

NZ Child and Youth Mortality Review Committee

10th Data Report

2009 – 2013

PREPARED BY THE NZ MORTALITY REVIEW DATA GROUP

2014

This report was written for the Child and Youth Mortality Review Committee by the NZ Mortality Review Data Group: GK McDonald, MD Healey, KE Szymanska, AJ Anderson and J Hii. University of Otago, 2014. URL: <https://secure-www.otago.ac.nz/nzmrhg/>

Executive summary

This is the 10th Data Report released by the CYMRC. It predominantly reports on data from 2009 to 2013, with some tables and figures for 2002-2013. These data are 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.

Overall, the number of deaths for those aged between 28 days and 24 years has reduced. In 2009, there were 674 deaths and in 2013 there were 515. This reduction has, in part, been driven by a reduction in the number of deaths due to motor vehicle crashes in young people aged between 15 and 24 years. However, there were fewer deaths from nearly all causes in 2013.

For children and young people overall, the leading causes of death were medical conditions (38.9%), including neoplasms and congenital anomalies. Unintentional injury accounted for 28.8% of deaths, with transport crashes being the leading cause of unintentional injury death.

The leading cause of death changes with age, with the main cause of death in post-neonatal infants being Sudden Unexpected Death in Infancy (SUDI). Medical conditions were the leading cause of death in age groups one to four years, five to nine years and ten to 14 years. However, there were a substantial number of deaths due to transport crashes in these age groups. In the 15 to 19 year age group, there were equal numbers of deaths from intentional and unintentional injury. Similarly, in those aged 20 to 24 years, there were almost equal numbers of deaths due to intentional and unintentional injury. The predominant cause of intentional injury death in young people was suicide.

There were statistically significant differences in mortality rates when examined by ethnicity. Māori had the highest mortality rate, followed by Pacific people, those in the MELAA ethnic group and European and Other. Those of Asian ethnicity had the lowest overall mortality rate in children and young people. For all age groups in this report, Māori had higher mortality rates than non-Māori. This was consistently statistically significant in post neonatal infants, and young people aged 15 to 19 years and 20 to 24 years.

Mortality rates vary by deprivation, as measured by the NZ Deprivation Index. For children and young people overall, there was a pattern of increasing mortality rates with increasing deprivation. Of note, those in deciles one and two (least deprived) had statistically significantly lower mortality rates than those in deciles four to ten. When examined by age group, this pattern remained for most age groups. In post neonatal infants, those in quintile five (NZ Deprivation Indices nine and ten) had a statistically significantly higher mortality rate than those in less deprived quintiles. In children aged one to four years, those in quintiles one to three had statistically significantly lower mortality rates than children in quintile five. In children aged ten to 14 years, children in quintile five (most deprived) had higher mortality rates than children in the lower quintiles. In those aged 15 to 19 years, those in quintiles one and two had statistically lower mortality rates than those in quintiles four and five. There were no statistically significant differences by deprivation in the five to nine and 20 to 24 year age groups.

Males continue to be over-represented in mortality data, accounting for 65% of all deaths during 2009-2013. While males predominated for all causes of death, this was particularly marked in unintentional and intentional injury deaths (74% and 71% respectively).

1. Methodology

Overview

The Child and Youth Mortality Review process has evolved since the Committee was established in 2002. Many people and organisations are involved in providing information, reviewing deaths, collating information, and analysing and reviewing collated data. Particular processes that are central to mortality review are: review of individual deaths in the District Health Board region where the person resided, and national data collection and collation. Steps that are undertaken in the context of case review and data collation include:

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 co-ordinators.
3. Following the review of each death, CYMRC co-ordinators add further information to the national database.
4. The MRDG collate and analyse 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 can be used to inform prevention strategies and support recommendations at both a local and national level.

Data collection

The Mortality Review Data Group collect, securely store and link case information about all child and youth deaths from 1 January 2002 for the CYMRC. Information comes from a variety of sources, including:

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 source. 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 Family provide information for cases which they have had contact with from June 2006 onwards. (The age range considered has gradually expanded from infant and preschool to include deaths in children and youth up to 24 years of age in 2009.) The majority of coroners have provided information on coronial cases from January 2003. The

Mortality Review Data Group enters and codes all information from the disparate and often conflicting data sources, in order to help facilitate local review as well as national reporting.

Figure M.1: Flow of case information from sources to the Mortality Review Database

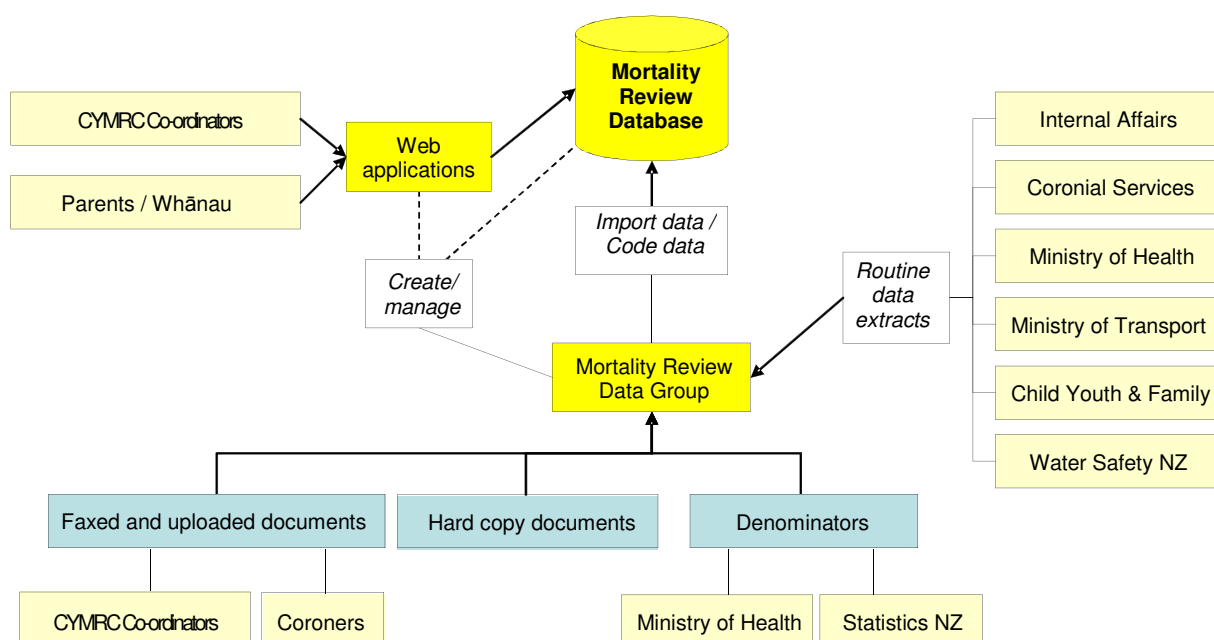


Figure M.1 illustrates these sources of information and some of the processing. The Mortality Review Data Group maintains websites which allow individuals to directly contribute information. A link on the public Health Quality and Safety Commission website (<http://www.hqsc.govt.nz/our-programmes/mrc/cymrc/information-for-parents-and-families/>) allows families, whānau and friends who have lost a child or young person to provide feedback about their experiences. The CYMRC Local Review Group Co-ordinator adds further details both before and after local review, via a private 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 Mortality Review Data Group identifies the NHI of the person for which each item of information is received. They import data into the Mortality Review Database and link the various sources of information that relate to each individual. Data are regularly cleaned to eliminate duplicate or incorrect records, follow up on missing details, and ensure completeness and internal consistency.

When interpreting CYMRC data it must be remembered that 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. The result of this is that 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 2013, the 2013 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 the Coroner, such as unexpected deaths and some injury deaths, are less likely to have complete cause of death information available quickly. Therefore, information relating to deaths in 2013 in particular needs to be interpreted with caution. This also means that consecutive annual reports may have slightly different numbers in any one category, but 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 the individual lived in. 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 co-ordinators of the local child and youth mortality review groups collect information from local organisations involved in the life and death of the individual. Some of the new information gathered as part of the local review process is entered into the Mortality Review Database.

Each Local Child and Youth Mortality Review Group has an appointed chair and co-ordinator. When the death of a child or youth aged between 28 days and 24 years occurs within a co-ordinator's region, the co-ordinator will access the secure database to gather initial information on the deceased. The co-ordinator will then initiate information requests to the various members of the local child and youth mortality review group who each act as a representative of their particular organisation.

As official agents of the CYMRC, the local child and youth mortality review group 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 illegal activity or the safety of others, must be dealt with outside the review process using the normal inter-agency protocols and procedures. This ensures that 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 co-ordinator will enter all the relevant data into the secure national database. In this way, issues, recommendations and follow-up actions are forwarded to the national Child and Youth Mortality Review Committee.

The local child and youth mortality review group 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 local child and youth mortality review groups 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 2 October 2014. For the purposes of mortality review in New Zealand, children and youth 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 their 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 Unexpected 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 one and two years 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. Under this classification system, unintentional injury is further divided into presumed unintentional injury, injury of undetermined intent, and injuries due to legal intervention or war. 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 (BDM), the Ministry of Health, Coronial records and the information entered by co-ordinators when reviewing a death. These data sources are prioritised based on evidence as to their quality and completeness in New Zealand. Prioritised ethnicity is used in this report to assign a single ethnic group to each individual.

DHB of Residence

The DHB of residence is derived from the person's address as supplied from the coroner, police or BDM. 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 database by the NZ Mortality Review Data Group. 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 (MoH). 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 2013. 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 (1980-2013). The denominator used to calculate mortality rates for children and young people aged one to 24 years were population estimates from Statistics New Zealand (1980-2013). Statistics New Zealand use 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.¹ 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.² 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.

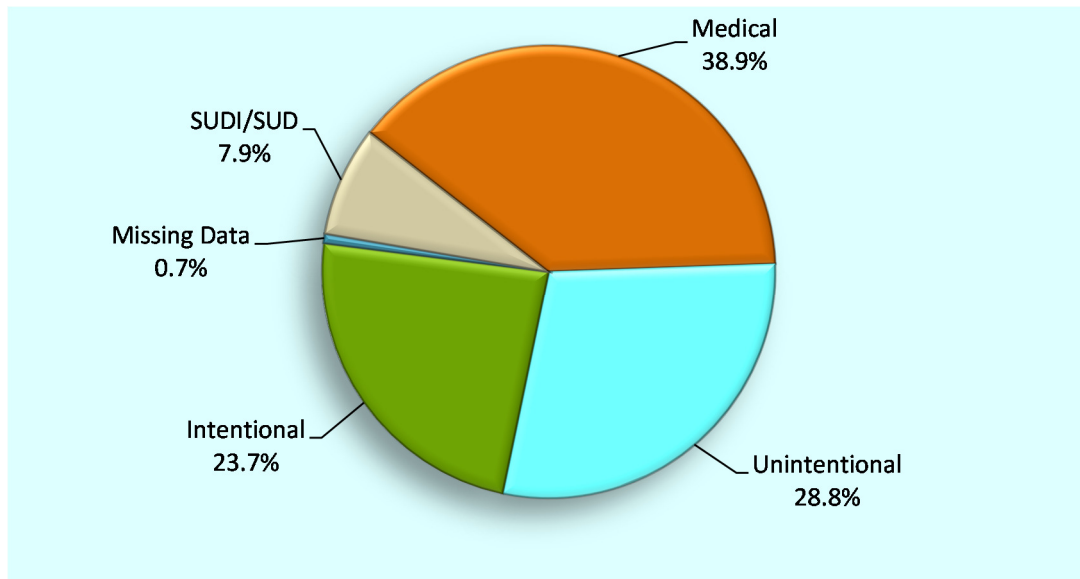
The deaths of non-New Zealand residents are excluded from the main sections of the report because the denominator in rate calculations (as above) excludes visitors from overseas. Data on this population is provided as a supplement, with rates not calculated.

¹ Statistics New Zealand website: <http://datainfolplus.stats.govt.nz/item/nz.govt.stats/bec27cc6-c9e2-4b7a-b1f4-cb5e096f91ad> accessed 26.11.2013

² Statistics New Zealand website: <http://datainfolplus.stats.govt.nz/item/nz.govt.stats/7751f101-7b2d-4e97-a487-3ac4126d22d4> accessed 26.11.2013

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 2009–2013 (n=3042 deaths)



Source: Mortality Review Database

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 2009–2013 combined (n=3042 deaths)

Category	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	Percentage (%)
Medical	324	187	81	107	224	260	1183	38.9
Unintentional injury	16	98	37	69	309	348	877	28.8
Intentional injury	7	17	3	37	309	349	722	23.7
SUDI/SUD	228	11	-	-	-	-	239	7.9
Missing data	6	2	1	1	5	6	21	0.7
Total	581	315	122	214	847	963	3042	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 rates per 100,000 resident population) by cause of death and age group, New Zealand 2009–2013 combined (n=3042 deaths)

Cause of death	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%	Rate 2009–2013
Medical									
Infectious and parasitic disease	34	17	3	4	5	4	67	2.2	0.88
Neoplasms	11	37	26	31	66	72	243	8.0	3.19
Diseases of the blood and blood-forming organs and disorders of the immune system	4	2	1	-	2	3	12	0.4	0.16
Endocrine, nutritional and metabolic diseases	11	9	12	4	15	19	70	2.3	0.92
Mental and behavioural disorders	-	-	-	1	2	1	4	0.1	0.05
Diseases of the nervous system	21	28	17	27	38	49	180	5.9	2.36
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of the circulatory system	16	15	3	11	27	42	114	3.7	1.50
Diseases of the respiratory system	43	25	10	10	21	15	124	4.1	1.63
Diseases of the digestive system	4	1	-	4	5	8	22	0.7	0.29
Diseases of the skin and subcutaneous tissue	1	-	-	-	3	1	5	0.2	0.07
Diseases of the musculoskeletal system and connective tissue	-	1	1	1	6	3	12	0.4	0.16
Diseases of the genitourinary system	3	-	1	-	1	5	10	0.3	0.13
Pregnancy, childbirth and the puerperium	-	-	-	-	-	5	5	0.2	0.07
Certain conditions originating in the perinatal period	76	8	-	1	-	-	85	2.8	1.12
Congenital anomalies	100	38	7	11	15	25	196	6.4	2.57
Symptoms & abnormal findings not elsewhere classified	-	6	-	2	18	8	34	1.1	0.45
Total medical	324	187	81	107	224	260	1,183	38.9	15.53
Unintentional injury (includes undetermined intent and legal intervention/war)#									
Cut/pierce	-	1	-	-	1	1	3	0.1	0.04
Drowning	2	29	3	8	25	25	92	3.0	1.21
Fall	1	2	1	1	13	15	33	1.1	0.43
Fire/hot object or substance	-	2	4	2	2	4	14	0.5	0.18
Firearm	-	-	-	1	2	2	5	0.2	0.07
Machinery	-	2	-	-	2	1	5	0.2	0.07
Transport	7	45	22	38	221	239	572	18.8	7.51
Natural/environmental	3	3	1	3	5	13	28	0.9	0.37
Overexertion	-	-	-	-	-	-	-	-	-
Poisoning	1	1	1	4	21	25	53	1.7	0.70
Struck by, against	-	4	3	2	2	7	18	0.6	0.24
Suffocation	2	5	1	8	7	7	30	1.0	0.39
Other specified, classifiable	-	1	-	1	5	8	15	0.5	0.20
Other specified, not elsewhere classified	-	1	1	-	2	-	4	0.1	0.05
Unspecified	-	1	-	-	-	1	2	0.1	s
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	98	37	69	309	348	877	28.8	11.51
Intentional injury									
Assault	7	17	2	2	16	33	77	2.5	1.01
Suicide	-	-	1	35	293	316	645	21.2	8.47
Total intentional injury	7	17	3	37	309	349	722	23.7	9.48
SUDI/SUD									
SUDI (28 days to <1 year) †	228	-	-	-	-	-	228	7.5	2.99
SUD (1-2 years) ‡	-	11	-	-	-	-	11	0.4	0.14
Total SUDI/SUD	228	11	-	-	-	-	239	7.9	3.14
Missing data	6	2	1	1	5	6	21	0.7	0.28
Total	581	315	122	214	847	963	3042	100.0	39.93

‘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

See table 1.3 for unintentional injury specified further by intent

† See table 2.1 for SUDI deaths by ICD-10-AM code

‡ See table 3.1 for SUD deaths by ICD-10-AM code

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013, 0-24 years

Table 1.3 Unintentional injury by cause of death, intent sub group and age group, New Zealand 2009–2013 combined (n=877 deaths)

Cause of death	Intent sub group																		
	< 1 year*			1-4 years			5-9 years			10-14 years			15-19 years			20-24 years			Total
	U	D	LW	U	D	LW	U	D	LW	U	D	LW	U	D	LW	U	D	LW	
Cut/pierce	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-	3
Drowning	2	-	-	29	-	-	3	-	-	8	-	-	24	1	-	24	1	-	92
Fall	1	-	-	2	-	-	1	-	-	1	-	-	12	1	-	14	1	-	33
Fire/hot object or substance	-	-	-	2	-	-	4	-	-	2	-	-	2	-	-	4	-	-	14
Firearm	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	1	-	1	5
Machinery	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-	1	-	-	5
Transport	7	-	-	45	-	-	22	-	-	38	-	-	221	-	-	239	-	-	572
Natural/environmental	3	-	-	3	-	-	1	-	-	3	-	-	5	-	-	13	-	-	28
Overexertion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poisoning	1	-	-	1	-	-	1	-	-	4	-	-	20	1	-	25	-	-	53
Struck by, against	-	-	-	4	-	-	3	-	-	2	-	-	2	-	-	7	-	-	18
Suffocation	2	-	-	5	-	-	1	-	-	4	4	-	3	4	-	5	2	-	30
Other specified, classifiable	-	-	-	1	-	-	-	-	-	1	-	-	4	1	-	8	-	-	15
Other specified, not elsewhere classified	-	-	-	1	-	-	1	-	-	-	-	-	2	-	-	-	-	-	4
Unspecified	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	2
Complications of medical and surgical care	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Total unintentional cause of death	16	-	-	97	1	-	37	-	-	65	4	-	299	8	2	343	4	1	877

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

U indicates unintentional intent

D indicates undetermined intent

LW indicates legal intervention/war

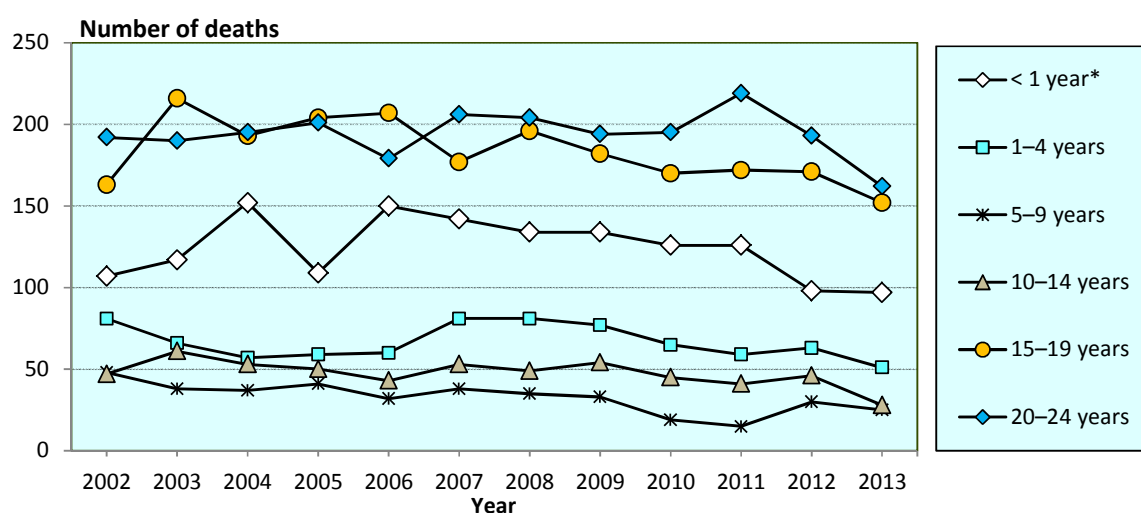
Source: Mortality Review Database

Table 1.4 Mortality (number of deaths) in children and young people aged 28 days to 24 years by age group and year of death, New Zealand 2009–2013 (n=3042 deaths)

Category	2009	2010	2011	2012	2013	Total	Percentage (%)
28 days – <1 year	134	126	126	98	97	581	19.1
1–4 years	77	65	59	63	51	315	10.4
5–9 years	33	19	15	30	25	122	4.0
10–14 years	54	45	41	46	28	214	7.0
15–19 years	182	170	172	171	152	847	27.8
20–24 years	194	195	219	193	162	963	31.7
Total	674	620	632	601	515	3042	100.0

Source: Mortality Review Database

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 2002–2013 (n=7786 deaths)



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

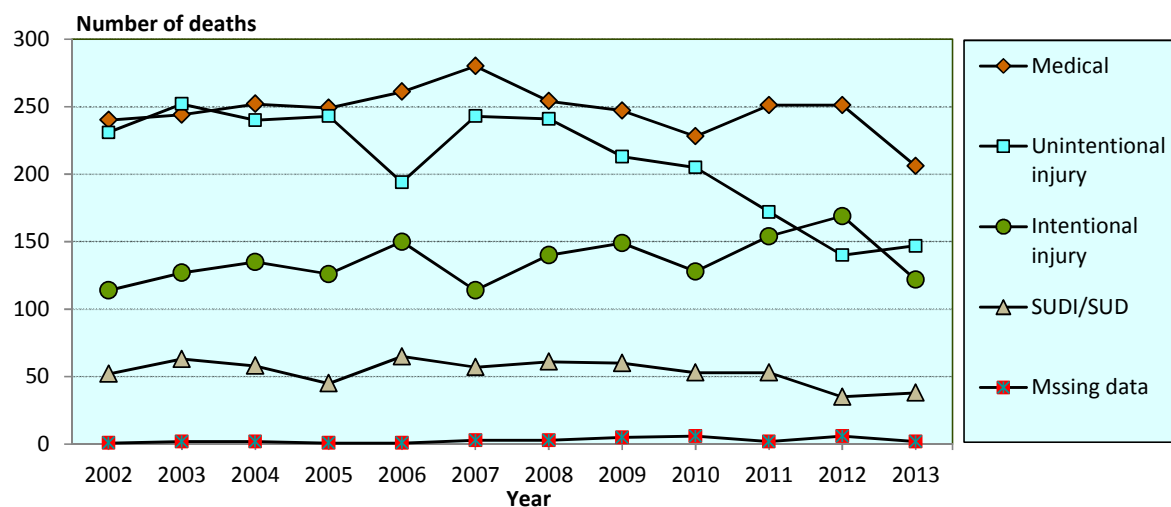
Source: Mortality Review Database

Table 1.5 Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause of death and year, New Zealand 2009–2013 (n=3042 deaths)

Category	2009	2010	2011	2012	2013	Total	Percentage (%)
Medical	247	228	251	251	206	1183	38.9
Unintentional injury	213	205	172	140	147	877	28.8
Intentional injury	149	128	154	169	122	722	23.7
SUDI/SUD	60	53	53	35	38	239	7.9
Missing data	5	6	2	6	2	21	0.7
Total	674	620	632	601	515	3042	100.0

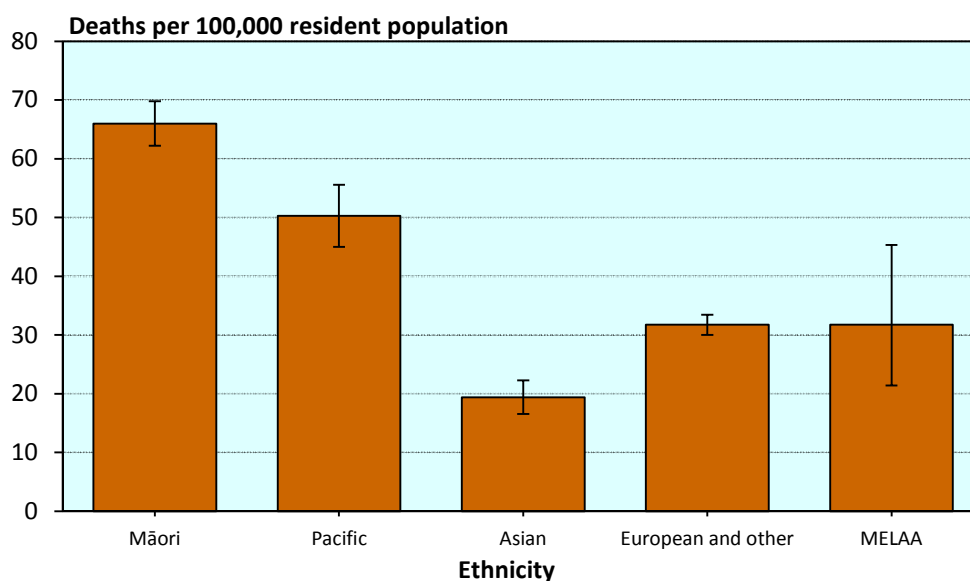
Source: Mortality Review Database

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 2002–2013 (n=7786 deaths)



Source: Mortality Review Database

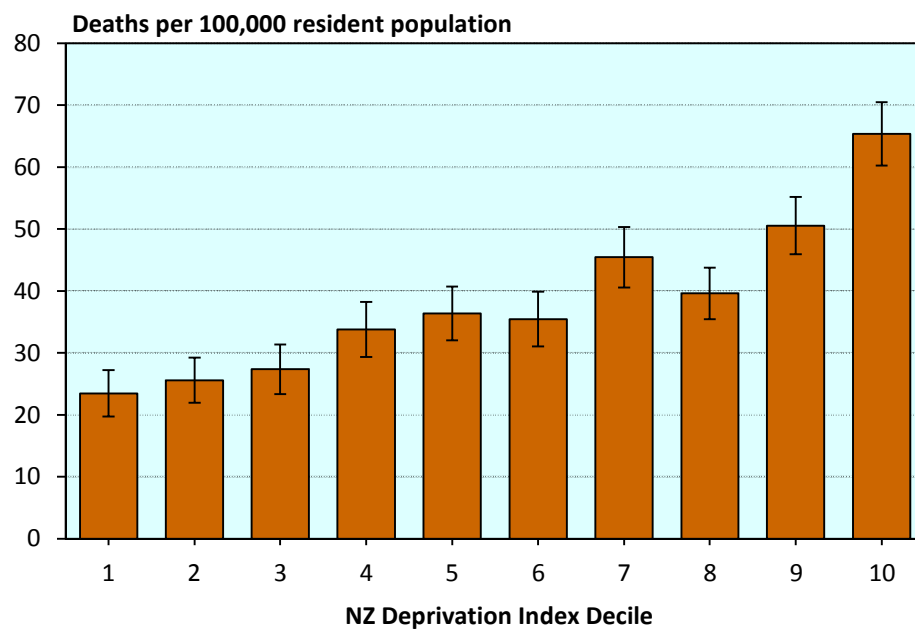
Figure 1.4 Mortality (rates per 100,000 population and 95% confidence intervals) in children and young people aged 28 days to 24 years by ethnicity, New Zealand 2009–2013 combined (n=3035 deaths*)



*Excludes 7 cases with no available ethnicity data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 1.5 Mortality (rates per 100,000 and 95% confidence intervals) in children and young people aged 28 days to 24 years by NZ Deprivation Index Decile, New Zealand 2009–2013 combined (n= 3026 deaths*)

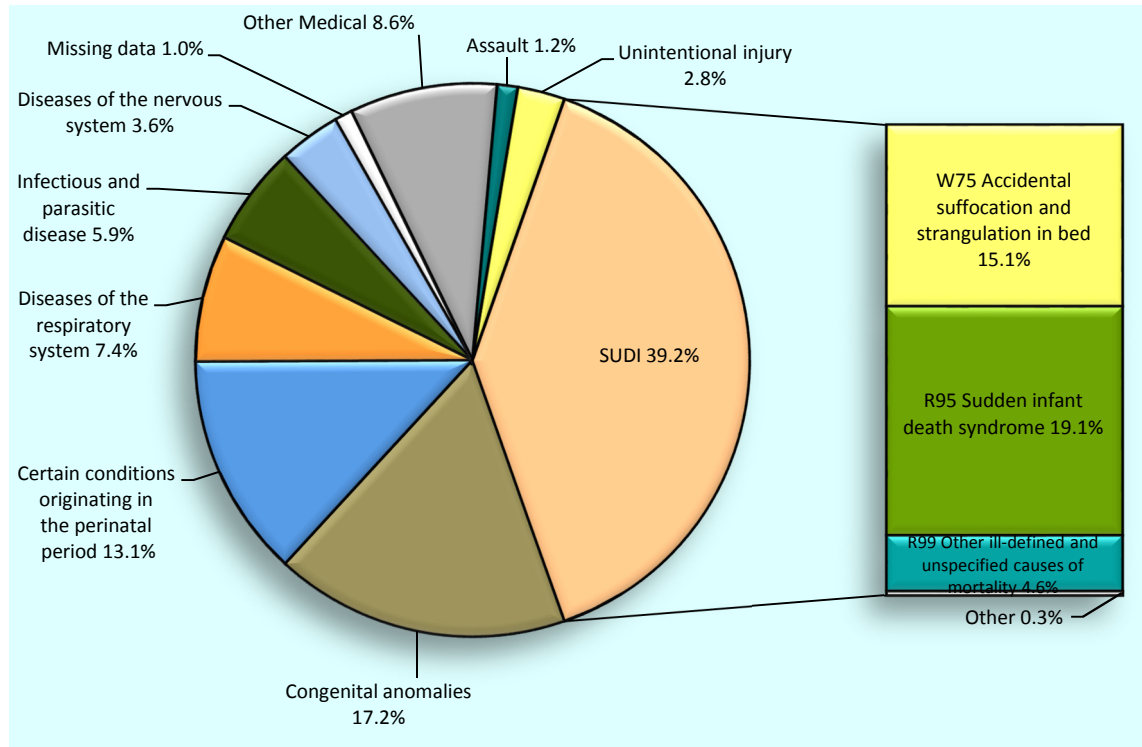


*Excludes 16 cases with no available deprivation data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

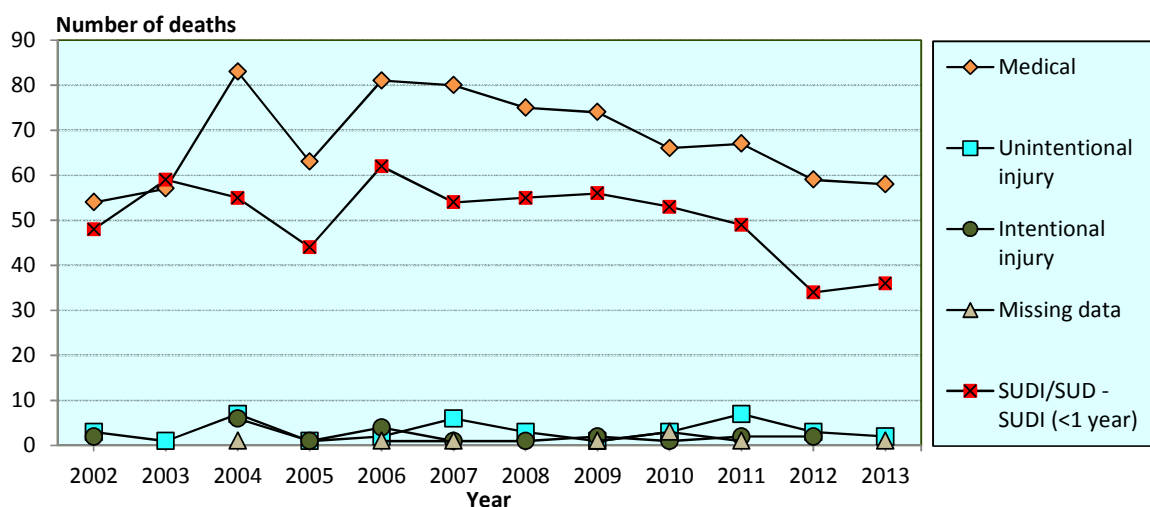
2. Infants aged 28 days to less than one year

Figure 2.1 Post-neonatal infant mortality (%) by cause of death, New Zealand 2009–2013 combined (n=581 deaths)



Source: Mortality Review Database

Figure 2.2 Post-neonatal infant mortality (number of deaths) by cause of death and year, New Zealand 2002–2013 (n=1492 deaths)



Source: Mortality Review Database

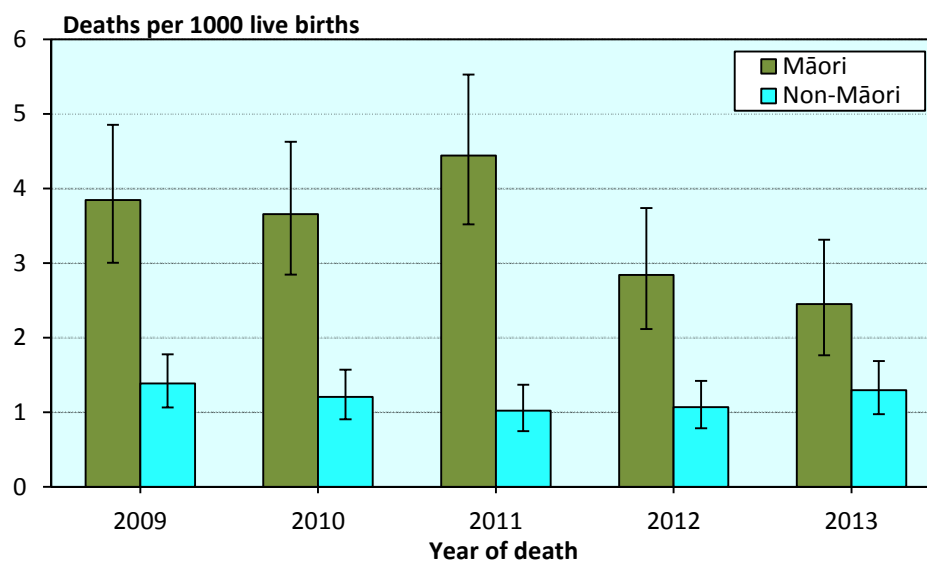
Table 2.1 Post-neonatal infant mortality (number of deaths and rates per 1000 live births) by cause of death and year, New Zealand 2009–2013 (n=581 deaths)

Cause of death	2009	2010	2011	2012	2013	Total	%	Rate 2009-2013
Medical								
Infectious and parasitic disease	11	4	9	3	7	34	5.9	0.11
Neoplasms	3	2	1	2	3	11	1.9	0.04
Diseases of the blood and blood-forming organs and disorders of the immune system	2	-	-	1	1	4	0.7	0.01
Endocrine, nutritional and metabolic diseases	3	3	2	1	2	11	1.9	0.04
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	3	4	5	6	3	21	3.6	0.07
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	2	4	4	2	4	16	2.8	0.05
Diseases of the respiratory system	10	10	8	12	3	43	7.4	0.14
Diseases of the digestive system	1	-	1	-	2	4	0.7	0.01
Diseases of the skin and subcutaneous tissue	-	1	-	-	-	1	0.2	s
Diseases of the musculoskeletal system and connective tissue	-	-	-	-	-	-	-	-
Diseases of the genitourinary system	1	1	1	-	-	3	0.5	0.01
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	19	10	13	15	19	76	13.1	0.24
Congenital anomalies	19	27	23	17	14	100	17.2	0.32
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-
Total medical	74	66	67	59	58	324	55.8	1.04
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	-	1	1	-	-	2	0.3	s
Fall	-	-	-	1	-	1	0.2	s
Fire/hot object or substance	-	-	-	-	-	-	-	-
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Transport	-	2	1	2	2	7	1.2	0.02
Natural/environmental	-	-	3	-	-	3	0.5	0.01
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	-	1	-	-	1	0.2	s
Struck by, against	-	-	-	-	-	-	-	-
Suffocation	1	-	1	-	-	2	0.3	s
Other specified, classifiable	-	-	-	-	-	-	-	-
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	3	7	3	2	16	2.8	0.05
Intentional injury								
Assault	2	1	2	2	-	7	1.2	0.02
Total intentional injury	2	1	2	2	-	7	1.2	0.02
Sudden Unexpected Death in Infancy (SUDI)								
R95 Sudden infant death syndrome	35	20	20	18	18	111	19.1	0.36
R96 Other sudden death, cause unknown	-	-	-	-	-	-	-	-
R98 Unattended death	-	-	-	-	-	-	-	-
R99 Other ill-defined and unspecified causes of mortality	1	3	8	5	10	27	4.6	0.09
W75 Accidental suffocation and strangulation in bed	19	29	21	11	8	88	15.1	0.28
W78 Inhalation of gastric contents	-	1	-	-	-	1	0.2	s
W79 Inhalation and ingestion of food causing obstruction of respiratory tract	1	-	-	-	-	1	0.2	s
Total SUDI	56	53	49	34	36	228	39.2	0.73
Missing data	1	3	1	-	1	6	1.0	0.02
Total	134	126	126	98	97	581	100.0	1.87

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* MoH Live Births 2009–2013

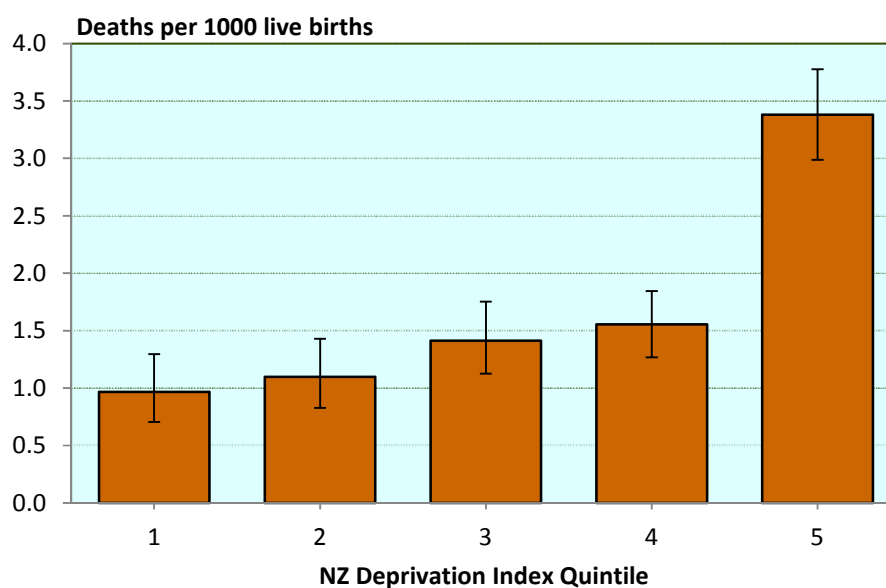
Figure 2.3 Post-neonatal infant mortality (rates per 1000 live births), Māori and non-Māori by year of death, New Zealand 2009—2013 (n=577 deaths*)



*Excludes 4 cases with no available ethnicity data

Source: *Numerator* Mortality Review Database; *Denominator* MoH Live Births 2009-2013

Figure 2.4 Post-neonatal infant mortality (rates per 1000 live births with 95% confidence intervals) by NZ Deprivation Index Quintile, New Zealand 2009—2013 combined (n=577 deaths)

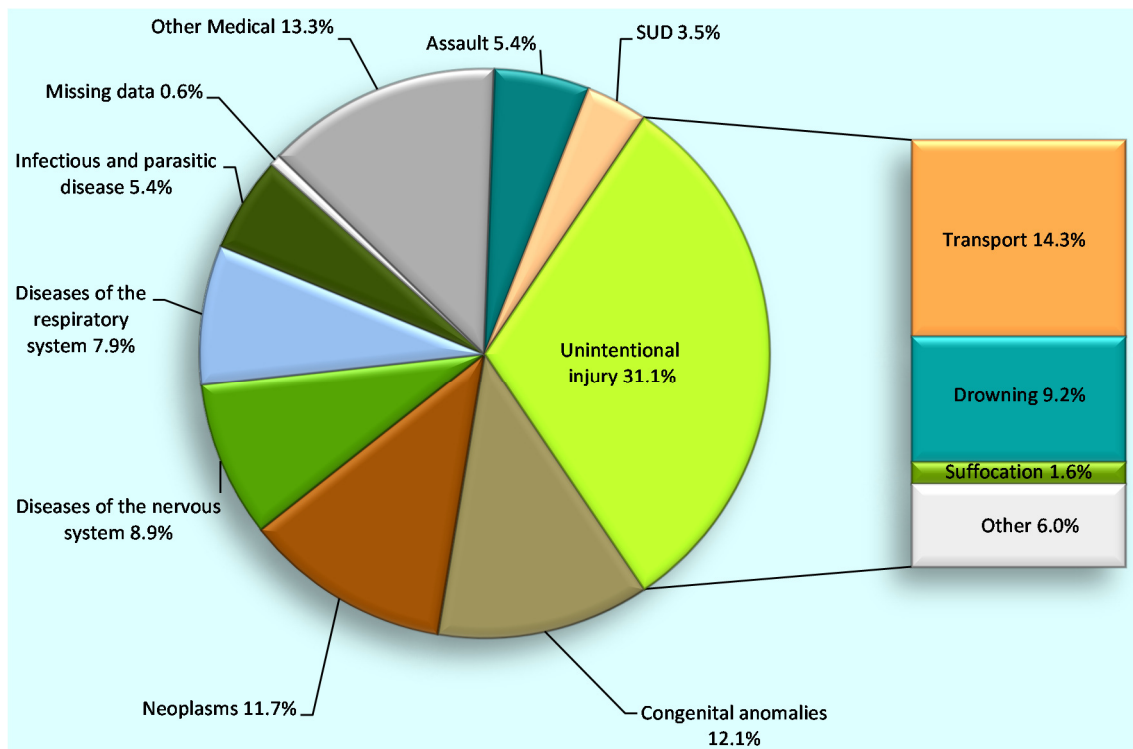


*Excludes 4 cases with no available deprivation data

Source: *Numerator* Mortality Review Database; *Denominator* MoH Live Births 2009-2013

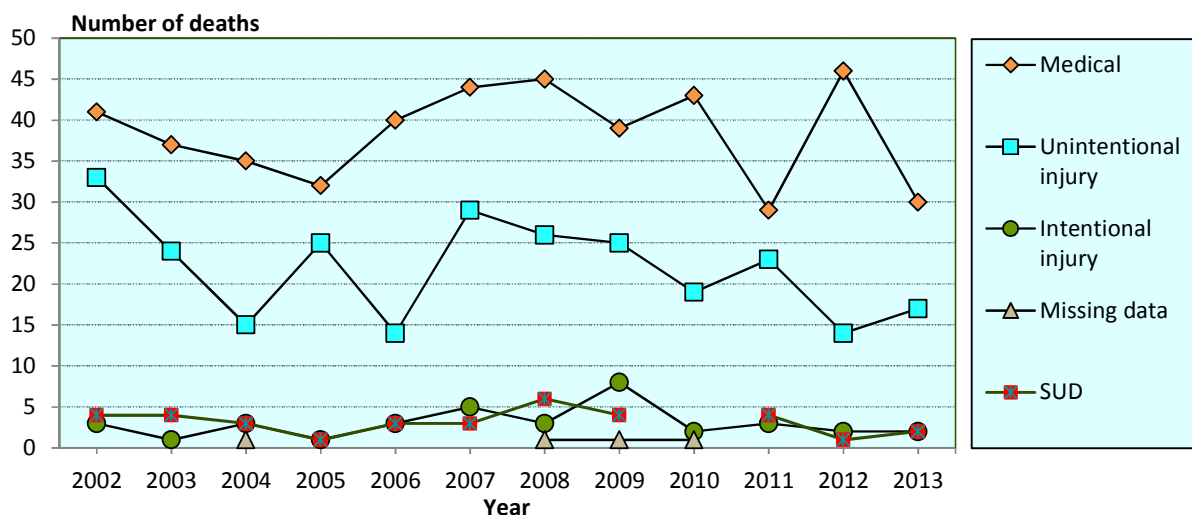
3. Children aged one to four years

Figure 3.1 Mortality (%) in children aged 1–4 years by cause of death, New Zealand 2009–2013 combined (n=315 deaths)



Source: Mortality Review Database

Figure 3.2 Mortality (number of deaths) in children aged 1–4 years by cause of death and year, New Zealand 2002–2013 (n=800 deaths)



Source: Mortality Review Database

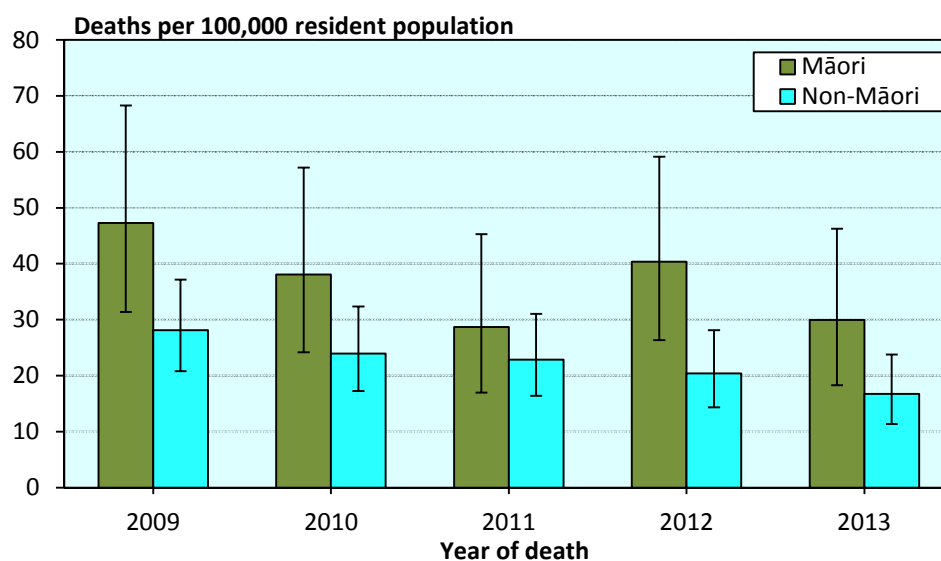
Table 3.1 Mortality (number of deaths and rates per 100,000 resident population) in children aged 1–4 years by cause of death and year, New Zealand 2009–2013 (n=315 deaths)

Cause of death	2009	2010	2011	2012	2013	Total	%	Rate 2009-2013
Medical								
Infectious and parasitic disease	1	5	6	4	1	17	5.4	1.40
Neoplasms	5	8	7	11	6	37	11.7	3.05
Diseases of the blood and blood-forming organs and disorders of the immune system	-	1	-	1	-	2	0.6	s
Endocrine, nutritional and metabolic diseases	3	2	1	1	2	9	2.9	0.74
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	7	6	2	5	8	28	8.9	2.31
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	3	4	2	4	2	15	4.8	1.24
Diseases of the respiratory system	5	6	2	8	4	25	7.9	2.06
Diseases of the digestive system	-	1	-	-	-	1	0.3	s
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	-	-	-	1	-	1	0.3	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	2	4	2	-	8	2.5	0.66
Congenital anomalies	13	6	5	9	5	38	12.1	3.14
Symptoms & abnormal findings not elsewhere classified	2	2	-	-	2	6	1.9	0.50
Total medical	39	43	29	46	30	187	59.4	15.43
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	1	1	0.3	s
Drowning	6	4	11	3	5	29	9.2	2.39
Fall	1	-	-	-	1	2	0.6	s
Fire/hot object or substance	2	-	-	-	-	2	0.6	s
Firearm	-	-	-	-	-	-	-	-
Machinery	-	1	1	-	-	2	0.6	s
Transport	13	11	6	7	8	45	14.3	3.71
Natural/environmental	-	1	1	-	1	3	1.0	0.25
Overexertion	-	-	-	-	-	-	-	-
Poisoning	1	-	-	-	-	1	0.3	s
Struck by, against	-	1	1	2	-	4	1.3	0.33
Suffocation	1	-	2	1	1	5	1.6	0.41
Other specified, classifiable	-	-	-	1	-	1	0.3	s
Other specified, not elsewhere classified	-	1	-	-	-	1	0.3	s
Unspecified	1	-	-	-	-	1	0.3	s
Complications of medical and surgical care	-	-	1	-	-	1	0.3	s
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	25	19	23	14	17	98	31.1	8.09
Intentional injury								
Assault	8	2	3	2	2	17	5.4	1.40
Total intentional injury	8	2	3	2	2	17	5.4	1.40
Sudden Unexpected Death								
R95 Sudden infant death syndrome	-	-	1	-	-	1	0.3	s
R96 Other sudden death, cause unknown	-	-	-	-	-	-	-	-
R98 Unattended death	-	-	-	-	-	-	-	-
R99 Other ill-defined and unspecified causes of mortality	4	-	3	1	1	9	2.9	0.74
W75 Accidental suffocation and strangulation in bed	-	-	-	-	1	1	0.3	s
W78 Inhalation of gastric contents	-	-	-	-	-	-	-	-
Total SUD	4	-	4	1	2	11	3.5	0.91
Missing data	1	1	-	-	-	2	0.6	s
Total	77	65	59	63	51	315	100.0	26.00

's' indicates rate not calculated due to small numbers

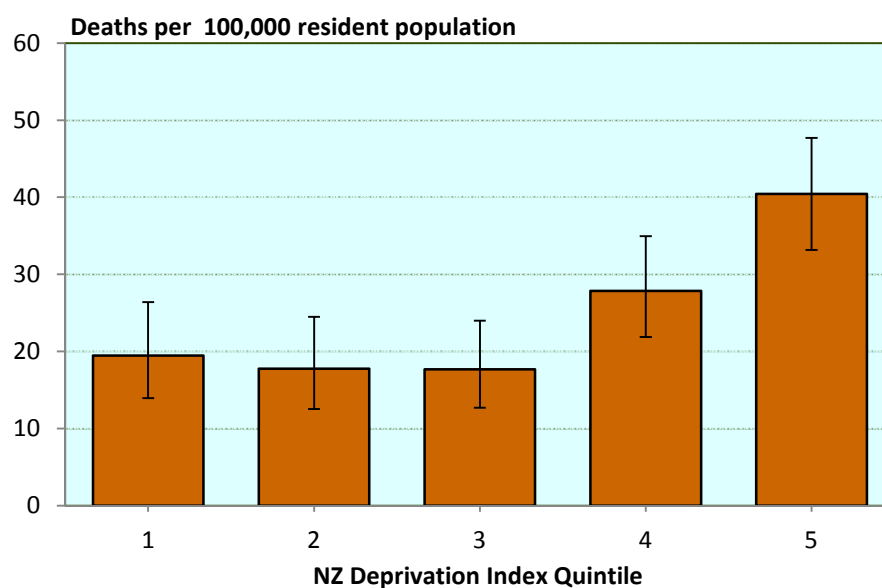
Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 3.3 Mortality (rates per 100,000 resident population) in children aged 1–4 years, Māori and non-Māori, New Zealand 2009–2013 (n=315 deaths)



Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 3.4 Mortality (rates per 100,000 resident population with 95% confidence intervals) in children aged 1–4 years by NZ Deprivation Index Quintile, New Zealand 2009–2013 combined (n=312 deaths*)

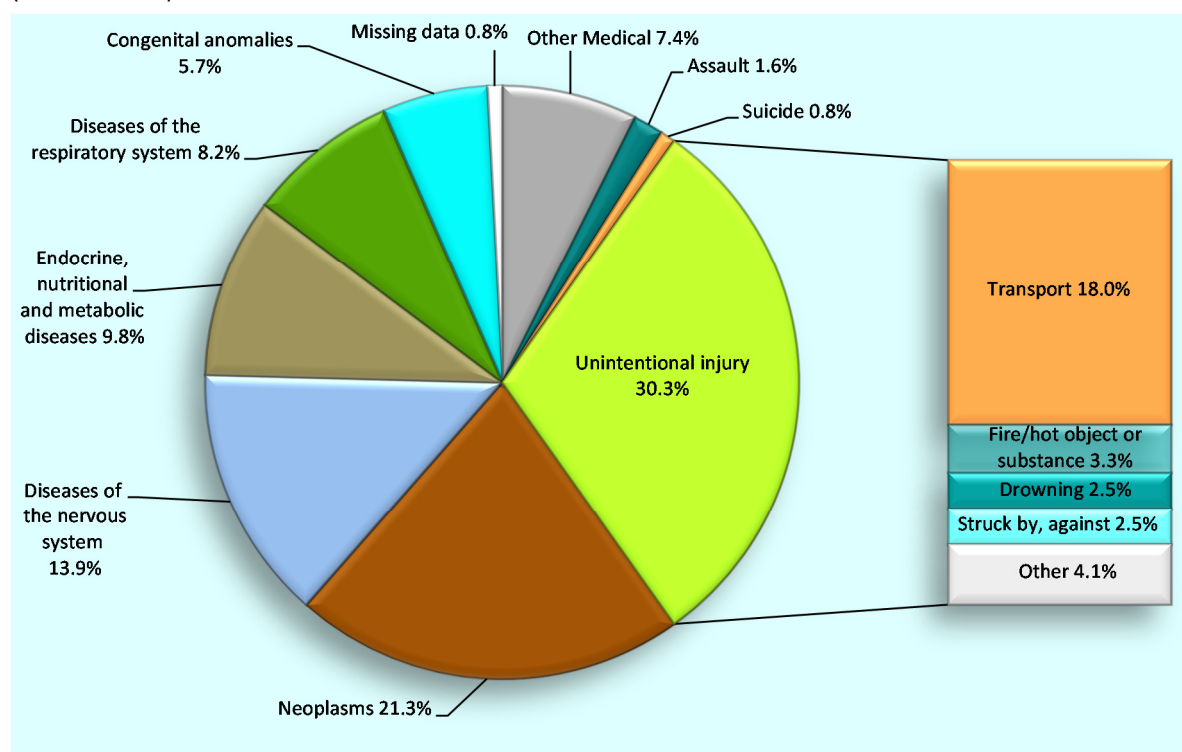


*Excludes 3 cases with no available deprivation data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

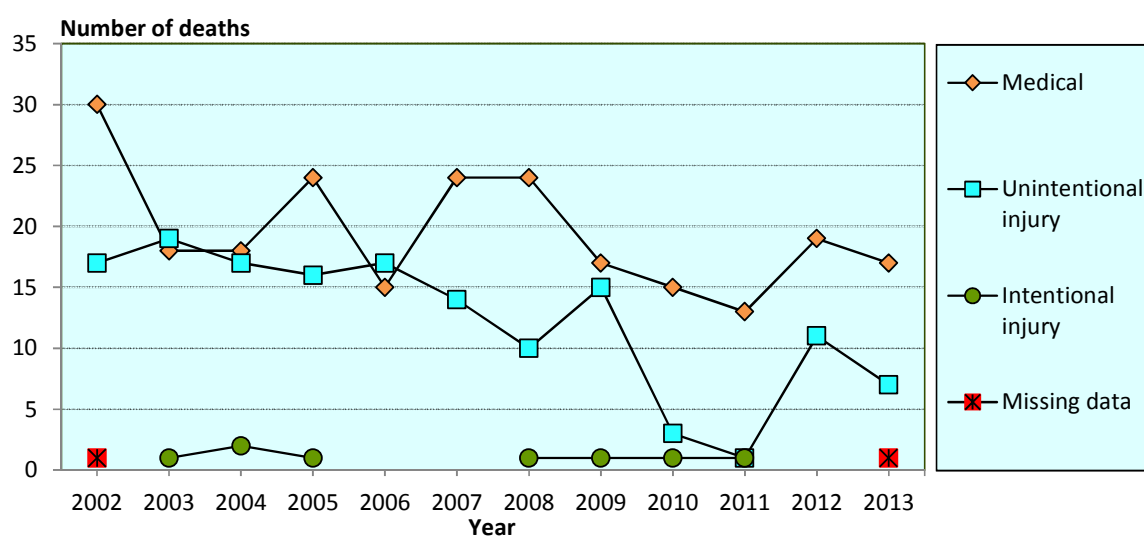
4. Children aged five to nine years

Figure 4.1 Mortality (%) in children aged 5–9 years by cause of death, New Zealand 2009–2013 combined (n=122 deaths)



Source: Mortality Review Database

Figure 4.2 Mortality (number of deaths) in children aged 5–9 years by cause of death and year, New Zealand 2002–2013 (n=391 deaths)



Source: Mortality Review Database

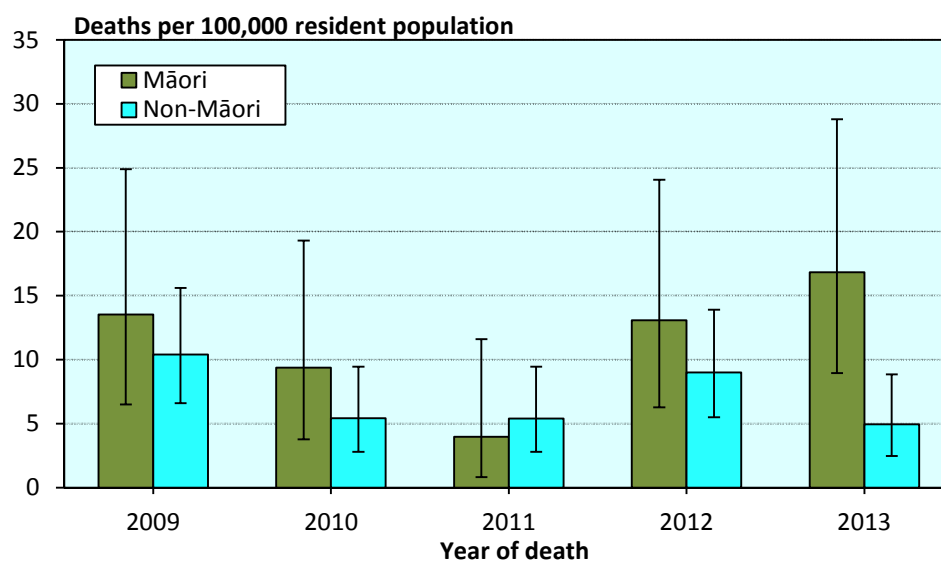
Table 4.1 Mortality (number of deaths and rates per 100,000 resident population) in children aged 5–9 years by cause of death and year, New Zealand 2009–2013 (n=122 deaths)

Cause of death	2009	2010	2011	2012	2013	Total	%	Rate 2009-2013
Medical								
Infectious and parasitic disease	-	-	1	1	1	3	2.5	0.20
Neoplasms	6	7	3	6	4	26	21.3	1.75
Diseases of the blood and blood-forming organs and disorders of the immune system	-	-	-	-	1	1	0.8	s
Endocrine, nutritional and metabolic diseases	1	1	2	6	2	12	9.8	0.81
Mental and behavioural disorders	-	-	-	-	-	-	-	-
Diseases of the nervous system	5	1	3	3	5	17	13.9	1.14
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	-	1	1	-	1	3	2.5	0.20
Diseases of the respiratory system	3	1	2	2	2	10	8.2	0.67
Diseases of the digestive system	-	-	-	-	-	-	-	-
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	1	-	-	-	-	1	0.8	s
Diseases of the genitourinary system	-	-	-	-	1	1	0.8	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	1	4	1	1	-	7	5.7	0.47
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-
Total medical	17	15	13	19	17	81	66.4	5.44
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	1	-	-	-	2	3	2.5	0.20
Fall	1	-	-	-	-	1	0.8	s
Fire/hot object or substance	2	1	-	-	1	4	3.3	0.27
Firearm	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-
Transport	9	2	1	9	1	22	18.0	1.48
Natural/environmental	-	-	-	-	1	1	0.8	s
Overexertion	-	-	-	-	-	-	-	-
Poisoning	-	-	-	1	-	1	0.8	s
Struck by, against	1	-	-	1	1	3	2.5	0.20
Suffocation	-	-	-	-	1	1	0.8	s
Other specified, classifiable	-	-	-	-	-	-	-	-
Other specified, not elsewhere classified	1	-	-	-	-	1	0.8	s
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	-	-	-	-
Total unintentional injury	15	3	1	11	7	37	30.3	2.49
Intentional injury								
Assault	1	1	-	-	-	2	1.6	s
Suicide	-	-	1	-	-	1	0.8	s
Total intentional injury	1	1	1	-	-	3	2.5	0.20
Missing data	-	-	-	-	1	1	0.8	s
Total	33	19	15	30	25	122	100.0	8.20

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

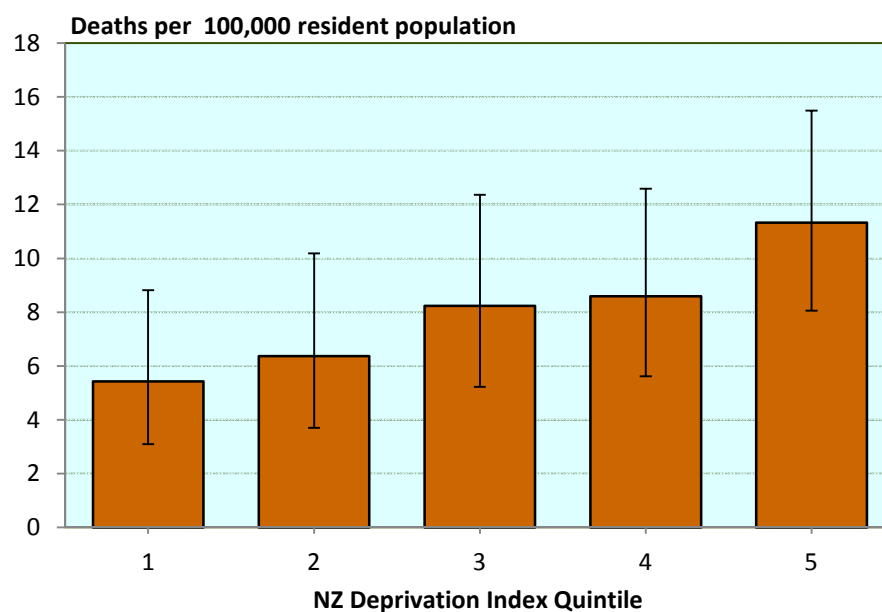
Figure 4.3 Mortality (rates per 100,000 resident population) in children aged 5–9 years, Māori and non-Māori, New Zealand 2009–2013 (n=121 deaths)



*Excludes 1 case with no available ethnicity data

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2009-2013

Figure 4.4 Mortality (rates per 100,000 resident population with 95% confidence intervals) in children aged 5–9 years by NZ Deprivation Index Quintile, New Zealand 2009–2013 combined (n=121 deaths)

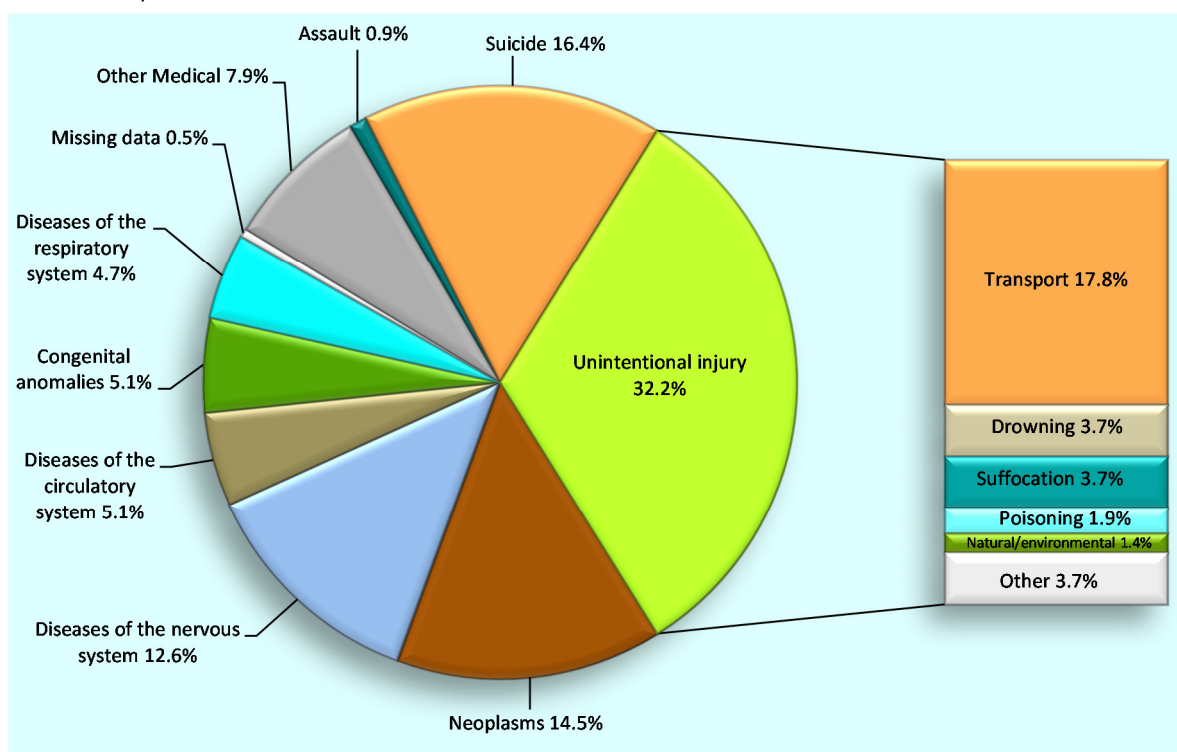


*Excludes 1 case with no available deprivation data

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2009-2013

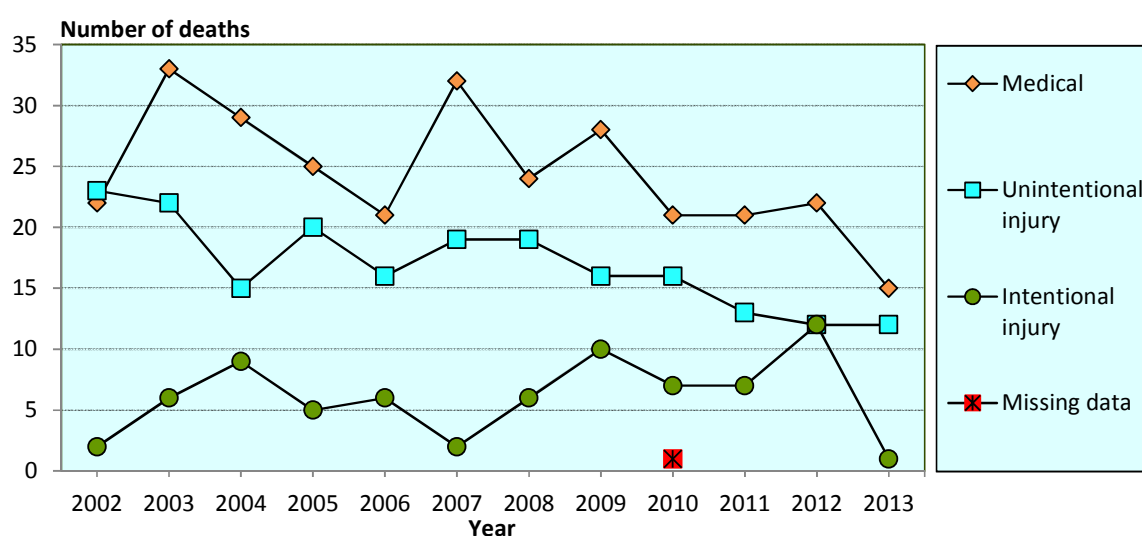
5. Children aged 10–14 years

Figure 5.1 Mortality (%) in children aged 10–14 years by cause of death, New Zealand 2009–2013 combined (n=214 deaths)



Source: Mortality Review Database

Figure 5.2 Mortality (number of deaths) in children aged 10–14 years by cause of death and year, New Zealand 2002–2013 (n=570 deaths)



Source: Mortality Review Database

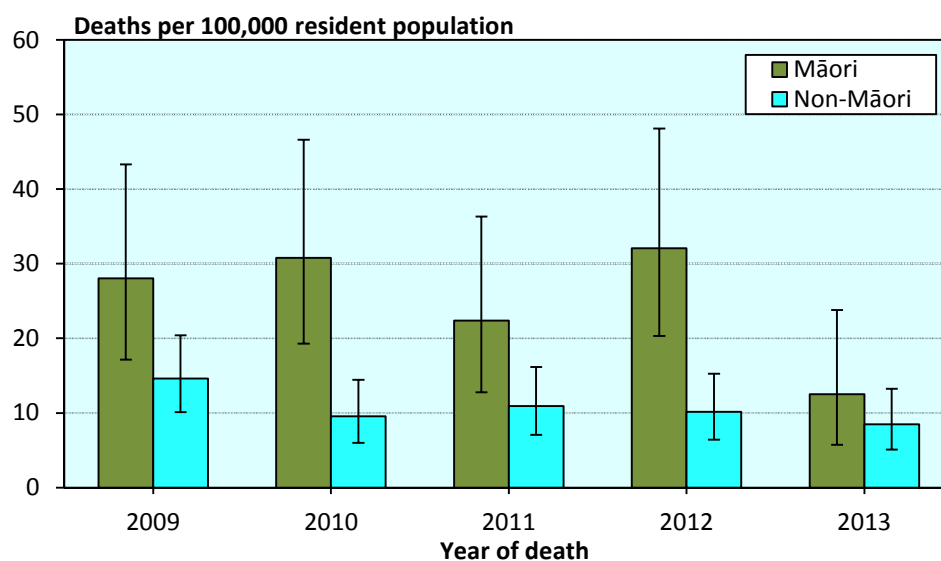
Table 5.1 Mortality (number of deaths and rates per 100,000 resident population) in children aged 10–14 years by cause of death and year, New Zealand 2009–2013 (n=214 deaths)

Cause of death	2009	2010	2011	2012	2013	Total	%	Rate 2009-2013
Medical								
Infectious and parasitic disease	1	-	1	1	1	4	1.9	0.27
Neoplasms	6	7	6	7	5	31	14.5	2.06
Diseases of the blood and blood-forming organs and disorders of the immune system	-	-	-	-	-	-	-	-
Endocrine, nutritional and metabolic diseases	-	2	2	-	-	4	1.9	0.27
Mental and behavioural disorders	1	-	-	-	-	1	0.5	s
Diseases of the nervous system	8	3	7	8	1	27	12.6	1.80
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	3	3	2	1	2	11	5.1	0.73
Diseases of the respiratory system	2	2	-	2	4	10	4.7	0.67
Diseases of the digestive system	1	-	-	2	1	4	1.9	0.27
Diseases of the skin and subcutaneous tissue	-	-	-	-	-	-	-	-
Diseases of the musculoskeletal system and connective tissue	1	-	-	-	-	1	0.5	s
Diseases of the genitourinary system	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	1	-	-	1	0.5	s
Congenital anomalies	5	3	2	1	-	11	5.1	0.73
Symptoms & abnormal findings not elsewhere classified	-	1	-	-	1	2	0.9	s
Total medical	28	21	21	22	15	107	50.0	7.12
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	-	-	-	-	-	-	-	-
Drowning	2	1	1	2	2	8	3.7	0.53
Fall	-	-	-	1	-	1	0.5	s
Fire/hot object or substance	1	-	-	-	1	2	0.9	s
Firearm	1	-	-	-	-	1	0.5	s
Machinery	-	-	-	-	-	-	-	-
Transport	7	10	8	8	5	38	17.8	2.53
Natural/environmental	-	1	1	-	1	3	1.4	0.20
Overexertion	-	-	-	-	-	-	-	-
Poisoning	2	1	-	1	-	4	1.9	0.27
Struck by, against	-	1	1	-	-	2	0.9	s
Suffocation	3	2	2	-	1	8	3.7	0.53
Other specified, classifiable	-	-	-	-	1	1	0.5	s
Other specified, not elsewhere classified	-	-	-	-	-	-	-	-
Unspecified	-	-	-	-	-	-	-	-
Complications of medical and surgical care	-	-	-	-	-	-	-	-
Sequelae of surgical and medical care as external cause	-	-	-	-	1	1	0.5	s
Total unintentional injury	16	16	13	12	12	69	32.2	4.59
Intentional injury								
Assault	-	1	1	-	-	2	0.9	s
Suicide	10	6	6	12	1	35	16.4	2.33
Total intentional injury	10	7	7	12	1	37	17.3	2.46
Missing data	-	1	-	-	-	1	0.5	s
Total	54	45	41	46	28	214	100.0	14.24

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

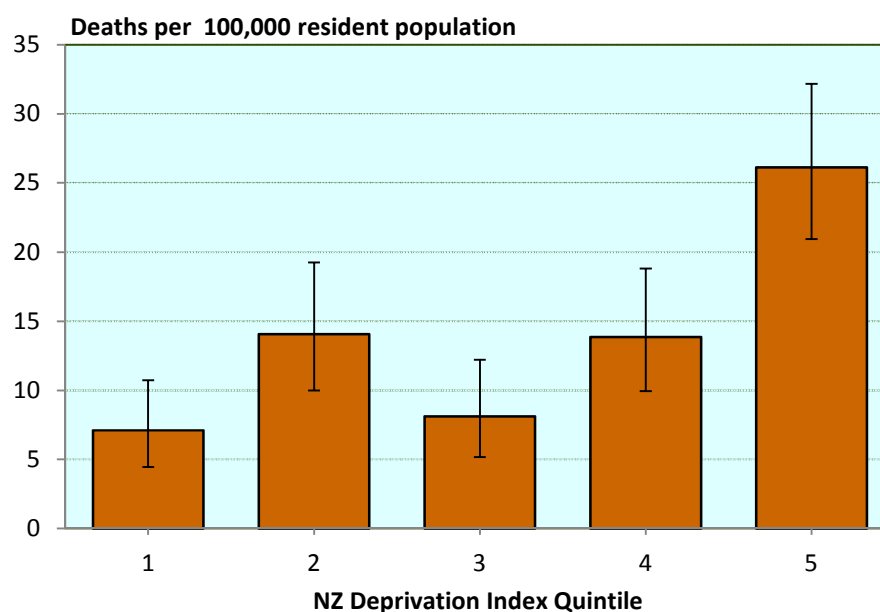
Figure 5.3 Mortality (rates per 100,000 resident population) in children aged 10–14 years, Māori and non-Māori, New Zealand 2009–2013 (n=213 deaths*)



*Excludes 1 case with no available ethnicity data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 5.4 Mortality (rates per 100,000 resident population with 95% confidence intervals) in children aged 10–14 years by NZ Deprivation Index Quintile, New Zealand 2009–2013 combined (n=213 deaths*)

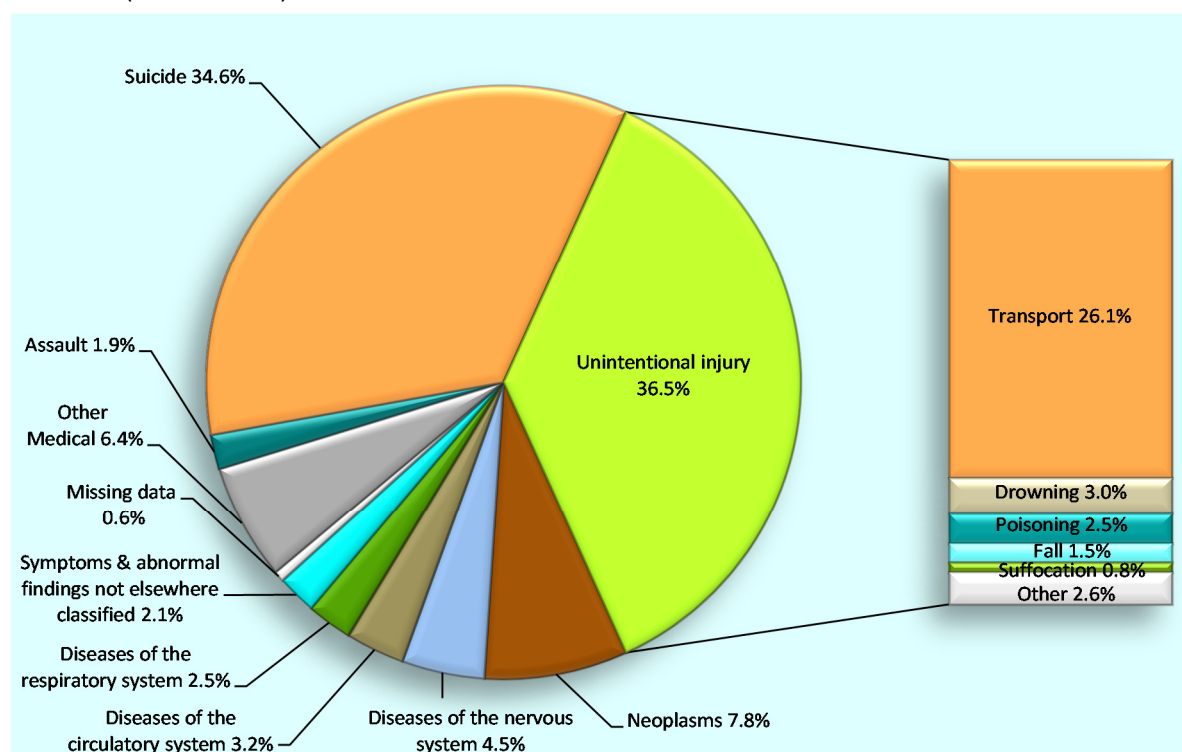


*Excludes 1 case with no available deprivation data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

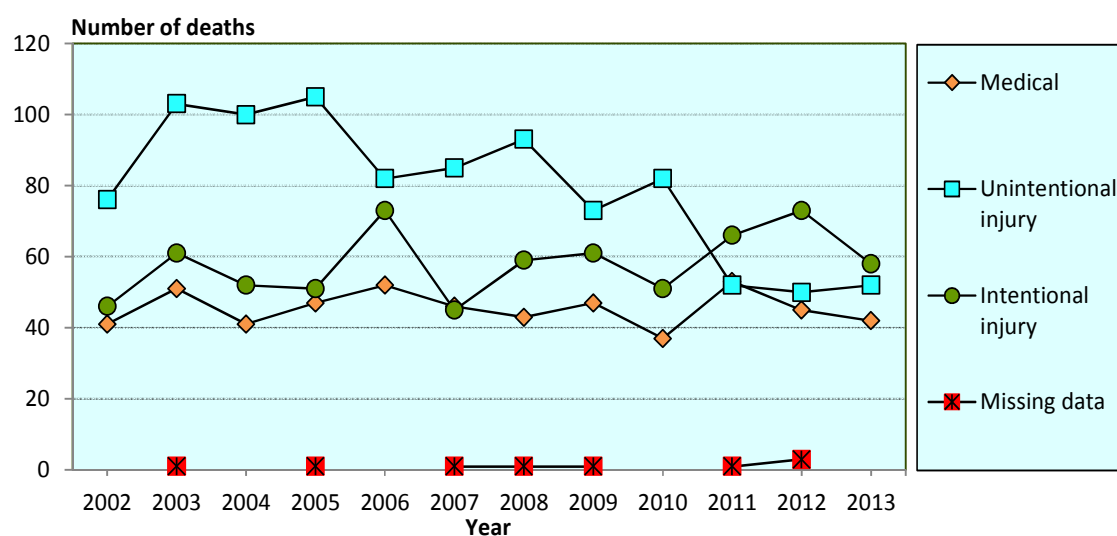
6. Young people aged 15–19 years

Figure 6.1 Mortality (%) in young people aged 15–19 years by cause of death, New Zealand 2009–2013 combined (n=847 deaths)



Source: Mortality Review Database

Figure 6.2 Mortality (number of deaths) in young people aged 15–19 years by cause of death and year, New Zealand 2002–2013 (n=2203 deaths)



Source: Mortality Review Database

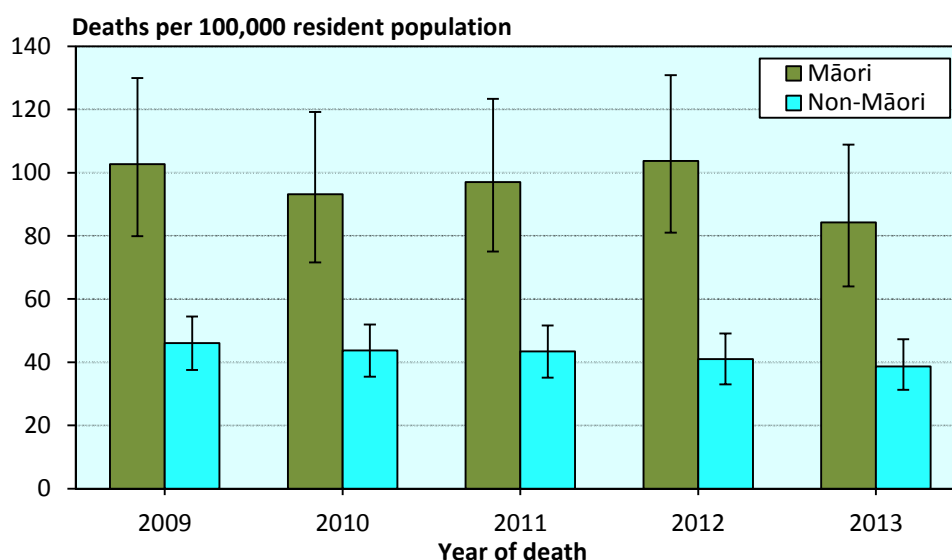
Table 6.1 Mortality (number of deaths and rates per 100,000 resident population) in young people aged 15–19 years by cause of death and year, New Zealand 2009–2013 (n=847 deaths)

Cause of death	2009	2010	2011	2012	2013	Total	%	Rate 2009-2013
Medical								
Infectious and parasitic disease	-	1	3	-	1	5	0.6	0.32
Neoplasms	13	13	14	12	14	66	7.8	4.22
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	5	3	1	3	3	15	1.8	0.96
Mental and behavioural disorders	-	1	-	-	1	2	0.2	s
Diseases of the nervous system	9	3	14	7	5	38	4.5	2.43
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	4	5	8	4	6	27	3.2	1.73
Diseases of the respiratory system	6	4	4	3	4	21	2.5	1.34
Diseases of the digestive system	1	-	1	1	2	5	0.6	0.32
Diseases of the skin and subcutaneous tissue	-	1	1	1	-	3	0.4	0.19
Diseases of the musculoskeletal system and connective tissue	2	1	-	2	1	6	0.7	0.38
Diseases of the genitourinary system	-	-	-	1	-	1	0.1	s
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	4	4	3	4	-	15	1.8	0.96
Symptoms & abnormal findings not elsewhere classified	3	1	3	6	5	18	2.1	1.15
Total medical	47	37	53	45	42	224	26.4	14.32
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	1	-	-	-	-	1	0.1	s
Drowning	1	11	1	6	6	25	3.0	1.60
Fall	4	2	1	4	2	13	1.5	0.83
Fire/hot object or substance	1	1	-	-	-	2	0.2	s
Firearm	1	-	1	-	-	2	0.2	s
Machinery	-	1	-	-	1	2	0.2	s
Transport	55	54	39	35	38	221	26.1	14.13
Natural/environmental	2	-	3	-	-	5	0.6	0.32
Overexertion	-	-	-	-	-	-	-	-
Poisoning	4	6	4	4	3	21	2.5	1.34
Struck by, against	1	-	-	-	1	2	0.2	s
Suffocation	1	4	2	-	-	7	0.8	0.45
Other specified, classifiable	1	2	1	-	1	5	0.6	0.32
Other specified, not elsewhere classified	-	1	-	1	-	2	0.2	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	73	82	52	50	52	309	36.5	19.76
Intentional injury								
Assault	5	3	3	2	3	16	1.9	1.02
Suicide	56	48	63	71	55	293	34.6	18.74
Total intentional injury	61	51	66	73	58	309	36.5	19.76
Missing data	1	-	1	3	-	5	0.6	0.32
Total	182	170	172	171	152	847	100.0	54.16

's' indicates rate not calculated due to small numbers

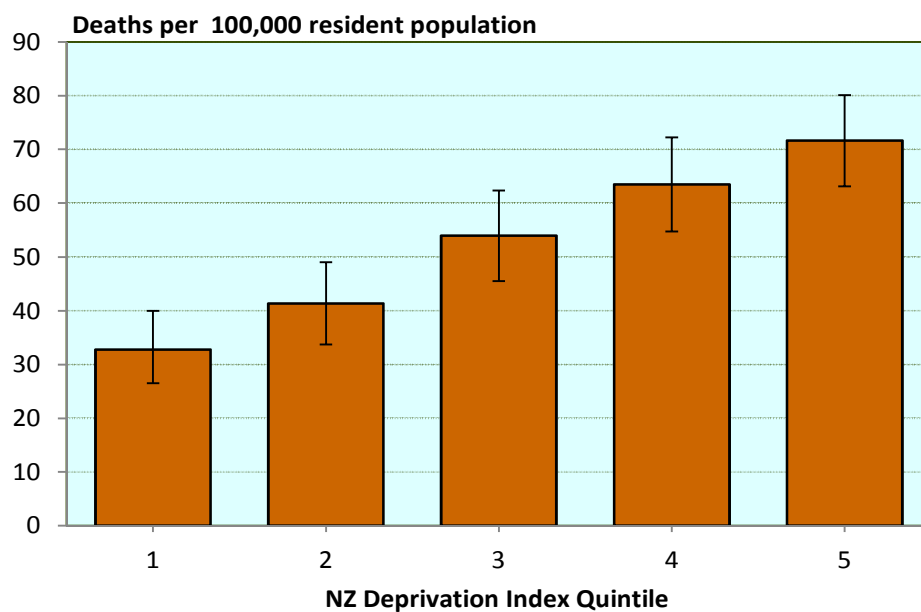
Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 6.3 Mortality (rates per 100,000 resident population) in young people aged 15–19 years, Māori and non-Māori, New Zealand 2009–2013 (n=847 deaths)



Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2009-2013

Figure 6.4 Mortality (rates per 100,000 resident population with 95% confidence intervals) in young people aged 15–19 years by NZ Deprivation Index Quintile, New Zealand 2009–2013 combined (n=844 deaths*)

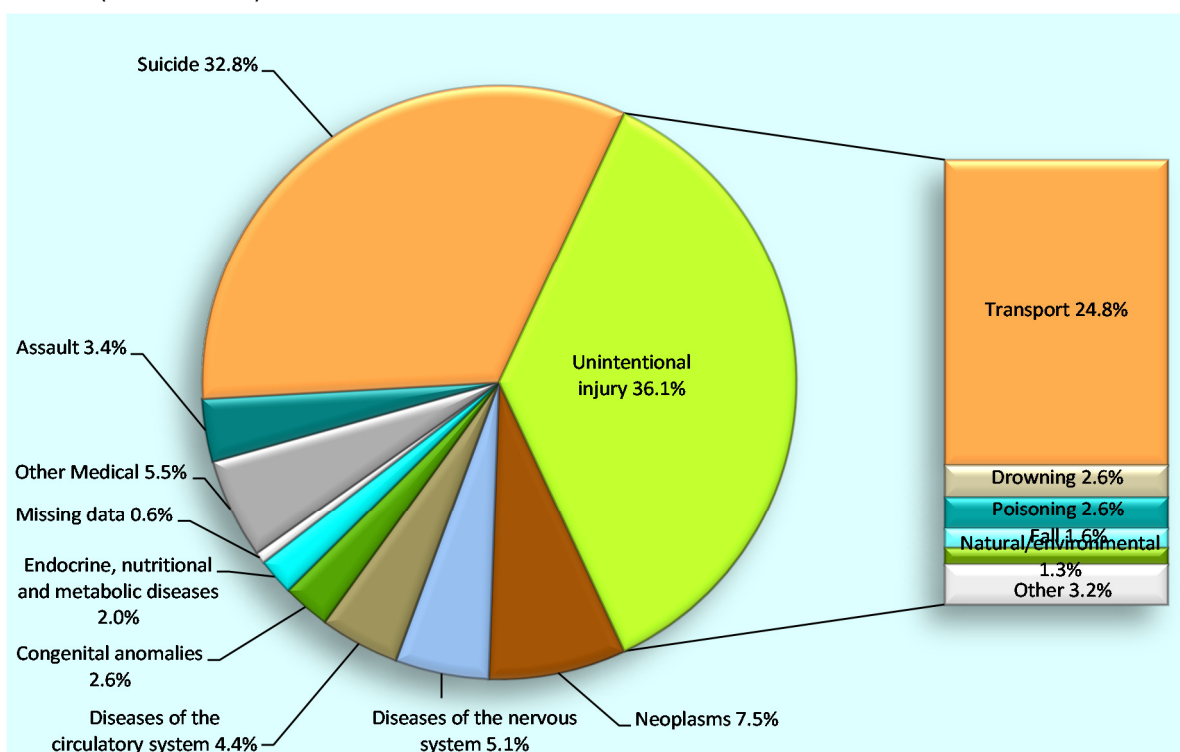


*Excludes 3 cases with no available deprivation data

Source: Numerator Mortality Review Database; Denominator NZ MRDG Estimated Resident Population 2009-2013

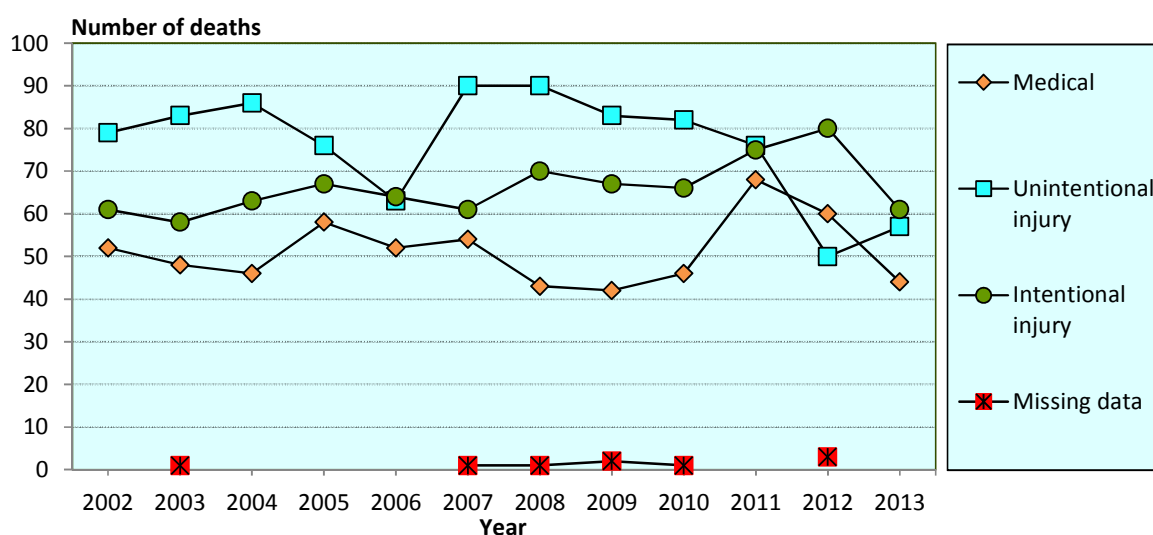
7. Young people aged 20–24 years

Figure 7.1 Mortality (%) in young people aged 20–24 years by cause of death, New Zealand 2009–2013 combined (n=963 deaths)



Source: Mortality Review Database

Figure 7.2 Mortality (number of deaths) in young people aged 20–24 years by cause of death and year, New Zealand 2002–2013 (n=2330 deaths)



Source: Mortality Review Database

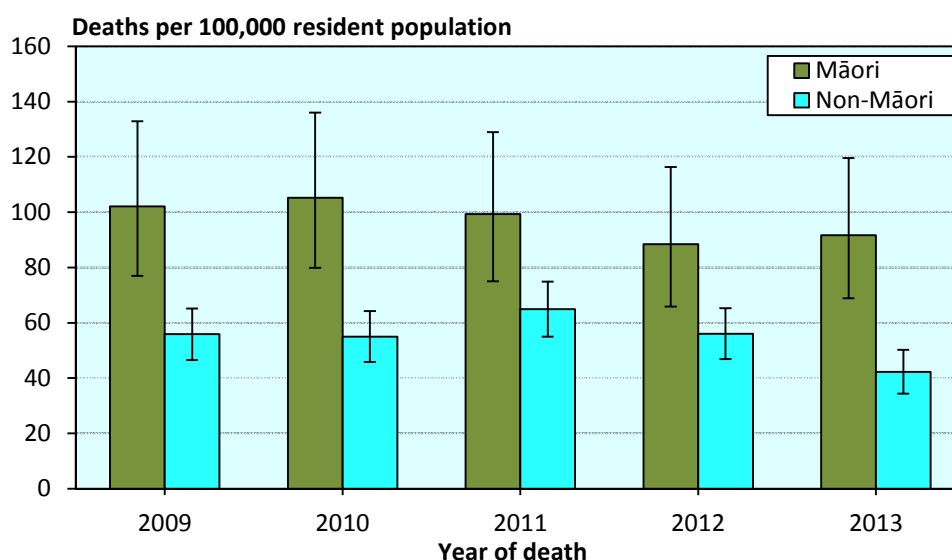
Table 7.1 Mortality (number of deaths and rates per 100,000 resident population) in young people aged 20–24 years by cause of death and year, New Zealand 2009–2013 (n=963 deaths)

Cause of death	2009	2010	2011	2012	2013	Total	%	Rate 2009-2013
Medical								
Infectious and parasitic disease	1	-	1	2	-	4	0.4	0.26
Neoplasms	8	16	20	16	12	72	7.5	4.67
Diseases of the blood and blood-forming organs and disorders of the immune system	1	1	-	-	1	3	0.3	0.19
Endocrine, nutritional and metabolic diseases	3	2	7	5	2	19	2.0	1.23
Mental and behavioural disorders	-	1	-	-	-	1	0.1	s
Diseases of the nervous system	6	8	13	13	9	49	5.1	3.18
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-
Diseases of the ear and mastoid process	-	-	-	-	-	-	-	-
Diseases of the circulatory system	10	10	9	8	5	42	4.4	2.73
Diseases of the respiratory system	5	3	4	2	1	15	1.6	0.97
Diseases of the digestive system	2	-	1	3	2	8	0.8	0.52
Diseases of the skin and subcutaneous tissue	-	-	1	-	-	1	0.1	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	5	0.5	0.32
Pregnancy, childbirth and the puerperium	-	-	1	2	2	5	0.5	0.32
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-
Congenital anomalies	6	4	6	4	5	25	2.6	1.62
Symptoms & abnormal findings not elsewhere classified	-	-	2	2	4	8	0.8	0.52
Total medical	42	46	68	60	44	260	27.0	16.88
Unintentional injury (includes undetermined intent and legal intervention/war)								
Cut/pierce	1	-	-	-	-	1	0.1	s
Drowning	4	6	5	4	6	25	2.6	1.62
Fall	4	2	4	2	3	15	1.6	0.97
Fire/hot object or substance	2	-	-	1	1	4	0.4	0.26
Firearm	-	-	1	-	1	2	0.2	s
Machinery	1	-	-	-	-	1	0.1	s
Transport	57	60	48	39	35	239	24.8	15.51
Natural/environmental	1	-	11	1	-	13	1.3	0.84
Overexertion	-	-	-	-	-	-	-	-
Poisoning	6	10	5	1	3	25	2.6	1.62
Struck by, against	1	1	-	1	4	7	0.7	0.45
Suffocation	3	-	1	1	2	7	0.7	0.45
Other specified, classifiable	3	3	1	-	1	8	0.8	0.52
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	83	82	76	50	57	348	36.1	22.59
Intentional injury								
Assault	9	4	6	9	5	33	3.4	2.14
Suicide	58	62	69	71	56	316	32.8	20.51
Total intentional injury	67	66	75	80	61	349	36.2	22.65
Missing data	2	1	-	3	-	6	0.6	0.39
Total	194	195	219	193	162	963	100.0	62.51

's' indicates rate not calculated due to small numbers

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 7.3 Mortality (rates per 100,000 resident population) in young people aged 20–24 years, Māori and non-Māori, New Zealand 2009–2013 (n=962 deaths*)



*Excludes 1 case with no available ethnicity data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

Figure 7.4 Mortality (rates per 100,000 resident population with 95% confidence intervals) in young people aged 20–24 years by NZ Deprivation Index Quintile, New Zealand 2009–2013 combined (n=959 deaths*)

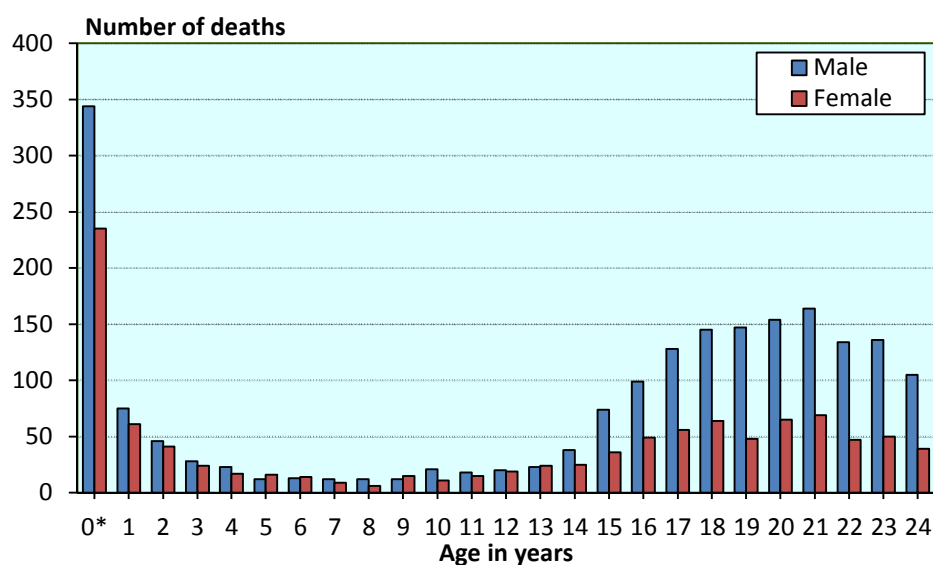


*Excludes 4 cases with no available deprivation data

Source: *Numerator* Mortality Review Database; *Denominator* NZ MRDG Estimated Resident Population 2009-2013

8. Additional Data

Figure 8.1 Mortality (number of deaths) in children and young people aged 28 days to 24 years by year of age and sex, New Zealand 2009—2013 combined (n=3038* deaths)



*Excludes 4 cases of indeterminate or unknown gender
Source: Mortality Review Database

Table 8.1 Mortality (number of deaths) in children and young people aged 28 days to 24 years by year of death and age group, New Zealand 1980–2013

Year	<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	1334
1981	310	160	77	97	316	327	1287
1982	323	130	82	75	287	345	1242
1983	353	111	79	92	279	381	1295
1984	367	120	74	84	274	323	1242
1985	320	113	85	95	307	326	1246
1986	330	135	65	97	312	351	1290
1987	326	112	70	95	324	372	1299
1988	349	117	68	77	298	367	1276
1989	336	111	67	70	335	362	1281
1990	255	120	56	62	299	375	1167
1991	238	98	63	67	239	324	1029
1992	213	102	68	74	245	331	1033
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	216	190	688
2004	152	57	37	53	193	195	687
2005	109	59	41	50	204	201	664
2006	150	60	32	43	207	179	671
2007	142	81	38	53	177	206	697
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	28	152	162	515

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

Source: 1980-2001: Statistics New Zealand. 2002-2013: Mortality Review Database

Table 8.2 Mortality (number of deaths) in children and young people aged 28 days to 24 years, by cause of death and sex, 2009—2013 combined (n=3038 deaths*)

	Male	Female	Total
Medical			
Infectious and parasitic disease	39	28	67
Neoplasms	134	108	242
Diseases of the blood and blood-forming organs and disorders of the immune system	6	6	12
Endocrine, nutritional and metabolic diseases	40	30	70
Mental and behavioural disorders	1	3	4
Diseases of the nervous system	106	73	179
Diseases of the eye and adnexa	-	-	-
Diseases of the ear and mastoid process	-	-	-
Diseases of the circulatory system	70	44	114
Diseases of the respiratory system	70	54	124
Diseases of the digestive system	10	12	22
Diseases of the skin and subcutaneous tissue	5	-	5
Diseases of the musculoskeletal system and connective tissue	3	9	12
Diseases of the genitourinary system	7	3	10
Pregnancy, childbirth and the puerperium	-	5	5
Certain conditions originating in the perinatal period	42	42	84
Congenital anomalies	109	86	195
Symptoms & abnormal findings not elsewhere classified	17	17	34
Total medical	659	520	1179
Percentage by sex	55.9	44.1	100.0
Unintentional injury (undetermined intent, legal intervention war)			
Cut/pierce	3	-	3
Drowning	72	20	92
Fall	27	6	33
Fire/hot object or substance	6	8	14
Firearm	5	-	5
Machinery	5	-	5
Transport	424	148	572
Natural/environmental	16	12	28
Overexertion	-	-	-
Poisoning	37	16	53
Struck by, against	14	4	18
Suffocation	22	8	30
Other specified, classifiable	12	3	15
Other specified, not elsewhere classified	4	-	4
Unspecified	-	2	2
Complications of medical and surgical care	-	2	2
Sequelae of surgical and medical care as external cause	1	-	1
Total unintentional injury	648	229	877
Percentage by sex	73.9	26.1	100.0
Intentional injury			
Assault	45	32	77
Suicide	464	181	645
Total intentional injury	509	213	722
Percentage by sex	70.5	29.5	100.0
SUDI/SUD			
SUDI (28 days to <1 year)	145	83	228
SUD (1-2 years)	6	5	11
Total SUDI/SUD	151	88	239
Percentage by sex	63.2	36.8	100.0
Missing data	16	5	21
Total	1983	1055	3038
Percentage by sex	65.3	34.7	100.0

* Excludes 4 cases of indeterminate or unknown gender

Source: Mortality Review Database

Overseas residents

Table 8.3 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, 2009–2013 combined (n=67 deaths)

Category	<1 year*	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total	%
Medical	2	1	-	2	2	4	11	16.4
Unintentional injury	-	-	-	1	18	34	53	79.1
Intentional injury	2	-	-	-	-	-	2	3.0
SUDI/SUD	1	-	-	-	-	-	1	1.5
Missing data	-	-	-	-	-	-	0	0.0
Total	5	1	0	3	20	38	67	100.0

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

Source: Mortality Review Database

Table 8.4 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, 2009–2013 (n=67 deaths)

Country	Deaths per year					Total deaths	
	2009	2010	2011	2012	2013	Number	%
Australia	5	3	2	-	2	12	17.9
Canada	-	-	1	-	1	2	3.0
China	-	1	-	-	-	1	1.5
Cook Islands	-	-	1	-	-	1	1.5
England	1	1	-	-	-	2	3.0
Fiji	-	-	1	-	-	1	1.5
France	1	-	1	1	-	3	4.5
French Polynesia	-	2	-	-	-	2	3.0
Germany	-	2	1	1	1	5	7.5
India	-	-	1	1	-	2	3.0
Ireland	-	1	-	-	-	1	1.5
Israel	1	-	3	-	-	4	6.0
Italy	-	-	-	1	-	1	1.5
Japan	-	-	12	-	-	12	17.9
Kazakhstan	-	-	-	-	1	1	1.5
Mexico	-	-	-	1	-	1	1.5
Samoa	-	3	-	1	1	5	7.5
South Korea	1	1	2	-	-	4	6.0
Tonga	-	1	-	-	-	1	1.5
Uruguay	-	1	-	-	-	1	1.5
USA	1	1	-	2	-	4	6.0
Vietnam	-	1	-	-	-	1	1.5
Total	10	18	25	8	6	67	100.0

Source: Mortality Review Database

Mortality by District Health Board of residence

Table 8.5 Mortality (number of deaths and age-specific mortality rates) by DHB of residence and age group, New Zealand 2009—2013 (n=3042 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	34	2.95	20	42.43	7	11.65	13	21.03	55	98.90	33	82.37	162	5.3	58.64	21	141	13.0
Waitemata	35	0.89	33	21.76	11	6.01	17	9.26	54	27.84	91	48.94	241	7.9	25.71	71	170	29.5
Auckland	45	1.38	24	20.96	10	7.53	9	6.95	61	39.58	68	31.68	217	7.1	27.88	36	181	16.6
Counties Manukau	113	2.62	53	33.41	19	9.75	32	16.46	98	50.20	126	70.78	441	14.5	45.73	123	318	27.9
Waikato	69	2.52	25	22.88	13	9.69	29	21.51	93	67.91	79	60.41	308	10.1	45.74	34	274	11.0
Lakes	19	2.42	10	31.88	2	s	10	25.18	37	101.59	24	79.73	102	3.4	55.21	18	84	17.6
Bay of Plenty	30	2.05	18	30.89	7	9.28	16	20.60	57	81.35	64	117.52	192	6.3	54.76	42	150	21.9
Tairāwhiti	8	2.14	7	45.35	2	s	3	15.18	16	90.84	12	86.24	48	1.6	53.19	10	38	20.8
Hawke's Bay	27	2.35	15	33.00	4	7.00	12	20.25	38	68.70	36	85.71	132	4.3	48.77	18	114	13.6
Taranaki	15	1.91	8	25.06	4	10.21	3	7.49	29	77.17	18	57.68	77	2.5	41.00	16	61	20.8
Whanganui	16	3.65	6	34.41	3	13.90	8	35.02	12	54.19	12	68.60	57	1.9	53.84	13	44	22.8
MidCentral	15	1.33	14	30.88	5	8.77	10	17.18	28	43.90	55	87.90	127	4.2	42.59	25	102	19.7
Capital & Coast	30	1.55	15	19.88	8	8.93	5	5.67	41	39.94	48	37.90	147	4.8	29.29	20	127	13.6
Hutt Valley	29	2.80	9	21.88	3	5.97	4	7.93	29	57.64	21	46.89	95	3.1	38.42	23	72	24.2
Wairarapa	4	1.51	4	37.01	0	-	3	20.90	12	87.87	11	111.59	34	1.1	51.94	10	24	29.4
Nelson																		
Marlborough	10	1.23	4	11.69	3	6.68	1	s	22	50.53	22	68.63	62	2.0	29.62	16	46	25.8
West Coast	0	-	2	s	4	38.65	2	s	15	151.52	13	156.36	36	1.2	72.08	5	31	13.9
Canterbury	48	1.53	26	20.46	7	4.48	19	12.01	72	41.94	127	69.67	299	9.8	36.17	18	281	6.0
South Canterbury	6	1.92	4	29.49	2	s	4	21.19	25	135.55	16	118.27	57	1.9	67.14	7	50	12.3
Otago	18	1.74	9	20.80	6	11.18	6	10.62	28	35.45	67	77.91	134	4.4	40.76	12	122	9.0
Southland	10	1.25	9	28.62	2	s	8	21.23	25	69.85	20	56.19	74	2.4	39.64	9	65	12.2
Total	581	1.87	315	26.00	122	8.20	214	14.23	847	54.15	963	62.50	3042	100.0	39.92	547	2495	18.0

's' indicates rate not calculated due to small numbers

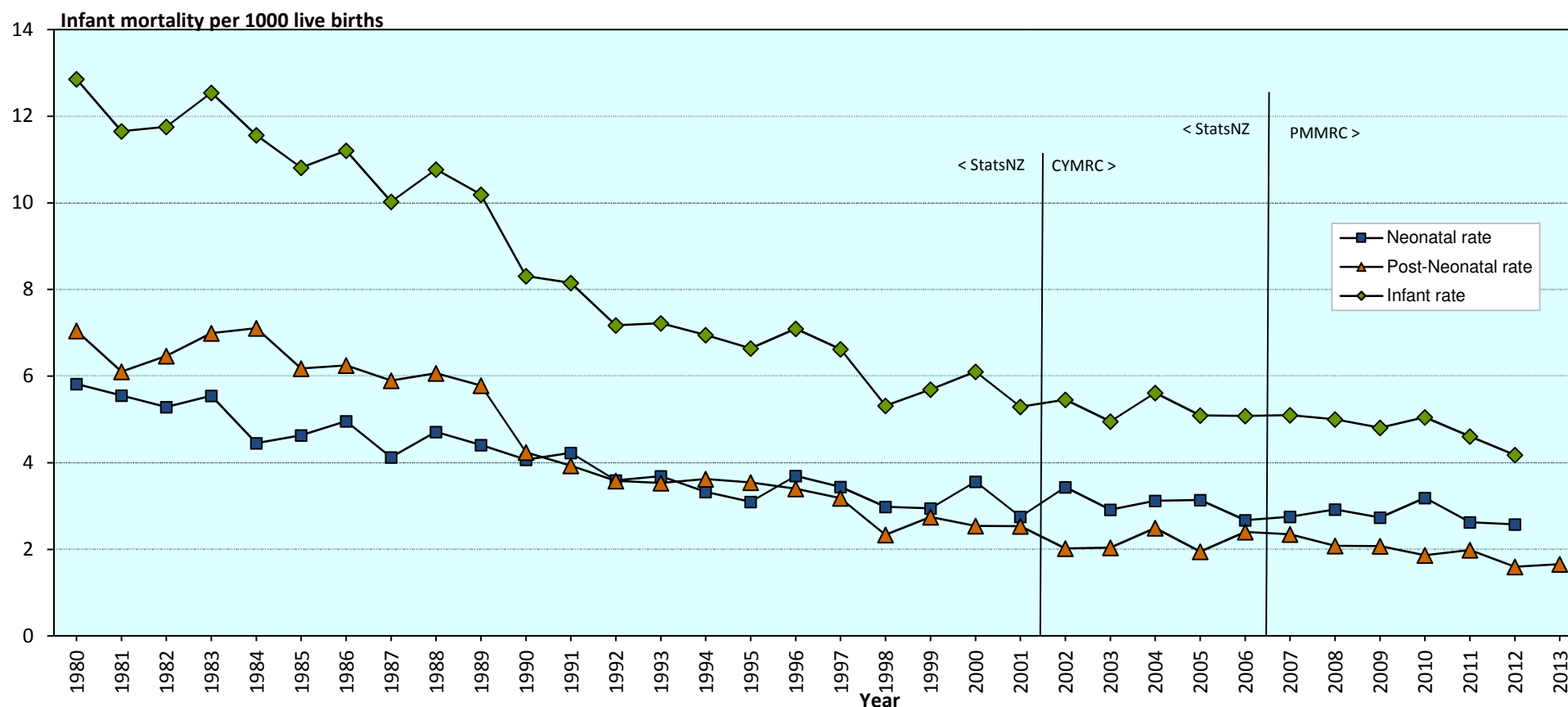
* rate per 1000 live births

‡ rate per 100,000 resident population

Source: *Numerator* Mortality Review Database; *Denominator* MoH Live Births 2009—2013 for 28 days to less than one year, NZ MRDG Estimated Resident Population 2009-2013 for ages 1-24 years.

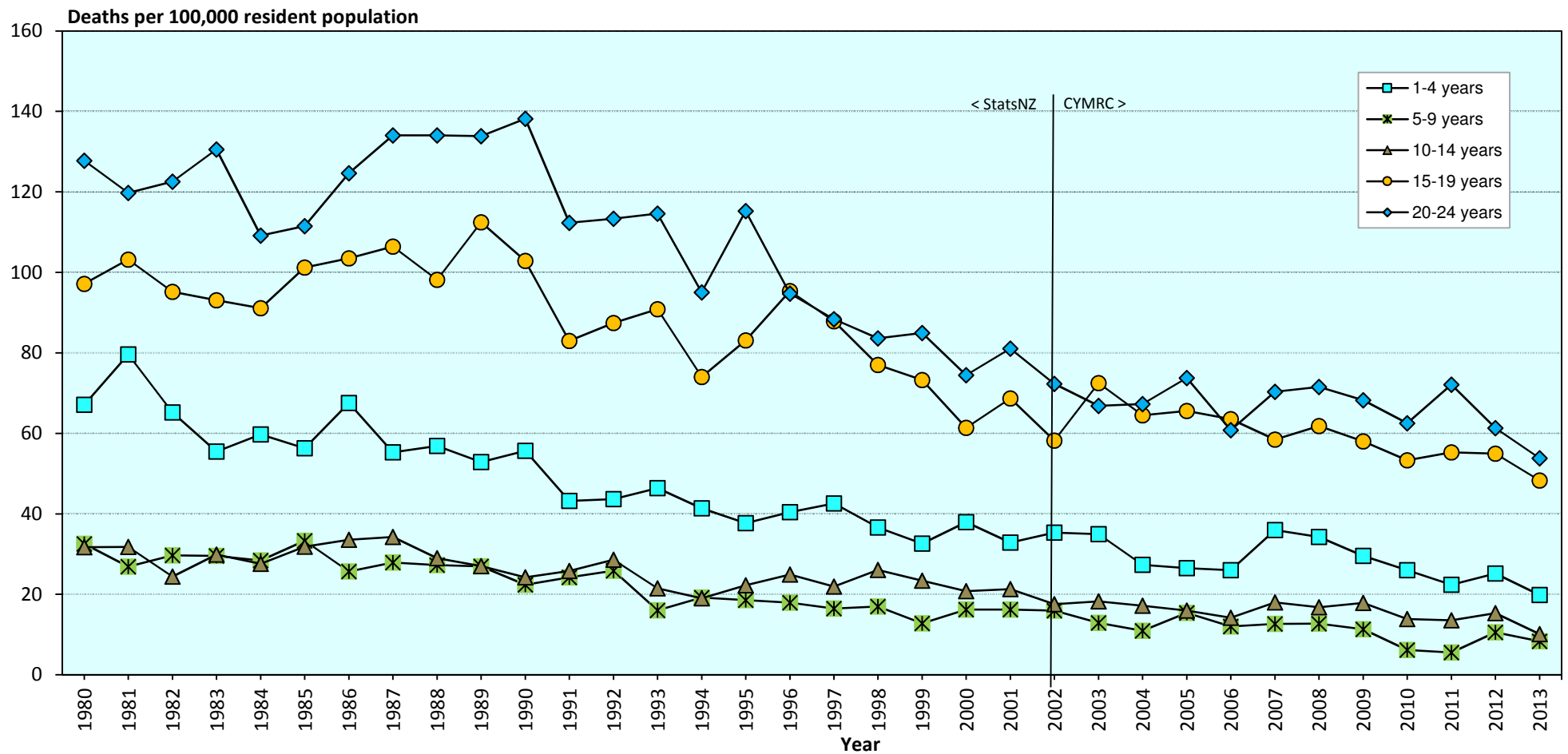
9. Appendix

Figure A.1 Neonatal, post-neonatal and infant mortality (rates per 1000 live births) in infants 0 days to less than 1 year of age, New Zealand 1980–2013



Source: *Numerator* Neonatal deaths (0-27 days): 1980-2006: Statistics New Zealand. 2007-2012: Mortality Review Database (PMMRC data); Note: 2013 data for neonatal deaths not yet available.
 Post-neonatal deaths (28 days to less than one year): 1980-2001: Statistics New Zealand. 2002-2013: 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 Statistics New Zealand live births 1980-2013.

Figure A.2 Mortality (age-specific rates per 100,000 population) by age group, 1-24 years, New Zealand 1980–2013



Source: Numerator 1980-2001: Statistics New Zealand. 2002-2013: Mortality Review Database; Denominator Statistics New Zealand estimated population 1980-2013.