

CHILD POVERTY MONITOR

2018 TECHNICAL REPORT



New Zealand Child and Youth
Epidemiology Service

While every endeavour has been made to use accurate data in this report, there are currently variations in the way data are collected by various 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 these data in the production of this report, or for any losses arising as a consequence thereof.

ISSN 2357-2078

2018

New Zealand Child and Youth Epidemiology Service (NZCYES)

University of Otago

Dunedin

www.otago.ac.nz/nzcyes

[@NZCYES](#)

Suggested citation:

Duncanson M, Oben G, Wicken A, Richardson G, Adams J, and Pierson M. (2018) Child Poverty Monitor 2018 Technical Report. Dunedin. NZ Child and Youth Epidemiology Service, University of Otago

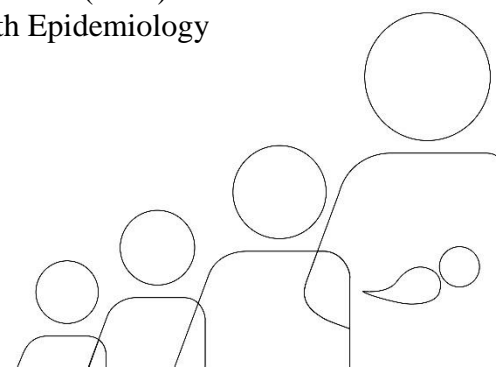


TABLE OF CONTENTS

Table of contents.....	i
List of figures.....	ii
List of tables	iv
Introduction.....	1
Key Points.....	3
Child poverty related factors	3
Social and economic environment	4
Child poverty related indicators.....	5
Hospitalisations	7
Deaths	13
Infant deaths	14
Food security	19
Physical punishment	21
Assault, neglect or maltreatment	23
Care and protection.....	27
Education	33
Social and economic environment	37
Economic growth and individual earnings	39
Income inequality	41
Unemployment and underutilisation.....	43
Housing affordability	46
Children reliant on recipients of a benefit	51
Appendices.....	53
Appendix 1: ICD-10-AM codes	54
Appendix 2: New Zealand index of deprivation.....	55
Appendix 3: Data sources	56
Appendix 4: Statistical methods	60
References	62

LIST OF FIGURES

Figure 1. All-cause hospitalisation rates, by category, 0–14 year olds (excluding neonates), New Zealand 1991–2017	8
Figure 2. All-cause hospitalisation rates, 0–14 year olds, by category and deprivation score New Zealand 2000–2017	8
Figure 3. All-cause hospitalisation rates, 0–14 year olds, by category and ethnicity New Zealand 2000–2017... 9	
Figure 4. All-cause hospitalisations, by demographic factor, 0–14 year olds New Zealand 2013–2017.....	10
Figure 5. Hospitalisations for select respiratory diseases 0–14 year olds, New Zealand 2000–2017	11
Figure 6. All-cause mortality rate, 0–14 year olds (excluding neonates) New Zealand 1990–2015.....	14
Figure 7. All-cause mortality, by demographic factor, 0–14 year olds (excluding neonates) New Zealand 2011–2015	14
Figure 8. International comparison of infant mortality rates, OECD countries, 2015	15
Figure 9. Infant mortality rates by ethnicity, New Zealand, 1990–2015.....	16
Figure 10. Infant mortality, comparison by demographic factors, New Zealand 2011–2015	17
Figure 11. Sudden unexpected death in infancy (SUDI) rates in New Zealand, total (1990–2015) and by prioritised ethnicity (1996–2015)	18
Figure 12. Sudden unexpected death in infancy, comparison by demographic factor New Zealand 2011–2015 .	18
Figure 13. Children in households experiencing moderate or severe food insecurity, by demographic factor, 2015/16* NZ Health Survey	20
Figure 14. Physical punishment, by survey year, 0–14 year olds New Zealand 2006/07–2016/17	22
Figure 15. Physical punishment, by demographic factor, 0–14 year olds New Zealand 2016/17.....	22
Figure 16. Physical punishment, by demographic factor, 0–14 year olds New Zealand 2016/17.....	22
Figure 17. Deaths due to injuries arising from assault, neglect, or maltreatment, 0–14 year olds, New Zealand 2000–2015.....	24
Figure 18. Hospitalisations due to injuries arising from assault, neglect, or maltreatment, 0–14 year olds, New Zealand 1990–2017	24
Figure 19. Hospitalisations due to injuries arising from assault, neglect, or maltreatment of 0–14 year olds by age and gender, New Zealand 2013–2017	25
Figure 20. Hospitalisations of 0–14 year olds for injuries arising from assault, neglect, or maltreatment, by demographic factor, New Zealand 2013–2017	26
Figure 21. Care and protection notifications and proportion requiring further action, New Zealand 2004–2017 28	
Figure 22. Distinct children with care and protection notifications requiring further action, by ethnicity, New Zealand 2004–2017	28
Figure 23. Notifications to Oranga Tamariki, by notifier New Zealand 2017	29
Figure 24. Referrer reports of concern requiring further action, by notifier, New Zealand 2017	29
Figure 25. Investigation assessment outcomes or substantiated abuse findings for children and young people notified to Oranga Tamariki, by year, 2004–2017.....	30
Figure 26. Children and young people in the custody of the Oranga Tamariki Chief Executive, by demographic factor 2017	31
Figure 27. Children and young people in the custody of the Oranga Tamariki Chief Executive, by age group New Zealand 2013–2015	31
Figure 28. Highest educational attainment of school leavers, New Zealand 2009–2017.....	34
Figure 29. Educational attainment of school leavers by ethnicity, New Zealand 2009–2017.....	34
Figure 30. Educational attainment of school leavers by school socio-economic quintile, New Zealand 2017.....	35
Figure 31. Real gross domestic product per capita and real average ordinary time hourly earnings, New Zealand March 1975 to June 2018	39
Figure 32. Real equivalised household incomes after housing costs, by income decile New Zealand 1982–2017	42
Figure 33. Ratio of 80th percentile to 20th percentile (P80:P20 ratio) of equivalised disposable housing income before and after housing costs, New Zealand 1982–2017	42
Figure 34. Seasonally adjusted quarterly unemployment numbers and rates, New Zealand March 1986 to June 2017	44
Figure 35. Unemployment rates by age (selected age groups), New Zealand 1987–2018.....	44
Figure 36. Quarterly unemployment rates by ethnicity, New Zealand March 2008–June 2018.....	44
Figure 37. Quarterly underutilisation by extended labour force status, New Zealand March 2004 to June 2018. 45	
Figure 38. Households spending more than 30% of their income on housing costs by income quintile, New Zealand 1988–2017	47

Figure 39. Households spending more than 40% of their income on housing costs by selected income quintile, New Zealand 1988–2017	47
Figure 40. Households spending more than 50% of their income on housing costs by selected income quintile, New Zealand 1988–2017	48
Figure 41. Individuals in households spending more than 30% of their income on housing costs (high OTI) by selected age groups, New Zealand 1988–2017	49
Figure 42. Children aged 0–17 years who were reliant on a recipient of a benefit recipient, New Zealand as at end of June 2000–2018	52
Figure 43. Children aged 0–17 years who were reliant on a recipient of a benefit, by age and benefit type, New Zealand as at end of June 2018	52

LIST OF TABLES

Table 1.	Hospitalisations for medical causes, by selected primary diagnosis, 0–14 year olds (excluding neonates), New Zealand 2013–2017.....	10
Table 2.	Deaths in 0–14 year olds, by cause of death, New Zealand 2011–2015.....	14
Table 3.	Infant mortality by main underlying cause of death, New Zealand 2011–2015.....	16
Table 4.	Hospitalisations for injuries arising from assault, neglect, or maltreatment, by nature of injury, 0–14 year olds New Zealand 2013–2017.....	25
Table 5.	Housing costs as a proportion of income, accommodation supplement recipients, by household type and selected NZHES survey year, New Zealand.....	48
Table 6.	Variables used in the NZ index of deprivation 2013 (NZDep2013).....	55
Table 7.	Number of survey participants and coverage, New Zealand Health Survey.....	58

INTRODUCTION

Each and every child has the right to grow up to be healthy, strong, well-educated and capable of contributing to their community and wider society, as demonstrated in every international agreement to recognise and protect children's rights.¹ Poverty interferes with the capacity of children to enjoy this right. For children in rich countries, relative poverty also perpetuates cycles of disadvantage and inequity so that some children miss out on the opportunities to be educated, healthy or nourished compared with their peers.¹ New Zealand ratified the United Nations Convention on the Rights of the Child 25 years ago, recognizing, among other things, the right of every child to a standard of living adequate for the child's physical, mental, spiritual, moral and social development. New Zealand is also a signatory to the United Nations Agenda 2030 for sustainable development that came into effect in January 2016.² The sustainable development goals (SDGs) apply to all countries and recognise that ensuring healthy lives and promoting wellbeing at all ages is essential to sustainable development.²

The 2018 Child Poverty Monitor Technical Report provides the sixth consecutive annual report on implications of child poverty in New Zealand, and progress toward achieving selected SDGs that are relevant to children.^{2,3} The first group of indicators tracks progress toward goals to ensure healthy lives and promote wellbeing, ensure inclusive and equitable quality education for all, and promote peaceful and inclusive societies. The second group of indicators provides information about the context in which the specific child-related issues arise, and is particularly relevant to goals to promote full and productive employment and decent work for all, and to reduce inequality within and between countries.³

Previous reports in this series have featured data on children in households experiencing income poverty and material hardship. In 2018, issues relating to sample size led the Ministry of Social Development, with the support of StatsNZ, to decide not to report on low-income and material hardship rates for children.⁴ However, StatsNZ will be producing a Child Poverty Report in early 2019 which will use some data from the 2018 Household Economic Survey (HES).⁴ The Government has resourced StatsNZ to use enhanced statistical methods in reporting on child poverty from 2019, and the Child Poverty Monitor partners look forward to being able to use the upcoming data. While we acknowledge this gap in the 2018 Child Poverty Monitor, we are pleased to be able to provide greater focus on some of the ways child poverty affects children

The Child Poverty Monitor comprises a partnership between the Office of the Children's Commissioner, the New Zealand Child and Youth Epidemiology Service (NZCYES) at the University of Otago, and the J R McKenzie Trust. The Child Poverty Monitor partners choose indicators each year, taking into consideration the recommendations of the Expert Advisory Group on Solutions to Child Poverty and the indicators previously included in the Children's Social Health Monitor.^{5,6} These indicators contribute to a broad picture of the scale and impact of poverty on children's lives in Aotearoa New Zealand.

KEY POINTS

Child poverty related factors

Hospitalisations

- From 2013–2017, the overall hospitalisation rate for medical conditions of under-15 year olds living in areas with the highest NZDep2013 scores (quintile 5, most deprived) was twice the rate for those living in areas with the lowest NZDep2013 scores (quintile 1, least deprived scores)
- In this same time period the hospitalisation rate for respiratory conditions of under-15 year olds living in areas with the highest NZDep2013 scores (quintile 5, most deprived) was more than three times the rate for those living in areas with the lowest NZDep2013 scores (quintile 1, least deprived scores)

Deaths

- From 2011 to 2015 the mortality rate for under-15 year olds living in neighbourhoods with the highest NZDep2013 scores (most deprived, quintile 5) was almost four times higher than mortality rate in quintile 1
- Infant mortality rates in New Zealand are higher than the OECD average. In 2015, the infant mortality rate for New Zealand was more than twice the rate in Slovenia, Iceland and Japan
- From 1996 to 2014, there was a statistically significant fall in the sudden unexpected death in infancy (SUDI) rate. Despite a fall in SUDI rates for Māori infants, significant inequity persists with higher SUDI rates for Māori and Pacific infants compared to the rate for European/Other infants

Food security

- In 2015/16 around one in five (19%) of under-15 year olds lived in households that experienced moderate-to-severe food insecurity. This represents between 161,000 and 188,000 children
- In the combined years 2013/14 and 2015/16 under-15 year olds living in neighbourhoods with the highest NZDep2013 scores (quintile 5, most deprived) were four times as likely to live in food insecure households as under-15 year olds living in neighbourhoods with the lowest NZDep2013 scores (quintile 1, least deprived scores), after adjusting for the child's age, gender and ethnicity

Physical punishment

- The percentage of 0–14 year olds who received physical punishment for misbehaviour in the previous four weeks, as reported by parents, fell from 10.4% in 2006/07 to 5.4% in 2016/17

Assault neglect and maltreatment

- Thirty-four children aged 0–14 years died from injuries arising from assault, neglect, or maltreatment in the five years from 2011–2015
- From 2013–2017 there were 677 hospitalisations of 0–14 years olds for injuries arising from assault, neglect, or maltreatment. The highest hospitalisation rate occurred in the first year of life
- The hospitalisation rate for injuries arising from assault, neglect, or maltreatment was 10 times higher for children living in areas with the highest NZDep2013 scores (quintile 5, most deprived) compared with children living in areas with the lowest NZDep2013 scores (quintile 1, least deprived scores)

Education

- The proportion of school-leavers who achieved NCEA level 2 or above increased from 68% in 2009 to 81% in 2017. The proportion of students leaving school with qualifications below NCEA level 1 fell from 19% in 2009 to 10% in 2017
- Ethnic and socio-economic disparities in educational attainment persist despite improvements in all ethnic groups and in schools in areas with different levels of socio-economic deprivation

Social and economic environment

Income inequality

- The incomes of households in higher income deciles rose more quickly than incomes for households in lower deciles, both in proportion and in absolute terms, between 1994 and 2017 which led to a greater gap between those on “higher” and those on “lower” incomes

Housing

- In 2017, 39% of households in the lowest income quintile were spending more than 30% of their income on housing costs compared with 14% of households in the highest income quintile
- Almost all accommodation supplement recipients were paying more than 30% of their income on housing costs and over half of accommodation supplement recipients in rental accommodation were paying over 50% of their income on housing costs
- Between 1988 and 2017 there was an increase in the percentage of individuals living in households spending more than 30% of their income on housing costs across all age groups
- Individuals aged 0–17 years are more likely than 45–64 year olds and older New Zealanders to live in households with high housing costs

Employment

- In June 2018, there were 124,000 New Zealanders who were officially unemployed (4.5%). The unemployment rate was highest for young people aged 15–19 years. In June 2018, 8.3% of 15–19 year olds were not in employment, education or training

Children dependent on benefit recipients

- There were over 169,000 children aged 0–17 years dependent on a benefit recipient in June 2018. Just over two-thirds of these children and young people were reliant on a recipient of sole parent support, one-fifth were reliant on recipients of jobseeker support with the remainder reliant on recipients of supported living payments or other benefits

CHILD POVERTY RELATED INDICATORS

Adequate household financial resources are important for children's positive health, educational and social-behavioural outcomes.⁷ Health effects of poverty arise from complex interactions between social and environmental factors such as education, poor quality housing and household crowding.⁸ The health indicators in this section include hospitalisations for medical conditions and injuries, deaths of all under-15 year olds and of infants, access to healthy nutritious food and indicators of child safety. Participation in education is a fundamental right of every child. Socio-economic background has a significant effect on educational outcomes in New Zealand and underpins observed variation in student performance.⁹

HOSPITALISATIONS

The different social, demographic or economic circumstances in which children live, learn and develop drive inequities in health outcomes that are unjust, unnecessary and preventable.¹⁰ The health of children in a population is particularly susceptible to changes in the social and economic environment.¹¹ Despite their increased clinical need, many children who experience inequities in health outcomes also have their access to health care, including specialist care, limited by factors such as geographic distance from services, cultural barriers and socio-economic status.¹² The concept of a social gradient reflects the observation that health is progressively worse the greater the degree of social disadvantage experienced by an individual or population group, and conversely health is progressively better with increasing social advantage.¹³

The NZ index of deprivation (NZDep) is a small area index used as a proxy for socio-economic status in health analysis. Deprivation is considered to be a state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belongs.¹⁴ It can include both material deprivation (involving goods, services, resources, amenities, and physical environment) and social deprivation (involving roles, relationships, functions, customs, rights and responsibilities of membership of society). The latest index, NZDep2013, combines nine variables from the 2013 census to reflect eight domains of material and social deprivation which are combined to give a score representing the average degree of deprivation experienced by people living in that area.¹⁵

Data about hospitalisations of under-15 year olds from the National Minimum Dataset are presented in this section, analysed by NZDep2013 index of deprivation score.

Data sources and methods

Indicator

Hospitalisations for medical conditions and injuries in 0–14 year olds

Data sources

Numerator: National Minimum Dataset

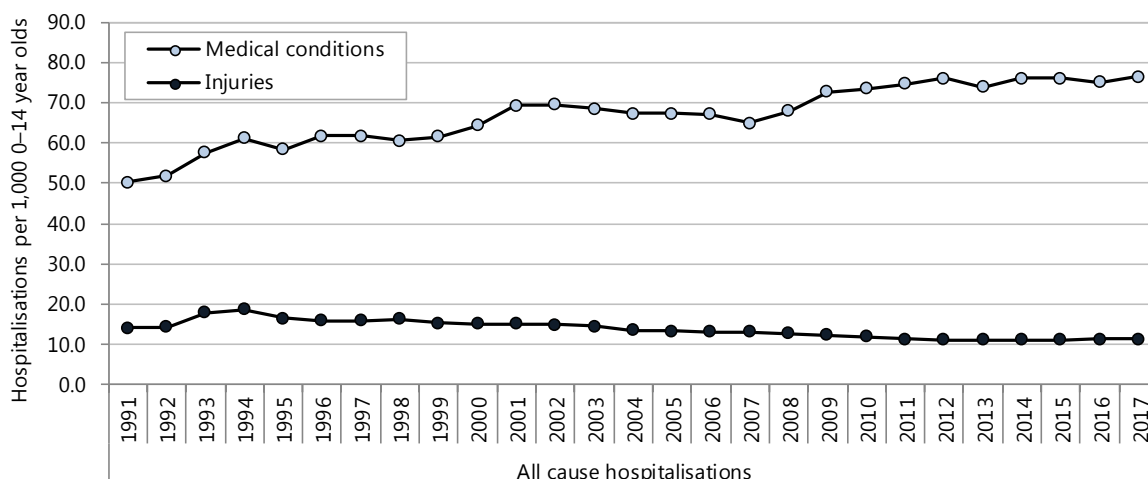
Denominator: NZCYES Estimated Resident Collection (ERP), with intercensal extrapolation

Definitions

Acute and arranged hospitalisations (excluding neonates and waiting list cases) with a medical condition as the primary diagnosis and non-emergency hospitalisations with a primary diagnosis of injury (excluding neonates). Arranged hospitalisations are admissions within 7 days of referral.

Hospitalisation rates of under-15 year olds for medical causes have risen from 50.2 hospitalisations per 1,000 age-specific population in 1991 to 76.4 hospitalisations per 1,000 age-specific population in 2017. Hospitalisation rates for injury in this age group rose between 1991 and 1994 (from 14.1 to 18.6 hospitalisations per 1,000 age-specific population) and have since fallen to 11.3 hospitalisations per 1,000 age-specific population in 2017 (Figure 1).

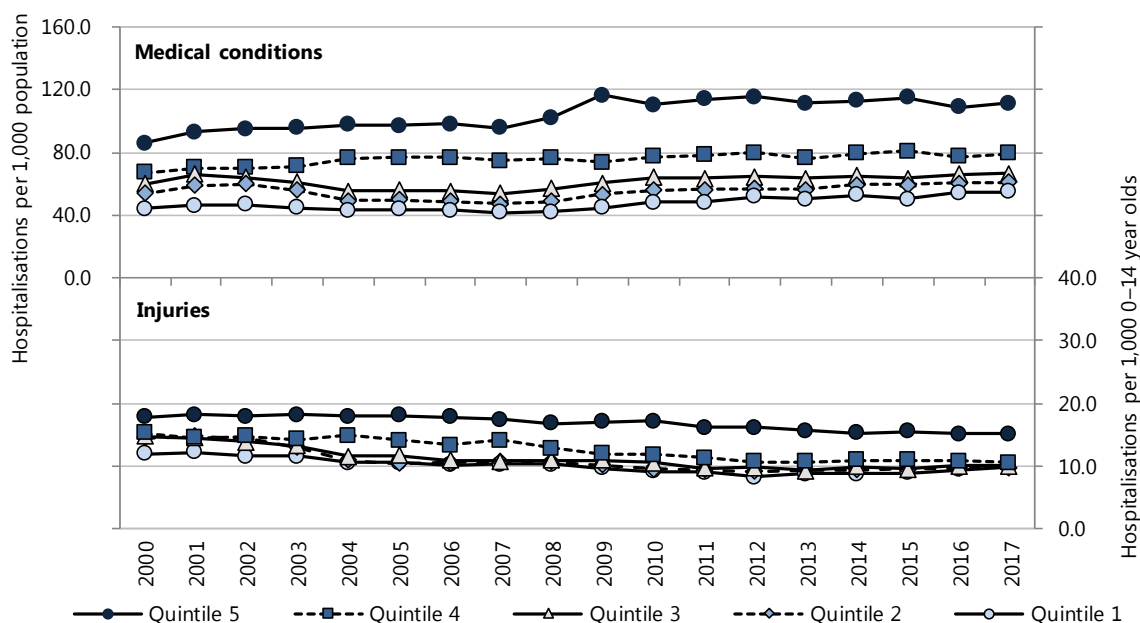
Figure 1. All-cause hospitalisation rates, by category, 0–14 year olds (excluding neonates), New Zealand 1991–2017



Numerator: National Minimum Dataset (excludes neonates), Denominator: NZCYES estimated resident population;
 Medical conditions: acute and arranged admissions, Injuries: excludes ED and waiting list cases

From 2000–2017 there was a social gradient in all-cause hospitalisation rates (medical causes and injury), with hospitalisation rates for medical causes and for injury for under-15 year olds increasing with increasing NZDep2013 scores. Between 2007 and 2009 hospitalisation rates for medical conditions increased markedly for under-15 year olds living in areas with the highest deprivation scores (quintile 5, greatest deprivation), this increase was disproportionately greater than the increase in medical condition hospitalisation rates for under-15 year olds living in areas with lower deprivation scores (Figure 2). The overall decline in injury hospitalisation rates for under-15 year olds was less marked for those living in areas with the highest NZDep2013 scores (quintile 5) compared with other quintiles (Figure 2).

Figure 2. All-cause hospitalisation rates, 0–14 year olds, by category and deprivation score New Zealand 2000–2017

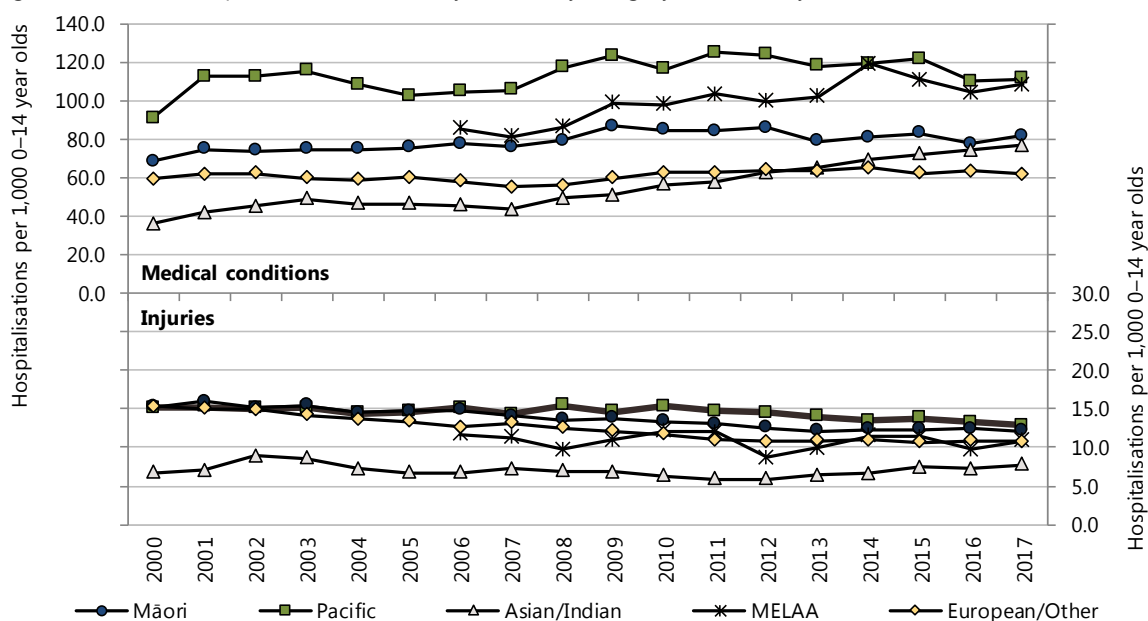


Numerator: National Minimum Dataset, Denominator: NZCYES Estimated Resident Population.
 Medical conditions: acute and arranged admissions, Injuries: excludes ED and waiting list cases

From 2000–2017 hospitalisation rates have been consistently highest for Pacific under-15 year olds compared with other ethnic groups, particularly for medical conditions. From 2014–2017 the medical hospitalisation rates for Middle Eastern, Latin American and African (MELAA) under-15 year olds were similar to the rates for their Pacific peers. Hospitalisation

rates for medical conditions have increased in all ethnic groups in this time period; the increase has been less marked for European/Other under-15 year olds than for other ethnic groups. (Figure 3).

Figure 3. All-cause hospitalisation rates, 0–14 year olds, by category and ethnicity New Zealand 2000–2017



Numerator: National Minimum Dataset (excludes neonates), Denominator: NZCYES Estimated Resident Population.
 Medical conditions: acute and arranged admissions, Injuries: excludes ED and waiting list cases

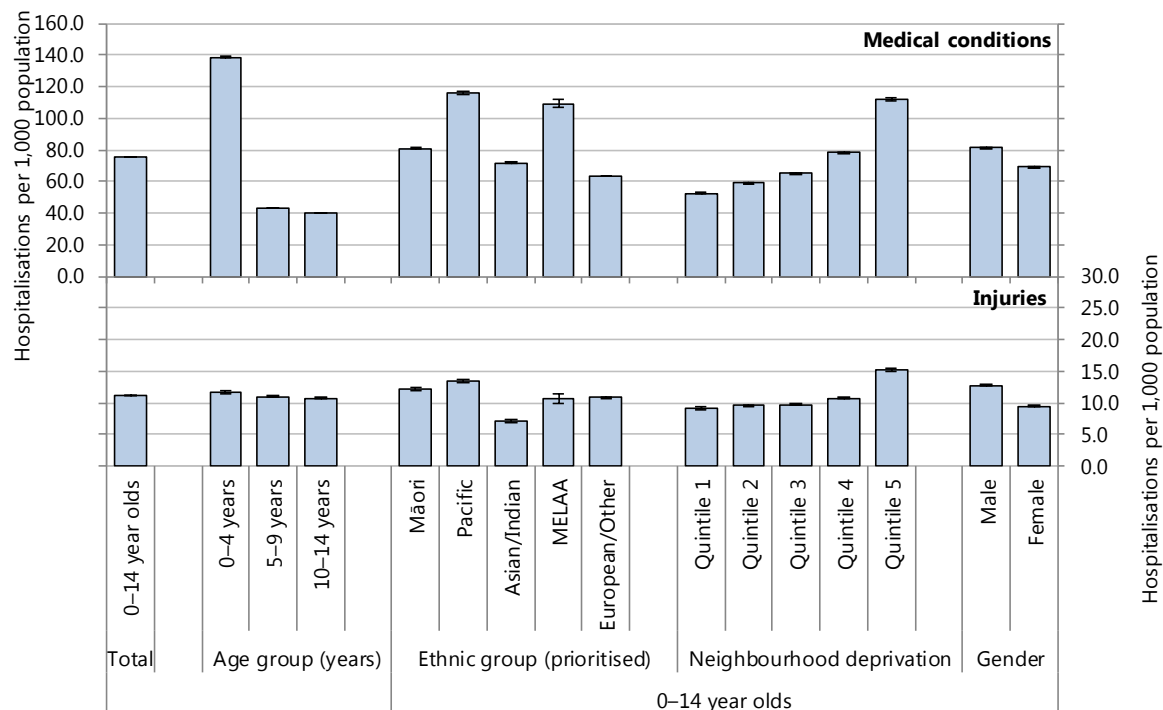
In the five years from 2013–2017 there were 345,141 hospitalisations of 192,554 under-15 year olds for a medical condition and 50,806 hospitalisations of 45,903 individuals in this age group as the result of an injury (intentional or unintentional).

As shown in Figure 4, hospitalisation rates for medical conditions were highest for 0–4 year olds compared with older children. Hospitalisation rates for medical conditions in this five-year period were significantly higher for Māori and for Pacific under-15 year olds compared with other ethnic groups. Males had higher hospitalisation rates for medical conditions than females. Although the magnitude of differences between population groups was not so marked for injury-related hospitalisation rates, rates were significantly higher for under-five year olds compared with their older peers, for Māori and for Pacific compared with other ethnic groups, and for males compared with females. Injury-related hospitalisation rates were significantly higher for under-15 year olds living in areas with the highest deprivation scores (greatest deprivation, quintile 5) compared with those living in areas with lower deprivation scores (quintiles 1–4). This univariate analysis is not able to quantify the independent effect of each demographic factor.

Overall, from 2013–2017, the hospitalisation rate for medical conditions of under-15 year olds living in areas with the highest NZDep2013 scores (greatest deprivation, quintile 5) was over twice the rate for those living in areas with the lowest NZDep2013 scores (quintile 1) (rate ratio (RR) 2.13, 95% CI 2.11–2.15).

The diagnostic categories with the highest number of hospitalisations for medical conditions were respiratory system diseases and infectious diseases. Table 1 presents the most frequent primary diagnoses within these diagnostic categories from 2013–2017. The hospitalisation rate for respiratory system diseases in under-15 year olds living in areas with the highest NZDep2013 scores (greatest deprivation, quintile 5) was three times higher than the rate for those living in areas with the lowest NZDep2013 scores (quintile 1) (RR 3.20, 95% CI 3.14–3.26).

Figure 4. All-cause hospitalisations, by demographic factor, 0–14 year olds New Zealand 2013–2017



Numerator: National Minimum Dataset (excluding neonates), Denominator: NZCYES Estimated Resident Population.
 Medical conditions: acute and arranged admissions, Injuries: excludes ED and waiting list cases

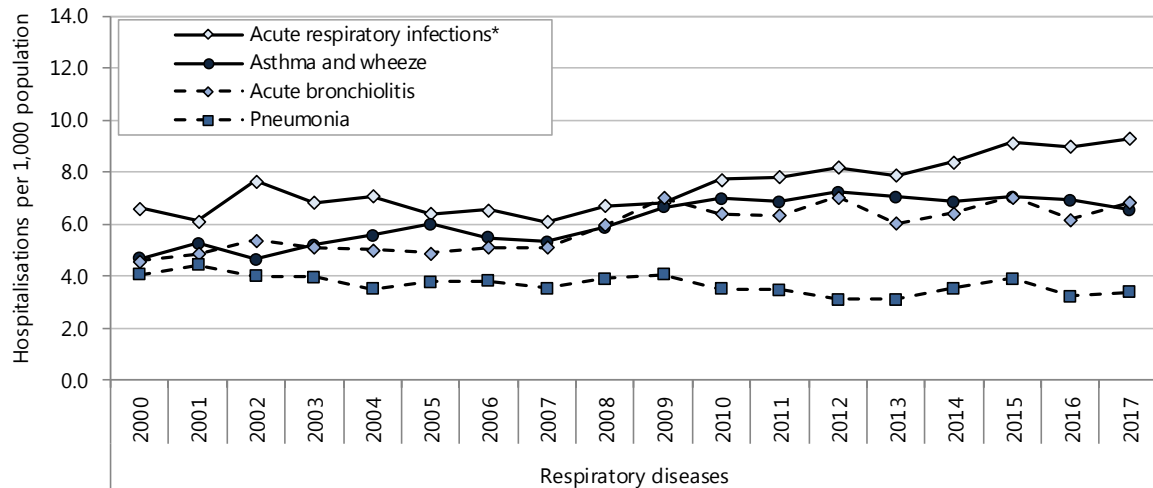
Table 1. Hospitalisations for medical causes, by selected primary diagnosis, 0–14 year olds (excluding neonates), New Zealand 2013–2017

Primary diagnosis	Individuals (n)	Hospitalisations (n)	Rate per 1,000 0–14 year olds	95% CI
Hospitalisations of 0–14 year olds for conditions with a deprivation gradient during 2013–2017				
Medical conditions				
Respiratory diseases				
Acute respiratory infections*	29,329	39,988	8.7	8.66–8.83
Acute bronchiolitis	18,093	29,753	6.5	6.43–6.58
Asthma and wheeze	15,247	31,517	6.9	6.82–6.97
Pneumonia	10,191	15,715	3.4	3.38–3.49
Other respiratory	4,779	6,348	1.4	1.35–1.42
Infectious diseases				
Gastroenteritis	17,954	20,230	4.4	4.36–4.49
Viral infection of unspecified site	19,528	22,463	4.9	4.85–4.98
Other infectious diseases	6,814	7,498	1.6	1.60–1.68
Other conditions	107,204	171,629	37.5	37.35–37.71
Total medical conditions	192,554	345,141	75.5	75.22–75.72

Numerator: National Minimum Dataset (excludes neonates), Denominator: NZCYES estimated resident population; Medical conditions: acute and arranged admissions,
 *Acute respiratory infections = upper and lower respiratory infections

From 2000–2017 hospitalisation rates of under-15 year olds have increased for acute respiratory infections, asthma and wheeze and acute bronchiolitis, with a decline in hospitalisation rates for pneumonia (Figure 5). For all of these conditions there has been a persistent social gradient over time, with the highest hospitalisation rates observed among under-15 year olds living in areas with the highest deprivation scores (quintile 5, most deprived).

Figure 5. Hospitalisations for select respiratory diseases 0–14 year olds, New Zealand 2000–2017



Numerator: National Minimum Dataset (acute and arranged admissions; excludes neonates).
Denominator: NZCYES estimated resident population. *Acute upper, lower and inflammatory infections

DEATHS

Progress in child survival worldwide has been described as one of the greatest success stories of international development, with child deaths being reduced by half between 1990 and 2010.¹⁶ The concept of social gradient evident in hospitalisations is also relevant when considering deaths of children and young people. Mortality rates for children and young people are progressively higher with increasing social and material deprivation.¹⁷ Availability and equitable distribution of resources within a society impact on children's life chances, and children's lives can be protected through supportive social policy and redistributive fiscal measures.¹⁸ Investigation of child deaths is important to increase our understanding of why children die and help prevent future child deaths.¹⁹ Data and analysis by the Child and Youth Mortality Review Committee complements the data presented in this section.¹⁷

Data about deaths of under-15 year olds from the National Mortality Collection are presented in this section, analysed by NZDep2013 index of deprivation score.

Data sources and methods

Indicators

Deaths from medical conditions and injuries in 0–14 year olds

Data sources

Numerator: Deaths: National Mortality Collection (MORT)

Denominator: NZCYES Estimated Resident Collection (ERP), with intercensal extrapolation

Definitions

Deaths: Deaths (excluding neonates) with a medical condition or injury documented in MORT as the main underlying cause of death and post-neonatal sudden unexpected deaths in infancy (SUDI)

Further information

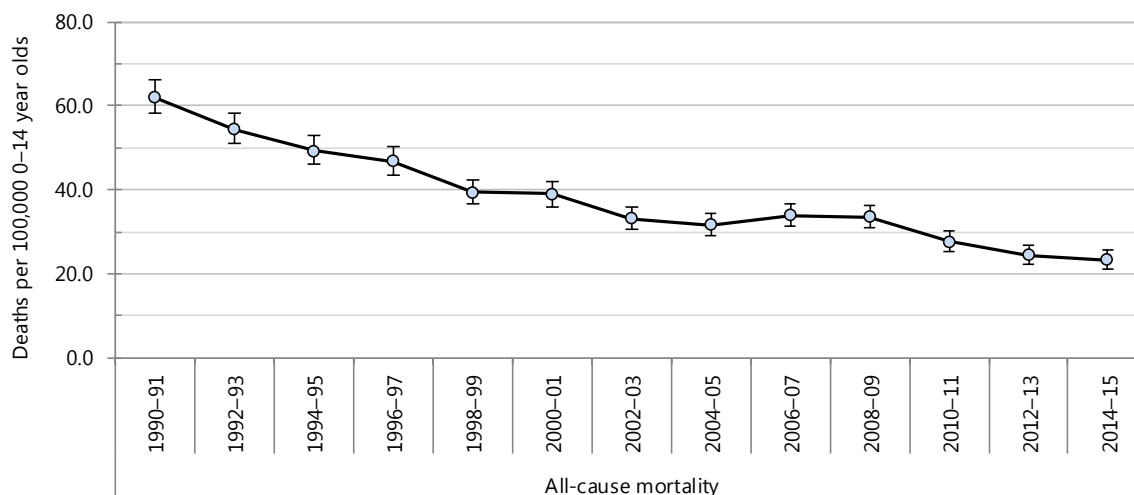
SUDI rates are traditionally calculated per 1,000 live births. However in this section of the report the denominator used was children aged 0–14 years, so that the relative contribution SUDI makes to mortality in this age group is more readily appreciated. As a result, SUDI rates in this section are not readily comparable to SUDI rates reported elsewhere. SUDI data are presented separately because SUDI can be included in both medical condition and injury classifications.

The all-cause mortality rate for under-15 year olds declined from 62.0 to 23.3 deaths per 100,000 age-specific population between 1990–91 and 2014–15 (Figure 6). Because of delays in recording causes of deaths under coronial investigation, there is a lag in release of New Zealand mortality data (2015 data were released in 2018).

In the five years from 2011–2015 there were 1,111 deaths of 0–14 year olds (excluding neonates); 644 as a result of medical conditions, 270 as a result of injury and 195 sudden unexpected deaths in infancy (SUDI) (Table 2). The most common main underlying medical causes of death were congenital anomalies and perinatal-related conditions, and cancers (neoplasms). The most common modes of fatal injury were motor vehicle traffic, suffocation, and drowning.

From 2011–2015 the mortality rate was highest in the first year of life, reflecting the predominance of SUDI and of perinatal conditions and congenital anomalies in the main underlying causes of death. Mortality rates were significantly higher for Māori and for Pacific under-15 year olds compared with the rates for other ethnic groups (Figure 7). The mortality rate for children living in neighbourhoods with low NZDep2013 scores (least deprivation, quintile 1) was significantly lower than mortality rates in other quintiles. The mortality rate for children living in neighbourhoods with the highest NZDep2013 scores (greatest deprivation, quintile 5) was almost four times higher than the mortality rate in quintile 1.

Figure 6. All-cause mortality rate, 0–14 year olds (excluding neonates) New Zealand 1990–2015



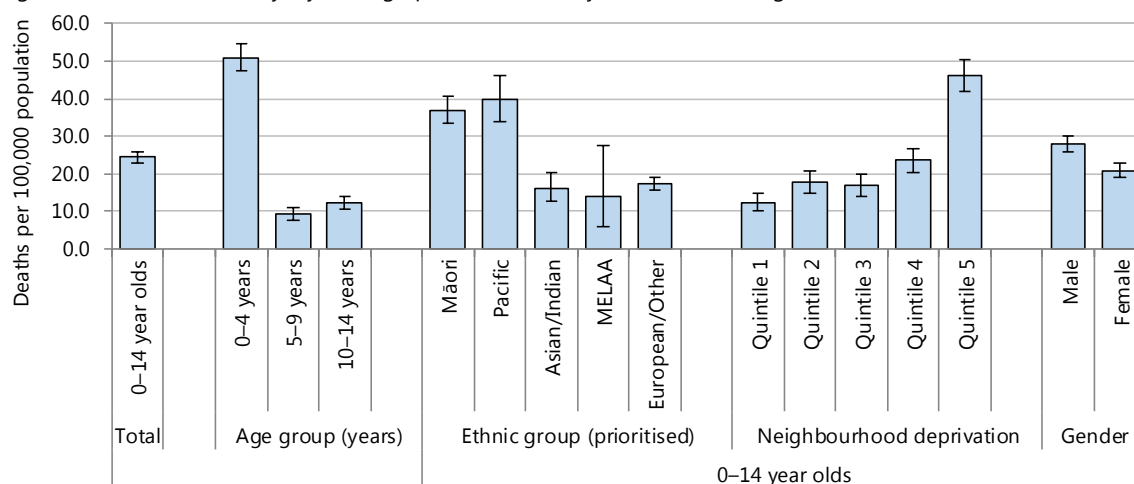
Numerator: National Mortality Collection (excluding neonates), Denominator: NZCYES Estimated Resident Population

Table 2. Deaths in 0–14 year olds, by cause of death, New Zealand 2011–2015

Cause of death	2011–2015 (n)	Annual average (n)	Rate per 100 population	95% CI	%
New Zealand					
All-cause mortality					
Medical conditions	644	129	14.17	13.10–15.31	58.0
Injury	270	54	5.94	5.25–6.69	24.3
SUDI	195	39	4.29	3.71–4.94	17.6
Total	1,111	222	24.45	23.03–25.93	100.0

Numerator: MORT, Denominator: NZCYES Estimated Resident Population. SUDI = Sudden Unexpected Death in Infancy

Figure 7. All-cause mortality, by demographic factor, 0–14 year olds (excluding neonates) New Zealand 2011–2015



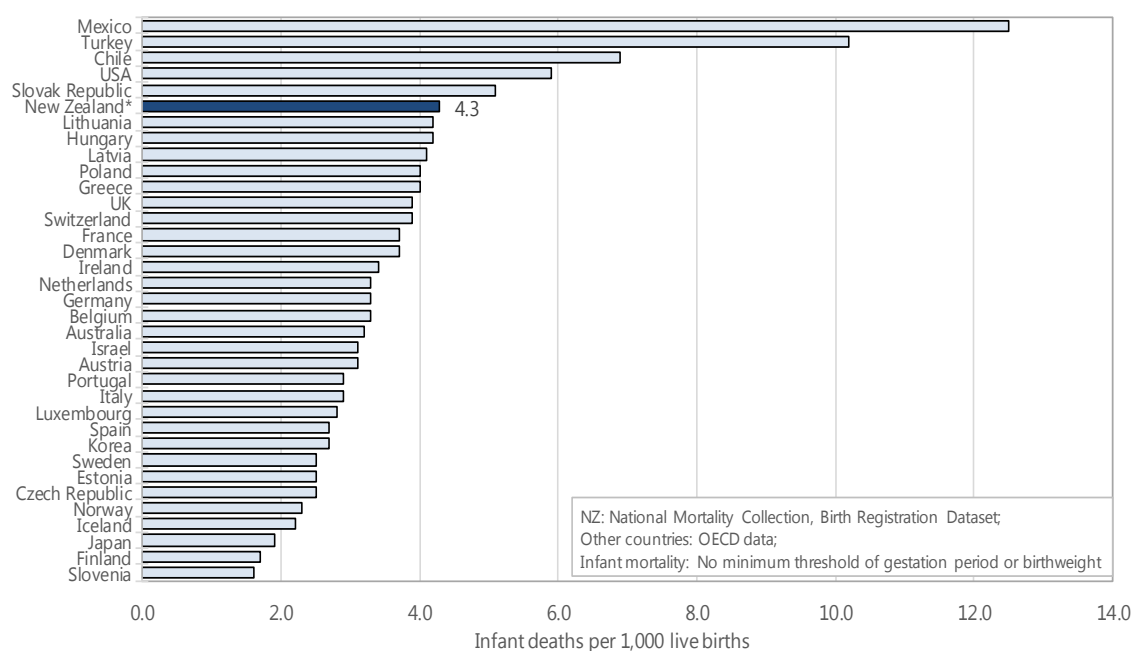
Numerator: National Mortality Collection (excluding neonates), Denominator: NZCYES Estimated Resident Population. Period: 2011–2015, Quintile is NZDep2013 Index of deprivation (1= least deprived; 5 = most deprived)

Infant deaths

Deaths of infants in the first year of life reflect effects of economic and social conditions on the health of mothers and newborns. Relevant factors include social environments, individual lifestyles, and characteristics and effectiveness of health systems.²⁰ Differences between countries and population groups in the rate of deaths in the first year of life (infant mortality rate, IMR) may reflect variations in commitment and capacity to deliver whatever services are necessary to protect every pregnant woman, every birth, and every infant in the earliest

days and weeks of life.²¹ Some of the international variation in infant mortality rates is due to variations among countries in registering practices for premature infants. The United States and Canada register a much higher proportion of babies weighing less than 500g, with low odds of survival, resulting in higher reported infant mortality. In Europe, several countries apply a minimum gestational age of 22 weeks (or a birth weight threshold of 500g) for babies to be registered as live births and thus infant mortality rates may be lower.²² Infant mortality rates in most developed countries have been reduced to fewer than 10 infant deaths per thousand live births.²¹ Infant mortality rates in New Zealand are higher than the OECD average.²⁰ The 2015 infant mortality rate for New Zealand was similar to the rates in Hungary and Lithuania, higher than Australia and more than twice the rates in Slovenia, Iceland or Japan (Figure 8).²²

Figure 8. International comparison of infant mortality rates, OECD countries, 2015



This section reviews infant deaths, including sudden unexpected death in infancy (SUDI), using information from the National Mortality Collection and the Birth Registration Dataset.

Data sources and methods

Indicators
Infant deaths and infant mortality rate
Sudden unexpected deaths in infancy (SUDI) and SUDI rate

Data sources
Numerator: National Mortality Collection
Denominator: Birth Registration Dataset (live births only)

Definitions
Infant death: Death of a live born infant prior to 365 days of life (includes neonates).
Infant mortality rate: Deaths of live born infants prior to 365 days of life per 1,000 live births.
Sudden unexpected death in infancy (SUDI): Death of a live born infant prior to 365 days of life, where the cause of death was sudden infant death syndrome (SIDS), accidental suffocation or strangulation in bed, inhalation of gastric contents or food, or ill-defined or unspecified causes.
SUDI rate: SUDI per 1,000 live births.
Sudden infant death syndrome (SIDS): Refers to refer to the sudden, unexpected death in an infant that is unexplained, even after a complete death scene investigation, thorough post-mortem (autopsy) and review of the infant’s clinical history.²³

Further information
Cause of death is the main underlying cause of death. Refer to appendices for relevant codes.

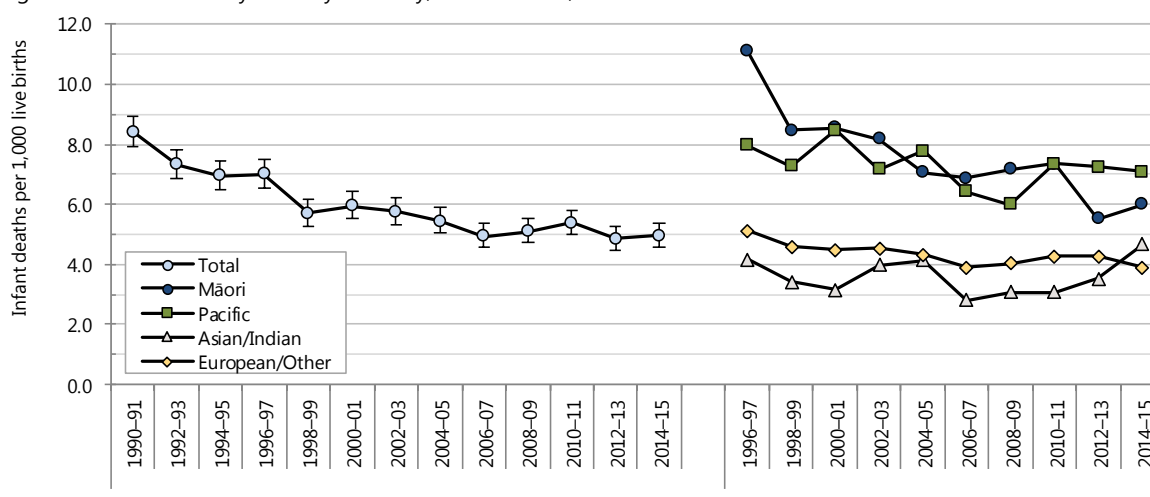
Infant mortality rates fell overall from 1990 to 2015, with most of that decrease occurring between 1990 and 1999 followed by a more gradual decline from 2000 to 2006/2007. Infant

mortality rates were stable from 2006–2015. From 1996 to 2015, a decline in infant mortality rates occurred in Māori, Pacific and European/Other ethnic groups. Although the decline was most marked for Māori infants, there was persistent inequity with infant mortality rates for Māori and Pacific infants consistently higher than for European/Other and Asian/Indian infants throughout this time period (Figure 9).

Most infant deaths occurred in the first 28 days of life, and resulted from congenital anomalies, extreme prematurity and other conditions occurring around the time of birth (perinatal conditions). As shown in Table 3, SUDI was the most common cause of death for infants aged from 28 days to one year.

Between 2011 and 2015 there were inequalities in infant mortality rates by socio-economic deprivation, maternal age, ethnicity and gender as shown in Figure 10. The mortality rate for infants born in areas with the highest scores on the NZDep2013 index of deprivation (greatest deprivation, quintile 5) was almost three times higher than the mortality rate for infants born in areas with the lowest NZDep2013 scores (quintile 1). The mortality rate for Māori infants was 1.5 times higher than mortality rate of European/Other infants, and for Pacific infants 1.7 times higher than for European/Other infants. Compared with infants born to mothers aged 30–34 years, the IMR for infants born to mothers aged younger than 20 years was almost three times higher and the rate for infants born to mothers aged 20–24 years was 1.7 times higher. The IMR for male infants was significantly higher than the rate for female infants.

Figure 9. Infant mortality rates by ethnicity, New Zealand, 1990–2015



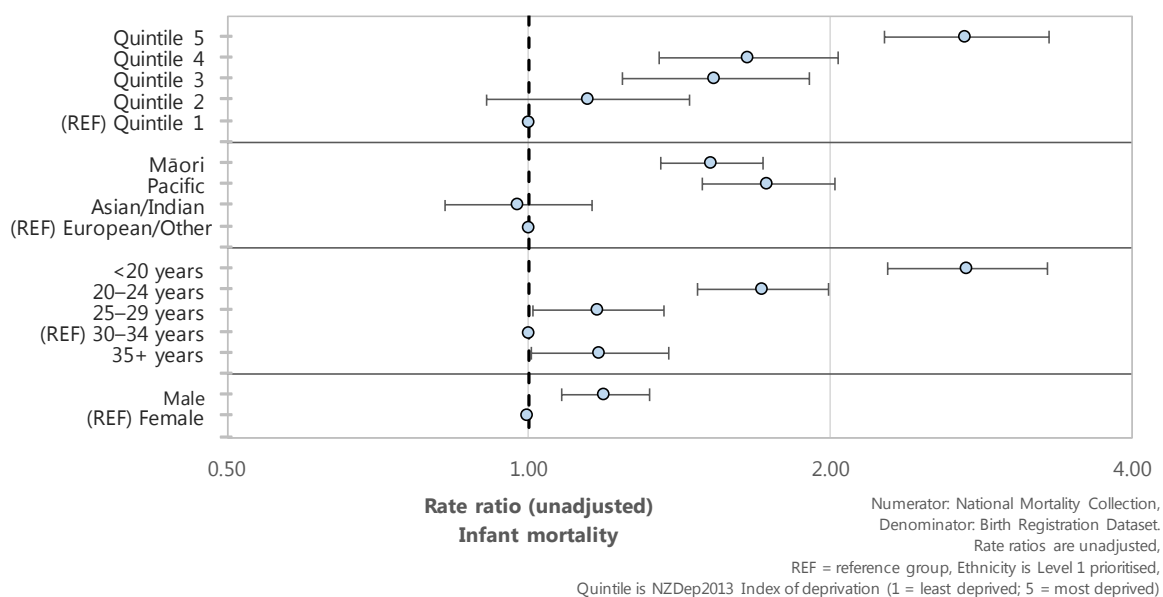
Numerator: National Mortality Collection, Denominator: Birth Registration Dataset; Ethnicity is level 1 prioritised

Table 3. Infant mortality by main underlying cause of death, New Zealand 2011–2015

Cause of death	2011–2015 (n)	Annual average (n)	Rate per 1,000 live births	%
New Zealand				
Infant mortality				
Congenital anomalies	358	72	1.18	23.7
Extreme prematurity	291	58	0.96	19.3
Other perinatal conditions	442	88	1.45	29.3
SUDI: SIDS	90	18	0.30	6.0
SUDI: suffocation or strangulation in bed	108	22	0.35	7.2
SUDI: all other types	18	4	0.06	1.2
Injury or poisoning	32	6	0.11	2.1
Intrauterine hypoxia or birth asphyxia	12	2	0.04	0.8
Other causes	158	32	0.52	10.5
Total	1,509	302	4.96	100.0

Numerator: National Mortality Collection, Denominator: Birth Registration Dataset; SUDI = Sudden Unexpected Death in Infancy, SIDS = Sudden Infant Death Syndrome

Figure 10. Infant mortality, comparison by demographic factors, New Zealand 2011–2015



Sudden unexpected death in infancy

Sudden unexpected death in infancy (SUDI) is the leading cause of death for New Zealand infants aged from 28–364 days. These are deaths that occur suddenly and unexpectedly in the first year of life, usually in otherwise healthy infants, and often during sleep.^{23,24} Inadequate housing, very low incomes, and a lack of financial resources affected many whānau and families whose baby died from SUDI. Income poverty restricted their housing options, and was associated with material hardship through negative effects on households’ ability to pay for heating, to access transport, and to purchase credit for their phones. Collectively these challenges were likely barriers to being able to provide a safe sleep environment for baby or to access appropriate supports.²⁴

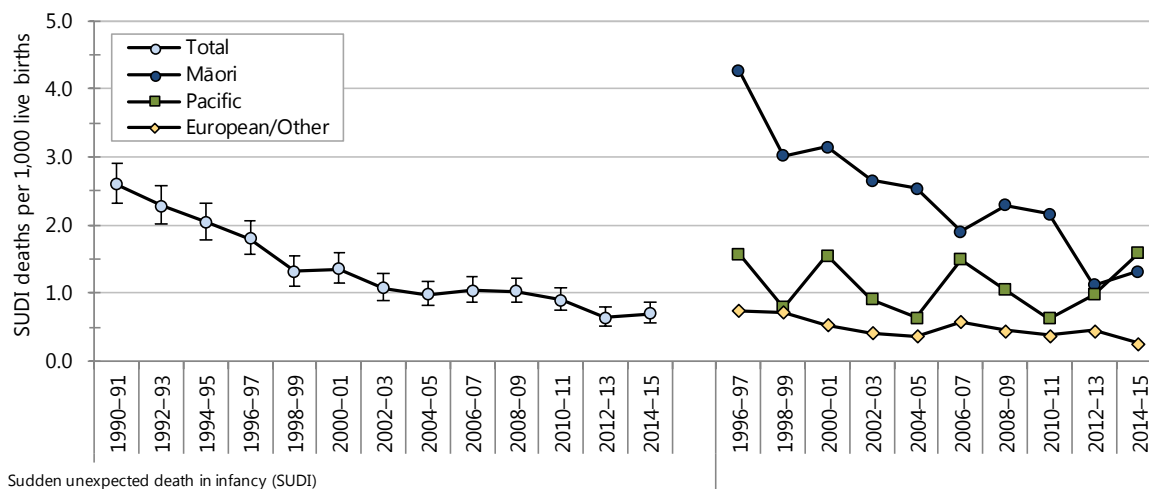
From 1996 to 2015, there was a statistically significant fall in the SUDI rate. Although the fall in SUDI rate was more marked for Māori infants compared with Pacific and European/Other infants, there is continuing inequity with rates for Pacific and Māori infants 5–6 times higher than that for European/Other infants in 2015 (Figure 11).

Between 2011 and 2015 there were inequalities in SUDI rates by socio-economic deprivation, maternal age, ethnicity, gestational age at birth and gender as shown in Figure 12. The SUDI rate for infants living in areas with the highest scores on the NZDep2013 index of deprivation (quintile 5, most deprived) was almost seven times higher than the SUDI rate for infants in areas with the lowest NZDep2013 scores (quintile 1). The SUDI rate for infants born to mothers aged under 20 years was almost seven times higher than the rate for infants born to mothers aged 30 years or older, and for infants born to mothers aged 20–25 years the SUDI rate was more than four times the rate for infants born to mothers aged 30 years or older. Over the whole time period 2011–2015 the SUDI rate for Māori infants was more than four times higher than the SUDI rate for European/Other infants and the SUDI rate for Pacific infants was three times higher than the SUDI rate for European/Other infants. The SUDI rate for infants born before 37 weeks gestation was three and a half times higher than the SUDI rate for infants born at or after 37 weeks gestation. The SUDI rate for male infants was one and a half times higher than the SUDI rate for female infants.

As previously shown in Table 3, the most common specific diagnoses within the SUDI group were sudden infant death syndrome (SIDS; 42% of SUDI deaths) and suffocation or strangulation in bed (50% of SUDI deaths). Deaths occurred throughout the first year of life,

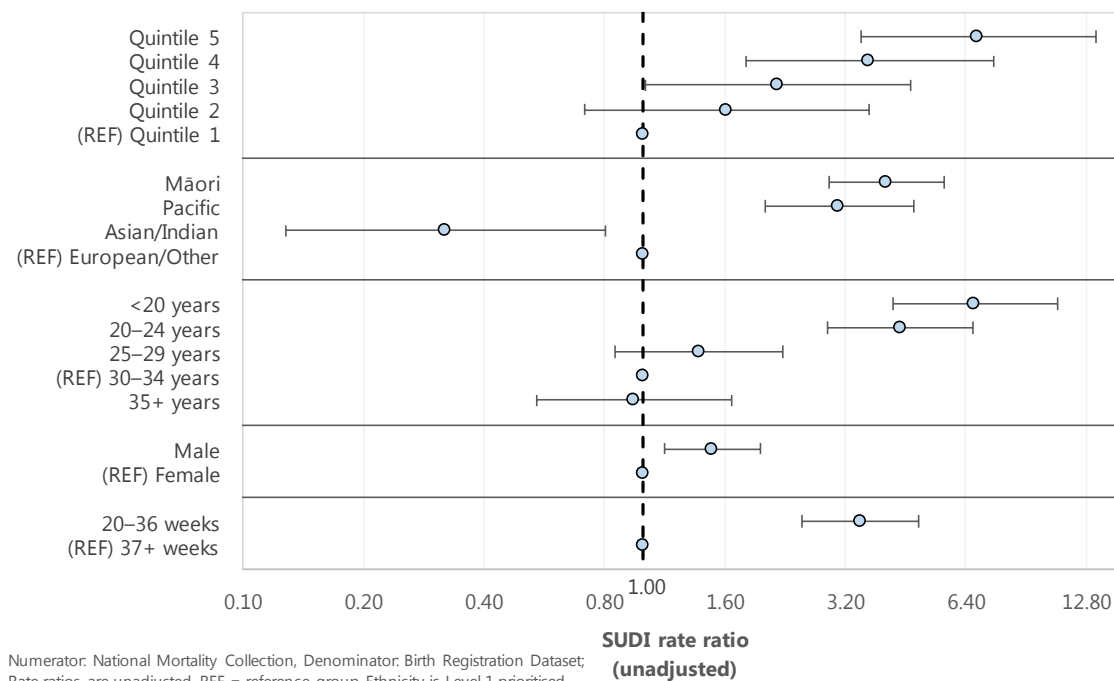
with 50% of SUDI occurring in the first 11 weeks and 87% of SUDI occurring in the first 27 weeks of life.

Figure 11. Sudden unexpected death in infancy (SUDI) rates in New Zealand, total (1990–2015) and by prioritised ethnicity (1996–2015)



Sudden unexpected death in infancy (SUDI)
 Numerator: National Mortality Collection, Denominator: Birth Registration Dataset.
 Ethnicity is Level 1 prioritised, Asian/Indian rate suppressed due to small numerator numbers

Figure 12. Sudden unexpected death in infancy, comparison by demographic factor New Zealand 2011–2015



Numerator: National Mortality Collection, Denominator: Birth Registration Dataset;
 Rate ratios are unadjusted, REF = reference group, Ethnicity is Level 1 prioritised,
 Quintile is NZDep2013 Index of deprivation (1 = least deprived; 5 = most deprived)

FOOD SECURITY

Children and their families enjoy food security when they have the assured ability to acquire nutritionally adequate and safe foods that meet cultural needs in a socially acceptable way.²⁵ Low food security exists in household situations with limited resources.²⁶ Households reporting low food security spend less on food overall than households with moderate food security, and particularly spend less on fruit, vegetables and cereals and tend to spend less on milk.^{25,26} Averaged over the 2013, 2014 and 2016 Household Economic Survey years, 10% of New Zealand 0–17 year olds in low income households (lowest income quintile after housing costs) went without fresh food and vegetables a lot, and 18% received help from foodbanks more than once in the previous 12 months.²⁷

Hardship assistance is available for people with insufficient income and assets, who have immediate and specific needs that cannot be met by their own resources.²⁸ Data from the Ministry of Social Development show that in 2010 and 2011 around 105,000 families with children whose main income was from an income support benefit received Special Needs Grants (SNGs) for food. The number declined to a plateau of just over 80,000 for 2012 to 2016, and increased to 84,000 in 2017 and 88,000 in 2018. The number of SNGs for food increased from a steady level of just over 160,000 from 2012 to 2016, to 233,000 in the June 2018 year. With the much more modest change in the number of families receiving a SNG, this suggests that the number of SNGs per family has increased. It is not clear if this increase is driven by rising need or an easier application process.²⁷

The New Zealand Health Survey (NZHS) included a household food security questionnaire of eight items in 2012/13, 2014/15 and 2015/16, which enabled monitoring of moderate and more severe household food insecurity across the child population. Item-specific food insecurity occurred when the primary caregiver answered 'sometimes' or 'often' to the relevant food insecurity statement. The overall extent of food insecurity was based on the caregivers' combined response to all eight items. More detail about the methodology will be available in a Ministry of Health report.²⁹ This measure may not always translate directly to the experience of individual children as caregivers may shield children from the full effects of food insecurity in the household.²⁹

This indicator presents information from the NZHS on the prevalence of household food insecurity among 0–14 year olds.

Data sources and methods

Indicator

Children in households experiencing moderate or severe food insecurity

Definition

Children (aged 0–14 years) are defined as living in households with moderate to severe food insecurity if the primary caregiver indicated that the household experienced food insecurity based on eight food security statements

Data source

New Zealand Health Survey (NZHS) Ministry of Health (in press)²⁹

Further information

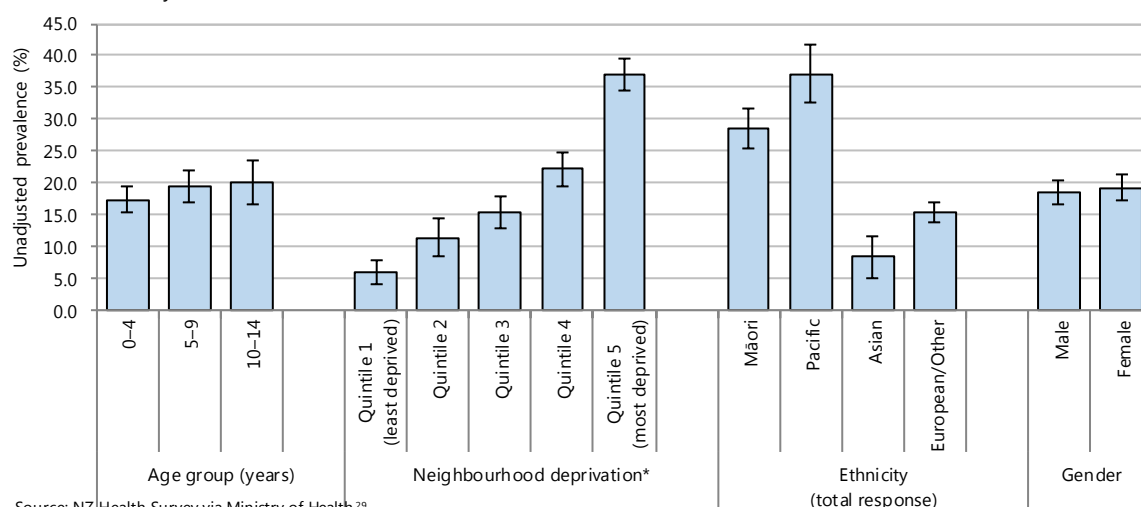
For more information on the NZHS please refer either to the Ministry of Health website <https://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/surveys/new-zealand-health-survey> or to the data source appendix in this report. The food security questionnaires included statements on how frequently: the household is (un)able to afford to eat properly, food running out in the household due to lack of money, eating less because of lack of money, eating a limited variety of foods because of lack of money, relying on others to provide food and/or money for food, making use of food grants or food banks when not having enough money for food, feeling stressed because of not having enough money for food and feeling stressed or whakamā (embarrassed) because of not being able to provide the food required for social occasions.²⁹

In 2012/13 the NZHS found that 23% of 0–14 year olds were in households reporting moderate to severe food insecurity; this proportion was 20% in 2014/15 and 19% in 2015/16. Although the lower reported rates of household food insecurity in 2015/16 compared to 2012/13 is a positive finding, more data points are needed to confirm whether or not these data points represent a declining trend over time. In 2015/16 there were estimated to be between 161,000 and 188,000 children living in households with moderate to severe food insecurity.²⁹

When interpreting the following sections, it is important to keep in mind that the differences in rates of household food insecurity for specific groups are likely due to differences in underlying poverty and material deprivation.²⁶ In the 2015/16 NZHS year, prevalence of household food insecurity was higher for under-15 year olds living in areas of high material and social deprivation (as indicated by NZDep2013) compared with those living in neighbourhoods with lower deprivation scores, and for Māori and Pacific children compared with European/Other and Asian children in this age group (Figure 13). Household food insecurity was more prevalent for children living in sole parent households (38%) than for children living in two-parent households (13%).²⁹ The prevalence of household food insecurity was particularly high (almost 56%) for children living in households where the main income source was an income support benefit.²⁹ Over half (53%) of children in public housing lived in households experiencing food insecurity compared with 28% in private rental housing and 8% in owner-occupied housing.²⁹

Data from the 2014/15 and 2015/16 NZHS were combined for analysis of food insecurity by neighbourhood deprivation, due to low numbers in quintile 1. In this combined time period, moderate to severe household food insecurity was four times as likely for 0–14 year olds living in areas with the highest deprivation scores (NZDep2013 quintile 5, most deprived) compared with their peers in areas with the lowest deprivation scores (quintile 1, least deprived scores) (Adjusted rate ratio (ARR) 4.2, 95% confidence interval 2.8–5.5 adjusted for age, gender and prioritised ethnicity). In 2015/16 Māori 0–14 year olds were around twice as likely as non-Māori to live in food insecure households (ARR 1.83, 95% CI 1.54–2.13 adjusted for age and gender) and Pacific children were twice as likely as non-Pacific to live in food insecure households (ARR 2.3, 95% CI 2.0-2.6 adjusted for age and gender). There were no significant differences by the child’s age group or by gender.

Figure 13. Children in households experiencing moderate or severe food insecurity, by demographic factor, 2015/16* NZ Health Survey



Source: NZ Health Survey via Ministry of Health²⁹
 *2014/15 and 2015/16 data combined for neighbourhood deprivation

PHYSICAL PUNISHMENT

Physical punishment (e.g. hitting a child with an open hand) is arguably among the most prevalent harmful traditional practices experienced by children around the world.^{30,31} Physical punishment violates the rights of children,^{30,32} is an ineffective method to change child behaviour,^{33,34} and is associated with a number of negative developmental outcomes, including increased child aggression, antisocial behaviour, poorer cognitive development, decreased family relationships, depression and other mental health problems.^{33,35,36} In 2007, New Zealand was the first English-speaking country to prohibit physical punishment, through an amendment to the Crimes Act.³⁷⁻³⁹ Legal prohibition of physical punishment has been followed by swift and dramatic change in public opinion and attitudes in many countries, including New Zealand.^{30,39,40}

Parenting education and some specific home visiting programmes have been effective in promoting positive disciplinary strategies and also in reducing rates of child abuse and neglect.³⁸ The aim of the Government sponsored SKIP initiative (strategies with kids; information for parents) is for all children in New Zealand to be raised in a positive way by parents and caregivers who feel confident about managing children's behaviour as part of a loving, nurturing relationship.⁴¹

This indicator presents information from the New Zealand Health Survey on the prevalence of physical punishment of 0–14 year olds by parents or primary caregivers in the 4 weeks preceding the interview.

Data sources and methods

Indicator

Child respondents aged 0–14 years who received physical punishment in past 4 weeks

Definition

Child respondents (aged 0–14 years) are defined as having experienced physical punishment in past 4 weeks if the child's parent or caregiver answered 'Physical punishment, such as smacking' to question C3.15 (see below).

Data source

New Zealand Health Survey

Further information

For more information on the NZ Health Survey please refer either to the Ministry of Health website (<https://www.health.govt.nz>) or to data source appendix in this report

Question C3.15:

Thinking back over the past 4 weeks, when [child's name] misbehaved, which of the following, if any, have you done? Just read out the number next to the words.

Made him/her go without something or miss out on something

Yelled at him/her

Explained why he/she should not do it

Physical punishment, such as smacking

Told him/her off

Sent him/her to the bedroom or other place in the house

Ignored his/her behaviour

Something else [specify] _____

My child has not misbehaved during the past 4 weeks

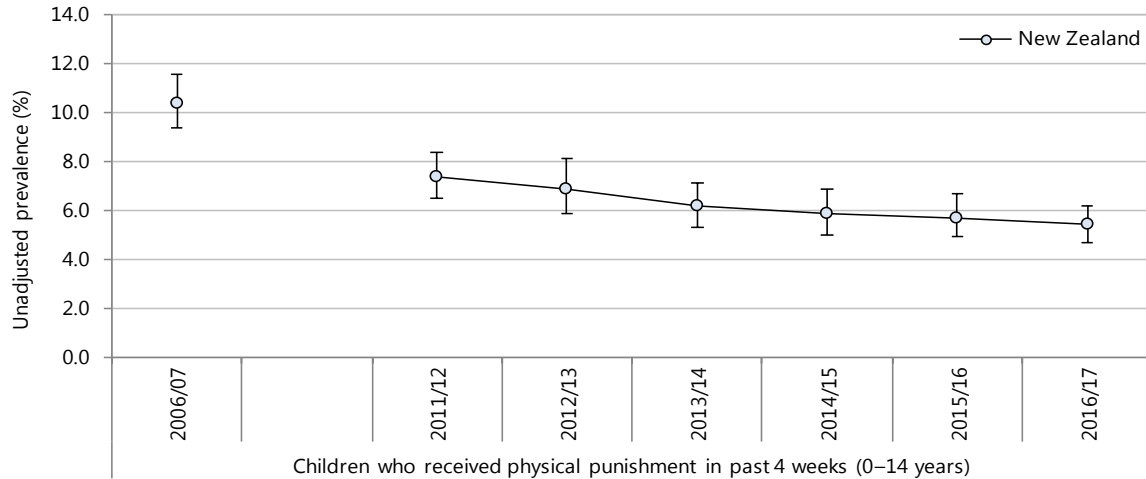
Source: New Zealand Health Survey Annual Data Explorer 2016/17 https://minhealthnz.shinyapps.io/nz-health-survey-2016-17-annual-data-explorer/_w_4243e190/#!/home (Accessed 16 May 2018)

The percentage of 0–14 year olds who received physical punishment for misbehaviour, in the previous four weeks, fell from 10.4% in 2006/07 to 5.4% in 2016/17 (Figure 14).

Rates of physical punishment were higher for under-ten year olds compared with older children (Figure 15). The percentages of 0–14 year olds who received physical punishment are presented as unadjusted rates by demographic factor in Figure 15 and as adjusted rates in Figure 16. Rates were significantly higher for 0–14 year olds who were Pacific (2.5 times

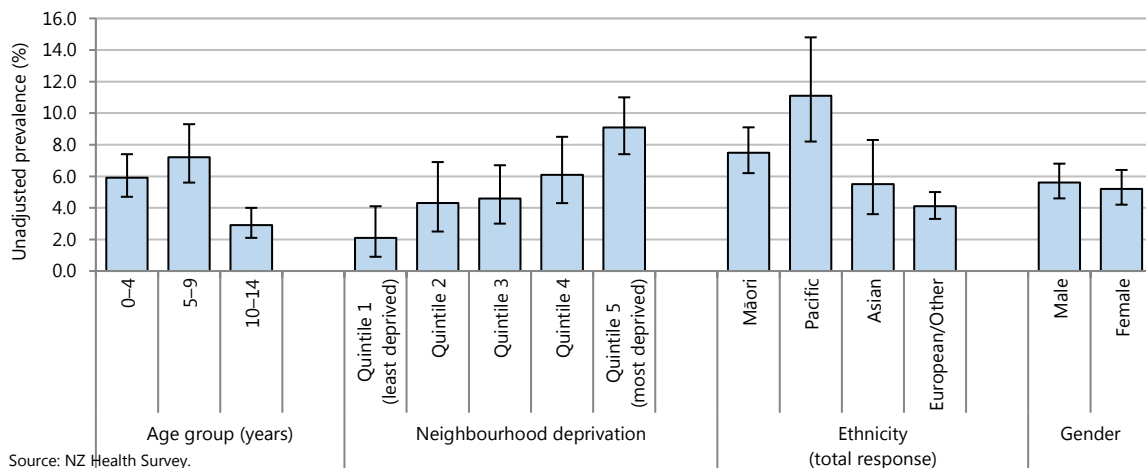
higher than the non-Pacific rate) and for Māori (1.6 times higher than the non-Māori rate). For 0–14 year olds living in areas of high material and social deprivation, the rates of physical punishment were 2.8 times higher than for those living in neighbourhoods with the lowest deprivation scores.

Figure 14. Physical punishment, by survey year, 0–14 year olds New Zealand 2006/07–2016/17



Source: NZ Health Survey

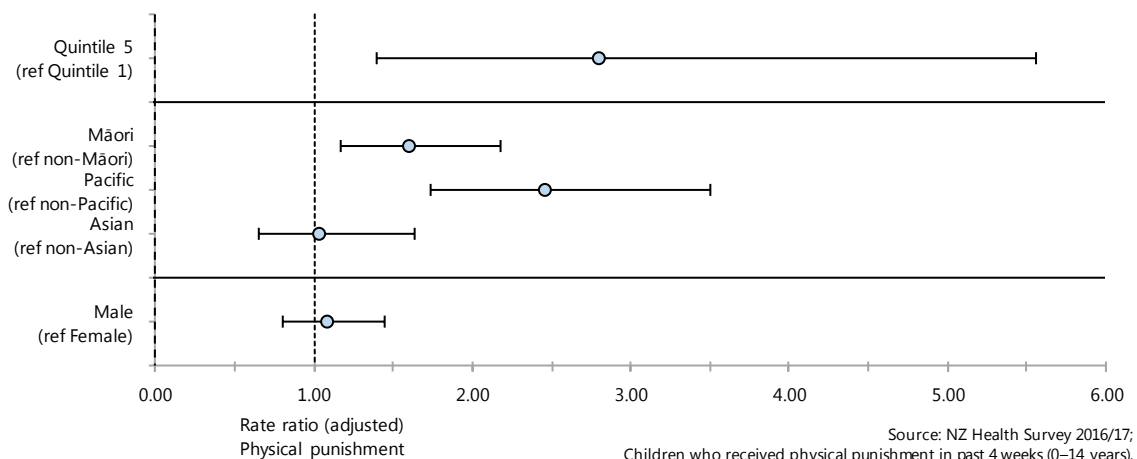
Figure 15. Physical punishment, by demographic factor, 0–14 year olds New Zealand 2016/17



Source: NZ Health Survey.

Children who received physical punishment in past 4 weeks (0–14 years);
 Quintile is NZDep2013 Index of deprivation (1 = least deprived; 5 = most deprived)

Figure 16. Physical punishment, by demographic factor, 0–14 year olds New Zealand 2016/17



Source: NZ Health Survey 2016/17;
 Children who received physical punishment in past 4 weeks (0–14 years),
 Rate ratios are adjusted, Ethnicity is total response

ASSAULT, NEGLECT OR MALTREATMENT

Child maltreatment is a serious public health issue that is recognised internationally.^{38,42} Childhood adversity, including child maltreatment, affects brain development and multiple body systems.⁴³ Children at high risk of maltreatment are more likely than their peers at low risk to die in the first year of life from any cause, and are more likely than their peers to be hospitalised for any cause.⁴⁴ There is considerable variability in the way that children respond to adversity which suggests that there are a complex array of personal and environmental factors that mitigate or exacerbate the effect of exposure to adversity.⁴³

Data from national mortality and morbidity collections are important for monitoring assault, neglect, and maltreatment of children, including that perpetrated by parents or other caregivers.^{42,45} Cases that are hospitalised are only the “tip of the iceberg” and hospitalisation data alone will underestimate the prevalence of child maltreatment in the community.⁴⁵ Other limitations of these data include undercounting of such injuries even in hospital, and possible reporting bias with health professionals assigning these diagnoses more readily to children perceived to be at risk.^{46,47} Despite these limitations, the use of de-identified data allows surveillance of the important and sensitive issue of child maltreatment while protecting the privacy of individual children.⁴⁵

The following section reviews deaths and hospitalisations of New Zealand 0–14 year olds that involved injuries due to assault, neglect or maltreatment, using data from the National Minimum Dataset and the National Mortality Collection.

Data sources and methods

Indicators

Deaths from injuries arising from the assault, neglect, or maltreatment of 0–14 year olds

Hospitalisations for injuries arising from the assault, neglect, or maltreatment of 0–14 year olds

Data sources

Numerator: Deaths: National Mortality Collection;

Hospitalisations: National Minimum Dataset

Denominator: NZCYES Estimated Resident Population

Definitions

Deaths: Deaths in 0–14 year olds with intentional injury as a cause of death.

Hospitalisations: Hospitalisations* of 0–14 year olds with a primary diagnosis of injury and an intentional injury (assault) external cause code in any of the first 10 external cause codes.†

Further information

* As outlined in the appendices, in order to ensure comparability over time, all hospitalisations with an emergency department specialty code on discharge were excluded, as were hospitalisations with a non-injury primary diagnosis.

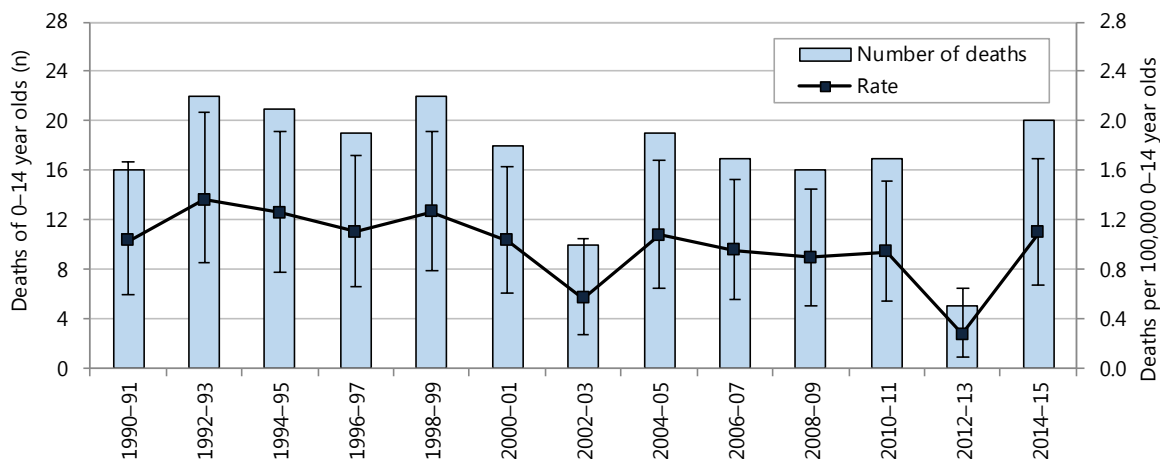
† Refer to appendices for the codes included in this section.

Deaths from assault, neglect or maltreatment

From 2000–2015 there were 222 children aged 0–14 years who died from injuries arising from assault, neglect, or maltreatment, a stable rate of around nine deaths per million children per year. Lower rates in 2002–03 and 2012–13 were not statistically different from the rates in other year-pairs (Figure 17).

In the five years from 2011–2015 there were 34 deaths of 0–14 year olds as a result of assault, neglect or maltreatment. Sixteen of these deaths were of female and 18 were of male children. Thirteen of these deaths occurred in the first year of life, 15 deaths were of 1–4 year olds, and six were of 5–14 year olds.

Figure 17. Deaths due to injuries arising from assault, neglect, or maltreatment, 0–14 year olds, New Zealand 2000-2015

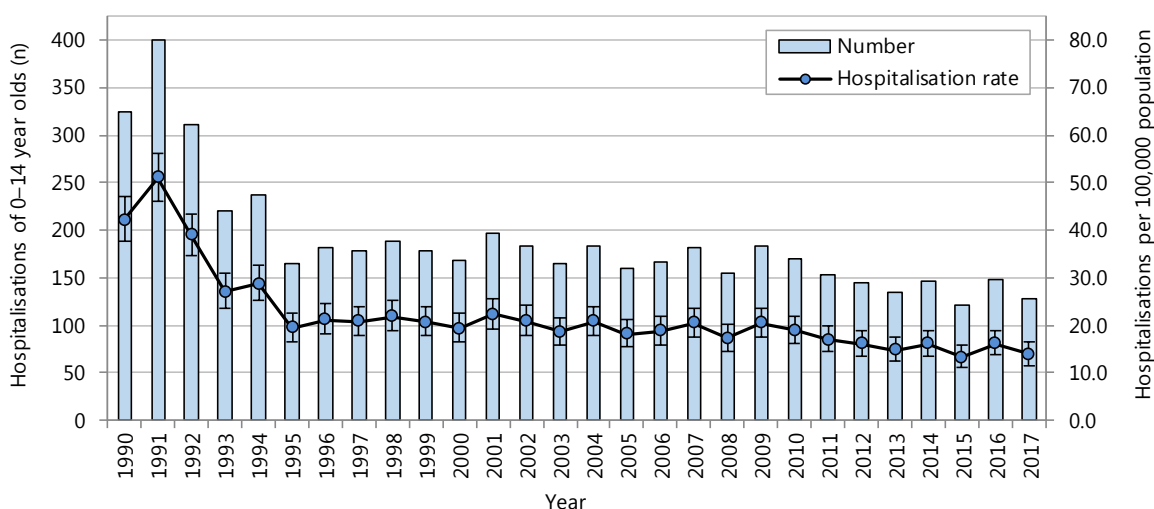


Indicator: Injuries arising from the assault, neglect, or maltreatment of children
 Numerator: National Mortality Collection, Denominator: NZCYES Estimated Resident Population.
 Year is year of death registration

Hospitalisations due to assault, neglect or maltreatment

There was a sharp decline in the number and rate of hospitalisations for injuries arising from assault, neglect or maltreatment of New Zealand children aged 0–14 years between 1990 and 1995, and a further more gradual fall from 2009 to 2011. From 2012–2017 the rate has been static at between 13 and 16 hospitalisations for assault, neglect and maltreatment per 100,000 0–14 year olds per year (Figure 18).

Figure 18. Hospitalisations due to injuries arising from assault, neglect, or maltreatment, 0–14 year olds, New Zealand 1990–2017



Indicator: Injuries arising from the assault, neglect, or maltreatment of children
 Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population

In the five years from 2013–2017 there were 677 hospitalisations of 0–14 year olds for injuries arising from assault, neglect or maltreatment, 277 of girls and 400 of boys. The most common injuries that required hospitalisation because of assault, neglect, or maltreatment were head injuries, including 119 traumatic brain injuries (Table 4). Age-specific hospitalisation rates for such injuries were highest in the first year of life (Figure 19).

There was a clear social gradient with increasing hospitalisation rates for children living in areas with higher scores on the NZDep2013 index of deprivation. Hospitalisation rates were ten times higher for children who lived in areas with the highest NZDep2013 scores (greatest deprivation, quintile 5) compared with children living in areas with the lowest scores (quintile

1). Inequity by ethnicity was evident with hospitalisation rates for Māori and for Pacific children over twice the hospitalisation rates of European/Other children (Figure 20).

Table 4. Hospitalisations for injuries arising from assault, neglect, or maltreatment, by nature of injury, 0–14 year olds New Zealand 2013–2017

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Assault, neglect, or maltreatment hospitalisations of 0–14 year olds during 2013–2017				
New Zealand				
Traumatic brain injuries	119	24	2.60	17.6
Superficial head injury	94	19	2.06	13.9
Fracture skull or facial bones	52	10	1.14	7.7
Other head injuries	72	14	1.57	10.6
Injuries to thorax (including rib fractures)	17	3	0.37	2.5
Injuries to abdomen, lower back, and pelvis	61	12	1.33	9.0
Injuries to upper limb	81	16	1.77	12.0
Fractured femur	11	2	0.24	1.6
Other injuries to lower limbs	35	7	0.77	5.2
Maltreatment	78	16	1.71	11.5
Other injuries	57	11	1.25	8.4
Total	677	135	14.80	100.0

Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population

Figure 19. Hospitalisations due to injuries arising from assault, neglect, or maltreatment of 0–14 year olds by age and gender, New Zealand 2013–2017

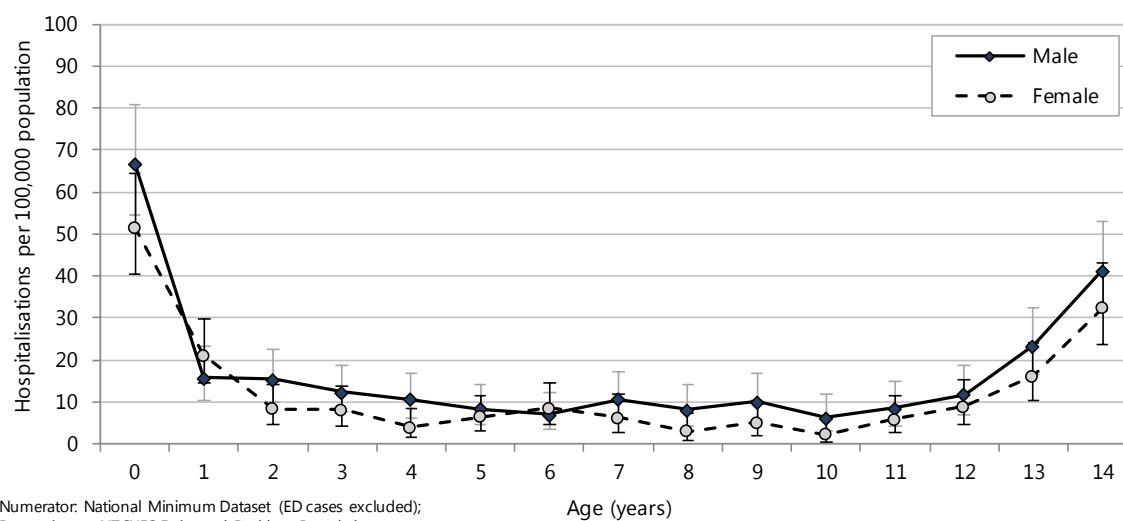
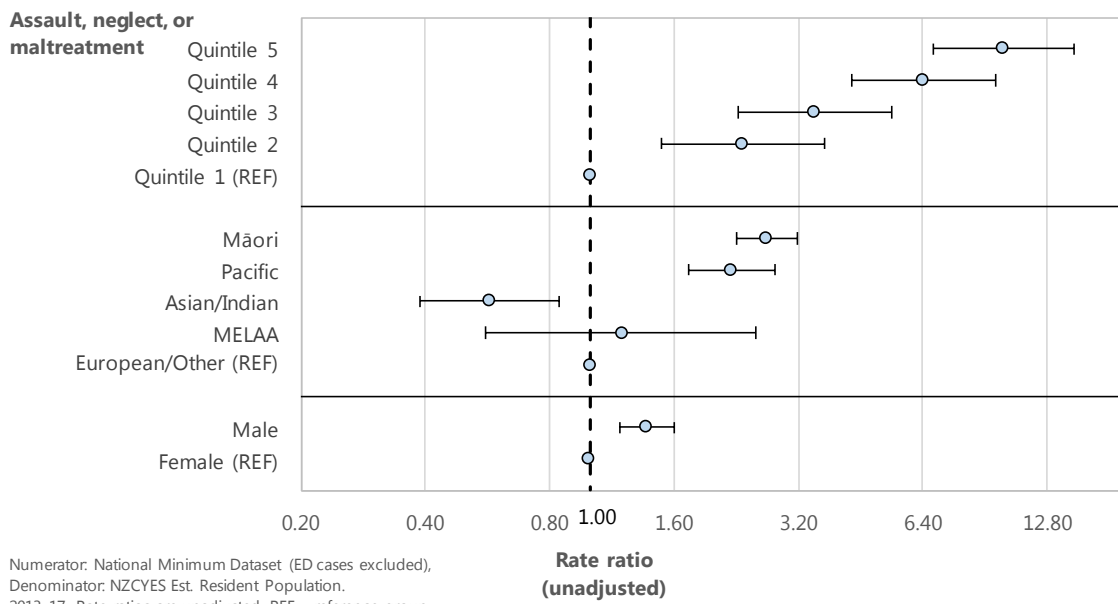


Figure 20. Hospitalisations of 0–14 year olds for injuries arising from assault, neglect, or maltreatment, by demographic factor, New Zealand 2013–2017



CARE AND PROTECTION

The Children, Young Persons and Their Families (Oranga Tamariki) Legislation Act received Royal assent in July 2017.⁴⁸ The Act changed the name of the principal Act (previously Children, Young Persons and Their Families Act 1989) to Oranga Tamariki Act 1989 or Children’s and Young People’s Well-being Act 1989 and established a statutory framework to create a more child-centred operating model for the Ministry for Children, Oranga Tamariki which replaced the former Child Youth and Family.

This section on care and protection provides data on children and young people from Oranga Tamariki data. The section reports on care and protection notifications and notifiers, investigation assessment outcomes and their substantiated findings, and children and young people in the custody of the Chief Executive.

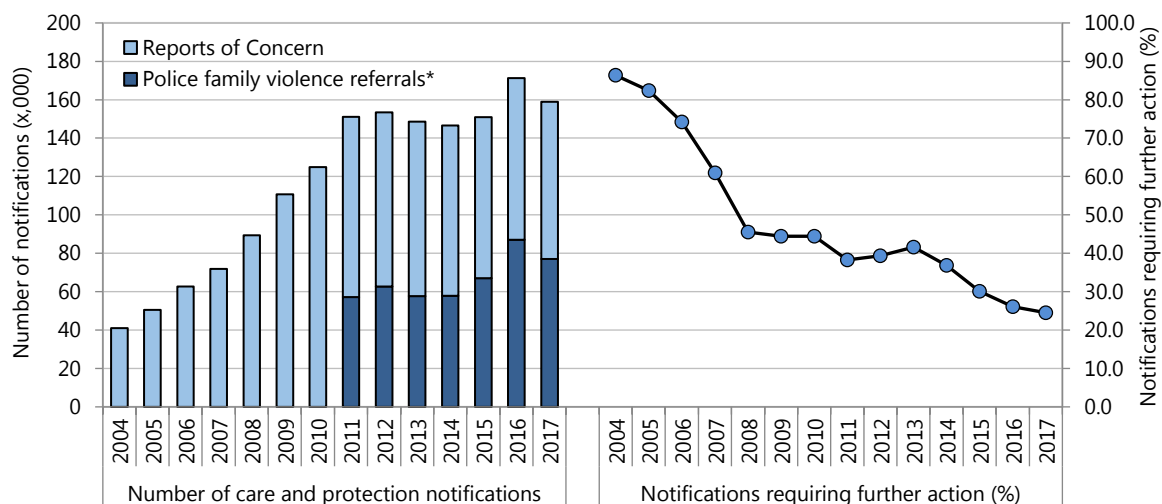
Data sources and methods	
Data source	
Oranga Tamariki	
Indicators and definition	
<i>Care and protection notifications requiring further action</i>	
<u>Numerator:</u>	Number of care and protection notifications requiring further action
<u>Denominator:</u>	Total number of care and protection notifications
<i>Reports of concern from notifiers</i>	
<u>Numerator:</u>	Number of type of investigation assessment outcome
<u>Denominator:</u>	Total number of investigation assessment outcomes
<i>Investigation assessment outcomes</i>	
<u>Numerator:</u>	Number of type of investigation assessment outcome
<u>Denominator:</u>	Total number of investigation assessment outcomes
<i>Types of substantiated findings</i>	
<u>Numerator:</u>	Number of type of substantiated finding of investigation assessment outcome
<u>Denominator:</u>	Total number of substantiated findings of investigation assessment outcome
<i>Distinct children and young people in the custody of the Chief Executive</i>	
<u>Numerator:</u>	Number of distinct children and young people in the custody of the Chief Executive
<u>Denominator:</u>	Total number of distinct children and young people in the custody of the Chief Executive
Further information	
Children and young people are “distinct” where they are counted once in the period.	
For more information on Oranga Tamariki data please refer either to the Ministry of Social Development website (https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/cyf/index.html) or to the data source appendix in this report.	

Figure 21 presents an overview for 2004 to 2017 of the number of care and protection notifications for children and young people and the proportion of care and protection notifications that required further action by Oranga Tamariki, as assessed by a social worker. A child or young person may have more than one notification for each period.

After a steep increase since 2004, the total number of care and protection notifications has remained relatively stable in recent years. There were 158,921 notifications in 2017. The proportion of notifications requiring further action has declined from 86% of notifications in 2004 to around 30% in the last three years.

Reports of Concern about the wellbeing of a child or young person are received from notifiers and indicate the children or young people who may require support. Police family violence referrals are the result of Police attending a family violence incident where children were present and where Police assess that Oranga Tamariki action is not required. The numbers of Reports of Concern and Police family violence referrals are similar.

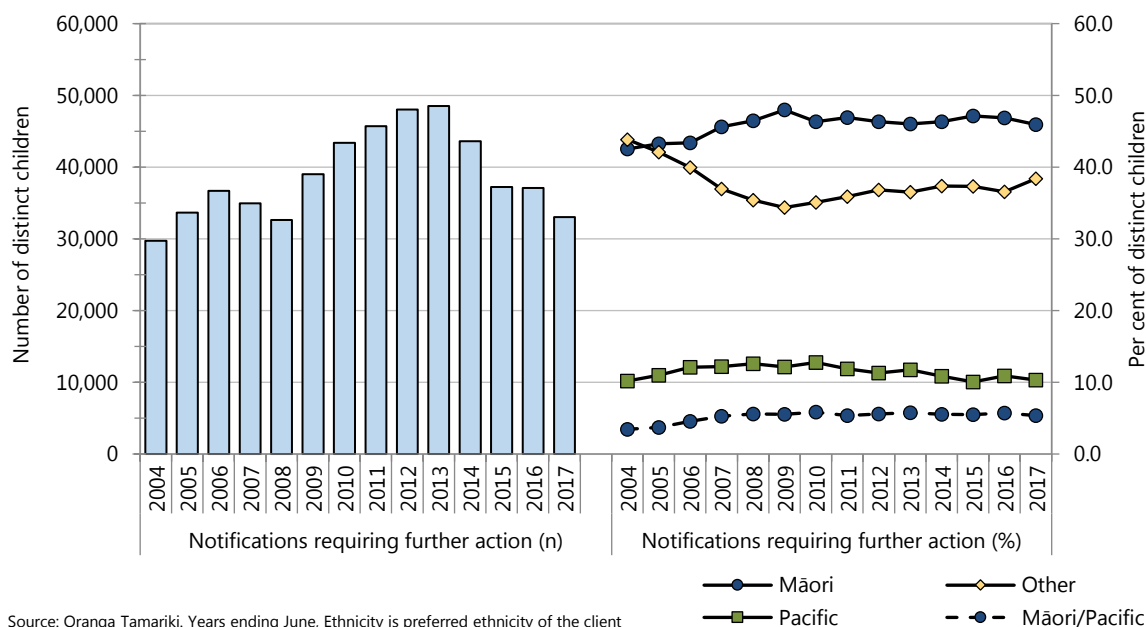
Figure 21. Care and protection notifications and proportion requiring further action, New Zealand 2004–2017



Source: CYF (data prior to 2011) & Oranga Tamariki (data for 2011 onwards).
 Years ending June. * Police family violence referrals not reported separately by CYF prior to 2011

Figure 22 presents patterns over time in the number of distinct children and young people in each period with a notification requiring further action, and the proportions by ethnic group, for 2004 to 2017. The overall number of individuals peaked in 2012 and 2013 but has since declined. The Māori/Pacific ethnic group includes children and young people who identified as both Māori and Pacific. The proportion of distinct children with notifications requiring further action has remained relatively stable in recent years for each ethnic group. Overall, 44% of children with reports of concern were Māori, 10% were Pacific, 5% identified as both Māori and Pacific and 38% were in other ethnic groups.

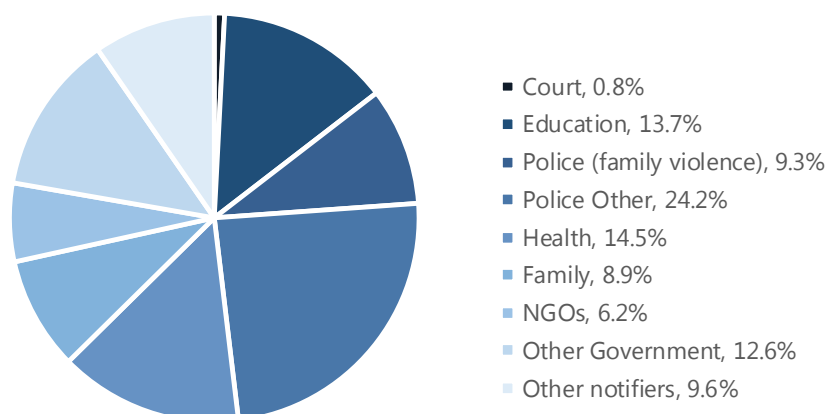
Figure 22. Distinct children with care and protection notifications requiring further action, by ethnicity, New Zealand 2004–2017



Source: Oranga Tamariki. Years ending June, Ethnicity is preferred ethnicity of the client

The notification sources (i.e. notifiers) of the 81,840 reports of concern made to Oranga Tamariki are presented for 2017 in Figure 23. Reports of concern from the health and education sectors, plus those from the Police (other) comprised more than 50% of all Reports.

Figure 23. Notifications to Oranga Tamariki, by notifier New Zealand 2017

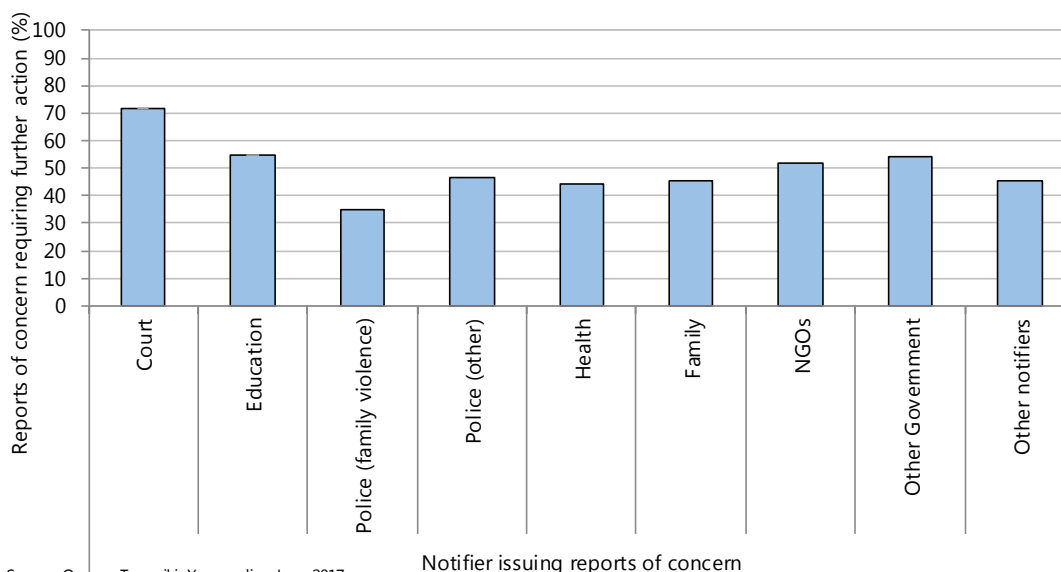


Reports of concern by notifier issuing reports of concern

Source: Oranga Tamariki. Year ending June 2017.
 "Police other" pertains to reports of concern not related to family violence

Figure 24 presents the proportion of reports of concern that required further action, by notifier, for the year ending June 2017. The notifier with the highest proportion of Reports requiring further action was Court at 72%, followed by Education and Other Government at around 55%.

Figure 24. Referrer reports of concern requiring further action, by notifier, New Zealand 2017



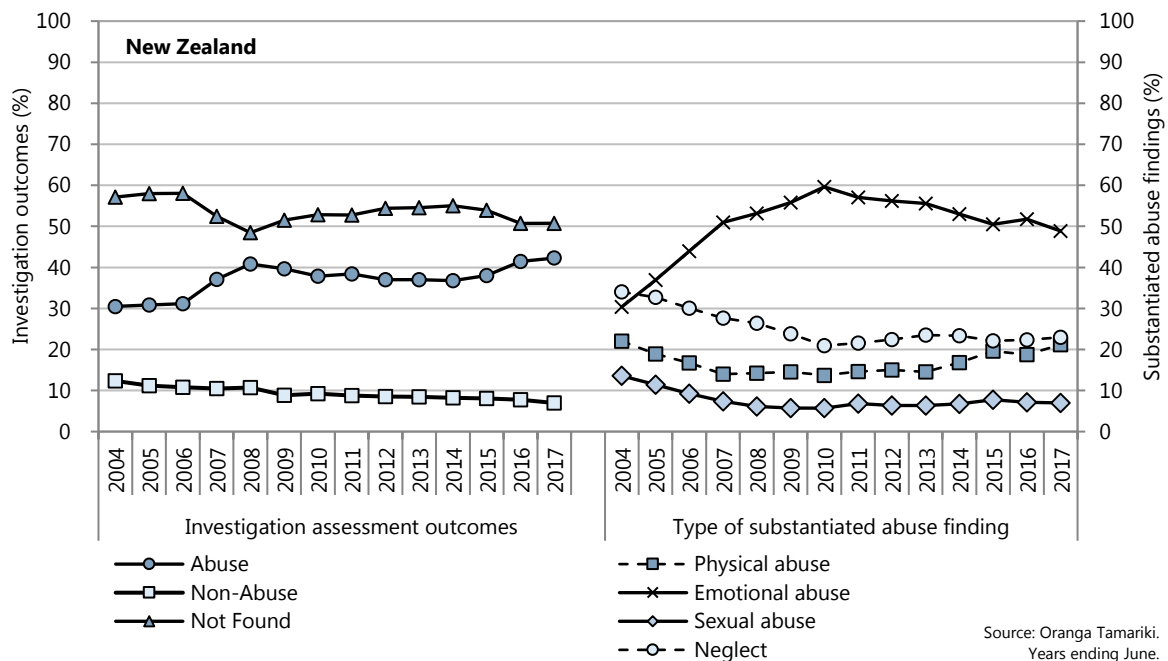
Source: Oranga Tamariki. Year ending June 2017.
 "Police other" pertains to reports of concern not related to family violence

Figure 25 shows outcomes from investigation assessments (abuse, non-abuse, and not found) and the types of substantiated findings for the abuse outcome for 2004 to 2017. A finding is made after an investigation has been completed by Oranga Tamariki and abuse or neglect has been verified.

For almost every period, at least 50% of investigation assessments have resulted in a "Not Found" outcome, which is where there is not clear and sufficient evidence to substantiate a finding. Investigation assessments with a "Non-Abuse" outcome are classified as either Behavioural Relationship Difficulties or Self Harm Suicidal, of which the majority are Behavioural Relationship Difficulties. The proportion of assessments that have resulted in an "Abuse" outcome increased from 2004–2008 and have remained at around 40% since then. Where abuse was substantiated, the most common type of abuse was emotional (49% of

investigations in 2017); in 2017 neglect was found in 23% of substantiated investigations, physical abuse in 21%, and sexual abuse in 7%.

Figure 25. Investigation assessment outcomes or substantiated abuse findings for children and young people notified to Oranga Tamariki, by year, 2004–2017

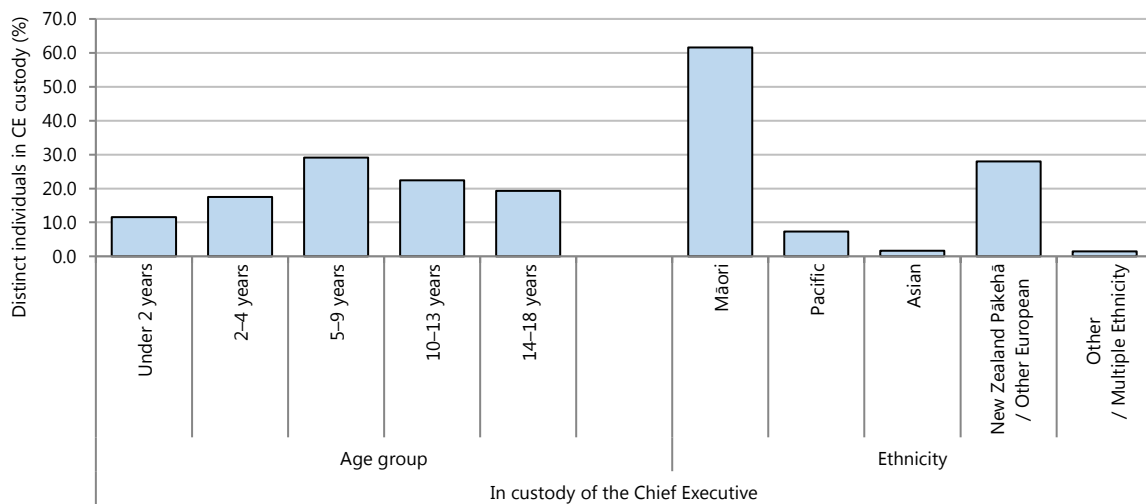


In June 2017, there were 5,708 children and young people in the custody of the Oranga Tamariki Chief Executive (CE), and most of these children and young people were in out of home care (4,716, 83%).

Demographic data for distinct children and young people in the custody of the CE in 2017 are presented in Figure 26; 62% identified with Māori as their primary ethnic group; 7% with Pacific and 27% as New Zealand Pākehā/Other European. By age group, 29% were aged 5–9 years, with 12% aged under 2 years and between 17% and 22% in the other age groups.

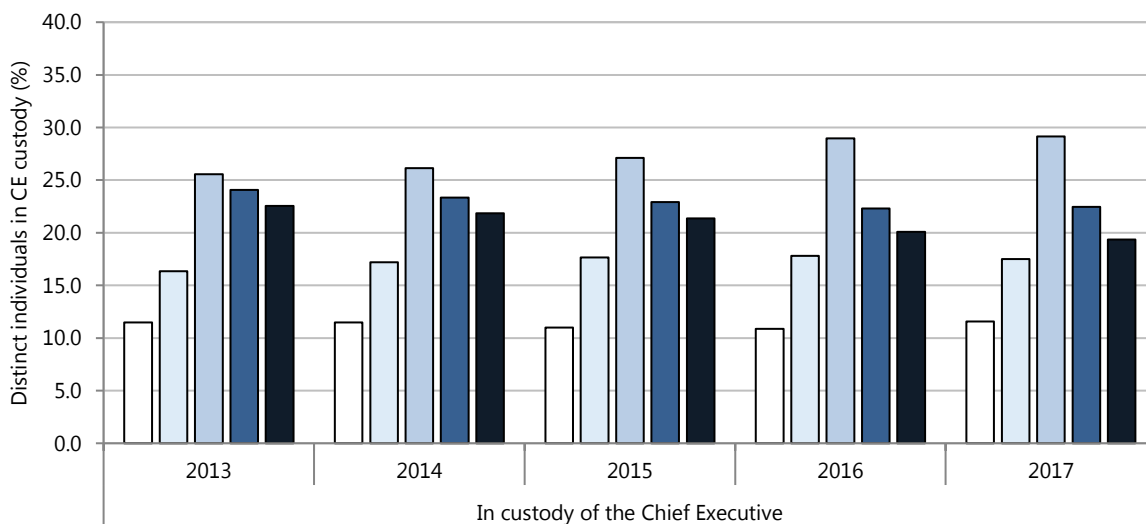
Since 2013, the proportion of children aged 5–9 in CE custody has increased and the proportions of children in the age groups 10–13 and 14–18 have decreased (Figure 27).

Figure 26. Children and young people in the custody of the Oranga Tamariki Chief Executive, by demographic factor 2017



Source: Oranga Tamariki. Year ending June 2017.
Ethnicity is self identified primary ethnic group

Figure 27. Children and young people in the custody of the Oranga Tamariki Chief Executive, by age group New Zealand 2013-2015



Source: Oranga Tamariki. Years ending June.
"Individuals" pertains to children and young people

Legend: Under 2 years (white), 2-4 years (light blue), 5-9 years (medium blue), 10-13 years (dark blue), 14-18 years (black)

EDUCATION

The socio-economic context in which children and young people live has a significant impact on their educational performance.⁹ Secondary education matters for young people's continuing education, their employment, their health and for having a better quality of life.⁴⁹ Measures of young people's academic success reported in New Zealand are usually presented in terms of the National Certificate of Educational Achievement (NCEA). The NCEA level 2 qualification is the desired minimum qualification for school leavers, giving them opportunities for the future.⁴⁹

The following section presents Ministry of Education data to summarise key measures for educational attainment of school leavers from 2009-2017.

Data sources and methods

Indicators

School leavers with no qualifications

School leavers with NCEA level 1 or higher

School leavers with NCEA level 2 or higher

School leavers with a University Entrance Standard

Data sources

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

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

Denominator: Number of school leavers in a given year

Definitions

The National Certificate of Educational Achievement (NCEA) is part of the National Qualifications Framework (NZQF). There are three levels depending on the difficulty of the standards achieved. At each level, students must achieve a certain number of credits, with credits being able to be gained over more than one year. Listed qualification levels include the NZQF as well as other equivalent qualifications that are non-NZQF.

School socio-economic decile: All schools are assigned a decile ranking based on the socio-economic status of the areas they serve. These rankings are based on census data from families with school age children in the areas from which the school draws its students. Census variables used in the ranking procedure include equivalent household income, parent's occupation and educational qualifications, household crowding and income support payments. Schools are assigned a decile ranking, with decile 1 schools being the 10% of schools with the highest proportion of students from low socio-economic 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.

Further information

These data follow a new definition of school leavers from the Ministry of Education's ENROL system utilised from 2009 onwards so comparison with previous years is not possible.

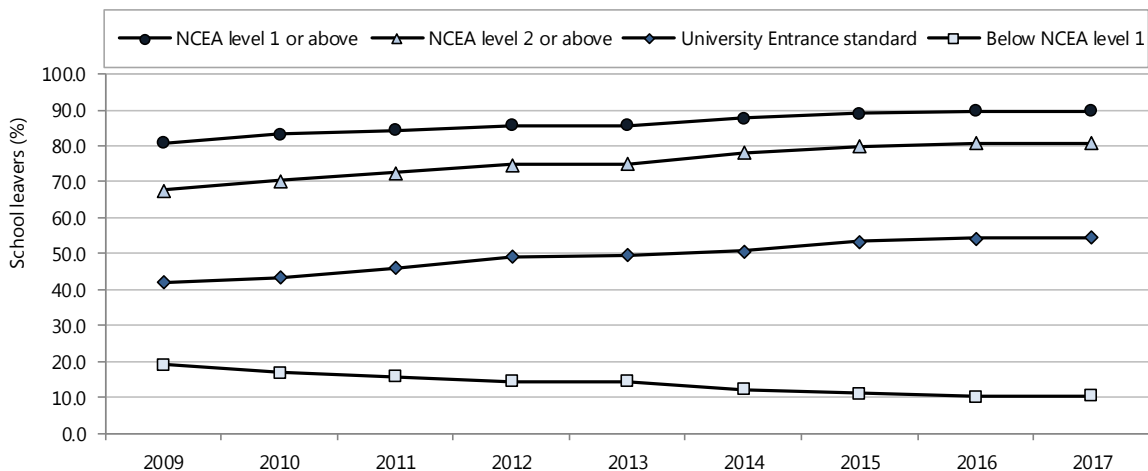
Ethnicity is total response so individual students may appear in more than one ethnic group.

New Zealand has continued to see an increasing percentage of students leaving school with qualifications. The proportion of school-leavers with NCEA level 1 rose from 81% in 2009 to 90% in 2017: with NCEA level 2 or above, the proportion rose from 68% in 2009 to 81% in 2017 and with University Entrance standard, from 42% in 2009 to 54% in 2017. Over the same period, the percentage of students leaving with a qualification below NCEA level 1 dropped from 19% to 10% (Figure 28).

From 2009–2017 there were improvements in educational outcomes across all ethnic groups, with persisting inequity between ethnic groups. The percentage of Māori students who attained NCEA level 2 or above rose from 46% in 2009 to 68% in 2017. Over the same time period, the percentage of Pacific students achieving NCEA level 2 or above rose from 56% to 76%. For all three measures of attainment, Māori and Pacific students were more likely than European or Asian students to leave school with a qualification below NCEA level 1 (Figure 29).

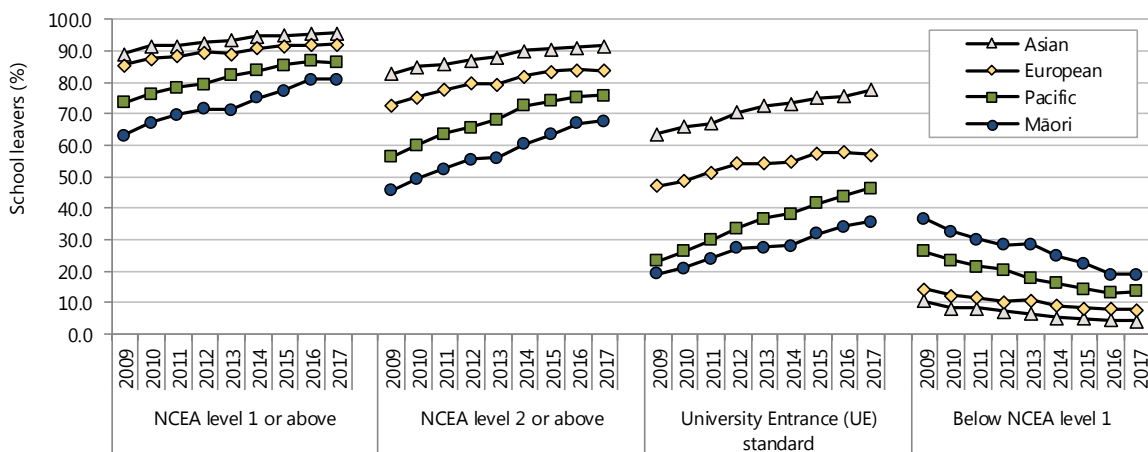
The Ministry of Education used school socio-economic quintiles in the time period of this report for funding purposes. Quintile 1 (lowest socio-economic status) schools are the 20% of schools with the highest proportion of students from low-socio-economic communities. Ranking of quintiles is in the opposite direction to that of the NZDep2013 index of deprivation used with health data in this report. The percentage of students attaining NCEA level 1 or above, NCEA level 2 and above and those attaining University Entrance standard increased with increasing socio-economic status quintile. In 2017, 68% of students in quintile 1 schools achieved NCEA level 2 or above, compared with 93% of students in quintile 5 schools. Conversely the percentage of those leaving school with attainment below NCEA level 1 increased with lower socio-economic status from 3.3% in quintile 5 (highest socio-economic status) to 20% in quintile 1 (lowest socio-economic status) (rate ratio (RR) 6.1, 95% CI 5.5–6.7) (Figure 30).

Figure 28. Highest educational attainment of school leavers, New Zealand 2009–2017



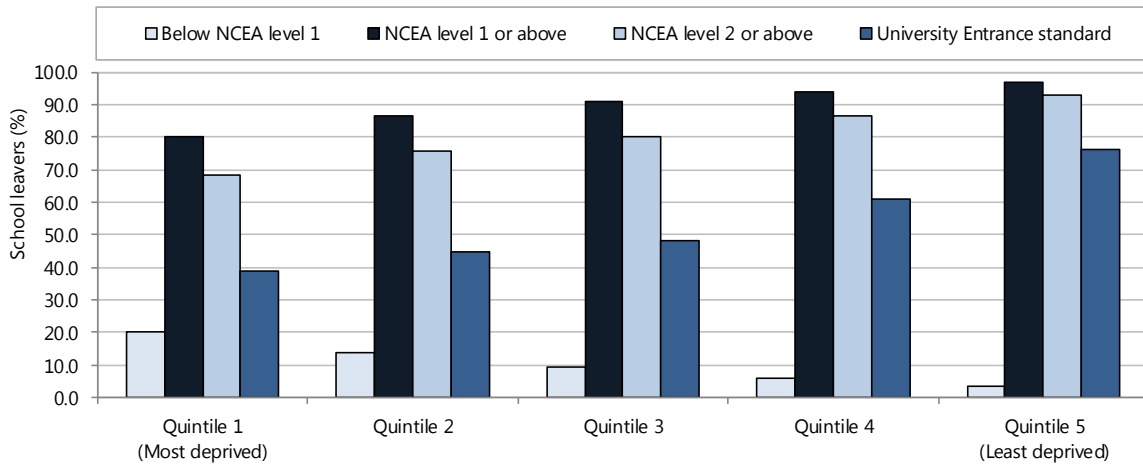
Source: Ministry of Education ENROL;
UE standard = school leavers achieving a University Entrance or a level 3 qualification or higher

Figure 29. Educational attainment of school leavers by ethnicity, New Zealand 2009–2017



Source: Ministry of Education ENROL;
Ethnicity is total response: Students have been counted in each ethnic group they belong to,
UE standard = school leavers achieving a University Entrance or a level 3 qualification or higher

Figure 30. Educational attainment of school leavers by school socio-economic quintile, New Zealand 2017



Source: Ministry of Education ENROL;
Deprivation based on school socioeconomic decile

SOCIAL AND ECONOMIC ENVIRONMENT

Factors in the social and economic environment may significantly impact the wellbeing of individual children, as well as their whānau and families.⁸ Such social determinants of health are profoundly influenced by social and political decisions, beyond the immediate control of individual children, parents or professionals.⁵⁰ The influence of the broader social and economic environment is exerted through complex pathways, and may be mediated by health behaviours and other environmental factors.⁵⁰ The following section provides a background to the other indicators presented in the Child Poverty Monitor, and shows patterns over time in New Zealand's economic growth relative to average hourly income, in unemployment and underutilisation of the labour force, in income inequality, and in the number and proportion of children dependent on a benefit recipient.

ECONOMIC GROWTH AND INDIVIDUAL EARNINGS

The gross domestic product (GDP) is the official measure of economic growth in New Zealand and provides a snapshot of economic performance.⁵¹ In most OECD countries over the last three decades growth in real wages has fallen behind growth in productivity; with a fall in “labour’s share” of income gains from productivity growth.⁵² Key drivers of this disparity include rapid technological change, globalisation and decreases in labour’s bargaining power.^{52,53}

This section compares growth in GDP with average hourly earnings using data from StatsNZ.

Data sources and methods

Indicators

Real per capita gross domestic product (RPC-GDP)

Real ordinary time average hourly earnings (ROT-AHE)

Data sources

Numerator: Base series from Lattimore and Equb⁵⁴ and supporting web page 1975–1987Q1. StatsNZ: GDP (production) chain volume seasonally adjusted total 1987Q2–2018Q2

Denominator: StatsNZ: Estimated de facto population 1975–1990; Estimated resident population 1991–2018

ROT-AHE: StatsNZ: Average hourly rates, all sectors EMP013AA 1980–1986; Average hourly earnings index ERN001AA was used to calculate back from EMP013AA data for 1975–1979; Quarterly Employment Survey 1987–2018

Definitions

Real GDP is adjusted for changing prices and reflects the extent to which growth in the value of goods and services is due to increased production rather than an increase in the absolute value of the goods and services produced.

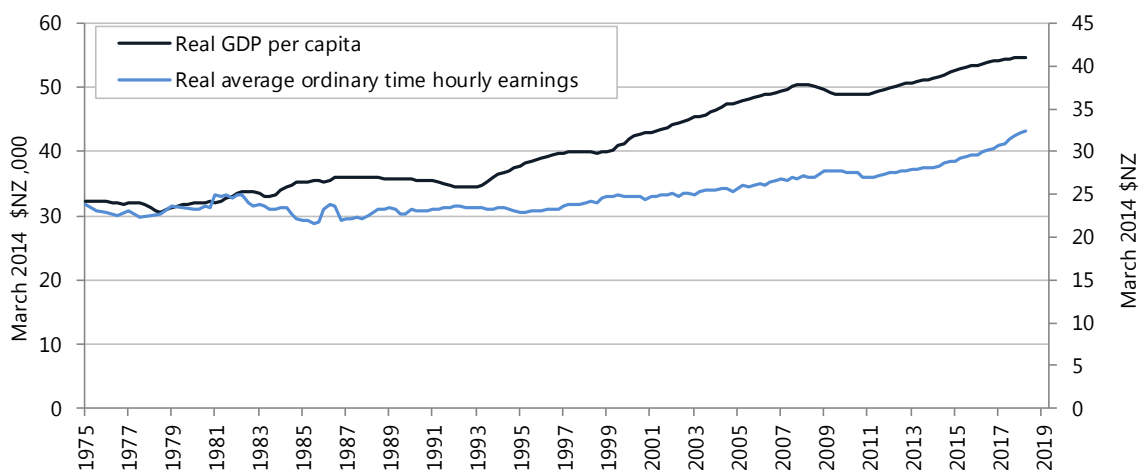
ROT-AHE represent the number of hours usually worked and the usual income in a reference week, adjusted for changing prices.

Further information

The production approach to GDP measures the total value of goods and services produced in New Zealand, after deducting the cost of goods and services used in the production process.⁵¹ GDP data were re-expressed in March 2014 prices using a constant ratio based on the ratio of the nominal and real values in the March 2014 quarter; AHE data were re-expressed in March 2014 prices using 2014 rebased Consumer Price Index. While the different data series used to develop a composite AHE data set may have had different underlying methodologies this is not likely to have a significant effect on the overall pattern of quarterly change in AHE. The important comparison in the section on RPC-GDP and ROT-AHE is the quarterly percentage change in each variable rather than the absolute monetary value. The graph axes have been scaled to make it easier to compare the relative changes in each variable over time.

Since 1975 the increase in gross domestic product (GDP) has been steeper than the increase in average hourly earnings (AHE): real GDP per capita increased by 69% from 1975–2018, while AHE increased by 36% during the same period (Figure 31).

Figure 31. Real gross domestic product per capita and real average ordinary time hourly earnings, New Zealand March 1975 to June 2018



Source: Lattimore & Equb (2011) and StatsNZ

INCOME INEQUALITY

Income inequality raises economic as well as social and political concerns, because rising inequality tends to drag down GDP growth. When people with lower incomes are prevented from realising their human capital potential, it is bad not only for them but for the economy as a whole.⁵⁵ The level of income inequality can also be regarded as an indicator of the fairness of a society. A population with a high level of inequality may be considered less socially connected than a society with less inequality.⁵⁶ A population with high income inequality is one where human resources are wasted through a high proportion of the population out of work or trapped in low-paid and low-skilled jobs.⁵⁵ In 2014 the World Bank set a shared prosperity goal to promote income growth of the lowest 40 percent of the population in each country.⁵⁷ The United Nations extended this goal to include a target of sustained income growth of the bottom 40 per cent of the population at a rate higher than the national average in Sustainable Development Goal 10.²

This section uses data from the New Zealand Household Economic Survey (NZHES) to describe income distribution in New Zealand.

Data sources and methods

Indicators

Trends in real income

Income inequality as measured by the P80:P20 ratio

Data sources

StatsNZ Household Economic Survey (NZHES) via Perry 2018⁴

OECD income distribution database <http://www.oecd.org/social/income-distribution-database.htm>

Definitions

Real income: Income adjusted for changing prices over time.

Income percentiles: Calculated by ranking individuals on the equivalised income of their respective households and dividing them into 100 equal-sized groups or percentiles. If the ranking starts with the lowest income then the income at the top of the 10th percentile is denoted P10, the median or top of the 50th percentile is P50 and so on.

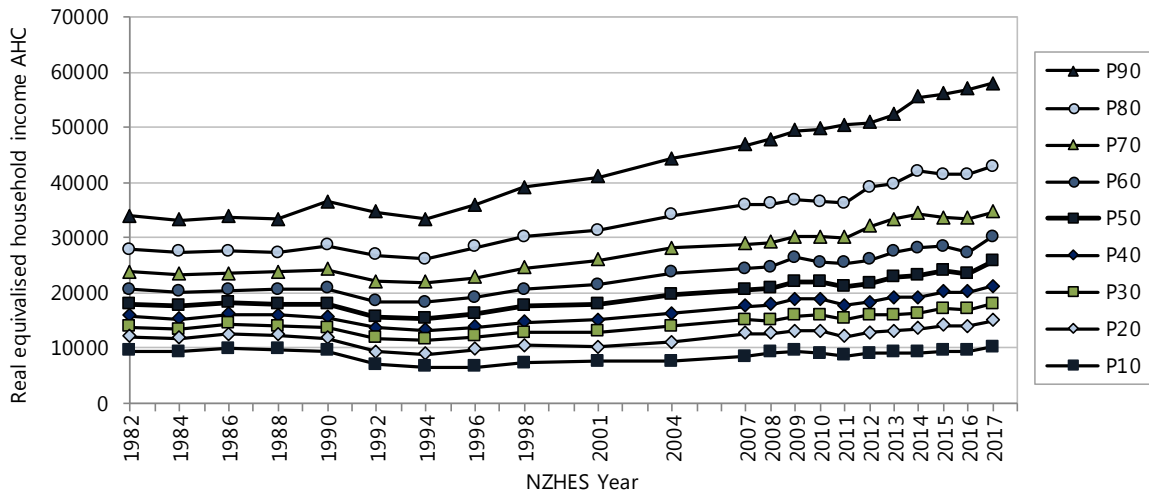
P80:P20 ratio: Ratios of values at the top of selected percentiles, such as P80:P20, are often called percentile ratios. Percentile ratios summarise the relative distance between two points in the income distribution: in the case of P80:P20 ratio this is the relative distance in the income distribution between high household incomes (those in the 80th percentile) and low household incomes (those in the 20th percentile). The higher the P80:P20 ratio, the greater the level of inequality; a P80:P20 ratio of 3.0 indicates that the incomes of individuals in households at the top of the 80th percentile are three times higher than for those at the top of the 20th percentile.

The incomes of households in higher income deciles rose more quickly than incomes for households in lower deciles, both in proportion and in absolute terms between 1994 and 2017. This led to a greater gap between those on “higher” and those on “lower” incomes (Figure 32).

The P80:P20 ratio gives an indication of the degree of dispersion, or gap between “higher” and “lower” equivalised household incomes. The ratio includes a range of incomes for most of the population. It also avoids the volatility associated with the top and bottom ten percent of incomes that would be included if the full spread of the distribution was included.⁴ An increasing P80:P20 ratio means that incomes for the 20% of the population with highest incomes have increased more than the increase in incomes for the 20% of the population with the lowest incomes, suggesting that there is more income inequality.

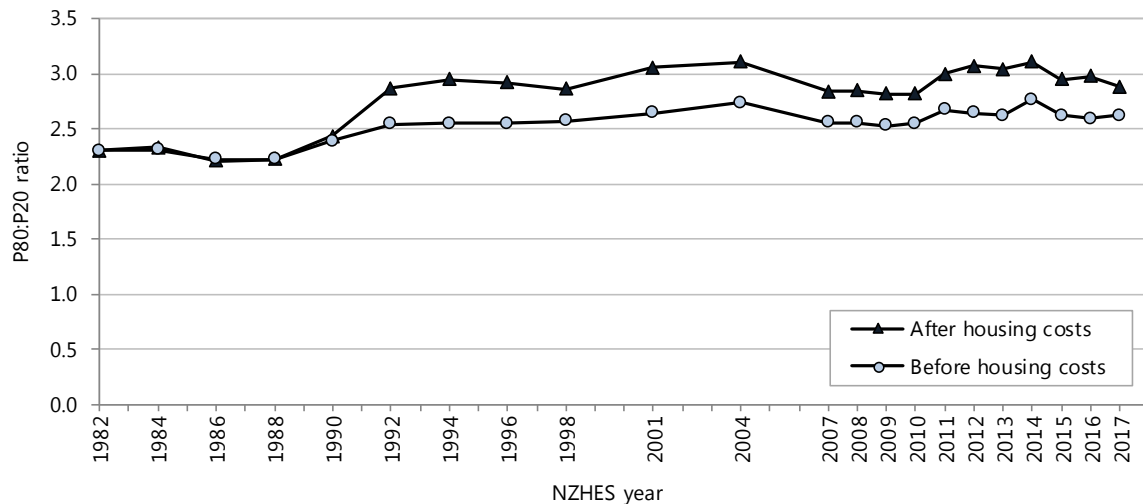
In New Zealand, the most rapid rises in income inequality occurred between 1988 and 1994. Between 2004 and 2007, income inequality fell after introduction of the Working for Families (WFF) package. Since the global financial crisis and associated recession in 2008 there has been a rise in the P80:P20 measure of income inequality after adjusting for housing costs⁴ (Figure 33).

Figure 32. Real equivalised household incomes after housing costs, by income decile New Zealand 1982–2017



Source: Pery (2018)⁴ derived from StatsNZ Household Economic Survey (NZHES)
 Income expressed in 2017 NZ dollars. P10 = highest income in decile 1 and so on; P50 = median income

Figure 33. Ratio of 80th percentile to 20th percentile (P80:P20 ratio) of equivalised disposable housing income before and after housing costs, New Zealand 1982–2017



Source: Pery (2018)⁴ derived from StatsNZ Household Economic Survey (NZHES)

UNEMPLOYMENT AND UNDERUTILISATION

The unemployment rate provides a picture of overall economic conditions.⁵⁸ A rise in the unemployment rate is associated with a wide range of adverse outcomes for all children and young people in a community, not just those whose parents lose employment.⁵⁹

Underutilisation is a concept that is supplementary to unemployment and measures lack of employment from a worker's perspective. It reflects not only total lack of work but also insufficient volume of work.⁵⁸

The following section is a review of unemployment and underutilisation using data from the StatsNZ Household Labour Force Survey.

Data sources and methods

Indicators

Persons unemployed and unemployment rate

Persons underutilised and underutilisation rate

Data source

StatsNZ Household Labour Force Survey (HLFS)

Definitions⁵⁸

Unemployed: All people in the working-age population who, during the reference week, were without a paid job, available for work, and had either actively sought work in the past four weeks or had a new job to start within the next four weeks

Unemployment rate: Number of unemployed people expressed as a percentage of the labour force

Working age population: Usually resident, non-institutionalised, civilian population of New Zealand aged 15 years and over.

Underutilised: Sum of those unemployed, underemployed, and in the potential labour force

Underutilisation rate: Number of underutilised people expressed as a proportion of those in the extended labour force

Underemployment: People who are in part-time employment who would like to, and are available to, work more hours

Potential labour force: People who are not actively seeking work but would like a paid job and are available in the reference week (i.e. available potential jobseekers), and people who are actively seeking work, are not available in the reference week but will become available in the next four weeks (i.e. unavailable jobseekers)

Extended labour force: People in the labour force plus people in the potential labour force

Further information

The estimates from the HLFS were revised in March 2015 using 2013 Census data

Seasonal adjustment removes the seasonal component present when dealing with quarterly data and makes the underlying behaviour of the series more apparent

A redesigned HLFS was implemented from the June 2016 quarter and will enable more accurate reporting of underutilisation statistics in line with International Labour Organisation recommendations

Underutilisation measures in the HLFS replace previously produced "jobless" data

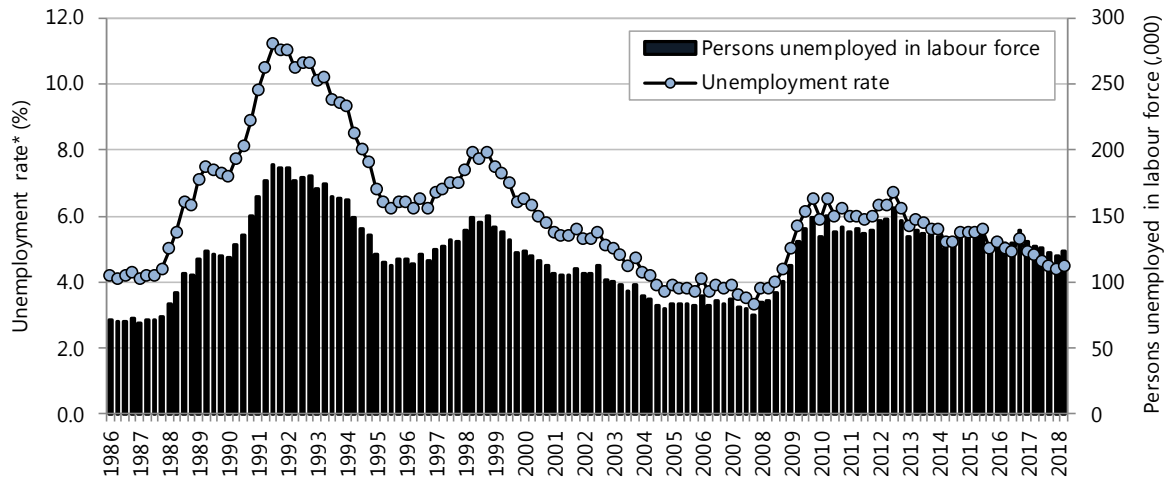
In June 2018 there were 124,000 New Zealanders in the labour force who were officially unemployed (4.5%). The seasonally adjusted unemployment rate has remained under 6% since March 2013, and below 5% since March 2017. Looking back over the past 30 years the highest observed unemployment rate was 11.2% in September 1991 and the lowest rate was 3.3% in December 2007 (Figure 34).

Unemployment rates, in absolute terms, differ by age, with the highest rates consistently observed for young people aged 15–19 years. In June 2018 the unemployment rate for young people aged 15–19 years was 19.5% compared with rates of around 3% for adults aged 35 years and over. A high proportion of 15–19 year olds are engaged in education or training, however in June 2018 there were 8.3% of 15–19 year olds who were not in employment, education or training. From 2008 to 2010 unemployment rates for 15–19 year olds rose more steeply and peaked higher than unemployment rates for other age groups, and rates have remained much higher than rates for other age groups (Figure 35).

There was also inequity in unemployment rates by ethnicity. In June 2018 the unemployment rate for Māori was 9.4% and for Pacific peoples 8.8% compared with 3.6% for Europeans. Following the 2008 global financial crisis, unemployment rates for Māori and Pacific

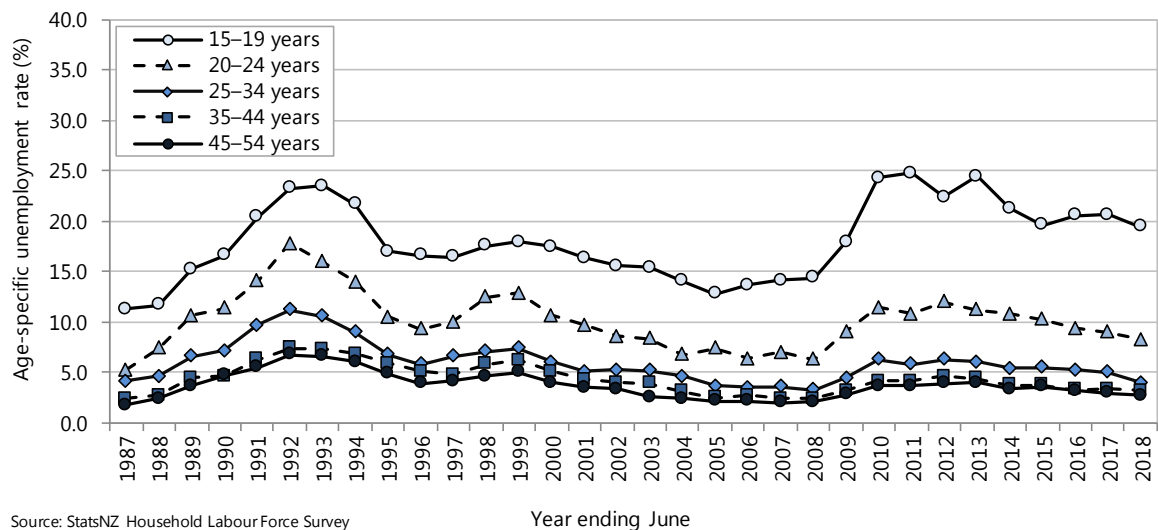
New Zealanders rose more steeply than unemployment rates for other New Zealanders and have remained higher than 2008 rates for these ethnic groups (Figure 36).

Figure 34. Seasonally adjusted quarterly unemployment numbers and rates, New Zealand March 1986 to June 2017



Source: StatsNZ Household Labour Force Survey.
Rates have been seasonally adjusted

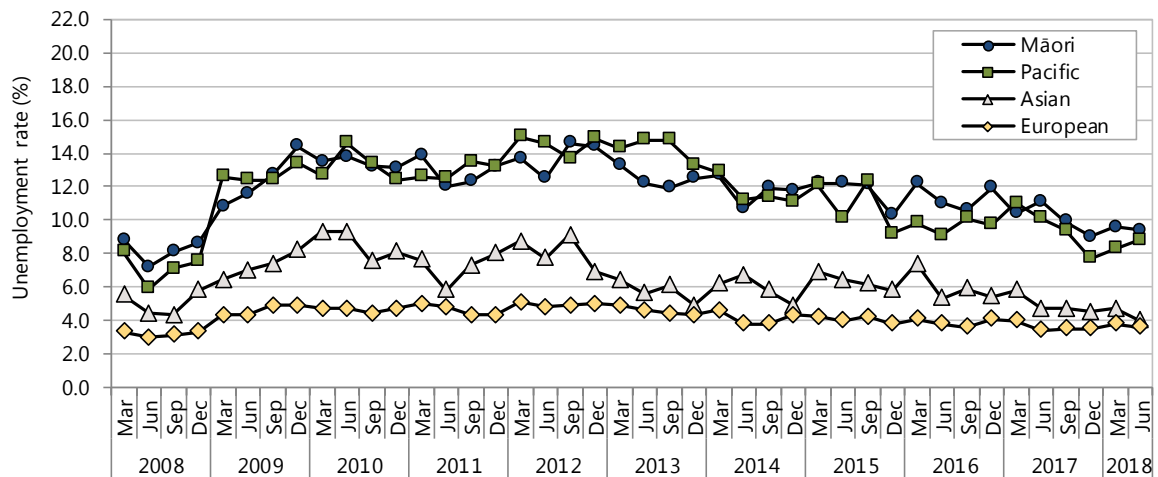
Figure 35. Unemployment rates by age (selected age groups), New Zealand 1987–2018



Source: StatsNZ Household Labour Force Survey

Year ending June

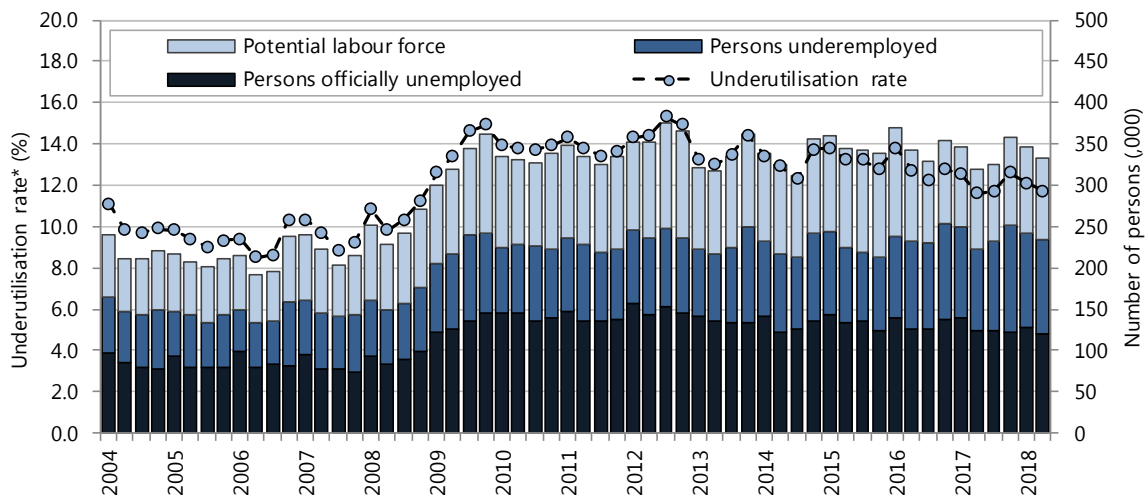
Figure 36. Quarterly unemployment rates by ethnicity, New Zealand March 2008–June 2018



Source: StatsNZ Household Labour Force Survey.
Ethnicity is total response

The underutilisation rate includes persons underemployed and in the potential labour force, as well as those unemployed. In June 2018 there were 333,000 New Zealanders seeking additional hours of work, actively seeking work but not available in the next week, or available but not actively seeking work. The underutilisation rate increased following the 2008 global financial crisis and remains high (Figure 37).

Figure 37. Quarterly underutilisation by extended labour force status, New Zealand March 2004 to June 2018



Source: StatsNZ Household Labour Force Survey.

* Underutilisation = Number of underutilised persons as a percentage of the extended labour force.

See 'Data sources and methods' box for further definitions. Rates have been seasonally adjusted

Analysis by StatsNZ showed that from 2004–2016 unemployment and underutilisation data followed similar patterns over time with the underutilisation rate much higher than the unemployment rate. In the June 2016 quarter, underutilisation and unemployment rates followed the same pattern across the ethnic groups; Māori and Pacific people had the highest rates of all ethnic groups. The highest underutilisation rates in the June 2016 quarter were observed for 15–19 year olds (over 45%). The 15–19 and 20–24 year old age groups had the highest numbers and rates of underemployment, unemployment, potential labour force, and underutilisation.⁵⁸

HOUSING AFFORDABILITY

Access to adequate, safe and affordable housing for all people is a universal human right and a target within Sustainable Development Goal 11.² Children who contributed to the Expert Advisory Group on Solutions to Child Poverty report identified housing as a key issue.⁵

The cost of housing is relatively high in New Zealand.⁵ Most low income families cannot afford to buy their own home.⁵ From 1986–2013 there was a fall in New Zealand home ownership rates, which disproportionately affected children, particularly Māori and Pacific children in one-parent households.⁶⁰ Child poverty rates show a clear gradient across different tenure types: in the New Zealand Household Economic Survey (NZHES) years 2013–2015 over half of children living in income poor households lived with their families in private rental accommodation, and another 17% in Housing New Zealand Corporation (HNZC) homes.⁴ Rates of mobility are higher for households who rent, which can have negative consequences for children in relation to schooling and social interaction.⁶⁰ Children and young people experience severe stress when they have had to move house because the household could not pay rent.⁵

Households that spend more than 30% of income on owner-occupied or rental accommodation are said to have a high “outgoings-to-income” ratio or OTI.⁴ Meeting high housing costs relative to income can leave insufficient money to cover other basic needs such as food, clothing, transport, medical care and education, especially for low-income households.⁴

The following section uses data from the StatsNZ Household Economic Survey to present the proportion of households spending more than 30% of their income on housing costs.

Data sources and methods

Indicator

Households spending more than 30% of their income on housing costs

Data source

New Zealand Household Economic Survey (NZHES) via Perry (2018)⁴

Definitions

Owned: People who owned their home, partly owned their home, or held it in a family trust.

Rental: People who did not own their home, did not have it in a family trust, and were making rent payments to a private person, trust, or business or were making rent payments to Housing New Zealand Corporation, local authority, or city council, or other state-owned corporation or state-owned enterprise, or government department or ministry.

Housing costs include all mortgage outgoings (principal and interest) together with rent and rates for all household members. Repairs, maintenance, and dwelling insurance are not included. Any housing-related cash assistance from the government is included in household income.⁴

High housing costs: When a household spends more than 30% of its income on accommodation (rent, mortgage outgoings, rates) it is said to have a high “outgoings-to-income” ratio (OTI).⁴

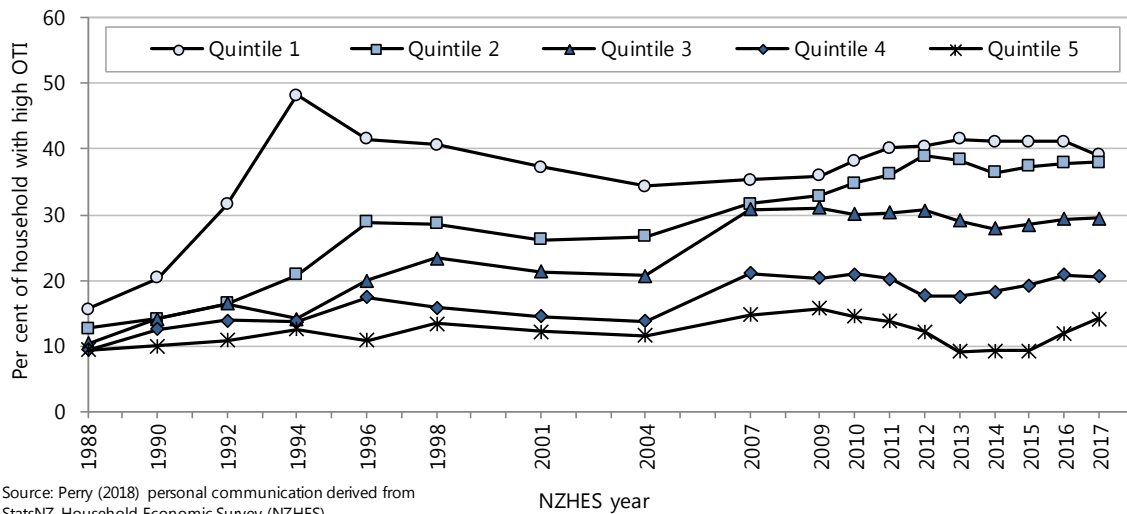
Further information

Variations in housing costs do not necessarily correspond to similar variations in housing quality. This is because many older individuals live in good accommodation with relatively low housing costs, for example, those living in mortgage-free homes, whereas many younger people have a similar standard of accommodation but relatively high accommodation costs.⁴

Low and middle-income New Zealand households are more likely than high income households to spend more than 30% of their income on housing costs (Figure 38). In 2017, 39% of those in the lowest income quintile (quintile 1) and 38% of those in the second lowest income quintile (quintile 2) were spending more than 30% of their income on housing costs. In comparison, 30% of households in the middle income quintile (quintile 3), 21% in quintile 4 and 14% of households in the highest income quintile (quintile 5) had such high outgoings to income ratios (OTI). From 2011–2017 at least 30% of households with the lowest incomes

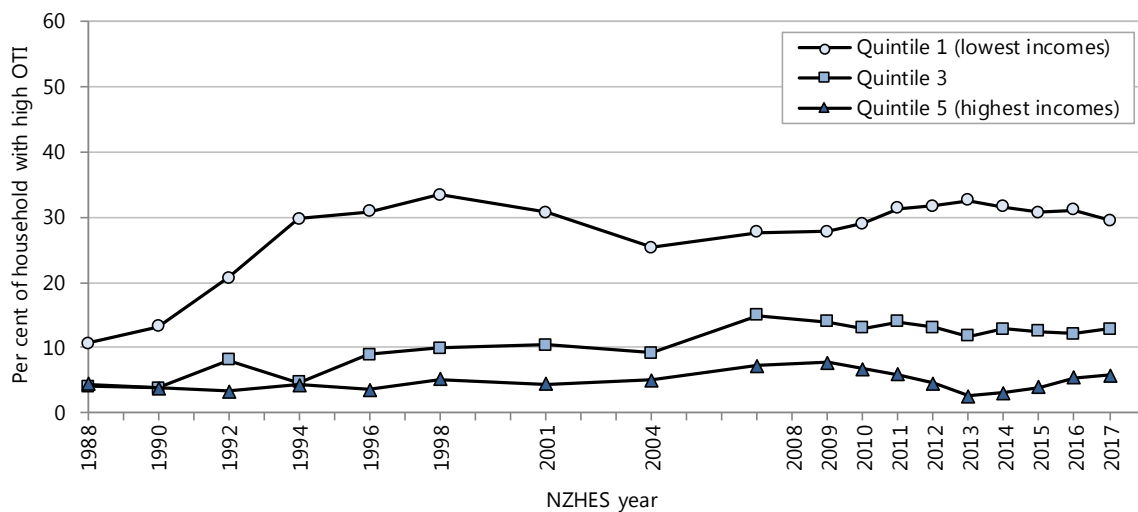
(quintile 1) have been spending 40% of their income on housing costs, and over one-fifth have been spending half of their income on housing costs (Figure 39, Figure 40).

Figure 38. Households spending more than 30% of their income on housing costs by income quintile, New Zealand 1988–2017



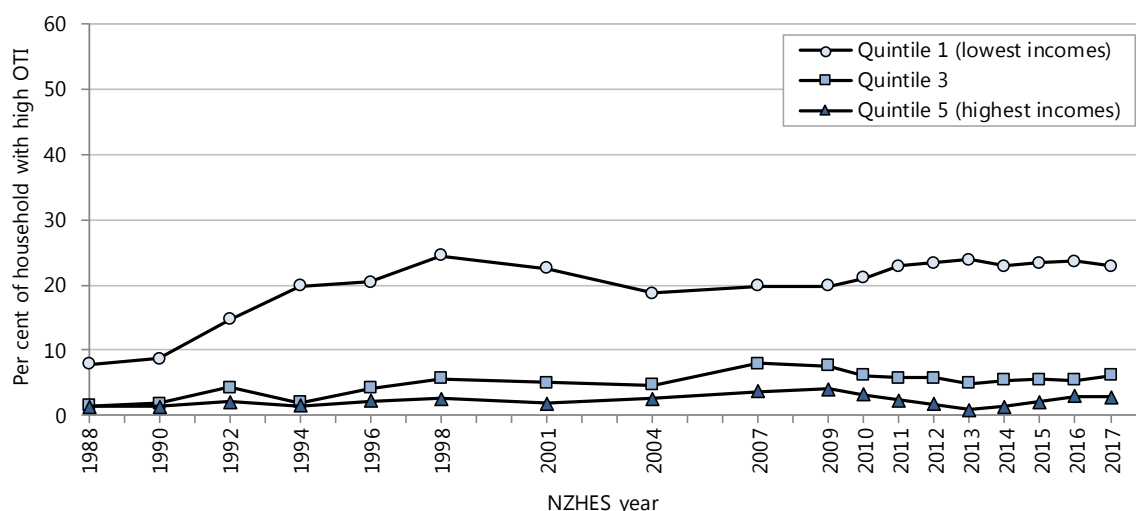
Source: Perry (2018) personal communication derived from StatsNZ Household Economic Survey (NZHES).
 Quintile 1 = lowest incomes; quintile 5 = highest incomes

Figure 39. Households spending more than 40% of their income on housing costs by selected income quintile, New Zealand 1988–2017



Source: Perry (2018) personal communication derived from StatsNZ Household Economic Survey (NZHES)

Figure 40. Households spending more than 50% of their income on housing costs by selected income quintile, New Zealand 1988–2017



Source: Perry (2018) personal communication derived from StatsNZ Household Economic Survey (NZHES)

The proportion of accommodation supplement recipients who were paying more than 30% of their income on housing costs increased from 87% in 2007 to 92% in 2016. In 2016 over half of accommodation supplement recipients in rental accommodation were paying over 50% of their income on housing costs. The proportion of sole parent with children households experiencing high housing costs increased from 84% in 2007 to 88% in 2016. In 2016 over 40% of one parent-one child households were paying more than half their income on housing costs (Table 5).

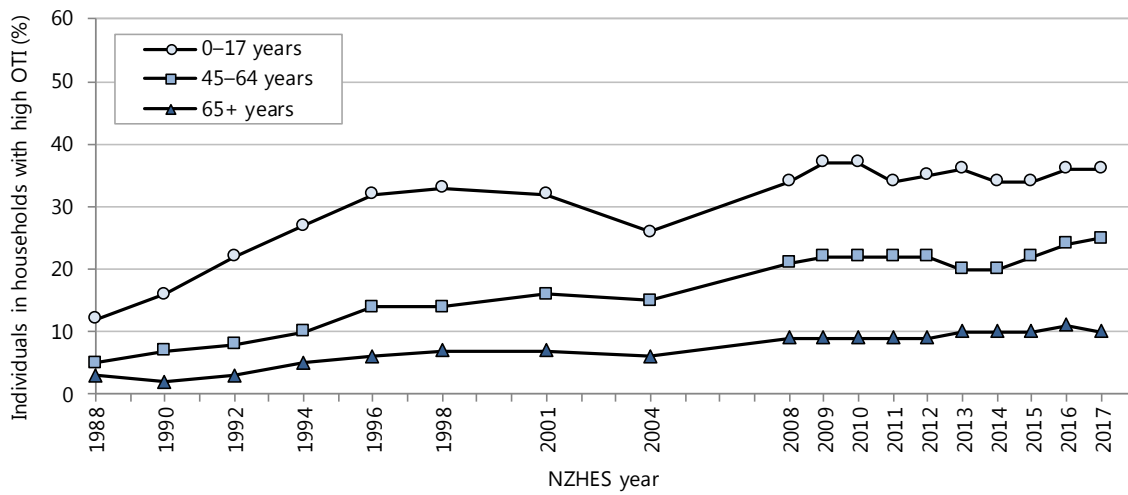
Individuals aged 0–17 years are more likely than 45–64 year olds and older New Zealanders to live in households with high OTIs. Between 1988 and 2017 there was an increase in the percentage of individuals living in households with high OTIs across all age groups (Figure 41).

Table 5. Housing costs as a proportion of income, accommodation supplement recipients, by household type and selected NZHES survey year, New Zealand

Household type	Group as % of those receiving AS*		Housing costs as a proportion of income					
			>30%		>40%		>50%	
New Zealand								
NZHES year	2007	2016	2007	2016	2007	2016	2007	2016
All	100	100	87	92	59	69	34	44
Renters	63	66	90	94	67	76	40	52
Single adult	45	55	90	94	65	73	40	50
Two parent with dependent children	11	9	74	89	40	56	21	29
One parent with one child	19	14	86	89	60	67	33	42
One parent with 2+ children	17	14	84	88	55	64	23	34
NZ Superannuation/Veterans Pension	9	13	81	86	48	54	23	27

Source: Perry (2018)* derived from MSD Information Analysis Platform (iMSD) AS=accommodation supplement; *Categories are not mutually exclusive and thus do not sum to 100%

Figure 41. Individuals in households spending more than 30% of their income on housing costs (high OTI) by selected age groups, New Zealand 1988–2017



Source: Perry (2018)⁴, derived from StatsNZ Household Economic Survey (NZHES).

Note: Rates for those aged 0-17, 18-24 and 25-44 years were very similar

CHILDREN RELIANT ON RECIPIENTS OF A BENEFIT

Children in New Zealand households where the main income is from an income support benefit are more likely than other children to live in income-poor households and to experience material deprivation.⁶¹ Cuts in the real value of most welfare benefits were a contributor to the dramatic increase in child poverty rates in the early 1990s. Government policies in areas such as access to and value of income support benefits have a substantial effect on household incomes for families dependent on benefit payments.⁵

The following section uses data from the Ministry of Social Development to review the proportion of children who are reliant on a recipient of a benefit.

Data sources and methods

Indicator

0–17 year olds reliant on a recipient of a benefit

Data sources

Numerator: SWIFTT Database: Number of children aged 0–17 years who were reliant on a recipient of a benefit

Denominator: StatsNZ Estimated Resident Population as at 30 June each year

Further information

The SWIFTT database provides information on the recipients of financial assistance through Work and Income.

All figures refer to the number of children reliant on a recipient of a benefit at the end of June and provide no information on the number receiving assistance at other times of the year. Figures refer to the number of children not the number of benefit recipients; in a household with more than one child each will be included in the count.

Welfare reform in July 2013 introduced three new benefits (Jobseeker Support, Sole Parent Support, and Supported Living Payment), which replaced many of the previously existing benefits, and changed the obligations to be met by recipients of a benefit. The welfare reform changes have been described at <https://www.msd.govt.nz/about-msd-and-our-work/work-programmes/welfare-reform/july-2013/>.

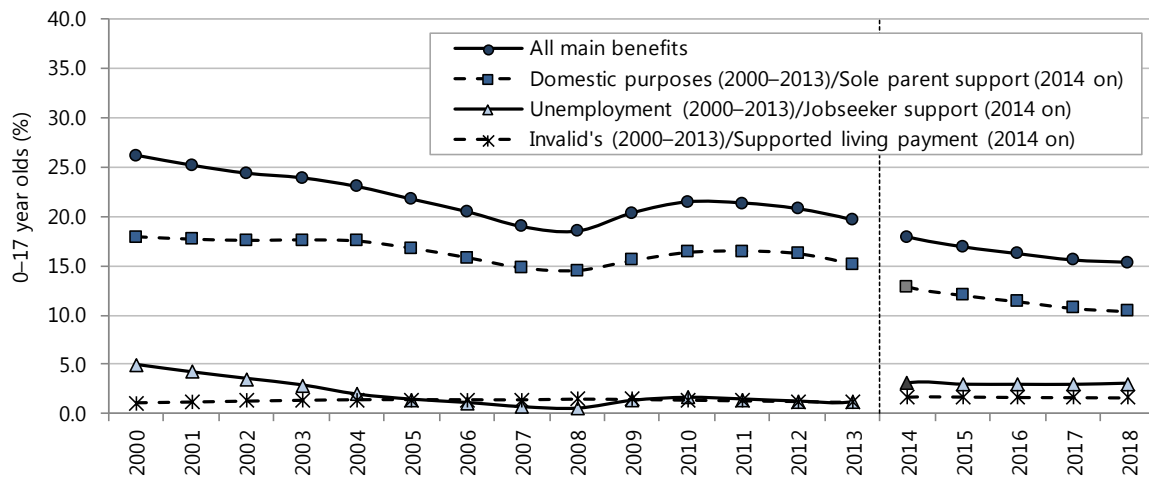
The benefits prior to the June 2013 reform are not directly comparable with the benefits as at June 2014. Prior to 2014, "Other benefits" included: Domestic Purposes Benefit - Women Alone and Caring for Sick or Infirm, Emergency Benefit, Independent Youth Benefit, Unemployment Benefit Training, and Unemployment Benefit Training Hardship, Unemployment Benefit Student Hardship, Widows Benefit, NZ Superannuation, Veterans and Transitional Retirement Benefit. "Other benefits" did not include Orphan's and Unsupported Child's Benefits, and non-benefit assistance. From 2014, "Other benefits" included: Emergency Benefit, Youth Payment, Young Parent Payment, Unemployment Benefit Student Hardship, NZ Superannuation, Veterans and Transitional Retirement Benefit.

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

The number and percentage of 0–17 year olds who were reliant on a recipient of a benefit declined from 271,463 (26% of all children in this age group) in June 2000 to 169,157 (15% of all children in this age group) in June 2018 (Figure 42). In June 2018 most (115,000, 68%) children dependent on a benefit recipient were reliant on a recipient of sole parent support, with the remainder reliant on recipients of jobseeker support (33,471, 20%), supported living payments (17,745, 11%) or other benefits (2,941, less than 2%).

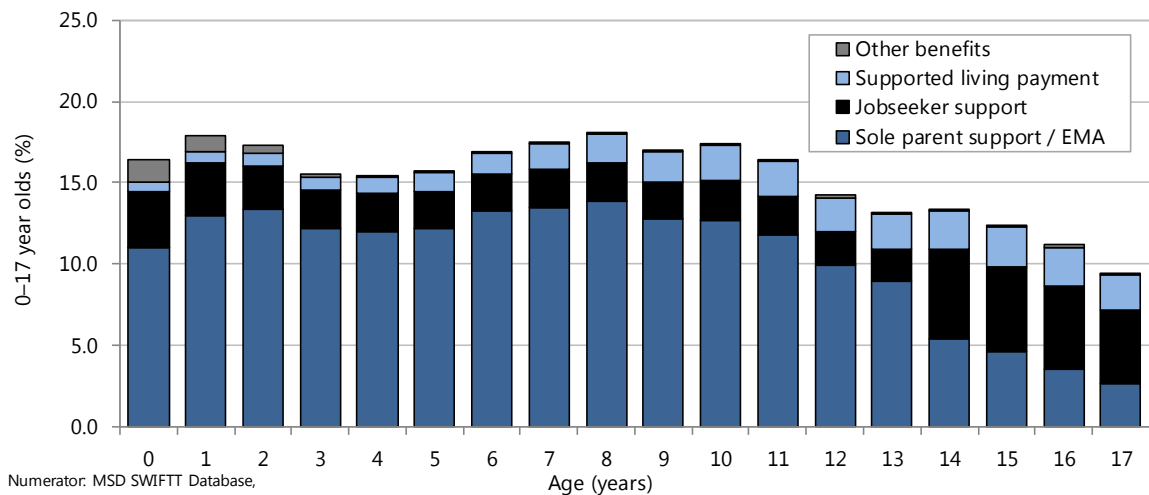
The percentage of 0–17 year olds who were reliant on a recipient of a benefit reduced with increasing age, from 18% of children aged one year to fewer than 10% of children aged 17 years. The percentage of children reliant on a recipient of sole parent support declined from around 13% of 1–8 year olds to fewer than 3% of 17 year olds. For 15–17 year olds, the percentage of children reliant on a recipient of sole parent support was lower than the percentage of children reliant on recipients of jobseeker support (Figure 43).

Figure 42. Children aged 0–17 years who were reliant on a recipient of a benefit recipient, New Zealand as at end of June 2000–2018



Numerator: MSD SWIFTT Database, Denominator: StatsNZ Estimated Resident Population;
The benefits prior to the June 2013 reform are not directly comparable with the benefits as at June 2014

Figure 43. Children aged 0–17 years who were reliant on a recipient of a benefit, by age and benefit type, New Zealand as at end of June 2018



Numerator: MSD SWIFTT Database,
Denominator: StatsNZ Estimated Resident Population.
EMA=Emergency Maintenance Allowance may be paid to sole parents who do not qualify for any other payments

APPENDICES

APPENDIX 1: ICD-10-AM CODES

Infant mortality including sudden unexpected death in infancy (SUDI) as underlying cause of death

Category	ICD-10-AM
Extreme prematurity	P07.2
Intrauterine hypoxia or birth asphyxia	P20, P21
Other perinatal conditions	P00–P19; P22–P96
Congenital anomalies	Q codes
SUDI: SIDS	R95
SUDI: unspecified	R96, R98, R99
SUDI: suffocation or strangulation in bed	W75
SUDI: inhalation of gastric contents or food	W78, W79
Injury or poisoning	V01–Y36

Hospitalisations

Category	ICD-10-AM
Age range	Up to 14 years, neonates under 28 days excluded
Medical hospitalisations	Acute and arranged (where arranged is within 7 days of referral), excluding ED admissions
Injury hospitalisations	Exclude ED admissions and waiting list admissions
SES Eligible admit type (excludes waiting list)	AA (Arranged Admission), AC (Acute), RL (Psychiatric patient returned from leave), ZA (Arranged Admission, ACC covered), ZC (Acute, ACC covered)
ED cases (based on health specialty code)	M05–M08

Medical causes (primary diagnosis)

A–R

Injury (primary diagnosis)

S–T79

Medical conditions

Pneumonia	J10.0 or J11.0, J12–J16, J18
Asthma and wheeze	J45–J46, R062
Acute bronchiolitis	J21
Acute respiratory infections	J00–J06, J22
Other respiratory	Other J codes not listed above

Gastroenteritis	A00–A09, K529
Viral infection of unspecified site	B34
Other communicable	Other A&B codes not listed above

Injury (external cause codes)

Falls	W00–W19
Mechanical forces: inanimate	W20–W49
Mechanical forces: animate	W50–W64
Thermal injury	W85–X19
Poisoning	X40–X49
Intentional self-harm	X60–X84
Assault	X85–Y09
Undetermined intent	Y10–Y34
Road traffic crash	
Pedestrian	V00–V06.(1), V09.(2,3)
Cyclist	V10–V18.(4,5,9), V19.(4,5,6,9)
Motorbike	V20–V28.(4,5,9), V29.(4,5,6,9)
3-wheeled	V30–V38.(5,6,7,9), V39.(4,5,6,9)
Vehicle occupant	V40–V78.(5,6,7,9), V49.(4,5,6,9), V59.(4,5,6,9), V69.(4,5,6,9), V79.(4,5,6,9),
Other land transport	V81.1, V82.(1,9), V83.(0,1,2,3), V84.(0,1,2,3), V85.(0,1,2,3), V86.(0,1,2,3), V87, V89.(2,3)
Non-traffic land transport crash	
Pedestrian	V00–V06.(0), V09.(0,1)
Cyclist	V10–V18. (0,1,2), V19. (0,1,2,3)
Motorbike	V20–V28.(0,1,2), V29. (0,1,2,3)
3-wheeled	V30–V38.(0,1,2,3), V39. (0,1,2,3)
Vehicle occupant	V40–V78.(0,1,2,3),
Other land transport	V81.0, V82.0, V83.(5,6,7,9),V84.(5,6,7,9),V85.(5,6,7,9),V86.(5,6,7,9), V88, V89.(0,1)

Injury range does not include diagnostic codes of late effects of injuries, poisonings, toxic effects, and other external causes

APPENDIX 2: NEW ZEALAND INDEX OF DEPRIVATION

The NZ index of deprivation (NZDep) was first created using information from the 1991 census, and has been updated following each census. It is a small area index of deprivation, and is used as a proxy for socio-economic status. The main concept underpinning small area indices of deprivation is that the socio-economic environment in which a person lives can confer risks or benefits which may be independent of their own social position within a community.⁶² They are aggregate measures, providing information about the wider socio-economic environment in which a person lives, rather than information about their individual socio-economic status.

The latest index, NZDep2013, combines nine variables from the 2013 census to reflect eight dimensions of material and social deprivation (Table 6). Each variable represents a standardised proportion of people living in an area who lack a defined material or social resource. These are combined to give a score representing the average degree of deprivation experienced by people in that area. Individual area scores are 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.¹⁵

The advantage of the NZDep is its ability to assign measures of socio-economic status to the older population, the unemployed and to children, to whom income and occupational measures often don't apply, as well as to provide proxy measures of socio-economic 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 socio-economic status.⁶² Despite these limitations, the NZDep has been shown to be predictive of mortality and morbidity from a number of diseases in New Zealand.

Table 6. Variables used in the NZ index of deprivation 2013 (NZDep2013)

Dimension	Variable in order of decreasing weight in the index
Communication	People aged <65 with no access to the Internet at home
Income	People aged 18–64 receiving a means tested benefit
Income	People living in equivalised* households with income below an income threshold
Employment	People aged 18–64 unemployed
Qualifications	People aged 18–64 without any qualifications
Owned home	People not living in own home
Support	People aged <65 living in a single parent family
Living space	People living in equivalised* households below a bedroom occupancy threshold
Transport	People with no access to a car

* The setting of the household equivalised income threshold was based on two principles: 1) the proportion of the population identified as being socio-economically deprived by the threshold should be broadly consistent with the other variables in the index, and 2) the threshold should be broadly consistent with other measures of income poverty.

APPENDIX 3: DATA SOURCES

The Child Poverty Monitor presents information derived from several national administrative datasets. These are described briefly below, and limitations and issues to be aware of when interpreting results drawn from these sources are outlined.

National Mortality Collection

The National Mortality Collection is a dataset managed by the Ministry of Health which contains information on the underlying cause, or causes, of death along with basic demographic data for all deaths registered in New Zealand since 1988. Fetal and infant death data are a subset of the Mortality Collection, with cases in this subset having further information on factors such as birth weight and gestational age.⁶³ Each of the approximately 28,000 deaths occurring in New Zealand each year is coded manually by Ministry of Health staff. For most deaths the Medical Certificate of Cause of Death provides the information required, although coders also have access to information from other sources such as Coronial Services, Police, NZ Transport Agency, the NZ Cancer Registry, the Institute of Environmental Science and Research, and Water Safety NZ.⁶⁴

National Minimum Dataset

The National Minimum Dataset (NMDS) is the national hospital discharge dataset and is maintained by the Ministry of Health. It is used for policy formation, performance monitoring, and research purposes, providing key information about the delivery of hospital inpatient and day patient health services both nationally and on a provider basis. It is also used for funding purposes.⁶⁵

Information in the NMDS includes principal and additional diagnoses, procedures, external causes of injury, length of stay and sub-specialty codes; and demographic information such as age, ethnicity, and usual area of residence. Data have been submitted by public hospitals electronically since the original NMDS was implemented in 1993, with additional data dating back to 1988 also included. The private hospital discharge information for publicly funded events has been collected since 1997. The current NMDS was introduced in 1999.⁶⁵

Birth Registration Dataset

Since 1995 all NZ hospitals and delivering midwives have been required to notify the Department of Internal Affairs within five working days of the birth of a live or stillborn baby. This applies to stillborn babies born at or more than 20 weeks gestation, or those weighing 400g or more; prior to 1995, only stillborn babies reaching more than 28 weeks of gestation required birth notification. Information on the hospital's notification form includes maternal age, ethnicity, multiple birth status, and the baby's sex, birth weight, and gestational age. In addition, parents must jointly complete a birth registration form as soon as reasonable practicable after the birth, and within two years of delivery, which duplicates the above information with the exception of birth weight and gestational age. Once both forms are received by Internal Affairs the information is merged into a single entry. This two-stage process is thought to capture 99.9% of births occurring in New Zealand and cross-checking at the receipting stage allows for the verification of birth detail.⁶⁶

Dataset limitations

There are limitations when using any of these datasets. The following are of particular relevance to this report.

Clinical coding accuracy and coding changes over time

The quality of data submitted to the administrative national datasets may vary. While the data for the National Mortality Collection and the Birth Registration Dataset are coded by single agencies, the clinical information held in the NMDS is entered by health providers before being collated by the Ministry of Health. In a 2001 review of the quality of coding in the data submitted to the NMDS, 2,708 events were audited over ten sites during a three month period. Overall the audit found that 22% of events required a change in coding, although this also included changes at a detailed level. Changes to the principal diagnosis involved 11% of events, to additional diagnoses 23%, and to procedure coding, 11%. There were 1,625 external causes of injury codes, of which 15% were re-coded differently.⁶⁷ 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, the average 16% error rate indicated by the 2001 review may be an overestimate as, in the majority of the analyses undertaken in this report, only the principal diagnosis is used to describe the reason for admission.

Changes in the coding systems used over time may result in irregularities in time series analyses.⁶⁴ New Zealand hospitals use the clinical coding classification developed by the World Health Organization and modified by the National Centre for Classification in Health, Australia. The current classification is called The International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM), the Australian Classification of Health Interventions (ACHI) and Australian Coding Standards (ACS). The introduction of ICD-10-AM represented the most significant change in classification in over 50 years, expanding the number of codes from ~5,000 to ~8,000, to provide for recently recognised conditions and allow greater specificity about common diseases.

From 1988 until 1999, clinical information in the NMDS was coded using versions of the ICD-9 classification system. From July 1999 onwards, the ICD-10-AM classification system has been used. Back and forward mapping between the two systems is possible using predefined algorithms,⁶³ and for most conditions there is a good correspondence between ICD-9 and ICD-10-AM codes. Care should still be taken when interpreting time series analyses which include data from both time periods as some conditions may not be directly comparable between the two coding systems.

Variation in reporting hospitalisations to the NMDS

Historically, there have been differences in the way New Zealand's 20 district health boards (DHBs) have reported their emergency department (ED) hospitalisations to the NMDS, which can affect the interpretation of hospitalisation data. Inconsistent recording of ED cases has resulted from differing definitions of the time spent in the ED, and at what point this time constitutes an admission. This is important in paediatrics where hospitalisations for acute onset infectious and respiratory diseases in young children especially are mainly of short duration. In addition, there are regional differences in treatment processes for paediatric emergency cases.

This report includes all ED day cases in its analyses of hospitalisations for medical conditions. This approach differs from that commonly used by the Ministry of Health when analysing NMDS hospital discharge data, which the Ministry of Health uses to minimise the impact of the inconsistent reporting of ED cases. Short stay ED events are often excluded from the Ministry's analyses to improve comparability between regions. However, as noted above, the treatment of children in acute cases differs from that of adults, and the inclusion of ED day cases is justified when considering hospitalisations for medical conditions, despite inconsistencies in the dataset. The Ministry of Health's practice of filtering out ED day cases

for hospitalisations for injuries is followed in this report as it is considered that the processes for injury assessments are relatively consistent around the country.

Further information on the details of the inconsistencies can be seen in earlier reports by the NZCYES <http://www.otago.ac.nz/nzcyes>

New Zealand Health Survey

The Ministry of Health’s New Zealand Health Survey (NZHS) became an annual survey in 2011. The survey is conducted by interviewing a sample of adults and children’s parents or caregivers in New Zealand. The NZHS utilises a core set of questions that cover a range of health-specific indicator areas, including health behaviours, conditions, and use of health services. The survey also includes a flexible programme of rotating topic modules, which change every 12 months.⁶⁸ Table 7 presents the number of participants selected for each NZHS conducted and the corresponding coverage rate, or the extent to which a population has been involved in a survey.

The NZHS utilised adjusted rate ratios to account for the potential influence of other demographic factors when undertaking demographic comparisons. Gender comparisons are adjusted for age, ethnic comparisons are adjusted for age and gender, and deprivation comparisons are adjusted for age, gender and ethnicity.⁶⁹

Table 7. Number of survey participants and coverage, New Zealand Health Survey

Survey year (1 July–30 June)	Adults (15 years and over)		Children (0–14 year olds)	
	<i>n</i>	Coverage (%)	<i>n</i>	Coverage (%)
New Zealand Health Survey				
2006/2007	12,488	59	4,921	67
2011/2012	12,370	54	4,478	68
2012/2013	13,009	59	4,485	69
2013/2014	13,309	54	4,699	63
2014/2015	13,497	59	4,754	69
2015/2016	13,781	67	4,721	76
2016/2017	13,598	63	4,668	73

Source: New Zealand Health Survey Methodology reports 2006/07–2016/17

Estimated prevalence

The NZHS presents the demographic factors for each surveyed condition using unadjusted prevalence rates and adjusted rate ratios. The survey uses the calibrated weighting method to construct survey weights that rate up the responding sample to represent the target population. This method takes into account the probability of selection of each respondent, and uses external population benchmarks (typically based on the most recent population census) to correct for any discrepancies between the sample and population benchmarks (by age, sex, ethnicity and the 2013 New Zealand Index of Deprivation).⁶⁹

The prevalence of a condition, or the proportion of the population with the condition was estimated by calculating the sum of the weights for the survey respondents with the condition divided by the sum of the weights of all survey respondents. For example, the sum of the weights for survey respondents with self-reported diabetes is divided by sum of the weights for all survey respondents.⁶⁹

Further information on the NZHS results, content, methodology, and interpretation of the estimates is available on the NZHS pages of Ministry of Health website <http://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/surveys/current-recent-surveys/new-zealand-health-survey>

Ethnicity in National Datasets

There were inconsistencies in the manner in which ethnicity information in New Zealand was collected prior to 1996. This report presents ethnic-specific analyses for 1996 onwards and, unless otherwise specified, prioritised ethnic group has been used to ensure that each health event is only counted once.

Despite significant improvements in the quality of ethnicity data in New Zealand's national health collections since 1996, care must still be taken when interpreting the ethnic-specific rates as the potential still remains for Māori and Pacific children and young people to be undercounted in our national data collections. The data presented in this report may undercount Māori and Pacific children to a variable extent depending on the dataset used; in the case of the hospitalisations for Māori, this undercount may be as high as 5–6%.

APPENDIX 4: STATISTICAL METHODS

Inferential statistics are used when a researcher wishes to use a sample to draw conclusions about a larger population as a whole (for example, weighing a class of 10-year-old boys, in order to estimate the average weight of all 10-year-old boys in New Zealand). The findings obtained from the sample provide an estimate for the population, but will always differ from it to some degree, simply due to chance. Similarly, samples are used when a researcher questions whether the risk of developing a particular condition is different between two groups, and the fit of the estimate obtained from the samples to the actual population needs to be carefully considered. An example of this would be a study examining whether lung cancer is more common in smokers or non-smokers: researchers using sample groups would have to consider the possibility that some of 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. These measures can assign a level of confidence to estimates and conclusions drawn from samples, allowing researchers to assess, for example, whether the average weight of boys in the sample reflects the true weight of all 10-year-old boys, or the rates of lung cancer in smokers are really different to those in non-smokers. Two of the most frequently used statistical significance tests are:

***P* values:** The *p* value from a statistical test measures the probability of finding a difference at least as large as the one observed between groups, if there were no real differences between the groups studied. For example, 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 if the *p* value is <0.05; that is, when the probability of the observed differences occurring by chance is less than 5%.⁷⁰

Confidence Intervals: When sampling from a population a confidence interval is a range of values that contains the measure of interest. While a confidence interval for the average height of 10-year-old boys could be 20 cm to 200 cm, for example, the smaller range of 130 cm to 150 cm is a more informative statistic. 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.⁷⁰

When tests of statistical significance have been applied in this report, the statistical significance of the associations presented has been signalled in the text with the words significant, or not significant. 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.

In general the data sources used in this report are either population surveys or routine administrative datasets.

Data from national surveys: In population surveys 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 included in the text accompanying graphs and tables. In a small number of cases, information on statistical significance was not available, and any associations described do not imply statistical significance.

Data from routine administrative data: Administrative datasets, for example the National Mortality Collection, capture information on all of the events occurring in a particular category. To facilitate comparisons between different time periods, and for examining the data from New Zealand in a wider context, whenever measures of association (rate ratios) are presented in this report, 95% confidence intervals have been provided.⁷¹ The following rates are provided:

- **Crude rates:** Measures the number of people with the condition of interest in relation to the number of people in the population. It is calculated by dividing the number of people with the condition of interest in a specific time period by the total number of people in the population in the same time period.
- **Age-specific rates:** Measures the occurrence of an event within a defined age group in relation to the number of people in that group. Age-specific rate is calculated by dividing the number of people with the condition of interest in a specific age group and time period by the total number of people in the population in the same age group and time period.

REFERENCES

1. UNICEF Office of Research. 2016. A fair chance for every child: The state of the world's children 2016 New York: UNICEF.
2. United Nations. 2015. Transforming our world: The 2030 agenda for sustainable development. <https://sustainabledevelopment.un.org/post2015/transformingourworld>
3. UNICEF Office of Research. 2017. Building the future: Children and the Sustainable Development Goals in rich countries Florence: UNICEF.
4. Perry B. 2018. Household incomes in New Zealand: Trends in indicators of inequality and hardship 1982 to 2017. Wellington: Ministry of Social Development. <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/household-incomes/index.html>
5. Expert Advisory Group on solutions to child poverty. 2012. Solutions to child poverty in New Zealand: Evidence for action. Wellington: Office of the Children's Commissioner. http://www.occ.org.nz/publications/child_poverty
6. Craig E, Baker N, Baxter J, et al. 2016. Creating a child and youth health monitoring framework to inform health sector prioritisation and planning: reflections on ten years experience in New Zealand. *Child Indicators Research*, 1-21. <http://dx.doi.org/10.1007/s12187-015-9357-8>
7. Cooper K, Stewart K. 2013. Does money affect children's outcomes? A systematic review. London: Joseph Rowntree Foundation.
8. Spencer N. 2010. Child health inequities. *Paediatrics and Child Health*, 20(4) 157-62. <http://dx.doi.org/10.1016/j.paed.2009.11.002>
9. Carey D. 2015. Making New Zealand's economic growth more inclusive Paris: OECD Publishing. <http://dx.doi.org/10.1787/5jrw21ntclwc-en>
10. Goldfeld S, O'Connor M, Cloney D, et al. 2018. Understanding child disadvantage from a social determinants perspective. *Journal of Epidemiology and Community Health*, 72(3) 223-29. <http://dx.doi.org/10.1136/jech-2017-209036>
11. Rajmil L, de Sanmamed M-J, Choonara I, et al. 2014. Impact of the 2008 economic and financial crisis on child health: A systematic review. *International Journal of Environmental Research and Public Health*, 11(6) 6528. <http://dx.doi.org/10.3390/ijerph110606528>
12. Royal Australasian College of Physicians. 2018. Inequities in child health position statement. Sydney: Royal Australasian College of Physicians.
13. Starfield B. 2016. Social Gradients and Child Health. In *International Encyclopedia of Public Health* 586-98.
14. Salmond CE, Crampton P. 2012. Development of New Zealand's deprivation index (NZDep) and its uptake as a national policy tool. *Canadian Journal of Public Health / Revue Canadienne de Sante'e Publique*, 103S7-S11. <http://www.jstor.org/stable/41995682>
15. Atkinson J, Salmond C, Crampton P. 2014. NZDep2013 Index of Deprivation. Wellington: Department of Public Health, University of Otago. <http://www.otago.ac.nz/wellington/otago069936.pdf>
16. Liu L, Oza S, Hogan D, et al. 2015. Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: an updated systematic analysis. *The Lancet*, 385(9966) 430-40. [https://doi.org/10.1016/S0140-6736\(14\)61698-6](https://doi.org/10.1016/S0140-6736(14)61698-6)

17. McDonald G, Chalmers S, Hii J, et al. 2018. Child and Youth Mortality Review Committee 13th data report 2012–16. Wellington: Child and Youth Mortality Review Committee.
https://www.hqsc.govt.nz/assets/CYMRC/Publications/CYMRC_SUDI_Report.pdf
18. Wolfe I, Macfarlane A, Donkin A, et al. 2014. Why children die: death in infants, children, and young people in the UK. London: Royal College of Paediatrics and Child Health, National Children's Bureau, British Association for Child and Adolescent Public Health.
19. Garstang J. 2018. Challenges of research using data from child death overview panels. *Archives of Disease in Childhood*, 103(11) 1008-09.
<http://dx.doi.org/10.1136/archdischild-2018-314821>
20. Organisation for economic co-operation and development. 2016. Infant mortality, in OECD Factbook 2015-2016: Economic, environmental and social statistics. Paris: OECD Publishing. <http://dx.doi.org/10.1787/factbook-2015-87-en>
21. UNICEF Office of Research. 2013. Child well-being in rich countries: A comparative overview. Florence: UNICEF Office of Research. https://www.unicef-irc.org/publications/pdf/rc11_eng.pdf
22. Organisation for economic co-operation and development. 2018. Infant mortality rates (indicator) <http://dx.doi.org/10.1787/83dea506-en> accessed September 2018.
23. Taylor BJ, Garstang J, Engelberts A, et al. 2015. International comparison of sudden unexpected death in infancy rates using a newly proposed set of cause-of-death codes. *Archives of Disease in Childhood*, 100(11) 1018–23.
<http://dx.doi.org/10.1136/archdischild-2015-308239>
24. Child and Youth Mortality Review Committee Te Ropu Arotake Auau Mate o te Hunga Tamariki Taiohi. 2017. Sudden unexpected death in infancy (SUDI): Special report. Wellington: Child and Youth Mortality Review Committee.
https://www.hqsc.govt.nz/assets/CYMRC/Publications/CYMRC_SUDI_Report.pdf
25. Smith C, Parnell WR, Brown RC, et al. 2013. Balancing the diet and the budget: Food purchasing practices of food-insecure families in New Zealand. *Nutrition and Dietetics*, 70(4) 278-85. <http://dx.doi.org/10.1111/1747-0080.12043>
26. Carter KN, Lanumata T, Kruse K, et al. 2010. What are the determinants of food insecurity in New Zealand and does this differ for males and females? *Australian and New Zealand Journal of Public Health*, 34(6) 602-08.
<http://dx.doi.org/10.1111/j.1753-6405.2010.00615.x>
27. Perry B. 2017. The material wellbeing of New Zealand households: Trends and relativities using non-income measures, with international comparisons. Wellington: Ministry of Social Development. <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/living-standards/index.html>
28. Ministry of Social Development. 2018. Hardship assistance - September 2018 quarter <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/latest-quarterly-results/hardship-assistance.html> accessed November 2018.
29. Ministry of Health. In press. Household food insecurity among children in New Zealand. Wellington: Ministry of Health.
30. Becker J. 2018. Corporal punishment: Legal reform as a route to changing norms. *Social Research*, 85(1) 255-71. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046902510&partnerID=40&md5=23d8e2b466de1534087f24699458f001>
31. MacMillan HL, Mikton CR. 2017. Moving research beyond the spanking debate. *Child Abuse & Neglect*, 715-8. <https://doi.org/10.1016/j.chiabu.2017.02.012>

32. Miller-Perrin C, Perrin R. 2018. Physical punishment of children by US parents: moving beyond debate to promote children's health and well-being. *Psicologia: Reflexao e Critica*, 31(1) <http://dx.doi.org/10.1186/s41155-018-0096-x>
33. Smith AB. 2006. The state of research on the effects of physical punishment. *Social Policy Journal of New Zealand*, (27) 114–27. <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/journals-and-magazines/social-policy-journal/spj27/the-state-of-research-on-effects-of-physical-punishment-27-pages114-127.html>
34. Gershoff ET. 2013. Spanking and child development: We know enough now to stop hitting our children *Child Development Perspectives*, 7(3) 133-37. <http://dx.doi.org/10.1111/cdep.12038>
35. Ferguson CJ. 2013. Spanking, corporal punishment and negative long-term outcomes: a meta-analytic review of longitudinal studies. *Clin Psychol Rev*, 33(1) 196-208. <http://dx.doi.org/10.1016/j.cpr.2012.11.002>
36. Grogan-Kaylor A, Ma J, Graham-Bermann SA. 2018. The case against physical punishment. *Current opinion in psychology*, 1922-27. <http://dx.doi.org/10.1016/j.copsyc.2017.03.022>
37. Crimes (Substituted Section 59) Amendment Act 2007. <http://www.legislation.govt.nz/act/public/2007/0018/latest/DLM407664.html>
38. Kelly P. 2011. Corporal punishment and child maltreatment in New Zealand. *Acta Paediatrica*, 100(1) 14-20. <http://dx.doi.org/10.1111/j.1651-2227.2010.02000.x>
39. D'Souza AJ, Russell M, Wood B, et al. 2016. Attitudes to physical punishment of children are changing. *Archives of Disease in Childhood*, 101(8) 690-93. <http://dx.doi.org/10.1136/archdischild-2015-310119>
40. Lansford JE, Cappa C, Putnick DL, et al. 2017. Change over time in parents' beliefs about and reported use of corporal punishment in eight countries with and without legal bans. *Child Abuse & Neglect*, 7144-55. <https://doi.org/10.1016/j.chiabu.2016.10.016>
41. New Zealand Government. undated. SKIP Strategies with kids: Information for parents <https://www.skip.org.nz/> accessed September 2018.
42. Gilbert R, Widom CS, Browne K, et al. 2009. Burden and consequences of child maltreatment in high-income countries. *The Lancet*, 373(9657) 68-81. [http://dx.doi.org/10.1016/S0140-6736\(08\)61706-7](http://dx.doi.org/10.1016/S0140-6736(08)61706-7)
43. Oh DL, Jerman P, Silvério Marques S, et al. 2018. Systematic review of pediatric health outcomes associated with childhood adversity. *BMC Pediatrics*, 18(1) <http://dx.doi.org/10.1186/s12887-018-1037-7>
44. Vaithianathan R, Rouland B, Putnam-Hornstein E. 2018. Injury and mortality among children identified as at high risk of maltreatment. *Pediatrics*, 141(2) <http://dx.doi.org/10.1542/peds.2017-2882>
45. O'Donnell M, Nassar N, Leonard H, et al. 2010. Monitoring child abuse and neglect at a population level: Patterns of hospital admissions for maltreatment and assault. *Child Abuse & Neglect*, 34(11) 823-32. <http://dx.doi.org/10.1016/j.chiabu.2010.04.003>
46. Hooft AM, Asnes AG, Livingston N, et al. 2015. The Accuracy of ICD Codes: Identifying Physical Abuse in 4 Children's Hospitals. *Academic Pediatrics*, 15(4) 444-50. <http://dx.doi.org/10.1016/j.acap.2015.01.008>
47. Ards SD, Myers Jr SL, Malkis A, et al. 2003. Racial disproportionality in reported and substantiated child abuse and neglect: An examination of systematic bias. *Children and Youth Services Review*, 25(5-6) 375-92. [http://dx.doi.org/10.1016/S0190-7409\(03\)00027-6](http://dx.doi.org/10.1016/S0190-7409(03)00027-6)

48. Children, Young Persons, and Their Families (Oranga Tamariki) Legislation Act. 2017. <http://www.legislation.govt.nz/act/public/2017/0031/24.0/DLM7064516.html>
49. Education Review Office. 2014. Achievement 2013-2017: Success for students in 2013. Wellington: New Zealand Government. <http://www.ero.govt.nz/assets/Uploads/Achievement-2013-2017-Success-for-students-in-2013.pdf>
50. Spencer N. 2018. The social determinants of child health. *Paediatrics and Child Health*, 28(3) 138–43. <https://doi.org/10.1016/j.paed.2018.01.001>
51. StatsNZ. 2018. Gross domestic product (GDP) <https://www.stats.govt.nz/indicators/gross-domestic-product-gdp> accessed September 2018.
52. Fraser H. 2018. The Labour income share in New Zealand: An update. Staff Research Note 2018/1 New Zealand Productivity Commission
53. Conway P, Meehan L, Parham D. 2015. Who benefits from productivity growth? The labour income share in New Zealand, New Zealand Productivity Commission Working Paper 2015/1. Wellington: New Zealand Productivity Commission. <http://www.productivity.govt.nz/sites/default/files/research-who-benefits-from-productivity-growth.pdf>
54. Lattimore Ralph, Eaqub Shamubeel. 2011. The New Zealand economy: An introduction Auckland: Auckland University Press.
55. Organisation for economic co-operation and development. 2015. In it together: Why less inequality benefits all. Paris: OECD Publishing. <http://dx.doi.org/10.1787/9789264235120-en>
56. StatsNZ. 2017. Income inequality http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-social-indicators/Home/Standard%20of%20living/income-inequality.aspx#anchor25 accessed August 2017.
57. World Bank. 2015. A measured approach to ending poverty and boosting shared prosperity: Concepts, data, and the twin goals. Washington DC: World Bank. <http://dx.doi.org/10.1596/978-1-4648-0361-1>.
58. StatsNZ. 2016. Introducing underutilisation in the labour market http://www.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/improving-labour-market-statistics/introducing-underutilisation/underutilisation-measures.aspx accessed November, 2016.
59. Gassman-Pines A, Gibson-Davis CM, Ananat EO. 2015. How economic downturns affect children's development: An interdisciplinary perspective on pathways of influence. *Child Development Perspectives*, 9(4) 233-38. <http://dx.doi.org/10.1111/cdep.12137>
60. StatsNZ. 2016. Changes in home-ownership patterns 1986–2013: Focus on Māori and Pacific people. Wellington: StatsNZ. http://www.stats.govt.nz/browse_for_stats/people_and_communities/housing/changing-maori-pacific-housing-tenure.aspx
61. Boston J. 2014. Child poverty in New Zealand: Why it matters and how it can be reduced. *Educational Philosophy and Theory*, 46(9) 962-88. <http://dx.doi.org/10.1080/00131857.2014.931002>
62. Berkman L, Macintyre S. 1997. The measurement of social class in health studies: Old measures and new formulations. In Kogevinas M, Pierce N, et al. (Eds.), *Social Inequalities and Cancer* 51-64. Lyon: IARC Scientific Publications.
63. New Zealand Health Information Service. 2003. Mortality Collection data dictionary. Wellington: Ministry of Health.

64. Gauld R, Raymont A, Bagshaw PF, et al. 2014. The importance of measuring unmet healthcare needs. *The New Zealand Medical Journal (Online)*, 127(1404) 63-7. <http://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2014/vol-127-no-1404-17-oct-2014/6332>
65. Ministry of Health. 2013. National Minimum Dataset (hospital events): Data dictionary. Wellington: National Health Board Business Unit.
66. StatsNZ. 2003. Information about births. Wellington: www.stats.govt.nz
67. New Zealand Health Information Service. 2002. 2001/2002 Ministry of Health Data Quality Audit Program. Coder's update. 1-4
68. Ministry of Health. 2010. The New Zealand Health Survey: Objectives and topic areas August 2010. Wellington: Ministry of Health.
69. Ministry of Health. 2016. Methodology report 2015/16: New Zealand Health Survey. Wellington: Ministry of Health.
70. Webb P, Pirozzo S. 2005. Essential epidemiology: An introduction for students and health professionals Cambridge: Cambridge University Press.
71. Rothman K. 2002. Epidemiology: An introduction New York: Oxford University Press.