



Child and Youth
Mortality Review
Committee

Child and Youth Mortality Review Committee

12th data report
2011–15

Prepared by the New Zealand Mortality Review Data Group,
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Executive summary

This is the 12th data report released for the Child and Youth Mortality Review Committee (the CYMRC). It predominantly reports on data from 2011 to 2015, with some tables and figures for 2002–15, and some for 1980–2015. The data is primarily from the Mortality Review Database, which contains information on all deaths in children and young people aged 28 days to 24 years who died in New Zealand from 2002 to the present.

During the period 2011–15 there were 2771 deaths in children and young people aged 28 days to 24 years. Of these, there were 536 deaths in 2015, which is more than in the previous two years (486 in 2014, and 516 in 2013), but lower than in years prior to 2013. The increase in deaths was seen across most age groups and all causes of death. However, proportionally the largest increases were in intentional injury and sudden unexpected death in infancy (SUDI)/sudden unexpected death (SUD).

For children and young people overall, the leading causes of death were medical conditions (39.6 percent), including neoplasms and congenital anomalies. Unintentional injury accounted for 27.4 percent of deaths, with transport crashes being the leading cause of unintentional injury death. Twenty-five percent of deaths were due to intentional injury, which includes suicide and assault.

Mortality rates vary by deprivation, as measured by the New Zealand Deprivation Index. For children and young people overall, there was a consistent pattern of higher mortality rates with increasing deprivation. Of note, those in decile 10 (most deprived) had a mortality rate nearly three times higher than those in decile one (least deprived).

There were statistically significant differences in mortality rates when examined by ethnicity. Māori had the highest mortality rate, followed by Pacific children and young people. Those of Asian ethnicity had the lowest overall mortality rate in children and young people.

During the period 2011–15, there were 1011 deaths in tamariki and taitamariki Māori. The leading causes of death were medical conditions (35.2 percent) followed by intentional injury (28.5 percent). The most common medical condition causing death was neoplasms. Unlike the number of deaths for non-Māori non-Pacific, the overall number of deaths was similar to the previous year, with 173 deaths in 2015, and 171 in 2014. In general, the number of deaths is reducing, with the mortality rates in 2014 and 2015 being statistically significantly lower than those in 2011 and 2012. However, despite this relative improvement, there remain large inequities in mortality rates for tamariki and taitamariki Māori compared with non-Māori non-Pacific children and young people. This is most notable for SUDI, where the rate ratio comparing Māori with non-Māori non-Pacific is 6.61 (95 percent CI 4.63–9.43), and for intentional injury deaths, where the rate ratio is 2.47 (95 percent CI 2.11–2.89). Eighty-nine percent of intentional injury deaths were due to suicide, with marked inequities between Māori and non-Māori non-Pacific occurring from the ages of 10 years upwards.

In Pacific children and young people there were 420 deaths over the five-year period from 2011 to 2015. The leading causes of death were medical conditions (50.0 percent), followed by intentional injury (20.5 percent). Of the intentional injury deaths, 93.0 percent were due to suicide; the remainder were due to fatal assault. Compared with non-Pacific non-Māori children and young people, there were relatively more deaths in the post-neonatal age group, and proportionally fewer in young people.

The number of SUDI deaths was higher in 2015, with 41 post-neonatal deaths, compared with 36 and 37 in 2013 and 2014, respectively. In 2015, the rate for Māori was the lowest since CYMRC data collection began in 2002. Despite recent improvements in the SUDI rate for Māori, as mentioned, there are marked inequities in SUDI rates between Māori and non-Māori non-Pacific babies. The SUDI rate for Pacific babies fluctuates substantially, but in 2015 was the highest it has been since 2002.

There were 623 deaths due to suicide during the five-year period from 2011 to 2015. While males are over-represented in suicide mortality data, this is not apparent until mid-teenage years: until this time, suicide deaths in females are as prevalent as in males. In later teenage years and through until the early twenties, the number of male suicide deaths is substantially greater than the number of female deaths, with an overall male: female ratio of 2.5.

Similarly, males are over-represented in deaths due to all causes, with 66 percent of deaths in males. While males predominated for all causes of death, this was particularly marked in intentional injury as above, and unintentional injury deaths (75 percent male).

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Method

Overview

The Child and Youth Mortality Review Committee (the CYMRC) was established in 2002.

The review process has evolved since then, with many people and organisations involved in providing information, reviewing deaths, collating information, and analysing and reviewing collated data. Particular processes that are central to mortality review are: information-gathering and review of individual deaths in the district health board (DHB) region where the person resided; and national data collection and collation.

The following steps are undertaken in the context of case review and data collation.

1. National organisations and some individuals provide information directly to the Mortality Review Data Group (MRDG).
2. The information held centrally is available for use at local review meetings through DHB-appointed CYMRC local review group coordinators.
3. Following the review of each death, CYMRC coordinators add further information to the national database.
4. The MRDG collates and analyses information held in the national database for the CYMRC.
5. The CYMRC reviews the collated case information as well as locally identified issues, recommendations and actions. This provides a detailed overview of regional and national trends, which inform prevention strategies and support recommendations at both a local and national level.

Data collection

The MRDG collects, securely stores and links case information about all child and youth deaths from 1 January 2002 for the CYMRC. Information comes from a variety of sources, including the following.

1. Births, Deaths and Marriages (Department of Internal Affairs)
2. Ministry of Health
3. Child, Youth and Family (Ministry of Social Development)
4. Coroners
5. Coronial Services (Ministry of Justice)
6. Water Safety New Zealand
7. Ministry of Transport
8. Local child and youth mortality review groups
9. Families of the deceased.

Information is provided in varying formats as well as being sent at times and time intervals that suit the data provider. A weekly extract from Birth, Deaths and Marriages is the primary source of notification of deaths. Organisations such as Water Safety New Zealand and the Ministries of Health

and Transport routinely provide selected information on all relevant deaths. The CYMRC continues to consider other suitable data sources in addition to these and to liaise with other organisations.

Some source providers have changed data format or have only recently started providing information. For example, Child, Youth and Family¹ provides information for cases which it has had contact with from June 2006 onwards. (The age range considered has gradually expanded from infant and preschool to include deaths in children and young people up to 24 years of age in 2009.) Most coroners have provided information on coronial cases since January 2003. The MRDG enters and codes all information from the disparate and sometimes conflicting data sources, in order to help facilitate local review as well as national reporting.

Figure M1: Flow of case information from sources to the Mortality Review Database

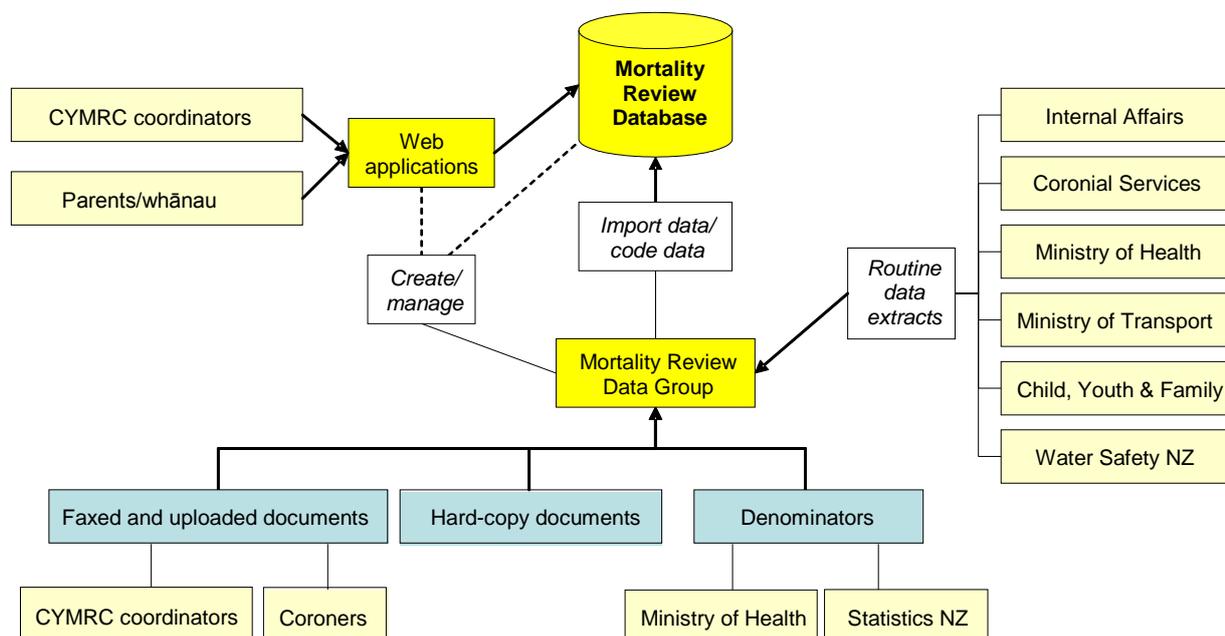


Figure M1 illustrates these sources of information and some of the processing of this information. The MRDG maintains websites that allow individuals to contribute information directly. A link on the public Health Quality & Safety Commission website (www.hqsc.govt.nz/our-programmes/mrc/cymrc/information-for-parents-and-families) allows families, whānau and friends who have lost a child or young person to provide feedback about their experiences. The CYMRC local review group coordinator adds further details both before and after local review, via a secure website. As well as data extracts – directly entered data and coded data – the information system also includes documents faxed by coroners, electronic format coronial case information (post-2010), uploaded documents, hard copies of documents and denominators (provided by Statistics New Zealand and the Ministry of Health).

The MRDG identifies the National Health Index (NHI) of the person for which each item of information is received. It imports data into the Mortality Review Database and links the various sources of information that relate to each individual. Data are regularly cleaned to eliminate

¹ Now Oranga Tamariki, the Ministry for Vulnerable Children, as of 31 March 2017.

duplicate or incorrect records, to follow up on missing details, and so records are complete and internally consistent.

When interpreting CYMRC data, it must be remembered it is derived from a database that is constantly being updated. As well as details of new cases, there can also be new information for existing cases and, at times, changing information for existing cases. As a result, details can change from year to year, even for cases whose death was some years previously. This is particularly true of cases that require an inquest, as in some cases this process may not be completed until years after the death. While this report includes deaths that occurred until 31 December 2015, the 2015 data are the least complete of any year, for the above reasons. The incompleteness of the data is not randomly spread across all causes. Deaths that are referred to a coroner, such as unexpected deaths and some injury deaths, are less likely to have final cause of death information available quickly. Therefore, information relating to deaths in 2015 in particular needs to be interpreted with caution. This also means consecutive annual reports may have slightly different numbers in any one category. The most recent reports will be the most accurate.

The local review process

Deaths of children and young people are reviewed by the local child and youth mortality review group (LCYMRG) in the DHB in which the individual lived. The purpose of local review is to identify systems issues that can be modified to reduce the likelihood of future deaths.

The CYMRC review process relies on information from the DHB of residence of the deceased child or youth. The coordinators of the LCYMRGs collect information from local organisations involved over the life course of the individual to create a shared understanding of the circumstances leading to a child or young person's death. Some of the new information gathered as part of the local review process is entered into the Mortality Review Database.

Each LCYMRG has an appointed chair and coordinator. When the death of a child or young person aged between 28 days and 24 years occurs within a coordinator's region, the coordinator will access the secure database to gather initial information on the deceased. The coordinator will then initiate information requests to the various members of the LCYMRG, who each act as a representative of their particular organisation.

As official agents of the CYMRC, the LCYMRG members can access their organisation's records to identify and collect information that may be relevant to the review process. The members bring this information to the review meeting and provide relevant details, as needed, for the review. Each review is facilitated by the local chair, whose task it is to bring together all the relevant factors relating to a death.

Information shared in the context of the review meeting must remain confidential to the process. Issues identified in the meeting that require urgent action from participating agencies, such as aspects of professional competence or the safety of others, must be dealt with outside the review process using the normal inter-agency protocols and procedures. This means participants do not compromise the no-blame focus of the review process or the confidentiality agreement signed as a condition of agent status. The process is exempt from Official Information Act requirements, but complaints about procedures can be reported to and investigated by the Ombudsman.

A review group might meet several times before all the information has been gathered on a case. Once all the information has been gathered, the group may choose to highlight issues or make specific recommendations. Local recommendations may be delegated to specific group members if

the agency they represent is needed to facilitate a response. It is important that the issues and recommendations be presented in a way that does not assign blame but rather focuses on changes that could prevent future deaths.

Once a local death review is completed, the coordinator enters all the relevant data into the secure national database. In this way, issues, recommendations and follow-up actions are forwarded to the national CYMRC.

The LCYMRG process allows high levels of detail about the context of death to be obtained. The process itself supports learning from cases to be acted upon locally. Although only a proportion of deaths prior to 2009 have been reviewed, the increased coverage of the LCYMRGs will allow for many more system improvements.

Analysis and coding

Mortality data

The data for this report are from the Mortality Review Database. The data were extracted from the database on 17 November 2016. For the purposes of mortality review in New Zealand, children and young people are defined as those aged between 28 days and less than 25 years. In all tables, the year of death relates to the calendar year in which the individual died, rather than the year the death was registered. This is different to some official collections, where the year the death is registered is used. Where neonatal deaths are included, these do not include stillbirths or terminations.

Cause of death

In response to requests for more detailed ICD-10-AM coding, the Ministry of Health data was altered in 2008 to include its mortality coding. Cause of death is now assigned using the Underlying Cause of Death from the Ministry of Health's Mortality Collection. This was backdated to include all cases in the database, not just those from 2008 onwards.

For deaths in infants less than one year of age, 'SUDI' (sudden expected death in infancy) is assigned as the cause of death where any one of the following ICD-10-AM codes were listed as the underlying cause of death in the Mortality Collection:

- R95 Sudden infant death syndrome
- R96 Other sudden death, cause unknown
- R98 Unattended death
- R99 Other ill-defined and unspecified causes of mortality
- W75 Accidental suffocation and strangulation in bed
- W78 Inhalation of gastric contents
- W79 Inhalation and ingestion of food causing obstruction of respiratory tract.

If the individual was between 12 and 23 months of age, and any of the following ICD-10-AM codes were listed as their underlying cause of death, the individual's cause of death was attributed to 'SUD' (sudden unexpected death):

- R95 Sudden infant death syndrome
- R96 Other sudden death, cause unknown
- R98 Unattended death
- R99 Other ill-defined and unspecified causes of mortality
- W75 Accidental suffocation and strangulation in bed
- W78 Inhalation of gastric contents.

The external causes of death as presented in the cause of death tables are arranged according to the International Collaborative Effort on Injury Statistics classification. This assigns ICD-10 groupings to various headings. The classification system used in this report has been used since 2011, and is slightly different to years prior to 2011; hence data from some previous reports may not match exactly.

Ethnicity

There are multiple sources of ethnicity data in the database. These are: Births, Deaths and Marriages, the Ministry of Health, coronial records and the information entered by LCYMRG coordinators when reviewing a death. There is a hierarchy, which determines which data source is used, based on evidence as to its quality and completeness in New Zealand.

Prioritised ethnicity is used in the main body of the report. Prioritised ethnicity assigns one ethnic group to each individual, giving precedence to Māori, followed by Pacific, Asian, MELAA (Middle Eastern Latin American and African) then European and Other ethnicities. However, in the Pacific chapter, a total response ethnicity classification is used. This means that if an individual has a Pacific ethnic group as any one of their ethnicities, they will be included there. Under a prioritised system, if an individual identified as being both Pacific and Māori, they would be counted as Māori. However, in the Pacific chapter using a total response system, they will be included as Pacific.

DHB of residence

The DHB of residence is derived from the person's address as supplied from the coroner, police or Births, Deaths and Marriages. This is based on the individual's self-identified 'usual' place of residence, and does not necessarily reflect their legal residential status.

Statistics

The data presented in this report were computed from the Mortality Review Database by the New Zealand MRDG. Percentages are expressed to one decimal point. In some cases, due to rounding, percentages do not sum to 100 exactly.

The denominators used in the main analyses are from two sources. The first is the number of live births in New Zealand, as supplied by the Ministry of Health. Year is determined using the year of registration of birth, rather than the year of birth itself. Rates for infant deaths are expressed as per 1000 live births. The other denominator used is a derived estimated resident population. This is calculated for each year, and is based on the Statistics New Zealand Estimated Resident Population from census years 2006 and 2013. Linear extrapolation was undertaken to calculate the estimated resident population between 2006 and 2015. The one to four-year age group denominator was calculated using the above methods to derive the under four-year population, with the number of live births from each year being subtracted off this total to compute the one to four-year age group denominator. Rates in this report are presented as per 100,000 age-specific population for most age groups, except for infants less than one year of age where rates are expressed as per thousand live births.

Some of the figures in this document contain historical data dating back to 1980. The numerator for these deaths is as follows: CYMRC data are used for deaths aged 28 days to 24 years from 2002 onwards; prior to this, Statistics New Zealand data are used. For neonatal deaths (zero to 27 days), Perinatal and Maternal Mortality Review Committee data are used from 2007 onwards; prior to this Statistics New Zealand data are used. The denominator used to calculate infant mortality rates was

live births from Statistics New Zealand (1980–2015). The denominator used to calculate mortality rates for children and young people aged 1–24 years were population estimates from Statistics New Zealand (1980–2015). Statistics New Zealand uses a historical de facto population for years prior to 1991, and from 1991 the Estimated Resident Population is used. The historical de facto population estimates are based on counts of all people present at a given time, and does not account for people who are not usually resident, or those who are usually resident but temporarily out of the country.² The Estimated Resident Population takes into account residents who are temporarily overseas and makes an adjustment for net census undercount, as well as excluding visitors from overseas.³ Rates and confidence intervals are expressed to two decimal places. Rates are not calculated for numbers less than three. Due to the differences in the way rates are calculated and the different denominators used, there may be variations between the rates presented in this report and other published rates.

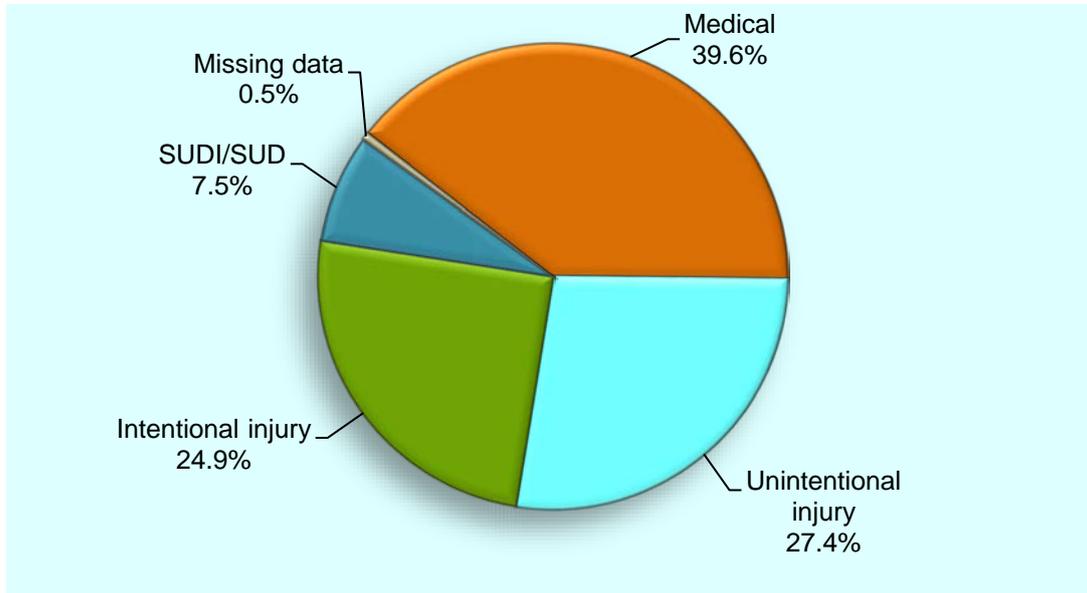
The deaths of non-New Zealand residents are excluded from the main sections of the report because the denominator in rate calculations (as above) excludes visitors from overseas. Data on this population is provided as a supplement, with rates not calculated.

² Statistics New Zealand website: <http://datainfolplus.stats.govt.nz/item/nz.govt.stats/bec27cc6-c9e2-4b7a-b1f4-cb5e096f91ad> accessed 30.11.2015

³ Statistics New Zealand website: <http://datainfolplus.stats.govt.nz/item/nz.govt.stats/7751f101-7b2d-4e97-a487-3ac4126d22d4> accessed 30.11.2015

1 New Zealand national data overview

Figure 1.1: Mortality (%) in children and young people aged 28 days to 24 years by cause of death, New Zealand 2011–15 (n=2771 deaths)



Source: Mortality Review Database.

In New Zealand during the period 2011–15, 2771 children and young people aged 28 days to 24 years died. Overall, the leading cause of death was medical conditions (39.6 percent). This was followed by unintentional injury (27.4 percent of deaths) and intentional injury (24.9 percent) deaths. Sudden unexpected death, either in infancy (SUDI) or in those aged 12 to 23 months of age (SUD) accounted for 7.5 percent of deaths (**Figure 1.1**).

The leading cause of death changes with age, with medical conditions being the most common cause of death in children aged younger than 15 years, and intentional injury (suicide and assault) predominating in those aged 15–24 years (**Table 1.1**).

Table 1.1: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and age group, New Zealand 2011–15 combined (n=2771 deaths)

Category	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	Percentage (%)
Medical	278	173	90	86	203	268	1,098	39.6
Unintentional injury	16	81	43	58	252	308	758	27.4
Intentional injury	9	12	4	36	297	333	691	24.9
SUDI/SUD	197	12	-	-	-	-	209	7.5
Missing data	1	1	3	1	4	5	15	0.5
Total	501	279	140	181	756	914	2,771	100.0

* This category represents infants 28 days and older, and less than one calendar year in age.

Source: Mortality Review Database.

Table 1.2: Mortality (number of deaths and total rate per 100,000 resident population) by cause of death and age group, New Zealand 2011–15 combined (n=2771 deaths)

Cause of death	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%	Rate 2011–15
Medical									
Infectious and parasitic disease	28	23	3	3	8	3	68	2.5	0.89
Neoplasms	12	36	33	30	65	76	252	9.1	3.28
Diseases of the blood and blood-forming organs and disorders of the immune system	5	2	2	-	4	2	15	0.5	0.20
Endocrine, nutritional and metabolic diseases	8	8	13	5	11	19	64	2.3	0.83
Mental and behavioural disorders	-	1	-	-	2	5	8	0.3	0.10
Diseases of the nervous system	19	23	14	21	38	55	170	6.1	2.21
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of the circulatory system	17	8	2	8	24	34	93	3.4	1.21
Diseases of the respiratory system	34	24	10	9	13	10	100	3.6	1.30
Diseases of the digestive system	4	1	1	3	3	7	19	0.7	0.25
Diseases of the skin and subcutaneous tissue	-	-	-	-	2	2	4	0.1	0.05
Diseases of the musculoskeletal system and connective tissue	-	1	-	1	3	3	8	0.3	0.10
Diseases of the genitourinary system	1	-	1	-	1	6	9	0.3	0.12
Pregnancy, childbirth and the puerperium	-	-	-	-	-	6	6	0.2	0.08
Certain conditions originating in the perinatal period	68	7	-	1	-	-	76	2.7	0.99
Congenital anomalies	82	33	10	4	19	25	173	6.2	2.25
Symptoms & abnormal findings not elsewhere classified	-	6	1	1	10	15	33	1.2	0.43
Total medical	278	173	90	86	203	268	1,098	39.6	14.30

Cause of death	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%	Rate 2011–15
Unintentional injury#									
Cut/pierce	-	-	-	-	-	2	2	0.1	s
Drowning	2	26	3	6	21	35	93	3.4	1.21
Fall	1	1	1	3	11	14	31	1.1	0.40
Fire/hot object or substance	-	1	3	1	3	3	11	0.4	0.14
Firearm	-	-	-	2	3	5	10	0.4	0.13
Machinery	-	2	-	-	1	1	4	0.1	0.05
Transport	7	32	26	34	180	206	485	17.5	6.31
Natural/environmental	3	3	1	2	3	12	24	0.9	0.31
Overexertion	-	-	-	-	-	-	-	-	-
Poisoning	1	2	2	1	19	14	39	1.4	0.51
Struck by, against	-	4	2	1	2	5	14	0.5	0.18
Suffocation	1	5	4	5	5	6	26	0.9	0.34
Other specified, classifiable	-	1	1	1	2	4	9	0.3	0.12
Other specified, not elsewhere classified	-	-	-	-	1	-	1	0.0	s
Unspecified	1	3	-	1	-	1	6	0.2	0.08
Complications of medical and surgical care	-	1	-	-	1	-	2	0.1	s
Sequelae of surgical and medical care as external cause	-	-	-	1	-	-	1	0.0	s
Total unintentional injury	16	81	43	58	252	308	758	27.4	9.87
Intentional injury									
Assault	9	12	3	2	12	30	68	2.5	0.89
Suicide	0	0	1	34	285	303	623	22.5	8.11
Total intentional injury	9	12	4	36	297	333	691	24.9	9.00
SUDI/SUD									
SUDI (28 days to <1 year)†	197	-	-	-	-	-	197	7.1	2.56
SUD (12–23 months)‡	-	12	-	-	-	-	12	0.4	0.16
Total SUDI/SUD	197	12	-	-	-	-	209	7.5	2.72
Missing data	1	1	3	1	4	5	15	0.5	0.20
Total	501	279	140	181	756	914	2,771	100.0	36.08

's' indicates rate not calculated due to small numbers.

* This category represents infants 28 days and older, and less than one calendar year in age.

Includes unintentional, undetermined intent and legal intervention/war.

† See **Table 6.1** for SUDI deaths by ICD-10-AM code. ‡ See **Table 7.1** for SUD deaths by ICD-10-AM code.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

The leading medical causes of death also change with age. Perinatal conditions and congenital anomalies predominate in the first year of life, followed by respiratory diseases and infectious and parasitic diseases. However, from one year of age onwards, neoplasms are the primary medical cause of death. In adolescents, diseases of the nervous system are also prevalent. This includes deaths due to epilepsy (45 percent of adolescent neurological deaths), cerebral palsy (25 percent) and muscular dystrophy (20 percent).

Unintentional injury deaths in children and young people occurred in two peaks: the first in children aged one to four years, where proportionally there are a high number of drownings, and the second in adolescence. Transport injuries feature heavily in unintentional injury deaths.

From 15 years of age onwards, suicide deaths predominate. Deaths due to assault also occur in two peaks: the first in children under the age of four, and the second in adolescence (**Table 1.2**).

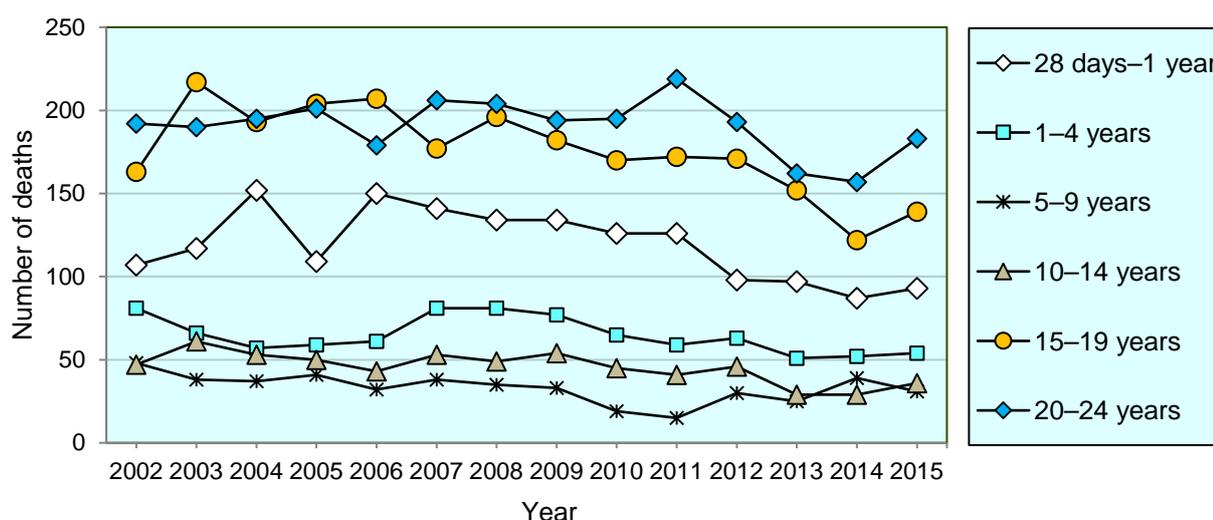
Table 1.3: Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, New Zealand 2011–15 (n=2771 deaths)

Category	2011	2012	2013	2014	2015	Total	Percentage (%)
28 days–<1 year	126	98	97	87	93	501	18.1
1–4 years	59	63	51	52	54	279	10.1
5–9 years	15	30	25	39	31	140	5.1
10–14 years	41	46	29	29	36	181	6.5
15–19 years	172	171	152	122	139	756	27.3
20–24 years	219	193	162	157	183	914	33.0
Total	632	601	516	486	536	2,771	100.0

Source: Mortality Review Database.

There has been a general trend of reducing deaths over time for all age groups, except five to nine year-olds. However, in 2015 there was a slight increase in the number of deaths in most age groups (**Table 1.3** and **Figure 1.2**).

Figure 1.2: Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, New Zealand 2002–15 (n=8810 deaths)



Source: Mortality Review Database.

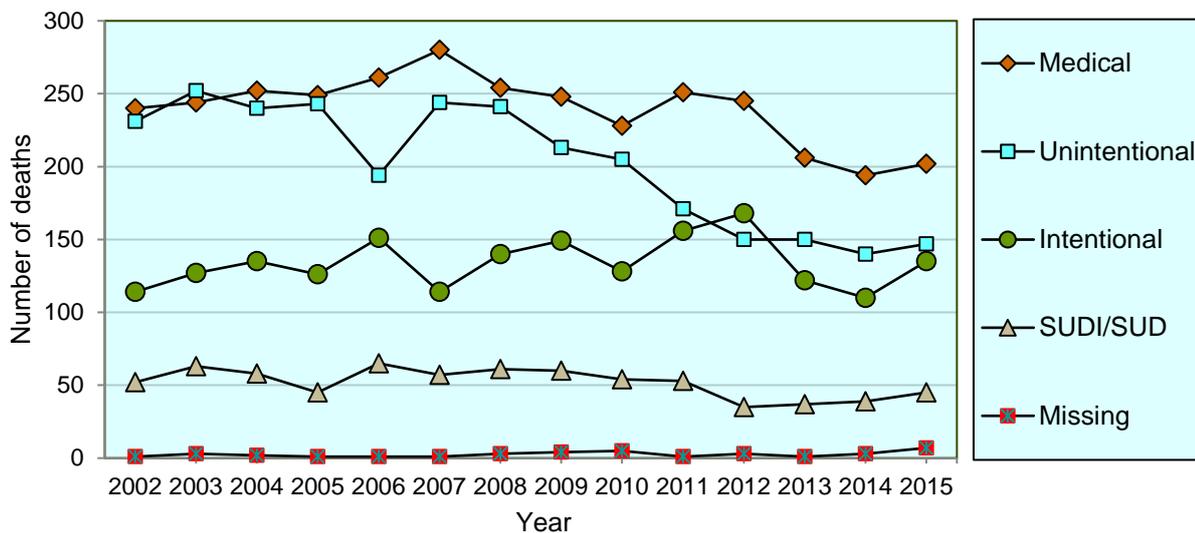
Table 1.4: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and year, New Zealand 2011–15 (n=2771 deaths)

Category	2011	2012	2013	2014	2015	Total	Percentage (%)
Medical	251	245	206	194	202	1098	39.6
Unintentional injury	171	150	150	140	147	758	27.4
Intentional injury	156	168	122	110	135	691	24.9
SUDI/SUD	53	35	37	39	45	209	7.5
Missing data	1	3	1	3	7	15	0.5
Total	632	601	516	486	536	2771	100

Source: Mortality Review Database.

Similarly, there has been a small increase in the number of deaths for all causes of death in 2015 compared with 2014 (**Table 1.4**). However, when compared with the years prior to 2011, the number of medical and unintentional injury deaths is still lower than in previous years. The number of intentional injury deaths fluctuates from year to year, and is currently in the mid-range compared with previous years (**Figure 1.3**).

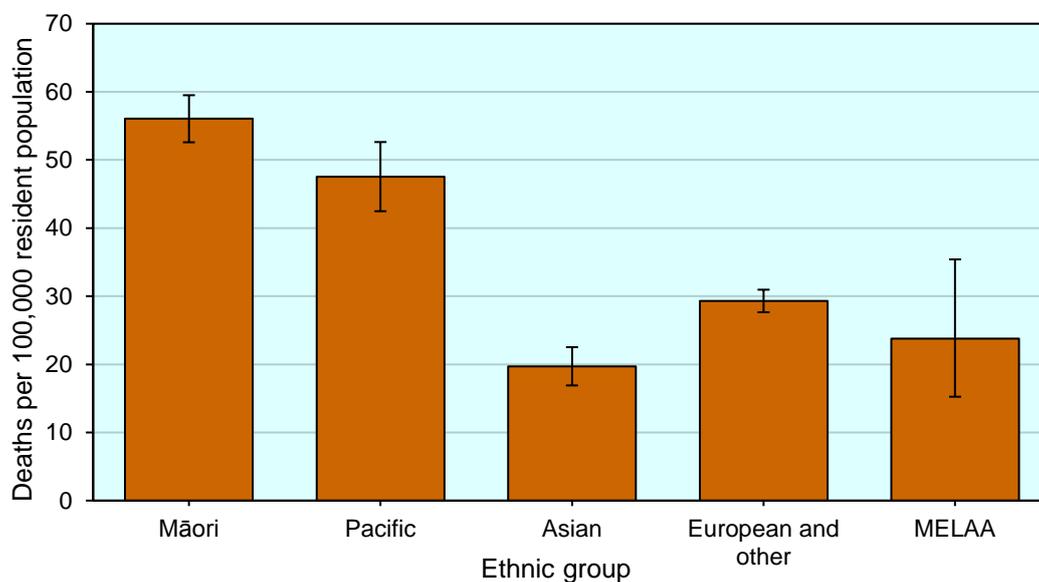
Figure 1.3: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and year, New Zealand 2002–15 (n=8810 deaths)



Source: Mortality Review Database.

When examined by ethnic group, tamariki and taitamariki Māori and Pacific children and young people had the highest mortality rates, followed by those of European and Other ethnicities, and MELAA. Asian children and young people had the lowest mortality rate overall (**Figure 1.4**).

Figure 1.4: Mortality rates (deaths per 100,000 resident population) and 95% confidence intervals in children and young people aged 28 days to 24 years by ethnic group, New Zealand 2011–15 combined (n=2765 deaths*)

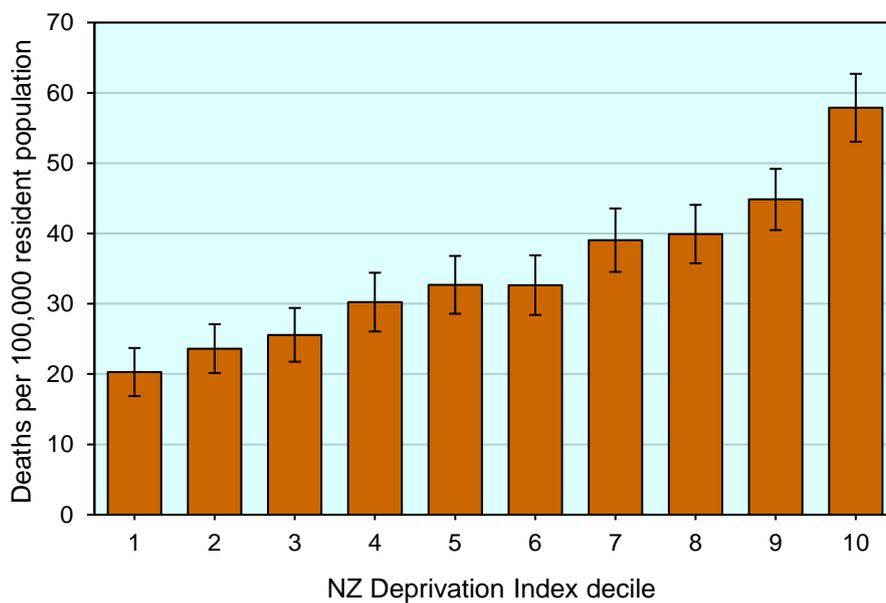


* Excludes six cases with no available ethnicity data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

Mortality rates vary by deprivation, as measured by the NZ Deprivation Index. For children and young people overall there was a consistent pattern of higher mortality rates with increasing deprivation. Of note, those in decile 10 (most deprived) had a mortality rate nearly three times higher than those in decile one (least deprived) (**Figure 1.5**).

Figure 1.5: Mortality rates (deaths per 100,000 resident population and 95% confidence intervals) in children and young people aged 28 days to 24 years by NZ Deprivation Index Decile, New Zealand 2011–15 combined (n= 2756 deaths*)



* Excludes 15 cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

2 Māori mortality

2.1 Overview

This chapter examines mortality in tamariki and taitamariki Māori. Non-Māori non-Pacific children and young people are used as the comparator group. Therefore, the analyses in this chapter exclude Pacific children and young people (n=337), and those for whom their ethnicity is unknown or not recorded (n=6). This chapter reports on deaths that occurred in New Zealand during the years 2011–15.

Table 2.1: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and age group, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n=2428 deaths)

Category	Māori						Total		Rate		Rate ratio (95% CI)
	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	120	60	21	23	62	70	356	570	19.74	11.03	1.79 (1.57–2.04)
Unintentional injury	5	29	16	27	85	69	231	464	12.81	8.98	1.43 (1.22–1.67)
Intentional injury	7	6	1	19	137	118	288	334	15.97	6.46	2.47 (2.11–2.89)
SUDI/SUD	126	6	-	-	-	-	132	46	7.32	0.89	8.22 (5.88–11.50)
Missing data	-	-	-	1	2	1	4	3	0.22	0.06	3.82 (0.86–17.07)
Total	258	101	38	70	286	258	1,011	1,417	56.05	27.42	2.04 (1.89–2.22)

* This category represents infants 28 days and older, and less than one calendar year in age.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

There were 1011 deaths in tamariki and taitamariki Māori during the years 2011–15. The overall leading cause of death for all ages was medical conditions (35.2 percent). The three leading causes of medical death were neoplasms (n=63); congenital anomalies (n=58); and diseases of the nervous system (n=51), which includes deaths due to epilepsy and cerebral palsy. The next most common cause of death was intentional injury (28.5 percent), which includes suicide and assault deaths. There were 231 deaths due to unintentional injury (22.8 percent) and 132 deaths due to sudden unexpected death either in infancy (SUDI), or in those aged 12 to 23 months (SUD) (13.1 percent). Overall, tamariki and taitamariki Māori had higher mortality rates compared with non-Māori non-Pacific. This was most notable for SUDI/SUD deaths (rate ratio 8.22, 95 percent CI 5.88–11.50) and intentional deaths (rate ratio 2.47, 95 percent CI 2.11–2.89) (**Table 2.1**). The total number of deaths fluctuates from year to year, but in general is reducing (**Table 2.2**), with mortality rates in 2014 and 2015 being statistically significantly lower than those in 2011 and 2012 (data not shown).

Table 2.2: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause and year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=2428 deaths)

Category	Māori					Total		Rate		Rate ratio (95% CI)
	2011	2012	2013	2014	2015	Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	85	92	66	56	57	356	570	19.74	11.03	1.79 (1.57–2.04)
Unintentional injury	52	46	53	43	37	231	464	12.81	8.98	1.43 (1.22–1.67)
Intentional injury	61	72	55	42	58	288	334	15.97	6.46	2.47 (2.11–2.89)
SUDI/SUD	41	21	22	29	19	132	46	7.32	0.89	8.22 (5.88–11.50)
Missing data	-	1	-	1	2	4	3	0.22	0.06	3.82 (0.86–17.07)
Total	239	232	196	171	173	1,011	1,417	56.05	27.42	2.04 (1.89–2.22)

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

Table 2.3: Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=2428 deaths)

Age group	Māori					Total		Rate		Rate ratio (95% CI)
	2011	2012	2013	2014	2015	Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
28 days–<1 year	80	51	42	50	35	258	168	2.95	0.92	3.22 (2.65–3.91)
1–4 years	18	26	20	21	16	101	138	30.34	17.20	1.76 (1.37–2.28)
5–9 years	3	10	13	9	3	38	82	9.85	8.43	1.17 (0.80–1.72)
10–14 years	16	23	9	11	11	70	84	19.50	8.55	2.28 (1.66–3.13)
15–19 years	66	71	58	34	57	286	384	83.07	35.66	2.33 (2.00–2.71)
20–24 years	56	51	54	46	51	258	561	87.62	48.73	1.80 (1.55–2.08)
Total	239	232	196	171	173	1,011	1,417	56.05	27.42	2.04 (1.89–2.22)

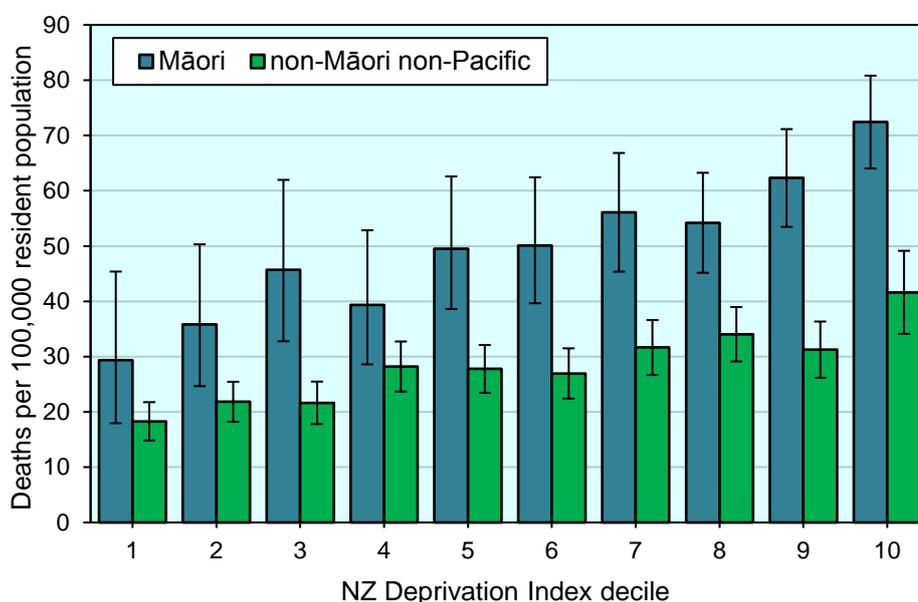
Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

Mortality rates varied considerably by age group, with the rate in those aged five to nine years being the lowest (9.85 per 100,000), and the rate in those aged 28 days to one year being the highest (2.95 per 1000; equivalent to 295 per 100,000). Similarly, inequities between Māori and non-Māori non-Pacific varied considerably by age group, with tamariki Māori aged five to nine years having a similar mortality rate to non-Māori non-Pacific, but Māori infants having a mortality rate 3.2 times higher than non-Māori non-Pacific (rate ratio 3.22, 95 percent CI 2.65–3.91) (**Table 2.3**). Excluding those aged five to nine years, mortality rates for tamariki and taitamariki Māori were statistically significantly higher than those for non-Māori non-Pacific children and young people.

Mortality varied significantly by deprivation as measured by the NZ Deprivation Index decile. Those residing in high-decile areas had significantly higher mortality rates than those living in lower-decile areas, regardless of ethnicity. However, tamariki and taitamariki Māori had statistically significantly

higher mortality rates than non-Māori non-Pacific at most levels of deprivation; particularly in deciles 5–10 (Figure 2.1).

Figure 2.1: Mortality rates (deaths per 100,000 resident population and 95% confidence intervals) in children and young people aged 28 days to 24 years by NZ Deprivation Index decile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n= 2421 deaths*)



* Excludes seven cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 0–24 years.

2.2 Post-neonatal infant mortality

Table 2.4: Post-neonatal infant mortality (number of deaths and rate per 1000 live births) by cause and year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=426 deaths)

Category	2011	2012	2013	2014	2015	Total		Rate		Rate ratio (95% CI)
						Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	35	29	21	18	17	120	116	1.37	0.63	2.17 (1.68–2.80)
Unintentional injury	4	-	-	1	-	5	10	0.06	0.05	1.05 (0.36–3.07)
Intentional injury	1	2	-	4	-	7	2	0.08	s	-
SUDI	40	20	21	27	18	126	40	1.44	0.22	6.61 (4.63–9.43)
Missing data	-	-	-	-	-	-	-	-	-	-
Total	80	51	42	50	35	258	168	2.95	0.92	3.22 (2.65–3.91)

's' indicates rate not calculated due to small numbers.

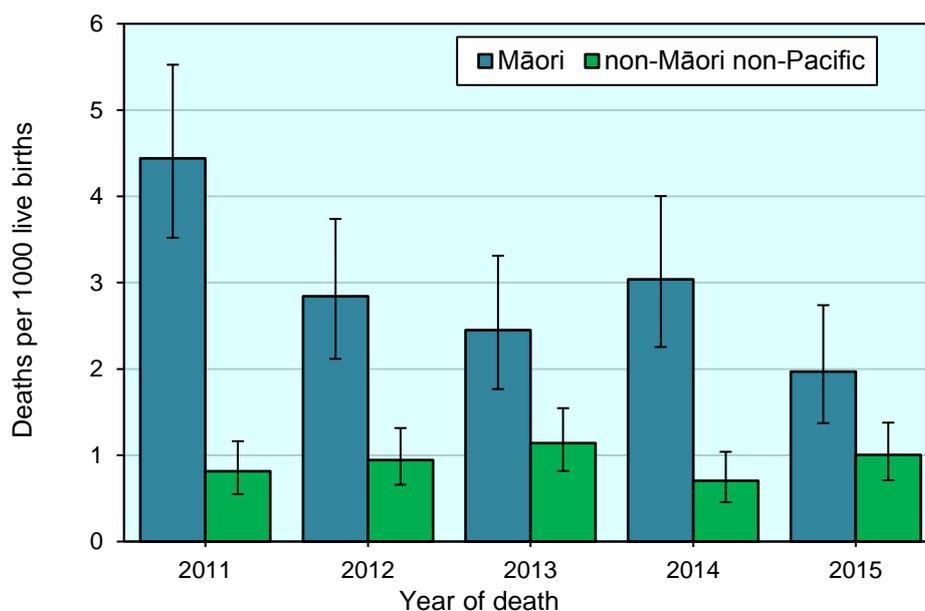
Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15.

There were 258 deaths in Māori infants aged 28 days to one year during the five-year period 2011–15. The most common cause of death was SUDI, with 126 deaths. The next leading cause of death was medical conditions, with 120 deaths. For both SUDI and medical conditions, the mortality rate in Māori was statistically significantly higher than that in non-Māori non-Pacific babies (SUDI rate ratio

6.61, 95 percent CI 4.63–9.43; medical rate ratio 2.17, 95 percent CI 1.68–2.80). There were seven deaths due to assault, and five due to unintentional injury (**Table 2.4**).

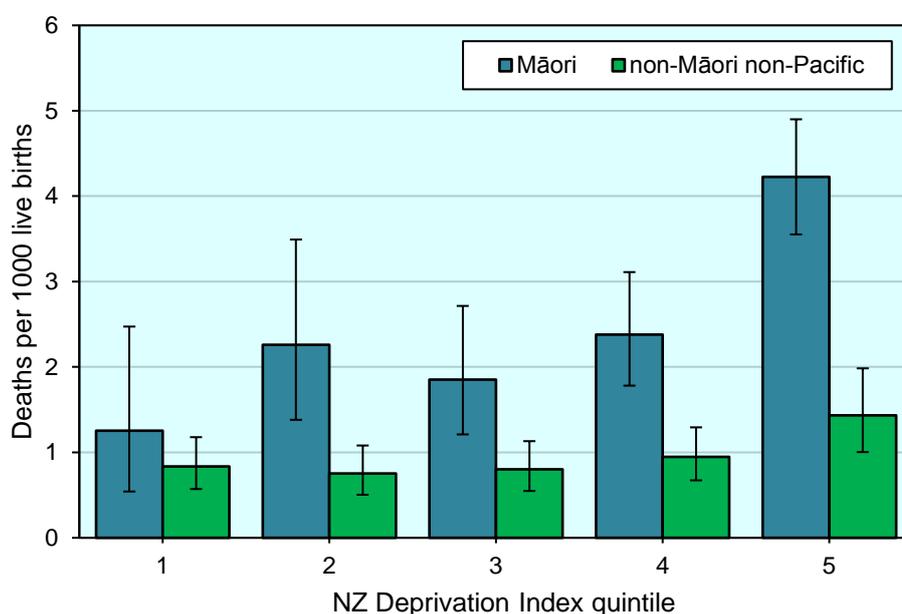
Since 2011, the mortality rate has reduced, with the rate in 2015 being statistically significantly lower than that in 2011. Though the mortality rate in 2015 was higher than non-Māori non-Pacific, this was not statistically significant (**Figure 2.2**).

Figure 2.2: Post-neonatal infant mortality rates (deaths per 1000 live births and 95% confidence intervals) by year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=258 Māori, 168 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15.

Figure 2.3: Post-neonatal infant mortality (rate per 1000 live births and 95% confidence intervals) by NZ Deprivation Index quintile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n= 258 Māori, 168 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15.

When examining mortality by deprivation, in Māori infants aged 28 days to one year, mortality rates were higher in those living in more deprived areas. Māori infants had statistically significantly higher mortality rates than non-Māori non-Pacific in all quintiles, except quintile 1 (least deprived) (Figure 2.3).

2.3 Children aged one to four years

Table 2.5: Mortality in children aged one to four years (number of deaths and rate per 100,000 resident population) by cause of death and year, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=239 deaths)

Category	2011	2012	2013	2014	2015	Total		Rate		Rate ratio (95% CI)
						Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	8	19	10	13	10	60	87	18.02	10.84	1.66 (1.20–2.31)
Unintentional injury	7	6	9	5	2	29	40	8.71	4.98	1.75 (1.08–2.82)
Intentional injury	2	-	-	1	3	6	5	1.80	0.62	2.89 (0.88–9.48)
SUD	1	1	1	2	1	6	6	1.80	0.75	2.41 (0.78–7.47)
Missing data	-	-	-	-	-	-	-	-	-	-
Total	18	26	20	21	16	101	138	30.34	17.20	1.76 (1.37–2.28)

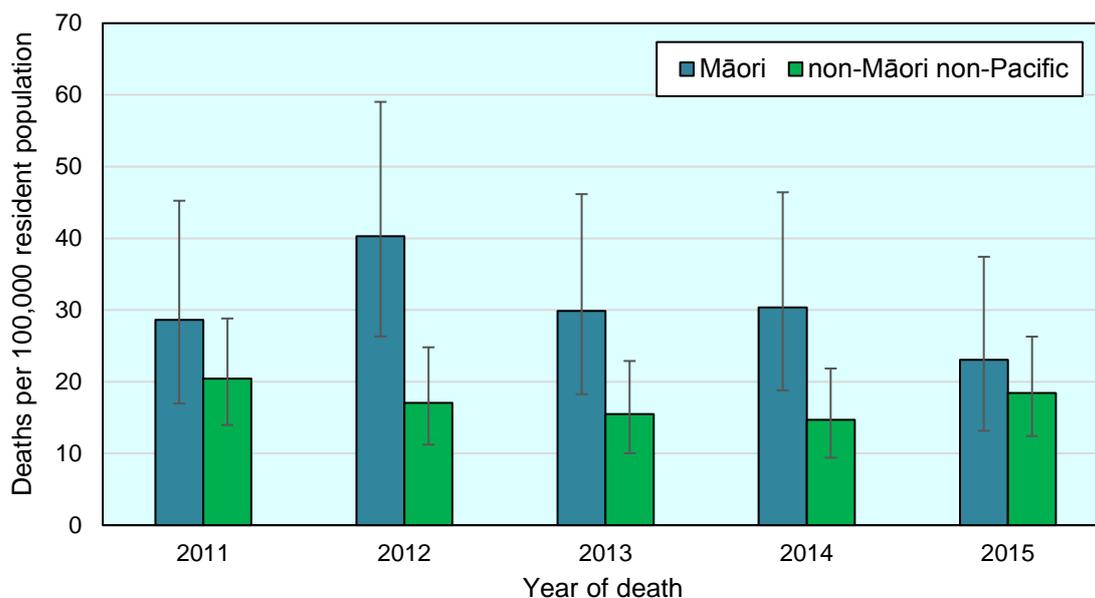
Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, one to four years.

There were 101 deaths in tamariki Māori aged one to four years during 2011–15. Medical conditions were the leading cause (59 percent), followed by unintentional injury (29 percent). For these two types of deaths, tamariki Māori had a higher mortality rate than non-Māori non-Pacific children

(medical conditions rate ratio 1.66, 95 percent CI 1.20–2.31; unintentional injury rate ratio 1.75, 95 percent CI 1.08–2.82) (**Table 2.5**). Regarding intentional injury, there were no statistically significant differences between tamariki Māori and non-Māori non-Pacific children.

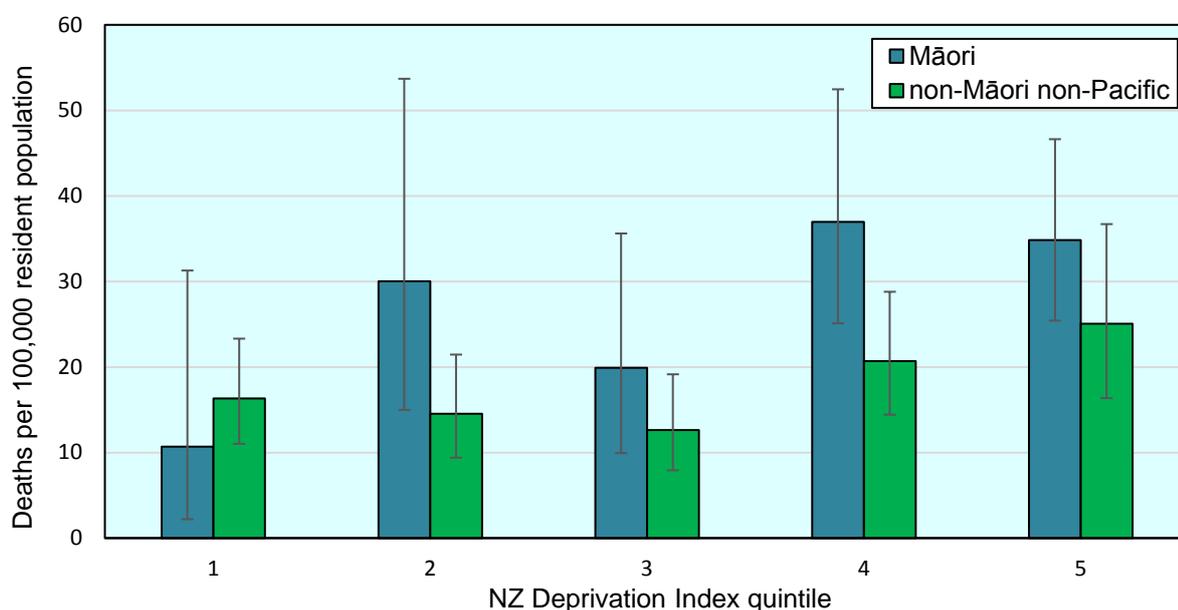
Mortality in this age group has fluctuated from year to year, with no statistically significant change over the study period for Māori or for non-Māori non-Pacific (**Figure 2.4**).

Figure 2.4: Mortality in children aged one to four years (number of deaths and rate per 100,000 resident population) by year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=101 Māori, 138 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, one to four years.

Figure 2.5: Mortality in children aged one to four years (number of deaths and rate per 100,000 resident population) by NZ Deprivation Index quintile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n=101 Māori, 138 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, one to four years.

For tamariki Māori aged one to four years, there was a general trend of higher mortality rates with increasing deprivation. There were no statistically significant differences between Māori and non-Māori non-Pacific at any deprivation quintile (Figure 2.5).

2.4 Children aged five to nine years

Table 2.6: Mortality in children aged five to nine years (number of deaths and rate per 100,000 resident population) by cause of death and year, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=120 deaths)

Category	2011	2012	2013	2014	2015	Total		Rate		Rate ratio (95% CI)
						Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	2	5	9	4	1	21	56	5.44	5.76	0.95 (0.57–1.56)
Unintentional injury	-	5	4	5	2	16	23	4.15	2.36	1.75 (0.93–3.32)
Intentional injury	1	-	-	-	-	1	3	s	0.31	-
Missing data	-	-	-	-	-	-	-	-	-	-
Total	3	10	13	9	3	38	82	9.85	8.43	1.17 (0.80–1.72)

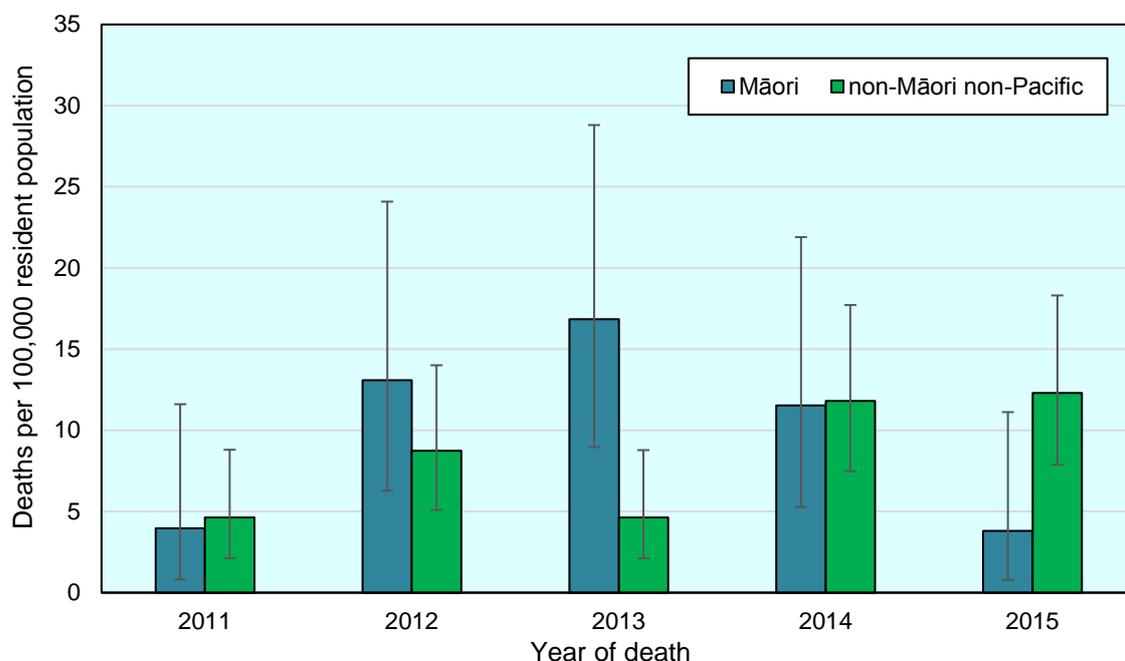
's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, five to nine years.

In children aged five to nine years, there were 38 deaths in tamariki Māori during 2011–15. The leading causes of death were medical conditions (55 percent) and unintentional injury (42 percent). There were no statistically significant differences between the mortality rates in tamariki Māori and non-Māori non-Pacific children (Table 2.6). There were no absolute differences between tamariki Māori and non-Māori non-Pacific children for death by intentional injury.

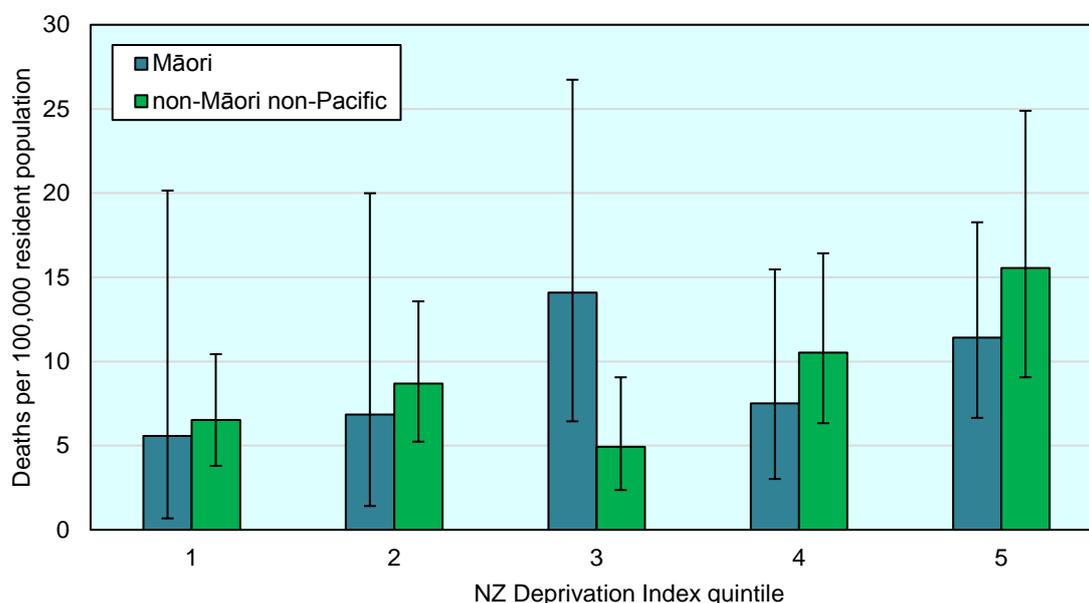
There was substantial variation in mortality rates over the five-year period, but with no statistically significant differences in mortality rates between the years or between tamariki Māori and non-Māori non-Pacific children (**Figure 2.6**).

Figure 2.6: Mortality in children aged five to nine years (number of deaths and rate per 100,000 resident population) by year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=38 Māori and 82 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, five to nine years.

Figure 2.7: Mortality in children aged five to nine years (number of deaths and rate per 100,000 resident population) by NZ Deprivation Index quintile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n=38 Māori and 82 non-Māori non-Pacific deaths*)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, five to nine years.

When examined by New Zealand deprivation quintile, there were no statistically significant differences in mortality rates either by deprivation quintile or by ethnic group (**Figure 2.7**).

2.5 Children aged 10–14 years

Table 2.7: Mortality in children aged 10–14 years (number of deaths and rate per 100,000 resident population) by cause of death and year, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=154 deaths)

Category	2011	2012	2013	2014	2015	Total		Rate		Rate ratio (95% CI)
						Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	4	8	3	3	5	23	47	6.41	4.79	1.34 (0.81–2.20)
Unintentional injury	8	8	5	4	2	27	28	7.52	2.85	2.64 (1.55–4.48)
Intentional injury	4	7	1	3	4	19	9	5.29	0.92	5.78 (2.61–12.77)
Missing data	-	-	-	1	-	1	-	s	-	-
Total	16	23	9	11	11	70	84	19.50	8.55	2.28 (1.66–3.13)

's' indicates rate not calculated due to small numbers.

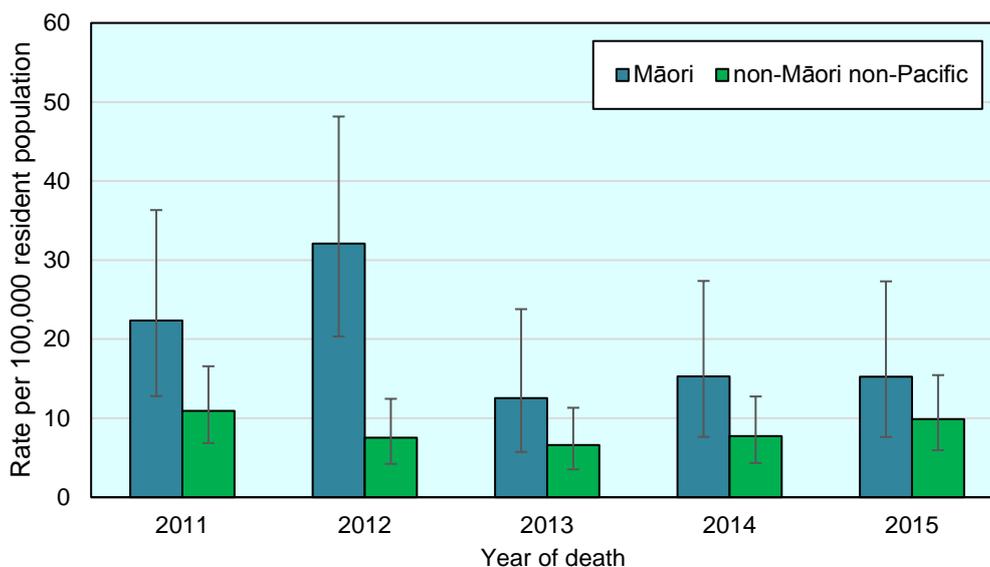
Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–14 years.

There were 70 tamariki Māori aged 10–14 years who died during the period 2011–15, with an overall mortality rate of 19.5 per 100 000, which was statistically significantly higher than the mortality rate for non-Māori non-Pacific children of the same age (rate ratio 2.28, 95 percent CI 1.66–3.13). The leading causes of death were unintentional injury (39 percent), medical conditions (33 percent), and intentional injury (27 percent). Of the intentional injury deaths in tamariki Māori in

this age group, all were due to suicide; there were no deaths due to assault. Compared with non-Māori non-Pacific children, Māori had statistically higher mortality rates of unintentional and intentional injury (rate ratios 2.64, 95 percent CI 1.55–4.48 and 5.78, 95 percent CI 2.61–12.77, respectively) (Table 2.7).

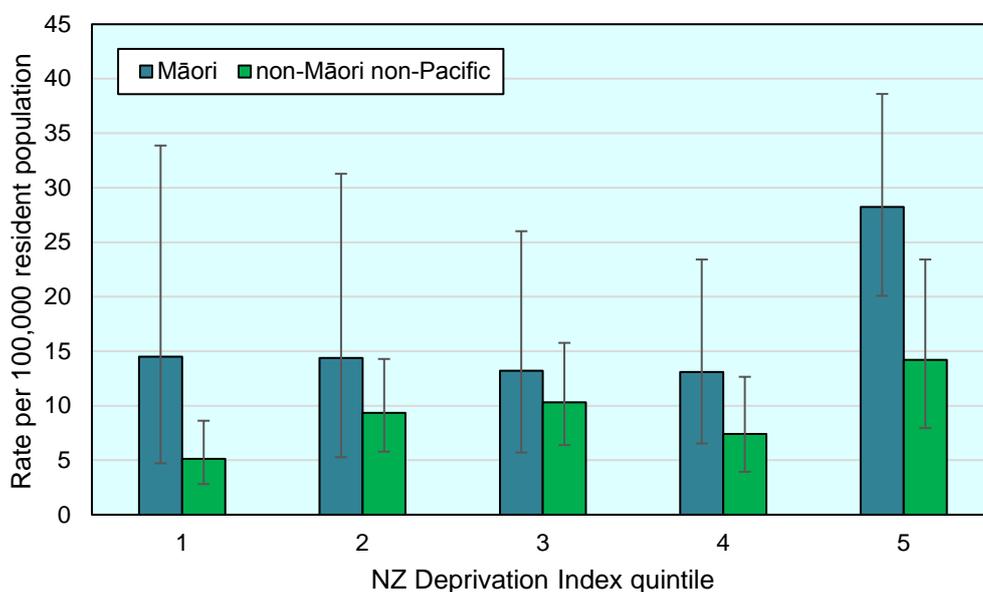
When examined by year, there were no consistent trends over the time period in either rates by year, or in comparisons between tamariki Māori and non-Māori non-Pacific children (Figure 2.8).

Figure 2.8: Mortality in children aged 10–14 years (number of deaths and rate per 100,000 resident population) by year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=70 Māori and 84 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–14 years.

Figure 2.9: Mortality in children aged 10–14 years (number of deaths and rate per 100,000 resident population) by NZ Deprivation Index quintile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n=69 Māori and 84 non-Māori non-Pacific deaths*)



* Excludes one case with no available deprivation data.

Source: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–14 years.

Mortality rates varied somewhat by deprivation, with a trend of higher mortality rates in the most deprived areas; however, this was not statistically significant (**Figure 2.9**).

2.6 Young people aged 15–19 years

Table 2.8: Mortality in young people aged 15–19 years (number of deaths and rate per 100,000 resident population) by cause of death and year, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=670 deaths)

Category	2011	2012	2013	2014	2015	Total		Rate		Rate ratio (95% CI)
						Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	13	16	13	7	13	62	113	18.01	10.49	1.72 (1.26–2.34)
Unintentional injury	21	17	17	14	16	85	147	24.69	13.65	1.81 (1.38–2.36)
Intentional injury	32	37	28	13	27	137	123	39.79	11.42	3.48 (2.73–4.44)
Missing data	-	1	-	-	1	2	1	s	s	-
Total	66	71	58	34	57	286	384	83.07	35.66	2.33 (2.00–2.71)

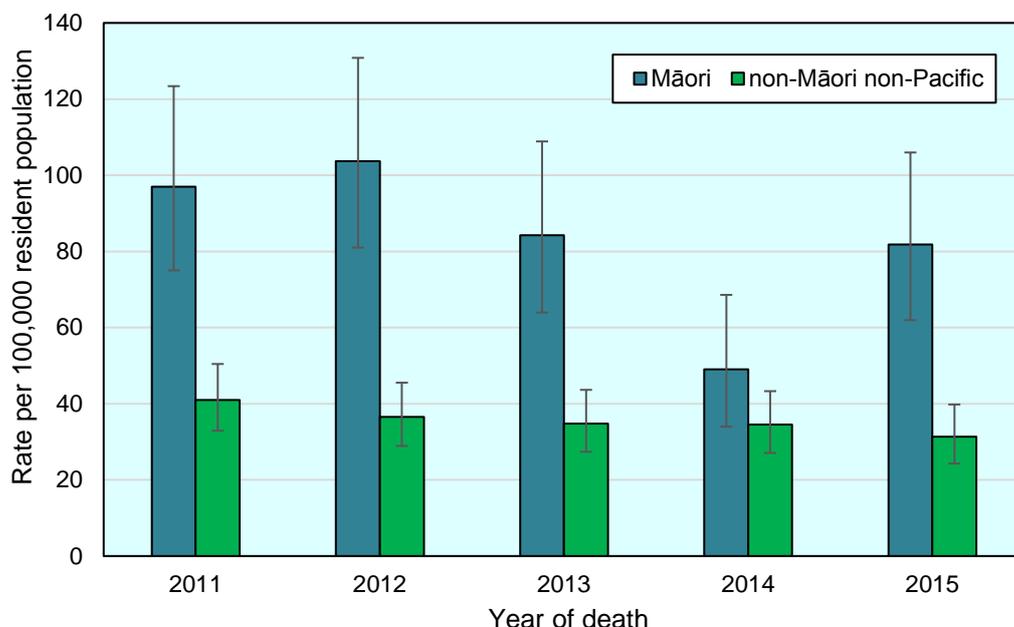
's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 15–19 years.

There were 286 deaths in taitamariki Māori during the period 2011–15. Intentional injury was the leading cause of death (48 percent), with 129 deaths due to suicide and eight because of assault. The remaining deaths were due to unintentional injury (30 percent) and medical conditions (22 percent). The leading causes of unintentional injury death were transport (n=64) and poisoning (n=7) followed by drowning and falls (both with three deaths). The leading medical causes of death

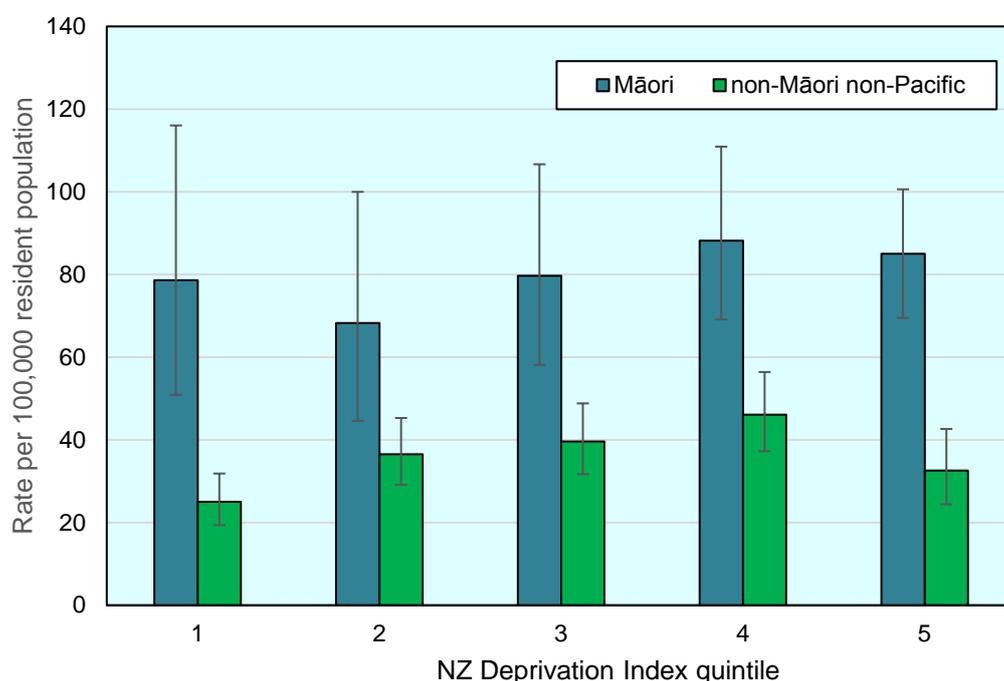
were neoplasms (n=20) and diseases of the nervous system (n=9), with diseases of the respiratory and circulatory systems accounting for seven deaths each. Taitamariki Māori had higher mortality rates both overall, and for each cause of death compared with non-Māori non-Pacific young people (**Table 2.8**).

Figure 2.10: Mortality in young people aged 15–19 years (number of deaths and rate per 100,000 resident population) by year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=286 Māori and 384 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 15–19 years.

Figure 2.11: Mortality in young people aged 15–19 years (number of deaths and rate per 100,000 resident population) by NZ Deprivation Index quintile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n=284 Māori and 383 non-Māori non-Pacific deaths*)



* Excludes three cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 15–19 years.

There has not been any statistically significant change in mortality rates in this age group over the period 2011–15 (**Figure 2.10**).

When examined by deprivation quintile, Māori had a higher mortality rate than non-Māori non-Pacific at each level of deprivation except quintile 2 (borderline). There was no clear pattern of higher mortality rates with increasing deprivation (**Figure 2.11**).

2.7 Young people aged 20–24 years

Table 2.9: Mortality in young people aged 20–24 years (number of deaths and rate per 100,000 resident population) by cause of death and year, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=819 deaths)

Category	2011	2012	2013	2014	2015	Total		Rate		Rate ratio (95% CI)
						Māori	Non-Māori non-Pacific	Māori	Non-Māori non-Pacific	
Medical	23	15	10	11	11	70	151	23.77	13.12	1.81 (1.37–2.41)
Unintentional injury	12	10	18	14	15	69	216	23.43	18.76	1.25 (0.95–1.64)
Intentional injury	21	26	26	21	24	118	192	40.07	16.68	2.40 (1.91–3.02)
Missing data	-	-	-	-	1	1	2	s	s	-
Total	56	51	54	46	51	258	561	87.62	48.73	1.80 (1.55–2.08)

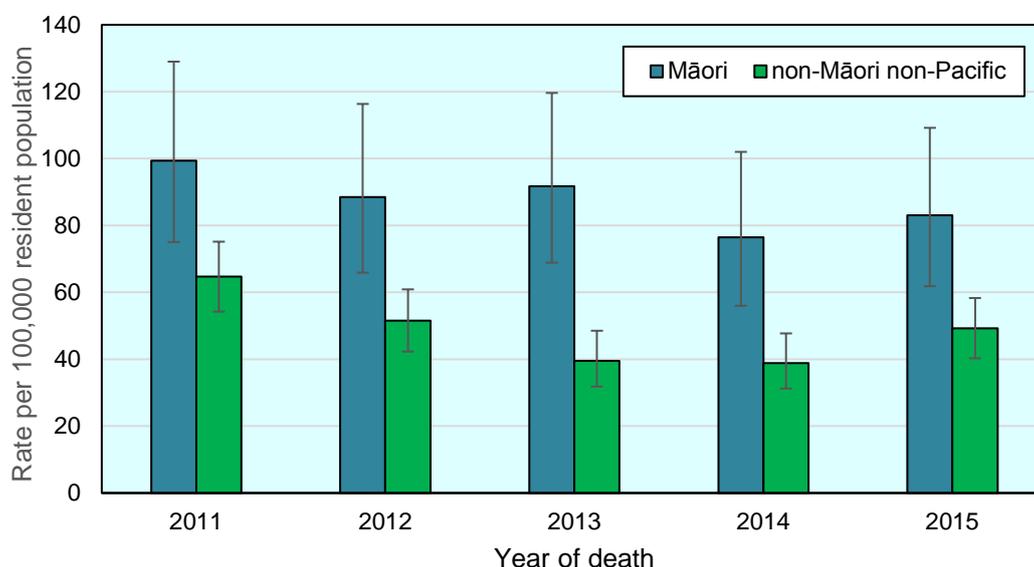
's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 20–24 years.

There were 258 deaths in taitamariki Māori aged 20–24 years during the years 2011–15. The leading cause of death was intentional injury (46 percent), followed by medical conditions and unintentional injury (27 percent each). Within these categories, suicide was the leading cause of intentional injury death, with 107 deaths; the remaining 11 were due to assault. Transport crashes accounted for 70 percent of unintentional injury deaths. The leading medical causes of death were neoplasms (n=18), diseases of the nervous system (n=15) and diseases of the circulatory system (n=9). Taitamariki Māori had a higher overall mortality rate compared with non-Māori non-Pacific young people (rate ratio 1.80, 95 percent CI 1.55–2.08), and statistically significantly higher mortality from intentional injury and medical conditions (**Table 2.9**).

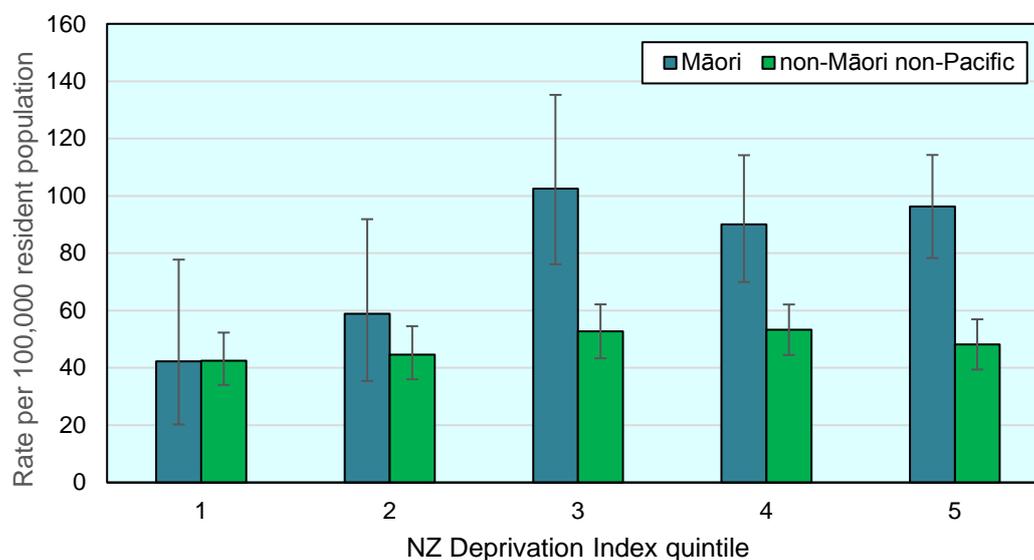
Mortality rates in taitamariki Māori have not changed substantially since 2011. However, from 2012 onwards the mortality rates for taitamariki Māori have been statistically significantly higher than those for non-Māori non-Pacific young people (**Figure 2.12**).

Figure 2.12: Mortality in young people aged 20–24 years (number of deaths and rate per 100,000 resident population) by year of death, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 (n=258 Māori and 561 non-Māori non-Pacific deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 20–24 years.

Figure 2.13: Mortality in young people aged 20–24 years (number of deaths and rate per 100,000 resident population) by NZ Deprivation Index quintile, Māori compared with non-Māori non-Pacific, New Zealand 2011–15 combined (n=257 Māori and 559 non-Māori non-Pacific deaths)



* Excludes three cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 20–24 years.

Taitamariki Māori had statistically significantly higher mortality rates than non-Māori non-Pacific young people in those residing in more deprived areas (quintiles 3–5) (**Figure 2.13**).

2.8 Summary

During the period 2011–15, there were 1011 deaths in tamariki and taitamariki Māori. The leading causes of death were medical conditions (35.2 percent) followed by intentional injury (28.6 percent). The most common medical condition causing death was neoplasms. Unlike non-Māori non-Pacific, the overall number of deaths was similar to the previous year, with 173 deaths in 2015, and 171 in 2014, but in general is reducing, with the mortality rates in 2014 and 2015 being statistically significantly lower than those in 2011 and 2012. However, despite this relative improvement, there remain large inequities in mortality rates for tamariki and taitamariki Māori compared with non-Māori non-Pacific children and young people. This is most notable for SUDI, where the rate ratio comparing Māori with non-Māori non-Pacific is 6.61 (95 percent CI 4.63–9.43), and for intentional injury deaths where the rate ratio is 2.47 (95 percent CI 2.11–2.89). Eighty-nine percent of intentional injury deaths were due to suicide, with marked inequities between Māori and non-Māori non-Pacific occurring from the ages of 10 years upwards.

3 Pacific mortality

This chapter reports on mortality in Pacific children and young people. ‘Total response’ ethnicity is used to determine Pacific ethnicity for this chapter. This means that if an individual has a Pacific ethnic group as any one of their ethnicities, they will be included here. In the rest of this report, ‘prioritised’ ethnicity is used. Prioritised ethnicity assigns one ethnic group to each individual, giving precedence to Māori, followed by Pacific, Asian, MELAA then European and Other ethnicities. Therefore, in the rest of the report if an individual identified as being both Pacific and Māori, they would be counted as Māori. However, in this chapter, they will be included as Pacific. This chapter uses non-Pacific non-Māori as a comparator group. Therefore, Māori who do not also identify as Pacific (n=928) are excluded, as are those with unknown ethnicity (n=6).

There were 420 Pacific children and young people who died during 2011–15. They are a diverse group, made up of people who identify with a range and number of ethnic groups (**Table 3.1**).

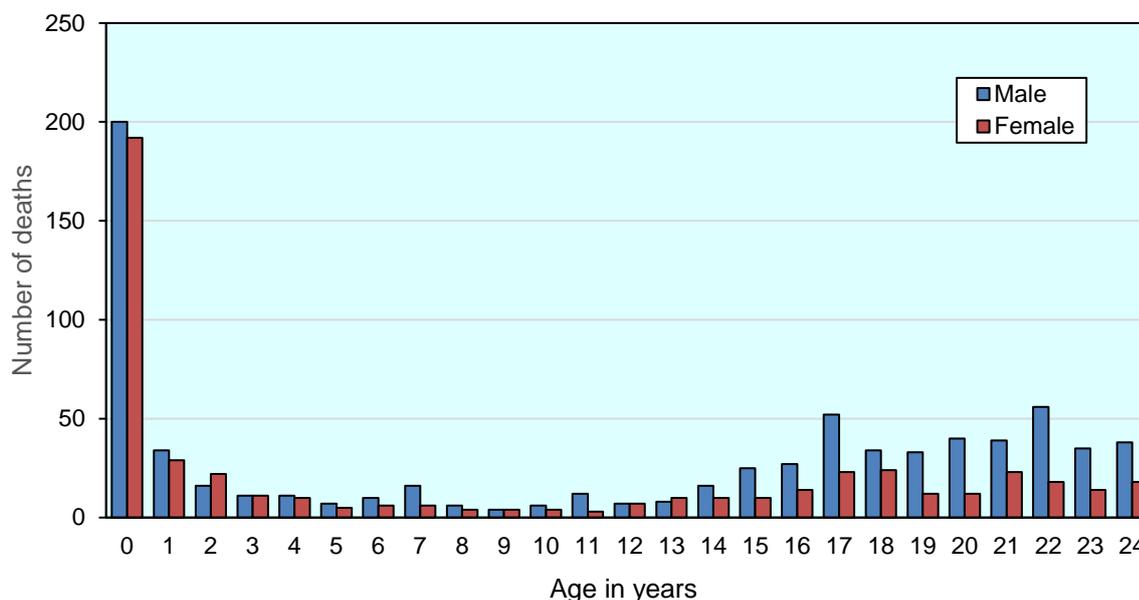
Table 3.1: Pacific mortality (number of deaths) in children and young people aged 28 days to 24 years by ethnic group and year of death, 2011–15 (n=420 deaths)

Ethnic groups	Deaths per year					Total
	2011	2012	2013	2014	2015	
Cook Island Māori	17	14	13	12	20	76
Cook Island Māori, Niuean	1	1				2
Cook Island Māori, Samoan	1	1	1	2		5
Cook Island Māori, Samoan, Tongan	1	1				2
Cook Island Māori, Tahitian, Samoan		1				1
Cook Island Māori, Tongan	1	2		1	1	5
Cook Island Māori, Tongan, Niuean		1				1
Fijian	1	3	1	2	5	12
Fijian, Niuean			1			1
Kiribati					1	1
Niuean	1	6	2	6	4	19
Papua New Guinean	1					1
Samoan	34	36	30	32	30	162
Samoan, Fijian		1		1		2
Samoan, Niuean	1	1		1	2	5
Samoan, Niuean, Fijian				1		1
Samoan, Tokelauan	1		1		1	3
Samoan, Tongan	1	1	2	3		7
Solomon Islander	1				1	2
Tahitian, Cook Island Māori	1					1
Tokelauan	2	4	3	1		10
Tongan	25	17	17	17	13	89
Tongan, Niuean	1	1	1	2		5
Tuvaluan	1	1		1	1	4
Tuvaluan, Samoan			1			1
Tuvaluan, Tokelauan		1				1
Pacific Islander not further defined			1			1
Total	92	93	74	82	79	420

Note: non-Pacific ethnicities not displayed.

Source: Mortality Review Database.

Figure 3.1: Pacific mortality (number of deaths) in children and young people aged 28 days to 24 years by age and sex, New Zealand 2002–15 (n=1234 deaths)



Source: Mortality Review Database.

There were 1234 deaths in Pacific children and young people during 2002–15. Deaths peaked in those aged 28 days to one year, and reduced thereafter. As in the non-Pacific population, there was an increase in deaths in the teenage years. However, this increase was not as high as would have been expected. Furthermore, while male deaths predominated, this was not to the same degree as in non-Pacific populations (**Figure 3.1**).

During the years 2011–15, there were 420 deaths in Pacific children and young people. Half of these deaths were due to medical conditions, with 21 percent being due to intentional injuries (suicide and assault). Seventeen percent were due to unintentional injury, and 12 percent to SUDI/SUD (**Table 3.2**).

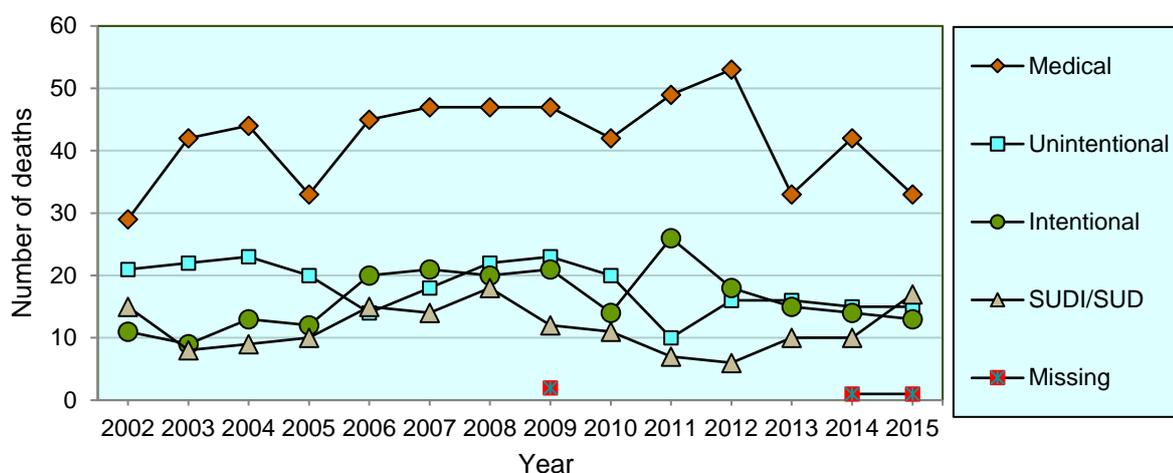
Table 3.2: Pacific mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and age group, New Zealand 2011–15 combined (n=420 deaths)

Category	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	Percentage (%)
Medical	62	33	15	20	31	49	210	50.0
Unintentional injury	2	13	4	5	20	28	72	17.1
Intentional injury	0	1	1	8	48	28	86	20.5
SUDI/SUD	50	0	0	0	0	0	50	11.9
Missing data	0	0	1	0	0	1	2	0.5
Total	114	47	21	33	99	106	420	100.0

* This category represents infants 28 days and older, and less than one calendar year in age.

Source: Mortality Review Database.

Figure 3.2: Pacific mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and year, New Zealand 2002–15 (n=1234 deaths)



Source: Mortality Review Database.

There have been fluctuations in the number of deaths by cause over the years since 2002; however, no clear trends of either an increase or decrease in the number of deaths can be seen (Figure 3.2 and Table 3.3).

Table 3.3: Pacific mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, New Zealand 2011–15 (n=420 deaths)

Category	2011	2012	2013	2014	2015	Total	Percentage (%)
28 days to 1 year	31	17	21	20	25	114	27.1
1–4 years	11	13	7	9	7	47	11.2
5–9 years	4	4	2	7	4	21	5.0
10–14 years	4	10	7	4	8	33	7.9
15–19 years	24	24	19	15	17	99	23.6
20–24 years	18	25	18	27	18	106	25.2
Total	92	93	74	82	79	420	100.0

Source: Mortality Review Database.

Medical conditions were the leading cause of death, with 210 deaths from 2011 to 2015. The most common causes of medical death were neoplasms (n=37), diseases of the nervous system (n=32) and congenital anomalies and diseases of the respiratory system (30 deaths each). Intentional injury accounted for 20.5 percent of deaths, with suicide accounting for 80 (93 percent) of these deaths. Within unintentional injury deaths, 41 (57 percent) were due to transport crashes. There were 50 deaths due to SUDI (Table 3.4).

Table 3.4: Pacific mortality (number of deaths) by cause of death and age group, New Zealand 2011–15 combined (n=420 deaths)

Cause of death	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%
Medical								
Infectious and parasitic disease	6	6	-	-	-	1	13	3.1
Neoplasms	1	5	5	6	6	14	37	8.8
Diseases of the blood and blood-forming organs and disorders of the immune system	2	1	1	-	2	1	7	1.7
Endocrine, nutritional and metabolic diseases	2	-	2	1	1	2	8	1.9
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	2	5	3	6	6	10	32	7.6
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	6	2	-	3	5	7	23	5.5
Diseases of the respiratory system	13	8	2	3	3	1	30	7.1
Diseases of the digestive system	1	-	-	-	-	2	3	0.7
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	1	1	0.2
Diseases of the musculoskeletal system and connective tissue	-	-	-	-	1	1	2	0.5
Diseases of the genitourinary system	1	-	-	-	-	2	3	0.7
Pregnancy, childbirth and the puerperium	-	-	-	-	-	1	1	0.2
Certain conditions originating in the perinatal period	14	1	-	-	-	-	15	3.6
Congenital anomalies	14	4	2	1	4	5	30	7.1
Symptoms & abnormal findings not elsewhere classified	-	1	-	-	3	1	5	1.2
Total medical	62	33	15	20	31	49	210	50.0
Unintentional injury								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	-	3	-	1	3	4	11	2.6
Fall	-	-	-	-	1	-	1	0.2
Fire/hot object or substance	-	-	1	-	-	-	1	0.2
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	1	1	0.2
Transport	1	5	2	3	11	19	41	9.8
Natural/environmental	-	-	-	-	-	-	-	-
Overexertion	-	-	-	-	-	-	-	-
Poisoning	1	2	1	1	4	4	13	3.1
Struck by, against	-	1	-	-	-	-	1	0.2
Suffocation	-	-	-	-	1	-	1	0.2
Other specified, classifiable	-	1	-	-	-	-	1	0.2
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	1	-	-	-	-	1	0.2
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	2	13	4	5	20	28	72	17.1

Cause of death	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%
Intentional injury								
Assault	-	1	-	-	-	5	6	1.4
Suicide	-	-	1	8	48	23	80	19.0
Total intentional injury	-	1	1	8	48	28	86	20.5
SUDI/SUD								
SUDI (28 days to <1 year)	50	-	-	-	-	-	50	11.9
SUD (1–2 years)	-	-	-	-	-	-	-	-
Total SUDI/SUD	50	-	-	-	-	-	50	11.9
Missing data	-	-	1	-	-	1	2	0.5
Total	114	47	21	33	99	106	420	100.0

* This category represents infants 28 days and older, and less than one calendar year in age.

Source: Mortality Review Database.

3.1 Post-neonatal infants

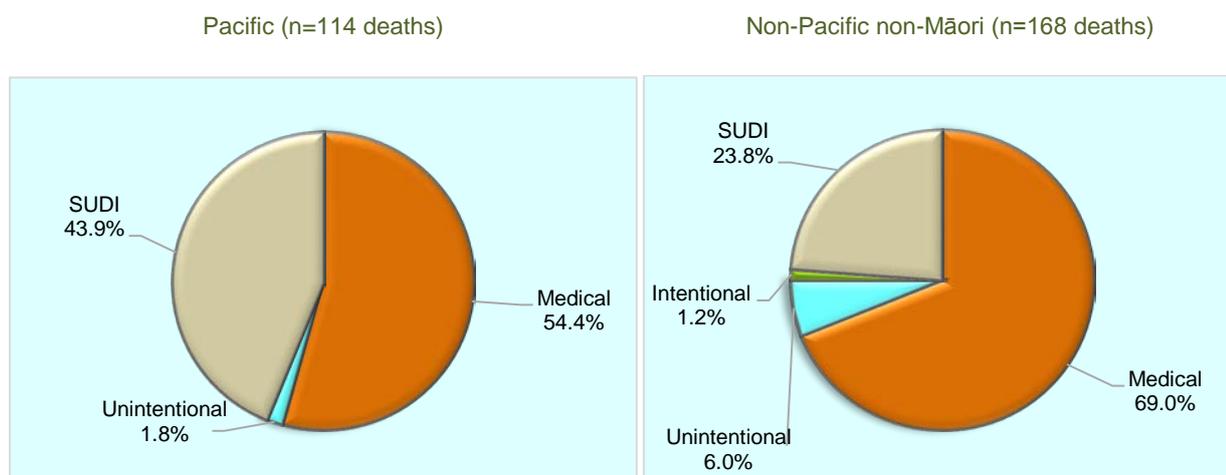
Table 3.5: Mortality in infants aged 28 days to less than one year (number of deaths) by cause of death and year, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 (n=282 deaths)

Category	2011	2012	2013	2014	2015	Total	
						Pacific	Non-Pacific non-Māori
Medical	23	11	10	10	8	62	116
Unintentional injury	1	-	1	-	-	2	10
Intentional injury	-	-	-	-	-	-	2
SUDI	7	6	10	10	17	50	40
Total	31	17	21	20	25	114	168

Source: Mortality Review Database.

There were 114 deaths in Pacific post-neonatal infants aged 28 days to one year during the period 2011–15. The leading cause of death in this age group was medical conditions (54.4 percent), followed by SUDI (43.9 percent) (**Table 3.5**). Compared with non-Pacific non-Māori infants, Pacific infants had a lower percentage of medical deaths in this age group (non-Pacific non-Māori = 69.0 percent) and a higher percentage of SUDI deaths (non-Pacific non-Māori = 23.8 percent) (**Figure 3.3**). While in the non-Pacific population SUDI rates are decreasing, Pacific infants had the highest number of deaths since the CYMRC started collecting data in 2002.

Figure 3.3: Mortality in infants aged 28 days to less than one year (number of deaths) by cause of death, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 combined



Source: Mortality Review Database.

3.2 Children aged one to four years

Table 3.6: Mortality in children aged one to four years (number of deaths) by cause of death and year, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 (n=185 deaths)

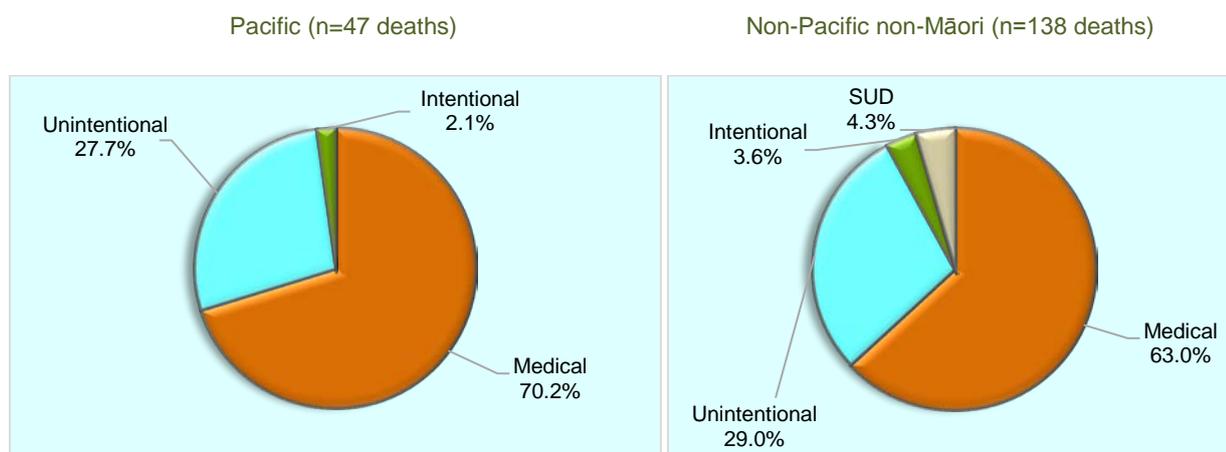
Category	2011	2012	2013	2014	2015	Total	
						Pacific	non-Pacific non-Māori
Medical	7	10	7	6	3	33	87
Unintentional injury	3	3	-	3	4	13	40
Intentional injury	1	-	-	-	-	1	5
SUD	-	-	-	-	-	-	6
Total	11	13	7	9	7	47	138

Source: Mortality Review Database.

There were 47 deaths in Pacific children aged one to four years during the period 2011–15. The leading cause of death was medical conditions. The most common medical conditions were diseases of the respiratory system (n=8) and infectious and parasitic diseases (n=6). There were 13 deaths due to unintentional injury (27.7 percent), with five of these being transport related, and three due to drowning. There was one assault death (**Table 3.4** and **Table 3.6**).

Compared with non-Pacific non-Māori children, Pacific children had a higher percentage of deaths due to medical conditions, and a lower percentage due to unintentional and intentional injury (**Figure 3.4**).

Figure 3.4: Mortality in children aged one to four years (number of deaths) by cause of death, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 combined



Source: Mortality Review Database.

3.3 Children aged five to nine years

Table 3.7: Mortality in children aged five to nine years (number of deaths) by cause of death and year, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 (n=103 deaths)

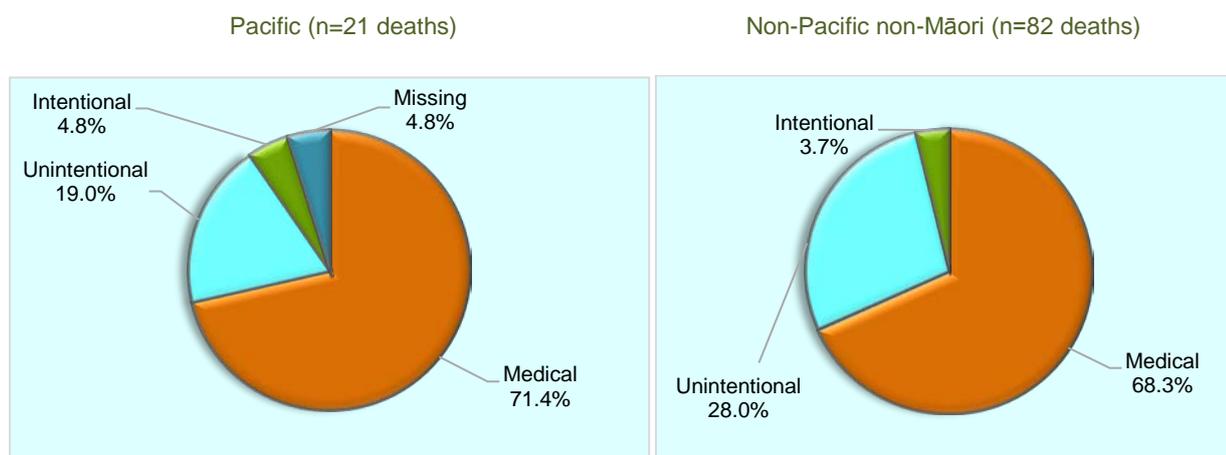
Category	2011	2012	2013	2014	2015	Total	
						Pacific	Non-Pacific non-Māori
Medical	3	2	1	7	2	15	56
Unintentional injury	-	2	1	-	1	4	23
Intentional injury	1	-	-	-	-	1	3
Missing data	-	-	-	-	1	1	-
Total	4	4	2	7	4	21	82

Source: Mortality Review Database.

In Pacific children aged five to nine years during 2011–15, there were 21 deaths. The leading cause of death was medical conditions, with 15 deaths. The most common medical conditions causing death were neoplasms (n=5) and diseases of the nervous system (n=3) (Table 3.7).

Compared with non-Pacific non-Māori children, in Pacific children there was a slightly higher percentage of medical deaths, and a lower percentage of unintentional injury deaths (Figure 3.5).

Figure 3.5: Mortality in children aged five to nine years (number of deaths) by cause of death, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 combined



Source: Mortality Review Database.

3.4 Children aged 10–14 years

Table 3.8: Mortality in children aged 10–14 years (number of deaths) by cause of death and year, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 (n=117 deaths)

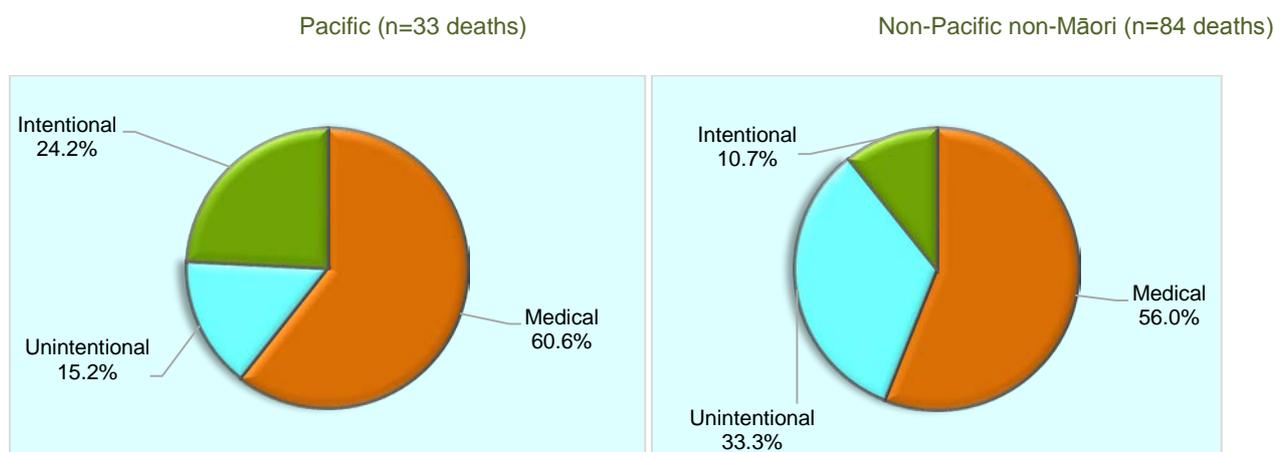
Category	2011	2012	2013	2014	2015	Total	
						Pacific	Non-Pacific non-Māori
Medical	3	7	3	3	4	20	47
Unintentional injury		1	3	-	1	5	28
Intentional injury	1	2	1	1	3	8	9
Total	4	10	7	4	8	33	84

Source: Mortality Review Database.

There were 33 deaths in Pacific children aged 10–14 years. The leading cause of death was medical conditions, with the most common medical conditions causing death being neoplasms and diseases of the nervous system (six deaths each). There were eight deaths due to suicide in this age group (**Table 3.4** and **Table 3.8**).

When compared with non-Pacific non-Māori, in Pacific children there was a higher percentage of medical (61 versus 56 percent) and intentional injury (24 versus 11 percent) deaths, and a lower percentage of unintentional injury deaths (15 compared with 33 percent) (Figure 3.6).

Figure 3.6: Mortality in children aged 10–14 years (number of deaths) by cause of death, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 combined



Source: Mortality Review Database.

3.5 Young people aged 15–19 years

Table 3.9: Mortality in young people aged 15–19 years (number of deaths) by cause of death and year, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 (n=483 deaths)

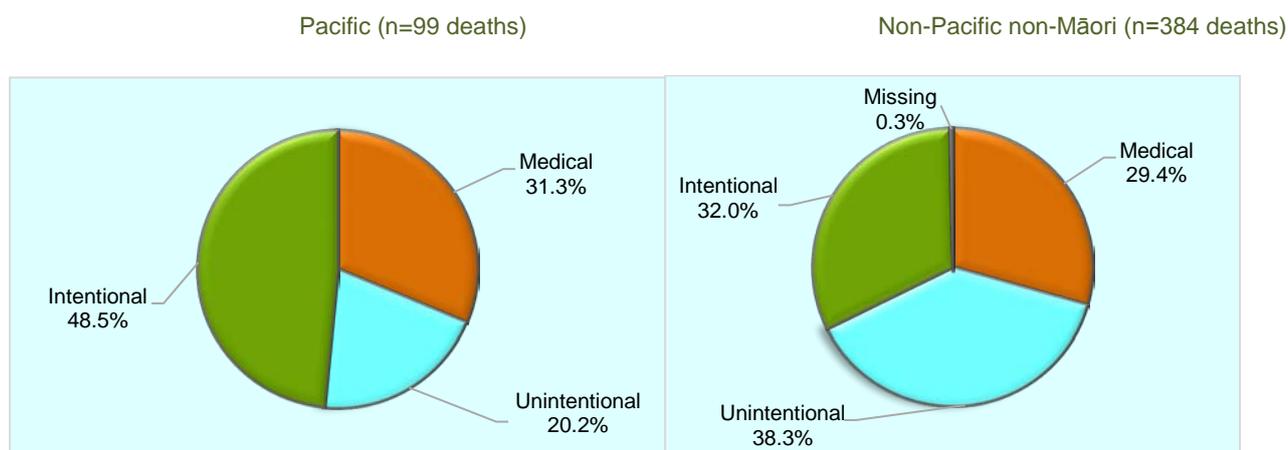
Category	2011	2012	2013	2014	2015	Total	
						Pacific	Non-Pacific non-Māori
Medical	7	9	4	5	6	31	113
Unintentional injury	2	4	9	3	2	20	147
Intentional injury	15	11	6	7	9	48	123
Missing data	-	-	-	-	-	-	1
Total	24	24	19	15	17	99	384

Source: Mortality Review Database.

In Pacific young people aged 15–19 years there were 99 deaths during 2011–15. The leading cause of death was intentional injury (n=48), with all of these deaths being due to suicide. The next leading cause of death was medical conditions, where six deaths each were due to neoplasms and diseases of the nervous system. The leading cause of unintentional injury death was transport crashes, with 11 deaths (55 percent) (**Table 3.4** and **Table 3.9**).

Compared with non-Pacific non-Maori young people, Pacific young people had a higher percentage of deaths due to intentional injury (49 compared with 32 percent), a similar percentage due to medical conditions, and a lower percentage due to unintentional injury (20 compared with 38 percent) (**Figure 3.7**).

Figure 3.7: Mortality in young people aged 15–19 years (number of deaths) by cause of death, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 combined



Source: Mortality Review Database.

3.6 Young people aged 20–24 years

Table 3.10: Mortality in young people aged 20–24 years (number of deaths) by cause of death and year, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 (n=667 deaths)

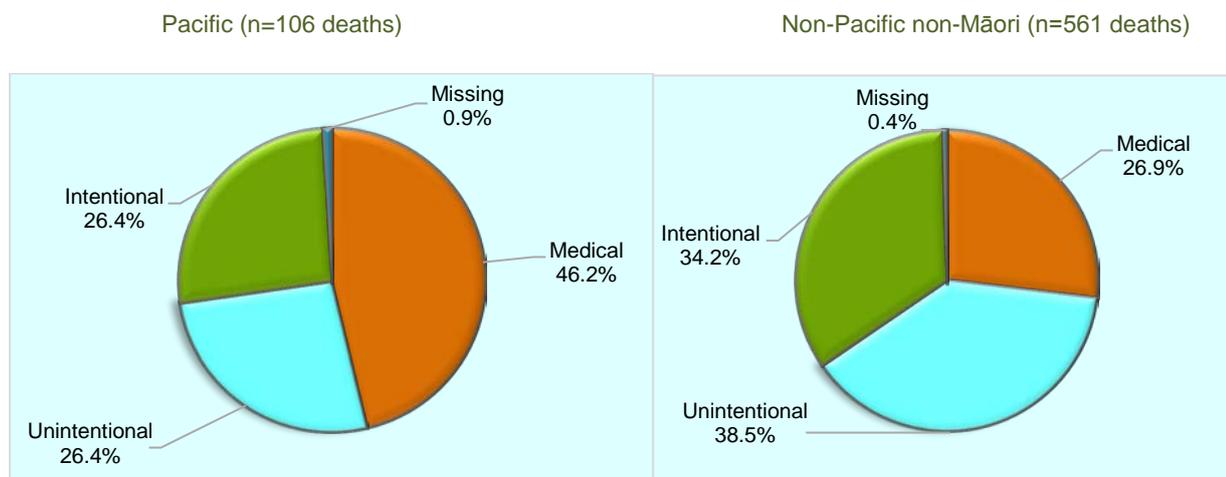
Category	2011	2012	2013	2014	2015	Total	
						Pacific	Non-Pacific non-Māori
Medical	6	14	8	11	10	49	151
Unintentional injury	4	6	2	9	7	28	216
Intentional injury	8	5	8	6	1	28	192
Missing data	-	-	-	1	-	1	2
Total	18	25	18	27	18	106	561

Source: Mortality Review Database.

There were 106 deaths in Pacific young people aged 20–24 years. The leading cause of death was medical conditions, with the most common medical causes being neoplasms (n=14), diseases of the nervous system (n=10) and diseases of the circulatory system (n=7). The leading cause of unintentional injury death was transport crashes (68 percent). There were 28 deaths due to intentional injury; 23 were due to suicide (82 percent) and five due to assault (**Table 3.4** and **Table 3.10**).

When compared with non-Pacific non-Māori young people, Pacific young people had a higher proportion of medical deaths, and a lower proportion of injury deaths, both unintentional and intentional (**Figure 3.8**).

Figure 3.8: Mortality in young people aged 20–24 years (number of deaths) by cause of death, Pacific compared with non-Pacific non-Māori, New Zealand 2011–15 combined



Source: Mortality Review Database.

4 SUDI mortality

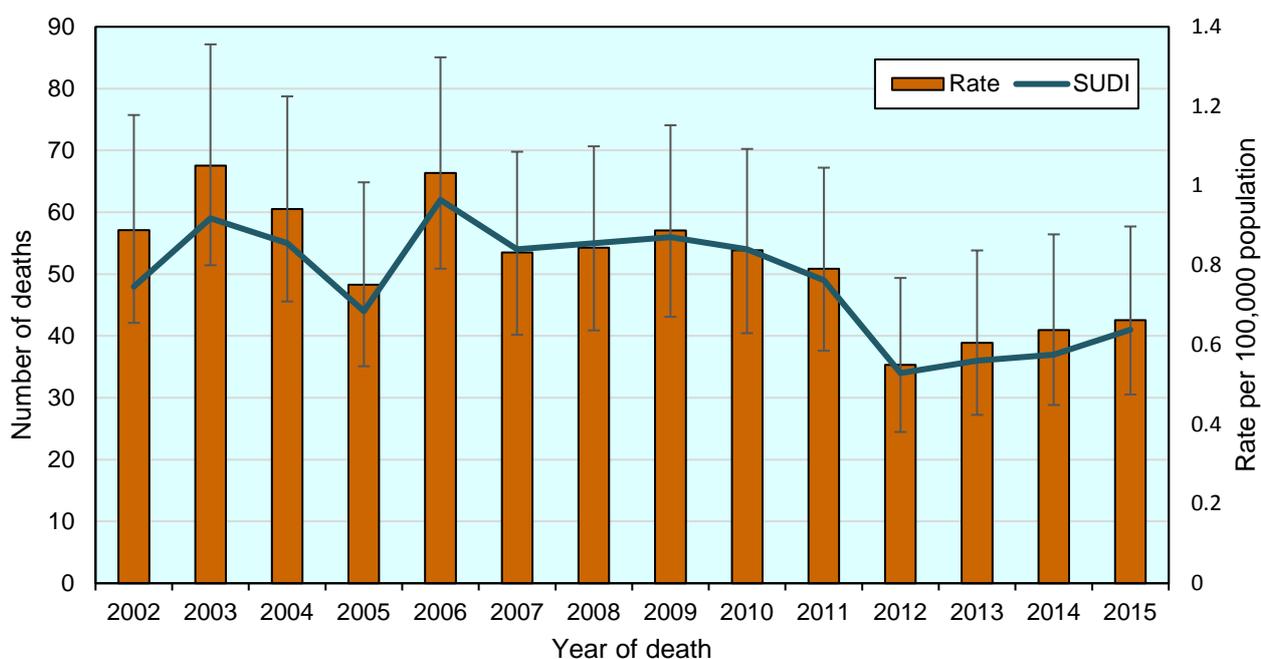
Table 4.1: Post-neonatal SUDI mortality (number of deaths and rate per 1000 live births) by year, New Zealand 2002–15 (n=684 deaths)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Number of deaths	48	59	55	44	62	54	55	56	54	49	34	36	37	41	684
Rate	0.89	1.05	0.94	0.75	1.03	0.83	0.84	0.89	0.84	0.79	0.55	0.60	0.64	0.66	0.81

Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2002–15.

There were 684 deaths due to SUDI in post-neonatal infants (aged 28 days to one year) during the years 2002–15. The SUDI mortality rate has varied substantially over this time, ranging from a low of 0.55 per 1000 live births in 2012 to a high of 1.05 per 1000 live births in 2003 (**Table 4.1** and **Figure 4.1**).

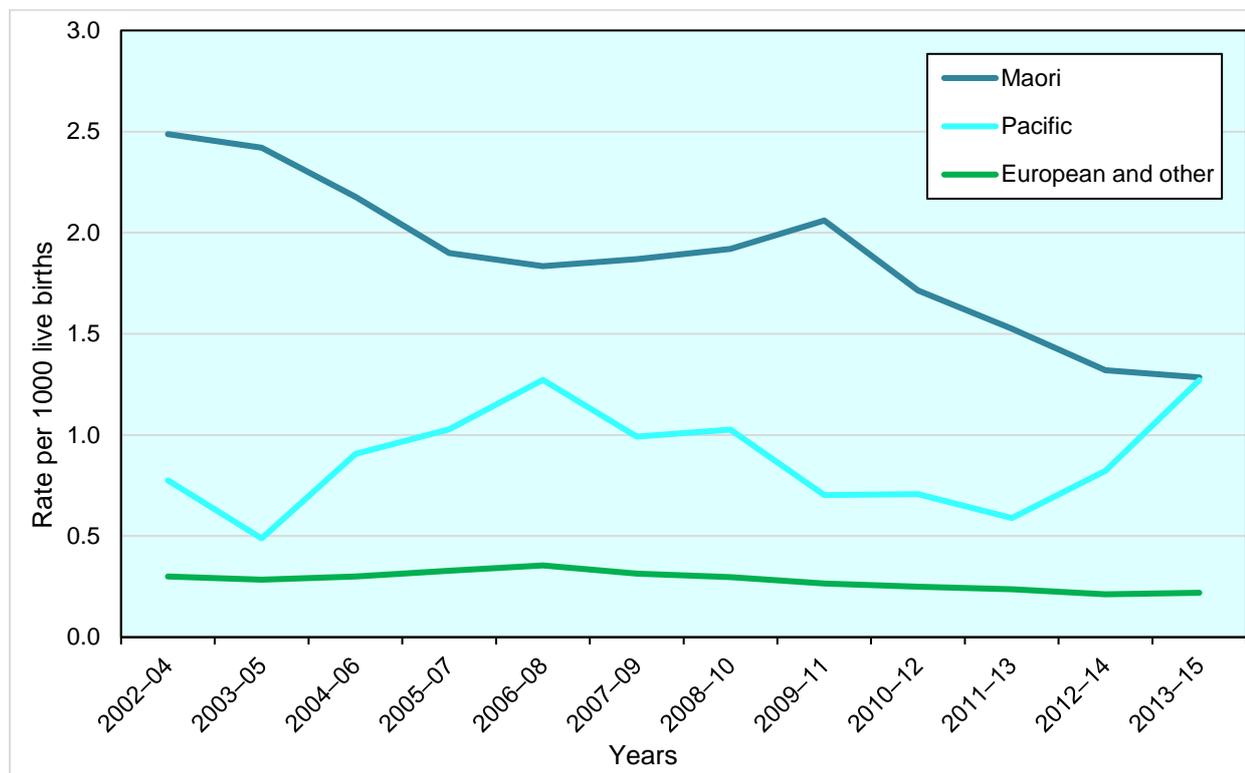
Figure 4.1: Post-neonatal SUDI mortality (number of deaths and rate per 1000 live births) by year, New Zealand 2002–15 (n=684 deaths)



Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2002–15.

When examined by ethnic group, the inequities that exist are clear, with Māori having a higher SUDI rate than European and Other. The SUDI mortality for Pacific fluctuates somewhat, but shows a concerning trend upwards over the previous two years (**Figure 4.2**).

Figure 4.2: Post-neonatal SUDI mortality (number of deaths and rate per 1000 live births) by ethnicity and year (three-year rolling rates), New Zealand 2002–15



Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2002–15.

Similarly, there was substantial variation in SUDI mortality rates by DHB of residence, with some DHBs not having any SUDI deaths during the five-year period, and others having a large number. In all DHBs excluding Wairarapa, the SUDI mortality rate in Māori was higher than in non-Māori (**Table 4.2**). It should be noted that these figures are based on five years' combined data, and some DHBs may have reduced the number of deaths within that time period.

Table 4.2: Post-neonatal SUDI mortality (number of deaths and rate per 1000 live births), by DHB of residence and ethnicity, 2011–15 combined (n=197 deaths)

DHB of residence	Māori			Non-Māori			Total		
	Deaths	Rate	95% CI	Deaths	Rate	95% CI	Deaths	Rate	95% CI
Northland	7	1.03	0.41–2.12	<3	s	-	9	0.80	0.37–1.52
Waitemata	3	0.41	0.09–1.21	<3	s	-	5	0.13	0.04–0.30
Auckland	<3	s	-	6	0.22	0.08–0.48	8	0.25	0.11–0.50
Counties Manukau	25	2.20	1.42–3.25	15	0.48	0.27–0.80	40	0.94	0.67–1.29
Waikato	17	1.58	0.92–2.53	7	0.43	0.17–0.88	24	0.89	0.57–1.32
Lakes	8	1.86	0.80–3.66	3	0.94	0.19–2.74	11	1.47	0.73–2.62
Bay of Plenty	10	1.51	0.72–2.78	<3	s	-	11	0.76	0.38–1.37
Tairāwhiti	7	2.79	1.12–5.74	-	-	-	7	1.94	0.78–4.00
Hawke's Bay	7	1.34	0.54–2.75	<3	s	-	9	0.81	0.37–1.54
Taranaki	4	1.53	0.42–3.91	<3	s	-	6	0.77	0.28–1.67
MidCentral	5	1.22	0.40–2.84	-	-	-	5	0.45	0.15–1.06
Whanganui	6	3.04	1.12–6.62	-	-	-	6	1.42	0.52–3.10
Capital & Coast	7	1.87	0.75–3.85	4	0.27	0.07–0.69	11	0.59	0.30–1.06
Hutt	4	1.36	0.37–3.47	5	0.72	0.23–1.68	9	0.91	0.42–1.73
Wairarapa	-	-	-	<3	s	-	<3	s	-
Nelson Marlborough	3	1.72	0.35–5.01	<3	s	-	4	0.52	0.14–1.33
West Coast	-	-	-	-	-	-	-	-	-
Canterbury	5	0.93	0.30–2.17	13	0.52	0.28–0.88	18	0.59	0.35–0.93
South Canterbury	-	-	-	-	-	-	-	-	-
Southern	6	1.65	0.60–3.59	7	0.50	0.20–1.02	13	0.73	0.39–1.25
New Zealand	126	1.44	1.19–1.69	71	0.33	0.26–0.41	197	0.65	0.56–0.74

's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15.

5 Suicide mortality

During the period 2002–15, there were 1638 deaths due to suicide. The age range for these deaths was nine to 24 years. This chapter will hereafter refer only to deaths in those aged 10–24 years.

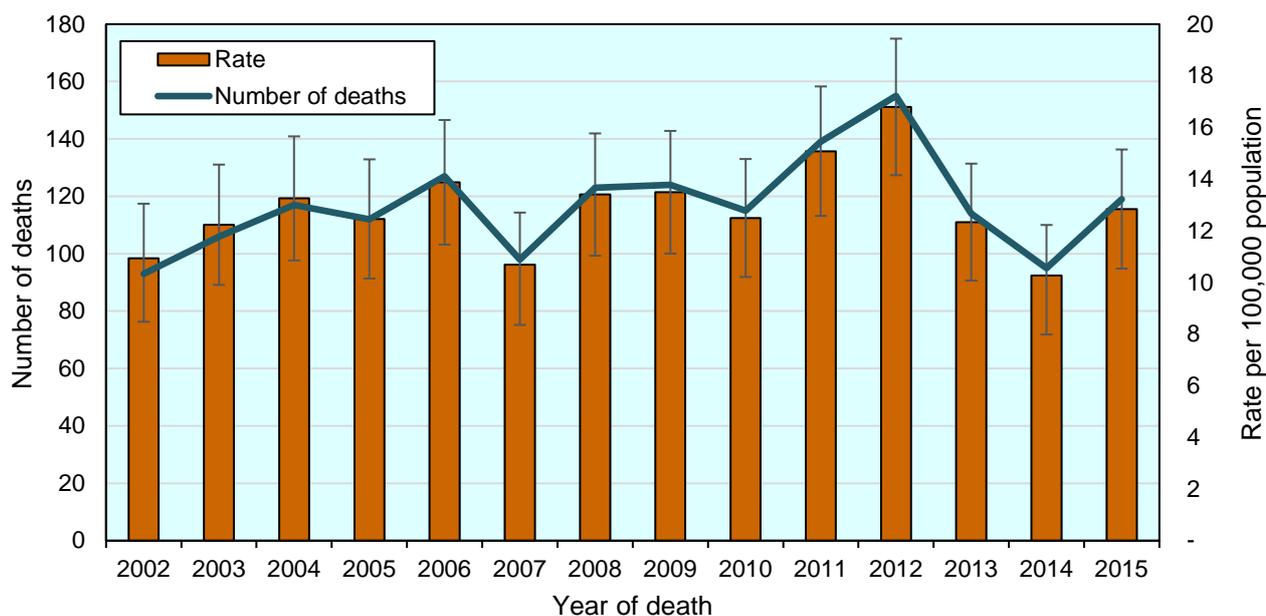
Table 5.1: Suicide mortality (number of deaths and rates per 100,000 population) in children and young people aged 10–24 years by year, New Zealand 2002–15 (n=1637 deaths)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2002–15
Number of deaths	93	106	117	112	127	98	123	124	115	139	155	114	95	119	1,637
Rate	10.94	12.23	13.25	12.46	13.88	10.69	13.40	13.49	12.50	15.08	16.80	12.34	10.27	12.84	12.88

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–24 years.

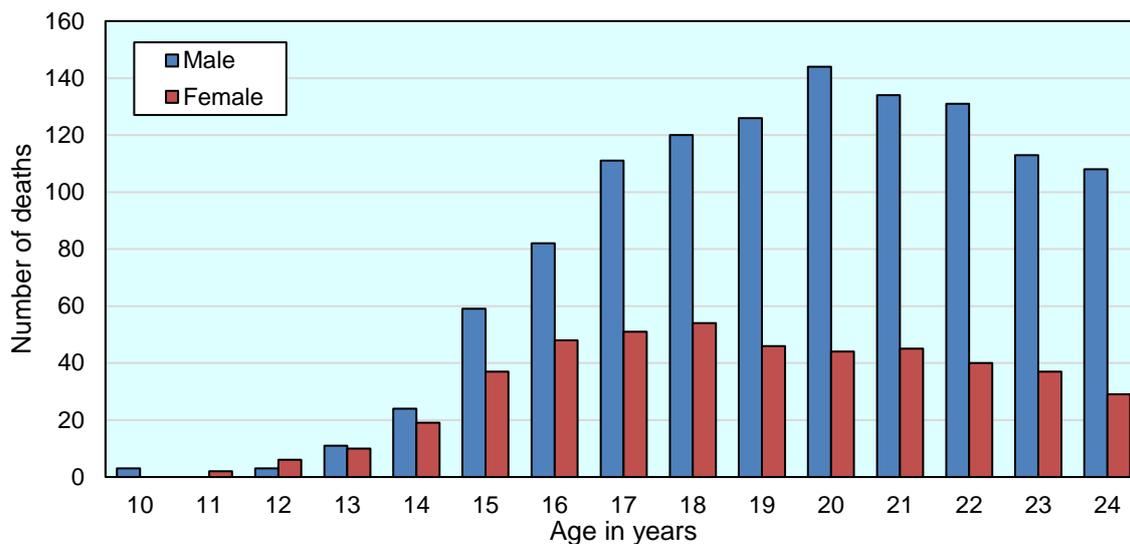
The suicide rate in children and young people aged 10–24 years has varied considerably over past 14 years, with the lowest rate in 2014 of 10.27 deaths per 100,000 population, and the highest rate in 2012 of 16.80 per 100,000 population (**Table 5.1**). While there has been much fluctuation in the suicide mortality rates, there are no clear trends emerging in the overall rate (**Figure 5.1**).

Figure 5.1: Suicide mortality (number of deaths and rates per 100,000 population) in children and young people aged 10–24 years by year of death, New Zealand 2002–15 (n=1637 deaths)



Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–24 years.

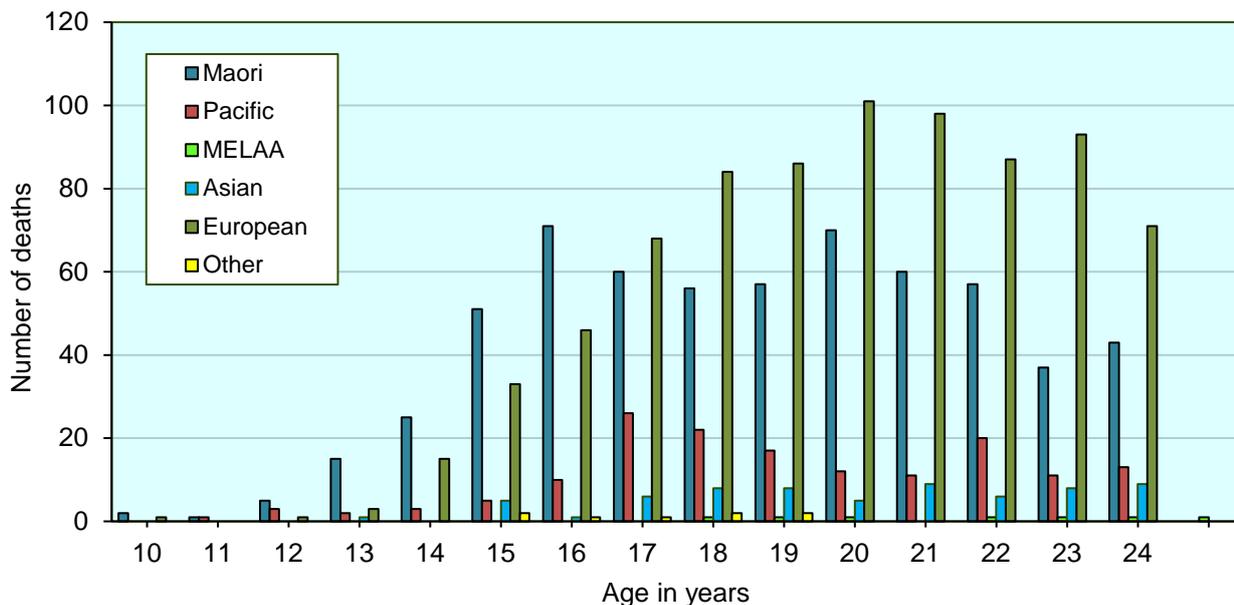
Figure 5.2: Suicide mortality (number of deaths) in children and young people aged 10–24 years by age and sex, New Zealand 2002–15 (n=1637 deaths)



Source: Mortality Review Database.

When examined by age and sex, a number of patterns are apparent. Male deaths due to suicide far outweigh deaths in females, with an overall male: female ratio of 2.5. However, in the childhood years (10–14 years of age) there is very little difference in the number of suicide deaths between males and females. It is not until adolescence that the male predominance becomes evident. From age 17 years onwards, there are at least twice as many suicide deaths in males as there are in females. The total number of deaths peaks at age 20 years, and gradually reduces thereafter (Figure 5.2).

Figure 5.3: Suicide mortality (number of deaths) in children and young people aged 10–24 years by age and ethnic group, New Zealand 2002–15 (n=1634 deaths*)

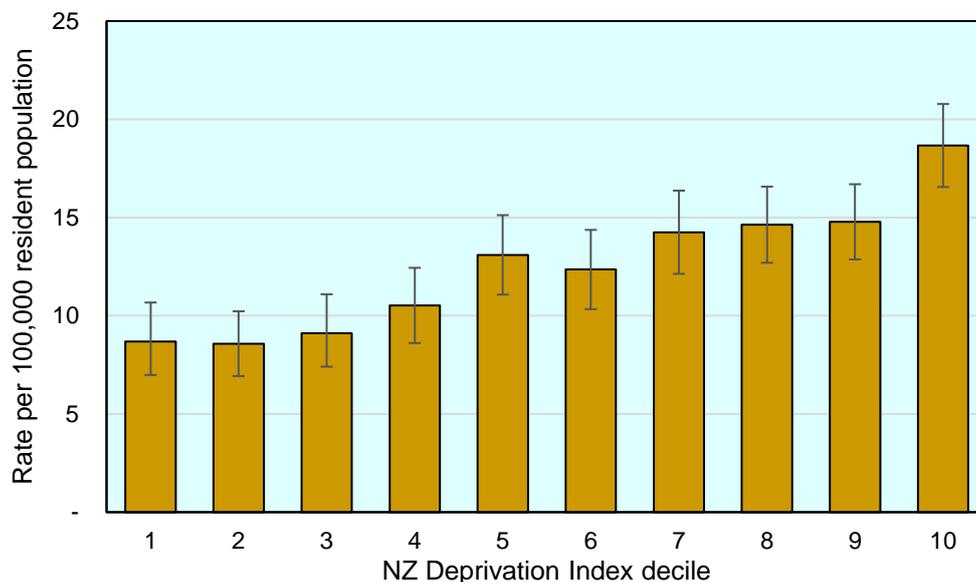


* Excludes three cases where ethnicity was unknown.

Source: Mortality Review Database.

While the main peak in suicide deaths in children and young people is at age 20, this varies by ethnic group. The peak for Māori begins at age 16, and continues until age 20. For those of European and Other ethnicity, suicide deaths peak at age 20. Deaths in Māori tend to have a slightly earlier onset, with 62 percent of deaths in those aged 10–14 years being in tamariki Māori (Figure 5.3).

Figure 5.4: Suicide mortality (number of deaths and rate per 100,000 population) in children and young people aged 10–24 years by NZ Deprivation Index decile, New Zealand 2002–15 (n=1636 deaths*)



* Excludes one case where deprivation was unknown.

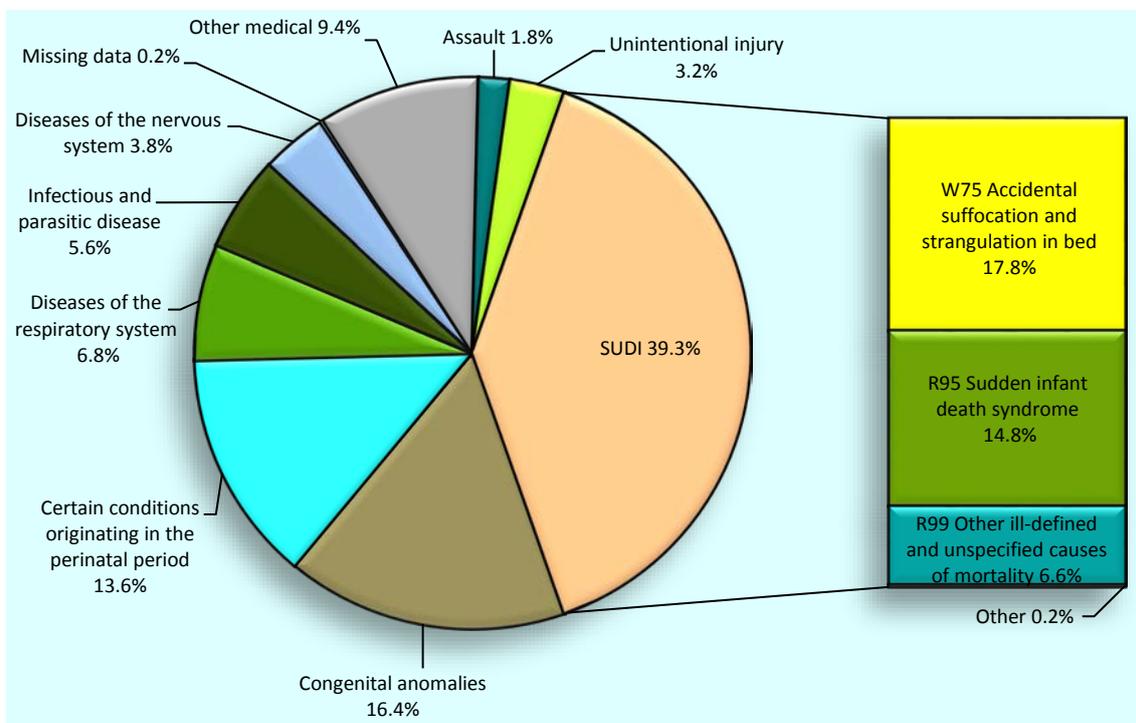
Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–24 years.

Deaths due to suicide were more frequent in those residing in high-deprivation areas, as measured by the New Zealand Deprivation Index decile. There were statistically significantly more deaths in deciles 7–10 compared with deciles 1–3 (Figure 5.4).

Appendices

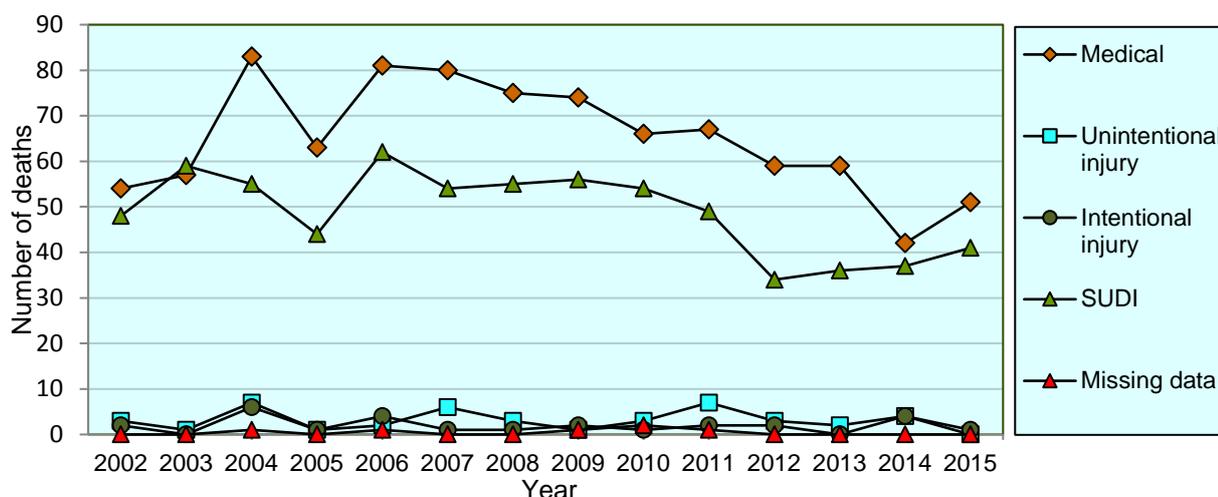
6 Post-neonatal infants: 28 days to less than one year

Figure 6.1: Post-neonatal infant mortality (%) by cause of death, New Zealand 2011–15 combined (n=501 deaths)



Source: Mortality Review Database.

Figure 6.2: Post-neonatal infant mortality (number of deaths) by cause of death and year, New Zealand 2002–15 (n=1671 deaths)



Source: Mortality Review Database.

Table 6.1: Post-neonatal infant mortality (number deaths and rate per 1000 live births) by cause of death and year, New Zealand 2011–15 (n=501 deaths)

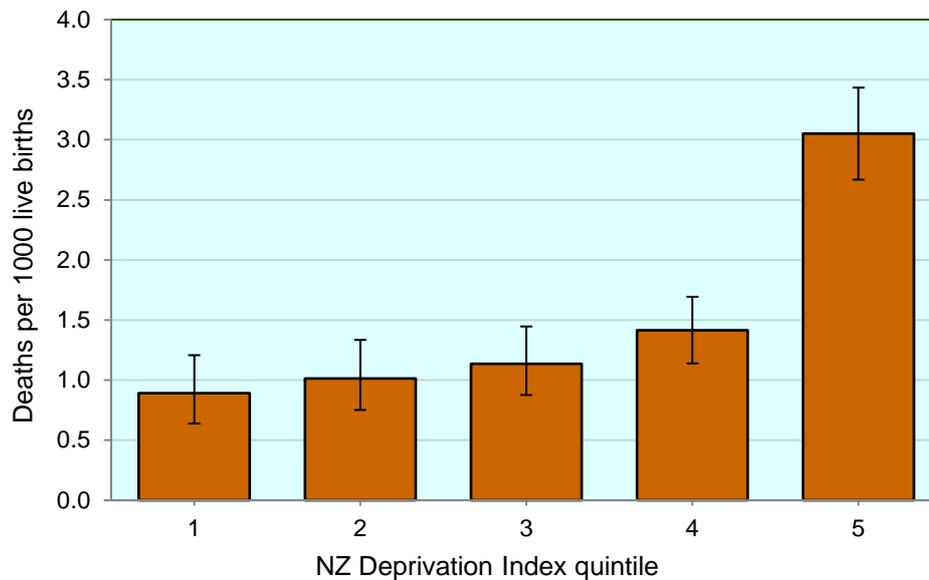
Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
Medical								
Infectious and parasitic disease	9	3	7	5	4	28	5.6	0.09
Neoplasms	1	2	3	2	4	12	2.4	0.04
Diseases of the blood and blood-forming organs and disorders of the immune system	-	1	1	2	1	5	1.0	0.02
Endocrine, nutritional and metabolic diseases	2	1	2	2	1	8	1.6	0.03
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	5	6	3	2	3	19	3.8	0.06
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	4	2	4	5	2	17	3.4	0.06
Diseases of the respiratory system	8	12	4	6	4	34	6.8	0.11
Diseases of the digestive system	1	-	2	-	1	4	0.8	0.01
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	-	-	-	-	-	-	-	-
Diseases of the genitourinary system	1	-	-	-	-	1	0.2	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	13	14	19	10	12	68	13.6	0.22
Congenital anomalies	23	18	14	8	19	82	16.4	0.27
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-
Total medical	67	59	59	42	51	278	55.5	0.92
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	1	-	-	1	-	2	0.4	s
Fall	-	1	-	-	-	1	0.2	s
Fire/hot object or substance	-	-	-	-	-	-	-	-
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Transport	1	2	2	2	-	7	1.4	0.02
Natural/environmental	3	-	-	-	-	3	0.6	0.01
Overexertion	-	-	-	-	-	-	-	-
Poisoning	1	-	-	-	-	1	0.2	s
Struck by, against	-	-	-	-	-	-	-	-
Suffocation	1	-	-	-	-	1	0.2	s
Other specified, classifiable	-	-	-	-	-	-	-	-
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	1	-	1	0.2	s
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	7	3	2	4	-	16	3.2	0.05
Intentional injury								
Assault	2	2	-	4	1	9	1.8	0.03
Total intentional injury	2	2	-	4	1	9	1.8	0.03

Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
SUDI								
R95 Sudden infant death syndrome	20	19	17	9	9	74	14.8	0.24
R96 Other sudden death, cause unknown	-	-	-	-	-	-	-	-
R98 Unattended death	-	-	-	-	-	-	-	-
R99 Other ill-defined and unspecified causes of mortality	8	2	3	5	15	33	6.6	0.11
W75 Accidental suffocation and strangulation in bed	21	13	16	23	16	89	17.8	0.29
W78 Inhalation of gastric contents	-	-	-	-	-	-	-	-
W79 Inhalation and ingestion of food causing obstruction of respiratory tract	-	-	-	-	1	1	0.2	s
Total SUDI	49	34	36	37	41	197	39.3	0.65
Missing data	1	-	-	-	-	1	0.2	s
Total	126	98	97	87	93	501	100.0	1.65

's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15.

Figure 6.3: Post-neonatal infant mortality rates (deaths per 1000 live births and 95% confidence intervals) by NZ Deprivation Index quintile, New Zealand 2011–15 combined (n=500 deaths*)

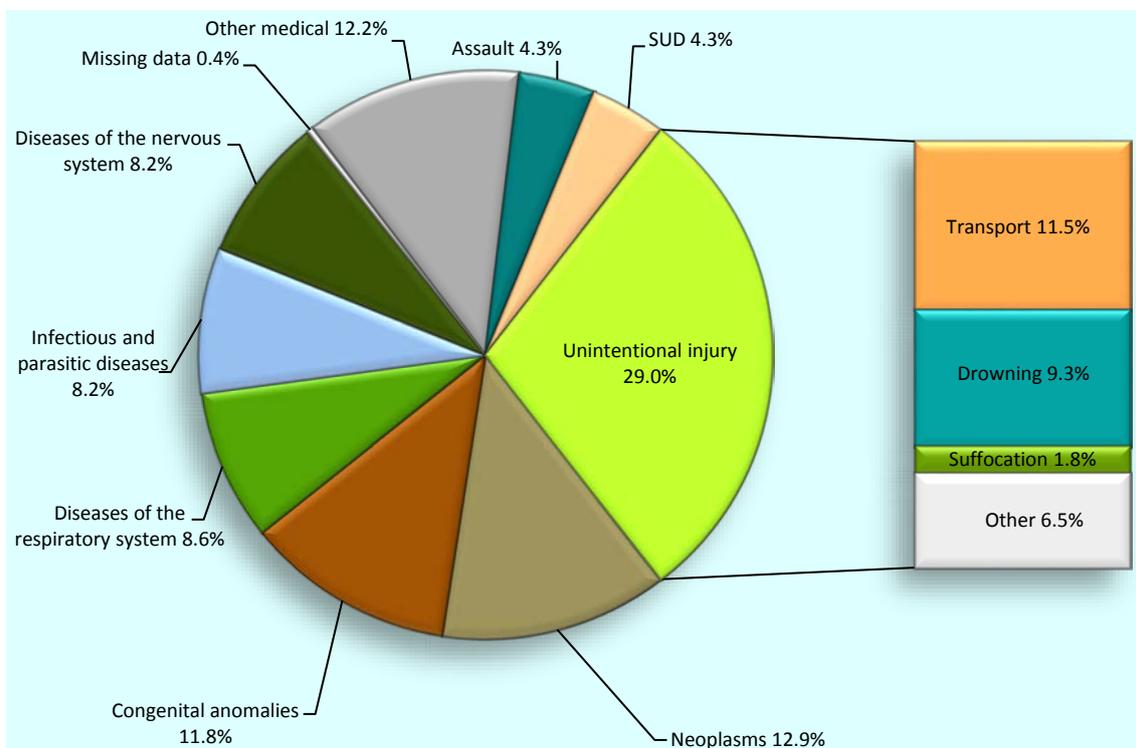


* Excludes one case with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15.

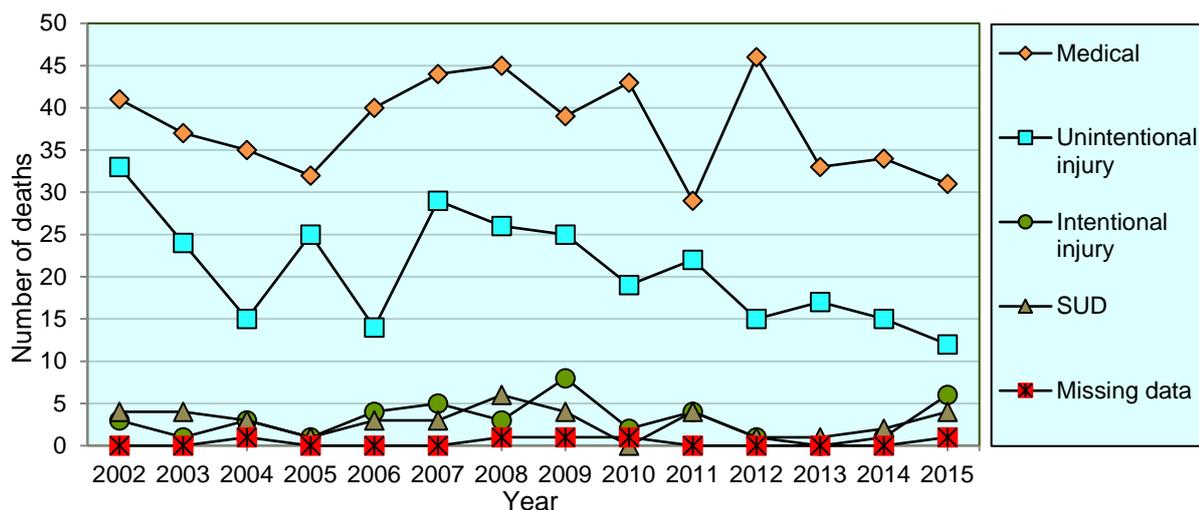
7 Children aged one to four years

Figure 7.4: Mortality (%) in children aged one to four years by cause of death, New Zealand 2011–15 combined (n=279 deaths)



Source: Mortality Review Database.

Figure 7.5: Mortality (number of deaths) in children aged one to four years by cause of death and year, New Zealand 2002–15 (n=907 deaths)



Source: Mortality Review Database.

Table 7.2: Mortality (deaths and total rate per 100,000 resident population) in children aged one to four years by cause of death and year, New Zealand 2011–15 (n=279 deaths)

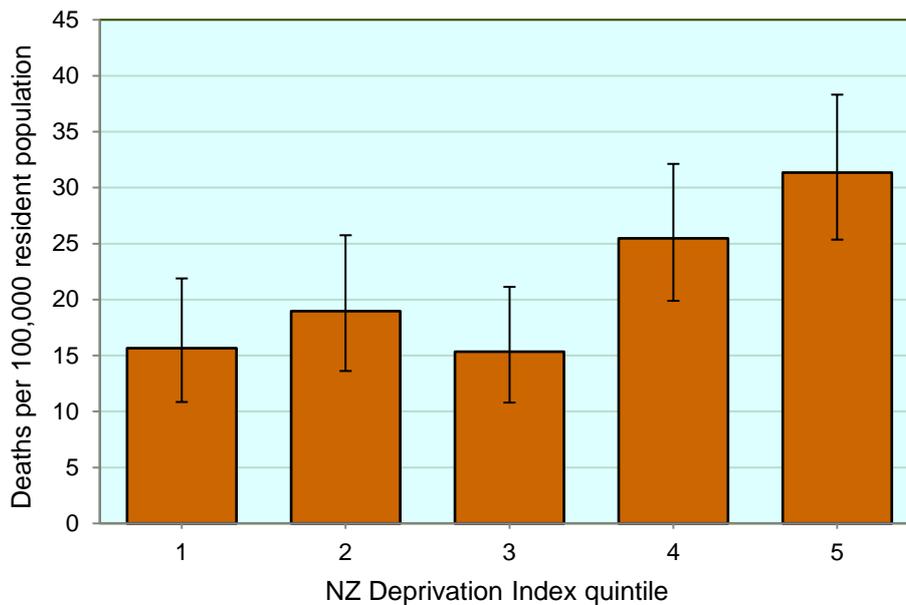
Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
Medical								
Infectious and parasitic disease	6	5	4	7	1	23	8.2	1.83
Neoplasms	7	11	6	5	7	36	12.9	2.87
Diseases of the blood and blood-forming organs and disorders of the immune system	-	1	-	1	-	2	0.7	s
Endocrine, nutritional and metabolic diseases	1	1	2	1	3	8	2.9	0.64
Mental and behavioural disorders	-	-	-	1	-	1	0.4	s
Diseases of the nervous system	2	5	9	3	4	23	8.2	1.83
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	2	3	1	1	1	8	2.9	0.64
Diseases of the respiratory system	2	8	4	5	5	24	8.6	1.91
Diseases of the digestive system	-	-	-	1	-	1	0.4	s
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	-	1	-	-	-	1	0.4	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	4	2	-	1	-	7	2.5	0.56
Congenital anomalies	5	9	5	7	7	33	11.8	2.63
Symptoms & abnormal findings not elsewhere classified	-	-	2	1	3	6	2.2	0.48
Total medical	29	46	33	34	31	173	62.0	13.77
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	11	3	5	4	3	26	9.3	2.07
Fall	-	-	1	-	-	1	0.4	s
Fire/hot object or substance	-	-	-	1	-	1	0.4	s
Firearm	-	-	-	-	-	-	-	-
Machinery	1	-	1	-	-	2	0.7	s
Transport	6	7	8	9	2	32	11.5	2.55
Natural/environmental	1	-	1	-	1	3	1.1	0.24
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	-	-	-	2	2	0.7	s
Struck by, against	-	2	-	-	2	4	1.4	0.32
Suffocation	2	1	-	1	1	5	1.8	0.40
Other specified, classifiable	-	1	-	-	-	1	0.4	s
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	1	1	-	1	3	1.1	0.24
Complications of medical and surgical care	1	-	-	-	-	1	0.4	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	22	15	17	15	12	81	29.0	6.45
Intentional injury								
Assault	4	1	-	1	6	12	4.3	0.96
Total intentional injury	4	1	-	1	6	12	4.3	0.96

Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
SUD (1–2 years)								
R95 Sudden infant death syndrome	1	-	-	-	-	1	0.4	s
R96 Other sudden death, cause unknown	-	-	-	-	-	-	-	-
R98 Unattended death	-	-	-	-	-	-	-	-
R99 Other ill-defined and unspecified causes of mortality	3	1	-	1	4	9	3.2	0.72
W75 Accidental suffocation and strangulation in bed	-	-	1	1	-	2	0.7	s
W78 Inhalation of gastric contents	-	-	-	-	-	-	-	-
Total SUD	4	1	1	2	4	12	4.3	0.96
Missing data	-	-	-	-	1	1	0.4	s
Total	59	63	51	52	54	279	100.0	22.21

's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, one to four years.

Figure 7.6: Mortality rates (deaths per 100,000 resident population with 95% confidence intervals) in children aged one to four years by NZ Deprivation Index quintile, New Zealand 2011–15 combined (278 deaths*)

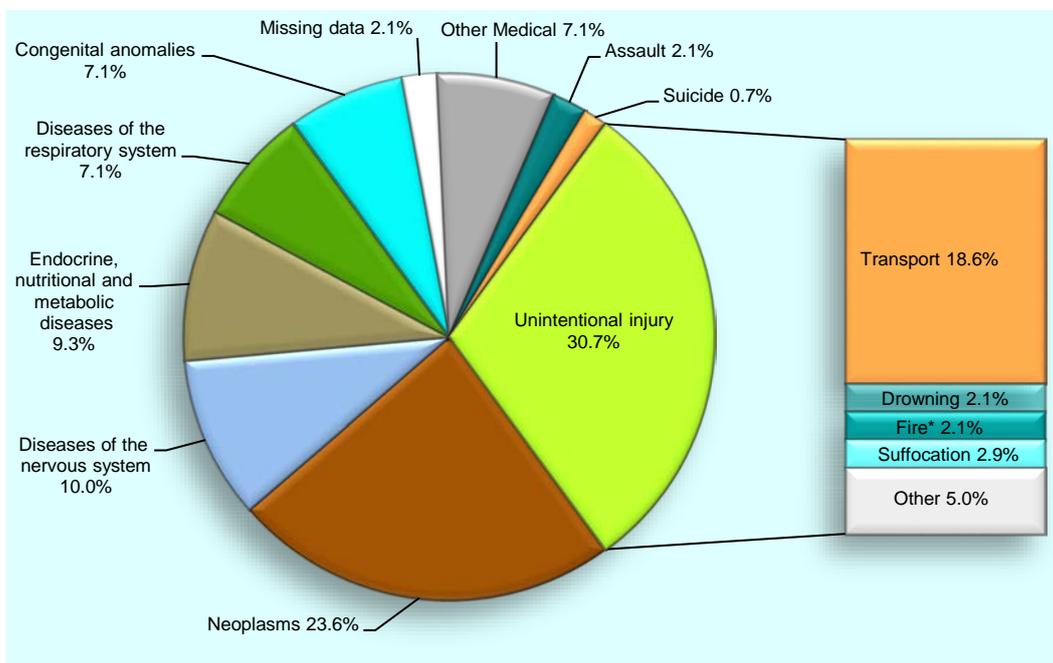


* Excludes one case with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, one to four years.

8 Children aged five to nine years

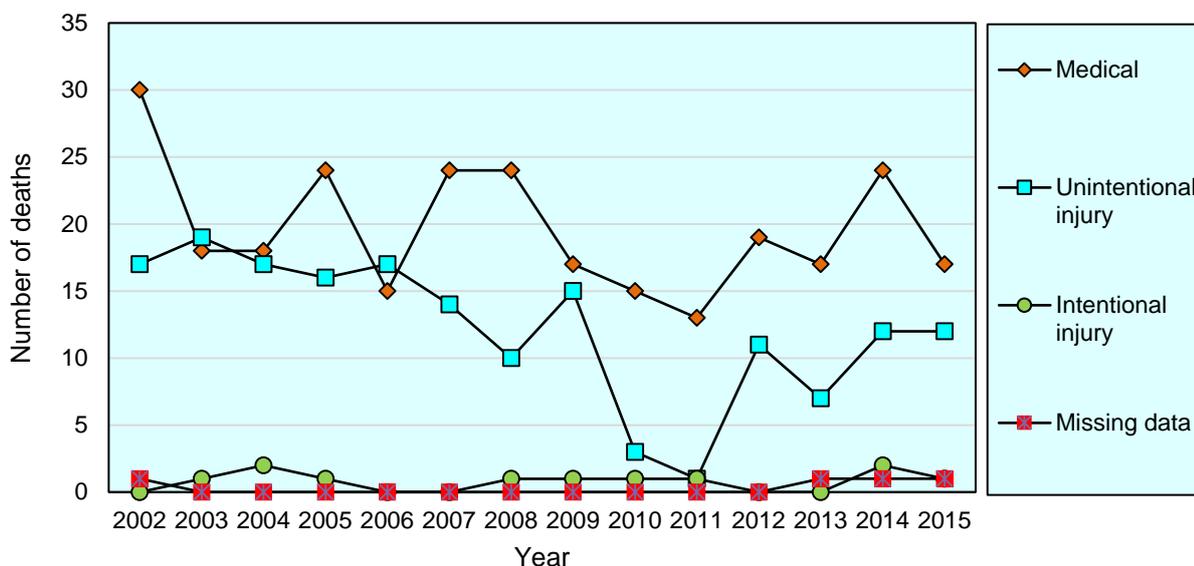
Figure 8.7: Mortality (%) in children aged five to nine years by cause of death, New Zealand 2011–15 combined (n=140 deaths)



* Includes Fire/hot object or substance.

Source: Mortality Review Database.

Figure 8.8: Mortality (number of deaths) in children aged five to nine years by cause of death and year, New Zealand 2002–15 (n=461 deaths)



Source: Mortality Review Database.

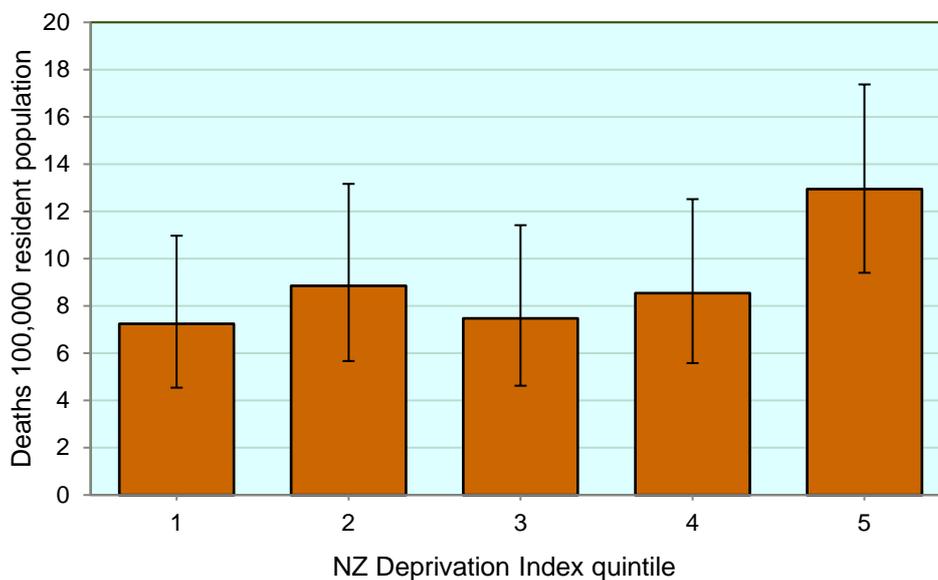
Table 8.3: Mortality (deaths and total rates per 100,000 resident population) in children aged five to nine years by cause of death and year, New Zealand 2011–15 (n=140 deaths)

Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
Medical								
Infectious and parasitic disease	1	1	1	-	-	3	2.1	0.20
Neoplasms	3	6	4	13	7	33	23.6	2.20
Diseases of the blood and blood-forming organs and disorders of the immune system	-	-	1	1	-	2	1.4	s
Endocrine, nutritional and metabolic diseases	2	6	2	2	1	13	9.3	0.87
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	3	3	5	2	1	14	10.0	0.93
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	1	-	1	-	-	2	1.4	s
Diseases of the respiratory system	2	2	1	2	3	10	7.1	0.67
Diseases of the digestive system	-	-	-	-	1	1	0.7	s
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	-	-	-	-	-	-	-	-
Diseases of the genitourinary system	-	-	1	-	-	1	0.7	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	1	1	1	4	3	10	7.1	0.67
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	1	1	0.7	s
Total medical	13	19	17	24	17	90	64.3	6.00
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	-	-	2	1	-	3	2.1	0.20
Fall	-	-	-	-	1	1	0.7	s
Fire/hot object or substance	-	-	1	-	2	3	2.1	0.20
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Transport	1	9	1	9	6	26	18.6	1.73
Natural/environmental	-	-	1	-	-	1	0.7	s
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	1	-	-	1	2	1.4	s
Struck by, against	-	1	1	-	-	2	1.4	s
Suffocation	-	-	1	1	2	4	2.9	0.27
Other specified, classifiable	-	-	-	1	-	1	0.7	s
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	1	11	7	12	12	43	30.7	2.87
Intentional injury								
Assault	-	-	-	2	1	3	2.1	0.20
Suicide	1	-	-	-	-	1	0.7	s
Total intentional injury	1	-	-	2	1	4	2.9	0.27
Missing data	-	-	1	1	1	3	2.1	0.20
Total	15	30	25	39	31	140	100.0	9.33

's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, five to nine years.

Figure 8.9: Mortality rates (deaths per 100,000 resident population with 95% confidence intervals) in children aged five to nine years by NZ Deprivation Index quintile, New Zealand 2011–15 combined (n=137 deaths*)

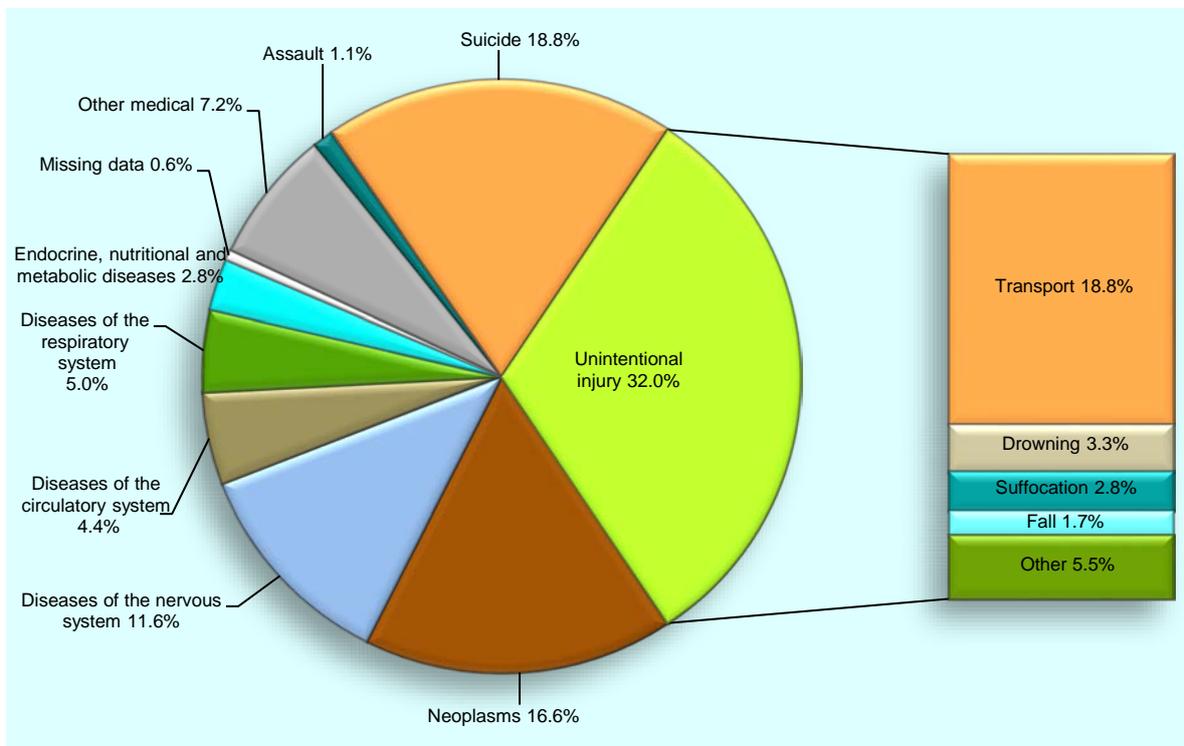


* Excludes three cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, five to nine years.

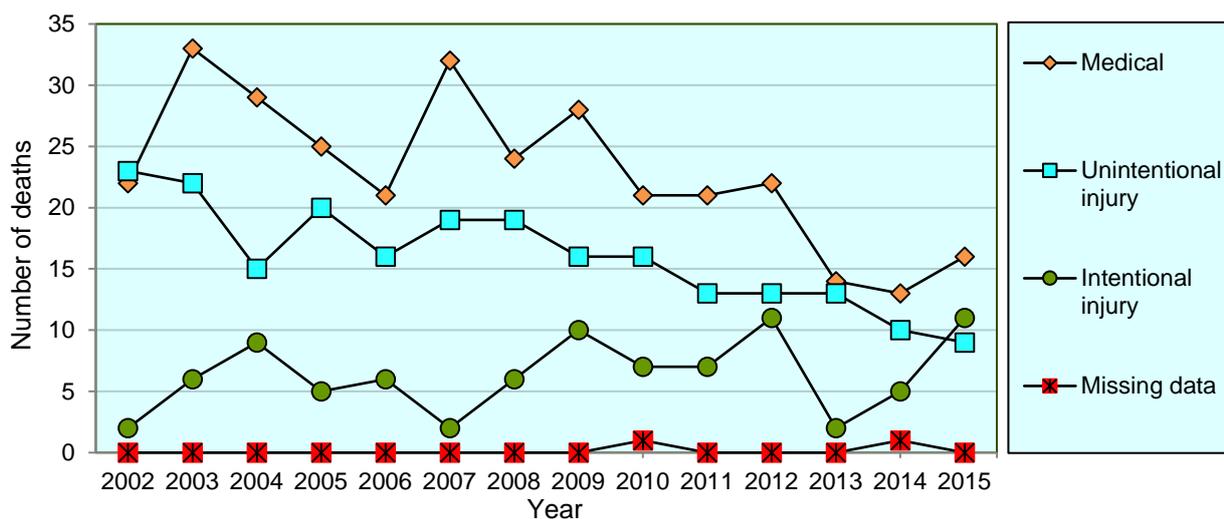
9 Children aged 10–14 years

Figure 9.10: Mortality (%) in children aged 10–14 years by cause of death, New Zealand 2011–15 combined (n=181 deaths)



Source: Mortality Review Database.

Figure 9.11: Mortality (number of deaths) in children aged 10–14 years by cause of death and year, New Zealand 2002–15 (n=636 deaths)



Source: Mortality Review Database.

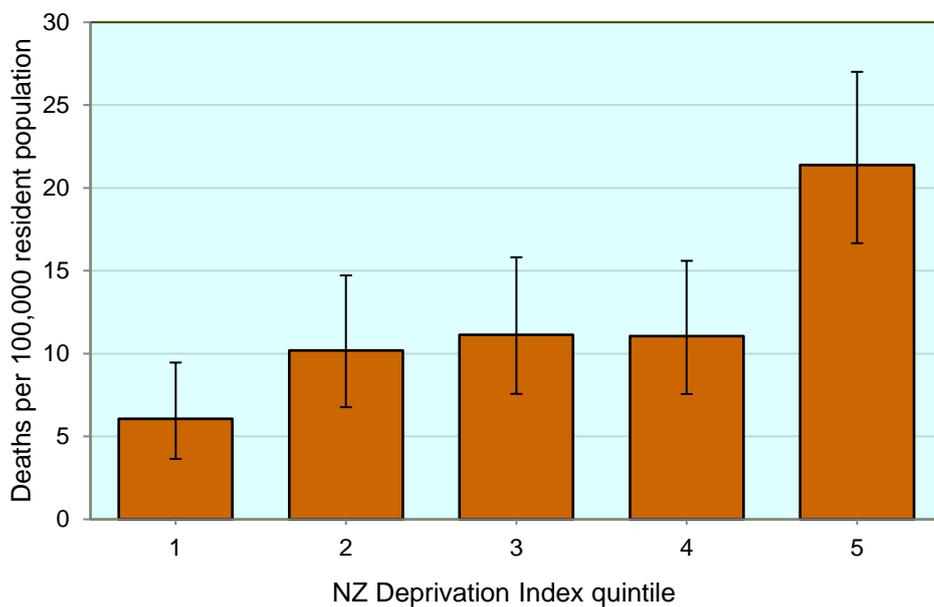
Table 9.4: Mortality (deaths and total rates per 100,000 resident population) in children aged 10–14 years by cause of death and year, New Zealand 2011–15 (n=181 deaths)

Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
Medical								
Infectious and parasitic disease	1	1	1	-	-	3	1.7	0.20
Neoplasms	6	7	5	6	6	30	16.6	2.02
Diseases of the blood and blood-forming organs and disorders of the immune system	-	-	-	-	-	-	-	-
Endocrine, nutritional and metabolic diseases	2	-	-	1	2	5	2.8	0.34
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	7	8	1	2	3	21	11.6	1.42
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	2	1	2	1	2	8	4.4	0.54
Diseases of the respiratory system	-	2	4	1	2	9	5.0	0.61
Diseases of the digestive system	-	2	1	-	-	3	1.7	0.20
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	-	-	-	1	-	1	0.6	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	1	-	-	-	-	1	0.6	s
Congenital anomalies	2	1	-	-	1	4	2.2	0.27
Symptoms & abnormal findings not elsewhere classified	-	-	-	1	-	1	0.6	s
Total medical	21	22	14	13	16	86	47.5	5.80
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	1	2	2	-	1	6	3.3	0.40
Fall	-	1	-	-	2	3	1.7	0.20
Fire/hot object or substance	-	-	1	-	-	1	0.6	s
Firearm	-	-	-	1	1	2	1.1	s
Machinery	-	-	-	-	-	-	-	-
Transport	8	8	6	8	4	34	18.8	2.29
Natural/environmental	1	-	1	-	-	2	1.1	s
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	1	-	-	-	1	0.6	s
Struck by, against	1	-	-	-	-	1	0.6	s
Suffocation	2	1	1	1	-	5	2.8	0.34
Other specified, classifiable	-	-	1	-	-	1	0.6	s
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	-	1	1	0.6	s
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	1	-	-	1	0.6	s
Total unintentional injury	13	13	13	10	9	58	32.0	3.91
Intentional injury								
Assault	1	-	-	-	1	2	1.1	s
Suicide	6	11	2	5	10	34	18.8	2.29
Total intentional injury	7	11	2	5	11	36	19.9	2.43
Missing data	-	-	-	1	-	1	0.6	s
Total	41	46	29	29	36	181	100.0	12.20

's' indicates rate not calculated due to small numbers

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–14 years.

Figure 9.12: Mortality rates (deaths per 100,000 resident population with 95% confidence intervals) in children aged 10–14 years by NZ Deprivation Index quintile, New Zealand 2011–15 combined (n=180 deaths*)

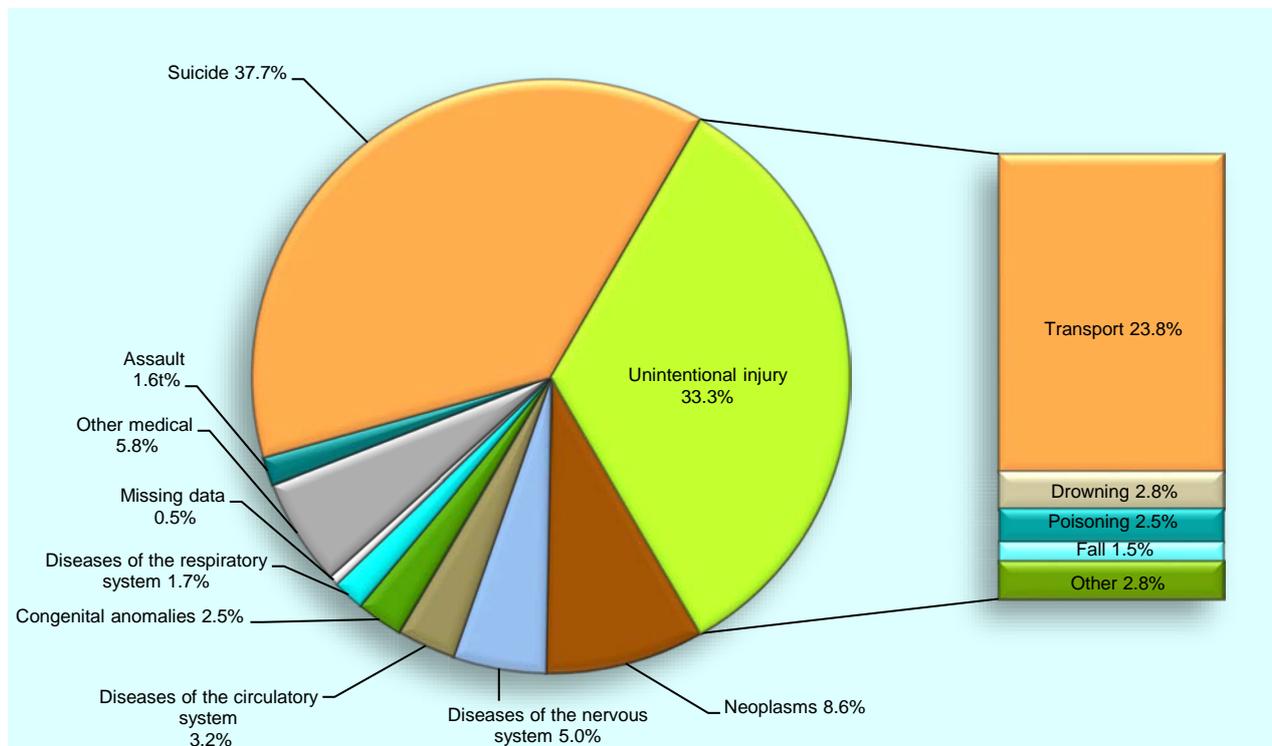


* Excludes one case with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 10–14 years.

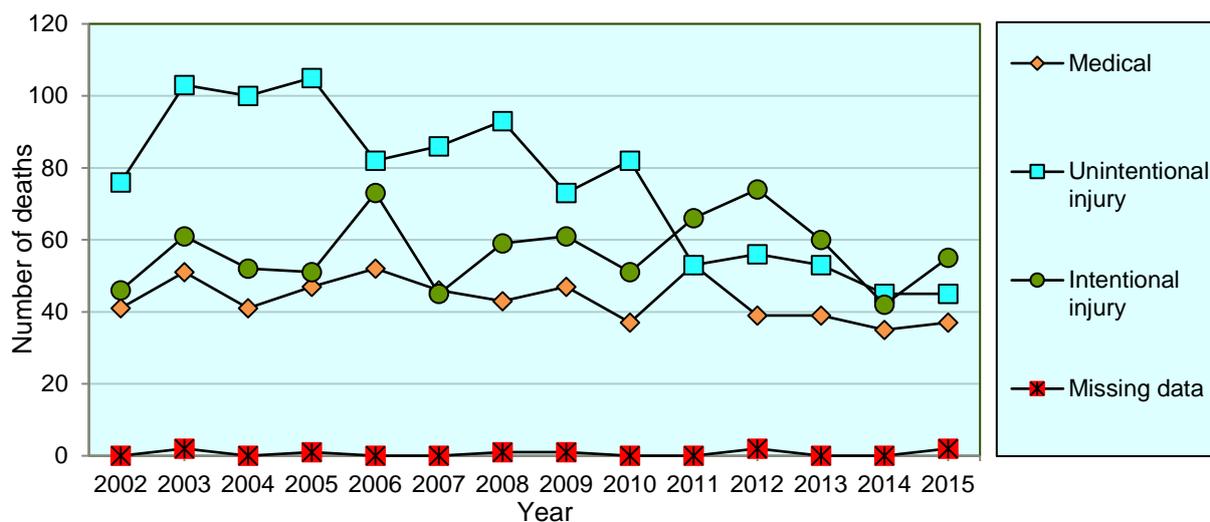
10 Young people aged 15–19 years

Figure 10.13: Mortality (%) in young people aged 15–19 years by cause of death, New Zealand 2011–15 combined (n=756 deaths)



Source: Mortality Review Database.

Figure 10.14: Mortality (number of deaths) in young people aged 15–19 years by cause of death and year, New Zealand 2002–15 (n=2465 deaths)



Source: Mortality Review Database.

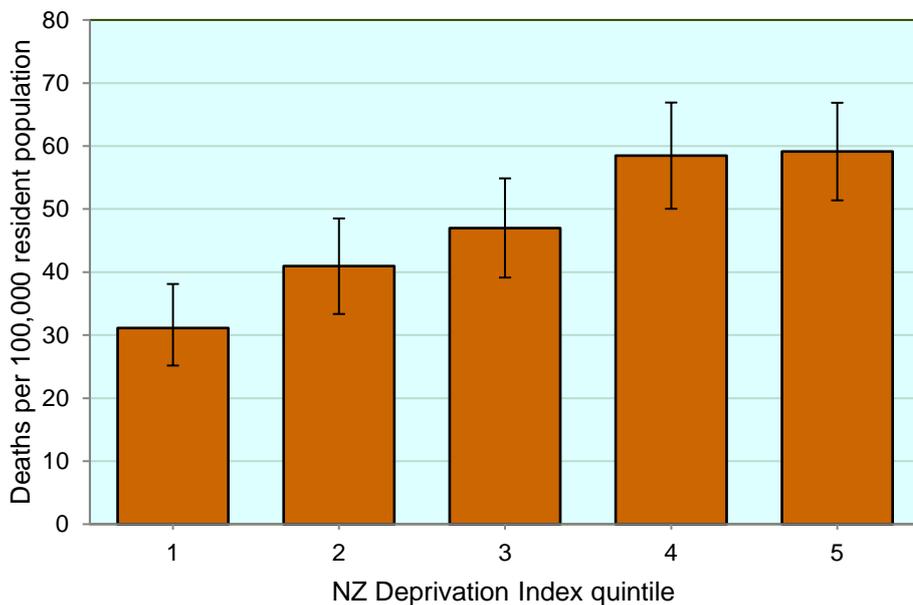
Table 10.5: Mortality (number of deaths and rates per 100,000 resident population) in young people aged 15–19 years by cause of death and year, New Zealand 2011–15 (n=756 deaths)

Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
Medical								
Infectious and parasitic disease	3	-	1	3	1	8	1.1	0.51
Neoplasms	14	12	14	11	14	65	8.6	4.16
Diseases of the blood and blood-forming organs and disorders of the immune system	1	1	-	1	1	4	0.5	0.26
Endocrine, nutritional and metabolic diseases	1	3	3	1	3	11	1.5	0.70
Mental and behavioural disorders	-	-	1	-	1	2	0.3	s
Diseases of the nervous system	14	8	5	5	6	38	5.0	2.43
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	8	4	6	4	2	24	3.2	1.54
Diseases of the respiratory system	4	3	4	2	-	13	1.7	0.83
Diseases of the digestive system	1	-	2	-	-	3	0.4	0.19
Diseases of the skin and subcutaneous tissue	1	1	-	-	-	2	0.3	s
Diseases of the musculoskeletal system and connective tissue	-	2	1	-	-	3	0.4	0.19
Diseases of the genitourinary system	-	1	-	-	-	1	0.1	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	3	4	-	6	6	19	2.5	1.22
Symptoms & abnormal findings not elsewhere classified	3	-	2	2	3	10	1.3	0.64
Total medical	53	39	39	35	37	203	26.9	12.99
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	1	6	4	6	4	21	2.8	1.34
Fall	1	4	3	2	1	11	1.5	0.70
Fire/hot object or substance	-	-	-	3	-	3	0.4	0.19
Firearm	1	-	1	-	1	3	0.4	0.19
Machinery	-	-	1	-	-	1	0.1	s
Transport	40	36	37	30	37	180	23.8	11.52
Natural/environmental	3	-	-	-	-	3	0.4	0.19
Overexertion	-	-	-	-	-	-	-	-
Poisoning	4	7	5	2	1	19	2.5	1.22
Struck by, against	-	-	1	1	-	2	0.3	s
Suffocation	2	1	-	1	1	5	0.7	0.32
Other specified, classifiable	1	-	1	-	-	2	0.3	s
Other specified, not elsewhere classified	-	1	-	-	-	1	0.1	s
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	1	-	-	-	1	0.1	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	53	56	53	45	45	252	33.3	16.13
Intentional injury								
Assault	3	2	3	3	1	12	1.6	0.77
Suicide	63	72	57	39	54	285	37.7	18.24
Total intentional injury	66	74	60	42	55	297	39.3	19.01
Missing data	-	2	-	-	2	4	0.5	0.26
Total	172	171	152	122	139	756	100.0	48.39

's' indicates rate not calculated due to small numbers

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 15–19 years.

Figure 10.15: Mortality rates (deaths per 100,000 resident population with 95% confidence intervals) in young people aged 15–19 years by NZ Deprivation Index quintile, New Zealand 2011–15 combined (n=752 deaths*)

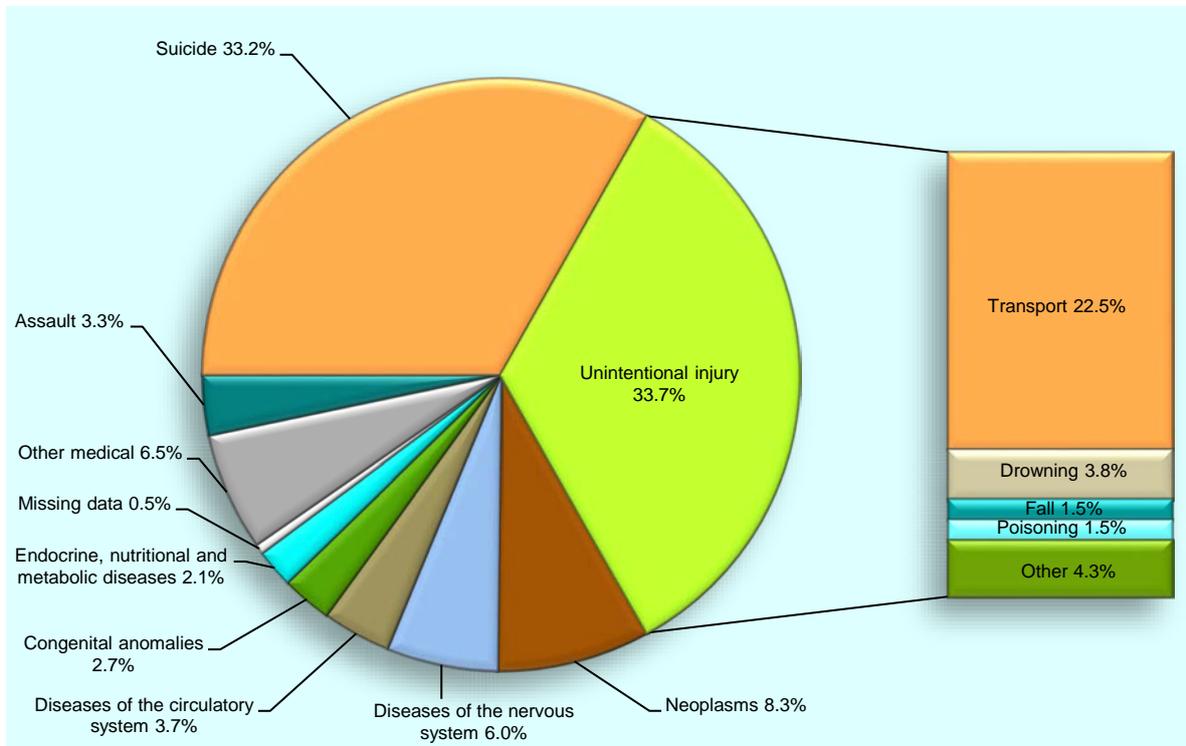


* Excludes four cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 15–19 years.

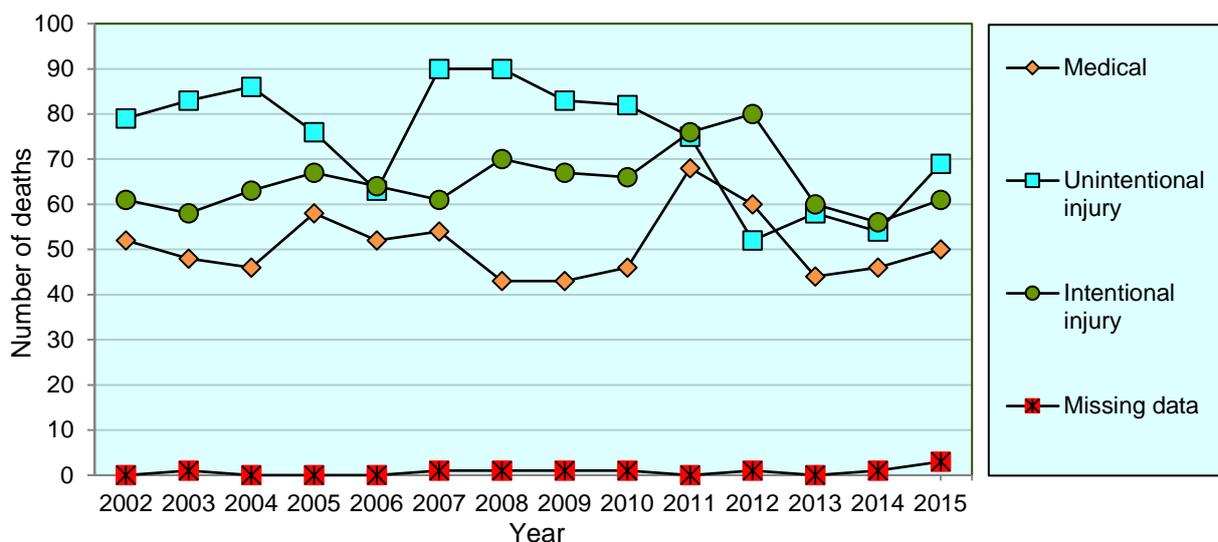
11 Young people aged 20–24 years

Figure 11.16: Mortality (%) in young people aged 20–24 years by cause of death, New Zealand 2011–15 combined (n=914 deaths)



Source: Mortality Review Database.

Figure 11.17: Mortality (number of deaths) in young people aged 20–24 years by cause of death and year, New Zealand 2002–15 (n=2670 deaths)



Source: Mortality Review Database.

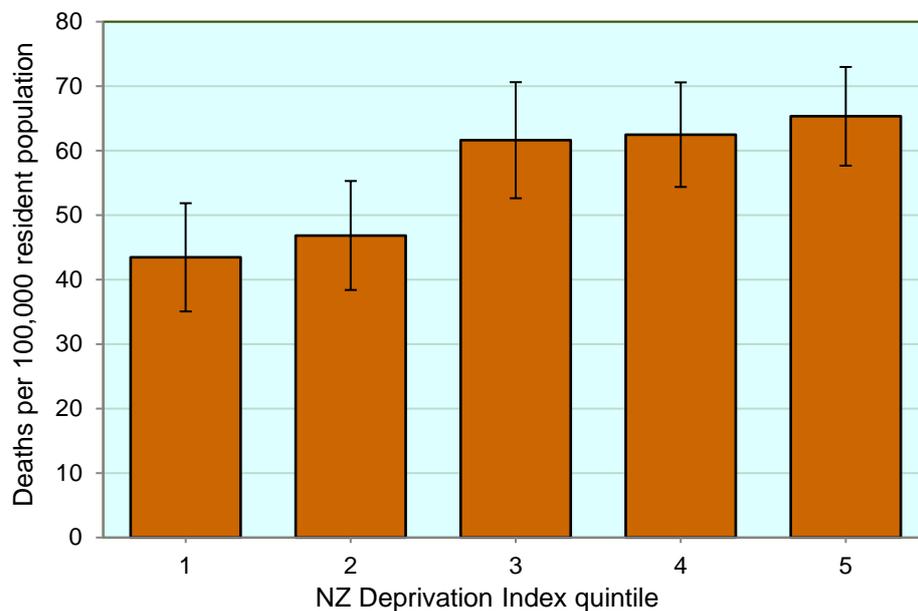
Table 11.6: Mortality (number of deaths and rates per 100,000 resident population) in young people aged 20–24 years by cause of death and year, New Zealand 2011–15 (n= 914 deaths)

Cause of death	2011	2012	2013	2014	2015	Total	%	Rate 2011–15
Medical								
Infectious and parasitic disease	1	2	-	-	-	3	0.3	0.19
Neoplasms	20	16	12	18	10	76	8.3	4.83
Diseases of the blood and blood-forming organs and disorders of the immune system	-	-	1	1	-	2	0.2	s
Endocrine, nutritional and metabolic diseases	7	5	2	2	3	19	2.1	1.21
Mental and behavioural disorders	-	-	1	2	2	5	0.5	0.32
Diseases of the nervous system	13	14	10	9	9	55	6.0	3.49
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	9	9	6	5	5	34	3.7	2.16
Diseases of the respiratory system	4	2	1	1	2	10	1.1	0.64
Diseases of the digestive system	1	3	2	1	-	7	0.8	0.44
Diseases of the skin and subcutaneous tissue	1	-	-	-	1	2	0.2	s
Diseases of the musculoskeletal system and connective tissue	1	1	-	-	1	3	0.3	0.19
Diseases of the genitourinary system	2	2	1	-	1	6	0.7	0.38
Pregnancy, childbirth and the puerperium	1	2	2	-	1	6	0.7	0.38
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	6	4	5	4	6	25	2.7	1.59
Symptoms & abnormal findings not elsewhere classified	2	-	1	3	9	15	1.6	0.95
Total medical	68	60	44	46	50	268	29.3	17.02
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	1	-	-	1	2	0.2	s
Drowning	5	6	6	6	12	35	3.8	2.22
Fall	4	1	3	5	1	14	1.5	0.89
Fire/hot object or substance	-	1	1	1	-	3	0.3	0.19
Firearm	1	-	1	-	3	5	0.5	0.32
Machinery	-	-	-	-	1	1	0.1	s
Transport	48	39	36	35	48	206	22.5	13.08
Natural/environmental	11	1	-	-	-	12	1.3	0.76
Overexertion	-	-	-	-	-	-	-	-
Poisoning	4	1	4	4	1	14	1.5	0.89
Struck by, against	-	1	3	1	-	5	0.5	0.32
Suffocation	1	1	3	-	1	6	0.7	0.38
Other specified, classifiable	1	-	1	1	1	4	0.4	0.25
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	1	-	1	0.1	s
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	75	52	58	54	69	308	33.7	19.56
Intentional injury								
Assault	6	8	5	5	6	30	3.3	1.91
Suicide	70	72	55	51	55	303	33.2	19.24
Total intentional injury	76	80	60	56	61	333	36.4	21.15
Missing data	-	1	-	1	3	5	0.5	0.32
Total	219	193	162	157	183	914	100.0	58.05

's' indicates rate not calculated due to small numbers.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 20–24 years.

Figure 11.18: Mortality rates (deaths per 100,000 resident population and 95% confidence intervals) in young people aged 20–24 years by NZ Deprivation Index quintile, New Zealand 2011–15 combined (n=909 deaths*)

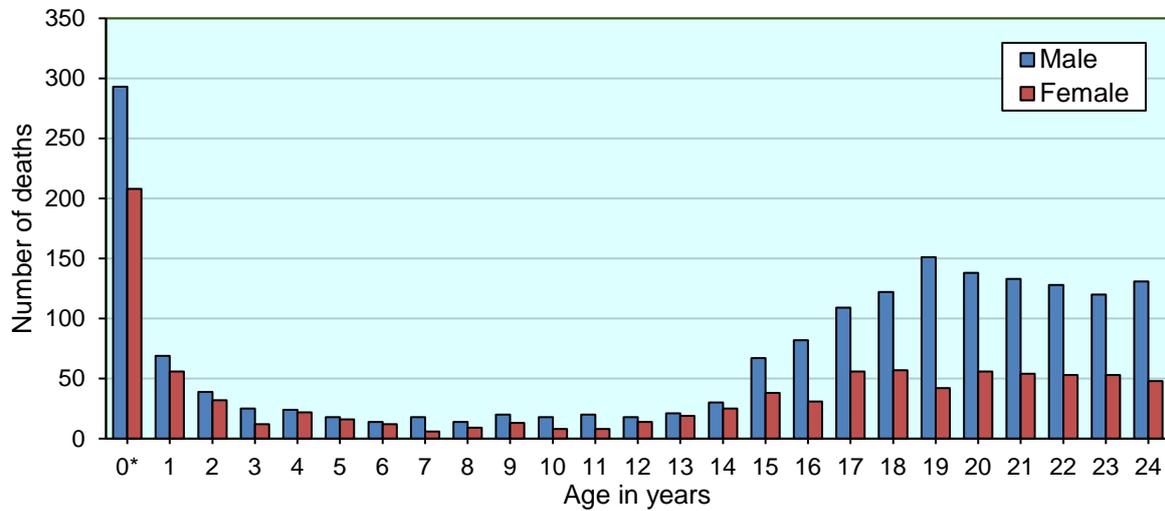


* Excludes five cases with no available deprivation data.

Sources: Numerator: Mortality Review Database; Denominator: NZ MRDG Estimated Resident Population 2011–15, 20–24 years.

12 Mortality by sex

Figure 12.19: Mortality (number of deaths) in children and young people aged 28 days to 24 years by age and sex, New Zealand 2011–15 combined (n=2770 deaths[‡])



* This category represents infants 28 days and older, and less than one calendar year in age.

‡ Excludes one case where year of age is missing.

Source: Mortality Review Database.

Table 12.7: Mortality (number of deaths) in children and young people aged 28 days to 24 years, by cause of death and sex, 2011–15 combined (n=2771 deaths)

	Male	Female	Total
Medical			
Infectious and parasitic disease	37	31	68
Neoplasms	147	105	252
Diseases of the blood and blood-forming organs and disorders of the immune system	6	9	15
Endocrine, nutritional and metabolic diseases	40	24	64
Mental and behavioural disorders	2	6	8
Diseases of the nervous system	102	68	170
Diseases of the eye and adnexa	-	-	-
Diseases of the ear and mastoid process	-	-	-
Diseases of the circulatory system	60	33	93
Diseases of the respiratory system	52	48	100
Diseases of the digestive system	9	10	19
Diseases of the skin and subcutaneous tissue	4	-	4
Diseases of the musculoskeletal system and connective tissue	1	7	8
Diseases of the genitourinary system	7	2	9
Pregnancy, childbirth and the puerperium	-	6	6
Certain conditions originating in the perinatal period	44	32	76
Congenital anomalies	103	70	173
Symptoms & abnormal findings not elsewhere classified	19	14	33
Total medical	633	465	1,098
Percentage by sex	57.7	42.3	100.0
Unintentional injury (undetermined intent, legal intervention war)			
Cut/pierce	2	-	2
Drowning	76	17	93
Fall	29	2	31
Fire/hot object or substance	6	5	11
Firearm	10	-	10
Machinery	4	-	4
Transport	358	127	485
Natural/environmental	14	10	24
Overexertion	-	-	-
Poisoning	27	12	39
Struck by, against	12	2	14
Suffocation	19	7	26
Other specified, classifiable	6	3	9
Other specified, not elsewhere classified	1	-	1
Unspecified	5	1	6
Complications of medical and surgical care	1	1	2
Sequelae of surgical and medical care as external cause	1	-	1
Total unintentional injury	571	187	758
Percentage by sex	75.3	24.7	100.0
Intentional injury			
Assault	41	27	68
Suicide	432	191	623
Total intentional injury	473	218	691
Percentage by sex	68.5	31.5	100.0

	Male	Female	Total
SUDI/SUD			
SUDI (28 days to <1 year)	8	4	12
SUD (1-2 years)	126	71	197
Total SUDI/SUD	134	75	209
Percentage by sex	64.1	35.9	100.0
Missing data	12	3	15
Total	1,823	948	2,771
Percentage by sex	65.8	34.2	100.0

Source: Mortality Review Database.

13 Overseas residents

Table 13.8: Mortality (number of deaths) in children and young people aged 28 days to 24 years among non-New Zealand residents, by cause of death and age group, 2011–15 combined (n=69 deaths)

Category	28 days–1 year	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%
Medical	1	3	-	-	4	3	11	15.9
Unintentional injury	-	2	-	-	21	33	56	81.2
Intentional injury	1	-	-	-	-	-	1	1.4
SUDI/SUD	1	-	-	-	-	-	1	1.4
Missing data	-	-	-	-	-	-	-	-
Total	3	5	-	-	25	36	69	100.0

* This category represents infants 28 days and older, and less than one calendar year in age.

Source: Mortality Review Database.

Table 13.9: Mortality (number of deaths) in children and young people aged 28 days to 24 years among non-New Zealand residents by country of residence and year of death, 2011–15 (n=69 deaths)

Country	Deaths per year					Total deaths	
	2011	2012	2013	2014	2015	Number	%
Australia	2	-	2	4	4	12	17.4
Canada	1	-	1	-	2	4	5.8
China	-	-	-	1	2	3	4.3
Cook Islands	1	-	-	-	-	1	1.4
England	-	-	-	-	1	1	1.4
Fiji	1	-	-	1	-	2	2.9
France	1	1	-	-	2	4	5.8
French Polynesia	-	-	-	1	-	1	1.4
Germany	1	1	1	2	-	5	7.2
India	1	1	-	1	-	3	4.3
Israel	3	-	-	-	-	3	4.3
Italy	-	1	-	-	-	1	1.4
Japan	12	-	-	-	-	12	17.4
Kazakhstan	-	-	1	-	-	1	1.4
Malaysia	-	-	-	1	-	1	1.4
Mexico	-	1	-	-	-	1	1.4
Samoa	-	1	1	-	1	3	4.3
South Korea	2	-	-	-	-	2	2.9
Tonga	-	-	-	1	-	1	1.4
USA	-	2	-	-	5	7	10.1
Vanuatu	-	-	-	1	-	1	1.4
Total	25	8	6	13	17	69	100.0

Source: Mortality Review Database.

14 Mortality by DHB of residence

Table 14.10: Mortality (number of deaths and age-specific mortality rates) by DHB of residence and age, New Zealand 2011–15 (n=2770 deaths*)

DHB	28 days–<1 year	Rate*: 28 days–<1 year	1–4 years	Rate‡: 1–4 years	5–9 years	Rate‡: 5–9 years	10–14 years	Rate‡: 10–14 years	15–19 years	Rate‡: 15–19 years	20–24 years	Rate‡: 20–24 years	Total	%	Rate‡ per DHB	Number of deaths outside DHB of residence	Number of deaths in DHB of residence	% resident deaths outside DHB
Northland	25	2.22	18	36.26	5	8.23	11	18.17	41	74.14	46	109.65	146	5.3	52.25	24	122	16.4
Waitemata	25	0.64	33	20.75	15	8.10	15	8.24	52	26.61	89	46.49	229	8.3	24.04	74	155	32.3
Auckland	36	1.14	19	15.95	13	9.59	5	3.87	49	31.30	74	34.24	196	7.1	24.87	36	160	18.4
Counties Manukau	100	2.36	45	27.39	14	7.13	28	14.48	91	46.18	116	62.69	394	14.2	40.27	105	289	26.6
Waikato	74	2.73	23	20.18	14	10.30	19	14.25	89	64.80	78	58.04	297	10.7	43.55	37	260	12.5
Lakes	17	2.27	9	28.31	2	s	10	25.84	28	78.10	25	80.91	91	3.3	49.55	18	73	19.8
Bay of Plenty	24	1.67	16	26.49	8	10.53	14	18.18	54	77.47	51	89.95	167	6.0	47.15	38	129	22.8
Tairāwhiti	10	2.78	5	31.75	3	15.15	2	s	7	40.46	14	96.55	41	1.5	45.43	8	33	19.5
Hawke's Bay	23	2.08	12	25.52	5	8.79	6	10.31	35	63.99	37	85.65	118	4.3	43.53	13	105	11.0
Taranaki	11	1.41	9	26.68	2	s	3	7.64	20	54.72	16	49.61	61	2.2	32.25	7	54	11.5
Whanganui	13	3.09	5	27.95	3	14.29	6	27.78	13	61.32	12	67.99	52	1.9	50.22	14	38	26.9
MidCentral	12	1.09	6	12.90	5	8.78	13	22.87	39	62.10	44	69.40	119	4.3	40.00	23	96	19.3
Capital & Coast	27	1.46	16	20.63	8	8.83	7	7.95	36	34.65	41	31.91	135	4.9	26.62	20	115	14.8
Hutt Valley	17	1.72	6	14.42	5	10.11	6	12.26	27	55.33	28	61.81	89	3.2	36.48	25	64	28.1
Wairarapa	1	s	5	44.77	-	-	3	21.28	15	110.29	10	96.15	34	1.2	51.44	11	23	32.4
Nelson Marlborough	10	1.30	1	s	2	s	2	s	10	23.34	23	71.21	48	1.7	22.86	13	35	27.1
West Coast	1	s	4	44.77	3	28.99	2	s	12	123.71	12	137.93	34	1.2	68.26	8	26	23.5
Canterbury	42	1.38	24	18.43	18	11.45	15	9.60	78	45.68	107	57.82	284	10.2	34.22	19	265	6.7
South Canterbury	2	s	6	42.39	3	17.39	3	16.35	15	81.97	11	76.92	40	1.4	46.78	4	36	10.0
Southern	31	1.75	17	21.80	12	12.94	11	11.85	44	38.41	80	65.68	195	7.0	37.67	27	168	13.8
Total	501	1.65	279	22.20	140	9.33	181	12.20	755	48.33	914	58.05	2,770	100.0	36.07	524	2,246	18.9

* Excludes one case with missing DHB of residence data.

's' indicates rate not calculated due to small numbers.

* rate per 1000 live births.

‡ rate per 100,000 resident population.

Sources: Numerator: Mortality Review Database; Denominator: Ministry of Health Live Birth Registrations 2011–15 for 28 days to less than one year, NZ MRDG Estimated Resident Population 2011–15 for ages 1–24 years.

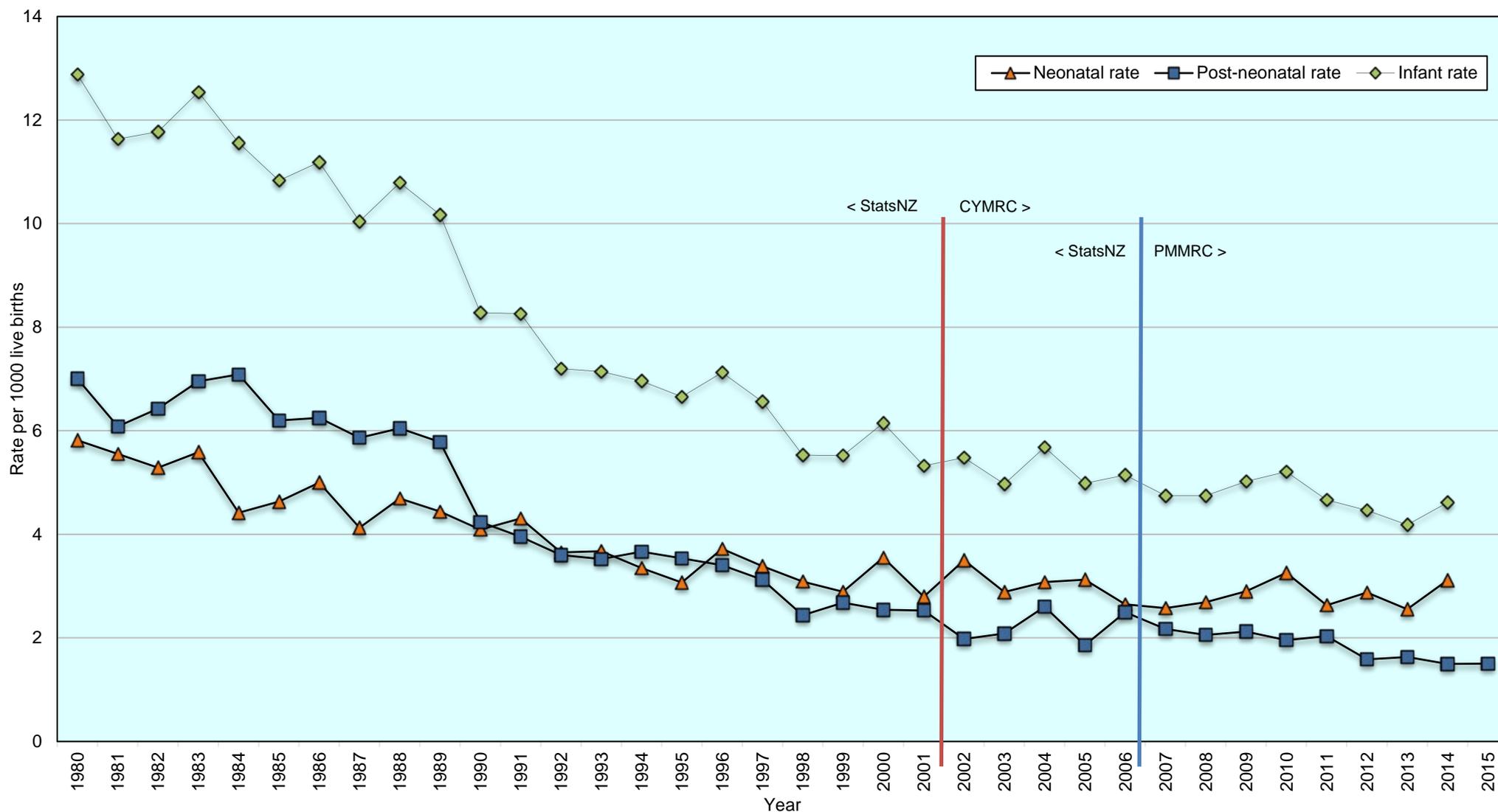
15 Historical data

Table 15.11: Mortality (number of deaths) in children and young people aged 28 days to 24 years by year of death and age group, New Zealand 1980–2015

Year	28 days–<1 year	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total
1980	356	138	96	96	306	342	1,334
1981	310	160	77	97	316	327	1,287
1982	323	130	82	75	287	345	1,242
1983	353	111	79	92	279	381	1,295
1984	367	120	74	84	274	323	1,242
1985	320	113	85	95	307	326	1,246
1986	330	135	65	97	312	351	1,290
1987	326	112	70	95	324	372	1,299
1988	349	117	68	77	298	367	1,276
1989	336	111	67	70	335	362	1,281
1990	255	120	56	62	299	375	1,167
1991	238	98	63	67	239	324	1,029
1992	213	102	68	74	245	331	1,033
1993	206	110	43	56	248	336	999
1994	209	99	53	50	199	277	887
1995	205	90	53	59	223	331	961
1996	195	96	53	67	258	266	935
1997	181	100	50	60	238	242	871
1998	134	85	52	73	209	222	775
1999	153	75	39	67	199	220	753
2000	144	86	49	61	168	190	698
2001	142	74	48	64	191	208	727
2002	107	81	48	47	163	192	638
2003	117	66	38	61	217	190	689
2004	152	57	37	53	193	195	687
2005	109	59	41	50	204	201	664
2006	150	61	32	43	207	179	672
2007	141	81	38	53	177	206	696
2008	134	81	35	49	196	204	699
2009	134	77	33	54	182	194	674
2010	126	65	19	45	170	195	620
2011	126	59	15	41	172	219	632
2012	98	63	30	46	171	193	601
2013	97	51	25	29	152	162	516
2014	87	52	39	29	122	157	486
2015	93	54	31	36	139	183	536

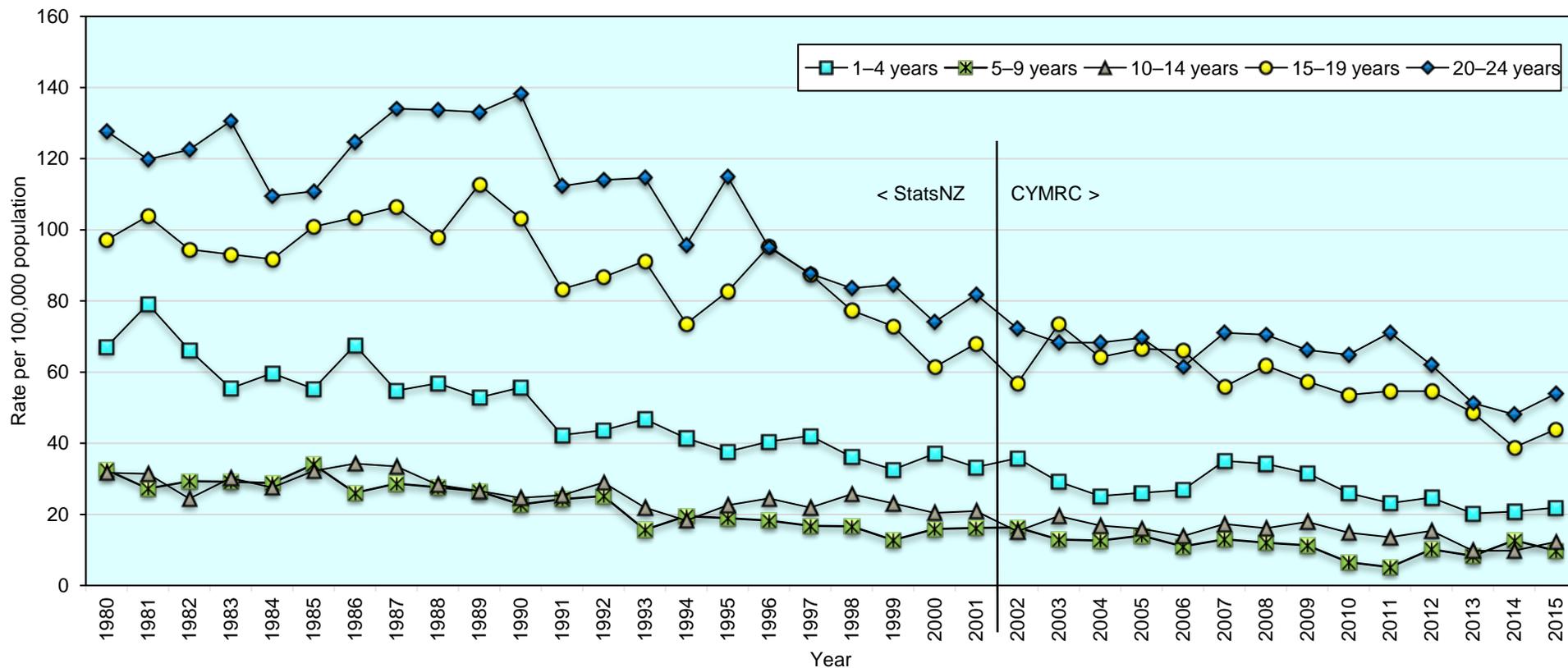
Sources: 1980–2001: Statistics New Zealand. 2002–15: Mortality Review Database.

Figure 15.20: Neonatal, post-neonatal and infant mortality rates (deaths per 1000 live births) in infants 0 days to less than one year of age, New Zealand 1980–2015



Sources: Numerator: Neonatal deaths (0–27 days): 1980–2006: Statistics New Zealand. 2007–15: Mortality Review Database (PMMRC data); Note: 2015 data for neonatal deaths not yet available. Post-neonatal deaths (28 days to less than one year): 1980–2001: Statistics New Zealand. 2002–15: Mortality Review Database (CYMRC data). Infant deaths (0 days to less than one year): sum of neonatal and post-neonatal deaths, as described above. Denominator: (all) Statistics New Zealand live births 1980–2015.

Figure 15.21: Mortality (age-specific rates per 100,000 population) in children and young people aged 1–24 years by age group, New Zealand 1980–2015



Sources: Numerator: 1980–2001: Statistics New Zealand. 2002–15: Mortality Review Database; Denominator: Statistics New Zealand estimated population 1980–2015.