

# **New Zealand Child and Youth Mortality Review Committee**

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## **National data overview**

NZ MORTALITY REVIEW DATA GROUP

2010

# Methodology

## Overview

The Child & Youth Mortality Review process includes national data collection, review of individual deaths in the DHB region where the person resided and a national review of collated information. Precise processes have evolved over the past seven years. Many people and organisations are involved in providing information, reviewing deaths, collating information, analysing and reviewing collated data. The various stages that have contributed to the formation of this report include:

1. National organisations and some individuals provide information directly to the Mortality Review Data Group.
2. The information held centrally is available for use at local review meetings via appointed DHB co-ordinators.
3. After each death is reviewed, these DHB coordinators add further information to the national database.
4. The Mortality Review Data Group collate and analyse information held in the national collection for the CYMRC.
5. The CYMRC reviews the collated case information as well as locally identified issues and recommendations. 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.
6. Subject experts use collated case information to prepare sections of the report and the CYMRC advisors review recommendations.
7. Finally the CYMRC considers all available information and feedback in order to make recommendations to the Minister of Health, health professionals and members of the public in the Committee's annual report.

## 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. Water Safety New Zealand
5. Coroners
6. Coronial Services (Ministry of Justice)
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 relevant 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 all deaths 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

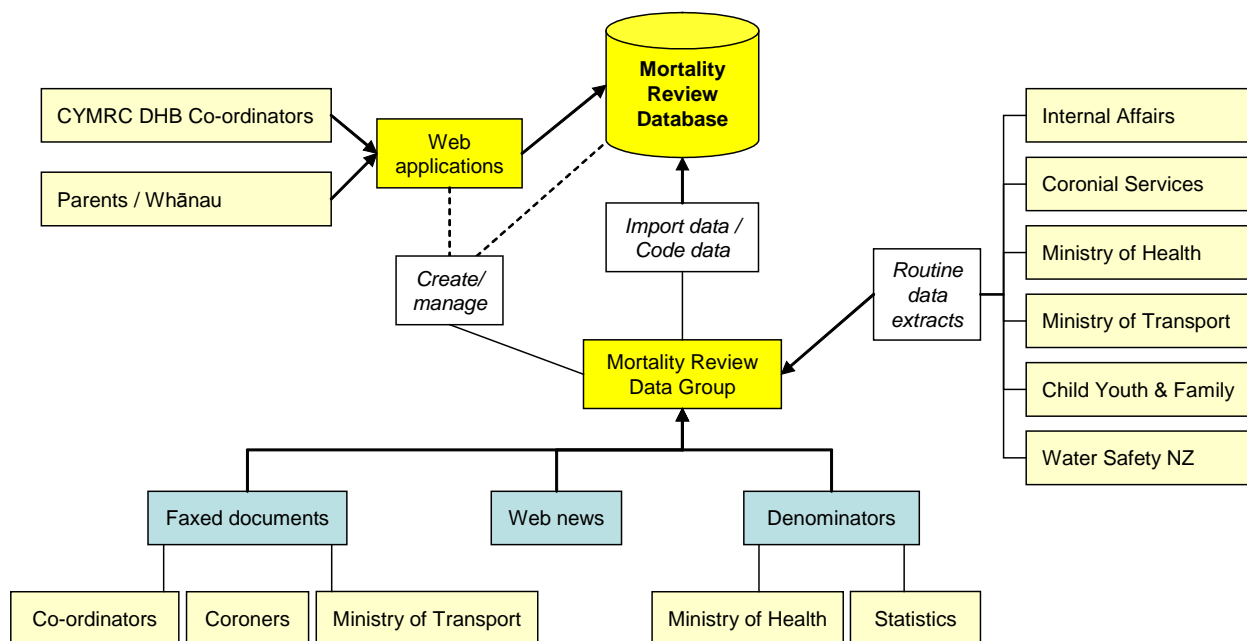


Figure M.1 illustrates these sources of information and some of the processing. The Mortality Review Data Group maintains two websites which allow individuals to directly contribute information. A link on the public website ([www.cymrc.health.govt.nz](http://www.cymrc.health.govt.nz)) allows families to provide feedback on health systems. The DHB 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 (pre-2010), electronic format coronial case information (post-2010), copies of news reports 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 information received from the various sources that relates to the same case. To facilitate both the local review and collation processes, the data is coded across a range of variables. These include age group, ethnicity, underlying cause of death, DHB of usual residence, place of death, and region that should review the death. Data is regularly cleaned to eliminate duplicate records, follow up missing person details, clarify DHB of residence (where this is inconsistent with the residential address), and rectify other identified inconsistencies.

When interpreting the CYMRC data it must be remembered that it is derived from a database that is continually being updated. The strength of this approach is that the data pool for each death can continue to grow as more data comes in; all information is retained and available for local mortality review. For the purposes of generating data for ministerial reports, often data sources are prioritised with respect to their importance in coding specific fields, even where this data may change from year to year as new data sources become available. For example, the

initial source of a death may be a news item. If new information received relating to the death changes, the classification of the cause of death, then the subsequent report, may state the death as owing to a different cause than in previous sources. This means that consecutive annual reports may have slightly different numbers in any one category, but the most recent reports should be the most accurate.

## **The local review process**

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. 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 (LCYMRG), has appointed a chair and a 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 any 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. These may be recorded against a timeline, or charted using a white board, computer and data projector, or recorded on paper.

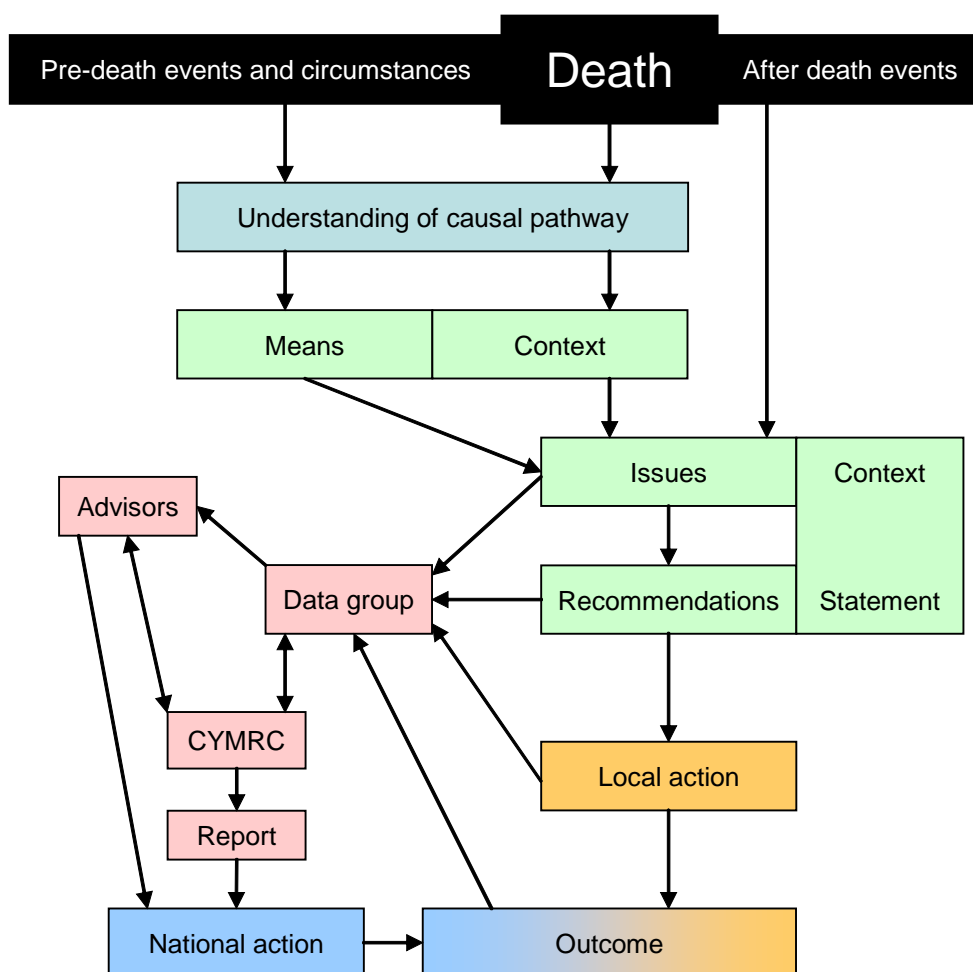
Information shared in the context of the review meeting must remain confidential to the process. Issues identified in the meeting that require urgent action from participating agencies, such as aspects of illegal activity or the safety of others, must be dealt with outside the review process using the 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 CYMRC.

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 small 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. A challenging process is to distil this detailed contextual information into recommendations that can work nationally.

Figure M.2: Local review group conceptualisation of causal pathway from death event



As seen in Figure M.2, for every death there is a *context* in which it occurs and a *means* of death. The context of a death describes the cluster of personal and environmental factors (eg, risk factors or circumstances) that together contribute to, or fail to prevent, a death. The means of death describes the final event or disease state that led to a death. The same context may lead to death by a variety of means (eg, unsupervised toddlers or youth risk-taking).

A *causal pathway* is determined by understanding how the context and means of death came together with lethal consequences. Along the causal pathway it is possible to identify points where something could have happened differently. These are referred to as 'issues'. Issues can also arise with regard to actions that occurred after a death.

When the issues are considered at the local or national level, it is often possible to identify ways to interrupt causal pathways or improve after-death actions. Such consideration leads to the generation of *recommendations*, which are expressed in two parts: a context statement and a proposed action. Placing the recommendation into context allows it to be shared with others in a depersonalised way for wider consideration.

Recommendations can result in local action as members of the LCYMRG take the learning from the review back to their work and alter practices. Recommendations are collected on the database for thematic analysis to influence work of the committee and their advisors, thus helping in the understanding of the quantitative data in the database and leading to recommendations in the Annual Report. It is planned that the database will maintain a record of what actions occur as a result of this work and, where possible, what the final outcome is at a community level.

## Analysis and coding

### Mortality data

The data for this report was extracted from the Mortality Review Database on 1 October 2010. The child and youth deaths presented in this report all occurred between 1 January 2004 and 31 December 2009. In all Tables, the *year of death* refers to the calendar year of the actual death (not the year of death registration).

### Cause of death

In response to requests for more detailed ICD-10 coding, the Ministry of Health extract was altered in 2008 to include their mortality coding. Cause of death was assigned using the Main Underlying Cause of Death data from the National Mortality Collection, Ministry of Health. This is coded in ICD-10-AM. Where there was no ICD-10-AM code assigned, the cause of death was determined by the information gained through the process of local

review of the case. In addition, for deaths in infants less than one year of age, 'SUDI' was assigned as the cause of death where any of the following ICD-10-AM codes were listed as the main 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) and W78 (inhalation of gastric contents). If the case was greater than one year of age these deaths were classified as Sudden Unexpected Death (SUD).

## Ethnicity

Ethnicity data is available from Births, Deaths and Marriages, Ministry of Health, local sources and from coronial records. The Mortality Review Data Group prioritises both data sources and specific ethnicities. Further details are available from the Mortality Review Data Group. The Tables in this report prioritise ethnicities in the following order: Māori, Pacific, Asian and Other (including New Zealand European). Ethnicity comparisons shown in the current report are between Māori and non-Māori.

## Statistics

The frequencies and discrete statistics were computed from the database by the Mortality Review Data Group. Percentages have been displayed with one decimal place. In some cases, due to rounding, the percentages do not sum exactly to 100%.

Where presented, 95% confidence intervals for rates have been calculated using the Fay's and Feuer's Method [1] according to CDC's National Vital Statistics Report [2]. These confidence intervals should be used when comparing two rates and, when there is no overlap, this indicates that there is a statistically significant difference.

The denominator for mortality rate calculations is taken from the estimated resident population (for 30 June in the year of death), as published by Statistics New Zealand. This is based on a projection on the count, including: all residents in the most recent census and residents who were temporarily overseas at the time of the most recent census, with an adjustment up for residents who may have been missed by the census or an adjustment down for anyone who may have been counted twice. Rates are per 100,000 age specific population for most age groups, except for those <1 year where rates are shown per 1000 live births.

The deaths of non-New Zealand residents are excluded from the main sections of the report because the denominator in rate calculations (estimated resident population from Statistics New Zealand) excludes visitors from overseas.

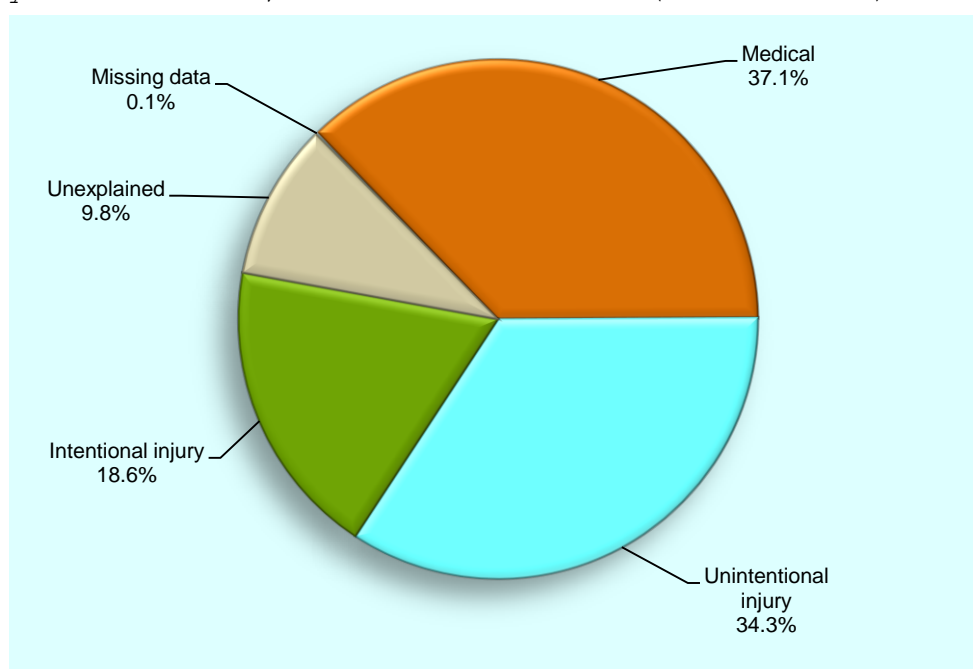


1. Fay, M., and Feuer, E., Confidence intervals for directly standardized rates: a method based on the gamma distribution. 1997, *Statistics in Medicine* 16: 791-801.
2. Centers for Disease Control and Prevention, National Vital Statistics Report. Volume 57, Number 14, pp. 128 - 134.

# New Zealand National Data Overview

The main causes of death for children and young people are shown in Figure 1.1 with how the main and detailed causes are distributed by age in Tables 1.1 and 2.2. Deaths by year and age group are shown in Table 1.3 and Figure 1.2. Deaths by main cause of death by year are shown in Table 1.4 and Figure 1.3 while the long term trends in child and youth mortality are shown in Figures 1.4 (child and youth age groups) and Figure 1.5 (infant mortality). Note that the infant mortality rates are per 1000 live births and are significantly higher than the other age groups.

Figure 1.1: Mortality (%) in children and young people ages 28 days to 24 years by cause of death, New Zealand 2004-2009 (n=4088 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 2004-2009 combined (n=4088 deaths)

Category	<1 year*	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	Total	Percentage (%)
Medical	446	230	122	158	271	291	1518	37.1
Unintentional injury	20	138	89	110	554	493	1404	34.3
Intentional injury	15	18	5	29	318	376	761	18.6
Unexplained	335	27	-	5	16	16	399	9.8
Missing data	1	-	-	-	1	4	6	0.1
<b>Total</b>	<b>817</b>	<b>413</b>	<b>216</b>	<b>302</b>	<b>1160</b>	<b>1180</b>	<b>4088</b>	<b>100.0</b>

\* This category represents children 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 age group and cause, New Zealand 2004-2009 combined (n=4088 deaths)

	<1 year*	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	44	20	4	3	2	8	81	2.0	0.90
Neoplasms	14	37	42	57	92	94	336	8.2	3.74
Diseases of the blood and blood-forming organs and disorders of immune system	6	5	1	1	1	1	15	0.4	0.17
Endocrine, nutritional and metabolic diseases	12	17	4	10	23	26	92	2.3	1.02
Mental and behavioural disorders	-	-	-	1	2	3	6	0.1	0.07
Diseases of nervous system	30	40	35	30	53	47	235	5.7	2.62
Diseases of the eye and adnexa	-	1	-	-	-	1	2	0.0	0.02
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	16	20	7	13	38	44	138	3.4	1.54
Diseases of respiratory system	81	23	9	8	13	15	149	3.6	1.66
Diseases of digestive system	4	4	1	3	2	4	18	0.4	0.20
Diseases of skin and subcutaneous tissue	-	-	-	-	1	1	2	0.0	0.02
Diseases of musculoskeletal system and connective tissue	2	2	2	1	3	9	19	0.5	0.21
Diseases of genitourinary system	3	-	-	-	1	3	7	0.2	0.08
Pregnancy, childbirth and the puerperium	-	-	-	-	1	3	4	0.1	0.04
Certain conditions originating in the perinatal period	91	1	1	-	-	1	94	2.3	1.05
Congenital anomalies	143	60	16	31	39	31	320	7.8	3.56
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>446</b>	<b>230</b>	<b>122</b>	<b>158</b>	<b>271</b>	<b>291</b>	<b>1518</b>	<b>37.1</b>	<b>16.90</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	1	1	-	1	1	-	4	0.1	0.04
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	-	2	4	6	0.1	0.07
Drowning	5	33	10	3	23	29	103	2.5	1.15
Fall	-	9	2	4	22	28	65	1.6	0.72
Fire/burn/heat/smoke	1	10	6	4	5	9	35	0.9	0.39
Firearm	-	-	-	3	5	1	9	0.2	0.10
Machinery	-	2	-	1	-	7	10	0.2	0.11
Transport	10	62	58	62	436	358	986	24.1	10.97
Natural/environmental/animal	-	1	1	5	9	2	18	0.4	0.20
Overexertion/travel/privation	-	-	1	-	1	1	3	0.1	0.03
Poisoning	-	-	1	8	27	38	74	1.8	0.82
Struck by, against	1	5	4	-	3	3	16	0.4	0.18
Suffocation	2	15	5	18	18	10	68	1.7	0.76
Electrocution	-	-	1	1	2	3	7	0.2	0.08
<b>Total unintentional</b>	<b>20</b>	<b>138</b>	<b>89</b>	<b>110</b>	<b>554</b>	<b>493</b>	<b>1404</b>	<b>34.3</b>	<b>15.63</b>
<b>Intentional injury</b>									
Assault	15	18	5	6	32	30	106	2.6	1.18
Suicide	-	-	-	23	286	346	655	16.0	7.29
<b>Total intentional</b>	<b>15</b>	<b>18</b>	<b>5</b>	<b>29</b>	<b>318</b>	<b>376</b>	<b>761</b>	<b>18.6</b>	<b>8.47</b>
<b>Unexplained</b>									
SUDI	334	-	-	-	-	-	334	8.2	3.72
SUD	-	24	-	5	15	13	57	1.4	0.63
Other	1	3	-	-	1	3	8	0.2	0.09
<b>Total unexplained</b>	<b>335</b>	<b>27</b>	<b>-</b>	<b>5</b>	<b>16</b>	<b>16</b>	<b>399</b>	<b>9.8</b>	<b>4.44</b>
MISSING DATA	1	-	-	-	1	4	6	0.1	0.07
<b>Total</b>	<b>817</b>	<b>413</b>	<b>216</b>	<b>302</b>	<b>1160</b>	<b>1180</b>	<b>4088</b>	<b>100.0</b>	<b>45.50</b>

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

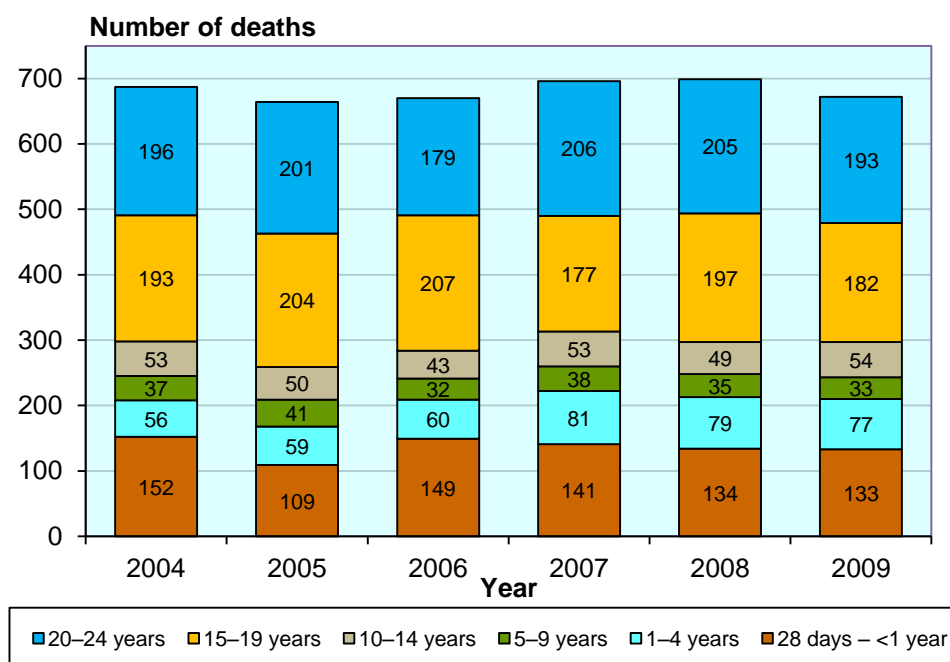
Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

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 2004–2009 (n=4088 deaths)

Category	2004	2005	2006	2007	2008	2009	Total	Percentage (%)
28 days - <1 year	152	109	149	141	133	133	817	20.0
1-4 years	56	59	60	81	80	77	413	10.1
5-9 years	37	41	32	38	35	33	216	5.3
10-14 years	53	50	43	53	49	54	302	7.4
15-19 years	193	204	207	177	197	182	1160	28.4
20-24 years	196	201	179	206	205	193	1180	28.9
<b>Total</b>	<b>687</b>	<b>664</b>	<b>670</b>	<b>696</b>	<b>699</b>	<b>672</b>	<b>4088</b>	<b>100.0</b>

Source: Mortality Review Database

Figure 1.2: Mortality (number of deaths) in children and young people aged 28 days to 24 years and 364 days by age group and year of death, New Zealand 2004–2009 (n=4088 deaths)



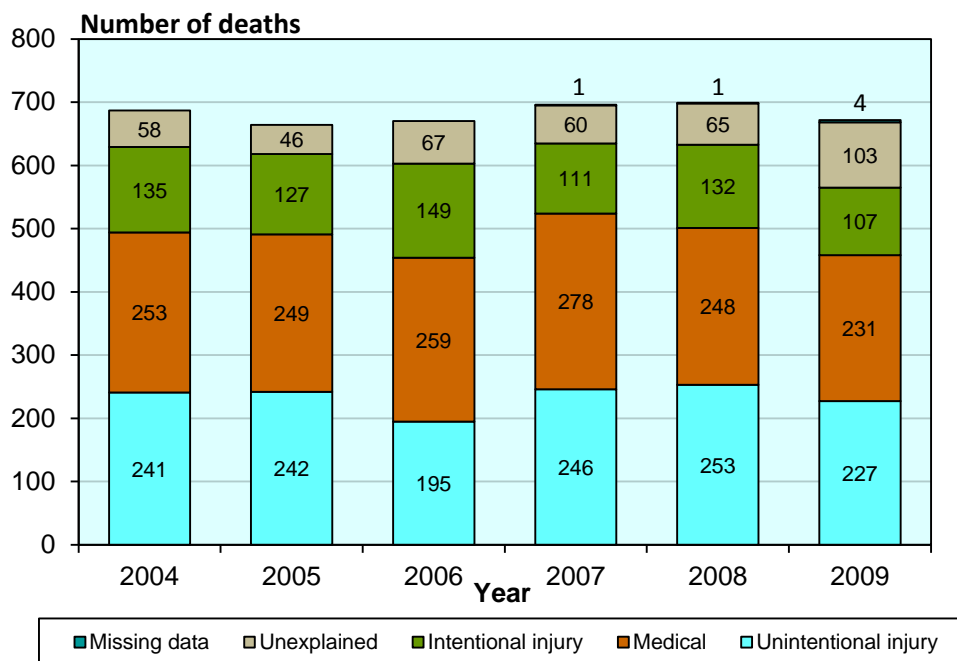
Source: Mortality Review Database

Table 1.4: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause and year of death, New Zealand 2004-2009 (n=4088 deaths)

Category	2004	2005	2006	2007	2008	2009	Total	Percentage (%)
<b>Medical</b>	253	249	259	278	248	231	1518	37.1
<b>Unintentional injury</b>	241	242	195	246	253	227	1404	34.3
<b>Intentional injury</b>	135	127	149	111	132	107	761	18.6
<b>Unexplained</b>	58	46	67	60	65	103	399	9.8
<b>Missing data</b>	-	-	-	1	1	4	6	0.1
<b>Total</b>	<b>687</b>	<b>664</b>	<b>670</b>	<b>696</b>	<b>699</b>	<b>672</b>	<b>4088</b>	<b>100.0</b>

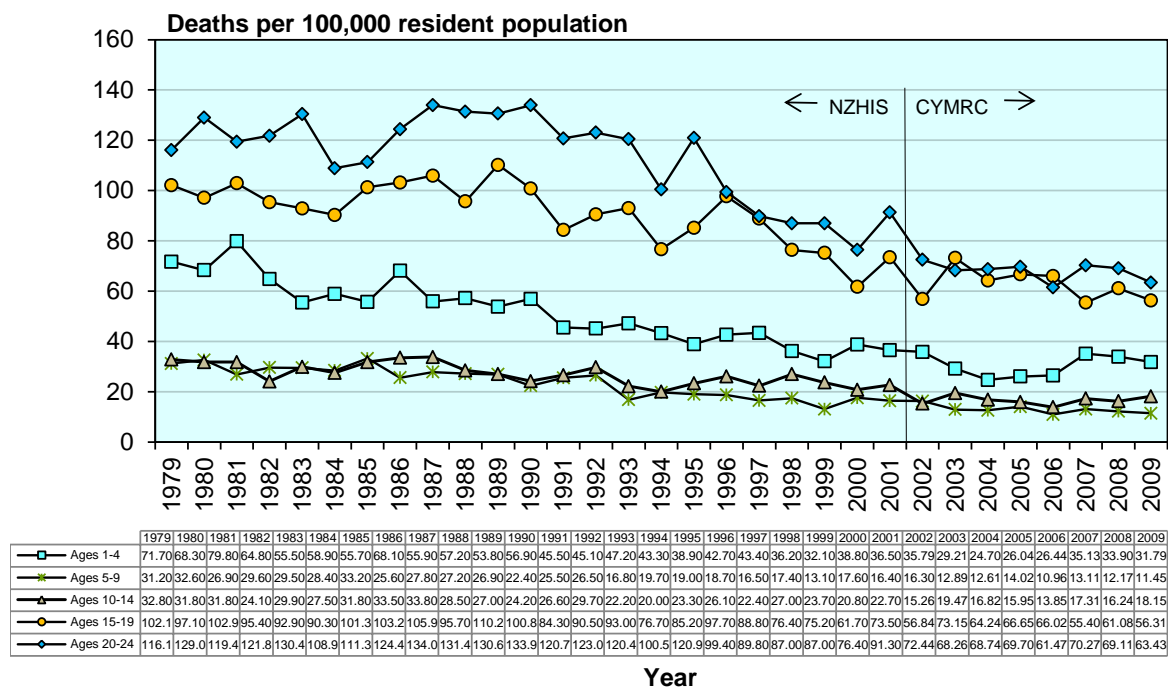
Source: Mortality Review Database

Figure 1.3: Mortality (number of deaths) in children and young people aged 28 days to 24 years by cause and year of death, New Zealand 2004-2009 (n=4088 deaths)



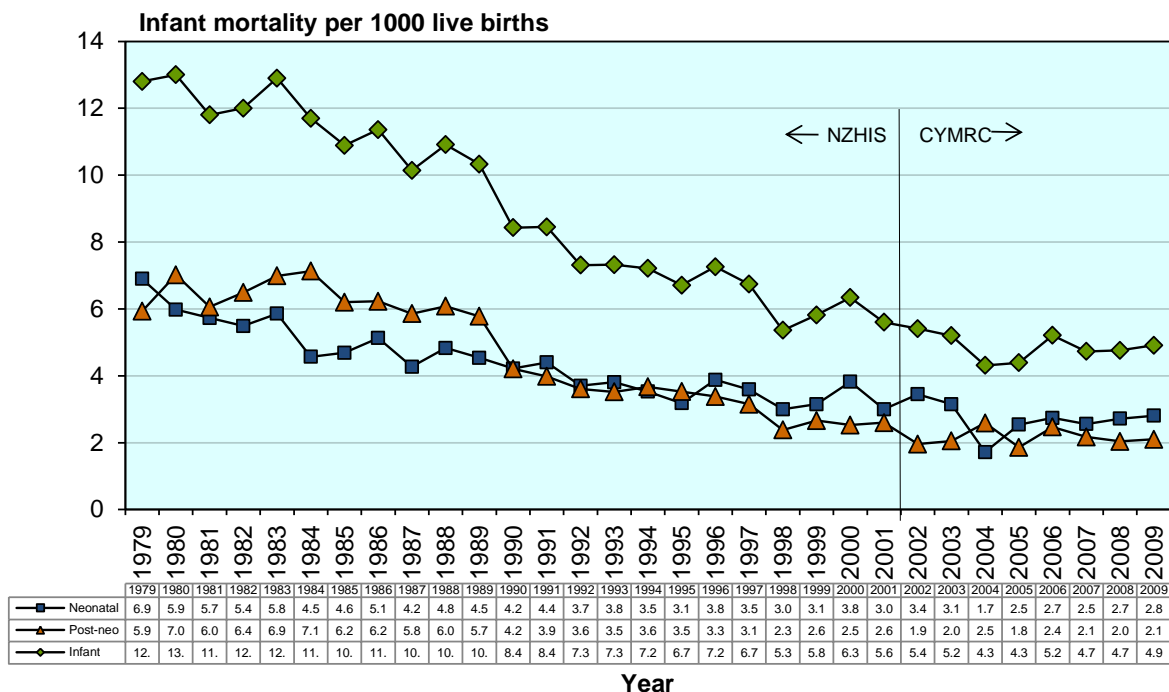
Source: Mortality Review Database

Figure 1.4: Mortality (age-specific rates per 100,000 resident population) by age group (excluding post-neonatal mortality), New Zealand 1979-2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZ Estimated Resident Population

Figure 1.5: Infant, neonatal and post-neonatal mortality (age specific rates per 1000 live births) in children 0\* days to 1 year of age, New Zealand 1979-2009



\* Neonatal rates (for deaths 0 days - 27 days) for 2002-2009 taken from PMMRC reporting extracts; pre-2002 neonatal rates from NZHIS

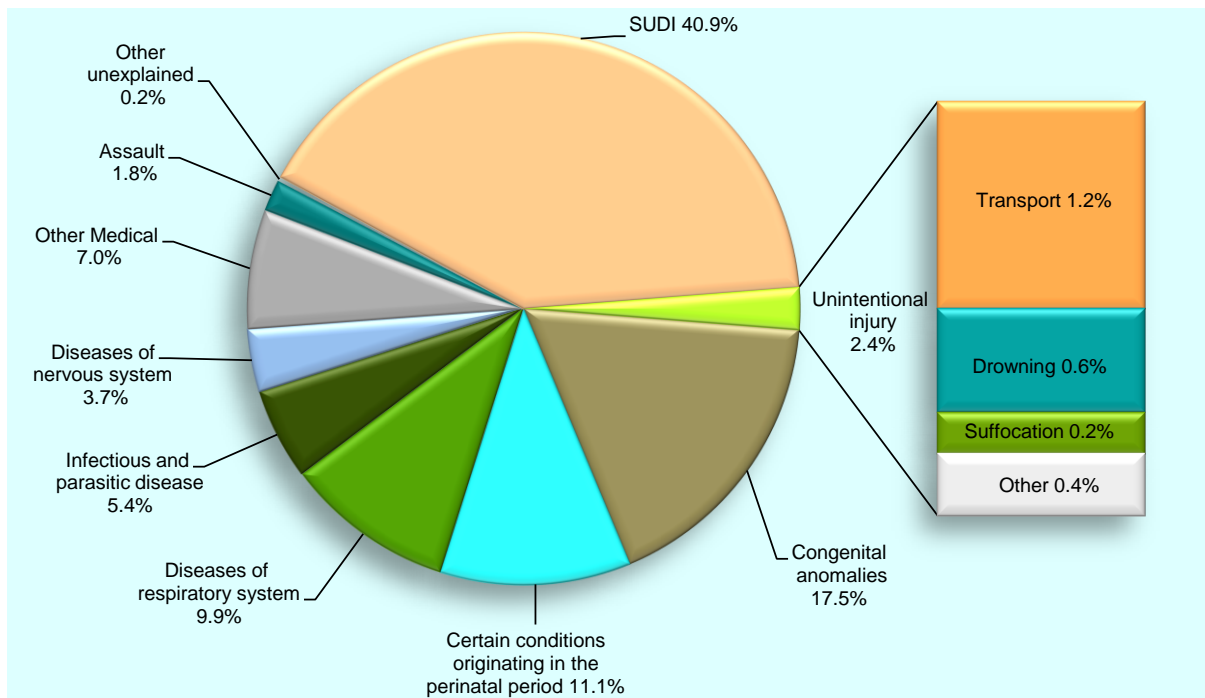
Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZHIS Live Births

In the following age-group sections, main causes of death (Pie Chart and Table) are shown, followed by long-term trends in the rates of death in the target age group, followed by a description of rates by year for Māori compared with all other ethnicities.

# Children aged 28 days – less than 1 year

The main causes of death in the post-neonatal period (28 days to less than 1 year) are shown in Figure 2.1 and Table 2.1. In these analyses, SUDI refers to unexplained sudden infant death (ICD code R95) and includes accidental suffocation and strangulation in bed (ICD code W75). The long-term trend over time of infant mortality, as well as its two subdivisions – neonatal (first 27 days of life) and post-neonatal (1–12 months of life) mortality is shown in Figure 2.2. The sudden decrease in post-neonatal mortality that occurred in 1990 was in the year following the national “back to sleep” campaign. The disparity in death rate between Māori and non-Māori over the last 6 years is shown in Figure 2.3.

Figure 2.1: Mortality (%) in children and young people ages 28 days to less than 1 year by cause of death, New Zealand 2004–2009 (n=817 deaths)



Source: Mortality Review Database

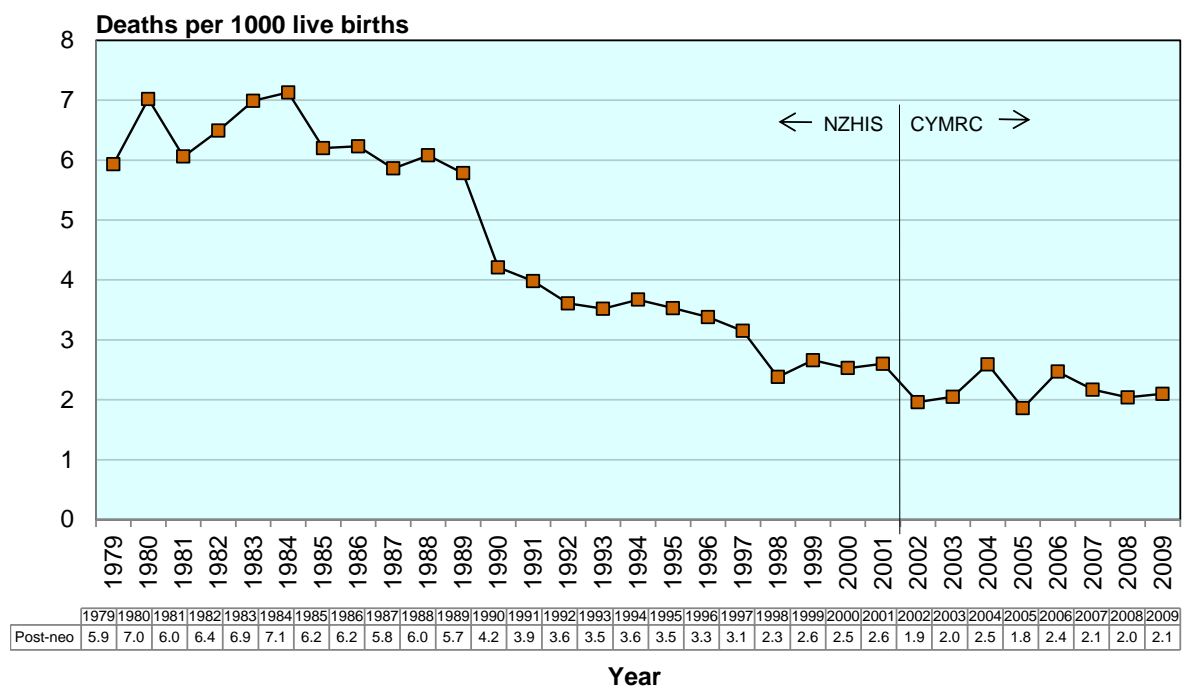
Table 2.1: Post-neonatal mortality (number of deaths and rates per 1,000 live births) by cause and by year, New Zealand 2004-2009 (n=817 deaths)

	2004	2005	2006	2007	2008	2009	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	10	4	7	7	7	9	44	5.4	0.12
Neoplasms	2	3	2	4	-	3	14	1.7	0.04
Diseases of the blood and blood-forming organs and disorders of immune system	2	1	-	1	1	1	6	0.7	0.02
Endocrine, nutritional and metabolic diseases	1	2	1	4	1	3	12	1.5	0.03
Mental and behavioural disorders	-	-	-	-	-	-	-	-	-
Diseases of nervous system	5	6	7	4	4	4	30	3.7	0.08
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	2	2	3	2	4	3	16	2.0	0.04
Diseases of respiratory system	22	11	15	15	10	8	81	9.9	0.22
Diseases of digestive system	2	-	1	-	1	-	4	0.5	0.01
Diseases of skin and subcutaneous tissue	-	-	-	-	-	-	-	-	-
Diseases of musculoskeletal system and connective tissue	1	-	-	1	-	-	2	0.2	0.01
Diseases of genitourinary system	1	-	1	-	-	1	3	0.4	0.01
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	9	13	19	15	19	16	91	11.1	0.24
Congenital anomalies	27	21	25	27	25	18	143	17.5	0.39
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>84</b>	<b>63</b>	<b>81</b>	<b>80</b>	<b>72</b>	<b>66</b>	<b>446</b>	<b>54.6</b>	<b>1.20</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	-	-	1	-	-	-	1	0.1	0.00
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	-	-	-	-	-	-
Drowning	1	1	-	3	-	-	5	0.6	0.01
Fall	-	-	-	-	-	-	-	-	-
Fire/burn/heat/smoke	1	-	-	-	-	-	1	0.1	0.00
Firearm	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-	-
Transport	4	-	1	2	3	-	10	1.2	0.03
Natural/environmental/animal	-	-	-	-	-	-	-	-	-
Overexertion/travel/privation	-	-	-	-	-	-	-	-	-
Poisoning	-	-	-	-	-	-	-	-	-
Struck by, against	1	-	-	-	-	-	1	0.1	0.00
Suffocation	-	-	-	1	-	1	2	0.2	0.01
Electrocution	-	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>20</b>	<b>2.4</b>	<b>0.05</b>
<b>Intentional injury</b>									
Assault	6	1	4	1	1	2	15	1.8	0.04
Suicide	-	-	-	-	-	-	-	-	-
<b>Total intentional injury</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>15</b>	<b>1.8</b>	<b>0.04</b>
<b>Unexplained</b>									
SUDI	55	44	62	54	57	62	334	40.9	0.90
Other	-	-	-	-	-	1	1	0.1	0.00
<b>Total unexplained</b>	<b>55</b>	<b>44</b>	<b>62</b>	<b>54</b>	<b>57</b>	<b>63</b>	<b>335</b>	<b>41.0</b>	<b>0.90</b>
Missing Data	-	-	-	-	-	1	1	0.1	0.00
<b>Total</b>	<b>152</b>	<b>109</b>	<b>149</b>	<b>141</b>	<b>133</b>	<b>133</b>	<b>817</b>	<b>100.0</b>	<b>2.20</b>

Source: Numerator Mortality Review Database; Denominator NZHIS Live Births

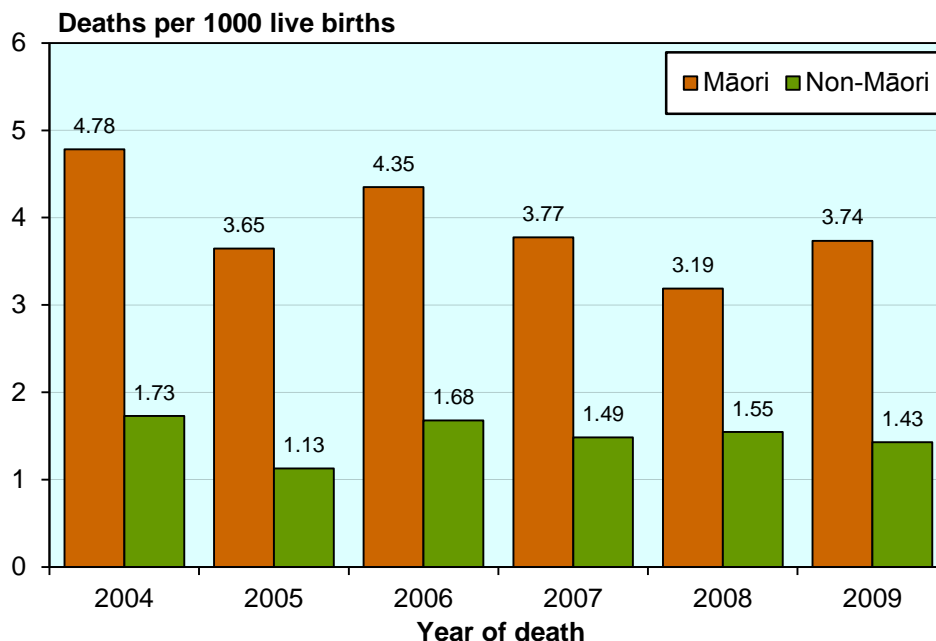


Figure 2.2: Post-neonatal mortality (rates per 1000 live births) in children (28 days to 1 year of age), New Zealand 1979–2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002–2009 data; Denominator NZHIS Live Births

Figure 2.3: Post-neonatal mortality (rates per 1000 live births), Māori and non-Māori, New Zealand 2004–2009 (n=817 deaths)

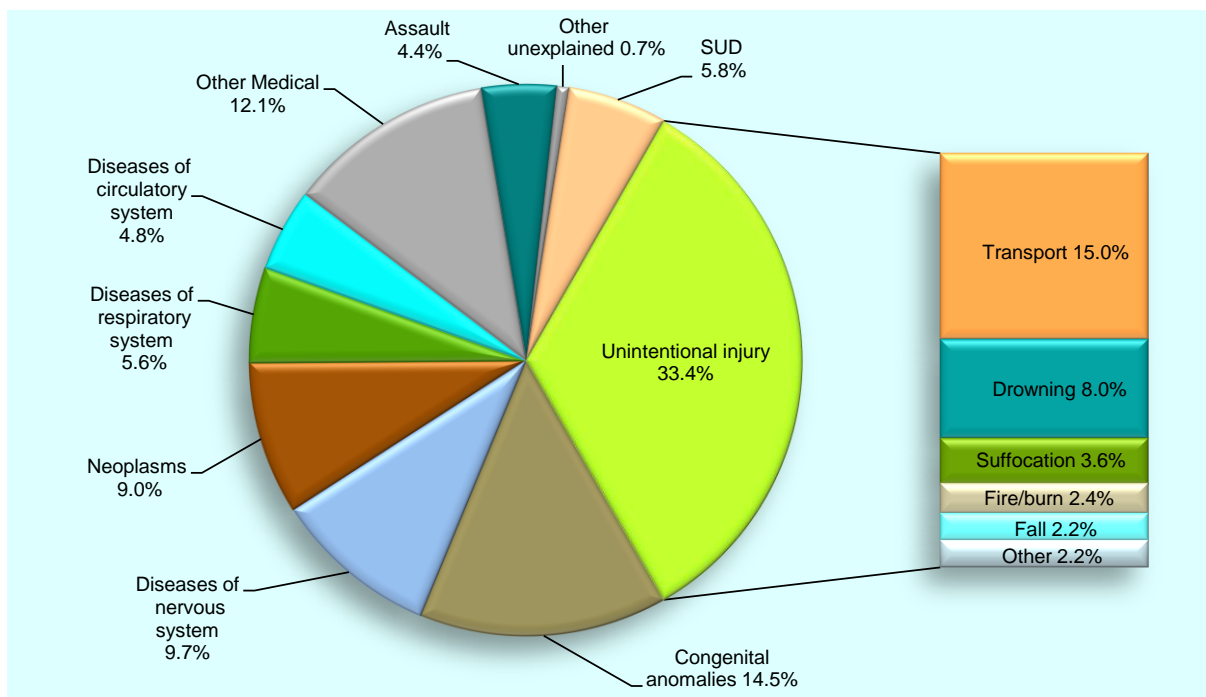


Source: Numerator Mortality Review Database; Denominator NZHIS Live Births

# Children aged 1-4 years

The main causes of death for children aged 1-4 years are shown in Figure 3.1 and Table 3.1. Note that in this section, SUD refers to Sudden Unexpected Death which includes ICD codes R95 (sudden infant death syndrome) and ICD code W75 (accidental suffocation and strangulation in bed). The long-term trend over time for the rate of death in this age group is shown in Figure 3.2. The disparity in death rate between Māori and non-Māori over the last 6 years is shown in Figure 3.3.

Figure 3.1: Mortality (%) in children aged 1-4 years by cause of death, New Zealand 2004-2009 (n=413 deaths)



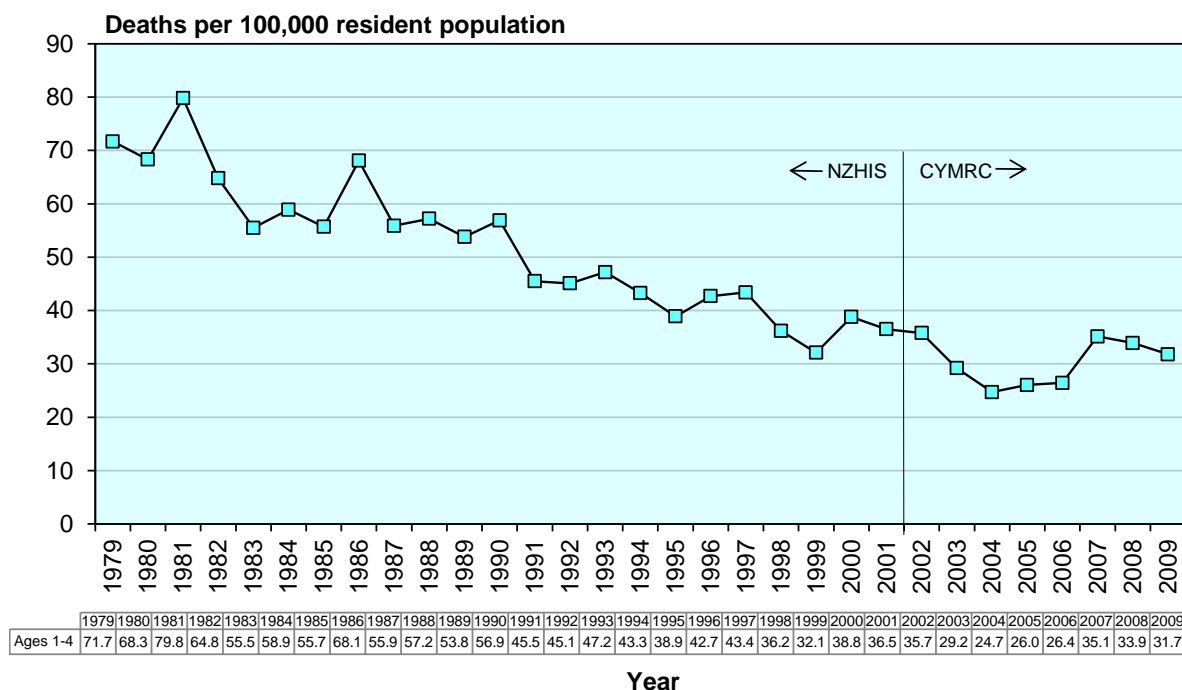
Source: Mortality Review Database

Table 3.1: Mortality (number of deaths and rates per 100,000 resident population) in children aged 1-4 years by cause and year of death, New Zealand 2004-2009 (n=413 deaths)

	2004	2005	2006	2007	2008	2009	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	2	4	3	3	7	1	20	4.8	1.44
Neoplasms	4	4	7	9	8	5	37	9.0	2.66
Diseases of the blood and blood-forming organs and disorders of immune system	-	1	1	2	1	-	5	1.2	0.36
Endocrine, nutritional and metabolic diseases	3	1	1	3	6	3	17	4.1	1.21
Mental and behavioural disorders	-	-	-	-	-	-	-	-	-
Diseases of nervous system	6	10	7	4	5	8	40	9.7	2.88
Diseases of the eye and adnexa	-	1	-	-	-	-	1	0.2	0.07
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	4	2	5	3	4	2	20	4.8	1.45
Diseases of respiratory system	2	1	4	7	4	5	23	5.6	1.65
Diseases of digestive system	-	1	-	2	1	-	4	1.0	0.29
Diseases of skin and subcutaneous tissue	-	-	-	-	-	-	-	-	-
Diseases of musculoskeletal system and connective tissue	-	-	-	2	-	-	2	0.5	0.14
Diseases of genitourinary system	-	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	1	-	-	-	-	-	1	0.2	0.07
Congenital anomalies	13	7	11	9	8	12	60	14.5	4.32
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>35</b>	<b>32</b>	<b>39</b>	<b>44</b>	<b>44</b>	<b>36</b>	<b>230</b>	<b>55.7</b>	<b>16.56</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	-	-	-	1	-	-	1	0.2	0.07
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	-	-	-	-	-	-
Drowning	3	6	3	7	7	7	33	8.0	2.36
Fall	1	-	2	2	2	2	9	2.2	0.64
Fire/burn/heat/smoke	2	2	1	1	2	2	10	2.4	0.72
Firearm	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	1	1	-	2	0.5	0.14
Transport	9	14	7	10	9	13	62	15.0	4.46
Natural/environmental/animal	-	1	-	-	-	-	1	0.2	0.07
Overexertion/travel/privation	-	-	-	-	-	-	-	-	-
Poisoning	-	-	-	-	-	-	-	-	-
Struck by, against	-	-	1	3	1	-	5	1.2	0.36
Suffocation	1	2	1	4	6	1	15	3.6	1.08
Electrocution	-	-	-	-	-	-	-	-	-
<b>Total unintentional injury</b>	<b>16</b>	<b>25</b>	<b>15</b>	<b>29</b>	<b>28</b>	<b>25</b>	<b>138</b>	<b>33.4</b>	<b>9.91</b>
<b>Intentional injury</b>									
Assault	3	1	2	4	2	6	18	4.4	1.28
Suicide	-	-	-	-	-	-	-	-	-
<b>Total intentional injury</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>18</b>	<b>4.4</b>	<b>1.28</b>
<b>Unexplained</b>									
SUDI	2	1	4	3	6	8	24	5.8	1.71
Other	-	-	-	1	-	2	3	0.7	0.21
<b>Total unexplained</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>10</b>	<b>27</b>	<b>6.5</b>	<b>1.92</b>
Missing Data	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>56</b>	<b>59</b>	<b>60</b>	<b>81</b>	<b>80</b>	<b>77</b>	<b>413</b>	<b>100.0</b>	<b>29.67</b>

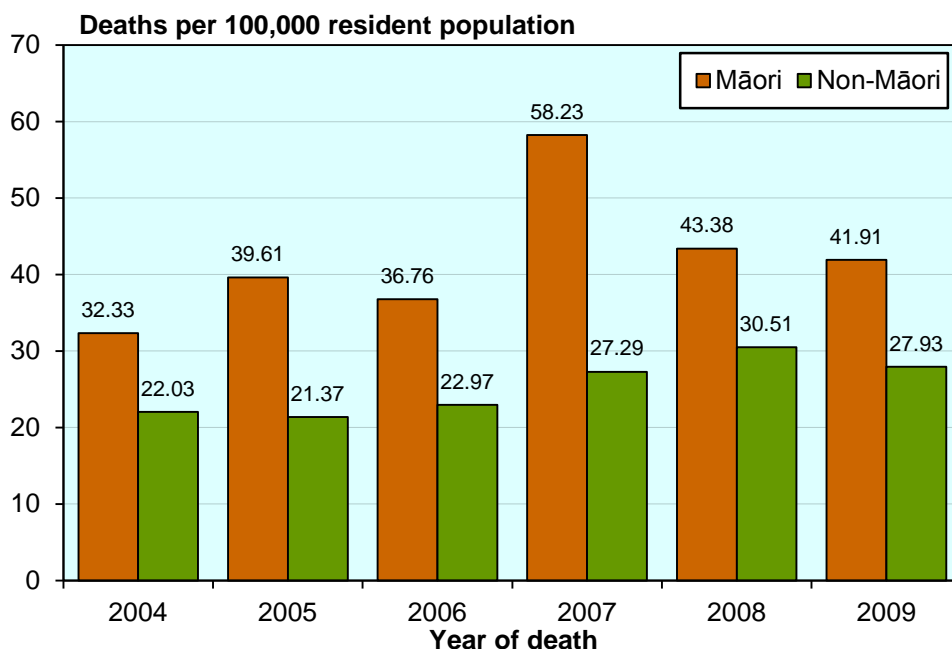
Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

Figure 3.2: Mortality (rates per 100,000 resident population) in children aged 1-4 years, New Zealand 1979-2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZ Estimated Resident Population

Figure 3.3: Mortality (rates per 100,000 resident population) in children aged 1-4 years for Māori and non-Māori, New Zealand 2004-2009 (n=413 deaths)

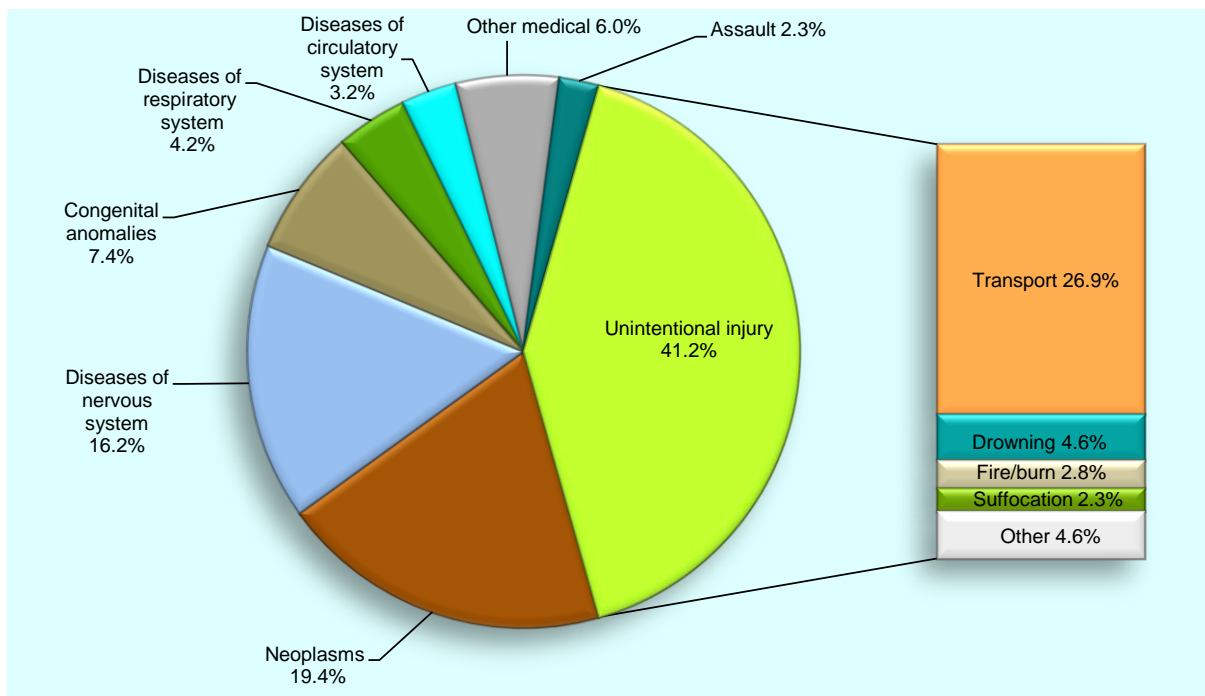


Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

# Children aged 5–9 years

The main causes of death for children aged 5–9 years are shown in Figure 4.1 and Table 4.1. Note that in this section, deaths due to Sudden Unexpected Death have now disappeared. The long-term trend over time of the rate of death in this age group is shown in Figure 4.2. The disparity in death rate between Māori and non-Māori over the last 6 years is shown in Figure 4.3.

Figure 4.1: Mortality (%) in children aged 5–9 years by cause of death, New Zealand 2004–2009 (n=216 deaths)



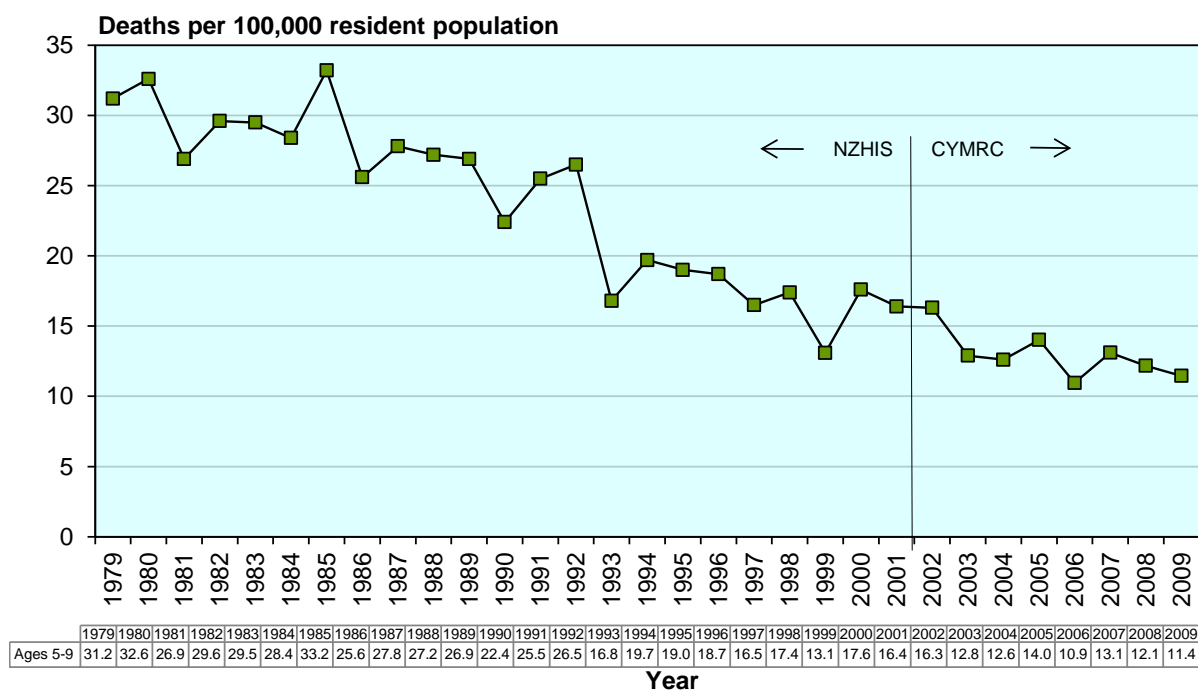
Source: Mortality Review Database

Table 4.1: Mortality (number of deaths and rates per 100,000 resident population) in children aged 5-9 years by cause and year of death, New Zealand 2004-2009 (n=216 deaths)

	2004	2005	2006	2007	2008	2009	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	1	-	1	1	1	-	4	1.9	0.23
Neoplasms	5	10	5	6	10	6	42	19.4	2.41
Diseases of the blood and blood-forming organs and disorders of immune system	-	-	-	1	-	-	1	0.5	0.06
Endocrine, nutritional and metabolic diseases	2	-	1	-	-	1	4	1.9	0.23
Mental and behavioural disorders	-	-	-	-	-	-	-	-	-
Diseases of nervous system	9	7	4	7	3	5	35	16.2	2.00
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	-	2	-	1	4	-	7	3.2	0.40
Diseases of respiratory system	-	-	1	3	2	3	9	4.2	0.52
Diseases of digestive system	-	-	-	-	1	-	1	0.5	0.06
Diseases of skin and subcutaneous tissue	-	-	-	-	-	-	-	-	-
Diseases of musculoskeletal system and connective tissue	-	-	-	1	-	1	2	0.9	0.12
Diseases of genitourinary system	-	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	1	-	-	1	0.5	0.06
Congenital anomalies	1	5	3	3	3	1	16	7.4	0.92
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>18</b>	<b>24</b>	<b>15</b>	<b>24</b>	<b>24</b>	<b>17</b>	<b>122</b>	<b>56.5</b>	<b>7.00</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	-	-	-	-	-	-	-	-	-
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	-	-	-	-	-	-
Drowning	5	2	-	-	2	2	11	5.1	0.63
Fall	-	-	-	1	-	1	2	0.9	0.12
Fire/burn/heat/smoke	-	1	-	2	1	2	6	2.8	0.35
Firearm	-	-	-	-	-	-	-	-	-
Machinery	-	-	-	-	-	-	-	-	-
Transport	11	9	14	11	4	9	58	26.9	3.32
Natural/environmental/animal	-	-	1	-	-	-	1	0.5	0.06
Overexertion/travel/privation	-	-	-	-	-	1	1	0.5	0.06
Poisoning	-	-	1	-	-	-	1	0.5	0.06
Struck by, against	1	1	1	-	-	-	3	1.4	0.17
Suffocation	-	3	-	-	2	-	5	2.3	0.29
Electrocution	-	-	-	-	1	-	1	0.5	0.06
<b>Total unintentional injury</b>	<b>17</b>	<b>16</b>	<b>17</b>	<b>14</b>	<b>10</b>	<b>15</b>	<b>89</b>	<b>41.2</b>	<b>5.10</b>
<b>Intentional injury</b>									
Assault	2	1	-	-	1	1	5	2.3	0.29
Suicide	-	-	-	-	-	-	-	-	-
<b>Total intentional injury</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>2.3</b>	<b>0.29</b>
<b>Unexplained</b>									
SUD	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-
<b>Total unexplained</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Missing Data	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>37</b>	<b>41</b>	<b>32</b>	<b>38</b>	<b>35</b>	<b>33</b>	<b>216</b>	<b>100.0</b>	<b>12.39</b>

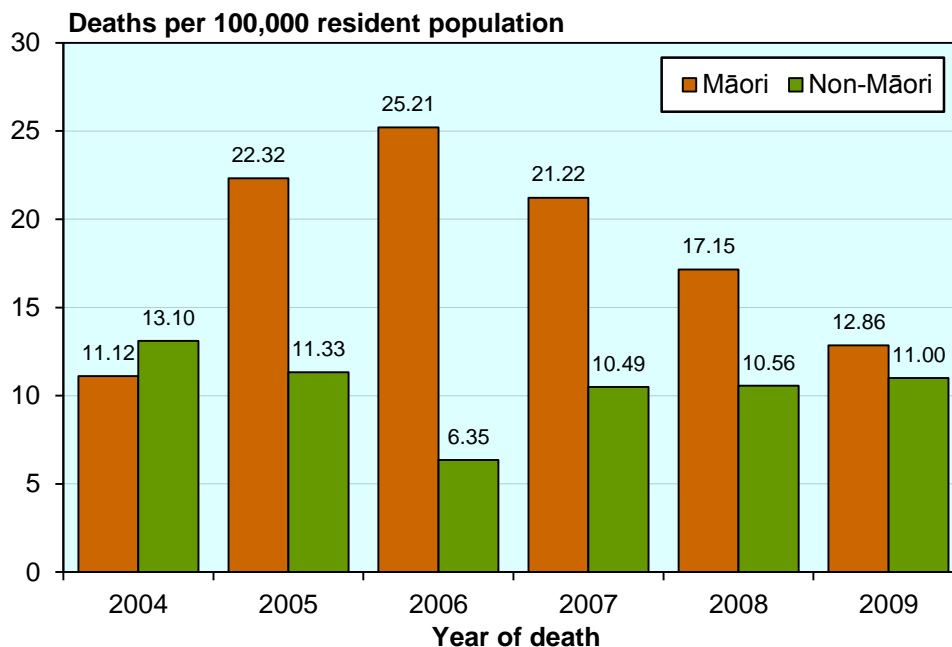
Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

Figure 4.2: Mortality (rates per 100,000 resident population) in children aged 5-9 years, New Zealand 1979-2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZ Estimated Resident Population

Figure 4.3: Mortality (rates per 100,000 resident population) in children aged 5-9 years for Māori and non-Māori, New Zealand 2004-2009 (n=216 deaths)

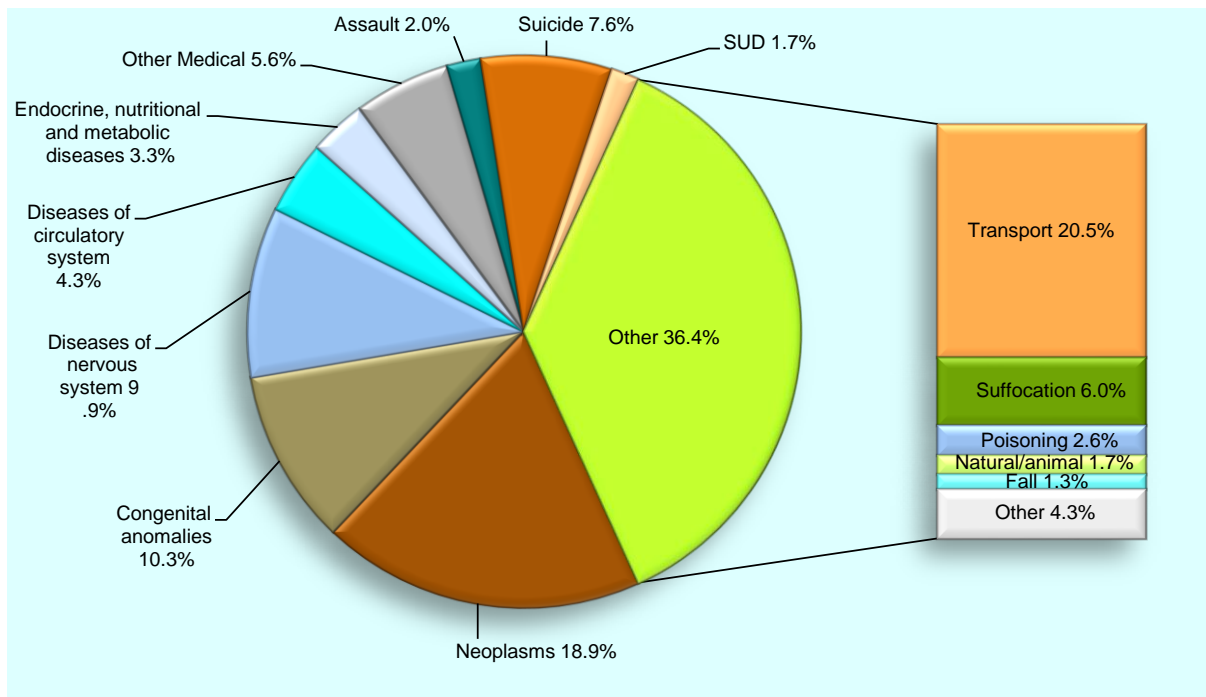


Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

# Children aged 10–14 years

The main causes of death for children aged 10–14 years are shown in Figure 5.1 and Table 5.1. The long-term trend over time of the rate of death in this age group is shown in Figure 5.2. The disparity in death rate between Māori and non-Māori over the last 6 years is shown in Figure 5.3.

Figure 5.1: Mortality (%) in children aged 10–14 years by cause of death, New Zealand 2004–2009 (n=302 deaths)



Source: Mortality Review Database

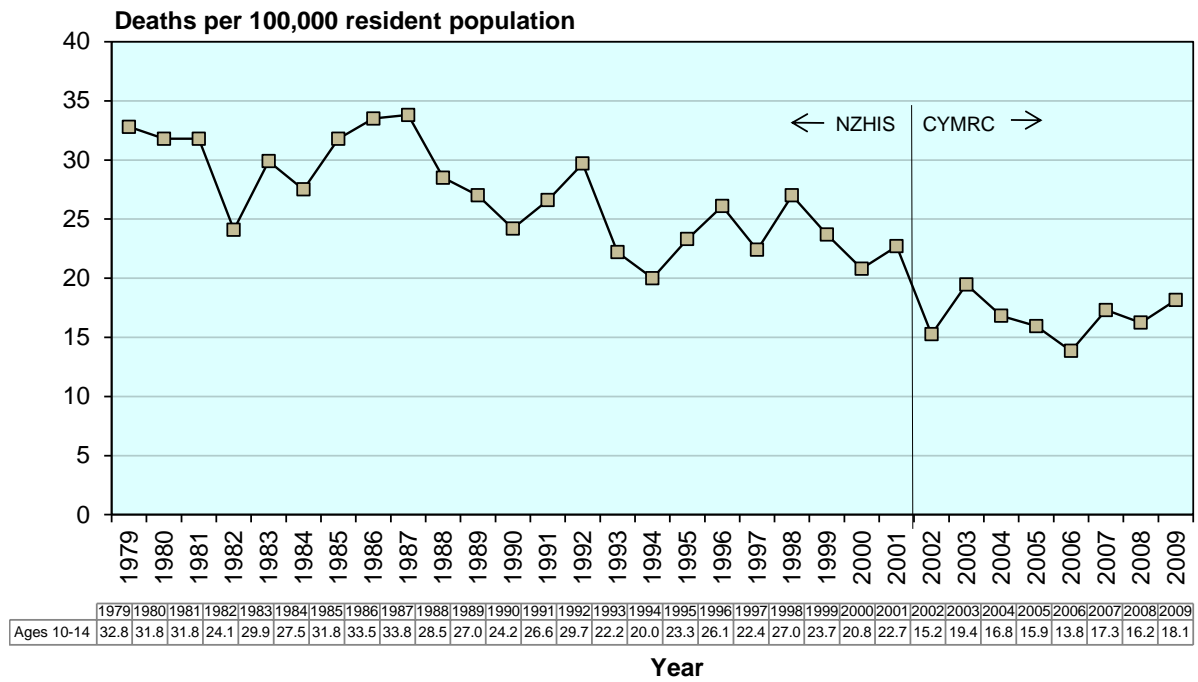


Table 5.1: Mortality (number of deaths and rates per 100,000 resident population) in children aged 10-14 years by cause and year of death, New Zealand 2004-2009 (n=302 deaths)

	2004	2005	2006	2007	2008	2009	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	1	-	-	1	-	1	3	1.0	0.16
Neoplasms	12	5	9	12	13	6	57	18.9	3.09
Diseases of the blood and blood-forming organs and disorders of immune system	-	-	-	1	-	-	1	0.3	0.05
Endocrine, nutritional and metabolic diseases	4	1	2	3	-	-	10	3.3	0.54
Mental and behavioural disorders	-	-	-	-	-	1	1	0.3	0.06
Diseases of nervous system	3	7	2	6	4	8	30	9.9	1.63
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	4	-	1	2	3	3	13	4.3	0.71
Diseases of respiratory system	-	3	2	1	-	2	8	2.6	0.43
Diseases of digestive system	1	-	-	1	-	1	3	1.0	0.16
Diseases of skin and subcutaneous tissue	-	-	-	-	-	-	-	-	-
Diseases of musculoskeletal system and connective tissue	-	-	-	-	-	1	1	0.3	0.06
Diseases of genitourinary system	-	-	-	-	-	-	-	-	-
Pregnancy, childbirth and the puerperium	-	-	-	-	-	-	-	-	-
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-	-
Congenital anomalies	4	9	5	5	3	5	31	10.3	1.68
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>29</b>	<b>25</b>	<b>21</b>	<b>32</b>	<b>23</b>	<b>28</b>	<b>158</b>	<b>52.3</b>	<b>8.57</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	-	-	-	-	1	-	1	0.3	0.06
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	-	-	-	-	-	-
Drowning	1	-	-	-	-	2	3	1.0	0.16
Fall	1	2	-	-	1	-	4	1.3	0.21
Fire/burn/heat/smoke	-	1	2	-	-	1	4	1.3	0.22
Firearm	1	-	-	-	-	2	3	1.0	0.16
Machinery	-	-	1	-	-	-	1	0.3	0.05
Transport	6	13	9	14	13	7	62	20.5	3.36
Natural/environmental/animal	1	1	2	-	1	-	5	1.7	0.27
Overexertion/travel/privation	-	-	-	-	-	-	-	-	-
Poisoning	2	-	-	2	2	2	8	2.6	0.44
Struck by, against	-	-	-	-	-	-	-	-	-
Suffocation	3	2	2	3	3	5	18	6.0	0.98
Electrocution	-	1	-	-	-	-	1	0.3	0.05
<b>Total unintentional injury</b>	<b>15</b>	<b>20</b>	<b>16</b>	<b>19</b>	<b>21</b>	<b>19</b>	<b>110</b>	<b>36.4</b>	<b>5.97</b>
<b>Intentional injury</b>									
Assault	2	2	1	-	1	-	6	2.0	0.32
Suicide	7	3	5	2	3	3	23	7.6	1.24
<b>Total intentional injury</b>	<b>9</b>	<b>5</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>29</b>	<b>9.6</b>	<b>1.56</b>
<b>Unexplained</b>									
SUD	-	-	-	-	1	4	5	1.7	0.28
Other	-	-	-	-	-	-	-	-	-
<b>Total unexplained</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>4</b>	<b>5</b>	<b>1.7</b>	<b>0.28</b>
Missing Data	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>53</b>	<b>50</b>	<b>43</b>	<b>53</b>	<b>49</b>	<b>54</b>	<b>302</b>	<b>100.0</b>	<b>16.39</b>

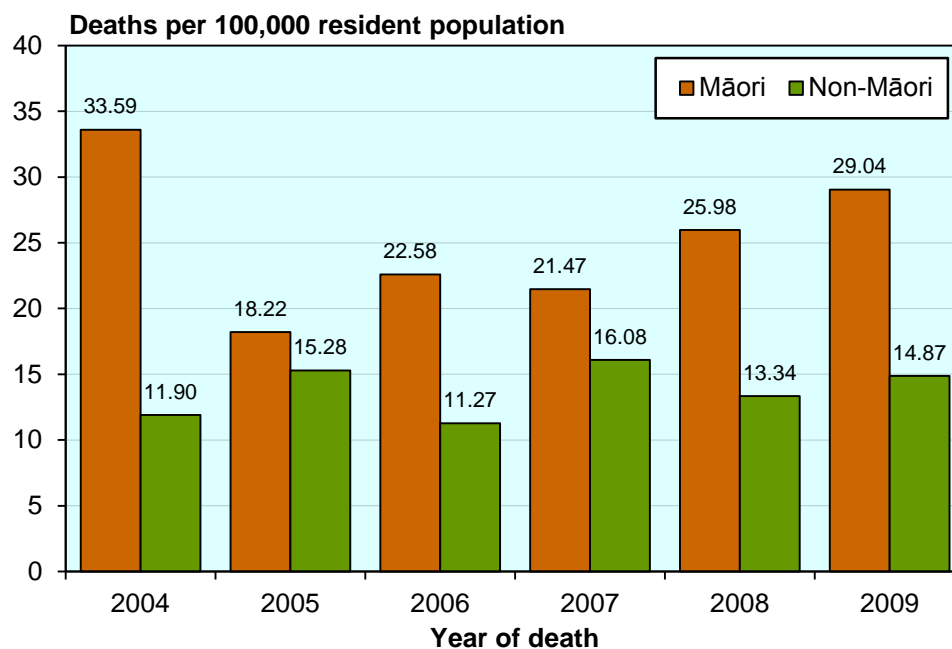
Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

Figure 5.2: Mortality (rates per 100,000 resident population) in children aged 10-14 years, New Zealand 1979-2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZ Estimated Resident Population

Figure 5.3: Mortality (rates per 100,000 resident population) in children aged 10-14 years for Māori and non-Māori, New Zealand 2004-2009 (n=302 deaths)

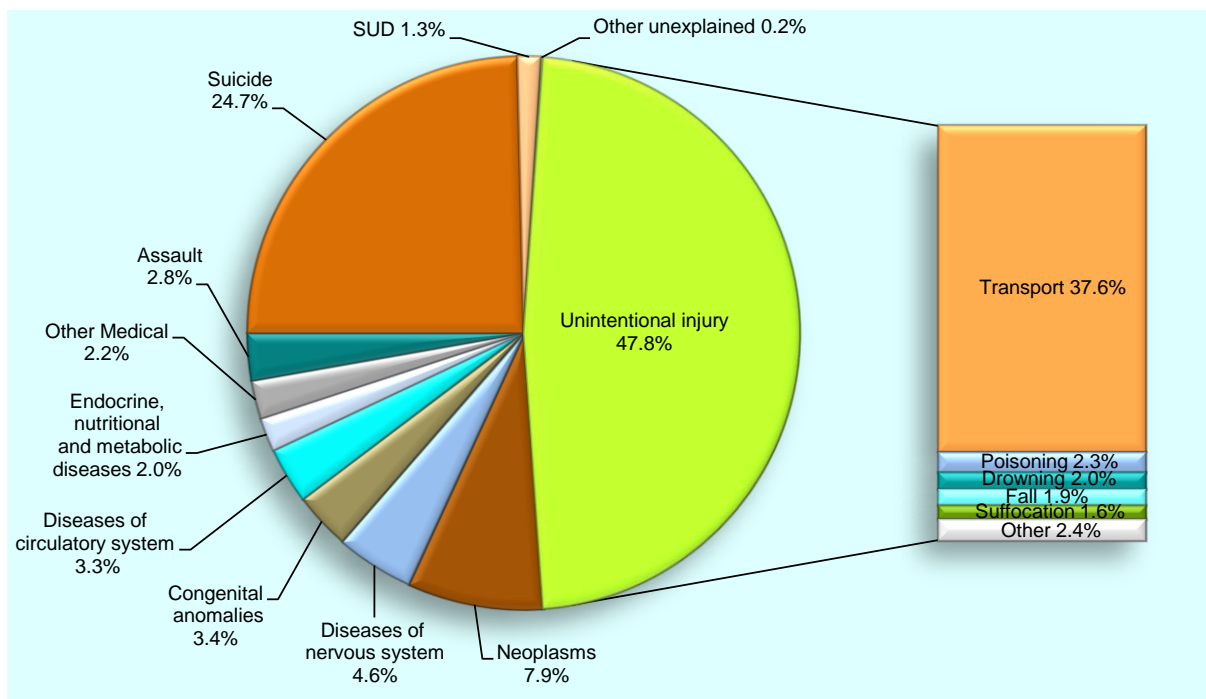


Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

# Young people aged 15–19 years

The main causes of death in young people aged 15–19 years are shown in Figure 6.1 and Table 6.1. The long-term trend over time of the rate of death in this age group is shown in Figure 6.2. The disparity in death rate between Māori and non-Māori over the last 6 years is shown in Figure 6.3.

Figure 6.1: Mortality (%) in young people aged 15–19 years by cause of death, New Zealand 2004–2009 (n=1160 deaths)



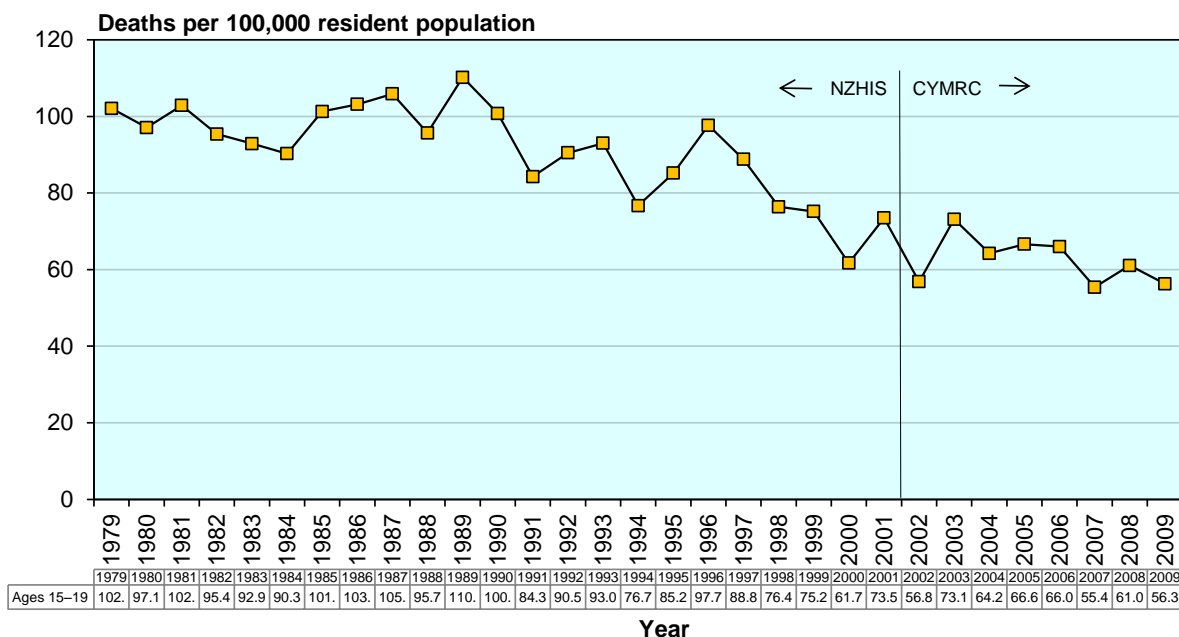
Source: Mortality Review Database

Table 6.1: Mortality (number of deaths and rates per 100,000 resident population) in young people aged 15-19 years by cause and year of death, New Zealand 2004-2009 (n=1160 deaths deaths)

	2004	2005	2006	2007	2008	2009	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	-	1	1	-	-	-	2	0.2	0.11
Neoplasms	11	20	17	19	12	13	92	7.9	4.88
Diseases of the blood and blood-forming organs and disorders of immune system	-	-	1	-	-	-	1	0.1	0.05
Endocrine, nutritional and metabolic diseases	5	4	3	4	3	4	23	2.0	1.22
Mental and behavioural disorders	1	1	-	-	-	-	2	0.2	0.11
Diseases of nervous system	8	11	10	9	7	8	53	4.6	2.82
Diseases of the eye and adnexa	-	-	-	-	-	-	-	-	-
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	5	7	6	6	10	4	38	3.3	2.01
Diseases of respiratory system	2	1	1	2	1	6	13	1.1	0.68
Diseases of digestive system	-	-	-	-	1	1	2	0.2	0.10
Diseases of skin and subcutaneous tissue	-	-	-	-	1	-	1	0.1	0.05
Diseases of musculoskeletal system and connective tissue	-	-	1	-	-	2	3	0.3	0.16
Diseases of genitourinary system	-	-	-	-	1	-	1	0.1	0.05
Pregnancy, childbirth and the puerperium	1	-	-	-	-	-	1	0.1	0.06
Certain conditions originating in the perinatal period	-	-	-	-	-	-	-	-	-
Congenital anomalies	8	2	11	6	8	4	39	3.4	2.07
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>41</b>	<b>47</b>	<b>51</b>	<b>46</b>	<b>44</b>	<b>42</b>	<b>271</b>	<b>23.4</b>	<b>14.38</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	-	-	-	-	-	1	1	0.1	0.05
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	1	-	1	2	0.2	0.10
Drowning	3	6	4	4	4	2	23	2.0	1.22
Fall	4	1	3	2	6	6	22	1.9	1.16
Fire/burn/heat/smoke	-	-	4	1	-	-	5	0.4	0.26
Firearm	-	-	-	-	2	3	5	0.4	0.26
Machinery	-	-	-	-	-	-	-	-	-
Transport	87	90	65	71	68	55	436	37.6	23.24
Natural/environmental/animal	-	-	1	-	6	2	9	0.8	0.47
Overexertion/travel/privation	-	-	-	-	1	-	1	0.1	0.05
Poisoning	4	6	4	4	6	3	27	2.3	1.43
Struck by, against	-	1	-	-	1	1	3	0.3	0.16
Suffocation	1	1	1	3	3	9	18	1.6	0.94
Electrocution	1	-	-	-	-	1	2	0.2	0.11
<b>Total unintentional injury</b>	<b>100</b>	<b>105</b>	<b>82</b>	<b>86</b>	<b>97</b>	<b>84</b>	<b>554</b>	<b>47.8</b>	<b>29.45</b>
<b>Intentional injury</b>									
Assault	3	4	11	3	6	5	32	2.8	1.69
Suicide	48	48	62	42	50	36	286	24.7	15.20
<b>Total intentional injury</b>	<b>51</b>	<b>52</b>	<b>73</b>	<b>45</b>	<b>56</b>	<b>41</b>	<b>318</b>	<b>27.4</b>	<b>16.90</b>
<b>Unexplained</b>									
SUD	1	-	1	-	-	13	15	1.3	0.78
Other	-	-	-	-	-	1	1	0.1	0.05
<b>Total unexplained</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>14</b>	<b>16</b>	<b>1.4</b>	<b>0.83</b>
Missing Data	-	-	-	-	-	1	1	0.1	0.05
<b>Total</b>	<b>193</b>	<b>204</b>	<b>207</b>	<b>177</b>	<b>197</b>	<b>182</b>	<b>1160</b>	<b>100.0</b>	<b>61.61</b>

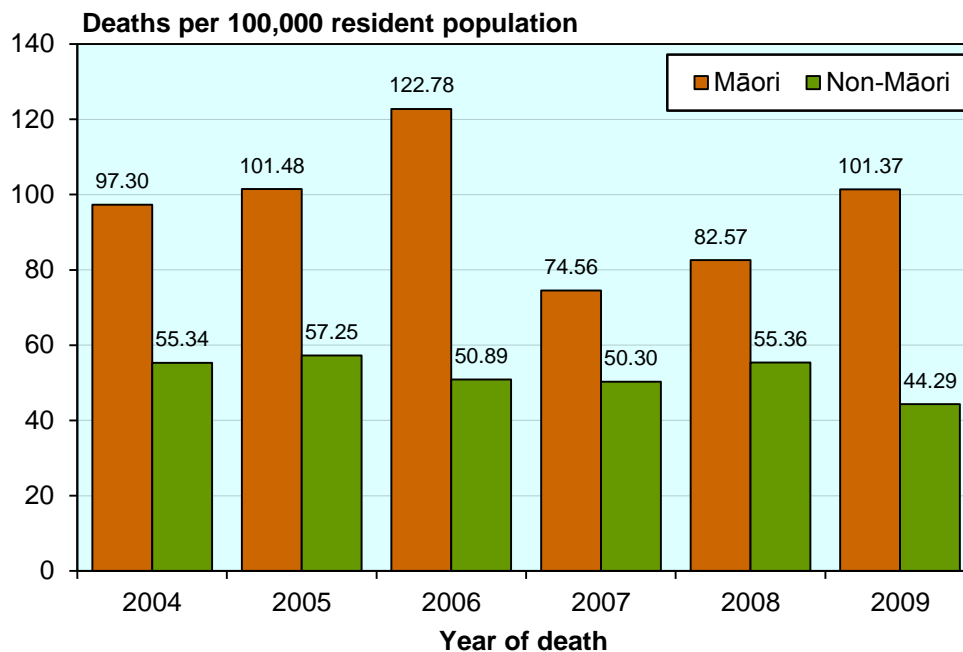
Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

Figure 6.2: Mortality (rates per 100,000 resident population) in young people aged 15-19 years, New Zealand 1979-2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZ Estimated Resident Population

Figure 6.3: Mortality (rates per 100,000 resident population) in young people aged 15-19 years for Māori and non-Māori, New Zealand 2004-2009 (n=1160 deaths)

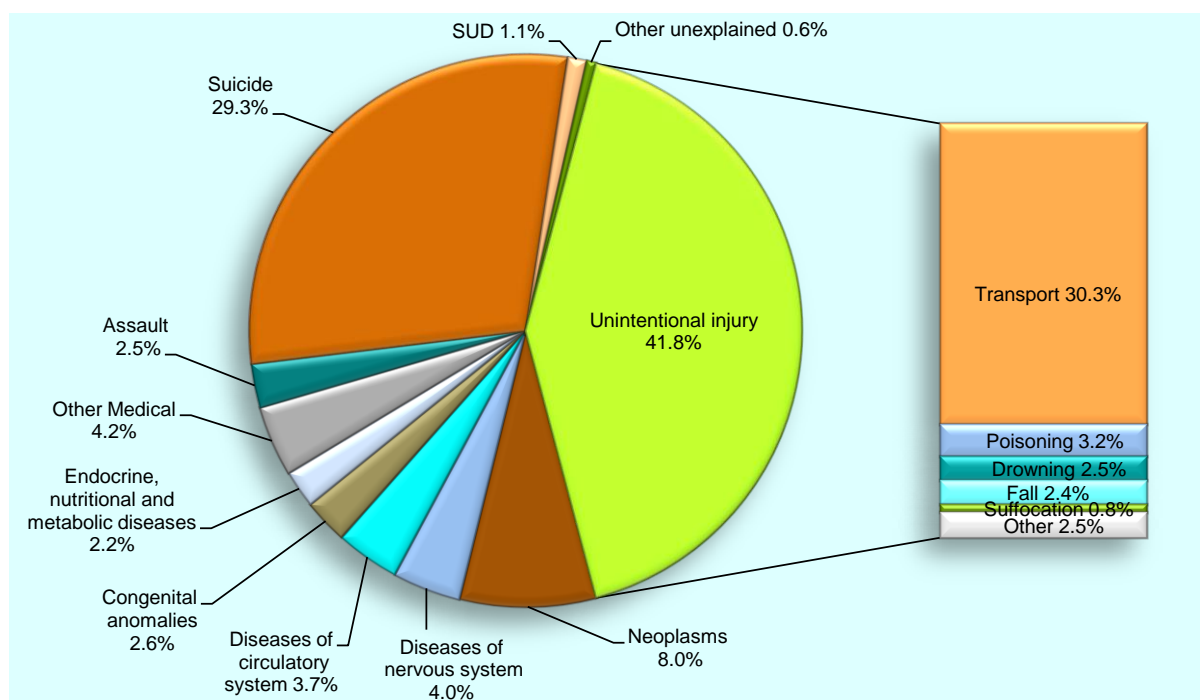


Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

# Young people aged 20–24 years

The main causes of death for young people aged 20–24 years are shown in Figure 7.1 and Table 7.1. The long-term trend over time of the rate of death in this age group is shown in Figure 7.2. The disparity in death rate between Māori and non-Māori over the last 6 years is shown in Figure 7.3.

Figure 7.1: Mortality (%) in young people aged 20–24 years by cause of death, New Zealand 2004–2009 (n=1180 deaths)



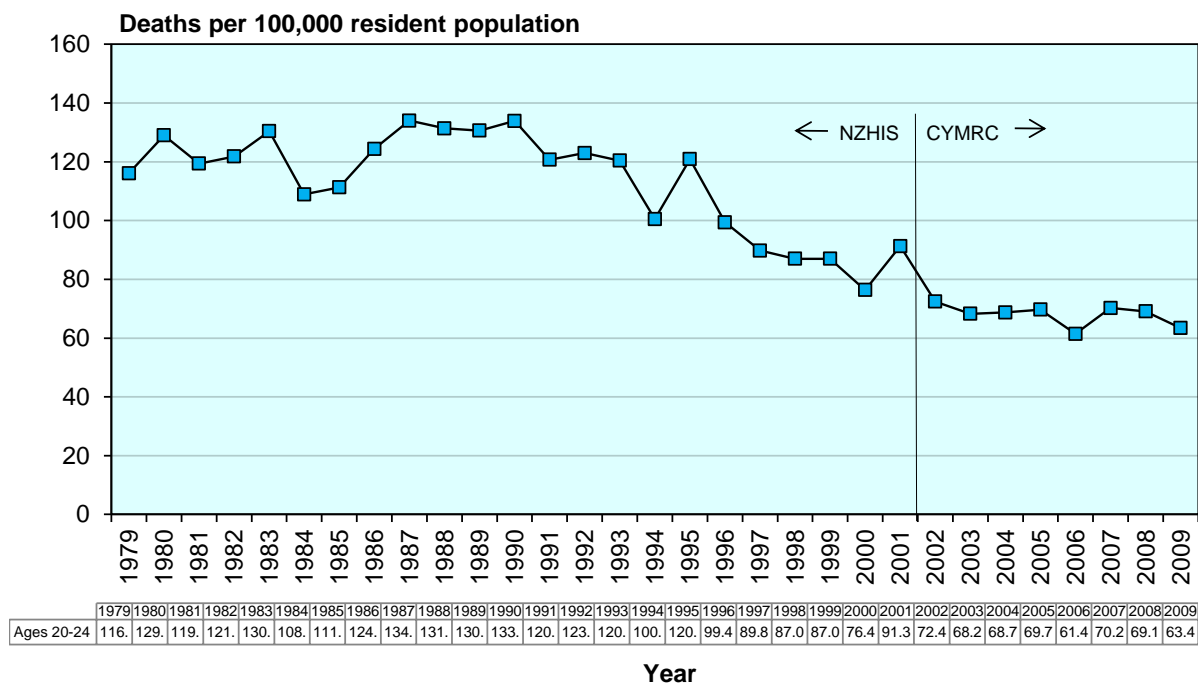
Source: Mortality Review Database

Table 7.1: Mortality (number of deaths and rates per 100,000 resident population) in young people aged 20-24 years by cause and year of death, New Zealand 2004-2009 (n=1160 deaths deaths)

	2004	2005	2006	2007	2008	2009	Total	%	Average rate
<b>Medical</b>									
Infectious and parasitic disease	3	1	2	1	-	1	8	0.7	0.46
Neoplasms	13	21	19	17	16	8	94	8.0	5.36
Diseases of the blood and blood-forming organs and disorders of immune system	-	-	-	-	-	1	1	0.1	0.05
Endocrine, nutritional and metabolic diseases	5	4	6	4	4	3	26	2.2	1.48
Mental and behavioural disorders	3	-	-	-	-	-	3	0.3	0.18
Diseases of nervous system	8	8	9	10	6	6	47	4.0	2.68
Diseases of the eye and adnexa	-	1	-	-	-	-	1	0.1	0.06
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	6	12	6	3	7	10	44	3.7	2.50
Diseases of respiratory system	4	1	2	1	2	5	15	1.3	0.85
Diseases of digestive system	-	-	-	2	-	2	4	0.3	0.22
Diseases of skin and subcutaneous tissue	-	1	-	-	-	-	1	0.1	0.06
Diseases of musculoskeletal system and connective tissue	1	2	3	2	1	-	9	0.8	0.52
Diseases of genitourinary system	-	1	-	1	1	-	3	0.3	0.17
Pregnancy, childbirth and the puerperium	-	-	1	2	-	-	3	0.3	0.17
Certain conditions originating in the perinatal period	-	-	1	-	-	-	1	0.1	0.06
Congenital anomalies	3	6	3	9	4	6	31	2.6	1.76
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>46</b>	<b>58</b>	<b>52</b>	<b>52</b>	<b>41</b>	<b>42</b>	<b>291</b>	<b>24.7</b>	<b>16.58</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	-	-	-	-	-	-	-	-	-
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	1	1	2	-	-	-	4	0.3	0.23
Drowning	8	5	1	6	3	6	29	2.5	1.65
Fall	9	4	2	2	6	5	28	2.4	1.60
Fire/burn/heat/smoke	1	1	1	-	3	3	9	0.8	0.51
Firearm	-	-	-	-	-	1	1	0.1	0.05
Machinery	1	1	-	2	1	2	7	0.6	0.40
Transport	57	54	48	71	71	57	358	30.3	20.35
Natural/environmental/animal	-	-	1	-	-	1	2	0.2	0.11
Overexertion/travel/privation	-	-	-	1	-	-	1	0.1	0.06
Poisoning	6	7	7	6	8	4	38	3.2	2.17
Struck by, against	-	2	-	1	-	-	3	0.3	0.17
Suffocation	2	-	1	2	2	3	10	0.8	0.56
Electrocution	1	-	-	1	-	1	3	0.3	0.17
<b>Total unintentional injury</b>	<b>86</b>	<b>75</b>	<b>63</b>	<b>92</b>	<b>94</b>	<b>83</b>	<b>493</b>	<b>41.8</b>	<b>28.03</b>
<b>Intentional injury</b>									
Assault	2	5	4	7	5	7	30	2.5	1.70
Suicide	62	62	60	52	63	47	346	29.3	19.71
<b>Total intentional injury</b>	<b>64</b>	<b>67</b>	<b>64</b>	<b>59</b>	<b>68</b>	<b>54</b>	<b>376</b>	<b>31.9</b>	<b>21.41</b>
<b>Unexplained</b>									
SUD	-	-	-	2	1	10	13	1.1	0.72
Other	-	1	-	-	-	2	3	0.3	0.17
<b>Total unexplained</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>1</b>	<b>12</b>	<b>16</b>	<b>1.4</b>	<b>0.88</b>
Missing Data	-	-	-	1	1	2	4	0.3	0.22
<b>Total</b>	<b>196</b>	<b>201</b>	<b>179</b>	<b>206</b>	<b>205</b>	<b>193</b>	<b>1180</b>	<b>100.0</b>	<b>67.12</b>

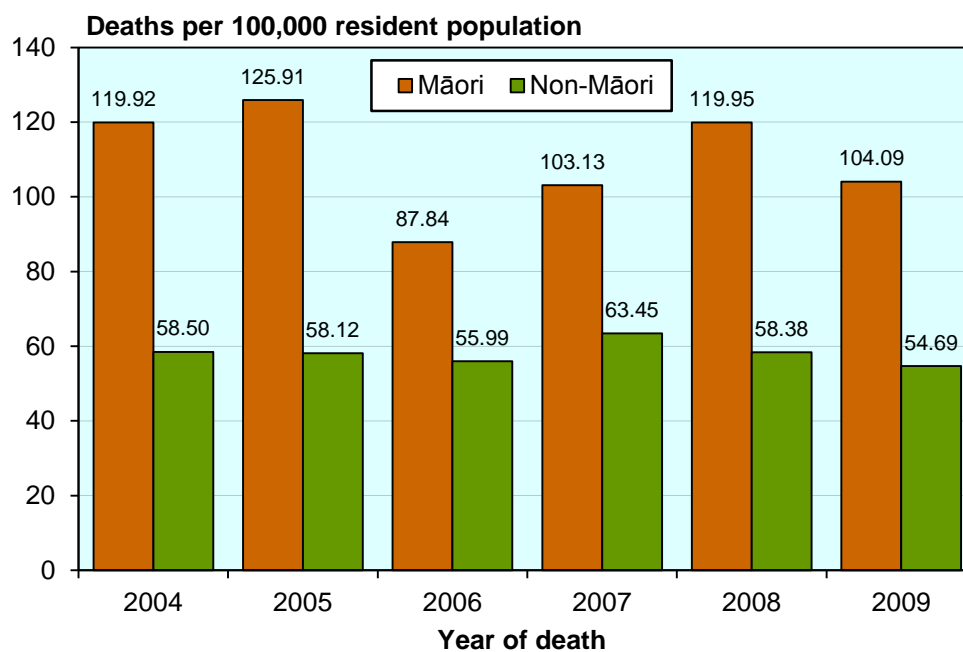
Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

Figure 7.2: Mortality (rates per 100,000 resident population) in young people aged 20-24 years, New Zealand 1979-2009



Source: Numerator NZHIS pre-2002 data, Mortality Review Database 2002-2009 data; Denominator Statistics NZ Estimated Resident Population

Figure 7.3: Mortality (rates per 100,000 resident population) in young people aged 20-24 years for Māori and non-Māori, New Zealand 2004-2009 (n=1180 deaths)

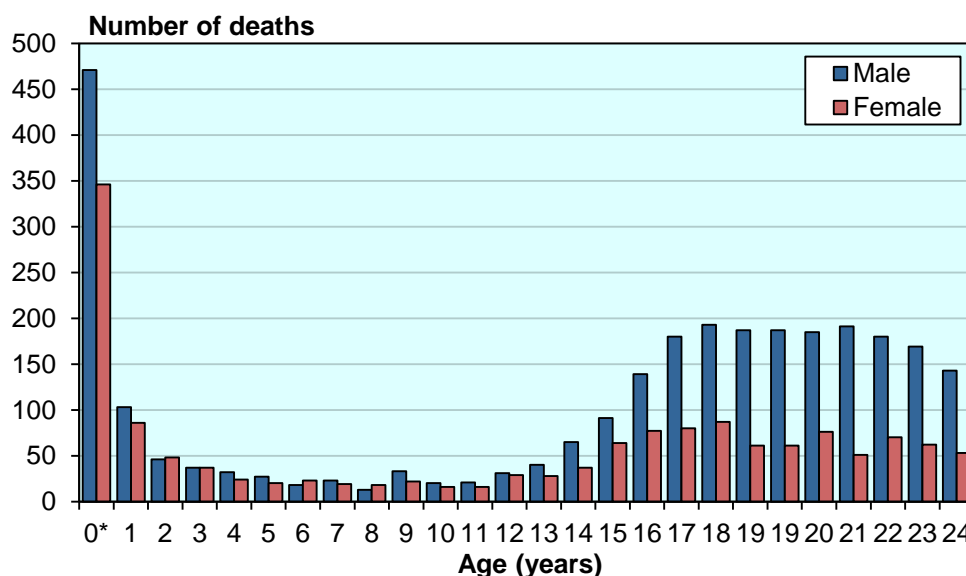


Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population



# Extras – NZCYMRC Data 2004–2009

Figure E.1: Total number of deaths by gender and by year of age, New Zealand 2004–2009 combined (n=4088 deaths)



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

Source: Mortality Review Database

Table E.1: Mortality (number of deaths) by age group and year, New Zealand 1979–2009

Year	< 1 year *	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	Total
1979	310	149	95	99	322	303	1278
1980	355	138	96	96	305	344	1334
1981	308	160	77	97	315	326	1283
1982	324	129	82	74	288	343	1240
1983	353	111	79	92	279	381	1295
1984	368	118	74	84	272	323	1239
1985	321	112	85	95	308	326	1247
1986	329	135	65	97	312	351	1289
1987	324	112	70	94	325	375	1300
1988	350	116	68	76	295	364	1269
1989	336	111	67	70	335	360	1279
1990	253	120	56	62	299	375	1165
1991	240	99	64	68	241	328	1040
1992	214	102	68	75	249	341	1049
1993	207	109	44	56	250	338	1004
1994	211	102	53	51	203	283	903
1995	204	92	53	60	225	338	972
1996	194	95	54	69	257	270	939
1997	182	102	50	61	240	245	880
1998	137	85	53	75	207	231	788
1999	153	74	40	67	204	226	764
2000	143	88	53	61	169	195	709
2001	145	79	47	66	195	219	751
2002	107	81	48	47	163	192	638
2003	116	66	38	61	216	190	687
2004	152	56	37	53	193	196	687
2005	109	59	41	50	204	201	664
2006	149	60	32	43	207	179	670
2007	141	81	38	53	177	206	696
2008	133	80	35	49	197	205	699
2009	133	77	33	54	182	193	672

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

Source: Mortality Review Database for deaths from 2002 onwards; NZHIS for deaths 1979–2001

Table E.2: Mortality (number of deaths and rates per 100,000 resident population), by age group and cause, 2004-2009 combined (n=4088 deaths)

	< 1 year*	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	Total	%	Rate
<b>Medical</b>									
Infectious and parasitic disease	44	20	4	3	2	8	81	2.0	0.90
Neoplasms	14	37	42	57	92	94	336	8.2	3.74
Diseases of the blood and blood-forming organs and disorders of immune system	6	5	1	1	1	1	15	0.4	0.17
Endocrine, nutritional and metabolic diseases	12	17	4	10	23	26	92	2.3	1.02
Mental and behavioural disorders	-	-	-	1	2	3	6	0.1	0.07
Diseases of nervous system	30	40	35	30	53	47	235	5.7	2.62
Diseases of the eye and adnexa	-	1	-	-	-	1	2	0.0	0.02
Diseases of ear and mastoid process	-	-	-	-	-	-	-	-	-
Diseases of circulatory system	16	20	7	13	38	44	138	3.4	1.54
Diseases of respiratory system	81	23	9	8	13	15	149	3.6	1.66
Diseases of digestive system	4	4	1	3	2	4	18	0.4	0.20
Diseases of skin and subcutaneous tissue	-	-	-	-	1	1	2	0.0	0.02
Diseases of musculoskeletal system and connective tissue	2	2	2	1	3	9	19	0.5	0.21
Diseases of genitourinary system	3	-	-	-	1	3	7	0.2	0.08
Pregnancy, childbirth and the puerperium	-	-	-	-	1	3	4	0.1	0.04
Certain conditions originating in the perinatal period	91	1	1	-	-	1	94	2.3	1.05
Congenital anomalies	143	60	16	31	39	31	320	7.8	3.56
Symptoms & abnormal findings not elsewhere classified	-	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-	-
<b>Total medical</b>	<b>446</b>	<b>230</b>	<b>122</b>	<b>158</b>	<b>271</b>	<b>291</b>	<b>1518</b>	<b>37.1</b>	<b>16.90</b>
<b>Unintentional injury</b>									
External cause unknown	-	-	-	-	-	-	-	-	-
Adverse effect of medication or treatment	1	1	-	1	1	-	4	0.1	0.04
Health system error	-	-	-	-	-	-	-	-	-
Cut/pierce	-	-	-	-	2	4	6	0.1	0.07
Drowning	5	33	10	3	23	29	103	2.5	1.15
Fall	-	9	2	4	22	28	65	1.6	0.72
Fire/burn/heat/smoke	1	10	6	4	5	9	35	0.9	0.39
Firearm	-	-	-	3	5	1	9	0.2	0.10
Machinery	-	2	-	1	-	7	10	0.2	0.11
Transport	10	62	58	62	436	358	986	24.1	10.97
Natural/environmental/animal	-	1	1	5	9	2	18	0.4	0.20
Overexertion/travel/privation	-	-	1	-	1	1	3	0.1	0.03
Poisoning	-	-	1	8	27	38	74	1.8	0.82
Struck by, against	1	5	4	-	3	3	16	0.4	0.18
Suffocation	2	15	5	18	18	10	68	1.7	0.76
Electrocution	-	-	1	1	2	3	7	0.2	0.08
<b>Total unintentional</b>	<b>20</b>	<b>138</b>	<b>89</b>	<b>110</b>	<b>554</b>	<b>493</b>	<b>1404</b>	<b>34.3</b>	<b>15.63</b>
<b>Intentional injury</b>									
Assault	15	18	5	6	32	30	106	2.6	1.18
Suicide	-	-	-	23	286	346	655	16.0	7.29
<b>Total intentional</b>	<b>15</b>	<b>18</b>	<b>5</b>	<b>29</b>	<b>318</b>	<b>376</b>	<b>761</b>	<b>18.6</b>	<b>8.47</b>
<b>Unexplained</b>									
SUDI	334	-	-	-	-	-	334	8.2	3.72
SUD	-	24	-	5	15	13	57	1.4	0.63
Other	1	3	-	-	1	3	8	0.2	0.09
<b>Total unexplained</b>	<b>335</b>	<b>27</b>	<b>-</b>	<b>5</b>	<b>16</b>	<b>16</b>	<b>399</b>	<b>9.8</b>	<b>4.44</b>
Missing data	1	-	-	-	1	4	6	0.1	0.07
<b>Total</b>	<b>817</b>	<b>413</b>	<b>216</b>	<b>302</b>	<b>1160</b>	<b>1180</b>	<b>4088</b>	<b>100.0</b>	<b>45.50</b>

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

Source: Numerator Mortality Review Database; Denominator Statistics NZ Estimated Resident Population

Table E.3: Mortality (number of deaths), by gender and cause, 2004-2009 combined (n=4088 deaths)

	Female	Male	Total
<b>Medical</b>			
Infectious and parasitic disease	27	54	81
Neoplasms	157	179	336
Diseases of the blood and blood-forming organs and disorders of immune system	6	9	15
Endocrine, nutritional and metabolic diseases	46	46	92
Mental and behavioural disorders	3	3	6
Diseases of nervous system	101	134	235
Diseases of the eye and adnexa	1	1	2
Diseases of ear and mastoid process	-	-	-
Diseases of circulatory system	51	87	138
Diseases of respiratory system	62	87	149
Diseases of digestive system	11	7	18
Diseases of skin and subcutaneous tissue	-	2	2
Diseases of musculoskeletal system and connective tissue	13	6	19
Diseases of genitourinary system	4	3	7
Pregnancy, childbirth and the puerperium	4	-	4
Certain conditions originating in the perinatal period	36	58	94
Congenital anomalies	144	176	320
Symptoms & abnormal findings not elsewhere classified	-	-	-
Unknown	-	-	-
<b>Total medical</b>	<b>666</b>	<b>852</b>	<b>1518</b>
Percentage by gender	<b>43.87%</b>	<b>56.13%</b>	
<b>Unintentional injury</b>			
External cause unknown	-	-	-
Adverse effect of medication or treatment	2	2	4
Health system error	-	-	-
Cut/pierce	1	5	6
Drowning	27	76	103
Fall	13	52	65
Fire/burn/heat/smoke	11	24	35
Firearm	1	8	9
Machinery	1	9	10
Transport	285	701	986
Natural/environmental/animal	7	11	18
Overexertion/travel/privation	1	2	3
Poisoning	24	50	74
Struck by, against	4	12	16
Suffocation	21	47	68
Electrocution	-	7	7
<b>Total unintentional injury</b>	<b>398</b>	<b>1006</b>	<b>1404</b>
Percentage by gender	<b>28.35%</b>	<b>71.65%</b>	
<b>Intentional</b>			
Assault	50	56	106
Suicide	166	489	655
<b>Total intentional injury</b>	<b>216</b>	<b>545</b>	<b>761</b>
Percentage by gender	<b>28.4%</b>	<b>71.6%</b>	
<b>Unexplained</b>			
SUDI	147	187	334
SUD	18	39	57
Other	2	6	8
<b>Total unexplained</b>	<b>167</b>	<b>232</b>	<b>399</b>
Missing Data	3	3	6
<b>Total</b>	<b>1450</b>	<b>2638</b>	<b>4088</b>
Percentage by gender	<b>35.47%</b>	<b>64.53%</b>	

Source: Numerator Mortality Review Database

Table E.4: Mortality (number of deaths) among non-New Zealand residents, by cause of death and age group, 2004–2009 combined (n=75 deaths)

Category	< 1 year*	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	Total	%
Medical	8	1	1	2	4	5	21	28.0
Unintentional injury	-	1	4	2	11	33	51	68.0
Intentional injury	-	-	-	-	-	2	2	2.7
Unexplained	1	-	-	-	-	-	1	1.3
<b>Total</b>	<b>9</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>15</b>	<b>40</b>	<b>75</b>	<b>100.0</b>

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

Source: Mortality Review Database

Table E.5: Non-resident deaths (28 days–24 years) by country of residence, 2004–2009 combined (n=75 deaths)

Country	Deaths per year 2004–2009						Total deaths	
	2004	2005	2006	2007	2008	2009	Number	Percentage (%)
Australia	3	2	3	2	3	5	18	24.0
Canada	1	-	-	-	1	-	2	2.7
Chile	1	-	-	-	-	-	1	1.3
China	1	-	2	-	-	-	3	4.0
Cook Islands	3	-	2	-	-	-	5	6.7
Czech Republic	1	-	-	-	-	-	1	1.3
Denmark	-	-	1	-	-	-	1	1.3
England	2	2	-	1	3	1	9	12.0
Fiji	1	-	-	-	-	-	1	1.3
Finland	-	1	-	-	-	-	1	1.3
French Polynesia	-	3	-	1	1	1	6	8.0
Germany	-	1	-	1	-	-	2	2.7
India	-	2	1	1	-	-	4	5.3
Ireland	-	-	-	-	1	-	1	1.3
Israel	-	-	-	-	-	1	1	1.3
Japan	4	-	-	-	-	-	4	5.3
Kiribati	-	1	-	-	-	-	1	1.3
Malaysia	-	-	-	-	1	-	1	1.3
Niue	1	-	-	-	-	-	1	1.3
Norway	-	-	-	1	-	-	1	1.3
Philippines	-	-	-	-	1	-	1	1.3
Samoa	-	-	2	-	-	-	2	2.7
South Korea	-	-	-	-	-	1	1	1.3
Tonga	1	1	-	-	-	-	2	2.7
USA	1	-	1	2	-	1	5	6.7
<b>Total</b>	<b>20</b>	<b>13</b>	<b>12</b>	<b>9</b>	<b>11</b>	<b>10</b>	<b>75</b>	<b>100.0</b>

Source: Mortality Review Database

Table E.6: Mortality (number of deaths and age-specific mortality rates) by age group and DHB of residence, New Zealand 2004-2009 (n=4088 deaths)

DHB	28 days - <1year	Rate: 28 days - <1year*	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	%	Outside DHB	Inside DHB	% resident deaths outside DHB
Northland	41	3.04	23	45.26	15	21.37	10	12.82	64	94.48	52	122.93	205	5.0	31	174	15.1
Waitemata	66	1.47	40	24.46	27	12.68	28	12.43	89	38.99	122	59.06	372	9.1	134	238	36.0
Auckland	73	1.88	26	20.11	14	9.26	18	11.53	73	41.06	98	38.70	302	7.4	46	256	15.2
Counties Manukau	164	3.22	59	32.66	36	15.72	34	14.37	127	55.51	145	75.29	565	13.8	144	421	25.5
Waikato	85	2.64	49	40.57	21	13.47	40	24.05	114	69.85	116	79.40	425	10.4	46	379	10.8
Bay of Plenty	39	2.24	30	45.83	10	11.25	19	19.92	67	78.75	66	112.70	231	5.7	62	169	26.8
Lakes	25	2.51	8	21.47	8	16.52	9	17.75	39	85.98	33	97.86	122	3.0	23	99	18.9
Tairāwhiti	13	2.74	5	27.87	-	-	6	23.87	26	118.07	16	107.10	66	1.6	8	58	12.1
Taranaki	24	2.64	7	20.58	7	15.29	7	13.89	39	80.85	30	87.57	114	2.8	17	97	14.9
Hawke's Bay	32	2.32	21	40.46	12	17.36	15	20.16	60	87.80	37	78.86	177	4.3	18	159	10.2
Whanganui	19	3.57	7	34.83	1	3.62	8	25.69	34	115.41	30	146.63	99	2.4	27	72	27.3
MidCentral	31	2.28	26	50.56	16	23.31	16	21.65	61	76.79	54	74.38	204	5.0	41	163	20.1
Wairarapa	10	3.18	3	24.51	2	12.21	4	22.15	12	72.20	12	119.05	43	1.1	11	32	25.6
Capital & Coast	47	2.00	20	23.04	5	4.79	11	10.33	55	46.04	64	43.72	202	4.9	41	161	20.3
Hutt Valley	41	3.21	17	34.64	5	7.98	13	20.02	23	35.36	35	67.20	134	3.3	31	103	23.1
Nelson Marlborough	6	0.61	8	20.90	9	17.44	9	15.66	37	68.29	27	71.54	96	2.3	16	80	16.7
West Coast	1	0.41	3	32.47	2	16.10	3	20.08	10	80.91	9	102.04	28	0.7	8	20	28.6
Canterbury	54	1.41	34	23.49	13	7.07	29	14.80	108	51.75	135	64.12	373	9.1	32	341	8.6
South Canterbury	7	1.87	4	27.10	1	4.73	4	16.46	27	119.05	15	108.23	58	1.4	8	50	13.8
Otago	15	1.22	14	28.56	3	4.70	10	14.28	50	52.94	44	42.46	136	3.3	11	125	8.1
Southland	24	2.59	9	26.32	9	20.63	8	17.01	44	99.77	39	93.80	133	3.3	19	114	14.3
Unknown	-	-	-	-	-	-	1	-	1	-	1	-	3	0.1	3	-	100.0
<b>Total</b>	<b>817</b>	<b>2.20</b>	<b>413</b>	<b>30.33</b>	<b>216</b>	<b>12.33</b>	<b>302</b>	<b>16.21</b>	<b>1160</b>	<b>61.66</b>	<b>1180</b>	<b>67.54</b>	<b>4088</b>	<b>100.0</b>	<b>777</b>	<b>3311</b>	<b>19.0</b>

\*\* Under 1 years of age rate is shown as deaths per 1000 live births, all other age categories showing deaths per 100,000 resident population

Source: Numerator Mortality Review Database; Denominator NZHIS Live Births for 28 days - <1year, Statistics NZ Estimated Resident Population for 1-24 years of age