THE HEALTH STATUS OF CHILDREN AND YOUNG PEOPLE IN THE SOUTH ISLAND
The Health Status of Children and Young People in the South Island

This report was prepared for the South Island Alliance Programme by Elizabeth Craig, Judith Adams, Glenda Oben, Anne Reddington, Andrew Wicken and Jean Simpson on behalf of the NZ Child and Youth Epidemiology Service, November 2011

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INTRODUCTION AND OVERVIEW
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Introduction

This report is the first of three reports, on the health of children and young people in the South Island, and fits into the reporting cycle as follows:

Year 1 (2011) Health Outcomes
Year 2 (2012) Health Determinants
Year 3 (2013) Disability and Chronic Conditions

While the aim of the two previous reporting cycles was to present an overview of the major issues affecting the health of children and young people in the South Island DHBs individually, this third series, while building on the frameworks developed in the previous two, aims to take a more regional approach to child and youth health needs assessment.

Report Aims and In-Depth Topics

The aim of the current report is to provide an overview of the health status of children and young people in the South Island, and to assist those working to improve child and youth health regionally, to utilise all of the available evidence when developing programmes and interventions to address child and youth health need.

In this context, the role primary care plays in preventing a range of avoidable hospital admissions and mortality is crucial, with this year’s in-depth topics focusing on the role of primary care in achieving health gains for children and young people. Specifically, the issues considered in this year’s in-depth topics are:

1. Models of Primary Care for Children: This in-depth topic focuses on ambulatory sensitive hospitalisations (ASH) in children, particularly those under 5 years of age. A factor common to many of these admissions is the abrupt nature of their onset. The reasons why primary care may not be addressing these acute conditions and the role of primary care in the management of chronic conditions are examined. The international literature also identifies a number of barriers to optimal service delivery that may impact at the personal or organisational level. Models that attempt to reduce such barriers by improving access, ensuring cultural and language appropriateness, and providing adequate out-of-hours services have been effective in improving services or reducing avoidable hospitalisations. Other models have focused on developing nurse-led services, or better information sharing systems within and between sectors of the health system. The literature also includes funding models that have achieved health gains. How these models could assist with the delivery of more effective primary health care to New Zealand children is discussed.

2. Models of Primary Care for Young People: This in-depth topic begins with a brief overview of the health issues most commonly encountered by New Zealand young people, before exploring the normal developmental milestones which occur during adolescence, and the implications these have for the delivery of primary healthcare. The three most frequent models of primary healthcare available to young people are then reviewed, namely: General Practitioners/Primary Health Organisations, School Based Health Services and Youth One Stop Shops. For each model of care, a brief description of the degree to which it has been implemented in the New Zealand context is provided, before the findings of any local evaluations are reviewed. Each section concludes with a brief review of the overseas literature, which seeks to identify evidence of effective service delivery, or guidance as to how optimal services might be developed. The review concludes with a brief discussion of the implications of these findings for the delivery of primary healthcare to young people in New Zealand.
**Report Sections and Indicators**

As previously, this report is based on the *Indicator Framework* developed during the first cycle of DHB reporting, with the majority of indicators in the *Individual and Whanau Health and Wellbeing* stream being updated in this year’s edition. Within this stream, each of the indicators in this year’s report has been assigned to one of three main sections as follows:

**Issues More Common in Infancy:** This section considers issues more common during the first year of life, and includes indicators such as *Fetal Deaths*, *Preterm Birth*, *Infant Mortality and Sudden Unexpected Death in Infancy (SUDI)*, and *Breastfeeding*.

**Issues More Common in Children, or Common in both Children and Young People:** This section, which focuses on issues more common to children or to both children and young people, is further subdivided into three sub-sections: Total and Avoidable Morbidity and Mortality, Infectious and Respiratory Diseases (including Upper and Lower Respiratory Tract Conditions and Infectious Diseases) and Other Issues (including Injuries in Children, Oral Health and Permanent Hearing Loss).

**Issues More Common in Young People:** This stream reviews a number of conditions more common in young people including *The Most Frequent Causes of Hospital Admissions and Mortality, Injuries, Teenage Births and Terminations of Pregnancy*.

**The Children’s Social Health Monitor**

The *Children’s Social Health Monitor* is updated again in this year’s report, with a view to determining how children are faring in the current economic climate. Issues reviewed include: Economic Indicators: *GDP, Income Inequality, Child Poverty, Unemployment Rates and Number of Children Reliant on Benefit Recipients*; and Child Wellbeing Indicators: *Hospital Admissions and Mortality with a Social Gradient, Infant Mortality*, and *Hospital Admissions for Injuries Arising from Assault in Children*.

**Evidence-Based Approaches to Intervention**

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

**Data Quality Issues and the Signalling of Statistical Significance**

For a number of conditions in this report, hospital admission rates for South Island Māori and European children appear much more similar than in other parts of New Zealand. While this may potentially suggest that disparities between Māori and European children are less in the South Island than elsewhere, it may also potentially signal an issue with the quality of the ethnicity data in the National Minimum Dataset. Caution is thus urged when interpreting the local ethnic specific rates presented in this report, as there is a real possibility that Māori children are being undercounted in the figures presented.

As previously *Appendix 2* outlines the rationale for the use of statistical significance testing in this report and *Appendix 4 to Appendix 9* contain information on the data sources used to develop each indicator. Readers are urged to be aware of the contents of these Appendices when interpreting any information in this report. (Note: As outlined in *Appendix 2*, in order to assist the reader to determine whether tests of statistical significance have been used in a particular section, the significance of the associations presented has been signalled in the text with the words *significant*, or not *significant* in italics. Where the words *significant* or not *significant* do not appear in the text, then the associations described do not imply statistical significance or non-significance).

**Overview of the Health Status of Children and Young People in the South Island**

While it is hoped that a regional approach will serve to enhance the utility of this report for regional planning purposes, the need for a consistent approach to monitoring over time means that the way the data are presented is very similar to previous years. Thus the table
which follows provides a brief overview of each of the indicators in this year’s report, including their distribution nationally and within the South Island DHBs.

While it is possible to consider each of these issues individually, when considering which should be awarded the highest priority in future regional planning, a number of the approaches to prioritising health need outlined below may provide useful starting points:

**Regional Comparative Approach:** One possible approach to prioritising health need is to consider those areas where the South Island DHBs differ from the New Zealand average. A brief perusal of the tables which follow however, suggests for many conditions (e.g., hospitalisations for bronchiolitis in infants, and pneumonia, asthma and skin infections in children) rates in the South Island DHBs are significantly lower than the New Zealand rate. Similarly ambulatory sensitive hospitalisations and admissions for gastroenteritis in children were also significantly lower than the New Zealand rate in all South Island DHBs except Southland, where rates were significantly higher. Hospital admissions for land transport injuries in children however, were significantly higher than the New Zealand rate in all South Island DHBs except Canterbury, while admissions for young people were significantly higher in all South Island DHBs except Canterbury and Otago.

**An Inequalities Approach:** An alternative approach to prioritisation would be to consider those issues for which ethnic or socioeconomic disparities were most marked. A brief review of the tables which follow however, suggests that differences between Māori and European children and young people in hospital admissions for many conditions were not marked. While this may potentially indicate smaller regional ethnic disparities, it may also signal that Māori children and young people are being undercounted in local hospital admission data, and this should be taken into account when interpreting the ethnic specific data presented in this report.

**An Absolute Approach:** Another approach to prioritisation is to consider those issues which, irrespective of regional or ethnic inequalities, made the greatest contributions to hospital admissions and mortality in the region. A brief perusal of the tables which follow suggests that in the South Island DHBs during the past 5 years, injuries (particularly from land transport injuries) and neoplasms were common causes of mortality for children and young people. Suicide, however, also claimed the lives of a large number of young people. In terms of hospital admissions, injuries again made a significant contribution to morbidity for both children and young people, although infectious and respiratory conditions were prominent for children, and reproductive health issues (particularly admissions for labour and delivery) were important for young people.

**Consideration of Areas of Unmet Need:** Finally, it is important to remember that hospital admission and mortality data does not fully capture all of the issues experienced by children and young people. In particular, there is a paucity of information on children and young people with disabilities and mental health issues, with the 2009 and 2010 reports suggesting that there may be considerable unmet need in these areas. Thus, in addition to the approaches outlined above, it is also necessary to consider whether similar areas of unmet need exist in the South Island DHBs, and if so, to consider the needs of these children and young people when allocating resources for future service development.

**Conclusions**

In addition to providing an overview of the health status of children and young people in the South Island, this report aims to provide an entry point into the policy and evidence-based review literatures, so that child and youth health needs can be addressed in a systematic and evidence-based manner. In undertaking this task, it is suggested that DHBs combine the epidemiological data in this report, with knowledge of existing services and local stakeholders’ views. In addition, any approaches developed need to be congruent with current Ministry of Health policy, and the evidence contained in the current literature. Finally, for those developing new approaches in areas where there is currently no sound evidence base, the plea is that they build into their programmes an evaluation arm, so that learning gained can be used by others to enhance the wellbeing of children and young people and to ensure the best use of available resources.
Table 1. Overview of the Health Status of Children and Young People in the South Island DHBs

<table>
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<tr>
<th>Indicator</th>
<th>New Zealand Distribution and Trends</th>
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<tr>
<td>Regional Births</td>
<td>In New Zealand, 46.4% of newborn babies registered during 2010 were European, 29.2% were Māori, 11.5% were Asian/Indian, and 11.2% were Pacific. While 7.01% were born to mothers aged &lt;20 years, 29.1% were born to mothers aged 35+ years. In addition, 15.0% were born into the least deprived (NZDep decile 1–2) areas, while 27.1% were born into the most deprived (NZDep decile 9–10) areas.</td>
<td>In the South Island during 2000–2010, the number of live births registered annually varied, with numbers increasing in Nelson Marlborough, Canterbury, the West Coast, and Southland, but remaining more static in South Canterbury and Otago. During 2010, the proportion of European babies born was higher than the New Zealand rate in all of the South Island DHBs, while the proportion of Māori, Pacific and Asian/Indian babies was lower. The proportion of babies born into the most deprived (NZDep decile 9–10) areas was much lower than the New Zealand rate in Nelson Marlborough, South Canterbury, Canterbury, Otago and Southland. In the West Coast, the proportion (while still lower) was closer to the New Zealand rate.</td>
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<td>Fetal Deaths</td>
<td>In New Zealand during 2004–2008, unspecified cause was the most frequently listed fetal cause of intermediate fetal deaths (IFD), followed by extreme immaturity/low birth weight. Congenital and chromosomal anomalies also made a significant contribution. Of IFDs with a maternal cause listed, the most frequent causes were placenta praevia / separation / haemorrhage and chorioamnionitis. Unspecified cause was also the most frequently listed fetal cause of late fetal deaths (LFD), followed by malnutrition/slow fetal growth. Congenital and chromosomal anomalies again made a significant contribution. Of LFDs with a maternal cause listed, the most frequent causes were placenta praevia / separation / haemorrhage / other anomaly, and compression of the umbilical cord.</td>
<td>In the South Island during 2004–2008, while there was some regional variability, IFD and LFD rates were not significantly different from the New Zealand rate in any of the South Island DHBs. During 2004–2008, extreme immaturity/low birth weight, congenital and chromosomal anomalies and unspecified causes were frequently listed fetal causes of IFDs. Of those IFDs which had a maternal cause listed, frequent causes were placenta praevia / other placental anomalies, incompetent cervix / premature rupture of the membranes and chorioamnionitis. Unspecified causes, intrauterine hypoxia and congenital and chromosomal anomalies were also common fetal causes of LFDs. Of those LFDs which had a maternal cause listed, frequent causes were placenta praevia / other placental anomalies and compression of the umbilical cord.</td>
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<td>Indicator</td>
<td>New Zealand Distribution and Trends</td>
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<td>Preterm Birth</td>
<td>In New Zealand during 2000–2010, preterm birth rates were relatively static. During 2006–2010, preterm birth rates were significantly higher for males, Māori &gt; Asian/Indian, European and Pacific babies, those born into more deprived (NZDep decile 6–10) areas, and babies born to younger (&lt;25 years) or older (35+ years) mothers.</td>
<td>In Nelson Marlborough, preterm birth rates declined during the mid-2000s, with rates being lower than the New Zealand rate for the majority of 2000–2010, while in South Canterbury, rates exhibited a fluctuating upward trend. In Canterbury, the West Coast, Otago and Southland rates fluctuated, with rates in Otago being consistently higher than the New Zealand rate, and rates in the other three DHBs being similar (although in Southland rates were higher during the mid-2000s). In Nelson Marlborough and Otago during 2000–2010, there were no consistent differences in preterm birth rates between Māori and European babies, although in South Canterbury, the West Coast and Southland, rates were higher for Māori than for European babies during the late 2000s. In addition, preterm birth rates in South Canterbury and West Coast Māori babies increased during this period, although it is unclear whether this reflected changes in ethnicity coding or real increases in the incidence of preterm birth.</td>
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<tr>
<td>Infant Mortality and Sudden Unexpected Death in Infancy (SUDI)</td>
<td><em>Neonatal and Post Neonatal Mortality</em>: In New Zealand during 1990–2008, neonatal and post neonatal mortality both declined. Neonatal mortality was higher for Pacific and Māori &gt; European &gt; Asian/Indian infants during the late 1990s, although ethnic differences were less consistent during the 2000s. Post neonatal mortality was higher for Māori &gt; Pacific &gt; European and Asian/Indian infants throughout 1996–2008. During 2004–2008, both outcomes were also significantly higher for males, those in average-to-more deprived areas, preterm infants and those with younger mothers. <em>SUDI</em>: In New Zealand, SUDI declined during the late 1990s–early 2000s, but became more static after 2002–03. When broken down by sub-type, SIDS deaths declined during 1996–2008, while those due to suffocation or strangulation in bed became more prominent as the period progressed. During 2004–2008, SUDI was highest in infants 4–7 weeks of age. Suffocation/strangulation in bed accounted for 57.1% of all SUDI deaths in those aged 0–3 weeks and 36.8% of SUDI deaths in those aged 4–7 weeks. SUDI was also significantly higher for Māori &gt; Pacific &gt; European &gt; Asian/Indian infants, those from average-to-more deprived (NZDep decile 3–10) areas, preterm infants, and those whose mothers were &lt;30 years of age.</td>
<td><em>Neonatal and Post Neonatal Mortality</em>: In the South Island DHBs during 2004–2008, congenital anomalies and extreme prematurity were frequent causes of neonatal mortality, although intrauterine/birth asphyxia also made a contribution in some DHBs. SUDI and congenital anomalies were frequent causes of post neonatal mortality. While there were regional variations, neonatal mortality rates were not significantly different from the New Zealand rate in any of the DHBs. Post neonatal mortality rates were lower than the New Zealand rate in Nelson Marlborough, Canterbury, South Canterbury and Otago, although only in the case of Nelson Marlborough and Canterbury did these differences reach statistical significance. Similarly, while higher, rates in Southland were not significantly different from the New Zealand rate. <em>SUDI</em>: In the South Island DHBs during 1996–2008, large year to year variations made precise interpretation of SUDI trends difficult, although rates in Nelson Marlborough, Canterbury and Otago exhibited a general downward trend. In Canterbury and Otago during 2004–2008, SUDI rates were lower than the New Zealand rate, although only in the case of Canterbury did these differences reach statistical significance. SUDI rates in Southland were not significantly different from the New Zealand rate, while in Nelson Marlborough and South Canterbury small numbers precluded a valid comparison. No SUDI deaths occurred in the West Coast during this period.</td>
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## Breastfeeding

In New Zealand during June 2004–2011, the proportion of babies exclusively or fully breastfed remained fairly static, with rates in the year ending June 2011 being 66.3% at <6 weeks, 54.9% at 3 months and 25.2% at 6 months. Exclusive/full breastfeeding rates at <6 weeks were consistently higher for European/Other babies than for babies of other ethnic groups. At 3 and 6 months however, rates were generally higher European/Other > Asian/Indian > Māori and Pacific babies, with differences between Asian/Indian and Māori and Pacific babies increasing as the period progressed.

## Issues More Common in Children or in Children and Young People

### Total and Avoidable Morbidity and Mortality

In the South Island DHBs during 2006–2010, injury/poisoning and gastroenteritis were the most frequent reasons for an acute hospital admission in children. Neoplasms/chemotherapy/radiotherapy and injury/poisoning were the most frequent reasons for arranged admissions, dental procedures and grommets were the most frequent reasons for a waiting list admission. During 2004–2008, neoplasms were the most frequent cause of mortality in children aged 1–14 years, followed by congenital anomalies and vehicle occupant transport injuries.

## Ambulatory Sensitive Hospitalisations (ASH)

In New Zealand during 2006–2010, gastroenteritis, acute upper respiratory infections and asthma were the most frequent causes of ASH in children 0–4 years when emergency department (ED) cases were included, while gastroenteritis, dental conditions and asthma were the most frequent causes when ED cases were excluded. When broken down by age, ASH rates were highest in infants and one year olds, with rates then tapering off rapidly between one and two years, and then again between four and seven years of age. ASH rates were also significantly higher for males, Pacific > Māori > Asian/Indian > European children and those from average-to-more deprived (NZDep decile 3–10) areas. Similar patterns were seen when ED cases were excluded, although admission rates for Asian/Indian were significantly lower than for European children.

Amongst the South Island DHBs during 2000–2008, neoplasms, congenital anomalies, transport injuries (vehicle occupant and pedestrian) and drowning/submersion were among the most frequent causes of mortality in children aged 1–14 years.

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<td><strong>Upper Respiratory Tract Conditions</strong></td>
<td><strong>Acute Upper Respiratory Infections</strong>: In New Zealand during 2006–2010, acute upper respiratory tract infections (URTI) of multiple/unspecified sites were the most frequent reason for an URTI admission in children, followed by croup/acute laryngitis/tracheitis. URTI admissions were most common in infants and one year olds, with rates tapering off rapidly thereafter. Rates were also significantly higher for males, Pacific &gt; Māori &gt; European &gt; Asian/Indian children and those in average-to-more deprived (NZDep decile 4–10) areas.</td>
<td><strong>Acute Upper Respiratory Infections</strong>: In Canterbury and the West Coast during 2000–2010, hospital admissions for URTI in children declined, while in South Canterbury admissions increased. In contrast, rates in Nelson Marlborough, Otago and Southland fluctuated from year to year. In Canterbury admissions were higher for Pacific &gt; European &gt; Asian/Indian children, although differences for Māori children were more variable. In the other South Island DHBs, no consistent differences were seen between Māori and European children. Admissions in all DHBs were highest during the cooler months.</td>
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<td><strong>Acute Upper Respiratory Infections and Tonsillectomy</strong></td>
<td><strong>Tonsillectomy</strong>: In New Zealand during 2006–2010, chronic tonsillitis was the most frequent primary diagnosis in children admitted to hospital for tonsillectomy +/- adenoidectomy, accounting for 60.1% of all admissions. Hypertrophy of the tonsils/adenoids was the second leading diagnosis, followed by sleep apnoea. Admissions increased during the pre-school years, to reach their highest point at four years of age in European and Asian/Indian children, at five years of age in Māori children, and at six years of age in Pacific children. Overall, admissions were significantly higher for European &gt; Māori &gt; Asian/Indian and Pacific children, and significantly lower for those living in the least deprived (NZDep decile 1) areas.</td>
<td><strong>Tonsillectomy</strong>: In Nelson Marlborough and South Canterbury, arranged/waiting list admissions for tonsillectomy +/- adenoidectomy in children fluctuated during the early-mid 2000s, but increased rapidly after 2006–07. In Canterbury admissions declined during the early-2000s, reached their lowest point in 2002–03 and then gradually increased again, while in the West Coast rates exhibited a downward trend. In Otago, admissions increased rapidly during the mid-late 2000s, while in Southland, admissions decreased during the early 2000s, but increased again after 2004–05. In Canterbury admissions were generally higher for European and Māori children than for Pacific and Asian/Indian children, while in Nelson Marlborough, South Canterbury, Otago and Southland, rates were generally higher for European than for Māori children. In the West Coast however, ethnic differences were less consistent.</td>
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<td><strong>Middle Ear Conditions: Otitis Media and Grommets</strong></td>
<td>In New Zealand during 2006–2010, otitis media was the most frequent primary diagnosis in those admitted acutely with conditions of the middle ear and mastoid, as well as for those admitted semi-acutely/from the waiting list for the insertion of grommets. Acute admissions for otitis media were highest in infants and one year olds, with rates declining rapidly thereafter. Rates were higher for Māori and Pacific &gt; European &gt; Asian/Indian children during the first four years, although ethnic differences were less consistent thereafter. In contrast, arranged/waiting list admissions for the insertion of grommets were relatively infrequent during the first year of life, but increased rapidly thereafter. Rates reached their highest point in European children at one year, in Māori children at two years, in Asian/Indian children at four years and in Pacific children at six years of age. Overall, during the first four years admissions were higher for European and Māori &gt; Pacific &gt; Asian/Indian children, while after six years, admissions were higher for Pacific &gt; Māori &gt; European &gt; Asian/Indian children.</td>
<td>In the South Island during 2006–2010, otitis media was the most frequent primary diagnosis in those admitted acutely with conditions of the middle ear and mastoid, as well as for those admitted semi-acutely/from the waiting list for the insertion of grommets. In Nelson Marlborough, the West Coast, Canterbury, South Canterbury and Otago, acute admissions for otitis media were lower than the New Zealand rate, although only in Nelson Marlborough and South Canterbury did these differences reach statistical significance. Rates in Southland were significantly higher than the New Zealand rate. In contrast, grommets admissions were significantly lower than the New Zealand rate in the West Coast and Canterbury, but significantly higher in South Canterbury, Otago and Southland, and similar in Nelson Marlborough. In Canterbury, grommets admissions were generally higher for Pacific and Māori &gt; European &gt; Asian/Indian children, while in the West Coast and Southland admissions were generally higher for Māori than for European children. In Otago (with the exception of 2010) admissions were higher for European than for Māori children, while in Nelson Marlborough and South Canterbury ethnic differences were less consistent.</td>
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<td><strong>Bronchiolitis</strong></td>
<td>In New Zealand during 2000–2010, bronchiolitis admissions remained static during the early-mid 2000s, but then increased between 2006–07 and 2008–09. On average during 2000–2008, one infant each year died from bronchiolitis. During 2006–2010, bronchiolitis admissions were significantly higher for males, Pacific &gt; Māori &gt; European &gt; Asian/Indian infants and those from average-to-more deprived (NZDep decile 3–10) areas.</td>
<td>In each of the South Island DHBs during 2006–2010, bronchiolitis admissions in infants were significantly lower than the New Zealand rate. In Canterbury during 2000–2010, admissions were higher for Pacific &gt; Māori &gt; European &gt; Asian/Indian infants, although in the West Coast no consistent differences were seen between Māori and European infants. In Nelson Marlborough, South Canterbury, Otago and Southland, while ethnic differences were not consistent, admissions were higher for Māori infants than for European infants in a number of years. Admissions however, were higher during winter and early spring in all South Island DHBs.</td>
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<tr>
<td><strong>Pneumonia</strong></td>
<td>In New Zealand, bacterial / non-viral / unspecified pneumonia admissions in children declined during 2000–2007. A small upswing in rates was evident in 2008–09, before rates declined again in 2010. Similar patterns were seen for young people. In contrast, viral pneumonia admissions increased in both children and young people, with the most rapid increases in children occurring between 2004–05 and 2008–09. Pneumonia admissions (both types) were highest in one year olds, with the next highest rates being in infants &lt;1 year. Mortality was highest in infants &lt; 1 year. Admissions for bacterial / non-viral / unspecified pneumonia in children were also significantly higher for males, Pacific &gt; Māori &gt; Asian/Indian &gt; European children and those in average–more deprived (NZDep decile 3–10) areas. For young people, admissions were significantly higher for Pacific &gt; Māori &gt; European &gt; Asian/Indian young people, and those in average-to-more deprived (NZDep decile 5–10) areas. Admissions for viral pneumonia were higher for Pacific &gt; Māori &gt; European and Asian/Indian children and those in average-to-more deprived (NZDep decile 6–10) areas.</td>
<td>In all of the South Island DHBs during 2006–2010, hospital admissions for bacterial/non-viral/unspecified pneumonia in children were significantly lower than the New Zealand rate. While admissions in young people were also lower than the New Zealand rate, only in Canterbury, South Canterbury and Otago did these differences reach statistical significance. Similarly, while admissions for viral pneumonia in children were lower than the New Zealand rate in all DHBs, only in the case of Nelson Marlborough, Canterbury, Otago and Southland did these differences reach statistical significance. In Canterbury during 2000–2010, admissions for bacterial/non-viral/unspecified pneumonia were higher for Pacific &gt; Māori and European &gt; Asian/Indian children and young people, while in Nelson Marlborough, South Canterbury, the West Coast and Southland there were no consistent differences in admissions between Māori and European children and young people. Admissions in Otago were higher for Māori than for European children and young people. Admissions for viral and bacterial/non-viral/unspecified pneumonia were higher in winter and early spring in all DHBs.</td>
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<tr>
<td><strong>Asthma</strong></td>
<td>In New Zealand during 2000–2010, asthma admissions in children gradually increased, while admissions in young people were more static after 2004–2005. On average during 2000–2008, five children or young people each year died from asthma. During 2006–2010, admissions were relatively infrequent during infancy but increased rapidly thereafter, reaching a peak at 2 years of age. In contrast, asthma deaths were most frequent amongst those in their late teens and early twenties. Asthma admissions in children were also significantly higher for males, Pacific &gt; Māori &gt; Asian/Indian &gt; European children and those living in average-to-deprived (NZDep decile 3–10) areas. In contrast, asthma admissions in young people were significantly higher for females, Pacific and Māori &gt; European &gt; Asian/Indian young people, and those in average-to-more deprived (NZDep decile 4–10) areas.</td>
<td>In each of the South Island DHBs during 2006–2010, asthma admissions in children were significantly lower than the New Zealand rate. While admissions in young people were also lower than the New Zealand rate in all DHBs, only in Nelson Marlborough, Canterbury, Otago and Southland did these differences reach statistical significance. In Canterbury during 2000–2010, admissions were generally higher for Pacific &gt; Māori &gt; European &gt; Asian/Indian children and young people, while in Nelson Marlborough, Otago and Southland asthma admissions were generally higher for Māori than for European children and young people. Ethnic differences in South Canterbury and the West Coast were less consistent from year to year.</td>
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<tr>
<td>Bronchiectasis</td>
<td>In New Zealand, hospital admissions for children and young people with bronchiectasis increased during the early 2000s, reached a peak in 2004–05 and then declined, with six children or young people having bronchiectasis listed as their main underlying cause of death during 2000–2008. During 2006–2010, admissions increased rapidly after the first year of life, with rates remaining elevated during childhood, but dropping away amongst those in their teens and early twenties. Admissions were also significantly higher for Pacific &gt; Māori &gt; Asian/Indian &gt; European children and young people and those in average-to-more deprived (NZDep decile 3–10) areas.</td>
<td>In Nelson Marlborough, South Canterbury, Canterbury, the West Coast and Otago during 2000–2010, large year to year variations (as the result of small numbers) made trends in hospital admissions for children and young people with bronchiectasis difficult to interpret. In Southland however, rates increased, with the most rapid increases being seen between 2006–07 and 2008–09. During 2006–2010, admissions were significantly lower than the New Zealand rate in Nelson Marlborough, Canterbury and Otago, while in Southland admission rates were similar. Small numbers precluded a valid analysis in South Canterbury, while no admissions occurred in the West Coast during this period.</td>
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<td>Infectious Diseases</td>
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<td>Pertussis</td>
<td>In New Zealand during 2000–2010, hospital admissions for pertussis in infants fluctuated, with peaks occurring in 2000 and 2004. Admissions reached their lowest point in 2007, with rates increasing gradually thereafter. During the early-mid 2000s one infant each year died from pertussis, although no deaths occurred during 2006–2008. During 2006–2010, pertussis admissions were highest in infants &lt;1 year, with rates declining rapidly thereafter. Similarly, during 2004–2008, all pertussis deaths occurred in infants &lt;1 year. Admission rates were also significantly higher for Pacific and Māori &gt; European &gt; Asian/Indian infants and those from more deprived (NZDep decile 5–10) areas.</td>
<td>In the South Island during 2000–2010, there were large year to year fluctuations in hospital admissions for pertussis in infants aged &lt;1 year in all DHBs. During 2006–2010, admissions were lower than the New Zealand rate in Nelson Marlborough, Canterbury, Otago and Southland, although only in Canterbury did these differences reach statistical significance. Small numbers precluded a valid comparison in the West Coast and South Canterbury.</td>
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<td>Meningococcal Disease</td>
<td>In New Zealand, hospital admissions for meningococcal disease in children and young people declined rapidly during the early-mid 2000s, but became more static after 2006–07. Similar patterns were seen for mortality during 2000–2008, although the number of deaths in 2008 was higher than in the previous four years. Admissions and mortality were both highest for infants &lt;1 year. During 2006–2010, admissions were also significantly higher for males, Pacific and Māori&gt;European &gt;Asian/Indian children and young people and those from more deprived (NZDep decile 5–10) areas.</td>
<td>In the South Island during 2000–2010, hospital admissions for meningococcal disease in children and young people decreased in all DHBs. During 2006–2010, admissions were significantly lower than the New Zealand rate in Nelson Marlborough and Canterbury, while in Southland rates were significantly higher. In the West Coast, South Canterbury and Otago rates were not significantly different from the New Zealand rate.</td>
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<tr>
<td>Tuberculosis</td>
<td>In New Zealand, hospital admissions for tuberculosis in children and young people declined after 2002–03, although a small upswing in rates was evident in 2010. During 2006–2010, admissions were highest amongst those in their late teens and early twenties. Rates were also significantly higher for Asian/Indian, Pacific and Māori children and young people than for European children and young people and for those from more deprived (NZDep decile 5–10) areas.</td>
<td>In the South Island during 2000–2010, small numbers made trends in hospital admissions for tuberculosis in children and young people difficult to interpret. During 2006–2010, while admissions were lower than the New Zealand rate in Nelson Marlborough and Canterbury, in neither case did these differences reach statistical significance. Small numbers precluded a valid analysis in South Canterbury and Otago, while there were no admissions for tuberculosis in West Coast or Southland children and young people during this period.</td>
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</table>
### Indicator: Acute Rheumatic Fever and Rheumatic Heart Disease

In New Zealand, hospital admissions for children and young people with acute rheumatic fever declined gradually during the early-mid 2000s, but increased again after 2006–07. In contrast, admissions for those with rheumatic heart disease were relatively static during the mid-2000s, although a downswing in rates was evident in 2010. During 2006–2010, acute rheumatic fever and heart disease admissions were infrequent during infancy, but increased rapidly during childhood, to reach a peak at 11-12 years. Acute rheumatic fever admissions were significantly higher for males, Pacific > Māori > European and Asian/Indian children and young people and those from average-to-more deprived (NZDep decile 3–10) areas. Rheumatic heart disease admissions were significantly higher for females, Pacific > Māori > European > Asian/Indian children and young people and those from average-to-more deprived (NZDep decile 3–10) areas.

In Canterbury and Otago during 2006–2010, hospital admissions for children and young people with acute rheumatic fever and rheumatic heart disease were significantly lower than the New Zealand rate, while in the West Coast no admissions for either outcome occurred during this period, and in South Canterbury small numbers precluded a valid analysis. Rheumatic heart disease admissions in Nelson Marlborough and Southland were also significantly lower than the New Zealand rate, although small numbers precluded a valid analysis for acute rheumatic fever.

### Indicator: Serious Skin Infections

In New Zealand during 2000–2010, hospital admissions for serious skin infections increased in both children and young people. During 2006–2010, cellulitis and cutaneous abscesses/furuncles/carbuncles were the most frequent primary diagnoses in children admitted with serious skin infections, while in young people, cutaneous abscesses/furuncles/carbuncles and cellulitis were the main reasons for admission. Admissions were highest in infants <1 year, with a second, smaller peak evident amongst those in their late teens and early twenties. Admissions in children were significantly higher for males, Pacific > Māori > European and Asian/Indian children and those from average-to-more deprived (NZDep decile 3–10) areas. For young people, admissions were significantly higher for Pacific and Māori > European > Asian/Indian young people and those from average-to-more deprived (NZDep decile 3–10) areas.

In the South Island during 2000–2010, hospital admissions for serious skin infections in children and young people increased in all DHBs, with the exception of the West Coast, where admissions in young people declined, while admissions in children fluctuated. During 2006–2010, admissions in children were significantly lower than the New Zealand rate in all South Island DHBs. While admissions for young people were also lower than the New Zealand rate, only in Canterbury, South Canterbury, Otago and Southland did these differences reach statistical significance. In Canterbury, admissions were higher for Pacific > Māori and European > Asian/Indian children and young people, although in the West Coast and South Canterbury no consistent ethnic differences were seen. In Nelson Marlborough admissions were higher for Māori than for European children and young people throughout 2000–2010, while in Otago, admissions were higher from 2004–05 onwards, and in Southland rates were higher during 2008–10.

### Indicator: Gastroenteritis

In New Zealand, gastroenteritis admissions increased gradually during the early-mid 2000s but became static after 2006-07 in both children and young people. During 2002–2008, on average one child or young person per year died from gastroenteritis. During 2006–2010, admissions were highest in infants <1 year, with rates tapering off rapidly during the preschool years. Mortality was also highest in infants <1 year. Admissions in children were significantly higher for males, Pacific > Asian/Indian and European > Māori children and those from average-to-more deprived (NZDep decile 4–10) areas. In contrast, admissions in young people were significantly higher for females, European > Pacific and Māori > Asian/Indian young people, and those from average-to-more deprived (NZDep decile 4–10) areas.

During 2006–2010, gastroenteritis admissions in children were significantly lower than the New Zealand rate in all of the South Island DHBs except Southland, where admissions were significantly higher. Admissions in young people were significantly lower than the New Zealand rate in the West Coast, Canterbury, and Southland, while rates in Nelson Marlborough, South Canterbury and Otago were not significantly different from the New Zealand rate. In Canterbury, admissions were generally higher for European and Pacific > Māori and Asian/Indian children and young people, while in Nelson Marlborough, the West Coast, Otago and Southland rates were higher for European than for Māori children and young people. Ethnic differences in South Canterbury were less consistent. Admissions were also generally higher in spring and early summer in all DHBs.
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<th>South Island Distribution and Trends</th>
<th>Other Issues</th>
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<tr>
<td>Injuries in Children</td>
<td>In New Zealand during 2006–2010 falls, followed by inanimate mechanical forces were the leading causes of injury admissions in children, although transport injuries as a group also made a significant contribution. In contrast, accidental threats to breathing, followed by vehicle occupant injuries were the leading causes of childhood injury mortality during 2004–2008. During 2000–2008, mortality from land transport injuries and unintentional non-transport injuries in children both declined, while mortality from accidental threats to breathing increased. The majority of accidental threats to breathing deaths however, occurred in infants &lt;1 year, who were coded as dying as a result of suffocation/strangulation in bed, and thus the potential exists for some of the increases seen to have arisen from a diagnostic shift in the coding of SUDI.</td>
<td>In the South Island during 2006–2010 falls, followed by inanimate mechanical forces, were the leading causes of injury admissions in children in all DHBs, although transport injuries as a group also made a significant contribution. During 2004–2008, accidental threats to breathing, vehicle occupant, pedestrian and other transport injuries, and assaults were among the leading causes of injury mortality in South Island children.</td>
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<td>Oral Health</td>
<td>School Dental Service Data: In New Zealand during 2000–2010, the % of children caries-free at 5 years was higher in areas with fluoridated school water supplies, while mean DMFT scores at 12 years were lower. During 2003–2010, a higher % of European/Other children, than Māori or Pacific children were caries-free at 5 years, while mean DMFT scores at 12 years were higher for Māori and Pacific children than for European/Other children. Dental Caries Admissions: In New Zealand during 2006–2010, dental caries were the leading reasons for dental admissions in children 0–4 and 5–14 years. In contrast, embedded/impacted teeth were the leading reasons in young people 15–24 years. Dental caries admissions in children 0–4 years were significantly higher for males, Pacific &gt; Māori &gt; Asian/Indian &gt; European children and those from average-to-more deprived (NZDep decile 2–10) areas, while admissions for children 5–14 years were significantly higher for males, Māori and Pacific &gt; Asian/Indian and European children and those from average-to-more deprived (NZDep decile 3–10) areas. For young people 15–24 years, admissions were significantly higher for European and Māori &gt; Pacific &gt; Asian/Indian young people and those from more deprived (NZDep decile 5–10) areas.</td>
<td>School Dental Service Data: In the Southern DHB during 2010, 49.5% of 5 year olds examined by the School Dental Service had access to fluoridated School water, as compared to 0.6% in Canterbury and 0% in Nelson Marlborough, South Canterbury and the West Coast. In all South Island DHBs during 2003–2009, a higher proportion of European/Other children than Māori children were caries-free at 5 years, while mean DMFT scores at 12 years were higher for Māori, than for European/Other children. In Nelson Marlborough during 2009, 80.4% of eligible adolescents (aged ≈13–18 years) were reported as accessing publicly funded dental services, as compared to 76.5% in the West Coast, 67.1% in Canterbury, 88.1% in South Canterbury, 83.7% in Otago and 73.7% in Southland. Dental Caries Admissions: During 2006–2010, dental caries was the leading reason for a dental admission in children aged 0–4 and 5–14 years in all South Island DHBs, while embedded/impacted teeth or dental caries were the leading reasons for admissions in young people 15–24 years. In Southland, hospital admissions for dental caries in children 0–4 and 5–14 years and young people 15–24 years were significantly higher than the New Zealand rate. In all of the other South Island DHBs however, no consistent patterns were seen, with admissions in some age groups being significantly higher than the New Zealand rate, while in others rates were similar or significantly lower.</td>
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<td>Indicator</td>
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<td>South Island Distribution and Trends</td>
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| Permanent Hearing Loss                        | *Deafness Notification Database:* In New Zealand during 2010, 120 notifications were received by the Deafness Notification Database for children with bilateral hearing losses of >26dB in the better ear and 60 notifications were received for children with unilateral losses. During 2010, 15% of children notified to the DND had profound losses, 6% had severe losses, 37% had moderate losses and 42% had mild losses. When unilateral, acquired and overseas born cases were excluded, the average age at confirmation of a hearing loss in 2010 was 51 months, although the average age of suspicion was much earlier (31 months).  
*Newborn Hearing Screening:* In New Zealand during 1 April 2010–30 September 2010, the caregivers of 77.8% of eligible babies consented to newborn hearing screening, although this proportion varied by DHB. Of those completing screening 94.0% did so within one month, with 2.4% of babies completing screening receiving an audiology referral. Of those babies who passed screening, a further 7.4% were deemed to have risk factors for delayed onset/progressive hearing loss which warranted follow up over time. | *Deafness Notification Database:* In the South Island DHBs during 2010, a total of 49 children were notified to the Deafness Notification Database.                                                                                                           
*Newborn Hearing Screening:* In the South Island DHBs (excluding Southern DHB where hearing screening commenced part way through the period), newborn hearing screening consent rates ranged from 60.8% to 98.7%, with the proportion of babies being referred for audiology assessment ranging from 0% to 2.1% and the proportion being targeted for follow up ranging from 4.4% to 10.4%. |
| Issues More Common in Young People            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Total and Avoidable Morbidity and Mortality   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Most Frequent Causes of Hospital Admissions and Mortality | In New Zealand during 2006–2010, issues associated with pregnancy, delivery and the postnatal period were the leading reasons for hospital admission in young people. In terms of other admission types, injury/poisoning and abdominal/pelvic pain were the leading reasons for acute admissions, injury/poisoning and neoplasms/chemotherapy/radiotherapy the leading reasons for arranged admissions, and musculoskeletal and gastrointestinal procedures the leading reasons for waiting list admissions. During 2004–2008, intentional self-harm, vehicle occupant transport injuries and neoplasms were the leading causes of mortality in young people aged 15–24 years. | In the South Island during 2006–2010, issues associated with pregnancy, delivery and the postnatal period were the leading reasons for hospital admissions in young people in all DHBs. In terms of other admission types, injury/poisoning, mental health issues and abdominal/pelvic pain were the leading reasons for acute admissions. Injury/poisoning, neoplasm/chemotherapy/radiotherapy, mental health issues, dialysis and dental conditions were frequent reasons for arranged admissions, while gastrointestinal, musculoskeletal, and skin procedures, tonsillectomy +/- adenoidectomy and dental procedures were frequent reasons for waiting list admissions. During 2004–2008, intentional self-harm and vehicle occupant transport injuries were the leading causes of mortality in young people. |
| Other Issues                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Injuries in Young People                      | In New Zealand during 2006–2010, inanimate mechanical forces and falls were the leading causes of injury admissions in young people, although as a group transport injuries also made a significant contribution. In contrast, during 2004–2008, intentional self-harm and vehicle occupant injuries were the leading causes of injury related mortality.                                                | In the South Island during 2006–2010, inanimate mechanical forces and falls were also the leading causes of injury admissions in young people, although as a group transport injuries again made a significant contribution. In contrast, during 2004–2008, intentional self-harm and vehicle occupant injuries were the leading causes of injury related mortality. |

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### Indicator: Teenage Pregnancy

In New Zealand, teenage live births declined during the late 1990s and early 2000s, to reach their lowest point in 2002. Birth rates then gradually increased again, reaching a peak of 32.4 per 1,000 in 2008. In contrast, teenage terminations increased during the late 1990s and early 2000s, reached a plateau during 2002–2007, and then declined, with teenage live birth and termination rates being roughly equivalent during 2002–2004.

During 2006–2010, teenage live birth rates were significantly higher for Māori > Pacific > European > Asian/Indian women and those from average-to-more deprived (NZDep decile 2–10) areas. Higher teenage live birth rates for Māori and Pacific women however, must be seen in the context of higher overall fertility rates (at all ages) for Māori and Pacific women.

In Southland during 2006–2010, teenage birth rates were significantly higher than the New Zealand rate, while in Nelson Marlborough, Canterbury, and Otago rates were significantly lower. Rates in the West Coast and South Canterbury were not significantly different from the New Zealand rate. In Canterbury, teenage birth rates were higher for Māori > Pacific > European > Asian/Indian women, while in the remaining South Island DHBs, rates were higher for Māori than for European women.

### Indicator: Terminations of Pregnancy

In New Zealand during 1980–2010, terminations of pregnancy were highest in women aged 20-24 years, followed by those 25-29 years and 15-19 years. Termination rates increased during the 1980s and 1990s, with rates reaching a peak for most age groups in the early 2000s and then beginning to gradually decline. During 2006–2010, terminations were higher for Pacific and Māori > European > Asian teenagers, while amongst those 20–24 years, terminations were higher for Pacific > Māori > Asian and European women.

During 2009, a total of 3,550 terminations of pregnancy were recorded as occurring amongst women living in the South Island's Regional Council catchments.

### The Children’s Social Health Monitor

#### Economic Indicators

**Gross Domestic Product (GDP)**

In New Zealand, GDP decreased for five consecutive quarters from March 2008–March 2009, before increasing again, for five consecutive quarters, from June 2009–June 2010. GDP then briefly declined by 0.1% in the September quarter of 2010, before increasing again, by 0.6% in the December 2010 quarter, by 0.9% in the March 2011 quarter and by 0.1% in the June 2011 quarter. Economic activity for the year ending June 2011 increased by 1.5%.

In New Zealand during 1984–2010 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. Additional falls in income inequality were seen in 2010, with Perry attributing this to a fall in higher incomes, coupled with small gains for lower income households.
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<td>Child Poverty and Living</td>
<td>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 or more children vs. 1–2 children), sole parent households and households where the adults were either workless, or where none worked full time.</td>
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<td>Living Standards</td>
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<tr>
<td>Unemployment Rates</td>
<td>In the quarter ending September 2011, seasonally adjusted unemployment rates rose to 6.6%, while seasonally adjusted unemployment numbers increased from 154,000 to 157,000. During September 1987–2011, unemployment rates were higher for younger people (15–19 years &gt; 20–24 years &gt; 25–29 years &gt; 35–39 years and 45–49 years) and those with no qualifications &gt; school qualifications, or post school but no school qualifications &gt; both post school and school qualifications, although there were no consistent gender differences for young people 15–24 years. During 2007(Q4)–2011(Q3) unemployment rates were higher for Māori and Pacific &gt; Asian/Indian &gt; European people. Unemployment rates increased for all ethnic groups during 2008 and 2009, but became more static during 2010–2011(Q3) for Māori, Pacific and European people. Rates for Asian/Indian people declined between 2010(Q2) and 2011(Q2).</td>
<td>In the South Island during 2005(Q1)–2011(Q3) unemployment trends were similar to those occurring nationally. Rates fluctuated during 2005–2008, but began to rise thereafter. Rates were lower than the New Zealand rate in Canterbury, Tasman/Nelson/Marlborough/West Coast, and Southland throughout this period, while in Otago rates were lower during 2008–2011(Q3).</td>
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<td>Children Reliant on</td>
<td>In New Zealand, the proportion of children aged 0–18 years who were reliant on a benefit, or benefit recipient, fell from 24.9% in April 2000 to 17.5% in April 2008, before increasing again to 20.4% in April 2011. A large proportion of the initial decline was due to a fall in the number of children reliant on unemployment benefit recipients (from 4.5% of children in 2000 to 0.5% in April 2008, before increasing to 1.4% in April 2011). The proportion of children reliant on DPB recipients also fell, from 17.2% of children in April 2000, to 13.8% in April 2008, before increasing to 15.8% in April 2011.</td>
<td>At the end of April 2011, there were 36,095 children aged 0–18 years who were reliant on a benefit or benefit recipient and who received their benefits from Service Centres in the Nelson Marlborough (n=5,535), South Canterbury (n=1,965), Canterbury (n=18,177), West Coast (n=1,159), Otago (n=5,198) and Southland (n=4,061) DHB catchments. While the majority of these children were reliant on DPB recipients, increases in the number reliant on unemployment benefit recipients were evident between April 2008 and April 2011.</td>
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<td>Benefit Recipients</td>
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<tr>
<td><strong>Hospital Admissions and Mortality with a Social Gradient</strong></td>
<td>In New Zealand during 2006–2010, gastroenteritis, bronchiolitis, and asthma were the leading causes of hospitalisations for medical conditions with a social gradient, while falls, followed by inanimate mechanical forces were the leading causes of injury admissions. During 2004–2008 SUDI was the leading cause of mortality with a social gradient. Vehicle occupant deaths, followed by pedestrian injuries and drowning, made the largest contribution to injury related deaths, while bacterial/non-viral pneumonia was the leading cause from medical conditions. Medical admissions with a social gradient increased during the early 2000s, reached peak in 2002 and then declined, with an upswing in rates again being evident during 2007–2009. In contrast, injury admissions declined throughout 2000–2010. During this period, hospitalisations for medical conditions were higher for Pacific &gt; Māori &gt; European and Asian/Indian children. For Pacific children, rates increased during the early 2000s, reached a peak in 2003 and then declined. An upswing in rates was again evident during 2007–2009, with rates then declining during 2010. For Māori children, rates were static during the mid-2000s, but then increased during 2007–2009, while for Asian/Indian and European children rates were static during the mid-2000s but increased after 2007. Injury admissions with a social gradient were also higher for Pacific and Māori &gt; European &gt; Asian/Indian children. Admission rates for European and Māori children declined during 2000–2010, while rates for Pacific and Asian/Indian children were more static.</td>
<td>In the South Island during 2006–2010, hospital admissions for medical conditions with a social gradient were significantly lower than the New Zealand rate in all DHBs. While injury admissions with a social gradient were also significantly lower than the New Zealand rate in Nelson Marlborough and Otago, rates in South Canterbury, the West Coast, Canterbury and Southland were similar to the New Zealand rate. Asthma, gastroenteritis and upper respiratory tract infections were the most frequent reasons for hospitalisations for medical conditions with a social gradient in the South Island DHBs, although viral infections of unspecified site and bronchiolitis also made a contribution in some DHBs. Infectious and respiratory diseases collectively were responsible for the majority of medical admissions during this period. Falls and inanimate mechanical forces were the most frequent reasons for injury admissions with a social gradient in all DHBs, although transport injuries as a group also made a significant contribution.</td>
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<tr>
<td><strong>Injuries Arising from the Assault, Neglect and Maltreatment of Children</strong></td>
<td>In New Zealand during 2006–2010, hospital admissions for injuries sustained as the result of the assault, neglect or maltreatment of children exhibited a U-shaped distribution with age, with rates being highest for infants &lt; 1 year, and those &gt; 11 years of age. In contrast, mortality was highest for infants &lt; 1 year. While the gender balance for admissions 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 &gt; Pacific &gt; European &gt; Asian/Indian children, and those in average-to-more deprived (NZDep decile 2–10) areas. In Canterbury during 2006–2010, hospital admissions for injuries arising from the assault, neglect or maltreatment of children were significantly higher than the New Zealand rate, while in the remaining South Island DHBs rates were not significantly different from the New Zealand rate. During 2000–2008, a total of 14 South Island children died as the result of injuries arising from assault, neglect or maltreatment.</td>
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