nationally. During this period, 21.9% of Māori and 6.0% of European children and young people lived in crowded households, as compared to 27.8% of Māori and 5.8% of European children and young people nationally (**Figure 43**).

Socioeconomic Differences: Taranaki vs. New Zealand
In Taranaki during 2006, the proportion of children and young people living in crowded households rose from 2.5% amongst those in the most affluent (Decile 1) areas, to 26.2% amongst those in the most deprived (Decile 10) areas. While similar differences were seen for New Zealand as a whole (NZ Decile 1, 2.8% vs. Decile 10, 42.4%), at each level of NZDep deprivation, household crowding in Taranaki was lower than the New Zealand average (**Figure 44**).

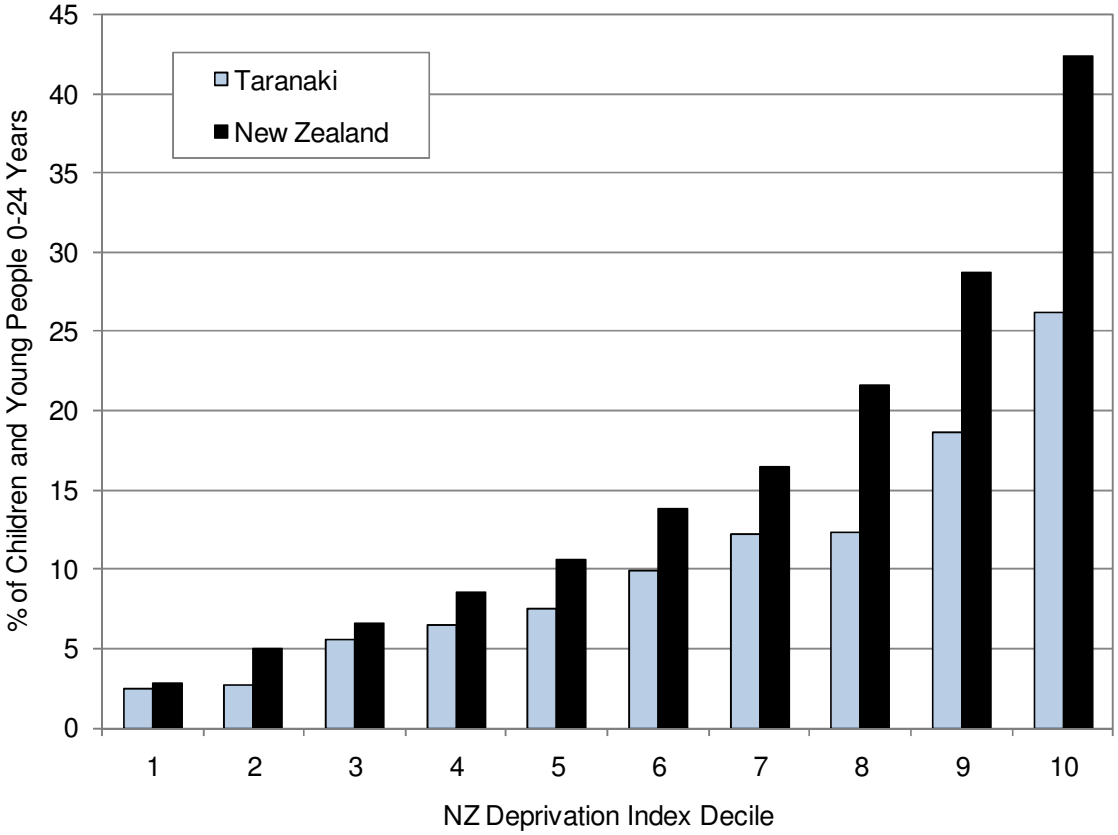
Relationship Between Socioeconomic Status and Ethnicity: New Zealand
During 2006, the proportion of children and young people living in crowded households increased with increasing socioeconomic deprivation for each of New Zealand's largest ethnic groups, but at each level of deprivation, crowding rates were higher for Pacific > Māori and Asian > European children and young people (**Figure 45**).

Figure 43. Proportion of Children and Young People 0-24 Years Living in a Crowded Household by Ethnicity, Taranaki vs. New Zealand at the 2006 Census



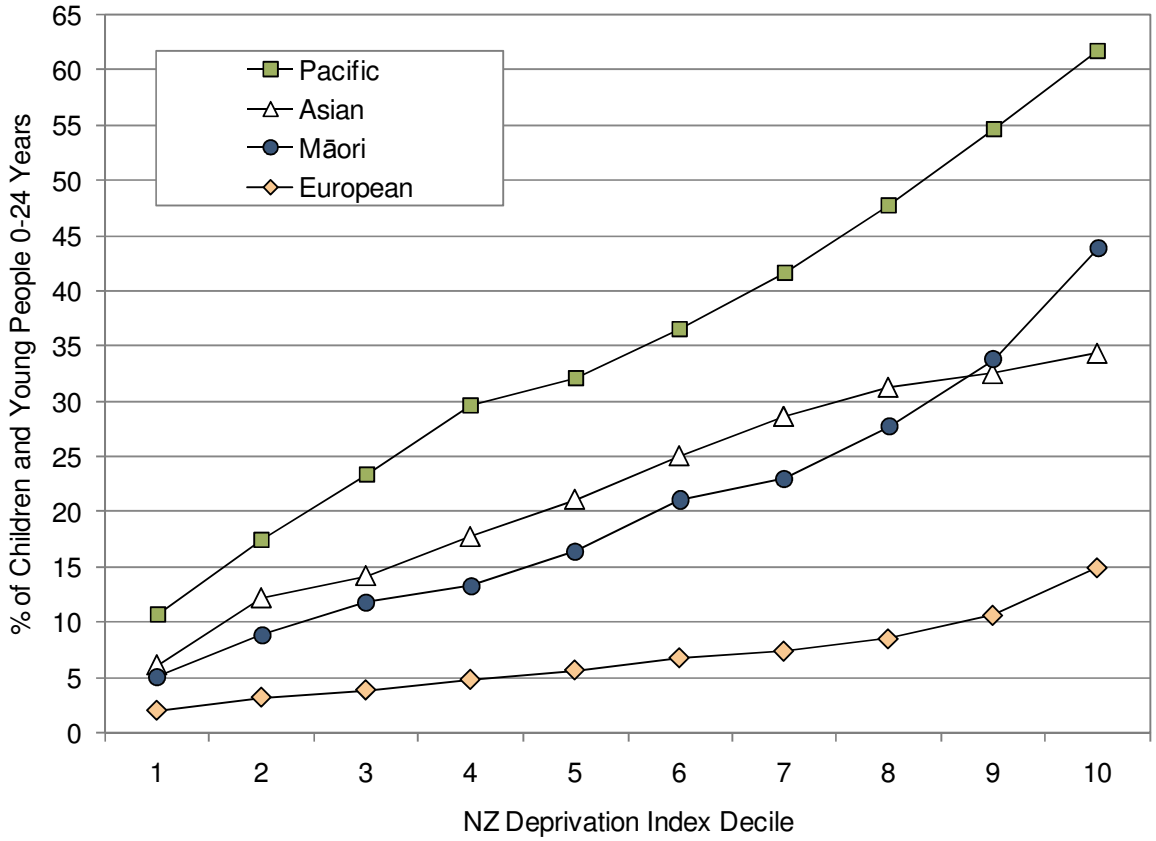
Source: Statistics New Zealand; Ethnicity is Level 1 Prioritised; Includes only those where crowding status was known

Figure 44. Proportion of Children and Young People 0-24 Years Living in a Crowded Household by NZ Deprivation Index Decile, Taranaki vs. New Zealand at the 2006 Census



Source: Statistics New Zealand; Includes only those where crowding status was known.

Figure 45. Proportion of Children and Young People 0-24 Years Living in a Crowded Household by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census



Source Statistics New Zealand; Ethnicity is Level 1 Prioritised; Includes only those where crowding status was known

Summary

The associations between substandard housing and poor health have been known for several centuries, with reports from as early as the 1830s attributing high rates of infectious disease to overcrowded, damp, and poorly ventilated housing. In New Zealand, crowding is strongly correlated with meningococcal disease, while overseas reports also demonstrate correlations with a number of infectious diseases and mental health issues.

In Taranaki during 2006, 10.7% of children and young people lived in crowded households, as compared to 16.5% nationally. During this period, 21.9% of Māori and 6.0% of European children and young people lived in crowded households, as compared to 27.8% of Māori and 5.8% of European children and young people nationally. In addition, the proportion in crowded households rose from 2.5% for those in the most affluent (Decile 1) areas, to 26.2% for those in the most deprived (Decile 10) areas. While similar socioeconomic differences were seen nationally, at each level of NZDep deprivation, household crowding in Taranaki was lower than the New Zealand average.

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

In New Zealand in recent years, there has been much interest in the relationships between housing and health, and considerable resources have been invested in improving New Zealand's housing stock. **Table 24** provides a brief overview of New Zealand policy documents and evidence based reviews which consider interventions in this area.

Table 24. Local Policy Documents and Evidence Based Reviews Relevant to the Provision of Healthy Housing

New Zealand Policy Documents
Housing New Zealand Corporation. **Building the Future: The New Zealand Housing Strategy.** 2005, Housing New Zealand Corporation: Wellington http://www.hnzc.co.nz/hnzc/dms/380D2C40C069A4CE4665F55A8C4523D1.pdf The New Zealand Housing Strategy sets out a vision and strategic direction for housing up to 2015. It describes a collaborative approach to strengthening the housing sector's ability to provide affordable, quality housing for all New Zealanders. The strategy identifies 7 action areas which include improving housing assistance, affordability and quality. The Government's role in this area is identified as including encouraging quality houses by regulating housing quality, establishing housing standards and providing guidance through using best practice in its own work.
Systematic and Other Reviews from the International Literature
Taske N, Taylor L, Mulvihill C, Doyle N. **Housing And Public Health: A Review of Reviews of Interventions for Improving Health - Evidence Briefing.** 2005, Health Development Authority. http://www.nice.org.uk/nicemedia/pdf/housing_MAIN%20FINAL.pdf This UK focused briefing paper is intended to inform policy and decision makers, housing officials, public health physicians and other public health practitioners in the widest sense. It aims to identify all relevant evidence based review documents on public health interventions relating to housing; review these papers and highlight what housing-related interventions work to promote health for all population groups, but with particular reference to disadvantaged and vulnerable groups; Identify cost-effectiveness data for housing-related interventions to promote health for all population groups; highlight any gaps in the evidence and provide recommendations for future research.
Thomson H, Petticrew M, D. Morrison D. 2002 **Housing Improvement and Health Gain: A Systematic Review**. MRC Social and Public Health Sciences Unit: Glasgow. http://www.sphsu.mrc.ac.uk/unit_reports.php?rptID=32&pageID=0 This review aims to provide policy makers and researchers with a summary of the evidence regarding the health impacts of housing interventions derived from experimental and non-experimental studies of housing interventions. The review encompasses experimental and non-experimental housing intervention studies which measured quantitative health outcomes. The main findings of the review were that: • housing improvements can improve residents' health, in particular their mental health; • housing improvements can result in rent increases, which in turn can actually make people's health worse; • the original residents may move to another area and not benefit from the housing improvements; and • housing improvements can have negative as well as positive effects on health.
Other Related Articles and Reviews
Housing New Zealand Corporation. **Healthy Housing Programme**. Housing New Zealand Corporation. Wellington. http://www.hnzc.co.nz/hnzc/web/housing-improvements-&-development/property-improvement/healthy-housing.htm. Healthy Housing is a joint project between Housing New Zealand and DHBs that began in 2001. The programme works with Housing NZ tenants in selected areas and aims to raise awareness of infectious diseases; improve access to health and social services; reduce the risk of housing-related health problems: and reduce overcrowding. The preliminary analysis of a case counterfactual study looking at acute hospitalisations of those involved in the Programme found a decrease in potentially avoidable hospitalisations and housing related potentially avoidable hospitalisations [51].
Howden-Chapman P, Matheson A, Crane J, et al. **Effect of Insulating Existing Houses on Health Inequality: Cluster Randomised Study in the Community**. British Medical Journal, 2007. 334(7591):460 This community based, cluster, single blinded randomised study aimed to determine whether insulating existing houses increased indoor temperatures and improved occupants' health and wellbeing. The study found that insulating existing houses led to a significantly warmer, drier indoor environment and resulted in improved self rated health and wheezing, days off school and work, and visits to GPs as well as a trend for fewer hospitalisations for respiratory conditions.
Chaudhuri N. **Interventions to Improve Children's Health by Improving the Housing Environment**. Reviews on Environmental Health, 2004. 19(3-4):197-222. This paper reviews factors shown to mediate housing and health interactions and provides examples of interventions to improve child health, with housing as a focus. Examples include integrated energy-efficiency programmes to improve thermal comfort and to reduce the allergens (e.g. mould, dust mites), housing and health policies, regulation and standard setting, education and training.
Baker M, et al. 2000. **Household Crowding a Major Risk Factor for Epidemic Meningococcal Disease in Auckland Children**. Pediatric Infectious Disease Journal, 2000. 19: p. 983-90. This case-control study compared the household and demographic characteristics of 202 meningococcal disease cases in Auckland children <8 years during 1997-1999 with 313 controls. Once factors such as age, ethnicity, season and socioeconomic factors were taken into account, risk of disease was strongly associated with overcrowding as measured by the number of adolescent / adult household members per room (odds ratio 10.7 (95% CI 3.9-29.5). This resulted in a doubling of risk with the addition of 2 adolescents / adults to a 6-room house. 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. The authors concluded that measures to reduce overcrowding could have a marked effect on reducing the incidence of disease in Auckland children.

EDUCATION: KNOWLEDGE AND SKILLS

EDUCATION: KNOWLEDGE AND SKILLS INTRODUCTION

Educational attainment is a key determinant of child and youth health, as well as a link in the intergenerational transfer of socioeconomic disadvantage. It is not only influenced by the socioeconomic environment in which young people grow up, but also via its effects on future employment and earning potential, influences the socioeconomic environment in which they will bring up their own children. Thus from health point of view, any initiative which improves young people's educational attainment, or ensures their ongoing participation in the education system, may have long term effects, not only for the young people concerned, but also for the next generation of New Zealand children.

The following sections thus review a number of Ministry of Education indicators which relate to educational attainment, or student's participation in the education system. They include:

1. Participation in Early Childhood Education (Page 98)
2. Enrolments in Kura Kaupapa Māori (Page 105)
3. Educational Attainment at School Leaving (Page 111)
4. Senior Secondary School Retention Rates (Page 118)
5. Stand-Downs, Suspensions, Exclusions and Expulsions (Page 124)
6. Truancy and Unjustified Absences (Page 131)

In addition, the In-Depth Topic: *Early Intervention Programmes for Socially Vulnerable Children* (**Page 269**) considers the roles early childhood education, home visiting programmes, and other early childhood interventions play in improving long term outcomes for socially vulnerable children.

PARTICIPATION IN EARLY CHILDHOOD EDUCATION

Introduction

Research suggests that participation in high quality early childhood education (ECE) has significant long term benefits for children's academic performance. While 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 suggest that the relationship may be quite complex, and may also depend on the number of hours spent in ECE each week, the quality of the ECE service and the socioeconomic background from which the child comes [52].

In one US study, children who started ECE between 2-3 years had higher pre-reading and mathematics scores at school entry than those who started earlier or later, but starting ECE at <2 years was associated with lower social development scores. In addition, children experienced greater academic gains if they attended ECE for >15 hours per week, but this was offset by lower social scores, particularly for those who attended for >30 hours per week. Outcomes also varied by socioeconomic status, with children from low income families only experiencing significant academic gains if they attended ECE for >30 hours per week, but for these children attending >30 hours per week had no negative behavioural consequences. In contrast, children from affluent homes experienced no additional academic gains from attending ECE for >30 hours per week, but displayed increasingly negative behaviour the longer they attended ECE [53]

In New Zealand the Competent Children, Competent Learners Study, which followed a cohort of children from preschool to age 14, suggested that differences in the ECE environment continued to influence performance at age 14, with differences between those with the highest or most of a particular aspect of ECE and others being on average 9%. Family factors (income and maternal qualifications) made more of a difference than a child's ECE experience at this age however, although ECE experience continued to make a contribution once these factors had been taken into account. In general, ECE experience made the greatest impact at the time a child started school, but the contribution was still evident at 14 years, even after taking age-5-performance, family income and maternal qualifications into account [52].

In New Zealand, Early Childhood Education is provided by a variety of different services and in a variety of different settings ranging from the more traditional Kindergartens and Te Kōhanga Reo, to services that cater for the needs of working parents (e.g. Education and Care Services, Home Based Services). During 1990-2006, New Zealand's enrolments in ECE increased for all age groups, with the largest increases occurring amongst those <3 years, for whom enrolments doubled. This increase was absorbed almost entirely by the Education and Care Services, who offer flexible hours and require little parental involvement and thus are particularly attractive to working parents. While there was also a 6-fold increase in Home Based Services during this period, in absolute terms the numbers of children receiving this type of care were less [54].

The following section reviews Ministry of Education data on the participation of New Zealand children in Early Childhood Education since 1990, as well as the prior participation of Taranaki new entrants in Early Childhood Education during 2000-2008. In addition, the In-Depth Topic: *The Effectiveness of Early Intervention Programmes for Socially Vulnerable Children* (**Page 269**) considers the roles early childhood education, home visiting programmes, and other early childhood interventions play in improving long term outcomes for socially vulnerable children.

Data Source and Methods

Definitions

1. *Total Enrolments in Early Childhood Education (ECE)*
2. *New Entrants (Year 1) Reporting Regular Participation in ECE Immediately Prior to Attending School*

Data Source

Ministry of Education **http://www.educationcounts.govt.nz/**

1. *Total Enrolments in Early Childhood Education*

Numerator: Total enrolments in early childhood education
Denominator: Not applicable (see notes below)

Interpretation: Total enrolments tend to overestimate ECE participation as they may double or triple count children who attend more than one ECE service. The measure however is a useful indicator of patterns of enrolment across different types of ECE.

2. *New Entrants (Year 1) Reporting Regular Participation in ECE Immediately Prior to Attending School*

Numerator: The number of new entrants reporting regular participation in early childhood education immediately prior to attending school
Denominator: The number of new entrants enrolled

Interpretation: Note 1: The number of new school entrants (Year 1) reporting regular participation in ECE immediately prior to attending school is a useful measure of ECE participation as it overcomes some of the over counting problems associated with other 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.

Note 2: *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, along with school ethnicity data. 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 (10%) 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.

Note 3: For detailed description of Early Childhood Education Types of Service, refer to http://www.educationcounts.govt.nz/statistics/ece

Indicator Category Proxy C

Total Enrolments in Early Childhood Education

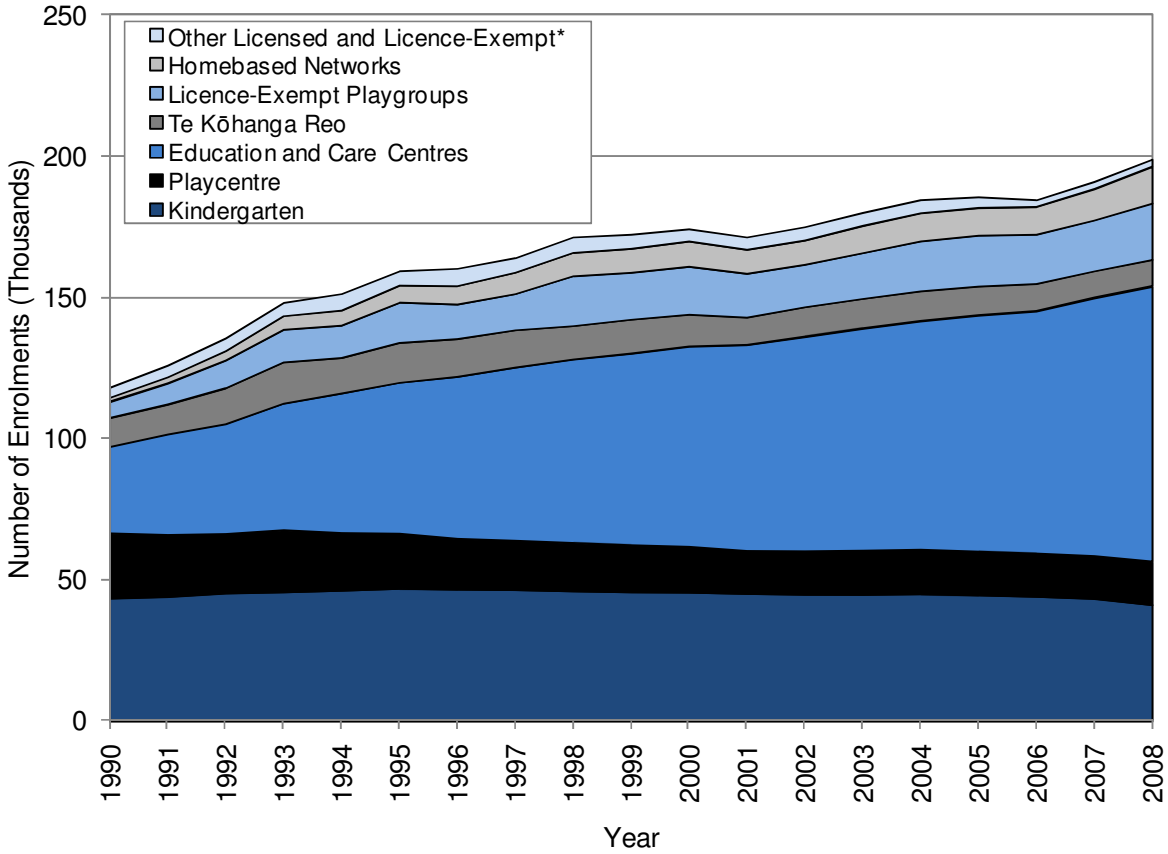
New Zealand Trends

In New Zealand during 1990-2008, the number of enrolments in Early Childhood Education (ECE) increased by 67.9%. Changes varied markedly by service type however, with enrolments in Education and Care Centres increasing by 215.0%, enrolments in Home Based Networks increasing by 711.0% and enrolments in License Exempt Playgroups increasing by 259.9%. In contrast, enrolments in Te Kōhanga Reo increased by only 9.3%, while enrolments in Kindergartens decreased by 5.3%. Thus while in 1990, Kindergarten was the most common source of ECE, by 2008 Education and Care Centres were the most common, with 49.2% of ECE enrolments during 2008 being for this type of service (**Figure 46**). Similarly, **Table 26** provides a more detailed overview of enrolments in Māori medium ECE during 1990-2008.

Hours Spent in Early Childhood Education

In addition to an increase in ECE enrolments, the number of hours spent in ECE increased progressively during 1997-2008 for all Service types, with the exception of PlayCentres and Te Kōhanga Reo. Children enrolled in Te Kōhanga Reo, at 28.5 hours per week, spent the longest amount of time in ECE, followed by those enrolled in Home Based Networks and Education and Care Centres [55] (**Table 25**).

Figure 46. Licensed and Licence-Exempt Early Childhood Education Enrolments by Service Type, New Zealand 1990 - 2008



Source: Ministry of Education. Note: *Other Licensed and Licence-Exempt Services include Licensed: Correspondence School, Licence-Exempt:: Ngā Puna Kōhungahunga, Playcentres, Te Kōhanga Reo and Pacific Islands EC Groups

Table 25. Average Number of Weekly Hours of Attendance in Licensed Early Childhood Education Services by Service Type, New Zealand 1997-2008

Year	Kindergarten	Playcentre	Education and care centres	Homebased networks	Licensed Te Kōhanga Reo*
1997	10.4	4.4	15.8	15.2	28.5
1998	10.7	4.4	15.9	15.7	28.5
1999	10.8	4.3	16.4	16.1	28.5
2000	11.2	4.4	16.6	16.9	28.5
2001	11.5	4.2	17.7	18.6	28.5
2002	11.8	4.3	18.3	18.1	28.5
2003	12.0	4.3	18.6	19.7	28.5
2004	12.5	4.4	19.5	21.3	28.5
2005	12.6	4.4	20.3	22.4	28.5
2006	12.6	4.4	20.8	22.0	28.5
2007	12.6	4.3	21.5	22.5	28.5
2008	13.4	4.2	22.9	22.8	28.5

Source: Ministry of Education. Note:*Estimated - most children are enrolled for 27-30 hours per week.

Table 26. Enrolments in Māori Medium Early Childhood Education by Type, New Zealand 1990-2008

Year	Te Kōhanga Reo*	Ngā Puna Kōhungahunga**	Te Kōhanga Reo**	Total
1990	10,108	…	..	10,108
1991	10,451	…	..	10,451
1992	12,617	…	..	12,617
1993	14,514	…	..	14,514
1994	12,508	…	1,035	13,543
1995	14,015	…	248	14,263
1996	13,279	…	1,023	14,302
1997	13,104	..	401	13,505
1998	11,689	..	361	12,050
1999	11,859	..	524	12,383
2000	11,138	..	381	11,519
2001	9,594	209	214	10,017
2002	10,389	351	138	10,878
2003	10,319	408	130	10,857
2004	10,418	571	191	11,180
2005	10,070	519	146	10,735
2006	9,493	289	89	9,871
2007	9,236	343	69	9,648
2008	9,165	454	43	9,662

Source: Ministry of Education. Note: *Licensed, **Licence-Exempt.

Prior Participation in Early Childhood Education

Trends and Ethnic Differences: New Zealand

In New Zealand, the proportion of new entrants (Year 1) reporting regular participation in ECE prior to attending school increased, from 91.0% in 2000 to 94.7% in 2008. While prior participation in ECE remained highest for European > Asian > Māori > Pacific children, prior participation increased for all ethnic groups during this period (Pacific children 76.1% in 2000 → 84.8% in 2008; Māori children 84.8% in 2000 → 90.4% in 2008; European children 95.4% in 2000 → 98.3% in 2008; Asian children 89.2% in 2000 → 95.3% in 2008 **Figure 47**).

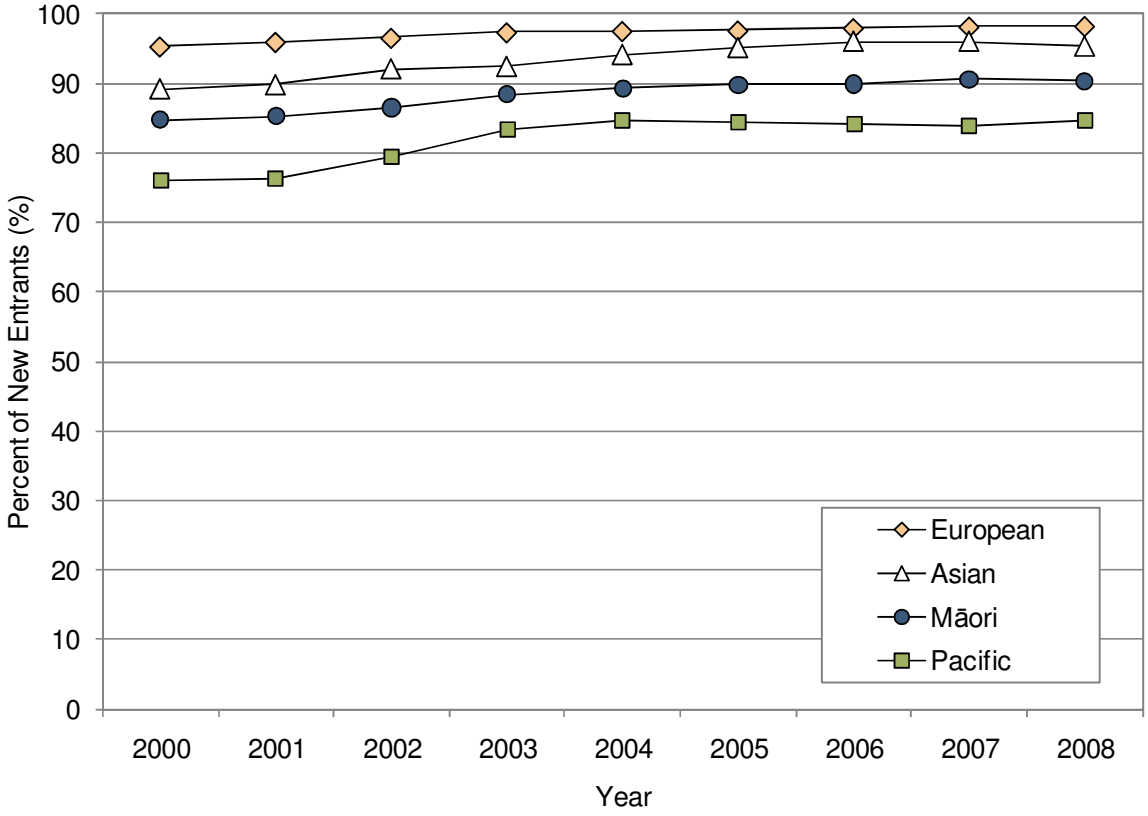
Socioeconomic Differences: New Zealand

In New Zealand during 2008, 18.1% of children attending schools in the most deprived (Decile 1) areas had not attended ECE immediately prior to school entry, as compared to only 0.9% of children attending schools in the least deprived (Decile 10) areas. Nevertheless these figures suggest that on average, 81.9% of children attending schools in the most deprived (Decile 1) areas had attended some form of ECE immediately prior to school entry (**Figure 48**).

Prior Participation in Taranaki

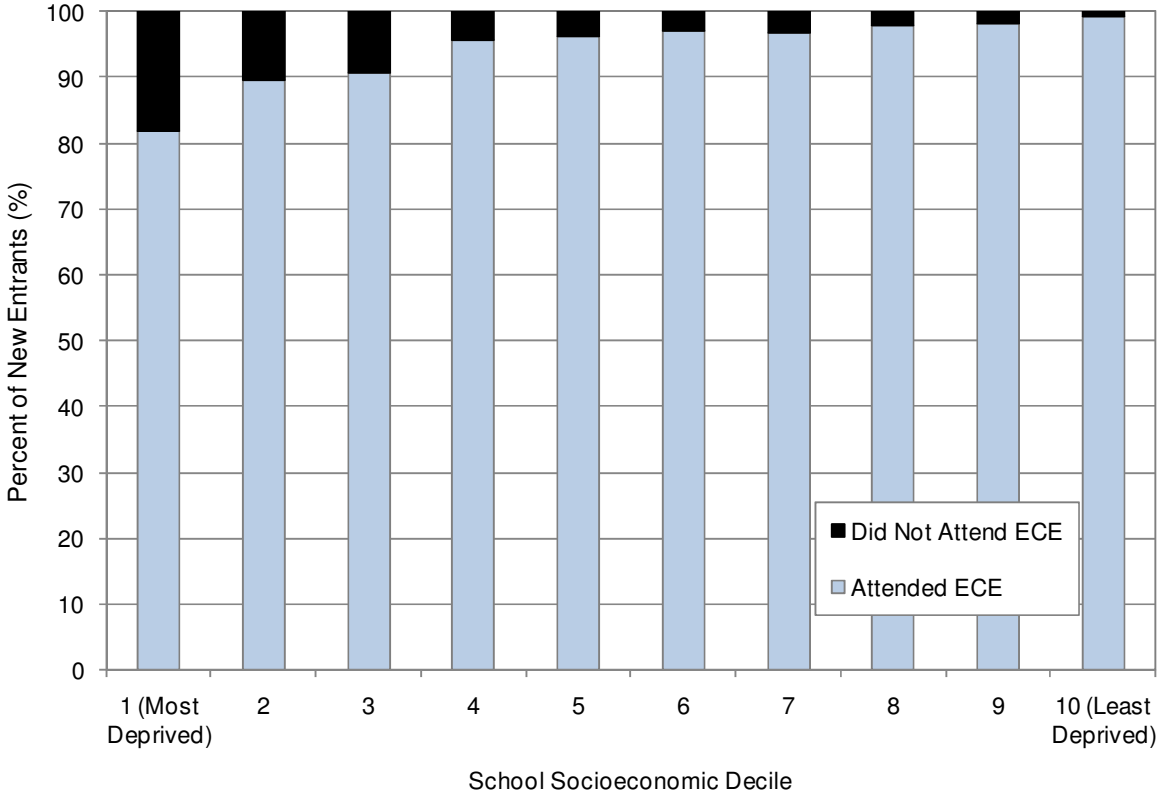
In Taranaki, prior participation in ECE amongst school entrants increased from 91.4% in 2000 to 96.8 % in 2008. For the majority of this period, prior participation in Taranaki was similar to the New Zealand average (**Figure 49**). Prior participation in ECE in Taranaki was generally higher for European than for Māori children, although differences were not as marked as those occurring nationally (**Figure 50**).

Figure 47. Proportion of New Entrants Who Had Previously Attended Early Childhood Education by Ethnicity, New Zealand 2000-2008



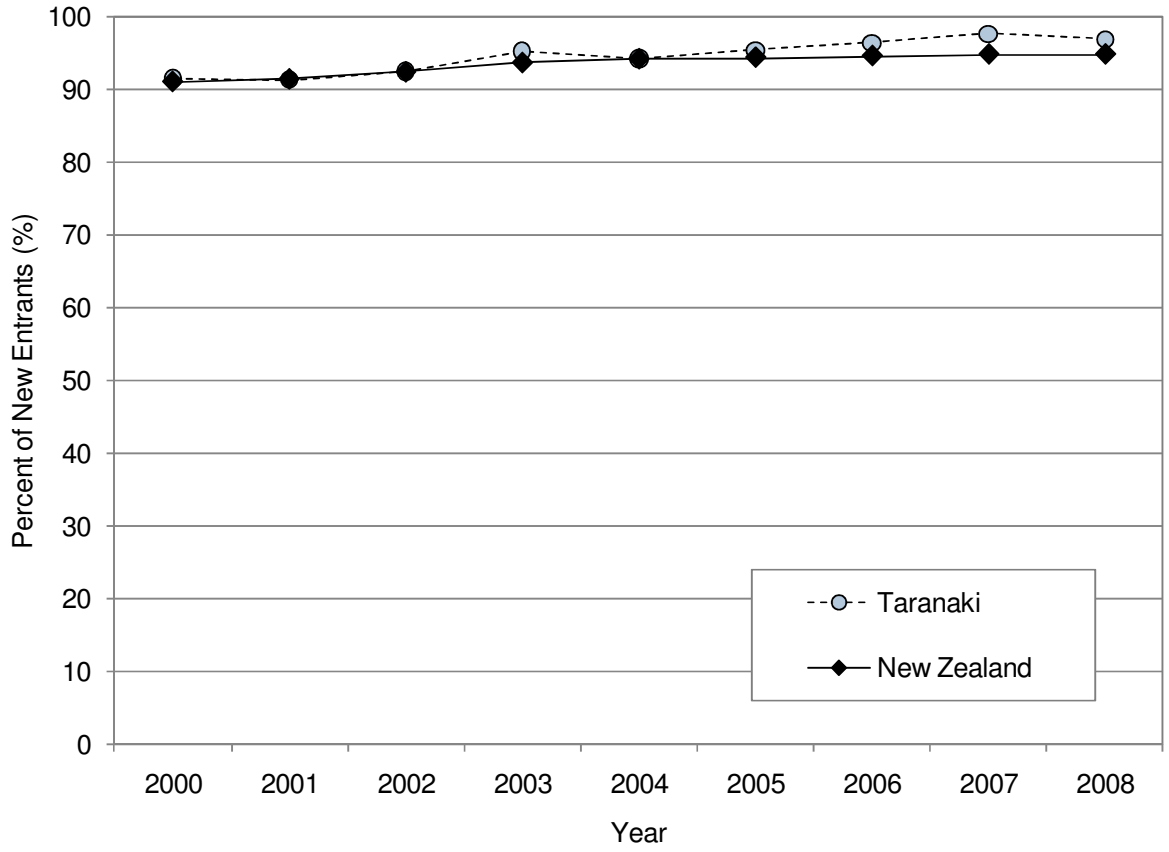
Source: Ministry of Education; Ethnicity is Prioritised

Figure 48. Proportion of New Entrants Who Had Previously Attended Early Childhood Education by School Socioeconomic Decile, New Zealand 2008



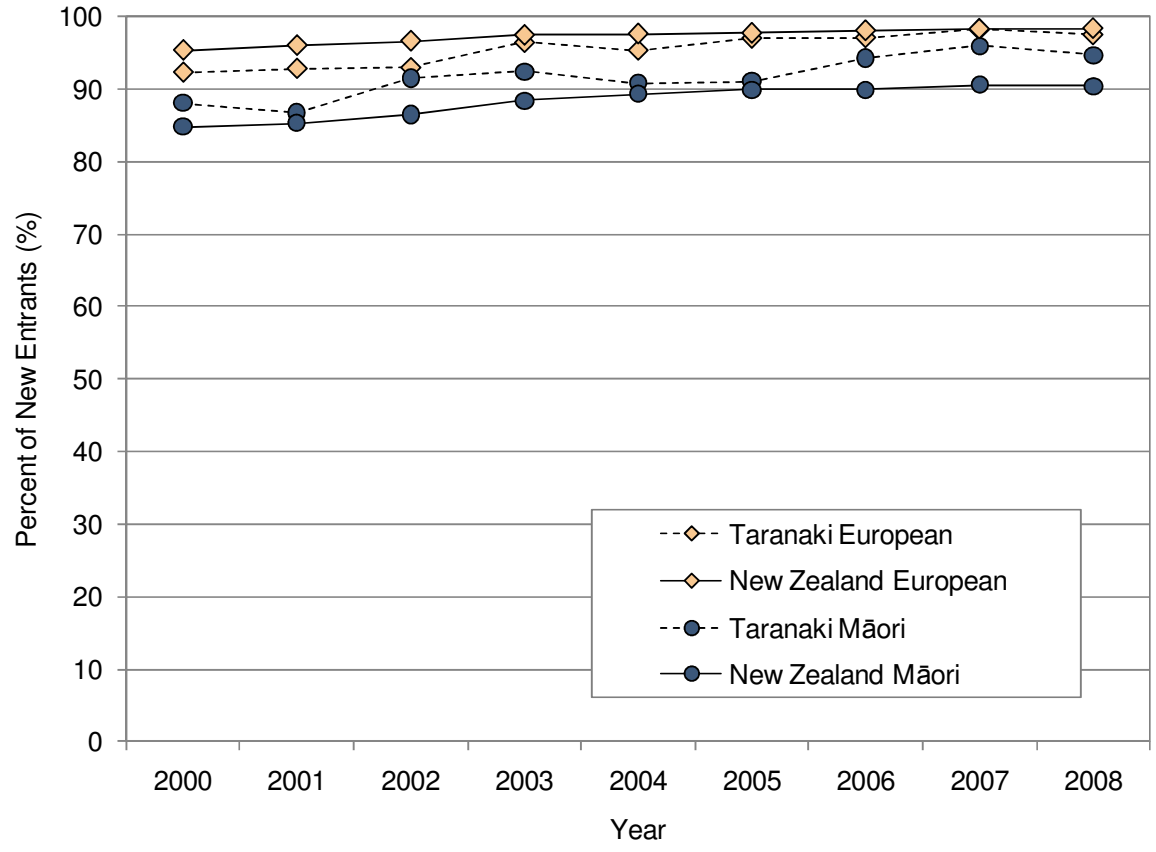
Source: Ministry of Education

Figure 49. Proportion of New Entrants (Year 1) who had Previously Attended Early Childhood Education, Taranaki vs. New Zealand 2000-2008



Source: Ministry of Education

Figure 50. Proportion of New Entrants (Year 1) who had Previously Attended Early Childhood Education by Ethnicity, Taranaki 2000-2008



Source: Ministry of Education; Ethnicity is Prioritised

Summary

Research suggests that participation in high quality early childhood education (ECE) has significant long term benefits. In New Zealand, ECE is provided in a variety of contexts ranging from the more traditional Kindergartens and Te Kōhanga Reo, to services that cater for the needs of working parents. In New Zealand during 1990-2008, the number of children enrolled in ECE increased by 67.9%, with the largest increases being in Education and Care Services, Home Based Services and License Exempt Playgroups. In addition, during 1997-2008 the number of hours children spent in ECE increased for all Service types, with the exception of PlayCentres and Te Kōhanga Reo.

In New Zealand, the proportion of new entrants (Year 1) reporting regular participation in ECE prior to attending school increased, from 91.0% in 2000, to 94.7% in 2008. During this period, prior participation rates remained higher for European > Asian > Māori > Pacific children and those attending schools in the least deprived areas. In Taranaki, prior participation in ECE amongst school entrants increased from 91.4% in 2000 to 96.8 % in 2008. For the majority of this period, prior participation in Taranaki was similar to the New Zealand average. Prior participation in ECE in Taranaki was generally higher for European than for Māori children, although differences were not as marked as those occurring nationally.

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

The In-Depth Topic: *Early Intervention Programmes for Socially Vulnerable Children* (**Page 269**) considers the roles early childhood education, home visiting programmes, and other early childhood interventions play in improving long term outcomes for socially vulnerable children.

ENROLMENTS IN KURA KAUPAPA MĀORI

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 [56]. In developing a set of indicators to assess outcomes for Māori, knowledge of whakapapa, use of marae and the practise of Māori values were seen as important cultural elements, but te reo Māori was regarded as fundamental and of sufficient importance to warrant consideration as a separate outcome in its own right. While not all agreed that it was critical for wellbeing, most identified te reo Māori as the single most defining characteristic of being Māori [56].

In New Zealand, 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. Kura Kaupapa Māori 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 [57]. Their origins can be traced back to the 1970s, when aspects of Māori language and culture began to be included in mainstream (English-medium) programmes, although they were 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, with the expectation that they would deliver the curriculum in Māori and English. During this period, Kōhanga reo (Māori language and culture preschools) also began to emerge, in response to the perceived need to provide for the regeneration of the Māori language and culture, as well as 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 [58]. While early Kōhanga Reo and Kura Kaupapa Māori were privately funded, Kura Kaupapa Māori were officially recognised in 1989 when they were incorporated into the state education system and hence eligible for state funding [58]. Today Māori medium education takes place across the educational spectrum from pre-school to tertiary including:

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 explore the number of children and young people enrolled in Māori medium education during 1992-2008. While it is unlikely that monitoring enrolments in Māori medium education captures the full diversity of Māori language proficiency, it is nevertheless hoped that the figures contained in this section will serve as a crude proxy for measuring progress towards improving Māori language proficiency amongst New Zealand's children and young people.

Data Source and Methods

Definition

1. Number of enrolments in Ministry of Education funded Kura Kaupapa Māori and Kura Teina
2. Number of enrolments in Māori Medium Education

Data Source

Ministry of Education **http://www.educationcounts.govt.nz/**
Numerator: Number of enrolments in Kura Kaupapa Māori, Kura Teina, or other Māori medium education at primary or secondary level
Denominator: Not applicable

Indicator Category Proxy C

New Zealand and Taranaki Distribution and Trends

Kura Kaupapa Māori and Kura Teina in New Zealand

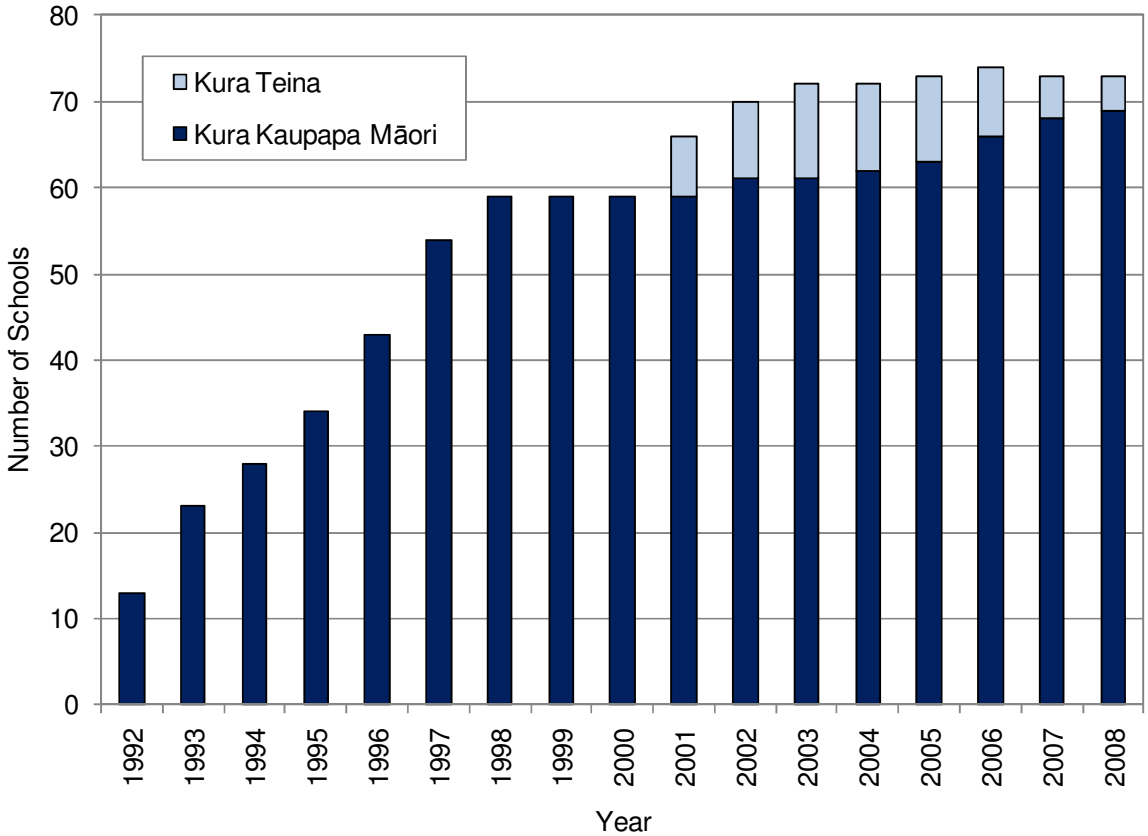
Kura Kaupapa Māori are schools where the teaching is in the Māori language and the school's aims, purposes and objectives reflect the Te Aho Matua philosophy. Kura Teina is an initiative by a community which wants to become a Kura Kaupapa Māori and has prepared a business case and been formally accepted by the Ministry of Education into the establishment process. During this establishment phase, Kura Teina are attached to and mentored by an established high performing Kura Kaupapa Māori. Prior to 2001, Kura Teina were not counted as separate schools [59].

In New Zealand since 1992, there has been a 4.6-fold increase in the number of Kura Kaupapa Māori and Kura Teina, with numbers increasing from 13 in 1992, to 73 in 2008. The most dramatic increases occurred during the 1990s and since then the rate of growth has slowed (**Figure 51**).

Kura Kaupapa Māori and Kura Teina in Taranaki

In Taranaki during 2008, there were 3 Kura Kaupapa Māori, which between them enrolled a total of 125 students (**Table 27**).

Figure 51. Number of Ministry of Education Funded Kura Kaupapa Māori and Kura Teina, New Zealand 1992-2008



Source: Ministry of Education. Note: Prior to 2001 Kura Teina were not counted as separate schools

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): up to 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 52** and **Table 28**).

Table 27. Number of Ministry of Education Funded Kura Kaupapa Māori and Kura Teina by District Health Board, New Zealand 2008

DHB	Number of Schools		Number of Students	
	Kura Kaupapa Māori	Kura Teina	Kura Kaupapa Māori	Kura Teina
Northland	8	1	766	39
Waitemata	4	0	321	0
Auckland	2	0	158	0
Counties Manukau	5	1	462	31
Waikato	9	1	1,076	29
Lakes	5	0	638	0
Bay of Plenty	8	1	524	29
Tairawhiti	7	0	377	0
Taranaki	3	0	125	0
Hawke's Bay	5	0	523	0
MidCentral	3	0	252	0
Whanganui	3	0	199	0
Capital and Coast	1	0	82	0
Hutt	1	0	168	0
Wairarapa	1	0	82	0
Nelson Marlborough	0	0	0	0
West Coast	0	0	0	0
Canterbury	2	0	184	0
South Canterbury	0	0	0	0
Otago	1	0	16	0
Southland	1	0	108	0
New Zealand Total	69	4	6,061	128

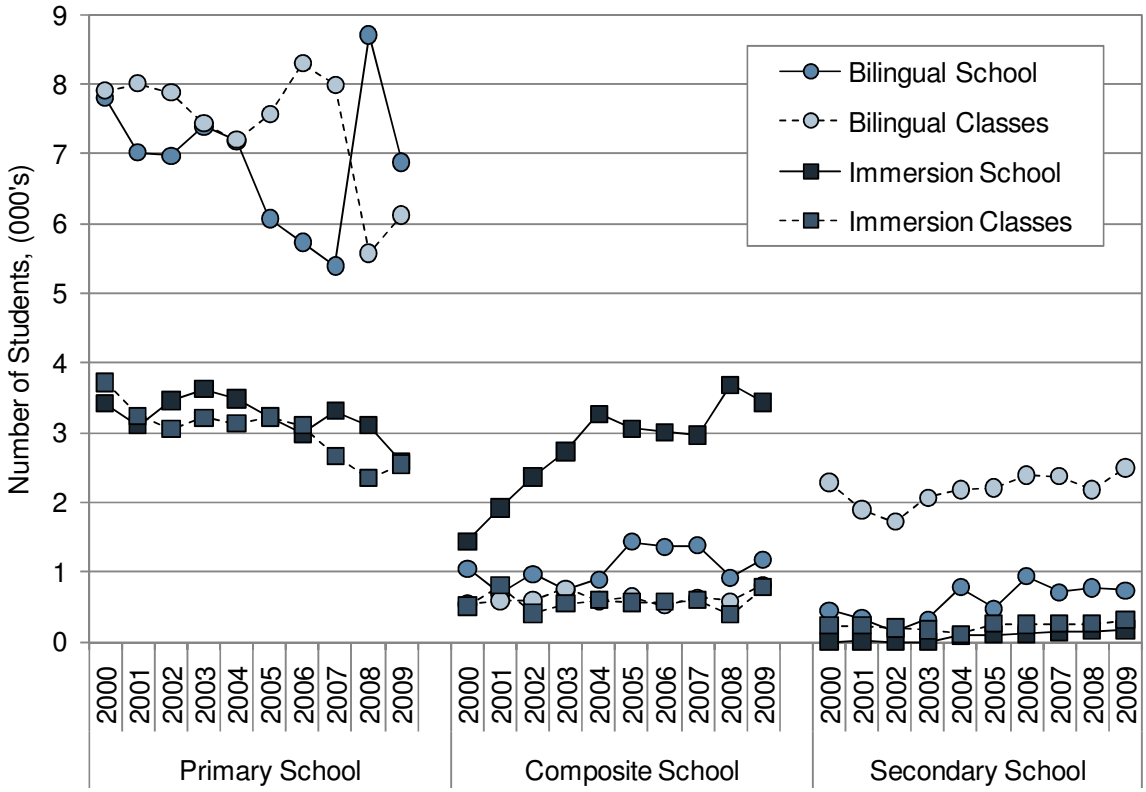
Source: Ministry of Education.

Table 28. Number of Enrolments in Māori-Medium Learning by Highest Level of Learning and Local Body Region, New Zealand as at 1 July 2009

Region	Māori-Medium Education: % Instruction Undertaken in Māori								TOTAL	
	Level 1: 81-100%		Level 2: 51-80%		Level 3: 31-50%		Level4(a): 12-30%			
	Non Māori	Māori	Non Māori	Māori	Non Māori	Māori	Non Māori	Māori	Non Māori	Māori
Northland	5	1,073	17	752	59	636	133	975	214	3,436
Auckland	23	1,800	62	988	159	1,285	280	335	524	4,408
Waikato	24	2,109	5	380	18	257	282	710	329	3,456
Bay of Plenty	10	2,568	42	743	96	656	722	1,570	870	5,537
Gisborne	<5	754	5	224	15	455	13	316	37	1,749
Hawke's Bay	<5	663	15	555	5	429	207	276	229	1,923
Taranaki	9	218	0	54	46	128	26	30	81	430
Manawatu-Wanganui	22	837	13	519	35	151	104	271	174	1,778
Wellington	9	1,062	5	180	14	120	98	170	126	1,532
Tasman	0	0	<5	37	0	0	0	0	<5	37
Nelson	0	0	18	145	0	0	0	0	18	145
Marlborough	0	0	<5	26	0	0	0	0	<5	26
Canterbury	12	279	56	254	10	75	127	82	205	690
Otago	0	9	<5	18	0	0	0	0	<5	27
Southland	<5	139	7	36	0	0	0	0	10	175
New Zealand	123	11,511	250	4,911	457	4,192	1,992	4,735	2,822	25,349

Source: Ministry of Education.

Figure 52. Total Number of Students Involved in Māori Medium Education by School Sector and Form of Education as at 1 July, New Zealand 2000-2009



Source: Ministry of Education.

Summary

Cultural identity is a critical component of positive Māori development and has been positively linked with health, educational achievement and emotional and social adjustment. In New Zealand, Kura Kaupapa Māori are total immersion schools which follow a curriculum that validates Māori knowledge, learning styles and practices and are key to revitalising the Māori language and improving the achievement levels of Māori students. Since 1992, there has been a 4.6-fold increase in the number of Kura Kaupapa Māori and Kura Teina in New Zealand, with 125 students enrolled in Kura Kaupapa Māori in Taranaki during 2008.

Local Policy Documents which Consider Interventions to Improve Educational Participation and Attainment in Māori Students

Table 30 on **Page 117** summarises local policy documents and evidence based reviews which consider interventions to improve educational participation and attainment in young people, while **Table 33** on **Page 134** summarises those documents relevant to improving school attendance. In addition, **Table 29**, below provides a brief summary of those publications which are of particular relevance for Māori students.

Table 29. Local Policy Documents and Evidence Based Reviews Which Consider Interventions to Improve Educational Participation and Attainment for Māori Students

Ministry of Education Policy Documents and Reviews
Earle D. 2007. **Te whai i ngā taumata atakura: Supporting Māori achievement in Bachelors Degrees**. Wellington. Ministry of Education. http://www.educationcounts.govt.nz/publications/Māori_education/10465 This report considers what determines the success of first-time Māori students studying towards bachelors degrees. The report considers trends in degree attainment amongst Māori, and the key factors which contribute to success, with a view to building an understanding about how to increase the number of Māori attaining bachelors degrees or above.
May S, Hill R, Taikiwai S. 2004. **Bilingual / Immersion Education: Indicators of Good Practice**. Wellington. Ministry of Education 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.
The Te Kōtahitanga Series is a series of reports from a project considering how to improve the educational achievement of Māori students in mainstream secondary school classrooms. The findings have been published as three separate reports which are available from http://www.educationcounts.govt.nz/publications/Māori_education/9977 Bishop R, Berryman M, Tiakiwai S, Richardson C. 2003. **Te Kōtahitanga Phase 1: The Experiences of Year 9 and 10 Māori Students in Mainstream Classrooms**. Wellington. Ministry of Education. This research project considered what was involved in improving the educational achievement of Māori students. The project began with a short scoping exercise, with the main project gathering the narratives of students' classroom experience, from a range of engaged and non-engaged Māori students in four mainstream schools. In these narratives 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 via which these 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 outcomes for Māori students in the classrooms of the teachers who had participated. Bishop R, Berryman M, Powell A, Teddy L. 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, Berryman M, Cavanagh T, Teddy L. 2007. **Te Kōtahitanga Phase 3: Establishing a Culturally Responsive Pedagogy of Relations in Mainstream Secondary School Classrooms**. Wellington. Ministry of Education This project reviewed the experiences of Phase 1 and Phase 2, and concluded that from a Kaupapa Māori perspective and an examination of appropriate Māori cultural metaphors, that 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.

EDUCATIONAL ATTAINMENT AT SCHOOL LEAVING

Introduction

In an increasingly knowledge based society, formal school qualifications are crucial in ensuring that young people gain access to tertiary education and entry level jobs [60]. Despite this, during 2008 5.4% of school leavers left school with little or no formal attainment. While some of these students may have continued their education through other tertiary providers, it is likely that a significant number would have also attempted to join the workforce, a process made more difficult by their lack of formal qualifications [61].

In attempting to understand why some students leave school with little or no formal attainment, the Ministry of Education (MOE) commissioned a literature review on the determinants of children's educational attainment [62]. This review suggested:

1. There are marked ethnic disparities in children's educational achievement, with European and Asian children achieving at higher levels than Māori and Pacific children, although some of these differences may be due to socioeconomic factors.
2. There are marked socioeconomic disparities in childhood educational achievement, with performance across a variety of subjects (e.g. reading, maths, science) increasing with increasing parental occupational class and school socioeconomic decile. Family income during early childhood (0-5 yrs) also affects educational achievement during primary school, even if income subsequently improves during this time.
3. Children living in families with higher levels of parental (especially maternal) education and which provide study facilities, computers and other resources, have higher achievement levels than those without such resources.
4. Frequent mobility adversely impacts on educational attainment, with those attending 4+ schools by the age of 10 achieving less well on some social and academic measures.
5. Factors positively impacting on educational attainment include parental expectations, social networks (e.g. Pacific church and Māori cultural connections), peer influences (which exert positive and negative effects), access to community institutions (e.g. libraries, medical services), social agencies (e.g. to receive income entitlements) and programmes which enhance the involvement of families in children's education.

While the relationships between each of these factors are necessarily complex, the review highlighted the significant role family socioeconomic position and access to educational resources play in the academic achievements of New Zealand children and young people. Such achievements in turn, are likely to influence the socioeconomic position in which the current generation of young people bring up their own families in future years.

The following section uses information from the Ministry of Education to review two key indicators of educational performance:

1. The Proportion of School Leavers with Little or No Formal Attainment
2. The Proportion of School Leavers with a University Entrance Standard

Data Source and Methods

Definition

1. School Leavers with a University Entrance Standard

Relevant qualifications include 42-59 credits at Level 3 or above for NCEA, or other National Certificates at Level 3 with University Entrance requirements; Accelerated Christian Education or overseas award at Year 13; University Entrance; National Certificate Level 3; University Bursary (A or B); NZ Scholarship or National Certificate Level 4.

2. School leavers with Little or no Formal Attainment

Before 2001: Leaving school without any credits towards a qualification in the National Qualifications Framework (NQF) or leaving school with 1-11 credits in a National Certificate;
2002-2004: Leaving school without any credits towards a qualification in the NQF or leaving school with 1-13 credits at NCEA Level 1 and other NQF qualifications;
From 2005: Leaving school without any credits towards a qualification in the NQF or leaving school with 1-13 credits at any NCEA Level and other NQF qualifications.

Data Source

Ministry of Education http://www.educationcounts.govt.nz/
Numerator: Students leaving with / without the qualifications outlined above.
Denominator: Number of school leavers in a given year

Indicator Category Ideal B

Notes on Interpretation

NCEA is part of the National Qualifications Framework and has replaced School Certificate, 6th Form Certificate and University Entrance / Bursaries. In 2002 all schools implemented NCEA Level 1, replacing School Certificate. In 2003, NCEA Level 2 was rolled out, although schools were still able to offer a transitional 6th Form Certificate Programme. From 2004, NCEA Level 3 replaced Higher School Certificate, University Entrance / Bursaries and a new Level 4 qualification, the NZ Scholarship was offered. The changes in qualification structure mean that time series information prior to and after 2002 may not be strictly comparable and in addition, the staggered roll out of the new qualification structure may mean that changes over 2002-2006 merely reflect this transition.

School Socioeconomic Decile: See page 99

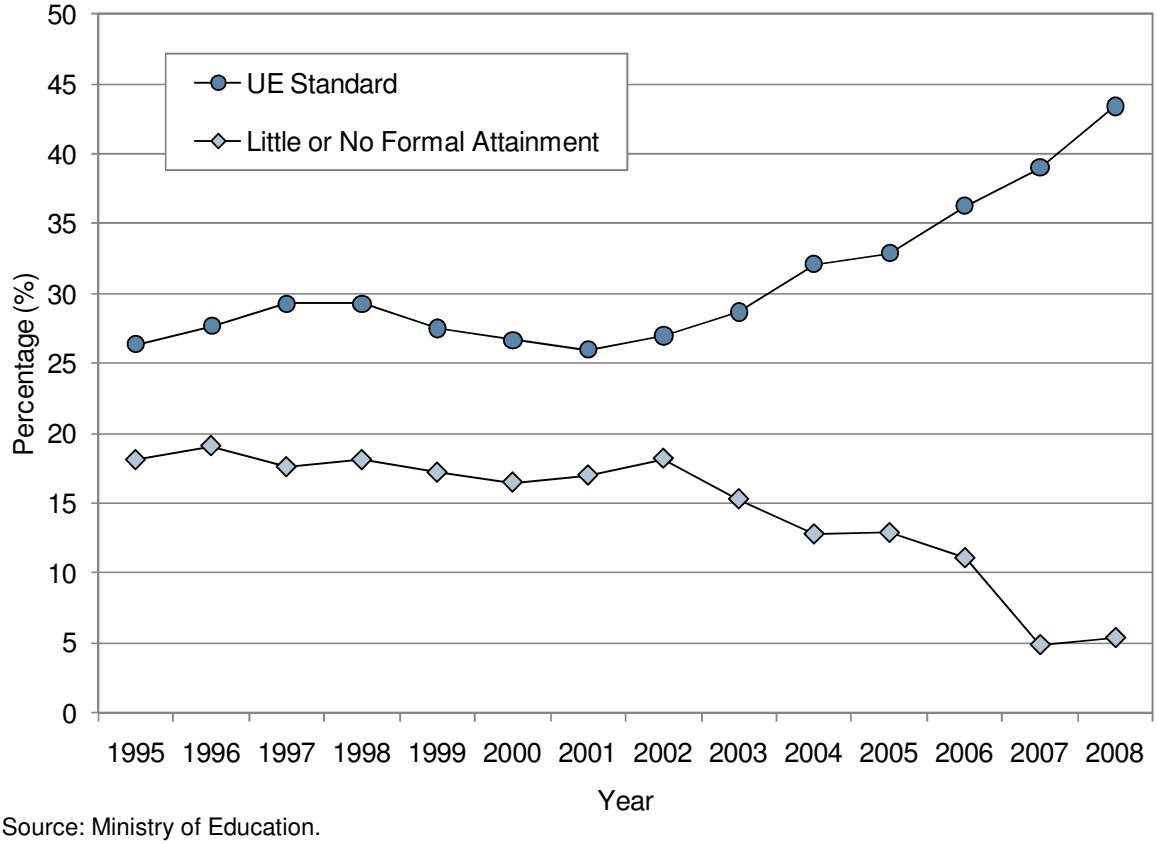
New Zealand Distribution and Trends

In New Zealand, the proportion of secondary school students who left school with a University Entrance Qualification rose during the mid-late 1990s, reached a peak of 29.3% in 1997-1998 and then declined. Following the introduction of the NCEA in 2002, rates rose again, reaching a high of 43.4% in 2008. Similarly, the proportion of secondary school students with little or no formal educational attainment rose during the early 1990s, reached a peak of 19.1% in 1996 and then declined. This decline became more rapid after the introduction of the NCEA in 2002, with only 5.4% of students leaving school with little or no formal educational attainment in 2008 (**Figure 53**). Care must be taken when interpreting educational attainment data before and after the introduction of the NCEA in 2002, as the qualification structure may not be strictly comparable. In addition, there was an 83% drop in early leaving exemptions between 2006 and 2008 [63]. As students only require 14 credits to be considered as having an educational attainment, the large fall in the number with little or no formal attainment during 2006-2007 may potentially be due to these students remaining at school and exceeding the 13 credit threshold.

Ethnic Specific Trends

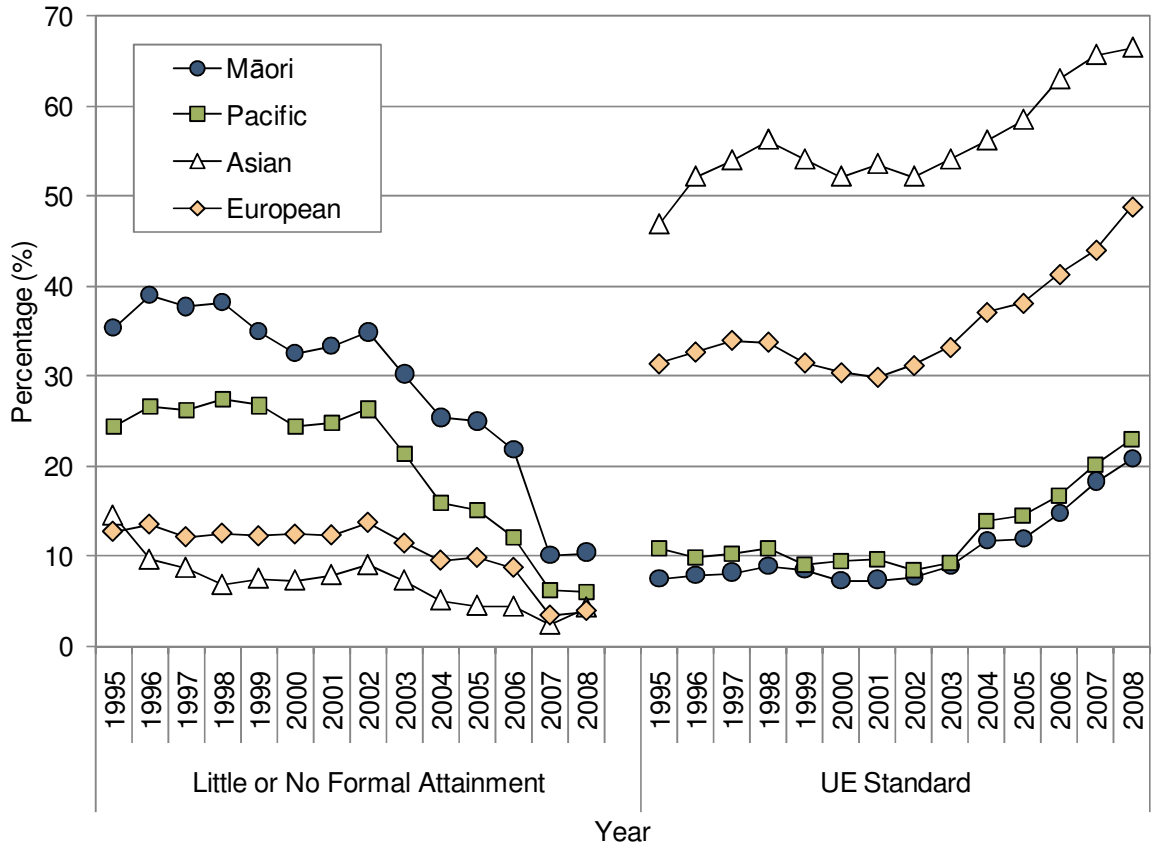
In New Zealand during 1995-2008, higher proportions of Māori > Pacific > European and Asian students left school with little or no formal attainment. For Māori, the proportion leaving with little or no formal attainment reached a peak of 39% in 1996 and then declined, with the most rapid declines occurring after the introduction of the NCEA in 2002. For Pacific students, rates reached a peak of 27.4% in 1998 and thereafter declined only marginally, until the introduction of the NCEA in 2002. In contrast, during the same period a higher proportion of Asian > European > Pacific and Māori students left school with a University Entrance Qualification. While there were some increases in rates for Asian and European students during the early-mid 1990s, rates for Māori and Pacific students remained fairly static until the introduction of the NCEA in 2002 (**Figure 54**). (As noted above, the large decline in the number leaving with little or no formal attainment during 2006-2007 may be due to a fall in early leaving exemptions during this period).

Figure 53. Highest Educational Attainment of School Leavers, New Zealand 1995-2008



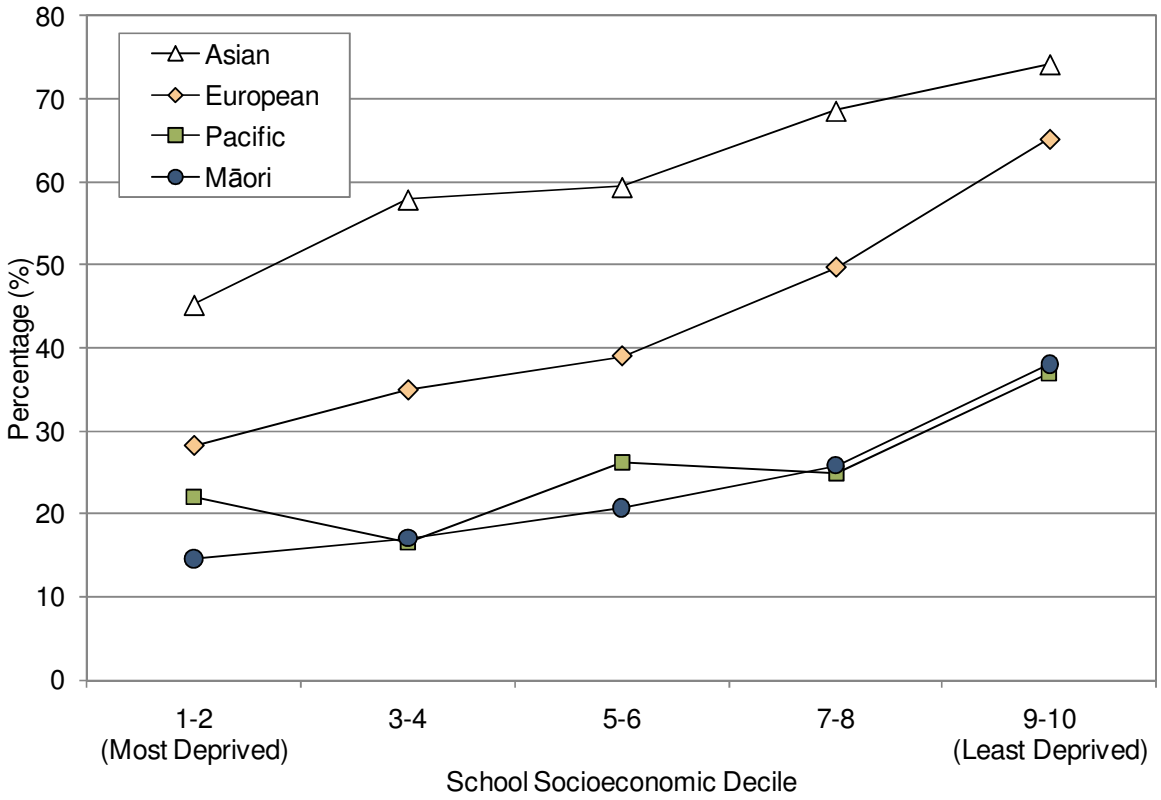
Source: Ministry of Education.

Figure 54. Highest Educational Attainment of School Leavers by Ethnicity, New Zealand 1995-2008



Source: Ministry of Education; Ethnicity is Prioritised

Figure 55. School Leavers with a University Entrance Standard by Ethnicity and School Socioeconomic Decile, New Zealand 2008



Source: Ministry of Education.

School Socioeconomic Decile

In New Zealand during 2008, there were socioeconomic differences in educational achievement amongst students in each of New Zealand's largest ethnic groups, with the proportion of students leaving school with a University Entrance Qualification increasing as the affluence of their school's catchment increased (**Figure 55**).

Taranaki Distribution and Trends

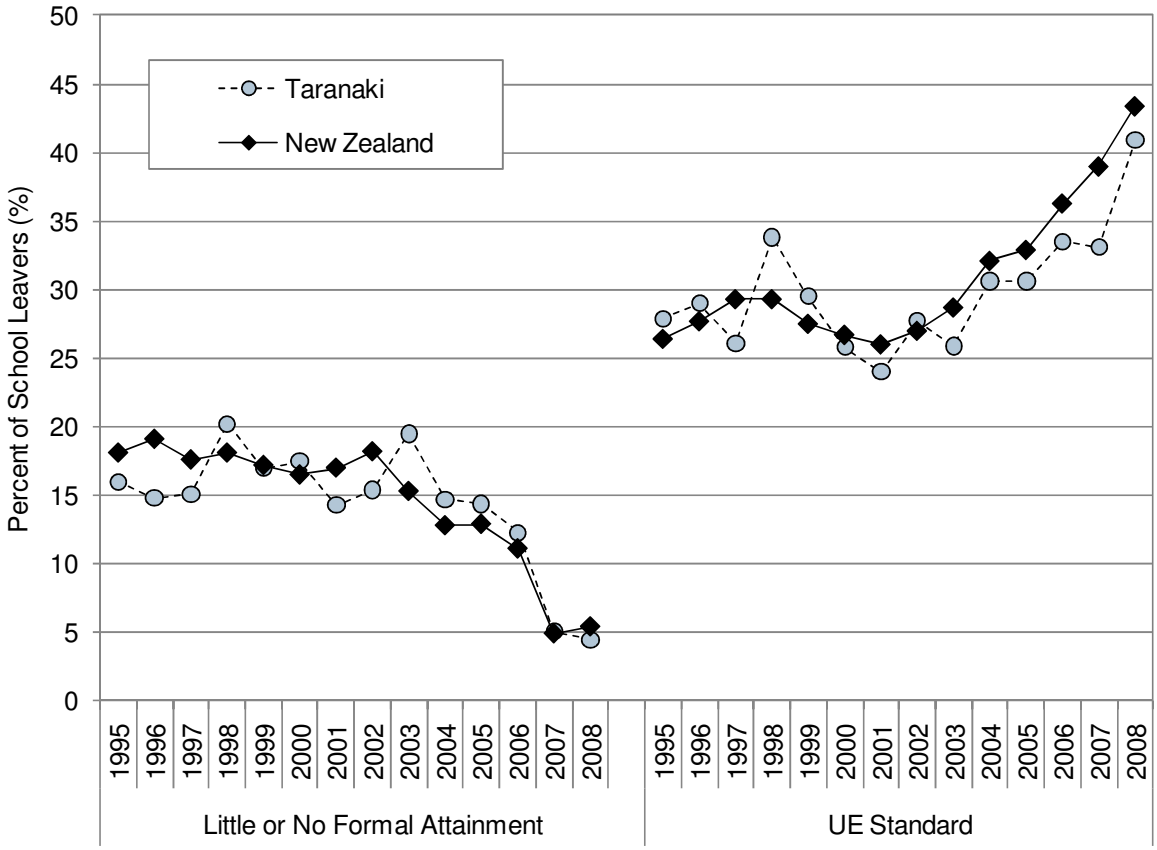
Highest Educational Attainment in Taranaki

In Taranaki during 1995-2008, the proportion of students leaving school with little or no formal attainment was similar to the New Zealand average, while the proportion leaving school with a University Entrance Standard was lower during 2003-2008. During this period, the proportion of students leaving with little or no formal attainment declined, with the most rapid declines occurring after 2003, while the proportion leaving with a University Entrance Standard increased. Both trends were consistent with those occurring nationally (see notes above regarding interpretation of national trends) (**Figure 56**).

Ethnic Specific Trends in Taranaki

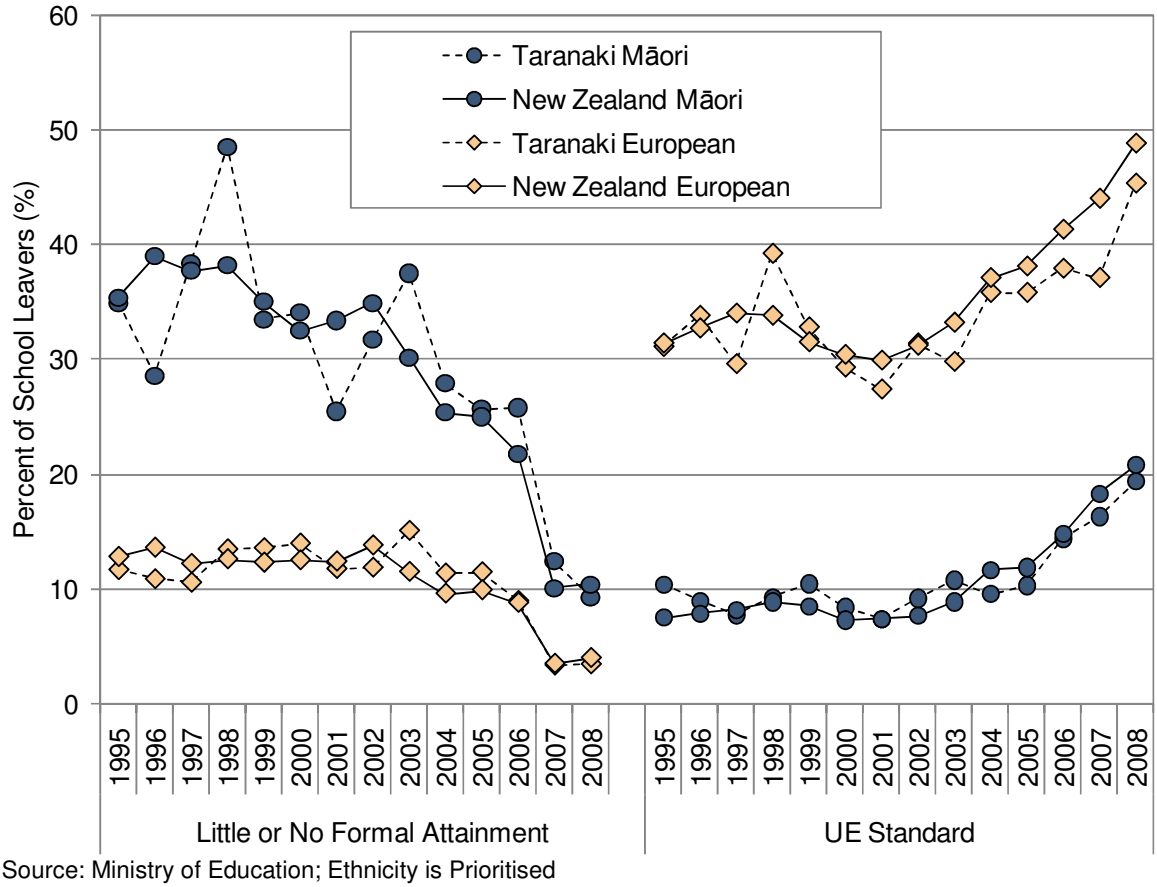
In Taranaki during 1995-2008, a higher proportion of Māori than European students left school with little or no formal attainment, while a higher proportion of European than Māori students acquired a University Entrance Standard. While for Māori students, rates for both outcomes were similar to the NZ Māori average, a lower proportion of European students left school with a UE standard than the NZ European average during 2003-2008 (**Figure 57**).

Figure 56. Highest Attainment of School Leavers, Taranaki vs. New Zealand 1995-2008



Source: Ministry of Education.

Figure 57. Highest Attainment of School Leavers by Ethnic Group, Taranaki vs. New Zealand 1995-2008



Source: Ministry of Education; Ethnicity is Prioritised

Summary

In New Zealand, the proportion of students leaving school with a University Entrance Qualification rose during the mid-late 1990s, peaked of in 1997-1998 and then declined. Following the introduction of the NCEA in 2002, rates rose again, reaching a high of 43.4% in 2008. Similarly, the proportion of students with little or no formal educational attainment rose during the early 1990s, reached a peak in 1996 and then declined. This decline became more rapid after the introduction of the NCEA in 2002, with only 5.4% of students leaving school with little or no formal attainment in 2008. During this period, a higher proportion of Māori > Pacific > European and Asian students left school with little or no formal attainment, while a higher proportion of Asian > European > Pacific and Māori students left school with a University Entrance Qualification.

In Taranaki during 1995-2008, the proportion of students leaving school with little or no formal attainment was similar to the New Zealand average, while the proportion leaving school with a University Entrance Standard was lower during 2003-2008. During this period, the proportion of students leaving with little or no formal attainment declined, with the most rapid declines occurring after 2003, while the proportion leaving with a University Entrance Standard increased. Both trends were consistent with those occurring nationally. A higher proportion of Māori than European students left school with little or no formal attainment, while a higher proportion of European than Māori students acquired a University Entrance Standard. While for Māori students, rates for both outcomes were similar to the NZ Māori average, a lower proportion of European students left school with a UE standard than the NZ European average during 2003-2008.

Local Policy Documents and Evidence Based Reviews which Consider Interventions to Improve Educational Attainment in Young People

Table 30 below summarises local policy documents and evidence based reviews which consider interventions to improve educational attainment in young people. Publications which primarily focus on improving educational attainment for Māori students are considered in **Table 29** on **Page 110**, while the In-Depth Topic: *Early Intervention Programmes for Socially Vulnerable Children* (**Page 269**) considers the role early childhood education plays in improving the academic attainment of socially vulnerable children. Strategies to improve students ongoing participation and engagement with the education system are also important, and these are considered in the sections on Stand-downs, Suspensions, Exclusions and Expulsions (**Table 32** on **Page 130)**, and Truancy and Unjustified Absences (**Table 33** on **Page 134**).

Table 30. Local Policy Documents and Evidence Based Reviews which Consider the Educational Attainment of Children and Young People

New Zealand Policy Documents
Biddulph F, Biddulph J, Biddulph C. 2003. **The Complexity of Community and Family Influences on Children's Achievement in New Zealand: Best Evidence Synthesis**. Wellington. Ministry of Education http://www.educationcounts.govt.nz/publications/series/2515/5947 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.
Alton-Lee A. 2003. **Quality Teaching for Diverse Students in Schooling: Best Evidence Synthesis**. 2003, Ministry of Education: Wellington. p. 1-103.http://www.educationcounts.govt.nz/publications/series/2515/5959 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. 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.

SENIOR SECONDARY SCHOOL RETENTION RATES

Introduction

A key factor in ensuring academic achievement at secondary school level is participation. In order to achieve, students must stay 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 [64]. 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) [64]. In New Zealand, the minimum school leaving age rose from 15 to 16 years in 1993 [65], although parents of students aged 15 years are able 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 [64].

In understanding trends and disparities in New Zealand's school retention rates over the past two decades, a number of factors must be taken into account:

1. During the past two decades school retention rates have fluctuated, partly in response to prevailing labour market conditions, with the rising retention rates observed during the late 1990s coinciding with increases in unemployment [66].
2. Not all students who leave school <18 years, or without formal qualifications transition directly into the workforce, with many taking part in other forms of tertiary education (of those aged <18 years in 2004, 14% of Māori, 10% of European, 8% of Pacific and 4% of Asian young people were involved in tertiary education, with >80% studying at Certificate 1-3 Level).
3. During 1998-2004, there were large increases in the number of students attending tertiary education, with the largest gains being amongst Māori students in Level 1-3 Certificate courses. During 1994-2004, there were also steady increases in the number of Māori students undertaking bachelor's degrees [67]. While those <18 yrs made up only a small proportion of this increase (the largest gains were in those 25+ yrs), these figures suggest that for many students, participation in education does not end at school leaving and that this must be taken into account when assessing the impact early school leaving has on long term employment and earning potential.
4. Not all forms of tertiary education have the same impact on future earning potential however, with an analysis of graduate incomes during 2002 suggesting that those completing a Level 1-3 Certificate had a median income of only $25,920, as compared to $40,000 for those completing a bachelors degree [68]. Thus, while a number of school leavers may actively participate in Certificate Level Courses, further training may be required if they are to achieve the same income premiums as those completing a degree.

The following section explores senior secondary school retention rates using information from the Ministry of Education. In addition, information on tertiary participation rates at a national level is reviewed, in order to provide some context for interpreting ethnic differences in secondary school participation during this period.

Data Source and Methods

Definition

Apparent Senior Secondary School Retention Rates at 16.5 and 17.5 Years

Data Source

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

Numerator: The number of 16 and 17 year olds on the school roll as at July 1 each year

Denominator: The number of 14 year old students on the roll as at 1 July, 2 and 3 years previously

Indicator Category Ideal C

Notes on Interpretation

Because the retention of individual students cannot be tracked over time, these figures are estimates derived from comparing enrolments by ethnic group in each year, with the numbers in each ethnic group enrolled 2 and 3 years previously. As a result of high migratory inflows, enrolments for some ethnic groups may increase, inflating the observed retention rates and in the case of Asian students, resulting in apparent retention rates of >100%. These issues need to be taken into account when interpreting school retention data, particularly for Asian and Pacific students. School retention rates exclude foreign NZAID and foreign fee paying students.

School Socioeconomic Decile: See page 99

New Zealand Distribution and Trends

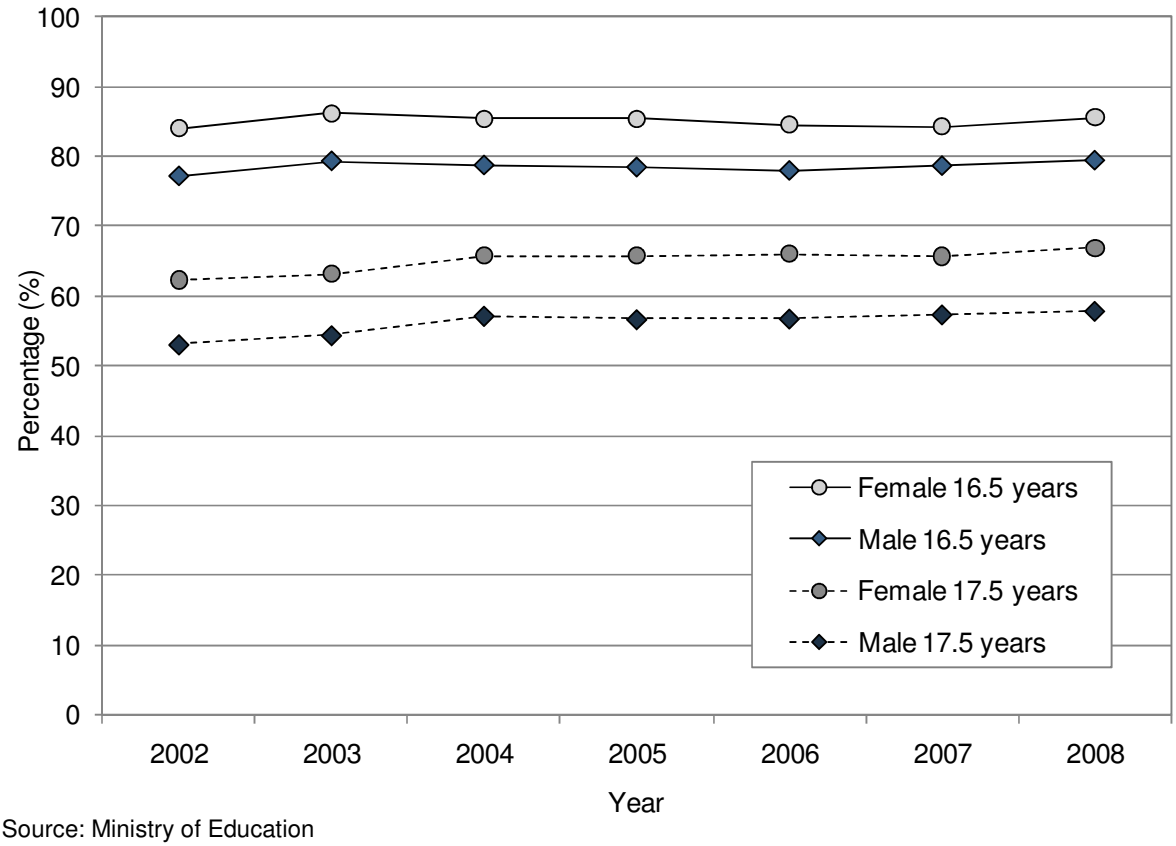
Retention Rates by Gender and Age

In New Zealand during 2002-2008, retention rates at 16.5 and 17.5 years were higher for females than males. While retention rates increased slightly during the early 2000s, they remained relatively static after 2004 (**Figure 58**).

Retention Rates by Ethnicity

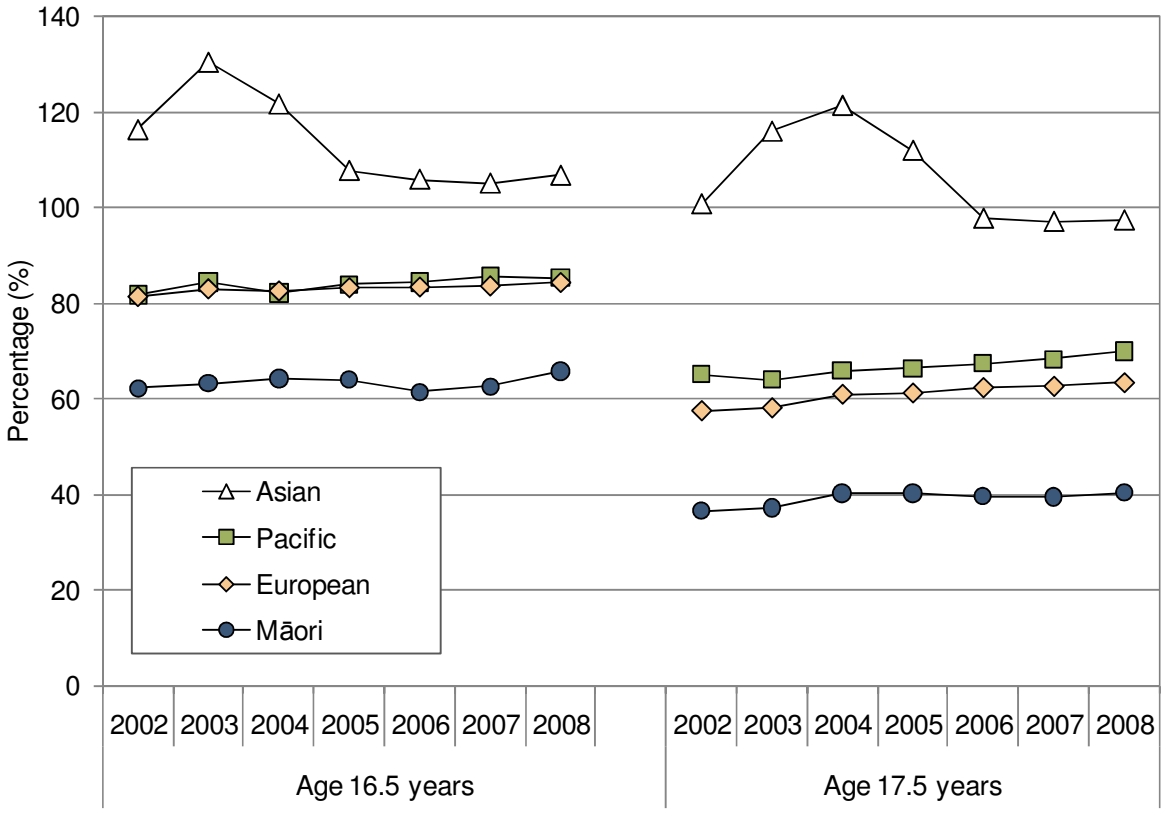
In New Zealand during 2002-2008, school retention rates at 16.5 years were higher for Asian > Pacific and European > Māori students, while retention rates at 17.5 years were higher for Asian > Pacific > European > Māori students (**Figure 59**). Retention rates in excess of 100% for Asian students are potentially the result of high migratory inflows (see Methods section).

Figure 58. Apparent Senior Secondary School Retention Rates at 16.5 and 17.5 Years by Gender, New Zealand 2002-2008



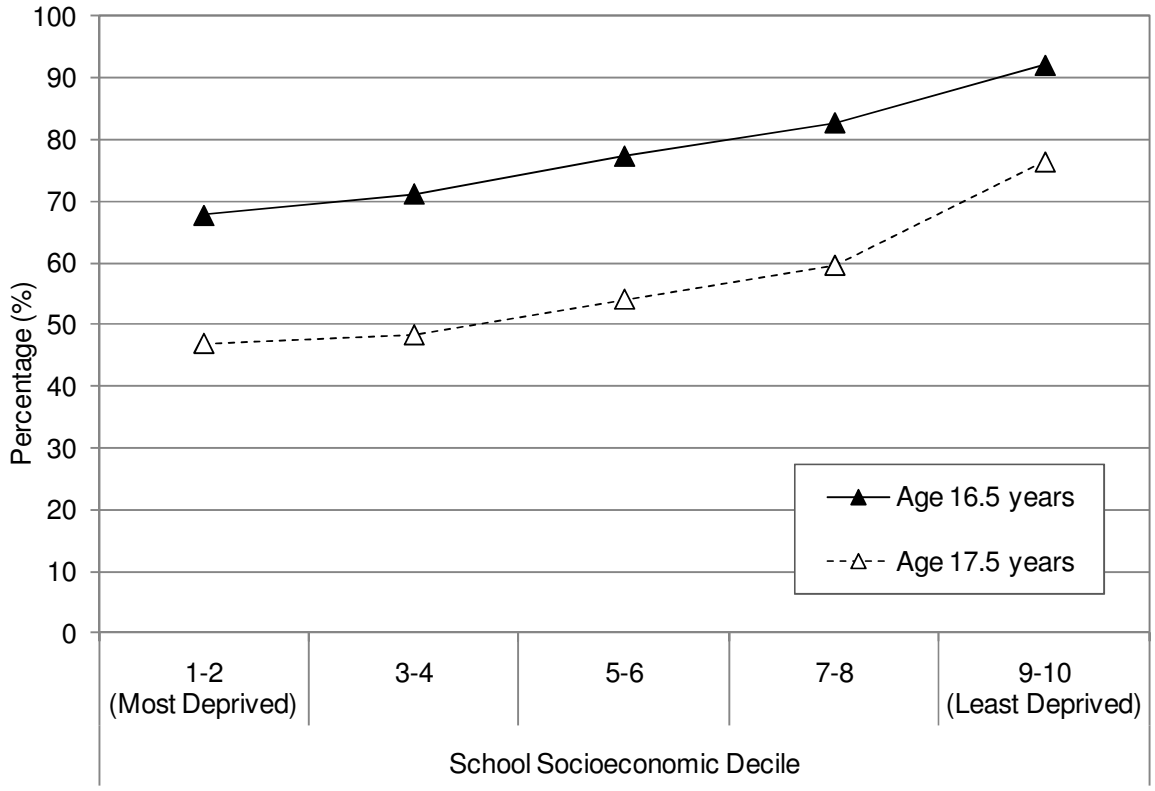
Source: Ministry of Education

Figure 59. Apparent Senior Secondary School Retention Rates at 16.5 and 17.5 Years by Ethnicity, New Zealand, 2002-2008



Source: Ministry of Education. Note: Due to the high positive net migration, retention rates for Asian students may be over inflated

Figure 60. Apparent Senior Secondary School Retention Rates at 16.5 and 17.5 Years by School Socioeconomic Decile, New Zealand 2008



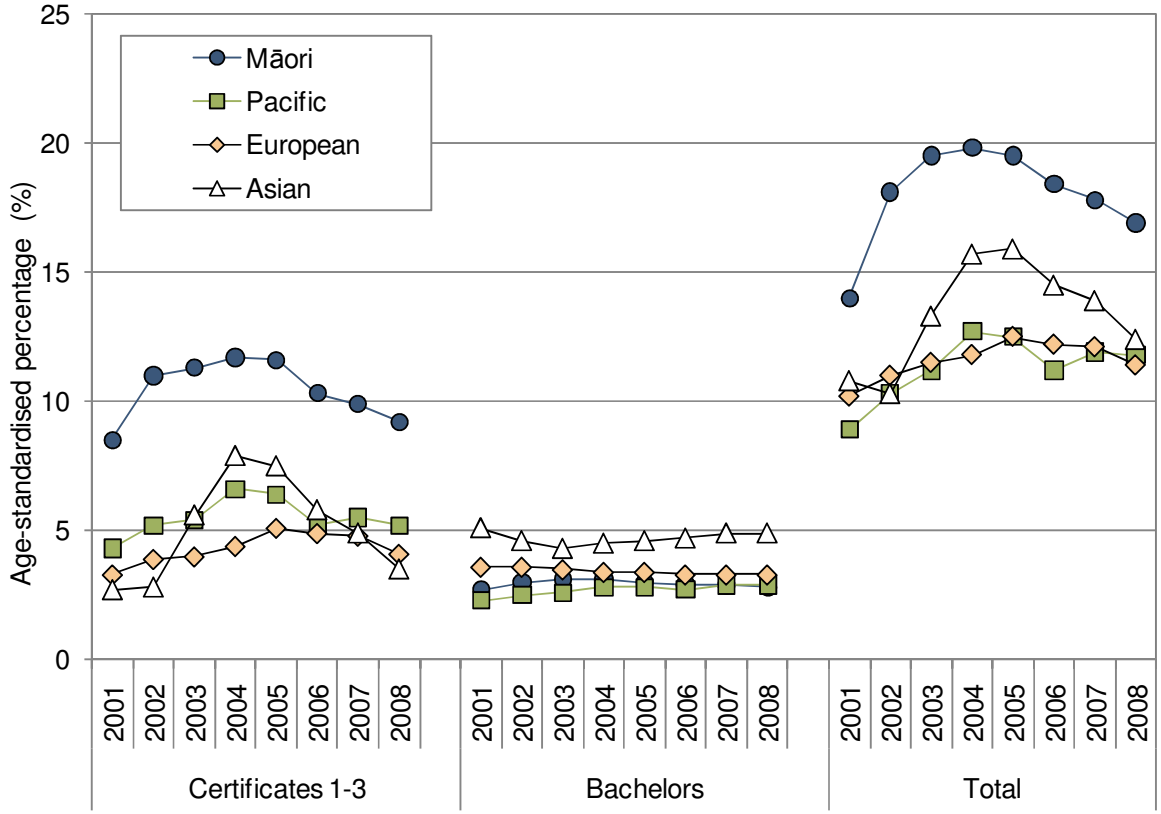
Source: Ministry of Education

Retention Rates by School Socioeconomic Decile
During 2008, modest socioeconomic gradients in school retention rates were apparent at both 16.5 and 17.5 years, with the proportion of students remaining at school increasing progressively as the affluence of the school catchment increased (**Figure 60**).

Comparison with Tertiary Participation Rates
Ethnic differences in school retention rates prior to 18 years need to be viewed within the context of the alternative educational opportunities available to students. During 2001-2008, a large number of students participated in tertiary education, with participation rates for Māori students being particularly high in Certificate Level 1-3 courses (**Figure 61**). 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. In this context, regional participation rates are likely to reflect the number and type of tertiary institutions in an area, rather than the participation rates of young people who have grown up in Taranaki, or who return home during their study breaks or vacations.

Figure 61. Age-Standardised Participation Rates in Tertiary Education for Domestic Students by Ethnic Group and Qualification, New Zealand 2001-2008

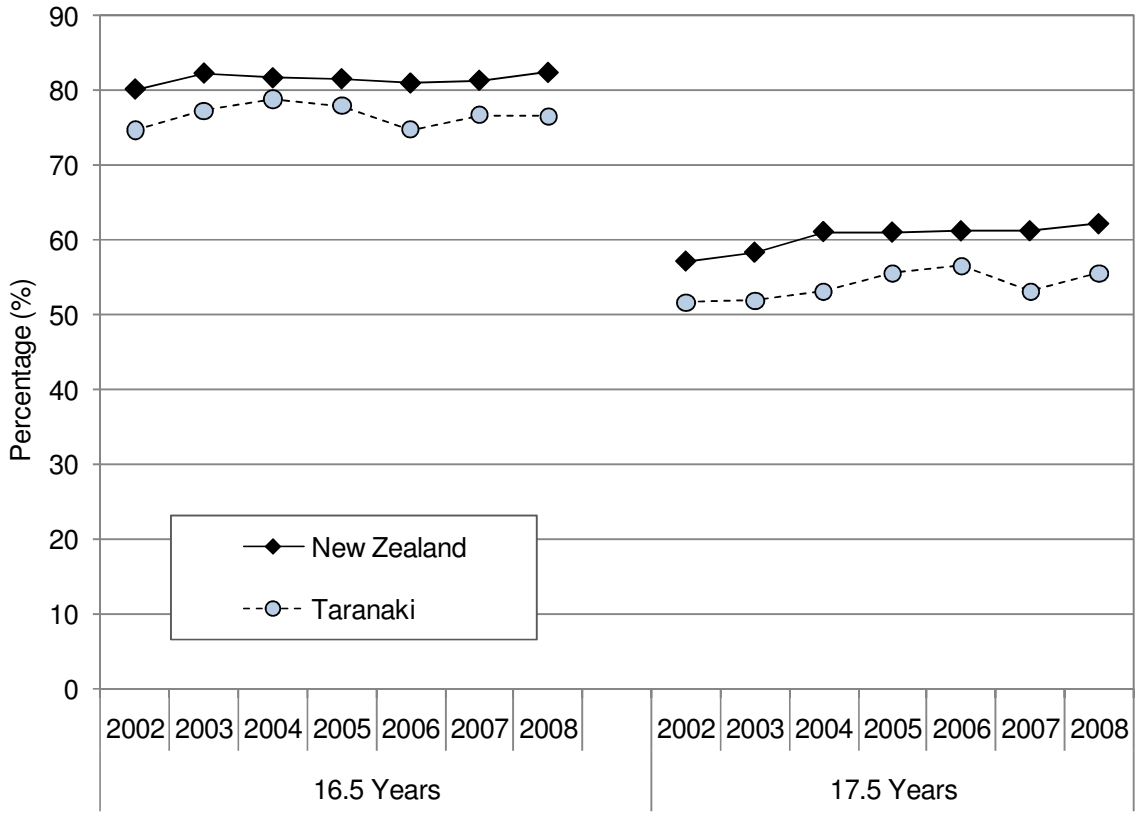


Source: Ministry of Education.

Taranaki Distribution and Trends

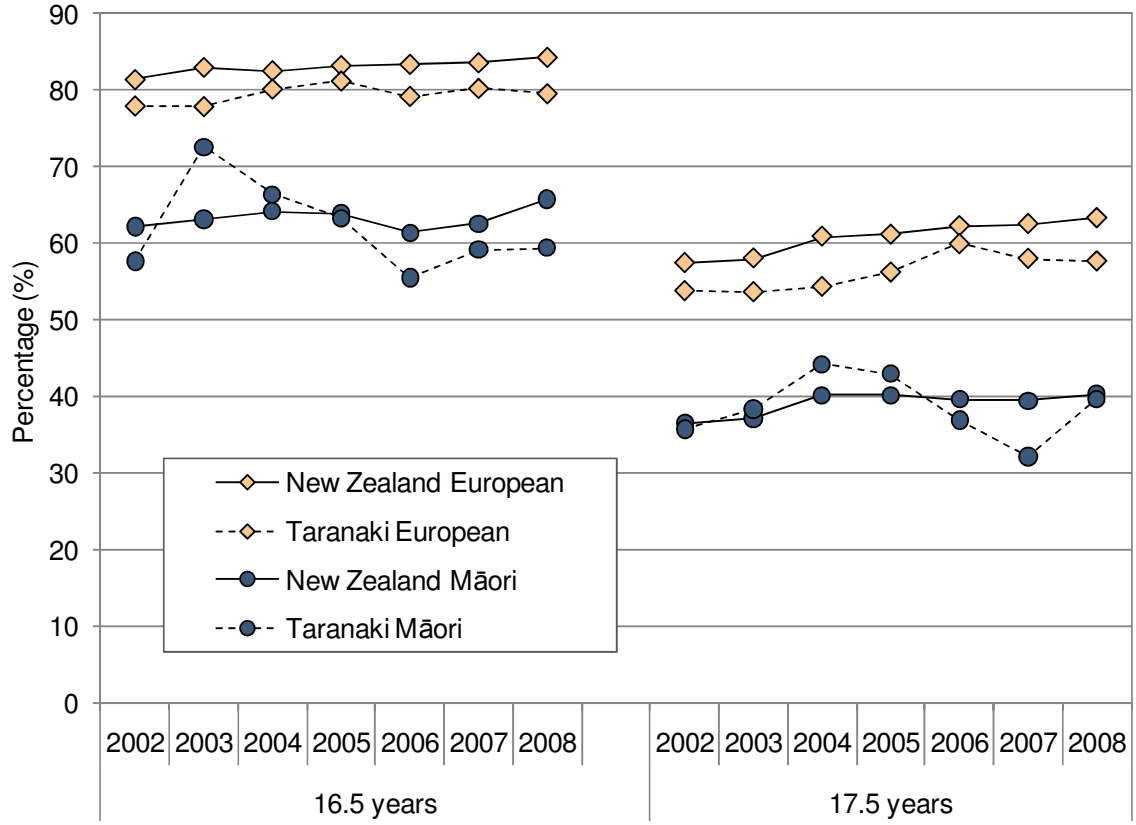
In Taranaki during 2002-2008, school retention rates at 16.5 and 17.5 years were lower than the New Zealand average (**Figure 62**). During this period, retention rates at 16.5 and 17.5 years were higher for Taranaki European than for Māori students, although retention rates for European students were lower than the NZ European average (**Figure 63**).

Figure 62. Apparent Senior School Retention Rates at Age 16.5 and 17.5 Years, Taranaki vs. New Zealand, 2002-2008



Source: Ministry of Education

Figure 63. Apparent Senior School Retention Rates at 16.5 and 17.5 Years by Ethnicity, Taranaki vs. New Zealand 2002-2008



Source: Ministry of Education; Ethnicity is Prioritised

Summary

In New Zealand, while school retention rates at 16.5 and 17.5 years have remained relatively static since 2004, marked socioeconomic and ethnic differences have remained, with retention rates being higher for Asian > Pacific and European > Māori students and those attending schools in more affluent areas. In Taranaki during 2002-2008, school retention rates at 16.5 and 17.5 years were lower than the New Zealand average. During this period, retention rates at 16.5 and 17.5 years were higher for Taranaki European than for Māori students, although retention rates for European students were lower than the NZ European average.

Ethnic differences in school retention need to be viewed within the context of the alternative educational opportunities available to students. During 2001-2008, a large number of students participated in tertiary education, with participation for Māori students being particularly high in Certificate Level 1-3 courses. While tertiary participation also includes 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.

Local Policy Documents and Evidence Based Reviews which Consider Interventions to Improve Educational Participation in Young People

Strategies to improve students ongoing participation and engagement with the education system are considered in the sections on Stand-downs, Suspensions, Exclusions and Expulsions (**Table 32** on **Page 130)**, and Truancy and Unjustified Absences (**Table 33** on **Page 134**). In addition, **Table 30** on **Page 117** summarises local policy documents and evidence based reviews which consider interventions to improve the educational attainment of young people. Publications which primarily focus on improving educational engagement for Māori students are considered in **Table 29** on **Page 110**, while the In-Depth Topic: *Early Intervention Programmes for Socially Vulnerable Children* (**Page 269**) considers the role early childhood education plays in improving the academic performance of socially vulnerable children.

SCHOOL STAND-DOWNS, SUSPENSIONS, EXCLUSIONS AND EXPULSIONS

Introduction

Participation in secondary school is vital for academic achievement and factors which cut short or interrupt participation potentially impact on educational outcomes. In New Zealand schools, stand-downs, suspensions, exclusions and expulsions are ways in which the educational system deals with student behaviour that disrupts the learning and wellbeing of other students or staff. These approaches are not used lightly by schools, but are seen as a way of helping students return to productive learning and relationships within the school community [69].

In recent years, 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 [70]. 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 significantly associated with poorer long term outcomes including educational underachievement (e.g. leaving school early and without qualifications), unemployment and occupational instability during young adulthood [71].

In exploring the determinants of childhood / adolescent conduct problems and how they impact on educational achievement, the Christchurch Longitudinal study noted that [71]:

1. **Determinants of Conduct Problems in Childhood**: Conduct problems in middle childhood were significantly associated with a range of socioeconomic, family and individual 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. **Conduct Problem's Impact on Secondary School Achievement**: In turn, conduct problems during childhood were significantly associated with poorer school achievement in the teenage years (e.g. leaving school <18 yrs 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 background factors reduced the associations between conduct problems and poorer school achievement from a 4.8 times excess risk to a 1.8 times excess risk (i.e. a significant, albeit reduced risk remained which could not be attributed to these factors).
3. **Conduct Problems and Adolescent Behaviour**: Those with conduct problems in childhood 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 also 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 [71].

The following section, using information from the Ministry of Education, reviews the proportion of students who were stood-down, suspended, excluded or expelled from school during 2000-2008.

Data Source and Methods

Definition

Information in this section is based on two Ministry of Education Student Participation Indicators: Stand-Downs and Suspensions and Exclusions and Expulsions, which are defined as follows:

1. **Stand-Down**: The formal removal of a student from school for a specified period. Stand-downs may not exceed 5 school days in any term, or 10 days in any year. Following stand-downs students automatically return to school.
2. **Suspension**: The formal removal of a student from school by the principal until the Board of Trustees decides the outcome at a suspension meeting. Following a suspension, the Board may decide to lift the suspension with or without conditions, extend the suspension, or in the most serious cases exclude or expel the student.
3. **Exclusion**: The formal removal of a student <16 years from school with the requirement that they enrol elsewhere.
4. **Expulsion**: The formal removal of a student 16+ years from school. They may enrol at another school.

Data Source

Ministry of Education http://www.educationcounts.govt.nz/
Numerator: 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

Indicator Category Proxy B

Notes on Interpretation

Data was obtained from the Ministry of Education's Stand-Down and Suspension database, which was developed in July 1999, after the introduction of the Education (Suspension) Rules 1999. Since these regulations introduced stand-downs for the first time, statistics prior to mid-1999 are not comparable. 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 are then age standardised (by the MOE), so that all subgroups in all years have the same age structure (this is necessary as stand-downs and suspensions are highest amongst those 13-15 years and thus differences in age structure by ethnic group, or over time (e.g. due to differing school retention rates) may lead to artificial differences in rates. As such the standardised rate is an artificial measure, but does provide an estimate of how groups over time might compare if they had the same age distribution [72]. As a number of students were suspended on more than one occasion, the number of individual students suspended may well be less than the number of cases reported in these figures.

School Socioeconomic Decile: See page 99

New Zealand Distribution and Trends

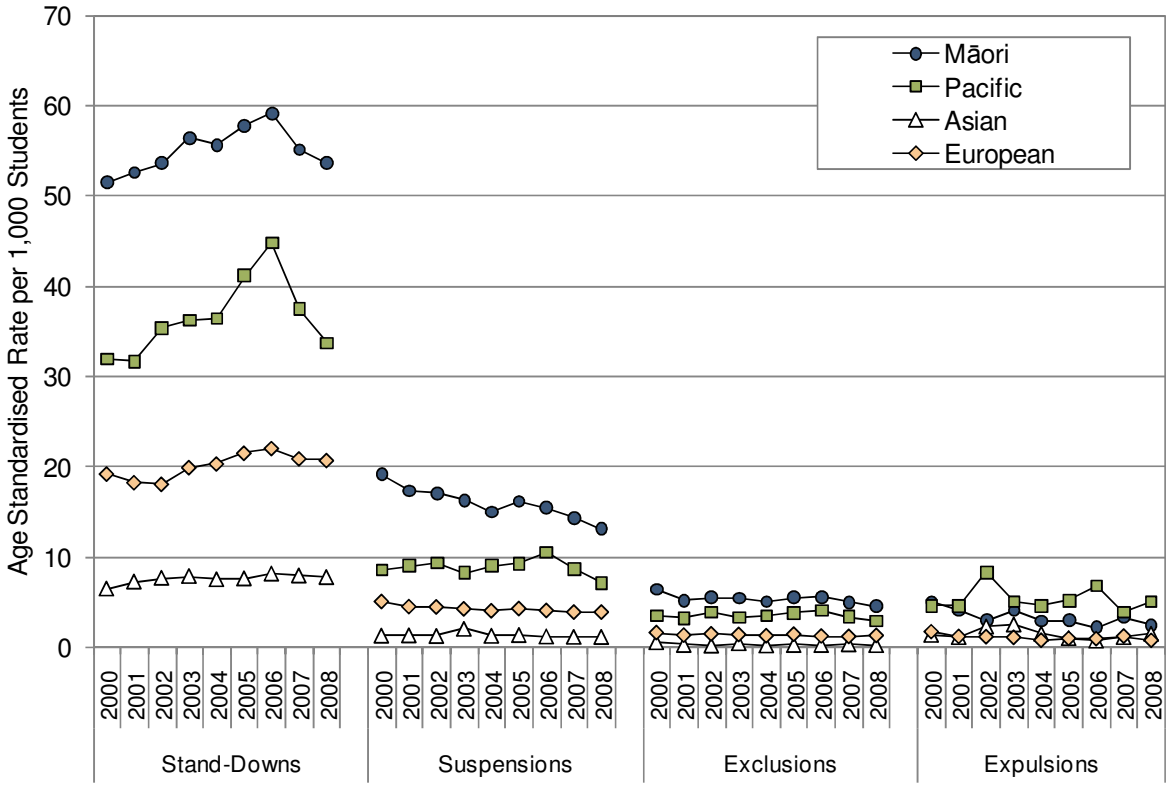
Stand-Downs and Suspensions

In New Zealand during 2007, there were 4,679 suspensions, with these events being most likely to occur amongst those in Secondary / Composite schools, males, Māori and Pacific students and those in average, or more deprived (Decile 1-7) areas. The most common reasons for a suspension were continual disobedience (27.5%), a physical assault on other students or staff (23.8%), or the misuse of drugs (20.1%), which together accounted for 71.4% of all suspension cases (**Table 31**). For most students a stand-down or suspension was a once only event [73].

New Zealand Trends

During 2000-2008, the number of suspensions, exclusions and expulsions declined, while the number of stand-downs increased, reached a peak in 2006 and then declined. Throughout this period stand-downs, suspensions and exclusions were higher for Māori > Pacific > European > Asian students, while expulsions were generally higher for Pacific > Māori > European and Asian students (**Figure 64**). The progressive decline in suspension rates for Māori students during this period needs to be seen in the context of a Suspension Reduction Initiative (SRI) which started in 2001. This SRI initially involved working with 86 secondary schools with historically high suspension rates for Māori students, although an additional 24 schools have become involved with the SRI since 2001 and a number of the original schools have left the initiative. It is thought that this SRI may have helped in reducing the overall suspension rate for Māori students by 16% since 2000 [72].

Figure 64. Age Standardised School Stand-Down, Suspension, Exclusion and Expulsion Rates by Ethnicity, New Zealand 2000-2008



Source: Ministry of Education; Ethnicity is Prioritised.

Taranaki Distribution and Trends

Stand-Downs, Suspensions, Exclusions and Expulsions

In Taranaki during 2000-2008, stand-downs increased, reached a peak in 2007 and then declined, while suspensions increased during the early 2000s and then remained more static. Exclusions were relatively static throughout 2000-2008. While suspension rates were generally lower than the New Zealand average (particularly during the early 2000s), stand-downs were higher during 2005-2008 (**Figure 65**).

Ethnic Differences

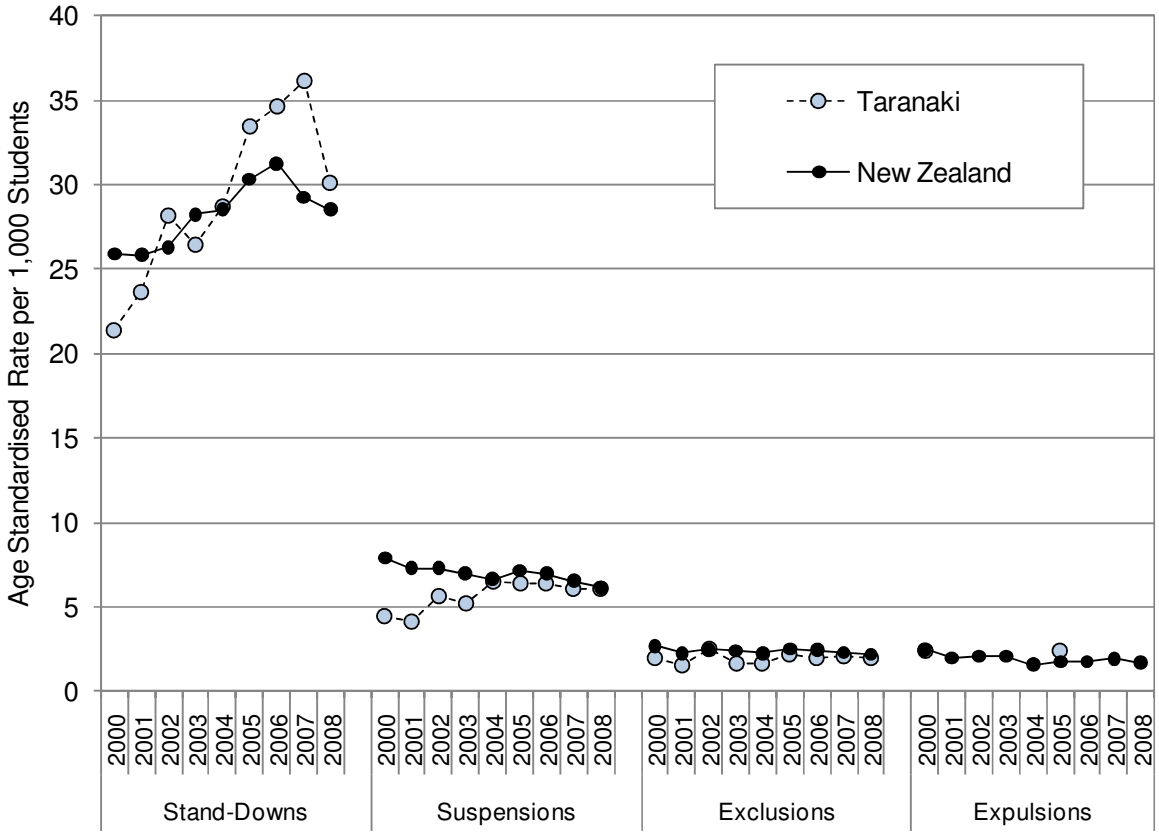
In Taranaki during 2000-2008, suspension rates were higher for Māori than for European students. While rates for European students were lower than the NZ European average, rates for Māori students were higher than the NZ Māori average during 2004-2008 (**Figure 66**).

Table 31. Number of Suspensions in State Schools by Type of Behaviour, New Zealand 2007

	Type Of Behaviour												Total	Rate per 1,000 Students
	Alcohol	Arson	Continual Disobedience	Drugs (Including Substance Abuse)	Physical Assault on Other Students or Staff	Sexual Harassment or Misconduct	Smoking	Theft	Vandalism	Verbal Assault on Other Students or Staff	Weapons	Other Harmful or Dangerous Behaviour		
	School Type													
Primary/Special	12	10	199	129	350	18	9	33	13	84	34	62	953	2.2
Secondary/Composite	164	39	1087	813	762	43	27	173	76	190	80	272	3726	13.3
	Gender													
Male	105	31	917	657	844	52	20	166	77	199	108	253	3429	9.4
Female	71	18	369	285	268	9	16	40	12	75	6	81	1250	3.6
	Ethnicity													
Māori	51	20	589	510	528	21	16	96	36	149	42	129	2187	14.1
European	81	23	472	304	348	23	13	59	29	91	47	123	1613	4.0
Pacific	27	<5	156	63	153	9	6	37	14	19	13	57	556	8.4
Asian	<5	<5	15	14	15	<5	<5	<5	<5	<5	5	6	72	1.2
Other	13	<5	54	51	68	5	<5	10	9	13	7	19	251	7.0
	Decile													
1-3 (Most Deprived)	43	12	419	291	457	18	10	44	28	118	46	96	1582	9.2
4-7	84	31	681	490	519	33	19	110	43	120	55	176	2361	8.0
8-10 (Least Deprived)	49	6	186	160	136	10	7	52	18	36	13	62	735	3.0
Total	176	49	1286	942	1112	61	36	206	89	274	114	334	4679	6.6

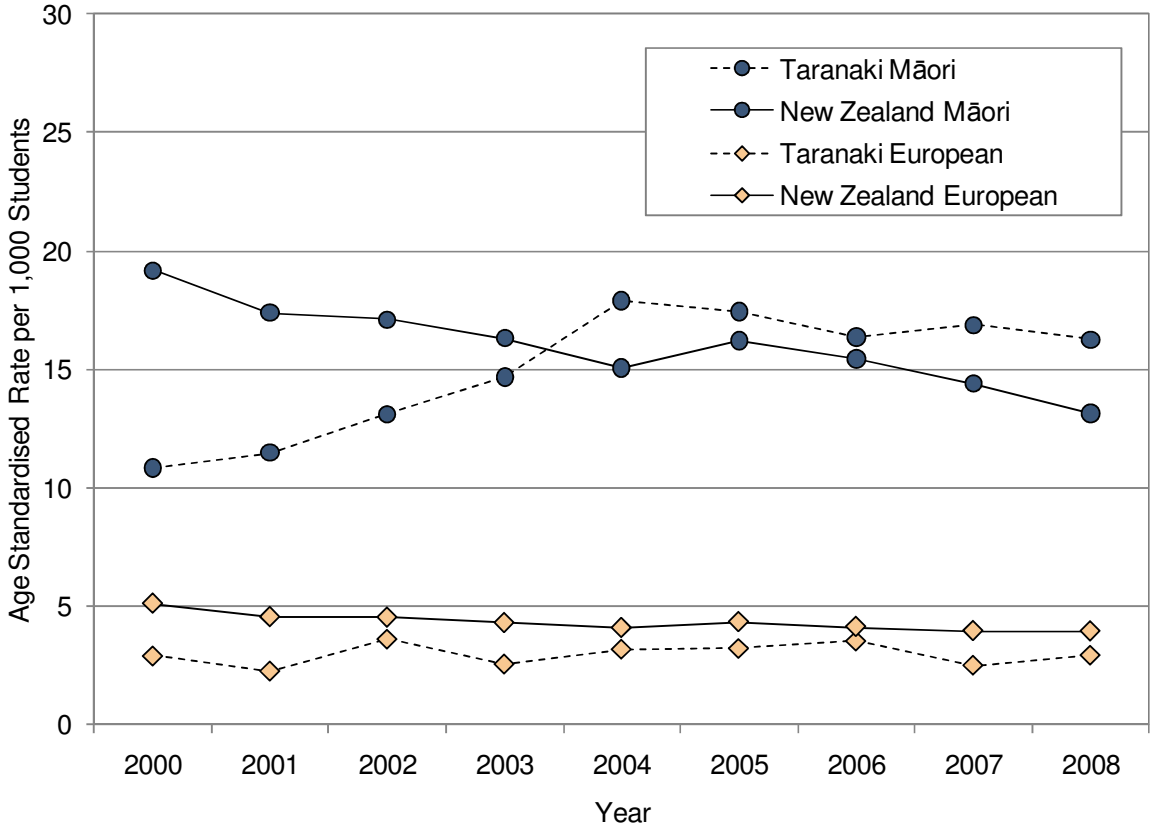
Source: Ministry of Education. Note: Suspensions are not age standardised; Rates for “Other” ethnic group may be anomalously high as some schools classify students as ‘Other' when on the school roll they appear in another ethnic group.

Figure 65. Age Standardised School Stand-Down, Suspension, Exclusion and Expulsion Rates, Taranaki vs. New Zealand 2000-2008



Source: Ministry of Education

Figure 66. Age Standardised School Suspension Rates by Ethnicity, Taranaki vs. New Zealand 2000-2008



Source: Ministry of Education; Ethnicity is Prioritised

Summary

Participation in secondary school is vital for academic achievement and factors which cut short or interrupt participation potentially impact on educational outcomes. In New Zealand schools, stand-downs, suspensions, exclusions and expulsions are ways in which the educational system deals with student behaviour that disrupts the learning and wellbeing of other students or staff. In New Zealand during 2007, there were 4,679 suspensions, with these events being most likely to occur amongst those in Secondary / Composite schools, males, Māori and Pacific students and those in average, or more deprived areas. The most common reasons for a suspension were continual disobedience, a physical assault on other students or staff, or the misuse of drugs, which together accounted for 71.4% of all suspension cases.

In Taranaki during 2000-2008, stand-downs increased, reached a peak in 2007 and then declined, while suspensions increased during the early 2000s and then remained more static. Exclusions were relatively static throughout 2000-2008. While suspension rates were generally lower than the New Zealand average (particularly during the early 2000s), stand-downs were higher during 2005-2008. During this period, suspension rates were higher for Māori than for European students. While rates for European students were lower than the NZ European average, rates for Māori students were higher than the NZ Māori average during 2004-2008.

Local Policy Documents and Evidence Based Reviews Relevant to the Suspension of Young People from School

As the section above suggests, conduct problems can significantly affect a young person's engagement with the education system. **Table 32** thus considers local policy documents relevant to the prevention of conduct problems in children and young people, as well as strategies to reduce their suspension from school, or to address youth offending. In addition, strategies to improve student engagement with the education system are reviewed in the section on Truancy and Unjustified Absences (**Table 33** on **Page 134**).

Table 32. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Suspensions, Conduct Problems and Youth Offending

Local Policy Documents and Evidence Bases Reviews
Advisory Group on Conduct Problems. 2009. **Conduct Problems: Best Practice Report**. Wellington. Ministry of Social Development. http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/conduct-problems-best-practice/index.html This report explores the issues relating to conduct problems and their treatment. It is presented in four parts: 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 of these. Part 2 provides a review of evidence on effective interventions, including the importance of randomised controlled trials 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 policy recommendations in this area. 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. 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.
Ministry of Education. 2005. **Ministry of Education Suspension Reduction Initiative**. Wellington. Ministry of Education http://www.tki.org.nz/r/governance/attendance/sei_e.php In 2000, Māori comprised 21% of the school population but 47% of suspended students. The Suspension Reduction Initiative (SRI) was established in 2001 to counter the disproportionately high number of Māori suspensions. Its goal is to reduce Māori suspension rates to the same as those of non-Māori students by 2016, and it is one of a number of initiatives directed towards the underlying goal of improving and sustaining Māori student achievement and retention. This report describes the Suspension Reduction Initiative (SRI), its purpose, how it operates, and its impact to date.
McLaren K. 2000. **Tough is Not Enough: Getting Smart About Youth Crime**. Wellington. Ministry of Youth Affairs. http://www.myd.govt.nz/Publications/Justice/toughisnotenough-gettingsmartabout.aspx Offending by young people is of great concern to New Zealanders, particularly given the perception that serious and violent offending by young people is increasing. This literature review considers the evidence regarding "what works to reduce crime by young people". As well as describing the interventions which the best research shows are effective, the review goes beyond this to identify the broad principles that underpin successful interventions.

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. 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 [74].

The Ministry of Education intermittently undertakes Surveys of School Attendances. The most recent School Attendance Survey for which data is available, occurred in August 2006. The following section uses data from the Ministry of Education's School Attendance Survey to explore truancy and unjustified absences at schools in Taranaki and New Zealand during 2006.

Data Source and Methods

Definitions

1. *Unjustified Absence: Where a student is absent from school (for a full day) without adequate explanation*
2. *Intermittent Unjustified Absence: Where a student is absent from school (for part of the day) without adequate explanation (e.g. arriving late at school, skipping classes or tardiness in attending classes)*
3. *Truancy Rate: Standardised percentage of students enrolled who are unjustifiably absent from school.*
4. *Frequent Truancy: Percentage of students who are unjustifiably absent, but not on an intermittent basis, for at least three days of the week of the survey*

Data Source

Ministry of Education Student Attendance Surveys (2004 and 2006) http://www.educationcounts.govt.nz/

Indicator Category Proxy B

Notes on Interpretation

The Ministry of Education undertook Student Attendance Surveys in 2004 and 2006. The 2006 Survey involved schools reporting student absences during the week 21-25 August 2006. *Unjustified Absences* and *Frequent Truancy* include only those student absences where no acceptable explanation from the student, or their caregiver was received by the school concerning the reason for their absence.

New Zealand Distribution

Unjustified Absences by Year of Schooling

In New Zealand during both 2004 and 2006, unjustified absences were relatively infrequent during the primary school years (Years 1-6), but increased progressively during secondary school (Years 9-13) (**Figure 67**).

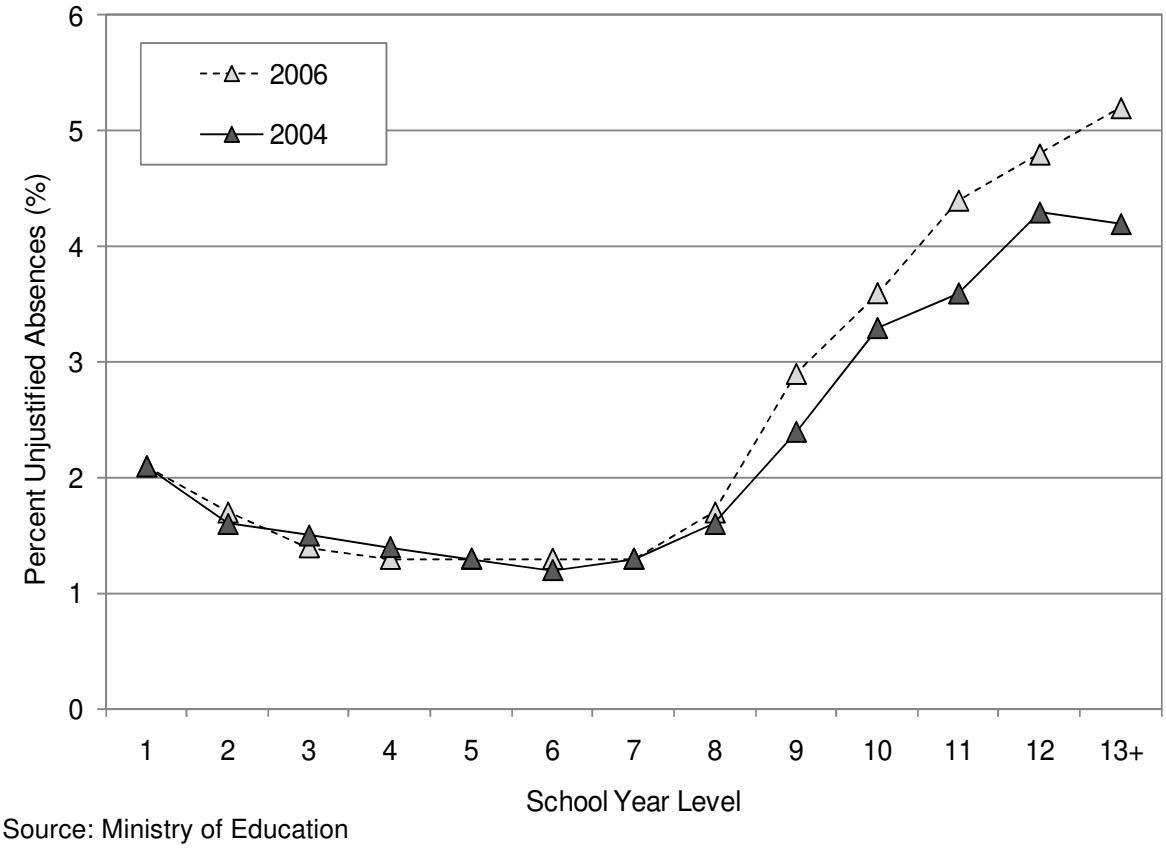
Unjustified Absences and Frequent Truancy by Ethnicity

In New Zealand during 2006, unjustified absences and frequent truancy were higher for Māori > Pacific > European and Asian students. There were however, no consistent gender differences across the various ethnic groups during this period (**Figure 68)**.

Unjustified Absences and Frequent Truancy by School Socioeconomic Decile

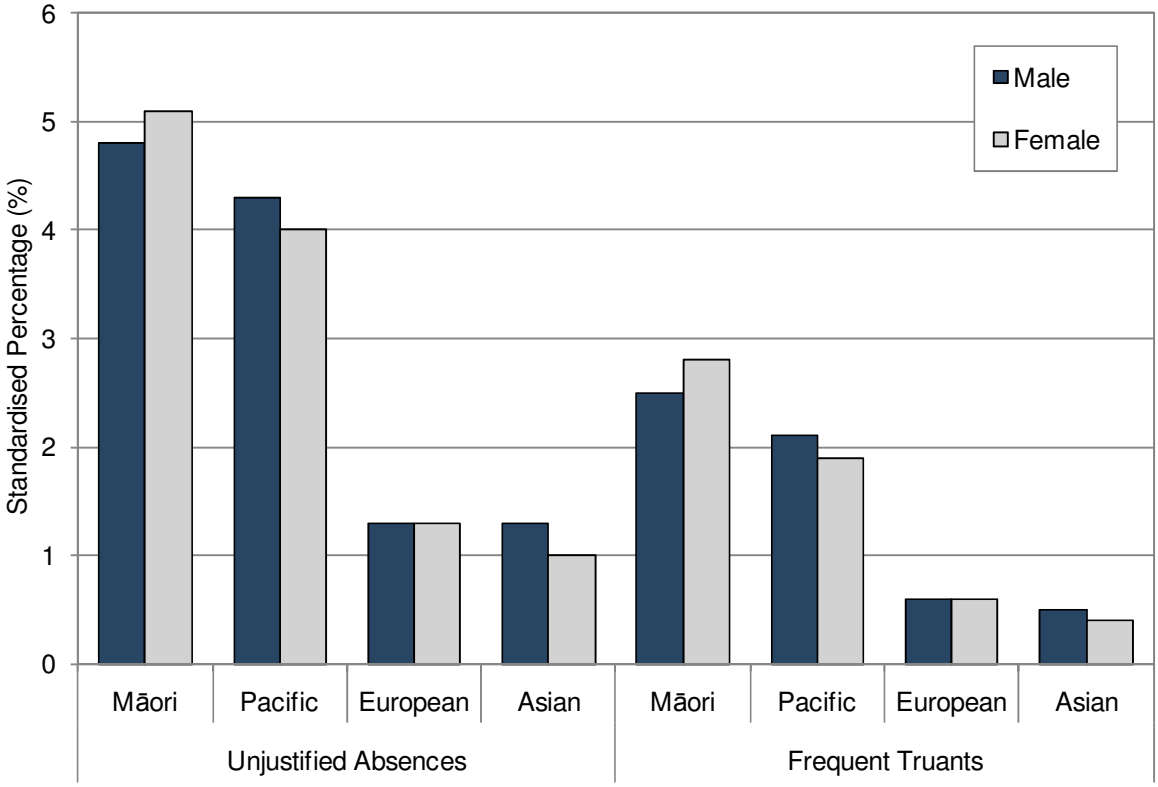
In New Zealand during 2006, unjustified absences and frequent truancy both decreased as the affluence of the school catchment increased. At each level of school socioeconomic deprivation however, unjustified absences and infrequent truancy were higher for Māori > Pacific > European and Asian students (**Figure 69**).

Figure 67. Unjustified Absences by School Year Level, New Zealand 2004 and 2006



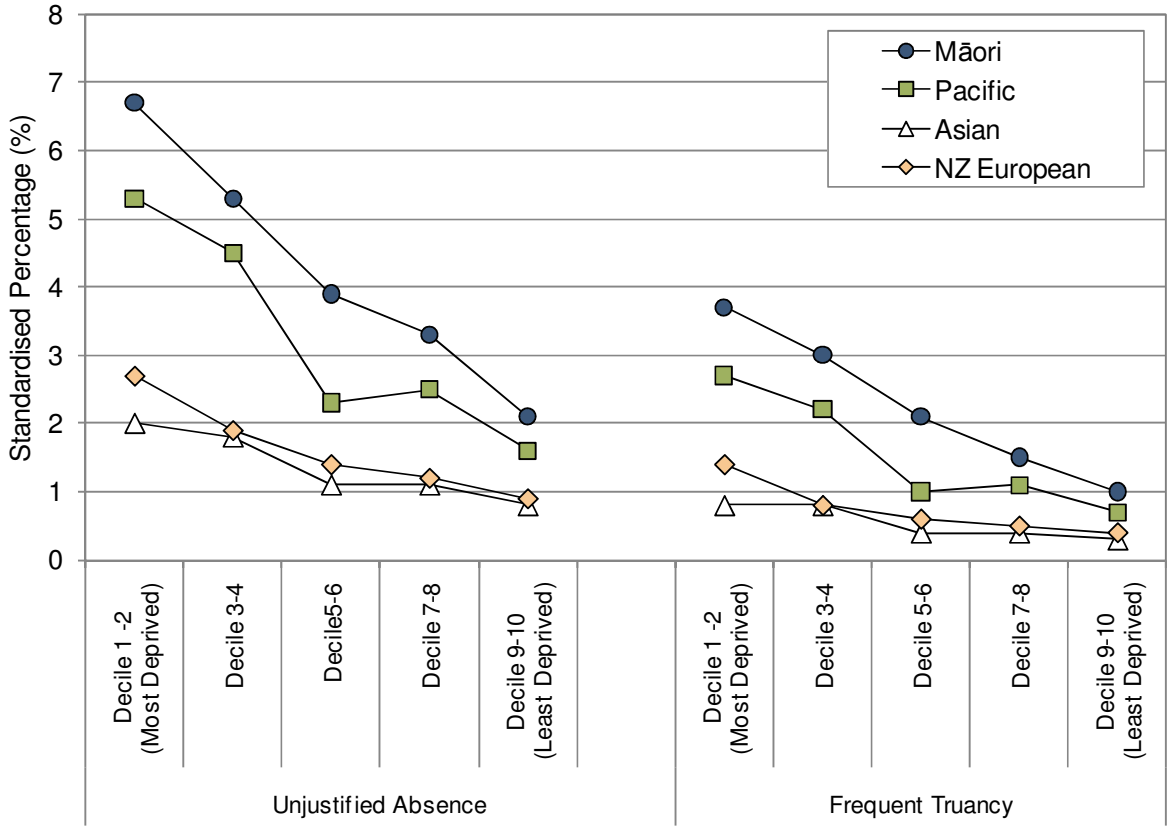
Source: Ministry of Education

Figure 68. Unjustified Absences and Frequent Truancy by Ethnicity and Gender, New Zealand 2006



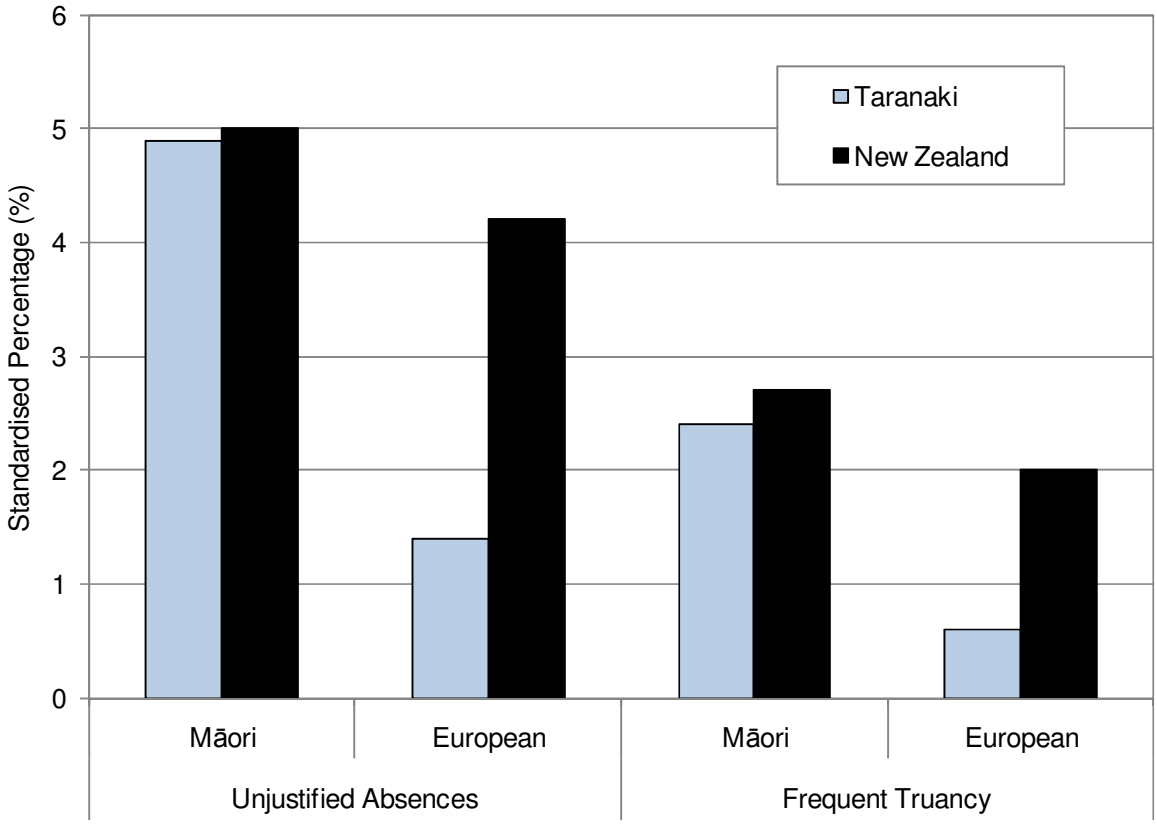
Source: Ministry of Education

Figure 69. Unjustified Absences and Frequent Truancy by Ethnicity and School Socioeconomic Decile, New Zealand 2006



Source: Ministry of Education; Ethnicity is Prioritised

Figure 70. Unjustified Absences and Frequent Truancy by Ethnicity, Taranaki vs. New Zealand 2006



Source: Ministry of Education; Ethnicity is Prioritised

Taranaki Distribution

Unjustified Absences and Frequent Truancy: Taranaki vs. New Zealand
In Taranaki during 2006, the unjustified absence rate was 2.2%, as compared to 2.3% for New Zealand as a whole, while the frequent truancy rate was 1.0%, as compared to 1.1% nationally.

Distribution by Ethnicity: Taranaki vs. New Zealand
In Taranaki during 2006, unjustified absences and frequent truancy were higher for Māori than for European students. Rates for European students however, were lower than the NZ European average (**Figure 70**).

Summary

In New Zealand during 2006, unjustified absences were relatively infrequent during the primary school years (Years 1-6), but increased progressively during secondary school (Years 9-13). When broken down by ethnicity, unjustified absences and frequent truancy were both higher for Māori > Pacific > European and Asian students. Both outcomes also decreased as the affluence of the school catchment increased. At each level of school socioeconomic deprivation however, unjustified absences and infrequent truancy were higher for Māori > Pacific > European and Asian students.

In Taranaki during 2006, the unjustified absence rate was 2.2%, as compared to 2.3% for New Zealand as a whole, while the frequent truancy rate was 1.0%, as compared to 1.1% nationally. Unjustified absences and frequent truancy were higher for Māori than for European students. Rates for European students however, were lower than the NZ European average.

Local Policy Documents and Evidence Based Reviews which Consider Interventions to Improve Educational Participation in Young People

Table 32 on **Page 130** considers local policy documents relevant to the prevention of conduct problems in children and young people, as well as strategies to reduce their suspension from school, or to address youth offending. In addition, **Table 33** below summarises a UK policy document which considers how the school attendance of young people might be improved.

Table 33. Policy Documents Relevant to the Improvement of School Attendance in Young People

Publication Relevant to Improving School Attendance
National Audit Office. 2005. **Improving School Attendance in England**. National Audit Office: London.http://www.nao.org.uk/publications/0405/improving_school_attendance.aspx?alreadysearchfor=yes
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 taken 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.

RISK AND PROTECTIVE FACTORS

SUBSTANCE USE

TOBACCO USE IN PREGNANCY

Introduction

Cigarette smoke contains a range of toxins, including nicotine and carbon monoxide, which rapidly cross the placenta, and in the context of chronic use, often result in levels in the foetal compartment which exceed those seen maternally [75]. Further, smoking in pregnancy has been associated with a range of adverse pregnancy outcomes including stillbirth, preterm birth and intrauterine growth restriction, with dose-response relationships consistently being observed, and with the risk being reduced if women give up smoking during pregnancy [75]. In addition, smoking during pregnancy is thought to increase the risk of later adverse outcomes for children including Sudden Unexpected Deaths in Infancy (SUDI) and neurobehavioral problems such as attention deficit disorders, hyperactivity, learning difficulties and an increased risk of smoking in later life [75].

In New Zealand, while data limitations have precluded the monitoring of trends in smoking during pregnancy over time, one recent survey (n=1,283 pregnant women registering with a lead maternity carer) found that smoking rates at the time of conception were higher for Māori women; those without a tertiary education; those whose partner smoked; and those who were without employment, or receiving income support. Factors associated with giving up smoking during the first trimester included current employment, first pregnancy and experiencing nausea, while women who held a Community Services Card, who were Māori, or whose partner smoked were less likely to give up [76].

The following section uses information from the National Minimum Dataset to review the proportion of women who were admitted to hospital for childbirth, who had tobacco use recorded in any of their first 15 diagnoses.

Data Source and Methods

Definition

The Proportion of Women Hospitalised for Childbirth who had Tobacco Use Listed in their First 15 Diagnoses

Data Source

Numerator: National Minimum Dataset: The number of women admitted to hospital for childbirth with tobacco use ICD-10 F17 (Mental and Behavioural Disorders due to Tobacco), or ICD-10 Z720 (Tobacco Use Current) listed in their first 15 diagnoses

Denominator: National Minimum Dataset: The number of women admitted to hospital for childbirth: with ICD-10 O80-O82 (Delivery) or O60-O75 (Complications of Labour and Delivery) listed in their first 15 diagnoses OR with an ICD-10 procedure code in the following range: 90467-00 (Spontaneous vertex delivery); 90468-00 (Low forceps delivery); 90468-01 (Mid-cavity forceps delivery); 90468-02 (High forceps delivery); 90468-04 (Forceps rotation of foetal head with delivery); 90469-00 (Vacuum extraction); 90470-00 (Spontaneous breech delivery); 90470-01 (Assisted breech delivery); 90470-02 (Assisted breech delivery with forceps to after coming head); 90470-03 (Breech extraction); 90470-04 (Breech extraction with forceps to after coming head); 16520-00 (Elective classical caesarean section); 16520-01 (Emergency classical caesarean section); 16520-02 (Elective lower segment caesarean section); 16520-03 (Emergency lower segment caesarean section);

Indicator Category Proxy B

Notes on Interpretation

Note 1: The National Minimum Dataset may potentially undercount the number of women who smoke during pregnancy, as the identification of smoking status relies on tobacco use being listed as a co-morbidity in one of the first 15 diagnostic codes, rather than this information being captured as a separate variable (i.e. tobacco use is either present, or not mentioned, with no specific code being available to identify non-smokers). The listing of tobacco use as a co-morbidity relies on tobacco use being identified by health care professionals → documented in hospital records → captured by coders and recorded in the NMDS and thus the figures in this section should be considered as providing a conservative (under-estimate) of smoking rates in this population.

Note 2: The National Minimum Dataset includes only those women admitted to hospital for childbirth. It thus does not capture information on those women who elect to give birth at home. This may potentially introduce bias into the sample, if the prevalence of smoking in women giving birth at home is different to those giving birth in the hospital setting.

New Zealand Distribution and Trends

Comparisons Between Hospital Births and Census Data

Tobacco Use by Age: Births vs. Census

In New Zealand during 2004-2008, tobacco use was highest for women giving birth in their teens > 20-24 years > 25-29 years > 30+ years. In contrast, at the 2006 Census smoking rates were highest for women in their twenties and lowest for those in their teenage years. Tobacco use in women giving birth in their teens was thus higher than female teenage smoking rates at the 2006 Census (33.2% vs. 18.0%), while tobacco use in older women giving birth was lower than comparable age specific smoking rates at the 2006 Census (e.g. for women 30-34 yrs: Births 9.6% vs. Census 22.5% (**Figure 71**)).

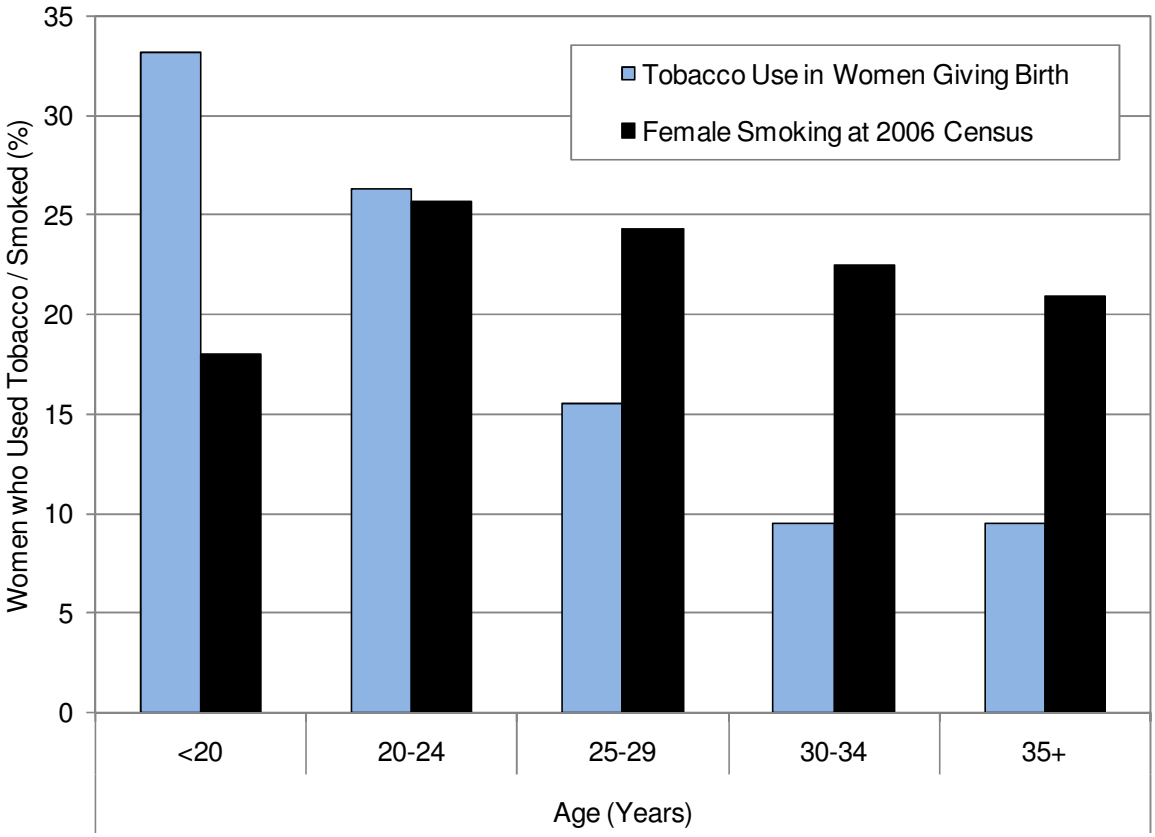
Tobacco Use by Age and Ethnicity: Births vs. Census

In New Zealand during 2004-2008, tobacco use in women giving birth was higher for Māori > Pacific > European > Asian women. Similar ethnic differences were seen at the 2006 Census. When broken down by age, tobacco use during pregnancy was highest for women in their teens (<20 years), while smoking at the 2006 Census was lowest in this age group (females 15-19 years), for all four ethnic groups. While tobacco use in women giving birth declined markedly with increasing age for European, Pacific and Asian women, the drop off with age was less marked for Māori women (**Figure 72**).

Tobacco Use by NZ Deprivation Index Decile and Age: Births

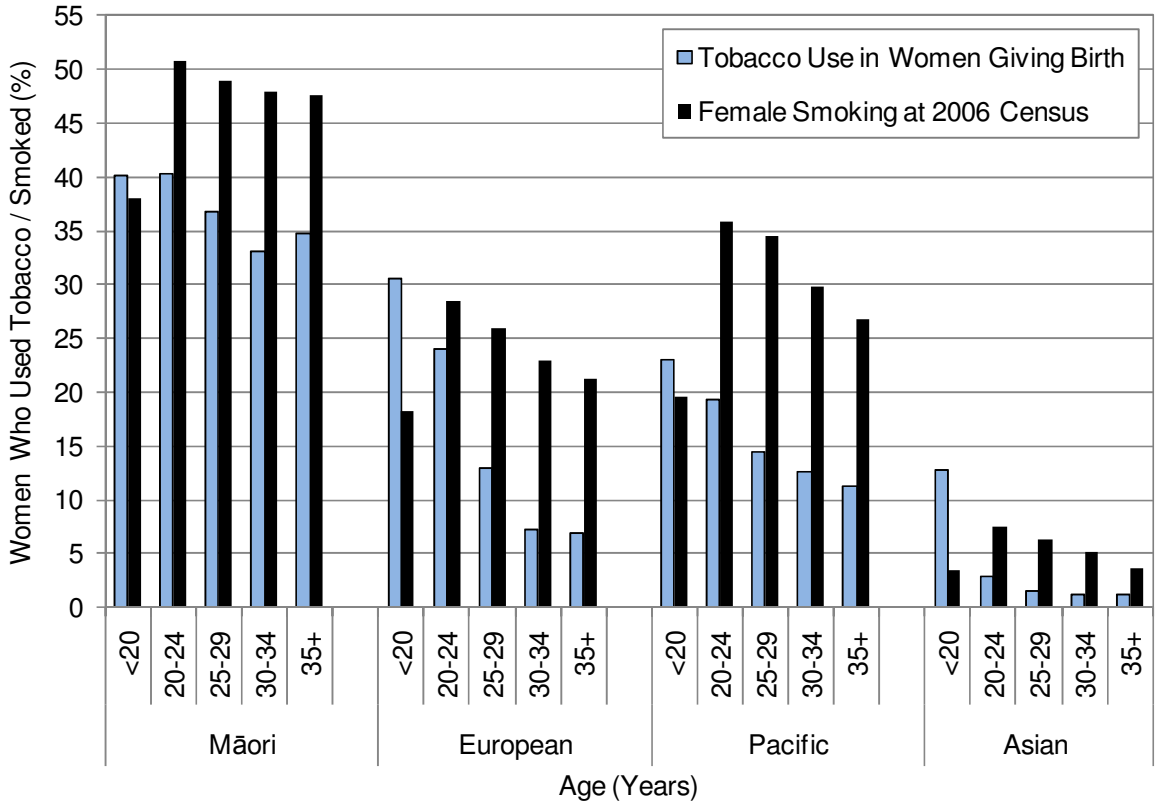
In New Zealand during 2004-2008, tobacco use in women giving birth increased progressively with increasing NZDep deprivation, with rates being highest for those in the most deprived (NZDep Decile 9-10) areas. Even once NZDep deprivation was taken into account however, tobacco use in women giving birth was higher for those in their teens > 20-24 years > 25-29 years > 30+ years (**Figure 73**).

Figure 71. Proportion of New Zealand Women Giving Birth During 2004-2008 Who Used Tobacco vs. Proportion of Female Smoking at the 2006 Census, by Age



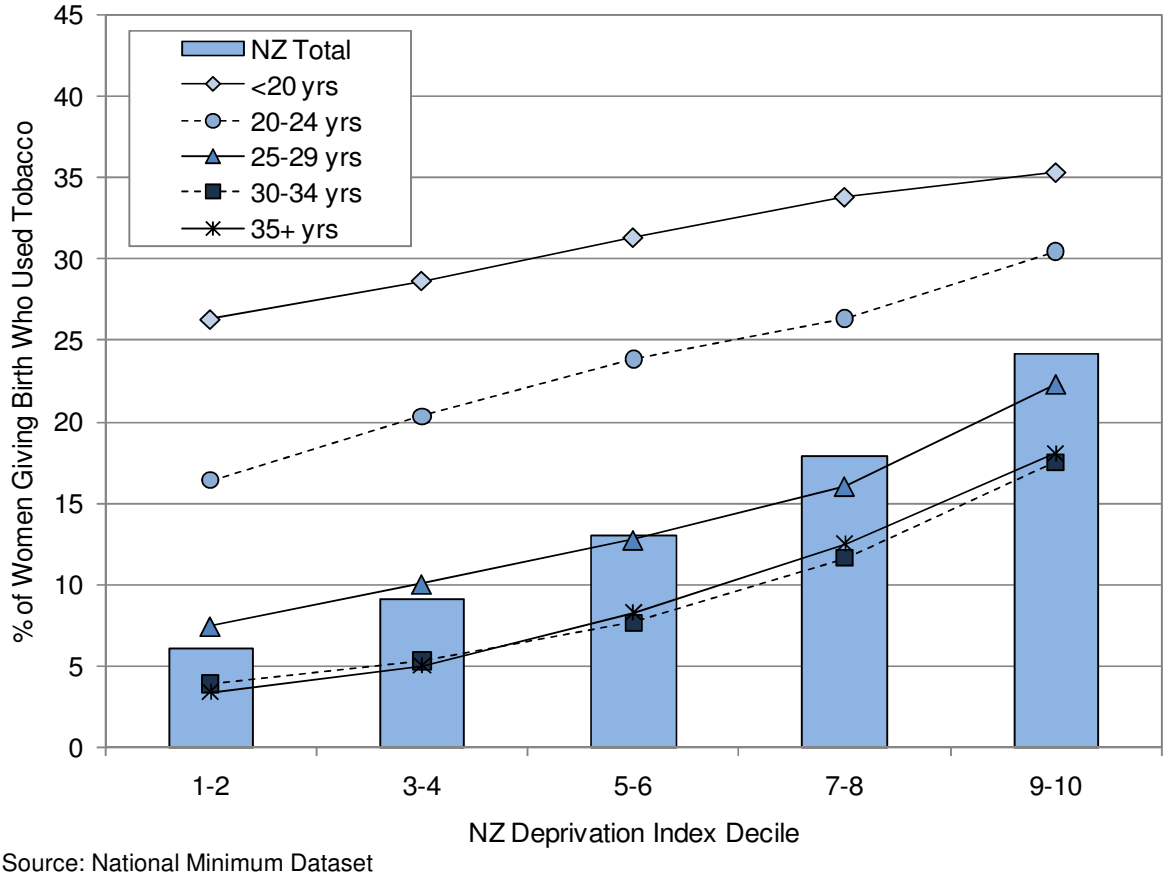
Source: National Minimum Dataset (Births) and NZ Census

Figure 72. Proportion of New Zealand Women Giving Birth During 2004-2008 Who Used Tobacco vs. Proportion of Women Smoking at the 2006 Census, by Age and (Total Response) Ethnicity



Source: National Minimum Dataset (Births) and NZ Census: Ethnicity is Total Response

Figure 73. Proportion of Women Giving Birth Who Used Tobacco by Maternal Age and NZ Deprivation Index Decile, New Zealand 2004-2008



Source: National Minimum Dataset

Taranaki Distribution and Trends

Taranaki vs. New Zealand Rates

In Taranaki during 2004-2008, 23.7% of women giving birth had tobacco use recorded in the hospital admission dataset, as compared to 15.8% for New Zealand as a whole. During 2000-2008, the use of tobacco by women giving birth in Taranaki was higher than the New Zealand average. Care must be taken when interpreting these figures however, as in addition to real differences in the prevalence of tobacco use during pregnancy, regional differences in the way in which tobacco use is recorded by hospital coders may have contributed to the patterns seen (**Figure 74**).

Maternal Age: Taranaki vs. New Zealand

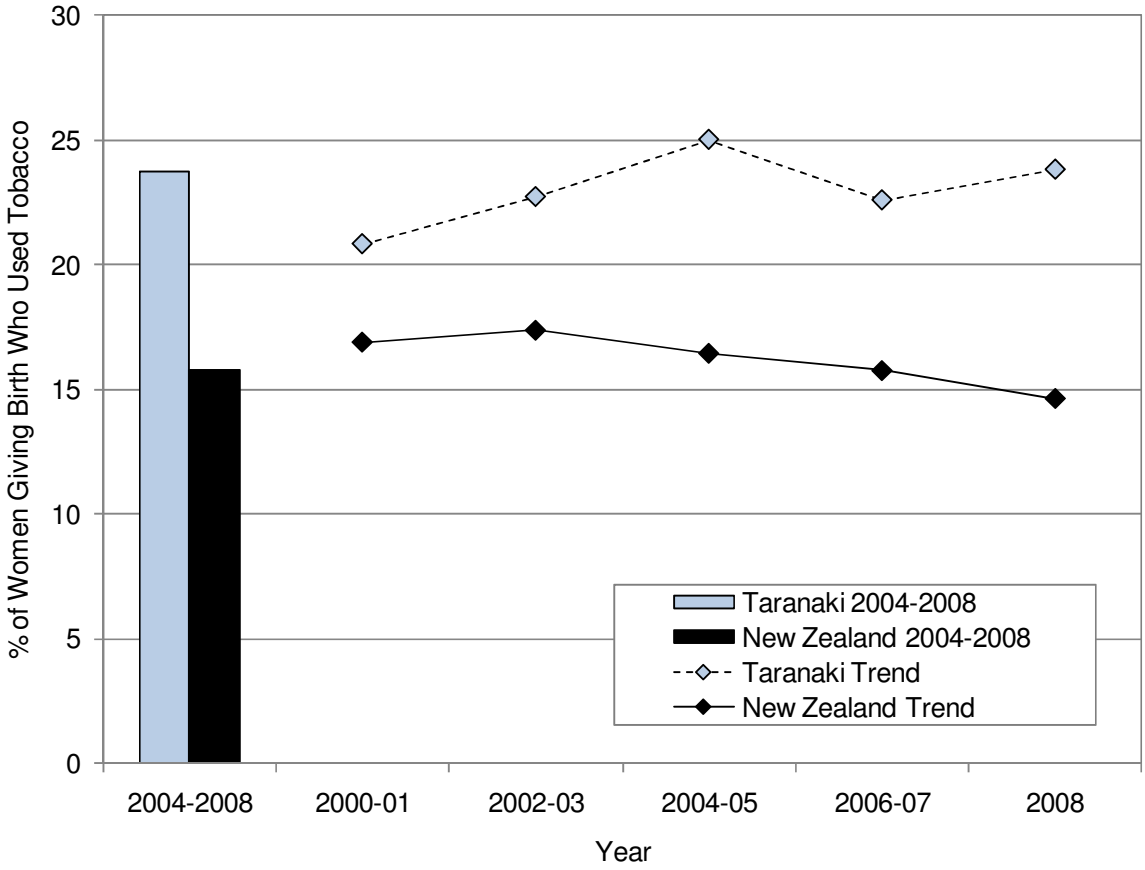
In Taranaki during 2004-2008, tobacco use in women giving birth was highest for those in their teens >20-24 years >25-29 years >30+ years. Similar differences were seen for New Zealand as a whole, with these patterns been evident throughout 2000-2008 (**Figure 75**).

Ethnicity and Maternal Age / Ethnicity: Taranaki vs. New Zealand

In Taranaki during 2004-2008, tobacco use in women giving birth was higher for Māori > Pacific > European > Asian women, with similar ethnic differences being seen nationally. Rates remained higher for Māori than for European women throughout 2000-2008 (**Figure 76**).

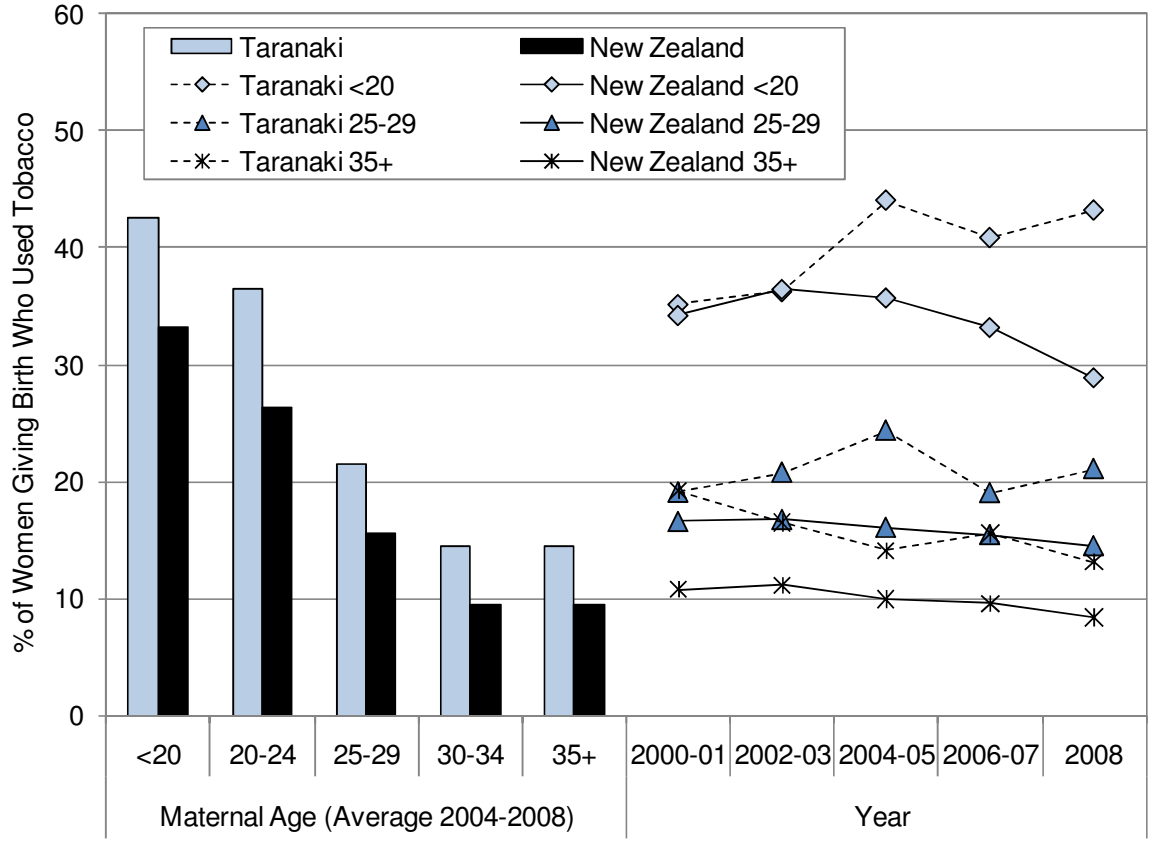
During 2004-2008, when broken down by age, tobacco use in European women giving birth was highest for those <20 years, with rates declining as maternal age increased. For Māori women however, the drop off in tobacco use with increasing maternal age was less steep (**Figure 77**).

Figure 74. Proportion of Women Giving Birth Who Used Tobacco, Taranaki vs. New Zealand 2000-2008



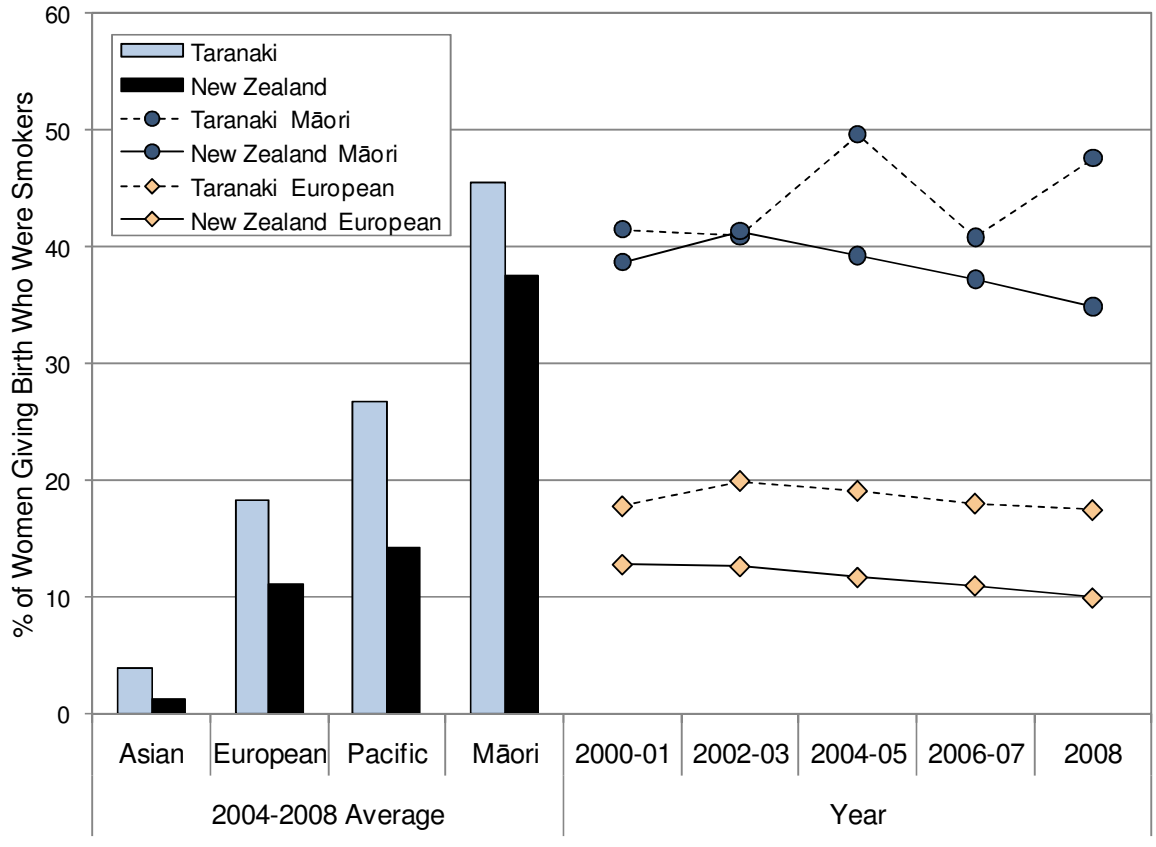
Source: National Minimum Dataset

Figure 75. Proportion of Women Giving Birth Who Used Tobacco by Maternal Age, Taranaki vs. New Zealand 2000-2008



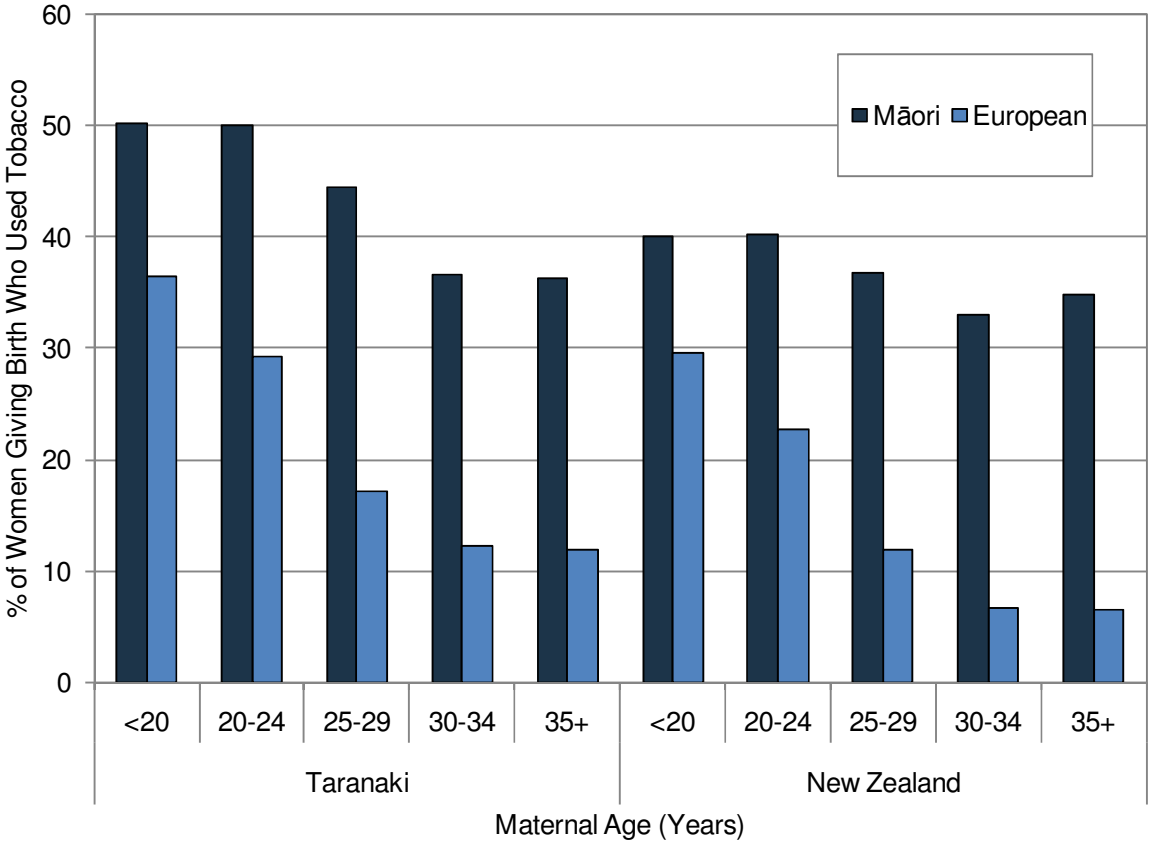
Source: National Minimum Dataset

Figure 76. Proportion of Women Giving Birth Who Used Tobacco by Ethnicity, Taranaki vs. New Zealand 2000-2008



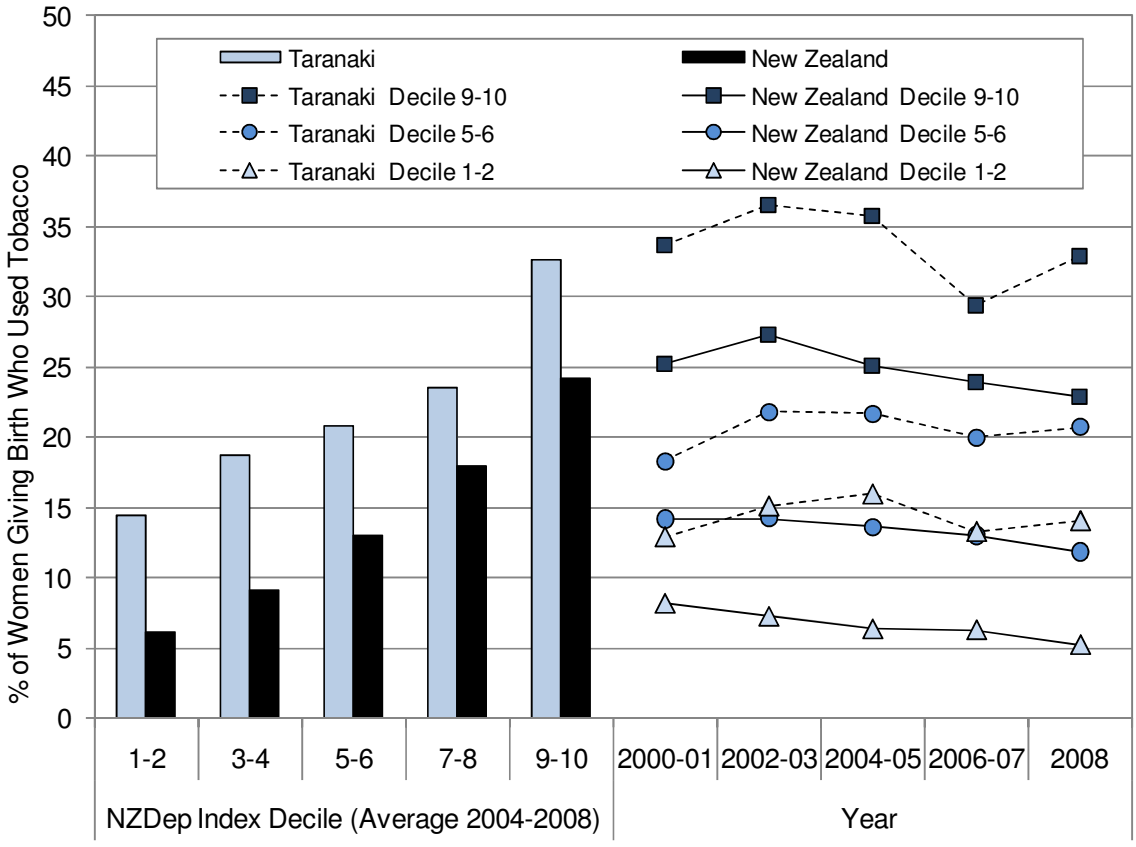
Source: National Minimum Dataset; Ethnicity is Level 1 Prioritised

Figure 77. Proportion of Women Giving Birth Who Used Tobacco by Maternal Age and Ethnicity, Taranaki vs. New Zealand 2004-2008



Source: National Minimum Dataset; Ethnicity is Level 1 Prioritised

Figure 78. Proportion of Women Giving Birth Who Used Tobacco by NZ Deprivation Index Decile, Taranaki vs. New Zealand 2000-2008



Source: National Minimum Dataset

New Zealand Deprivation Index Decile: Taranaki vs. New Zealand
In Taranaki during 2004-2008, tobacco use in women giving birth increased with increasing NZDep deprivation, with the highest rates being seen in women in the most deprived (NZDep decile 9-10) areas. Similar patterns were seen for New Zealand as a whole, with these differences being evident throughout 2000-2008 (**Figure 78**).

Summary

In New Zealand during 2004-2008, tobacco use was highest for women giving birth in their teens > 20-24 years > 25-29 years > 30+ years. In contrast, at the 2006 Census smoking rates were lowest for women in their teenage years. Tobacco use in women giving birth was also higher for Māori > Pacific > European > Asian women. While tobacco use declined markedly with increasing age for European, Pacific and Asian women, the drop off with age was less marked for Māori women. Tobacco use also increased with increasing NZDep deprivation, with rates being highest for those in the most deprived (NZDep Decile 9-10) areas. Even once NZDep deprivation was taken into account however, tobacco use was higher for those in their teens > 20-24 years > 25-29 years > 30+ years.

In Taranaki during 2004-2008, 23.7% of women giving birth had tobacco use recorded, as compared to 15.8% nationally. Tobacco use was higher for those in their teens >20-24 years >25-29 years >30+ years and for Māori > Pacific > European > Asian women. Tobacco use in European women giving birth was highest for those <20 years, with rates declining as maternal age increased. For Māori women however, the drop off in tobacco use with increasing maternal age was less steep. Care must be taken when interpreting these figures however, as in addition to real differences in tobacco use during pregnancy, regional differences in the way tobacco use is recorded by hospital coders may have contributed to the patterns seen.

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

The analysis above suggests that smoking during pregnancy is highest amongst teenage mothers and **Table 36** (Page 162) and **Table 37** (Page 164) at the end of the Tobacco Use in Young People section provide an overview of local policy documents and evidence based reviews relevant to smoking prevention and cessation in young people. In addition, **Table 34** below provides a brief overview of a small number of local policy documents and evidence based reviews which considers interventions to promote smoking cessation during pregnancy.

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

Ministry of Health Policy Documents
Ministry of Health. 1998. **Child Health Programme Review**. Wellington: Ministry of Health. This document outlines the prevalence of smoking in pregnancy and the risks to the unborn child, children and adolescents. It recommends that effective interventions be used. At the individual level, these interventions include smoking cessation counselling in pregnancy, social support and skills training/problem solving. This document also recommends the development of health systems to ensure the systematic identification of tobacco users.
Systematic and Other Reviews from the International Literature
Lumley J, Oliver S, Chamberlain C, Oakley L. 2004. **Interventions for promoting smoking cessation during pregnancy**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD001055. DOI: 10.1002/14651858.CD001055.pub2. Maternal smoking is an important modifiable risk factor for preterm birth, low birth weight and perinatal death. This review examined the effectiveness of smoking cessation programmes in pregnancy. The studies reviewed included some specifically undertaken in adolescents. The review showed that there was a significant reduction in maternal smoking in the intervention groups. The smoking cessation interventions were associated with less low birth weight babies, and fewer preterm deliveries. The authors conclude that smoking cessation programmes in pregnancy are worthwhile to improve both pregnancy and infant outcomes, and to reduce maternal complications in pregnancy.
Fang WL, Goldstein AO, Butzen AY, Hartsock SA, Hartmann KE, Helton M, Lohr JA. 2004. **Smoking cessation in pregnancy: A review of postpartum relapse prevention strategies**. Journal of the American Board of Family Medicine 17(4): 264-75. The aim of this review was to examine smoking cessation relapse and relapse prevention strategies. The authors found that there was little research on how to prevent relapse. There was some evidence to suggest that appropriate assessment and anticipatory guidance after smoking cessation may increase the chance of women remaining smoke free. The authors recommend the use of programmes that incorporate the stresses particular to postpartum women, that smoking cessation should be incorporated into routine health care, and should include the woman's social support network.
NHS Centre for Reviews and Dissemination. 1998. **Smoking Cessation: What the Health Service Can Do**. Effectiveness Matters 3(1). University of York. This article summarises the research evidence about the effectiveness of methods to promote smoking cessation. The reviewers determined that there is good evidence of the effectiveness of brief advice from a health professional, nicotine replacement therapy with advice, and advice and support to pregnant women. The reviewers found that there was insufficient evidence to support the use of antidepressant and anxiolytics, aversive conditioning, acupuncture, hypnosis, mecamylamine, and self help materials.
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. The aim of this review was to critically examine economic evaluations of smoking cessation and relapse prevention programmes for pregnant women. Of the three studies included in the review that used cost-benefit analyses, all found a favourable cost-benefit ration, of up to 3:1. This may be an underestimate of the true benefit of smoking cessation programmes in pregnancy, with the benefit being greater when societal gains and incremental health gains are included.
Naughton F, Prevost AT, Sutton S. 2008. **Self-help smoking cessation interventions in pregnancy: A systematic review and meta-analysis**. Addiction 103(4): 566-79. The aim of this review was to examine the efficacy of self-help interventions for pregnant smokers. The authors concluded that self-help interventions appear to be more effective than usual care. Given that they are of relatively low cost, self-help interventions are good value for money, despite the overall effectiveness being low. Questions remain about the degree to which intensity of material, tailoring of materials to the individual and increased face-to-face contact affect efficacy.
Levitt C, Shaw E, Wong S, Kaczorowski J. 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): 341-7. This review examined the evidence for the efficacy of postpartum interventions that prevent relapse, improve smoking cessation, and reduce smoking in postpartum women. There was no evidence from randomised controlled trials to support implementing post partum smoking cessation interventions such as providing advice, materials and counselling.
Bull J, Mulvihill C, Quigley R. 2003. **Prevention of low birth weight: Assessing the effectiveness of smoking cessation interventions**. London: Health Development Agency. URL: www.hda.nhs.uk/evidence The aim of this briefing was to identify smoking cessation and nutrition interventions that have been shown to be effective in preventing low birth weight. The authors found that there is good evidence from systematic reviews to support the use of formal smoking cessation interventions, provided by specialists as part of antenatal care to increase smoking cessation rates. There is also evidence that effective smoking cessation interventions reduce the prevalence of low birth weight, and increase birth weight in babies of women who stop smoking as a result of the intervention.

EXPOSURE TO SECOND-HAND CIGARETTE SMOKE IN THE HOME

Introduction

In New Zealand each year, it has been estimated that exposure to second hand smoke results in [77]:

- 500 hospital admissions for chest infections in children <2 years
- 27,000 GP consultations for asthma and respiratory problems
- 15,000 episodes of childhood asthma
- 50 cases of meningococcal disease
- 1,500 operations to treat glue ear

Further, it has been suggested that the financial costs of smoking impact disproportionately on children in low income families, with up to 14% of non-housing related income in one study being spent on tobacco related products [78]. Finally, parental smoking significantly increases the risk that children will smoke during their adolescent years [79], which if continued, increases their risk of outcomes such as ischemic heart disease, lung cancer and chronic obstructive respiratory disease in later life.

Estimates of the proportion of New Zealand children exposed to cigarette smoke in their homes vary, from as high as 21.2% amongst 14-15 year olds in a recent ASH Survey [80], to as low as 9.5% (daily exposure) in a recent research report [81]. The same report also suggested that while 19.6% of the general population smoked, only 47% of smokers smoked inside their homes. Reasons given for outdoor smoking policies included not wanting to expose others to their smoke and setting a good example for children [81].

The extent to which outdoor smoking policies protect children from passive smoke exposure remains unclear however, with one recent New Zealand study suggesting that hair nicotine levels in children were significantly elevated in smoking households irrespective of whether family members smoked inside or outside their homes [82]. In contrast, another study (using different exposure measures) suggested that while environmental tobacco smoke and its contaminants (e.g. dust and surface contamination) were 5-7 times higher in households where smokers tried to protect their infants by smoking outside, such exposures were 3-8 times higher again amongst those who continued to smoke indoors (i.e. outside smoking policies, while not being able to confer full protection, nevertheless did reduce the amount of exposure infants and young children had to tobacco smoke and its contaminants within the home) [83].

The following section reviews children's exposure to cigarette smoke using two different data sources:

1. *Parental and Household Smoking*: The proportion of Year 10 students reporting that their parents smoked or that people smoked inside their homes (ASH Year 10 Smoking Survey Data)
2. *Household Smoking*: The proportion of children aged 0-14 years who lived in a household with a smoker at the 2006 Census.

ASH Year 10 Survey Data

Since 2001, ASH's annual surveys of the smoking behaviour of Year 10 students have included a question on parental smoking ("*Which of these people smoke? (tick one or more that apply), mother, father, older brother or sister, best friend, none of these"),* as well as a question on exposure to cigarette smoke within the home (*"Do people smoke inside your house?"*) [79]. The following section uses ASH Survey data to explore trends in parental smoking behaviour and exposure to cigarette smoke within the home for young people aged 14-15 years during 2001-2008.

Data Source and Methods

Definition

Proportion of Year 10 Students with Parents who Smoke, or who Live in a Home with Smoking Inside

Data Source

Numerator: ASH Surveys; Number of Year 10 students who report that one or both parents smoke, or who live in a house where smoking is allowed inside

Denominator: ASH Survey; Number of Year 10 Students surveyed

Indicator Category Proxy B

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 [84]. Since 1997, ASH has conducted annual surveys of smoking behaviour in Year 10 (14-15 yrs) students, and since 1999 has collected information from >30,000 students annually. In 2000 and 2001, >70% of schools in NZ participated, and of these 70% of enrolled students took part [79]. 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 [85].

Note 2: Since 2001, participation rates have declined, with school response rates of 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 underrepresented in these figures [86]

New Zealand Distribution and Trends

Trends in Parental and Household Smoking Behaviour

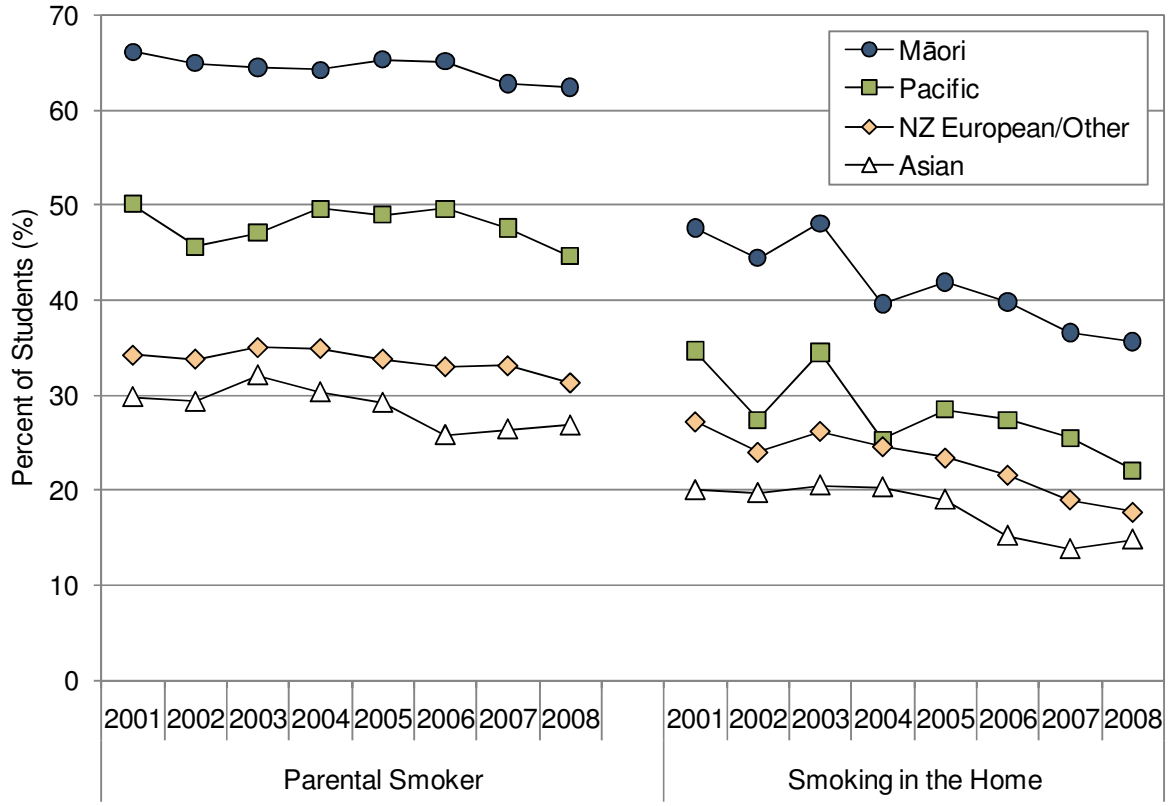
In New Zealand during 2001-2008, the proportion of Year 10 students with a parent(s) who smoked changed little, being 40.4% in 2001 and 38.0% in 2008. In contrast, the proportion of students who lived in homes where smoking was permitted inside declined *significantly*, from 30.7% in 2001 to 21.2% in 2008 **(Figure 81**).

Ethnic Differences in Parental and Household Smoking Behaviour

In New Zealand during 2001-2008, there were no significant changes in parental smoking rates for Māori (2001 66.1% → 2008 62.4%) or European / Other students (2001 34.2% → 2008 31.3%), although rates for Pacific (2001 50.1% → 2008 44.6%) and Asian (2001 29.8% → 2008 26.8%) students did decline *significantly* between 2004 and 2008 (once school decile was taken into account). Throughout this period, parental smoking rates remained higher for Māori > Pacific > European / Other > Asian students.

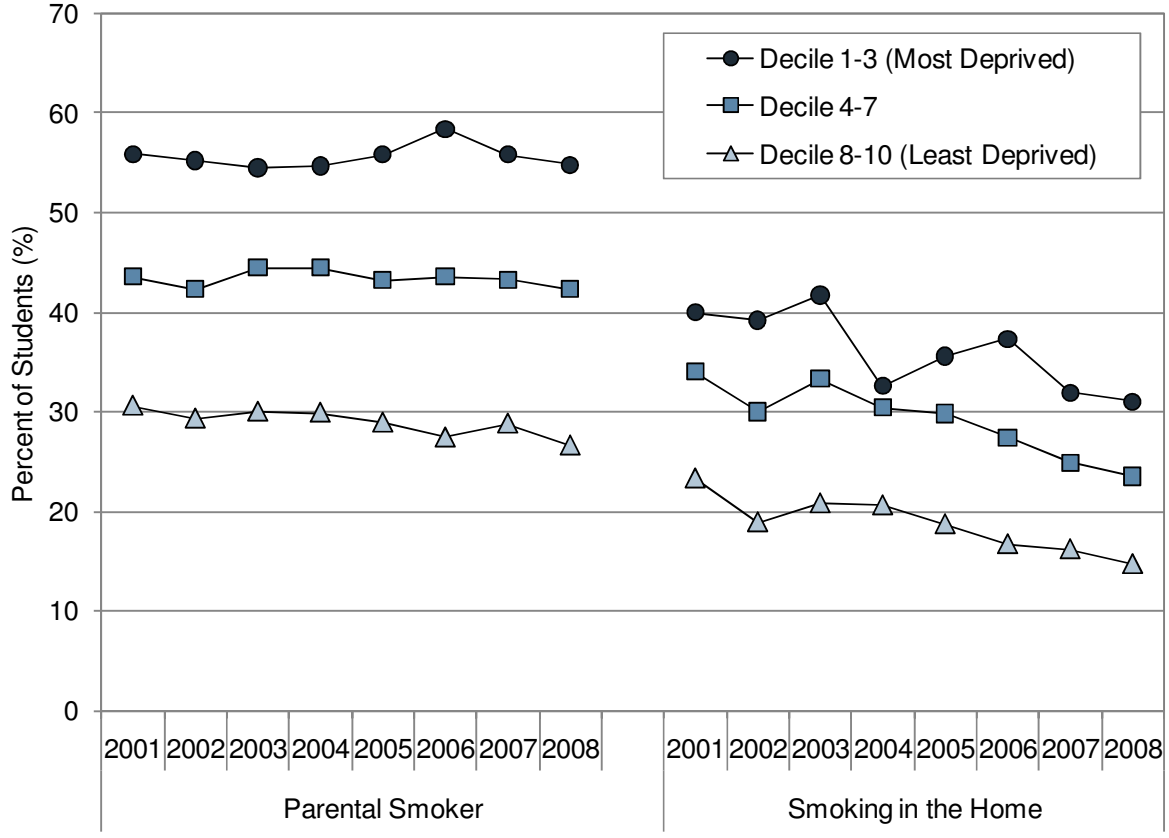
While ethnic differences were also evident in exposure to cigarette smoke in the home, exposures were lower than parental smoking rates might predict, potentially suggesting the presence of in-house non-smoking policies for families of all ethnic groups. During 2001-2008 the proportion of 14-15 year olds exposed to smoking in their homes declined for all ethnic groups, with rates falling from 47.6% → 35.6% for Māori, from 34.7% → 22.1%% for Pacific, from 27.2% → 17.7% for European / Other and from 20.0% → 14.8% for Asian students, although these differences only reached statistical significance for Pacific and Asian students between 2004-08 (once school decile was taken into account) (**Figure 79**).

Figure 79. Proportion of Year 10 Students With Parents Who Smoke or Who Live in a Home With Smoking Inside by Ethnicity, New Zealand ASH Surveys 2001-2008



Source: ASH Year 10 Surveys [86]

Figure 80. 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 2001-2008



Source: ASH Year 10 Surveys [86]

Socioeconomic Differences in Parental and Household Smoking Behaviour

In New Zealand during 2001-2008, parental smoking rates declined *significantly* for those attending schools in the least deprived (Decile 8-10, 2001 30.6% → 2008 26.6%) and average (Decile 4-7, 2001 43.6% → 2008 42.3%) areas (2004 vs. 2008 adjusted for ethnicity). Parental smoking however, did not change significantly for those attending schools in the most deprived (Decile 1-3, 2001 55.9% → 2008 54.8%) areas. Throughout this period, parental smoking remained higher for those attending schools in the most deprived areas.

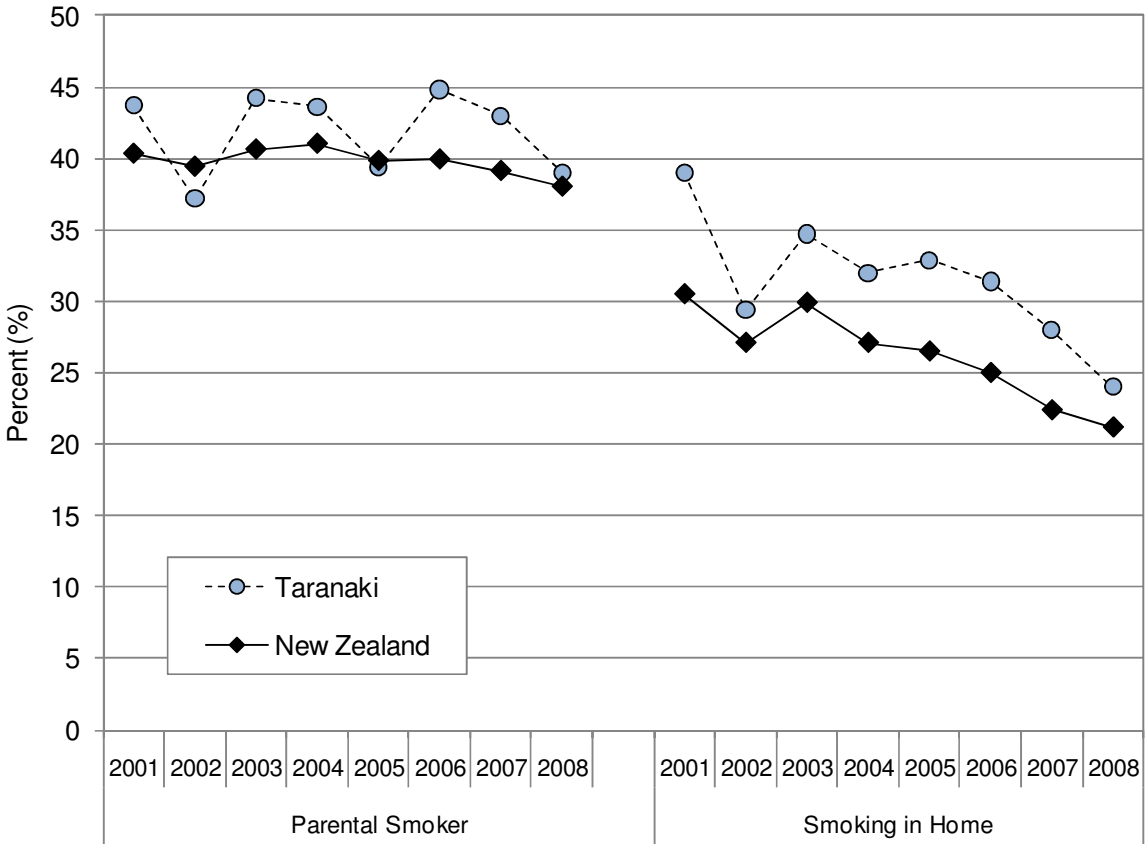
Exposure to smoking within the home also exhibited a social gradient (school decile 1-3 > 4-7 > 8-10), although exposures were lower than parental smoking rates might predict, again suggesting the presence of in house non-smoking policies across all socioeconomic groups. As with parental smoking rates, exposure to smoke in the home declined *significantly* for those in average (Decile 4-7, 34.0% → 23.5%) and the least deprived (Decile 1-3, 23.3% → 14.7%) areas (2004 vs. 2008 adjusted for ethnicity), For those attending schools in the most deprived (decile 1-3) areas, rates fell from 40.0% →31.0% (**Figure 80**).

Taranaki Distribution and Trends

Parental and Household Smoking in Taranaki

In Taranaki during 2001-2008, the proportion of Year 10 students who reported at least one parent smoking remained relatively static (44% in 2001→ 39% in 2008), while the proportion who reported living in homes where people smoked inside declined *significantly* (39% in 2001→ 24% in 2008). Parental smoking was similar to / higher than the New Zealand average during this period, while the proportion living in homes where people smoked inside was consistently higher (**Figure 81**).

Figure 81. Proportion of Year 10 Students with Parents who Smoke or who Live in Homes with Smoking Inside, Taranaki vs. New Zealand, ASH Surveys 2001-2008



Source: ASH Year 10 Surveys [86]

2006 Census Data

At the 2006 Census, respondents aged >15 years were asked "*Do you smoke cigarettes regularly (that is one or more per day)?* This section considers the proportion of children aged 0-14 years who live in a household with someone who answered yes to this question.

Data Source and Methods

Definition
Proportion of Children Aged 0-14 Years who Live in a Household with a Smoker

Data Source
Numerator: 2006 Census: Number of children aged 0-14 yrs who live in a household with someone who answered yes to the Census question "*Do you smoke cigarettes regularly (that is one or more per day)?"*
Denominator: 2006 Census: The number of children 0-14 years at the 2006 Census

Interpretation
Census data categorises those ≥15 years into two groups: smokers and non smokers, with missing responses being assigned to the non-smoking category. Thus Census data may underestimate the proportion of smokers, as the number with missing information is unspecified.

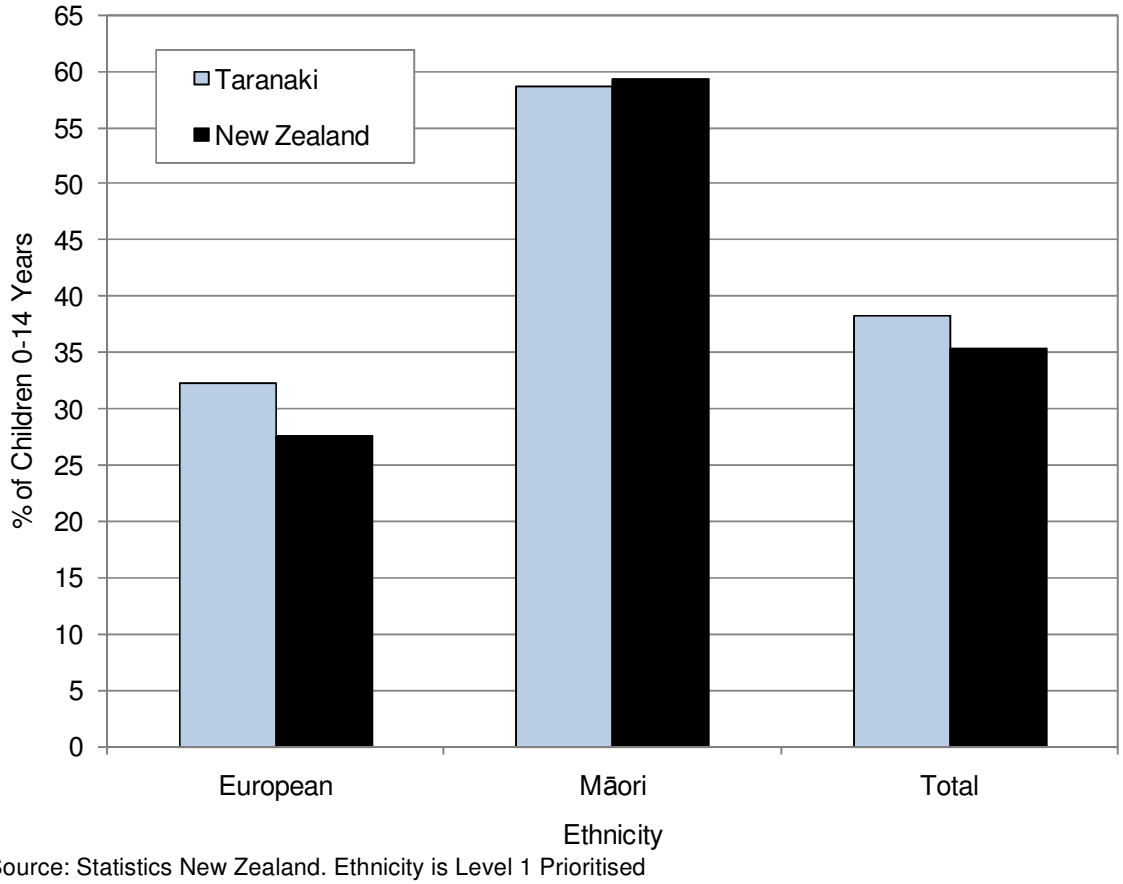
Indicator Category Proxy B

New Zealand and Taranaki Distribution and Trends

Total Smoking Exposure and Ethnic Differences

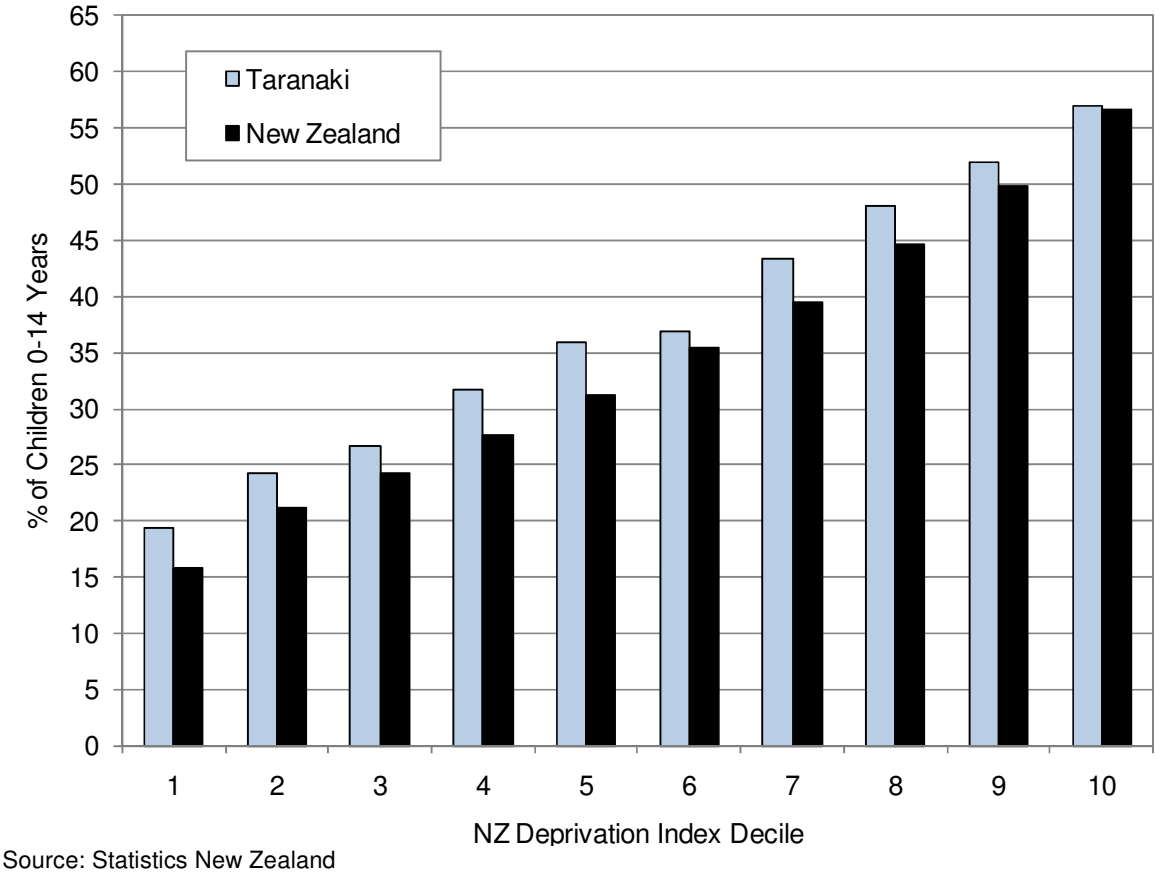
In Taranaki during 2006, 38.3% of children aged 0-14 yrs lived in a household with a smoker, as compared to 35.3% nationally. During this period, 58.6% of Māori and 32.3% of European children lived in a household with a smoker, as compared to 59.3% of Māori and 27.5% of European children nationally (**Figure 82**).

Figure 82. Proportion of Children 0-14 Years Living in a Household with a Smoker by Ethnicity, Taranaki vs. New Zealand at the 2006 Census



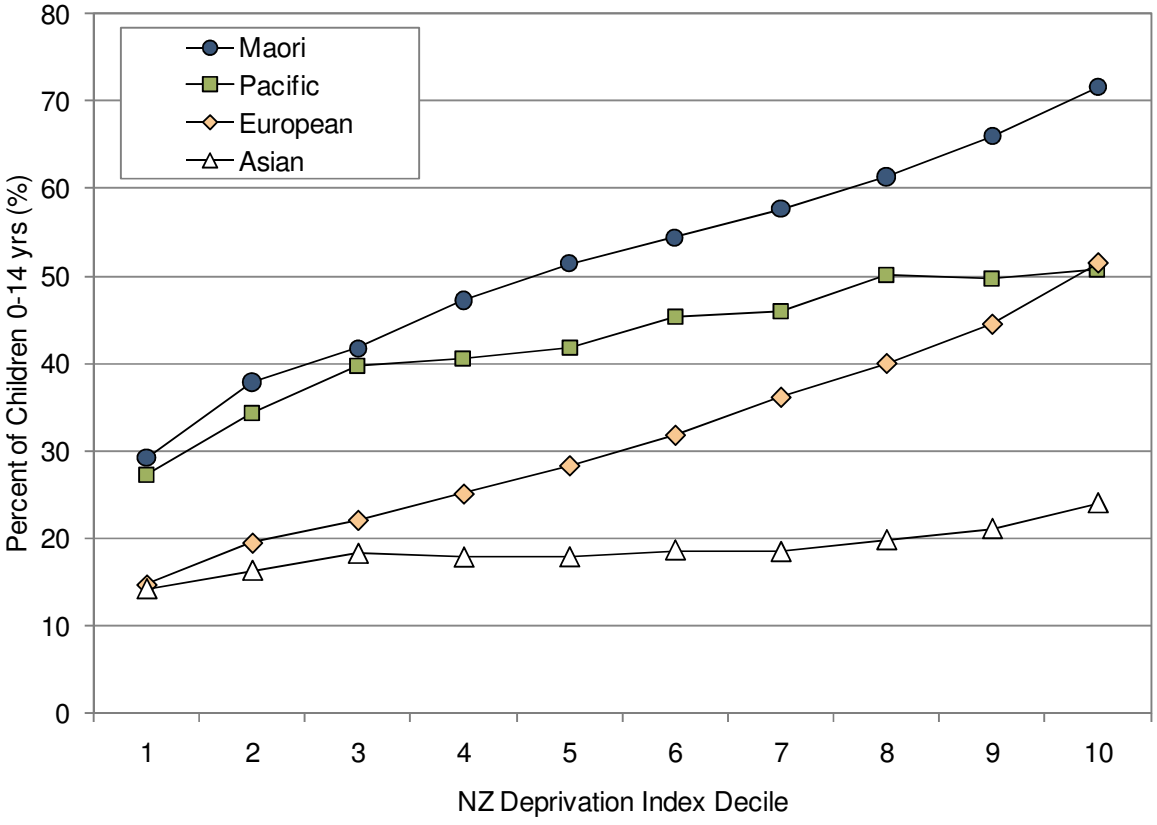
Source: Statistics New Zealand. Ethnicity is Level 1 Prioritised

Figure 83. Proportion of Children 0-14 Years Living in a Household with a Smoker by NZ Deprivation Index Decile, Taranaki vs. New Zealand at the 2006 Census



Source: Statistics New Zealand

Figure 84. Proportion of Children 0-14 Years Living in a Household with a Smoker by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census



Source: Statistics New Zealand. Ethnicity is Level 1 Prioritised

Socioeconomic Differences
There were also marked socioeconomic differences in the proportion of Taranaki children living in a household with a smoker during 2006, with rates rising progressively from 19.4% for those living in the most affluent (Decile 1) areas, to 57.0% for those living in the most deprived (Decile 10) areas. These differences were similar to those occurring in New Zealand as a whole (NZ Decile 1, 15.8% vs. Decile 10, 56.6% (**Figure 83**)).

Relationship between Socioeconomic Status and Ethnicity
During 2006, while the proportion of children living in a household with a smoker increased with increasing socioeconomic deprivation for each of New Zealand's largest ethnic groups, at nearly every level of socioeconomic deprivation, household smoking rates remained higher for Māori > Pacific > European > Asian / Indian children (**Figure 84**).

Summary

In New Zealand during 2008, ASH Surveys suggested that 38.0% of Year 10 students had a parent who smoked and that parental smoking rates were higher for Māori > Pacific > European / Other > Asian students, and those attending schools in the most deprived areas. While socioeconomic and ethnic differences were also observed for exposure to smoke in the home, exposures were lower than parental smoking rates might predict, potentially suggesting the presence of in-house non-smoking policies among families of all socioeconomic and ethnic groups. In Taranaki during 2001-2008, the proportion of Year 10 students who reported at least one parent smoking remained relatively static (44% in 2001→ 39% in 2008), while the proportion who reported living in homes where people smoked inside declined *significantly* (39% in 2001→ 24% in 2008). Parental smoking was similar to / higher than the New Zealand average during this period, while the proportion living in homes where people smoked inside was consistently higher.

Data from the 2006 Census painted a similar picture, with 35.3% of New Zealand children 0-14 years living in a household with a smoker and exposures being higher for Māori > Pacific > European > Asian children and those in the most deprived NZDep areas. In Taranaki, 38.3% of children lived in a household with a smoker, with socioeconomic and ethnic differences being similar to those seen nationally. Given the significant associations between passive smoking and outcomes such as SIDS, bronchiolitis, and pneumonia, it is likely that exposure to second hand cigarette smoke made a significant contribution to child health disparities in Taranaki during this period.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention Second Hand Smoke Exposure in Children

In New Zealand, there is no single strategy which focuses solely on the prevention of second hand cigarette exposure in children, and thus any local strategies developed will need to incorporate evidence from a variety of sources. **Table 35** 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 146) provides an overview of publications relevant to the cessation of smoking in pregnancy, while **Table 36** (Page 162) and **Table 37** (Page 164) provide an overview of publications relevant to the prevention and cessation of smoking in adolescents. (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any strategy to reduce exposure to second hand cigarette smoke in children).

Table 35. 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
Ministry of Health. 1998. **Child Health Programme Review**. Wellington: Ministry of Health. This document outlines the prevalence of smoking in pregnancy and the risks to the unborn child, children and adolescents. It recommends that effective interventions be used. At the individual level, these interventions include smoking cessation counselling in pregnancy, social support and skills training/problem solving. This document also recommends the development of health systems to ensure the systematic identification of tobacco users.
Ministry of Health. 1998. **Child Health Strategy**. Wellington: Ministry of Health. The Child Health Strategy represents the collective wisdom of those in the child health sector about what is required to improve child health services and child health. One of its goals is to improve, promote and protect the health of children / tamariki by reducing tobacco use, exposure to environmental tobacco smoke, and their adverse health consequences.
Ministry of Health. 2001. **DHB Toolkit: Tobacco Control**. Wellington: Ministry of Health. This toolkit was designed to assist District Health Boards to implement the New Zealand Health Strategy objective of reducing smoking (and the harm from second-hand smoke). The toolkit outlines the burden that smoking places on the population, provides evidence on the best ways to achieve health gain for affected groups, identifies priorities for tobacco control research, proposes indicators to enable progress to be monitored, and provides baseline data for indicators.
Systematic and Other Reviews from the International Literature
Priest N, Roseby R, Waters E, Polnay A, Campbell R, Spencer N, Webster P, Ferguson-Thorne G. 2008. **Family and carer smoking control programmes for reducing children's exposure to environmental tobacco smoke**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD001746. DOI: 10.1002/14651858.CD001746.pub2. It is known that children's exposure to other people's cigarette smoke is associated with a number of adverse health outcomes. This review examined the effectiveness of interventions aimed at reducing environmental smoke exposure in children. The studies were conducted in both in health care and community settings. There was insufficient evidence to clearly demonstrate the effectiveness of such interventions. Those studies that showed some benefit were more likely to have intensive counselling for parents, rather than brief interventions.
Gehrman CA, Hovell MF. 2003. **Protecting children from environmental tobacco smoke (ETS) exposure: A critical review**. Nicotine & Tobacco Research 5: 289-301. This review examined the effectiveness of strategies to reduce child and adolescent exposure to household environmental tobacco smoke. There were a small number of studies of variable quality; however, there was evidence to conclude that interventions can be effective in reducing home ETS exposure. The interventions that were most effective included repeated or longer duration of contact, and were based on behaviour change theories.

TOBACCO USE IN YOUNG PEOPLE

Introduction

ASH Surveys suggest that in New Zealand during 2008, 12.0% of young people aged 14-15 years smoked at least monthly, with 6.9% smoking on a daily basis [80]. Factors associated with higher smoking rates included gender (female > male), ethnicity (Māori > Pacific> European > Asian), relative socioeconomic deprivation (school decile: least affluent > more affluent), parental smoking (both parents > one parent > neither parent) [87], pocket money (larger amounts > smaller amounts) [88] and peer smoking [89].

The disparities highlighted by this survey are a cause of concern, as the Christchurch Longitudinal Study has shown that amongst adolescents, the transition from non-smoking to smoking is a one way process that accelerates with age and that once teenagers graduate to a given smoking status, return to earlier stages is uncommon [90]. These findings are also supported by overseas research, which suggests that 33-50% of young people who try smoking (even a few cigarettes), become regular smokers, with the transition taking on average 2-3 years. Once smoking regularly, the well documented signs of nicotine dependence and withdrawal become as evident amongst adolescents, as they do in the adult population [91]. As a consequence, adolescent smoking is one of the key predictors of adult smoking behaviour, with ¾ of adult smokers trying their first cigarettes and becoming daily smokers before the age of 18 years. Early onset smoking in turn, has been associated with an increased risk of heavy smoking and smoking related diseases [91], including coronary heart disease, stroke, lung cancer and chronic obstructive lung disease and in the context of passive smoking, childhood respiratory disease, foetal growth restriction and SIDS [77]. Thus any initiatives which reduce the uptake of smoking amongst adolescents will have far reaching effects, not only for the current generation of New Zealand young people, but also for the next generation of New Zealand children who, as a result of their parent's smoking, are likely to be exposed to cigarette smoke in utero and during their early years.

The following section reviews information on youth smoking behaviour using data from two different sources. The first is the annual ASH Year 10 Surveys, which collect information on the smoking behaviour of >30,000 14-15 year old secondary school students in New Zealand each year, while the second is the 2006 Census, which collects information on the number of young people aged >15 years who smoke on a regular basis.

ASH Survey Data

Since 1999, ASH has conducted surveys of >30,000 Year 10 students annually [79]. The results reflect the smoking behaviour of 14-15 year old secondary school students in New Zealand and are useful in understanding trends and risk factors for smoking initiation.

Data Source and Methods

Definition

Proportion of Year 10 Students who are Daily Smokers (ASH Surveys)

Data Source

Numerator: Number of Year 10 Students who are regular smokers (ASH Year 10 Survey)
Denominator: Number of Year 10 Students surveyed (ASH Year 10 Survey)

Indicator Category Proxy B

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 [84]. Since 1997, ASH has conducted annual surveys of smoking behaviour in Year 10 (14-15 yrs) students, and since 1999 has collected information from >30,000 students annually. In 2000 and 2001, >70% of schools in NZ participated, and of these 70% of enrolled students took part [79]. 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 [85].

Note 2: Since 2001, participation rates have declined, with school response rates of 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 underrepresented in these figures [86]

New Zealand Distribution and Trends

New Zealand Trends

In New Zealand during 1999-2008 the proportion of Year 10 students who were daily smokers declined, from 15.6% in 1999 to 6.9% in 2008. Similarly, the proportion who had never smoked increased, from 31.6% in 1999 to 60.5% in 2008 (both differences were statistically *significant*: 2004 vs. 2008, adjusting for gender, age and ethnicity) (**Figure 88**).

Gender and Ethnicity

During 1999-2008, while daily smoking rates for Māori and Pacific students were higher for females, daily smoking rates for Asian students were higher for males. There were also marked ethnic differences in daily smoking, with rates being higher for Māori > Pacific > European / Other > Asian students. During 2004-2008, daily smoking rates declined *significantly* for all ethnic groups (once adjusted for age and school decile), with the exception of Asian students (**Figure 85**).

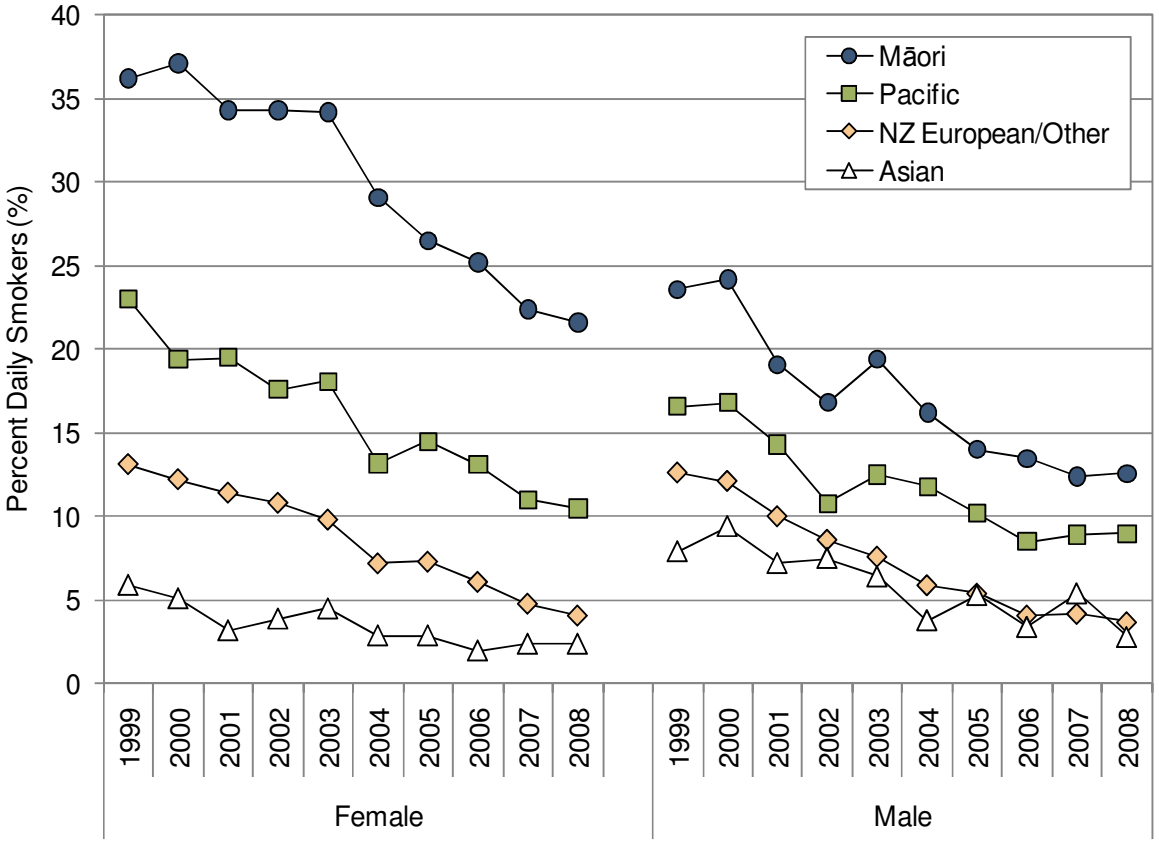
Socioeconomic Status

During 1999-2008, daily smoking rates were consistently higher for students attending schools in the most deprived (Decile 1-3) > average (Decile 4-7) > least deprived (Decile 8-10) areas. While gender differences were again evident, these diminished as the level of affluence increased, with the higher female smoking rates seen in the most deprived schools, virtually disappearing in the least deprived schools. Again daily smoking rates declined *significantly* for students in all three school SES groups (2004-2008: adjusted for age and ethnicity **Figure 86**).

Parental Smoking

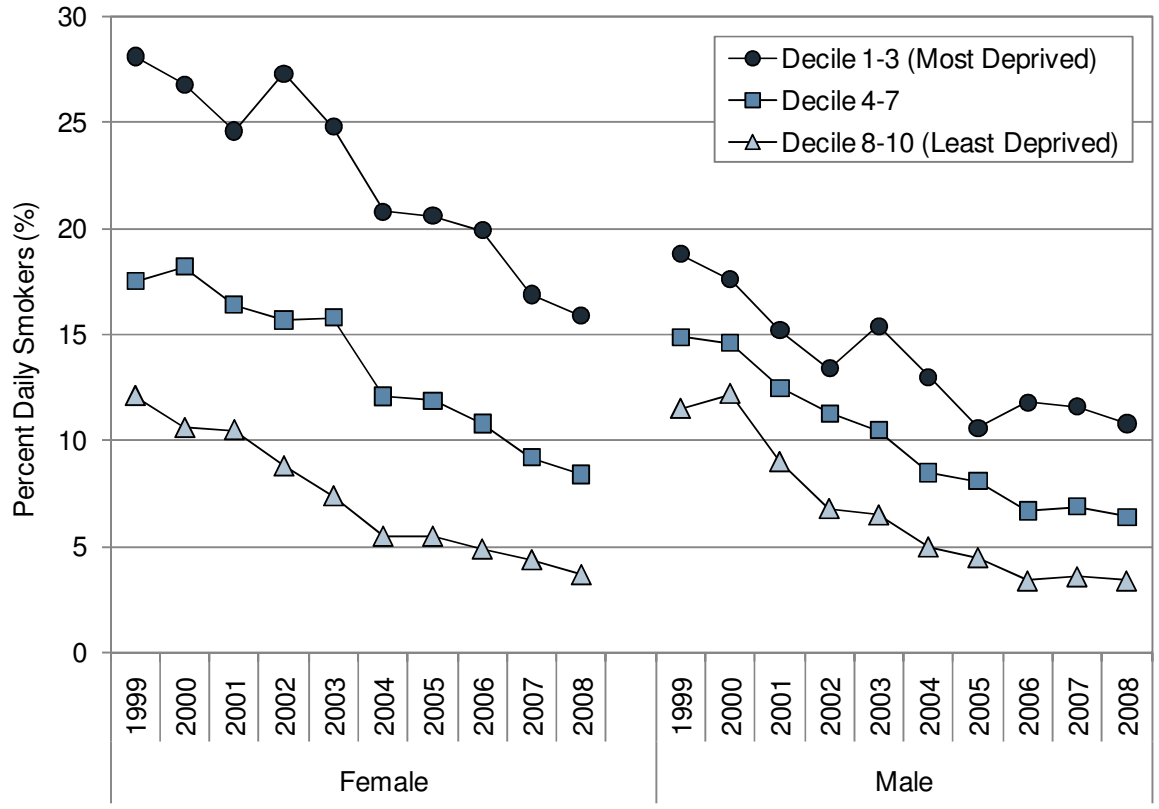
During 2001-2008, daily smoking rates were highest for students for whom both parents smoked > one parent smoked > neither parent smoked. During 2001-2008, daily smoking rates declined from 31.6% → 19.7% for those for whom both parents smoked, from 18.3% → 9.5% for those for whom one parent smoked, and from 7.2% → 3.0% for those for whom neither parents smoked. Again daily smoking rates declined *significantly* for students in all three categories (2004-2008: adjusted for gender, age and ethnicity **Figure 87**).

Figure 85. Daily Smoking Rates in Year 10 Students by Gender and Ethnicity, New Zealand ASH Surveys 1999-2008



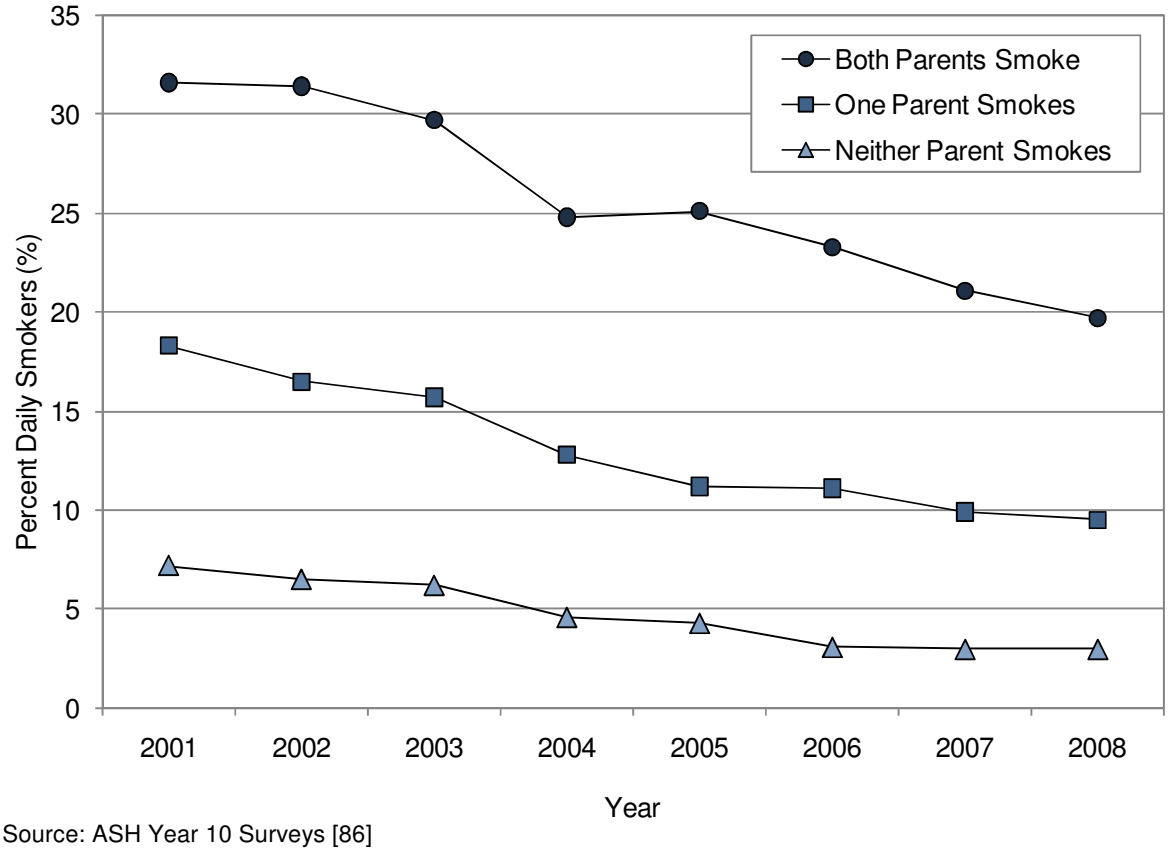
Source: ASH Year 10 Surveys [86]

Figure 86. Daily Smoking Rates in Year 10 Students by Gender and School Socioeconomic Decile, New Zealand ASH Surveys 1999-2008



Source: ASH Year 10 Surveys [86]

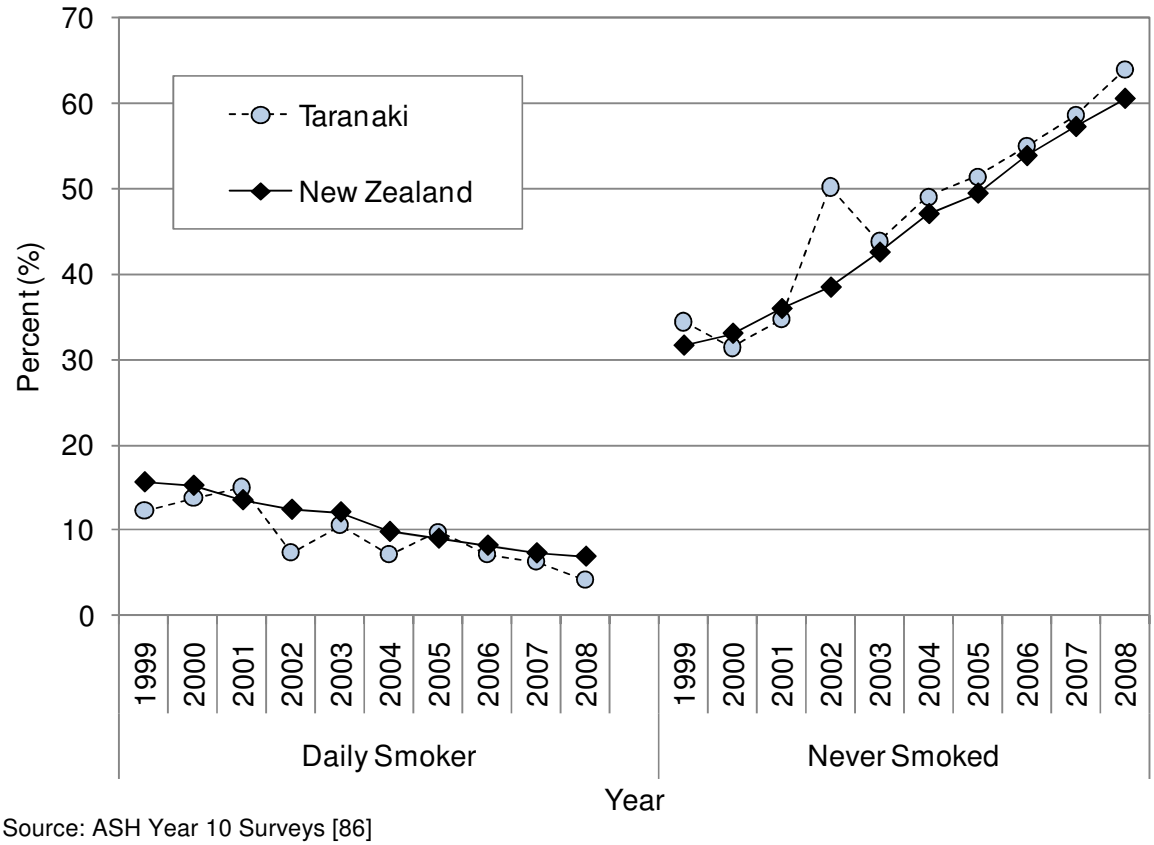
Figure 87. Daily Smoking Rates in Year 10 Students by Parents Smoking Status, New Zealand ASH Surveys 2001-2008



Source: ASH Year 10 Surveys [86]

Taranaki Distribution and Trends

Figure 88. Daily vs. Never Smoking Rates in Year 10 Students, Taranaki vs. New Zealand ASH Surveys 1999-2008



Source: ASH Year 10 Surveys [86]

Taranaki Trends
In Taranaki during 1999-2008, the proportion of Year 10 students who were daily smokers declined *significantly*, from 12.3% in 1999 → 4.2% in 2008, while the proportion who had never smoked increased *significantly*, from 34.4% in 1999 → 63.9% in 2008. Throughout this period, daily smoking rates in Taranaki were similar to the NZ average, as was the proportion of students who had never smoked (**Figure 88**).

Smoking in Young People 15-24 Years at the 2006 Census

At the 2006 Census all respondents aged ≥15 years were asked, "*Do you smoke cigarettes regularly (that is one or more per day)?"* The figures in this section refer to the number of young people aged 15-24 years who answered yes to this question.

Data Source and Methods

Definition
Proportion of Young People 15-24 years who are Regular Smokers

Data Source
Numerator: The number of young people aged 15-24 yrs who answered yes to the Census question "*Do you smoke cigarettes regularly (that is one or more per day)?"*
Denominator: The number of young people 15-24 years at the Census

Notes on Interpretation
Census data categorises those >15 years into two groups: smokers and non smokers, with missing responses being assigned to the non-smoking category. Thus Census data may underestimate the proportion of smokers, as the number with missing information is unspecified.

Indicator Category Ideal B

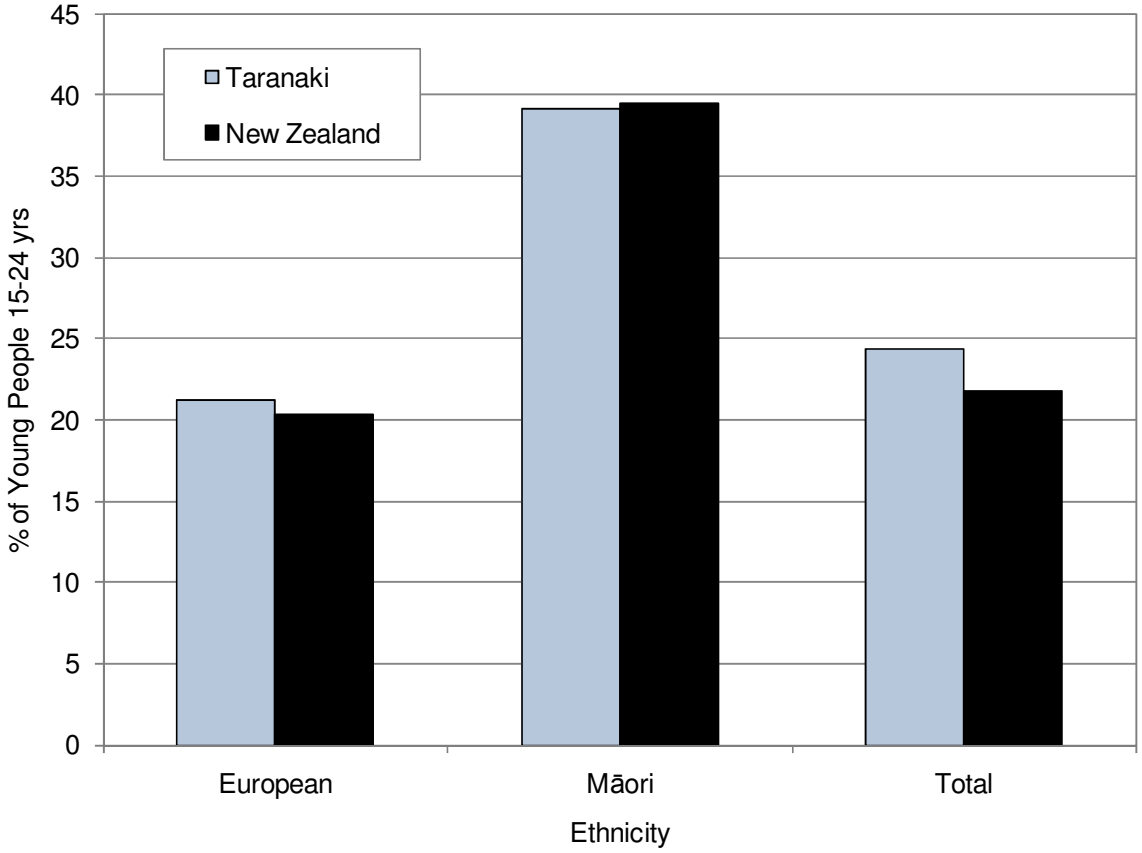
New Zealand and Taranaki Distribution

Regional and Ethnic Differences: Taranaki vs. New Zealand
In Taranaki during 2006, 24.4% of young people aged 15-24 years reported smoking cigarettes regularly, as compared to 21.8% for New Zealand as a whole. During this period, 39.2% of Māori and 21.2% of European young people were regular smokers, as compared to 39.4% of Māori and 20.3% of European young people nationally (**Figure 89**).

Socioeconomic Differences: Taranaki vs. New Zealand
There were also marked socioeconomic differences in the proportion of Taranaki young people who were regular smokers during 2006, with rates rising from 14.1% amongst those living in the most affluent (Decile 1) areas, to 38.5% amongst those living in the most deprived (Decile 10) areas. Similar socioeconomic gradients were seen nationally (Decile 1, 12.1% vs. Decile 10, 31.3%) although at most levels of NZDep deprivation, smoking rates in Taranaki were higher than the NZ average (**Figure 90**).

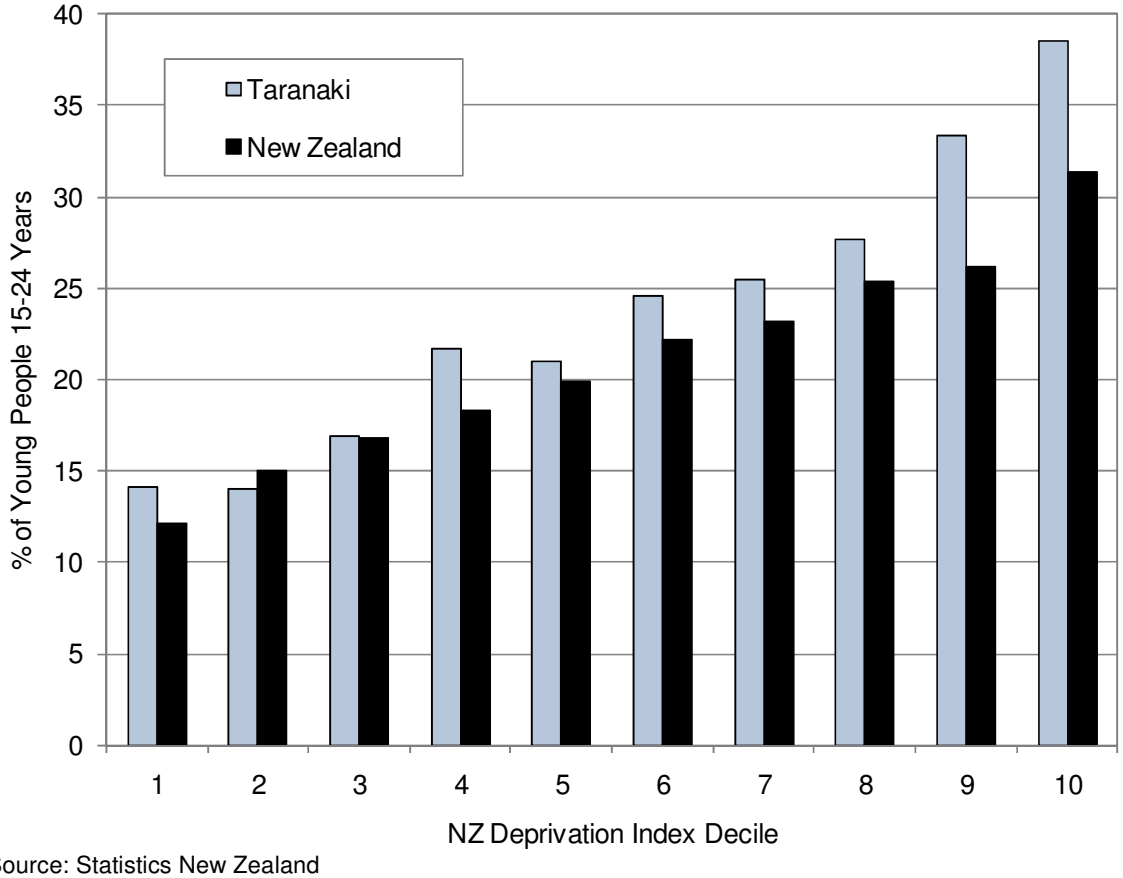
Socioeconomic Status and Ethnicity: New Zealand
In New Zealand during 2006, the proportion of young people who were regular smokers increased with increasing socioeconomic deprivation for each of New Zealand's largest ethnic groups, but that at nearly every level of deprivation, smoking rates remained higher for Māori > Pacific and European > Asian young people (**Figure 91**).

Figure 89. Proportion of Young People Aged 15-24 Years who were Regular Smokers by Ethnicity, Taranaki vs. New Zealand at the 2006 Census



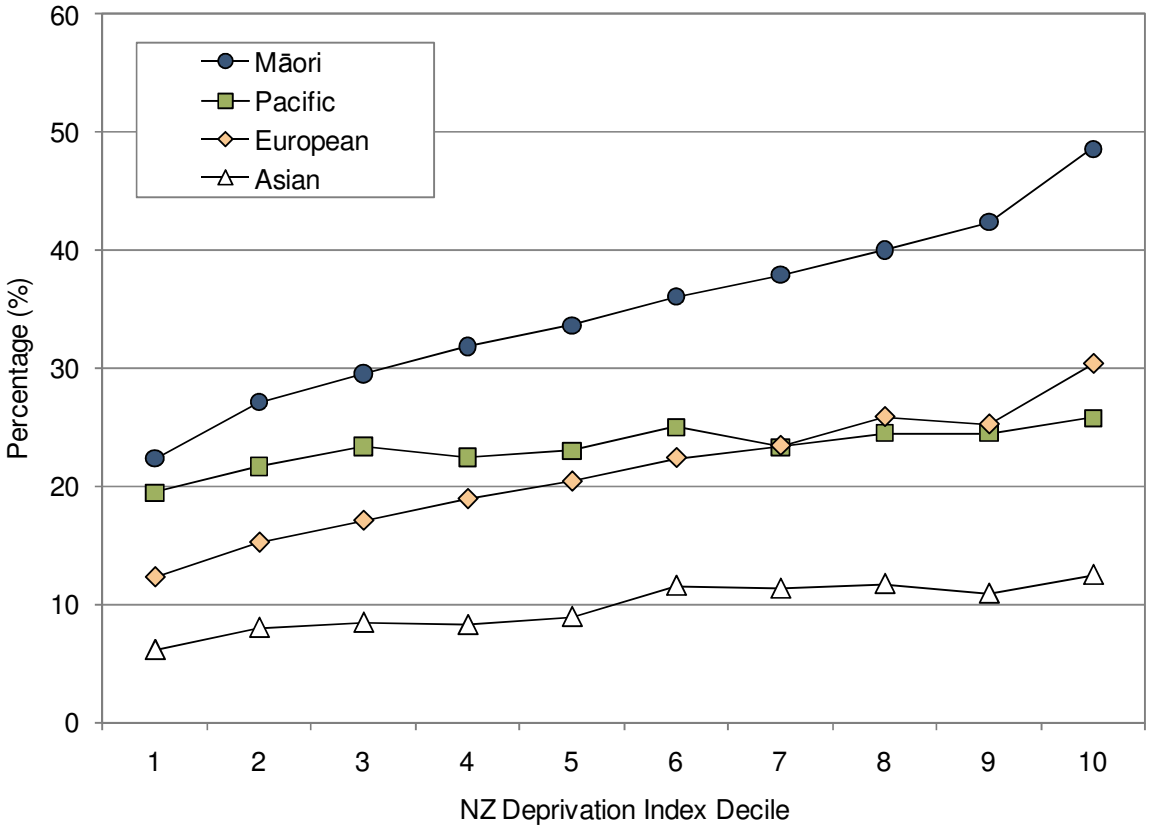
Source; Statistics New Zealand; Ethnicity is Level 1 Prioritised

Figure 90. Proportion of Young People Aged 15-24 Years who were Regular Smokers by NZ Deprivation Index Decile, Taranaki vs. New Zealand at the 2006 Census



Source: Statistics New Zealand

Figure 91. Proportion of Young People Aged 15-24 Years who were Regular Smokers by Ethnicity and NZ Deprivation Index Decile, New Zealand at the 2006 Census



Source; Statistics New Zealand; Ethnicity is Level 1 Prioritised

Summary

In New Zealand during 1999-2008, ASH Survey data suggested that daily smoking rates among Year 10 students were highest for females, Māori > Pacific > European / Other > Asian young people, those attending schools in the most deprived areas, and those for whom one or both parents smoked. In Taranaki during 1999-2008, the proportion of Year 10 students who were daily smokers declined *significantly*, from 12.3% in 1999 → 4.2% in 2008, while the proportion who had never smoked increased *significantly*, from 34.4% in 1999 → 63.9% in 2008. Throughout this period, daily smoking rates in Taranaki were similar to the NZ average, as was the proportion of students who had never smoked.

Data from the 2006 Census demonstrated a similar picture, with 24.4% of Taranaki young people aged 15-24 years being regular smokers, as compared to 21.8% nationally and smoking rates being higher for Māori than for European young people, and for those living in the most deprived areas. Such disparities are of concern, as if left unaddressed they potentially signal ongoing disparities in later adult health outcomes, as well in-utero and early childhood exposures as the current generation of Taranaki young people begin their own families in future years.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention or Cessation of Smoking in Young People

In New Zealand, while there is no single strategy which focuses solely on the prevention of youth smoking, several policy documents focus on strategies to prevent smoking, or promote smoking cessation in general. In addition, a large number of evidence based and other reviews consider smoking prevention and cessation in adolescents. **Table 36** below thus provides an overview of local policy documents and evidence based reviews relevant to the prevention of smoking in young people, while **Table 37** reviews those documents which are relevant to smoking cessation. In addition, **Table 34** (Page 146) summarises publications relevant to the cessation of smoking in pregnancy, while **Table 35** (Page 154) summarises publications which consider the prevention of exposure to second hand cigarette smoke in children (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any strategy to reduce youth smoking.)

Table 36. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Smoking in Young People

Ministry of Health Policy Documents
Ministry of Health. 2009. **Implementing the ABC Approach for Smoking Cessation: Framework and Work Programme**. Wellington: Ministry of Health. This document contains the framework for implementing the ABC (**A**sking, **B**rief advice, offer smoking **C**essation treatment) approach for smoking cessation. The document outlines the ABC approach, how this relates to other interventions, the expected impacts of the ABC approach, key points of leverage to be used to implement the approach, elements of the work programme, and an approach to governance and management of the work programme. 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.
Ministerial Committee on Drug Policy. 2007. **National Drug Policy 2007–2012**. Wellington: Ministry of Health. The overarching goal of this policy is to "… prevent and reduce the health, social and economic harms that are linked to tobacco, alcohol, illegal and other drug use." The objectives to achieve this are to: prevent or delay the uptake of tobacco, alcohol, illegal and other drug use, particularly in Māori, Pacific peoples and young people; reduce the harm caused by tobacco by reducing the prevalence of tobacco smoking, consumption of tobacco products and exposure to second-hand smoke; reduce the harm to individuals, families and communities from the risky consumption of alcohol; prevent or reduce the supply and use of illegal drugs and other harmful drug use; make families and communities safer by reducing the irresponsible and unlawful use of drugs; and reduce the cost of drug misuse to individuals, society and government. The policy has an intersectoral focus, encompassing both the social and economic harms of drug use.
Ministry of Health. 2004. **Clearing the Smoke: A Five-Year Plan for Tobacco Control in New Zealand (2004-2009)**. Wellington: Ministry of Health. This document is the action plan for tobacco control that was developed under the National Drug Policy. Its overarching vision is for "…*New Zealand to be a country where smokefree lifestyles are the norm*." 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; and improve infrastructural support and co-ordination for tobacco control activities.
Systematic and Other Reviews from the International Literature
Sowden AJ, Stead LF. 2003. **Community interventions for preventing smoking in young people**. Cochrane Database of Systematic Reviews Issue 1. Art. No.: CD001291. DOI: 10.1002/14651858.CD001291. This review examined the effectiveness of community based interventions to prevent smoking in young people, based on the premise that decisions about whether or not to smoke occur within a broad social context. The interventions were multi-component, and delivered in a range of environments, including schools, communities, or as part of larger disease-prevention programmes. The results were mixed, but there was some evidence that community interventions to prevent smoking can be effective. The authors comment about features of community intervention studies that appear to be associated with success, for those planning community intervention programmes.

Sowden AJ. 1998. **Mass media Interventions for Preventing Smoking in Young People**. Cochrane Database of Systematic Reviews Issue 4. Art. No.: CD001006. DOI: 10.1002/14651858.CD001006.

This review examined the effectiveness of mass media campaigns to prevent the uptake of smoking in young people, given that mass media have the potential to reach a large proportion of the community. The studies showing effectiveness had a sound theoretical basis, used formative research when designing the campaign messages, and broadcast messages with reasonable intensity over extensive periods of time. The authors provide recommendations for those planning a mass-media campaign, including advice for study design and campaign message development.

Skara S, Sussman S. 2003. **A Review of 25 Long-Term Adolescent Tobacco and Other Drug Use Prevention Program Evaluations**. Preventive Medicine 37: 451-74.

This review examined the long term effectiveness of programmes using psychosocial influences to prevent smoking, alcohol and substance use in adolescents. The results were mixed, however, there is evidence that programmes can prevent or reduce substance use for up to 15 years following the completion of the programme.

Stead LF, Lancaster T. 2005. **Interventions for Preventing Tobacco Sales to Minors**. Cochrane Database of Systematic Reviews Issue 1. Art. No.: CD001497. DOI: 10.1002/14651858.CD001497.pub2.

This review examined the effects of interventions aimed at reducing underage access to tobacco through deterring shopkeepers from making illegal sales. Active enforcement and/or multi-component educational strategies were more effective than strategies such as giving information to retailers. However, none of the strategies examined produced sustained change and there was little effect on the prevalence of youth smoking.

Thomas RE, Baker PRA, Lorenzetti D. 2007. **Family-Based Programmes for Preventing Smoking by Children and Adolescents**. Cochrane Database of Systematic Reviews Issue 1. Art. No.: CD004493. DOI:10.1002/14651858.CD004493.pub2.

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, given background evidence that children's decisions to smoke are influenced by family and friends. There were an inadequate number of studies for meta-analysis; however, the review found that trials that were well executed showed that family interventions may prevent adolescent smoking. Trials which were less well executed had mostly neutral or negative results.

Petrie J, Bunn F, Byrne G. 2007. **Parenting Programmes for Preventing Tobacco, Alcohol or Drug Misuse in Children <18: A Systematic Review**. Health Education Research 22: 177-91.

This article reports on the results of a systematic review of controlled studies of parenting programmes to prevent tobacco, drug and alcohol use in children or adolescents. Most interventions were based on social or behavioural learning models, teaching communication skills, developing boundary setting, reinforcing refusal skills and problem-solving approaches. The reviewers found that of the smoking-related studies, nine out of the 13 studies reviewed showed statistically significant reductions in self-reported use. The most effective interventions appeared to be those that emphasised the development of social skills and personal responsibility, and that included active parental involvement.

Thomas RE, Perera R. 2006. **School-Based Programmes for Preventing Smoking**. Cochrane Database of Systematic Reviews Issue 3. Art. No.: CD001293. DOI: 10.1002/14651858.CD001293.pub2.

This article reviewed randomised controlled trials of behavioural interventions in schools to prevent children and adolescents smoking. The results were mixed, with about half of the trials showing positive results. The authors provide recommendations for those contemplating a school-based programme, given the conflicting results to date.

Wiehe SE, Garrison MM, Christakis DA, Ebel BE, Rivara FP. 2005. **A Systematic Review of School-Based Smoking Prevention Trials with Long-Term Follow-Up.** Journal of Adolescent Health 36: 162-9.

This review aimed to determine the long-term efficacy of school-based interventions to prevent smoking. Very few studies had evaluated the long-term impact of their interventions. Of those that had long-term follow-up, there was little evidence of long-term effectiveness.

Christakis DA, Garrison MM, Ebel BE, Wiehe SE, Rivara FP. 2003. **Pediatric Smoking Prevention Interventions Delivered by Care Providers**. American Journal of Preventive Medicine 25(4): 358-362.

This article reviewed randomised controlled trials of smoking prevention interventions for youth that were delivered through medical or dental providers' offices. The reviewers found that there was little evidence demonstrating the efficacy of smoking prevention in this context, and no evidence of long term benefit.

Other Related Articles and Reviews

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.

This is a report produced by the Public Health Interventions Advisory Committee, and consists of a review of the evidence, an economic appraisal, stakeholder comments and the results of fieldwork. They recommend mass media campaigns and actions to reduce illegal sales of tobacco products, to prevent the uptake of smoking by children and young people.

Table 37 Local Policy Documents and Evidence Based Reviews Relevant to Smoking Cessation in Young People

Ministry of Health Policy Documents
Ministry of Health. 2007. **New Zealand Smoking Cessation Guidelines**. Wellington: Ministry of Health. These Guidelines contain updated guidance for health care workers about smoking cessation. The guidelines recommend the use of evidence-based interventions in priority population groups. They are based on national and international evidence of the best practice in smoking cessation. The guidelines promote the ABC tool, as used in Implementing the ABC Approach for Smoking Cessation - Framework and Work Programme, above.
Ministry of Health. 2007. **Smoking Cessation Competencies for New Zealand**. Wellington: Ministry of Health. This document complements the NZ Smoking Cessation Guidelines (above), and can be viewed as the competencies required to deliver the Guidelines. The competencies provide standards which practitioners can use to assess their own levels of competency.
Systematic and Other Reviews from the International Literature
Grimshaw G, Stanton A. 2006. **Tobacco Cessation Interventions for Young People**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD003289. DOI: 10.1002/14651858.CD003289.pub4. This review examines the effectiveness of strategies designed to stop young people smoking tobacco, given that those who do not smoke before the age of 20 are significantly less likely to start as adults. The reviewers found that trials with multiple approaches were more likely to be beneficial, particularly those that incorporate elements of behavioural therapy programmes. There is insufficient evidence to currently recommend widespread implementation of one model.
Garrison MM, Christakis DA, Ebel BE, Wiehe SE, Rivara FP. 2003. **Smoking Cessation Interventions for Adolescents: A Systematic Review**. American Journal of Preventive Medicine 25(4): 363-7. This article reviews controlled trials for adolescent smoking cessation. Of the six studies that met the inclusion criteria, none had follow up for longer than 5.2 months. There was very limited evidence demonstrating the efficacy of such interventions, and no evidence of long term benefit. None of the studies examined interventions that have been efficacious in adults, such as nicotine replacement therapy.
Secker-Walker R, Gnich W, Platt S, Lancaster T. 2002. **Community Interventions for Reducing Smoking Among Adults**. Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD001745. DOI: 10.1002/14651858.CD001745. This review assessed the effectiveness of community interventions for the prevention of smoking, based on the premise that smoking behaviour is determined by social contexts; therefore using programmes which support and encourage norms for non-smoking may be the best way to reduce prevalence. The reviewers found that while community intervention studies led to increased knowledge of health risks, more quit attempts, changes in attitudes to smoking and better environmental and social supports; this rarely led to higher cessation rates.
Friend K, Levy DT. 2000. **Reductions in Smoking Prevalence and Cigarette Consumption Associated with Mass-Media Campaigns**. Health Education Research 17(1): 85-98. This paper examined the reductions in cigarette consumption and smoking prevalence following local and state-wide mass-media campaigns in the US. The reviewers found that well funded and well implemented mass-media campaigns in conjunction with tobacco control programmes are effective. Youth oriented programmes showed mixed results, but still indicated strong potential for benefit.
Cahill K, Perera R. 2008. **Competitions and Incentives for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD004307. DOI: 10.1002/14651858.CD004307.pub3. Incentives (material or financial) are sometimes used to assist smoking cessation. This review examined whether competitions and incentives lead to higher long-term cessation rates. None of the studies reviewed showed higher cessation rates for those receiving incentives beyond six months. However, recruitment rates were improved by rewarding participation, which may lead to higher absolute numbers of those who quit smoking.
Stead LF, Perera R, Bullen C, Mant D, Lancaster T. 2008. **Nicotine Replacement Therapy for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD000146. DOI: 10.1002/14651858.CD000146.pub3. Nicotine replacement therapy (NRT) is often given to replace much of the nicotine in cigarettes to reduce nicotine withdrawal symptoms. The aims of this review were to determine if NRT is effective, if particular delivery systems are more effective than others, if combinations of NRT offer benefits above one type alone, whether the effectiveness is influenced by dosage, and whether NRT is more or less likely to lead to successful cessation compared to other pharmacotherapies. The primary outcome measure was abstinence of smoking after six months or more follow up. The trials showed that there is benefit in NRT, with the chances of stopping smoking increased by 50-70%. Higher doses of NRT are likely to be beneficial for heavy smokers. A combination of slow and rapid nicotine delivery systems is likely to be more beneficial than one system alone.

Woolacott NF, Jones L, Forbes CA, Mather LC, Sowden AJ, Song FJ, Raftery JP, Aveyard PN, Hyde CJ, Barton PM. 2002. **The Clinical Effectiveness and Cost-Effectiveness of Bupropion and Nicotine Replacement Therapy for Smoking Cessation: A Systematic Review and Economic Evaluation**. Health Technology Assessment 6(16).

This reviewed examined the effectiveness, cost effectiveness and adverse effects of bupropion SR and nicotine replacement therapy (NRT) in smoking cessation. The reviewers found that both bupropion SR and NRT are effective interventions in assisting smoking cessation. There was insufficient information to determine which was more effective than the other, although NRT has a better safety profile. Both interventions are cost effective, and are relatively low cost compared to other smoking cessation interventions.

Hughes JR, Stead LF, Lancaster T. 2007. **Antidepressants for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD000031. DOI: 10.1002/14651858.CD000031.pub3.

Antidepressants have been used to assist smoking cessation based on two theories. One, that nicotine withdrawal may produce depressive symptoms; and two, that nicotine may have antidepressant effects and antidepressants may substitute for this. It is also theorised that some antidepressants may have an effect on neural pathways underlying nicotine addiction, independent of their antidepressant effects. This review examined the efficacy of antidepressants in aiding smoking cessation. The reviewers found that some classes of antidepressant significantly increase the odds of long-term cessation. They appear to be of similar efficacy to nicotine replacement therapy. Only one study was performed solely in adolescents; the majority being undertaken in adults.

White AR, Rampes H, Campbell J. 2006. **Acupuncture and Related Interventions for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD000009. DOI: 10.1002/14651858.CD000009.pub2.

This review was undertaken to determine if acupuncture, acupressure, laser therapy and electro stimulation were effective in smoking cessation, given the belief that they may reduce nicotine withdrawal symptoms. There were very mixed results with some studies showing positive effects. However, there is not enough consistent evidence to support to use of acupuncture or related interventions to assist smoking cessation.

Ussher MH, Taylor A, Faulkner G. 2008. **Exercise Interventions for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD002295. DOI: 10.1002/14651858.CD002295.pub3.

It is postulated that regular exercise may assist people to give up smoking by moderating nicotine withdrawal and cravings and by helping manage weight gain. This review assessed randomised trials that used an exercise programme, with or without a smoking cessation programme. The trials were of variable quality and the results were mixed. Several trials showed short term benefit, and one trial showed that an exercise programme in addition to a smoking cessation programme was beneficial, after 12 months follow-up.

Lancaster T, Stead LF. 2005. **Individual Behavioural Counselling for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD001292. DOI: 10.1002/14651858.CD001292.pub2.

This review examined the effectiveness of individual counselling by a trained therapist to assist smoking cessation. The reviewers found that there was benefit in counselling. In trials where nicotine replacement therapy was given to both control and intervention groups, there was still benefit in counselling. There was insufficient evidence to determine if more intensive counselling is more effective than briefer interventions.

Lancaster T, Stead LF. 2005. **Self-help Interventions for Smoking Cessation**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD001118. DOI: 10.1002/14651858.CD001118.pub2.

This review aimed to determine if providing self help materials to smokers would assist them to successfully quit. The reviewers found that self-help materials increase smoking cessation rates compared to no intervention. Material that was tailored to the individual was more effective than generic material. There was no evidence that self-help materials produce additional benefits over other interventions such as advice from a health care professional or nicotine replacement therapy.

Walters ST, Wright JA, Shegog R. 2006. **A review of Computer and Internet-Based Interventions for Smoking Behaviour**. Addictive Behaviours 31: 264-77.

This review examined the effectiveness of computer and internet-based interventions for smoking behaviour. The reviewers found that about half of the studies examined showed long-term benefits. The results were consistent with previous reviews in the following areas: studies in smokers seeking treatment usually resulted in higher abstinence rates; most studies that used serial follow-up points found that the effects of the intervention lessened over time; and all of the studies showed that rates of abstinence in the intervention group were higher or the same as in non-treatment controls (i.e. the interventions did not inadvertently make smokers more likely to stay smoking).

Tait RJ, Hulse GK. 2003. **A Systematic Review of the Effectiveness of Brief Interventions with Substance Using Adolescents by Type of Drug**. Drug Alcohol Review 22: 337-46.

The aim of this review was to evaluate the effectiveness of brief interventions in adolescents to reduce alcohol, tobacco or other drug use. The two studies with tobacco showed a very small reduction in risk.

Fichtenberg CM, Glantz SA. 2002. **Effect of Smoke-Free Workplaces on Smoking Behaviour: Systematic Review**. British Medical Journal 325: 188.

This review examined the effects of smoke-free workplaces on daily cigarette consumption, and compared these effects to those achieved through tax increases. The reviewers found that there was a reduction in both the prevalence of smoking, and the number of cigarettes smoked per day by continuing smokers. Smoke-free workplaces therefore both protect non-smokers from passive smoke, but also encourage smokers to quit, or to reduce their consumption. To achieve similar reductions through the use of taxes, it was calculated that the tax on a packet of cigarettes would have to increase from $0.76 to $3.05 in the US.

NHS Centre for Reviews and Dissemination. 1998. **Smoking Cessation: What the Health Service Can Do**. Effectiveness Matters 3(1). University of York.

This article summarises the research evidence about the effectiveness of methods to promote smoking cessation. The reviewers determined that there is good evidence of the effectiveness of brief advice from a health professional, nicotine replacement therapy with advice, and advice and support to pregnant women. The reviewers found that there was insufficient evidence to support the use of antidepressant and anxiolytics, aversive conditioning, acupuncture, hypnosis, mecamylamine, and self help materials.

Fichtenberg C, Glantz S. 2002. **Youth Access Interventions do not Affect Youth Smoking**. Pediatrics 109: 1088-92.

This review was conducted to determine the effect of laws restricting youth access to cigarettes on the prevalence of smoking in teens. The reviewers concluded there was no effect on teen smoking rates with increased compliance from retailers. Increased retailer compliance with youth access laws was not associated with a decrease in either 30-day or regular smoking prevalence, and there were no significant differences in youth smoking in communities with youth access interventions compared to control communities. The authors propose that where youth access is restricted, youths find other means of obtaining cigarettes.

Other Related Articles and Reviews

National Institute for Health and Clinical Excellence. 2006. **Brief Interventions and Referral for Smoking Cessation in Primary Care and Other Settings**. London: National Institute for Health and Clinical Excellence.

This is a report produced by the Public Health Interventions Advisory Committee, and consists of a review of the evidence and an economic appraisal. It contains nine recommendations to assist with smoking cessation in adults in the UK, with interventions delivered in primary as well as secondary and tertiary care settings, and policy advice.

National Institute for Health and Clinical Excellence. 2007. **Workplace Health Promotion: How to Help Employees to Stop Smoking**. London: National Institute for Health and Clinical Excellence.

This is a report produced by the Public Health Interventions Advisory Committee. It gives guidance about workplace health promotion with regard to smoking, and how best to motivate employees and change their behaviour. In developing these recommendations, the authors conducted of a review of the evidence, an economic appraisal, a survey of current practice and stakeholder comments. The report makes six recommendations on how to encourage employees to stop smoking. These recommendations include advice to employers, health authorities and primary care trusts.

Fayter D, Main C, Misso K, Ogilvie D, Petticrew M, Sowden A, Stirk A, Thomas S, Whitehead M, Worthy G. 2008. **Population Tobacco Control Interventions and their Effects on Social Inequalities in Smoking**. York: Centre for Reviews and Dissemination, University of York.

This document summarises the findings from two reviews: a review of existing systematic reviews, and a systematic review of primary studies. They discuss results on studies examining restrictions on smoking in workplaces and public places; restrictions on smoking in schools and restrictions in sales of tobacco to minors; health warnings on tobacco products, and restrictions on advertising; and the effects of tobacco pricing in adults and adolescents. The authors also discuss some implications for policy makers.

Lovato C, Linn G, Stead LF, Best A. 2003. **Impact of Tobacco Advertising and Promotion on Increasing Adolescent Smoking Behaviours**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD003439. DOI: 10.1002/14651858.CD003439.

This review examined the effects of tobacco promotion and advertising on non-smoking adolescents' smoking behaviour. All the studies reviewed showed that the non-smoking adolescents who were more receptive to advertising or aware of it, were more likely to have become smokers, or experimented with cigarettes at follow-up.

Guide to Community Preventive Services. 2000. **Increasing Tobacco Use Cessation: Multicomponent Interventions that Include Telephone Support**. URL: www.thecommunityguide.org/tobacco/cessation/multicomponentinterventions.html.

The Task Force on Community Preventive Services recommends the use of smoking cessation interventions that involve telephone support, based on strong evidence of the effectiveness in increasing patient tobacco cessation, and its efficacy in both clinical settings and when used community-wide.

ALCOHOL RELATED HARM

Introduction

The Alcohol Advisory Council (ALAC)'s annual survey estimated that in New Zealand during 2005, 80% of young people aged 12-17 years had tried alcohol, 53% were current drinkers and that 22% drank at least once a week. In addition, 44% of males and 30% of females reported binge drinking (≥5 drinks) on their last drinking occasion [92]. Using this information, ALAC grouped young people into 4 main categories:

1. **Non-Drinkers**: 48% of young people, usually <13 years and / or attending church.
2. **Supervised Drinkers**: 21% of young people, usually 14+ years, at school and drinking fortnightly, monthly or less, typically at home with their parents / whānau. Supervised drinkers tended to consume ≤2 drinks per occasion and to be concerned about the short term (e.g. behaviour, hangovers) and long term (e.g. health, weight) effects of alcohol.
3. **Social Binge Drinkers**: 16% of young people. This group tended to drink regularly (≥every two weeks) and to binge (52% drank ≥5 drinks on the last occasion), mainly with their friends on weekends or holidays. Social binge drinkers tended to be 16+ years, at school and to drink for the social benefits (e.g. comradeship, sense of belonging, confidence) and because everyone else was drinking.
4. **Uncontrolled Binge Drinkers**: 16% of young people. This group were typically male, drank ≥once a week and binge drank (54% drank ≥5 drinks on the last occasion). Uncontrolled binge drinkers were generally ≥16 years, less likely to be at school (~1/3 were in employment) and frequently drank to enjoy the physical "buzz", or with the intention of getting drunk [92].

While these figures suggest that many New Zealand young people are either non-drinkers or drink infrequently under the supervision of their parents, the high number of binge drinkers has potential public health consequences, with the Youth 2000 Survey (a survey of 9,699 secondary school students [93]), noting that of those who had ever drunk alcohol:

1. 28% had got into trouble
2. 26% done something they would not normally do (e.g. breaking rules / law)
3. 14% had got into a fight
4. 13% had had an injury or accident
5. 12% had had sex while drunk and later regretted it
6. 27% had ridden in a car driven by someone potentially drunk in the last month
7. 8% had driven a car while potentially drunk in the last month

Such adverse outcomes are of particular relevance in the context of the debate on the minimum age for purchasing alcohol in New Zealand, which in 1999 was lowered from 20 to 18 years. Since that time a number of studies have suggested possible negative health consequences in terms of emergency department attendances and hospital admissions for injuries, traffic crashes and intoxication [94] [95] [96]. But while initiatives aimed at reducing the availability of alcohol to under-age young people are seen as one way of reducing the burden of alcohol related harm [93], the 2001 National Alcohol Strategy suggests that such supply based strategies are most effective when adopted in conjunction with demand reduction strategies (e.g. education, labelling, advertising) and problem limitation initiatives (e.g. host responsibility in licensed premises and private venues) [97].

The following section explores alcohol related (non-emergency department) hospital admissions in New Zealand young people aged 15-24 years. Because alcohol is often seen as a contributory cause (e.g. in an alcohol related traffic crash, alcohol will only be listed after the primary diagnosis (e.g. fractured femur) and external causes (e.g. vehicle occupant in transport accident) have been recorded), the following section includes all

(non-emergency department) admissions in which alcohol was listed in the first 15 diagnoses, or the first 10 external causes (injury admissions) of the National Minimum Dataset. The analysis is restricted to national level data only (as differences in the ways DHBs code contributory causes may make interpretation of regional differences difficult).

While it is likely that such an approach will be subject to significant undercounting, as it relies on the thoroughness of hospital staff in documenting all relevant contributory causes (see Methods Section for estimate of undercount), it is nevertheless hoped that such an approach will serve to identify "the tip of the iceberg" in terms of the contribution alcohol use makes to hospital admissions in this age group.

Data Source and Methods

Definition
Hospital Admissions in Young People 15-24 Years Where Alcohol Was Mentioned in the First 15 Diagnostic Codes, or the First 10 External Cause Codes in the Case of an Injury

Data Source
Numerator: National Minimum Dataset: Alcohol related hospital admissions included those with any mention of an alcohol related condition in the first 15 diagnostic codes, or the first 10 external cause codes (ICD-10 F10 Mental and Behavioural Disorders Due to Alcohol; T51.0 Toxic Effects of Alcohol (ethanol only); ICD-10 E codes X45 Accidental Poisoning by and Exposure to Alcohol; X65 Intentional Self Poisoning by and Exposure to Alcohol; Y15 Poisoning by and Exposure to Alcohol of Undetermined Intent; Y90-91 Evidence of Alcohol Involvement Determined by Blood Alcohol Level or Level of Intoxication).
Denominator: Census

Indicator Category Bookmark C

Notes on Interpretation
All cross sectional analyses were undertaken using ICD-10 coding. Time series analysis has not been provided for this indicator, as it remains unclear the extent to which differences in the degree to which contributory diagnoses (e.g. alcohol use) may have been recorded, both over time and across regions, may have influenced temporal and regional variations in this indicator.

Extent of Undercounting: 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, a figure considerably higher than the usual 10-18% reported overseas [98]. An analysis of New Zealand emergency department cases for the period 2000-2005 using the methodology described above (age 15-24 yrs in the NMDS), found that 10.3% of injury cases had a mention of alcohol, while only 4.5% of injury cases admitted beyond the emergency department setting (the group reviewed in this section) had alcohol as a listed cause. As a result, the figures contained in this section are likely to underestimate the burden of alcohol related morbidity amongst the youth population and when interpreting the data contained in this section, this must be borne in mind.

New Zealand Distribution: Hospital Admissions

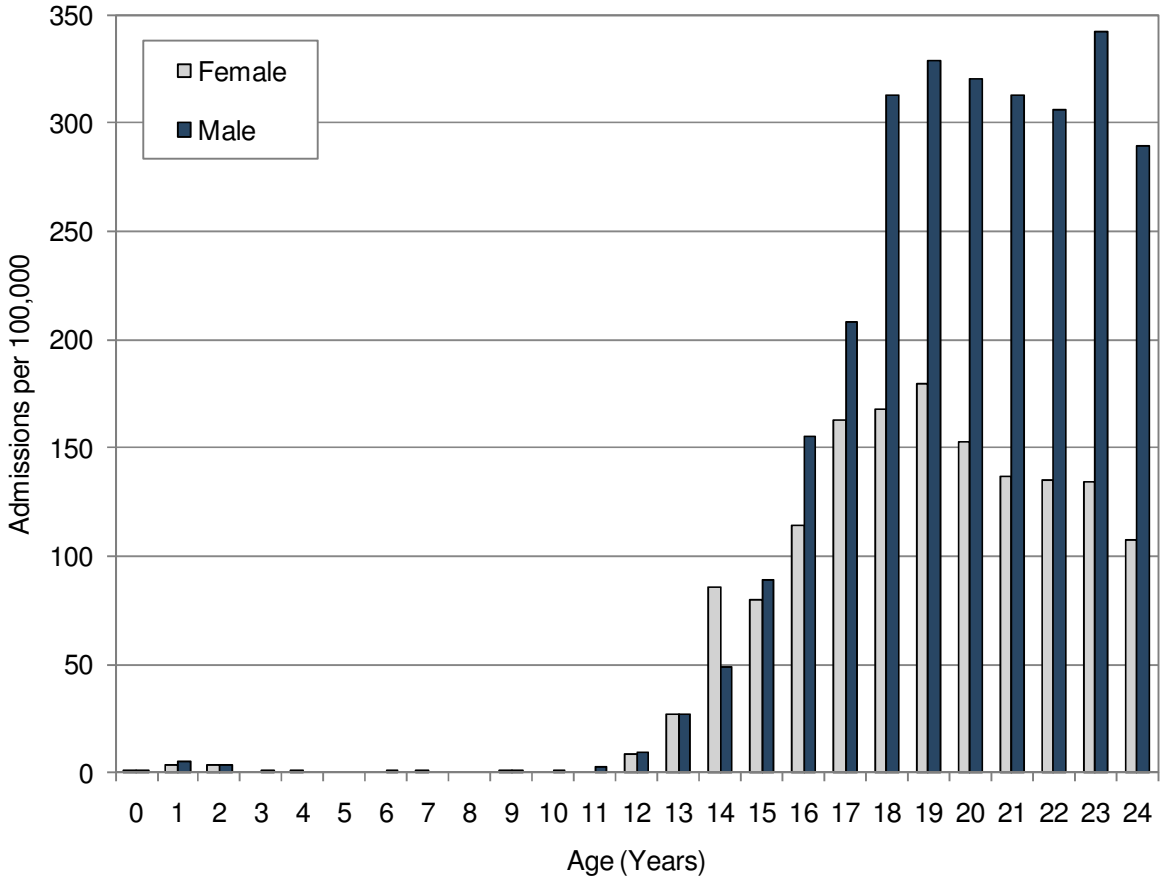
Age and Gender

In New Zealand during 2004-2008, alcohol related hospital admissions were relatively infrequent in children, but rose rapidly amongst those in their early teens, reaching a plateau in the late teens / early 20s. While gender differences were less marked for those in their early teens (13-15 years), for those in their late teens / early twenties, a marked male predominance was evident (**Figure 92**).

Ethnicity, Gender and NZ Deprivation Index Decile

In New Zealand during 2004-2008, alcohol related hospital admissions were *significantly* higher for males, Māori > European and Pacific > Asian young people, and those living in more deprived areas (**Table 38**).

Figure 92. Alcohol Related Hospital Admissions in Children and Young People 0-24 Years by Age and Gender, New Zealand 2004-2008



Source: Numerator National Minimum Dataset; Denominator: Census; Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed

Table 38. Risk of Alcohol Related Hospital Admission in Young People Aged 15-24 Years by Ethnicity, Gender and NZ Deprivation Index Decile, New Zealand 2004-2008

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
1	96.1	1.00		1	108.0	1.00	
2	119.6	1.25	1.05 - 1.48	2	134.7	1.25	1.11 - 1.40
3	114.0	1.19	1.00 - 1.41	3	176.9	1.64	1.47 - 1.82
4	155.6	1.62	1.38 - 1.91	4	237.4	2.20	1.99 - 2.43
5	159.5	1.66	1.41 - 1.95	5	280.7	2.60	2.36 - 2.86
6	193.0	2.01	1.72 - 2.34	Ethnicity			
7	227.5	2.37	2.04 - 2.75	Māori	374.1	1.93	1.83 - 2.05
8	246.7	2.57	2.22 - 2.98	Pacific	184.3	0.95	0.86 - 1.06
9	297.7	3.10	2.69 - 3.58	European	193.4	1.00	
10	263.5	2.74	2.37 - 3.17	Asian	22.9	0.12	0.10 - 0.15
Gender							
Female	136.6	1.00					
Male	261.5	1.91	1.81 - 2.02				

Source: Numerator National Minimum Dataset; Denominator: Census; Note: *Rates are per 100,000 per year, RR: Rate Ratios are unadjusted; Admissions with alcohol mentioned in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed.

Table 39. Alcohol Related Hospital Admissions in Young People Aged 15-24 Years by Primary Diagnosis, New Zealand 2004-2008

ICD10	Diagnosis	Total 2004-08	Rate per 100,000	% of Total
Mental and Behavioural Disorders				
F100	Alcohol: Acute Intoxication	556	19.5	9.8
F102	Alcohol: Dependence	106	3.7	1.9
F101, F103-109	Alcohol: Other Mental / Behavioural Disorders	44	1.5	0.8
F20	Schizophrenia	553	19.4	9.7
F21-F29	Other Schizotypal and Delusional Disorders	180	6.3	3.2
F31	Bipolar Affective Disorder	112	3.9	2.0
F32-F39	Depression / Mood Disorders	285	10.0	5.0
F43	Reaction to Stress / Adjustment Disorder	152	5.3	2.7
Other F00-F99	Other Mental and Behavioural Disorders	281	9.8	4.9
Gastrointestinal System				
K226 K29 K920	Gastritis / Upper Gastrointestinal Bleeding	127	4.4	2.2
Other K00-K93	Other Gastrointestinal Conditions	93	3.3	1.6
Injury and Poisoning				
S00-S09	Head Injury	800	28.0	14.0
S10-S19	Neck Injury	65	2.3	1.1
S40-S49	Shoulder / Upper Arm Injuries	135	4.7	2.4
S50-S59	Elbow / Forearm Injuries	221	7.7	3.9
S60-S69	Wrist / Hand Injuries	273	9.6	4.8
S70-S99	Lower Limb Injuries	258	9.0	4.5
T36-T50	Poisoning (Drugs / Biological Substances)	659	23.1	11.6
T51.0	Toxic Effect of Alcohol (Ethanol)	102	3.6	1.8
Other S00-T79	Other Injuries	323	11.3	5.7
All Other Diagnoses				
All Other Codes	Other Conditions	372	13.0	6.5
Total	Total	5,697	199.5	100.0

Source: Numerator National Minimum Dataset; Denominator: Census; Note: Admissions with any mention of alcohol in first 15 diagnostic codes or first 10 external cause codes; Emergency Department cases removed; Rate per 100,000 per year; Poisoning includes drugs, medicines, biological substances.

Nature of Alcohol Related Admissions

Alcohol was listed as a contributory cause in a large number of the hospital admissions for young people during 2004-2008. Analysis of the primary diagnosis for each of these admissions suggested that only 11.6% had acute intoxication, or poisoning by alcohol listed as the primary diagnosis. In 36.4% of cases an injury was the primary diagnosis, with head injuries and injuries of the upper limbs playing a particularly prominent role. In addition, a further 30.1% of admissions had a mental health condition listed as the primary diagnosis, with schizophrenia making up the single largest category in this group. Finally 11.6% of admissions had poisoning by other drugs or substances listed as their primary reason for admission (**Table 39**). 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, emergency department cases have been removed. These figures thus potentially reflect the more severe end of spectrum, as it is likely that many cases of intoxication or minor alcohol related injuries are dealt with in the emergency department setting. In addition, it is likely that these figures represent an undercount, as they rely on hospital staff at the time of discharge listing alcohol as a contributory cause, something which may occur inconsistently over time and across the country.

Injury Admissions with Alcohol as a Contributory Cause

An analysis of those who were admitted with a primary diagnosis of injury, and alcohol use listed as a contributory cause, found that 21.1% of these injuries were associated with episodes of self harm, 17.8% were sustained as a result of an assault and a further 12.3% were sustained while the young person was the occupant of a vehicle. Of note, a large proportion of vehicle accidents were not in conjunction with other vehicles, but arose as a result of the car crashing into a stationary object, or in a non-collision situation (e.g. vehicle overturning). Finally 14.1% of injuries resulted from a fall and a further 14.5% from other inanimate mechanical forces (**Table 40**).

Table 40. Primary Cause of Alcohol Related Hospital Admissions Resulting in Injury in Young People Aged 15-24 Years by Cause of Injury, New Zealand 2004-2008

ICD-10	External Cause of Injury	Total 2004-08	Rate per 100,000	% of Total
X85-Y09	Assault	506	17.7	17.8
X60-X84	Intentional Self Harm	598	20.9	21.1
Y10-Y34	Undetermined Intent	137	4.8	4.8
W00-W19	Falls	400	14.0	14.1
W20-W49	Inanimate Mechanical Forces	412	14.4	14.5
V01-V09	Transport: Pedestrian	62	2.2	2.2
V10-V19	Transport: Cyclist	19	0.7	0.7
V20-V29	Transport: Motorbike	45	1.6	1.6
V47	Transport: Vehicle, Collide Stationery Object	176	6.2	6.2
V48	Transport: Vehicle, Overturning	94	3.3	3.3
V40-V46, V49	Transport: Vehicle, Other Accident	80	2.8	2.8
V80-V89	Transport: Other Land Transport Accident	45	1.6	1.6
X45	Accidental Poisoning: Alcohol	69	2.4	2.4
X40-44, X46-49	Accidental Poisoning; Other Substances	76	2.7	2.7
Other Codes	Other Causes	116	4.1	4.1
Total	Total	2835	99.3	100.0

Source: Numerator National Minimum Dataset; Denominator: Census; Note: Admissions with any mention of alcohol in the 2nd- 15th diagnostic codes or 1st-10th external cause codes and with an injury as a primary diagnosis. Emergency Department cases removed.

Summary

In New Zealand during 2004-2008, alcohol related hospital admissions were highest for males, those in their late teens / early 20s, Māori young people and those living in more deprived areas. Reasons for admission included acute intoxication, mental health issues and injuries, with the latter commonly arising from episodes of self harm, assault or motor vehicle accidents. Significant methodological constraints however must be taken into consideration when interpreting these findings, as with the removal of emergency department cases, these figures reflect the more severe end of the spectrum. In addition, it is likely that these figures represent an undercount, as they rely on hospital staff at the time of discharge listing alcohol use as a contributory cause, something which may occur inconsistently over time and across the country. Nevertheless it is hoped that the figures presented in this section will act as a starting point, when considering the range and extent of alcohol related harm amongst young people in New Zealand in recent years.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Alcohol Related Harm

In New Zealand, while there is no single strategy focusing solely on the prevention of alcohol related harm in young people, a number of policy documents consider strategies to address this issue in general. In addition, a number of evidence based and other reviews focus on alcohol misuse in adolescents. **Table 41** provides an overview of New Zealand policy documents and evidence based reviews which may be useful in this context (**Table 105** on Page 255 reviews publications which consider the prevention of drug use in adolescents.) (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any strategy to reduce alcohol related harm in young people.)

Table 41. Local Policy Documents and Evidence Based Reviews Relevant to the Reduction of Alcohol Related Harm in Young People

Ministry of Health Policy Documents
Ministry of Health. 2000. **The New Zealand Health Strategy**. Wellington: Ministry of Health. The New Zealand Health Strategy identifies the Government's priority areas for health. One of the 13 priority areas for the New Zealand Health Strategy (NZHS) is to "minimise harm caused by alcohol and illicit and other drug use to both individuals and the community." The Strategy develops a framework for action, identifies key priority areas, provides District Health Boards with the context within which they are to operate, and identifies the way forward. Part of the Strategy includes development of 'toolkits' to help District Health Boards best meet their populations' needs.
Ministry of Health. 2001. **DHB Toolkit: Minimising Alcohol and Other Drug Related Harm**. Edition 1. Wellington : Ministry of Health. This toolkit was developed to assist District Health Boards to implement the NZHS priority objective of minimising the harm caused by alcohol and other drug use. The interventions recommended relate to interventions in primary, secondary and tertiary care, and in public health. Secondary and tertiary care interventions relate to providing specialist care; workforce development; improving service provision for Māori, Pacific peoples, children and young people; and including families and the community in addressing needs.
Alcohol Advisory Committee of New Zealand and Ministry of Health. 2001. **National Alcohol Strategy 2000-2003**. Wellington: Alcohol Advisory Committee of New Zealand and Ministry of Health. The National Alcohol Strategy complements and extends the Government's National Drug Policy (1998). The goal of the Strategy is to minimise alcohol-related harm on individual, family, and society-wide levels. The Strategy provides a discussion of key issues around alcohol, lists the alcohol-related priorities for action, gives a range of strategies for addressing alcohol-related harm, outlines a range of strategies for workforce development, and provides a framework for monitoring and measuring progress toward desired outcomes.
Ministerial Committee on Drug Policy. 2007. **National Drug Policy 2007-2012**. Wellington: Ministry of Health. This National Drug Policy outlines the Government's policy for tobacco, alcohol, illegal and other drugs. The main goal of the policy is to minimise the social, economic and health harms of tobacco, alcohol and other drugs. Drug policy and intersectoral decision-making is to be guided by the goals, objectives and principles set out in this document, to address the harms caused by drug use.
Ministry of Health. 2001. **A National Strategic Framework for Alcohol and Drug Services**. Wellington: Ministry of Health. The focus of this framework is to increase the capacity of the specialist alcohol and drug treatment sector, in terms of service delivery and workforce. The recommended actions for District Health Boards include improving the availability and accessibility of alcohol and drug treatment for priority groups; identifying regional service need; consideration of service development in localities where current expenditure is below the national average; and development of culturally responsive services for Māori, Pacific people, children, and older people.
Systematic and Other Reviews from the International Literature
Petrie J, Bunn F, Byrne G. 2007. **Parenting Programmes for Preventing Tobacco, Alcohol or Drug Misuse in Children <18: A Systematic Review**. Health Education Research 22: 177-91. This article reports on the results of a systematic review of controlled studies of parenting programmes to prevent tobacco, drug and alcohol use in children or adolescents. Most interventions were based on social or behavioural learning models, teaching communication skills, developing boundary setting, reinforcing refusal skills and problem-solving approaches. The reviewers found that of the alcohol-related studies, six out of the 14 studies reviewed showed statistically significant reductions in self-reported use. The most effective interventions appeared to be those that emphasised the development of social skills and personal responsibility, and that included active parental involvement.

Moreira MT, Smith LA, Foxcroft D. 2009. **Social Norms Interventions to Reduce Alcohol Misuse in University or College Students**. Cochrane Database of Systematic Reviews Issue 3. Art. No.: CD006748. DOI: 10.1002/14651858.CD006748.pub2.

The authors of this review aimed to determine whether social norms feedback reduces alcohol misuse in university students, based on the premise that drinking is influenced by (mis)perceptions of how their peers drink. The interventions that had been trialled included web/computer feedback, mailed feedback, individual face-to-face feedback and group face-to-face feedback. Of these, web and individual face-to-face feedback are both probably effective in reducing alcohol misuse, with web feedback having a significant impact across a broader set of outcomes (alcohol-related problems, peak blood alcohol content, drinking frequency, drinking quantity and binge drinking).

Gottfredson DC, Wilson DB. 2003. **Characteristics of Effective School-Based Substance Abuse Prevention**. Prevention Science 4(1): 27-38.

This review summarises results from 94 studies of school-based prevention programmes for alcohol or other drugs. The authors found that studies that were most effective were delivered at middle school and that were delivered by peer leaders. Targeting higher risk youths may be more effective than universal programmes, although the evidence supporting this was sparse. The length of the intervention was not strongly related to success.

Elder RW, Nichols JL, Shults RA, Sleet DA, Barrios LC, Compton R. 2005. **Effectiveness of School-Based Programs for Reducing Drinking and Driving and Riding with Drinking Drivers**. American Journal of Preventive Medicine 28(5s): 288-304.

This review examined the effectiveness of school-based programmes for reducing drinking and travelling with drinking drivers. The review examined three types of intervention: school-based instructional programmes, peer organisations and social norming campaigns. There was some evidence that school-based instructional programmes are effective for reducing travelling with drinking drivers. However, there was insufficient evidence to determine the effectiveness of any of the programmes for reducing drinking and driving.

Ditter S, Elder R, Shults R, Sleet D, Compton R, Nichols J. 2005. **Effectiveness of Designated Driver Programs for Reducing Alcohol-Impaired Driving: A Systematic Review**. American Journal of Preventive Medicine 28(5s): 280-7.

This systematic review was conducted to examine the effectiveness of designated driver programmes for reducing alcohol-impaired driving and alcohol-related crashes. The review examined both population-based campaigns and programmes conducted in drinking establishments to encourage designated sober drivers. Only one study of population-based designated driver promotion was identified. This showed there was an increase in the number of people using a designated driver, but no significant reduction in self-reported alcohol-impaired driving, or riding with an alcohol-impaired driver. Results from studies that intervened at drinking establishments were mixed, and there was insufficient evidence to draw reliable conclusions about this type of intervention.

Onofrio G, Degutis L. 2002. **Preventive Care in the Emergency Department: Screening and Brief Intervention for Alcohol Problems in the Emergency Department: Systematic Review**. Academic Emergency Medicine 9(6): 627-38.

This review was conducted to determine the strength of the recommendation for screening and brief intervention for alcohol-related problems. The primary outcome measure that was assessed was the prevention of mortality and morbidity secondary to alcohol-related illnesses/injuries. The secondary outcome measures included reduced consumption of alcohol, a decrease in social consequences, and increased referrals for follow-up and/or treatment. A number of articles were reviewed, with ages ranging from 12 to 70 years. A positive effect was demonstrated in the majority of studies. The authors conclude that screening and brief intervention for alcohol-related problems in the emergency department should be incorporated into standard practice.

Bertholet N, Daeppen J-B, Wietlisbach V, Fleming M, Burnand B. 2005. **Reduction of Alcohol Consumption by Brief Alcohol Intervention in Primary Care**. Archives of Internal Medicine 165: 986-95.

The authors of this review evaluated the efficacy of brief alcohol interventions aimed at reducing long-term alcohol use and related harm. The included studies were conducted in individuals who were attending primary care facilities for non-alcohol related problems. Meta-analysis showed that brief interventions are effective in reducing alcohol consumption at six and 12 months.

Fiellin DA, Reid C, O'Connor PG. 2000. **Screening for Alcohol Problems in Primary Care: A Systematic Review**. Archives of Internal Medicine 160: 1977-89.

The aim of this review was to evaluate the accuracy of screening methods for alcohol problems in primary care settings. The studies reviewed used a variety of screening methods. The AUDIT (Alcohol Use Disorders Identification Test) was most effective in identifying subjects with at-risk, harmful or hazardous drinking, and the CAGE questionnaire was superior in detecting alcohol abuse and dependence. The authors conclude that there is evidence to support the use of formal screening measures over other clinical measures for the detection of alcohol problems in primary care.

Cook CCH. 2004. **Alcohol Misuse**. In The Protocol of Health Care Needs Assessment (1st series). URL: http://www.hcna.bham.ac.uk/chapters.shtml

This chapter outlines some strategies for the treatment of alcohol misuse. These include planning services that integrate different agencies, and at different levels of care, preferably with a community alcohol team; improving the use and training of staff in existing service settings; and undertaking most of the treatment for alcohol misuse in primary and generalist care, with specialist care being employed selectively.

Mulvihill C, Taylor L, Waller S with Naidoo B, Thom B. 2005. **Prevention and Reduction of Alcohol Misuse: Evidence Briefing**. URL: www.hda.nhs.uk/evidence

This briefing provides a synthesis of the evidence for various interventions (i) to reduce alcohol-impaired driving (ii) that can be delivered in healthcare settings and (iii) for children and young people. Of the interventions that can be delivered in healthcare settings, there was some evidence to suggest that the following are effective: brief interventions targeted to heavy drinkers and hazardous drinkers, brief interventions to reduce net weekly drinking, extended brief interventions for women, brief interventions in opportunistic settings, and self help materials. The authors found there is currently a lack of review-level evidence around the effectiveness of reducing alcohol misuse in young people.

Doggett C, Burrett SL, Osborn DA. 2005. **Home Visits During Pregnancy and After Birth for Women with an Alcohol or Drug Problem**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD004456. DOI:10.1002/14651858.CD004456.pub2.

This review aimed to determine the efficacy of home visiting during pregnancy and after delivery for women with an alcohol or drug problem. There was insufficient evidence to recommend the routine use of home visits to improve the health of the baby or mother. However, none of the included studies provided a significant component of antenatal home visiting, and there were large losses to follow up.

Stade BC, Bailey C, Dzendoletas D, Sgro M, Dowswell T, Bennett D. 2009. **Psychological and/or Educational Interventions for Reducing Alcohol Consumption in Pregnant Women and Women Planning Pregnancy**. Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD004228. DOI: 10.1002/14651858.CD004228.pub2.

This review aimed to determine the effectiveness of educational and psychological interventions (such as brief educational and supportive counselling sessions) to reduce alcohol consumption among pregnant women and those planning pregnancy. There were a limited number of studies able to be included in the review. However, there was some evidence that educational and psychological interventions may result in a reduction in alcohol consumption and increasing abstinence in pregnant women.

Tait RJ, Hulse GK. 2003. **A Systematic Review of the Effectiveness of Brief Interventions with Substance Using Adolescents by Type of Drug**. *Drug Alcohol Review* 22: 337-346.

The aim of this review was to evaluate the effectiveness of brief interventions in adolescents to reduce alcohol, tobacco or other drug use. There was a small but significant effect of brief interventions on alcohol consumption. However, even when the intervention did not change alcohol consumption, there was a reduction in alcohol-related harm.

Werch CE, Owen DM. 2002. **Iatrogenic Effects of Alcohol and Drug Prevention Programs**. Journal of Studies on Alcohol 63: 581-90.

This review was conducted to systematically analyse studies evaluating substance use prevention programmes in youth and young adults, to determine if iatrogenic effects have occurred, and if so, what types of harmful effects, and under what conditions these arose. The authors found that there was evidence of negative programme effects in several studies. These were likely to be due to poor programme implementation or theory error. The authors discuss common negative effects and ways to address these.

Foxcroft D, Ireland D, Lowe G, Breen R. 2002. **Primary Prevention for Alcohol Misuse in Young People**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD003024. DOI: 10.1002/14651858.CD003024.

This review aimed to identify effective psychosocial and educational interventions aimed at the primary prevention of alcohol misuse by young people (less than 25 years). There were mixed results, with one programme showing some benefit over the longer term (the Strengthening Families Programme). In addition, one study examining culturally focused skills training showed some benefit after three and a half years follow up.

Cuijpers P. 2002. **Peer-led and Adult-led School Drug Prevention: A Meta-analytic Comparison**. Journal of Drug Education 32(2): 107-119.

The authors of this review examined the relative effectiveness of peer-led and adult-led drug (tobacco, alcohol or marijuana) prevention programmes undertaken in schools. Results of the meta-analysis showed that peer-led programmes were, to some extent, more effective than adult-led interventions. However, the overall effectiveness of programmes appears to be determined by a range of factors, such as content, the number of sessions, use of booster sessions, age group, and interactions between students. This review had some methodological weaknesses, so these results should be interpreted with caution.

Other Related Articles and Reviews

National Institute for Health and Clinical Excellence. 2007. **Interventions in Schools to Prevent and Reduce Alcohol Use Among Children and Young People**. London: National Institute for Health and Clinical Excellence.

This document constitutes formal guidance from the National Institute for Health and Clinical Excellence on interventions in schools to prevent and reduce alcohol use among children and young people. The recommendations relate to school-base education and advice, with regard to the school curriculum, brief advice, referral to outside agencies, working with families, participation in community activities, and developing partnerships.

INDIVIDUAL AND WHĀNAU HEALTH AND WELLBEING

SAFETY AND FAMILY VIOLENCE

INJURIES ARISING FROM THE ASSAULT, NEGLECT OR MALTREATMENT OF CHILDREN

Introduction

Longitudinal studies suggest that 4-10% of New Zealand children experience physical abuse and 11-20% experience sexual abuse during childhood and that the long term consequences for these children are significant [99]. During the 1990s, New Zealand ranked 3rd highest amongst rich nations for its child maltreatment death rates [100], with 49 children <15 years dying as a result of maltreatment between 1996 and 2000. This situation does not appear to have improved over time, with mortality rates almost doubling during the late 1980s and changing very little since then [101]. Mortality represents the tip of the iceberg however, with the number of notifications to Child Youth and Family (CYF) for possible abuse or neglect increasing each year. In 2008, a total of 104,181 notifications were recorded by CYF and of these, 48,957 were deemed to require further action (see CYF section). This is of concern, as in addition to the physical effects, research has shown that survivors of childhood abuse often suffer long term psychological sequelae including depression, post-traumatic stress disorder, substance abuse, suicide / suicide attempts and high risk sexual behaviour [102].

The following section explores 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 Mortality Collection.

Data Source and Methods

Definition

1. *Hospitalisations for Injuries Arising From the Assault / Neglect / Maltreatment of Children Aged 0-14 Years*
2. *Deaths from Injuries Arising from the Assault / Neglect / Maltreatment of Children Aged 0-14 Years*

Data Source

1. *Hospital Admissions*

Numerator: National Minimum Dataset: Hospital admissions of children (0-14 years) with a primary diagnosis of injury (ICD9 800-995: ICD 10 S00-T79) and an external cause code of intentional injury (ICD-9 E960-968; ICD-10 X85-Y09) in any of the first 10 External Cause codes. As outlined in Appendix 4, in order to ensure comparability over time, all cases with an Emergency Department Specialty Code (M05-M08) on discharge were excluded

2. Mortality

Numerator: National Mortality Collection: Deaths in children (0-14 years) with a clinical code (cause of death) of Intentional Injury (ICD-9 E960-968; ICD-10 X85-Y09).
Denominator: NZ Census

Interpretation

The limitations of the National Minimum Dataset are discussed at length in Appendix 4. The reader is urged to review this Appendix before interpreting any trends based on hospital admission data.

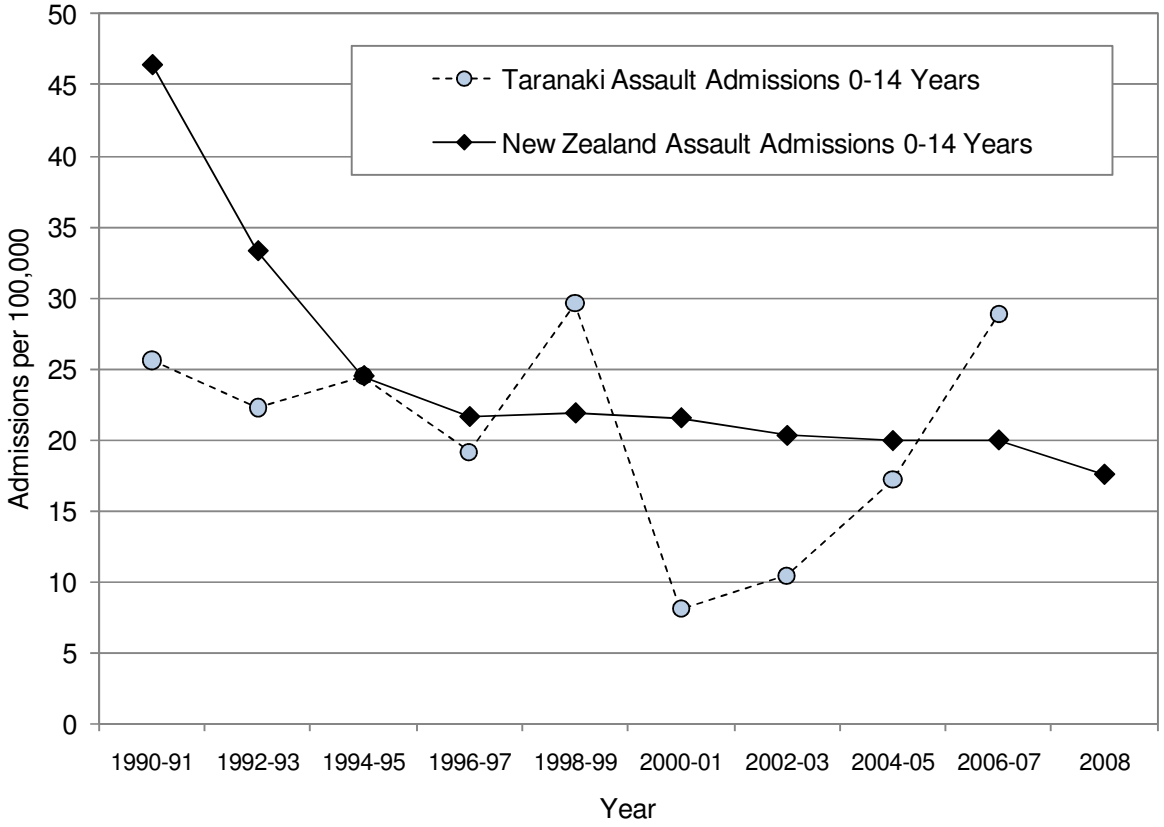
Indicator Category Admissions Proxy C; Mortality Ideal B

New Zealand and Taranaki Distribution and Trends

Trends in Hospital Admission: Taranaki vs. New Zealand

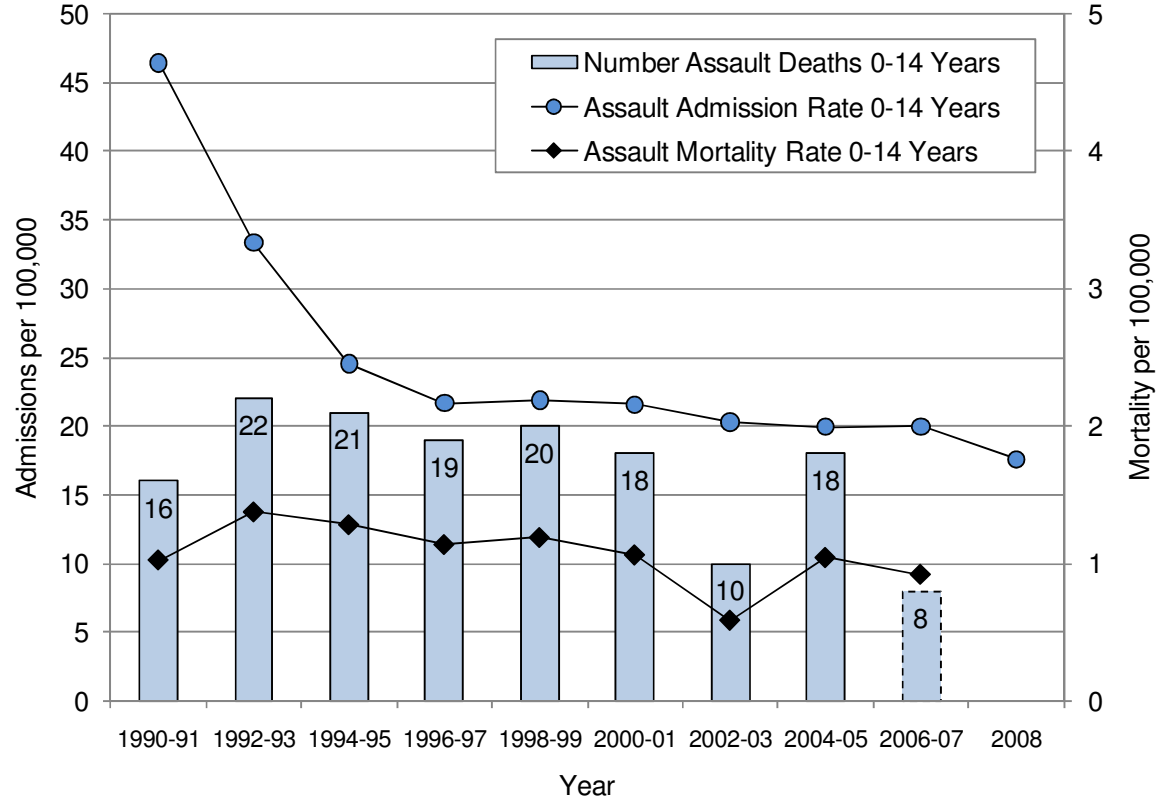
In Taranaki during 1990-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children fluctuated markedly, making precise interpretation of trends difficult (**Figure 93**).

Figure 93. Hospital Admissions due to Injuries Arising from the Assault, Neglect or Maltreatment of Children 0-14 Years, Taranaki vs. New Zealand 1990-2008



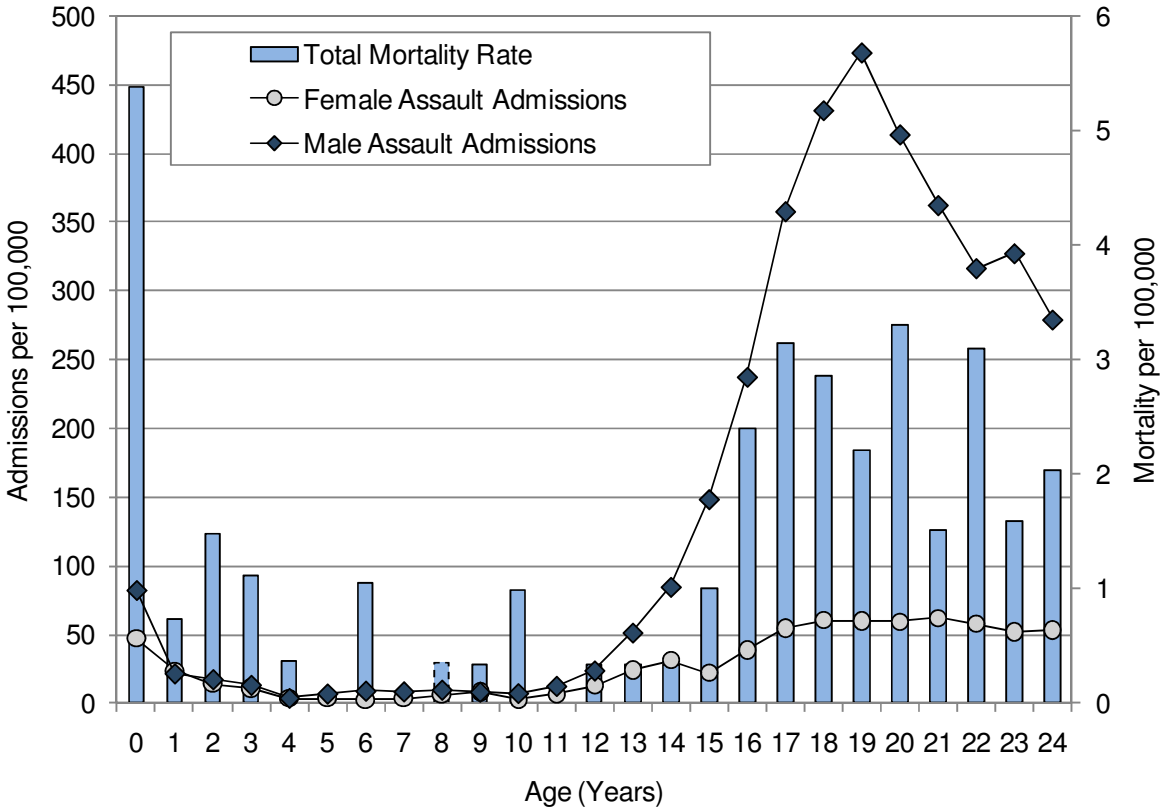
Source: Numerator-National Minimum Dataset; Denominator-Census

Figure 94. Hospital Admissions (1990-2008) and Deaths (1990-2006) due to Injuries Arising from the Assault, Neglect or Maltreatment of New Zealand Children 0-14 Years



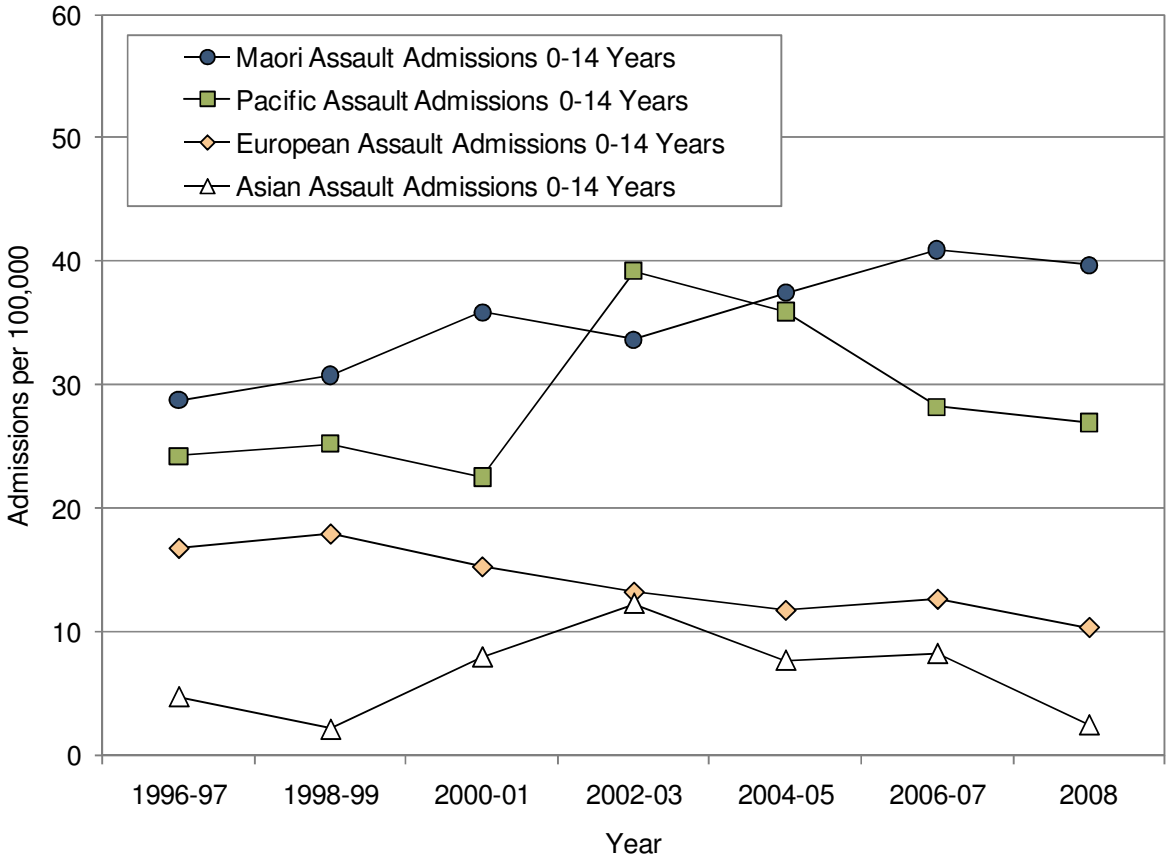
Source: Numerators-National Minimum Dataset and National Mortality Collection; Denominator Census; Numbers of Deaths for 1990-2005 are per 2 year period. Deaths for 2006 are for single year only.

Figure 95. Hospital Admissions (2004-2008) and Deaths (2002-2006) due to Injuries Arising from the Assault, Neglect or Maltreatment of New Zealand Children and Young People by Age and Gender



Source: Numerators-National Minimum Dataset and National Mortality Collection; Denominator Census

Figure 96. Hospital Admissions due to Injuries Arising from the Assault, Neglect or Maltreatment of Children 0-14 Years by Ethnicity, New Zealand 1996-2008



Source: Numerator-National Minimum Dataset; Denominator Census; Ethnicity is Level 1 Prioritised

Table 42. Risk Factors for Hospital Admissions due to Injuries Arising from the Assault, Neglect or Maltreatment in Children 0-14 Years, New Zealand 2004-2008

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	3.6	1.00		Decile 1-2	6.4	1.00	
Decile 2	9.3	2.63	1.47 - 4.69	Decile 3-4	10.3	1.62	1.16 - 2.27
Decile 3	8.4	2.37	1.31 - 4.29	Decile 5-6	15.6	2.45	1.78 - 3.35
Decile 4	12.2	3.44	1.96 - 6.04	Decile 7-8	24.1	3.79	2.81 - 5.10
Decile 5	13.6	3.82	2.18 - 6.67	Decile 9-10	36.8	5.77	4.36 - 7.64
Decile 6	17.6	4.96	2.88 - 8.53	Ethnicity			
Decile 7	18.9	5.33	3.10 - 9.14	Māori	39.3	3.32	2.85 - 3.87
Decile 8	29.1	8.18	4.86 - 13.78	Pacific	31.0	2.61	2.11 - 3.24
Decile 9	33.9	9.54	5.71 - 15.96	European	11.8	1.00	
Decile 10	39.2	11.02	6.63 - 18.31	Asian	6.8	0.57	0.38 - 0.87
Gender							
Female	13.7	1.00					
Male	25.0	1.83	1.59 - 2.11				

Source: Numerator-National Minimum Dataset; Denominator-Census; Rate per 100,000 per year; Ethnicity is Level 1 Prioritised; RR: Rate Ratios are compared to the European group and are unadjusted

Mortality: Taranaki and New Zealand

In New Zealand during 1990-2006, mortality from injuries arising from the assault, neglect or maltreatment of children remained relatively static, with deaths averaging 9 per year during this period (**Figure 94**). Similarly in Taranaki during 1990-2006, a total of 5 children died as the result of assault, neglect or maltreatment.

Distribution by Age and Gender: New Zealand

In New Zealand during 2004-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children exhibited a J-shaped distribution with age, with rates being higher for infants <1 year and those > 11 years of age. In contrast, mortality was highest for infants < 1 year. While the gender balance was relatively even during infancy and early childhood, admissions for males became more predominant as adolescence approached (**Figure 95**).

Distribution by Age, Gender, Ethnicity and NZ Deprivation Index Decile

In New Zealand during 2004-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were *significantly* higher for males, Māori and Pacific > European > Asian children, and those living in the most deprived areas (**Table 42**).

In New Zealand during 1996-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were consistently higher for Māori and Pacific > European > Asian children (**Figure 96**).

Nature of the Injury Sustained

During 2004-2008, the type of intentional injury leading to hospital admission varied with the age of the child, with those in the 0-4 year age bracket tending to be assigned an ICD-10 Y07 “Maltreatment” code (including mental cruelty, physical abuse, sexual abuse or torture), while older children (particularly males aged 13-14 years) were more likely to be assigned to ICD-10 Y04 “Assault by Bodily Force” (including unarmed brawl or fight). While it is tempting to speculate that this reflects a transition towards assaults occurring in non-family contexts as children approach adolescence, the ICD-10 5th digit (describing the relationship of the victim to the perpetrator) was most frequently 9 (unspecified person), making such hypotheses difficult to substantiate. As a result of this likely transition however, the tables below consider only pre-school (0-4 years) and primary school (5-12 years) age children, with information on older children (13+ years) being considered in the youth assault section which follows.

During 2004-2008, the most common types of injury sustained as the result of the assault, neglect or maltreatment of children aged 0-4 years were subdural haemorrhages and superficial scalp injuries, followed by fractures of the face and femur, and other injuries to the head and upper limbs. For children aged 5-12 years, head and upper limb injuries predominated, with fractures of the skull and facial bones being common (**Table 43**).

Table 43. Nature of Injury Arising from Assault, Neglect or Maltreatment in Hospitalised Children 0-12 Years by Age Group, New Zealand 2004-2008

Injury Type	Total Number 2004-2008	% of Age Group
Age 0-4 Years		
Traumatic Subdural Haemorrhage	84	24.9
Superficial Injury to Scalp	57	16.9
Fracture Skull / Facial Bones	19	5.6
Other Head Injuries	33	9.8
Upper Limb Injuries	26	7.7
Fractured Femur	11	3.3
Other Lower Limb Injuries	16	4.7
Maltreatment Unspecified	41	12.2
Other Injuries	50	14.8
Total	337	100.0
Age 5-12 Years		
Superficial Injury to Scalp	25	12.3
Fracture Skull / Facial Bones	21	10.3
Other Head Injuries	55	27.0
Upper Limb Injuries	38	18.6
Lower Limb Injuries	9	4.4
Maltreatment Unspecified	13	6.4
Other Injuries	43	21.1
Total	204	100.0

Source: National Minimum Dataset

Summary

In New Zealand during 2004-2008, hospital admissions for injuries sustained as the result of the assault, neglect or maltreatment of children exhibited a J-shaped distribution with age, with rates being highest for infants < 1 year, and those > 11 years of age. In contrast, mortality was highest for infants < 1 year. While the gender balance was relatively even during infancy and early childhood, hospital admissions for males became more predominant as adolescence approached. In addition, admissions were also *significantly* higher for males, Māori and Pacific > European > Asian children, and those in the most deprived areas.

In Taranaki during 1990-2008, hospital admissions for injuries arising from the assault, neglect or maltreatment of children fluctuated markedly, making precise interpretation of trends difficult. Despite this, during 1990-2006 a total of 5 Taranaki children died as the result of assault, neglect or maltreatment.

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 which consider child abuse and family violence, and a large number of international reviews have also explored this issue in detail. **Table 44** considers those publications which focus primarily on child abuse and neglect, while **Table 52** on Page 202 considers those publications which focus on family violence more broadly (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any strategy to reduce child abuse).

Table 44. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of the Assault, Neglect or Maltreatment of Children

Ministry of Health Policy Documents
Ministry of Health; Child, Youth and Family. **Recommended Referral Process for General Practitioners: Suspected Child Abuse and Neglect**. 2000. This document is a resource for General Practitioners to assist them in identifying and reporting abuse. It provides a number of body map diagrams, a form that can be used to notify the Child, Youth and Family National Call Centre, a description of CYF referral procedures, recommended procedures for Practices, and a summary of the relevant legislation.
Systematic and Other Reviews from the International Literature
Wade K, Cava M, Douglas C, Feldman L, Irving H, O'Brien MA, Sims-Jones N, Thomas H. 1999. **A Systematic Review of the Effectiveness of Peer / Professional 1:1 Interventions Targeted Towards Mothers (Parents) of 0-6 Year Old Children in Promoting Positive Maternal (Parental) and/or Child Health / Development Outcomes**. Hamilton: Effective Public Health Practice Project (EPHPP). This review sought to determine the effectiveness of peer/professional one-to-one interventions targeted towards mothers (parents) of infants/young children in promoting positive maternal and/or child health and development outcomes. The reviewers examined studies in which the peer/professional was the only intervener, as well studies in which the peer/professional intervention was included amongst multifaceted interventions. The reviewers found that one-to-one interventions can have a positive impact and child development and parent-child interaction. Interventions are more effective when provided in high intensity during the prenatal period, and when provided as part of a multifaceted intervention. There was no conclusive evidence of benefit for outcomes such as health care utilisation, child abuse and neglect, or maternal psychosocial health status. There were very few studies examining the long term impact of such interventions, therefore their long term efficacy has not yet been established.
MacMillan HL. 2000. **Preventive Health Care, 2000 Update: Prevention of Child Maltreatment**. Canadian Medical Association Journal 163(11): 1451-8. This article reviews the evidence for the effectiveness of screening and prevention programmes for preventing physical and sexual child abuse. The author found that there was no net benefit in screening for abuse, because of the high false-positive rates of screening tests and the consequent potential for mislabelling people as potential child abusers. There was good evidence to support home visitation programmes for disadvantaged families from the perinatal period through to infancy. This should target first time mothers with one or more of the following: age less than 19 years, single parent or low socioeconomic status. The most compelling evidence was for intensive home visitation programmes delivered by nurses, beginning prenatally and extending through until the child's second birthday. There was insufficient evidence to support the use of comprehensive health care programmes, parent education and support programmes, or a combination of home-based services for the prevention of child maltreatment. This does not preclude their use for other reasons. There was insufficient evidence to support the use of education programmes to prevent sexual abuse.
Roberts I, Kramer MS, Suissa S. 1996. **Does Home Visiting Prevent Childhood Injury? A Systematic Review of Randomised Controlled Trials**. British Medical Journal 312: 29-33. This review aimed to quantify the effectiveness of home visiting programmes in the prevention of unintentional childhood injury and child abuse. The reviewers concluded that home visiting programmes have the potential to significantly reduce the rates of childhood injury. The trials examining the prevention of child abuse did not show a consistent effect, but differential surveillance for child abuse between visited and control groups was a weakness in many trials, limiting the conclusions that could be drawn.
Dinh-Zarr T, Goss C, Heitman E, Roberts I, DiGuiseppi C. 2004. **Interventions for Preventing Injuries in Problem Drinkers**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD001857. DOI: 10.1002/14651858.CD001857.pub2. The authors of this review assessed the effect of interventions for problem drinking on subsequent unintentional and intentional injury risk. The most common intervention evaluated was brief counselling in the clinical setting. Due to the heterogeneity of the trials included, the data were not pooled for meta-analysis. However, it appeared as though interventions did reduce domestic violence, assaults and child abuse.

Barlow J, Johnston I, Kendrick D, Polnay L, Stewart-Brown S. 2006. **Individual and Group-Based Parenting Programmes for the Treatment of Physical Child Abuse and Neglect**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD005463. DOI: 10.1002/14651858.CD005463.pub2.

This review examined the efficacy of one-to-one or group-based parenting programmes to treat physically abusive or neglectful parenting. Only a small number of studies were able to be included in the review, and these provided insufficient evidence to support the use of parenting programmes to treat physical abuse or neglect. There was some evidence to suggest that some parenting programmes may be effective in improving some outcomes that are associated with physically abusive parenting.

Skowron E, Reinemann DHS. 2005. **Effectiveness of Psychological Interventions for Child Maltreatment: A Meta-Analysis**. Psychotherapy: Theory, Research, Practice, Training 42(1): 52-71.

This review examined the effectiveness of psychological treatments for child maltreatment (physical abuse, child sexual abuse, physical neglect and general maltreatment) for children and their families. The authors found that on average, treated participants were better off than those in control groups. They concluded that treatments for child maltreatment may be effective and may assist maltreated children and their families to cope and to facilitate the development of healthy, productive lives.

Allin H, Wathen CN, MacMillan H. 2005. **Treatment of Child Neglect: A Systematic Review**. Canadian Journal of Psychiatry 50(8): 497-504.

The objective of this review was to evaluate the effectiveness of child neglect treatment programmes, including those focused on victims of childhood neglect and (or) their caregiver. The number of high quality studies in this area was small, limiting the conclusions that can be drawn. However, there was some evidence that specific types of play therapy and a therapeutic day treatment programme were beneficial for children. In addition, parents and children in families where neglect had occurred showed improvement with multisystemic therapy.

Louwers ECFM, Affourtit MJ, Moll HA, de Koning HJ, Korfage IJ. 2009. **Screening for Child Abuse at Emergency Departments: A Systematic Review**. Archives of Disease in Childhood doi:10.1136/adc.2008.151654

The objective of this review was to identify effective interventions used in emergency departments that significantly increase the detection rate of confirmed cases of child abuse. Only four studies were able to be included in the review. None of the studies showed a significant increase in the detection of confirmed abuse in children. However, all of the studies reported an increase in the rate of suspected cases, as well as improved documentation in patient files, and a higher level of awareness of child abuse among ED staff. One risk associated with screening is an increase in the rate of incorrect suspicions without an increase in detection of confirmed cases, which can be harmful for families.

Winokur M, Holtan A, Valentine D. 2009. **Kinship Care for the Safety, Permanency, and Wellbeing of Children Removed from the Home for Maltreatment**. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD006546. DOI: 10.1002/14651858.CD006546.pub2.

It is known that children who are removed from their homes because of maltreatment typically display more behavioural, educational, and psychological problems than their peers. It is unclear whether this is a result of the placement itself, the maltreatment that precipitated the placement, or inadequacies in the child welfare system. This review evaluated the effect of kinship care placement on the safety, permanency and well-being of such children. The studies included in the review were of poor quality overall, limiting the results that can be drawn. However, it appears as though children placed in kinship care experienced better behavioural development, mental health functioning and placement stability than children in non-kinship care. Children in kinship care were also more likely to adopted, and less likely to utilise mental health services than children in non-kinship care.

Zwi K, Woolfenden S, Wheeler DM, O'Brien T, Tait P, Williams KJ. 2007. **School-based Education Programmes for the Prevention of Child Sexual Abuse**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD004380. DOI: 10.1002/14651858.CD004380.pub2.

This review assessed whether school-based programmes are effective in improving knowledge about sexual abuse and self-protective behaviours; if participation results in an increase in disclosure of abuse and/or produces harm; the effect of programme type or setting on knowledge retention. Studies reviewed showed significant improvements in knowledge measures and protective behaviours. However, several studies reported harms, such as increased anxiety in children.

Davis MK, Gidycz CA. 2000. **Child Sexual Abuse Prevention Programs: A Meta-Analysis**. Journal of Clinical Psychology 29(2): 257-65.

This article is a meta-analytic evaluation of the effectiveness of school-based child sexual abuse prevention programmes. The authors found that on average, children who participated in prevention programmes improved in terms of prevention-related knowledge and skills. None of the studies reviewed examined abuse prevalence, so it cannot be assumed that successful programmes made children at lower risk for sexual abuse. Programmes that allowed physically active participation and that used behavioural skills training were more effective than those that did not.

Rispens J, Aleman A, Goudena PP. 1997. **Prevention of Child Sexual Abuse Victimization: A Meta-Analysis of School Programs**. Child Abuse and Neglect 21(10): 975-87.

This article aimed to provide data about the effects of child sexual abuse prevention programmes. The authors concluded that victimisation prevention programmes can be successful in teaching children sexual abuse concepts and self-protection skills. Study variables such as duration and content of the programmes, and child characteristics such as age and socio-economic status were important moderators of effect size. These conclusions should be interpreted with caution, given the heterogeneity of the studies in the review.

Macdonald G, Higgins JPT, Ramchandani P. 2006. **Cognitive-Behavioural Interventions for Children who Have Been Sexually Abused**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD001930. DOI: 10.1002/14651858.CD001930.pub2.

The objective of this review was to examine the efficacy of cognitive-behavioural approaches (CBT) in addressing the immediate and longer-term sequelae on children who have been sexually abused. The review looked at interventions provided to children and adolescents up to age 18 years. The data suggest that CBT may have a beneficial impact on the sequelae of child abuse, but most of the results were not statistically significant.

Hetzel-Riggin MD, Brausch AM, Montgomery BS. 2007. **A Meta-Analytic Investigation of Therapy Modality Outcomes for Sexually Abused Children and Adolescents: An Exploratory Study**. Child Abuse and Neglect 31(2): 125-41.

The purpose of this study was to investigate the independent effects of different treatment elements on a number of secondary problems related to childhood and adolescent sexual abuse. The results showed that psychological treatment after childhood or adolescent sexual abuse tended to result in better outcomes than no treatment. Play therapy appeared to be the most effective treatment for social functioning; cognitive-behavioural, abuse specific, and support therapy were most effective for behavioural problems. Cognitive-behavioural, family and individual therapy seemed to be the most effective for low self-concept. The authors concluded that the choice of therapy modality should be determined based on the child's main presenting secondary problem.

Other Related Articles and Reviews

Centre for Social Research and Evaluation. 2008. **Preventing Physical and Psychological Maltreatment of Children in Families. Review of Research for the Campaign for Action on Families**. Centre for Social Research and Evaluation: Wellington. http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/literature-reviews/preventing-maltreatment/index.html

This report is a literature review of research on preventing physical and psychological maltreatment of children in families. It identifies the risk factors for child abuse and neglect and also considers what can help prevent child abuse. A particular focus of the research was determining the motivations that enabled adults in the family and the community to intervene when they suspect child abuse.

Minister for ACC. 2003. **New Zealand Injury Prevention Strategy**. Wellington: Accident Compensation Corporation. URL: www.nzips.govt.nz

This strategy aims to improve the country's injury prevention performance. It provides a strategic framework for injury prevention activity in New Zealand, and outlines the government's commitment to working with organisations and groups in the wider community to improve the country's injury prevention performance, whether unintentional or intentional. The strategy's objectives include to design and develop safe environments, systems and products; advancing injury prevention knowledge and information; developing and implementing effective injury prevention interventions; ensuring appropriate resourcing for injury prevention; and the development, implementation and monitoring of national injury prevention strategies for priority areas. The framework provides a guide for action by a range of government agencies, local government, non-governmental organisations, communities and individuals.

Task Force on Community Preventive Services. 2005. **Early Childhood Home Visitation to Prevent Violence**. Guide to Community Preventive Services. ULR: www.thecommunityguide.org/violence/home/homevisitation.html.

This Guide recommends early childhood home visitation to reduce child maltreatment in high risk families. The authors note that some visits must occur during the first two years of a child's life, but they can be initiated in pregnancy.

INJURIES ARISING FROM ASSAULT IN YOUNG PEOPLE

Introduction

Data from the Christchurch Longitudinal Health and Development study noted that 23% of males and 14% of females reported an assault between the ages of 16 and 18 years. While the gender specific rates differed, the study noted that the risk factors for assault were similar for males and females. These included childhood measures of behavioural disturbance and parental dysfunction, as well as adolescent participation in violent offending and the misuse of alcohol [103]. A more recent review suggested that hospital admissions for assault in young people aged 15-24 years were also higher for Māori and Pacific young people, males and those living in more deprived areas [2].

The following section uses the National Minimum Dataset and the National Mortality Collection to explore hospital admissions and mortality from injuries arising from the assault of young people aged 15-24 years.

Data Source and Methods

Definition

1. *Hospital Admissions for Injuries Sustained as the Result Assault in Young People Aged 15-24 Years*
2. *Deaths from Injuries Sustained as the Result of an Assault in Young People Aged 15-24 Years*

Data Source

1. *Hospital Admissions*

Numerator: National Minimum Dataset: Hospital admissions of young people (15-24 years) with a primary diagnosis of injury (ICD9 800-995: ICD 10 S00-T79) and an external cause code of intentional injury (ICD-9 E960-968; ICD-10 X85-Y09) in any of the first 10 External Cause codes. As outlined in Appendix 4, in order to ensure comparability over time, all cases with an Emergency Department Specialty Code (M05-M08) on discharge were excluded

2. Mortality

Numerator: National Mortality Collection: Deaths in young people (15-24 years) with a clinical code (cause of death) of Intentional Injury (ICD-9 E960-968; ICD-10 X85-Y09).
Denominator: NZ Census

Interpretation

The limitations of the National Minimum Dataset are discussed at length in Appendix 4. The reader is urged to review this Appendix before interpreting any trends based on hospital admission data.

Indicator Category Admissions Proxy C; Mortality Ideal B

New Zealand and Taranaki Distribution and Trends

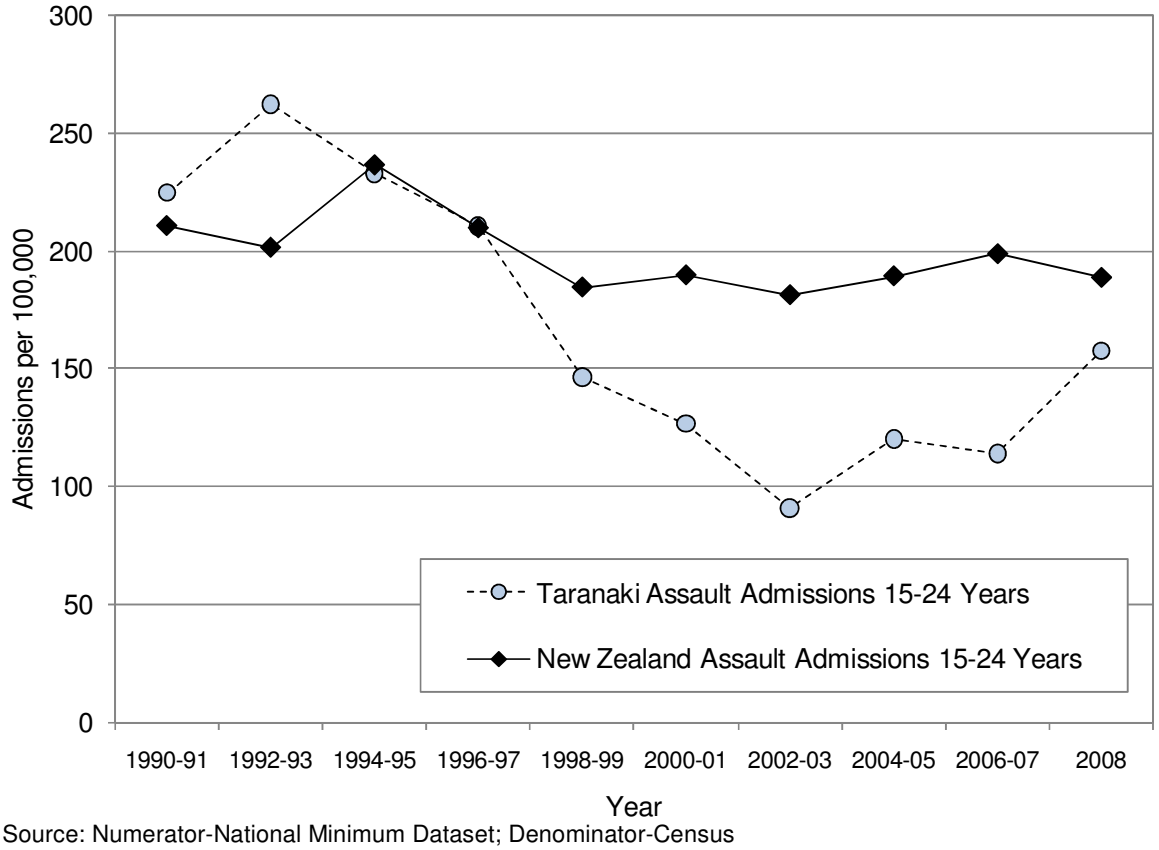
Hospital Admissions: New Zealand and Taranaki

In Taranaki, hospital admissions for injuries sustained as the result of an assault in young people decreased during the 1990s, reached a nadir in 2002-03 and then increased again. Throughout the 2000s, youth assault admissions in Taranaki were lower than the New Zealand average (**Figure 97**).

Mortality: New Zealand and Taranaki

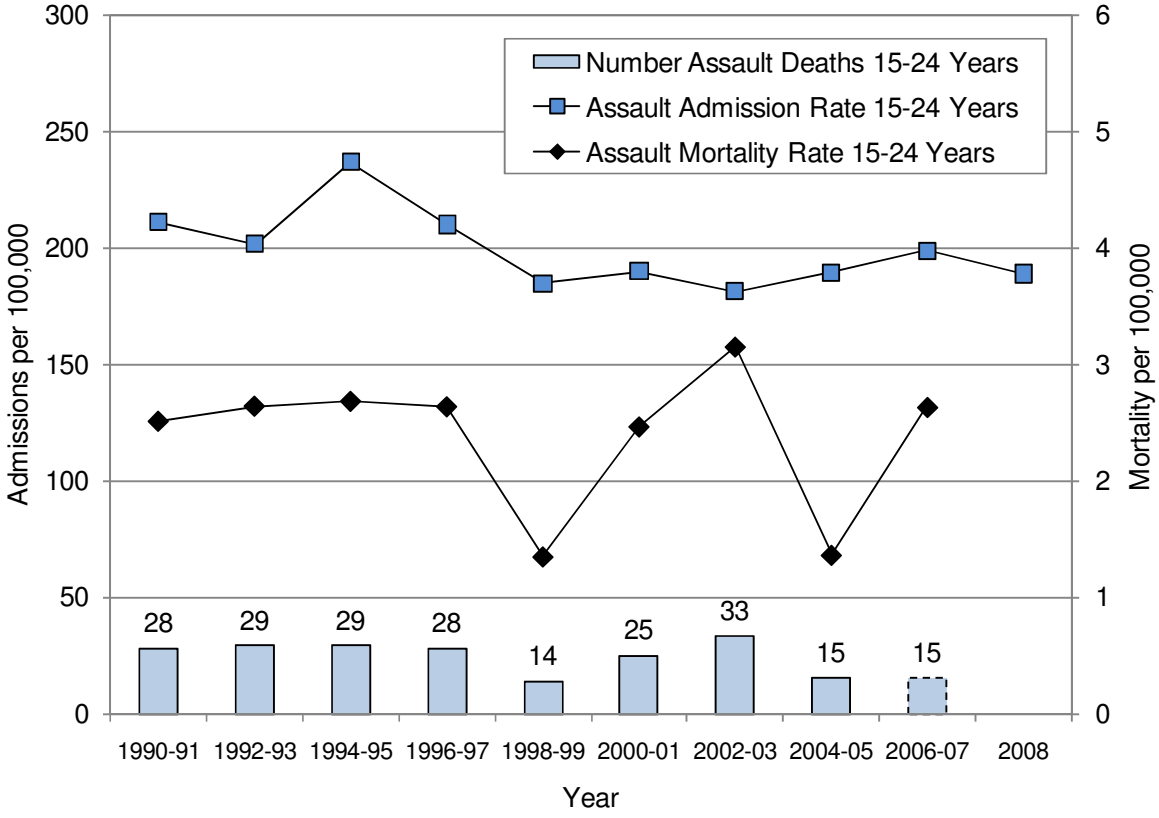
In New Zealand during 1996-2006, assault mortality in young people fluctuated markedly. During 1990-2006 however, on average 13 young people each year died as the result of an assault (**Figure 98**). Similarly, in Taranaki during 1990-2006, a total of 3 young people died as the result of an assault.

Figure 97. Hospital Admissions due to Injuries Arising from Assault in Young People Aged 15-24 Years, Taranaki vs. New Zealand 1990-2008



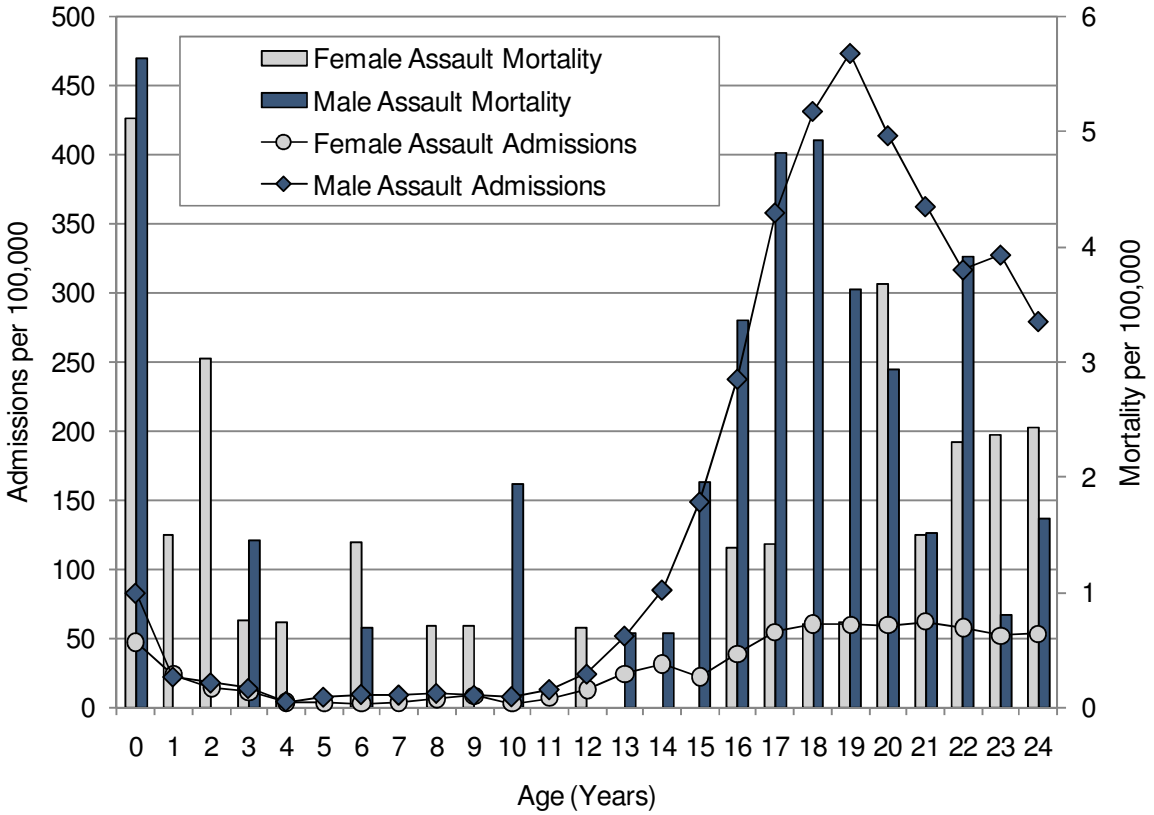
Source: Numerator-National Minimum Dataset; Denominator-Census

Figure 98. Hospital Admissions (1990-2008) and Deaths (1990-2006) due to Injuries Arising from Assault in New Zealand Young People Aged 15-24 Years



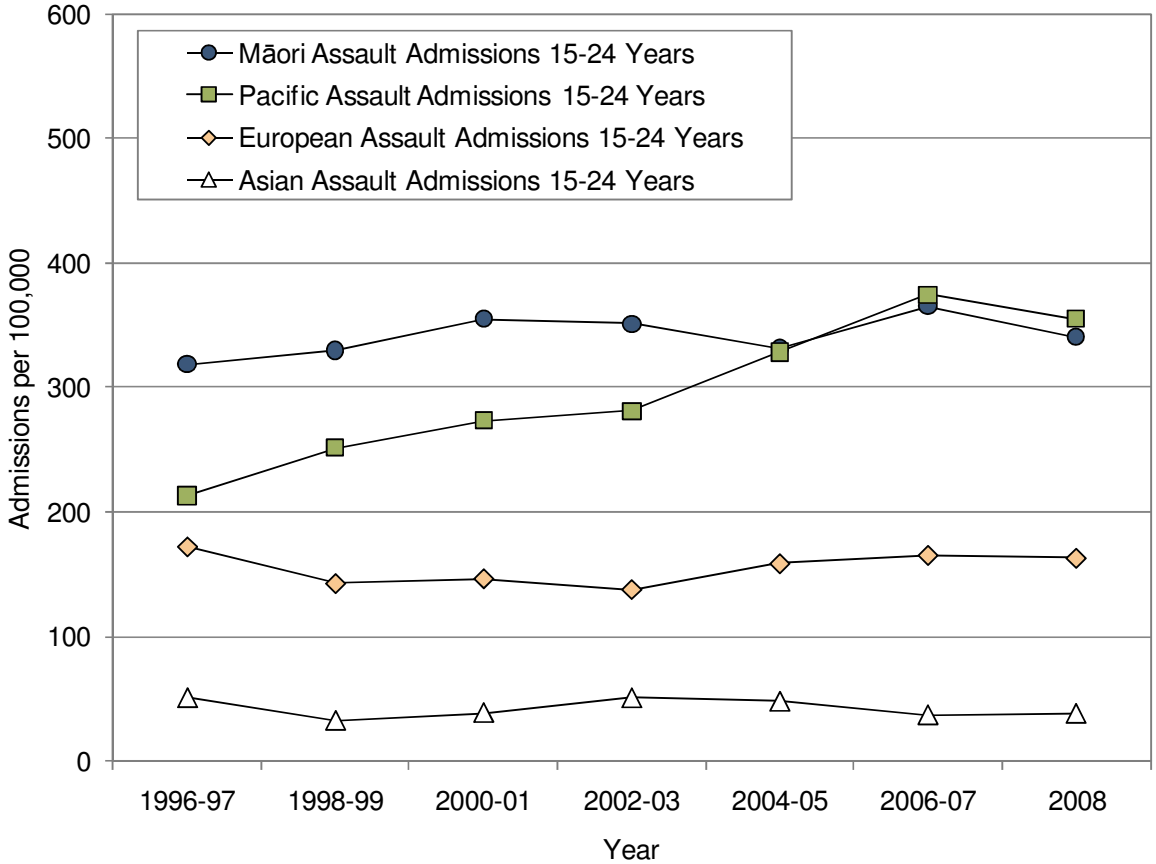
Source: Numerators-National Minimum Dataset and National Mortality Collection; Denominator Census; Numbers of Deaths for 1990-2005 are per 2 year period. Deaths for 2006 are for single year only.

Figure 99. Hospital Admissions (2004-2008) and Deaths (2002-2006) due to Injuries Arising from Assault in New Zealand Children and Young People by Age and Gender



Source: Numerators-National Minimum Dataset and Mortality Collection; Denominator-Census

Figure 100. Hospital Admissions due to Injuries Arising from Assault in Young People Aged 15-24 Years by Ethnicity, New Zealand 1996-2008



Source: Numerator-National Minimum Dataset; Denominator-Census; Ethnicity is Level 1 Prioritised

Table 45. Risk Factors for Hospital Admission due to Injuries Arising from Assault in Young People Aged 15-24 Years, New Zealand 2004-2008

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	96.9	1.00		Decile 1-2	106.7	1.00	
Decile 2	116.3	1.20	1.01 - 1.43	Decile 3-4	126.1	1.18	1.05 - 1.33
Decile 3	121.4	1.25	1.06 - 1.49	Decile 5-6	147.5	1.38	1.24 - 1.54
Decile 4	130.8	1.35	1.14 - 1.60	Decile 7-8	209.8	1.97	1.77 - 2.18
Decile 5	133.2	1.37	1.16 - 1.62	Decile 9-10	309.9	2.90	2.64 - 3.20
Decile 6	160.8	1.66	1.42 - 1.94	Ethnicity			
Decile 7	174.6	1.80	1.54 - 2.11	Māori	346.9	2.13	2.01 - 2.27
Decile 8	243.2	2.51	2.17 - 2.91	Pacific	352.8	2.17	2.00 - 2.36
Decile 9	280.3	2.89	2.51 - 3.34	European	162.6	1.00	
Decile 10	340.1	3.51	3.05 - 4.04	Asian	41.5	0.26	0.22 - 0.30
Gender							
Female	51.6	1.00					
Male	332.4	6.44	5.96 - 6.96				

Source: Numerator-National Minimum Dataset; Denominator-Census; Rate per 100,000 per year; Ethnicity is Level 1 Prioritised; RR: Rate Ratios are compared to the European group and are unadjusted

Age and Gender Differences

In New Zealand during 2004-2008, hospital admissions for injuries arising from an assault in young men increased with age, reached a peak in the mid-late teens and then declined. While assault admissions for young women also increased during the teenage years, rates were lower than for young men at all ages from 12-24 years. Assault mortality during 2002-2006 was also higher for young men during their teenage years, although during the early twenties, gender differences in assault mortality were less marked (**Figure 99**).

Gender, Ethnic and Socioeconomic Differences

In New Zealand during 2004-2008, hospital admissions for injuries arising from an assault were *significantly* higher for males, Māori and Pacific > European > Asian young people and those living in more deprived areas (**Table 45**).

Nature of the Injury Sustained

During 2004-2008, the most common types of injury sustained as the result of an assault in young people aged 13-18 and 19-24 years were head injuries, including fractures of the jaw, nose and facial bones; eye injuries, and concussion. Upper limb (including hand and wrist) injuries were also common (**Table 46**).

Summary

In New Zealand during 2004-2008, hospital admissions for injuries arising from an assault in young men increased with age, reached a peak in the mid-late teens and then declined. While admissions for young women also increased during their teenage years, rates were lower than for young men at all ages from 12-24 years. Admissions were also higher for Māori and Pacific > European > Asian young people and those in more deprived areas. Assault mortality during 2002-2006 was higher for young men during their teens, although during the early twenties, gender differences in mortality were less marked.

In Taranaki, hospital admissions for injuries sustained as the result of an assault in young people decreased during the 1990s, reached a nadir in 2002-03 and then increased again. Throughout the 2000s, youth assault admissions in Taranaki were lower than the New Zealand average. In addition, during 1990-2006 a total of 3 Taranaki young people died as the result of an assault.

Table 46. Nature of Injury Arising from Assault in Hospitalised Young People Aged 13-24 Years by Age Group, New Zealand 2004-2008

Injury Type	Total Number 2004-2008	% of Age Group
Age 13-18 Years		
Fracture Lower Jaw	434	18.3
Fracture Nose	251	10.6
Concussion	172	7.3
Fracture Malar and Maxillary Bones	106	4.5
Fracture Orbital Floor	76	3.2
Other Fracture Skull and Facial Bones	70	3.0
Superficial Injury of Scalp	69	2.9
Injury of Eye and Orbit	49	2.1
Other Intracranial Injury	89	3.8
Other Head Injury	251	10.6
Fracture Wrist and Hand	178	7.5
Open Wound Wrist and Hand	88	3.7
Other Upper Limb Injuries	175	7.4
Lower Limb Injuries	60	2.5
Other Injuries	300	12.7
Total	2,368	100.0
Age 19-24 Years		
Fracture Lower Jaw	750	21.8
Concussion	206	6.0
Fracture Malar and Maxillary Bones	200	5.8
Fracture Nose	189	5.5
Fracture Orbital Floor	129	3.7
Superficial Injury of Scalp	85	2.5
Other Intracranial Injury	145	4.2
Other Head Injury	540	15.7
Fracture Wrist and Hand	254	7.4
Open Wound Wrist and Hand	142	4.1
Other Upper Limb Injuries	274	7.9
Lower Limb Injuries	115	3.3
Other Injuries	418	12.1
Total	3,447	100.0

Source: National Minimum Dataset

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Assault in Young People

In New Zealand, there is no single strategy which focuses on the prevention of assault in young people, and thus any local strategies developed will need to incorporate evidence from a variety of sources. **Table 47** provides an overview of a range of evidence based reviews which may be useful in this context. In addition, **Table 44** on Page 184 considers publications which focus on assaults occurring in the context child abuse, while **Table 52** on Page 202 considers publications which focus on family violence more broadly. (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and thus should be seen as reflecting topics for which higher quality evidence (e.g. systematic reviews) was available, rather than as being indicative of the overall balance of interventions required in any youth assault prevention strategy)

Table 47. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Assault in Young People

Systematic and Other Reviews from the International Literature
Hahn R, 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 Supplement): S114-29.
The aim of this review was to examine the effectiveness of universal school-based interventions in preventing aggressive and violent behaviour in pre-school and school aged children. The primary outcomes assessed in the review were violence by youths and victimisation of youths. The median overall effect showed there was a reduction in violence-related outcomes for universal school-based programmes at school levels examined, from pre-kindergarten through to high school. There were some methodological limitations in the way this review was conducted, so these conclusions should be interpreted with caution.
Mytton JA, et al. 2006. **School-Based Secondary Prevention Programmes for Preventing Violence**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD004606. DOI: 10.1002/14651858.CD004606.pub2.
This review examined the effectiveness of school-based violence prevention programmes, given that early aggressive behaviour is a risk factor for later violence and criminal behaviour. None of the 56 trials included in the review reported on violent injuries. However, aggressive behaviour was significantly reduced in the intervention groups immediately after the intervention, and at 12 months in the seven studies that reported on 12 month outcomes. The authors concluded that school-based programmes appear to produce improvements in behaviour above what would be expected by chance.
Dinh-Zarr T et al. 2004. **Interventions for Preventing Injuries in Problem Drinkers**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD001857. DOI: 10.1002/14651858.CD001857.pub2.
The authors of this review assessed the effect of interventions for problem drinking on subsequent unintentional and intentional injury risk. The most common intervention evaluated was brief counselling in the clinical setting. Due to the heterogeneity of the trials included, the data were not pooled for meta-analysis. However, it appeared as though interventions did reduce domestic violence, assaults and child abuse.
Other Related Articles and Reviews
Minister for ACC. 2003. **New Zealand Injury Prevention Strategy**. Wellington: Accident Compensation Corporation. URL: www.nzips.govt.nz
This strategy provides a strategic framework for injury prevention activity in New Zealand, and outlines the government's commitment to working with organisations and groups in the wider community to improve the country's injury prevention performance (unintentional or intentional). The strategy's objectives include designing and developing safe environments, systems and products; advancing injury prevention knowledge and information; developing and implementing effective injury prevention interventions; ensuring appropriate resourcing for injury prevention; and the development, implementation and monitoring of national injury prevention strategies for priority areas. The framework provides a guide for action by government agencies, local government, non-governmental organisations, communities and individuals.
Guide to Community Preventive Services. 2007. **School-Based Programs to Reduce Violence**. URL: www.thecommunityguide.org/violence/schoolbasedprograms.html.
In summarising the results from a systematic review, the Task Force on Community Preventive Services recommended the use of universal, school-based programmes to prevent or reduce violent behaviour.
Guide to Community Preventive Services. 2005. **Therapeutic Foster Care to Reduce Violence**. URL: www.thecommunityguide.org/violence/reduceviolence.html.
The Task Force on Community Preventive Services undertook a review of therapeutic foster care for chronically delinquent youths, and for those with severe emotional disturbance. The Task Force recommends the use of therapeutic foster care for adolescents aged 12-18 years with a history of chronic delinquency, to prevent violence among this population. There was insufficient evidence to determine its efficacy in preventing violence in children with severe emotional disturbance.

CHILD YOUTH AND FAMILY NOTIFICATIONS

Introduction

During the 1990s New Zealand ranked 3rd highest amongst rich nations for its child maltreatment death rates. During 1996-2000, 49 children <15 years died as a result of maltreatment, with the highest rates being seen in those <5 years of age [101]. In New Zealand, Child Youth and Family (CYF) hold the statutory responsibility for protecting children from recurrent abuse and receive notifications from a variety of sources including the police, the education and health sectors, families / Whānau and the general public. The appropriate handling of these notifications is crucial as failing to respond to a legitimate concern may, in the worst case scenario, lead to an avoidable death, while over-reacting to a non-substantiated concern may result in significant trauma for a child's Whānau [104].

Since 2001, notifications recorded by CYF have doubled and while it is often assumed that this reflects an increase in the underlying rate of child abuse, recent research would suggest that changes in the behaviour of the child protection system have also played a significant role [104]. In understanding these changes, knowledge of the current child protection referral process is crucial, as during 2004 it was estimated that of the 1 million phone calls and faxes to CYF, only 140,000 (14%) were forwarded to intake social workers for further review. Of these, only ≈35,000 resulted in a formal notification being lodged and as many notifications were for >1 child, this resulted in a total of 63,000 client notifications for 2004. At each point in this pathway, the notifier, telephone operator and intake social worker had to make a decision 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 wider community for the consequences of child abuse. That increases in CYF notifications in recent years have resulted, at least in part, from changes within the system itself is suggested by a number of observations including [104]:

- Correlations between high profile media events and spikes in notifications
- A 300% rise in fax concerns following the introduction of afterhours fax lodgement
- An increase in the average number of siblings per notification
- Exponential growth in Police Family Violence (POL400) referrals as a result of new processes and behaviours
- A sudden surge in demand relating to the roll out of a Call Centre

While to a certain extent, the increase in notifications has been accompanied by a decline in the percentage requiring investigation (86% required further investigation in 2000, as compared to 79% in 2005), recent evidence suggests that only 20% of avoidable child deaths in New Zealand are known to CYF [104]. In addition, while the new Police referral system (which refers children as a result of family violence (POL400) attendances) appears to be uncovering softer concerns, the uptake of the system is variable across the country and in many cases the system has served to identify new concerns of a similar level of severity to previous notifications [104]. As a consequence, while a large proportion of the increase in CYF notifications in recent years may have been due to changes within the system itself [104], it is likely that many of the victims of child abuse who present to health care settings in New Zealand each year remain undetected and that further effort is required to ensure that the health and safety needs of these children are met [105]. In this context, the Family Violence Intervention Guidelines recommend taking a thorough history for child abuse from high risk groups, the provision of emotional support for victims and the following of risk assessment, safety planning and referral pathways in clinical practice [105].

The following section reviews the number of notifications to Child Youth and Family Offices in the Taranaki Region during 2004-2008.

Data Source and Methods

Definition

1. *Number of Notifications Regarding Children and Young People Recorded by Child, Youth and Family (CYF)*
2. Outcome of Assessments for Children and Young People Notified to Child Youth and Family (CYF) Offices

Data Source

Numerator: Notifications recorded by CYF
Denominator: Not applicable (see notes below)

Indicator Category Proxy C

Notes on Interpretation

The number of notifications and further assessments required does not represent the number of distinct clients, as some clients had multiple notifications and assessments during the year. Similarly, the total number of assessment findings does not represent the number of client investigations, as some clients had multiple investigation records during the year. In addition, as some clients have more than one type of finding during an investigation, they may appear across several categories depending on the type of finding. Finally the number of assessments in a year does not directly relate to the number of notifications or further assessments, as there is a time lag between a further assessment being required and the investigation 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.

New Zealand and Taranaki Distribution and Trends

Table 48. Number of Notifications Recorded by Child Youth and Family Offices in the Taranaki Region vs. New Zealand 2004-2008

Year	Notifications	No. Requiring Further Action	% Requiring Further Action	Notifications	No. Requiring Further Action	% Requiring Further Action
	Taranaki			New Zealand		
2004	1,680	1,130	67.3	48,465	40,720	84.0
2005	1,739	1,050	60.4	57,454	46,463	80.9
2006	1,649	667	40.4	69,948	47,407	67.8
2007	1,604	480	29.9	83,017	46,170	55.6
2008	2,320	933	40.2	104,181	48,957	47.0

Source: Child Youth and Family

Notifications and Numbers Requiring Further Investigation

In the Taranaki region during 2008, a total of 2,320 notifications were recorded by CYF Offices, with 40.2% of these being thought to require further investigation. While these figures reflect an increase in notifications since 2004, when 1,680 notifications were recorded, the proportion requiring further investigation declined (67.3% required further investigation in 2004). Similarly, the number of notifications requiring further investigation declined, from 1,130 in 2004 to 933 in 2008 (**Table 48**). In interpreting these figures, it must 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.

Assessment Findings for Cases Requiring Further Investigation

Of those notifications which were investigated further during 2004-2008, a large proportion resulted in no abuse being found. Where abuse was found however, physical and emotional abuse, neglect and behavioural / relationship difficulties were prominent (**Table 49**). 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).

Table 49. Outcome of Assessment for Children Notified to Child Youth and Family Offices in the Taranaki Region vs. New Zealand 2004-2008

Year	Emotional Abuse	Physical Abuse	Sexual Abuse	Neglect	Behavioural / Relationship Difficulties	Self Harm / Suicidal	Abuse Not Found
	Taranaki						
2004	121	36	29	102	132	<5	585
2005	95	38	23	64	133	<5	589
2006	55	29	14	63	70	<5	415
2007	62	28	7	40	51	<5	129
2008	97	38	10	75	45	<5	366
New Zealand							
2004	3,556	2,182	1,378	3,538	4,036	175	20,550
2005	5,376	2,261	1,251	4,186	4,446	153	23,872
2006	6,956	2,332	1,266	4,227	4,601	158	25,633
2007	9,293	2,256	1,121	4,602	4,400	134	21,285
2008	9,337	2,535	1,066	4,469	4,059	108	21,476

Source: Child Youth and Family

Summary

In New Zealand, the agency with the statutory responsibility for protecting children from recurrent abuse is Child Youth and Family (CYF), who receive notifications from a variety of sources including the police, the education and health sectors, families / Whānau and the general public. Since 2001 notifications recorded by CYF have doubled, and while it is often assumed that this reflects an increase in the prevalence of child abuse, recent research suggests that changes in the behaviour of the child protection system itself may have also played a role.

In Taranaki during 2008, 2,320 notifications were recorded by CYF Offices, with 40.2% requiring further investigation. While this reflects an increase since 2004, when 1,680 notifications were recorded, the proportion requiring further investigation declined (67.3% required further investigation in 2004). Similarly, the number of notifications requiring further investigation declined, from 1,130 in 2004 to 933 in 2008. Of those notifications investigated further during 2004-2008, a large proportion resulted in no abuse being found. Nevertheless, recent evidence would suggest that only 20% of avoidable child deaths in New Zealand are known to CYF and it is likely that many of the victims of child abuse presenting to health care settings in New Zealand each year remain undetected. Further effort is thus required to ensure that the health and safety needs of these children are met.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of 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 44** on Page 184 considers those publications which focus primarily on child abuse and neglect, while **Table 52** on Page 202 considers those publications which focus on family violence more broadly.

FAMILY VIOLENCE

Introduction

Te Rito: The NZ Family Violence Prevention Strategy [106] 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.*"

Research has shown that witnessing family violence can have significant and long term impacts on children [107]. The Dunedin Longitudinal Study, in following a cohort of 980 children to 26 years noted that 24% reported violence or threats of violence directed from one parent to another and of these, 6% reported threats, 9% reported 1-4 incidents of physical violence and 10% reported ≥5 incidents. 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 [108]. Similarly, the Christchurch Longitudinal Study followed a cohort of 1,265 children to 18 years and noted that ~38% reported exposure to inter-parental violence, with violence varying from verbal assaults (35%) to more infrequent physical attacks (slap, hit or punch partner 6%). After adjusting for known confounders, exposure to inter-parental violence was associated with an increased risk of anxiety, conduct disorder and property crime (father initiated violence) and alcohol abuse / dependence (mother initiated violence) [109].

In terms of the determinants of family violence, the Christchurch Longitudinal Study noted that violence was initiated with equal frequency by mothers and fathers [109]. In contrast, the Dunedin Longitudinal Study noted that 55% of violence was by fathers only, 28% was by both partners and 16% was by mothers only [108]. Other estimates suggest that between 15-35% of women are hit or forced to have sex by their partners at least once in their lifetime, while only 7% of men report a similar type of abuse [105]. Exposure to inter-parental violence has also been found to be higher amongst those living in difficult socioeconomic circumstances, both in NZ [110] and overseas [111], with the Christchurch Longitudinal Study reporting that family violence was 2.8 times higher if a child's mother was <20 yrs at their birth, was 2.4 times higher if a child's mother was without formal qualifications and was 3.1 times higher if the family was in the lowest quartile for living standards [110]. Potential pathways for these associations include higher levels of stress and financial constraints that mitigate against leaving unsatisfactory relationships [111].

In developing regional responses, identifying children exposed to family violence needs to be given a high priority, not only because of the long term effects such exposures have on children's psychological wellbeing, but also because of the potential overlaps between the occurrence of child abuse and partner abuse in families. While the actual figures are the subject of debate [112] [113], some estimates suggest that up to 30-60% of families who report one type of abuse, also experience the other type of abuse, with the likelihood of child abuse increasing with increasing partner abuse [105]. In this context, the Family Violence Intervention Guidelines, which integrate child and partner abuse strategies into a single document, suggest some starting points at the service delivery level including screening all females ≥16 years, or those with signs and symptoms of abuse using a validated screening tool, supporting and empowering those identified as being the victims of abuse and following appropriate risk assessment, safety planning and referral pathways in clinical settings [105]. Similar guidelines for children are outlined in the CYF Notifications section of this Report.

In an attempt to highlight the extent to which family violence is an issue for children and young people in Taranaki, the following section reviews Police POL400 attendances at family violence incidents. While it has been suggested that the Police are only involved in ~10% of the family violence incidents occurring in New Zealand each year [105] and that trend data may be sensitive to changes in the way in which the Police recognise and

record family violence incidents (see Methods Section), it is nevertheless hoped that these figures will provide some insights into the context within which family violence is occurring, as well as to identify the "tip of the iceberg" in terms of prevalence.

Data Source and Methods

Definition

Police Attendance at Family Violence Incidents, as Recorded by the Police POL400 Form

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. The POL400 form is used whether or not an arrest is made, to report all Family Violence Offences, incidents and breaches of domestic protection orders. The nature of the incidents reported can vary from no offence being recorded, to the most serious forms of violence. Not all police attendances at this type of incident lead to charges being laid and situations can be resolved in a number of different ways.

Data Source

Numerator: Police (POL400) attendances at family violence incidents

Indicator Category Proxy C

Notes on Interpretation

The information contained in this section relates to all Police POL400 attendances, irrespective of whether a child was present. In addition, the information relates to the total number of POL400 attendances rather than the number of families involved i.e. each separate attendance at a family violence incident results in a new POL400 record, making it possible for a single household to generate multiple POL400 attendances during the same year. In addition, as Police have increasingly focused on domestic violence over recent years, it is likely that more offences have been recognised and recorded as being domestic violence related than in earlier years. Additionally, the Police replaced their crime recording IT system in 2005 which made it easier for staff to record an offence as being domestic violence related. The combined effect of these changes is that they are likely to produce increases in recorded domestic violence over time, with a particularly steep increase in mid-2005. As a result, Police statistics for recorded domestic violence cannot be used to make inferences about trends in the underlying incidence of domestic violence over time.

New Zealand Distribution

Presence of Children

Of the 72,550 family violence attendances in New Zealand during 2008 where this information was recorded, children were present at 50.4% (**Table 50**).

Table 50. Police (POL400) Attendances at Family Violence Incidents Where Children Were Present, New Zealand 2008

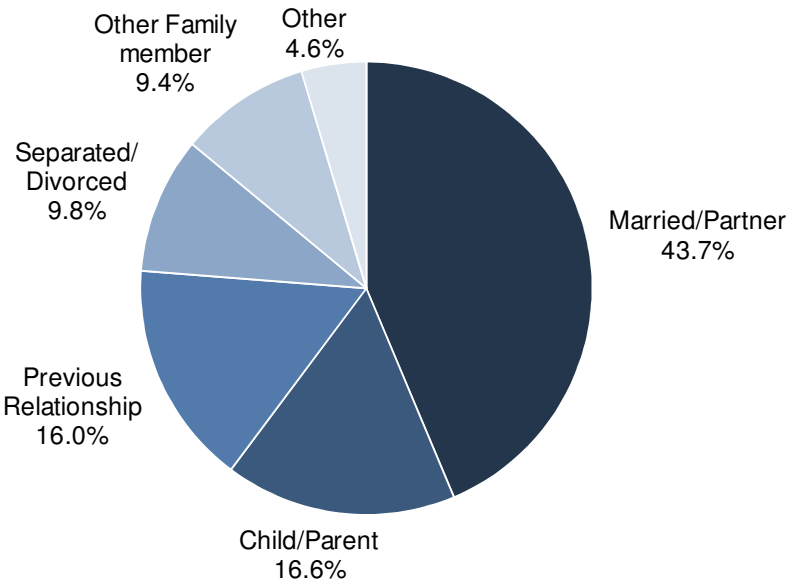
	Number of POL400 Attendances	% POL400 Attendances
Children Present	36,595	50.4%
Children Not Present	35,955	49.6%
Total	72,550	100.0%

Source: NZ Police

Relationship between Victim and Offender

Of the 28,530 identified victims of family violence offences in which the relationship between the victim and the offender was recorded during 2008, in 43.7% of cases the victim was the spouse / partner of the offender, with a further 25.8% having been in a previous relationship (separated / divorced / past relationship) and in 16.6% of cases, the conflict was between a parent and child (**Figure 101**).

Figure 101. Relationship Between the Victim and Offender in Identified Victims of Family Violence Offences, New Zealand 2008 (n=28,530)

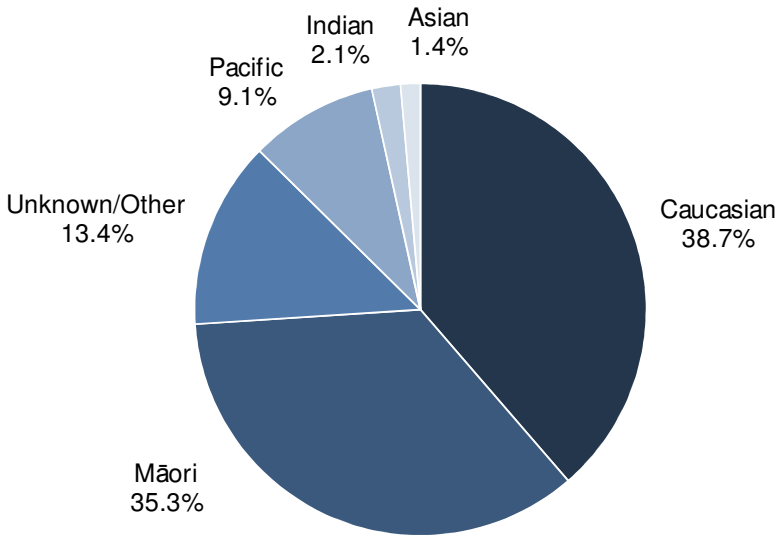


Source: NZ Police

Ethnicity of Victim

Of the 28,530 identified victims of family violence offences during 2008 where the ethnicity of the victim was recorded, 35.3% of victims were Māori, 38.7% were Caucasian, 9.1% were Pacific, 1.4% were Asian and 2.1% were Indian respectively. In a further 13.4% of cases, the ethnicity of the victim was unknown (**Figure 102**).

Figure 102. Ethnicity of Identified Victims of Family Violence Offences, New Zealand 2008 (n=28,530)

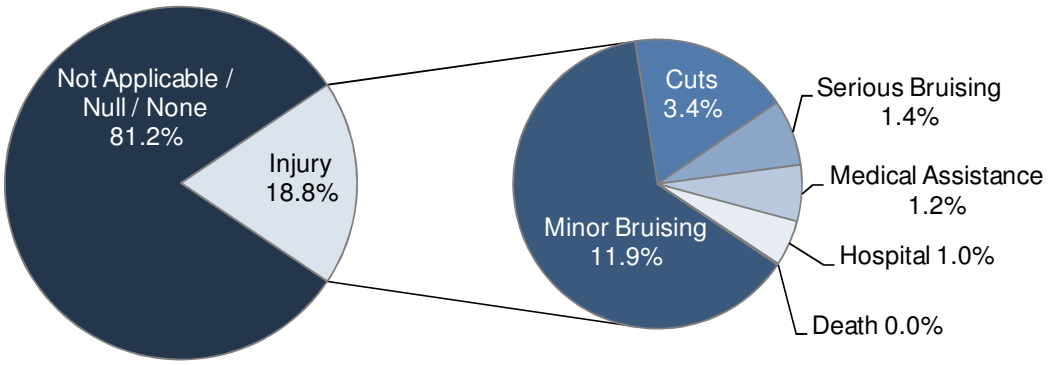


Source: NZ Police

Injuries Reported at Family Violence Attendances

Of the 72,550 family violence attendances during 2008 for which this information was recorded, in 81.2% of cases injuries were not reported. While the most common injuries were minor bruising (11.9%), cuts (3.4%) and serious bruising (1.4%), in 698 cases (0.96%) a hospital attendance was required, and in 16 cases (0.02%) the incident resulted in a death (**Figure 103**).

Figure 103. Police Attendances at Family Violence Incidents where Injuries were Reported by Injury Type, New Zealand 2008 (n=72,550)

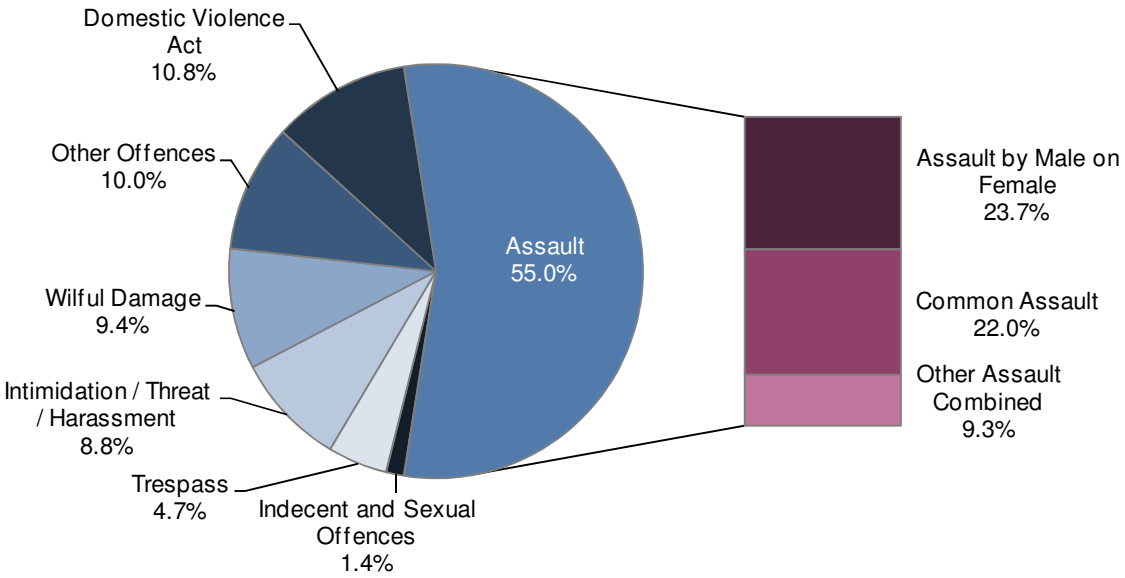


Source: NZ Police

Attendances Where an Offence was Disclosed

Police attendances at family violence incidents during 2008 resulted in a total of 32,683 offences being disclosed. While not all family violence attendances resulted in the disclosure of an offence and some attendances resulted in more than one offence, the nature of offences disclosed gives some indication of the types of incidents occurring. Overall, 55.0% of the offences disclosed during 2008 related to assaults, with "assault by male on female" being the most common in this category (23.7% of all offences). In addition 10.8% of offences related to the Domestic Violence Act, and a further 8.8% related to harassment, threats or intimidation (**Figure 104**).

Figure 104. Police Attendances at Family Violence Incidents where an Offence was Disclosed by Offence Type, New Zealand 2008 (n=32,683)



Source: NZ Police

Taranaki Distribution

Police Attendances at Family Violence Incidents in the Taranaki Region

The Police break the Central Police District into 6 Police Areas (New Plymouth, Palmerston North City, Palmerston North Rural, Ruapehu, Taranaki Rural and Wanganui), the boundaries of which can be seen in Appendix 8. **Table 51** summarises the number of Police attendances at family violence incidents in these Areas during 2008, although the lack of a clearly defined denominator (which takes into account the age profile of the region) precluded the calculation of rates.

While these figures cannot be used to comment on trends in the prevalence of family violence during this period, these figures suggest that a large number of family violence incidents are occurring in Taranaki each year, and that (based on NZ level figures) children are likely to be present at a large proportion of these.

Table 51. Number of Police Attendances at Family Violence Incidents by Police Area, New Zealand 2008

Police District	Police Area					
Northland	Far North	Whangarei				
3,019	1,240	1,779				
Waitemata	North Shore	Rodney	Waitakere			
7,326	2,106	1,143	4,077			
Auckland City	Auckland City Central	Auckland City Eastern	Auckland City Western	Auckland Motorways		
5,137	947	1,988	2,185	17		
Counties Manukau	Counties Manukau Central	Counties Manukau East	Counties Manukau South	Counties Manukau West		
12,533	3,218	2,865	2,696	3,754		
Waikato	Hamilton City	Waikato East	Waikato West			
7,099	4,530	954	1,615			
Bay of Plenty	Eastern Bay of Plenty	Rotorua	Taupo	Western Bay of Plenty		
6,430	999	1,701	1,362	2,368		
Eastern	Gisborne	Hastings	Napier			
5,039	1,920	1,698	1,421			
Central	New Plymouth	Palmerston North City	Palmerston North Rural	Ruapehu	Taranaki Rural	Wanganui
5,965	1,104	1,336	1,368	384	534	1,239
Wellington	Kapiti-Mana	Lower Hutt	Upper Hutt	Wairarapa	Wellington	
7,224	1,899	2,080	627	894	1,724	
Tasman	Marlborough	Nelson Bays	West Coast			
1,964	461	1,146	357			
Canterbury	Christchurch Central	Mid South Canterbury	Northern Canterbury	Southern Canterbury		
7,360	1,889	852	2,830	1,789		
Southern	Dunedin	Otago Rural	Southland			
3,454	1,509	525	1,420			

Source: NZ Police

Summary

For children, exposure to family violence is of particular concern, not only because of the long term consequences such exposures have for their psychological wellbeing, but also because of the potential overlaps between the occurrence of child abuse and partner abuse in families. In New Zealand during 2008, children were present at 50.4% of the family violence incidents attended by Police. In 43.7% of cases the victim was the spouse / partner of the offender, with a further 25.8% having been in a previous relationship (separated / divorced / past relationship) and in 16.6% of cases, the conflict was between a parent and child. Overall, 35.3% of victims were Māori, 38.7% were Caucasian, 9.1% were Pacific, 1.4% were Asian and 2.1% were Indian respectively. While in 81.2% of cases injuries were not reported, in 698 cases (0.96%) a hospital attendance was required, and in 16 cases (0.02%) the incident resulted in a death. While it is difficult to use Police data to comment on trends in the prevalence of family violence due to changes in the way in which the Police have recognised and recorded family violence over time, what Police data does suggest is that a large number of family violence incidents are occurring in Taranaki each year, and that children are likely to be present at a large proportion of these.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of 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 44** on Page 184 considers those publications which focus primarily on child abuse and neglect, while **Table 52** below considers those publications which focus on family violence more broadly (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any strategy to prevent family violence.)

Table 52. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Family Violence

Ministry of Health Policy Documents
Fanslow JL. 2002. **Family Violence Intervention Guidelines**. Wellington: Ministry of Health. URL: http://www.moh.govt.nz/moh.nsf/indexmh/family-violence-guidelines-child-partner-abuse These guidelines present a six-step model for identifying and responding to family violence within health care settings. The guidelines address both child abuse and partner abuse. The guidelines contain practical strategies with which health care professionals can assist in the elimination of family violence.
Ministry of Health. 2003. **Recognising and Responding to Partner Abuse: A Resource for General Practices**. Wellington: Ministry of Health. URL: http://www.moh.govt.nz/moh.nsf/pagesmh/5136 This resource includes how to ask about partner abuse, provide support, assess risk and discuss options. It is designed to be used in conjunction with training in this area. The resource includes a partner abuse documentation form, general examination record body maps, a guide to risk assessment, and a list of referral agencies.
Systematic and Other Reviews from the International Literature
Smedslund G, Dalsbø TK, Steiro A, Winsvold A, Clench-Aas J. 2007. **Cognitive Behavioural Therapy for Men who Physically Abuse their Female Partner**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD006048. DOI: 10.1002/14651858.CD006048.pub2. This review aimed to measure the efficacy of Cognitive Behavioural Therapy (CBT) and similar interventions to reduce men's physical abuse of their female partners. There were only a small number of studies that were able to be included in the review, and hence no conclusions about effectiveness were able to be made.
Whitaker DJ, Morrison S, Lindquist C, Hawkins SR, O'Neil JA, Nesius AM, Mathew A, Reese LR. 2006. **A Critical Review of Interventions for the Primary Prevention of Perpetration of Partner Violence**. Aggression and Violent Behaviour 11(2): 151-66. This article presents a systematic review of interventions for the primary prevention of partner violence, given the growing consensus that prevention is required before partner violence begins. Current primary prevention strategies for the perpetration of partner violence almost exclusively consist of universal, school-based, dating violence prevention programmes that target individual-level factors. There is inadequate evidence to enable firm conclusions about such programmes to be made, however, some showed promise.
Babcock J C, Green C E, Robie C. 2004. **Does Batterers' Treatment Work? A Meta-Analytic Review of Domestic Violence Treatment**. Clinical Psychology Review 23(8): 1023-53. The authors of this review aimed to determine the effectiveness of the treatment for violence relapse in domestically violent male partners. Most of the interventions studies were psychological therapies. The authors concluded that current interventions have a minimal impact on the reducing recidivism, beyond the effect of being arrested. However, due to some methodological limitations of the review, these results should be interpreted with caution.
Anglin D, Sachs C. 2003. **Preventive Care in the Emergency Department: Screening for Domestic Violence in the Emergency Department**. Academic Emergency Medicine 10(10): 1118-27. This review examined the effectiveness of screening for domestic violence in emergency departments to prevent morbidity and mortality caused by such violence. There was a paucity of studies that examined outcomes. The authors thus stated there is insufficient evidence for or against screening for domestic violence to prevent morbidity and mortality.
Ting S, Connock M, Meads C. 2006. **The Clinical and Cost Effectiveness of Counselling Interventions for Heavy Alcohol Drinkers to Reduce Domestic Violence**. Birmingham: West Midlands Health Technology Assessment Collaboration. The aim of this review was to systematically evaluate the evidence on the clinical and cost effectiveness of counselling interventions for heavy alcohol consumers, to reduce domestic violence. There was a paucity of good quality studies available for review. Of the studies examined, there appeared to be a reduction in domestic violence after counselling interventions. There were no published economic evaluations on this subject. However, the authors undertook an evaluation and determined that counselling interventions may be cost effective.

Mueller D, Tomas H. 2001. **The Effectiveness of Public Health Interventions to Reduce or Prevent Spousal Abuse Toward Women**. City of Hamilton Social and Public Health Services Division. URL: http://old.hamilton.ca/phcs/ephpp/Research/Full-Reviews/SpousalAbuse.pdf

The objective of this review was to summarise the evidence of the efficacy of public health interventions to reduce or prevent spousal abuse toward women. The interventions studied included counselling, support groups, screening, and outreach through advocates or mentors. There was some evidence to suggest that an empowerment or advocacy framework can be effective in reducing spousal violence experienced by women. Screening interventions were able to increase case finding, but had no overall effect on reducing abuse.

Dinh-Zarr TB, Goss CW, Heitman E, Roberts IG, DiGuiseppi C. 2004. **Interventions for Preventing Injuries in Problem Drinkers**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD001857. DOI: 10.1002/14651858.CD001857.pub2.

The authors of this review assessed the effect of interventions for problem drinking on subsequent unintentional and intentional injury risk. The most common intervention evaluated was brief counselling in the clinical setting. Due to the heterogeneity of the trials included, the data were not pooled for meta-analysis. However, it appeared as though interventions did reduce domestic violence, assaults and child abuse.

Ramsay J, Carter Y, Davidson L, Dunne D, Eldridge S, Hegarty K, Rivas C, Taft A, Warburton A, Feder G. 2009. **Advocacy Interventions to Reduce or Eliminate Violence and Promote the Physical and Psychosocial Well-being of Women who Experience Intimate Partner Abuse**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD005043. DOI: 10.1002/14651858.CD005043.pub2.

The aim of this review was to examine the effects of advocacy interventions on women who have experienced intimate partner abuse. Due to the heterogeneity of trials, few firm conclusions were able to be made. The authors state that it is possible that intensive advocacy for women recruited in domestic violence shelters and refuges reduces physical abuse one to two years after the intervention. There was insufficient evidence to determine if this has a beneficial effect on quality of life and mental health.

Nelson H, Nygren P, McInerny Y. 2004. **Screening for Family and Intimate Partner Violence**. Agency for Healthcare Research and Quality. URL: http://www.ahrq.gov/downloads/pub/prevent/pdfser/famviolser.pdf

The aim of this review was to examine the evidence on the performance of screening procedures and interventions in reducing harm from family and intimate partner violence for children, women, and the elderly, in the primary care setting. The authors found one good quality trial of home nurse visits during and after pregnancy that showed reduced violence measures after 15 years follow up. Other studies of home nurse visits reported improved outcomes related to violence. Several brief screening instruments for intimate partner violence were tested, with fair to good correlation with longer instruments.

Ramsay J, Rivas C, Feder G. 2005. **Interventions to Reduce Violence and Promote the Physical and Psychosocial Well-being of Women who Experience Partner Violence: A Systematic Review of Controlled Evaluations**. Policy Research Programme, UK Department of Health. URL: http://www.ihse.qmul.ac.uk/chsgppc/researchmethods/systematic/index.html

The aim of this report was to examine the effectiveness of interventions relevant to health care for the reduction of violence, or improvement in the physical and psychological well-being of women who have experienced or are experiencing partner violence. The reviewed studies examined interventions such as advocacy, support groups, systems-centred interventions (in and outside of healthcare settings). The quality of the studies was low, however the reviewers make a number of tentative policy recommendations based on the findings of their review.

Other Related Articles and Reviews

Koziol-McLain J, Garrett N, Gear C. 2009. **Hospital Responsiveness to Family Violence: 48 Month Follow-up Evaluation Report**. Auckland: Auckland University of Technology.

This report presents the findings of four consecutive yearly evaluations on the development of DHB family violence programmes. The evaluations showed that over the four year period, there was increasing programme maturation, stability, ongoing health provider training, national coordination and other efforts that have successfully created sustainable institutional change.

Lievore D, Mayhew P. 2007. **The Scale and Nature of Family Violence in New Zealand: A Review and Evaluation of Knowledge**. Wellington. Centre for Social Research and Evaluation. http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/scale-nature-family-violence/index.html

This report was commissioned from the Crime and Justice Research Centre, to provide a comprehensive review of the nature and scale of family violence in New Zealand, and to assess the quality of the evidence. The review was intended to support the Taskforce for Action on Violence within Families. The types of family violence covered in this report include intimate partner violence, dating violence, child abuse and neglect, elder abuse and neglect, sibling abuse. In line with current understandings of what is encompassed within family violence, the report covers physical, sexual, psychological and financial abuse/violence. Family / whānau violence among Māori and Pacific peoples is covered in a separate section on ethnicity. The report was produced following a systematic search and review of published and unpublished research conducted in New Zealand and provides comprehensive coverage of the major studies, set in an international context. It also encompasses administrative and service-based data collected by government and non-government agencies, some of which have been re-analysed.

MENTAL HEALTH

ISSUES EXPERIENCED BY CALLERS TO TELEPHONE COUNSELLING SERVICES

Introduction

Good empirical evidence suggests that investment in early intervention and prevention programmes in child and youth mental health can be effective [114]. The potential for mental health problems to have long term disabling effects on the normal development and well-being of children and young people suggests that the costs of early intervention and prevention can be easily offset by longitudinal savings from reduced treatment costs and improved occupational achievements.

In New Zealand, the need for child and youth mental health services can be seen as spanning a continuum, with the types of issues being dealt with by child and youth telephone counselling services, at one end of this continuum potentially reflecting the everyday issues and concerns being experienced by many New Zealand children and young people. Analysis of calls received by the What's Up telephone counselling service and Youthline's Youth Help Line Service in recent years suggest that many of these concerns relate to issues such as peer relationships and bullying, although relationships with family and partners (girlfriends and boyfriends) also feature prominently [115].

Supporting children and young people in dealing with these issues is vital, as it has been suggested that peer relationships contribute substantially to social and cognitive development, and to the effectiveness with which we function as adults, with some authors suggesting that the single best childhood predictor of adult adaptation is the adequacy with which a child gets along with their peers. In this context, children who are generally disliked, who are aggressive or disruptive, who are unable to sustain close relationships with other children, or who cannot establish a place for themselves in their peer culture, are seen as being seriously at risk [116].

A number of studies also suggest that being victimised by peers is significantly related to low levels of psychological wellbeing and social adjustment, and to high levels of psychological distress and adverse physical health symptoms. Evidence from retrospective and longitudinal studies suggests that these associations may be causal [117]. Conversely, it has been suggested that young people with high self esteem, a sense of purpose, resilience, interpersonal skills, support from parents, family and community, and a connectedness with their peers are at a much lower risk of adverse outcomes, such as suicide [118].

In attempting to assess some of the more common issues affecting the mental wellbeing of New Zealand children and young people, the following section explores the most frequent reasons for calling the 0800WHATSUP telephone counselling service during 2008. While limits on the number of calls which can be answered, as well as the inability to identify individual callers in these statistics, preclude the extrapolation of rates from this data, these figures nevertheless highlight a range of issues which New Zealand children and young people identify as concerns. In addition, the large number calls which are unable to be answered (71% of calls to 0800WHATSUP were unable to be answered during 2008) potentially suggest that there is a large amount of unmet need in this area.

Data Source and Methods

Definition

Calls made by children and young people to the 0800WHATSUP Telephone-Based Counselling Service

Data Sources and Interpretation

0800WHATSUP is a free, professional telephone counselling service that is available from noon to midnight every day of the year to New Zealand children and young people aged between 5 and 18 years. 0800WHATSUP is provided by The Kids Help Foundation Trust, an incorporated charity. It became available to children and young people in September 2001.

Indicator Category Bookmark / Proxy C

Calls to the 0800WHATSUP Telephone Counselling Service

Number of Calls

During 2008, 0800WHATSUP counsellors answered 145,060 calls from children and young people, an increase of 18.2% from the previous year. On average 1,422 calls were made each day, and 0800WHATSUP counsellors answered 396 (29%), with the response rate being constrained by limited funding for counsellor wages and telecommunication costs. Males made up 47.4% of callers and females 52.6%, with the average age being 13 years (40% of callers were 12 years or younger, and 93% were <16 years, with callers >18 years being referred to more age-appropriate services where possible). 0800WHATSUP counsellors record non-identifying details on all calls answered, providing a pool of valuable information on the issues of concern to the young people who phone the service.

Types of Problems

Calls from children and young people during 2008 were categorised into one of eleven problem categories as outlined in **Table 53**. These categories were further divided into 39 sub-problems, with the ten main problems for which children and young people called 0800WHATSUP in 2008 being outlined in **Figure 105**. Within these categories, the top 4 reasons for calling were issues relating to relationships with peers, bullying, relationships with family and relationships with partners.

Relationships

By far the most common reason for calling 0800WHATSUP during 2008 was to discuss relationship issues, with just over half of all counselling calls involving concerns about relationships with others. Overall, 22.5% of those calling reported problems with peer relationships, including difficulties in maintaining relationships. Of those calling about family relationships, 51% reported experiencing frequent family conflict, or family breakdown, such as separation or divorce. Finally, relationships with partners (girlfriends / boyfriends) were the main concern for teenage callers, with 37% of calls about partner relationships reporting significant difficulties, or relationship breakdown. In addition, 31% said they wanted to establish a relationship.

School Related Problems and Bullying

Bullying was the second most frequent reason for children and young people calling 0800WHATSUP, and the leading issue for those aged 9-11 years. Nearly 26.7% of calls about bullying concerned frequent incidents or continual harassment (a drop from 42.8% of calls about bullying in 2007).

Gender and Age Differences

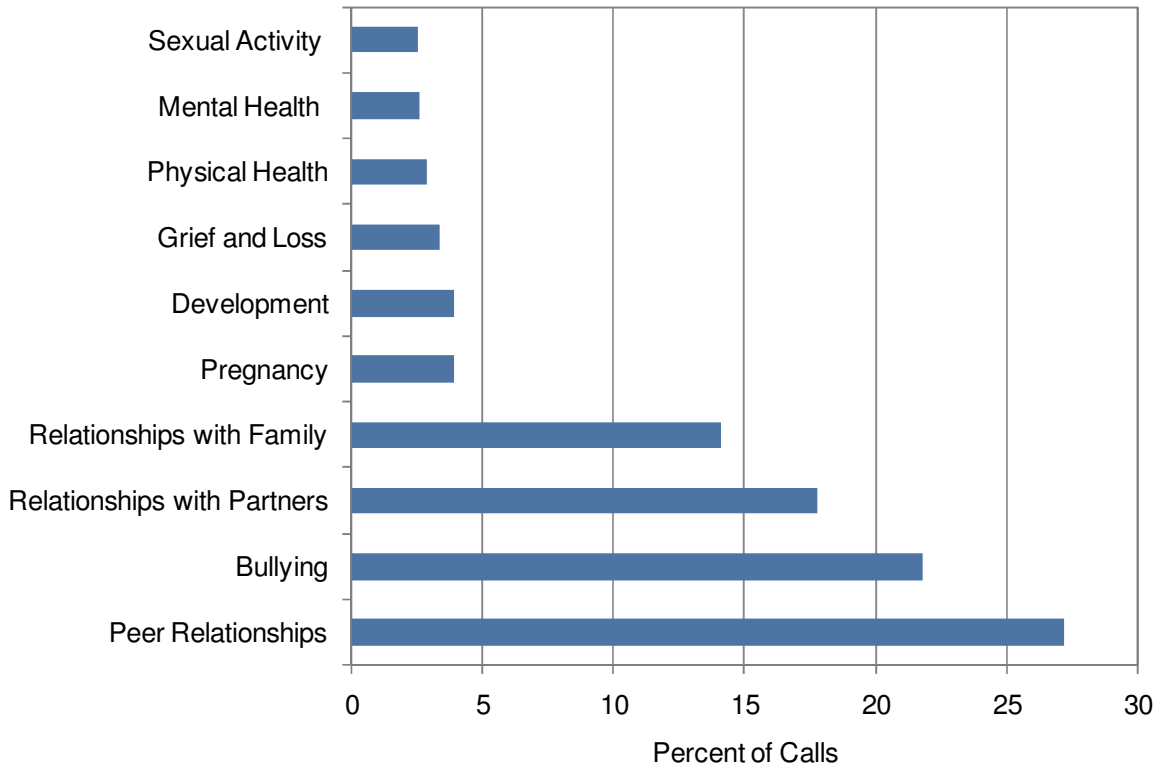
During 2008, while both males and females were concerned with relationship problems, the relative importance of different types of relationships varied, with peer relationships followed by bullying being the main reasons for calling 0800WHATSUP for females, while for males bullying, followed by relationships with partners were the most frequent reasons. In addition, while relationships with peers followed by bullying were the main reasons for calling for those aged 5-12 years, relationships with partners, followed by relationships with peers were the top reasons for calling for those aged 13-18 years (**Table 54**).

Table 53. Number and Percentage of Calls to the 0800WHATSUP Telephone Counselling Service by Category, New Zealand 2008

Problem Category	Number of Calls	% of Calls
Relationships	6,903	50.4
School Related	2,776	20.3
Sex	833	6.1
Emotional	811	5.9
Health	712	5.2
Self Concept	767	5.6
Practical	343	2.5
Drug and Alcohol	215	1.6
Child Abuse	193	1.4
Violence	138	1.0
Cults/Sects	8	0.1
Total	13,699	100.0

Source: 0800WHATSUP

Figure 105. Ten Most Frequent Reasons for Calling the 0800WHATSUP Telephone Counselling Service, New Zealand 2008



Source: 0800WHATSUP

Table 54. The Top 5 Reasons for Calling the 0800WHATSUP Telephone Counselling Service by Gender and Age, New Zealand 2008

Females	Males	Aged 5-12 Years	Aged 13-18 Years
Peer Relationships	Bullying	Peer Relationships	Partner Relationships
Bullying	Partner Relationships	Bullying	Peer Relationships
Partner Relationships	Peer Relationships	Family Relationships	Family Relationships
Family Relationships	Family Relationships	Partner Relationships	Bullying
Pregnancy	Sexual Activity	Development	Pregnancy

Source: 0800WHATSUP

Summary

Good empirical evidence suggests that investment in early intervention and prevention programmes in child and youth mental health can be effective. In New Zealand, the need for child and youth mental health services can be seen as spanning a continuum, with the types of issues being dealt with by telephone counselling services, at one end of this continuum potentially reflecting the everyday issues and concerns experienced by many New Zealand children and young people. Analysis of the calls received by the 0800WHATSUP telephone counselling service during 2008 suggests that many of these concerns relate to peer relationships and bullying, although relationships with family and partners (girlfriends and boyfriends) also feature prominently. Supporting children and young people in dealing with these issues is vital, as peer relationships contribute substantially to social and cognitive development. The large number of calls which were unable to be answered also potentially suggests that there may be considerable unmet need in this area.

Local Policy Documents and Evidence Based Reviews Which Consider Mental Health Issues in Children and Young People

In New Zealand, a number of publications consider mental health issues in children and young people, and these are summarised in **Table 55** on Page 213. A range of international reviews also consider the management of specific mental health conditions, or the delivery of mental health services in general, and these are summarized in the same table.

ACCESS TO MENTAL HEALTH SERVICES: INTRODUCTION, METHODS AND EVIDENCE BASED REVIEWS

Introduction

Mental health problems become more common as young people move through adolescence, with the Dunedin Multidisciplinary Health and Development Study suggesting that the prevalence of mental health problems increases from about 17.6% at age 11, through 22.0% at age 15, to 36.6% at 18 years of age [119]. Mental health conditions commonly diagnosed amongst this age group include anxiety disorders, depression, conduct disorders and alcohol and substance use disorders. In addition, suicide rates amongst New Zealand young people remain high by international standards [120].

The type of mental health problem diagnosed varies by age and gender, with males tending to have higher rates of conduct disorder and alcohol and substance use and females higher rates of anxiety and depression. More limited information also suggests that mental health problems vary with ethnicity, with higher rates of admission and readmission to psychiatric facilities amongst Māori males 15-19 years [120]. In terms of risk factors for mental health problems, multiple disadvantages during childhood appear to place young people at higher risk of poorer mental health outcomes. Known resiliency / protective factors include intelligence and problem solving abilities; interests outside the home; a caring relationship with an adult outside the family; warm, nurturing and supportive relationships with a parent; easy temperament; positive peer relationships; and low levels of novelty seeking [120].

The following sections use data from the Mental Health Information National Collection (MHINC) to explore access to mental health inpatient, outpatient and community services for children and young people with specific mental health diagnoses. The diagnoses reviewed have been grouped into three clusters, based on the age groups most affected:

1. *Children Aged 0-14 Years*: Hyperkinetic Disorders (including ADHD), Conduct / Mixed Conduct Emotional Disorders, Pervasive Developmental Disorders (including Autism), Learning Disorders, Separation Anxiety and Reactive Attachment Disorders.
2. *Children and Young People Aged 0-24 Years*: Anxiety Disorders, Adjustment Disorders, Obsessive Compulsive Disorder and Eating Disorders.
3. *Young People Aged 15-24 Years*: Schizophrenia, Schizotypal / Delusional Disorders, Personality Disorders and Organic Mental Disorders; and Mental Health Issues Associated with Substance Use (Alcohol, Cannabis, Tobacco and Other Drugs).

Note: Because the data contained in the MHINC is very different to that contained in the National Minimum (Hospital Admission) Dataset and National Mortality Collection, the reader is urged to review the methods section below, so that they are familiar with the strengths and limitations of the MHINC, as it relates to the information presented in the sections which follow.

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: Mental Health Information National Collection (MHINC)

Individuals: Number of individuals accessing Mental Health Services who were ever diagnosed with a specified mental health condition during 2005-2007. These included ICD-10 F00-F09 (Organic Mental Disorders); 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); F70-F79 (Mental Retardation); F84 (Pervasive Developmental Disorders Including Autism); F90 (Hyperkinetic Disorders Including Attention Deficit Hyperactivity Disorder (ADHD)); F91 or F92 (Conduct / Mixed Conduct Emotional Disorders); F81 (Learning Disorders / Disorders of Development of Scholastic Skills); F930 (Separation Anxiety Disorder); F94.1 (Reactive Attachment Disorder);

Contacts: Individual contacts, attendances, groups or day programmes reported to the MHINC. Service codes indicating 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. Service codes indicating 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 Level 1-4 bed nights.

Denominator: NZ Census

Indicator Category Proxy B

Notes on Interpretation

Note 1: The MHINC is the Ministry of Health's national database covering the provision of publicly funded secondary mental health and alcohol and drug services. It includes secondary inpatient, outpatient and community care provided by hospitals and non-Government organisations (although as at July 2005, most NGOs were not reporting to the system). It does not include information on outpatient visits to paediatricians however, 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 problems) 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 MHINC may provide a better overview of access to secondary services for mental and behavioural issues.

Note 2: The MHINC records principal, secondary and provisional diagnoses for clients at each contact, although in a large number of cases the diagnosis is either missing, or indicates that the child / young person was attending for a mental health assessment, rather than ascribing a diagnosis per-se. In this section, children / young people have been assigned a diagnosis, if they ever received this diagnosis (principal / secondary / provisional) at any point in the 3 year period (i.e. numbers = total number of individuals receiving the diagnosis during 2005-2007; rates = total number of individuals with the diagnosis divided by the number in the population at the mid-point of this period (i.e. 2006)). 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 conduct disorder), they appear twice in the figures which follow. 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: Where an individual accessed services on multiple occasions, and was thus recorded as having multiple ages or NZDep deciles, the mean age / NZDep decile (averaged across the 3-year period) has been used. Where an individual resided in multiple DHBs however, they have been included in the data for each DHB in which they resided. As a result of this double counting, the total number of individuals with a particular diagnosis, when summed across DHBS, exceeds the total number with the condition nationally, and as a consequence, regional rates (particularly for conditions where high mobility might be expected) may appear artificially higher than the New Zealand average.

Local Policy Documents and Evidence Based Reviews Relevant to the Management of Mental Health Issues in Children and Young People

In New Zealand, a number of publications consider mental health issues in children and young people, and these are summarised in **Table 55**, along with publications which consider the management of specific mental health conditions, or the delivery of mental health services in general. (Note: A large number of international reviews considered the efficacy of individual drug therapies for specific mental health conditions, and it was beyond the scope of this review to provide a comprehensive coverage of this literature. Instead, the table below contains a specific section summarising treatment guidelines for some of the mental health issues more common in children and young people, which have been specifically adapted for New Zealand use). In addition, **Table 105** on page 255 provides an overview of publications focusing on drug use in young people, while **Table 41** on page 172 considers publications relating to the reduction of alcohol related harm, and **Table 32** on page 130 provides links to documents considering conduct problems. Finally, **Table 108** on page 263 provides an overview of publications considering suicide and self inflicted injuries (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any child or youth mental health strategy).

Table 55. 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
Ministry of Health. 2007. **Te Raukura: Mental Health and Alcohol and Other Drugs: Improving Outcomes for Children and Youth**, Ministry of Health: Wellington. This document draws together the key issues and priorities identified by the child and youth mental health, and alcohol and drug sector, as requiring action in the next three to five years. It provides a high-level current profile of child and youth mental health and alcohol and drug services, and includes a summary of evidence, a set of principles and a description of how services are currently organised.
Minister of Health. 2006. **Te Kōkiri: The Mental Health and Addiction Action Plan 2006-2015**. Wellington. Ministry of Health. http://www.moh.govt.nz/moh.nsf/by+unid/06296245E407C4A4CC2571B80080E327?Open Te Kōkiri was developed to directly implement Te Tāhuhu – Improving Mental Health 2005-2015: The Second New Zealand Mental Health and Addiction Plan. It is the result of extensive consultation with the mental health and addiction sector, with the Ministry of Health and DHBs jointly developing the action plan. Te Kōkiri is a high-level document with a comprehensive approach that includes a mix of high-level initiatives and specific operational actions. In relation to specific actions, key stakeholders and milestones are identified. Timeframes are set and clustered around three time periods, 1-3 years, 3-5 years and 5-10 years. The action plan also clearly defines the responsibilities of the Ministry of Health and DHBs, the two agencies responsible for implementing the action plan.
Minister of Health. 2005. **Te Tāhuhu - Improving Mental Health 2005-2015. Wellington**. Ministry of Healthhttp://www.moh.govt.nz/moh.nsf/by+unid/F2907744575A9DA9CC25702C007E8411?Open#1 Te Tāhuhu outlines Government policy and priorities for mental health and addiction for the 10 years between 2005 and 2015, and provides an overall direction for investment in mental health and addiction. It builds on the current Mental Health Strategy contained in Looking Forward (1994) and Moving Forward (1997), and the Mental Health Commission's Blueprint for Mental Health Services (1998). The document was informed by extensive public and health sector consultation and responds to the calls from the sector for a more strategic and over-arching plan. It is based on an outcomes framework and describes ten leading challenges that need to be addressed in order for government outcomes for mental health and addiction to be achieved.
Ministry of Youth Affairs. 2002. **Youth Development Strategy Aotearoa: Action for Child and Youth Development**. Wellington Ministry of Youth Affairs. http://www.myd.govt.nz/Publications/youthdevelopment/youthdevelopmentstrategyaotearoa20.aspx The Strategy outlines how government and society can support young women and men (aged 12 to 24 years) to develop the skills and attitudes they need to take part positively in society, now and in the future. The Strategy consists of a vision, principles, aims and goals, and also suggests actions that can be taken to support the positive development of young people. The principles of "youth development" outline what the youth development approach is all about. They can be used as a checklist and a tool for developing youth policies and programmes and in working alongside young people.

McLaren K. 2002. **Youth Development Literature Review: Building Strength**. Ministry of Youth Development: Wellington. http://www.myd.govt.nz/Publications/youthdevelopment/buildingstrengthyouthdevelopmentli1.aspx

This literature review was undertaken to support the implementation of the Ministry of Youth Development's Youth Development Strategy Aotearoa. The report considers key stages in young people's development, and the factors which lead to good outcomes (e.g. family, peer, school, work / career, and neighbourhood / community influences), with a view to informing discussion on youth development and assisting policy, programme and service development.

New Zealand Guidelines

New Zealand Guidelines Group. 2008. **Identification of Common Mental Disorders and Management of Depression in Primary Care. An Evidence-Based Best Practice Guideline**. Wellington. New Zealand Guidelines Group. http://www.nzgg.org.nz/index.cfm?fuseaction=fuseaction_10&fusesubaction=docs&documentID=22

This guideline addresses the identification of common mental disorders and the management of depression in primary care in all age groups. It contains an overview of the epidemiology of mental health conditions in children and young people, a section on the recognition and assessment of common mental disorders in young people, and a specific algorithm focusing on the management of depression in young people in primary care. The guideline does not detail the management of common mental disorders other than depression and is intended for use by all health care practitioners in the primary care setting, including general practitioners, practice nurses, midwives, counsellors, nurse practitioners, psychologists, psychotherapists, social workers and school nurses. While the guideline is intended to inform development of service frameworks, it does not make specific recommendations in this area.

Ministry of Health and Ministry of Education. 2008. **New Zealand Autism Spectrum Disorder Guideline**. Wellington. Ministries of Health and Education http://www.moh.govt.nz/moh.nsf/indexmh/nz-asd-guideline-apr08

This evidence based guideline provides guidance on autism spectrum disorders (ASD) in both children and adults in New Zealand. It covers the identification and diagnosis of ASD, and the ongoing assessment and access to services and interventions for individuals with ASD. Its intended audience is primary care practitioners, policy makers, educational professionals, funders, parents, specialists and any others who care for individuals with ASD.

Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Anorexia Nervosa. 2004. **Australian and New Zealand Clinical Practice Guidelines for the Treatment of Anorexia Nervosa.** Australian and New Zealand Journal of Psychiatry 38: p. 659-670. http://www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineCatID=8&guidelineID=91

The authors of this guideline found it was extremely difficult to draw general conclusions about the efficacy of specific treatments for anorexia nervosa, as there were few controlled clinical trials and their quality was generally poor. The guidelines thus rely largely upon expert opinion and uncontrolled trials, and recommend a multidimensional approach, with the medical aspects needing to be addressed and any physical harm halted and reversed. Weight restoration was seen as being essential, but insufficient evidence was available regarding any single approach. A lenient approach was seen as more acceptable than a punitive one, and less likely to impair self-esteem. Dealing with the psychiatric problems was not simple and much controversy remained. For patients with less severe anorexia who did not require in-patient treatment, out-patient or day-patient treatment was seen as being suitable, but dependant on the availability of such services. Family therapy was a valuable part of treatment, particularly for children and adolescents, but no particular approach emerged as superior to any other. Dietary advice was seen as needing to be included in all treatment programs. Cognitive behaviour therapy or other psychotherapies were seen as being helpful, with antidepressants having a role in patients with depressive symptoms, and olanzapine potentially being useful in attenuating hyperactivity.

Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Bipolar Disorder. 2004. **Australian and New Zealand Clinical Practice Guidelines for the Treatment of Bipolar Disorder**. Australian and New Zealand Journal of Psychiatry. 38: p. 280-305. http://www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineCatID=8&guidelineID=92

This guideline provides evidence-based recommendations for the management of bipolar disorder by phase of illness: i.e. acute mania, mixed episodes and bipolar depression, and the prophylaxis of such episodes. It specifies the roles of various mood-stabilizing medications and of psychological treatments such as cognitive therapy and psycho-education.

Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression. 2004. **Australian and New Zealand Clinical Practice Guidelines for the Treatment of Depression**. Australian and New Zealand Journal of Psychiatry. 38: p. 389-407. http://www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineCatID=8&guidelineID=95

This guideline noted that in the management of depression it was essential to establish an effective therapeutic relationship; provide the patient with information on the condition, the rationale for treatment, the likelihood of a positive response and the expected timeframe; and to consider the patient's strengths, life stresses and supports. Treatment choice depended on the clinician's skills and the patient's circumstances and preferences, and should be guided by but not determined by these guidelines. In moderately severe depression, all recognized antidepressants, cognitive behavioural therapy and interpersonal psychotherapy are equally effective; clinicians should consider treatment burdens as well as benefits, including side-effects and toxicity. In severe depression, antidepressant treatment should precede psychological therapy. For depression with psychosis, electroconvulsive therapy or a tricyclic combined with an antipsychotic are equally helpful. Depression has a high rate of recurrence and efforts to reduce this are crucial.

McGorry P et al. 2003. **Summary Australian and New Zealand Clinical Practice Guideline for the Treatment of Schizophrenia**. Australasian Psychiatry, 2003. 11(2): p. 136-147.
http://www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineCatID=8&guidelineID=94

The authors of this guideline noted that schizophrenia is a complex and misunderstood illness with a poor public image, but it is more treatable than ever before. A new generation of medication and psychosocial therapies, combined with a first generation of service reform, have created an evidence-based climate of realistic optimism. However, the potential for better outcomes and quality of life for people with schizophrenia has not been translated into reality. The gap between efficacy and effectiveness is wider for schizophrenia than for any other serious medical disorder. These guidelines distil the current evidence and make recommendations based on the best available knowledge. They are based on systematic meta-analyses and comprehensive reviews of the evidence, and their validity is supported by their congruence with several recent rigorous and independent guideline statements from the UK and North America.

Ministry of Health. 2001. **New Zealand Guidelines for the Assessment and Treatment of Attention Deficit Hyperactivity Disorder**. Wellington. Ministry of Health.
http://www.moh.govt.nz/moh.nsf/0/4E1C3CDDF420BCAECC256A8E007F12D9

This evidence based guideline aims to assist New Zealand health professional in their assessment and treatment of those with ADHD. It contains specific sections on clinical assessment (including assessment and management in schools), and treatment options (e.g. medication, psychosocial interventions, support services and other therapies). It assumes that practitioners will also address the holistic needs of the child and family, including any co-morbidities.

Other Related Articles and Reviews

Ministry of Health 2008. **Let's Get Real: Real Skills for People Working in Mental Health and Addiction**. Wellington: Ministry of Health

Let's Get Real is a framework that describes the essential knowledge, skills and attitudes required to deliver effective mental health and addiction treatment services. It outlines expectations for people who work in mental health and addiction treatment services irrespective of their role, discipline or position in the organisational structure. Values and attitudes underpin all the work of mental health and addiction treatment services. They are expressed in action through each of the seven skill sets. Each skill set has a broad definition and three levels (essential, practitioner and leader) of performance indicators. *Let's get real* will be phased in over time, starting from late 2008. The Ministry's goal is that the implementation of *Let's get real* has a practical focus. With that aim in mind, guides, tools and other resources that support the use and application of the framework in different contexts will be developed.

Oakley Browne M, Wells J, Scott K. 2006. **Te Rau Hinengaro: The New Zealand Mental Health Survey**. Wellington. Ministry of Health. http://www.moh.govt.nz/moh.nsf/by+unid/3195F8D3155E1C2ACC2571FC00131A6D?Open

The main aims of Te Rau Hinengaro were (for total New Zealand, Māori and Pacific peoples) to:

- Describe the one-month, 12-month and lifetime prevalence of major mental disorders in those 16+ years
- Describe patterns of, and barriers to, health service use for people with mental disorders
- Describe the level of disability associated with mental disorders
- Provide baseline data and calibrate instruments measuring mental disorders / psychological distress for future use

The report provides important and not previously available information on the prevalence of mental disorders and their patterns of onset and impact for adults in New Zealand. It explores the relationship between mental disorders and physical disorders, provides information about the patterns of health and non-health service use by people with mental health problems, examines the relationship between socio-demographic correlates and the probability of people meeting criteria for a mental disorder or accessing care, and describes the prevalence and correlates of suicidal behaviour.

Ministry of Health. 1999. **Better Times: Contributing to the Mental Health of Children and Young People**. Wellington: Ministry of Health.

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. Strengthening Families aims to achieve better outcomes for children and improve the wellbeing of families. This document aims to assist anyone working with children and young people, including helping early childhood workers, teachers, social workers and others to recognise and support children with mild and moderate mental health problems and to make appropriate referrals to specialists when necessary.

ACCESS TO MENTAL HEALTH SERVICES IN CHILDREN AGED 0-14 YEARS

The following section provides an overview of access to mental health services for children aged 0-14 years with the following diagnoses:

1. Hyperkinetic Disorders (including Attention Deficit Hyperactivity Disorder (ADHD))
2. Conduct / Mixed Conduct Emotional Disorders
3. Pervasive Developmental Disorders (Including Autism)
4. Learning Disorders / Disorders of the Development of Scholastic Skills
5. Separation Anxiety Disorder
6. Reactive Attachment Disorder
7. Mental Retardation

Data Source and Methods

Information on the Mental Health Information National Collection (MHINC) and the ICD-10 codes used is provided in the Introduction Section commencing on **Page 211**.

Taranaki and New Zealand Distribution

Common Diagnoses in Children Accessing Mental Health Services

In Taranaki during 2005-2007, hyperkinetic disorders (including ADHD) and pervasive developmental disorders (including autism) were the most frequent diagnoses given to children accessing mental health services **Table 56**. While individual rates for some conditions varied from the New Zealand average, it must be remembered that many children with these diagnoses are likely to access paediatric outpatient services, and that this workload is not captured by the MHINC (**Note: Rates for a number of conditions appear unusually high, and thus the possibility of irregularities in the way in which data was uploaded to the MHINC cannot be ruled out*).

Table 56. Number of Children Aged 0-14 Years Accessing Mental Health Services with Selected Diagnoses*, Taranaki vs. New Zealand 2005-2007

Diagnosis	Taranaki		New Zealand	
	No. of Individuals with Diagnosis	Rate per 100,000	No. of Individuals with Diagnosis	Rate per 100,000
Hyperkinetic Disorders Including ADHD	252*	1109.8	2,349	270.8
Conduct / Mixed Conduct Emotional Disorders	21	92.5	1,439	165.9
Pervasive Developmental Disorders (Incl. Autism)	96*	422.8	856	98.7
Learning Disorder / Development Scholastic Skills	18	79.3	475	54.8
Separation Anxiety Disorder	11	48.4	300	34.6
Reactive Attachment Disorder	35*	154.1	268	30.9
Mental Retardation	21	92.5	255	29.4

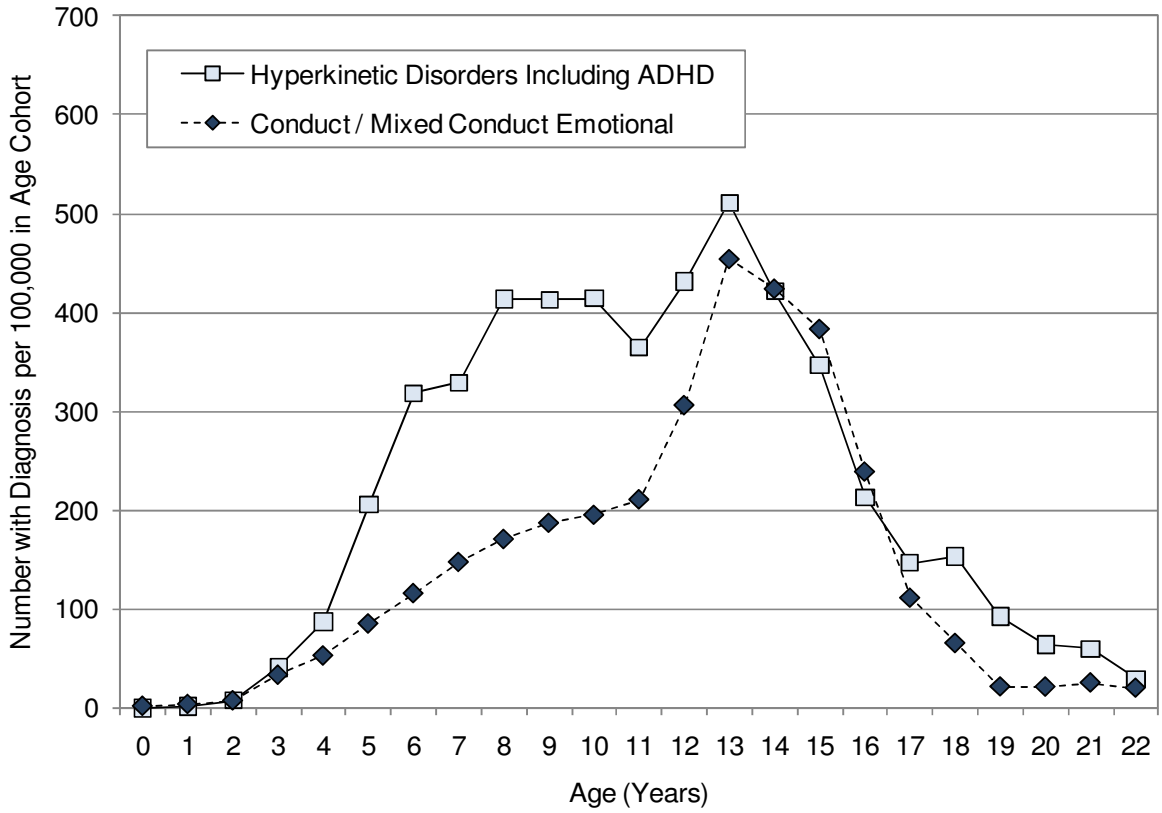
Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 (irrespective of where they subsequently accessed services). This approach may increase DHB rates (vs. NZ average) in situations where mobility between DHBs is high (see Methods section). As an individual may have more than one mental health diagnosis, columns do NOT sum to 100%; *Table does not include all children with mental health diagnoses accessing services in the region, but rather provides an overview of the most common diagnoses only.

Hyperkinetic and Conduct Disorders

Numbers Accessing Services by Age: New Zealand

In New Zealand during 2005-2007, the number of children accessing mental health services with a diagnosis of a hyperkinetic disorder (including ADHD) increased rapidly during early childhood (4-7 years), plateaued in late childhood (8-11 years) and then rose again, reaching a peak at 13 years of age. Numbers tapered off relatively rapidly thereafter. For children diagnosed with conduct, or mixed conduct / emotional disorders, numbers increased more slowly during childhood (3-11 years), but then rose rapidly between 11 and 13 years of age. As with hyperkinetic disorders, numbers peaked at 13 years and tapered off relatively rapidly thereafter (**Figure 106**).

Figure 106. Children and Young People Accessing Mental Health Services with Hyperkinetic or Conduct Disorders by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period)

Access to Services: Taranaki vs. New Zealand

Hyperkinetic Disorders: In Taranaki during 2005-2007, a total of 252 children accessing mental health services were diagnosed with a hyperkinetic disorder (including ADHD). Children with hyperkinetic disorders, on average, had 8.8 contacts with mental health services per year, although none were admitted overnight on an inpatient basis (**Table 57**). (*Note: Rates for this diagnosis appear unusually high, and thus the possibility of irregularities in the way in which data was uploaded to the MHINC cannot be ruled out*).

Conduct Disorders: In Taranaki during 2005-2007, a total of 21 children accessing mental health services were diagnosed with conduct / mixed conduct emotional disorders. Children with conduct disorders, on average, had 19.8 contacts per year with mental health services, and 1.7 inpatient bed nights (**Table 59**).

Access to Services by Ethnicity, NZDep Index Decile and Gender: New Zealand

Hyperkinetic Disorders: In New Zealand during 2005-2007, the number of children accessing mental health services with a hyperkinetic disorder (including ADHD) was *significantly* lower for those in the most affluent (NZDep decile 1-2) areas. Rates were

significantly higher for males and European > Māori > Pacific > Asian children. A similar pattern was seen for mental health service contacts, although the small number of inpatient bed nights made interpretation of bed night data more difficult (**Table 58**).

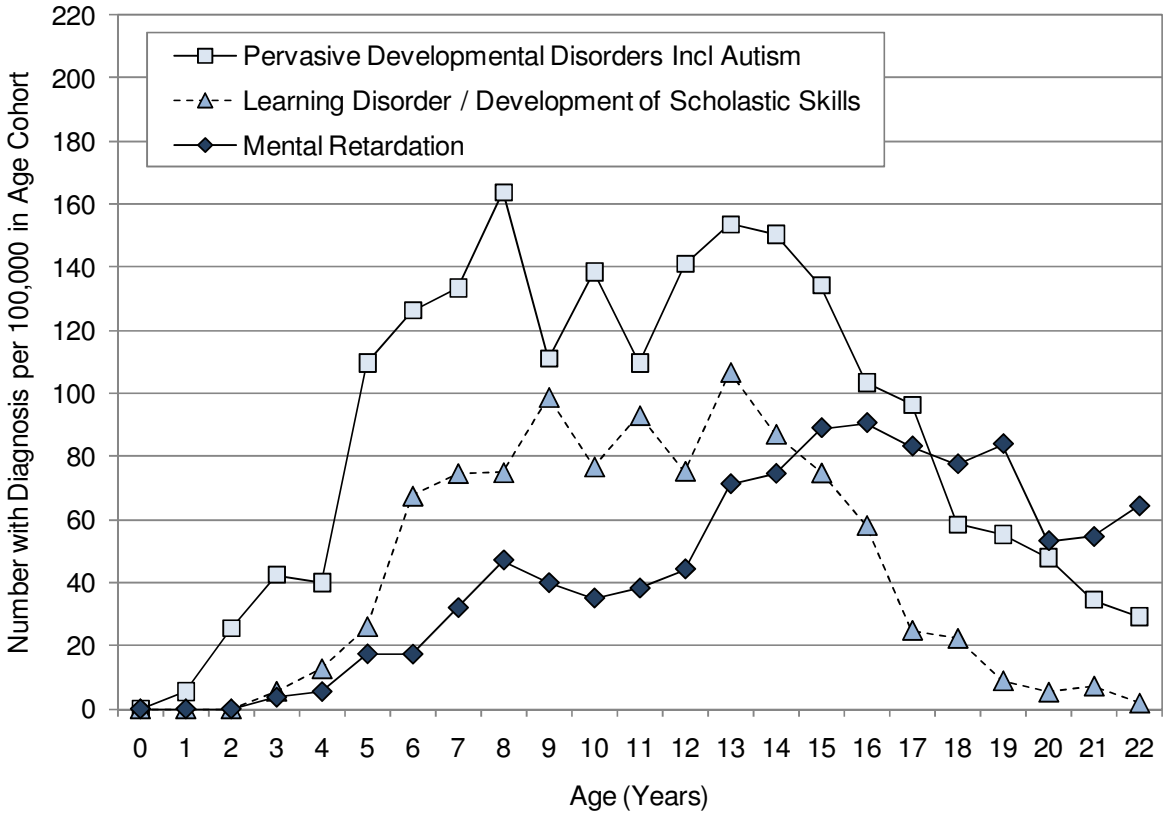
Conduct Disorders: In New Zealand during 2005-2007, the number of children accessing mental health services with a conduct / mixed conduct emotional disorder was *significantly* lower for those in the most affluent (NZDep decile 1-2) areas. Rates were *significantly* higher for males and Māori and European > Pacific > Asian children. For mental health service contacts, while gender and NZDep deprivation differences were similar, contacts were *significantly* higher for European > Māori > Pacific > Asian children. Again, the small number of inpatient bed nights made interpretation of bed night data difficult (**Table 60**).

Pervasive Developmental Disorders and Learning Disorders

Numbers Accessing Services by Age: New Zealand

In New Zealand during 2005-2007, the number of children accessing mental health services with a pervasive developmental disorder (including autism) increased rapidly during childhood, reaching a peak at 8 years of age. Rates then fluctuated during early adolescence, before declining after 14 years of age. For children diagnosed with a learning disorder, rates rose most rapidly between 4-9 years of age, remained relatively static during early adolescence, and then declined again after 13 years. Finally, for children diagnosed with mental retardation, rates rose gradually during childhood and early adolescence, peaking amongst those in their mid-late teens (**Figure 107**).

Figure 107. Children and Young People Accessing Mental Health Services with Pervasive Developmental Disorders, Learning Disorders or Mental Retardation by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period)

Access to Services: Taranaki vs. New Zealand

Pervasive Developmental Disorders (including Autism): In Taranaki during 2005-2007, a total of 96 children accessing mental health services were diagnosed with a pervasive developmental disorder. Children with pervasive developmental disorders, on average,

had 11.2 contacts with mental health services per year, although the number of inpatient bed nights was small (0.4 bed nights per child per year (**Table 61**)). (*Note: Rates for this diagnosis appear unusually high, and thus the possibility of irregularities in the way in which data was uploaded to the MHINC cannot be ruled out*).

Learning Disorders: In Taranaki during 2005-2007, a total of 18 children accessing mental health services were diagnosed with a learning disorder. Children with learning disorders, on average, had 7.1 contacts with mental health services per year, although none were admitted overnight (**Table 63**).

Mental Retardation: In Taranaki during 2005-2007, a total of 21 children accessing mental health services were diagnosed with mental retardation. Children with mental retardation, on average, had 6.1 contacts per year with mental health services, although none were admitted overnight (**Table 65**).

Access to Services by Ethnicity, NZDep Index Decile and Gender: New Zealand

Pervasive Developmental Disorders (Including Autism): In New Zealand during 2005-2007, the number of children accessing mental health services with a pervasive developmental disorder was *significantly* higher for males and European > Māori and Asian > Pacific children, although the distribution by NZDep deprivation was less consistent. A similar pattern was seen for mental health service contacts, although the small number of inpatient bed nights made interpretation of bed night data more difficult (**Table 62**).

Learning Disorders: In New Zealand during 2005-2007, the number of children accessing mental health services with a learning disorder was *significantly* lower for those in the most affluent (NZDep decile 1-2) areas. Rates were *significantly* higher for males and European > Māori > Pacific and Asian children. A similar pattern was seen for mental health service contacts, although the small number of inpatient bed nights again made interpretation of bed night data difficult (**Table 64**).

Mental Retardation: In New Zealand during 2005-2007, the number of children accessing mental health services with mental retardation was *significantly* higher for males, European and Māori > Pacific and Asian children, and those in the more deprived (NZDep decile 5-10) areas. For mental health service contacts, while gender and NZDep deprivation differences were similar, contacts were *significantly* higher for European > Māori > Pacific > Asian children. Again, the small number of inpatient bed nights made interpretation of bed night data difficult (**Table 66**).

Separation Anxiety and Reactive Attachment Disorders

Numbers Accessing Services by Age: New Zealand

In New Zealand during 2005-2007, the number of children accessing mental health services with a separation anxiety disorder increased steadily during childhood, reached a peak at 12 years of age, and then declined. The number of children diagnosed with a reactive attachment disorder also increased during early childhood, reached a peak at 7 years of age, and then declined (**Figure 108**).

Access to Services: Taranaki vs. New Zealand

Separation Anxiety Disorder: In Taranaki during 2005-2007, a total of 11 children accessing mental health services were diagnosed with a separation anxiety disorder. Children with this diagnosis, on average, had 8.0 contacts with mental health services each year, although none were admitted on an inpatient basis (**Table 67**).

Reactive Attachment Disorder: In Taranaki during 2005-2007, a total of 35 children accessing mental health services were diagnosed with a reactive attachment disorder. Children with this diagnosis, on average, had 14.3 contacts per year with mental health services, although the number of inpatient bed nights was small (0.1 bed nights per child per year (**Table 69**)).

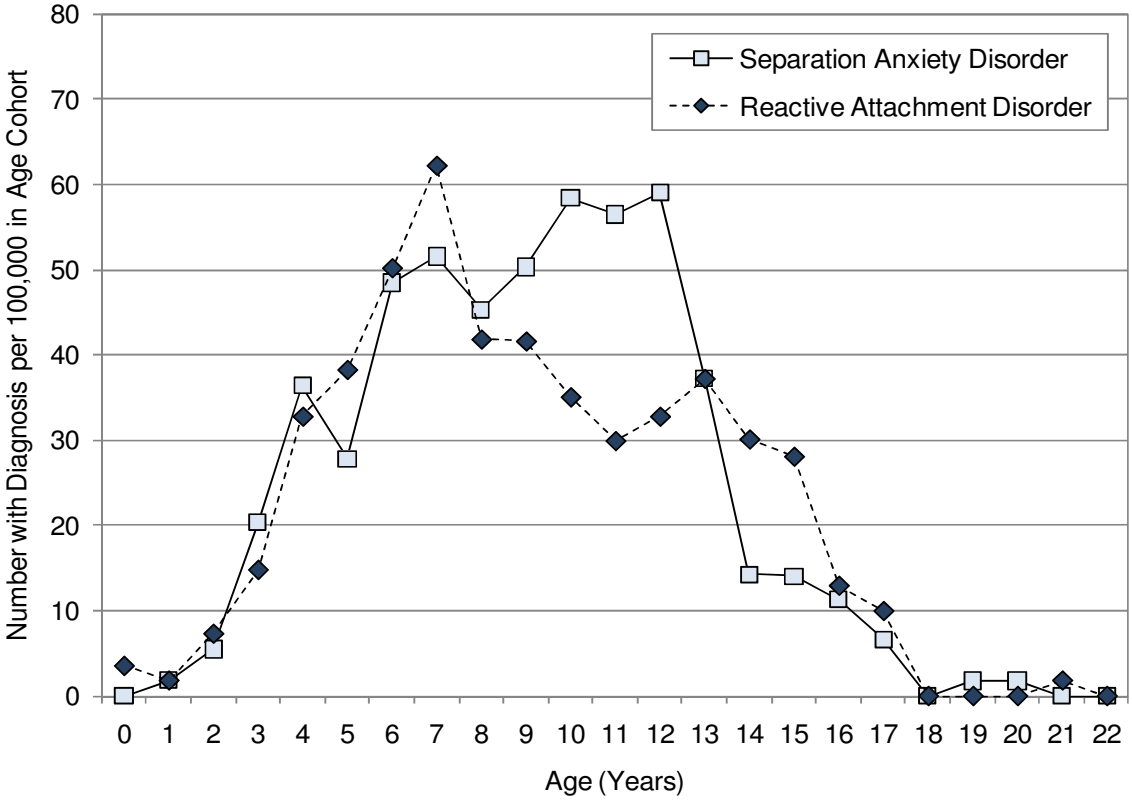
Access to Services by Ethnicity, NZDep Index Decile and Gender: New Zealand

Separation Anxiety Disorder: In New Zealand during 2005-2007, the number of children accessing mental health services with a separation anxiety disorder was *significantly*

higher for European > Māori, Pacific and Asian children, although no significant gender differences were evident. Rates were also *significantly* higher for those in the mid range (Deciles 5-8) of the NZDep distribution. A similar pattern was seen for mental health service contacts, (although males had *significantly* more contacts than females). The small number of inpatient bed nights made interpretation of this data difficult (**Table 68**).

Reactive Attachment Disorder: In New Zealand during 2005-2007, the number of children accessing mental health services with a reactive attachment disorder was *significantly* higher for Māori and European > Pacific and Asian children, males and those in the more deprived NZDep areas. For mental health service contacts, while gender and NZDep deprivation differences were similar, contacts were *significantly* higher for Māori > European > Pacific > Asian children. Again, the small number of inpatient bed nights made interpretation of bed night data difficult (**Table 70**).

Figure 108. Children and Young People Accessing Mental Health Services with Separation Anxiety or Reactive Attachment Disorders by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period)

Table 57. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Hyperkinetic Disorder (Including Attention Deficit Hyperactivity Disorder), Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	252*	8.8	0.0		
New Zealand	2,349	9.8	0.1	0.01	90.82

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. of Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No of. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation); * see cautions in text when interpreting this figure.

Table 58. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Hyperkinetic Disorder (Including Attention Deficit Hyperactivity Disorder) by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	204	116	1.00		1,821	1,036	1.00		84	48	1.00	
Decile 3-4	345	209	1.80	1.52 - 2.14	3,203	1,944	1.88	1.82 - 1.94	25	15	0.32	0.25 - 0.42
Decile 5-6	587	369	3.18	2.71 - 3.73	5,923	3,724	3.59	3.49 - 3.70	29	18	0.38	0.30 - 0.49
Decile 7-8	681	419	3.61	3.09 - 4.22	7,286	4,486	4.33	4.21 - 4.46	48	29	0.62	0.50 - 0.76
Decile 9-10	530	258	2.22	1.89 - 2.61	4,800	2,337	2.26	2.19 - 2.32	68	33	0.70	0.58 - 0.84
	Ethnicity				Ethnicity				Ethnicity			
Asian	12	17	0.05	0.03 - 0.09	128	182	0.05	0.05 - 0.06	<5	s	s	s
European	1,691	353	1.00		16,596	3,462	1.00		196	41	1.00	
Māori	476	238	0.68	0.61 - 0.75	5,043	2,522	0.73	0.72 - 0.74	44	22	0.54	0.45 - 0.65
Pacific	54	71	0.20	0.15 - 0.27	347	460	0.13	0.12 - 0.14	0	s	s	s
	Gender				Gender				Gender			
Female	405	96	1.00		4,539	1,072	1.00		118	28	1.00	
Male	1944	438	4.58	4.11 - 5.10	18,500	4,166	3.89	3.82 - 3.96	135	30	1.09	0.95 - 1.26

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 59. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Conduct / Mixed Conduct Emotional Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	21	19.8	1.7	0.09	11.53
New Zealand	1,439	11.2	0.5	0.04	23.93

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 60. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Conduct / Mixed Conduct Emotional Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	106	60	1.00		1,223	696	1.00		81	46	1.00	
Decile 3-4	185	112	1.86	1.47 - 2.36	1,757	1,066	1.53	1.47 - 1.60	66	40	0.87	0.72 - 1.05
Decile 5-6	301	189	3.14	2.51 - 3.91	3,897	2,450	3.52	3.39 - 3.65	198	124	2.69	2.32 - 3.12
Decile 7-8	455	280	4.64	3.76 - 5.74	5,761	3,547	5.10	4.92 - 5.28	222	137	2.95	2.55 - 3.42
Decile 9-10	391	190	3.15	2.55 - 3.91	3,498	1,703	2.45	2.36 - 2.54	107	52	1.12	0.95 - 1.32
	Ethnicity				Ethnicity				Ethnicity			
Asian	15	21	0.11	0.07 - 0.19	102	144	0.06	0.06 - 0.07	0	s	s	s
European	910	190	1.00		10,903	2,274	1.00		583	122	1.00	
Māori	388	194	1.02	0.91 - 1.15	4,129	2,065	0.91	0.89 - 0.93	62	31	0.25	0.22 - 0.29
Pacific	52	69	0.36	0.27 - 0.48	385	510	0.22	0.21 - 0.24	9	12	0.10	0.07 - 0.15
	Gender				Gender				Gender			
Female	360	85	1.00		4,394	1,037	1.00		378	89	1.00	
Male	1,079	243	2.86	2.54 - 3.22	11,746	2,645	2.55	2.50 - 2.60	296	67	0.75	0.69 - 0.82

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 61. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Pervasive Developmental Disorder (Including Autism), Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	96*	11.2	0.4	0.03	31.98
New Zealand	856	10.2	0.4	0.04	25.19

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation); * see cautions in text when interpreting this figure.

Table 62. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Pervasive Developmental Disorder (Including Autism) by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	116	66	1.00		925	527	1.00		28	16	1.00	
Decile 3-4	150	91	1.38	1.08 - 1.76	1,419	861	1.64	1.56 - 1.71	82	50	3.10	2.42 - 3.97
Decile 5-6	201	126	1.91	1.52 - 2.41	2,292	1,441	2.74	2.62 - 2.86	18	11	0.69	0.49 - 0.97
Decile 7-8	249	153	2.32	1.86 - 2.89	2,955	1,820	3.46	3.31 - 3.60	189	116	7.20	5.74 - 9.05
Decile 9-10	140	68	1.03	0.81 - 1.32	1,167	568	1.08	1.03 - 1.13	31	15	0.93	0.69 - 1.24
	Ethnicity				Ethnicity				Ethnicity			
Asian	32	45	0.32	0.23 - 0.46	227	323	0.22	0.20 - 0.23	<5	s	s	s
European	672	140	1.00		7,122	1,486	1.00		265	55	1.00	
Māori	93	47	0.33	0.27 - 0.41	910	455	0.31	0.29 - 0.32	64	32	0.58	0.49 - 0.67
Pacific	13	17	0.12	0.07 - 0.21	88	117	0.08	0.07 - 0.09	7	10	0.18	0.12 - 0.27
	Gender				Gender				Gender			
Female	144	34	1.00		1,531	361	1.00		110	26	1.00	
Male	712	160	4.72	3.94 - 5.64	7,227	1,628	4.50	4.36 - 4.65	238	54	2.06	1.81 - 2.35

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 63. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Learning Disorder / Problems with the Development of Scholastic Skills, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	18	7.1	0.0		
New Zealand	475	8.9	0.1	0.02	60.66

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 64. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of a Learning Disorder / Problems with the Development of Scholastic Skills by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	60	34	1.00		412	234	1.00		<5	s	s	s
Decile 3-4	88	53	1.56	1.13 - 2.17	877	532	2.27	2.12 - 2.43	8	5	s	s
Decile 5-6	103	65	1.90	1.38 - 2.61	891	560	2.39	2.23 - 2.55	15	9	s	s
Decile 7-8	125	77	2.25	1.66 - 3.07	1,242	764	3.26	3.06 - 3.48	41	25	s	s
Decile 9-10	99	48	1.41	1.02 - 1.94	805	392	1.67	1.56 - 1.79	<5	s	s	s
	Ethnicity				Ethnicity				Ethnicity			
Asian	8	11	0.16	0.08 - 0.32	107	151	0.23	0.21 - 0.26	<5	s	s	s
European	339	71	1.00		3,114	650	1.00		60	13	1.00	
Māori	95	48	0.67	0.54 - 0.84	791	396	0.61	0.58 - 0.64	8	4	0.32	0.21 - 0.49
Pacific	15	20	0.28	0.17 - 0.47	111	147	0.23	0.20 - 0.25	0	s	s	s
	Gender				Gender				Gender			
Female	112	26	1.00		1,153	272	1.00		23	5	1.00	
Male	363	82	3.09	2.50 - 3.82	3,073	692	2.54	2.44 - 2.64	47	11	1.98	1.48 - 2.64

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 65. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of Mental Retardation, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	21	6.1	0.0		
New Zealand	255	8.6	0.7	0.08	11.93

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 66. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of Mental Retardation by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	20	11	1.00		170	97	1.00		0	s	s	s
Decile 3-4	29	18	1.55	0.87 - 2.73	205	124	1.28	1.14 - 1.44	8	5	s	s
Decile 5-6	56	35	3.09	1.86 - 5.15	598	376	3.88	3.52 - 4.28	103	65	s	s
Decile 7-8	79	49	4.27	2.62 - 6.98	755	465	4.80	4.36 - 5.28	30	18	s	s
Decile 9-10	71	35	3.04	1.85 - 4.99	475	231	2.38	2.15 - 2.64	44	21	s	s
	Ethnicity				Ethnicity				Ethnicity			
Asian	5	7	0.21	0.08 - 0.50	37	52	0.17	0.14 - 0.21	<5	s	s	s
European	165	34	1.00		1,443	301	1.00		127	26	1.00	
Māori	57	29	0.83	0.61 - 1.12	515	258	0.86	0.81 - 0.91	31	15	0.58	0.46 - 0.73
Pacific	15	20	0.58	0.34 - 0.98	129	170	0.57	0.51 - 0.63	24	31	1.19	0.92 - 1.53
	Gender				Gender				Gender			
Female	78	18	1.00		770	182	1.00		86	20	1.00	
Male	177	40	2.16	1.66 - 2.83	1,433	323	1.77	1.69 - 1.87	99	22	1.10	0.93 - 1.30

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 67. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of Separation Anxiety Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	11	8.0	0.0		
New Zealand	300	10.8	0.1	0.01	85.98

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 68. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of Separation Anxiety Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	45	26	1.00		569	324	1.00		8	5	s	s
Decile 3-4	52	32	1.23	0.83 - 1.84	559	339	1.05	0.98 - 1.12	<5	1	s	s
Decile 5-6	68	43	1.67	1.15 - 2.43	932	586	1.81	1.70 - 1.92	26	16	s	s
Decile 7-8	81	50	1.95	1.35 - 2.80	743	457	1.41	1.33 - 1.50	<5	1	s	s
Decile 9-10	54	26	1.03	0.69 - 1.52	436	212	0.65	0.61 - 0.70	0	0	s	s
	Ethnicity				Ethnicity				Ethnicity			
Asian	<5	4	0.08	0.03 - 0.25	38	53	0.09	0.08 - 0.11	0	0	s	s
European	255	53	1.00		2,775	579	1.00		29	6	s	s
Māori	25	13	0.24	0.16 - 0.35	260	130	0.22	0.21 - 0.24	0	0	s	s
Pacific	7	9	0.17	0.08 - 0.37	79	105	0.18	0.16 - 0.21	0	0	s	s
	Gender				Gender				Gender			
Female	142	34	1.00		1,417	335	1.00		30	7	1.00	
Male	158	36	1.06	0.85 - 1.33	1,821	410	1.23	1.18 - 1.28	8	2	0.24	0.15 - 0.39

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 69. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of Reactive Attachment Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	35*	14.3	0.1	0.01	100.13
New Zealand	268	14.1	0.1	0.00	206.27

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation); * see cautions in text when interpreting this figure.

Table 70. Access to Mental Health Services for Children Aged 0-14 Years with a Diagnosis of Reactive Attachment Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	23	13	1.00		265	151	1.00		0	0	s	s
Decile 3-4	33	20	1.53	0.90 - 2.61	476	289	1.91	1.75 - 2.09	9	s	s	s
Decile 5-6	60	38	2.88	1.78 - 4.66	1,176	739	4.89	4.53 - 5.28	6	s	s	s
Decile 7-8	74	46	3.48	2.18 - 5.56	1,070	659	4.36	4.04 - 4.71	<5	s	s	s
Decile 9-10	78	38	2.90	1.82 - 4.62	795	387	2.56	2.37 - 2.78	0	0	s	s
	Ethnicity				Ethnicity				Ethnicity			
Asian	<5	3	0.08	0.02 - 0.32	28	40	0.08	0.07 - 0.10	0	0	s	s
European	171	36	1.00		2,296	479	1.00		11	s	s	s
Māori	75	38	1.05	0.80 - 1.38	1,037	519	1.08	1.04 - 1.13	<5	s	s	s
Pacific	10	13	0.37	0.20 - 0.70	208	275	0.58	0.53 - 0.62	<5	s	s	s
	Gender				Gender				Gender			
Female	104	25	1.00		1,737	410	1.00		10	s	s	s
Male	164	37	1.50	1.18 - 1.92	2,045	460	1.12	1.08 - 1.16	9	s	s	s

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children 0-14 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 children 0-14 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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

Summary

In New Zealand during 2005-2007, hyperkinetic disorders (including ADHD) and conduct / mixed conduct emotional disorders were the most frequent diagnoses given to children accessing mental health services. Pervasive developmental disorders (including autism) and learning problems also made a significant contribution. While the distribution by gender, ethnicity and NZDep deprivation varied from diagnosis to diagnosis, the majority of interactions with mental health services occurred on an outpatient / community basis, with very few children being managed as inpatients. When considering these figures however, it must be remembered that many children with these diagnoses are likely to access paediatric outpatient services, and that this workload is not captured by the MHINC.

In Taranaki during 2005-2007, hyperkinetic disorders (including ADHD) and pervasive developmental disorders (including autism) were the most frequent diagnoses given to children accessing mental health services. The majority of children with these diagnoses were seen on an outpatient / community basis, with very few being admitted to hospital for management. (*Note: Rates for a number of conditions appear unusually high, and thus the possibility of irregularities in the way in which data was uploaded to the MHINC cannot be ruled out*).

ACCESS TO MENTAL HEALTH SERVICES: LATE CHILDHOOD AND ADOLESCENCE

The following section provides an overview of access to mental health services for children and young people aged 0-24 years with the following diagnoses:

1. Stress Reaction / Adjustment Disorders
2. Anxiety Disorders
3. Eating Disorders
4. Obsessive Compulsive Disorder

Data Source and Methods

Information on the Mental Health Information National Collection (MHINC) and the ICD-10 codes used is provided in the Introduction Section commencing on **Page 211**.

Taranaki and New Zealand Distribution

Anxiety, Adjustment, Obsessive Compulsive and Eating Disorders

Common Diagnoses in Children and Young People Accessing Mental Health Services in Late Childhood and Adolescence: Taranaki vs. New Zealand

In addition to the diagnoses reviewed in the earlier 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 Taranaki during 2005-2007, these included stress reaction / adjustment disorders, anxiety disorders, eating disorders and obsessive compulsive disorder (**Table 71**).

Table 71. Number of Children and Young People Aged 0-24 Years Accessing Mental Health Services with Selected Diagnoses, Taranaki vs. New Zealand 2005-2007

Diagnosis	Taranaki		New Zealand	
	No. of Individuals with Diagnosis	Rate per 100,000	No. of Individuals with Diagnosis	Rate per 100,000
Stress Reaction/Adjustment Disorder	269	751.7	5,196	361.2
Anxiety Disorders	139	388.4	3,201	222.5
Eating Disorders	27	75.5	971	67.5
Obsessive Compulsive Disorder	24	67.1	518	36.0

Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they subsequently accessed services. This approach may increase DHB rates (cf. NZ average) in situations where mobility between DHBs is high (see Methods section for more detailed explanation). As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%. *Table does not include all children and young people with mental health diagnoses accessing services in the region, but rather provides an overview of the most common diagnoses only.

Numbers Accessing Services by Age: New Zealand

In New Zealand during 2005-2007, the number accessing mental health services with a diagnosis of stress reaction / adjustment disorder increased gradually during childhood, but then more steeply between 12 and 14 years. Numbers peaked at 14 years of age, before declining again during the late teens / early twenties. The number with a diagnosis of an anxiety disorder increased more gradually during childhood and adolescence, to a peak at 16 years of age, while eating disorders and obsessive compulsive disorder were most common in those aged 13-22 years (**Figure 109**).

Access to Services: Taranaki vs. New Zealand

Anxiety Disorders: In Taranaki during 2005-2007, a total of 139 children and young people accessing mental health services were diagnosed with an anxiety disorder. Children and

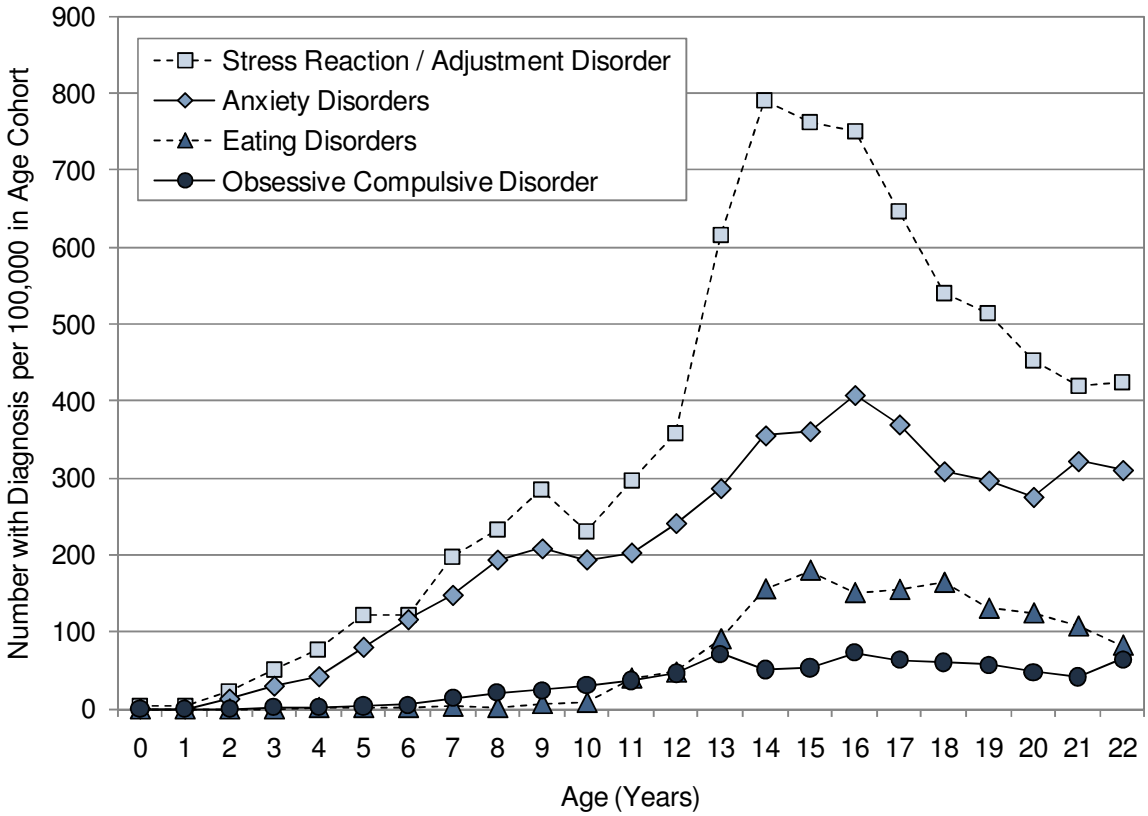
young people with anxiety disorders, on average, had 10.7 contacts per year with mental health services, and 1.0 inpatient bed nights, resulting in a ratio of 10.39 contacts for every inpatient bed night during this period (**Table 72**).

Stress Reaction / Adjustment Disorders: In Taranaki during 2005-2007, a total of 269 children and young people accessing mental health services were diagnosed with a stress reaction / adjustment disorder. Children and young people with stress reactions / adjustment disorders, on average, had 12.0 contacts per year with mental health services, and 2.8 inpatient bed nights, resulting in a ratio of 4.27 contacts for every inpatient bed night during this period (**Table 74**).

Obsessive Compulsive Disorder: In Taranaki during 2005-2007, a total of 24 children and young people accessing mental health services were diagnosed with obsessive compulsive disorder. Children and young people with obsessive compulsive disorder, on average, had 20.3 contacts per year with mental health services, and 5.3 inpatient bed nights, resulting in a ratio of 3.85 contacts for every inpatient bed night during this period (**Table 76**).

Eating Disorders: In Taranaki during 2005-2007, a total of 27 children and young people accessing mental health services were diagnosed with an eating disorder. Children and young people with eating disorders, on average, had 16.8 contacts per year with mental health services, and 1.9 inpatient bed nights, resulting in a ratio of 8.97 contacts for every inpatient bed night during this period (**Table 78**).

Figure 109. Children and Young People Accessing Mental Health Services with Anxiety, Adjustment, Obsessive Compulsive or Eating Disorders by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period)

Access to Services by Ethnicity, NZDep Index Decile and Gender: New Zealand

Anxiety Disorders: In New Zealand during 2005-2007, the number of children and young people accessing mental health services with an anxiety disorder was *significantly* higher for European > Māori > Pacific and Asian children and young people, females and those in the mid-ranges (Deciles 3-8) of the NZDep distribution. A similar pattern was seem for mental health service contacts, although for inpatient bed nights, rates were *significantly*

higher for European and Māori > Asian > Pacific children and young people, females and those in average-more deprived (Deciles 3-10) areas (**Table 73**).

Stress Reaction / Adjustment Disorders: In New Zealand during 2005-2007, the number of children and young people accessing mental health services with a stress reaction / adjustment disorder was *significantly* higher for European > Māori > Pacific > Asian children and young people, females and those in average-more deprived (Decile 3-10) areas. While similar socioeconomic and gender differences were seen for the number of contacts and inpatient bed nights, both measures were significantly higher for Māori > European > Pacific > Asian children and young people (**Table 75**).

Obsessive Compulsive Disorder: In New Zealand during 2005-2007, the number of children and young people accessing mental health services with obsessive compulsive disorder was *significantly* higher for European > Māori, Pacific and Asian children and young people, and those in the mid-ranges (Deciles 5-8) of the NZDep distribution. For mental health contacts and inpatient bed nights, rates were *significantly* higher for females, European > Asian > Māori > Pacific children and young people, and those in the mid-ranges (Deciles 3-8) of the NZDep distribution (**Table 77**).

Eating Disorders: In New Zealand during 2005-2007, the number of children and young people accessing mental health services with an eating disorder was *significantly* lower for those in the most deprived (Decile 9-10) areas. Rates were *significantly* higher for females, and European > Asian > Māori and Pacific children and young people. A similar pattern was seen for mental health service contacts and inpatient bed nights (**Table 79**).

Summary

In New Zealand during 2005-2007, in addition to conditions emerging during childhood, a number of mental health diagnoses became increasingly common during late childhood and early adolescence. These included stress reaction / adjustment disorders, anxiety disorders, eating disorders and obsessive compulsive disorder. While the distribution by gender, ethnicity and NZDep deprivation varied from diagnosis to diagnosis, when compared to mental health issues in childhood, a higher proportion of children and young people with these diagnoses were managed on an inpatient basis (although outpatient and community contacts still predominated, with 6-10 mental health service contacts occurring for every inpatient bed night during this period).

In Taranaki during 2005-2007, a number of children and young people with stress reaction / adjustment disorders, anxiety disorders, eating disorders and obsessive compulsive disorder also accessed mental health services. A higher proportion of children and young people with these diagnoses were managed on an inpatient basis (vs. common childhood conditions), although outpatient and community contacts still far exceeded the number of inpatient bed nights seen.

Table 72. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of an Anxiety Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	139	10.7	1.0	0.10	10.39
New Zealand	3,201	12.0	1.4	0.11	8.86

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 73. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of an Anxiety Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	500	184	1.00		5,412	1,991	1.00		419	154	1.00	
Decile 3-4	558	209	1.14	1.01 - 1.28	6,539	2,450	1.23	1.21 - 1.26	580	217	1.41	1.31 - 1.51
Decile 5-6	696	258	1.40	1.25 - 1.58	9,521	3,534	1.78	1.74 - 1.81	916	340	2.21	2.06 - 2.36
Decile 7-8	882	311	1.69	1.52 - 1.89	11,708	4,130	2.07	2.04 - 2.11	1,804	636	4.13	3.88 - 4.39
Decile 9-10	559	161	0.88	0.78 - 0.99	5,227	1,508	0.76	0.74 - 0.77	621	179	1.16	1.08 - 1.25
	Ethnicity				Ethnicity				Ethnicity			
Asian	60	41	0.13	0.10 - 0.17	825	566	0.15	0.15 - 0.16	88	60	0.18	0.16 - 0.20
European	2,501	313	1.00		29,526	3,690	1.00		2,710	339	1.00	
Māori	298	99	0.32	0.28 - 0.36	4,243	1,408	0.38	0.37 - 0.39	988	328	0.97	0.93 - 1.01
Pacific	60	52	0.17	0.13 - 0.21	874	752	0.20	0.20 - 0.21	28	24	0.07	0.06 - 0.09
	Gender				Gender				Gender			
Female	1,767	250	1.00		22,208	3,140	1.00		2,595	367	1.00	
Male	1,434	196	0.78	0.73 - 0.84	16,229	2,218	0.71	0.70 - 0.71	1,746	239	0.65	0.63 - 0.67

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children and young people 0-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 74. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of a Stress Reaction / Adjustment Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	269	12.0	2.8	0.23	4.27
New Zealand	5,196	10.6	1.8	0.17	6.06

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 75. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of a Stress Reaction / Adjustment Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	516	190	1.00		3,789	1,394	1.00		359	132	1.00	
Decile 3-4	729	273	1.44	1.29 - 1.61	7,246	2,715	1.95	1.91 - 1.99	700	262	1.99	1.85 - 2.14
Decile 5-6	1127	418	2.20	1.99 - 2.45	14,601	5,419	3.89	3.81 - 3.97	2,234	829	6.29	5.89 - 6.70
Decile 7-8	1577	556	2.93	2.65 - 3.24	18,585	6,555	4.70	4.61 - 4.80	3,719	1,312	9.94	9.34 - 10.58
Decile 9-10	1238	357	1.88	1.70 - 2.08	10,902	3,145	2.26	2.21 - 2.30	2,091	603	4.57	4.29 - 4.88
	Ethnicity				Ethnicity				Ethnicity			
Asian	177	122	0.29	0.25 - 0.33	1,390	954	0.22	0.22 - 0.23	133	92	0.14	0.13 - 0.15
European	3,390	424	1.00		34,038	4,254	1.00		5,247	656	1.00	
Māori	1,063	353	0.83	0.78 - 0.89	13,512	4,486	1.05	1.04 - 1.07	2,593	861	1.31	1.28 - 1.35
Pacific	198	170	0.40	0.35 - 0.46	2,518	2,166	0.51	0.50 - 0.52	403	347	0.53	0.50 - 0.56
	Gender				Gender				Gender			
Female	2,993	423	1.00		34,590	4,891	1.00		5,983	846	1.00	
Male	2,202	301	0.71	0.67 - 0.75	20,554	2,810	0.57	0.57 - 0.58	3,121	427	0.50	0.49 - 0.52

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children and young people 0-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 76. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of Obsessive Compulsive Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	24	20.3	5.3	0.26	3.85
New Zealand	518	17.0	3.3	0.19	5.20

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 77. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of Obsessive Compulsive Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	88	32	1.00		1,186	436	1.00		148	54	1.00	
Decile 3-4	93	35	1.08	0.80 - 1.44	1,659	621	1.42	1.37 - 1.49	427	160	2.94	2.64 - 3.28
Decile 5-6	115	43	1.32	1.00 - 1.74	2,344	870	1.99	1.92 - 2.08	241	90	1.65	1.47 - 1.86
Decile 7-8	146	52	1.59	1.22 - 2.07	2,649	935	2.14	2.06 - 2.23	817	288	5.30	4.79 - 5.87
Decile 9-10	76	22	0.68	0.50 - 0.92	958	276	0.63	0.60 - 0.67	60	17	0.32	0.27 - 0.38
	Ethnicity				Ethnicity				Ethnicity			
Asian	23	16	0.33	0.22 - 0.50	609	418	0.51	0.49 - 0.54	131	90	0.74	0.66 - 0.82
European	383	48	1.00		6,507	813	1.00		978	122	1.00	
Māori	30	10	0.21	0.14 - 0.30	566	188	0.23	0.22 - 0.24	134	45	0.36	0.33 - 0.40
Pacific	11	9	0.20	0.11 - 0.36	73	63	0.08	0.07 - 0.09	0	s	s	s
	Gender				Gender				Gender			
Female	265	37	1.00		4,808	680	1.00		1,330	188	1.00	
Male	253	35	0.92	0.78 - 1.10	3,987	545	0.80	0.78 - 0.82	362	49	0.26	0.25 - 0.28

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children and young people 0-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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; s: rate suppressed due to small sample size

Table 78. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of an Eating Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	27	16.8	1.9	0.11	8.97
New Zealand	971	17.3	4.2	0.24	4.16

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 79. Access to Mental Health Services for Children and Young People Aged 0-24 Years with a Diagnosis of an Eating Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	187	69	1.00		2,615	962	1.00		629	231	1.00	
Decile 3-4	217	81	1.18	0.97 - 1.44	3,670	1,375	1.43	1.39 - 1.47	897	336	1.45	1.37 - 1.54
Decile 5-6	226	84	1.22	1.00 - 1.48	4,862	1,805	1.88	1.83 - 1.93	1,001	372	1.61	1.52 - 1.70
Decile 7-8	226	80	1.16	0.95 - 1.41	4,304	1,518	1.58	1.54 - 1.62	1,105	390	1.68	1.59 - 1.78
Decile 9-10	112	32	0.47	0.37 - 0.59	1,267	366	0.38	0.37 - 0.39	401	116	0.50	0.46 - 0.54
	Ethnicity				Ethnicity				Ethnicity			
Asian	47	32	0.35	0.26 - 0.46	514	353	0.21	0.20 - 0.22	89	61	0.16	0.14 - 0.18
European	746	93	1.00		13,475	1,684	1.00		3,023	378	1.00	
Māori	49	16	0.17	0.13 - 0.23	910	302	0.18	0.17 - 0.19	99	33	0.09	0.08 - 0.10
Pacific	9	8	0.08	0.04 - 0.16	64	55	0.03	0.03 - 0.04	6	5	0.01	0.01 - 0.02
	Gender				Gender				Gender			
Female	917	130	1.00		15,970	2,258	1.00		3,792	536	1.00	
Male	54	7	0.06	0.04 - 0.07	817	112	0.05	0.05 - 0.05	241	33	0.06	0.06 - 0.07

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 children and young people 0-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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

ACCESS TO MENTAL HEALTH SERVICES: LATE ADOLESCENCE

In contrast to the previous two sections, the following section is broken into two parts:

1. *Hospital Inpatient Admissions*: This section uses the National Minimum Dataset to review the most common reasons for hospital admission with a mental health diagnosis in young people, with the unit of analysis being the number of hospital admissions, rather than the number of individuals with a given diagnosis.
2. *Access to Mental Health Services*: This section uses the Mental Health Information National Collection (MHINC) to review access to mental health services for young people with the following diagnoses: Schizophrenia; Schizotypal / Delusional Disorders; Personality / Behaviour Disorders; and Organic Mental Disorders. In addition access to services for mental health issues associated with Substance Use (Alcohol, Cannabis, Tobacco and other Drugs) is also considered.

Additional Data Source and Methods

Note: Information on the Mental Health Information National Collection (MHINC) and the ICD-10 codes used is provided in the Introduction Section commencing on **Page 211**. 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 in this section.

Definition

1. *Hospital Admissions for Mental Health Issues in Young People Aged 15-24 Years*

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 F00-F99). Admissions with an Emergency Medicine specialty code in the range M05-M08 on discharge were excluded.

Denominator: NZ Census

Indicator Category Bookmark / Proxy C

Notes on Interpretation

Note 1: The limitations of the National Minimum Dataset are discussed in Appendix 4. The reader is urged to review this Appendix before interpreting any analyses based on hospital admission data. In addition, the change over from ICD-9 to ICD-10 during 1999 made comparisons with earlier years difficult.

Note 2: Whereas the inpatient data derived from the MHINC refers to the number of bed nights utilised by young people with various mental health diagnoses, the section on mental health inpatient admissions below 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 the same diagnosis).

Note 3: For hospital admission data, only the primary diagnosis has been used (vs. MHINC data, where a client with more than one diagnosis may appear several times in conjunction with each of the diagnoses received)

Inpatient Hospital Admissions with Mental Health Issues

Taranaki and New Zealand Distribution

In New Zealand during 2004-2008, the most common reasons for hospital admissions with mental health issues in young people were for schizophrenia, followed by depression and bipolar affective disorder. Composite categories including schizotypal / delusional disorders and drug and alcohol related conditions also made a significant contribution. In Taranaki during this period, the most common reasons for inpatient admissions with mental health issues were for alcohol and drug problems, stress reaction / adjustment disorders and schizophrenia. While rates for a number of diagnoses varied from the New Zealand average, such figures are difficult to interpret, as many mental health services in New Zealand 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 in **Table 80** is the number of hospital admissions (as compared to the number of inpatient bed nights in the sections derived from MHINC data)).

Table 80. The Most Frequent Reasons for a Hospital Admission with a Mental Health Issue in Young People 15-24 Years, Taranaki vs. New Zealand 2004-2008

Diagnosis	Number: Total 2004-2008	Number: Annual Average	Rate per 100,000	% of Total
Taranaki				
Schizophrenia	70	14.0	107.1	15.7
Schizotypal/Delusional Disorders	32	6.4	48.9	7.2
Depression	55	11.0	84.1	12.3
Bipolar Affective Disorder	18	3.6	27.5	4.0
Other Mood Disorders	8	1.6	12.2	1.8
Alcohol/Drug Mental Health Effects	95	19.0	145.3	21.3
Stress Reaction/Adjustment Disorder	71	14.2	108.6	15.9
Personality Disorders	<5	0.6	4.6	0.7
Eating Disorders	15	3.0	22.9	3.4
Other Mental Health Issues	80	16.0	122.4	17.9
Taranaki Total	447	89.4	683.6	100.0
New Zealand				
Schizophrenia	3,329	665.8	116.6	25.7
Schizotypal/Delusional Disorders	1,517	303.4	53.1	11.7
Depression	1,813	362.6	63.5	14.0
Bipolar Affective Disorder	1,066	213.2	37.3	8.2
Other Mood Disorders	325	65.0	11.4	2.5
Alcohol/Drug Mental Health Effects	1,478	295.6	51.8	11.4
Stress Reaction/Adjustment Disorder	1,153	230.6	40.4	8.9
Personality Disorders	627	125.4	22.0	4.8
Eating Disorders	404	80.8	14.1	3.1
Other Mental Health Issues	1,233	246.6	43.2	9.5
New Zealand Total	12,945	2,589.0	453.3	100.0

Source: Numerator National Minimum Dataset; Denominator: Census; Emergency Department cases removed.

Access to Mental Health Services (MHINC Data)

Schizophrenia, Schizotypal / Delusional Disorders, Personality / Behavioural Disorders and Organic Mental Disorders

Common Diagnoses in Young People Accessing Mental Health Services in Late Adolescence: Taranaki vs. New Zealand

In addition to the diagnoses reviewed in earlier sections, a number of mental health diagnoses became increasingly common during late adolescence. In Taranaki during 2005-2007, these included schizophrenia and schizotypal / delusional disorders, personality / behaviour disorders and organic mental disorders (**Table 81**).

Numbers Accessing Services by Age: New Zealand

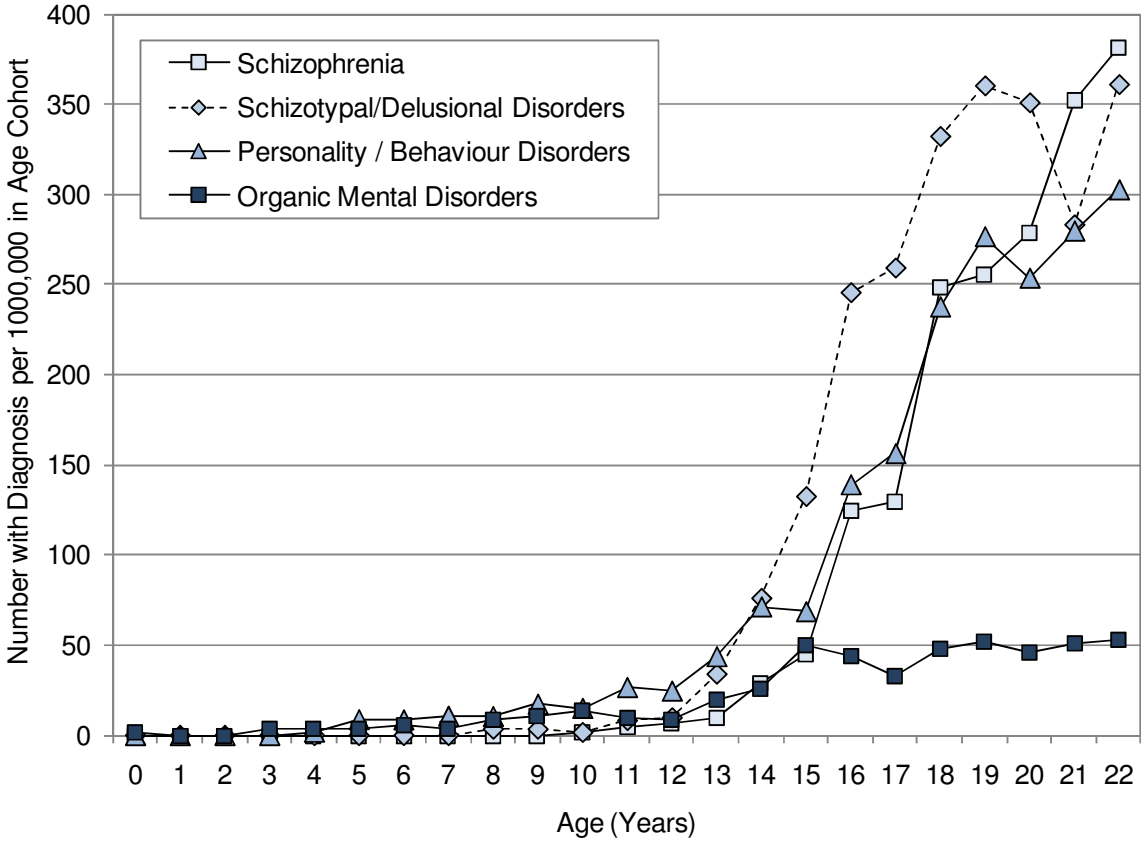
In New Zealand during 2005-2007, the number of young people accessing mental health services with a schizotypal / delusional disorder increased rapidly after 12 years of age, with numbers being highest during the late teens / early twenties. While the number with a diagnosis of schizophrenia or a behaviour / personality disorder followed a similar pattern, the age distribution was shifted to the right (vs. schizotypal disorders) by 1-2 years. The number diagnosed with an organic mental disorder increased slowly during childhood / early adolescence, and remained relatively static thereafter (**Figure 110**).

Table 81. Number of Young People Aged 15-24 Years Accessing Mental Health Services with Selected Diagnoses*, Taranaki vs. New Zealand 2005-2007

Diagnosis	Taranaki		New Zealand	
	No. of Individuals with Diagnosis	Rate per 100,000	No. of Individuals with Diagnosis	Rate per 100,000
Schizotypal/Delusional Disorders	49	374.7	1,816	317.9
Schizophrenia	63	481.8	1,731	303.1
Personality / Behaviour Disorders	50	382.4	1,349	236.2
Organic Mental Disorders	9	68.8	285	49.9

Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they subsequently accessed services. This approach may increase DHB rates (cf. NZ average) in situations where mobility between DHBs is high (see Methods section for more detailed explanation). As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%. *Table does not include all young people with mental health diagnoses accessing services in the region, but rather provides an overview of the most common diagnoses only.

Figure 110. Children and Young People Accessing Mental Health Services with Schizophrenia, Schizotypal / Delusional, Personality / Behaviour or Organic Mental Disorders by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period)

Access to Services: Taranaki vs. New Zealand

Schizophrenia: In Taranaki during 2005-2007, a total of 63 young people accessing mental health services were diagnosed with schizophrenia. Young people with schizophrenia, on average, had 37.1 contacts per year with mental health services, and 31.9 inpatient bed nights, resulting in a ratio of 1.16 contacts for every inpatient bed night during this period (**Table 82**).

Schizotypal / Delusional Disorders: In Taranaki during 2005-2007, a total of 49 young people accessing mental health services were diagnosed with schizotypal / delusional disorders. Young people with schizotypal / delusional disorders, on average, had 37.4 contacts per year with mental health services, and 23.1 inpatient bed nights, resulting in a ratio of 1.62 contacts for every inpatient bed night during this period (**Table 84**).

Personality / Behaviour Disorders: In Taranaki during 2005-2007, a total of 50 young people accessing mental health services were diagnosed with personality / behaviour disorders. Young people with personality / behaviour disorders, on average, had 32.7 contacts per year with mental health services, and 27.8 inpatient bed nights, resulting in a ratio of 1.17 contacts for every inpatient bed night during this period (**Table 86**).

Organic Mental Disorders: In Taranaki during 2005-2007, a total of 9 young people accessing mental health services were diagnosed with organic mental disorders. Young people with organic mental disorders, on average, had 9.1 contacts per year with mental health services, and 1.7 inpatient bed nights, resulting in a ratio of 5.26 contacts for every inpatient bed night during this period (**Table 88**).

Note: As outlined in the Methods section, contacts and inpatient bed nights are counted for individuals *ever diagnosed* with a particular condition, rather than for the diagnosis relating to the current episode of care (e.g. an individual may receive a diagnosis of a schizotypal / delusional disorder, and this may subsequently be changed to schizophrenia). The analysis presented relates to *all episodes of care* for an individual *ever diagnosed* with a condition (e.g. schizotypal / delusional disorder), irrespective of the fact that some of these presentations may be in relation to other diagnoses (e.g. schizophrenia).

Access to Services by Ethnicity, NZDep Index Decile and Gender: New Zealand

Schizophrenia: In New Zealand during 2005-2007, the number of young people accessing mental health services with a diagnosis of schizophrenia was *significantly* higher for Māori > Pacific > European > Asian young people, males and those in more deprived (Deciles 5-10) areas. While similar patterns were seen for contacts with mental health services and inpatient bed nights, socioeconomic and ethnic differences were greater for inpatient bed nights, than for the number of individuals diagnosed (**Table 83**).

Schizotypal / Delusional Disorders: In New Zealand during 2005-2007, the number of young people accessing mental health services with a diagnosis of a schizotypal / delusional disorder was *significantly* higher for Māori > Pacific > European > Asian young people, males and those in average-more deprived (Deciles 3-10) areas. Similar patterns were seen for contacts with mental health services and inpatient bed nights (**Table 85**).

Personality / Behaviour Disorders: In New Zealand during 2005-2007, the number of young people accessing mental health services with a personality / behaviour disorder was *significantly* higher for Māori and European > Pacific and Asian young people, females and those in average-more deprived (Deciles 3-10) areas. While socioeconomic differences were similar for mental health service contacts and inpatient bed nights, rates for these measures were *significantly* higher for Māori > European > Pacific > Asian young people. Further, while mental health contacts were *significantly* higher in females, inpatient bed nights were *significantly* higher in males (**Table 87**).

Organic Mental Disorders: In New Zealand during 2005-2007, the number of young people accessing mental health services with an organic mental disorder was *significantly* higher for Māori > European > Asian young people, males and those in more deprived (Decile 5-10) areas. For mental health contacts and inpatient bed nights, rates were *significantly* higher for Māori > Pacific > European > Asian young people, males and those in average-more deprived (Decile 3-10) areas (**Table 89**).

Table 82. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Schizophrenia, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	63	37.1	31.9	0.86	1.16
New Zealand	1,731	42.1	24.6	0.58	1.71

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 83. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Schizophrenia by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	94	98	1.00		2,894	3,010	1.00		1,133	1,178	1.00	
Decile 3-4	121	118	1.21	0.93 - 1.59	3,985	3,901	1.30	1.26 - 1.33	1,521	1,489	1.26	1.21 - 1.32
Decile 5-6	329	298	3.05	2.42 - 3.83	15,037	13,625	4.53	4.43 - 4.62	7,429	6,732	5.71	5.52 - 5.92
Decile 7-8	582	481	4.92	3.95 - 6.11	27,763	22,930	7.62	7.46 - 7.78	19,130	15,800	13.41	12.97 - 13.87
Decile 9-10	601	426	4.35	3.50 - 5.41	23,235	16,454	5.47	5.35 - 5.58	13,257	9,388	7.97	7.70 - 8.24
	Ethnicity				Ethnicity				Ethnicity			
Asian	70	93	0.58	0.45 - 0.74	2,596	3,452	0.54	0.53 - 0.55	1,615	2,148	0.57	0.56 - 0.59
European	517	161	1.00		20,501	6,392	1.00		12,043	3,755	1.00	
Māori	844	833	5.17	4.63 - 5.77	37,922	37,433	5.86	5.82 - 5.90	23,048	22,751	6.06	6.00 - 6.12
Pacific	172	423	2.62	2.21 - 3.11	8,185	20,109	3.15	3.11 - 3.18	3,540	8,697	2.32	2.27 - 2.36
	Gender				Gender				Gender			
Female	414	146	1.00		20,638	7,276	1.00		11,242	3,963	1.00	
Male	1,316	458	3.14	2.81 - 3.50	52,275	18,181	2.50	2.48 - 2.52	31,352	10,904	2.75	2.72 - 2.78

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 84. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Schizotypal / Delusional Disorders, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	49	37.4	23.1	0.62	1.62
New Zealand	1,816	34.1	16.0	0.47	2.13

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 85. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Schizotypal / Delusional Disorders by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	147	153	1.00		4,220	4,390	1.00		1,612	1,676	1.00	
Decile 3-4	196	192	1.25	1.01 - 1.55	5,953	5,828	1.33	1.30 - 1.36	1,674	1,639	0.98	0.94 - 1.02
Decile 5-6	373	338	2.21	1.83 - 2.67	13,807	12,510	2.85	2.80 - 2.90	6,168	5,589	3.33	3.23 - 3.44
Decile 7-8	568	469	3.07	2.56 - 3.68	23,205	19,165	4.37	4.29 - 4.44	11,768	9,719	5.80	5.63 - 5.97
Decile 9-10	520	368	2.41	2.01 - 2.89	14,691	10,404	2.37	2.33 - 2.41	7,874	5,576	3.33	3.23 - 3.43
	Ethnicity				Ethnicity				Ethnicity			
Asian	109	145	0.61	0.50 - 0.74	2,835	3,771	0.50	0.49 - 0.51	1,406	1,870	0.64	0.62 - 0.66
European	767	239	1.00		24,003	7,484	1.00		9,352	2,916	1.00	
Māori	645	637	2.66	2.40 - 2.96	24,635	24,317	3.25	3.23 - 3.27	14,275	14,091	4.83	4.77 - 4.90
Pacific	135	332	1.39	1.16 - 1.66	5,935	14,581	1.95	1.92 - 1.97	2,207	5,423	1.86	1.81 - 1.91
	Gender				Gender				Gender			
Female	623	220	1.00		23,897	8,424	1.00		10,614	3,742	1.00	
Male	1,192	415	1.89	1.71 - 2.08	38,020	13,223	1.57	1.56 - 1.58	18,501	6,435	1.72	1.70 - 1.74

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 86. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of a Personality / Behaviour Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	50	32.7	27.8	0.85	1.17
New Zealand	1,349	24.1	10.7	0.44	2.26

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 87. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of a Personality / Behaviour Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	99	103	1.00		1,487	1,547	1.00		502	522	1.00	
Decile 3-4	169	165	1.61	1.25 - 2.06	3,546	3,471	2.24	2.17 - 2.32	1,012	990	1.90	1.78 - 2.02
Decile 5-6	335	304	2.95	2.36 - 3.69	9,133	8,275	5.35	5.19 - 5.51	3,005	2,723	5.21	4.94 - 5.50
Decile 7-8	459	379	3.68	2.96 - 4.57	13,764	11,368	7.35	7.13 - 7.57	7,008	5,788	11.08	10.53 - 11.67
Decile 9-10	285	202	1.96	1.56 - 2.46	4,587	3,248	2.10	2.03 - 2.17	2,885	2,043	3.91	3.71 - 4.13
	Ethnicity				Ethnicity				Ethnicity			
Asian	30	40	0.15	0.10 - 0.21	786	1,046	0.18	0.18 - 0.19	462	614	0.32	0.30 - 0.34
European	878	274	1.00		18,216	5,679	1.00		6,204	1,934	1.00	
Māori	291	287	1.05	0.92 - 1.20	9,546	9,423	1.66	1.64 - 1.68	5,929	5,852	3.03	2.97 - 3.08
Pacific	32	79	0.29	0.20 - 0.41	1,335	3,280	0.58	0.56 - 0.60	473	1,161	0.60	0.57 - 0.63
	Gender				Gender				Gender			
Female	762	269	1.00		20,287	7,152	1.00		5,838	2,058	1.00	
Male	587	204	0.76	0.68 - 0.85	12,242	4,258	0.60	0.59 - 0.60	8,573	2,982	1.45	1.42 - 1.48

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 88. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of an Organic Mental Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	9	9.1	1.7	0.19	5.26
New Zealand	285	27.7	12.7	0.46	2.17

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 89. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of an Organic Mental Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	24	25	1.00		420	437	1.00		75	78	1.00	
Decile 3-4	29	28	1.14	0.66 - 1.95	759	743	1.70	1.59 - 1.82	185	181	2.33	2.00 - 2.72
Decile 5-6	60	54	2.18	1.36 - 3.50	1,989	1,803	4.12	3.88 - 4.38	835	757	9.74	8.50 - 11.17
Decile 7-8	91	75	3.01	1.92 - 4.72	2,990	2,469	5.65	5.33 - 5.99	1,598	1,320	16.99	14.87 - 19.42
Decile 9-10	79	56	2.24	1.42 - 3.54	1,723	1,220	2.79	2.63 - 2.97	937	664	8.55	7.46 - 9.79
	Ethnicity				Ethnicity				Ethnicity			
Asian	14	19	0.39	0.23 - 0.67	438	583	0.55	0.52 - 0.58	161	214	0.56	0.51 - 0.61
European	153	48	1.00		3,428	1,069	1.00		1,230	383	1.00	
Māori	72	71	1.49	1.13 - 1.97	3,038	2,998	2.81	2.73 - 2.88	1,639	1,618	4.22	4.05 - 4.40
Pacific	26	64	1.34	0.88 - 2.03	723	1,775	1.66	1.59 - 1.74	242	594	1.55	1.43 - 1.68
	Gender				Gender				Gender			
Female	113	40	1.00		3,003	1,059	1.00		852	300	1.00	
Male	172	60	1.50	1.18 - 1.90	4,882	1,698	1.60	1.56 - 1.65	2,779	967	3.22	3.08 - 3.36

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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

Depression, Bipolar Affective Disorder and Other Mood Disorders

Common Mood Disorders in Young People Accessing Mental Health Services in Late Adolescence: Taranaki vs. New Zealand

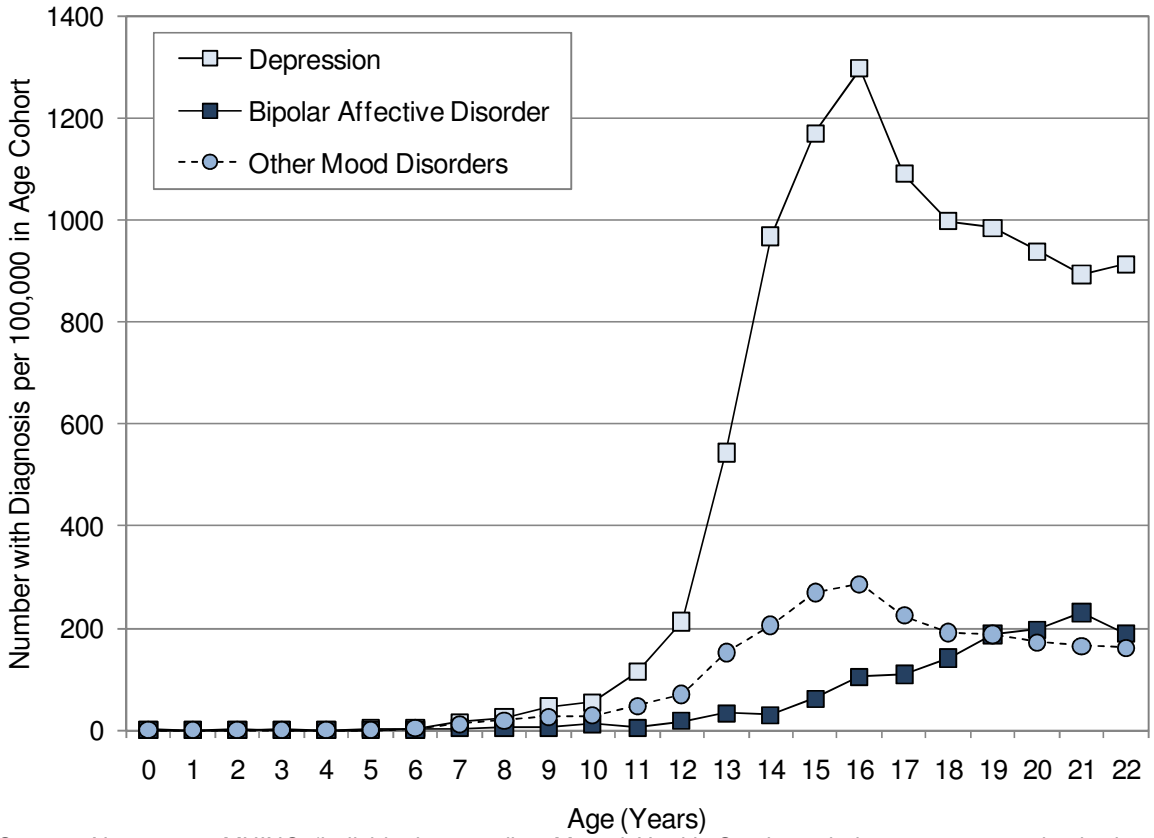
In addition to the diagnoses reviewed above, a number of mood disorders became increasingly common during late adolescence. In Taranaki during 2005-2007, these included depression, bipolar affective disorder and other mood disorders (**Table 90**).

Table 90. Number of Young People Aged 15-24 Years Accessing Mental Health Services with Selected Mood Disorders*, Taranaki vs. New Zealand 2005-2007

Diagnosis	Taranaki		New Zealand	
	No. of Individuals with Diagnosis	Rate per 100,000	No. of Individuals with Diagnosis	Rate per 100,000
Depression	198	1,514.1	5,874	1,028.4
Bipolar Affective Disorder	41	313.5	1,008	176.5
Other Mood Disorders	65	497.1	1,184	207.3

Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they subsequently accessed services. This approach may increase DHB rates (cf. NZ average) in situations where mobility between DHBs is high (see Methods section for more detailed explanation). As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%. *Table does not include all young people with mental health diagnoses accessing services in the region, but rather provides an overview of the most common diagnoses only.

Figure 111. Children and Young People Accessing Mental Health Services with Depression, Bipolar Affective Disorder and Other Mood Disorders by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period).

Numbers Accessing Services by Age: New Zealand
In New Zealand during 2005-2007, the number of young people accessing mental health services with depression increased rapidly after 11 years of age. While numbers peaked in the mid-teens, they remained high during the late teens and early twenties. The number with other mood disorders followed a similar pattern, although numbers were much lower than for those with depression. In contrast, bipolar affective disorder was more common amongst those in their late teens and early twenties (**Figure 111**).

Access to Services: Taranaki vs. New Zealand
Depression: In Taranaki during 2005-2007, a total of 198 young people accessing mental health services were diagnosed with depression. Young people with depression, on average, had 12.1 contacts per year with mental health services, and 3.2 inpatient bed nights, resulting in a ratio of 3.78 contacts for every inpatient bed night during this period (**Table 91**).

Bipolar Affective Disorder: In Taranaki during 2005-2007, a total of 41 young people accessing mental health services were diagnosed with bipolar affective disorder. Young people with bipolar affective disorder, on average, had 19.1 contacts per year with mental health services, and 4.7 inpatient bed nights, resulting in a ratio of 4.09 contacts for every inpatient bed night during this period (**Table 93**).

Other Mood Disorders: In Taranaki during 2005-2007, a total of 65 young people accessing mental health services were diagnosed with other mood disorders. Young people with other mood disorders, on average, had 16.9 contacts per year with mental health services, and 6.3 inpatient bed nights, resulting in a ratio of 2.68 contacts for every inpatient bed night during this period (**Table 95**).

Access to Services by Ethnicity, NZDep Index Decile and Gender: New Zealand
Depression: In New Zealand during 2005-2007, the number of young people accessing mental health services with a diagnosis of depression was *significantly* higher for European > Māori > Pacific > Asian young people, females and those in the mid ranges (Deciles 3-8) of the NZDep distribution. While similar patterns were seen for mental health contacts, inpatient bed nights were *significantly* higher for Māori > European > Pacific > Asian young people, females and those in average-more deprived (Decile 3-10) areas (**Table 92**).

Bipolar Affective Disorder: In New Zealand during 2005-2007, the number of young people accessing mental health services with a diagnosis of bipolar affective disorder was *significantly* higher for Māori > European > Pacific > Asian young people, females and those in average-more deprived (Deciles 5-10) areas. While similar patterns were seen for mental health contacts, inpatient bed nights were *significantly* higher for Māori > Pacific > European > Asian young people, males, and those in average-more deprived (Decile 3-10) areas (**Table 94**).

Other Mood Disorders: In New Zealand during 2005-2007, the number of young people accessing mental health services with other mood disorders was *significantly* higher for European > Māori > Pacific and Asian young people, females and those in average-more deprived (Deciles 5-10) areas. In contrast, mental health contacts were *significantly* higher for European and Māori > Pacific > Asian young people, females and those in average-more deprived (Deciles 3-10) areas, while inpatient bed nights were *significantly* higher for Māori > Pacific > European > Asian young people, females and those in average-more deprived (Decile 3-10) areas (**Table 96**).

Table 91. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Depression, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	198	12.1	3.2	0.26	3.78
New Zealand	5,874	11.9	2.2	0.18	5.43

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 92. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Depression by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	768	799	1.00		7,885	8,202	1.00		767	798	1.00	
Decile 3-4	927	907	1.14	1.03 - 1.25	10,648	10,423	1.27	1.25 - 1.29	1,519	1,487	1.86	1.77 - 1.96
Decile 5-6	1,351	1,224	1.53	1.40 - 1.67	17,924	16,241	1.98	1.96 - 2.01	3,270	2,963	3.71	3.55 - 3.88
Decile 7-8	1,633	1,349	1.69	1.55 - 1.84	21,776	17,985	2.19	2.17 - 2.22	4,636	3,829	4.80	4.60 - 5.01
Decile 9-10	1,175	832	1.04	0.95 - 1.14	11,324	8,019	0.98	0.96 - 0.99	2,651	1,878	2.35	2.25 - 2.46
	Ethnicity				Ethnicity				Ethnicity			
Asian	187	249	0.19	0.17 - 0.22	2,522	3,354	0.23	0.22 - 0.23	554	736	0.31	0.30 - 0.33
European	4,163	1,298	1.00		47,703	14,873	1.00		7,514	2,343	1.00	
Māori	795	785	0.60	0.56 - 0.65	10,789	10,650	0.72	0.71 - 0.72	3,198	3,157	1.35	1.32 - 1.38
Pacific	148	364	0.28	0.24 - 0.33	2,515	6,178	0.42	0.41 - 0.42	583	1,431	0.61	0.58 - 0.64
	Gender				Gender				Gender			
Female	3,858	1,360	1.00		47,530	16,756	1.00		8,107	2,858	1.00	
Male	2,015	701	0.52	0.49 - 0.54	22,211	7,725	0.46	0.46 - 0.46	4,742	1,649	0.58	0.57 - 0.59

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 93. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Bipolar Affective Disorder, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	41	19.1	4.7	0.24	4.09
New Zealand	1,008	27.7	10.7	0.39	2.59

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 94. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Bipolar Affective Disorder by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	93	97	1.00		2,043	2,125	1.00		630	656	1.00	
Decile 3-4	127	124	1.29	0.98 - 1.68	3,476	3,403	1.60	1.55 - 1.65	928	909	1.39	1.31 - 1.47
Decile 5-6	237	215	2.22	1.75 - 2.82	7,057	6,394	3.01	2.93 - 3.09	2,947	2,670	4.07	3.88 - 4.28
Decile 7-8	318	263	2.72	2.16 - 3.42	9,405	7,768	3.66	3.56 - 3.75	3,743	3,091	4.71	4.49 - 4.95
Decile 9-10	227	161	1.66	1.31 - 2.12	5,788	4,099	1.93	1.88 - 1.98	2,509	1,777	2.71	2.58 - 2.85
	Ethnicity				Ethnicity				Ethnicity			
Asian	37	49	0.27	0.19 - 0.38	1,195	1,589	0.35	0.34 - 0.37	421	560	0.37	0.35 - 0.39
European	585	182	1.00		14,426	4,498	1.00		4,919	1,534	1.00	
Māori	230	227	1.24	1.07 - 1.45	8,065	7,961	1.77	1.75 - 1.80	3,910	3,860	2.52	2.46 - 2.58
Pacific	41	101	0.55	0.40 - 0.76	1,672	4,108	0.91	0.89 - 0.94	829	2,037	1.33	1.27 - 1.38
	Gender				Gender				Gender			
Female	536	189	1.00		15,265	5,382	1.00		5,049	1,780	1.00	
Male	472	164	0.87	0.77 - 0.98	12,609	4,386	0.81	0.80 - 0.83	5,717	1,988	1.12	1.09 - 1.14

Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) 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; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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 95. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Other Mood Disorders, Taranaki vs. New Zealand 2005-2007

DHB	No. of Individuals with Diagnosis	No. of Annual Contacts per Individual	No. of Annual Bed Nights per Individual	Bed Night to Contact Ratio	Contact to Bed Night Ratio
Taranaki	65	16.9	6.3	0.37	2.68
New Zealand	1,184	17.4	4.3	0.25	4.02

No of Individuals= total number of individuals with diagnosis accessing services during 2005-2007; No. Annual Contacts per Individual= number of contacts each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; No. Annual Bed Nights per Individual= number of Bed Nights each year (averaged over 2005-2007) for individuals with diagnosis ÷ number of individuals with diagnosis; Bed Night to Contact Ratio = number of Bed Nights ÷ number of Contacts; Contact to Bed Night Ratio = Number of Contacts ÷ Number of Bed Nights. Note: DHB numbers include anyone resident in DHB at any time during 2005-2007 with diagnosis (irrespective of where they may have subsequently accessed services (see Methods section for more detailed explanation).

Table 96. Access to Mental Health Services for Young People Aged 15-24 Years with a Diagnosis of Other Mood Disorders by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Individuals				Contacts				Inpatient Bed Nights			
	Total Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI	Annual Number	Rate	RR	95% CI
	NZ Deprivation Index Decile				NZ Deprivation Index Decile				NZ Deprivation Index Decile			
Decile 1-2	121	126	1.00		1,752	1,823	1.00		174	181	1.00	
Decile 3-4	155	152	1.21	0.95 - 1.53	2,413	2,362	1.30	1.25 - 1.34	306	300	1.65	1.48 - 1.84
Decile 5-6	263	238	1.89	1.53 - 2.35	5,363	4,859	2.67	2.59 - 2.75	1,144	1,037	5.72	5.22 - 6.27
Decile 7-8	352	291	2.31	1.88 - 2.84	6,850	5,658	3.10	3.02 - 3.20	2,186	1,805	9.96	9.11 - 10.88
Decile 9-10	293	208	1.65	1.33 - 2.04	4,218	2,987	1.64	1.59 - 1.69	1,317	933	5.14	4.70 - 5.63
	Ethnicity				Ethnicity				Ethnicity			
Asian	39	52	0.21	0.15 - 0.28	675	897	0.23	0.22 - 0.24	188	250	0.37	0.34 - 0.40
European	808	252	1.00		12,652	3,945	1.00		2,193	684	1.00	
Māori	195	192	0.76	0.65 - 0.89	3,936	3,885	0.98	0.97 - 1.00	1,606	1,585	2.32	2.24 - 2.41
Pacific	32	79	0.31	0.22 - 0.44	1,198	2,942	0.75	0.72 - 0.77	360	884	1.29	1.21 - 1.38
	Gender				Gender				Gender			
Female	727	256	1.00		13,147	4,635	1.00		2,806	989	1.00	
Male	457	159	0.62	0.55 - 0.70	7,450	2,591	0.56	0.55 - 0.57	2,322	808	0.82	0.79 - 0.84

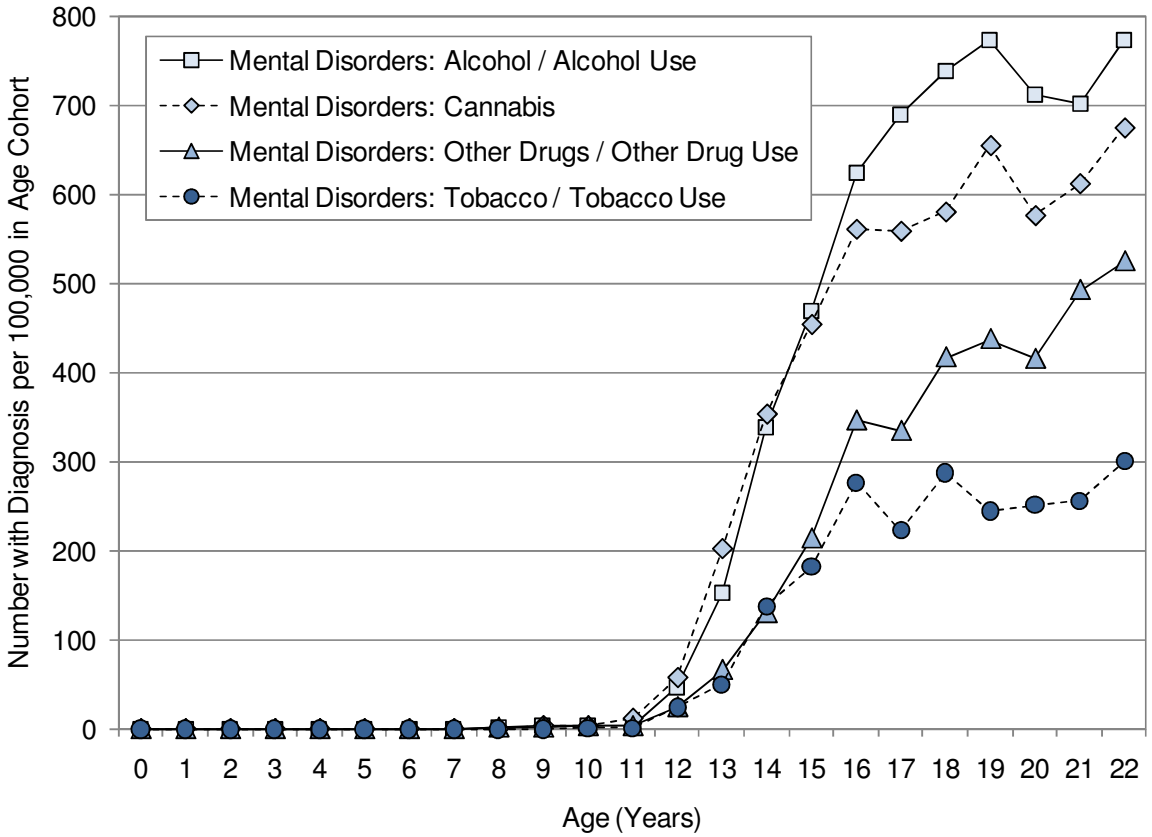
Individuals: Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); *Contacts:* Annual Number = number of contacts each year (averaged over 2005-2007) with clients with this diagnosis; Rate = average number of contacts with clients with this diagnosis each year, per 100,000 young people 15-24 years; *Bed Nights:* Annual Number = number of Bed Nights each year (averaged over 2005-2007) 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

Mental Health Issues Associated with Substance Use

Access to Services by Age: New Zealand

In New Zealand during 2005-2007, the number of young people accessing mental health services with a mental health issue associated with substance use, or with substance use 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 during their teens and early twenties, although tobacco and other drug use were also relatively common in this age group (**Figure 112**).

Figure 112. Children and Young People Accessing Mental Health Services with Mental Health Issues Associated with Substance Use by Age, New Zealand 2005-2007



Source: Numerator: MHINC (individuals attending Mental Health Services during 2005-2007 who had ever been assigned the above diagnoses); Denominator: NZ Census (population at mid point of 2005-2007 period)

Mental Health Issues Associated with Alcohol Use

In New Zealand during 2005-2007, alcohol related mental health issues were a very common co-morbidity for those with other mental health diagnoses. For example 27% of those with a personality disorder, 23% of those with schizophrenia and 21% of those with schizotypal / delusional disorders had alcohol related issues recorded as co-morbidities. As a result of this considerable overlap, information on the number of contacts and inpatient bed-nights for individuals with alcohol related issues has not been presented, as many of these presentations are likely to have occurred in the context of care for other diagnoses. Nevertheless these figures suggest that there is a considerable need for alcohol related issues to be addressed, as part of the care plan for those accessing mental health services with other diagnoses (**Table 97**).

In New Zealand during 2005-2007, the number of young people accessing mental health services, who had alcohol related mental health issues listed as a diagnosis, was *significantly* higher for Māori > European > Pacific > Asian young people, males and those living in average-more deprived (Decile 3-10) areas (**Table 98**).

Table 97. Young People Aged 15-24 Years with Various Mental Health Diagnoses, Who Also Had a Mental or Behavioural Disorder due to Alcohol, or Alcohol Use Listed as a Co-Diagnosis, New Zealand 2005-2007

Diagnosis	Number with Diagnosis	Number with Alcohol as Co-Diagnosis	% with Alcohol as Co-Diagnosis
Personality / Behaviour Disorders	1,349	365	27.1
Schizophrenia	1,731	399	23.1
Schizotypal/Delusional Disorders	1,816	388	21.4
Bipolar Affective Disorder	1,008	186	18.5
Organic Mental Disorders	285	43	15.1
Stress Reaction/Adjustment Disorder	3,147	395	12.6
Depression	5,874	697	11.9
Anxiety Disorders	1,942	220	11.3
Eating Disorders	749	69	9.2
Obsessive Compulsive Disorder	333	30	9.0

Number with Diagnosis = total number of individuals with diagnosis accessing services during 2005-2007; As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%

Table 98. Number of Young People Aged 15-24 Years Accessing Mental Health Services with a Mental or Behavioural Disorder due to Alcohol, or Alcohol Use Listed as a Co-Diagnosis, by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Total Number	Rate	Rate Ratio	95% CI
NZ Deprivation Index Decile				
Decile 1-2	293	305	1.00	
Decile 3-4	450	440	1.45	1.25 - 1.67
Decile 5-6	833	755	2.48	2.17 - 2.83
Decile 7-8	1,366	1,128	3.70	3.26 - 4.20
Decile 9-10	1,162	823	2.70	2.38 - 3.07
Ethnicity				
Asian	33	44	0.06	0.04 - 0.09
European	2,319	723	1.00	
Māori	1,307	1,290	1.78	1.67 - 1.91
Pacific	143	351	0.49	0.41 - 0.58
Gender				
Female	1,358	479	1.00	
Male	2,754	958	2.00	1.88 - 2.13

Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); **Note: Alcohol Use may be a co-morbidity rather than primary reason for accessing services**

Mental Health Issues Associated with Cannabis Use

In New Zealand during 2005-2007, cannabis use was a very common co-diagnosis for those with other mental health issues. For example 35.6% of those with schizophrenia, 31.7% of those with schizotypal / delusional disorders, 26.1% of those with personality / behaviour disorders, and 24.0% of those with a bipolar affective disorder had cannabis use listed as a co-diagnosis. As a result of this considerable overlap, information on the number of contacts and inpatient bed-nights for individuals with cannabis use has not been presented, as many of these presentations are likely to have occurred in the context of care for other conditions (**Table 99**).

In New Zealand during 2005-2007, the number of young people accessing mental health services who had cannabis use listed as a diagnosis was *significantly* higher for Māori > European > Pacific > Asian young people, males and those living in average-more deprived (Decile 3-10) areas (**Table 100**)

Table 99. Young People Aged 15-24 Years with Various Mental Health Diagnoses, who also had a Mental or Behavioural Disorder due to Cannabis Use Listed as a Co-Diagnosis, New Zealand 2005-2007

Diagnosis	Number with Diagnosis	Number with Cannabis Listed as a Co-Diagnosis	% with Cannabis Listed as a Co-Diagnosis
Schizophrenia	1,731	616	35.6
Schizotypal/Delusional Disorders	1,816	576	31.7
Personality / Behaviour Disorders	1,349	352	26.1
Bipolar Affective Disorder	1,008	242	24.0
Organic Mental Disorders	285	60	21.1
Stress Reaction/Adjustment Disorder	3,147	347	11.0
Anxiety Disorders	1,942	190	9.8
Depression	5,874	562	9.6
Obsessive Compulsive Disorder	333	24	7.2
Eating Disorders	749	41	5.5

Number with Diagnosis = total number of individuals with diagnosis accessing services during 2005-2007; As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%

Table 100. Number of Young People Aged 15-24 Years Accessing Mental Health Services with a Mental or Behavioural Disorder due to Cannabis Use, by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Total Number	Rate	Rate Ratio	95% CI
NZ Deprivation Index Decile				
Decile 1-2	204	212	1.00	
Decile 3-4	356	348	1.64	1.38 - 1.95
Decile 5-6	691	626	2.95	2.52 - 3.45
Decile 7-8	1,185	979	4.61	3.98 - 5.35
Decile 9-10	1,039	736	3.47	2.98 - 4.03
Ethnicity				
Asian	29	39	0.07	0.05 - 0.10
European	1,832	571	1.00	
Māori	1,234	1,218	2.13	1.98 - 2.29
Pacific	103	253	0.44	0.36 - 0.54
Gender				
Female	958	338	1.00	
Male	2,526	879	2.60	2.42 - 2.80

Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); **Note: Cannabis use may be a co-morbidity rather than primary reason for accessing services**

Mental Health Issues Associated with Other Drug Use (Excluding Cannabis)

In New Zealand during 2005-2007, mental health issues associated with drug use were very common co-diagnoses for those with other mental health issues. For example 26.0% of those with schizotypal / delusional disorders, 25.0% of those with schizophrenia, 24.5% of those with personality / behaviour disorders, and 20.0% of those with a organic mental

disorders had drug use listed as a co-diagnosis. As a result of this considerable overlap, information on the number of contacts and inpatient bed-nights for individuals with drug use has not been provided, as many of these presentations are likely to have occurred in the context of care for other conditions. Nevertheless these figures suggest that there is a considerable need for drug related issues to be addressed as part of the care plan for those accessing mental health services with other diagnoses (**Table 101**).

In New Zealand during 2005-2007, the number of young people accessing mental health services who had drug use listed as a diagnosis was *significantly* higher for Māori > European > Pacific > Asian young people, males and those living in average-more deprived (Decile 3-10) areas (**Table 102**)

Table 101. Young People Aged 15-24 Years with Various Mental Health Diagnoses, who also had a Mental or Behavioural Disorder due to Other Drugs, or Other Drug Use Listed as a Co-Diagnosis, New Zealand 2005-2007

Diagnosis	Number with Diagnosis	Number with Other Drug Use Listed as a Co-Diagnosis	% with Other Drug Use Listed as a Co-Diagnosis
Schizotypal/Delusional Disorders	1,816	473	26.0
Schizophrenia	1,731	432	25.0
Personality / Behaviour Disorders	1,349	331	24.5
Organic Mental Disorders	285	57	20.0
Bipolar Affective Disorder	1,008	176	17.5
Stress Reaction/Adjustment Disorder	3,147	291	9.2
Depression	5,874	469	8.0
Anxiety Disorders	1,942	142	7.3
Obsessive Compulsive Disorder	333	16	4.8
Eating Disorders	749	32	4.3

Number with Diagnosis = total number of individuals with diagnosis accessing services during 2005-2007; As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%

Table 102. Number of Young People Aged 15-24 Years Accessing Mental Health Services with a Mental or Behavioural Disorder due to Other Drugs, or Other Drug Use Listed as a Co-Diagnosis, by NZDep Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Total Number	Rate	Rate Ratio	95% CI
NZ Deprivation Index Decile				
Decile 1-2	166	173	1.00	
Decile 3-4	242	237	1.37	1.13 - 1.67
Decile 5-6	564	511	2.96	2.49 - 3.52
Decile 7-8	850	702	4.07	3.44 - 4.80
Decile 9-10	691	489	2.83	2.39 - 3.36
Ethnicity				
Asian	30	40	0.09	0.06 - 0.13
European	1,447	451	1.00	
Māori	775	765	1.70	1.55 - 1.85
Pacific	79	194	0.43	0.34 - 0.54
Gender				
Female	938	331	1.00	
Male	1,583	551	1.67	1.54 - 1.80

Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); **Note: Other Drug Use may be a co-morbidity rather than primary reason for accessing services**

Mental Health Issues Associated with Tobacco Use

In New Zealand during 2005-2007, mental health issues associated with tobacco use were also a very common co-diagnosis for those with other mental health issues, with 26.6% of those with schizophrenia, 22.7% of those with schizotypal / delusional disorders, 18.9% of those with personality / behaviour disorders, and 18.6% of those with organic mental disorders having mental health issues associated with tobacco use listed as a co-diagnosis. These figures should not be used to estimate the prevalence of tobacco use in those accessing mental health services however, as they primarily relate to those with a mental health issue related to tobacco use, rather than tobacco use per se (**Table 103**).

Table 103. Young People Aged 15-24 Years with Various Mental Health Diagnoses, who also had a Mental or Behavioural Disorder due to Tobacco, or Tobacco Use Listed as a Co-Diagnosis, New Zealand 2005-2007

Diagnosis	Number with Diagnosis	Number with Tobacco Use Listed as a Co-Diagnosis	% with Tobacco Use Listed as a Co-Diagnosis
Schizophrenia	1,731	460	26.6
Schizotypal/Delusional Disorders	1,816	413	22.7
Personality / Behaviour Disorders	1,349	255	18.9
Organic Mental Disorders	285	53	18.6
Bipolar Affective Disorder	1,008	171	17.0
Stress Reaction/Adjustment Disorder	3,147	266	8.5
Depression	5,874	403	6.9
Anxiety Disorders	1,942	113	5.8
Eating Disorders	749	38	5.1
Obsessive Compulsive Disorder	333	13	3.9

Number with Diagnosis = total number of individuals with diagnosis accessing services during 2005-2007; As an individual can have more than one mental health diagnosis, columns do NOT sum to 100%

Table 104. Number of Young People Aged 15-24 Years Accessing Mental Health Services with a Mental or Behavioural Disorder due to Tobacco, or Tobacco Use Listed as a Co-Diagnosis, by NZ Deprivation Index Decile, Ethnicity and Gender, New Zealand 2005-2007

Variable	Total Number	Rate	Rate Ratio	95% CI
NZ Deprivation Index Decile				
Decile 1-2	93	97	1.00	
Decile 3-4	142	139	1.44	1.11 - 1.87
Decile 5-6	374	339	3.50	2.79 - 4.40
Decile 7-8	591	488	5.05	4.06 - 6.28
Decile 9-10	408	289	2.99	2.38 - 3.74
Ethnicity				
Asian	30	40	0.15	0.10 - 0.22
European	849	265	1.00	
Māori	562	555	2.10	1.88 - 2.33
Pacific	69	170	0.64	0.50 - 0.82
Gender				
Female	626	221	1.00	
Male	984	342	1.55	1.40 - 1.71

Total Number = total number of individuals with diagnosis accessing services during 2005-2007; Rate = number with diagnosis per 100,000 young people 15-24 years (at mid point of period (i.e. 2006)); **Note: Tobacco Use may be a co-morbidity rather than primary reason for accessing services**

In New Zealand during 2005-2007, the number of young people accessing mental health services who had mental health issues associated with tobacco use listed as a diagnosis was *significantly* higher for Māori > European > Pacific > Asian young people, males and those living in average-more deprived (Decile 3-10) areas (**Table 104**).

Summary

In New Zealand during 2005-2007, schizophrenia, schizotypal / delusional disorders, personality / behaviour disorders, and organic mental disorders became increasingly common during late adolescence. While the majority of care still occurred in the ambulatory care setting, the number of annual contacts and in-patient bed nights were higher than for mental health diagnoses occurring in younger age groups. In addition alcohol, cannabis, tobacco and other drug related co-diagnoses were common in this age group, with >20% of those diagnosed with schizophrenia, schizotypal / delusional disorders, personality / behaviour disorders and organic mental disorders having alcohol, cannabis or other drug use listed as a co-diagnosis.

In Taranaki during 2005-2007, schizophrenia, schizotypal / delusional disorders, personality / behaviour disorders and organic mental disorders were also common in young people accessing mental health services, with a higher contact and inpatient service load for these diagnoses being evident, when compared to diagnoses more commonly managed in younger age groups. In addition, a large number of young people accessed mental health services with depression, bipolar affective disorder, or other mood disorders.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Drug Use in Young People

In New Zealand, while there is no single strategy which focuses solely on the prevention of drug use in young people, a number of policy documents consider strategies to address drug use in general. In addition, a number of international evidence based and other reviews focus on addressing this issue in adolescents. **Table 105** below thus provides an overview of New Zealand policy documents and evidence based reviews which focus on preventing drug use in young people, while **Table 41** on page 172 considers publications which focus on strategies to reduce alcohol related harm. (Note: the publications listed were identified using the search methodology outlined in **Appendix 2** and as a consequence, should be seen as reflecting those topics for which higher quality evidence (e.g. systematic reviews of multiple studies) was available, rather than as being indicative of the overall balance of interventions required in any strategy to reduce drug use in young people.)

Table 105. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Drug Use in Young People

Ministry of Health Policy Documents
Ministry of Health. 2000. **The New Zealand Health Strategy**. Wellington: Ministry of Health. The New Zealand Health Strategy identifies the Government's priority areas for health. One of the 13 priority areas for the New Zealand Health Strategy (NZHS) is to "minimise harm caused by alcohol and illicit and other drug use to both individuals and the community." The Strategy develops a framework for action, identifies key priority areas, provides District Health Boards with the context within which they are to operate, and identifies the way forward. Part of the Strategy included development of 'toolkits' to help District Health Boards to best meet their populations' needs.
Ministry of Health. 2001. **DHB Toolkit: Minimising Alcohol and Other Drug Related Harm**. Wellington: Ministry of Health. This toolkit was developed to assist District Health Boards to implement the NZHS priority objective of minimising the harm caused by alcohol and other drug use. The interventions recommended relate to interventions in primary, secondary and tertiary care, and in public health. Secondary and tertiary care interventions relate to providing specialist care; workforce development; improving service provision for Māori, Pacific peoples, children and young people; and including families and the community in addressing needs.
Ministerial Committee of Drug Policy. 2007. **National Drug Policy 2007-2012**. Wellington: Ministry of Health. This National Drug Policy outlines the Government's policy for tobacco, alcohol, illegal and other drugs. The main goal of the policy is to minimise the social, economic and health harms of tobacco, alcohol and other drugs. Drug policy and intersectoral decision-making is to be guided by the goals, objectives and principles set out in this document, to address the harms caused by drug use.
Ministry of Health. 2001. **A National Strategic Framework for Alcohol and Drug Services**. Wellington: Ministry of Health. The focus of this framework is to increase the capacity of the specialist alcohol and drug treatment sector, in terms of service delivery and workforce. The recommended actions for District Health Boards include improving the availability and accessibility of alcohol and drug treatment for priority groups; identifying regional service need; consideration of service development in localities where current expenditure is below the national average; and development of culturally responsive services for Māori, Pacific people, children, and older people.
Systematic and Other Reviews from the International Literature
Petrie J, Bunn F, Byrne G. 2007. **Parenting Programmes for Preventing Tobacco, Alcohol or Drug Misuse in Children <18: A Systematic Review**. Health Education Research 22: 177-91. This article reports on the results of a systematic review of controlled studies of parenting programmes to prevent tobacco, drug and alcohol use in children or adolescents. Most interventions were based on social or behavioural learning models, teaching communication skills, developing boundary setting, reinforcing refusal skills and problem-solving approaches. The reviewers found that of the alcohol-related studies, six out of the 14 studies reviewed showed statistically significant reductions in self-reported use. The most effective interventions appeared to be those that emphasised the development of social skills and personal responsibility, and that included active parental involvement.
Gottfredson DC, Wilson DB. 2003. **Characteristics of Effective School-Based Substance Abuse Prevention**. Prevention Science 4(1): 27-38. This review summarises results from 94 studies of school-based prevention programmes for alcohol or other drugs. The authors found that studies that were most effective were delivered at middle school and that were delivered by peer leaders. Targeting higher risk youths may be more effective than universal programmes, although the evidence supporting this was sparse. The length of the intervention was not strongly related to success.
Fletcher A, Bonell C, Hargreaves J. 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.
Faggiano F, Vigna-Taglianti F, Versino E, Zambon A, Borraccino A, Lemma P. 2005. **School-Based Prevention for Illicit Drugs Use**. Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD003020. DOI: 10.1002/14651858.CD003020.pub2. The aim of this review was to evaluate the effectiveness of school-based interventions to improve knowledge, develop skills, promote change and prevent or reduce drug use. The authors concluded that skills based programmes appear to be effective in deterring early-stage drug use. However, most of the studies reviewed were conducted in the US, and the authors comment that the results may not be generalisable to non-US populations.

Denis C, Lavie E, Fatseas M, Auriacombe M. 2006. **Psychotherapeutic Interventions for Cannabis Abuse and/or Dependence in Outpatient Settings**. Cochrane Database of Systematic Reviews, Issue 3. Art. No.: CD005336. DOI: 10.1002/14651858.CD005336.pub2.

The aim of this review was to examine the efficacy of psychosocial intervention for cannabis abuse or dependence. Six trials were included in the review, however, they were too heterogeneous to allow clear conclusions to be drawn. Cognitive behavioural therapy produced better outcomes than brief interventions, and adding incentives may enhance treatment effect. The low abstinence rates overall suggest that cannabis dependence is not easy to treat using psychotherapies in the outpatient setting.

Doggett C, Burrett SL, Osborn DA. 2005. **Home Visits During Pregnancy and After Birth for Women with an Alcohol or Drug Problem**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD004456. DOI:10.1002/14651858.CD004456.pub2.

This review aimed to determine the efficacy of home visiting during pregnancy and after delivery for women with an alcohol or drug problem. There was insufficient evidence to recommend the routine use of home visits to improve the health of the baby or mother. However, none of the included studies provided a significant component of antenatal home visiting, and there were large losses to follow up.

Terplan M, Lui S. 2007. **Psychosocial Interventions for Pregnant Women in Outpatient Illicit Drug Treatment Programs Compared to Other Interventions**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD006037. DOI: 10.1002/14651858.CD006037.pub2.

The aim of this review was to evaluate the efficacy of psychosocial interventions in pregnant women who were enrolled in illicit drug treatment programmes. Nine trials were included in the review. Contingency management (positive reinforcement with monetary reward) was found to lead to better study retention, but had a minimal effect on drug abstinence. Motivational interviewing generally led to poorer study retention, though this result was not significant. Neither intervention improved birth or neonatal outcomes, however, this was rarely measured in the studies reviewed.

Werch CE, Owen DM. 2002. **Iatrogenic Effects of Alcohol and Drug Prevention Programs**. Journal of Studies on Alcohol 63: 581-90.

This review was conducted to systematically analyse studies evaluating substance use prevention programmes in youth and young adults, to determine if iatrogenic effects have occurred, and if so, what types of harmful effects, and under what conditions these arose. The authors found that there was evidence of negative programme effects in several studies. These were likely to be due to poor programme implementation or theory error. The authors discuss common negative effects and ways to address these.

Tait RJ, Hulse GK. 2003. **A Systematic Review of the Effectiveness of Brief Interventions with Substance Using Adolescents by Type of Drug**. Drug Alcohol Review 22: 337-46.

The aim of this review was to evaluate the effectiveness of brief interventions in adolescents to reduce alcohol, tobacco or other drug use. There was a small but significant effect of brief interventions on alcohol consumption. However, even when the intervention did not change alcohol consumption, there was a reduction in alcohol-related harm.

Williams R J, Chang S Y. 2000. **A Comprehensive and Comparative Review of Adolescent Substance Abuse Treatment Outcome**. Clinical Psychology: Science and Practice 7(2): 138-66.

The aim of this review was to examine the effectiveness of adolescent drug treatment programmes, and factors associated with various outcomes. There was enough evidence to conclude that treatment is superior to no treatment, but insufficient evidence to determine which type of treatment is most effective, with the exception of out-patient family therapy which appears to be better than other forms of outpatient treatment. The authors make a number of recommendations about characteristics of programmes that appear to improve their success.

Vaughn MG, Howard MO. 2004. **Adolescent Substance Abuse Treatment: A Synthesis of controlled Evaluations**. Research on Social Work Practice 14(5): 325-35.

The authors of this review aimed to assess the effectiveness of interventions for substance abuse in adolescents. They found that there are several psychosocial interventions that are effective for this group. Multidimensional family therapy and cognitive-behavioural group therapy had the strongest evidence for efficacy.

Waldron HB, Turner CW. 2008. **Evidence-Based Psychosocial Treatments for Adolescent Substance Abuse**. Journal of Clinical Child and Adolescent Psychology 37(1): 238-61.

The objective of this review was to evaluate outpatient treatments for adolescent substance abuse. Pooled results of the three active treatments (cognitive behavioural therapy [individual and group] and family therapy) significantly reduced marijuana use. The authors suggest that there is evidence to support the use of Multidimensional Family Therapy, Functional Family Therapy and group Cognitive Behavioural Therapy. Multi-Systemic Therapy, Brief Strategic Family Therapy and Behavioural Family Therapy are probably efficacious in reducing substance abuse. There were some methodological weaknesses in the review, so the extent to which these conclusions are reliable is unclear.

Gates S, McCambridge J, Smith LA, Foxcroft D. 2006. **Interventions for Prevention of Drug Use by Young People Delivered in non-School Settings**. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD005030. DOI: 10.1002/14651858.CD005030.pub2.

The aim of this review was to summarise the current evidence about the effectiveness of interventions to reduce or prevent drug use in adolescents under the age of 25 years. The authors also investigated whether the interventions effects were modified by the type of intervention, the setting, and the age of participants. Seventeen studies were included in the review. Many of the studies had high losses to follow up, limiting the conclusions that could be made. Three of the family interventions studied showed some promise, particularly in preventing cannabis use. There was insufficient evidence to recommend any interventions.

Cuijpers P. 2002. **Peer-led and Adult-led School Drug Prevention: A Meta-Analytic Comparison**. Journal of Drug Education 32(2): 107-19.

The authors of this review examined the relative effectiveness of peer-led and adult-led drug (tobacco, alcohol or marijuana) prevention programmes undertaken in schools. Results of the meta-analysis showed that peer-led programmes were, to some extent, more effective than adult-led interventions. However, the overall effectiveness of programmes appears to be determined by a range of factors, such as content, the number of sessions, use of booster sessions, age group, and interactions between students. This review had some methodological weaknesses, so these results should be interpreted with caution.

Srisurapanont M, Jarusuraisin N, Kittirattanapaiboon P. 2001. **Treatment for Amphetamine Dependence and Abuse**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD003022. DOI: 10.1002/14651858.CD003022.

The aim of this review was to investigate the risks, benefits and costs of treatments for amphetamine dependence or abuse. Fluoxetine, amlodipine, imipramie and desipramine have been investigated for this use. Of these, short-term treatment with fluoxetine reduced cravings, and imipramine increased the duration of adherence to treatment. None of the four drugs studied had any influence on amphetamine use.

McGrath Y, Sumnall H, McVeigh J, Bellis M. 2006. **Drug Use Prevention Among Young People: A Review of Reviews**. National Institute for Health and Clinical Excellence. URL: www.publichealth.nice.org.uk

The aim of this briefing was to provide updated information about tertiary-level evidence to prevent and/or reduce illicit drug use in young people aged 7-25 years. This document discusses features of programmes in relation to the evidence for their effectiveness. These include programme delivery, design and content, targeted prevention and the ability to generalise research findings. In summary, the authors conclude that a 'one size fits all' approach to drug prevention is inappropriate, and interventions should be delivered based on the target audience.

Sumnall H, McGrath Y, McVeigh J, Burrell K, Wilkinson L, Bellis M. 2006. **Drug Use Prevention Among Young People: Evidence into Practice Briefing**. National Institute for Health and Clinical Excellence. URL: www.publichealth.nice.org.uk

The briefing integrates published scientific literature with practitioner expertise and experience to provide ways to prevent drug misuse. The briefing draws on the findings from the above document, and addresses local issues to do with implementation in the UK.

SELF-HARM AND SUICIDE

Introduction

While New Zealand's youth suicide rates had been increasing steadily since the early 1970s, it was not until the late 1980s / early 1990s that the most dramatic increases began to occur. Youth suicide reached a peak in 1996 and since then has begun to decline. Risk factors for suicide include male gender, ethnicity (Māori males > non-Māori males > Māori females > non-Māori females) and age. While much recent interest has focused on teenage suicides, recent data would suggest that the majority of youth deaths actually occur amongst those aged 19-24 years [121].

In 2008, the Government launched the New Zealand Suicide Prevention Action Plan (2008-2012), which aims to provide an evidence base for suicide prevention, and to assist policy advisors, service planners and providers, health professionals and communities gain a shared understanding of their role in the spectrum of suicide prevention [122].

The following section uses information from the National Minimum Dataset and the National Mortality Collection to review hospital admissions for self inflicted injuries and mortality from suicide in young people aged 15-24 years.

Data Source and Methods

Definition

Hospital Admissions for Self-Inflicted Injuries and Deaths from Suicide in Young People Aged 15-24 Years

Data Source

Admissions Numerator: National Minimum Dataset: Hospital admissions for young people 15-24 years with a primary diagnosis of injury (ICD-9 800-995: ICD-10 S00-T79) and an external cause code (E code) of intentional self harm (ICD-9 E950-E958 or ICD-10 X60-X84); Inpatient admissions with an Emergency Medicine Specialty code (M05-M08) on discharge were excluded (see Appendix 4).

Deaths Numerator: National Mortality Collection: Deaths of young people aged 15-24 years with a clinical code (cause of death) attributed to intentional self harm (ICD-9 E950-E958 or ICD-10 X60-X84)

Denominator: NZ Census

Indicator Category Admissions: Proxy B-C; Mortality: Ideal B

Notes on Interpretation

The limitations of the National Minimum Dataset are discussed at length in Appendix 4. The reader is urged to review this Appendix before interpreting any trends based on hospital admission data.

New Zealand Distribution and Trends

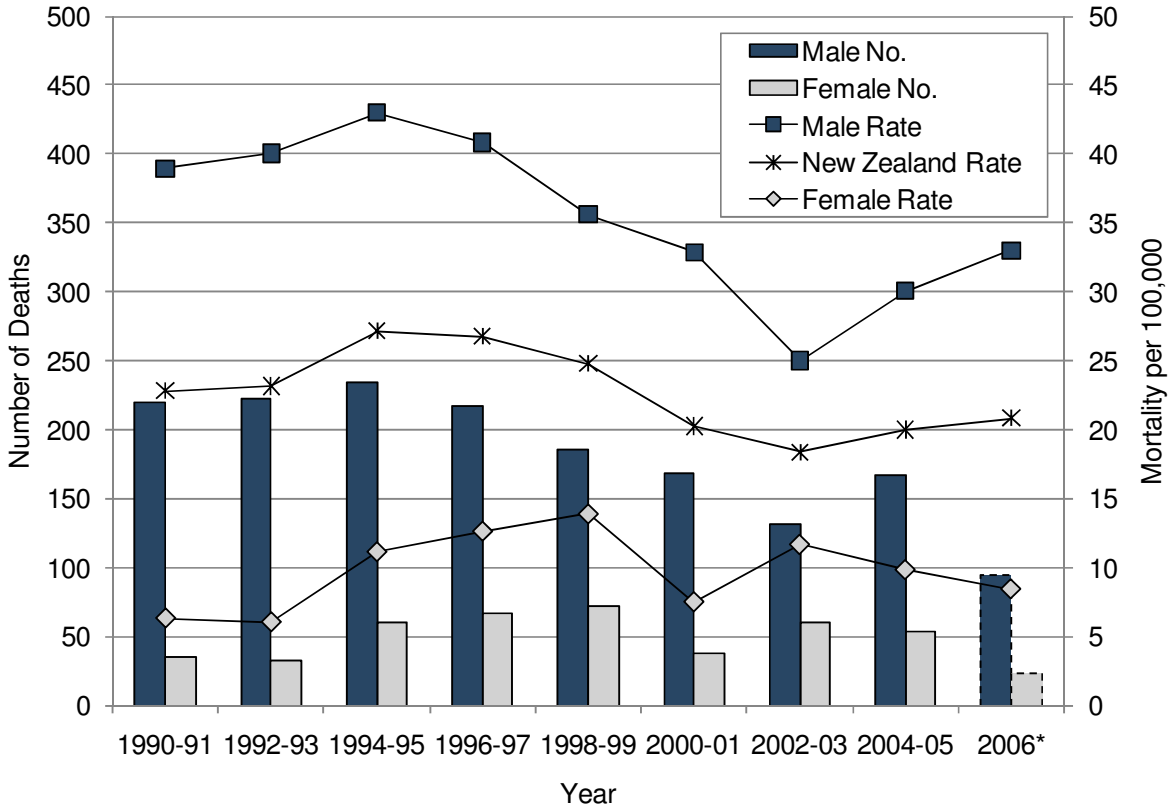
Trends in Suicide Mortality by Gender

In New Zealand, suicide rates increased amongst males during the early 1990s, reached a peak in 1994-95 and then declined. Rates reached a nadir in 2002-03, and since then have increased again. For females, suicide rates increased during the mid-late 1990s, fluctuated during 1998-2002, and since then have gradually declined. Throughout this period, suicide rates were higher for males than for females (**Figure 113**).

Hospital Admissions and Mortality by Age and Gender

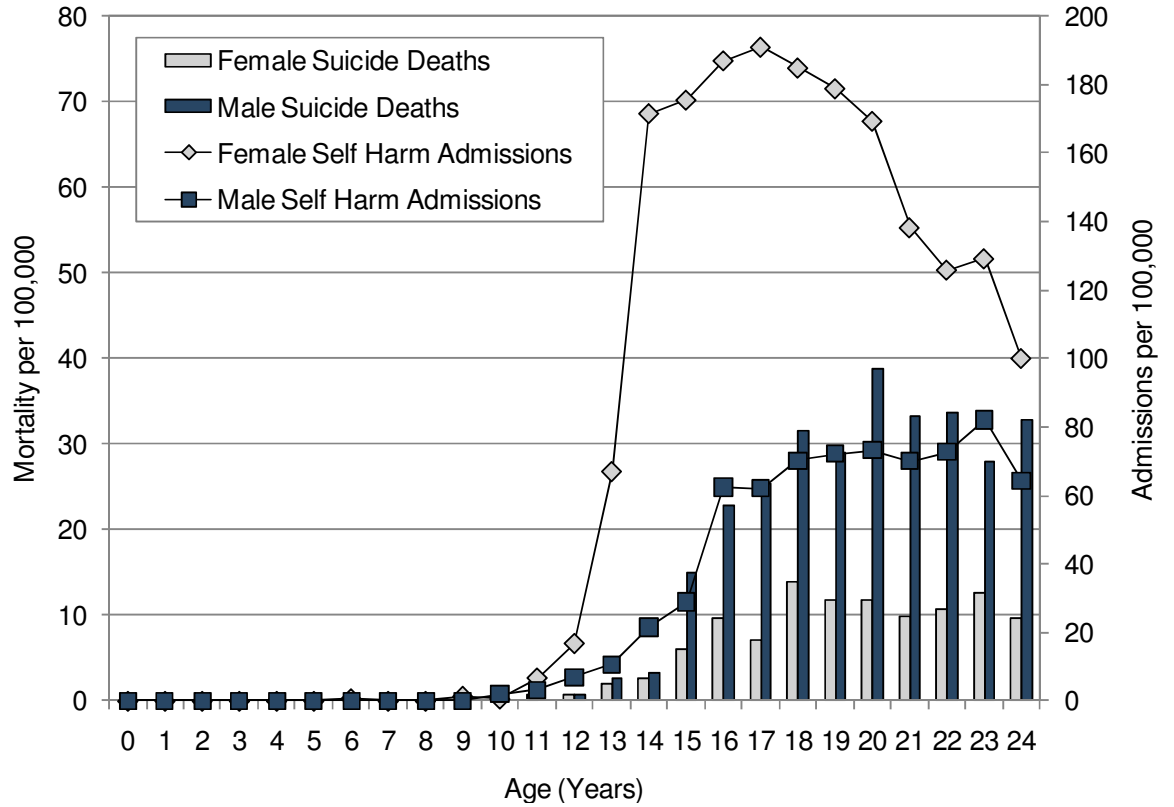
In New Zealand during 2004-2008, self inflicted injury admissions in females increased sharply during early adolescence, reached a peak at 16-18 years and then declined. Rates for males increased during mid-adolescence, and thereafter remained relatively static. Throughout the teens and early 20s, admissions for self-inflicted injuries were higher for females than males. While suicide mortality during 2002-2006 also increased during mid-late adolescence, rates were consistently higher for males after 14 years of age (**Figure 114**).

Figure 113. Suicide Mortality in Young People Aged 15-24 Years by Gender, New Zealand 1990-2006



Source: Numerator-National Mortality Collection; Denominator-Census: *Numbers are per 2 year period, with the exception of 2006, which is for a single year.

Figure 114. Hospital Admissions (2004-2008) due to Self Inflicted Injury and Deaths (2002-2006) due to Suicide in New Zealand Children and Young People by Age and Gender



Source: Numerators-National Minimum Dataset and Mortality Collection; Denominator-Census

Distribution by Prioritised Ethnicity, Gender and NZ Deprivation Index Decile

In New Zealand during 2004-2008, self inflicted injury admissions were *significantly* higher for European and Māori > Pacific and Asian young people, females and those living in more deprived (NZDep Decile 5-9) areas (**Table 106**). In contrast, during 2002-2006, suicide mortality was *significantly* higher for Māori > Pacific and European > Asian young people, males and those living in the most deprived (NZDep decile 7-10) areas (**Table 107**). During 1996-2006, suicide mortality was consistently higher for Māori > Pacific and European > Asian young people (**Figure 115**).

Table 106. Risk Factors for Hospital Admission due to Self-Harm Related Injuries in Young People Aged 15-24 Years, New Zealand 2004-2008

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	87.2	1.00		Decile 1-2	85.1	1.00	
Decile 2	83.0	0.95	0.78 - 1.16	Decile 3-4	86.5	1.02	0.89 - 1.16
Decile 3	75.5	0.87	0.71 - 1.05	Decile 5-6	115.1	1.35	1.19 - 1.53
Decile 4	97.7	1.12	0.93 - 1.35	Decile 7-8	133.6	1.57	1.39 - 1.77
Decile 5	107.2	1.23	1.03 - 1.47	Decile 9-10	123.8	1.45	1.29 - 1.64
Decile 6	122.4	1.40	1.18 - 1.67	Ethnicity			
Decile 7	140.0	1.61	1.36 - 1.90	Māori	129.9	0.98	0.90 - 1.07
Decile 8	127.5	1.46	1.24 - 1.73	Pacific	56.5	0.43	0.35 - 0.51
Decile 9	145.6	1.67	1.42 - 1.96	European	132.6	1.00	
Decile 10	101.5	1.16	0.98 - 1.38	Asian	40.4	0.31	0.26 - 0.36
Gender							
Female	159.3	1.00					
Male	65.1	0.41	0.38 - 0.44				

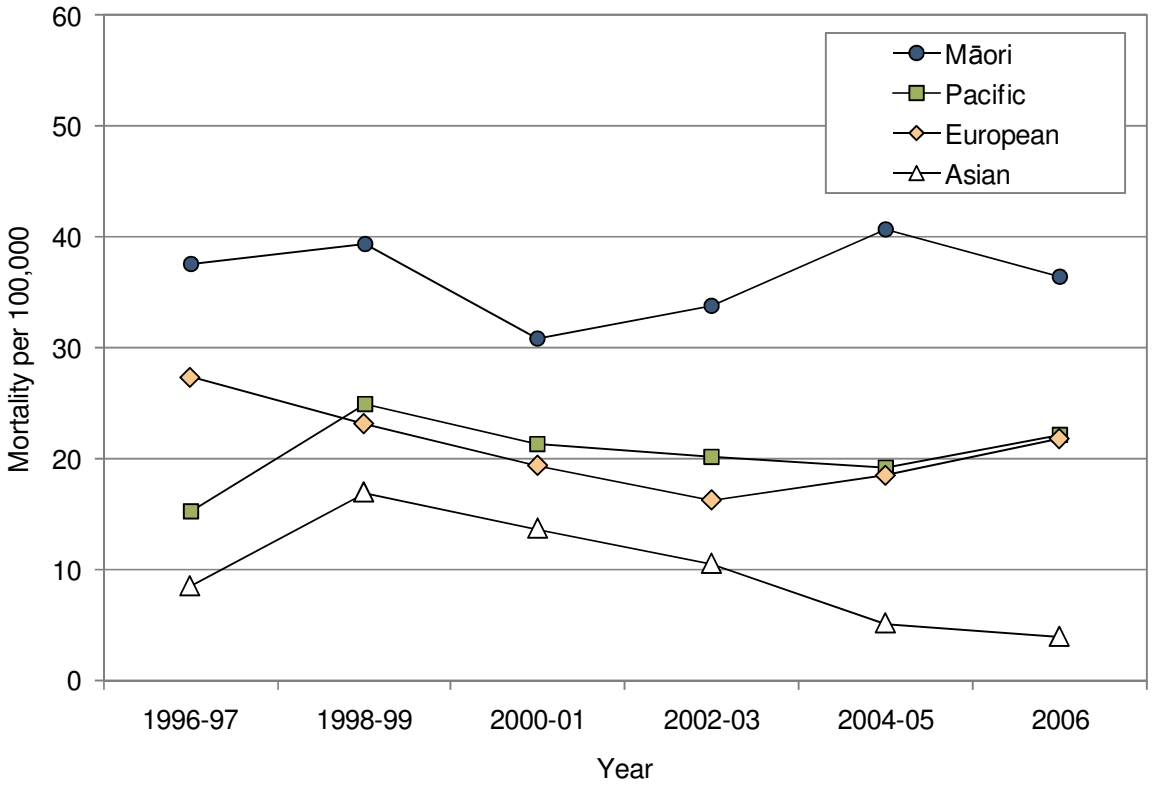
Source: Numerator-National Minimum Dataset; Denominator-Census; Note: Rate per 100,000 per year; Ethnicity is Level 1 Prioritised; RR: Rate Ratios are Compared to the European Group and are Unadjusted

Table 107. Risk Factors for Suicide in Young People Aged 15-24 Years, New Zealand 2002-2006

Variable	Rate	RR	95% CI	Variable	Rate	RR	95% CI
NZ Deprivation Index Decile				NZ Deprivation Index Quintile			
Decile 1	13.4	1.00		Decile 1-2	12.7	1.00	
Decile 2	12.1	0.91	0.55 - 1.50	Decile 3-4	16.9	1.33	0.95 - 1.85
Decile 3	14.2	1.06	0.65 - 1.72	Decile 5-6	18.1	1.43	1.03 - 1.97
Decile 4	19.6	1.47	0.93 - 2.31	Decile 7-8	21.8	1.71	1.26 - 2.33
Decile 5	18.1	1.35	0.86 - 2.13	Decile 9-10	25.1	1.97	1.47 - 2.65
Decile 6	18.2	1.36	0.87 - 2.14	Ethnicity			
Decile 7	21.9	1.64	1.06 - 2.52	Māori	37.2	2.03	1.69 - 2.44
Decile 8	21.7	1.62	1.06 - 2.49	Pacific	20.2	1.10	0.79 - 1.54
Decile 9	25.3	1.89	1.26 - 2.86	European	18.3	1.00	
Decile 10	24.9	1.86	1.23 - 2.82	Asian	6.8	0.37	0.24 - 0.57
Gender							
Female	10.3	1.00					
Male	28.8	2.80	2.31 - 3.40				

Source: Numerator-National Mortality Collection; Denominator-Census; Note: Rate per 100,000 per year; Ethnicity is Level 1 Prioritised: RR: Rate Ratios are Compared to the European Group and are Unadjusted

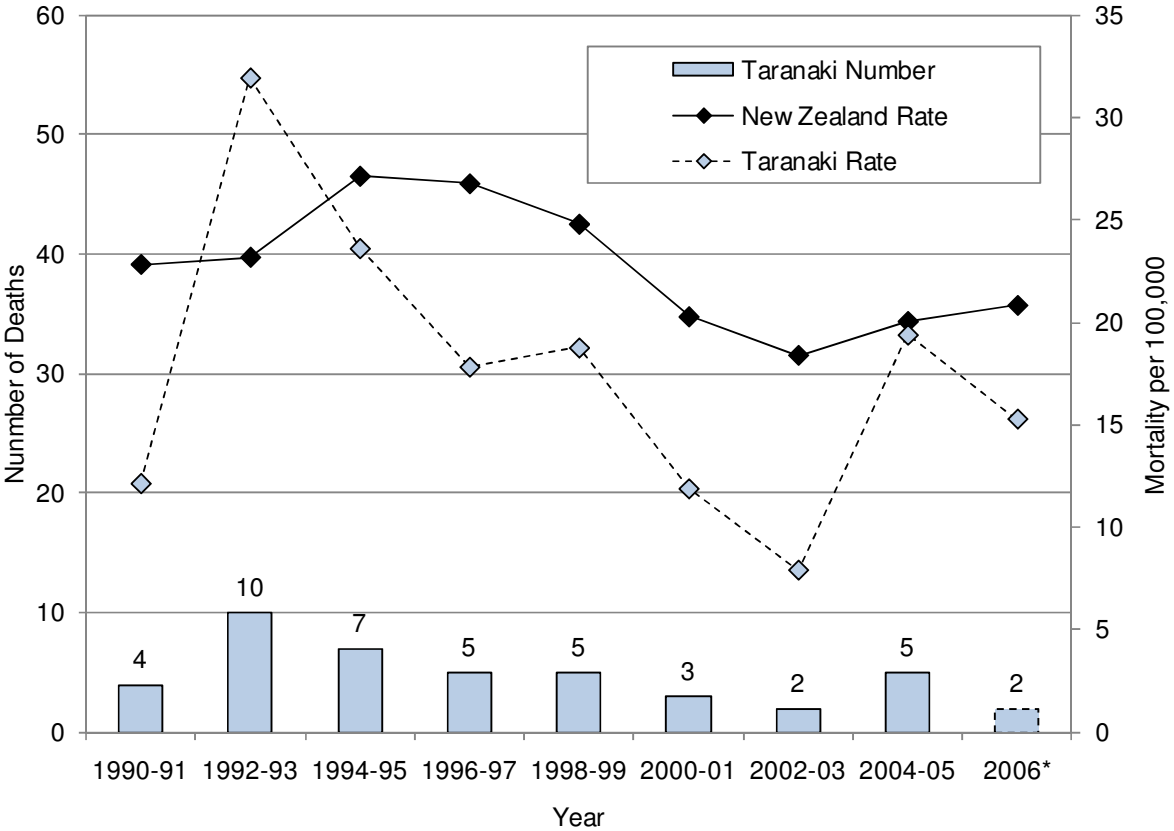
Figure 115. Suicide Rates in Young People Aged 15-24 Years by Ethnicity, New Zealand 1996-2006



Source: Numerator-National Mortality Collection; Denominator-Census; Ethnicity is Level 1 Prioritised

Taranaki Distribution and Trends

Figure 116. Suicide Mortality in Young People Aged 15-24 Years, Taranaki vs. New Zealand 1990-2006



Source: Numerators-National Minimum Dataset and Mortality Collection; Denominator-Census; Note: Numbers are per 2 year period, with the exception of 2006, which is for a single year.

Taranaki Trends

In Taranaki during 1990-2006, suicide mortality fluctuated markedly, although rates were lower than the New Zealand average for the majority of the late 1990s and 2000s. Despite this, during 1990-2006, a total of 43 Taranaki young people aged 15-24 years died as the result of suicide (**Figure 116**). Small numbers precluded a more detailed analysis by ethnicity, and thus regional rates need to be estimated from national figures.

Summary

In New Zealand, suicide rates increased in males during the early 1990s, reached a peak in 1994-95 and then declined. Rates reached a nadir in 2002-03, and since then have increased. For females, suicide rates increased during the mid-late 1990s, fluctuated during 1998-2002, and since then have gradually declined. Throughout this period, suicide rates were higher for males than for females. When broken down by age, self inflicted injury admissions in females increased sharply during early adolescence, reached a peak at 16-18 years and then declined. Rates for males increased during mid-adolescence, and thereafter remained static. Throughout the teens-early 20s, admissions for self-inflicted injuries were higher for females. While suicide mortality during 2002-2006 also increased during mid-late adolescence, rates were higher for males after 14 years of age. During 2004-2008, self inflicted injury admissions were *significantly* higher for European and Māori > Pacific and Asian young people and those in more deprived areas, while suicide mortality during 2002-2006 was *significantly* higher for Māori > Pacific and European > Asian young people and those in the most deprived areas.

In Taranaki during 1990-2006, suicide mortality fluctuated markedly, although rates were lower than the New Zealand average for the majority of the late 1990s and 2000s. Despite this, during 1990-2006, a total of 43 Taranaki young people aged 15-24 years died as the result of suicide. Small numbers precluded a more detailed analysis by ethnicity, and thus regional rates need to be estimated from national figures.

Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Suicide and Self Harm

In New Zealand, the New Zealand Suicide Prevention Strategy provides a framework for suicide prevention efforts, including those for young people. A number of local and international reviews also focus on suicide prevention, and these are summarised in **Table 108** below. In addition, a range of publications focus on mental health issues more generally and these are summarised in **Table 55** on page 213.

Table 108. Local Policy Documents and Evidence Based Reviews Relevant to the Prevention of Suicide and Self Harm

Ministry of Health Policy Documents
Assoc Minister of Health. 2006. **New Zealand Suicide Prevention Strategy 2006-2016**. Wellington: Ministry of Health. This document provides a framework for suicide prevention efforts in New Zealand until 2016. The aim is to reduce the rate of suicidal behaviour and its effects on New Zealanders. There are seven goals in the strategy: to promote mental health and well being, 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; to expand the evidence about the rates, causes and effective interventions.
Ministry of Health. 2008. **New Zealand Suicide Prevention Action Plan 2008–2012: The Summary for Action**. Wellington: Ministry of Health. This document and the one below, make up the New Zealand Suicide Prevention Action Plan 2008-2012. These documents were developed to translate the goals of the Suicide Prevention Strategy into action. The Action Plan provides a uniform set of evidence-based directions to guide suicide prevention activities; it helps to identify where new investment is required; and it assists government and non-government policy advisors, service planners, services providers, researchers, professional groups and communities to work closely together to gain a common understanding of their role in the overall spectrum of suicide prevention. The Summary for Action provides tables outlining outcomes, actions, milestones, whānau ora considerations, timeframes, and the agencies that are responsible for implementing the actions.
Ministry of Health. 2008. **New Zealand Suicide Prevention Action Plan 2008–2012: The Evidence for Action**. Wellington: Ministry of Health. This Evidence for Action document provides details about the context, rationale, and evidence for the actions proposed, for each of the seven goals outlined in the New Zealand Suicide Prevention Strategy 2006-2016. Note: For the Ministry of Health's suicide prevention resources, see http://www.moh.govt.nz/moh.nsf/indexmh/suicideprevention-initiatives#dhb
Systematic and Other Reviews from the International Literature
Crowley P, Kilroe J and Burke S. 2004. **Youth Suicide Prevention**. London: Health Development Agency. The aims of this briefing included identifying all relevant systematic reviews, syntheses and meta-analyses; and analysing the evidence to highlight what strategies are effective to prevent youth suicide. The authors included seven reviews; three from the UK, two from North America, and one each from NZ and Australia. They found that there was insufficient evidence to recommend universal (not targeted) school based programmes, or programmes for high-risk groups and/or behaviours. In two of the studies, detrimental effects of such programmes were detected. Three reviews examined interventions to promote access to supports and advice for those at risk of suicide. There was no evidence supporting the use of crisis hotlines, however, there was weak evidence for the use of contact cards. Three of the reviews examined limiting the means of suicide to youths and showed there was some evidence for restricting the amount of paracetamol sold per packet. The authors concluded that complex interventions in many areas of young people's lives may be most successful in preventing youth suicide.
Ploeg J, Ciliska D, Brunton G, MacDonnell J, O'Brien M A. 1999. **The effectiveness of School-Based Curriculum Suicide Prevention Programs for Adolescents**. Dundas: Ontario Ministry of Health, Region of Hamilton-Wentworth, Social and Public Health Services Division. The authors of this review aimed to provide a summary of the effectiveness of school-based curriculum suicide prevention programmes for adolescents. The results were mixed, with some of the studies showing beneficial effects. However, some of the studies also showed detrimental effects, particularly in males who appeared to be at higher risk for suicide. The authors concluded that there is currently insufficient evidence to support programmes of this type.
Guo B, Harstall C. 2002. **Efficacy of Suicide Prevention Programs for Children and Youth**. Edmonton: Alberta Heritage Foundation for Medical Research. The authors of this review examined the efficacy of suicide prevention programmes for school-aged children and youth (5-15 years of age), including those based in the school or community. The studies examined included programmes targeted to high risk children, and those delivered to general student population. Of the ten studies that were included in the review, none were in young children, with the age range within studies being 12-19 years. Only one study assessed the adverse events of the programmes. The authors concluded that there was insufficient evidence to either support or refute curriculum-based suicide prevention programmes in schools.
Ploeg J, Ciliska D, Dobbins M, Hayward S, Thomas H, Underwood J. 1995. **A Systematic Overview of the Effectiveness of Public Health Nursing Interventions: An Overview of Adolescent Suicide Prevention Programs**. Toronto: University of Toronto. The authors of this review aimed to summarise the efficacy of adolescent suicide prevention curricula programmes. There were 11 studies included in the review; results were mixed. Where the outcomes assessed were knowledge related to suicide, most found that knowledge increased with the interventions. However, where outcomes included factors such as disclosure of suicide intention, seeking help from adults and professionals, and helping suicidal peers, both beneficial and harmful effects were detected. The authors conclude that there may be beneficial and harmful effects of suicide prevention programmes for adolescents.

Crawford M J, Thomas O, Khan N, Kulinskaya E. 2007. **Psychosocial Interventions Following Self-Harm: Systematic Review of their Efficacy in Preventing Suicide**. British Journal of Psychiatry 190: 11-17.

The authors of this review aimed to determine whether additional psychosocial interventions after an episode of self harm reduce the likelihood of subsequent suicide. The authors concluded that there was no evidence that additional interventions would be effective. However, the authors did not comment on the quality of the included studies, making it difficult to confirm the reliability of their results.

Hawton KKE, Townsend E, Arensman E, Gunnell D, Hazell P, House A, van Heeringen K. 1999. **Psychosocial and Pharmacological Treatments for Deliberate Self Harm**. Cochrane Database of Systematic Reviews, Issue 4. Art. No.:CD001764. DOI: 10.1002/14651858.CD001764.

The aim of this review was to examine the effectiveness of interventions for people who have intentionally harmed themselves, given that self harm is associated with subsequent self harm, including completed suicide. Due to methodological problems with the included trials, the authors commented that there remains considerable uncertainty about which forms of psychological and physical treatments for self harm are most effective.

Hall K, Day P. 2002. **Suicide prevention topic 1: What Kind of Follow-up is Needed to Reduce the Risk of Repeated Suicide Attempts / Suicide?** Christchurch: New Zealand Health Technology Assessment. URL: http://nzhta.chmeds.ac.nz/prevention.htm

This review was undertaken to examine the evidence about follow-up required to reduce the risk of repeated suicide and suicide attempts. Overall, the evidence suggests that no firm conclusions can be reached on the efficacy of a variety of different kinds of follow-up, largely due to the small size and heterogeneity of trials, making it difficult to perform meta-analyses. There is some evidence to suggest that cognitive-behavioural strategies may reduce repeat suicide attempts, but it is unknown which groups of patients would most benefit. In addition, any positive effect seen diminishes with follow-up periods of longer than 6-12 months.

Day P, Dawson S. 2002. **Suicide Prevention topic 2: What is the Efficacy of Crisis Interventions?** Christchurch: New Zealand Health Technology Assessment. URL: http://nzhta.chmeds.ac.nz/prevention.htm

The aim of this review was to examine the efficacy of crisis interventions for persons presenting following a suicide attempt, expressing suicidal ideation, and suicide threat. Overall, the evidence suggested that no firm conclusions can be reached on the efficacy of different crisis interventions, due to the small number and size of trials that have been undertaken. There is very little evidence to suggest that crisis intervention as opposed to 'standard care' reduces the risk of repeat suicide attempts. It would appear that specialist telephone help lines may be of some help in decreasing suicidal urgency in the short-term, but evidence is lacking as regards to the long-term benefits of this crisis intervention.

Dawson S. 2002. **Suicide Prevention Topic 4: Are Different Triage Models Associated with Different Outcomes in People Presenting Following Suicidal Ideation / Threat / Attempt?** Christchurch: New Zealand Health Technology Assessment. URL: http://nzhta.chmeds.ac.nz/prevention.htm

This review examines the efficacy of different triage models used for persons presenting following a suicide attempt, expressing suicidal ideation, and suicide threat. Overall, no firm conclusions can be reached on the efficacy of different triage models used for people presenting following suicide attempt, due to the small number and size of trials that have been undertaken. Available evidence suggests that psychosocial assessment to identify high-risk patients may be of some help in reducing repeat suicide attempts.

Guo B, Scott A, Bowker S. 2003. **Suicide Prevention Strategies: Evidence from Systematic Reviews**. Edmonton: Alberta Heritage Foundation for Medical Research.

This report provides a summary of the evidence of systematic reviews on the effectiveness of suicide prevention strategies. The authors found that there is insufficient evidence as to the effectiveness of school-based prevention programmes for adolescents. However, there was some promise in terms of reducing suicidal risk behaviours and enhancing protective factors. The authors conclude that suicide is complex and multifaceted, and therefore requires a combination of prevention and treatment strategies to reduce suicide rates.

Other Related Articles, Reviews and Guidelines

New Zealand Guidelines Group. 2003. **The Assessment and Management of People at Risk of Suicide; For Emergency Departments and Mental Health Service Acute Assessment Settings**. Wellington: New Zealand Guidelines Group. URL: http://www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineCatID=8&guidelineID=5

The purpose of these guidelines is to guide those working in emergency departments and in acute psychiatric services in the appropriate assessment and early management of suicidal people (with a specific section focusing on children and adolescents). These guidelines focus on intervening with people who have made a suicide attempt with the intent (or partial intent) of ending their lives and those who are at risk of taking their own life. Some people harm themselves deliberately without suicidal intent, such as by repeated cutting or other forms of deliberate self-harm. While some of the management principles described in these guidelines may be helpful for assisting these people, additional measures are necessary, which are beyond the scope of these guidelines.

Bennett S, Coggan C, Brewin M. 2003. **Evidence for Student Focused School-Based Suicide Prevention Programmes: Criteria for External Providers**. Auckland: Injury Prevention Research Centre.

The aim of this report was to examine the efficacy and safety of school-based student-focused suicide prevention programmes, to develop a set of criteria which schools can use to evaluate such programmes. The authors examined universal classroom-based programmes, targeted programmes, and whole-school approaches. While universal programmes are the most common type of programme offered to young people, there is little-to-no evidence which supports undertaking these. Of particular concern is that classroom programmes may have negative side effects for males, who are at higher risk for suicide than their female counterparts. Research also suggests that suicidal students react more negatively than their non-suicidal peers to such programmes. There is little evidence about the effectiveness of targeted (indicated) programmes. However, programmes that address risk factors strongly associated with suicidal behaviours have shown some promise. In addition, there is strong theoretical justification for a whole-school approach to improving mental health, where this includes identification and referral of vulnerable youth to appropriate support and gate keeper training, which aims to improve the knowledge and awareness of teachers and other adults about youth suicide. The authors also provide criteria for choosing and evaluating external providers of suicide prevention programmes.

Royal New Zealand College of General Practitioners. 1999. **Detection and Management of Young People at Risk of Suicide: Guidelines for Primary Care Providers**. Wellington: RNZCGP.

This document aims to assist primary care providers to recognise young people who are at risk of suicide, and to enable them to provide appropriate management or appropriate referral to secondary services. The document gives background data on suicide, outlines some principles of care for young people, provides ways to recognise significant risk of suicide and how to mange this.

Ministry of Youth Development. 2005. **Guidance for Community Organisations Involved in Suicide Postvention**. Wellington: Ministry of Youth Development.

This document provides guidance for community organisations involved in suicide postvention. It outlines some background and principles for establishing a community initiative and provides sources for further information.

IN DEPTH
TOPICS

EARLY INTERVENTION PROGRAMMES FOR SOCIALLY VULNERABLE CHILDREN

Introduction

In recent years, there has been an increasing awareness of the crucial role the first five years of life play in creating a foundation for future academic success, health and wellbeing [123]. Ongoing exposure to socioeconomic disadvantage during these crucial early years has repeatedly been associated with detrimental long-term outcomes (e.g. leaving school without qualifications, workforce inactivity, and early parenthood [4]). As a consequence, there has been much interest in early intervention programmes, and the role they play in mitigating the effects of socioeconomic disadvantage on academic performance, social-emotional functioning, and long term wellbeing.

The following review considers the impact early exposure to socioeconomic disadvantage has on long term outcomes for children and the pathways via which this might occur, before reviewing the different types of early intervention programmes available for socially vulnerable children. The overseas literature on the effectiveness of various types of early intervention programme is then reviewed, before a brief summary of programmes available in New Zealand is presented. The section concludes by highlighting the issues New Zealand will need to consider, if it is to substantially increase its investment in this area.

Early Childhood Disadvantage and Long Term Outcomes

Effects on Health, Development and Wellbeing

There is now a considerable body of evidence to suggest that exposure to socioeconomic disadvantage during childhood impacts negatively on children's health and wellbeing, with the effects often being divided into three categories [5]:

1. **Health and Physical Development**: Numerous studies have demonstrated associations between socioeconomic disadvantage and adverse health outcomes, with the effects beginning in utero, where maternal socioeconomic adversity has been associated with preterm birth, foetal growth restriction, birth asphyxia and foetal alcohol syndrome [5]. During childhood, socioeconomic disadvantage has been associated with an increased risk of respiratory diseases, dental caries, iron deficiency, growth stunting and obesity, and accidental and non-accidental injuries; while in adolescence such exposures increase the risk of teenage pregnancy and intentional self harm [2]. Childhood socioeconomic disadvantage has also been independently associated with adverse outcomes in adulthood (even if socioeconomic status (SES) subsequently improves), including high blood pressure, higher body mass index, and lower cardiovascular fitness [124].
2. **Cognitive and Academic Attainment**: A considerable body of evidence also links family socioeconomic position with children's cognitive development and academic attainment. In New Zealand, the Christchurch longitudinal study found that low family income during childhood was significantly associated with leaving school without formal qualifications, early parenthood and economic inactivity at 21 years, with the associations weakening, but not disappearing when confounding factors (e.g. gender, ethnicity, age of mother, education of parents, sole parent status of family, number of siblings) were taken into account [4]. These findings are consistent with overseas research, which has found associations between poverty and lower parental education, with lower levels of school achievement and IQ in later childhood [5].
3. **Socio-Emotional Development and Behaviour**: A number of studies have also found associations between children's socioeconomic circumstances, mental health symptoms, and issues with social functioning [5]. While not being apparent in very young children, these associations emerge during early childhood, and become

consistent from middle childhood onwards. The strength of the association however, varies with the mental health issue concerned, with associations being strongest for schizophrenia and personality disorders, and less consistent for neurosis and affective disorders [5].

Potential Pathways Linking Early Disadvantage to Adverse Outcomes

While the associations between early childhood disadvantage and later health and wellbeing are fairly consistent, the pathways via which these exposures lead to adverse outcomes for children remain the subject of considerable debate. In general however, the literature considers them under three broad headings:

1. Access to Resources
2. Stress Reactions in Response to Economic Adversity; including stress' impact on health related behaviours (e.g. smoking, alcohol) and parenting
3. Neighbourhood Effects

Access to Resources

These pathways focus on the role socioeconomic factors play in determining children's access to the resources essential for normal growth and development. These include:

1. **Nutrition**: Inadequate dietary intake is associated with a number of adverse outcomes in children including growth stunting, neural tube defects (via inadequate maternal folic acid intake) and iron deficiency anaemia. More severe under nutrition is associated with impaired long term memory and defences against infection. Children from low-SES families are also at increased risk of overweight and obesity, with food security potentially playing a role in both under and over nutrition [125]).
2. **Access to HealthCare**: Financial constraints may also limit access to antenatal and preventative health care (e.g. immunizations) and the timeliness of care for acute and chronic conditions. This in turn may lead to children being sicker at the time of initial presentation, as well as an increased risk of vaccine preventable diseases [126].
3. **Housing Quality**: Reduced financial resources also increase children's exposure to poorly maintained, cold, damp and crowded houses. Substandard housing in turn has been associated with an increased risk of infectious and respiratory disease [46].
4. **Cognitively Stimulating Resources**: Research suggests that children from lower SES families have less access to cognitively stimulating resources (e.g. books and reading material) and activities (e.g. trips to the library, museum or theatre, lessons to enhance their skills) [5], which in turn may result in them being less ready for school entry at 5-6 years of age [5].
5. **Parents Expectations and Patenting Styles**: Another postulated pathway is social variations in parenting styles, with more affluent parents being thought to engage children in more conversations, to read to them more often and to provide more teaching experiences, than parents in more difficult economic circumstances [5].
6. **Teachers Attitudes and Expectations**: Research also suggests that teachers may regard children from lower socioeconomic families less positively and provide less positive attention and reinforcement for good performance. Further, combining less cognitively stimulating experiences at home, with less positive interactions with teachers, may increase the risk of poorer psychological outcomes, resulting in negative behaviours (e.g. acting out, depression) and poorer academic attainment [5].

Stress Reactions in Response to Academic Adversity

It has also been suggested that the day to day stresses associated with living with constrained financial resources impact on physical health, health related behaviours, and parenting styles in a variety of ways. These include:

1. **Physiological Responses to Allostatic Load**: Allostatis refers to the body's capacity to adjust (by means of physiological changes) to the load placed on it by environmental stressors. The constant turning on and off of physiological stress responses creates a

higher allostatic load which may have long term consequences (e.g. in primates this is associated with growth and the timing of puberty, cognitive development, metabolism, susceptibility to illness and raised blood pressure) [5].

2. **Parenting**: Research also suggests that living in a low SES environment for a prolonged period may deplete emotional reserves, potentially leading to negative emotional states including anxiety, depression and hostility, which in turn lead to poorer relationships with family and friends. Further, emotional distress in parents may lead to the overuse of negative control strategies, low warmth and responsiveness, and failure to adequately monitor children. For older children, such parenting behaviours may result in low self esteem and poor adaptive functioning, which in turn may lead to bonding with peers rather than parents [5].
3. **Health Related Behaviours**: Exposure to stress has also been associated with a range of health related behaviours including smoking and alcohol use, and reductions in diet and exercise. Such associations, via their impacts on parental behaviour, may also affect child wellbeing (e.g. the associations between exposure to second-hand cigarette smoke and respiratory illnesses; and excess use of alcohol and family violence) [5].

Neighbourhood Effects

In addition to individual socioeconomic status, research suggests that living in an affluent neighbourhood has positive effects on children's school readiness and achievement, while living in a deprived neighbourhood may contribute to behavioural problems and increase the risk of early childbearing. Potential mediators for these associations include [5]:

a) The quality of institutional resources (e.g. schools, childcare, medical facilities, employment opportunities).
b) The characteristics of parents and the networks available to support parents.
c) The extent to which residents monitor and regulate behaviour within the neighbourhood in accordance with social standards.

Impacts of Socioeconomic Disadvantage on Child Outcomes Summary: The literature suggests that exposure to socioeconomic disadvantage during the first 5 years of life not only affects immediate cognitive and social development and wellbeing, but it can also influence longer term educational attainment, workforce participation and the likelihood of teenage parenting and delinquency. A range of pathways are likely to mediate these associations including reduced access to resources (e.g. nutrition, housing, healthcare), the impact of stress on psychosocial functioning (e.g. parenting, smoking, alcohol consumption) and neighbourhood effects (e.g. quality of schools and local amenities).

Early Childhood Intervention Programmes

Types of Early Intervention Programme

As understanding of the pathways linking socioeconomic disadvantage to poorer long term outcomes has grown, a range of programmes have emerged, each attempting to ameliorate the impacts of socioeconomic disadvantage on children's long term health and wellbeing. Broadly speaking, these programmes *"attempt to improve child health and development during the period from conception to six year of age, with the expectation that these improvements will have long term consequences for child development and wellbeing*" [127]). Such Early Intervention Programmes, in general, fall into four broad categories:

1. **Programmes Delivered in Child Care or Pre-School Facilities**: These programmes are based in child care or pre-school facilities, and focus on socially vulnerable infants and pre-school age children (e.g. from low income families, or neighbourhoods with high levels of socioeconomic deprivation). They aim to enhance child development directly, via educational interventions which involve the child as the primary participant [127].

2. **Parent Focused Home Visiting Programmes**: These programmes provide targeted home visiting for vulnerable families with infants or pre-school children (e.g. low income families, or families with other risk factors such as a maternal depression, or a low birth weight baby). They aim to improve child wellbeing indirectly, via interventions which provide parental social support or improve parenting skills [127].
3. **Targeted Programmes to Improve Family Economic Wellbeing**: These programmes aim to improve children's wellbeing by enhancing their family's economic self-sufficiency / parental employment prospects. Most are targeted at socioeconomically vulnerable caregivers (e.g. sole, teenage, or unemployed parents) and include a mixture of intensive case management, financial support and other services [127].
4. **Integrated Programmes Which Include Elements of the Above Categories**: These programmes are delivered in a variety of settings and target socioeconomically vulnerable children and their families using a mix of interventions, which aim to enhance child and parental wellbeing (e.g. various combinations of centre-based early childhood education, home visiting and parental support, and parenting skills training) [127].

Difficulties in Evaluating Early Intervention Programmes

As the categories above suggest, a plurality of approaches to early childhood intervention has evolved in recent years, with researchers now beginning to ask a fundamental question: which programme type(s) are most effective in ameliorating the effects of socioeconomic disadvantage on children's long term wellbeing? While this would seem a relatively straight forward question, a recent Australian review [127] of the international literature highlighted the considerable methodological constraints which often hinder answering questions of this nature. In this review the authors found that:

1. Of the 108 published early interventions identified, many were demonstration or pilot programmes involving small sample sizes, which had not been formally evaluated. In addition, very few involved longitudinal follow up.
2. A range of different interventions were employed (e.g. centre based, home visiting, group meetings, single site, co-ordinated multi-site), along with a range of different outcomes measures (e.g. cognitive, behavioural and social outcomes, parenting skills, family economic sufficiency), making it difficult to undertake a standardised comparison across different programmes and outcome types.
3. Even once a smaller subset of programmes (n=32) meeting stricter quality criteria (large-scale, well established programmes, formal evaluation +/- cost benefit analysis) had been identified, a number of issues remained, including high drop-out rates, the short term (e.g. 2-3 years) focus of many evaluations, and the fact that the only studies which explored long term cost-effectiveness were based on relatively small sample sizes.

Thus while the following sections review a range of early intervention programmes operating in New Zealand and overseas, when considering which one(s) might best meet the needs of New Zealand children, the reader must be aware that evaluating the effectiveness of such programmes is inherently difficult, as a result of differing methodologies, difficulties in establishing the most appropriate comparison group, and the lack of long term follow up data in the majority of instances.

The Effectiveness of Early Intervention Programmes

There have been a large number of reviews in the international literature on the effectiveness of early intervention programmes. In general, these fall into two broad categories: those considering the effectiveness of home visiting programmes, and those reviewing programmes delivered in centre based facilities. The following sections review each of these in turn, before considering the range of programmes currently available in New Zealand. (Note: due to the large number of programmes in each of these categories, the review of the international literature is restricted to systematic and other reviews of well

designed (preferably randomised controlled) studies, with clearly defined outcome measures and medium to long term follow up. More detail however, is provided on individual New Zealand programmes, in order to provide a more detailed overview of the services available locally.)

Reviews of the International Literature on the Effectiveness of Early Intervention Programmes

Reviews of the Effectiveness of Home Visiting Programmes

It has been suggested that home based interventions influence children's development indirectly, via their effects on parent's behaviour, with the assumption often being that the parents of more disadvantaged children may use less effective parenting strategies because they lack the necessary knowledge [128]. Such theories suggest that home based programmes may lead to improved outcomes for children via their impacts on parental attitudes, behaviour and involvement with outside agencies [128]. There have been a number of reviews of the effectiveness of home visiting programmes, with the findings of randomised trials (with a few exceptions, including the Nurse Family Partnership Programme) in general suggesting negligible to small effects across a range of outcomes. Such findings have led some to conclude that the effects of parenting interventions alone are relatively weak, either because parenting beliefs and practice are not easily altered, or because if such changes do occur, they do not lead to improved outcomes for children [128]. The findings of a number of these reviews are outlined below:

Fergusson et al 2005 [129]: As part of a review of the Early Start Programme, Fergusson et al summarised two major reviews of home visiting programmes prior to 2005. In the first of these (published in 1993), Olds and Kitzman [130] considered randomised controlled trials of home visiting, with outcomes including children's cognitive development and behaviour, prevention of child abuse, and health outcomes. The review found inconsistent results, with some programmes demonstrating positive effects and others no significant differences. For example, in one trial, home visited children made better use of well child services and had fewer hospitalisations. In contrast, none of the six trials which sought to prevent child abuse and neglect had significant effects. The review found that studies which employed professionals (e.g. nurses) and had more comprehensive service models had a greater impact than narrowly focused programmes which employed paraprofessionals.

The second review Fergusson summarised, considered six well established home visiting programmes in the United States which had been evaluated using randomised controlled trials during the 1990s [131]. The review found that none of the programmes reported consistent benefits in children's health, development and behaviour, or risk of child abuse (none found significant effects on the majority of measures employed, and many revealed no positive effects at all). The authors also found wide variability in benefit using the same model in different sites, suggesting that programme implementation was variable in different areas. They concluded "*no home visiting model produces impressive or consistent benefits in child development or child health. Several models produce some benefit in parenting and perhaps in the prevention of child abuse and neglect, but only on some of the measures used to assess these outcomes [131]".*

Fergusson [129] also reviewed two large US home visiting programmes, whose evaluations had been published after these reviews: the Nurse Family Partnership Programme and the Hawaii Healthy Start Programme. Evaluations of the Nurse Family Partnership Programme suggested that at age 6, children who were home visited during infancy were more likely to be enrolled in formal out of home care, have higher intellectual functioning, and fewer behavioural problems [132]. The qualifications of visiting staff appeared important however, with children visited by a nurse having better language and intellectual development, and home environments which were more supportive of children's early learning, than controls, while no significant differences were found for those visited by paraprofessionals [133]. At 15 years, children previously enrolled in the programme had fewer arrests and convictions, fewer sexual partners, and fewer

behavioural problems from alcohol and drug use, while their mothers had fewer subsequent pregnancies, received welfare support for fewer months, and had fewer arrests and convictions [134]. In contrast, a review of the impact of the Hawaii Healthy Start Programme on the prevention of child abuse and neglect found no significant differences in self reported abusive behaviours, hospitalisations or official reports of abuse, with the authors concluding that the programme had little impact on preventing child abuse [135].

Overall, Fergusson et al [129] concluded that with the exception of the Nurse Family Partnership Programme, home visitation programmes had failed to show clear or consistent benefits. They noted however, that despite the failure of many programmes to produce positive effects, some had done so, and that there was an urgent need for further research to identify those factors which ensured programme effectiveness.

Sweet and Appelbaum 2004 [136]: In a more recent review, Sweet and Appelbaum undertook a meta-analysis of 60 home visiting programmes in the United States. While the majority of child outcomes (e.g. children's cognitive development, potential risk of child abuse), and parental outcomes (e.g. parenting behaviour and attitudes, maternal education) demonstrated effect sizes significantly greater than zero, for most outcomes the effect size was small (e.g. improvements in cognitive measures were only a few points on a standardised intelligence scale (which typically had a standard deviation of 10 points)). The results of an analysis of programme design were also inconclusive, with no one programme feature (e.g. location, duration, staff type, populations targeted) having significant effects across all outcomes. As in other studies however, children visited by professionals fared better in cognitive tests, than those visited by non-professionals. The authors thus questioned whether improvements of the magnitude seen were worth the cost, time and effort required to generate them, and suggested that further research was required to determine the usefulness of home visiting, and the key elements of programme success.

Wise et al 2005 [127]: Similarly, an Australian review of the efficacy of early intervention programmes found that of the 8 established home visiting programmes reviewed, most had effect sizes which were negligible to small, and where short term effects were evident, these diminished over time. The authors concluded that the findings of the evaluation were in keeping with other research, which suggested that the greatest effects were derived from centre based early childhood interventions, as opposed to home visiting or case management. The authors noted however, that significant methodological constraints and the paucity of high quality long term follow up data, made it difficult to draw firm conclusions from their analysis.

Home Visiting Summary: In considering these reviews, a number of themes emerge. Firstly, the evidence for the effectiveness of home visiting programmes is inconclusive / weak, with few programmes resulting in positive effects across all child and parenting outcomes. A number of individual programmes however, have shown consistent benefits, with a recent review suggesting that the Nurses Family Partnership programme resulted in a cost benefit of $17,180 per child, in terms of long term adverse youth outcomes averted [137]. Multiple evaluations however, have failed to identify those elements of programme design which result in consistent beneficial outcomes, although it does appear that the qualifications of those undertaking the visiting are important, with the employment of professional staff (e.g. nurses) tending to lead to better cognitive outcomes for children.

Reviews of Centre Based Early Intervention Programmes

Centre based programmes provide children with direct educational experiences and are usually delivered in a daycare or preschool setting. A number of reviews have suggested that such interventions can lead to improved cognitive outcomes at school entry, and there is a growing body of evidence that they may be more effective than trying to influence child outcomes indirectly (e.g. via home visiting [128]). The findings of a number of these reviews are outlined below:

Anderson et al 2003 [123]: This systematic review considered the effectiveness of publicly funded preschool programmes for children aged 3-5 years, who were at risk due to family poverty. Of the 16 studies reviewed, 12 identified cognitive outcomes (academic achievement, school readiness, IQ, grade repetition and special education placement). Of the nine using standard academic measures, six demonstrated increases in academic achievement, one reported a negative effect, and two provided no data on effect size. Three of three studies assessing school readiness showed positive effects, as did six out of seven studies measuring IQ, four out of five studies measuring grade repetition, and five out of five studies assessing special education placement. Of the five studies which considered social outcomes, three demonstrated improvements in social competence (impulsivity, behaviour, motivation), with two demonstrating benefits at one year post intervention. Two studies also reviewed long term social outcomes, with both showing reductions in social risk behaviour (e.g. at age 27, participants in the Perry Preschool Programme had improvements in high school graduation, employment status, home ownership, and reductions in teen pregnancy, delinquency, arrests, and receipt of social services). The only study to consider health outcomes suggested improvements in health screening and dental examinations. Finally, two studies considered family outcomes, with one study finding positive effects on parental educational status and employment, poverty and receipt of public assistance, and the other finding positive effects on sibling's access to health screening. The authors concluded that early intervention programmes had a positive effect on cognitive development and readiness to learn, although they acknowledged that the small number of studies exploring social, preventive health, or family outcomes made firm conclusions in these areas more difficult.

Gray and McCormick 2005 [138]: In the mid-2000s Gray and McCormick summarised the three main reviews of early intervention programmes during the previous decade. They noted that a series of reviews in a 1995 edition of *The Future of Children* [139] had found that effective programmes were associated with small class sizes, well supported teachers, prolonged intervention and good links with home; and that child focused programmes dealing directly with the child were in general, more effective than programmes which served both parents and children, or which attempted to work on the child through the parents. Similarly, they considered a 1999 RAND [140] report which examined the effects of nine programmes, most of which had been evaluated by randomised controlled trials. This report found a range of benefits including cognitive, emotional and educational gains, reduced criminal activity, improved parent child relationships, and in the longer term, improved workforce participation, reduced welfare dependency and higher incomes in adult life. The third review, undertaken by a committee of the National Research Council and Institute of Medicine [141] found that there was reasonable evidence to demonstrate the short term effectiveness of programmes for low income children, in terms of improving their cognitive and social outcomes. They noted however, that short term gains in IQ typically "faded out" once the intervention had ended, but longer terms benefits on academic achievement appeared in some studies with long term follow up. They also found long term economic benefits resulting from averted costs in public expenditure for criminal justice, welfare and special education in some studies with long term follow up.

Gray and McCormick 2005 on Long Term Reviews [138]: In 2005, Gray and McCormick also reviewed the findings of three centre based early intervention programmes established in the 1960s which had reported on long term outcomes. The Perry Preschool Study followed 121 of 123 children aged 3-4 years to age 27. In this study, 57 children were randomly assigned to a 2 ½ hour, daily education programme 5 days a week, plus weekly home visiting for 1-2 years, while controls received no preschool programme. Those receiving the programme had greater educational attainment and less welfare dependency at age 27, and lower rates of recurrent arrest [142]. The Abecedarian Project followed up 105 of 111 infants to age 21, with 57 being randomly assigned to daily preschool education 5 days a week from birth to 5 years. At 5 years, half of the intervention and control groups were randomly assigned to 3 further years of intervention, resulting in four groups: no intervention, preschool intervention only, intervention at age 5-

8 only, and intervention from preschool to age 8. Preschool intervention was associated with greater educational attainment, longer time spent in education, and an increased likelihood of skilled employment. In contrast, the school age intervention had little effect [143]. The Chicago Child Parent Centre Programme [144] provided centre based educational support to low income children from age three to age nine, along with home visiting and support. Parents also had to attend the centres half a day per week. The 989 participants were compared to a non randomised control group (550 attending alternative early childhood programmes). Follow up at age 21 showed that those with 1-2 years of preschool intervention had higher rates of school completion, lower school drop out rates, and fewer arrests by age 18. The authors concluded that such early interventions resulted in improved academic outcomes and reduced criminality during adolescence, with many longer term "sleeper effects" lying dormant until children become older. "Fade out" effects were also evident, with some effects (e.g. on IQ) being apparent immediately after the intervention, but disappearing with long term follow up.

Blok et al 2005 [128]: In the mid-2000s, Blok et al reviewed 19 studies of the effectiveness of early interventions published from 1985 onwards, with a view to determining which programme characteristics were most effective in influencing childhood outcomes. The authors found that centre-based and combined home-and-centre-based programmes produced greater effect sizes in terms of children's cognitive development, than did home based delivery models (although neither programme type had large effects on children's socio-emotional development). The inclusion of coaching support for parenting skills however had a large positive effect on cognitive outcomes. In contrast to other reviews, the age of onset, programme length and intensity, or inclusion of social or economic support was not associated with improved outcomes in this review.

Centre Based Interventions Summary: Collectively these reviews suggest that centre based early intervention programmes have consistent effects on children's cognitive development, school readiness, need for special education, and grade repetition. There were however, insufficient studies to draw firm conclusions regarding their effectiveness in terms of social development, child health or family outcomes. The effects on IQ are greatest in the years immediately following the intervention and fade out thereafter, but longer term "sleeper effects" (e.g. on academic performance, workforce participation and criminality) were evident in some studies into middle adulthood.

Before drawing any conclusions as to the relevance of these findings for New Zealand however, it is perhaps worthwhile reviewing the evidence for the effectiveness of early intervention programmes currently operating in New Zealand.

Early Intervention Programmes in New Zealand

As elsewhere, early intervention programmes in New Zealand tend to fall into two broad categories: home visiting programmes, which are often targeted towards socially vulnerable children; and early childhood education (ECE) which is more universal in its availability. The following section briefly reviews each of these in turn.

Home Visiting Programmes in New Zealand

In New Zealand, with the exception of Plunket, home visiting programmes tend to be region specific, to target medium to high risk families, and (in many cases) to be inconsistently evaluated [145]. Government funded or partially funded programmes in New Zealand include those listed below, with the following sections reviewing each of these in turn:

1. Family Start
2. Early Start
3. Parents as First Teachers
4. Whānau Toko / Te Ora
5. Home Interaction Programme for Parents and Youngsters (HIPPY)
6. Plunket national Parenting Education Programme (PEPE)

Family Start

Family Start began in 1998 as part of the Government's Strengthening Families strategy. It aims to reach the 15% of *'most-at-risk'* families, and has three main objectives [146]:

1. To improve children's wellbeing and development, and to enhance life outcomes
2. To improve parents' parenting capability and practice
3. To improve parents' personal and family circumstances

The programme is administered by the Ministry of Social Development (MSD). Services are delivered by community providers (predominantly non-government organisations), who enter into contracts with the MSD, and who then develop service plans tailored to meet the needs of individual families. Three pilot programmes were established in 1999, with another 13 added a year later. Further programme roll outs have occurred over time, with 32 Family Start sites being listed on the MSD's website in 2009.

Approved referral agencies (e.g. Lead Maternity Carers and Well Child providers) refer clients to a Family Start provider within six months of a child's birth. The Family Start provider then undertakes a full assessment of the family, following which the family may be invited to participate in the programme. If the family accepts, they are then assigned to a designated family / whānau support worker, who then develops an Individualised Family Plan with the family. Support workers are drawn from the same communities as the client, so as to '*begin where the family/whānau are'* (this is a significant point of difference with Early Start (below), which utilises tertiary trained support workers).

Family Start has been subject to two evaluations: In 2003, an Evaluation Management Group gathered information from a number of reports for a process evaluation. More recently, an outcome / impact evaluation has been published, although this evaluation was restricted to four Family Start sites, and had significant methodological constraints (an initial decision not to undertake a randomised controlled trial meant there was no suitable comparison group with which to compare Family Start families, and there was also a generally low participation rate by families in the evaluation). The evaluation found that:

1. While it was initially planned that clients would participate in the programme for 5 years, only 38% of families remained in the programme for more than 21 months. The main reasons for low retention were high geographic mobility, mother unable to be contacted, and services no longer required [146].
2. While information on access to services (e.g. WellChild Providers, Early Childhood Education) and health outcomes (immunisation, breastfeeding) was available, the lack of a suitable comparison group made it difficult to assess the impact of the programme on these outcomes. Rates of immunisation and breastfeeding (at 6 months) however, were generally low amongst Family Start families [146].
3. Concerns were expressed that support workers were in many cases more oriented towards the needs of adults in the families than the children, and that this was an issue in situations where violence against children had occurred, or was suspected [146].
4. Concern was also expressed regarding the level of training of support workers and the extent to which intersectoral collaboration was actually occurring. The reviewers noted that "*Family Start supervisors and staff in external agencies all recognized the need to establish, strengthen and…re-establish collaborative ties between Family Start and other agencies in the community. However, there was some evidence that Family Start providers may be highly selective in who they collaborate with, are insular and exclusive in their approach, or see themselves as a one-stop shop able to provide for all the needs of a family. These factors may reduce the need or impetus for collaboration and undermine the development of good working relationships. When these factors are considered in the light of reported heavy workloads for family workers, low levels of training and limited professional expertise in some areas, a lack of collaboration with other service agencies is of concern. It suggests that families may not always be accessing the expertise available in the community that may best assist them. [146]".*

As a result of this review, a number of changes were made to Family Start in 2004. These included the mandatory requirement that supervisors have tertiary qualifications, a MOU between Family Start and CYF regarding referrals for child abuse and neglect, and new performance indicators in dental services, WellChild Services, immunisation and breastfeeding support. In the 2005 Budget an additional $18.8 million was allocated over four years, with a view to further educating and training support workers.

Early Start

Early Start is an intensive home-based support system, developed during the early 1990s to meet the needs of high-risk families and their children [129]. The impetus for its development was high rates of psychosocial problems in children and young people (e.g. conduct problems, substance abuse, mental health issues, and youth suicide). The Christchurch Health and Development Study had found that in many cases, these outcomes were associated with socioeconomic disadvantage in childhood [129]. As a result, a consortium of non-government organisations[2] was formed, with a view to piloting a three-stage home visiting programme, loosely based on the Hawaiian Healthy Start Programme. In an initial 1995 pilot, Plunket nurses used screening criteria to identify high risk children, with eligible families then being referred to Early Start, where they were enrolled into the programme for a one-month trial (which acquainted families with the programme, and staff with the families). After this initial period, an in-depth needs assessment was undertaken, and families meeting pre-specified criteria were invited to join the programme long term. The three step process ensured families were enrolled into the full programme on the basis of need, rather than a screening test (which may have resulted in false positives, and unduly stigmatised some families).

Participating families then received a home based family support and visitation service, tailored to their needs by trained family support workers. While the support provided varied, support workers aimed to encourage positive family change in a number of areas: child health (e.g. ensuring all families enrolled with a GP); social, emotional and practical support; advice and role modelling regarding parenting skills; assisting families to achieve greater economic security (e.g. budgeting advice, financial management skills, securing affordable accommodation, part time employment); and assistance with crisis management.

Following the initial pilot, funding was provided by the Family Start initiative, and this allowed the consortium to undertake a randomised controlled trial in 2000. This trial compared 220 families receiving Early Start, with 223 control families not receiving the programme. Families were enrolled onto the programme following screening, and outcomes were assessed at 6, 12, 24 and 36 months. At 3 years, 59% of families were still receiving the programme, and of those enrolled, 90% were studied for 3 years. The trial found that compared to controls, the children of families enrolled in Early Start had:

1. Improved health care and health outcomes (greater use of GPs and Well Child checks, fewer hospital attendances for injuries or poisonings, and greater use of preschool dental services).
2. Increased exposure to early childhood education
3. Increased exposure to positive parenting practices
4. Lower rates of severe / very severe physical assaults by parents
5. Reduced rates of externalising and internalising behaviour problems

Despite positive child outcomes, there were no consistent differences in terms of maternal health and wellbeing; family stability, family relationships and family violence; family economic and material well-being; or family exposure to stress and adversity. The authors concluded *"It is clear that the provision of family support via Early Start did not produce large and immediate changes in families. However, over time there is an emerging trend*

[2] Collaborating organisations included the Christchurch Health and Development Study, the Family Help Trust, Plunket, representatives from Child, Youth and Family Services, the Pegasus GP Health Group, Māori representatives and community members.

for the experimental families to fare better than control families in a number of areas including: preschool education; home safety; maternal depression; child abuse risk" [147].

Early Start now operates as a Family Start service provider, with Family Start funding having enabled the project to continue, once the research programme was completed.

Parents as First Teachers

Parents as First Teachers (PAFT) is a parent education and support programme developed in the USA, and is based on the philosophy that parents are their children's first and most important teachers [148]. The PAFT programme began in New Zealand in 1991, and aims to assist parents to understand infant development and learning, and to ensure that their children reach their full potential. The programme has been modified to meet local needs, including those of Māori and Pacific families and now operates under the New Zealand PAFT curriculum *Āhuru Mōwai* and *Born to Learn*. *Ahuru Mōwai* is the Māori dimension and is derived from traditional child rearing beliefs and practices, while *Born to Learn* contains neuroscience, child development and parenting information derived from western pedagogy. The curriculum has undergone several reviews to ensure that its information on child development, health checks, immunisations, and safety regulations are consistent with New Zealand requirements [148].

In New Zealand, PAFT is funded by the Ministry of Social Development, with the PAFT National Centre managing 37 contracts delivering the PAFT programme in 64 locations. Funding is available from before birth to 3 years, for between 6000 and 6500 families, and most programmes are operating at full capacity. Vacancies become available as families complete their three years, or exit for other reasons [148]. The services enable families with young children to access free, support and guidance which includes [148]:

1. **Personal Visits** by parent educators to families in their homes. At these visits, information and practical ideas are shared, and guidance is provided on children's growth and development (e.g. what can be realistically expected from a child at each developmental stage). Visits allow parent educators to individualise the PAFT programme for each family and child, to model appropriate parent-child learning activities (e.g. inexpensive educational experiences, using books and stories) and to assist parents in considering safety issues relevant to their child's development.
2. **Group Meetings** provide families with regular opportunities to meet with others, to learn from each other, and to discuss a range of topics (e.g. managing behaviour).
3. **Developmental Surveillance**. Children's growth and development are monitored at each visit, enabling the parent educator to identify potential problems early. Parents are also reminded of the importance of WellChild-Tamariki Ora Heath Checks.
4. **Connections with Community Resources**. Parent educators maintain networks with local community services, and are able to link families with other services as required.

New Zealand trainers train new parent educators, with ongoing professional development being provided annually. All parent educators are also offered training in Āhuru Mōwai. The minimum qualification for a parent educator is a Teaching Diploma in Early Childhood Education or equivalent, or experience in education, health or social work [148].

In terms of its effectiveness, Fergusson [129] notes that a number of New Zealand pilot PAFT programmes were evaluated using a multi-centre randomised controlled methodology in the mid-1990s, with the results suggesting either no, or only small benefits. While this lack of effect was consistent with the findings of randomised trials in the USA, Fergusson noted that a number of deficiencies in the implementation of the programme, or the conduct of the evaluation may have led some to call the findings of the trial into question [129]. The findings are also incongruent with a more recent review by Farquhar [149], which noted:

1. PAFT was popular with families, with providers not tending to advertise because they were unable to offer places to all the families wanting to participate. In particular, PAFT was successful in recruiting Māori and Pacific families, with 42% of families being

Māori and 15% being Pacific in 2002. A significant proportion of mothers were also teenagers (15%) or from low income households (50%).

2. The home visit as a venue for programme delivery was preferred by families because of convenience, particularly when children were young. Group meetings at external venues were not well attended by most families for the same reason.
3. Families found the written information useful and relevant to their parenting. The Āhuru Mōwai curriculum also provided useful reference documents for educators when working with Māori families.
4. Not all families experienced the same outcomes, as this was influenced by caregiver willingness to take on board the information and guidance offered. In addition, it was more difficult for PAFT as an educational programme to make a difference for families with multiple high needs (e.g. housing, heating, nappies, clothes, food).

The review was limited however, in that no suitable comparison group was available, making it difficult to draw any firm conclusions as to the overall effectiveness of the programme from this evaluation, despite its popularity with parents.

Whānau Toko I Te Ora

Whānau Toki I Te Ora is a national parenting programme for Māori delivered under the auspices of the Māori Women's Welfare League. It began in 1999, with three trial sites and has since been expanded to six regions. It provides child-centred, whānau focused services, which integrate Māori tikanga into all aspects of child development, with the emphasis being on the first five years [150]. The programme is aimed at whānau with medium to high needs (n ≈120 families nationally [145]) and is delivered via home visiting, a whānau learning programme, and group support. Its main objectives are to promote [150]:

- Positive parenting skills
- Confident family functioning, relationships and mental outlook
- Learning and development opportunities for children

The programme offers individualised support, and aims to link in with, rather than duplicate community services. This includes:

- Linking whānau in with suitable early childhood, health and social services
- Role modelling positive parenting behaviour
- Supporting whānau achieve the goals outlined in their individualised plans
- Providing support to whānau with no immediate whānau living nearby
- Providing appropriate cultural whānau learning sessions with topics including literacy; house care, cooking and hygiene; financial management; child development; Māori concepts in child development; and Māori cultural topics.

A qualitative evaluation of the programme was undertaken in 2001. This was based on sixteen case studies, with information being drawn from a national database, and in depth interviews conducted in late 2001. The main themes from this review were:

- The health of whānau on programme entry was generally poor, with asthma being prevalent, many parents being smokers, and some being on drugs. While some improvements in child health occurred (e.g. via staff putting whānau in touch with appropriate services), ½ of adults still had health concerns at the time of interview.
- 2/3 of whānau had improved their housing, either by reducing overcrowding in existing homes, or by moving to another home with better facilities and services.
- Virtually all caregivers were on a benefit. Finance was one of the major concerns, with the programme introducing sound budgeting practices. Almost all whānau recorded improvements in financial management over the period surveyed.
- Nearly all in the study had left school without formal qualifications. Most had attempted some training since, and further education in te reo Māori was a priority for many. The

main form of education was through Whānau Learning Programme sessions (which taught e.g. parenting and home management skills). This was an area of consistent improvement for virtually everyone on the programme.

- Whānau encompassed a range of ages, but ½ had at least one preschool child, with most attending kōhanga reo. Parental and sibling interactions became generally more positive during the evaluation period, with a reduction in emotional stress, whānau discord, and inappropriate methods of discipline. Marked increases were recorded in parenting skills and confidence (one of the major thrusts of the programme).
- Very few of the caregivers were fluent in te reo Māori, but during the programme most whānau began to identify more strongly with their Māori heritage, learning the language, and using it more often and naturally in conversation.

While the lack of a suitable comparison group and the small proportion of whānau involved (n=16) made it difficult to fully evaluate the effectiveness of the service, or to demonstrate that the programme was solely responsible for the improvements seen, the reviewers concluded, that without such an injection of resources into a high-needs group, it was unlikely that any significant changes would have occurred [150].

Home Interaction Programme for Parents and Youngsters (HIPPY)

The Home Interaction Programme for Parents and Youngsters (HIPPY) is a home-based intervention programme, aimed at the educational enrichment of preschool children. It originated in Israel in 1969, and began operation in New Zealand in 1992 [151]. It is now operating in 24 sites across the country. HIPPY targets parents from less affluent communities who have low educational levels and is focused on pre-literacy and pre-numeracy skills. The programme centres on the parent-child dyad, and aims to increase parents' confidence and abilities as home educators [151].

HIPPY home tutors are themselves mothers of preschool children from the same communities. The tutors meet with participating parent-child dyads in their home every fortnight to go over activities using a role-playing technique. Parents and children then work together for fifteen minutes each day with storybooks, puzzles and learning games that help children become successful learners [152]. In addition, parents may attend group meetings every fortnight where the activities for the following week are rehearsed. Local centres are run by a local co-ordinator, who usually has a background in education.

The programme has been repeatedly evaluated since its establishment in Israel in 1969. Evaluations have been carried out in Turkey, the US, the Netherlands, South Africa, Mexico and New Zealand [151]. Evaluation designs have ranged from informal observations and interviews, through quasi-experimental designs to randomised trials, with the focus being primarily on children's cognitive abilities, teachers' perceptions, and improvements in skills such as hand-eye co-ordination. In general, these studies have demonstrated significant differences between HIPPY and control group children, with the most notable differences being in Maths achievement [151].

In New Zealand, five HIPPY programmes were formally evaluated during the late 1990s, with HIPPY graduates at age 6, scoring higher than non-HIPPY children (in the same schools) across a range of measures (3 out of 6 NZ Reading Diagnostic tests, Concepts About Print, Word Tests and the Burt). The authors concluded that children who participated in HIPPY scored higher on a variety of school achievement and adjustment measures than same-school peers and that these results suggest that the HIPPY programme is effective in enhancing children's school readiness.

Plunket and the National Parenting Education Programme (PEPE)

The Royal New Zealand Plunket Society was founded by Truby King in 1907 and is currently New Zealand's largest provider of Well Child Services. Plunket's services are available free to New Zealand families with children from birth to 5 years of age and include [153]:

1. **Home Visits**: Plunket nurses provide home visits from 4-6 weeks after birth. During the initial home visit, nurses usually undertake a full physical assessment, and review

babies growth and development, feeding behaviour and discuss early parenting issues. Further visits can then be arranged, with ongoing support being provided for e.g. feeding, sleep position, safety, immunisation and parenting.

2. **Community Services**: Plunket also organizes regular coffee groups, so new parents can meet together for shared support and learning. They also facilitate the organization of car rental schemes, play groups, music groups and toy libraries.

The Parenting Education Programme (PEPE)
In addition, Plunket also runs the Parenting Education Programme (PEPE) where new parents can learn about parenting skills and child development. PEPE consists of a series of four courses aimed at supporting first time parents through different stages of their child development. These include [154]:

1. Your New Baby-Parenting in the First 6 Weeks
2. Your Growing Baby-Parenting from 6 Weeks to 1 Year
3. Your Active Toddler-Parenting from 1 to 2 Years
4. Your Curios Pre-Schooler-Parenting from 2 to 3 Years

Plunket also offers parenting support for fathers of children aged <1 year, with these courses being facilitated by fathers themselves. Unfortunately at the time of writing no formal evaluation of Plunket Parenting Programmes was available, although an internal review has apparently been completed [145].

New Zealand Home Visiting Programmes Summary: The review above suggests there a range of home visiting programmes available in New Zealand. In a recent review of these services however, the Families Commission noted that while a range of evaluations had been undertaken, and while families generally spoke well of the programmes in which they participated, the evaluations to date had been uneven, and the lack of rigor had, in some cases, been disappointing. They indicated that there was a clear need for more robust evaluations, which could generate a sound evidence base as to what worked effectively in the New Zealand context. [145]. The same review also noted that the majority of home visiting programmes in New Zealand were targeted towards medium to high risk families, and that many had a 'boutique' style, reflecting the unique needs of the communities in which they operated. While some provided children experiencing abuse, stress or neglect, an opportunity to break the cycle, and participation may also have helped to prevent the types of domestic environment damaging to children's development, the small scale of parenting programmes and their ad-hoc distribution throughout New Zealand meant than many families who could be assisted, were not receiving the type of help they required [145].

Early Childhood Education in New Zealand

Types of Early Childhood Education in New Zealand
The Early Childhood Education Section of this report (**Page 98**) provides an overview of the ECE available in New Zealand, and recent trends in participation. In brief, ECE in New Zealand is provided by a range of licensed and licence-exempt services including [155]:

- *Kindergartens,* which operate sessional ECE for children aged 3-5 years
- *Kōhanga Reo,* which provide programmes totally in Te Reo and Tikanga Māori for mokopuna and their whānau from birth to school age
- *Education and Care Centres,* which provide sessional, all day or flexible hours programmes for children from birth to school age. They may be privately owned, not for profit, or provide childcare for a related organisation (e.g. a University)
- *Home Based Services* comprise a cluster of home-based caregivers operating under the supervision of a coordinator, who places children in the care of caregivers in approved homes for an agreed number of hours each week (e.g. Barnardos)
- *Playgroups,* which are community based groups of parents and children who meet for one to three sessions per week

- *PlayCentres,* which are collectively supervised and managed by parents for children up to the age of five

Strategic Framework for Early Childhood Education in New Zealand

Te Whariki, first released in 1996, is the curriculum framework upon which early childhood education services in New Zealand are based. It is specifically designed for children from birth to school entry, and aims to ensure that children "*grow up as competent and confident learners and communicators, healthy in mind, body and spirit, secure in their sense of belonging and in the knowledge that they make a valued contribution to society*". The framework is based on four key principles: Holistic Development, Empowerment, Family and Community, and Relationships, which are interwoven with five strands: Wellbeing, Belonging, Contribution, Communication and Exploration. It is bicultural in nature, with Part B having a particular emphasis on the curriculum for kōhanga reo [156].

In order to create a shared vision as to how the Early Childhood Education Sector might effectively implement *Te Whariki*, the Government released a 10-year (2002-2012) strategic plan, *Pathways to the Future: Ngā Huarahi Arataki [155].* This strategic plan focuses on three main goals:

1. Increasing Participation in Quality ECE Services
2. Improving the Quality of ECE Services
3. Promoting Collaborative Relationships

The plan includes specific strategies for building an ECE sector responsive to the needs of Māori and Pacific children, increasing the knowledge and skill levels of ECE educators and ensuring that *Te Whāriki* is implemented in an effective manner *[155]*.

Ensuring the Quality of Early Childhood Education in New Zealand

In New Zealand, the Education Review Office (ERO) is responsible for monitoring the quality of ECE Services. The ERO undertakes regular reviews of ECE Services, with the reviews aiming to ensure that services are aware of what they are doing well, what they need to improve on, and how they might achieve any improvements. Each review begins with a discussion with the service's management, in order to establish the priorities for the review. ERO staff then visit the service, analyse the service's documentation, and observe the programme in action. The information gathered is then used by review officers to reach an evaluative judgement, with written reports focusing on four key areas [157]:

- The quality of the programme, environment and interactions
- Any additional priorities (e.g. management and staffing)
- Any areas of specific government interest
- Compliance issues

An 'unconfirmed' report is sent to management within 20 working days, with management then having 15 days to respond. Responses are then considered by the review team, and the report is amended as necessary. Where concerns are raised about the service, the reviewers indicate what changes they expect before their next scheduled review. The results of the review are then made publicly available on the ERO's website [157].

New Zealand Evaluations of the Effectiveness of ECE

While the ERO makes the results of individual Service evaluations available online, no overall evaluation of ECE Services in New Zealand is available, with a recent report by the Families Commission [145] noting that, as there has never been a formal assessment of the different types of ECE in New Zealand, it remains difficult to determine which are most effective in improving outcomes for children.

In terms of the effectiveness of Early Childhood Education as a whole however, one local study does provide some insights. The Competent Children, Competent Learners Study is a longitudinal study which has followed a cohort of 500 children in the Wider Wellington Region at 2 yearly intervals from age 4 (in 1993) to age 16. The study aims to determine whether ECE improves long term competencies in numeracy, literacy, logical problem

solving, social and attitudinal skills, as well as the role children's home environments play in determining long term development and performance [158].

At the age 4 baseline, ECE experience was positively associated with children's scores for mathematics, motor skills, perseverance, communication, social skills with peers and social skills with adults. Aspects contributing positively to these outcomes were: age at which ECE started (1-2 years); length of ECE (>36 months); and the socioeconomic mix of children attending. In addition, the quality of ECE was also important, with better outcomes being seen for children attending services with higher quality scores for programme / activity, staff: child interactions, and resources and safety [159].

By 6 years, those who had started ECE at age <3 years had higher competencies in communication, mathematics and problem solving, although there was no additional advantage conferred by starting ECE <1 year. Those having >48 months of ECE scored higher on logical problem solving and individual responsibility, while those with >36 months of ECE scored higher for communication, mathematics and word recognition. As previously, the quality of ECE was important, and children whose final ECE centre served mainly low income children, also scored lower for a range of outcomes [159].

At 14 years, the effects of prior ECE were less marked, with family income and maternal qualifications making a greater contribution to children's performance. Despite this, prior ECE continued to influence outcomes, with children starting ECE at 1-2 years having higher scores than those starting later; and with those with <24 months ECE having lower scores in several areas. Children attending ECE with the highest quality scores again scored significantly higher for cognitive and attitudinal competencies, while children who attended services where most of the children were from middle-class families had higher mathematics and reading scores. Overall, differences between those with the highest, or most, of a particular aspect of ECE and others were around 9% [52].

By 16 years, while prior ECE was still associated with children's performance, the associations were weaker than at 14 years. The same quality measures of ECE were still positively associated with student performance, even once maternal education and family income had been taken into account. While the effects of age at starting ECE and total ECE duration had waned, the socioeconomic mix of the ECE still made a significant difference, with those attending centres with children from mainly middle class families being less likely to have social difficulties [158].

Early Childhood Education Summary: While the only New Zealand study to assess the long term effectiveness of ECE was unable to determine which programme types were the most effective, the findings suggest that ECE does have long term effects on children's educational and social competencies, and that while the effects are most marked at the point of school entry, residual effects remain at least until 16 years of age. Further, the quality of the ECE is important, with programmes which ensure high quality staff-child interactions and a print saturated environment making the greatest contribution [158].

Implications for New Zealand and Conclusion

In considering the research findings above, a number of key themes emerge which are relevant to the New Zealand context and these are listed in the text box below.

Early Intervention Programmes for Socially Vulnerable Children Summary: The review of the available literature on early intervention programmes suggests that:

1. Exposure to socioeconomic disadvantage during the first 5 years of life not only affects immediate cognitive and social development and wellbeing, but it can also influence longer term educational attainment, workforce participation and the likelihood of teenage parenting and delinquency.
2. Interventions targeting children at risk of adverse outcomes as a result of their family's socioeconomic position may significantly improve a child's chances of succeeding in education and reduce their risk of delinquency and worklessness in early adulthood.

3. However, the type of early intervention, the qualifications of the staff delivering the programme and the quality of the programme itself all play a significant role.
4. There is emerging evidence that interventions delivered directly to children (e.g. in a centre based setting) result in greater impacts on children's academic attainment than interventions which act indirectly via changes in parent's behaviour or economic circumstances (e.g. via home visiting or case management). Programmes which directly address parenting skills however, have also shown promise, as have a handful of well designed home visiting programmes where professionals (e.g. nurses) have delivered the intervention.
5. In New Zealand, current home visiting programmes are variable in their coverage, with most targeting medium to high risk families, and none (with the exception of Plunket) being universally available in all regions. In addition, with the exception of Early Start, none have been rigorously evaluated locally using a randomised control methodology. While early childhood education is more universally available, and one longitudinal study suggests that high quality ECE may have long term impacts on children's cognitive development, there is a great deal of variation in terms of the quality / type of services available (although the Government's recent policy to ensure all 3-4 year olds receive 20 hours free ECE per week is a positive step in reducing barriers to access).

Issues if New Zealand is to Invest Further in Early Interventions

In terms of the best way forward for New Zealand, the large number of children exposed to socioeconomic disadvantage, and the proven effectiveness of (particularly centre based) early intervention programmes, suggest that further investments in this area should be awarded a high priority. While it would thus seem logical to review the available literature → select a successful programme which has been rigorously evaluated → adapt this to local needs (including those of Māori and Pacific families) → and then up scale it for national roll out, a number of cautions, outlined in a recent paper by US researchers to their equivalents in the UK (in the context of the national roll out of the Sure Start programme), are of relevance to New Zealand. In this paper, the authors caution [160]:

1. Many of the programmes demonstrating the most positive outcomes have been research based programmes, where adequate funding, formal quality control (including staffing), and standardised evaluation procedures have been built in from the outset. A number of problems can occur when such programmes are rolled out nationally in the context of inadequate funding and a rushed time line. In such contexts, a shortage of qualified teachers often means that poorly qualified staff and volunteers are drafted in, leading to a diminution in programme quality. Once a given level of funding becomes established as the norm, it is often difficult to increase funding at a later date, and ongoing issues with recruitment and retention emerge. Such issues need to be proactively addressed by ensuring sufficient funding from the outset, having minimum staff qualifications, and ensuring that performance standards are specified and monitored on a regular basis.
2. Narrow, easily measurable targets can often crowd out broader objectives which are harder to measure. While early intervention programmes may have relatively broad objectives (e.g. improving overall health, wellbeing, academic attainment and children's chances of later success), such outcomes are often difficult to measure, leading evaluators to utilise more quantifiable tools (e.g. IQ, school readiness). Care must be taken that these broader objectives are not subsumed by the desire by funding bodies to ensure that children meet narrowly measurable targets of performance.
3. Conflicts also arise between ensuring the implementation of a standardised proven model, and the need for local flexibility. Tensions often arise in project implementation, when trying to ensure that a programme which has been successful elsewhere is delivered in a manner which does not dilute those factors which made it successful, while at the same time acknowledging that such programmes also need to be tailored to meet the needs of local communities.

Further, even if such a programme were to be selected, adapted for local use and then rolled out nationally with adequate resources, a number of other issues need to be taken into consideration, concerning the broader contexts within which the programme will operate. Australian researchers [161] suggest that, because families often need a wider range of services than any single programme can provide, such programmes need also to be integrated within existing structures and the services provided by other agencies (i.e. intersectorally integrated programmes are preferable to stand alone services). In addition, consideration needs to be given to whether the programme will have a universal model of service, with additional resources being provided to those with the greatest need, or whether it will focus on high needs groups from the outset [161]. Finally, and perhaps most importantly, services need to be responsive to community cultural values and needs, with local agencies playing a pivotal role in resource allocation and programme delivery [161].

In Conclusion

It is hoped that this review will provide some context for those wishing to develop early intervention programmes for socially vulnerable children. While the literature is often incomplete, the available evidence would suggest that early intervention programmes can be effective in improving long term outcomes, and may generate considerable cost savings in years to come. The literature does suggest however, that programme design, the qualifications and training of the staff involved, and the quality of the service itself are important in achieving optimal outcomes, and these factors should be borne in mind by anyone wanting to plan further initiatives in this area.

SHIFTING SERVICES FROM SECONDARY TO PRIMARY CARE

Political Context for this Review

One of the key aims of New Zealand's current Government is to create a more efficient, effective and productive health sector that better meets the health needs of New Zealanders. The need for a fresh approach is seen as critical, given New Zealand's current financial pressures and the array of service challenges within the health sector. With this in mind, a Ministerial Review Group (MRG) was formed in January 2009 to [162]:

1. Advise the Minister and Ministry of Health on how the Government's priorities in clinical leadership, productivity and quality patient services might be progressed
2. Review existing systems in the areas of infrastructure and prioritisation, and advise on any improvements required
3. Undertake a fresh examination of health sector spending, with a view to identifying low priority / poor quality spending that might be redirected to frontline health services.

Upon completion of their review, the MRG made a large number of recommendations concerning the health sector [163]. Amongst these were a number which focused on the shifting of services to primary care, including that the:

> '…*public health and disability service must operate more efficiently. Bureaucracy, waste, and inefficiencies must be reduced and resources moved to the front-line as spending growth slows. We must focus on quality which will deliver better patient outcomes and on ensuring best access to health services through smarter planning and resource utilisation, at regional and national levels'*.

To achieve this, one of the nine key themes of the recommendations was to develop:

> *'new models of care which see the patient rather than the institution at the centre of service delivery and which aim to promote a more seamless patient journey across community, primary, and hospital sectors, greater use of primary and community care, and the shifting of care 'closer to home*.'

In its report, the MRG made a number of recommendations aimed at clarifying and strengthening the roles of primary and community care, with a view to better integrating primary and hospital services and delivering care 'closer to home', so that primary health care and home-based care could be substituted for hospital-based care, when this produced an equal or better outcome. The MRG expected substantial benefits from the shifting of some forms of care from secondary to primary and community settings, including the provision of more convenient care closer to home, and at a reduced cost. Such changes were seen as being beneficial for the health budget, as well as for delivering more, and more timely care.

In terms of the types of services which might be shifted to the primary care setting, assessments and minor surgery were seen as likely candidates. There was a realisation however, that shifting services to primary care would only reduce overall cost, if the investment actually substituted for more expensive new hospital capacity. Community and primary care providers were also seen as playing a crucial role in assisting District Health Boards (DHBs) to better manage acute care, by working more closely with hospital based clinicians; by helping to reduce avoidable hospital admissions and unplanned readmissions through a focus on early intervention and self-managed care; and by providing a safe option for earlier discharge from hospital. Community and primary care providers were also seen as crucial in reducing unnecessary GP referrals to secondary care. DHBs were also seen as having a role in reviewing local primary care access to diagnostic services, in order to ensure that appropriate direct access was made available

in a planned and evaluated way, with a view to ensuring that all service demands were fairly and transparently prioritised.

The MRG also stressed the importance of improving patient safety and service quality, with a view to improving health outcomes and reducing cost and cost growth. It suggested that new models of care be developed which ensured better integration between providers, and stressed the need for significantly more cooperation across community, primary, secondary and tertiary providers, so that truly patient-centred care could be achieved, which was accompanied by a seamless transition between providers, as an individual's health needs changed. In this context, the MRG recommended change in five key areas:

1. Building stronger clinical networks in more places (clinical networks were seen as a way of "*enabling traditional professional and organisational boundaries to be crossed within an environment of professional generosity, to improve patient care*").
2. Clarifying the role of Primary Health Organisations (PHOs)
3. Developing the management capability of PHOs, so they could take on a larger role
4. Requiring DHBs to play a more active role in developing new models of care
5. Enabling health professionals in different settings access to a common patient record.

The MRG also considered Non Governmental Organisations (NGOs) as service providers who should be further integrated into the health and disability sector. NGOs were seen as having a long history of front-line care provision in a range of areas, and as they often benefited from volunteer contributions, they were seen as being able to provide more service for limited funding. NGOs were also seen as being relatively flexible and innovative in meeting consumer needs, and as having an important role to play in the development of new models of care, that sought to move care 'closer to home'.

The MRG also suggested that where it was desired by stakeholders and practicable, co-location of PHO primary care services, hospital and related NGO services should be considered. Ways of achieving this included the development of Integrated Family Health Centres, creating virtual connections between existing entities, or the use of other configurations. From such arrangements, primary care clinics could be established, which were made up of General Practitioners (GPs), nurses, allied health professionals and hospital specialists. In this context, DHB funding of PHOs was seen as needing to be less prescriptive, with a greater emphasis on outcomes, thereby allowing primary providers to choose the best mix of staff to attain these outcomes. The MRG also raised the possibility of allocating some of the elective budget to PHOs who were willing to work with private or public hospital specialists to deliver elective services (e.g. post-operative care and follow-ups) to their patients on the public waiting list, for the current national price.

With a view to implementing these recommendations, the Ministry of Health recently requested expressions of interest from eligible primary health care providers, PHOs and community health services, for the delivery of Better, Sooner, More Convenient Health Care. Organisations were asked to describe how they could help the Government create a more personalised primary health care system which achieved the following:

- The establishment of Integrated Family Health Centres that supported multidisciplinary ways of working
- The provision of a wider range of services than was available at present, and which were more responsive to the needs of the community they served
- A reduction in acute demand on public hospitals
- The better management of patients with chronic conditions
- The achievement of these objectives in a cost effective manner which ensured quality.

While expressions of interest were to be submitted by primary and community care services, the Ministry noted it was vital that DHBs were closely involved in the development of business cases, and that they supported the implementation of improved models of care.

Objectives of this Review

In the context of the changes proposed above, and the role DHBs will be required to play in overseeing their implementation, this review considers the current evidence base for the recommendations made by the MRG, and the experiences of other countries who have implemented such changes in their own jurisdictions. Specifically, this review seeks to provide DHBs with answers to the following questions:

1. Have any other countries attempted to implement health sector changes along the lines recommended by the MRG, and if so what lessons were learnt?
2. Are there any aspects of secondary care which are particularly suitable for shifting to a primary care setting?
3. Do such shifts improve patient's access to services, or make services more affordable, or closer to home?
4. Are such shifts likely to be cost effective (e.g. result in cost savings for the health sector, or the provision of more care for the same cost)?
5. Is the quality of care likely to change as the result of such a shift, and are there any patient safety considerations which need to be taken into consideration?

With these questions in mind, the following review explores the experience of the United Kingdom, where there has been a move towards more primary led care since the 1990s, before considering the evidence for a number of discrete service models which may be of value in the New Zealand context. These include:

The Transfer of Services from Secondary to Primary Care

1. General Approaches
2. General Practitioners with Special Interest

The Relocation of Hospital Services

1. Outreach Clinics
2. Telemedicine

Liaison Between Primary and Secondary Care

1. Shared Care,
2. Managed Clinical Networks
3. Consultation-Liaison

Reducing Outpatient Referrals to Secondary Care

Lessons Learned from the United Kingdom

In the United Kingdom, there have been moves towards a primary care led National Health System (NHS) since the 1990's, with many authors being supportive of such models of care. For example, Cheshire et al [164] argue for more teamwork in patient management approaches, not just amongst medical staff, but in the context of multidisciplinary teams, with such teamwork being seen as a necessary step for improving the care of long-term conditions. Cheshire also advocates for the integration of primary and secondary care, and the development of clinical networks to achieve these goals. Similarly, Lakhani [165] argues against the use of the terms 'primary' and 'secondary' care, instead advocating for terms such as 'generalist' and 'specialist'. In Lakhani's view, most care should be provided in the community, with hospitals reserved for acute patients, or for situations where a specialist procedure or treatment is required. In this context, the possibility of generalists and specialists working together in new community models is welcomed, although the author cautions that such changes must be undertaken in a managed and evaluated way.

In evaluating the impacts such shifts in service delivery might have on health service demand however, Taylor et al [166] evaluated the likely effects of a number 'closer to home' service scenarios, including outreach clinics, near patient testing, GPs undertaking minor surgery, telemedicine and day surgery. They specifically focused on service need in two different hospitals, with models which considered various scenarios in relation to cardiac catheterisation services. Key outputs were waiting list trends, average waiting times, cumulative patient referrals, cumulative patient activity, and cumulative overall

costs. Their model suggested that demand could be stimulated through a number of different mechanisms. They also examined different ways to achieve the same gains in service provision (e.g. more strict clinical guidelines and capacity increases vs. changes to the goals that drive activity). The authors challenged the health sector's focus on isolated events, short-term results and single performance measures, and noted that the underlying feedback mechanisms of intended and unintended effects needed to be understood. They recommended using a systematic approach to design effective policies, rather than implementing isolated initiatives, which may only have a limited impact.

Similarly, in a qualitative study of barriers to, and incentives for a move towards a primary care-led national health system, Craig et al [167] identified the following factors. Shifts towards primary care were usually small, piecemeal, non-strategic and not directly related to resource shifts. Barriers identified included resources that were inadequate and inflexible; concerns in the primary and secondary care sectors about the appropriateness of the move; the absence of clear incentives encouraging the move; doubts in the secondary sector about the capability of the primary sector to take on additional workload and responsibilities; the attitudes of GPs towards the shift; and the absence of trust across organisational boundaries. Likewise, Miller et al [168] highlighted concerns about how increases in primary care workload were not being supported by shifts in resourcing into primary care.

With these and other issues in mind, the UK Government in 2006 published a White Paper entitled '*Our Health, Our Care, Our Say: A New Direction for Community Services'* [169]. The White Paper's aim was the provision of high quality, flexible and responsive services, which met people's aspirations and their needs for independence and control over their lives. It had four main goals:

1. Better prevention services with earlier intervention
2. Providing people with more choice and a louder voice
3. Doing more to tackle inequalities and to improve access to community services
4. Providing more support for people with long term needs

These goals were to be achieved through:

1. Practice based commissioning (giving GPs more responsibility for local budgets)
2. Shifting resources into prevention
3. Undertaking more care outside hospitals and in the home (with a focus on dermatology, ENT, general surgery, orthopaedics, urology and gynaecology)
4. Better joining up of services at the local level
5. Encouraging innovation
6. Allowing different providers to compete for services.

The White Paper set out the direction for the whole health and social care system, with the overall aim of making services more responsive to people's needs, giving patients more control, and shifting services closer to home, while also getting better value for money.

In 2007, Salisbury and Purdy [170] reviewed the progress made since the release of '*Our Health, Our Care, Our Say'*. They noted that the White Paper was based on international evidence which suggested that moving care from large hospitals to smaller units improved patient satisfaction and outcomes, and was more cost effective. The authors found that since implementation, patient satisfaction had improved, with patients finding new services more convenient, and with shorter waiting times. Patients were generally happy with the level of care they received. Cost effectiveness however, was more difficult to determine. Under the NHS fixed national tariff funding model, diverting low-cost cases to the community had left hospitals with the most complex and expensive cases, resulting in them making a loss on the cases left to them, a situation which was seen as being unsustainable in the longer term. Community sites had also increased their capacity, rather than shifting care per se, meaning that there was no disinvestment in hospital care (i.e. community services appeared to be increasing demand, rather than merely relocating the current level of services available). This combination was seen as resulting in a potential

cost increase for the NHS. Further, in terms of the White Paper's objective of providing services 'closer to home', with a view to improving outcomes for people, no objective measures of quality were obtained, which was of concern. Tensions also emerged between promoting choice and providing value for money. The practice of triaging cases once they had been referred to secondary care was seen as not increasing choice for patients, if they are were directed to a community provider and denied their preference of attending the hospital. The authors thus recommend careful consideration of implementation, cost, quality, and training issues, as such policies were rolled out.

Similarly, in 2008 Hubbard and Walker [171] discussed some of the unintended effects of moving services closer to home. The provision of medical services in their community was not followed by adequate provision of allied health support, in this case, pharmaceuticals. Only one fifth of the pharmacies in the area stocked the same necessary preparations as the hospital pharmacy, meaning that some patients had to wait up to two weeks to start the recommended course of treatment. The authors concluded that prolonging the patient journey, even if they are being cared for closer to home, is not only ironic, but may also have significant consequences for the local health economy.

Overall, the experience of the UK suggests that some of the intended aims of the 'closer to home' policy can be met. However, there appear to be many areas in which the aims of the policy have not yet been realised, including cost-effectiveness. In addition, it is not clear if health outcomes have improved, remained the same, or worsened. While many aspects of the strategy make theoretical sense, it is important to implement changes in an evidence-based and structured way, with appropriate evaluation in order to monitor and minimise any unintended effects.

Review of Different Models of Service Delivery

In addition to reviewing the experiences of the UK in this area, it is possible to consider the effectiveness of different models of service delivery using information from a variety of sources. While the transfer of services usually involves the substitution of services delivered by hospital practitioners, with services delivered by practitioners in primary care [172], there are a number of ways this might be achieved including: GPs undertaking more care for patients with certain conditions; the use of General Practitioners with a Special Interest (GPSIs); discharging hospital outpatients to either: no follow up, patient-initiated follow up, or primary care follow up; and GPs having direct access to hospital diagnostic tests and services. The following sections review such models as follows:

The Transfer of Services from Secondary to Primary Care

1. General Approaches
2. General Practitioners with Special Interest

The Relocation of Hospital Services

1. Outreach Clinics
2. Telemedicine

Liaison Between Primary and Secondary Care

1. Shared Care,
2. Managed Clinical Networks
3. Consultation-Liaison

Reducing Outpatient Referrals to Secondary Care

The Transfer of Services from Secondary to Primary Care

General Approaches

Sibbald et al [172] conducted a review of the transfer of services from secondary to primary care and found that transfer to primary care was generally associated with improved access to care and more convenience for patients. The health outcomes and the

quality of the care provided were compromised however, when the transfer required competencies beyond that of the average primary care practitioner (e.g. minor surgery). Some reductions in cost were achieved, particularly in terms of reduced salary costs in primary care and reduced time and travel costs for patients. However, overall costs were increased by an amplification of the volume of care, and the loss of economies of scale. Further, the reductions in hospital workload that were desired were not always achieved, due to increases in the volume of patients requesting care. Interventions that did reduce hospital workload with few adverse effects on other aspects of care included discharging hospital patients to no follow-up, patient-initiated or primary care follow-up; and direct access of primary care clinicians to hospital diagnostic services and tests. There was insufficient evidence however, to determine whether the transfer of medical care for common chronic conditions, from secondary to primary care, or the substitution of hospital specialists with General Practitioners with Special Interest (GPSI) had any impact on hospital workload.

Interventions that were shown to have adverse effects with regard to quality, effectiveness and efficiency of care included the transfer of minor surgery. There was a concern that the transfer of care might result in increases in the overall volume of care, either through meeting previously unmet need, or because treatment thresholds were lowered. If a true transfer of services was to be achieved, it was thought necessary to simultaneously downsize hospital services, and transfer resources into the community. The authors noted that in the past, efforts to transfer care from secondary to primary services have resulted in duplicated provision in both services (e.g. minor surgery). There was insufficient evidence to determine whether savings that were generated through reduced hospital care (where this could be achieved), were sufficient to meet the costs of the care in the community. It is generally presumed that services offered in the community will be cheaper than hospital services due to lower salary and overhead costs. However, available research suggests that this expectation has not always been met. Salary costs can in fact increase, where GPs are used to replace junior hospital doctors in outpatient clinics.

Similarly Coulter et al [173], in an appraisal of a British policy whereby GPs were given financial incentives to perform minor surgery in an effort to reduce secondary care workloads, found that this did not result in reductions in demand for procedures in secondary care. Instead GPs' willingness and availability to perform these procedures generated higher demand. Similar patterns were found when making diagnostic services more accessible. Further, for certain conditions (e.g. diabetes), shared care was found not to offer any advantages for patients, and the costs were often higher in primary care.

In contrast, other studies have examined the effects of shifting services such as IV antibiotics into the community. Nathwani and Davey [174] in a UK review, highlighted some of the practical barriers to community antibiotic treatment. They noted however, that there were some conditions where community management was a success, including cystic fibrosis, cancer, chronic orthopaedic infections, and infections complicating AIDS. The authors concluded there were some situations where intravenous antibiotics could be given in the community, provided there was adequate community support and clear definitions of the clinical responsibilities of hospital and community services.

Similarly, Bakker et al [175] undertook a qualitative study of the experiences of adult cancer patients undergoing chemotherapy in regional or community settings in Canada. Of those choosing to have chemotherapy at community centres, most were very satisfied with the level of care they received. For the majority, the gains in quality of life in the regional centres outweighed the benefits of the biomedical expertise ascribed to tertiary centres. Patients were reassured about the quality of care provided in the regional centres when they could see that nurses could communicate easily with tertiary centres, either via a direct phone line or similar. Benefits that patients cited were those of reduced travel, or weeks to months spent out of town. Overall this led to less disruption to family life.

Roberts and Mays [176] conducted a systematic review which examined options for replacing secondary care with primary care in emergency medicine. The authors found that broadening access to primary care, and introducing barriers to secondary care (e.g.

through user charges) reduced demand for secondary care, but the relative cost effectiveness of this was unclear. Also, much of the evidence reviewed was from the US, where access to primary care was problematic, making such findings less generalisable to countries such as New Zealand or the UK, where access to primary care is more universal. While employing primary care professionals to attend to patients with minor injuries or illnesses in the hospital setting would seem to be a cost effective way to substitute primary for secondary care resources, the authors noted that while the average cost of hospital treatment is high, the marginal costs of treating primary care patients in ED may be comparatively low. Further, even if one could treat all minor ailments in primary care, this might not release significant resources, with the authors also cautioning that transferring interventions which have worked in one setting to another, without understanding the underlying process of change was likely to result in unexpected consequences.

In the Netherlands, Integrated Emergency Posts (IEPs) have been created, which merge the care provided by GP posts and ED departments, to improve the provision of emergency care. Kool et al [177] studied the efficiency and patient and employee satisfaction in two such IEPs. The IEPs had a common triage area. Patients were triaged by either a GP assistant or a nurse, and were allocated to see either the ED doctor, or a GP or nurse specialist. The authors found that there was a shift from secondary to primary care consultations. Waiting / consultation times were shortened by more than 10%. There were no differences in the level of satisfaction between patients who visited the IEP and the control locations. Employees were less satisfied with working in an IEP. The authors concluded that IEPs could potentially organise emergency care more efficiently, however, larger studies over long time periods were required.

General Practitioners with a Special Interest (GPSI)

In addition to the models described above, the transfer of some specialist services to General Practitioners with a Special Interest (GPSI) is seen as a promising innovation by some. Most of the literature is on GPSI however, is derived from adult medicine, particularly dermatology, cardiology, and neurology. However, it is likely that the lessons learned pertain to paediatric specialties also.

Offredy et al [178] reviewed the development and implementation of a clinical assessment service in their Primary Care Trust (PCT). They piloted a headache service, using a GPSI and a consultant neurologist. The neurologist triaged referrals, with the GPSI seeing patients in the hospital. Following the success of this pilot, other specialties were added, including cardiology, dermatology, ophthalmology, gynaecology and minor surgery, with the addition of rheumatology, paediatrics, and ENT being planned in the future. The PCT used guidelines to ensure that appropriate patients were referred to the GPSI, with these guidelines also listing conditions that should not be referred. They determined that success was influenced by: a whole-systems approach to implementation; involvement with stakeholders; and the expertise and close partnership between clinicians, nurses and management. They found that the system was cost effective, being cheaper than previous systems, and appeared to provide good patient satisfaction. Mentoring by local hospital consultants was important to ensure that GPSIs had a resource to draw upon.

Similarly, Salisbury et al [179] conducted a randomised controlled trial to assess the effectiveness, accessibility and acceptability of a GPSI dermatology clinic. Suitable adult referrals were assessed by a consultant or a GPSI and randomised to receive care at either the GPSI, or hospital outpatient clinic. The primary outcome measures were disease-related quality of life and patient's perception of access to services. The study found no significant differences between the two groups in terms of patient-assessed clinical outcomes. Patients found the GPSI clinic more accessible and were seen more quickly. However, the GPSI service was more expensive than the consultant / hospital service, and 12% of patients seen by the GPSI were then referred on to the hospital clinic. GPSIs also had higher follow-up rates. Further, the service was run by two general practitioners with significant training in dermatology, meaning that the results may not be generalisable to other populations. The authors noted that if the main reason for GPSI

schemes was to reduce waiting times for appointments, it may be more efficient to increase capacity in the hospital setting.

Coast et al [180] performed an economic evaluation of a GPSI dermatology service, compared to outpatient care. They found that the costs of GPSI clinics were 75% higher than for outpatient care. This was largely due to outpatients not necessarily being seen by consultants, but rather being seen by a registrar or clinical assistant who was less costly than a GP. There were no significant differences in costs to patients or companions. The authors thus questioned whether the marginally greater benefits in terms of self-identified health status and easier access were sufficient to offset the greater costs to the health system, with the question that needed to be answered being, how much are decision makers willing to pay to improve access to health care, rather than spending available funds on greater improvements in health outcomes?

Similarly Sibbald et al [181] conducted an evaluation on 30 UK demonstration sites in the context of the 'Closer to Home' initiative, which aimed to improve access to care. Care was delivered by community practitioners with a special interest (GPs, nurses, and other practitioners), rather than by relocating existing specialists into community settings. The initiative aimed to make greater use of these specially trained staff, and to increase the provision of diagnostic and treatment facilities in community sites, with a view to relieving pressure on hospitals, which were failing to meet their average waiting time targets. The authors found that service location, while initially intended to be more convenient for patients, ended up being determined by the availability of sites in the community. Community locations were more challenging because of the need to have equipment at multiple sites, the need to ensure that equipment was well maintained and cleaned, and the loss of clinical time through travelling. To address this, multiple services were sometimes co-located in the same community facility.

The Transfer of Services from Secondary to Primary Care: Summary

In general, services provided in the community were estimated to cost less than equivalent services in the hospital. However, this was predominantly because patients seen in the community had less complex conditions. Patients reported shorter waiting times for community services, and found them more accessible. No other significant differences between hospital and community services were found, however, health outcomes were not measured. A number of difficulties were also noted, including problems with the accreditation of those working in the community. In addition, in the context of the UK funding model (where hospitals are funded a flat fee per patient), loss of business may have affected some hospitals negatively, particularly if the less complex cases were seen in primary care, and the more complicated cases in the hospital. In addition, it was unclear whether the increase in referrals seen (to either of the services) was due to meeting previously unmet need, or because of a lowered threshold for referral. The authors concluded that a large amount of investment was required in terms of service design, consulting with key stakeholders, the training and accreditation of staff in their new roles, and finding and equipping suitable venues for service delivery. It was not clear at the time of the review, whether this initial investment would pay off in terms of improved quality of care, or better health outcomes for patients. In addition, the findings may not be representative of similar initiatives elsewhere, given that some of the community practitioners were highly qualified, including previous or retired surgeons.

The use of general practitioners with a special interest shows promise in terms of the ability to reduce waiting times. However, a number of questions remain unanswered. In particular, there has been little research on the effects on health outcomes, other than as measured by a self-administered questionnaire. Further, most of the cases seen by GPSIs are less complex than those seen in the hospital setting. Under some funding models, this may make the financial viability of secondary centres unsustainable. Further, there is evidence that the use of GPSIs increases demand for services, rather than allowing services to be transferred from secondary to primary care. Where this increase in demand is due to addressing previously unmet need, this may be beneficial. However, in certain situations this increase in demand may be due to a lower threshold for referral.

Relocation of Hospital Services

There are a number of other ways to re-locate hospital services into the community, including locating outpatient clinics in community settings, the use of telemedicine, and attachment of specialists to primary care teams [172].

Outreach Clinics

The use of visiting specialists, or 'specialist outreach', is seen as desirable for a number of reasons, including improved access to specialist care, reducing pressure on hospitals, enhancing primary-specialist care relationships, shifting care to community-based services, and reducing health service costs. In a Cochrane review of the effectiveness of specialist outreach clinics in primary care and rural hospital settings, Gruen et al [182] found that outreach clinics performed variably in terms of clinic waiting times, with some initiatives resulting in shorter and others in longer waiting times. Outreach clinics in the UK, in general, cost the health service more, due to loss of economies of scale (due to less throughput and higher marginal costs). One of the studies reviewed suggested that the fact that outreach clinics were smaller, led to most of their advantages and thus increasing size to improve financial cost would also reduce most of the advantages. Other costs associated with outreach clinics were the additional resources required to provide the clinics, inefficient use of specialists' time, and opportunity costs associated with additional investment in the specialist sector.

Gruen et al [182] noted that while outreach appears to facilitate engagement between specialists and primary care practitioners, this cannot be presumed. Engagement is greatest when outreach is a part of a multi-faceted intervention which involves case conferences, joint consultations, education sessions, or other care enhancements. Such initiatives have the potential to lead to improved health outcomes and more efficient use of services. In addition, it appears that urban, non-disadvantaged populations have relatively little to gain from outreach clinics, when compared to disadvantaged or rural populations, in terms of improving access to specialists and hospital services, with most of the improvement being in the area of patient convenience. However, this comes at the cost of additional investment on the part of the health provider and health care system. None of the studies reviewed showed that the combination of improved access and patient preference had any impact on higher attendance rates at clinic, or lasting health benefits. Providing outreach clinics to rural populations may also increase demand for services, as a result of uncovering unmet need. However, a high proportion of the studies reviewed were in the area of psychiatry, which may limit the generalisability of the review's findings, particularly for equipment intensive specialties, or those which require more specific investigations. However, on the whole, outreach appears to offer some benefits to both procedural and non-procedural specialties. Areas not addressed by the current research are opportunity cost of specialists' time, sustainability (most of the outreaches studied were for finite periods of time), and the balance of in-hospital and outreach care.

In another review of relocating care, Sibbald et al [172] found that relocating specialist services to primary care is generally associated with better access for patients. There was insufficient evidence to make firm conclusions about health outcomes and quality of care. They noted that relocating services can improve equity when services are provided to rural and under-served urban populations. In urban areas that are well-served, however relocation is likely to reduce service efficiency and effectiveness.

Similarly Powell [183] conducted a systematic review of outreach clinics in the UK. He examined aspects such as cost, waiting times, convenience and satisfaction and found that the results varied depended on the speciality under examination. For example, of ENT patients attending an outreach clinic, 76% still required a visit to the hospital for investigations. Waiting times also varied by specialty. For some, waiting times were shorter, for others, they were longer. Studies have not shown any consistent difference in health outcomes, with only self-rated health scores being used to date. Outreach clinics are expensive to provide. The main costs are the opportunity costs of the specialists' time and travel, and the additional administrative costs. However, the clinics are cheaper for

patients. Costs that have not been included in economic analyses are the impact of the consultant being absent from the hospital, and the educational benefit of outreach clinics to GPs. Powell concluded that the literature does not show a clear benefit of outreach over hospital based clinics in terms of health improvement, effective delivery of appropriate health care, or health outcomes of health service care. Benefits of outreach clinics to patients are increased satisfaction, more convenient location, and reduced patient costs. These appear to be generalisable across specialties, as are the financial disadvantages to the health service. Hospital clinics have advantages in terms of efficiency; outreach clinics are superior in terms of patient experience. The question of fair access however, was unanswered by the research. Other findings tend to be more specialty or location specific, such as the quality of clinic accommodation or waiting times for appointments. Some specialties seem to more suited to outreach clinics, i.e. those that require fewer investigations, equipment, or hospital back up, such as psychiatry and paediatrics. Comparisons with hospital care are difficult, given that patients at outreach clinics always see a consultant, whereas in hospital this is not always the case.

In an English study, Bond et al [184] assessed the processes of care, health benefits and costs of ENT and paediatric outreach clinics held by hospital specialists in primary care. The authors concluded that while outreach clinics were of higher quality in terms of process and efficacy of care (vs. outpatient clinics), the effect on patient outcomes was small. Patient satisfaction was superior in outreach clinics, as was patient access to specialist care, but the costs to the UK public health system were significantly higher. Also, communication between specialists and GPs was limited.

Ayshford et al [185] reviewed data on outreach consultations by an ENT specialist in two GP surgeries. Seventy-six percent of the patients required an investigation which would have been available in the hospital, which was not available at the GP surgery. Therefore, despite the convenience of having a clinic closer to home, the majority of patients needed to spend more time being assessed than what they would have as outpatients. Further, the authors suggested that unless outreach was used sufficiently frequently, it was difficult to justify the cost of equipping GP's surgeries, particularly when cleaning and maintenance costs were included. The authors suggested instead, that scarce resources might be used on initiatives to make hospital outpatients more accessible (e.g. better access and free parking). Further, there were not the opportunities for GP education that might have been envisaged, due to the large specialist workload. In addition, travel times were costly (492 additional patients (43%) could have been seen during the specialist's travelling time).

Telemedicine

Telemedicine uses telecommunications technology to aid patient care and diagnosis. Its scope is broad, ranging from the use of telephones, through to sophisticated remote diagnostic equipment. Currell et al [186] conducted a Cochrane review of the effects of telemedicine compared to face-to-face patient care. In this review, 'Telemedicine' included technologies such as giving test results by phone and video consultations. The authors found insufficient evidence to support the widespread use of telemedicine, with little evidence of clinical benefit, and no analysable data about cost effectiveness. The authors concluded that policy makers should be cautious about recommending the increasing use and investment of technologies that have not been adequately evaluated.

Other studies have examined the effectiveness of telemedicine for specific specialties, and for specific aspects of care. Weinerman et al [187] conducted a small study investigating patient and oncologist satisfaction with videoconferencing for the first consultation for newly diagnosed cancer patients in Canada. Physical examination was not performed by a proxy in this study, instead previous examination reports and imaging was available. They found that patients were just as happy with telemedicine; the oncologist was slightly less happy. There were similar outcomes in terms of subsequent treatment for patients in the study, although less of the patients in the videoconference group were completely staged at the time of the initial consultation. The authors advocate for the use of telemedicine for first appointments for those who need to travel long distances.

Goodenough and Cohn [188] also examined the use of telemedicine for cancer patients. Their study comprised a survey of paediatric patients (and their families) who had used interactive audiovisual videoconferencing for oncology care in New South Wales. They found that parents of children with cancer were receptive to technology to provide some service closer to home. This was particularly so for non-medical services, such as psychosocial care and education, rather than clinical uses or treatment planning. The authors concluded that videoconferencing should be encouraged, for psychosocial care and education, particularly for rural families.

Ferguson et al [189] conducted a seven year retrospective review of store-and-forward telehealth in Alaska. Store-and-forward telehealth refers to technology where data (such as images), can be recorded and stored electronically and retrieved at a later time and in a distant location. This is sometimes referred to as 'asynchronous' telemedicine, as both providers do not need to be available at the same time, compared to live videoconferencing, when they do. Alaska is particularly suited to using telehealth, due to the large geographical area, very sparsely populated rural regions, comparatively little roading and expensive plane travel. Store-and-forward telehealth was found to be effective in improving access to care and providing quality diagnosis and treatment. It was found to be an efficient way of delivering care, as consultants often attended to 'consults' during down times, and therefore did not require pre-booked time slots. A comparatively small amount of time was required for each consult. In Alaska, telehealth reduced both the waiting time to see a specialist at an outpatient appointment and the number of people waiting a long time (5 months or more) for a clinic appointment. Of the telehealth consults, only 10% needed to be physically seen by specialist, meaning that 90% of patients who would otherwise have required access to specialist care, were able to be treated outside of the hospital. Furthermore, patients waiting to see a specialist often require more primary care visits. Therefore, the use of telehealth is thought to have reduced both secondary and primary care workload. The system is more efficient, as earlier treatment of disease is more beneficial for both the patient and the health care system. Telehealth has also enabled more appropriate triage of people into secondary care. Those with 'inappropriate' referrals are seen remotely (by telemedicine), often requiring no further specialist assistance. Those who need to be seen in person by a specialist are seen, often with some appropriate treatment before hand. Telehealth has been very successful in Alaska, particularly for some specialties, such as ENT.

In New Zealand, Miyahara et al [190] conducted a pilot study to determine whether it is possible to develop and implement a family-focused tele-intervention programme that can improve the coordination of children with Developmental Coordination Disorder (DCD). This was thought to be particularly important in New Zealand, as therapists are unavailable in the public system in some areas. A model of care was developed which involved an initial outpatient consultation, the provision of resource materials for families (workbook and DVD), weekly telephone calls from a paediatric physiotherapist and an interactive internet site. Overall, the tele-intervention programme appeared to be a satisfactory way of supporting families and children with DCD. The authors comment that although the concept initially appeared to be more time efficient than traditional outpatient visits, the time taken to contact families for their weekly telephone consultation was often more time consuming than seeing them in clinic.

Relocation of Hospital Services: Summary

Relocating secondary services into primary care can be an effective way of delivering care. The evidence suggests that outreach clinics are usually more convenient and less expensive for patients, who are usually happy with the care they receive. However, outreach clinics are almost always more costly to the health system and often do not produce some of the expected benefits (e.g. more communication between GPs and specialists, a reduction in secondary service workload). Outreach clinics are probably of little benefit to urban, non-disadvantaged populations (and may in fact reduce service effectiveness and efficiency), although they may be beneficial for rural and underserved communities. There are some specialties for which outreach may be more efficient, such

as psychiatry. The costs of outreach clinics need to be determined, as well as their resultant opportunity costs. Costs need to be based on the available local and overseas evidence, as expected gains may not always be realised. In addition, Telemedicine can be a very useful tool to serve some populations, particularly for some specialties. The benefits of telemedicine appear to be greatest for those who live outside of tertiary centres and for those for whom travel is very expensive, or whose conditions require frequent contact with health services. Telemedicine requires some information technology investment, and therefore an accurate appraisal of costs and benefits is required, before significant investment occurs.

Liaison Between Primary and Secondary Care

In addition to the transfer of services, there are a number of ways that joint working between primary and secondary care can be improved. These included models of shared care, managed clinical networks, and consultation-liaison.

Shared Care

Shared care involves the shared management of patients with chronic diseases between primary and secondary practitioners, in situations where the primary practitioner would be unable or unwilling to manage the patient on their own [172]. In a review of shared care models, Sibbald et al [172] examined access / equity, quality / health, hospital impact, general practice impact, health service cost, and implementation issues. The authors found there was insufficient evidence to comment on equity / access issues. There was no change in the quality of services, or the health of individuals, although some studies showed less patient satisfaction. The impact on the hospital varied, but in some cases resource use was lower. The impact on general practices was unknown, but in theory one would expect workload to increase. Savings to the health system were dependent on reductions in outpatient use, which were not always achieved. The implementation of shared care was dependent on good communication between the GP and specialist.

Similarly, King et al [191] examined the effectiveness of a paediatric diabetes network, which was established to integrate the services of primary care and a diabetes specialty team. The diabetes specialty team consisted of a paediatric endocrinologist, two nurses, and a dietician. The nurses and dietician were certified diabetes educators. The roles of the primary care team were to:

- Provide chronic maintenance care for their patients with diabetes
- Communicate records of visits to the diabetes team

The roles of the specialty team were to:

- Provide self-management training to families
- Consult with primary care as requested
- Develop forms for recording and transmitting information

The specialty team provided education to the primary care practitioners, which consisted of written material and a four hour workshop. The paediatric endocrinologist saw patients only once at the first visit, and then discussed each patient's case at weekly specialty team meetings. The study determined that this model was feasible for the management of paediatric patients with diabetes. Further work is to be undertaken to examine the efficacy and efficiency of this type of model of care.

Smith et al [192] reviewed a new model of care for HIV positive patients. The intervention consisted of an HIV/AIDS management and training guide containing local information, a structured outpatient letter (faxed to the GP within 48 hours of consult), and direct GP access to an infectious disease consultant (24 hours a day) through a mobile telephone service. In addition, quarterly discussion forums were held and a regular newsletter was circulated. For patients on the program, the average length of stay decreased by half, over a two year period. The number of outpatient visits for patients with AIDS also reduced, with an increase in GP consultations. GPs felt they were referring patients to the hospital more appropriately than previously. This model appeared to have been beneficial in terms of

efficiency, and patients and GPs thought that the standard of care had improved. However, there was no detailed evaluation of the quality of care received, or an examination of cost effectiveness. The authors attribute some of the success to the development of practical communication systems between hospital and primary care through the prompt faxing of standardised outpatient reports and the 24 hour phone service.

Managed Clinical Networks

Managed clinical networks are defined as "*linked groups of health professionals and organisations from primary, secondary, and tertiary care, working in a coordinated way that is not constrained by existing organisational or professional boundaries, to ensure equitable provision of high quality, clinically effective care*" [193]. They aim to offer patients better access to services, more effective services, improved coordination between services, consistent advice, and better care and prevention.

The National Health Service in Scotland has spent a significant amount of time and effort investing in the development of clinical networks for a wide range of conditions [194]. Their experience suggests that developing a network requires a small team of people to drive the process forward. They have found a project management approach to be useful. Key advantages are involving patients, helping to achieve waiting times initiatives, improving quality, and addressing workforce issues through the development of innovative roles and new ways of working with health professionals.

In the wider UK, there have been moves to create managed clinical networks. Spencer and Cropper [195] reflect on their experience of establishing managed clinical networks for paediatrics, as part of Partners in Paediatrics (PIP). One of their projects was to improve access to specialist paediatric gastroenterology care, with linked improvements to first-line primary and secondary care. The central team consisted of two paediatric gastroenterologists, specialist nurses and dietetics support. As well as creating a specialist service to which referrals could be made, the 'network' enabled outreach clinics to be supplemented by transfer of expertise into local hospitals through jointly held clinics and other local training. In addition, protocol and guideline development and network-wide education / discussion forums were developed to spread expertise and develop service capacity across the network. After some initial setbacks, PIP sought to re-use existing resources. While there were improvements in access to the service, there were increasing problems with addressing large pools of unmet need, resource allocation, lack of support staff within local hospitals, and increasing pressure on central resource to manage a growing number of chronic patients. Eventually, the service was withdrawn from many of the partner trusts. The authors report there was a clear recognition of the quality of the service, before it became overloaded.

The benefits of managed clinical networks include pooling of scarce resources, the development of service relationships across organisational boundaries, the strengthening of clinical governance, and professional self-regulation. However, the authors [195] caution that the organisation of a network is very complex; networks in themselves do not guarantee that services will become patient-oriented – cultural change is required; and networks vary considerably in the level of achievement, with local enthusiasm achieving much more than central direction. Many of the problems they encountered were associated with conventional service provision, which still have to be resolved. Challenges to establishing and maintaining managed clinical networks include performance management, commissioning, workforce management, accountability arrangements and the skills of managers. These challenges stem from the collective governance and accounting systems, and the need for long-term investment to achieve real improvement in patient care in managed clinical networks. The authors found that the planning and implementation of networks proved to be more difficult than might have been expected. The features that Spencer and Cropper identified as being most likely to produce a successful clinical network were strong clinical leadership and local support; investment in a core team, including a lead clinician, network manager, and an education programme; and recognition that networks are most effective when there is a partnership of equals, demonstrated by inclusive management, such as a steering or reference group.

Cancer Australia commissioned a systematic review of the relevant national and international policies and literature related to the establishment of clinical networks [196]. The review found that managed clinical networks can address many of the problems that have been identified in the traditional delivery of health care, including: poor coordination and collaboration between health services; changing roles for health professionals; and the need for greater efficiencies, better use of limited resources, quality patient-centred care, improved access, and more equitable service provision. However, there is a marked absence of empirical research studies on managed clinical networks. This makes it difficult to draw conclusions about whether managed clinical networks do lead to improved outcomes. Nonetheless, available studies suggests that although establishing a managed clinical network is a difficult process requiring much effort and cost, they may result in enhanced coordination and collaboration between services and better care outcomes if sufficient planning and organisation occurs. The literature suggests that developing and maintaining managed clinical networks is a time consuming process requiring much effort. A long term view is required if they are to be successful. Experience from previous attempts to establish managed clinical networks suggests that they ought to possess a set of core principles and characteristics, broadly categorised into four main areas. These are management and structure; patient focus and consultation; evidence based practice and continued professional development; and reporting requirements. Other key factors associated with successful managed clinical networks appear to be a clear vision and statement of purpose and structure, lateral orientation, the development of a strategy for working within and across existing organisations, careful consideration of geographic and demographic issues, and focussing on new management and governance models.

In summary, the studies reviewed demonstrated that better care outcomes can be achieved with managed clinical networks. However, any improvements in care occur at the cost of considerable practitioner effort and funding and also require energetic leadership. It seems evident that positive outcomes are likely to take some time to become apparent. The authors comment that there is a risk that managed clinical networks may be seen as the next panacea for healthcare systems. If they merely represent structural change, networks will not be of benefit, and may even prove to be detrimental.

Consultation-Liaison

Consultation-liaison consists of a primary care practitioner and a hospital specialist holding face-to-face meetings and conducting joint consultations to assess and manage patients [172]. Most of the literature around consultation-liaison is from psychiatry. Sibbald et al [172] conducted a review of consultation-liaison, and determined that there was insufficient evidence to comment on whether this improves equity and access. There was some evidence to suggest that consultation-liaison can improve quality, however there were no changes in health outcomes. Likewise, consultation-liaison did not produce any change in referral rates. There was little change in GPs' workloads, however there was a small reduction in prescribing. It is uncertain whether there was any impact on health service cost, but is it thought that it is unlikely to be cost-effective as costs are in general higher, with no improvement in health outcomes. In terms of implementation, consultation-liaison requires major revision to the working practices of GPs and specialists.

Liaison Between Primary and Secondary Care Summary

There is little systematic review evidence to support the practice of shared care. Available evidence suggests that the gains are marginal, and the costs may be greater. There are specific conditions for which a shared care model appears to be more effective, however, the literature does not support widespread implementation.

Managed clinical networks seem to offer the promise of better outcomes and improvements in service delivery, however there is a paucity of data on this. Any improvements will occur at the cost of considerable practitioner effort and will generally require significant planning and organisation. Managed clinical networks require adequate funding and energetic leadership. It seems evident that positive outcomes are likely to take some time to become apparent, and some initial investment is required.

The available evidence suggests that the benefits of consultation-liaison are marginal. There do not appear to be significant benefits in terms of quality, access, reducing hospital demand, or cost effectiveness and there are significant implementation issues.

Reducing Outpatient Referrals to Secondary Care

There have been a number of interventions trialled to change referral behaviour. These include the use of structured referral sheets; educational outreach to GPs by hospital specialists; use of an 'in-house' referral (second opinion) prior to referral; financial incentives to discourage referral; passive dissemination of referral guidelines; audit, feedback and discussion of referral rates with an independent medical advisor; and adjusting patient co-payments to encourage self-referral to primary care [172].

Sibbald et al [172] conducted a review of the above interventions, and found evidence that some of these are effective. The use of structured referral sheets and educational outreach both had sufficient evidence to suggest they are effective in reducing inappropriate referrals to secondary care. In house second opinion looks promising, but as yet there is insufficient evidence to recommend its widespread use. Financial incentives have been used in some areas, and have reduced referral rates. However, there appears to be a high risk that both necessary and unnecessary referrals are reduced. Interventions that have been found to be ineffective are passive dissemination of referral guidelines; audit, feedback and discussion of referral rates with an independent medical advisor; and adjusting patient co-payments to encourage self-referral to primary care.

Akbari et al [197] conducted a Cochrane review examining interventions to change referral rates or improve outpatient referrals from primary to secondary care. The only intervention they found that was shown to improve referrals was active local educational interventions combined with structured referral sheets. The effect of the structured referral sheets was to improve pre-referral work-up of patients and ensure that all the appropriate examinations and investigations had been completed prior to referral. The authors do not comment on whether there was an overall effect on referral rates per se. They also determined that the use of an in-house second opinion showed promise. Another intervention that shows promise is the use of other intermediate primary care based alternatives to outpatient referral, such as enhancing services provided before a referral (e.g. access to a physiotherapist). Ineffective strategies included passive dissemination of local referral guidelines, feedback of primary care physician referral rates and discussion with an independent medical adviser.

In the UK, the interface between primary and secondary care has been a key focus of health policy debate. Evans [198] conducted a qualitative study of primary and secondary care stakeholders to examine their perspectives on developments in this area, and barriers and opportunities for future development. He found that one of the areas in which respondents felt that progress had been made was in the introduction of direct access to certain investigations, such as audiology, endoscopy, cardiac and radiology interventions. This enabled GPs to make more rapid assessments and provide more appropriate treatments for patients. This has the potential to reduce referrals to secondary care. In their multiple cross-sectional studies on Emergency Departments (EDs), Andersson and Karlberg [199] likewise highlight the possibility of increasing access of primary care to diagnostic investigations, to reduce referrals to hospital EDs.

Kinnersley et al [200] conducted a randomised controlled trial to examine the effect of in-house referral (referral of a patient by a GP to another GP within the practice) prior to referral to secondary care on health outcomes, and to determine if this was practical, and acceptable to patients. Of the patients that were referred in-house, 61% were judged to need referral onto secondary care. Of the patients who were not referred to secondary care, in the 12 months following the in-house referral, 19% required referral to secondary care, to the same specialty to which there were originally to be referred. There were no significant differences between the two intervention groups in terms of satisfaction with the

process. The authors concluded that it appears as though in house referral does reduce referrals to secondary care, without inflicting harm on patients.

Nelson et al [201] conducted a descriptive study in the US, examining the effects of an asthma management protocol to reduce presentations to ED. The protocol was used in an after-hours call centre that was staffed by nurses. The protocol involved the provision of severity-based home treatment recommendations, and / or the recommendation to seek medical advice, and follow-up phone call assessments. The results suggested that most children for whom this service was used improved after the home-based treatment recommended by the nurse. The study was unable to examine the effect of the telephone service on ED presentations, but the authors comment that the results suggest that some ED visits may have been avoided.

Reducing Outpatient Referrals to Primary Care: Summary
There is evidence that the use of structured referral sheets and the provision of educational outreach to GPs by hospital specialists are effective in reducing inappropriate referrals to secondary care. The evidence to date suggests that there may be some benefit in an in-house second opinion prior to referral. Other areas which may be of use, but for which there is currently little evidence, are GP access to diagnostic investigations and acute management of specific conditions by an after hours call centre.

Conclusion

There has been a general trend, both in New Zealand and overseas, to strengthen primary care and shift more services from secondary to primary care. While this is a laudable goal, international evidence to support such moves is varied. Of the strategies to provide more services in primary care, some show more promise than others.

The experience of the UK suggests that some of the intended aims of 'closer to home' policies can be met. However, there appear to be many areas in which the aims of the policy have not yet been realised, including cost-effectiveness. In addition, it is not clear if there has been any effect on health outcomes, whether good or bad.

The use of general practitioners with a special interest shows some promise in terms of the ability to reduce waiting times with this model of care. However, there has been little research on the effect on health outcomes. There is evidence to suggest that the use of GPSIs increases demand for services, often through a lower threshold for referral.

Relocating secondary services into primary care can be an effective way of delivering care. The evidence suggests that outreach clinics are usually more convenient and less expensive for patients, and patients are usually happy with the care they receive. However, outreach clinics are almost always found to be more costly to the health system, without producing some of the expected benefits. Outreach clinics are probably of little benefit to urban non-disadvantaged populations (and may in fact reduce service effectiveness and efficiency), although they may be beneficial for rural and underserved communities. Telemedicine can be a very useful tool to serve some populations, particularly for some specialties. This requires some information technology investment, and therefore an accurate appraisal of costs and benefits needs to be undertaken before significant investment.

There is little systematic review evidence to support the practice of shared care. Available evidence suggests that the gains are marginal, and the costs may be greater. There are specific conditions for which a shared care model appears to be more effective, however, the literature does not support widespread implementation. Likewise, there is little evidence to support the practice of consultation-liaison. Managed clinical networks seem to offer the promise of better outcomes and improvements in service delivery, however there is a paucity of data on this. Any improvements will occur at the cost of considerable practitioner effort and will generally require significant planning and organisation. It seems evident that positive outcomes are likely to take some time to become apparent, and some initial investment is required.

There is evidence to suggest that the use of structured referral sheets and the provision of educational outreach to GPs by hospital specialists are effective in reducing inappropriate referrals to secondary care. The evidence to date suggests that there may be some benefit in an in-house second opinion prior to referral.

Shifting services from secondary to primary care is thus a plausible strategy for improving access to specialist care, but it is apparent that there are also a number of unintended effects that may occur, such as reducing quality and increasing cost. It is therefore important to implement any changes carefully. Strategies should be based on available evidence, be well organised and planned, and be evaluated after implementation. Many strategies to shift services to primary care come at the cost of increasing demand, or increasing costs. Policy makers and those delivering health care therefore need to weigh up the relative value of particular aims before investing time, funding and clinical resource in new strategies.

Transferring Services from Primary to Secondary Care: In Summary

- Shifting services to be closer to home can increase convenience for patients
- The use of general practitioners with a special interest has the potential to reduce waiting times. However, this may also increase demand for services. There is insufficient evidence to comment on health outcomes from such initiatives.
- Relocating secondary services to a primary care setting is more convenient for patients, but is generally more costly than services provided in a hospital, and do not often produce the benefits that would be expected.
- Managed clinical networks may improve care for patients. However, they are difficult and costly to set up, and there is a paucity of data on their effectiveness.
- There are effective strategies to reduce referrals to secondary care, particularly through the use of structured referral sheets and local education.
- Any changes in service delivery should be based on sound evidence and be implemented in a planned and organised way. Any such changes should be evaluated, to detect any unintended effects, such as increasing cost or reducing quality.

APPENDICES AND REFERENCES

APPENDIX 1 : STATISTICAL SIGNIFICANCE TESTING AND ITS USE IN THIS REPORT

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 (i.e. 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%) [202].

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 ≥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) [202].

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 of 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 reporting series utilise data derived from national surveys (e.g. Action for Smoking and Health (ASH) Smoking Surveys, the NZ Children's Nutrition 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 words *significant*, or *not significant* in italics are used to imply that a test of statistical significance has been applied to the data and that the significance of the associations are as indicated). In a small number of cases however (e.g. SPARC Physical Activity Surveys) 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 data sets (e.g. Birth Registration, Hospital Admission, Mortality), 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 2002-2006, 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 [203] 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 2004-2008, 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 [203].

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 *Data Sources and Methods* text box accompanying each indicator includes a small paragraph entitled *Statistical Significance Testing* (see examples below). It is suggested the reader briefly reviews this information before considering the analyses presented in the sections which follow.

Data Sources and Methods

Statistical Significance Testing Example 1

Note: Tests of statistical significance have not been applied to any of the data in this section, and thus any associations described do not imply statistical significance or non-significance.

Statistical Significance Testing Example 2

Note: Tests of statistical significance (in the form of 95% confidence intervals) have been applied to some of the data in this section. Where relevant, the significance of these associations has been signalled in the text (with the words *significant*, or *not significant* in italics being used to denote the statistical significance of the observed association). Where the words *significant* or *non-significant* do not appear in the text, then the associations described do not imply statistical significance or non-significance.

APPENDIX 2: SEARCH METHODOLOGY FOR POLICY DOCUMENTS & EVIDENCE BASED REVIEWS

One of the new features of this reporting series are sections which briefly review local policy documents (e.g. Ministry of Health Strategies / Toolkits) and international evidence based reviews relevant to the prevention / 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 [204]. Such overviews generally rely on reviewers collating all of the available evidence (e.g. published and unpublished trials and observational studies), evaluating this in a rigorous manner, and then publishing the resulting synthesis in a format which allows clinicians to quickly evaluate the effectiveness of the intervention(s) reviewed. While the evidence base for population level interventions is much less developed than for individual patient therapies (as such interventions often have longer follow up times, more diffuse outcomes, and less readily identifiable "control" groups [205]), there is nevertheless a reasonable body of evidence emerging as to the effectiveness of population level interventions in particular areas.

The brief overviews presented in this report, thus aim to provide busy DHB staff with a logical starting point for considering the types of intervention available to address particular child and youth health issues. In preparing these overviews however, the methodology used was not exhaustive, but rather involved searching a restricted number of EBM journals and databases (e.g. the Cochrane Library) 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 section aimed 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) was searched for key documents. All identified documents were then scanned and the most relevant summarised, with the focus being 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 which considered the effectiveness of population level interventions to prevent / 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 not being exhaustive, 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-Full Text: This allows three databases to be searched simultaneously: 1) The ACP Journal Club comprising two journals; ACP Journal Club and Evidence-Based Medicine 2) The Cochrane Database of Systematic Reviews; and 3) The Database of Reviews of Effects (DARE) produced by National Health Services' Centre for Reviews and Dissemination at the University of York, UK.

The Health Care Needs Assessment Series: This is funded by the department of Health/National Institute of Clinical Excellence and is complied and managed in the Department of Public Health and Epidemiology at the University of Birmingham (http://hcna.radcliffe-oxford.com)

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 promotion of good health, 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)(http://www.thecommunityguide.org/about/). The Community Guide summarises what is known about the effectiveness, economic efficiency, and feasibility of interventions to promote community health and prevent disease.

While undertaking this task, it quickly became apparent that the quality of evidence varied considerably depending on the issue reviewed (e.g. while a considerable literature exists as to the most effective ways to address youth smoking or alcohol or drug use, there was a paucity of evidence based solutions concerning how the health sector might engage with the education sector to improve young people's academic performance beyond the early childhood years). In addition, in many cases the research provided reasonably strong guidance as what did not work (e.g. current evidence suggests additional social support is ineffective in preventing preterm birth in high-risk women), but little advice as to effective interventions which would.

Thus in many cases, these brief overviews served to highlight the current paucity of evidence on population level interventions to address child and youth health need (although the absence of systematic / other reviews, does not rule out the existence of individual studies in particular areas). In this context, while 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 however, the reader needs to be reminded that these studies were identified in a non-systematic manner and that their findings should thus not be given the same weight as systematic reviews (e.g. Cochrane reviews) where all the available evidence has been evaluated using a rigorous methodology.

APPENDIX 3: DATA QUALITY GRADING SYSTEM FOR INDICATORS IN THIS REPORT

One of the central aims of the Child and Youth Health Indicator project was to develop an overall map of all of the issues which needed to be taken into account when planning child and youth health services and strategies at a population level. Yet very early on in the course of consultation it became apparent that adequate data sources were available for only a fraction of the issues that those working in the health sector considered important to child and youth health. In order to ensure that issues for which adequate data was available did not take undue precedence over those for which reliable data was lacking, it was decided early on that a set of indicator selection criteria would be developed, which awarded a high priority to public health importance. Where an issue was deemed to have met these criteria but where routine data sources were lacking, "non-traditional" data sources would then be considered, in order to ensure that the issue did not fall below the public health radar.

Such an approach however, meant that many of the indicators included in the Indicator Framework may not have met the stricter data quality criteria utilised by other Government agencies. In order to highlight the impacts that such data quality issues may have had on the interpretability of the data, it was felt necessary to grade each indicator on the degree to which it captured the issue it was designed to measure, as well as the quality of its data source. Thus each indicator in the framework was assigned to one of three categories: Ideal, Proxy or Bookmark, and an assessment made as to whether its data sources were Excellent (A), Adequate (B), or whether Further Work (C) was required in order to improve the interpretability of the indicator (**Table 109)**. These categories are outlined below:

Ideal Indicators: An indicator was considered ideal if it offered the potential to measure the total extent of a particular issue e.g. because the birth registration dataset captures >99% of births in New Zealand and information on gestational age is >98% complete, the preterm birth indicator derived from this dataset was considered ideal, in that it allowed conclusions to be drawn about trends in the incidence of preterm birth over time.

Proxy Indicators: In many cases, while it was not possible to measure the full extent of an issue, it was possible to assess the number of children and young people attending publicly funded services for its management e.g. while hospital admission data is unable to provide any commentary on the total number of injuries occurring in the community (as many injuries are treated in primary care, or at home), such data is nevertheless useful for assessing the workload such injuries create for secondary and tertiary services. One of the chief limitations of proxy indicators, however, is the variable extent to which they capture the total burden of morbidity (e.g. while nearly all non-fatal cases of meningococcal disease are likely to be captured by hospital admission data, the same datasets are likely to record only a fraction of gastroenteritis cases occurring in the community). While it is generally assumed that if admission thresholds remain constant (i.e. that children with a given level of severity for a condition will be managed in the same way), then such indicators can be used to track trends in the underlying burden of morbidity, in reality such thresholds are very seldom static and vary in ways which are both predictable (e.g. the introduction of pulse oximetry altering admission thresholds for infants with bronchiolitis over time) and unpredictable (e.g. differences in the ways in which DHBs upload their emergency department cases to the National Minimum Dataset). Thus while being of considerable utility in planning for future health service demand, such indicators are less useful for tracking temporal trends in the total burden of morbidity occurring in the community.

Bookmark Indicators: In many cases, consultation suggested that there was a need for indicators in areas where no data sources existed e.g. indicators to assess the prevalence of disability amongst New Zealand children by diagnostic category (e.g. autism, cerebral palsy) and by degree of functional impairment (e.g. visual acuity, degree of hearing loss).

While more traditional approaches to indicator development might have suggested that such issues should be excluded from the monitoring framework until such time as high quality data sources could be developed, such approaches may also have inadvertently resulted in the needs of children and young people with these conditions slipping below the public health radar, and as a consequence being awarded a lesser priority in resource allocation decisions. Thus it was decided that a number of “Bookmark Indicators” should be created, which served to highlight particular issues until such time as more appropriate data sources could be developed. Where possible, such indicators would use currently available data sources to capture particular facets of the wider issue e.g. the current Mental Health Section contains three indicators – Children Calling Telephone Based Counselling Services, Inpatient Hospital Admissions for Mental Health Issues and Hospital Admissions and Mortality from Self Inflicted Injuries. While it is acknowledged that collectively these indicators fail to capture the full scope of child and youth mental health issues (the majority of which are managed on an outpatient basis and are thus not adequately represented by inpatient hospital admissions), it is nevertheless hoped that these indicators will serve as a “Bookmark” for child and youth mental health issues, until such time as better indicators can be developed.

Table 109. Indicator Categories Based on the Type of the Indicator and the Quality of its Data Source

Indicator Type	Data Quality		
	Excellent (A)	Adequate (B)	Further Work Required (C)
Ideal	Measures total extent of an issue and data quality permits appropriate interpretation of trends and population level differences (No NZ indicators currently in this category)	Measures total extent of an issue and data quality permits adequate interpretation of information once the limitations of the datasets have been outlined E.g. Interpretation of trends in highest attainment at school leaving requires an understanding of changes associated with the roll out of the NCEA which began in 2002. While such changes make interpretation of trends difficult, improvements in data quality per se are unlikely to improve this situation	Measures total extent of an issue but data quality limits appropriate interpretation E.g. While theoretically the MOH's two oral health indicators provide near complete coverage of children at 5 and 12 years of age, in reality information is only collected on those who have completed treatment, potentially discounting the poor oral health status of children still undergoing treatment for dental caries at these points in time
Proxy	Measures attendances at publicly funded services for management of an issue and data quality permits appropriate interpretation of trends and population level differences (No NZ indicators currently in this category)	Measures attendances at publicly funded services for management of an issue and data quality permits adequate interpretation once the limitations of the datasets have been outlined E.g. Hospital admission data, when combined with mortality data, provides a reasonable overview of the incidence of invasive meningococcal disease. While a number of data quality issues apply to all indicators derived from these datasets (e.g. accuracy of coding), such limitations are unlikely to significantly hinder the interpretation of the data in this context	Measures attendances at publicly funded services for management of an issue but data quality currently limits appropriate interpretation E.g. Because of the inconsistent manner in which some DHBs have uploaded their emergency department cases to the hospital admission dataset over time, it is difficult to interpret trends in hospital admissions for minor injuries with any certainty. Thus while cross sectional analyses provide an overview of the types if injuries presenting to secondary and tertiary services, interpretation of trend data is significantly impeded by the quality of the datasets
Bookmark	Measures one facet of a wider issue, or provides a brief overview of the literature in an area where no data sources currently exist. Data quality for isolated facets permits appropriate interpretation. (No NZ indicators currently in this category)	Measures one facet of a wider issue, or provides a brief overview of the literature in an area where no data sources currently exist. Data quality for isolated facets permits adequate interpretation once the limitations of the datasets have been outlined E.g. The 2002 Children's Nutrition Survey provides a reasonable snapshot of overweight and obesity amongst New Zealand children at a single point in time. For this isolated snapshot, data quality permits adequate interpretation of the issues covered by this survey	Measures one facet of a wider issue, or provides a brief overview of the literature in an area where no data sources currently exist. Data quality for isolated facets limits appropriate interpretation E.g. In the absence of routine data on the extent of alcohol related harm amongst New Zealand young people, an analysis of hospital admissions with mention of alcohol in any of the first 15 diagnostic codes provides a snapshot of the types of issues presenting to secondary care services. Significant data quality issues however preclude this data being used to make any inferences about trends in alcohol related harm

APPENDIX 4: THE NATIONAL MINIMUM DATASET

Mode of Data Collection

The National Minimum Dataset (NMDS) is New Zealand's national hospital discharge data collection and is maintained by the New Zealand Health Information Service (NZHIS). 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 [206]. 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 is 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 if 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 [207].

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 [207]. 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 [208].

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 [208]. In its analyses it excludes all cases where:

1. the admission and discharge date are the same (length of stay = 0)
2. and the patient was discharged alive
3. and 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 ¼ 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 >1/3 of NMDS emergency department discharges for those 0-24 years were due to injury, with another 1/3 were 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 1/3 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, with the exception of the injury and poisoning sections. Here 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/poisoning emergency cases may lead to undercounting for a number of more minor types of injury. Nevertheless, the filtering process utilised 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 variants 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 classification system has been used, although for time series analysis, back and forward mapping between the two classification systems is possible fusing pre-defined algorithms [206].

The introduction of ICD-10 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 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 [209]. 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 NZHIS has undertaken a number of reviews of the quality of ICD coding in the NMDS. In the latest audit 2708 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 [210]. 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 5: NATIONAL MORTALITY COLLECTION

Mode of Data Collection

The Mortality Collection is a dataset managed by the New Zealand Health Information Service (NZHIS), which classifies the underlying cause, for all deaths registered in NZ since 1988. Foetal and infant data is a subset of the Mortality Collection and contains extra information on factors such as birth weight and gestational age [211].

Each month Births, Deaths and Marriages send NZHIS 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, 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-9 and ICD-10) is assigned by NZHIS staff according to the World Health Organisation's rules and guidelines for mortality coding [211].

Data Quality Issues Relating to the Mortality Collection

Unlike the NMDS, where information on the principal diagnosis is coded at the hospital level and then forwarded electronically to the NZHIS, for the Mortality Collection each of the approximately 28,000 deaths occurring in NZ each year is coded manually within NZHIS. 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 [212]. 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 admission data.

While there are few published accounts of the quality of coding information contained in the 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: MEASUREMENT OF ETHNICITY

All of the rates calculated in this report have relied on the division of numerators (e.g. hospital admissions, mortality data) by Statistics New Zealand Census 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 denominator datasets and that a single child will be identified similarly in each. 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 Admission, 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 >50% of Pacific or Māori blood were deemed to meet the ethnic group criteria of the time [213]. A similar approach was used to recording 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 / deceased individual. For hospital admissions, ancestry based definitions were also used during the early 80s, with admission officers often assuming ethnicity, or leaving the question blank [214].

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(s) 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 [213]. 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 [214].

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 [214].

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 1 box.

There was a new “Other European” category with 6 sub groups

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 [213].

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 [214]. 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 greater than that previously, there remains some concern that hospitals continue to undercount multiple ethnic identifications and as a result, may continue to undercount Pacific and Māori peoples [214].

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 [213]. 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 Questions

The 2006 Census used identical wording to the 2001 Census. Within the "Other" ethnic group however, a new category was created which allowed for the responses of those identifying as a "New Zealander". In previous years this sub-category had been assigned to the European ethnic group. At the 2006 Census, a total of 429,429 individuals (10.6% of the NZ population) identified themselves as a New Zealander, a large increase from previous years and a trend, which if continued, poses a serious threat to the availability of valid population denominators for use with health sector data. As yet the consequences of this change have not been fully addressed by the health sector and in this report, where prioritised ethnicity has been used, 2006 Census data has combined the New Zealander category with the European category, as per the protocol in previous censuses.

The Current Recording of Ethnicity in New Zealand's National Datasets

In New Zealand at present, only 3 ethnic groups per person are currently stored electronically in the National Minimum Dataset (Hospital Admission Dataset) and Mortality Collections, with Statistics New Zealand's prioritisation algorithms being used if more than 3 ethnic groups are identified [206]. These datasets also use Statistics New Zealand's Hierarchical Ethnicity Classification, which has 4 levels, each providing greater detail:

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

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 >Other >European ethnic groups [215]. This ensures that each individual is counted only once and that the sum of the ethnic group sub-populations equals the total NZ population [214]. The implications of prioritisation for Pacific Island

groups however are that the outcomes of those identifying as both Māori and Pacific (12.2% of Pacific births during the past 5 years) are only recorded under the Māori ethnic group.

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, with Statistics NZ's Level 1 Ethnicity Classification being used, which recognise 5 ethnic groups: European, Māori, Pacific Island, Asian (including Indian) and Other Ethnic Groups. In order to ensure that each health event is only counted once, prioritised ethnic group has been used throughout.

Caution however must be taken when interpreting the ethnic specific information contained in these reports, as while the quality of information available since 1996 has been much greater than that previously, there remains some concern as to the way in which ethnicity information is collected within the health sector. Recent analysis of post 1996 data has suggested that hospitals continue to undercount multiple ethnic identifications and as a result, recent admission rates may continue to undercount Māori and Pacific peoples [214]. Similarly a linked analysis of the ethnicity information provided on census forms and death certificates suggests that during the 1996-1999 period, death certificate data tended to undercount Māori by about 7% [216]. Thus the ethnic specific rates presented in this report must be interpreted with these cautions in mind.

APPENDIX 7: 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 [217]. 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 110**). 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 [218].

Table 110. Variables used in the NZDep2006 Index of Deprivation[219]

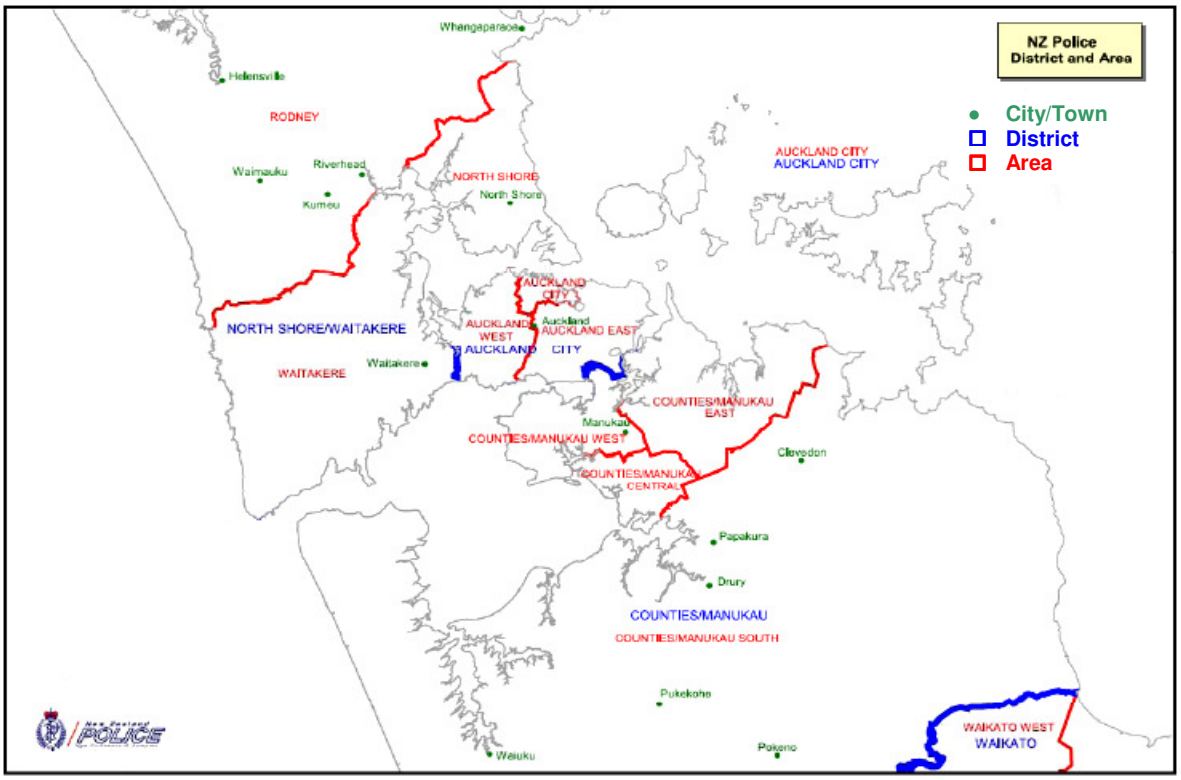
No.	Factor	Variable in Order of Decreasing Weight in the Index
1	Income	People aged 18-64 receiving means tested benefit
2	Employment	People aged 18-64 unemployed
3	Income	People living in households with income below an income threshold
4	Communication	People with no access to a telephone
5	Transport	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 [217]. Despite these limitations however, the NZDep has been shown to be predictive of mortality and morbidity from a number of diseases in New Zealand.

Note: As New Zealand's national datasets have traditionally continued to use the previous Censuses' domicile codes for 1-2 years after any new Census, all of the numerators (e.g. numbers of hospital admissions, deaths) in the previous analyses used NZDep2001 deciles. Because it was necessary to account for population growth between 2001 and 2006 however, denominators were created using both NZDep2001 and NZDep2006 deciles, with linear extrapolation used to create denominators for inter-Census years.

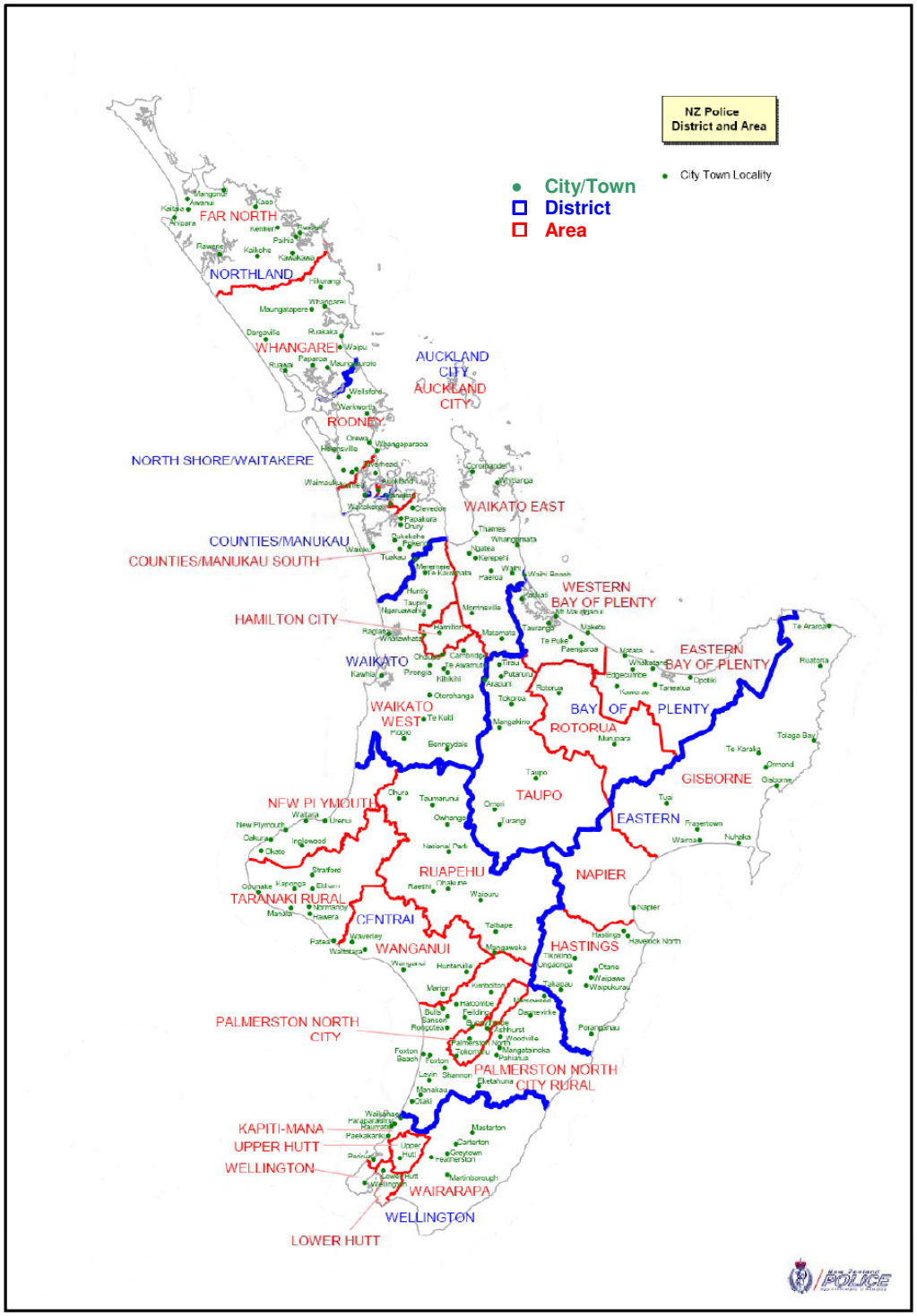
APPENDIX 8: POLICE BOUNDARIES

Figure 117. New Zealand Police Area Boundaries in the Auckland Region



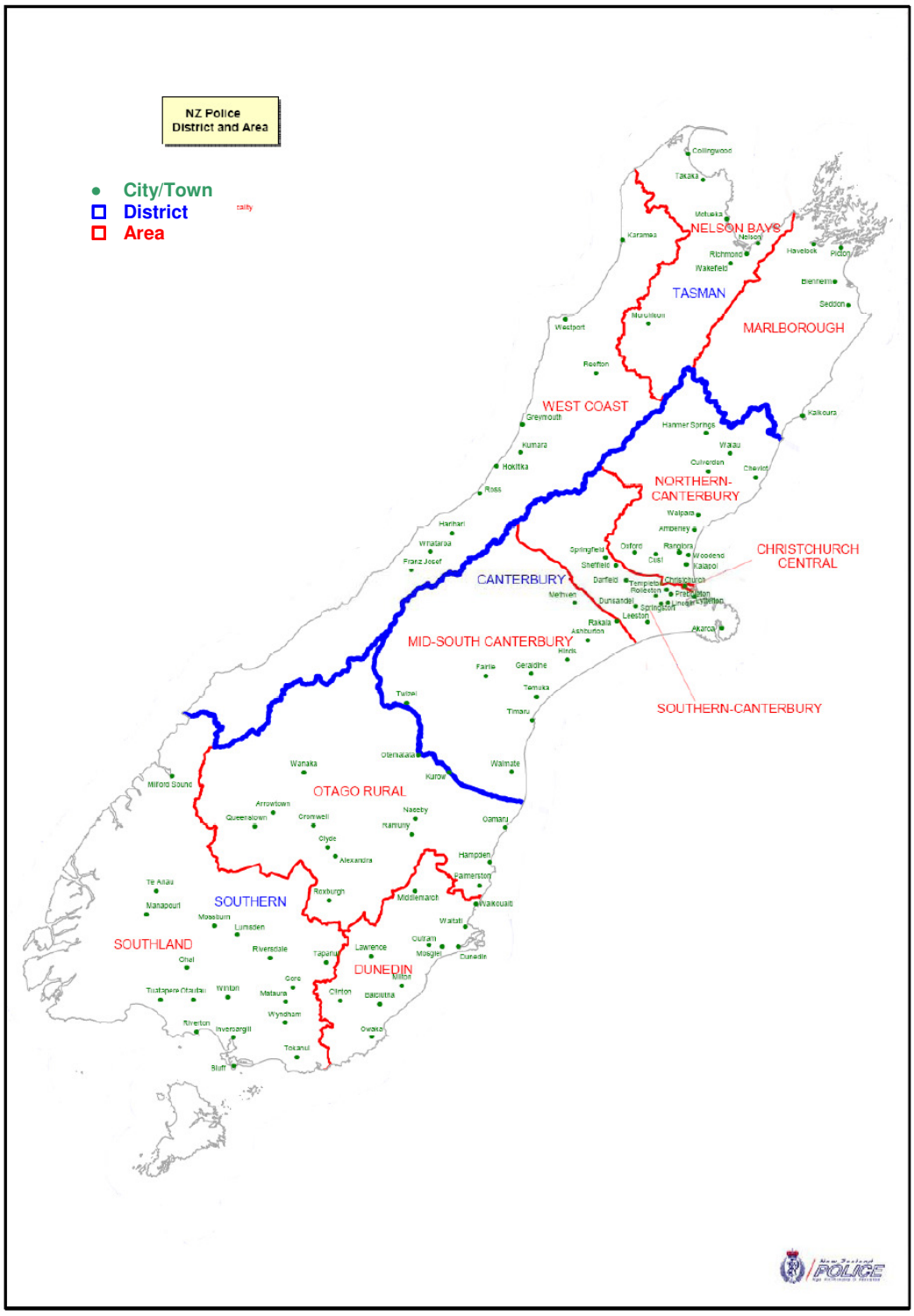
Source: http://www.stats.govt.nz/products-and-services/table-builder/crime-tables/maps.htm

Figure 118. Police Area Boundaries in the North Island



Source: http://www.stats.govt.nz/products-and-services/table-builder/crime-tables/maps.htm

Figure 119. Police Area Boundaries in the South Island



Source: http://www.stats.govt.nz/products-and-services/table-builder/crime-tables/maps.htm

APPENDIX 9. METHODS USED TO DEVELOP THE CHILDREN'S SOCIAL HEALTH MONITOR

Introduction

In response to deteriorating economic conditions in New Zealand and Australia over the past 18 months, a Working Group of health professionals from a range of organisations[3] with an interest in child health was formed in early 2009 (see membership below). Over the course of the year, this Working Group discussed the conceptualisation of an indicator suite to monitor the impact of the recession on child wellbeing, the range of indicators which might be included, and the criteria by which 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 Families with Children Reliant on Government Benefits.

2. *A Basket of Indicators to Monitor Children's Wellbeing*; Ideally indicators would responded 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 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 suite 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 either be relatively well understood, or an association between the indicator and wellbeing at least 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).

[3] 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 Program, the Kia Mataara Well Child Consortium, the New Zealand Council of Christian Social Services, and academics from the Universities of Auckland and Otago

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).
3. The condition exhibits a socioeconomic gradient (e.g. rates are higher in poorer 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 a group of Working Group members and other health professionals (n=20). Those scoring the indicators were also asked to select a Top 5 Economic and Top 5 Health and Wellbeing Indicators for inclusion in the Children's Social Health Monitor. The resulting Top 5 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 Indicators

While all of the Top 5 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 indicators had to be derived specially for the Children's Social Health Monitor. The methodology used to derive these indicators is outlined briefly 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 ≥1.8 for NZDep Decile 9-10 vs. Decile 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 is 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 4 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 indentified 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 indictor 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. It is also hoped that further adaptations to this indicator set will be made, so that it can also be used in the Australian context.

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