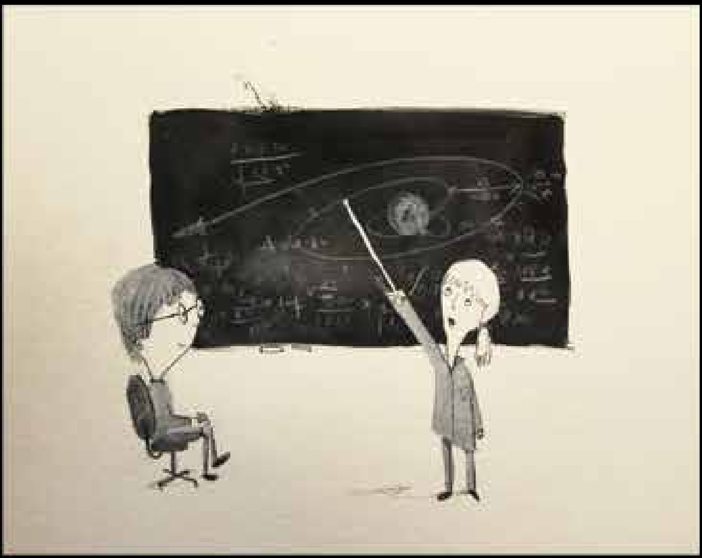
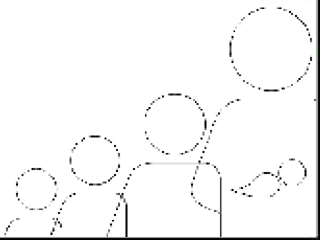


Health and wellbeing of under-25 year olds in Southern District Health Board 2019



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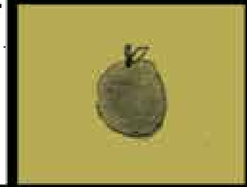

New Zealand Child and Youth
Epidemiology Service

Health and wellbeing of under-25 year olds in Southern District Health Board 2019

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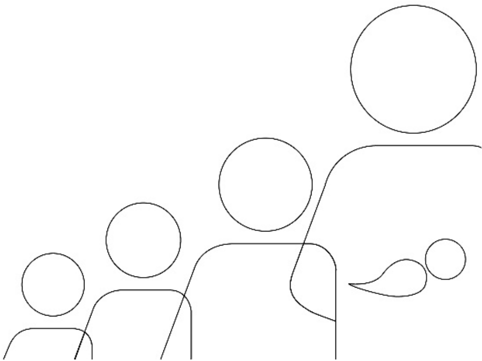
2020



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Smith L. Young people’s alcohol use. In: Duncanson M, Oben G, Adams J, Richardson G, Wicken A and Smith L. 2020. Health and wellbeing of under-25 year olds in Southern District Health Board 2019. Dunedin: New Zealand Child and Youth Epidemiology Service, University of Otago. https://www.otago.ac.nz/nzcyes

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1. Introduction

In this report the New Zealand Child and Youth Epidemiology Service (NZCYES) presents information to assist in the planning and funding of services that can collectively improve, promote and protect the health and wellbeing of children and young people aged under-25 years. This is the final of three age-based reports: indicators presented in 2017 had a focus on the first five years of life, and the 2018 report had a focus on the health and wellbeing of under-15 year olds.

Data for the indicators presented in this report were extracted in 2019 from a range of routinely collected national datasets. The report provides an analysis of the most recent data available for each indicator at the time of writing. Unadjusted rates should be interpreted in light of the differing patterns in age structure, ethnic composition, social and material deprivation in each DHB and in Aotearoa overall. Evidence for good practice is presented for each section, compiled from published scholarly literature and from publicly available guidelines, policies, and reports. Where possible, the evidence for good practice includes discussion of equity issues relevant to each indicator, to inform service planning and delivery.

The sections and review topics of the 2019 report are released, initially, in parts following the response of Aotearoa to the COVID-19 pandemic that commenced in early 2020.

The two review topics included in this report were selected by DHB representatives: *Alcohol use in young people* by Lee Smith, and *Promoting mental wellbeing in school* by Judith Adams and Georgia Richardson. These two sections of the report can inform strategies to promote health and wellbeing for all young people. Intervention and treatment services, supportive environments, and healthy cultural norms around drinking are some key components to addressing hazardous alcohol consumption in Aotearoa's youngest generations. Through school-based initiatives, services can support the mental wellbeing of children and adolescents and thus invest in their long-term flourishing.

Navigating sexual and reproductive health is important to the lives of many young people. Information on reproductive planning and pregnancy rates can provide an indication about the accessibility of services and provide an indication about the future social and economic participation of this generation of young people and the sustainability of the overall population and economy.[1] These indicators are presented in the section on *Reproductive health*.

The section on *Mental Health* presents information on the prevalence of selected mental health diagnoses in young people, the mental health services utilised by young people and the hospitalisations of young people that are associated with mental health issues.

Selected indicators about substance use and smoking, alcohol and drug service utilisation, and alcohol and drug hospitalisations are presented in the *Substance use* section. These indicators are important for overall wellbeing, growth, and long-term health of children and young people and inextricably linked to other wellbeing measures presented in the 2019 report.

The United Nations Convention on the Rights of the Child establishes that every child is deserving of a state-level commitment towards the promotion of their social, spiritual and mental wellbeing, as well as towards their protection from all forms of violence and harm.[2] The section on *Safety and Security* provides an overview of indicators relating to the protection of children and young people in Aotearoa, including information about assault and self-harm.

Supporting and adding value to the lives of children and young people with cancer is an important part of planning and funding decisions and is presented in the section on *Cancer*.

The report appendices describe the processes used in compiling information for these reports, including the methods used to develop evidence for good practice, and the statistical methods used in the data analyses. The appendices give further information about the data sources used for the indicators in the report, explanation about classification of ethnicity and social and material deprivation, and a list of the clinical codes relevant to each indicator.

In summary, the 2019 report on health and wellbeing of under-25 year olds presents data and interpretation on a set of relevant indicators extracted from national health datasets. The data used were the most recent available at the time of writing, and provide a snapshot of achievements and challenges in these areas. This report cannot address questions that require outpatient data, as these are not yet available at a national level. Developing systems that can provide a fuller picture of outpatient and primary health care data is important to inform child health service planning at national and DHB levels. The NZCYES is liaising with the Ministry of Health as they develop and roll out a patient flow system that will include primary care and outpatient data.

References

1. World Health Organization. 2020. Family planning/contraception methods. https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception accessed September 2020.

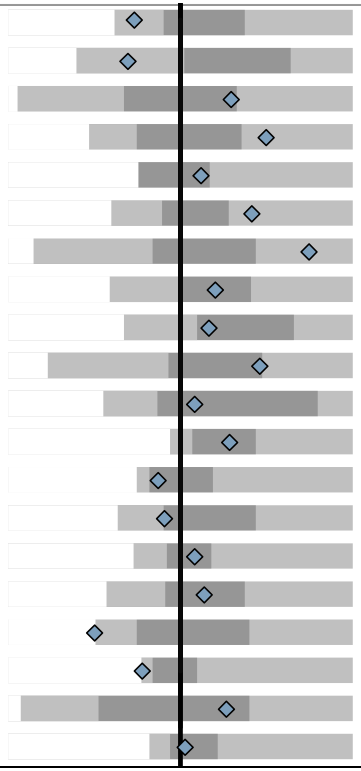
2. UN General Assembly. 1989. Convention on the Rights of the Child. http://www.ohchr.org/en/professionalinterest/pages/crc.aspx accessed September 2020.

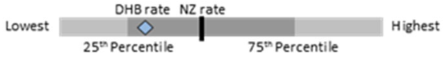
Indicator overview

An overview of the health and wellbeing indicators of under-25 year olds included in this report for Southern DHB is presented in Figure 1-1, with the national rate and the range of values observed across all DHBs.

Figure 1-1. Summary indicator graph, Southern DHB vs New Zealand

	Indicator	Period	Southern DHB number	Southern DHB rate	NZ rate	Lowest DHB rate	Indicator range	Highest DHB rate
1	Teenage mothers aged under 20 years	2014–2018	561	9.65	15.69	7.11		38.24
2	Mothers aged 20–24 years	2014–2018	2,432	39.82	55.72	24.28		108.15
3	Psychological distress (high or very high) in young people	2014-2016	..	11.50	9.40	2.80		16.40
4	Diagnosed depression in young people	2014-2016	..	14.50	9.30	3.90		19.60
5	Diagnosed bipolar disorder in young people	2014-2016	..	0.90	0.60	0.00		3.10
6	Diagnosed anxiety disorder in young people	2014-2016	..	12.40	7.90	3.60		18.70
7	Hospitalisations for mental health conditions in young people	2014–2018	2,910	12.31	9.28	5.85		13.31
8	Clients aged 0–14 years seen by mental health services	2017	1,788	31.28	28.26	22.27		43.10
9	Clients aged 15–24 years seen by mental health services	2017	3,674	77.73	68.75	51.17		122.59
10	Alcohol use in young people	2014-2016	..	s	76.00	63.70		92.10
11	Smoking status in young people	2014-2016	..	s	16.70	10.80		30.10
12	Cannabis use in young people	2014-2016	..	s	16.70	15.10		45.00
13	Clients aged 0–14 years seen by alcohol and drug services	2017	87	1.52	2.49	0.49		10.41
14	Clients aged 15–24 years seen by alcohol and drug services	2017	826	17.48	19.54	11.08		42.98
15	Alcohol-related hospitalisations of 15-24 year olds	2014-2018	517	218.76	189.51	100.42		519.31
16	Hospitalisations due to injuries arising from assault, neglect, or maltreatment in children	2014–2018	51	17.92	14.97	6.23		35.26
17	Hospitalisations due to injuries arising from assault in young people	2014–2018	144	60.93	112.67	60.93		217.34
18	Deaths due to injuries arising from assault in young people	2000–2016	8	1.01	1.81	1.01		5.44
19	Hospitalisations for injuries arising from intentional self-harm in 10–24 year olds	2014–2018	1,562	477.44	437.35	299.41		586.69
20	Deaths from suicide in 10–24 year olds	2012–2016	46	14.00	13.12	8.05		42.48





2. Young people’s alcohol use

Lee Smith

Introduction

In only three regions of the world, including Europe, the Americas, and Western Pacific (of which New Zealand is a member), more than half of the population consumes alcohol.[1] In 2009, it was estimated that the cost of alcohol and social harms was 1% of the gross domestic product of high and mid-income countries,[2] and also $5.3 billion for New Zealand[3] (although this was disputed[4]). Globally and nationally, young people aged 15 to 24 years make up the highest proportion of drinkers, and are also the age group most likely to engage in binge drinking.[1,5] At the same time however, young people also have a lower tolerance to alcohol than adults (due to psychological and biological immaturity).[6,7] The hazardous alcohol consumption patterns of young New Zealanders, and associated alcohol-related harms, are well documented in national literature. Some of these harms include interruptions to education and/or work, illegal behaviours, violence, sexual risk-taking, hospitalisations, increased risk of accidents, injury, alcohol poisoning, and death.[8-11] Given the social and financial costs of hazardous drinking and alcohol related harms, finding ways to mitigate young people’s problematic alcohol use are urgently needed.[12]

This chapter will explore national policy on alcohol regulation and sales, and provide an overview of national research on young people’s alcohol consumption patterns. Groups of young people who are disproportionately represented in the statistics for problematic alcohol usage and/or alcohol-related harms are mentioned, and the reasons why young people may engage in binge drinking are reported. An overview of alcohol-related harms is then given, and the chapter is concluded with a discussion of interventions aimed at reducing hazardous drinking amongst young people.

The sale and marketing of alcohol in New Zealand

Government regulation and alcohol policy

In 1989, the New Zealand Government started to liberalise alcohol sales and the following year, supermarkets and similar stores began selling alcohol.[13] The 1999 *Sale of Liquor Amendment Act* (henceforward *LAA*), lowered the minimum legal age for purchasing alcohol from 20 to 18 years.[14]

In 2010, the New Zealand Law Commission (NZLC) conducted a review of New Zealand’s alcohol policy and laws. They argued that the knowledge of alcohol-related harms had advanced exponentially since 1999, and the *LAA* had no mention of the health effects of alcohol consumption or its link to criminal offending.[15] The NZLC recommended that the *LAA* should be replaced with a new *Alcohol Harm Reduction Act* that focused on limiting the advertising and sale of alcohol (restricted to certain days, times and places), providing more treatment options, and reverting the minimum legal alcohol purchasing age back to 20 years.

In response, the Government introduced the *Sale and Supply of Alcohol Act 2012 (SSA)* where alcohol sales were limited to between 7am and 11pm in off-licence premises and 8am to 4am in licenced premises (and a one-way door policy implemented in licensed premises after a certain time), but the minimum legal purchase age remained at 18 years.[16] The Government also made supplying alcohol to under-age drinkers a criminal offence, unless it is given to a child by a parent/guardian or someone with parental consent (prior to the *SSA*, alcohol could be supplied to underage drinkers in private spaces). Following this change there was a small decline in the social supply of alcohol to underage drinkers, but parents/guardians are now supplying their children with greater quantities of alcohol than previously.[17] Consequently, it appears that making the supply of alcohol to those under 18 years a criminal offence may have had little effect on under-age alcohol consumption.

Availability and marketing of alcohol

New Zealand also has a volumetric excise tax on alcohol, which rises with the concentration of ethanol (adjusted annually for inflation), with a 15% goods and services tax also applied.[18,19] In comparison with other countries, such as nearby Australia, this tax rate is low.[20] New Zealand incomes have been increasing at a faster rate over recent decades than the price of alcohol and thus alcohol has become increasingly affordable.[21] In 2017, a person on the median income was able to purchase a standard drink of whisky and a ready to drink (RTD) after working 2.6 minutes (while cheap cask wine would take 1.6 minutes and beer 2.8).[21] The price of alcohol purchased in supermarkets and other retailers is almost one quarter of that purchased in licensed premises, which may explain why increasing numbers of young people are preloading or consuming alcohol in private spaces prior to going out.[21,22]

Numerous studies have also highlighted a positive link between alcohol advertising and young people's early and hazardous alcohol consumption.[23-26] In New Zealand, the alcohol industry regulates its alcohol advertisements (although they must meet with the Advertising Standards Authority guidelines).[27] Alcohol advertisements are common in the media and alcohol companies sponsor such things as music festivals and sporting events, which associate alcohol consumption with coolness, excitement and fun.[23] A recent study showed New Zealand children see an average of 4.5 alcohol advertisements per day,[28] and young people under 18 years can easily recite the alcohol advertisements that they see.[24] Such exposure may reinforce positive associations with alcohol and increase alcohol consumption amongst young people.[23-27]

Why do young people drink?

In New Zealand, alcohol is almost framed as a necessity for social interaction and is considered to increase a person's self-confidence and lower one's social inhibitions.[9,15,29-31] Given young people are immersed in New Zealand culture, then it is unsurprising that they have also reported that they drink to enhance their sociability and confidence, as well as to initiate sexual and/or romantic relationships.[29,32-34] Some young people have stated that they engaged in binge-drinking because it is "what New Zealanders do".[30]

There is also a long national association in New Zealand of linking masculinity with hazardous drinking, thus young men may engage in binge drinking in an attempt to constitute their masculinity.[35,36] This may explain why young males are more likely to engage in binge drinking than their female counterparts.[37] However, the traditional gendered gap in alcohol consumption and binge drinking has narrowed in recent years, with younger women 18 to 20 years consuming more alcohol than their male counterparts in 2012/2013, but young men were more likely to binge drink.[38]

Young people in national studies have reported similar reasons for why young people engage in binge drinking. They do so because it is viewed as fun, exciting, enjoyable, and considered to create a buzz and enhance the party mood.[34,39-42] Drinking is also a normative behaviour amongst young people, and therefore some drink because of peer pressure, or a desire to 'fit in', to map their belonging to their friendship group, or in an effort to appear 'cool'.[30,41,42] Some young people have also reported drinking because they are bored, to relax, or to demarcate the end of the week or alternatively, the weekend.[22,30,34] Nevertheless, some young people also drink to forget or cope with specific aspects in their lives, which suggests they are drinking in an attempt to manage unhappiness or depression and/or anxiety.[34]

School students' alcohol consumption patterns

There is an abundance of international research focusing on school students' alcohol consumption patterns.[43-50] Many of these studies attempt to document the alcohol use and hazardous drinking amongst various populations of students.[43-50] For instance, in 2015, it was estimated that 32.8% of Canadian school students consumed alcohol and 17.5% engaged in binge drinking.[51] Various national surveys have also documented the percentage of young people who consume alcohol and engage in binge drinking. For instance, results of the 2018/2019 annual update of the *New Zealand Health Survey* showed that 35.4% of young people aged 18-24 engaged in hazardous drinking, while 6.3% of adolescents aged 15 to 17 also drank in this manner.[52] Such statistics are in line with the Canadian study.

However, along with other Western countries (e.g. Canada, the USA and Australia) the number of adolescents who engage in hazardous drinking has fallen in recent years.[51,53,54] For example, there were 18% less young people who reported drinking in a manner that could harm themselves or others in the 2017/2018 annual update of the *New Zealand Health Survey* compared to the earlier 2006/2007 update.[5] Given that early onset of alcohol consumption is associated with later alcohol dependence, then such a finding is positive.[55,56]

The Youth 2000 series

The most extensive information on secondary school students' alcohol consumption patterns has been reported by the Adolescent Health Research Group responsible for the Youth 2000 series of national surveys, as well as articles published by various members of the Group. The Youth 2000 series has so far consisted of three large national surveys), undertaken with mainstream and special character secondary schools; *Youth'01* (9,699 participants), *Youth'07* (9, 107 participants), and *Youth'12* (8, 500 participants), with a further survey planned for 2020.[57,58]

Results of the *Youth'12 Survey* showed that 11% of participants reported very high substance abuse with binge drinking being the most common form (8% of those under 16 years and 12% of those 16 years and over).[59,60] Those students with high substance abuse had higher rates of obesity, depression, self-harm and suicidal ideation than those who did not, and also reported higher rates of sexual abuse/coercion, violence, and injuries requiring medical attention following substance use.[59] Alongside heavy alcohol use, these students were also more likely to report gambling, cigarette smoking, marijuana use, and consuming other illicit substances than those who did not.[60]

Results of three surveys have shown a decline in the number of young people who report hazardous alcohol consumption over time (40% in *Youth'01*, 34% in *Youth'07* and 23% in *Youth'12*).[61] At the same time, however, there has been an increase in the number of female students under 16 years (from both low and high socioeconomic backgrounds) who reported hazardous drinking during this period.[61]

Some smaller regional studies have been undertaken with high school students on the West Coast (as well as parental attitudes to alcohol consumption in adolescents),[39] and from across the regions of Otago, Southland and Hawke's Bay,[40] which report similar statistics on the number of young people drinking. Like the Youth 2000 series, these surveys also report that the percentage of young people consuming and purchasing alcohol increases with age.

It is interesting to note that the combined results for the *2014, 2015, 2016 New Zealand Health Surveys* showed that young people (aged 15 to 24 years), in the Auckland and Counties Manukau District Health Board regions were significantly less likely to consume alcohol in the last year compared to the national average for their age group.[37] However, past year alcohol consumption was significantly higher than the national average for young people in the Hauora Tairāwhiti, South Canterbury and Southern District Health Board regions. Although it cannot be ascertained why this is the case, the largest population of Pasifika peoples living in New Zealand reside in urban Auckland.[62] Pasifika adults and young people are less likely to drink than New Zealand Europeans,[62] which may explain the lower than national rates of youth drinking in the Auckland and Counties Manukau regions (although we acknowledge this is speculation).

Inequities in alcohol abuse and associated harms

Unfortunately, Māori students (like indigenous youth in Canada and the US) are more likely to consume alcohol earlier and engage in binge drinking than their New Zealand European counterparts and are therefore over-represented in the statistics for alcohol-related harms.[34,63-65] The *Youth'07 survey* found that possible factors associated for this was the view that 'drinking alcohol is okay for people my age', and having friends who consumed alcohol and friends (and adults) who supplied them with alcohol.

However, comparisons of students' alcohol consumption across ethnic groups fails to consider the contextual factors that may lead to these statistics, which may perpetuate negative stereotypes.[66] For instance, in the *Youth'07* survey Māori, Pasifika, Asian, and Other students who reported experiencing ethnic discrimination were twice as likely to report binge drinking as those who did not.[67] Māori alcohol consumption patterns need to be explored through the pressures of discrimination, colonisation, and social inequities (Māori and Pasifika peoples are more likely to be represented in the statistics for financial hardships, unemployment and low paid employment than New Zealand Europeans).[22,68]

Pasifika students tend to either abstain from drinking or binge-drink,[7,57] with those living in crowded homes and residing in low socio-economic locations being more likely to do so (although Pasifika students are less likely to binge-drink than New Zealand European students).[69,70] Given that liquor outlets tend to be clustered in low socioeconomic locations, then it is likely that Pasifika and Māori youth have more access to alcohol than their more affluent counterparts.[71,72] Pasifika young people have also reported that they are more likely to consume alcohol with their parents, while cultural and spiritual beliefs, parental supervision and parents' ability to speak more than one language act to buffer hazardous drinking amongst young Pasifika peoples.[7,22]

Young rainbow New Zealanders, like their counterparts in other Western countries, also experience disproportionally high rates of hazardous alcohol consumption.[73-76] For instance, same/both sex attracted students in the *Youth'12* survey were twice as likely to report binge-drinking in the last four weeks, than their opposite sex attracted counterparts.[75] Results of another national study showed that both-sex attracted young people reported engaging in binge-drinking because they felt excluded from, and stigmatised by, lesbian/gay and heterosexual communities alike.[32] However, such studies need to explore how the link between heteronormativity (where heterosexual is purported to be the normal sexuality) and discrimination impacts on the alcohol consumption of rainbow youth.[76] It should also be noted that rainbow students' alcohol consumption has been declining in recent years, however, it is not to the same extent as heterosexual students.[77]

Furthermore, international research has highlighted that alternative education students have higher levels of binge drinking and poly-substance abuse, than mainstream students.[78,79] In 2002 the Adolescent Health Research Group surveyed 268 alternative education students aged 16 and over residing in the Northland and Auckland region. Almost all of the participants had tried alcohol, cigarettes and marijuana, while almost half had also tried hallucinogens, stimulants, narcotics and/or cocaine.[80] However, given some students are excluded from mainstream schools because of alcohol and drug use such a result cannot be considered as surprising.[81]

Young adults

Worldwide the prevalence of high episodic or binge drinking peaks in young adults aged 20 to 24, which is also the case in New Zealand.[1,82] Across the *2015, 2016, 2017 New Zealand Health Surveys*, the prevalence of monthly reported binge drinking was highest amongst those aged 18 to 24 years, but the rate for daily or weekly binge drinking was similar between those aged 18 to 24 years and 45 to 54 years.[37]

Nevertheless, like in other Western countries, regular updates of the National Health Survey have shown a steady decline in the number of young adults consuming alcohol and engaging in weekly (or more) binge drinking.[83,84] Many international and national studies have focused on the alcohol consumption patterns of tertiary students.[85-90] This may be because excessive alcohol consumption is considered to be a facet of university life and therefore, tertiary students have been identified as at higher risk of alcohol-related harms than non-students.[85-90] Nevertheless, it may simply be because they are more readily accessible study population than their working or non-studying counterparts.

University students

Like their international counterparts, New Zealand university students have reported regularly vomiting, confusion, blackouts, arguments and fighting, unwanted sexual advances, and criminal offending (which are discussed in more depth in the following section titled alcohol related harms), as a result of their binge drinking.[84-86] Halls of residence are also identified as places where young people are likely to drink to excess,[85,91,92] while birthdays and specific events (e.g. the annual Hyde Street party in Dunedin) are regularly portrayed as drunken affairs (although the Otago University Students Association has in recent years begun to regulate entry into the event and provide food).[93] Excessive alcohol consumption is associated with a normative student identity and it is seen to demark one as sociable, popular and friendly, while those who do not drink may be labelled negatively and stigmatised.[88]

In stating this, however, some university students who do not drink or drink in moderation view their drunken counterparts as burdens.[8] Those who abstain from binge drinking have reported having their sleep and study interrupted by their intoxicated counterparts, having to look after their intoxicated peers, while experiencing vomit in communal bathrooms.[94] These students have also reported being subjected to insults, ridicule, assault, unwanted sexual advances and/or sexual assault by their intoxicated peers.[94]

Drinking patterns

More recent qualitative national studies have explored the role of binge-drinking and pre-loading in young adult's friendship groupings across occupations.[22,30,42,95] These studies highlight how excessive alcohol consumption is a normalised part of young people's socialisation and is considered integral to a 'fun night out'.[30,95-97] Participants have reported preloading because alcohol is cheaper than purchasing at bars and clubs; however, it was also part of social rituals including 'getting ready', listening to music, drinking games, and drinking in hostels with large groups of students and then going out.[95,96] However, some young adults consume too much alcohol and therefore cannot go out, which is considered annoying; others vomit so that they can consume more.[42,96,97] A young mother in one study, reported that waking up covered in vomit and unable to remember what happened was simply her attempt at 'blowing off steam'.[42]

In one study Māori and Pasifika young women reported that binge-drinking is a necessary component of 'a girls' night out' and that they purchased drinks with the highest alcohol content and limited their food intake so that they could become drunk sooner.[22] Unlike New Zealand European adolescents, young Pasifika women are more likely to drink in single-sex groups, while both Māori and Pasifika young women will not drink on occasions closely aligned with their culture.[22] Pasifika young adults of both genders in another study have reported that their religious beliefs (and in one instance, their role as a youth worker and role model for young people) protected them from hazardous drinking.[42]

All of these studies report that young women are not left alone by their friends while drinking because of the potential for sexual victimisation, while young men are deemed capable of being able to look after themselves (although young males are more likely present at hospitals for alcohol-related assaults).[22,30,42,96,98]

Alcohol-related harms

There are numerous alcohol-related harms that accompany hazardous drinking in which young people are overrepresented. Some of these are reported in the following section.

Deaths and drink driving

From 2005 to 2007, there were 87 deaths of children and young people in New Zealand, which were directly associated with alcohol use. These included motor vehicle crashes (31%), falls (30%), assaults (29%), poisonings (20.6%), drownings (15.7%), and suffocations (9.7%).[99] Young adults aged 20-24 years were more likely to die from their own alcohol consumption (primarily through drink driving), but those aged 15 to 19 years primarily died as a result of other's drinking (assault or being a passenger with a drunk driver).

Between 2014 and 2016, 16 young people aged 15 to 19 years, and 37 aged 20 to 24 years, died due to drink/drugged driving. During the same period 22 passengers aged 15 to 19 years, and 15 aged 20 to 24 years, died as a result of travelling with an intoxicated driver.[100] Young males aged 20 to 24 were almost twice more likely to drink/drug drive and be involved in fatal crashes than young women of the same age (37% and 19% respectively). Nevertheless, from 1995 to 2016, the number of drink/drugged driving deaths decreased by 33% amongst 15 to 17 years olds, and by 4% amongst 20 to 24 year olds. This decline corresponds with a number of driving legislation changes including a zero alcohol limit for drivers under 20 (Land Transport Act 1998), and a reduction from 400 mcgs to 250 mcgs per breath for those aged 20 and over (Land Transport Amendment Act (No 2) 2014).[101-103] Moreover, in 2011 the minimum driving age increased from 15 to 16 years. The downward trends in drink driving crash and death statistics need to be viewed through these various legislative changes. However, after the introduction of the lower alcohol limit for those 20 years and over, 35% of 1, 666 New Zealanders reported that they consumed less alcohol prior to driving but still drove, with the majority of these participants being young men.[104]

Hospital presentations

The lowering of the legal alcohol purchasing age to 18 years in 1999, has also correlated with an increase in numbers of young people entering hospital emergency departments.[105] This increase in presentations is especially pronounced in the number of young men presenting for alcohol-related assaults.[98] Furthermore, from 2008 to 2012, there were 188 admissions in Southern District Health Board hospitals for alcohol poisoning and extreme intoxication in young people under 18 years (although total alcohol related presentations was highest in those aged 18 to 24 years).[106]

Impacts on physical health

The immediate effects of a binge drinking session include confusion, blurred vision, slurred speech, confused thoughts, nausea, vomiting (with risk of asphyxiation) and headaches, and may directly lead to alcohol poisoning, coma and death.[107,108] Unfortunately, as stated previously, national studies have highlighted how young people consider blackouts, vomiting, headaches, and small injuries as acceptable components of excessive drinking.[57,85,95] Binge drinking may also damage a young person's developing brain and thereby cause diminished cognitive functioning throughout their life.[109,110] Binge-drinking also increases the risk of accident, and disability, as well as death (see above) from which young people are not immune. In the long term however, heavy alcohol consumption can a lead to brain damage (e.g. increased risk of stroke and dementia and extreme use may lead to Wernicke-Korsakoff syndrome, which is caused by reduced ability to ingest thiamine due to alcohol damage), heart disease (increased blood pressure), liver damage (increased risk of cirrhosis and liver cancer), and stomach conditions (such as gastritis) and can lead to a higher risk of developing diabetes and breast cancer in women.[107,111,112]

Impacts on sexual health and pregnancy

Due to lowered inhibitions, drinking is associated with sexual risk taking (including practicing unprotected sex, participating in unwanted sexual activities or those later regretted), increased risk of unwanted sexual advances and assault (both as the victim and perpetrator).[57,85-87,113,114] Students who engage in hazardous drinking and unprotected sex may lead to higher rates of sexually transmitted infections and unplanned pregnancies.[87] Hazardous drinking can hinder male sexual performance, and consumption of alcohol during pregnancy can result in fetal alcohol syndrome disorders in children.[111]

Impacts on mental health

Early onset of alcohol use is associated with increased alcohol dependence and mental health concerns into adulthood.[55,56,115] Alcohol use may induce psychosis and is obviously linked with alcohol dependence syndrome and associated withdrawal.[116] The link between alcohol, anxiety and depression has been well established (although this could be considered as a 'chicken before the egg' type scenario).[12,117-120] Alcohol/drug abuse and depression are risk factors for self-harm, suicide attempts and deaths from suicide.[121-126] For example, participants in the *Youth'12* survey that were identified as having high rates of alcohol and substance abuse were twice as likely to report depressive symptoms, self-harm and suicidal ideation compared to those that were not.[60] In New Zealand, alcohol and/or drug use is apparent in more than half of youth deaths from suicide.[125]

Legal impacts

A third of criminal offences in New Zealand are committed by someone under the influence of alcohol.[127] Globally, those young people who are perpetrators of rape and homicide are likely to have consumed alcohol prior to their offending (but this behaviour is correlated with other factors such as personality disorders, impulsive conditions, low intelligence, and poor social connectedness, amongst others).[128] Being a young male (who are statistically more likely to commit crimes than young women) and related alcohol use are listed as risk factors for criminal offending.[128] New Zealand data highlights how alcohol and substance abuse is linked with young people committing impulsive crimes (e.g. assault, violence, property damage, vandalism, and arson).[129] Furthermore, the number of young people arrested for drink/drug driving, disorderly behaviour, and assault increased after 1999 when the alcohol purchasing age was lowered (as outlined previously).[130] Youth offending in New Zealand has reduced by two thirds between 2008/2009 and 2018/2019, but no information regarding alcohol use in youth offending is available at present.[131]

Social impacts

Excessive alcohol consumption can also have an impact on friendships and social networks, as well as family relationships.[132,133] Heated arguments and conflict with friends and peers are reported when young people engage in hazardous drinking.[85] Negative impacts on friendship and social networks are more likely to be experienced by young men and those residing in more financially deprived regions.[132] Young people who are classified as heavy drink/drug users also report that they have been told by friends and family members that they have to reduce their consumption,[60] which may cause stress in their relationships. Given that violence increases with alcohol use and drinking is a social activity, then it is likely that some of this violence may be directed at friends, family and partners of young people.[134] At the same time some young people report heavy drinking to manage family stress and associated anxiety.[135]

Negative impacts on study and employment

Hazardous drinking impacts on educational achievement with those young people with alcohol dependence often requiring remedial academic support.[136] Moreover, 6% of young people who participated in the *Youth 12* survey reported that their drinking impacted on their school work,[57] while 14.1% of Maori students who participated in the *Youth 07* survey reported that their drinking impacted on their school work.[63] Students who engage in binge drinking may experience falling grades, fail to meet assignment deadlines or sit examinations, or may sit examinations impaired by hangovers.[137,138] Missing classes/lectures is a taken for granted consequence of hazardous drinking, while some university students may not select courses on Fridays because this may impact on their Thursday night drinking.[89,95,139]

Hazardous drinking may result in long-term unemployment, workplace dismissal, absenteeism, poor punctuality, lowered productivity, increased risk of theft, workplace conflicts, and result in low workplace morale.[140] In New Zealand, alcohol consumption has also been linked to impaired workplace performance, and increased risk of workplace injuries and death.[141,142] Some New Zealand employees have reported operating machinery while under the influence of alcohol with young males over represented in these statistics.[143] Some young people also post harmful posts on social media while intoxicated, which can harm their current and/or future career prospects.[144] However, peer-reviewed research focusing on the impact of alcohol misuse by young people in the workplace is scarce.

Interventions

The report resulting from the 2018 governmental inquiry into New Zealand Mental Health and Addiction Services, has included a number of recommendations aimed at targeting high rates of substance abuse, and the increasing demand on treatment and mental health services.[145] When it comes to targeting alcohol abuse, the report authors maintain that the government needs to act on the recommendations of the NZLC (outlined in the earlier section titled government regulation and alcohol policy). At the same time, they also argue that the Government needs to be bold and take a strong leadership in policy related to alcohol regulation, as it has on cigarette consumption.

Raising the tax and establishing a minimum price on alcohol

A large body of evidence has shown that increasing the price of alcohol and setting a minimum price is effective in reducing hazardous alcohol consumption and associated alcohol-related harm.[146-151] Based on this evidence, the WHO asserted that Governments should increase the taxes on alcohol, set minimum prices, and regularly monitor the price of alcohol in relation to income levels and inflation.[152] Increasing the tax on alcohol can also provide Governments with revenue to balance the financial cost of alcohol-related harm.[152,153]

In 2018, Scotland was the first country in the world to establish a minimum unit price policy (MUP) for alcohol (set at 50p per 10 mL/8 g alcohol)[154] Following the MUP, alcohol prices rose by 0.64p per gram and a decline of 9.5g of alcohol consumed per adult in a household.[155] The largest reduction in consumption were beer, spirits, and cider, which the MUP aimed to target given that some spirits include cheap home/supermarket-brands and ciders are often high in alcohol content.[155] Although the health impacts of the introduction of the MUP have not yet been assessed, the subsequent price rise and reduction in alcohol consumption is likely to have positive result on hazardous alcohol consumption and alcohol harms.

In New Zealand, numerous health academics and public health organisations have also maintained that increasing the tax on alcohol will likely reduce harmful drinking and ‘offset’ the costs of alcohol-related harm.[15,18,21,145,156-158] For instance, Cobiac et al (2019)[18] modelled how a 15 cent increase in the price of a standard alcohol drink would result in a 4% drop in total pure alcohol consumed, and a 27% annual increase in excise tax revenue. They also claimed it would also reduce the costs of treating alcohol related traffic injuries (by $3.8 million) and save the country $240 million in regard to lost productivity, crime, and vehicle damage.

Heavy drinkers and young people who binge drink often purchase the cheapest alcohol (as reported previously).[156,159-161] An increase in the price of alcohol may therefore reduce problematic alcohol amongst risky drinkers, especially those residing in financially deprived areas where hazardous alcohol consumption is more frequent (this statement is not intended to be punitive or frame those on low incomes in a negative manner, but rather reflects the reality of the consequences of a society not addressing social inequity).[7,12,40]

Limiting the availability and marketing of alcohol

The panel responsible for the Government inquiry into mental health and addiction, received numerous submissions from people and organisations concerned about the number of liquor outlets in their area (which they were powerless to change), and how easy it was for young people to purchase alcohol.[145] However, as far back as 2010, the NZLC recommended that limiting the number of alcohol outlets and restricting alcohol sales to certain times, may reduce hazardous drinking and alcohol-related harms.[162-166] Limiting the number of alcohol outlets and the hours and days of alcohol sales has also been reiterated by leading national health researchers as well as the New Zealand Medical Association (NZMA), who are concerned about alcohol related- harm.[12,15,24,27,28,72,145,152,167-169]

National studies have shown that the increasing density of alcohol outlets and their close proximity correlate with young peoples' binge drinking, as well as increased statistics for crime, drink driving, and alcohol-related crashes.[170-174] The increasing density of alcohol outlets (which are more likely to be in low socio-economic neighbourhoods) leads to competition between stores, resulting in cheaper alcohol prices.[71,72,169] Limiting the number of outlets and their proximity to areas with large numbers of young people (for instance, near university halls of residence) may result in a decline in hazardous drinking (although this is speculation).

Given the links between advertising and alcohol consumption, the World Health Organization (WHO) has recommended that alcohol should not be sold at certain events that are primarily attended by young people (e.g. concerts and sporting events)[1,152] Moreover, given that the alcohol industry is responsible for regulating the sale of its own product, then the NZMA and NZLC have also argued that an external body needs to be established to regulate alcohol sales and advertising of alcohol should be stopped.[169]

Raising the minimum legal purchasing age

WHO has recommended setting a minimum age for purchasing and consuming alcohol as one step towards reducing hazardous drinking in young people.[152] Although New Zealand has set the minimum age for purchasing alcohol at 18 years there is no set age limit for when young people can consume alcohol.[14] Research from North America and Australia has shown how the minimum legal alcohol purchasing age does impact on young people's alcohol consumption and alcohol-related harms.[175-178] For instance, a reduction in the legal alcohol purchasing age from 21 to 18 years in the United States during the 1970s resulted in an increase in alcohol-related harms but this trend reversed when the legal purchasing age was reinstated to 21 years during the 1980s.[175,176]

In New Zealand, the decrease in the minimum legal purchasing age from 20 to 18 years has led to an increase in alcohol-related hospital presentations amongst young people.[98] Due to this increase, as well as the adverse effects of alcohol on young people's brains, then the NZLC and the NZMA have called for the reinstatement of 20 years as the minimum legal alcohol purchasing age.[15,169]

Strategies to combat drink driving

International research has highlighted how reducing legal alcohol driving limits has lessened instances of drink-driving and alcohol-related fatal crashes involving young people.[179-181] During the period of 1995 to 2016 there has been a national decline in fatal crashes involving alcohol, which as stated previously, has coincided with, but cannot be directly attributed to, the introduction of a zero alcohol limit for drivers under 20 years and the lowering of the alcohol limit for those over 20 years. Given that the legal alcohol limit is already set to nil for those under 20 years of age, additional strategies are needed to reduce harm.

Based on evidence, WHO maintain that random breath testing, public drink-driving campaigns (especially around events, such as public holidays) and targeting specific groups of drivers are options for reducing drink driving.[152] In New Zealand, the Office of the Auditor General[182] proposed that stricter police enforcement of alcohol laws, alongside confrontational drink driving public campaigns would improve national drink driving statistics. The combination of more roadside breath testing, stricter police enforcement of alcohol laws, and confronting public drink driving campaigns (targeting young males who are over-represented in drink driving statistics), may be effective in reducing alcohol related crashes, injuries and deaths.[104,183] Furthermore, given that peer pressure is a factor in why young New Zealanders drink and drive, then campaigns need to address this aspect of youth culture.[104,184]

Treatment interventions

Internationally, the WHO, and nationally, the panel of the Government Inquiry into Mental Health and Addiction, have maintained that more early intervention and alcohol treatment services are needed.[1,152] Doctors, nurses, psychologists and other health care workers can play a key role in screening for alcohol problems, and subsequently, whether or not young people are referred on to the various support and treatment services that are available.[169,185,186]

Systematic reviews of research on alcohol interventions highlight how they are generally effective in reducing hazardous alcohol consumption amongst older and young people.[111,187,188] Short-term interventions generally consist of a limited number of education or counselling sessions, which are aimed at curbing hazardous drinking and developing more effective coping behaviours.[111,187,189,190] These brief early interventions have proven effective in curbing the hazardous alcohol consumption by people who do not have alcohol-use disorders.[111,187,189,190]

More intensive community and hospital based programmes are available for people with alcohol addiction problems (including day, extensive day and residential programmes).[111,188,191,192] In these programmes numerous treatment approaches are used, including therapy (family, group, and individual) as well as varying counselling approaches with cognitive behaviour therapy (CBT) appearing to be the most common.[111,188,191,192] Others focus on relapse prevention, utilise the 12-steps, while some include pharmaceutical interventions (although the research debates some of these drugs.[111,188,191,192] Strong evidence highlights how these programmes are effective in reducing alcohol abuse, although some are more effective than others and people must also be willing to change their behaviour.[111,188]

New Zealand does have a number of hospital and community-based day and residential programmes, which may be effective in combating substance abuse problems (e.g. the Salvation Army's Bridge Programme).[193] However, some of these programmes only treat young adults over 18 years, and there also needs to be more research evaluating their effectiveness.

Younger adolescents are likely to have different treatment needs than adults due to their heightened susceptibility to peer influence and the effects of alcohol.[194,195] Adolescents may also be fearful of interventions dependent on their method of referral (e.g. the legal or educational system), while transport issues and the opening hours of intervention services may be barriers for younger adolescents accessing such services.[186] In stating this however, most New Zealand cities do have specialist alcohol and substance abuse treatment programmes for adolescents (although those in rural locations may be unable to access these services).[186] Some of these interventions are provided by some district health boards under the umbrella of youth mental health services, but others are provided by non-government organisations (e.g. Mirror HQ Youth Addiction Services, Dunedin), cultural intervention programmes (Awhi Mai Awhi Atu, Counties Manukau), as well as private providers (e.g. Ashburn Hall, Dunedin).[196]

International systematic reviews have highlighted general treatment modalities, as mentioned above, are effectively utilised with adolescents (i.e. individual, group and/or family therapy,[197-199] CBT.)[200,201] However, motivational approaches (e.g. rewards) are also prevalent in intervention approaches with young people.[202,203] It is likely that practitioners will utilise a number of treatment modalities, and it is important that these interventions are targeted to individual's specific circumstances and delivered by highly knowledgeable, skilled, and caring practitioners.[136,186]

A national guide was developed in 2017 by the youth addiction sector, for those working with young people with addiction issues.[186] This resource, based on best-evidence based practice, outlines risk factors for substance abuse, presents models of the steps of addiction and stages of withdrawal, youth wellbeing and behavioural change models. Moreover, necessary qualities for working with young people with substance abuse problems are listed as being open, communicative, respectful, truthful, flexible, and being mindful of one's own values and a young person's concerns about confidentiality. A number of cultural considerations that are necessary when engaging with Māori and Pasifika young people and their wider whānau are also given. Although this resource is not peer-evaluated, it is a valuable tool for those working with youth, as well as adolescents and families alike.

The Government needs to provide more treatment services and funding for alcohol and drug substance treatment services, which also include a range of cultural embedded treatment options for Māori and Pasifika peoples and adolescents.[145,186] This is highlighted by the results of the *Youth'12* survey, where approximately 10% of those identified as having very high substance use had difficulty accessing help when endeavouring to stop.[60]

Traditional interventions that are ineffective

Media campaigns

Reviews of studies on public media campaigns (e.g. television and billboard advertisements) that focus on drinking in moderation found no evidence that such campaigns result in responsible drinking.[111,204] This may be because such advertisements are outnumbered by glossy alcohol advertisements that promote their product as fun and exciting, while also enhancing female glamorousness, or masculinity (alcohol advertising is also linked to sporting prowess and male mateship).[30,205]

Alcohol and drug education

Although common, school alcohol education is generally reported as having little or no long-term impact on young people's hazardous alcohol consumption.[12,111,158,206,207] A review by Stigler et al,[208] of alcohol education programmes in the United States, concluded that programmes which helped students to identify and overcome societal pressures to drink, that included peer educators, targeted specific student groups, and involved parents, were more effective in curbing hazardous alcohol consumption than those that did not.

Moreover, results of an Australian research trial (School Health and Alcohol Harm Reduction Project SHAHRP) focused on an intervention to reduce alcohol harm (rather than promoting abstinence or delaying the onset of drinking), which was effective in reducing alcohol consumption in students.[209] The programme consisted of 13 alcohol harm reduction lessons (over 24 weeks), which were interactive, involving group work and devising scenarios for helping to reduce alcohol related harm. The participating students had greater alcohol-related knowledge, were less likely to consume alcohol, and experienced less alcohol-related harm from their own drinking and other's up until 18 months post-trial when the scores began to converge. Although, systematic reviews report little to no long-term reduction in hazardous drinking as a result of such programmes (and Foxcroft[210] questions the results of this study), then given that alcohol and drug education is a component of health education in New Zealand secondary schools, then approaches such as SHAHRP that may produce at least short term alcohol harm reduction, need to be considered.

In 2013, a national review of alcohol and drug education programmes implemented in New Zealand schools, was unable to evaluate their effectiveness (due to a mismatch in how they were evaluated).[211,212] Following this, the Ministry of Education[212] released a guide on alcohol and drug education programmes, which they based on the suggestions of the reviewer, which in turn were based in best-evidenced based practice. These include a whole school and community approach, combining alcohol and drug education with education on other mental health concerns, including the wider community as well as Māori and Pasifika views of health and wellbeing, making such programmes inquiry based and including professional development for teachers. Given that alcohol consumption often co-exists with mental health concerns, then such an approach may be effective than treating substance abuse as a single concern.

Tertiary institutions have also implemented interventions aimed at reducing binge-drinking and alcohol related harm in their student cohorts. In a comprehensive review of research on these programmes Babor et al.[111] explain that these interventions have typically included reducing the number of alcohol outlets by campus, banning alcohol on campus, and employee training in hazardous alcohol consumption. Nevertheless, the review found little evidence to show that these interventions lead to changes in students' hazardous drinking. Two other meta-analyses found that university interventions which included brief motivational approaches (i.e. advice on drinking) and skills-based interventions (e.g. focusing on stress management), did not lead to long-term behaviour change.[213,214]

From 2004 to 2014, the University of Otago has implemented a number of changes in an attempt to combat students' hazardous drinking and problematic drunken behaviours.[215] These changes have included implementing a stricter Code of Conduct, the formation of Campus Watch (security), purchasing and disestablishing traditional 'student pubs', banning alcohol advertising and alcohol consumption on campus, and tightened policy on alcohol consumption in halls of residence (amongst others). Researchers attempting to evaluate these strategic changes found there was little difference in the number of Otago University students who reported binge drinking compared with students from the other participating universities.[215] The authors also reported that, across the four participating universities, the number of participants who reported drinking in a hazardous manner had decreased by approximately one third between 2004 and 2014, and conclude that this reduction may be due to wider societal changes.

Alcohol warning labels

By 2018, 56 countries (such as the United States, South Africa and Australia) had introduced warning labels on alcohol bottles or cans outlining the risks of excess alcohol consumption in an attempt to curtail it.[1,216] A number of systematic reviews have concluded that there is minimal or no evidence to suggest that they are effective in reducing hazardous alcohol consumption, but these labels may act as a starting point for discussion about alcohol-related harms.[111,217-219] In 2018, the New Zealand Government made warning labels about the effects of alcohol consumption during pregnancy compulsory,[220] however other warning labels about the risks of heavy alcohol consumption are not.

Conclusion

In summary, in New Zealand and internationally, young people are over-represented in the statistics for hazardous drinking and associated alcohol-related harm. Amongst young people drinking for the sole purpose of getting drunk is common, while it appears that many young people do not understand the potential consequences of hazardous drinking. By binge-drinking, young people place themselves at higher risk of violence, sexual victimisation, engaging in unprotected sex, alcohol poisoning, alcohol-related injuries and death (amongst others). Hazardous drinking also negatively impacts on young people's academic and work performance as well as their relationships with employers, friends, family and sexual/romantic partners. Unfortunately, Māori, Pasifika, and rainbow youth, and those from low socio-economic backgrounds are disproportionately represented in the statistics for hazardous drinking and/or alcohol-related harms.

Young people report that they engage in binge drinking because it heightens their mood, it is fun and makes socialising easier; however, others do it to alleviate their stress, and to cope and forget. For some young people heavy alcohol use coincides with mental health concerns such as anxiety or depression, but such conditions and others are likely to be exacerbated by their alcohol use. Given the heterogeneity of young people's personalities, friendship groupings, background circumstances, and motivations for engaging in hazardous alcohol consumption, numerous strategies are needed to address it.

In 2010, the New Zealand Law Commission recommended a number of governmental changes to curb hazardous drinking in young people. Subsequently these recommendations have been reinforced by numerous health academics and researchers, the NZMA, and the panel of the Government Inquiry into Mental Health and Addiction Services. These have included increasing the minimum legal age for purchasing alcohol from 18 to 20 years, raising the excise tax on alcohol, establishing an external body to regulate the alcohol industry, and eliminating alcohol advertising (similar to the way it has in regard to cigarette advertising). Reducing the number of alcohol outlets, especially in low socio-economic locations is a further recommendation, as is introducing set minimum prices and restricting sales to certain days and hours.

Providing more alcohol intervention and treatment services, as well as allocating more public funding for them is a further recommendation. Investing public funding in such services is likely to save the country in the long term, as it will reduce the financial burden of alcohol related hospital presentations, imprisonment rates, as well as long term rehabilitation for those experiencing alcohol related injuries and road crashes. At the same time, programmes need to be available that cater for the cultural and gender/sexual diversity amongst young people. These treatment services need to be based in current best evidence-based practice, employ highly skilled practitioners and be evaluated for their effectiveness. Moreover, young people who leave these facilities need to have follow up support, while more rural programmes and/or support for rural adolescents to access urban youth services needs to be available.

At the same time however, given that some young people report drinking because it is what New Zealanders do, then the wider alcohol consumptions patterns of all New Zealanders need addressing, as do permissive attitudes to intoxication. Some parents/guardians may also wish to explore their role in supplying their underage children with alcohol and permitting binge-drinking in their children, although others are likely to feel powerless to curb such behaviour.

On a positive note, statistics have highlighted a decline in young people's alcohol consumption, hazardous drinking, and drink driving over recent years. Although it cannot be ascertained why this may be the case, such a trend in conjunction with the Government taking a strong lead in reducing alcohol-related harms by implementing the changes outlined above, may protect more of our young people in the future from alcohol-related harms.

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3. Promoting mental wellbeing in schools

Judith Adams and Georgia Richardson

Introduction

Schools have an ethical, professional, and legal responsibility to ensure that their practices promote the wellbeing of all students. This responsibility is outlined in the Code of Ethics for Registered Teachers and the Registered Teacher Criteria.[1]

Young people (people up to the age of 25) often face challenges to their mental wellbeing pertaining to financial security, living with dignity, safety, the livelihood of their whānau and communities, and establishing meaning in their lives in relation to the world around them.[2-4] These challenges are compounded by occurring at a time when young people are also facing key developmental challenges including choosing a path through the education system, beginning intimate relationships, leaving school, entering the workforce, leaving home and becoming independent.[5]

Mental disorders and substance use disorders are the leading cause of disability in children and young people,[2,6] and the median age of their onset is in adolescence.[2,7,8] Around half of all lifetime mental disorders have their onset by the mid-teens and three quarters by the mid-20s.[9]

The individual, public health, economic and other implications of mental health issues in the youth population make prevention and early intervention very important.[2,10] Many mental health problems in children and young people will remain undetected and compound[4,7] unless organisations and governments take an active role in helping young people thrive.[4]

Compromised mental wellbeing, unhealthy coping mechanisms, and problematic internalisation and externalisation of problems in youth have flow-on effects on the chances of them reaching their potential, including impacts on their educational outcomes, employment outcomes, other health outcomes and mortality into adulthood.[2,7,11] Education and health systems in particular grapple with the contributors to and flow-on effects of poor mental wellbeing in young people.[11] These systems encounter challenges regarding students staying in school, anti-social behaviour and misbehaviour, achievement of developmental and academic milestones, and the higher and unique needs of specific population groups.[4,11]

Not only is the mental wellbeing of students relevant to schools because of its impact on educational achievement,[4,12] but schools are also well-positioned to reach children and young people who could benefit from preventive public health initiatives.[2,10,13] As a key point of contact in their lives, school is a crucial element of youth ecology.[14,15] Children and young people spend much of their time at school, schools are a place where large numbers of children and young people can be accessed to provide support, and they are also places where learning is a normative task.[13,16,17] Schools already make critical contributions to areas reciprocally affected by mental wellbeing, including, but not limited to: the cognitive development of children, their ways of socially interacting, their morals and behavioural expectations, how they respond to emotions, and the peer relationships they form.[12,17] Schools are also a multi-tiered site where risk factors at individual (including the student and also the whānau), environmental and policy levels can be addressed and protective factors at these respective levels can be strengthened.[2]

This chapter provides an overview of school-based programmes for promoting mental wellbeing that have had a favourable impact on children and young people, both across the globe and in Aotearoa. It also covers some relevant factors for consideration. It aims to summarise information for New Zealand service planners and other relevant stakeholders who are interested in implementing evidence-based and school-based mental wellbeing promotion programmes at the interface of the education and health sectors. It is informed by evidence from international guidelines, systematic reviews, studies on prevention programmes, and evaluations of school-based programmes.

The section of this chapter on the evidence base for school-based mental wellbeing programmes is comprised of two major parts: 1) evidence from programmes around the world, which discusses common features, patterns and brief descriptions of promising programmes; and 2) evidence from programmes implemented in Aotearoa New Zealand, which provides an overview of New Zealand programmes and their evidence base.

In this chapter, the term "mental wellbeing" refers to a state of positive social, mental, psychological, and emotional wellbeing. For children and young people, it may manifest in being happy and enjoying life, having supportive friends and family, and feeling safe, valued and respected.[3] The term "mental health" refers to something that all people have but that some people may have "problems" with, which may or may not be clinically significant enough to warrant a formal diagnosis.

Foundations of school-based initiatives

Approaches to promoting wellbeing in New Zealand need to employ a whole-person approach that recognises lifestyle, relationships and whānau, whakapapa, environment and culture, and access to resources.[17] Young people in New Zealand emphasise that a “good” life involves enjoying life, feeling safe and safe from bullying, feeling respected, feeling valued, and having supportive friends and whānau.[3]

The national Child and Youth Wellbeing Strategy recognises several guiding principles for promoting the wellbeing of all children.[18] Some of these are:[18]

- "Māori are tangata whenua and the Māori-Crown relationship is foundational." Recognising Te Tiriti o Waitangi and putting it into practice is essential to any work that aims to support the wellbeing of Māori children and young people
- "All children and young people deserve to live a good life," regardless of their circumstances and with recognition that some children and young people will require more support than others
- Because wellbeing is multidimensional, "wellbeing needs holistic and comprehensive approaches"
- "Children and young people's wellbeing is interwoven with family and whānau wellbeing," so family and whānau should also be provided with appropriate support
- "Change requires action by all of us" and it is often the case that the best solutions are designed and delivered by the community
- "Early support is needed" because adverse childhood experiences can accumulate through childhood and adolescence and manifest as long-term problems.

Mental health promotion in Aotearoa New Zealand should be underpinned by concepts of hauora (wellbeing), which, in the context of mental health, is concerned with the need for people to be socially, emotionally, and spiritually connected and feel like they are valued and belong.[17] Promotion and initiatives need to recognise that taha hinengaro (mental and emotional wellbeing) is interdependent with tinana (physical), wairua (spiritual), whānau (family), papa kainga (community), and taiao (environmental) wellbeing.[17]

The concepts within general wellbeing and aspects of a “good life” (as perceived by young people themselves) and the ways in which they relate to strong mental health can be further explored in a genuine partnership with young people. It is important that mental health promotion approaches include the voices of young people in the design of programmes for them,[4,19] not only for ethical reasons and for improving the programme but also for supporting young people's senses of self-efficacy and control.[4]

Approaches to mental health promotion in schools

A three-tiered model is popular for conceptualising public health interventions for implementation in schools underpinned by an aim to strengthen protective factors for good mental wellbeing and to prevent emotional, mental, and behavioural problems before they occur.[10,12] The model is comprised of:

- A "universal" or "primary" level, where interventions are delivered to all individuals in a given population (such as a school)
- A "secondary" or "selected" or "selective" level, where interventions are delivered to whānau, children or youth identified as having a higher risk (such as those who do not experience positive results from universal level interventions, or groups of the population that experience a higher prevalence of mental health issues)
- A "tertiary" or "indicated" level, where specialised and comprehensive interventions are delivered to individuals who show signs that suggest they have clinical symptoms or are on a pathway that is problematic and not aligned with a thriving wellbeing.[10,12,13,20]

All tiers have their strengths.[20] Well-implemented, universal school-based prevention programmes have great potential to positively impact on the wellbeing of all participating students, regardless of any symptoms they may have, as well as the wellbeing of those students who experience any adjustment problems or sub-clinical symptoms.[10,12,16] Some benefits of universal programmes include that recruitment, drop-out rates, and access (such as transport issues) are less of a challenge.[16] Universal programmes can be expensive to establish, and thus funds for start-up costs may be difficult to obtain.[16] Programmes that employ a secondary or tertiary approach risk stigmatizing students by identifying them as having problems, and additional time is often required for identifying those who could benefit.[20] The resources required to deliver secondary or tertiary approaches may strain service providers and schools.[20]

To most effectively prevent emotional, mental, and behavioural issues in children and young people, it is likely a coordinated multi-level approach across all three tiers is required.[10] Evidence also shows that programmes are more effective in addressing substance use and mental health issues (and associated outcomes) when they involve initiatives at multiple tiers and address multiple risk indicators.[4,13] Alongside prevention work in a multi-tiered approach, there is a need for age-appropriate and culturally safe interventions for underserved youth, especially those with a history of adverse childhood experiences and trauma and those who show clinically significant symptoms of anxiety, depression, post-traumatic stress disorder, and other mental health and behavioural problems. Direct linkage between interventions placed at the various levels is necessary for a maximally effective school-based public health approach.[10]

An approach relevant to the comprehensive multi-level strategy, and popular internationally, is a whole-of-school approach. A whole-of-school approach is a multi-component and strengths-based approach designed to engage all levels of the school experience in a way that promotes mental wellbeing while also preventing problems.[4,11,21] Evidence suggests that a whole-of-school approach is effective for improving mental health outcomes in children and adolescents.[22]

Whole-of-school interventions involve activities delivered in small groups and incorporating positive mental wellbeing promotion in every part of school working, such as in policy, the curriculum, processes, staff capacity, having school champions, working with parents and whānau, having tertiary support available, and establishing relationships and referral pathways with specialist services.[17,21,23] It involves addressing the school and classroom environment (core values, attitudes, beliefs, culture, and permeating tone) so that it is supportive of good wellbeing through supporting senses of connectedness and purpose while also supporting a climate that welcomes respectful and warm relationships, celebration of diversity, emotion, and communication.[4,21] These are protective factors against mental disorders and compromised mental wellbeing.[4] The climate developed by a whole-of-school approach at a universal level builds the capacity of the entire school population to better address mental wellbeing needs.[4] It is important for this approach to be developed and strategically, with total commitment by school leaders and realistic expectations, so as to avoid becoming too diluted and thus compromising the effectiveness of the approach.[4,19]

A Health Promoting Schools Framework has a similar approach to the whole-of-school approach, where it focuses on the climate of the school environment and developing senses of belonging, respect, and being valued.[17] Some work in New Zealand has used a Health Promoting Schools approach, as will be explored later in this chapter.

This chapter focuses on the promotion of mental wellbeing and prevention of mental health problems, but there is also an important need for age-appropriate and culturally safe interventions for youth who have a history of adverse childhood experiences and trauma and also show clinically significant symptoms of anxiety, depression, post-traumatic stress disorder and other mental health and behavioural problems.

School-based mental health programmes around the world

Features common to successful programmes

This section provides a brief overview of evidence synthesised about the features commonly present in more effective mental wellbeing promotion programmes around the world. The following section focuses on individual programmes that appear to be promising in more detail. Before stronger recommendations can be made, more evidence from programme evaluations, especially regarding long term outcomes, is needed.[20,24]

Many of the programmes for preventing mental health problems that are considered promising by Public Health England's guidance[24,25] are designed to strengthen the life, emotional, and social skills of children and young people. Recommended by the Guide to Community Preventive Services (The Community Guide, an initiative of the US Department of Health and Human Services) for addressing depression and anxiety in young people, Cognitive Behavioural Therapy (CBT) is multi-component with focus on training children and young people in problem solving, emotional regulation, and developing helpful and protective thoughts and behaviours.[13,26,27] Many school-based programmes for preventing mental health issues in children and young people utilise CBT, especially those aimed at addressing anxiety.[12,16]

The skills commonly taught across a variety of programmes include (but are not limited to):[4]

- Self-related skills: self-awareness, self-conflict, and self-belief
- Emotional skills: identifying and managing emotions
- Motivational skills: problem-solving, resilience, and optimism
- Social skills: empathy, compassion, and social connection.

These skills help young people negotiate challenges and transitions in ways that are healthier for their mental wellbeing.[4] A recent systematic review of universal school-based anxiety prevention trials concluded that, while the studies had a generally high risk of bias, three of eight studies reported larger reductions in symptoms of anxiety in the intervention group post-intervention when compared to the control group.[16] More young people with good wellbeing and healthy social and emotional skills is reciprocally affected by a positive climate and culture of the larger student population.[4]

Involving parents, caregivers, and whānau in programmes, formally or informally, can enable them to reinforce wellbeing-promoting messages and norms in the home while also building their capacity raise children and young people in ways that help their mental wellbeing thrive.[4]

Programmes' relevance to equity

While some programmes may show promise for young people collectively, it is important that they also are culturally relevant and have the desired effects for children and young people of different demographics and from different backgrounds (such as socio-economic, ethnic, geographic, and cultural backgrounds).[16,28]

Systematic reviews have highlighted that there is a paucity of information internationally on evaluated prevention programmes that have been designed to be responsive to the needs of underserved groups of youth, such as youth from areas of higher deprivation[29] and indigenous youth.[28]

A systematic and meta-analytic review of 21 different studies with samples in the US (29 independent samples, 23 of which contributed to meta-analyses) published between 1985-2009 raised concerns about the effectiveness of school-based mental health and behavioral programmes for youth with low-income urban backgrounds.[29] The review found that seven samples that had an internalizing problems (such as anxiety or depression) or broad socio-emotional focus and were delivered at a universal level had the strongest effectiveness on mental health outcomes in low-income urban youth, although effect sizes were small, while nine samples that were focused on externalisation or substance use and delivered at a secondary or tertiary had negative significant effects.[29] The review authors stated that their findings were consistent with previous research which found that conduct-disordered youths may escalate their problem behaviours when interventions are provided in groups with similar peers. This may be because the group setting provides youth with an audience that reinforces their behaviour patterns through peers' laughter, social attention and interest, and the information provided may increase interest and motivation to commit further delinquent acts.

Programmes designed to support the mental wellbeing of young people must consider the stressors endemic to marginalised groups (people in poverty, indigenous people) and respond to their needs and context-specific factors if they are to be designed in ways that are effective and sustainable and, ultimately, strive for equitable outcomes in the youth population.[29]

Urban poverty often has impacts on the lives of youth, their whānau, and the schools they attend, thus restricting the ability of individuals within those systems to effectively deliver and respond to mental wellbeing programmes.[29] For the total population, schools in general will likely face the challenge of addressing a variety of barriers to delivering mental wellbeing programmes, which may include but are not limited to: myths about mental wellbeing and associated health outcomes (such as suicide); hesitation of parents, caregivers and whānau to allow their child to participate in programmes; possible funding problems; and ethical and legal issues.[13] Urban schools in areas of higher deprivation are more likely to be compromised by under-funding and under-resourcing and may feature higher staff stress, turnover and risk of staff burnout.[12,29] Other populations may be more vulnerable to other barriers, which may include: social isolation, problematic student help-seeking behaviours, non-availability of trained professionals, and inter-sectoral service fragmentation.[12]

When evaluating the effectiveness of interventions, the literature should undertake more robust reporting of programmes and examine demographics and contextual factors surrounding population groups.[16,29] Improving reporting practice in this way has important flow-on effect for enabling planners and funders to make evidence-based recommendations specific to more marginalised groups and thus improve the effectiveness of the programmes that are designed and implemented for these groups.[29] Some of the many groups for which programme effectiveness evidence is needed include indigenous youth and young people who have experienced trauma or adverse childhood experiences.[28]

Examples of programmes around the world

The following section briefly describes various school-based programmes around the world that appeared to be effective in improving children's wellbeing in programme evaluations.

The FRIENDS programme

The evidence-based FRIENDS programme suite[30] includes Fun FRIENDS (or "FRIENDS for Children"), FRIENDS for Life, and FRIENDS for Youth (or "My FRIENDS Youth") as some of its programmes for young people. Public Health England and the Early Intervention Foundation Guidebook recognise the FRIENDS programmes as promising for preventing emotional problems in children and young people.[24,31] Their recognition and rating of the FRIENDS suite is underpinned by a review of nine studies for Fun FRIENDS and eight for FRIENDS for Life,[24] and the evidence base for each of the three programmes for youth being comprised of at least one randomised controlled trial (RCT).[31-33]

Fun FRIENDS (for children aged 4-7 years), aims to develop cognitive behavioural skills (e.g. coping mechanisms) through 10 one-hour sessions of play-based experiential learning.[12,24,33] Through stories, videos, games, and activities, children are taught cognitive behavioural skills alongside regular separate group sessions for parents throughout the duration of the programme.[33] Two cluster RCTs have been conducted in Australia, one of which involved 263 preschool children and found improvements in child anxiety, behavioural inhibition and social-emotional competence at 12-month follow-up, as reported by children's parents.[34] The second of which was with 488 children (aged between four and seven) across 14 schools and found parent-reported improved social and emotional competence in children and reduced behavioural inhibition and difficulties.[35]

FRIENDS for Life (for children aged 8-11 years),[36] when led by two trained health facilitators, has been found by a RCT (United Kingdom) involving 1,442 children to reduce child-reported symptoms of anxiety and depression at 12 months follow-up, when compared to usual school provision.[12,24,31,37]

The FRIENDS for Life modules focus on several life skills, including but not limited to understanding: feelings, helpful and unhelpful thoughts, support systems, body cues and relaxation, and problem solving.[24,36,38] It involves group work, workbook and role playing exercises, games, and interactive activities.[31] It is delivered universally in school through 10-12 sessions of one hour weekly.[31] The programme can be delivered by school staff or health facilitators; however, the programme seems to be more effective with health facilitator leads.[37]

FRIENDS for Youth is for young people aged between 12 and 15 years aimed to improve their self-confidence with problem-solving and responding to anxiety.[39] It is a universal programme delivered through five sessions of 2–2.5 hours.[39] A RCT conducted in Ireland with 62 children (aged between 12 and 13) from a socially disadvantaged urban area found that the programme showed reduced anxiety levels in young people at a four-month follow-up, as reported both by the children themselves and their parents.[40]

The parent training component of FRIENDS also provides support beyond school, which can be more meaningful for children and young people showing sub-clinical signs of mental health issues.[38]

The New Zealand implementation of FRIENDS is explored more in the section on New Zealand.

The Zippy's Friends programme

The Zippy's Friends programme is also identified by Public Health England as a promising intervention for promoting resilience and coping skills among primary-school children.[24,25] The intervention was a 24-week course (six modules each comprised of four sessions) aimed to increase the coping skills available to children through simulation according to the themes: feelings, communication, making and breaking relationships, bullying and conflict, change and loss.[24,41]

Three cluster RCTs have been conducted, the locations of which were Ireland (766 children in 44 schools), Norway (1,483 children in 35 schools), and the United Kingdom (3,904 children in 83 schools).[42-45] The studies found teacher-reported outcomes, as assessed immediately after the intervention, pertaining to improved emotional literacy,[42] coping skills[44] and emotional self-regulation,[43] and classroom social climate and reduced bullying.[45] In one study, the results pertaining to improvements in self-regulation, self-awareness, and social skills were maintained at 12 months follow-up.[42]

The Promoting Alternative Thinking Strategies (PATHS) programme

The Promoting Alternative Thinking Strategies (PATHS) Elementary Curriculum programme[46] is for primary-school children aged between six and 12 years.[47] PATHS aims both to reduce behavioural problems while also enhancing educational achievements and is delivered by teachers in the first five years of a child's schooling (primary school) with 30–55 sessions per school year of 20-30 minutes per session.[47] The programme provides developmentally-appropriate lessons and materials for teaching children emotional literacy (e.g. understanding and expressing feelings, having a positive attitude), social competence (e.g. reading others and understanding their perspectives), self-control (e.g. impulse control, delaying gratification), and interpersonal problem-solving (e.g. problem-solving steps, verbal and non-verbal communication).[24]

A cluster RCT conducted in the US involving 779 students (ages around 8-10 years) from 14 schools (urban, suburban and Midwestern) investigated how the PATHS programme impacted on aggressive outcomes in children, as reported by children themselves and their teachers.[48] The study found beneficial effects on aggressive outcomes post-test, including but not limited to aggressive social problem solving and behaviour, acting out, hostile attribution bias.[47,48]

A study conducted in Zurich, Switzerland (cluster RCT with 1,675 first-year children around 7 years of age in 56 schools), measured parent-, teacher-, and child-reported externalising problem behaviour and social competence at a two-year and a five-year follow-up.[49,50] The intervention group was teacher-reported at the two-year follow-up to see a reduction in aggressive behaviour and impulsivity (children's ratings of their own externalising behaviour did not change).[49] The five-year follow-up found reduced prevalence of police contacts in the intervention group.[50]

The Resourceful Adolescent Programme (RAP-A)

An Australian universal programme, the Resourceful Adolescent Programme,[51] aims to prevent depression in teenagers (and related difficulties) and is designed to build resilience and strengthen positive mental health in students in grades seven to ten (around 12 to 16 years of age).[24,25,51] Integrated with the standard school curriculum, the programme is a fully manualised group treatment delivered through 11 sessions of 50 minutes duration by a range of professionals.[24,51,52]

In a study conducted at one school in Brisbane, Australia, involving 260 young people between 12 and 15 years old found that young people had lower rates of clinical and subclinical symptoms of depression and hopelessness, as assessed immediately after the intervention and at 10 months follow-up.[52]

The LARS&LISA programme

The LARS&LISA programme (*Lust An Realistischer Sicht & Leichtigkeit Im Sozialen Alltag*)[53] is universal and designed for secondary school children (aged 13-16 years) also shows promise for reducing emotional difficulties.[24] It utilises a CBT-based approach delivered by the school (with psychologists as trainers) through 10 sessions of 1.5 hours weekly during regular school hours.[24,54] The programme is named after the programme role models (Lars and Lisa), who accompany the student journey through exercises and films on the topics of: understanding behaviours and emotions and social skills and assertiveness.[24]

When compared to the non-intervention control group in a study conducted in southwest Germany with 301 adolescents across four schools, the programme appeared to have a positive impact at six-months follow-up on the self-reported severity of depressive symptoms of students in eighth grade (around 13 years of age).[54]

The Penn Resilience Programme (PRP)

Penn Resilience Programme (PRP)[55] is designed for children aged between 10-13 years of age and consists of 18 group lessons integrated with the standard school day and delivered by teachers.[23,24] The programme has been adapted for the United Kingdom and titled the UK resilience programme (UKRP).[56] Lessons utilise role play, quizzes, and individual and group activities and focus on strengthening children's adaptive coping and other resilience skills (such as assertive communication and problem solving).[24] The evaluation of the programme showed that PRP lead to students translating learned skills into practice in their lives and lower depression scores alongside other positive academic performance results.[23]

Developing mental wellbeing-promoting schools

Increasing evidence indicates how school infrastructure and classroom factors have a relationship with supporting the wellbeing of youth.[12] The context of the school has potential to be modified to better enable positive behavioural norms and peer and student-teacher relationships.[12]

An Australian study using focus groups with school-aged children and young people found that students perceived the physical and emotional environment of school as critical to their wellbeing needs.[11] Positive experiences of and at school and the communal values underpinning these experiences (such as sharing, respect, equality, and cooperation) were important components of a school's emotional environment.[11] The children and young people expressed desires for school infrastructure that is designed in a way that supports positive emotions through how it feels and looks, such as including more green space (sunshine, shade, grass and flowers) and colour ("bright").[11] They also desired more facilities for enjoying themselves in the school setting, such as play swings, sports areas, swimming pools, art rooms, boxing bags, and music rooms.[11]

New Zealand initiatives in school mental health

Mental health in the New Zealand Curriculum

Mental health is one of seven key areas of learning In the health and physical education section of the New Zealand Curriculum, the Ministry of Education's statement of official policy on teaching and learning.[57] (The other key areas are: sexuality education, food and nutrition, body care and physical safety, physical activity, sport studies, and outdoor education.[57])

The health and physical education curriculum specifies achievement objectives for each of the eight levels of the curriculum, under four headings: personal growth and development, movement concepts and motor skills, relationships with other people, and healthy communities and environments.[57] Objectives for level one (students in the first years of primary school) include, for example, being able to describe feelings and ask questions about their health, growth, development, and personal needs and wants; exploring and sharing ideas about relationships with other people; and showing respect through sharing and cooperation in groups.[57]

Among the level eight objectives (for students in their final years of high school) are: analysing and evaluating attitudes and interpersonal skills that enable people to participate fully and effectively as community members in various situations; and critically analysing societal attitudes and practices and legislation influencing contemporary health and sporting issues, in relation to the need to promote mentally healthy and physically safe communities.[57] Senior students can gain NCEA credits for achievement standards such as "Take action to enhance an aspect of personal wellbeing" (Level 1) and "Take action to enhance an aspect of people's well-being within the school or wider community" (Level 2).[58] Health is not a compulsory subject in the senior school, and relatively few students choose it. In 2019, whereas English and Mathematics were each taken by more than 50,000 students at instructional level Year 11, only around 4600 students took Health and around 6200 took Health and Physical Education.[59]

Mental health education in New Zealand schools is primarily about learning about mental health rather than "fixing" mental health or public health problems, but it is reasonable to hope that learning about mental health and developing skills for maintaining mental health in a safe and supportive classroom will have beneficial effects on students' mental wellbeing.[60]

Topics that that may be covered in mental health education from Year 7 onwards include: [60]

- personal identity and enhancing self-worth
- stress management
- friendships, relationships and communication
- effects of discrimination and stereotyping on mental health
- support of self and others in times of difficulty

- equity issues that affect the mental health of others and society
- help-seeking
- drugs and alcohol (for example, personal values, decision making, and assertive communication)
- leadership and effective communication.

The Prime Minister's Youth Mental Health Project initiatives in schools

The Prime Minister's Youth Mental Health Project (PMYMHP), launched in 2012, consisted of 26 initiatives, in a variety of settings, intended to promote the mental health and wellbeing of young people with, or at risk of, mild to moderate mental health issues.[61] Ten of the initiatives were based in schools: Four to promote all students' wellbeing, and six to target vulnerable youth and prevent mental health problems.

The initiatives to promote wellbeing were:

- My FRIENDS Youth (an evidence-based resilience programme)
- Positive Behaviour for Learning (PB4L) School-wide
- Review of alcohol and drug education programmes
- Collecting data on students' engagement, wellbeing and inclusion, and responding accordingly.

The initiatives targeting at students at risk were:

- School-based health services
- The HEADSSS Wellness check[62]
- Youth workers in low decile secondary schools
- Social workers in schools (expanded to all decile 1–3 primary schools and kura kaupapa Māori)
- Improvements in the school guidance system
- Check & Connect

The My FRIENDS Youth Resilience Programme

The My FRIENDS Youth Resilience Programme (My FRIENDS Youth) is a ten-session programme based the principles of cognitive behavioural therapy, designed to support young people aged 12–16 years to become more resilient by developing knowledge, strategies and skills to cope with difficult and challenging situations.[63] It was developed in Australia by Dr. Paula Barrett and is a licensed programme.[64]

My FRIENDS Youth uses the following acronym to help participants remember skills, and to provide structure to the program:[64]

- **F**eelings (try to be aware of feelings and regulate negative feelings)
- **R**elax (do "relaxation" breathing, meditation and have some quiet time)
- **I** try to think helpful (positive thinking)
- **E**xplore solutions (step plans and problem solving techniques)
- **N**ow Reward Yourself (quality time together doing fun activities)
- **D**on't forget – be brave! (practice skills everyday with friends /family)
- **S**tay happy and talk to support networks.

My FRIENDS Youth was trialled with Year 9 students in 26 schools in 2013 and 2014 as part of the health and physical education curriculum.[63] The evaluation of My FRIENDS Youth, commissioned by the Ministry of Education, found that the majority of students thought My FRIENDS was worth doing, and reported using the strategies they learned.[63]

The students completed a Wellbeing@school (W@S) survey before and after the programme, and when they were beginning Year 10. Immediately after finishing the programme, there were improvements in survey responses indicating wellbeing, with the biggest improvements being in the percentages of students agreeing or strongly agreeing that at school they were taught: to manage my feelings (from 62% to 69%), to think about other students' feelings (from 75% to 81%), and what to say or do if other students are bullying or hassling me (from 70% to 76%).[63] At the beginning of Year 10, students' responses had returned to the levels they were at before the programme, but the evaluation's authors stated that this could still be considered a positive outcome because it contrasts with the expected pattern of students' views of school getting more negative as students get older.

The teachers felt well supported and implemented the programme with a high degree of fidelity. (The teachers had to attend a 2-day training programme.) They felt that the group leaders' manual and students' activity book that came with the programme were of limited benefit, and most felt the need to adapt the resources to make them more relevant for their students.

Initiatives from the Education Review Office

As part of the Youth Mental Health Project, the Education Review Office conducted an evaluation project to help schools promote and respond to student wellbeing.[65] The evaluation had three components: developing a set of indicators to evaluate student wellbeing; carrying out evaluations of how well primary and secondary schools promote students' wellbeing; and publishing a good practice report.[65]

The Education Review Office identified five key aspects in schools that successfully promoted and responded to student wellbeing:[66]

- agreed values and vision underpin the actions in the school to promote students' wellbeing
- the school's curriculum is designed and monitored for valued goals
- students are a powerful force in wellbeing and other decisions
- all students' wellbeing is actively monitored
- systems are in place and followed to respond to wellbeing issues.

Their publication *Wellbeing for success: A resource for schools*[66] offers guidance for schools on promoting student wellbeing, monitoring student wellbeing, and responding to wellbeing concerns and issues.

The Education Review office developed the Wellbeing@school toolkit which contains tools designed to support schools to engage in a review process as part of an ongoing journey towards building inclusive practices for all learners.[67] The main focus of the tools is the social aspect of wellbeing. The tools explore five aspects of wellbeing that the literature suggests work together to create a safe and caring school climate that deters bullying. The five aspects are: school-wide climate and practices; teaching and learning; community partnerships; prosocial student culture and strategies; and aggressive student culture.[68] The tools include two Wellbeing@school surveys (Years 5–8 and Years 7–13), the W@S self-review tool, which explores how different layers of school life contribute to creating a safe and caring climate that deters bullying, the W@S Teacher Survey, and other resources.[67]

Positive Behaviour for Learning School-wide

Positive Behaviour for Learning School-wide (PB4L-SW) is an evidence-based framework, developed in the US, that views behaviour and learning from a whole-of-school as well as an individual student perspective.[69] It provides schools with a process for teaching social and behavioural skills, and it helps them to take a positive, proactive and systematic approach to managing behaviour, based on school data on student behaviour.[69]

The framework has three tiers: Tier 1 looks at the processes and support systems across the whole school, that affect all students and adults; Tier 2 looks at students who need extra support with behaviour and learning; and Tier 3 looks at more intensive and individualized support for students who exhibit chronic severe and challenging behaviour.[70] Schools begin with Tier 1, and, over several years, progress to Tier 2 and then Tier 3.[70]

Evaluation undertaken at the end of 2013 and the end of 2014, by which time around 500 schools had joined Tier 1 of PB4L-SW, mostly focused on the experiences of school staff but it did include collecting data from students using the Wellbeing@School survey.[71] The evaluation report did not include statistical significance tests of the survey findings, but it indicated that, for Year 5/6 students, in the first year of PB4L-SW, there was a general pattern of small improvements in the percentages of students reporting positive aspects of wellbeing (by at most 5 to 7 percentage points, from baseline values typically in the 70–90% range) and a small decreases in a negative aspects of wellbeing (being pushed or hit by another student, -7 percentage points, from 24% to 17%).[71] From the first to the second year, a decrease in a wider range of aggressive behaviours was apparent. For the Year 9/10 students, there was also a general pattern of small increases in positive aspects of wellbeing, but no change in the aggressive behaviour items (although there was a small increase in the percentage of students who reported feeling safe at school).[71]

The authors of the evaluation report thought that PB4L-SW had likely contributed to the improvements, for three reasons: the aspects of wellbeing that had most consistently improved were the ones most tied to PB4L-SW practice; the pattern of change was similar for the schools that had joined PB4L in 2012, and those that had joined in 2013, and among both Year 5/6 and Year 9/10 students; and the shifts were consistent with what school staff were reporting.[71]

Health services in secondary schools

The government has funded school nurses or school-based health services nurses in decile 1–2 secondary schools, alternative education, and teen parent units since 2008, and funding was extended to decile 3 schools in 2013, decile 4 schools in 2018, and decile 5 schools in 2019.[72,73]

As part of the Prime Minister’s Mental Health Project, the Ministry of Health commissioned the Youth ’12 survey team to examine the examine the current (2012) state of health services in secondary schools and the impact they may have had on student health and wellbeing outcomes.[72] The survey team looked health services in the random sample of 90 schools whose students participated in the survey. The survey results showed that there was considerable variation in the provision of health services between schools. A significant proportion, 12%, had no health services apart from the minimum required first aid services. This situation was more common in private or integrated schools than state schools. The most common type of health service in the other 88% of schools was from visiting health professionals (56% of all schools). Some schools had on site health professionals: 20% had a school nurse and 12% had a collaborative team of health and other professionals for most of the week.

Analysis of the survey data the health and wellbeing of the students (8483 in total) indicated that there were benefits associated with school health services, especially in the area of mental health.[72] In schools with higher levels of health services there was less depression and suicide risk and there was significantly less depression and suicide risk where: the health professionals were on site; there were greater hours of health professional time per week per 100 students; where the health professionals were trained in youth health and well supported through professional peer review; and where the health professionals were well integrated with the school and the local community.

Instrumental variable analysis suggested that team-based school-based health services (but not other types of school-based health services) may be associated with fewer depression symptoms, fewer emotional and behavioural difficulties, and lower suicide risk among students who had used these services in the past 12 months, compared to students who had not. [74] Instrumental variable analysis was used in an attempt to address the issue that students who have health concerns are more likely to use school-based health services.

Social Workers in schools

Government-funded social workers in schools (SWiS) are employed by contracted NGOs to work in decile 1–3 schools and kura kaupapa Māori.[75] The services provided by SWiS include individual case work with children referred to the service and their whānau, and group-based programmes delivered to selected groups of children or to the school community. Social workers are also responsible for community liaison and service coordination. Involvement with SWiS is voluntary.[75] The SWiS service aims to see safe, healthy and socialised children with a strong sense of identity, who are fully engaged in school, and also to protect vulnerable children and ensure their safety, wellbeing and educational needs are met.[75]

Social workers may help children and whānau with issues such as: social skills, self-esteem and confidence; peer relationships; family relationships; behavioural concerns; parenting; family violence; advocacy; and referrals to other services.[76]

Social workers in the SWiS service are required to use the SDQ (Strengths and difficulties questionnaire, a brief behavioural screening tool) both before and after intervention with a student.[77] The SDQ includes five questions assessing each of the following areas: emotional symptoms, conduct problems, hyperactivity, peer relationship problems and prosocial behaviour.[77] As well as helping the social workers with their intervention plans, the SDQs will be collected and used (anonymously) by Oranga Tamariki to generate performance indicators for the service, such as the percentage of children who have improved on before/after scores.[77]

Check and Connect

The programme stresses the need for ongoing persistence, with mentors working for two years or more with students in the US.

The Prime Minister's Mental Health Project funded a trial of Check and Connect in three locations in New Zealand: Auckland, Wellington and Hawke's Bay (18 schools in total), contracting NGOs to provide teams of mentors.[78] Mentors all had previous experience working with young people and mentors were generally of the same gender as their student, and, as far as possible, from the same cultural background. The trial ran from mid to late 2013 to early 2016. The evaluation included surveys of students, mentors and teachers, and interviews of both mentors and students. It focused on 138 students who had been involved with the programme for at least a year, and it indicated that most students and their mentors noted gains for students.

Just over a third of students made many gains, and most students made some. Gains cited by students included: having better ways to talk about what was going on in their lives; having more support at school; feeling more positive about school; putting more effort into schoolwork; being better organized; getting better results; being more confident about school; gaining useful skills in dealing with people; having a better sense of their own strengths; having better ways of dealing with things that upset them; gaining skills in managing their feelings; and getting more support at home. Factors that were linked to gains were:

- the length of time a student had been part of the programme
- the student's relationship with their mentor
- their mentor's use of Check and Connect strategies
- having a mentor who gave high ratings to their training and support within their team
- having a mentor with a good partnership with their school.

The evaluation was largely based on reports from students and mentors because consistent information on student needs, school attendance and performance levels before embarking on Check and Connect (to compare with where they were at the end of 2015) was not available.[78]

Health promoting schools

Health Promoting Schools (or HPS) is a school community focused national service that was funded by the Ministry of Health to help schools assess and address the health and wellbeing requirements of their students to advance student learning and achievement outcomes.[79] The New Zealand Health Promoting schools approach is based on the World Health Organization Health Promoting Schools framework,[80] which was founded on the principles of the Ottawa Charter for Health Promotion (1986).[81] Schools were free to choose whether they participated in HPS or not, and, at the end of 2016, 60% were doing so.[79]

Health Promoting Schools sought to support all aspects of hauora: physical, mental, emotional, social, and spiritual wellbeing.[79] It involved trained HPS facilitators from District Health Boards, who supported schools to establish connections between the different groups in a school community: child, whānau/family, education, health and social service organisations.[79] Ideally, schools incorporated health and wellbeing into their planning and review processes, curriculum, teaching strategies, and assessment activities.[79]

An evaluation of HPS, published in 2017,[79] reported on an analysis of the impact of HPS on student, school and family/whānau outcomes, as follows.

Student outcomes:

- Attendance
- Achievement
- Stand-downs
- Suspensions

School community outcomes:

- School effectiveness
- School leader effectiveness
- Levels of parent and whānau engagement
- HPS facilitator effectiveness.

The findings of the evaluation indicated that, when school effectiveness, leadership effectiveness, whānau engagement, and HPS facilitator effectiveness were combined, there were positive student outcomes in attendance, stand-downs and suspensions, and achievement in reading.[79]

The Ministry of Health ended funding for HPS from January 2020,[82] but has funded a new initiative, *Healthy Active Learning,* focused on supporting schools to improve child and youth wellbeing through healthy eating and physical activity.[83]

Jade Speaks Up

Jade Speaks Up[84] is a programme supported by ACC that trains classroom teachers to deliver a short-term programme to help children and young teens explore being violence-free and learn about: feelings and safe ways to express them; trust and the importance of having trusting relationships in our lives; the fundamentals of respectful relationships; and how to keep themselves safe from violence. The programme delivers key safety messages through a series of catchy phrases and songs. There are visual resources, such as video clips, and interactive activities to promote discussion and cooperative learning.

The Jade Speaks Up pilot project involved 1300 students and 48 teachers from classes at Years 5–8 in eight schools (seven in Auckland and one in the Bay of Plenty). Pre-programme, children's wellbeing was assessed using the Child Outcomes Rating Scale (CORS)[85,86] and the Center for Epidemiologic Studies of Depression Scale for Children (CES-DC).[87] According to these measures, 48% of the children were in the category of "at risk" for psychological distress.

The pilot project was evaluated using student and teacher questionnaires pre- and post- programme and at six-month follow-up, and qualitative data drawn from training and support conversations with teachers. The student questionnaires assessed wellbeing (using the two scales referred to earlier), emotional literacy, knowledge of safe people and environments, trust and safety attitudes and skills, responses to a scary person, and the perceived overall value of the programme.

The evaluation indicated significant positive changes in children's attitudes and behaviours around safety; in children's access to people and environments they can trust; and in children's wellbeing and risk of depression. From pre-test to post-test children's wellbeing scores on the combination of CES-DC and CORS rose from 75.8 to 78.5 (data from 495 students, $p= 0.006$). From post-test to 6-month follow-up, the change in wellbeing scores was not statistically significant (from 79.8 to 77.2, data from 277 students, $p > 0.05$). The numbers in the analyses were limited by the researchers' need to have data from matched participants at the two time points being compared.

Of the children who rated the programme, 82% said it was helpful, including 42% who said that that it was very helpful, 78% said it was interesting, 75% found it fun and 50% would definitely recommend it (and 39% maybe).

Teachers' questionnaires indicated that the four areas they were initially most concerned about in their children were the areas in which the children had made the most progress: being unable to talk about their feelings; not knowing how to keep themselves safe; not being supportive of other children who were struggling to keep up; and being unable to ask for help. Between 70% and 90% of teachers said their students had improved in these areas. In addition, more than half the classrooms reported reductions in bullying and in non-school issues of concern. Overall, the teachers rated the programmes as being helpful and practical.

It became apparent to the programme organisers during teacher training and supervision that teachers' skills for responding to student disclosures were either lacking or inadequate. The pastoral care and supervision the programme offered to teachers was appreciated by both the teachers themselves and school management.

There were differences in improvements in child wellbeing by ethnicity, age, type of school and gender. The programme organisers' informal observations indicated that, for Maori and Pacific students, it was helpful if the teacher came from their culture, especially where aspects of the programme promoted an approach that contrasted with students' home experiences with discipline practices and survival skills' regimes in under-resourced social and economic environments.

Mana Ake

Mana Ake was established in March 2018 to promote wellbeing and deliver dedicated wellbeing and mental health support to children in school Years 1-8 across Canterbury.[88] There are 13 providers who employ kaimahi to work with schools to support teachers, and whānau when children are experiencing issues that affect their wellbeing such as managing emotions, friendships and bullying, parental separation, and grief and loss.

The kaimahi have a range of skills and backgrounds and they include psychologists, social workers, counsellors, youth workers and teachers. They provide advice, guidance and support.[89] They can work with children and families, at school, in the community or at home, and with groups of children in schools.

Mana Ake will be evaluated in various ways, including using the Wellbeing@school tool, as well as school data such as attendance, referrals to specialist services, stand down and suspensions, and both education and health system level data.[90]

Mindfulness programmes

Mindfulness is the practice of intentionally focusing on what is occurring in the present moment, being aware of the physical sensations that occur in our bodies and how these change in response to behaviours, mind states, emotions and environmental conditions.[91]

Pause, Breathe, Smile (PBS) is a mindfulness programme for schools that was developed in New Zealand and has been delivered to more than 200 schools nationwide.[92,93] The programme consists of one hour lessons delivered weekly over eight weeks by educators who have received PBS training (who are often teachers, but may be health professionals) and classroom teachers are encouraged to incorporate mindfulness practices into their daily classroom routine. The lessons are:[93]

1. *Coming home*: Introducing core practices for mind-body integration
2. *Happiness here and now:* Exploring happiness and learning how our actions impact wellbeing
3. *Everything for the first time*: Using creative role-play for looking at the world with fresh eyes
4. *All things rising and falling*: recognising how emotions are felt within the body and learning how to self-regulate with mindfulness
5. *Moving still*: Learning about the brain and how to settle scattered thinking
6. *Kind heart, happy heart*: Fostering kindness towards self and others, and practicing gratitude
7. *Everything is connected to everything else*: Exploring the relationships between self, others and the natural world.
8. *Touching base, touching stillness*: Sharing thoughts and food, and using the metaphor of a circle to emphasise that the end of the lessons marks the beginning of the classroom's mindfulness journey.

An evaluation study assessed the effectiveness of PBS in five primary schools. Study participants included 126 children aged 6–11 years, and six classroom teachers.[94,95] The teachers were asked to complete fortnightly journal entries during the programme, and, to assess any long term effects, three months after the last mindfulness class.[94] The study authors conducted a thematic analysis of these journal entries and reported that their findings suggested that PBS may be efficacious for increasing calm and reducing stress, in both teachers and students, and improving students' focus, attention and relationships with each other.

Students completed two self-rated scales assessing their mindfulness and wellbeing: the Mindful Awareness Attention Scale for Children and the Stirling Children's Well-being Scale.[95] The quantitative data from these indicated a steady increase in students' mindfulness. Wellbeing increased significantly, but returned to baseline levels at three-month follow-up. There was a positive relationship between changes in mindfulness and changes in wellbeing.

A comparison study[96] undertaken in the senior classes (Years 5 and 6) of one Auckland primary school randomized one classroom (54 students) to undertake PBS and another (52 students) to undertake an eight-week emotional literacy programme based on a published workbook. The primary outcome measure was children's self-reported wellbeing, assessed by the Stirling Children's Wellbeing Scale (SCWBS), and the secondary outcome was mindfulness, assessed by the Mindful Awareness Attention Scale for Children (MAAS-C). Participants in both programmes had improved general wellbeing scores post programme, but the improvement was significantly greater for the PBS group. The PBS group had significantly greater improvements in subjective but not psychological wellbeing. The differences were relatively small. Mindfulness scores increased for the PBS group only. There was some indication that PBS had longer term effects as MAAS-C scores at 12 weeks were unchanged from those post programme, and SCWBS scores, although significantly lower, were still significantly higher than pre-programme scores.

In 2017 the Mental Health Foundation received funding from the Rata Foundation to train 20 Canterbury-based educators to deliver PBS in their region.[97] The effectiveness of this initiative was evaluated through thematic analysis of the educators' journal entries, as in previous research.[97] This analysis found positive impacts on student wellbeing in four main areas: increased calm; increased empathy, kindness and respect; enhanced emotion regulation, resilience and self-regulation; and increased engagement in learning with increased focus and attention. All except one teacher reported a meaningful improvement in personal wellbeing at the end of training. Teachers reported a range of benefits from implementing PBS in the classroom, including feeling calmer, increased self-awareness, feeling more engaged with the class, and improved collaborative teaching.

The Kindness Institute, based in Auckland, has also developed and delivered mindfulness programmes in schools, and in out-of-school settings to young people excluded from school and/or involved with Youth Justice (the ATAWHAI programme).[98] A programme delivered to Year 11 students at Auckland Girls' Grammar School consisted of eight weekly classes and covered topics including mindful communication, forgiveness, being kind and compassionate, mental health and self-love.[99]

The programme was evaluated through evaluation and reflection throughout the course, and post-programme questionnaires consisting of short yes/no questions and a section for open feedback.[99] The programme received very positive responses from both students and teachers.[99] Specific feedback from the students and teachers clustered into the following interrelated themes:

- Increased calmness and ability to manage stress / anger
- Increased ability to focus
- Increased kindness to others
- Increased kindness to self / self love
- Increased sense of connection and improved relationships
- Improved ability to communicate / mindful communication
- Increased ability to forgive.

Sparklers

Sparklers[100,101] is a web-based collection of over 50 activities and games, aligned with the New Zealand Curriculum, that classroom teachers can use with Year 1–8 students to help them feel calmer, happier and more ready to learn. The activities cover a wide range of wellbeing topics, including living in the moment, managing emotions, being grateful and showing kindness.

Sparklers was developed in response to the 2010 and 2011 Canterbury earthquakes, through a collaboration between the Canterbury DHB's School-based Mental Health Team and Health Promoting Schools Team and the *All Right?* campaign.

A pilot evaluation of Sparklers was conducted in 2016 when schools and teachers in the 50 pilot Canterbury schools were asked for feedback via an online feedback form on the *All Right?* Sparklers webpage or via Survey Monkey.[102] Although there were few responses, these were overwhelmingly positive.

A more comprehensive evaluation was undertaken with five schools during November 2017 to May 2018.[102] This involved interviews with senior school leaders, focus groups and interviews with teachers, an online survey for teachers, focus groups with students, and an evaluator observing a junior class participating in Sparklers activities during an afternoon session facilitated by their classroom teacher. An evaluator also conducted a focus groups with members of the School-based Mental Health Team (CDHB) and Resources Teachers of Learning and Behaviour (RTLBs), and there was an online survey for Health Promoting Schools (HPS) facilitators.

The contributors to the evaluation universally offered strongly positive comments about their experiences with the Sparklers resource.[102] The RTLBs and members of the School-based Mental Health team used Sparklers to help teachers and students manage complex behaviours and situations, the teachers used Sparklers activities to build the social and emotional literacy of their students, and the students shared ways Sparklers had helped them, including helping them to calm themselves, show kindness to others, give and receive compliments, and reflect on personal strengths.

Conclusions

Schools have a vital part to play in supporting young people's mental wellbeing. There is a wide range of resources and programmes that schools can use to help promote young people's mental wellbeing in school. There is clear evidence from well-conducted systematic reviews that student wellbeing is enhanced when schools engage with the whole community; take a whole-of school approach with a focus on positive wellbeing for everyone; prioritise staff learning and development; explicitly teach social and emotional skills; and have robust policies in areas such as behaviour, anti-bullying and diversity, including tackling prejudice and stigma around mental health. Enhancing student wellbeing results in more effective learning and greater student achievement and gives students tools that they can use for the rest of their lives to take care of their own mental health and that of the people they are connected with.

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4. Reproductive health

Reproductive hospitalisations include pregnancy, delivery, and postnatal-related conditions, terminations of pregnancy and spontaneous pregnancy loss (miscarriage). Such reproductive hospitalisations account for one-fifth of all hospitalisations in the 15–24 year old age group. The 2014/15 New Zealand Health Survey reported that 18% of women aged 16–24 years had been pregnant in the previous five years.[1] Twenty percent of these pregnancies were scored as planned and 30% were scored as unplanned, based on questions about behaviour and opinions prior to the pregnancy.[1] Women aged 16–24 years who had been pregnant in the previous five years were less likely than older mothers to have taken folic acid supplements before becoming pregnant and less likely to have eaten in a more healthy way before becoming pregnant.[1]

In Aotearoa, as well as in other high-income countries, secondary school students are delaying initiation of sexual behaviour when compared with their peers ten years ago.[2] In 2012, the Youth2000 survey found that 11.2% of school students aged under-16 years and one-third (32.9%) of school students aged over 15 years were sexually active.[2] The median age for giving birth in Aotearoa is 30.2 years.[3] There is, therefore, for many young people a significant gap between first sexual activity and deciding to become a parent.

Declining teen birth rates in Aotearoa have contributed to an overall decline in total fertility rate, although the birth rate to mothers aged under-20 years remains high compared to other countries.[4] There has also been a strong downward trend in the rate of terminations of pregnancy for women aged 15–19 years since 2007.[4] Contraception use among sexually-active school students has shown little change over time; in 2012, 45.5% always used a condom, and 58.2% always used contraception.[2]

This section presents information on the fertility of women in New Zealand, the incidence of legally induced abortions (terminations of pregnancy), livebirths to teenage women as registered with Births, Deaths and Marriages, and data concerning teenage women who gave birth. Policy documents and evidence-based reviews relevant to the support of teenage parents and their children are summarised at the end of this section.

Data sources and methods

Data source(s):

Numerator:	Live birth registrations (Stats NZ, excluding late registrations) Induced Abortions (Abortion Supervisory Committee, via Stats NZ) National Mortality Collection (Stillbirths, Ministry of Health) National Minimum Dataset (Teenage mothers, Ministry of Health)
Denominator:	NZCYES Estimated Resident Population (with linear interpolation between Stats NZ Census years, and extrapolation thereafter).

Definition

Teenager is defined as a woman aged 10–19 years

Teenage birth rate	number of live births per 1,000 women aged 15–19 years
Age-specific fertility rates	number of live births per 1,000 women for a particular age group in a given year
General fertility rate	number of live births per 1,000 female population in each age group

Additional information

Unless specified otherwise, the denominator is women aged 15–19 years

In the analysis of total teenage pregnancy rates, early miscarriage rates were estimated at 10% of induced abortions and 20% of live births using miscarriage methodology based on Dickson et. al (2000).[5]

continued overleaf

The teenage birth rates presented here may vary slightly from previous years, as the Ministry of Health no longer provides stillbirth data in the Birth Registration Dataset due to concerns about data quality. Thus the current analysis for total teenage birth rates includes stillbirths from the National Mortality Collection and Livebirth registrations from the Birth Registration Dataset.

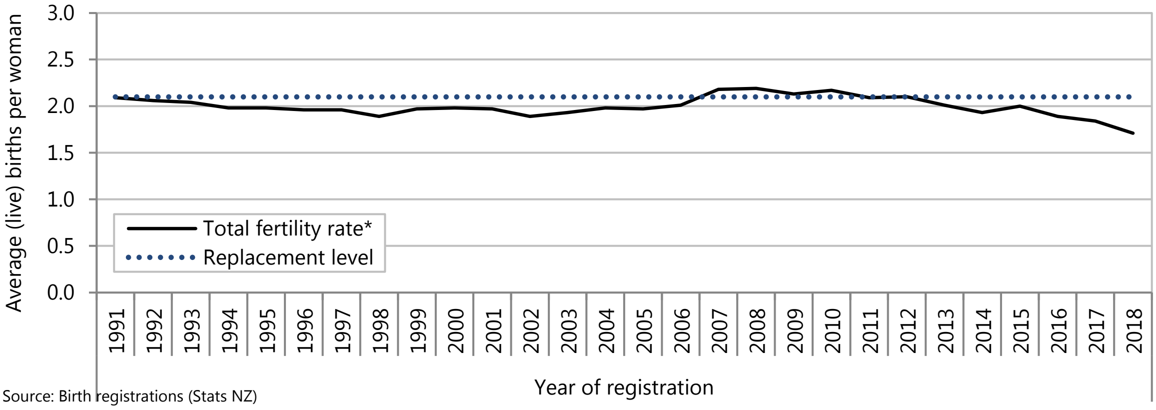
An overview of the strengths and limitations of the data sources is provided in the Appendices.

Fertility rates

Figure 4-1 presents the total fertility rate for New Zealand (based on age-specific fertility rates), alongside the replacement level, the average number of babies that women would need to have over their lifetime to maintain the size of the population.[3,6] The total fertility rate has declined from 2.09 births per woman in 1991 to 1.71 in 2018, predominantly through the declining rates for under-25 year olds.

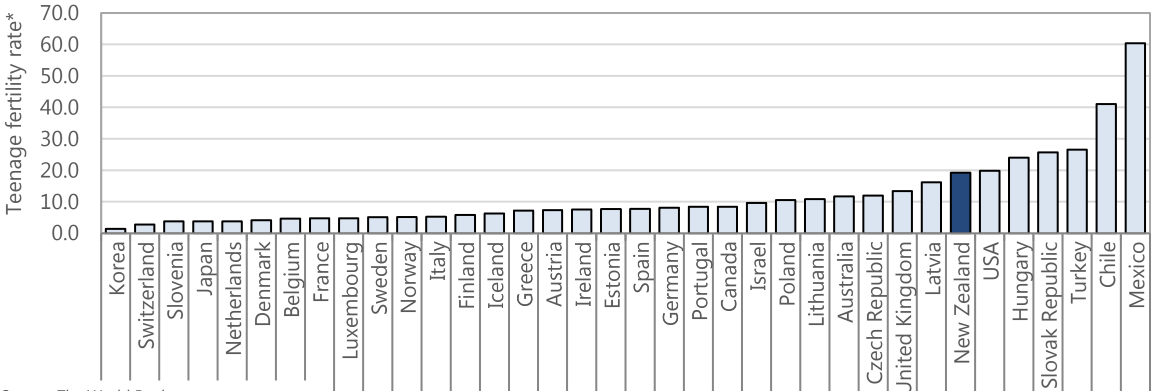
The World Bank's World Development Indicators data shows that the teenage fertility rate in most high-income countries is less than 30 births per thousand women aged 15–19 years. The teenage fertility rate for New Zealand is lower than the United States, and higher than the United Kingdom and Australia (Figure 4-2).

Figure 4-1. Total fertility rate, New Zealand 1991–2018



Source: Birth registrations (Stats NZ)
Excludes late registrations. *Total fertility rate: average number of live births a woman would have during her life if she experienced the age-specific rates of a given period (usually a year)

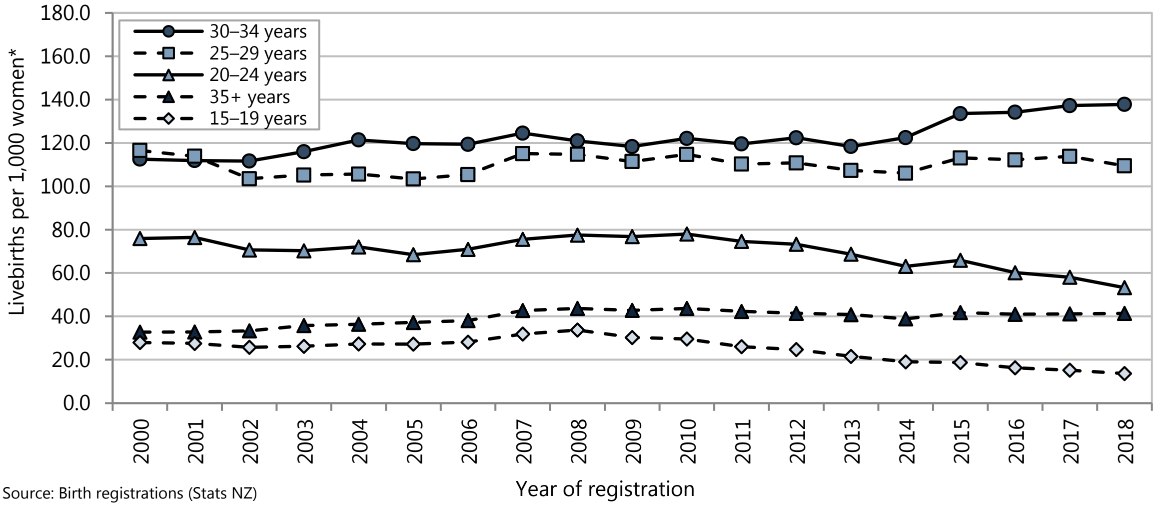
Figure 4-2. Teenage fertility rate, by OECD country, 2017



Source: The World Bank
Period: 2017
*Births per 1,000 women aged 15–19 years

In Aotearoa, the (live) birth rate declined for women aged under-25 years, and increased in recent years for 30–34 year olds (Figure 4-3). The age-specific birth rate declined from 28.0 live births per 1,000 15–19 year olds in 2000 to 13.6 in 2018. Rates peaked for this age group in 2008 at 33.7 births per 1,000 15–19 year olds. For 20–24 year olds, the birth rate in 2000 was 75.9 per 1,000 20–24 year olds and, after peaking at 78.0 in 2010, decreased to 53.2 in 2018.

Figure 4-3. General fertility rate, by age group, New Zealand 2000–2018



Source: Birth registrations (Stats NZ)
Excludes late registrations. *Number of live births per 1,000 age-specific females of childbearing age (15–44 years)

Terminations of pregnancy

The Abortion Legislation Act 2020 aligned the regulation of abortion services with regulation of other health services, and modernised the legal framework for abortion through amendments to the Crimes Act 1961 and the Contraception, Sterilisation, and Abortion Act 1977.[7]

The 2018 report of the Abortion Supervisory Committee[8] contains New Zealand's latest abortion-related statistics. The Committee noted the release of an updated Standards of Care for Women Requesting an Abortion in Aotearoa New Zealand. The new version of the document strengthens areas such as Māori health, women-centred care, counselling, clinical guidelines, and pre and post abortion care. New sections include working with young women, women in situations of family violence, migrant and refugee women, and women who have experienced sexual assault.[8]

This section presents information as reported to the Abortion Supervisory Committee on the incidence of legally induced abortions (terminations of pregnancy).

Data sources and methods

Indicator

Legally induced abortions (terminations of pregnancy) registered in Aotearoa/New Zealand

Data source:

Abortion Supervisory Committee

Additional information

In New Zealand, information on the domicile of women presenting for a termination of pregnancy has only been recorded by the Abortion Supervisory Committee since 2004. Geographical breakdown of terminations of pregnancy are only available at a regional council level, in accordance with the agreement between the Abortion Supervisory Committee and Stats NZ. Therefore information on terminations of pregnancy by DHB or NZDep Index decile is not available.

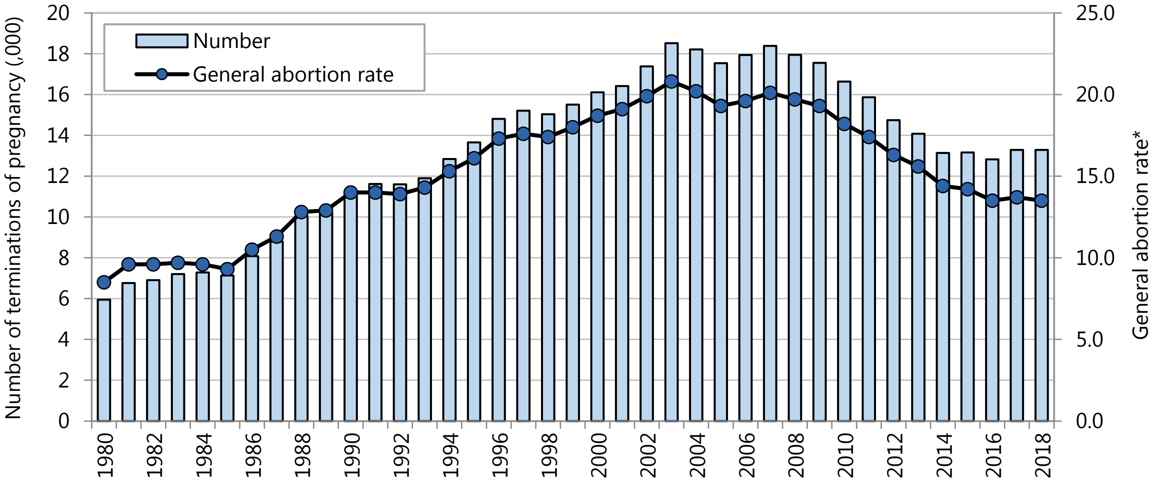
Termination information on ethnicity is total response, as reported by Stats NZ. This means that women identifying in multiple ethnic groups will appear in each identified ethnic group and only once in the total.

Annual reports up to 2018 are available under the tribunals section of the Justice website (www.justice.govt.nz) and the data are available via the Stats NZ website (www.stats.govt.nz).

Figure 4-4 presents the number of terminations of pregnancy and the general abortion rate per 1,000 of the mean estimated population of women aged 15–44 years. The general abortion rate increased from 8.5 per 1000 females aged 15–44 years in 1980 and peaked at 20.8 in 2003. Since then rates have declined to 13.5 in 2018.

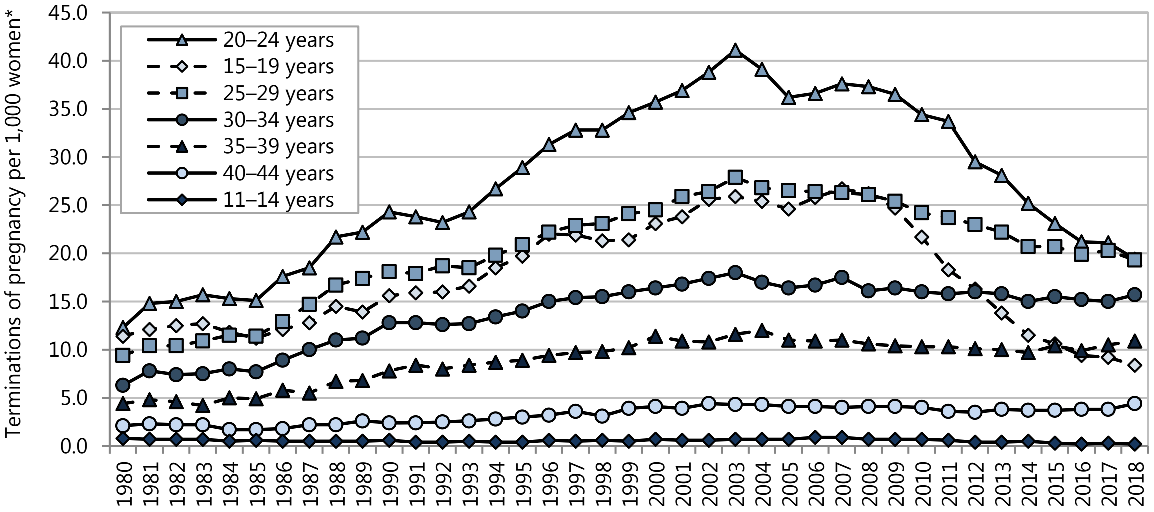
During this period, rates of terminations of pregnancy have declined among women aged 15–24 years and increased for women aged over 25 (Figure 4-5). In 2018 rates for women aged 20–24 years dropped to the level of the 25–29 year old group (19 per 1,000 women).

Figure 4-4. Terminations of pregnancy in New Zealand, number and rate by year, 1980–2018



Source: Abortion Supervisory Committee
*General rate: abortions per 1,000 mean estimated number of women aged 15–44 years

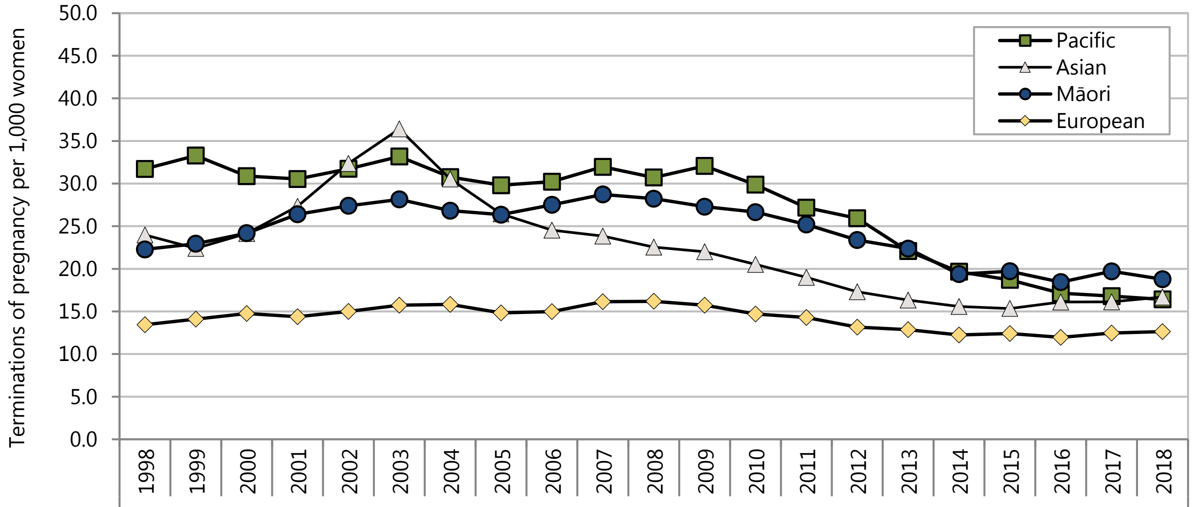
Figure 4-5. Terminations of pregnancy, by year and age of woman, New Zealand 1980–2018



Source: Abortion Supervisory Committee
*Termination rate per 1,000 mean female estimated resident population in each age group

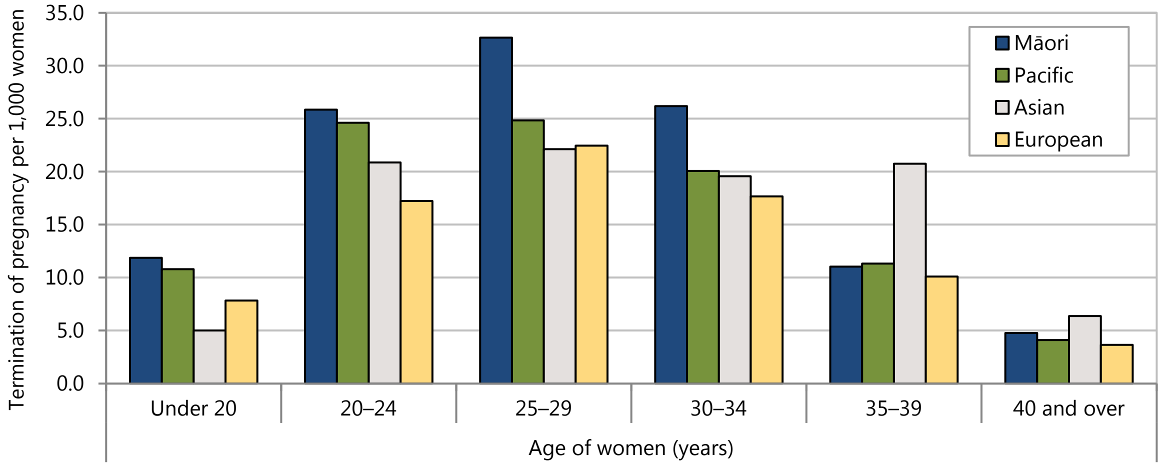
Rates of termination of pregnancy in the European ethnic group have been stable since 1998 whereas rates of termination of pregnancy have declined for all other ethnic group categories as shown in Figure 4-6. Rates of termination of pregnancy were higher among Māori and Pacific women in the age groups up to 34 years old compared with Asian and European women. Asian women aged 35–39 years had high rates compared with women of the same age among the other ethnic groups (Figure 4-7).

Figure 4-6. Terminations of pregnancy, by year and ethnicity of woman, New Zealand 1998–2018



Source: Abortion Supervisory Committee
Denominator: NZCYES Extrapolated female estimated resident population (total response). *Ethnicity is total response

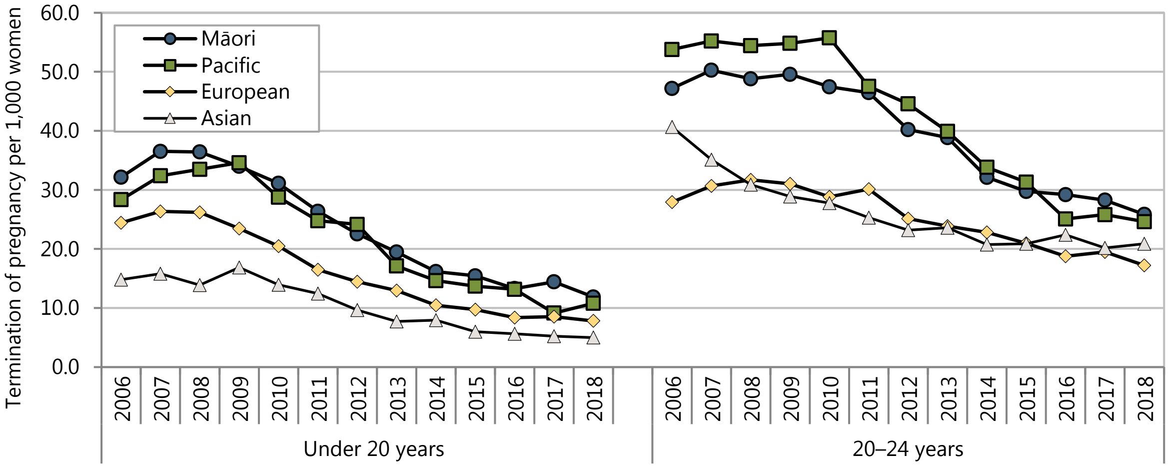
Figure 4-7. Termination of pregnancy rates, by ethnicity and age of women, New Zealand 2018



Source: Abortion Supervisory Committee
Denominator: NZCYES Extrapolated female estimated resident population (total response)
Year ending Dec 2018. *Ethnicity is total response

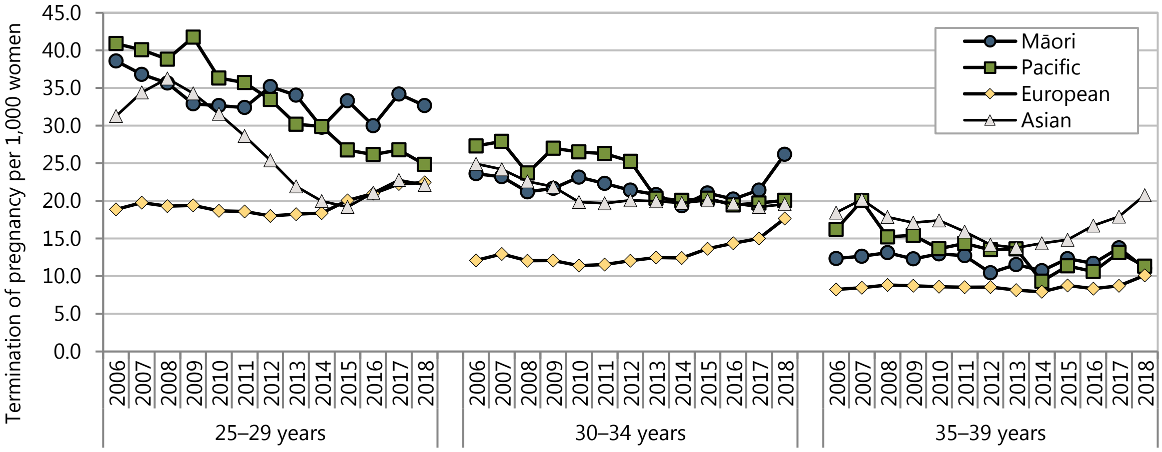
Figure 4-8 and Figure 4-9 present the rates of termination by the age and ethnicity of the women between 2006 and 2018. Rates of termination have declined for women aged under-25 years within each ethnic group. For women aged 25–29 years, rates consistently declined among Pacific women and increased among Europeans. Rates of terminations among Asian women aged 35–39 years have gradually increased since 2013.

Figure 4-8. Trends in termination of pregnancy rates, by ethnicity and age of women (under-25 years), New Zealand 2006–2018



Numerator: Abortion Supervisory Committee
Denominator: NZCYES Extrapolated female estimated resident population (total response)
Ethnicity is total response

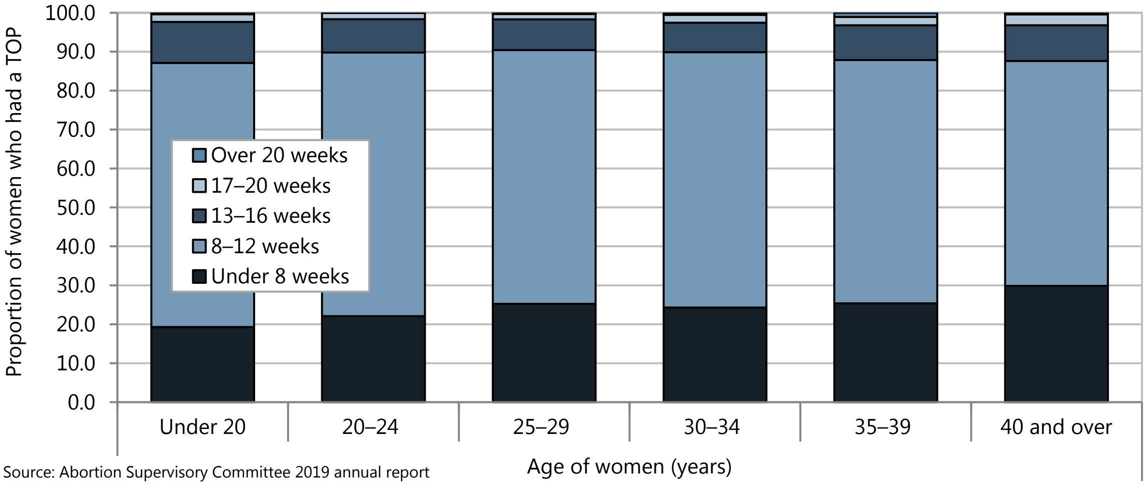
Figure 4-9. Trends in termination of pregnancy rates, by ethnicity and age of women (25 years and older), New Zealand 2006–2018



Numerator: Abortion Supervisory Committee
Denominator: NZCYES Extrapolated female estimated resident population (total response)
Ethnicity is total response

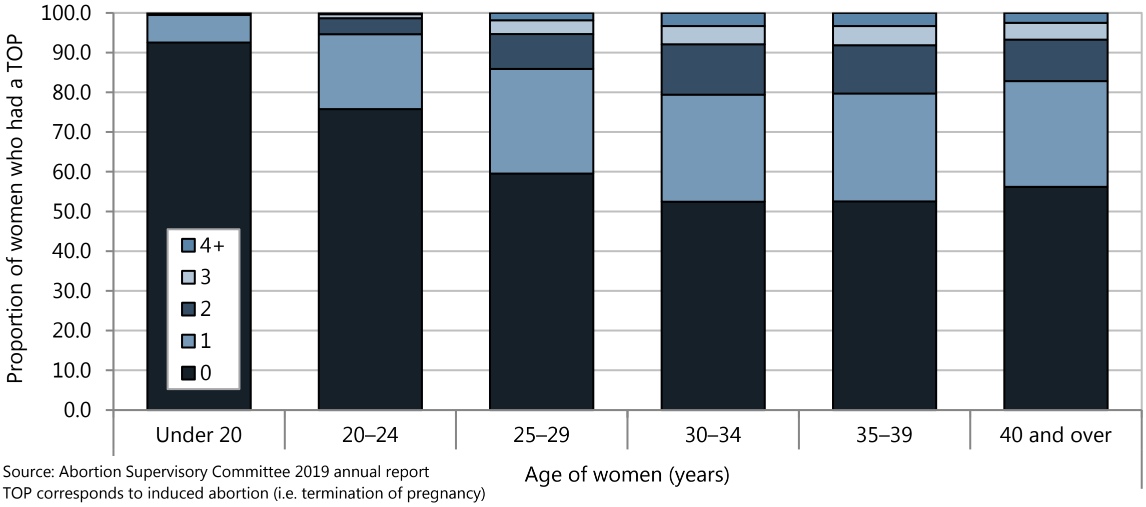
The majority of terminations of pregnancy occurred between 8 and 12 weeks gestation irrespective of the age of the women (Figure 4-10). The majority of women had not had a previous termination, particularly among the under-25 year olds (Figure 4-11).

Figure 4-10. Proportion of women who had a termination, by age of woman and gestation of pregnancy, New Zealand 2018



Source: Abortion Supervisory Committee 2019 annual report
TOP corresponds to induced abortion (i.e.termination of pregnancy)
Period: Year ending 2018

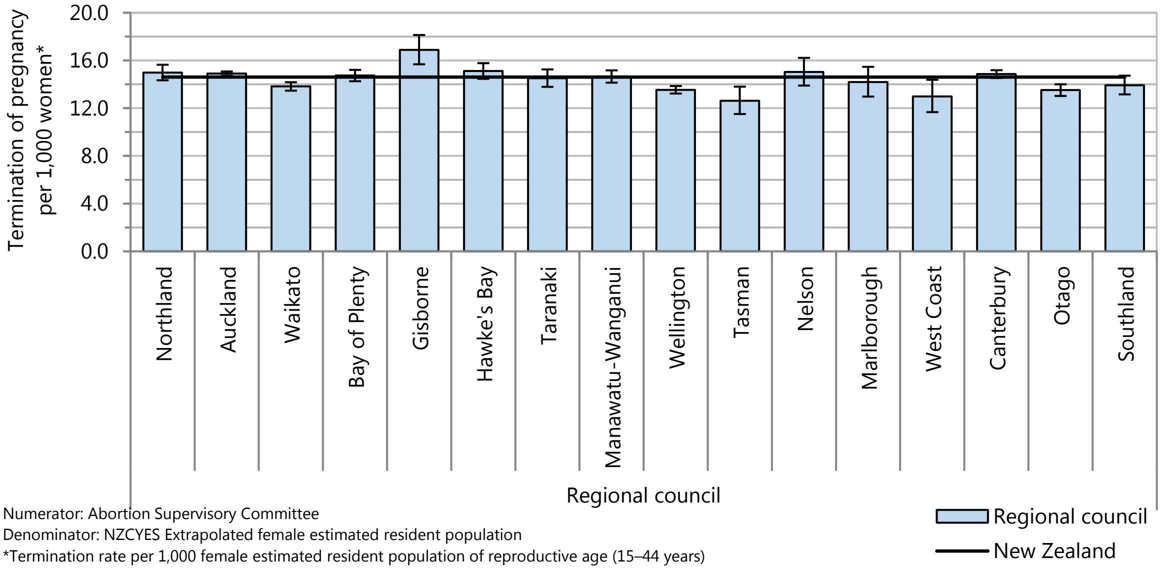
Figure 4-11. Proportion of women who had a termination, by age of woman and number of previous terminations, New Zealand 2018



Source: Abortion Supervisory Committee 2019 annual report
TOP corresponds to induced abortion (i.e. termination of pregnancy)
Period: Year ending 2018

At a regional level information on terminations of pregnancy is reported by residential regional council. Figure 4-12 presents the rate for each regional council for the period 2014–2018 and the numbers within this period are presented in Table 4-1. Caution should be applied when interpreting regional differences due to variations in reporting place of residence.

Figure 4-12. Rates of terminations of pregnancy, by regional council of residence, New Zealand 2014–2018



Numerator: Abortion Supervisory Committee
Denominator: NZCYES Extrapolated female estimated resident population
*Termination rate per 1,000 female estimated resident population of reproductive age (15–44 years)

Table 4-1. Number of terminations of pregnancy, by regional council of residence, New Zealand 2014–2018

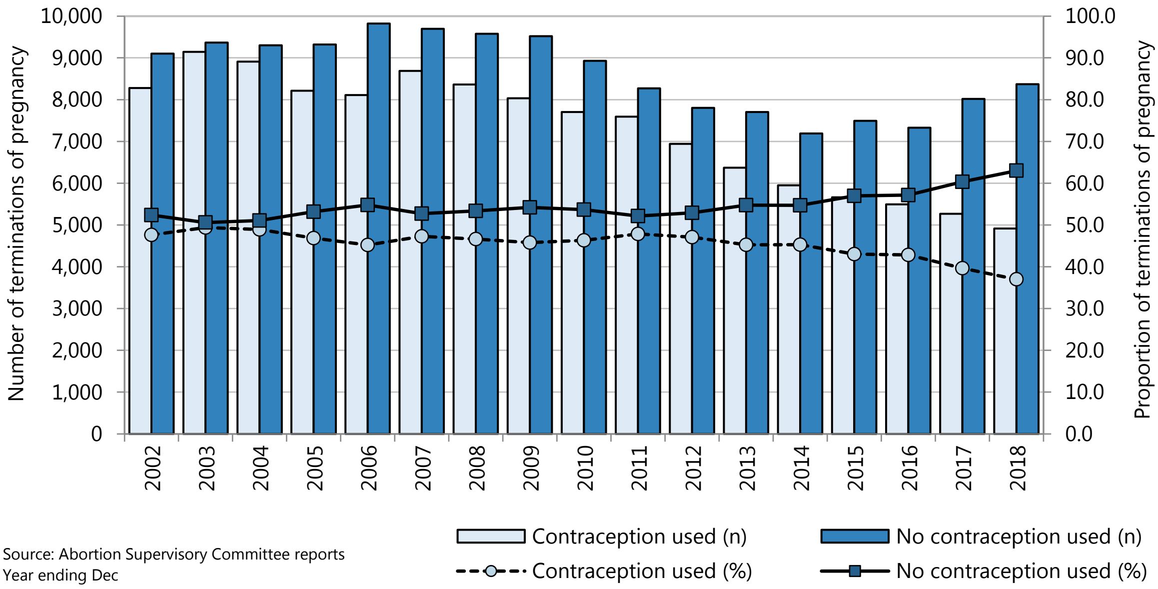
Regional council	2014	2015	2016	2017	2018
Number of terminations					
Northland	431	449	385	402	381
Auckland	5,138	5,021	4,896	5,047	4,959
Waikato	1,046	1,204	1,148	1,241	1,144
Bay of Plenty	667	715	735	737	830
Gisborne	140	151	172	145	137
Hawke's Bay	413	414	382	447	432
Taranaki	272	275	310	317	337
Manawatu-Wanganui	601	605	567	678	677
Wellington	1,521	1,441	1,348	1,352	1,415
Tasman	108	112	77	77	105
Nelson	160	149	104	119	122
Marlborough	95	109	94	97	114
West Coast	88	91	71	56	57
Canterbury	1,628	1,545	1,604	1,580	1,558
Otago	552	539	623	589	648
Southland	249	265	248	225	241
New Zealand	13,137	13,155	12,823	13,285	13,282

Source: Abortion Supervisory Committee

Contraception

Around 37% of women who had a termination of pregnancy in 2018 had been using some form of contraception, such as condoms, natural family planning, oral or emergency contraception, intrauterine contraceptive device, injection, long-acting implant, or diaphragm. Over the period 2002–2018, the proportion of women who had a termination of pregnancy and reported as having used contraception gradually decreased (Figure 4-13). Of the women that had been using contraception and had a termination of pregnancy in 2018, use of condoms accounted for 54.7%, and 32.4% used an oral contraceptive (either combined or progesterone only).[8]

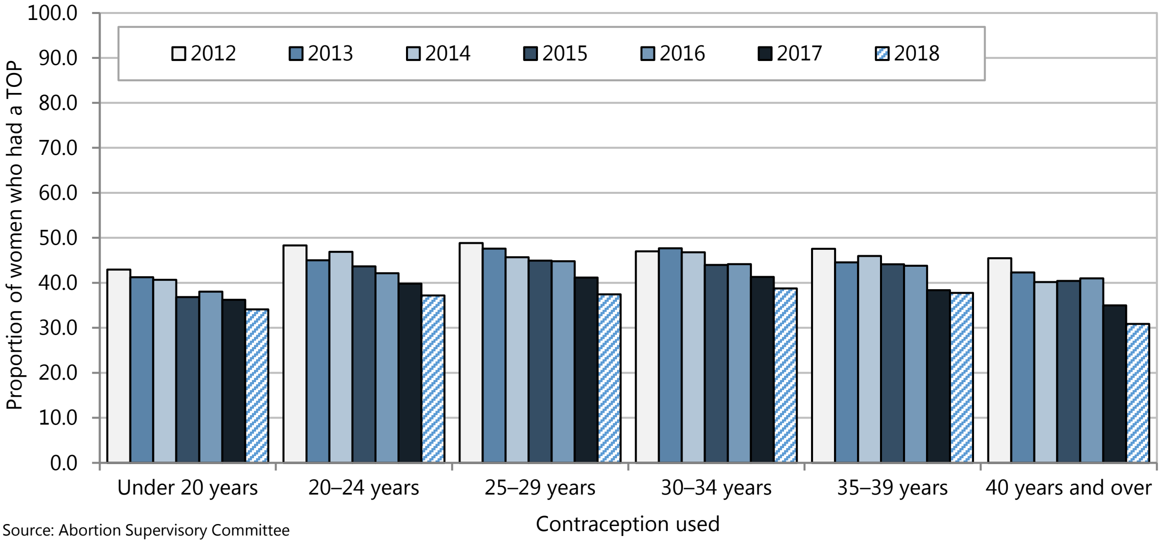
Figure 4-13. Terminations of pregnancy, by contraception status and year, New Zealand 2002–2018



Source: Abortion Supervisory Committee reports
Year ending Dec

The proportion of contraception use, among women who had a termination of pregnancy, declined across all age groups between 2011 and 2018. For under-20 year olds the proportion that used contraception decreased from 42.1% in 2011 to 34.1% in 2018, whereas for 35–39 year olds the decline was from 49.6% to 37.8% over the same time period (Figure 4-14).

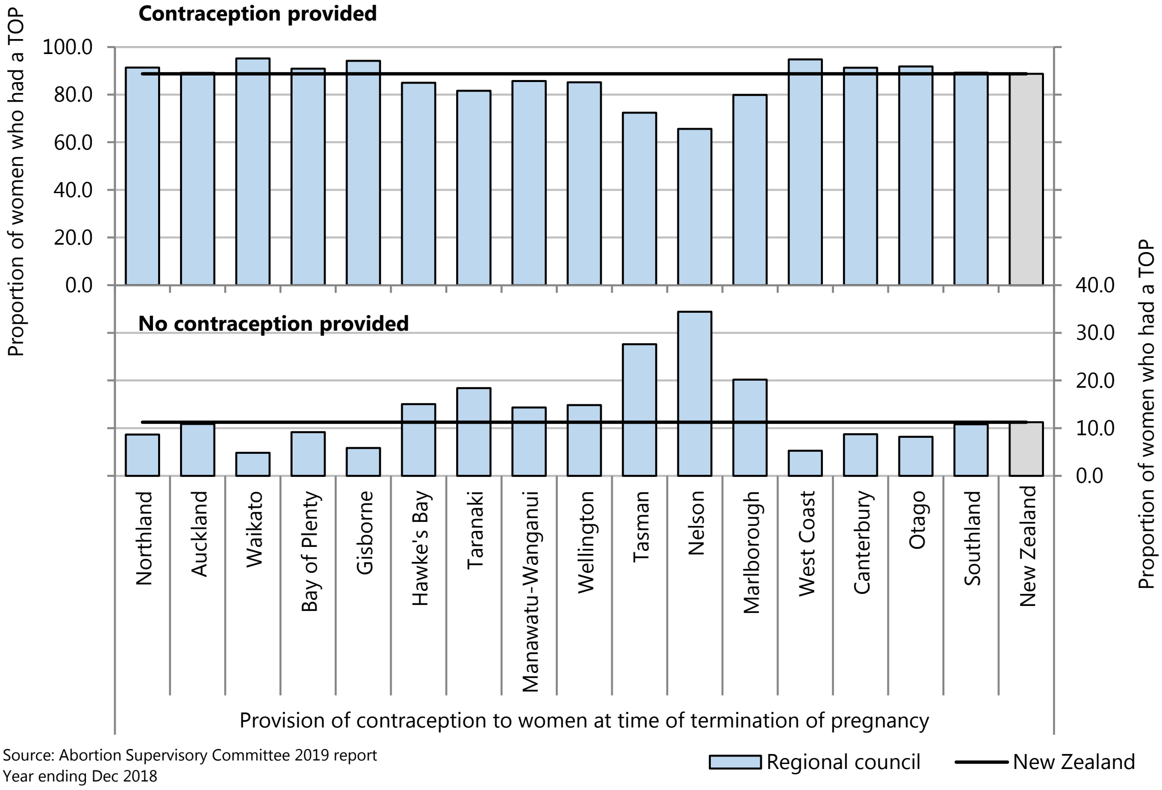
Figure 4-14. Contraception use among women who had a termination of pregnancy, by year and age, New Zealand 2012–2018



Source: Abortion Supervisory Committee
Year ending Dec

At a regional level information on terminations of pregnancy is reported by residential regional council. Figure 4-15 presents the provision of contraception to women at the time of the termination, as a proportion of all women undergoing a termination, by regional council of residence during 2018. Caution should be applied when interpreting regional differences due to variations in reporting place of residence.

Figure 4-15. Contraception provision to women at time of termination of pregnancy, by provision status and regional council of residence, New Zealand 2018



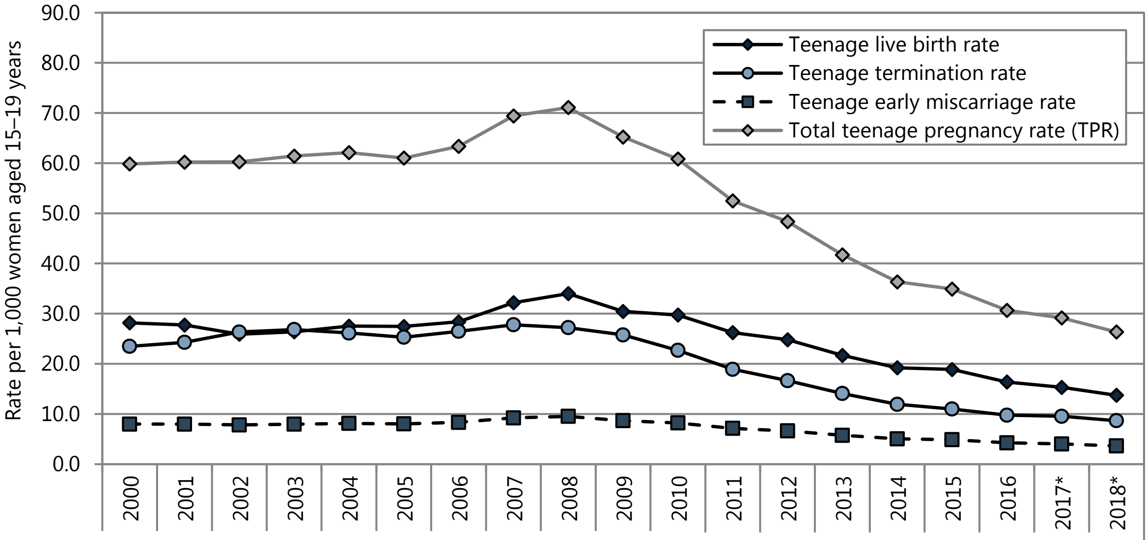
Source: Abortion Supervisory Committee 2019 report
Year ending Dec 2018

Teenage pregnancy

The health and wellbeing of women aged under-20 years and of their babies are vital as these teenage women have higher rates of preterm birth, or having babies of low birthweight, are at risk of social stigma, and typically require additional support particularly in relation to improving education, training and employment opportunities.[9-13]

The pregnancy outcomes for women aged 15–19 years are presented in Figure 4-16. The declines in rates of live births, termination of pregnancy, and miscarriage from 2008 to 2018 are reflected in the overall decline in total teenage pregnancy rate.

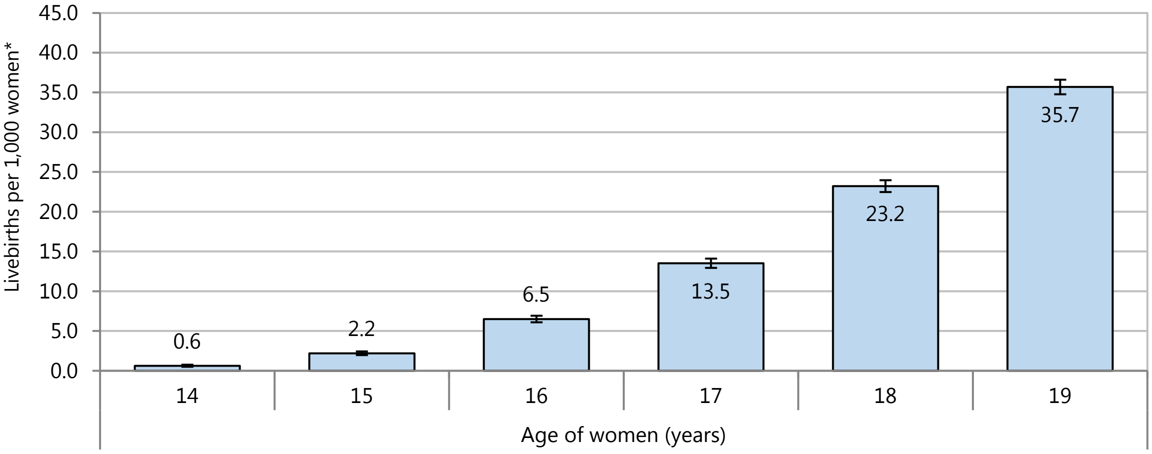
Figure 4-16. Trends in teenage pregnancy, by pregnancy outcome, New Zealand 2000–2018



Numerators: MORT (stillbirths), Stats NZ (Livebirths, Abortion Supervisory Committee),
Denominator: NZCYES Estimated resident population (aged 15–19 years)
Early miscarriages estimated 10% of induced abortions and 20% of live births. *provisional TPR

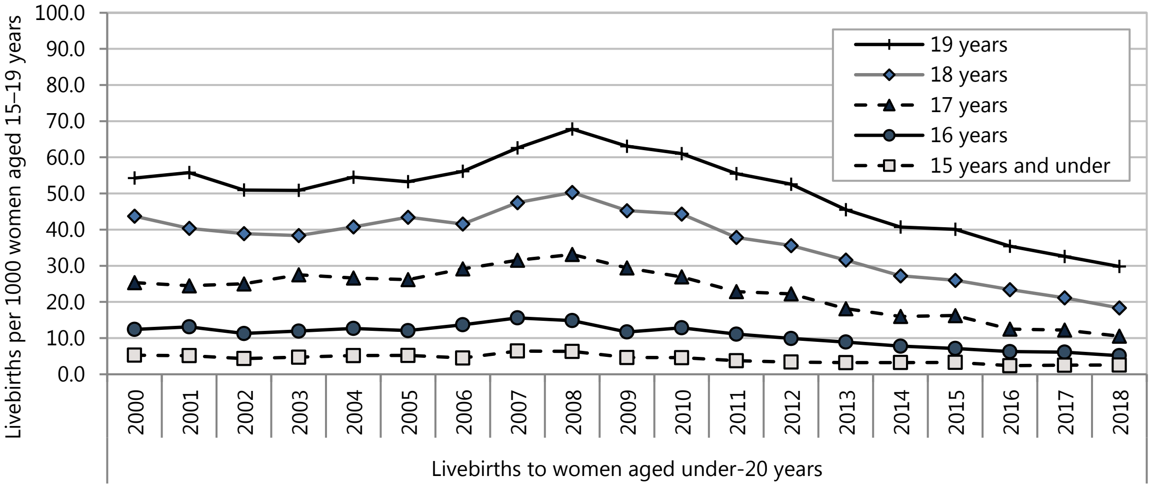
The majority of registered live births to teenage mothers were to women aged 18 or 19 years (73%) and only 0.7% were to girls aged under-15. Women aged 19 years had the highest rate of registered livebirths in this age group between 2014 and 2018 (Figure 4-17), which has been consistent since 2000 (Figure 4-18).

Figure 4-17. Registered livebirths to women aged under-20 years, by age group of women, New Zealand 2014–2018



Numerator: (Live) Birth registrations (Stats NZ), Denominator: NZCYES Estimated resident population
Period: 2014–2018. Excludes late registrations. Year of birth registration. NZ residents only
*Live birth rate per 1,000 female estimated resident populat

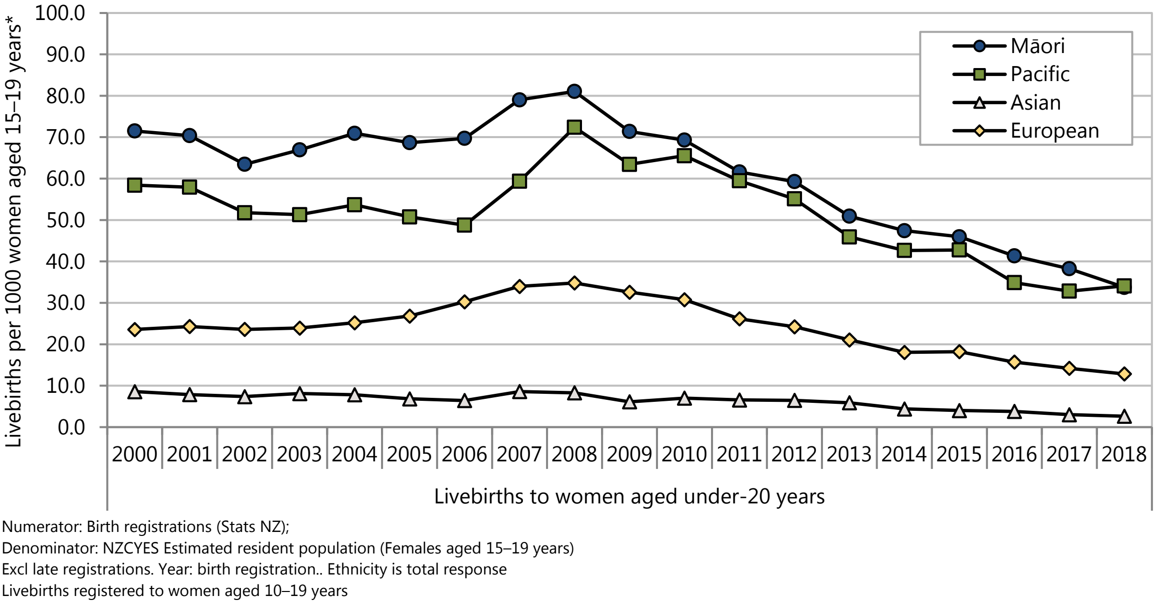
Figure 4-18. Trends in registered livebirths to women aged under-20 years, by age, New Zealand 2000–2018



Numerator: Birth registrations (Stats NZ);
Denominator: NZCYES Estimated resident population (Females aged 15–19 years)
Excl late registrations. Year: birth registration.. Livebirths registered to women aged 10–19 years

The rates of registered liveborn babies to teenage women have decreased for each ethnic group between 2000 and 2018. Over this period the rates of livebirths have been consistently high among Māori and Pacific teenage women while Asian/Indian teenage women have had consistently low birth rates (Figure 4-19). Caution is advised when interpreting the ethnicity information presented in Figure 4-19, as it is reported as total response (such that any birth with multiple ethnic groups specified at registration will be counted in each specified ethnic group, and therefore each birth may be represented multiple times).

Figure 4-19. Trends in registered livebirths to women aged under-20 years, by (total response) ethnicity, New Zealand 2000–2018



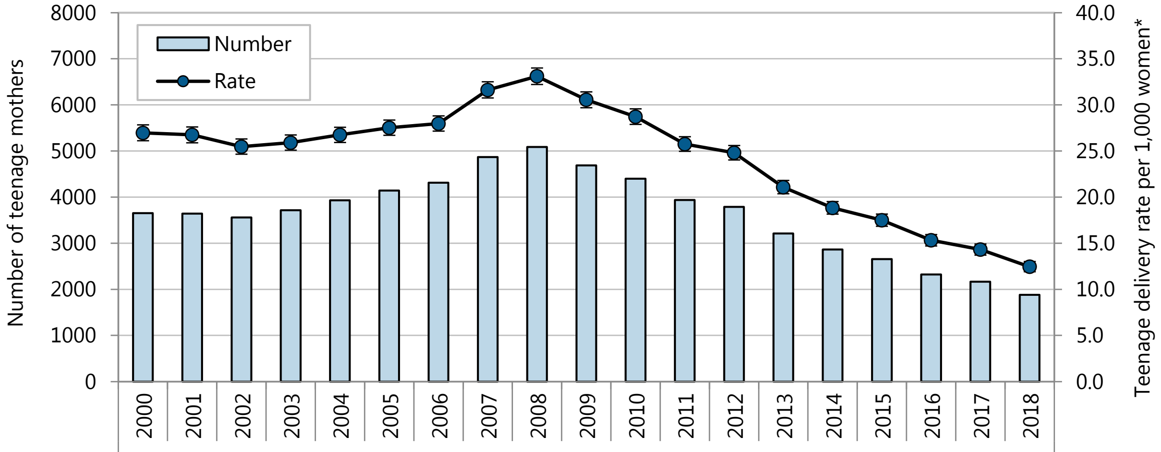
Numerator: Birth registrations (Stats NZ);
Denominator: NZCYES Estimated resident population (Females aged 15–19 years)
Excl late registrations. Year: birth registration.. Ethnicity is total response
Livebirths registered to women aged 10–19 years

Teenage mothers

In this section analysis is based on women who gave birth aged between 10 and 19 years. (Teenage) Delivery rate has been based on mothers who were discharged from hospital with a documented outcome of pregnancy code (ICD-10-AM Z37). Unless specified otherwise, rates and population-level proportions were calculated based on women who gave birth aged 15–19. For select factors analyses for mothers aged 20–24 years are presented alongside for comparison purposes, as this group is biologically similar, to enable representation of differences in relation to biological factors or inequities.

The number of teenage mothers who gave birth (delivered) in hospital or were admitted to hospital shortly after, and teenage delivery rate, are presented in Figure 4-20. The number of teenage mothers has declined overall since 2000. The teenage birth rate per 1,000 women age 15–19 years declined over this period by 45%. Between 2014 and 2018, almost half of teenage mothers were aged 19 (44.4%; 5,295), followed by 18 (28.7%; 3,424), 17 (16.3%; 1,941) and 16 (6.9%; 567). Only a small proportion were aged 15 (2.3%; 275) or under (0.7%; 84). The overall average age of teenage mothers during this period was 18.0 years.

Figure 4-20. Number of teenage mothers and teenage birth rate, by year, New Zealand 2000–2018

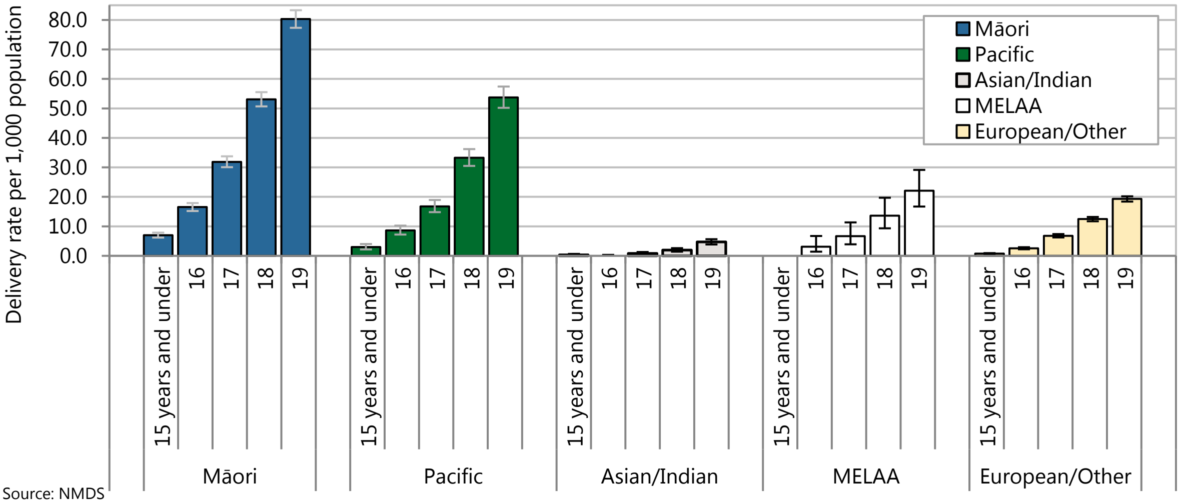


Numerator: NMDS, Denominator: NZCYES Estimated Resident Population
*Birth rate per 1,000 women aged 15–19 years
Note: Mothers aged less than 15 were included in the numerator when calculating delivery rates

A similar pattern was seen within the ethnic groups (Figure 4-21). During 2014–2018, Māori accounted for 52.8% of teenage mothers, followed by teenage mothers of European/Other ethnicity (30.2%). The proportion of 18 and 19 year old mothers ranged from 69.5% for Māori to 85.2% for Asian/Indian. The rate for Māori 19 year olds was 80/1,000 19 year olds and 54 for Pacific 19 years old during 2014–2018.

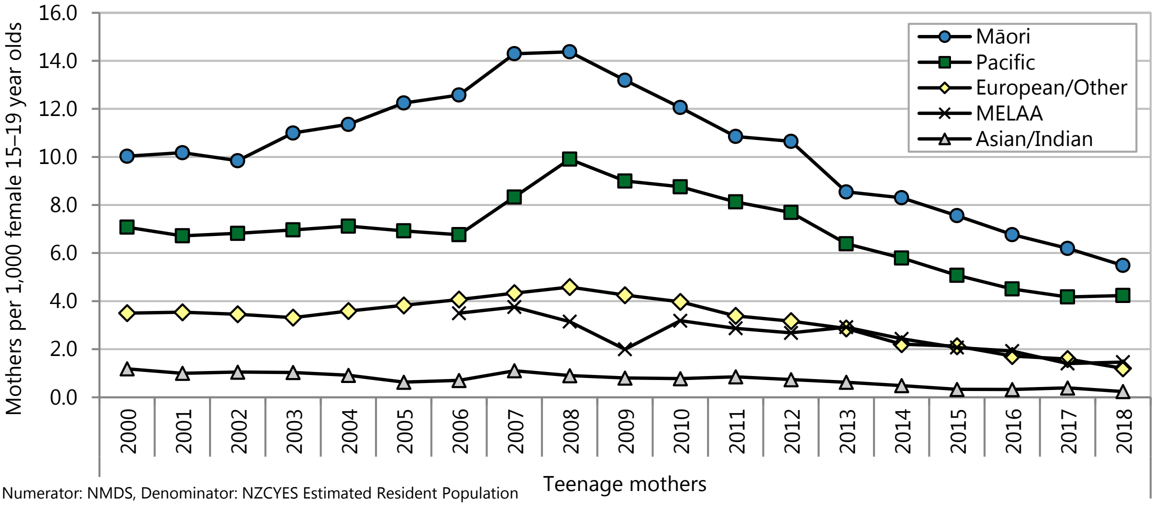
The number of teenage mothers has declined within each ethnic group from peak levels in 2007 or 2008 to 2018. During this period, the declining rate of teenage mothers per 1,000 15–19 year olds ranged from a 21% decline for Asian/Indian teenage mothers to a 42% decline for Pacific (Figure 4-22).

Figure 4-21. Teenage mothers, by age and ethnicity, New Zealand 2014–2018



Source: NMDS
Denominator: NZCYES Estimated Resident Population
Period: 2014–2018

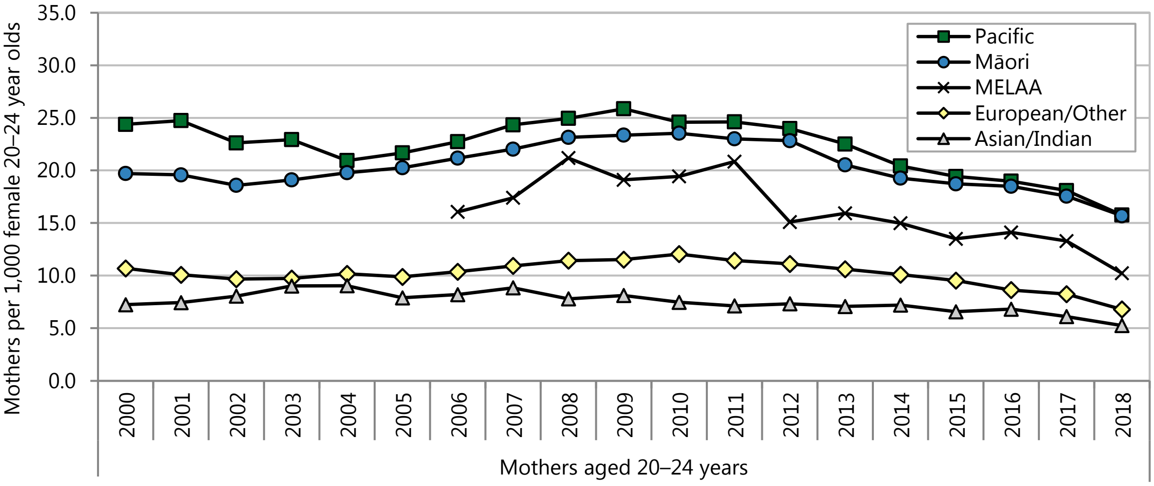
Figure 4-22. Teenage mothers, by year and prioritised ethnicity, New Zealand 2000–2018



Numerator: NMDS, Denominator: NZCYES Estimated Resident Population
Ethnicity is Level 1 prioritised

In comparison, nearly 40% of mothers aged 20–24 during 2014–2018 were of European/Other ethnicity, followed by Māori (36.8%), and Pacific accounted for 15% of mothers in this age group. Over the period 2000 to 2018 Pacific mothers had consistently high delivery rates per 1,000 20–24 year olds (Figure 4-23). Decreasing delivery rates for mothers aged 20–24 years were seen over this period for each ethnic group, and the declines ranged from 62% for European/Other aged 20–24 years to a 79% decline in mothers among Māori aged 20–24 years.

Figure 4-23. Mothers aged 20–24 years, by year and prioritised ethnicity, New Zealand 2000–2018

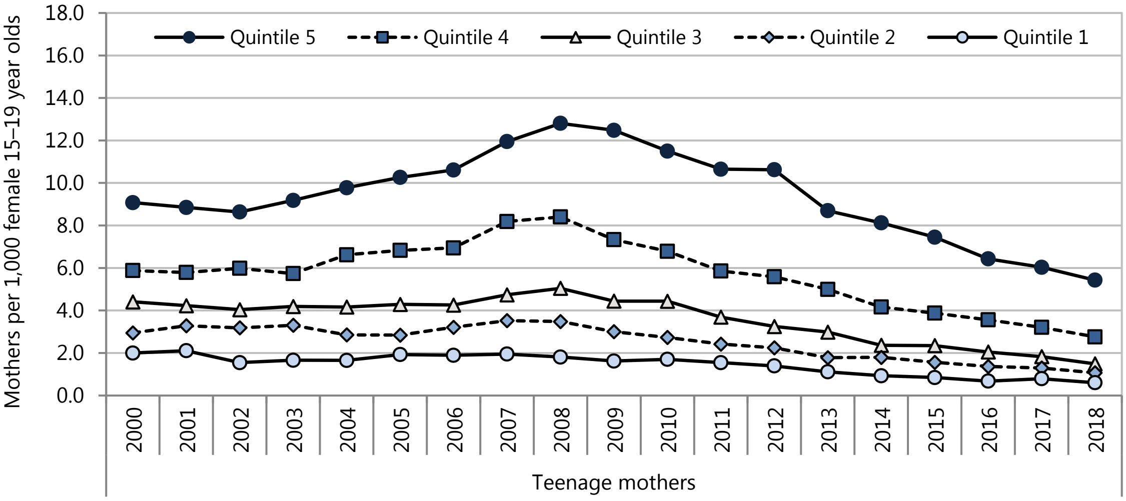


Numerator: NMDS, Denominator: NZCYES Estimated Resident Population
Ethnicity is Level 1 prioritised

Figure 4-24 presents the rate of teenage mothers who gave birth by the deprivation quintile of their area of residence at the time of discharge from hospital. The majority of teenage mothers who gave birth in 2018 resided in areas with high deprivation scores (quintile 5; 52.6%). The rate of 5.4 teenage mothers per1,000 15–19 year olds in quintile 5 was 9 times as high as the rate for those that resided in areas with low deprivation scores (quintile 1; 4.6% of teenage mothers; 0.6 mothers per 1,000). While the decline in teenage mothers over the period 2000 to 2018 was greatest among those residing in quintile 5 areas (4 teenage mothers/1,000 15–19 year olds) compared with teenage mothers in quintile 1 (1 teenage mother/1,000 15–19 year olds), the ratio between quintile 1 and quintile 5 widened from 4.5 in 2000 to 9.1 in 2018. Similarly the ratio increased between teenage mothers in quintile 5 areas and those in quintile 4 areas (1.5 in 2000 to 2 in 2018).

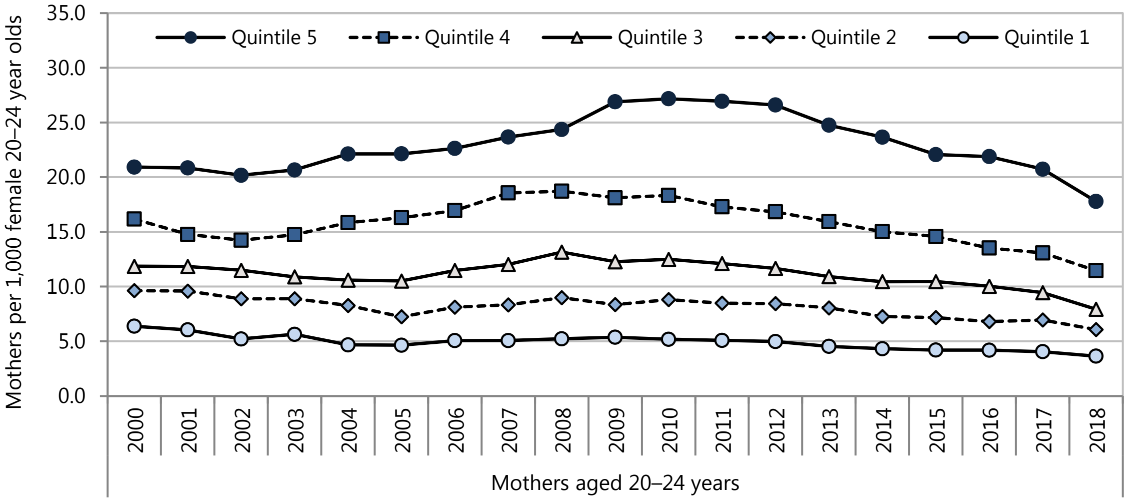
Decreases were also seen across all levels of residential deprivation for slightly older mothers aged 20–24 years, for whom the difference in rates of decline were similar between quintile 5 and quintile 1 (3 mothers/1,000 20–24 year olds; Figure 4-25). The ratio between mothers who resided in quintile 5 areas and those in quintile 1 areas widened for mothers aged 20–24 years between 2000 and 2018.

Figure 4-24. Teenage mothers, by year and NZ Deprivation Index quintile, New Zealand 2000–2018



Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

Figure 4-25. Mothers aged 20–24 years, by year and NZ Deprivation Index quintile, New Zealand 2000–2018



Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

During this period, delivery rates for mothers aged 15–19 years or aged 20–24 years were significantly lower than the New Zealand rate in Southern DHB. Within the Otago region of Southern DHB, rates were significantly lower for both maternal age groups, whilst rates for mothers aged 20–24 years were significantly higher than the national rate in the Southland region (Table 4-2).

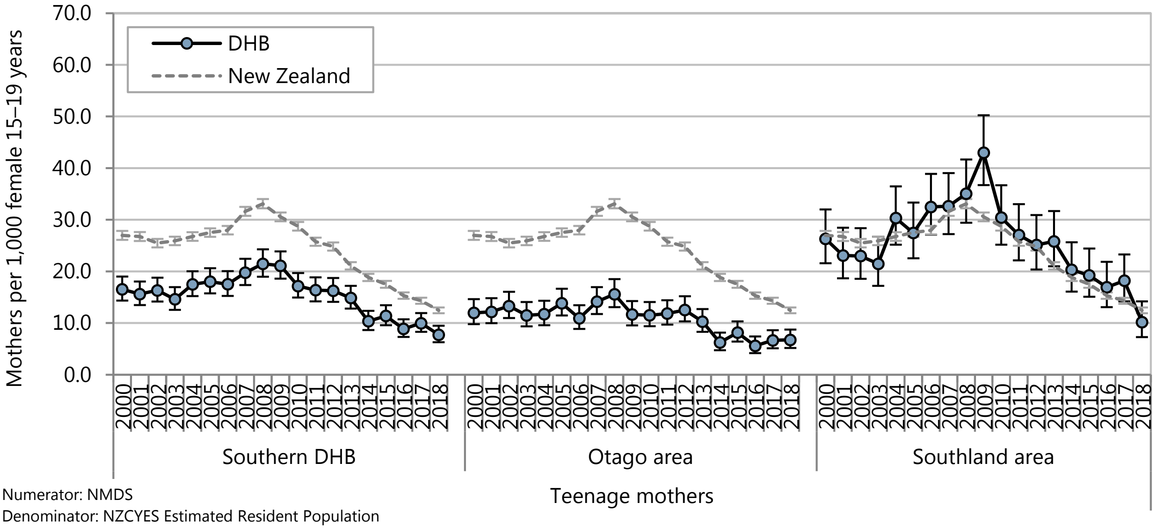
The number of teenage mothers declined over the period 2000 to 2018 in Southern DHB. For the same period, the teenage birth rate per 1,000 women aged 15–19 years declined by 46% for Southern DHB (Figure 4-26). Within regional areas of Southern DHB, the decline for Otago was higher than that for Southland (55% and 38% respectively).

Table 4-2. Mothers, by age group and district health board, Southern DHB vs New Zealand 2014–2018

DHB/Area	n	Annual average (n)	Mothers per 1,000 female population	Rate ratio	95% CI
Mothers who gave birth in 2014–2018					
Under 20 years					
Southern DHB	561	112	9.65	0.62	0.57–0.67
Otago	275	55	6.66	0.42	0.38–0.48
Southland	286	57	16.99	1.08	0.96–1.22
New Zealand	11,886	2,377	15.69	1.00	
20–24 years					
Southern DHB	2,432	486	39.82	0.71	0.69–0.74
Otago	1,313	263	30.24	0.54	0.51–0.57
Southland	1,119	224	63.40	1.14	1.07–1.20
New Zealand	44,632	8,926	55.72	1.00	

Source: NMDS, Denominator: NZCYES Estimated Resident Population. Period: 2014–2018. Rate ratios are unadjusted

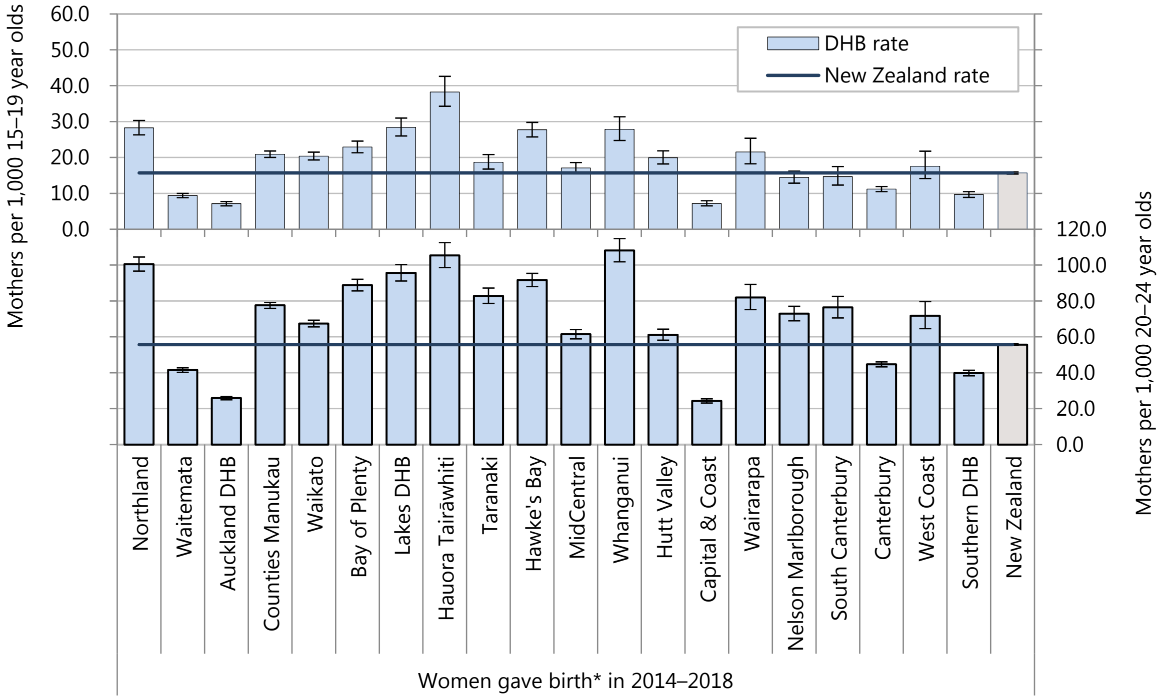
Figure 4-26. Teenage mothers, Southern DHB vs New Zealand 2000–2018



Numerator: NMDS
Denominator: NZCYES Estimated Resident Population

Figure 4-27 and Table 4-2 present the age-specific delivery rates for mothers residing in each district health board between 2014 and 2018 compared to the rate for New Zealand as a whole.

Figure 4-27. Mothers, by maternal age group and district health board, New Zealand 2014–2018



Source: NMDS Denominator: NZCYES Estimated Resident Population
*in-hospital or admitted to hospital shortly after birth

Antenatal factors

Figure 4-28 presents factors related to the antenatal period for the mothers that gave birth during 2014 to 2018, including whether they had registered with a primary maternity service provider, their smoking status and weight classification at registration, and whether gestational diabetes was documented.

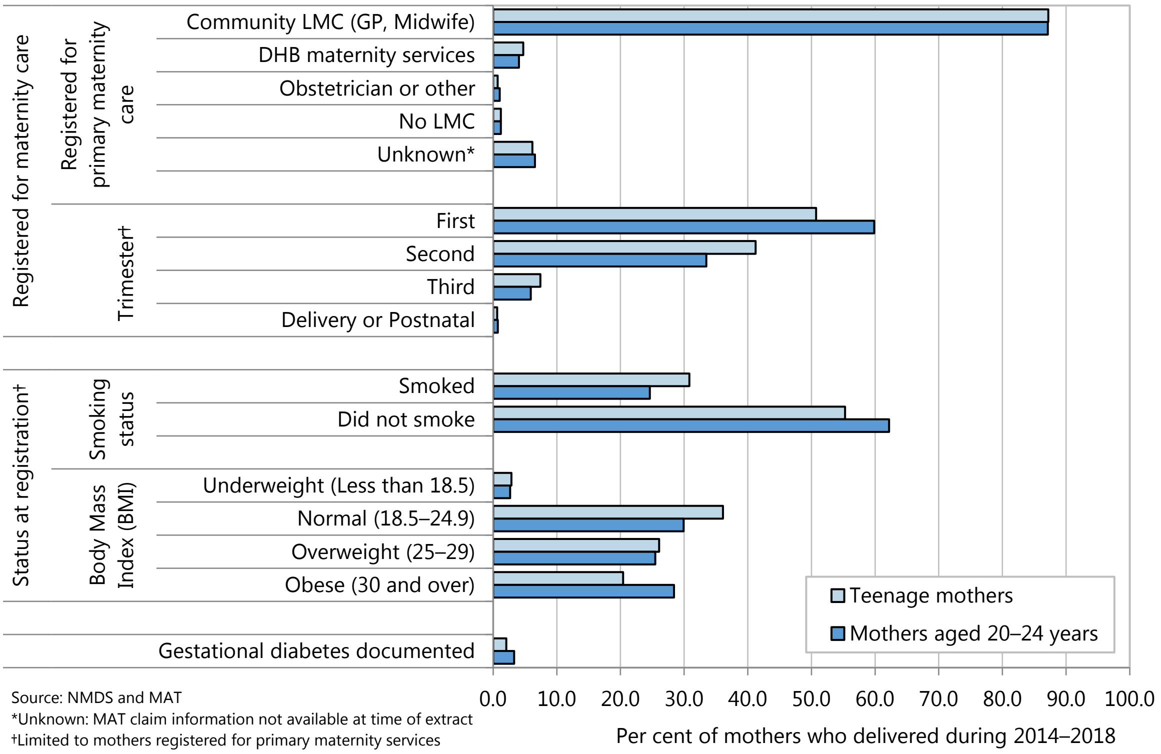
Of the mothers that gave birth during 2014–2018, 87% of teenage mothers and of mothers aged 20–24 years had registered with a community-based primary maternity service provider in the antenatal period, and approximately 1%, for both maternal age groups, had not registered with a provider. Registration status was unknown for 6% of teenage mothers and 7% of mothers aged 20–24 years. In each age group around 5% of mothers were enrolled with other maternity service providers. While the majority of mothers in these two age group registered in the first trimester, the proportion was lower for teenage mothers (50.7% compared with 59.9% for mothers aged 20–24 years). A higher proportion of teenage mothers registered for primary maternity services during the second trimester, compared with mothers aged 20–24 years.

Smoking status and weight (body mass index (BMI)) are documented when the mother registers with a primary maternity service provider. A higher proportion of teenage mothers reporting smoking at registration (36.0% compared to 28.5% for mothers aged 20–24 years). Of the teenage mothers who gave birth and had been registered with a primary maternity service provider, 36.1% were classified as of normal weight and 2.9% as underweight, while 26.1% were classified as overweight and 20.4% as obese.

While these proportions provide a helpful indicator of maternal behaviours, caution should be applied as information from some DHBs' primary maternity services are missing from the National Maternity Collection (MAT).[14]

Of the mothers that gave birth during 2014–2018, gestational diabetes was documented for 2.1% of teenage mothers and 3.3% of 20–24 year old mothers.

Figure 4-28. Select antenatal factors, by maternal age group, New Zealand 2014–2018



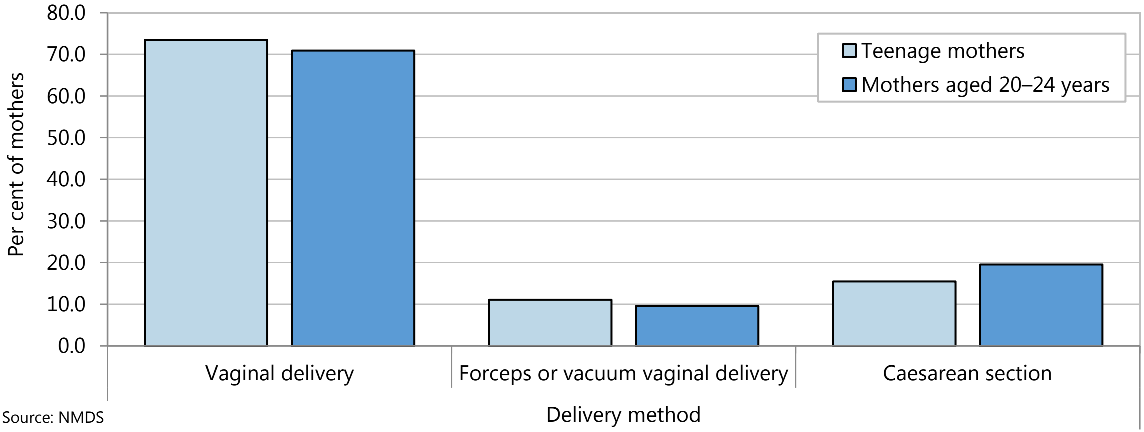
Source: NMDS and MAT
*Unknown: MAT claim information not available at time of extract
†Limited to mothers registered for primary maternity services

Labour and birth

Figure 4-29 presents the proportion of mothers aged under-20 years and the method by which their baby was delivered, alongside the delivery method for mothers aged 20–24 years. A higher proportion of teenage mothers compared with mothers aged 20–24 years had a vaginal delivery (73.5% and

70.9% respectively), and a slightly higher proportion of teenage mothers required assistance via forceps or a vacuum delivery (11.1% and 9.6% respectively). Just over 15% of teenage mothers had a caesarean section, compared with 19.6% of mothers aged 20–24 years.

Figure 4-29. Delivery method, by maternal age group, New Zealand 2014–2018

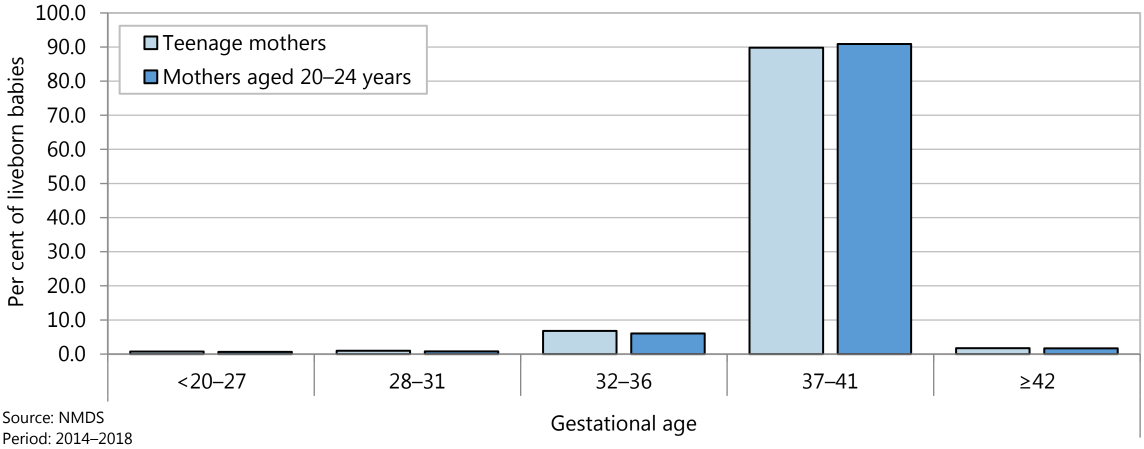


Source: NMDS
Period: 2014–2018

Baby outcomes

The majority of liveborn babies born to teenage mothers or to mothers aged 20–24 were born between 37 to 41 weeks' gestation (term), and fewer than 8.5% of babies born to teenage mothers were born preterm (7.5% for mothers aged 20–24 years). Within the preterm babies, most babies were born at 32–36 weeks gestation (Figure 4-30).

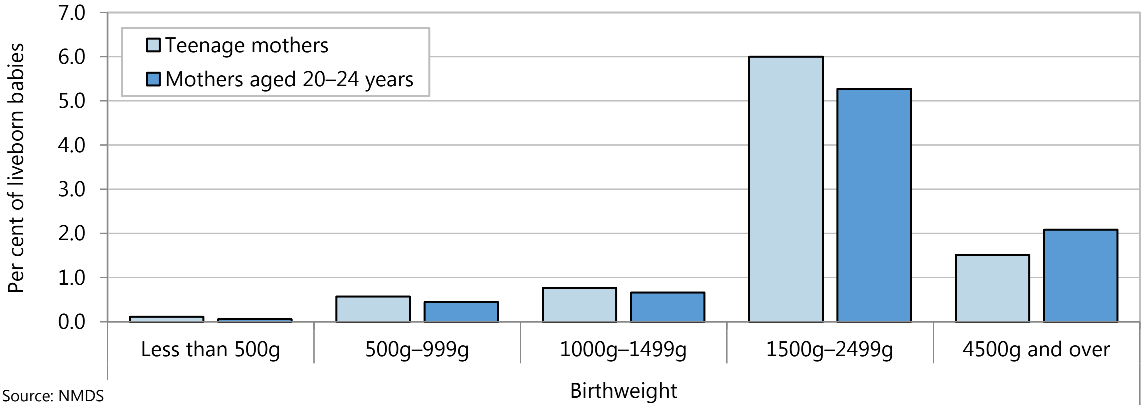
Figure 4-30. Gestational age of baby, by maternal age group, New Zealand 2014–2018



Source: NMDS
Period: 2014–2018

Over 90% of liveborn babies born to teenage mothers or to mothers aged 20–24 years were born weighing between 2.5kg to <4.5kg. Over 7% of babies born to teenage mothers had a birthweight of less than 2.5kg (low birthweight; 7.4%), compared with 6.4% of babies born to mothers aged 20–24 years (Figure 4-31).

Figure 4-31. Birthweight of baby, by maternal age group, New Zealand 2014–2018



Source: NMDS
Period: 2014–2018. Excludes 2.5–<4.5kg birthweight
Low birthweight (a birthweight of less than 2,500 grams).

Evidence for good practice

Promoting reproductive and sexual health

Sexual health has been defined as "an intrinsic element of human health and is based on a positive, equitable, and respectful approach to sexuality, relationships, and reproduction, that is free of coercion, fear, discrimination, stigma, shame, and violence".[15] Sexual health involves physical, emotional, mental, social, and spiritual dimensions, and is impacted by socioeconomic and cultural contexts as well as by health service policies, practices, and services.[15] To provide better support to sexually active teens, pregnant teens, and teen parents, adults need to show that they accept that sex and contraception are normal parts of adolescence.[4] This acceptance supports young people to access the best information and support available without fear of stigmatisation.[4]

The health system has a role, alongside the education system, in helping young people to avoid unplanned or unwanted pregnancy, providing care to young pregnant women, and liaising with other agencies to support young parents and their children.[13] "Building knowledge, skills, resilience and aspirations of young people helps them to delay sex until they are ready to enjoy healthy consensual relationships and to use contraception to prevent unplanned pregnancy. An open culture and ease of parental communication around sexual issues is associated with lower teenage pregnancy rates."[16 pg 6].

Comprehensive sexuality education is associated with delays in initiating first sexual contact, less frequent sex, fewer sexual partners; and an increase in the use of contraception and condoms.[2] Teens need timely access to free or low cost, culturally responsive sexual and reproductive health services to avoid unplanned pregnancy.[4] When young people see a future for themselves that includes completing their education and having a career, this may reduce the perception that early parenthood is the only path into adulthood, and diminish ambivalence towards the possibility of pregnancy as a consequence of having sex.[13]

There has been very little evaluation of the impact of sexuality education in Aotearoa, but there is evidence to suggest that what is provided currently does not meet the needs of all students and that there is considerable variation between schools in the quality and content of sexuality education.[2]

Public Health England has identified the following characteristics of high quality relationships and sex education:[16 page 15]

- A comprehensive, inclusive programme with timetabled slots on the curriculum every year and age appropriate content
- Trained educators
- Medically and factually accurate information
- Promotion of core values: equality, consent, mutual respect
- Participatory and small group work

- Partnerships with parents and carers.

Good practice

Socio-economic factors such as poverty, unemployment, low education, inequality, poor housing, discrimination and stigma contribute to the challenges faced by young parents. These broader social and economic issues are best addressed through strengths-based policy and youth development approaches.[4] International literature suggests that declines in teen pregnancies have been driven by structural factors including economic inequality, greater access to education, economic downturns, childbearing norms, increased access to good information, media perceptions about teen pregnancy, healthcare policies, and easier access to sexual healthcare.[4]

Teenage mothers (mothers aged under-20 years at the time of delivery) are more likely than older mothers to experience social disadvantage including lack of education, employment and social support.[9] Teenage and young parents are commonly faced with multiple stressors including financial pressure, role restriction, social isolation, and interruption of education.[4] These challenges arise partly because of their younger age,[9] but may also be the result of stigma associated with being a young parent, racism and class stereotyping, and presumptions that they lack parenting capability.[4,17]

Young people need timely access to conveniently located, free or low-cost, culturally responsive sexual and reproductive health services, particularly as they may face barriers including racism and stigma because of their age.[4] The decline in teenage pregnancy in the United States has been associated with the combination of increased public acceptance of contraceptive use by 18- and 19-year-olds (reduced stigmatisation of teens who use contraception), and the increased use of long-acting reversible contraceptives (LARCs) by this cohort.[4] Although there was no reported change in the use of contraceptives (60%) by sexually active teenagers in New Zealand between 2001 and 2012,[2] some young women are using more reliable methods of contraception.[4] There has been a steady rise in the number of women in the 15-19 age group getting fitted with LARCs at Family Planning clinics over the past decade, with a particularly sharp increase in the uptake of contraceptive implants in 2011 when contraceptive implants became subsidised by the government.[18] There is an opportunity to increase the use of LARCs by teenage women, with provision of improved information and increased understanding of this very effective method of contraception.[4] More health services providers need to be trained to provide a wider range of contraception options, including LARCs.[4]

When a teenager finds themselves in the position where they may become a parent, it is important that they are supported and empowered to make the decisions that are best for themselves and their children.[4] The existing evidence suggests that early and comprehensive support interventions, social support, and reducing stigma and discrimination are important for pregnant and parenting teenagers. Teenage parents and their children may have multiple and complex needs but can also exhibit resilience in the face of significant challenges. Interventions should recognise that teenage parents are a diverse population, and ensure that efforts are tailored and flexible enough to meet specific needs and strengths. It is vitally important that interventions are delivered in ways that do not exacerbate the stigma faced by some teenage parents. Antenatal classes designed specifically to meet the needs of young people have been very positive for young parents.[4]

A qualitative study investigating the impact of spontaneous pregnancy loss (miscarriage) for women aged under-20 years[19] found unique uncertainty management strategies among adolescent women. Participants reported that they isolated themselves from others who assumed that they would feel relieved at having a miscarriage, when their emotional reactions were more complex and nuanced.[19]

A comprehensive, evidence-driven, framework for supporting teenage parents would consider a number of inter-related needs in the areas of child health, mental health and wellbeing, economic wellbeing, the use of alcohol and drug services, and future pregnancies and children.[4] Allen + Clarke[4] cite the following types of intervention that have had positive outcomes:

- A supportive housing programme for pregnant and parenting teenagers improved educational status, employment and stable residence.

- A participatory-designed home-visiting service for indigenous teenage mothers and children in the USA, significantly improved outcomes for teenage mothers and their children
- Home visiting programmes are associated with significant improvements in parenting outcomes for young mothers and their children
- Parental reading interventions have been found to have a positive impact on children's developing language and literacy skills

When implemented well, teen parent units (TPUs) can be highly effective in positively changing the lives of teenage parents and their children.[4] Characteristics of highly effective TPUs include strong pedagogical leadership and expertise, a range and depth of curriculum knowledge, and strong partnerships to extend curriculum and pedagogical knowledge to help students achieve their goals. One study showed that parents who attended a TPU were more likely to achieve NCEA Level 1, and another noted that young parents who remained in a TPU for two years or more often went on to tertiary studies.[4]

Social services that are intended to provide support to young parents are often experienced as stressful and stigmatising. Service provider attributes sought by young parents include:[4]

- Professional, respectful, non-judgemental, listening
- A supportive, positive, empathetic, strengths-based approach
- Giving options and information to enable informed decision-making
- Openness and honesty about entitlements
- Proactive support for connecting clients with other services
- Facilitating engagement through assistance with transportation and childcare
- Seamlessness: being able to access support from the same place throughout pregnancy and into parenting.

There are identified gaps in service provision for teenage fathers, and for co-parenting teenage parents.[4] Teenage fathers can have multiple, complex needs.[4] Fathers who are involved in the lives of their children are seen to be a protective factor for children of teenage mothers with depression.[4] In the UK it has been found that young fathers are more likely, than older fathers and other young men, to have been subjected to violent forms of punishment at home and to have been sexually abused, to have pre-existing serious anxiety, depression and conduct disorder, to have poor health and nutrition, and to drink, smoke and misuse other substances.[20] They further note that one in every six men aged under-25 years who access drug and alcohol treatment services are young fathers.[20]

Not all young parents and their children experience detrimental outcomes. Pregnancy and parenthood can be positive catalysts for change and lead to increased motivation to complete education. Young parents describe close relationships with their children due to the smaller age gap, experience opportunities for long, successful careers as mothers with time to enjoy life after children leave home, and having energy while child-rearing at a younger age.[4] There has been very little research reporting on support for teen parents in the context of their whānau and communities.[4]

Equity

In 2017, 62% of babies born to women aged 15 to 19 years were born to Māori women and 13% were born to Pacific women.[4] Other groups with higher rates of young parenthood compared with the general population are those who have experienced State care, those who have a history of treatment for mental health or substance use, and those living in areas of high deprivation.[4]

Early parenting for Māori has been pathologised and conflated with social disadvantage and adverse risk factors, resulting in significant stigma for Māori youth. There is, however, evidence that risks associated with early parenting for Māori disappear when socioeconomic factors and support systems are taken into account [2,4] Māori women aged under-20 years who found that they were pregnant engaged early with health care services (GP services, school and community based youth health services) both to confirm their pregnancy and to initiate maternity care. Despite this early engagement, many experienced barriers to accessing the maternity care pathway. They did not receive enough information or support to identify, confirm, and enrol with a midwife or hospital care. Those who did experience proactive support at the first interaction with health services went on to access an appropriate maternity care pathway with early and seamless maternity care.[21]

During pregnancy, Māori teenagers need non-judgemental support and time to reframe aspirations and goals, and they need help establishing maternity care. When baby is born they need reassurance (advice but not pressure), praise, sharing of parenting stories, recognition that it is a strength to ask for help, and non-judgemental encounters.[4] Through a “Western” lens the public social and health support systems often see teenage parents as a problem to be solved. There is a high need for tikanga Māori models and supportive interventions for Māori teenage mothers and their children. One of the characteristics of successful TPUs is a focus on tikanga, te reo, and relationships with marae.[4]

Social services designed to support teenage parents and their children can be stigmatising, for Māori and for non-Māori.[4] Too often the risks associated with young mothers are significantly and negatively over-represented. Not all teenage mothers experience poor outcomes, and pregnancies to Māori women aged under-20 years should not be viewed as inherently problematic. In the context of a Māori worldview, the voices and experiences of young, pregnant, Māori women can identify when and where the system and services are not working as they should be.[21]

There is a lack of literature that specifically focuses on teenage parenting by Pacific peoples. This may be because of a taboo nature of discussions about sexual and reproductive health in the context of traditional values that are heavily influenced by Christian teachings.[4] Sexual health attitudes and behaviours among Samoan youth are diverse and it is important to undertake further research so as to improve health outcomes for young Samoans and for Pacific peoples more broadly.[4]

With the overall decline in teen birth rates, young mothers may include a greater proportion of the most vulnerable and at-risk young women (i.e. women with a history of mental health or substance use treatment, or who have a statutory history of State care). Birth rates are reducing more slowly for these groups than for women without such history.[4]

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5. Mental health

There are many definitions of mental health and wellbeing, all influenced by the culture that each was developed in. In response to their awareness that differences in values, cultures and social background may hinder the achievement of a general consensus on the concept of mental health, Galderisi et al.[1] offered the following definition:

> *"Mental health is a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium."*

They explained that "universal values" were respect and care for oneself and other living beings; recognition of connectedness between people; respect for the environment; and respect for one's own and others' freedom.

A person is considered to have a mental disorder (mental illness) if they have significant disturbance in their thinking, emotional regulation or behaviour. These disturbances are usually associated with distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning.[2] The most common mental disorders in young people are anxiety, depression and alcohol use disorders.[3] Mental disorders have a range of severity and the threshold beyond which a mental health issue becomes a disorder is somewhat arbitrary, and it is common for people to meet the diagnostic criteria for multiple conditions, for example both anxiety and depression, or both depression and substance use disorder.[4]

Around three quarters of all lifetime cases of mental health disorders begin before age 24 years.[5,6] Mental health problems can adversely affect educational attainment[7-9] and family relationships,[10] and increase the risk of substance abuse, unemployment,[11] and involvement with the justice system.[12-14] These difficulties tend to make a person's mental health worse, and can set them on a downward spiral that is difficult to break out of.[15]

The high prevalence and high impact of mental health disorders make them the most important health issue that young people face. Addressing this issue is a task for the whole of society. Providing high quality mental health services is important, but just one aspect of support for young people's mental health and wellbeing.

This chapter presents data on the prevalence of mental health disorders from the New Zealand Health Survey, data on the use of mental health services from PRIMHD, and data on hospitalisations for mental health disorders from the National Minimum Dataset.

Prevalence of specified mental disorders

This section provides information from the NZ Health Survey on the prevalence of psychological distress, depression, anxiety disorder and bipolar disorder in young people.

Data sources and methods

Indicators

Psychological distress (high or very high) in young people

Depression (diagnosed) in children and young people

Bipolar disorder (diagnosed) in young people

Anxiety disorder (diagnosed) in young people

Definitions

Young people are 15–24 years old.

High or very high psychological distress refers to having experienced symptoms in the past four weeks that may pertain to anxiety, confused emotions, depression or rage. High or very high is a score of 12 or more on the 10-question Kessler Psychological Distress Scale (K10). A ≥12 score is strongly associated with having a mental disorder in the previous month and in the previous year. There is a high or very high probability that the respondent also has a mental disorder or anxiety or depressive disorder.

A diagnosed condition: in children it is where parents or caregivers have ever been told by a doctor that the child has the condition; in young people it is where they themselves have ever been told by a doctor they have the condition.

Anxiety disorder may include panic attacks, phobia, post-traumatic stress disorder, and obsessive-compulsive disorder.

Data sources

NZ Health Survey (2006–2017 or latest available) as published by the Ministry of Health

Additional information

Demographic information for 15–24 year olds was not available at the time of analysis. Prevalence rates for pooled years were calculated using NZ Health Surveys: 2014, 2015, and 2016.

Relevant NZ Health Survey questions include: psychological distress (A4.13–A4.22); depression (A1.23); bipolar disorder (A1.25); anxiety disorder (A1.27). For more information on the NZ Health Survey questions, please refer to the Appendices.

The definitions of depression, bipolar disorder and anxiety disorder are likely to underestimate the true number of people with those conditions. Note that not all of the respondents who have ever had these conditions would meet the criteria for these conditions at the time they were surveyed.

Survey years (beginning July) are referred to by the year of data collection beginning (for example, Survey 2017/18 will be referred to as Survey 2017). For more information on the NZ Health Survey please refer either to the Ministry of Health website (https://www.health.govt.nz) or to appendices in this report.

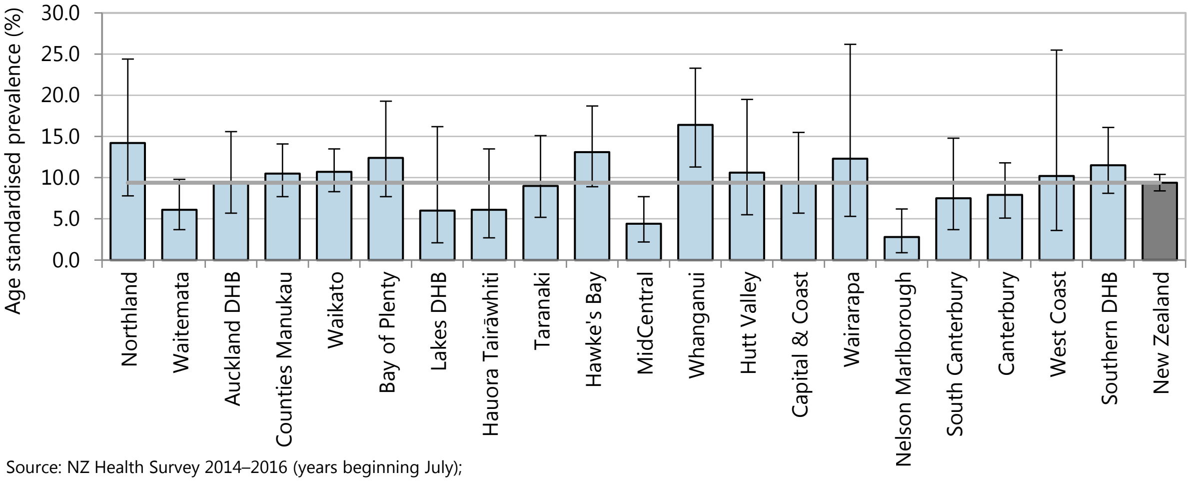
Psychological distress

In New Zealand, 9.4% of young people experienced high or very high psychological distress. The percentage of young people in Southern DHB who experienced psychological distress was not significantly different to that in New Zealand as whole.

Figure 5-1 presents the percentages of young people who have experienced high or very high psychological distress by DHB for the period 2014–2016.

In New Zealand, 9.4% of young people experienced high or very high psychological distress. The percentage of young people in Southern DHB who experienced psychological distress was not significantly different to that in New Zealand as whole.

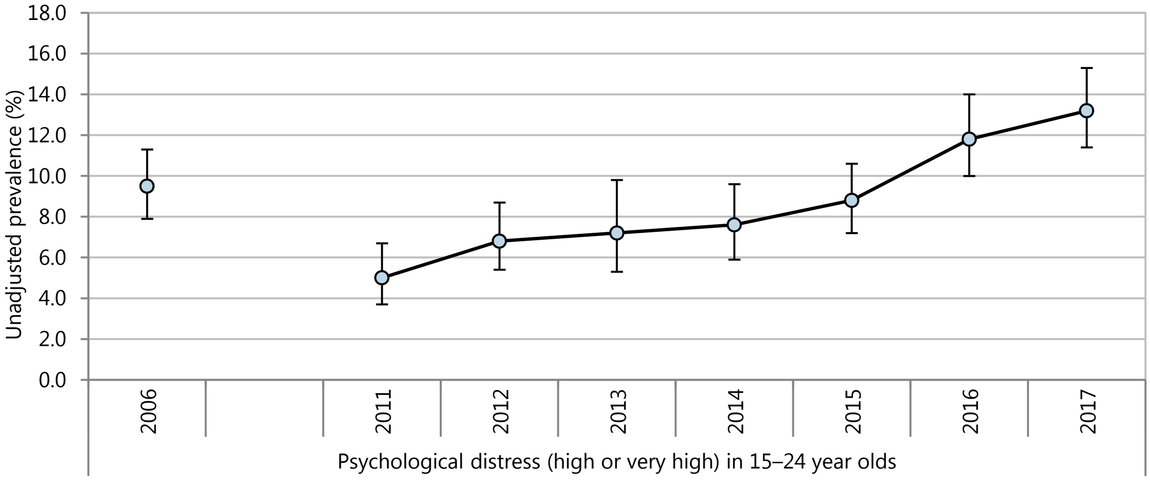
Figure 5-1 Psychological distress (high or very high) in 15–24 year olds, by district health board, NZ Health Survey 2014–2016



Source: NZ Health Survey 2014–2016 (years beginning July);
Psychological distress (high or very high). Percent of 15–24 year olds (Age standardised prevalence, 95% confidence intervals)

Figure 5-2 presents the young people who reported high or very high psychological distress for the survey years 2006–2017. The percentage of young people with psychological distress decreased from 2006 to 2011 to 5% of young people but increased from 2011 on to 13% in 2017, a value which is significantly higher than the values for 2011–2015.

Figure 5-2. Psychological distress (high or very high) in 15–24 year olds, by survey year, New Zealand NZ Health Survey 2006–2017



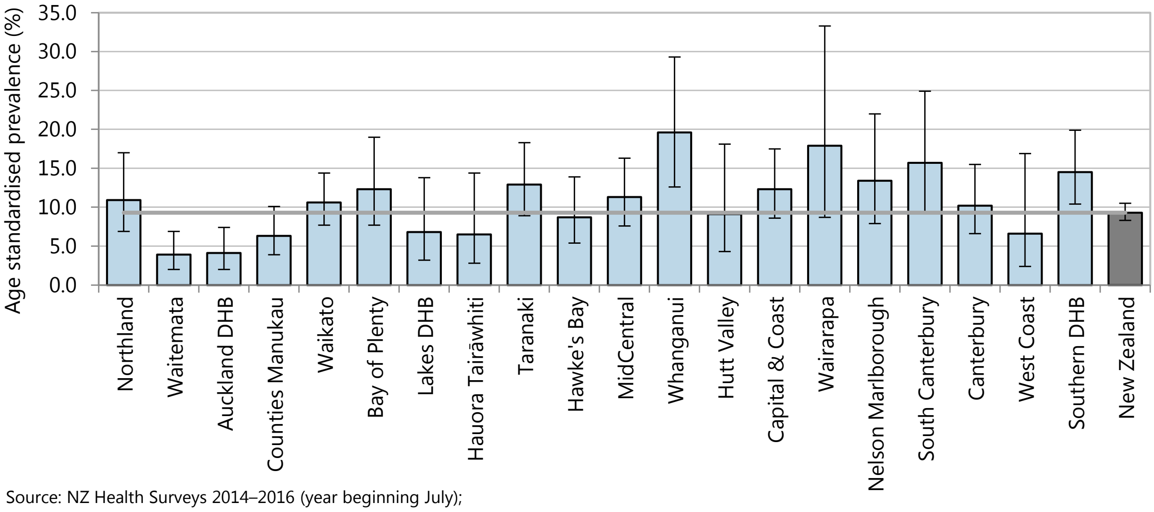
Source: NZ Health Surveys (years beginning July);
Percent of 15–24 year olds (unadjusted prevalence, 95% confidence intervals)

Depression

The percentage of young people who have been diagnosed with depression is presented in Figure 5-3 by DHB for the period 2014–2016.

Aggregate data from 2014–2016 indicated that 9.3% of young people in New Zealand had ever been told by a doctor that they had depression (Figure 5-3).). Southern DHB had a significantly higher percentage of young people diagnosed with depression compared to New Zealand as whole.

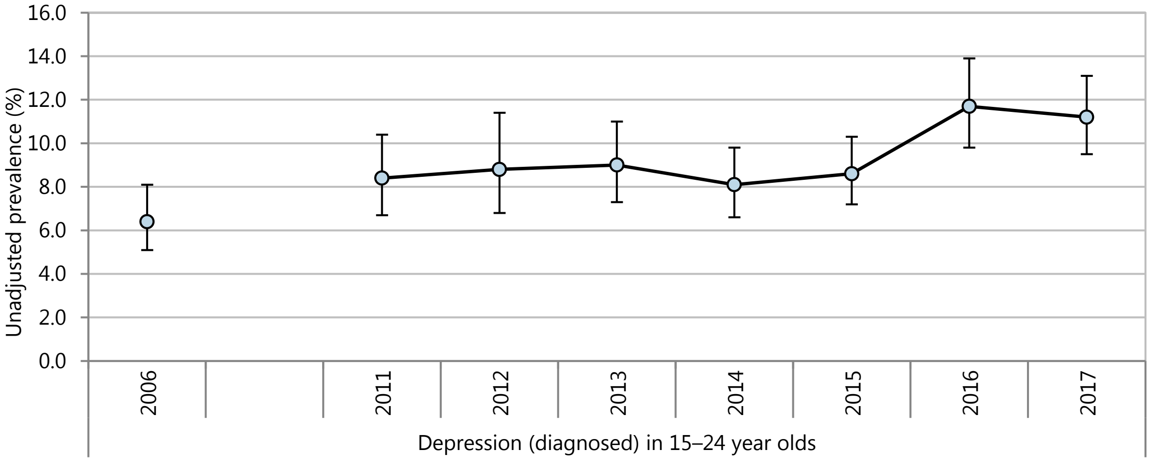
Figure 5-3. Depression (diagnosed) in 15–24 year olds, by district health board, NZ Health Survey 2014–2016



Source: NZ Health Surveys 2014–2016 (year beginning July);
Diagnosed depression. Percent of 15–24 year olds (Age standardised prevalence, 95% confidence intervals)

Figure 5-4 presents the young people who have been diagnosed with depression, as recorded by New Zealand Health Surveys 2006–2017. When compared to 2006, a significantly higher percent of young people had been diagnosed with depression in 2016 and 2017 (Figure 5-4).

Figure 5-4. Depression (diagnosed) in 15–24 year olds, by survey year, New Zealand, NZ Health Survey 2006–2017



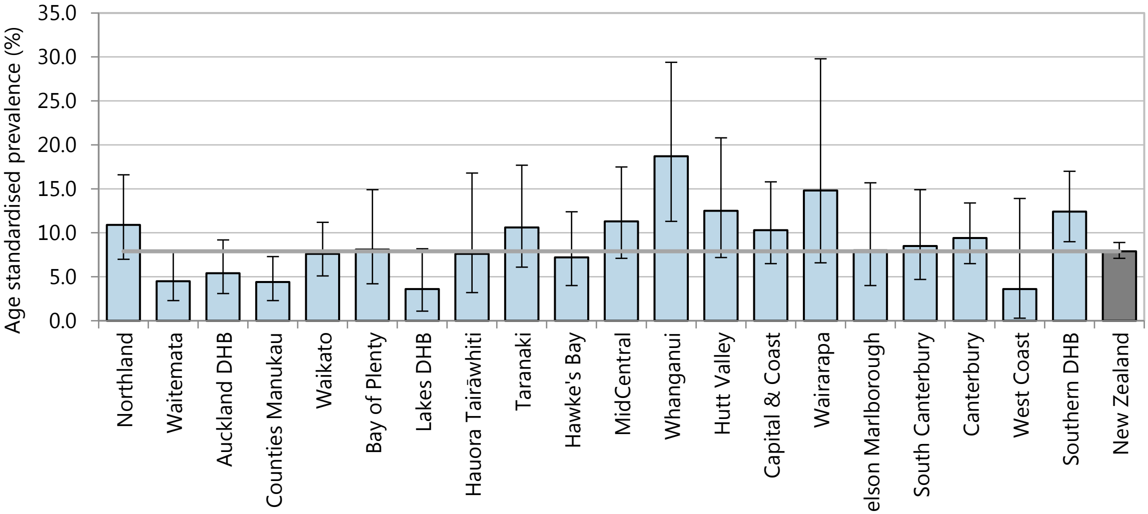
Source: NZ Health Survey (year beginning July);
Diagnosed depression. Percent of 15–24 year olds (unadjusted prevalence, 95% confidence intervals)

Anxiety disorder

The percentages of young people who have been diagnosed with anxiety disorder in the period 2014–2016 are presented in Figure 5-5, by DHB.

Aggregate 2014–2016 New Zealand Health Survey data indicated that 8% of young people had ever been diagnosed with anxiety disorder. Southern DHB had a significantly higher percentage of young people diagnosed with anxiety disorder than New Zealand as whole.

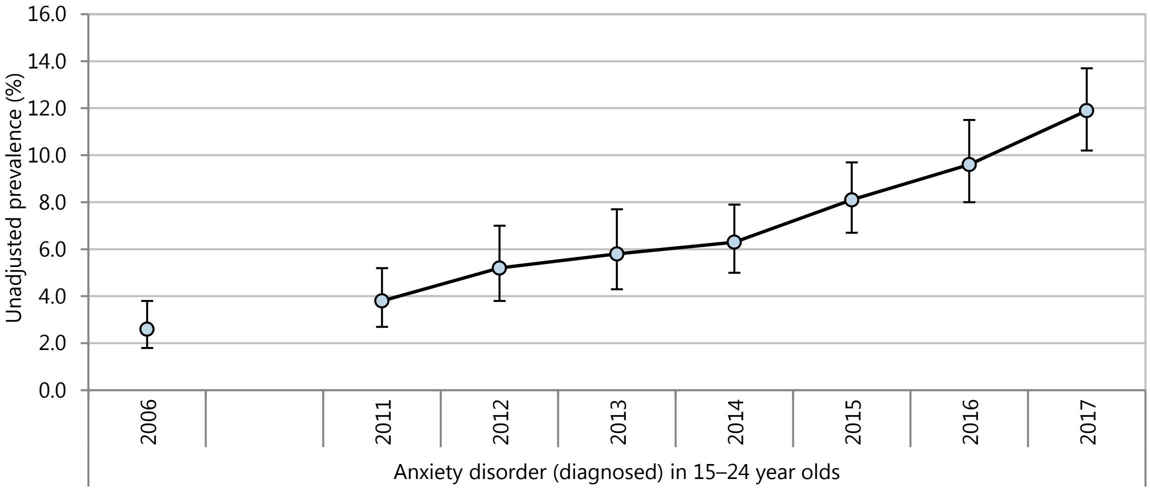
Figure 5-5. Anxiety disorder (diagnosed), by district health board, NZ Health Survey 2014–2016



Source: NZ Health Survey 2014–2016 (year beginning July);
Anxiety disorder (diagnosed). Percent of 15–24 year olds (Age standardised prevalence, 95% confidence intervals)

Figure 5-6 presents the percentage of young people who have been diagnosed with anxiety disorder, as recorded by New Zealand Health Surveys 2006–2017. When compared to 2006, a significantly higher percentage of young people were diagnosed with anxiety disorder from 2013 onwards and the percentage has increased in each successive year.

Figure 5-6. Anxiety disorder (diagnosed) in 15–24 year olds, by survey year, New Zealand, NZ Health Survey 2006–2017



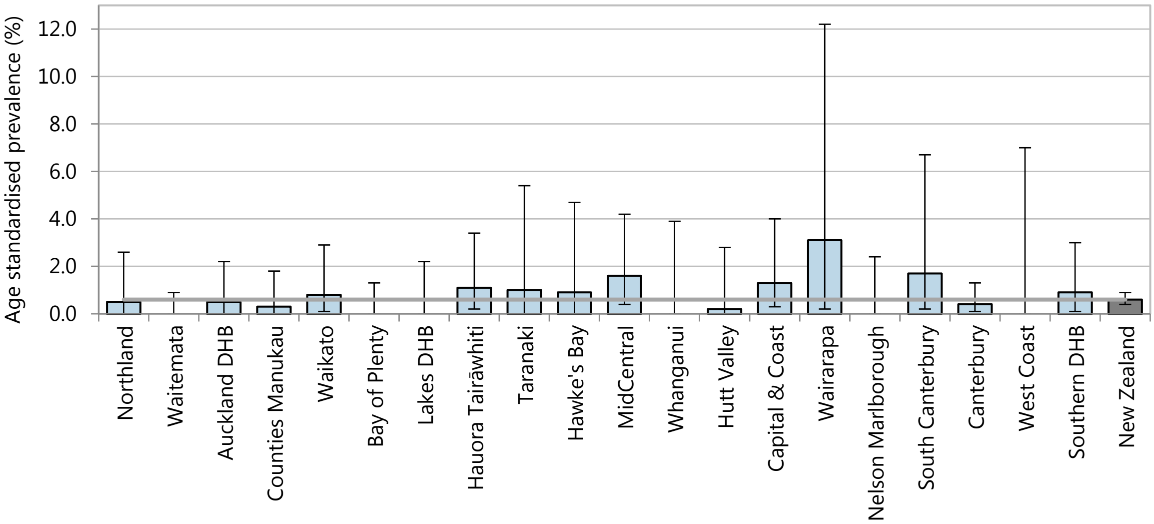
Source: NZ Health Survey (year beginning July);
Percent of young people (of 15–24 year olds; unadjusted prevalence, 95% confidence intervals)

Bipolar disorder

The percentages of young people who have been diagnosed with bipolar disorder in each DHB are presented in Figure 5-7.

Aggregate data from 2014–2016 New Zealand Health Surveys showed that an estimated 0.6% of young people in Aotearoa had ever been told by a doctor that they had bipolar disorder (sometimes called manic depression). Percentages were generally small with wide confidence intervals in all DHBs and none differed significantly from the national percentage.

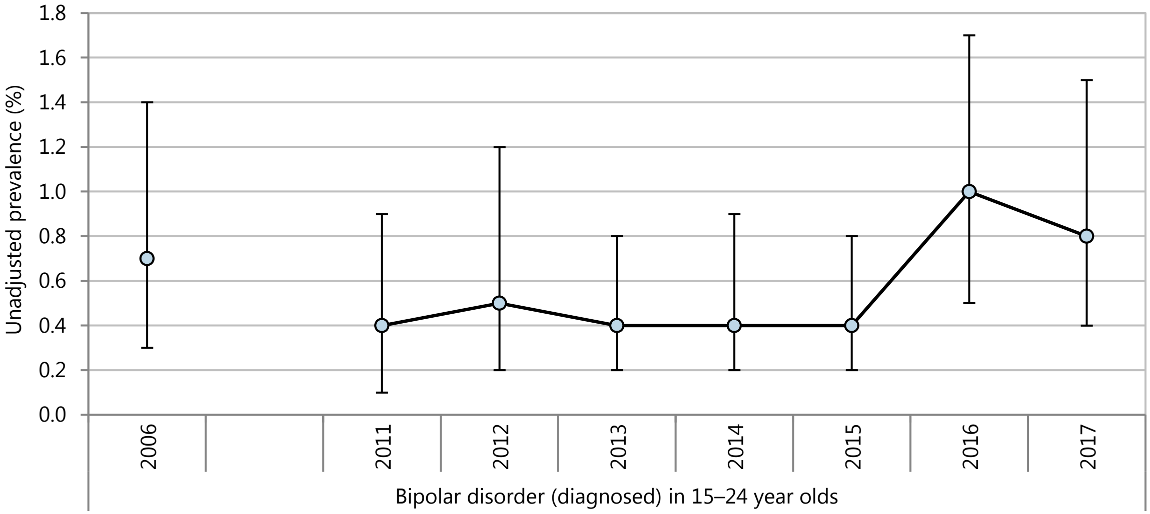
Figure 5-7. Bipolar disorder (diagnosed) in 15–24 year olds, by district health board, NZ Health Survey 2014–2016



Source: NZ Health Surveys 2014–2016 (years beginning July);
Diagnosed bipolar disorder. Percent of 15–24 year olds (Age standardised prevalence, 95% confidence intervals)

Figure 5-8 presents the percentages of young people who have been diagnosed with bipolar disorder, as recorded by surveys 2006–2017. Differences between survey years were not statistically significant.

Figure 5-8. Bipolar disorder (diagnosed) in 15–24 year olds, by survey year, New Zealand, NZ Health Survey 2006–2017



Source: NZ Health Survey (year beginning July);
Percent of young people (of 15–24 year olds; unadjusted prevalence, 95% confidence intervals)

Use of mental health services

This section presents data on the use of mental health services from PRIMHD.

Data sources and methods

Indicator

Number of 0–24 year olds accessing mental health services

Data sources

Numerator:	PRIMHD (Programme for the Integration of Mental Health Data)
Denominator:	NZCYES estimated resident population

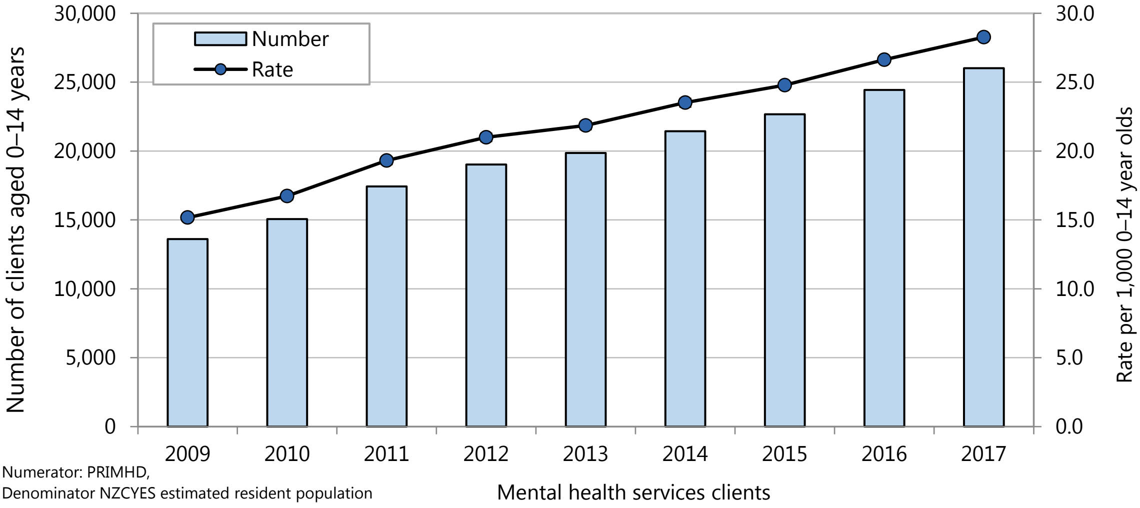
Additional information

PRIMHD is the Ministry of Health's national database covering the provision of publicly funded secondary mental health and alcohol and drug services. Commencing on 1 July 2008, it integrates information from the previous Mental Health Information National Collection (MHINC) and the MH-SMART data collection. It includes secondary inpatient, outpatient and community care provided by hospitals and non-Government organisations (although data from NGOs is incomplete, particularly in the earlier years of the database). It does not include information on outpatient visits to paediatricians, and so, where local referral pathways result in children seeing a paediatrician rather than a mental health professional for behavioural or emotional problems, the use of PRIMHD data may lead to significant underestimates of the prevalence of mental health issues in children. Referral pathways (i.e. the relative balance between paediatrics vs mental health services) are likely to vary both by region (depending on the availability of specialist child and youth mental health services) and by age (children as less likely to be seen by a paediatrician as they approach adolescence). As paediatric outpatient data is currently not coded by diagnosis, the work of community/developmental paediatricians in this context is invisible, making it difficult to assess the underlying prevalence of mental health conditions in children in the community. For adolescents/young adults, however, PRIMHD probably provides a better reflection of access to secondary services for mental and behavioural issues.

The analyses that used data from PRIMHD have counted numbers of individual clients, rather than numbers of contacts, so each client was counted only once in each category that they appeared in. A particular client may have been counted in more than one age group, year or DHB category. For example, the same client may have been seen in several different years, or in more than one DHB in the same year, or have been seen both as a 14 year old and as a 15 year old in the same year (and so have been counted in both the 0–14 and 15–24 years age categories for that year). This means that the sum of the category totals may be greater than the overall total.

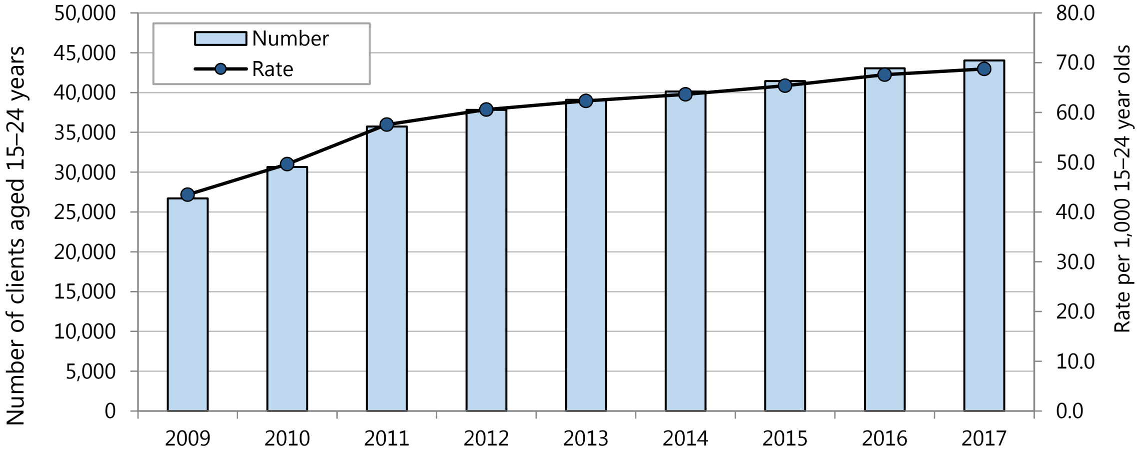
The rate at which 0–14 year olds were seen by mental health services increased steadily over the period 2009–2017 (Figure 5-9) while the rate for 15–24 year olds increased only slightly from 2012 onwards (Figure 5-10). The rate at which 15–24 year olds were seen by mental health services was more than double the rate for 0–14 year olds.

Figure 5-9. Clients aged 0–14 years seen by mental health services, New Zealand 2009–2017



Numerator: PRIMHD,
Denominator NZCYES estimated resident population
Each client is counted once in each year they attended

Figure 5-10. Clients aged 15–24 years seen by mental health services, New Zealand 2009–2017



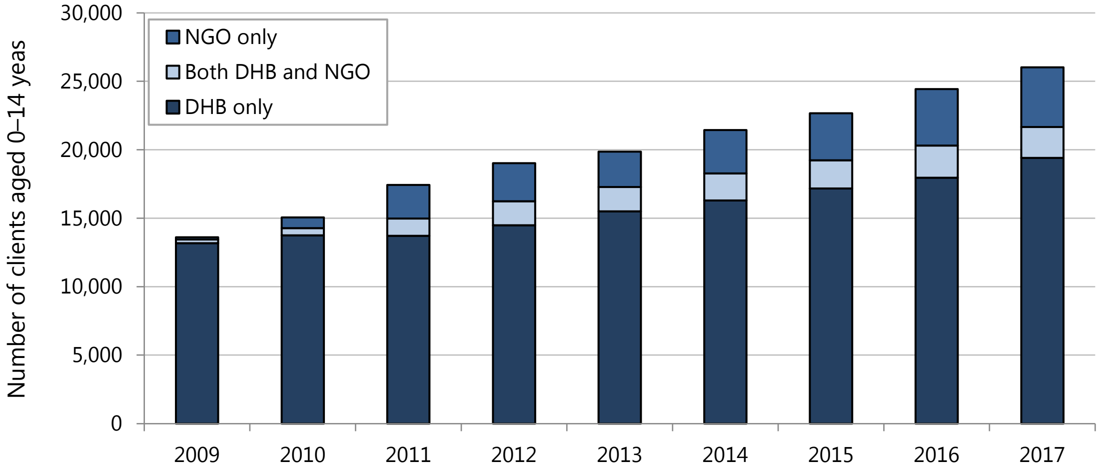
Numerator: PRIMHD,
Denominator NZCYES estimated resident population
Each client is counted once in each year they attended

Mental health services clients

During 2009–2017, most of the 0–14 year olds who were seen by mental health services received care from services provided by district health boards, but some received care from services provided by NGOs, and a small proportion received care from both types of service provider (Figure 5-11) The number of clients seen by district health boards, the number seen by NGOs, and the number seen by both, all increased over the period 2009–2017. The apparently small numbers seen by NGOs in 2009 and 2010 may be the result of these organisations not uploading their contact records to PRIMHD rather than a true indication of the number of clients seen.

A much higher proportion of the 15–24 year olds than the 0–14 year olds who were seen by mental health services received care from a service provided by an NGO rather than by a DHB (Figure 5-12). Over the years 2009–2017, the numbers of 15–24 year olds seen only by DHB providers changed very little, while the numbers seen by NGO providers alone, and by both NGO and DHB providers, increased. The apparently small numbers seen by NGOs in 2009 and 2010 may be the result of these organisations not uploading their contact records to PRIMHD rather than a true indication of the number of clients seen.

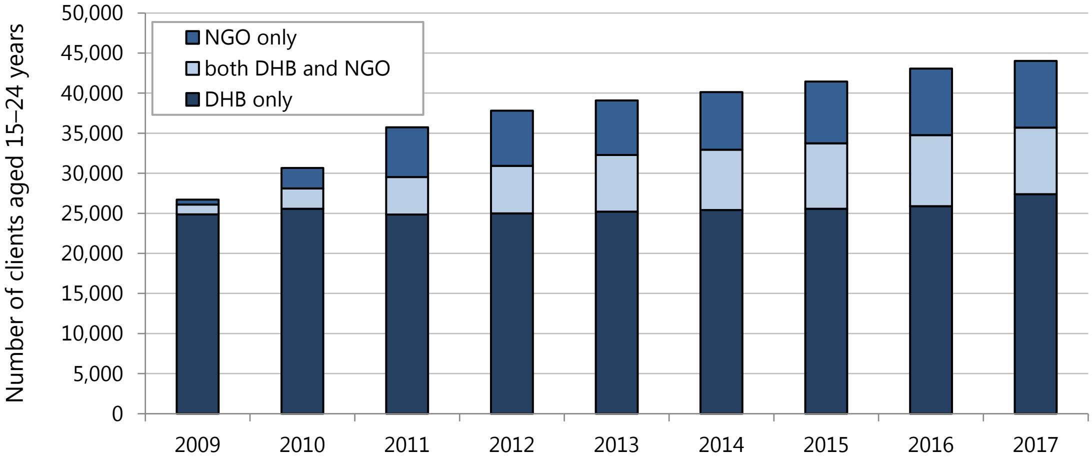
Figure 5-11. Clients aged 0–14 years seen by mental health services, by service provider, New Zealand 2009–2017



Numerator: PRIMHD
Denominator: NZCYES Estimated Resident Population
Each client is counted once in each year they attended

Mental health services clients

Figure 5-12. Clients aged 15–24 years seen by mental health services, by service provider, New Zealand 2009–2017



Numerator: PRIMHD
Denominator: NZCYES Estimated Resident Population
Each client is counted once in each year they attended

Mental health services clients

Table 5-1. Clients aged 0–24 years seen by mental health services, by age group and service provider or service setting, New Zealand 2017

Clients aged 0–24 years seen by mental health services, New Zealand 2017				
	0–14 years		15–24 years	
	Number	%	Number	%
Total	26016	100.0	44024	100.0
Service provider				
DHB only	19403	74.6	27387	62.2
both DHB and NGO	2252	8.7	8312	18.9
NGO only	4361	16.8	8325	18.9
Service setting				
Outpatient only	25633	98.5	40274	91.5
both outpatient and inpatient	342	1.3	3714	8.4
Inpatient only	41	0.2	36	0.1

Source: PRIMHD

Around three quarters of the 0–14 year olds who were seen by mental health services in 2017 were seen only by services provided by DHBs and the vast majority received their care as outpatients only (Table 5-1). The proportion of 15–24 year clients who accessed mental health services from NGO providers was considerably higher than the proportion of 0–14 year olds who did so. Most 15–24 year olds received care from mental health services as outpatients only but 8.5% received some or all of their care as inpatients.

Almost 90% of 0–14 year olds seen by mental health services in 2017 were seen by a community team (Table 5-2). The next most frequently seen team types in this age group were alcohol and drug teams and specialty teams. Of the 15–24 year olds seen by mental health services in 2017, around three quarters were seen by a community team and one quarter by an alcohol and drug team (Table 5-2). The next most frequently seen team types in this age group were forensic teams, inpatient teams and specialty teams.

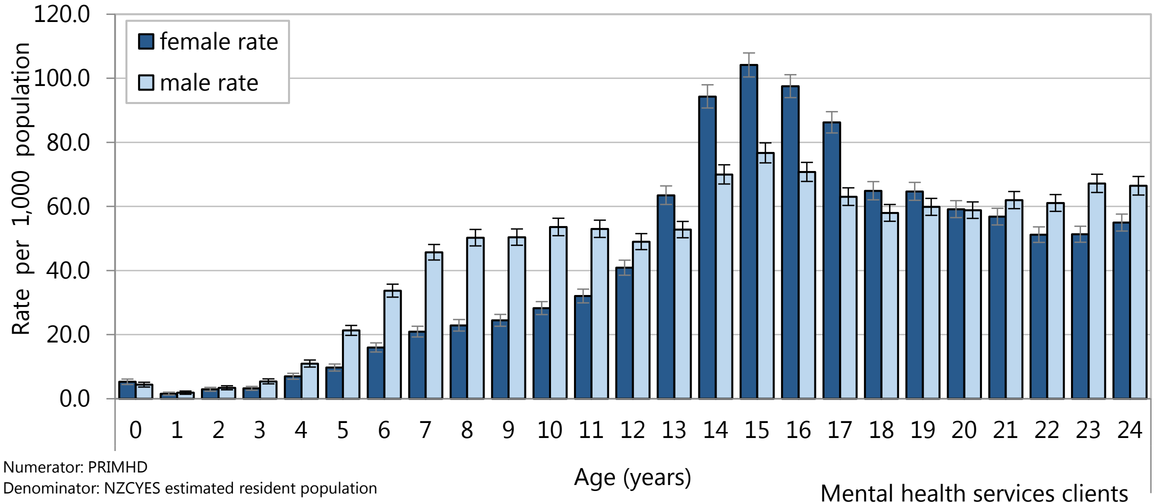
Table 5-2. Clients aged 0–24 years seen by mental health services, by age group and team type seen, New Zealand 2017

Clients aged 0–24 years seen by mental health services, New Zealand 2017				
	0–14 years		15–24 years	
Team type seen	Number	%	Number	%
Total	26016	100.0	44024	100.0
Community Team	23322	89.6	32203	73.1
Alcohol and Drug Team	1999	7.7	11830	26.9
Forensic Team	299	1.1	2642	6.0
Inpatient Team	146	0.6	2316	5.3
Specialty Team	1794	6.9	2117	4.8
Residential / Accommodation Team	155	0.6	1381	3.1
Maternal Mental Health Team	13	0.1	1181	2.7
Early Intervention Team	85	0.3	1164	2.6
Eating Disorder Team	161	0.6	877	2.0
Co-Existing Problems Team	310	1.2	839	1.9
Needs Assessment and Service Coordination Team	362	1.4	469	1.1
Intellectual Disability Dual Diagnosis Team	0	0.0	202	0.5
Specialist Psychotherapy Team	<5	s	59	0.1

Source: PRIMHD. Note: some clients were seen by more than one team type. Co-existing problems teams see people with coexisting problems of mental illness and alcohol and drug use

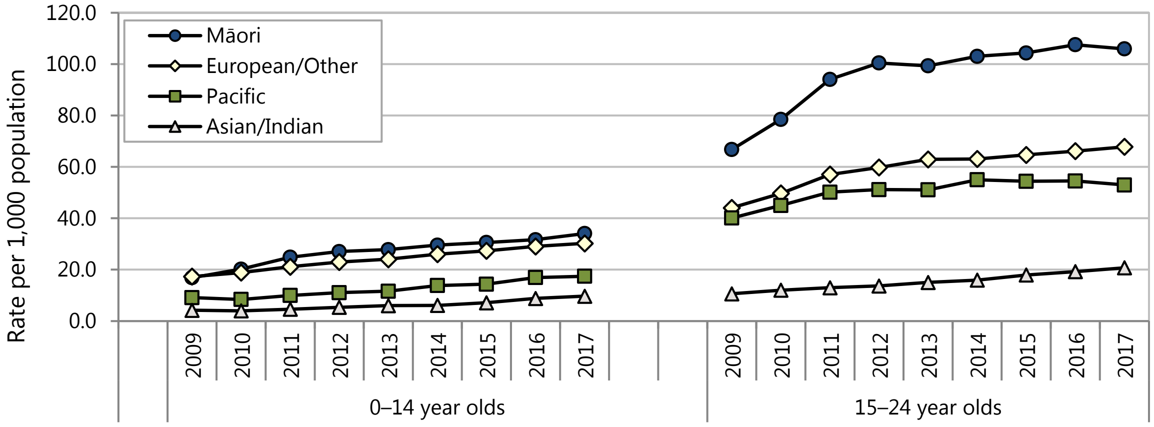
Rates of contact with mental health services were very low for both male and female pre-schoolers (Figure 5-13). Rates for boys rose steeply from age three and then levelled off from age eight before rising again from 12 years to peak at age 15. Rates for boys were considerably higher than rates for girls during middle childhood. Rates for girls rose steadily from age three to age eleven years and then rose sharply to peak at age 15 years before falling almost as sharply until age 18. Rates for girls were considerably higher than rates for boys in the fourteen to seventeen years age range. From age eighteen rates for both young men and young women were quite similar and showed less variation with increasing age.

Figure 5-13. Clients aged 0–24 years seen by mental health services, by age at first contact of year, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Age is derived from first contact in year

Figure 5-14. Clients aged 0–24 years seen by mental health services, by age group and ethnicity, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are age specific and per 1,000 population
Ethnicity is level 1 prioritised

Mental health services clients

Rates of contact with mental health services increased over time in all ethnic groups for both the 0–14 and 15–24 years age groups, with the exception of Pacific 15–24 year olds for whom the rate changed little from 2014 onwards (Figure 5-14). In the 0–14 years age group, Māori had the highest rates, although their rates were only slightly higher than European/Other rates, followed by the Pacific and then the Asian/Indian ethnic groups. In the 15–24 years age group, rates for Māori were much the highest and those for the Asian/Indian ethnic group much the lowest. Rates for the European/Other and Pacific ethnic groups were quite similar although rates for the European /Other group were somewhat higher, and, unlike the Pacific rates, continued to increase from 2014 onwards.

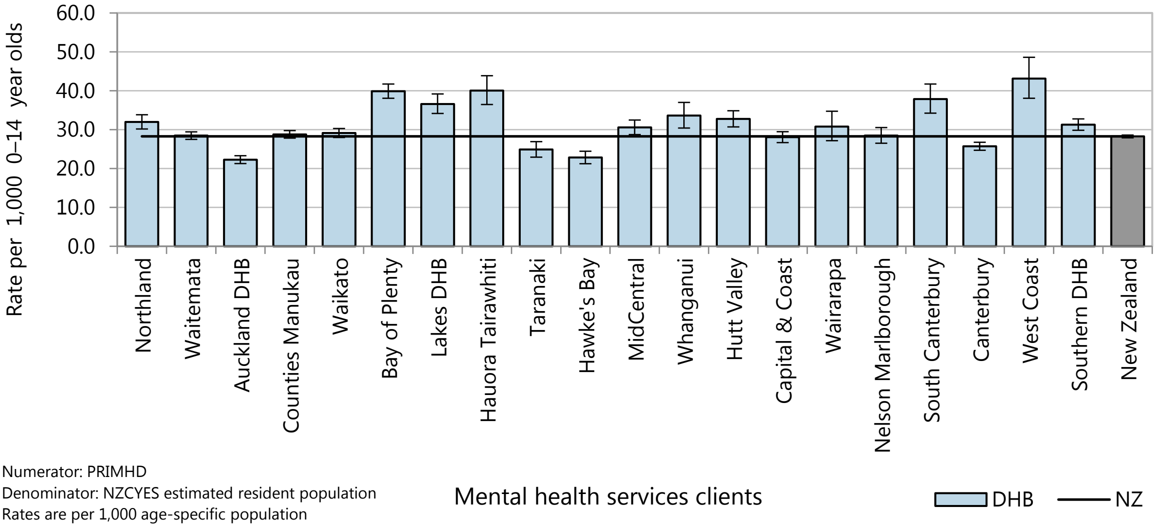
In 2017, there were marked differences in rates of mental health service utilisation by deprivation level, by ethnicity and by gender in both the 0–14 and the 15–24 years age groups (Table 5-3). There was a clear gradient by deprivation with rates increasing with increasing deprivation. Differences between deprivation quintiles were statistically significant, except for the difference between quintile 2 and quintile 3 in the 0–14 years age group. Compared to the rates for the European/Other ethnic group, the rates for Māori were significantly higher and rates for the Pacific and Asian/Indian ethnic groups were significantly lower. The MELAA ethnic group had a similar rate of mental health service utilisation to the European/Other group in both age categories. Compared to the female rate for the 0–14 age group, the male rate was significantly higher but, for the 15–24 age group, the male rate was slightly lower and this difference was statistically significant.

Table 5-3. Clients aged 0–24 years seen by mental health services, by age group and demographic variable, New Zealand 2017

Variable	Number	Rate per 1,000	Rate ratio	95% CI
Clients aged 0–14 years seen by mental health services, New Zealand 2017				
NZDep2013 index of deprivation quintile				
Quintile 1 (least deprived)	4,102	22.40	1.00	
Quintile 2	4,291	25.88	1.16	1.11–1.21
Quintile 3	4,764	27.43	1.22	1.18–1.28
Quintile 4	5,824	30.44	1.36	1.31–1.41
Quintile 5 (most deprived)	7,856	38.04	1.70	1.64–1.76
Prioritised ethnicity				
Māori	8,278	34.05	1.13	1.10–1.16
Pacific	1,571	17.39	0.58	0.55–0.61
Asian/Indian	1,071	9.66	0.32	0.30–0.34
MELAA	380	29.63	0.98	0.89–1.08
European/Other	14,711	30.21	1.00	
Gender				
Male	15,788	33.44	1.35	1.32–1.39
Female	11,068	24.69	1.00	
Clients aged 15–24 years seen by mental health services, New Zealand 2017				
NZDep2013 index of deprivation quintile				
Quintile 1	5,934	52.12	1.00	
Quintile 2	6,630	61.47	1.18	1.14–1.22
Quintile 3	8,023	67.98	1.30	1.26–1.35
Quintile 4	11,944	87.17	1.67	1.62–1.72
Quintile 5	15,465	94.56	1.81	1.76–1.87
Prioritised ethnicity				
Māori	14,237	105.92	1.56	1.53–1.59
Pacific	3,053	52.94	0.78	0.75–0.81
Asian/Indian	2,013	20.73	0.30	0.29–0.32
MELAA	578	60.48	0.89	0.82–0.96
European/Other	24,076	67.99	1.00	
Gender				
Male	23,838	72.81	0.94	0.92–0.96
Female	24,241	77.46	1.00	

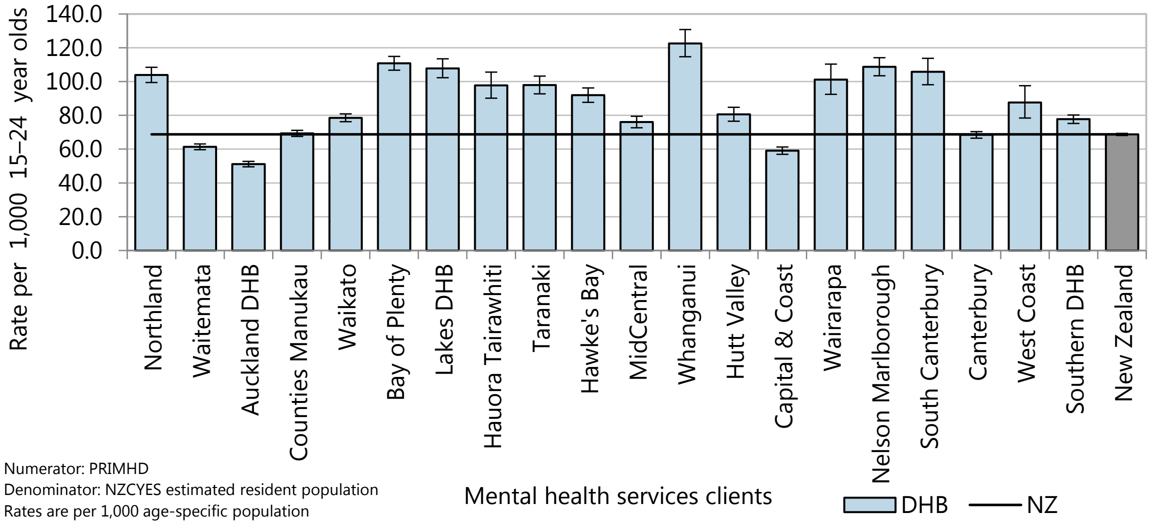
Numerator: PRIMHD, Denominator: NZCYES Estimated Resident Population. Rates are per 1000 age-specific population. Rate ratios are unadjusted. Ethnicity is level 1 prioritised.

Figure 5-15. Clients aged 0–14 years seen by mental health services, by district health board, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are per 1,000 age-specific population

Figure 5-16. Clients aged 15–24 years seen by mental health services, by district health board, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are per 1,000 age-specific population

Children and young people seen by mental health service in the Southern District Health Board

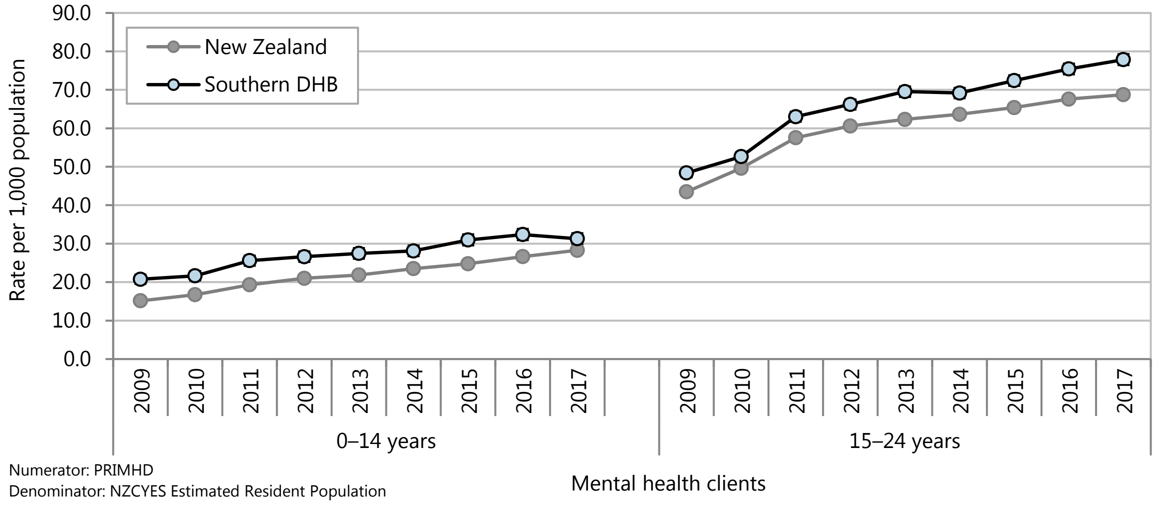
In 2017, the mental health service access rates for both 0–14 year olds and 15–24 year olds in Southern DHB were significantly higher than the corresponding national rates (Figure 5-17, Table 5-4).

Table 5-4. Clients aged 0–24 years seen by mental health services, Southern DHB vs New Zealand 2017

DHB	Number	Rate per 1,000 population	Rate ratio	95% CI
Clients seen by mental health services in 2017				
0–14 year olds				
Southern DHB	1,788	31.28	1.11	1.06–1.16
New Zealand	26,016	28.26	1.00	0.98-1.02
15–24 year olds				
Southern DHB	3,674	77.73	1.13	1.09–1.17
New Zealand	44,024	68.75	1.00	0.99-1.01

Numerator: PRIMHD, Denominator: NZCYES Estimated Resident Population. Rates are per 1,000 age-specific population. Rate ratios are unadjusted

Figure 5-17. Clients seen by mental health services, 0–14 years and 15–24 years, Southern DHB vs New Zealand 2009–2017



Numerator: PRIMHD
Denominator: NZCYES Estimated Resident Population
Rates are age-specific

The mental health services access rates in Southern DHB during 2009–2017 for both 0–14 and 15–24 year olds were consistently a little higher than the corresponding New Zealand rates but increased more or less in parallel with them (Figure 5-17).

Table 5-5. Clients aged 0–24 years seen by mental health services, by age group and demographic variable, Southern District Health Board, 2017

Clients aged 0–24 years seen by mental health services, Southern District Health Board, 2017				
	0–14 years		15–24 years	
	Number	%	Number	%
Total	1788	100.0	3674	100.0
NZDep2013 index of deprivation quintile				
Quintile 1 (least deprived)	347	19.4	608	16.5
Quintile 2	297	16.6	531	14.5
Quintile 3	448	25.1	822	22.4
Quintile 4	437	24.4	982	26.7
Quintile 5 (most deprived)	258	14.4	724	19.7
Prioritised ethnicity				
Māori	401	22.4	719	19.6
Pacific	51	2.9	98	2.7
Asian/Indian	19	1.1	113	3.1
MELAA	7	0.4	35	1.0
European/Other	1308	73.2	2704	73.6
Gender				
Male	1037	58.0	1707	46.5
Female	751	42.0	1965	53.5

Source: PRIMHD. Ethnicity is level 1 prioritised. Percentages are the percentages of the total number of clients in the age group seen in the DHB

The children and young people seen by mental health services in Southern DHB in 2017 lived in all deprivation quintiles (Table 5-5). Over 70% belonged to the European/Other ethnic group and most of the rest were Māori. Few were of Pacific, Asian/Indian or MELAA ethnicity. In the 0–14 years age group, more males than females were seen by mental health services but, in the 15–24 years age group, more females than males.

Table 5-6. Clients aged 0–24 years seen by mental health services, by age group and service provider or service setting, Southern District Health Board, 2017

Clients aged 0–24 years seen by mental health services, Southern District Health Board, 2017				
	0–14 years		15–24 years	
	Number	%	Number	%
Total	1788	100.0	3674	100.0
Service provider				
DHB only	980	54.8	2284	62.2
both DHB and NGO	236	13.2	520	14.2
NGO only	572	32.0	870	23.7
Service setting				
Outpatient only	1763	98.6	3366	91.6
both outpatient and inpatient	21	1.2	305	8.3
Inpatient only	< 5	s	< 5	s

Source: PRIMHD

The majority of the children and young people who were seen by mental health services in Southern DHB in 2017 were seen by services provided by the DHB but the proportion who received some or all of their care from an NGO was higher than in most other DHBs (Table 5-6). The vast majority of 0–14 year olds who were seen by mental health services received their mental health care as outpatients only. Most of the 15–24 year olds were also seen as outpatients but around 8% received some or all of their care as inpatients.

Hospitalisations for mental health conditions

This section presents data on hospitalisations for mental health conditions from the National Minimum Dataset.

Data sources and methods

Indicator

Hospitalisations for mental health conditions

Data source(s)

Numerator: National minimum dataset (NMDS)
Denominator: NZCYES Estimated Resident Population

Additional information

Hospitalisations for mental health conditions are hospitalisations for which the primary diagnosis was recorded as a mental health condition (i.e., one with an ICD-10 "F" code or an ICD-9 mental health code). The hospitalisations analysis is a measure of hospital service use rather than the number of individuals with mental health diagnoses because it counts hospitalisations rather than individuals (An individual may have multiple hospitalisations).

In New Zealand during 2014–18, the most common reasons for mental health hospitalisations in 15–24 year olds were schizophrenia, schizotypal and delusional disorders, and mood disorders, especially depression (Table 5-7). Together these two categories accounted for around half of all mental health hospitalisations in this age group. The third most common reason for mental health hospitalisation was disorders due to harmful use of alcohol. Almost all of these hospitalisations were due to acute alcohol intoxication.

In the younger age group (15–19 years), the most common reasons for mental health hospitalisation were mood disorders (primarily depression), followed by acute alcohol intoxication, neurotic, stress-related and somatoform disorders, and schizophrenia, schizotypal and delusional disorders (Table 5-8).

In 20–24 year olds, the most common reasons for mental health hospitalisation were schizophrenia, schizotypal and delusional disorders, the most common of which were schizophrenia and unspecified non-organic psychosis, followed by mood disorders, acute alcohol intoxication and neurotic, stress-related and somatoform disorders (Table 5-9).

Table 5-7. Mental health diagnoses of hospitalised 15–24 year olds, New Zealand 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Mental health hospitalisations of 15–24 year olds during 2014–2018				
New Zealand				
Schizophrenia, schizotypal and delusional disorders	6,448	1,290	202.42	21.8
Schizophrenia	*2,882*	*576*	*90.47*	*9.8*
Unspecified non-organic psychosis	*2,519*	*504*	*79.08*	*8.5*
Schizoaffective disorders	*471*	*94*	*14.79*	*1.6*
Acute and transient psychotic disorders	*406*	*81*	*12.75*	*1.4*
Other delusional and psychotic disorders	*170*	*34*	*5.34*	*0.6*
Mood disorders	6,108	1,222	191.74	20.7
Depressive episode	*3,460*	*692*	*108.62*	*11.7*
Bipolar affective disorder	*1,206*	*241*	*37.86*	*4.1*
Recurrent depressive episode	*704*	*141*	*22.10*	*2.4*
Other mood disorders	*738*	*148*	*23.17*	*2.5*
Mental and behavioural disorders due to harmful use of alcohol	5,319	1,064	166.97	18.0
Acute intoxication	*4,943*	*989*	*155.17*	*16.7*
Other mental and behavioural disorders due to harmful use of alcohol	*376*	*75*	*11.80*	*1.3*
Neurotic, stress-related and somatoform disorders	4,091	818	128.43	13.8
Anxiety disorders	*1,399*	*280*	*43.92*	*4.7*
Adjustment disorders	*1,027*	*205*	*32.24*	*3.5*
Post-traumatic stress disorder	*766*	*153*	*24.05*	*2.6*
Dissociative convulsions	*311*	*62*	*9.76*	*1.1*
Other Neurotic, stress-related and somatoform disorders	*588*	*118*	*18.46*	*2.0*
Personality disorders	2,279	456	71.54	7.7
Borderline Personality disorder	*1,955*	*391*	*61.37*	*6.6*
Other personality disorders	*324*	*65*	*10.17*	*1.1*
Mental and behavioural disorders due to other or multiple psychoactive substances	1,449	290	45.49	4.9
Psychotic disorder due to other or multiple psychoactive substances	*663*	*133*	*20.81*	*2.2*
Other M+B disorders due to other or multiple psychoactive substances	*786*	*157*	*24.67*	*2.7*
Eating disorders	1,395	279	43.79	4.7
Anorexia nervosa	*1,086*	*217*	*34.09*	*3.7*
Other eating disorders	*309*	*62*	*9.70*	1.0
Mental and behavioural disorders due to harmful use of cannabinoids	968	194	30.39	3.3
Psychosis due to cannabinoids	*586*	*117*	*18.40*	*2.0*
Other M+B disorders due to use of cannabinoids	*382*	*76*	*11.99*	*1.3*
Organic mental disorders	431	86	13.53	1.5
Postconcussional syndrome	*343*	*69*	*10.77*	*1.2*
Other organic mental disorders	*88*	*18*	*2.76*	*0.3*
Behavioural and emotional disorders with onset usually in childhood or adolescence	431	86	13.53	1.5
Disorders of psychological development	323	65	10.14	1.1
Childhood autism	*216*	*43*	*6.78*	*0.7*
Other disorders of psychological development	*107*	*21*	*3.36*	*0.4*
Other mental and behavioural disorders	307	61	9.64	1.0
Total	29,549	5,910	927.60	100.0

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

Table 5-8. Mental health diagnoses of hospitalised 15–19 year olds, New Zealand 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Mental health hospitalisations of 15–19 year olds during 2014–2018				
New Zealand				
Mood disorders	3,042	608	194.99	21.9
Depressive episode	*1,859*	*372*	*119.16*	*13.4*
Bipolar affective disorder	*384*	*77*	*24.61*	*2.8*
Recurrent depressive episode	*356*	*71*	*22.82*	*2.6*
Other mood disorders	*443*	*89*	*28.40*	*3.2*
Mental and behavioural disorders due to harmful use of alcohol	2,970	594	190.38	21.4
Acute intoxication	*2,850*	*570*	*182.68*	*20.5*
Other mental and behavioural disorders due to harmful use of alcohol	*120*	*24*	*7.69*	*0.9*
Neurotic, stress-related and somatoform disorders	2,228	446	142.81	16.0
Anxiety disorders	*731*	*146*	*46.86*	*5.3*
Adjustment disorders	*561*	*112*	*35.96*	*4.0*
Post-traumatic stress disorder	*462*	*92*	*29.61*	*3.3*
Dissociative convulsions	*178*	*36*	*11.41*	*1.3*
Other Neurotic, stress-related and somatoform disorders	*296*	*59*	*18.97*	*2.1*
Schizophrenia, schizotypal and delusional disorders	2,057	411	131.85	14.8
Unspecified non-organic psychosis	*1,073*	*215*	*68.78*	*7.7*
Schizophrenia	*635*	*127*	*40.70*	*4.6*
Acute and transient psychotic disorders	*172*	*34*	*11.03*	*1.2*
Schizoaffective disorders	*117*	*23*	*7.50*	*0.8*
Other delusional and psychotic disorders	*60*	*12*	*3.85*	*0.4*
Eating disorders	1,038	208	66.54	7.5
Anorexia nervosa	*819*	*164*	*52.50*	*5.9*
Other eating disorders	*219*	*44*	*14.04*	*1.6*
Personality disorders	869	174	55.70	6.2
Borderline Personality disorder	*745*	*149*	*47.75*	*5.4*
Other personality disorders	*124*	*25*	*7.95*	*0.9*
M+B disorders due to other or multiple psychoactive substances	421	84	26.99	3.0
Psychotic disorder due to other or multiple psychoactive substances	*167*	*33*	*10.71*	*1.2*
Other M+B disorder due to other or multiple psychoactive substances	*254*	*51*	*16.28*	*1.8*
Mental and behavioural disorders due to harmful use of cannabinoids	404	81	25.90	2.9
Psychosis due to cannabinoids	*237*	*47*	*15.19*	*1.7*
Other M+B disorders due to use of cannabinoids	*167*	*33*	*10.71*	*1.2*
Behavioural and emotional disorders with onset usually in childhood or adolescence	332	66	21.28	2.4
Organic mental disorders	208	42	13.33	1.5
Postconcussional syndrome	*177*	*35*	*11.35*	*1.3*
Other organic mental disorders	*31*	*6*	*1.99*	*0.2*
Disorders of psychological development	191	38	12.24	1.4
Childhood autism	*136*	*27*	*8.72*	*1.0*
Other disorders of psychological development	*55*	*11*	*3.53*	*0.4*
Other mental and behavioural disorders	151	30	9.68	1.1
Total	13,911	2,782	891.69	100.0

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

Table 5-9. Mental health diagnoses of hospitalised 20–24 year olds, New Zealand 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Mental health hospitalisations of 20–24 year olds during 2014–2018				
New Zealand				
Schizophrenia, schizotypal and delusional disorders	4,391	878	270.14	28.1
Schizophrenia	*2,247*	*449*	*138.24*	*14.4*
Unspecified non-organic psychosis	*1,446*	*289*	*88.96*	*9.2*
Schizoaffective disorders	*354*	*71*	*21.78*	*2.3*
Acute and transient psychotic disorders	*234*	*47*	*14.40*	*1.5*
Other delusional and psychotic disorders	*110*	*22*	*6.77*	*0.7*
Mood disorders	3,066	613	188.63	19.6
Depressive episode	*1,601*	*320*	*98.50*	*10.2*
Bipolar affective disorder	*822*	*164*	*50.57*	*5.3*
Recurrent depressive episode	*348*	*70*	*21.41*	*2.2*
Other mood disorders	*295*	*59*	*18.15*	*1.9*
Mental and behavioural disorders due to harmful use of alcohol	2,349	470	144.51	15.0
Acute intoxication	*2,093*	*419*	*128.76*	*13.4*
Other mental and behavioural disorders due to harmful use of alcohol	*256*	*51*	*15.75*	*1.6*
Neurotic, stress-related and somatoform disorders	1,863	373	114.61	11.9
Anxiety disorders	*668*	*134*	*41.10*	*4.3*
Adjustment disorders	*466*	*93*	*28.67*	*3.0*
Post-traumatic stress disorder	*304*	*61*	*18.70*	*1.9*
Dissociative convulsions	*133*	*27*	*8.18*	*0.9*
Other Neurotic, stress-related and somatoform disorders	*292*	*58*	*17.96*	*1.9*
Personality disorders	1,410	282	86.75	9.0
Borderline Personality disorder	*1,210*	*242*	*74.44*	*7.7*
Other personality disorders	*200*	*40*	*12.30*	*1.3*
M+B disorders due to other or multiple psychoactive substances	1,028	206	63.24	6.6
Psychotic disorder due to other or multiple psychoactive substances	*496*	*99*	*30.52*	*3.2*
Other M+B disorder due to other or multiple psychoactive substances	*532*	*106*	*32.73*	*3.4*
Mental and behavioural disorders due to harmful use of cannabinoids	564	113	34.70	3.6
Psychosis due to cannabinoids	*349*	*70*	*21.47*	*2.2*
Other M+B disorders due to use of cannabinoids	*215*	*43*	*13.23*	*1.4*
Eating disorders	357	71	21.96	2.3
Anorexia nervosa	*267*	*53*	*16.43*	*1.7*
Other eating disorders	*90*	*18*	*5.54*	*0.6*
Organic mental disorders	223	45	13.72	1.4
Postconcussional syndrome	*166*	*33*	*10.21*	*1.1*
Other organic mental disorders	*57*	*11*	*3.51*	*0.4*
Disorders of psychological development	132	26	8.12	0.8
Childhood autism	*80*	*16*	*4.92*	*0.5*
Other disorders of psychological development	*52*	*10*	*3.20*	*0.3*
Behavioural and emotional disorders with onset usually in childhood or adolescence	99	20	6.09	0.6
Other M+B disorders	156	31	9.60	1.0
Total	15,638	3,128	962.07	100.0

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

The most common diagnoses associated with mental health hospitalisation in 15–24 year olds in Southern DHB in 2014–2018 were mood disorders, most commonly depression, mental and behavioural disorders due to harmful use of alcohol (almost all acute intoxication), personality disorders, especially borderline personality disorders, and neurotic, stress-related and somatoform disorders (Table 5-10).

In the Otago area of Southern DHB during 2014–2018, most common diagnoses associated with mental health hospitalisation in 15–24 year olds were mood disorders, most commonly depression, mental and behavioural disorders due to harmful use of alcohol (almost all acute intoxication), personality disorders, especially borderline personality disorders, and neurotic, stress-related and somatoform disorders (Figure 5-11).

In the Southland area of Southern DHB during 2014–2018, most common diagnoses associated with mental health hospitalisation in 15–24 year olds were mental and behavioural disorders due to harmful use of alcohol (almost all acute intoxication), mood disorders, schizophrenia, schizotypal and delusional disorders, and neurotic, stress-related and somatoform disorders (Figure 5-12).

Table 5-10. Mental health diagnoses of hospitalised 15–24 year olds, Southern DHB 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Mental Health hospitalisations of 15–24 year olds during 2014–2018				
Southern DHB				
Mood disorders	601	120	254.31	20.7
Mental and behavioural disorders due to harmful use of alcohol	590	118	249.65	20.3
Personality disorders	484	97	204.80	16.6
Neurotic, stress-related and somatoform disorders	469	94	198.45	16.1
Schizophrenia, schizotypal and delusional disorders	321	64	135.83	11.0
Eating disorders	112	22	47.39	3.8
M+B disorders due to other or multiple psychoactive substances	95	19	40.20	3.3
Mental and behavioural disorders due to harmful use of cannabinoids	70	14	29.62	2.4
Organic mental disorders	43	9	18.20	1.5
Behavioural and emotional disorders with onset usually in childhood or adolescence	40	8	16.93	1.4
Disorders of psychological development	33	7	13.96	1.1
Other mental and behavioural disorders	52	10	22.00	1.8
Total	2,910	582	1,231.34	100.0

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

Table 5-11. Mental health diagnoses of hospitalised 15–24 year olds, Otago 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Mental Health hospitalisations of 15–24 year olds during 2014–2018				
Otago area of Southern DHB				
Mood disorders	499	100	302.60	21.0
Mental and behavioural disorders due to harmful use of alcohol	475	95	288.04	20.0
Personality disorders	458	92	277.73	19.3
Neurotic, stress-related and somatoform disorders	386	77	234.07	16.3
Schizophrenia, schizotypal and delusional disorders	222	44	134.62	9.4
Eating disorders	84	17	50.94	3.5
M+B disorders due to other or multiple psychoactive substances	64	13	38.81	2.7
Mental and behavioural disorders due to harmful use of cannabinoids	54	11	32.75	2.3
Behavioural and emotional disorders with onset usually in childhood or adolescence	38	8	23.04	1.6
Organic mental disorders	30	6	18.19	1.3
Disorders of psychological development	17	3	10.31	0.7
Other mental and behavioural disorders	47	9	28.50	2.0
Total	2,374	475	1,439.60	100.0

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

Table 5-12. Mental health diagnoses of hospitalised 15–24 year olds, Southland 2014–2018

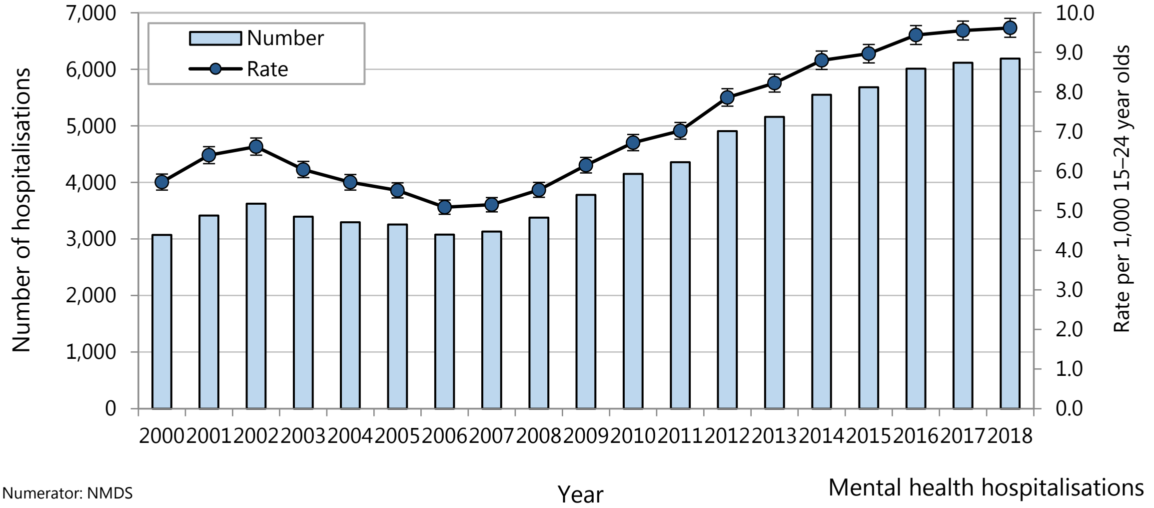
Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Mental Health hospitalisations of 15–24 year olds during 2014–2018				
Southland area of Southern DHB				
Mental and behavioural disorders due to harmful use of alcohol	115	23	161.02	21.5
Mood disorders	102	20	142.81	19.0
Schizophrenia, schizotypal and delusional disorders	99	20	138.61	18.5
Neurotic, stress-related and somatoform disorders	83	17	116.21	15.5
M+B disorders due to other or multiple psychoactive substances	31	6	43.40	5.8
Eating disorders	28	6	39.20	5.2
Personality disorders	26	5	36.40	4.9
Mental and behavioural disorders due to harmful use of cannabinoids	16	3	22.40	3.0
Disorders of psychological development	16	3	22.40	3.0
Organic mental disorders	13	3	18.20	2.4
Behavioural and emotional disorders with onset usually in childhood or adolescence	2	s	s	s
Other mental and behavioural disorders	5	1	7.00	0.9
Total	536	107	750.48	100.0

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

The rate of hospitalisations for mental and behavioural disorders in New Zealand 15–24 year olds fell from 2002 to 2006, and then increased steadily from 2006 to 2016 before levelling off in the last few years (Figure 5-18).

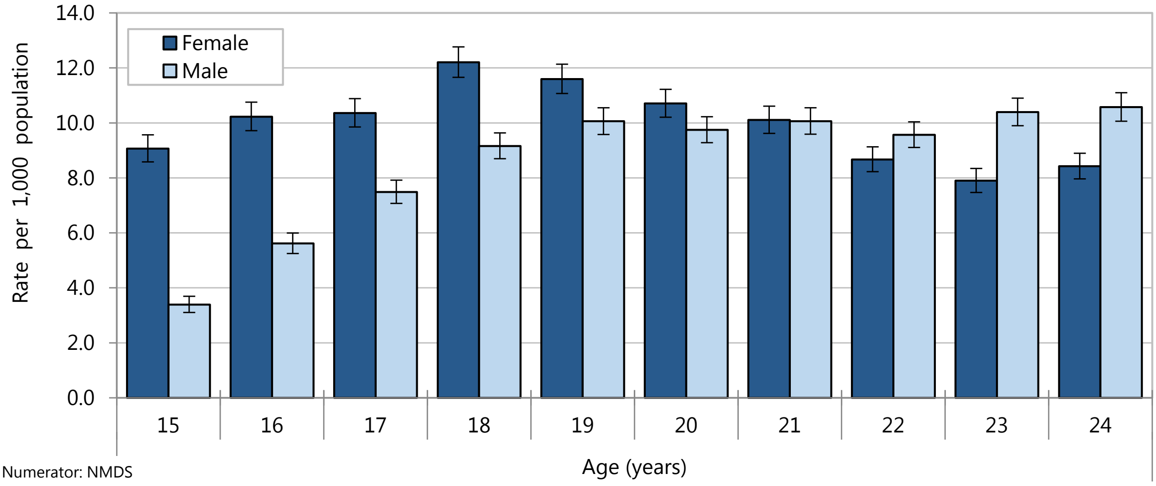
At age 15 years, the females had a mental health hospitalisation rate more than double that of males (Figure 5-19). Female rates rose with increasing age and peaked at age 18 years before declining with increasing age until age 23 years. From ages 15 to 18 years, the male rate had a greater rate of increase with increasing age than the female rate, narrowing the gap between male and female rates at eighteen years. From age 19 years, male rates changed little with increasing age. Male rates were higher than female rates from 22 years of age.

Figure 5-18. Hospitalisations for mental health conditions in 15–24 year olds, New Zealand 2000–2018



Numerator: NMDS
Denominator: NZCYES estimated resident population

Figure 5-19. Hospitalisations for mental health conditions in 15–24 year olds, by age, New Zealand 2014–2018

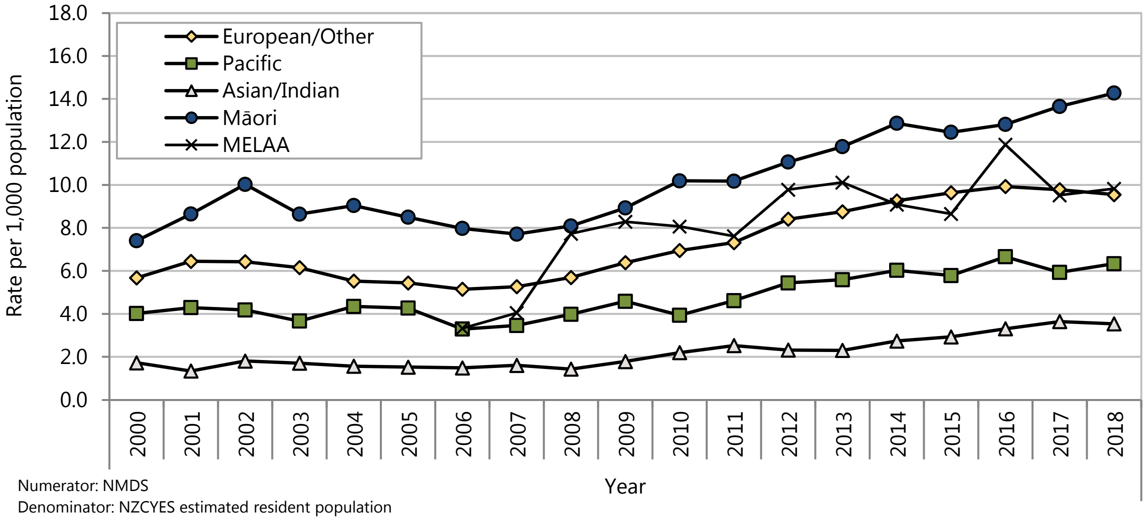


Numerator: NMDS
Denominator: NZCYES estimated resident population

Mental health hospitalisations

Throughout 2000–2018, mental health hospitalisation rates were highest for Māori 15–24 year olds (Figure 5-20). The European/Other ethnic group had the next highest rates, followed by the Pacific and then the Asian/Indian ethnic groups. Rates increased for all five ethnic groups from around 2007–2008 until 2016, although MELAA rates were quite variable due to the relatively small numbers in this ethnic group. European/Other and Pacific rates levelled off from 2016 while Māori rates continued to increase, resulting in greater disparity between rates for Māori young people and those for young people from other ethnic groups.

Figure 5-20. Hospitalisations for mental health conditions in 15–24 year olds, by ethnicity, New Zealand 2000–2018

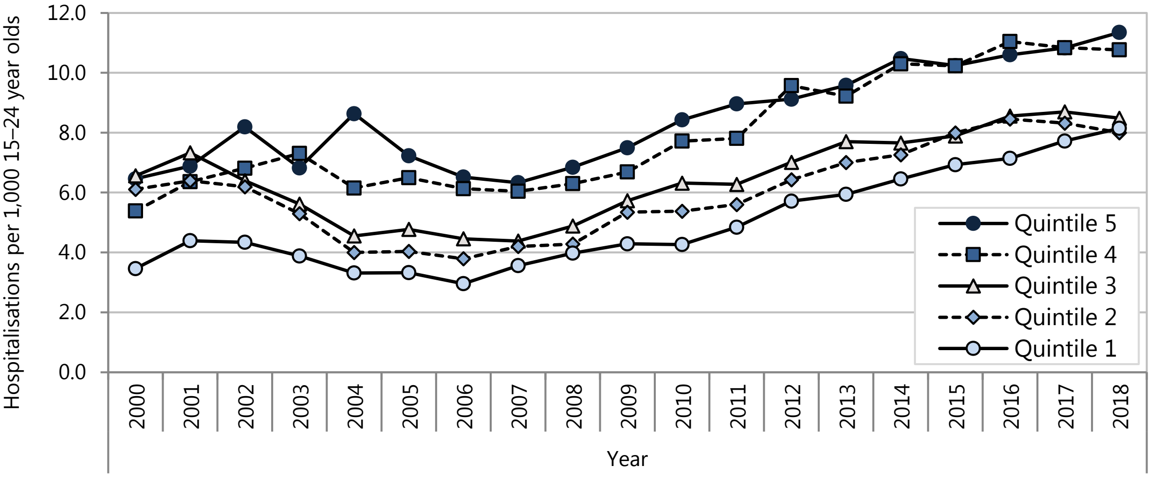


Numerator: NMDS
Denominator: NZCYES estimated resident population
Ethnicity is level 1 prioritised
European/Other includes MELAA prior to 2006

Mental health hospitalisations

From 2007 onwards, mental health hospitalisation rates for 15–24 year olds increased over time in all deprivation quintiles to a similar degree (Figure 5-21). Quintile 1, the quintile with lowest deprivation scores, consistently had the lowest rate, and quintiles 4 and 5, the quintiles with the highest deprivation scores, consistently had the highest hospitalisation rates. In the last few years the rates for quintiles 4 and 5 have been almost the same, as have the rates in quintiles 2 and 3. From around 2007, the gap in rates between quintile 1 and quintiles 4 and 5 has remained much the same.

Figure 5-21. Hospitalisations for mental health conditions in 15–24 year olds, by NZ Deprivation Index quintile, New Zealand 2000–2018



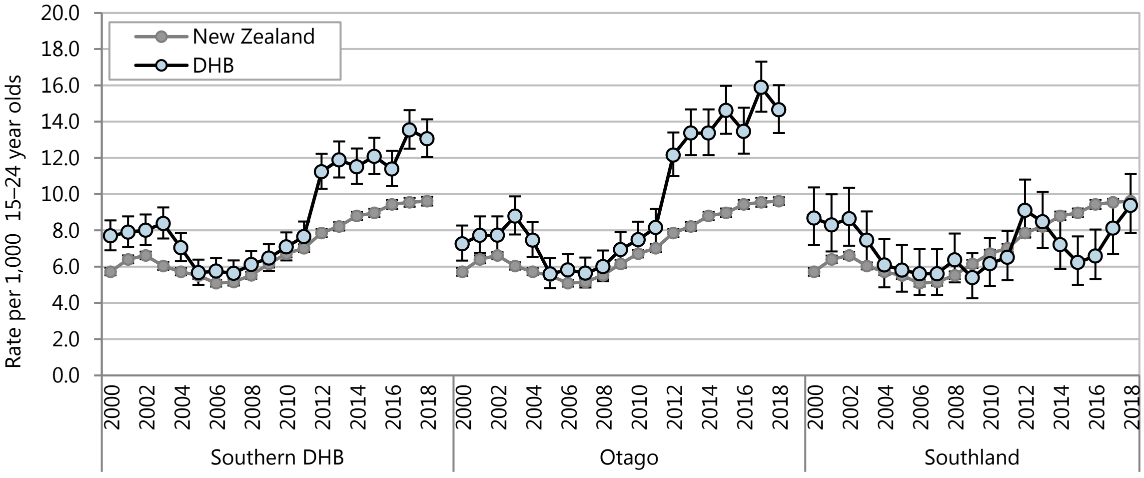
Numerator: NMDS, Denominator: NZCYES Estimated Resident Population.
Quintile: NZDep2013 Index of deprivation (1= least deprived; 5 = most deprived)

The hospitalisation rate for mental health conditions in 15–24 year olds in Southern DHB was higher than the corresponding national rate during 2000 to 2004, similar to the national rate during 2005 to 2011, and, due to a sharp increase from 2011 to 2012, higher than the national rate from 2012 onwards (Figure 5-22).

The Otago rate followed the same pattern as the rate for the whole of Southern DHB, but the difference from the national rate was more pronounced from 2012 onwards (Figure 5-22).

The Southland rate was higher than the New Zealand rate from 2000 to 2003, and close to the New Zealand rate from 2004 to 2011. From 2012 to 2014, the Southland rate fell before rising again to become almost the same as the New Zealand rate in 2018 (Figure 5-22).

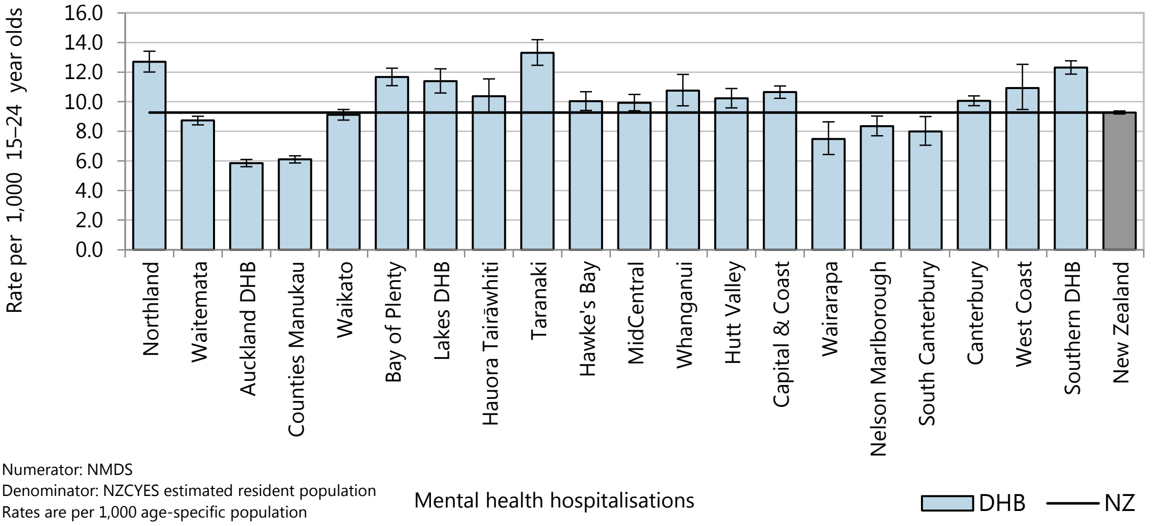
Figure 5-22. Hospitalisations for mental health conditions in 15–24 year olds, Southern DHB 2000–2018



Numerator: NMDS,
Denominator: NZCYES Estimated Resident Population

The mental health hospitalisation rate for 15–24 year olds in Southern DHB during 2014–2018 was significantly higher than New Zealand rate for 15–24 year olds. This was largely due to Otago (which has a considerably larger population than Southland) having a significantly higher rate than the national rate, as Southland had a rate that was significantly lower than the national rate. (Figure 5-23, Table 5-13).

Figure 5-23. Hospitalisations for mental health conditions in 15–24 year olds, by district health board, New Zealand 2014–2018



Numerator: NMDS
Denominator: NZCYES estimated resident population
Rates are per 1,000 age-specific population

Table 5-13. Hospitalisations for mental health conditions in 15–24 year olds, Southern DHB vs New Zealand 2014–2018

DHB	Number	Rate per 1,000 population	Rate ratio	95% CI
Mental health hospitalisations of 15–24 year olds				
Southern DHB	2,910	12.31	1.33	1.28–1.38
Otago	2,374	14.40	1.55	1.49–1.62
Southland	536	7.50	0.81	0.74–0.88
New Zealand	29,549	9.28	1.00	0.98-1.02

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population. Rates are per 1,000 age-specific population. Rate ratios are unadjusted

During 2014–2018, there was a social gradient in mental health hospitalisation rates for New Zealand 15–24 year olds (Table 5-14). Rates for young people living in more deprived areas (quintiles four and five) were around one and half times those for young people living in the least deprived areas (quintile 1), and significantly higher than rates in quintiles one, two and three. Compared to the European/Other rate, the Māori rate was significantly higher, the Pacific and Asian/Indian rates were significantly lower, and the MELAA rate was not significantly different. The female rate was slightly but significantly higher than the male rate.

Table 5-14. Hospitalisations for mental health conditions in 15–24 year olds, by demographic variable, New Zealand 2014–2018

Variable	Number	Rate per 1,000	Rate ratio	95% CI
Mental health hospitalisations of 15–24 year olds, New Zealand 2014–2018				
NZDep2013 index of deprivation quintile				
Quintile 1 (least deprived)	4,094	7.29	1.00	
Quintile 2	4,290	8.01	1.10	1.05–1.15
Quintile 3	4,859	8.26	1.13	1.09–1.18
Quintile 4	7,276	10.63	1.46	1.40–1.52
Quintile 5 (most deprived)	8,722	10.70	1.47	1.41–1.52
Prioritised ethnicity				
Māori	8,775	13.22	1.37	1.34–1.41
Pacific	1,745	6.15	0.64	0.61–0.67
Asian/Indian	1,556	3.24	0.34	0.32–0.35
MELAA	458	9.80	1.02	0.93–1.12
European/Other	16,868	9.63	1.00	
Gender				
Male	14,074	8.65	0.87	0.85–0.89
Female	15,469	9.92	1.00	

Numerator: NMDS; Denominator: NZCYES Estimated Resident Population. Rates are per 1000 age-specific population. Rate ratios are unadjusted. Ethnicity is level 1 prioritised.

Over half of the 15–24 year olds hospitalised for mental health conditions in Southern DHB during 2014–2018 lived in the two most deprived NZDep quintiles (quintiles 4–5) (Table 5-15). More than three quarters were of European/Other ethnicity. Just over 60 % were female and just under 40% were male.

The demographic profile of the Otago 15–24 year olds hospitalised for mental health conditions during 2014–2018 was almost the same as that for whole Southern DHB (Table 5-15).

Thirty percent of the 15–24 year olds hospitalised for mental health conditions in Southland during 2014–2018 lived in the most deprived NZDep2013 quintile (quintile 5) (Table 5-15). European/Other was much the largest ethnic group, although the proportion who were Māori was higher than in Otago. Numbers of males and females were almost equal.

Table 5-15. Hospitalisations for mental health conditions in 15–24 year olds, by demographic variable, Southern District Health Board, 2014–2018

	Number	%	Number	%	Number	%
	Southern DHB		Otago		Southland	
Hospitalisations of 15–24 year olds, 2014–2018						
Total	2910	100.0	2374	100.0	536	100.0
NZDep2013 index of deprivation quintile						
Quintile 1 (least deprived)	400	13.7	283	11.9	117	21.8
Quintile 2	352	12.1	252	10.6	100	18.7
Quintile 3	628	21.6	565	23.8	63	11.8
Quintile 4	865	29.7	772	32.5	93	17.4
Quintile 5 (most deprived)	663	22.8	501	21.1	162	30.2
Prioritised ethnicity						
Māori	425	14.6	307	12.9	118	22.0
Pacific	59	2.0	51	2.1	8	1.5
Asian/Indian	137	4.7	131	5.5	6	1.1
MELAA	32	1.1	28	1.2	< 5	s
European/Other	2240	77.0	1846	77.8	394	73.5
Gender						
Male	1125	38.7	860	36.2	265	49.4
Female	1782	61.2	1511	63.6	271	50.6

Numerator: NMDS, Denominator: NZCYES Estimated Resident Population. Rates are per 1,000 age-specific population. Rate ratios are unadjusted

Evidence for good practice

Promoting young people's mental wellbeing and preventing mental health problems

Mental disorders are believed to result from the cumulative effect of multiple genetic and environmental risk factors.[16] Different mental disorders have different degrees of heritability and it seems that what is inherited is an increased risk for mental disorders in general, rather than for any one disorder in particular, and that there are many common genes that each confer a small increased risk, and a few rare genes that confer a relatively high risk.[16,17] Similarly, it seems that there are many environmental risk factors, most of which have small effect sizes, that increase susceptibility to mental disorder but are not causal in themselves.[16] The more risk genes and environmental risk factors a person has, the greater their chances of developing a mental disorder.

Environmental risk factors include antenatal factors (such as poor nutrition, exposure to alcohol, drugs or toxins, maternal infections and stress), birth complications, preterm delivery, brain trauma, social factors (e.g. poverty and socio-economic disadvantage, poor living conditions, immigration and social isolation), trauma (e.g. parental neglect, physical, emotional and sexual abuse, bullying), lack of stimulation, stressful life events and general adversity, and drug and alcohol abuse.[16] Many of these risk factors are interrelated and they tend to occur in clusters, exacerbating each other's effects.[16]

Many studies have investigated potential risk factors for, and determinants of, mental illness, and a few of them are discussed below as examples, but the determinants of lifelong mental wellbeing have been little studied. The authors of a study published in 2017[18] reviewed lifetime prevalence studies from different countries and concluded that most people will develop a diagnosable mental disorder at some stage during their life and that only a minority will experience enduring mental health. They then used data from the Dunedin longitudinal study to compare the 17% of their study population who had never been diagnosed with a mental disorder with the study members who had met the diagnostic criteria for a mental disorder at one or two study waves (out of the six mental health study waves from ages 11 to 38 years), and thus had a mental health history resembling the majority of other study members.

The results of this comparison suggested that enduring mental wellbeing was largely due to an advantageous personality style and a lack of family history of disorder, but not to childhood socioeconomic privilege, superior health, or high intelligence.[18] The study members with enduring mental health tended to have a personality style characterised in childhood by few negative emotions, having many friends and having higher self-control.[18]

A person's mental health can be influenced by circumstances very early in their life, possibly even before birth. A recent review[19] that included 33 studies found that a majority of studies that had looked at the association between maternal alcohol use in pregnancy and offspring mental health had found a positive association, specifically with anxiety and depression, conduct disorders and total mental health problems. Several studies have suggested that antenatal maternal stress, especially depression, increases the risk of mental disorders in offspring,[20,21] although a recently published study involving a large cohort of twins cast some doubt on these findings.[22] This study found that shared genetic factors were at least partly the explanation.[23]

Adverse childhood experiences (ACEs) are strongly associated with mental illness and substance use in young people. A recently published study[24] that combined data from cross sectional studies among young adults (14,661 in total) in ten European countries used multivariate modelling to investigate relationships between ACEs, childhood relationships and early alcohol initiation, problem alcohol use, smoking, drug use, therapy for mental health problems, and suicide attempts. The ACEs in participants' first 18 years that were measured were physical abuse; emotional abuse; sexual abuse; parental separation or divorce; witnessing domestic violence and living in a household where someone was depressed or suicidal, a problem drinker/alcoholic, a drug user or incarcerated. The supportive relationships were whether participants had someone in their family to help them feel special or important; felt loved; knew there was someone to take care of and protect them; whether people in their family looked out for each other; felt close to each other and whether their family was a source of strength and support.

Compared to the young people with no ACEs, young people who had four or more ACEs (5.6% of participants) had twice the odds of current smoking and early alcohol initiation, four times the odds of reporting problem alcohol and drug use, six times the odds of therapy, and 17 times the odds of attempting suicide. Whether or not a young person had supportive relationships did not make a significant difference to drug use or early alcohol initiation at different ACE counts, but at all ACE levels the adjusted proportions of suicide attempt were approximately halved when childhood support was higher. For young people with four or more ACEs, the reductions with higher support were from 23% to 13% for suicide attempt, from 25% to 23% for therapy, from 23% to 17% for problem drinking, and from 34% to 32% for smoking.

Reducing the number of children who suffer multiple adverse experiences in childhood and ensuring that those who do receive appropriate support is clearly important, but may not make a huge difference to the total number of young people with mental health problems because the young people with many ACEs are only a small proportion of the total population of young people. This is the familiar prevention paradox, which is that population strategies which focus on reducing the risk of those already at low or moderate risk of mental health problems will often be more effective at reducing the total number of people with mental health problems in a population than strategies which focus only on individuals at high risk.[25,26]

Longitudinal studies, especially prospective birth cohorts, provide the best method of demonstrating associations between factors in childhood and adult mental illness.[27] The 2012 review by Fryers and

Brugha[27] looked at hundreds of papers from the published literature from longitudinal studies, as well as some large-scale retrospective studies and relevant reviews, to identify potentially ameliorable factors. The authors identified ten childhood factors that were associated with later mental ill health: psychological disturbance; genetic influences; neurological deviance; neuroticism; behaviour; school performance; adversity; child abuse or neglect; parenting and parent-child relationships; and disrupted and dysfunctional families.

They suggested the following as potential strategies for prevention: good antenatal and obstetric care, to prevent brain damage before, during or after birth, and to prevent drug and alcohol abuse in pregnancy; identification and treatment of maternal mental health problems; identifying and investigating child behaviour problems; and supporting at-risk families to improve parenting practices and prevent child abuse.[27]

Furber et al.[28] conducted a rapid review of meta-analytic studies of risk factors for mental illness and identified 1628 relevant studies. They reported that the greatest number of meta-analyses related to schizophrenia, neurodegenerative disorders (e.g. Alzheimer's disease, dementia) and depression (n = 907, 46%). The most studied risk factors were genetic, psychological and physiological factors (n = 1112, 66.5%). There were relatively few meta-analyses of predictors of response to trauma and negative environmental exposures (n=34, 2.0%) The review authors pointed out that the volume of research does not match the needs of those involved in prevention planning who are more interested in social, relational, occupational, environmental, and lifestyle factors than in genetic, neuroanatomical and physiological factors (which currently can't be altered).

Furber et al.[28] stated that their findings reinforce the idea that "mental health is everybody's business" and that there are different roles for different professionals and sectors: public health professionals might target lifestyle, environmental or occupational exposures; psychologists might target psychological vulnerabilities; child and family services could focus on important family relationships; and medical professionals could screen for and try to modify key biomedical risks.

Primary prevention interventions are those directed at people without a clinically diagnosable mental disorder.[16] They can involve reducing exposure to risk factors, enhancing protective factors, and targeting thought patterns and neurotransmitter imbalances that are believed to be casual factors for mental disorders, and often combinations of all of these strategies.[16] They can be delivered to the whole population (universal prevention), people known to be at increased risk for mental illness (selective prevention), or people who are already showing early signs of mental illness (indicated prevention).[16]

In their recent review of preventive strategies for mental health, Arango et al.[16] identified the following evidence-based interventions:

for the general population:

- reducing income inequality and unemployment
- improving education and childcare
- reducing social stigma
- increasing societal and professional awareness,

for the general population of children and young people:

- proper stimulation for developmental stage
- family dinners
- school academic achievement, social climate, resiliency skills
- anti-bulling interventions in schools
- nutrition and physical exercise
- prevention of substance use,

for at-risk children and young people:

- improving parental mental state
- early intensive intervention for autism spectrum disorders
- parent training for externalising and internalising problems
- secondary prevention of ADHD complications with stimulants
- psychological interventions (e.g. cognitive behavioural therapy, interpersonal therapy) for indicated prevention in young people with sub-clinical symptoms
- cognitive remediation and improving social skills for selective prevention in some high-risk groups.

Sandler et al.[29] conducted a review of 48 meta-analyses of prevention and promotion programmes to prevent mental health, substance use, and conduct problems and promote healthy development in children, youth and young adults, published between 2000 and May 2013. The prevention meta-analyses addressed depression (n=5), anxiety (n=2), aggressive, violent and antisocial behaviour (n=9), and substance use (n=14, 6 on alcohol , tobacco and illicit drugs, 5 on alcohol only, and 3 on tobacco use only). Programmes designed to promote healthy development or resilience of children and young people exposed to stressful situations are expected to reduce multiple problem outcomes.

The review authors identified meta-analyses of five approaches to promoting individual and environmental resources for healthy development: school-based social and emotional learning (n=1), after-school (n=1), mentoring (n=2), parenting (n=6), and preschool/ home visiting programmes (n=3). They also identified resilience promoting programmes for youth exposed to three family stressors: parental death (n=2), parental mental illness (n=1) and parental divorce (n=2).

The review authors calculated overall effect sizes for each broad category of meta-analyses that they reviewed. (The effect size is the difference in the outcome measure between the intervention and control group, expressed in units of the standard deviation.[30] The greater the effect size, the more effective the intervention.)

The effect sizes showed small to medium beneficial effects for all intervention categories. Effect sizes were in the range 0.12 to 0.43.[29] The meta-analyses focussed on anxiety had the largest effect size (0.43).[29] The overall effect size for the promoting healthy development and resilience meta-analyses was 0.30, and the effect sizes for depression, substance use, and crime/anti-social behaviour ranged from 0.12 to 0.19.[29]

The review authors reported that heterogeneity of effects was reported in 78% of the meta-analyses, indicating that there is substantial variation in the effectiveness of interventions.[29] They suggested five reasons why the effects of a prevention programme may vary: characteristics of the programme, characteristics of participants who receive the programme, variability in programme implementation, characteristics of the programme delivery system and service providers, and the community and historical context within which the programme is delivered.[29]

They stated that it is important to understand the reasons for variation in effects to improve the public health impact of prevention programmes.[29] They reported that the programme characteristic that was most commonly found to be associated with greater programme effects was using interactive skill building strategies.[29] Cognitive behavioural programmes were substantially more effective than other types of programmes at reducing antisocial behaviour but were of more variable effectiveness for other outcomes.[29] Interventions generally had greater benefits for individuals at higher risk of problem outcomes than those at lower risk.[29] Few meta-analyses examined whether poverty or ethnicity moderated programme effects.[29]

The review authors stated that more research is needed on the moderators and mediators of programme effects, and whether prevention programmes actually reduce the public health burden of the problem they are designed to address.[29]

In their article *Preventing mental illness: closing the evidence-practice gap through workforce and services planning*, Furber et al.[31] present a six-step framework which outlines the specific tasks involved in translating the prevention evidence base into clearly actionable workforce, service delivery and funding recommendations. The six steps are:

- identifying priority risk factors
- profiling the population in terms of these risk factors to identify at-risk groups
- matching these at-risk groups to best-practice interventions, translation of these interventions to competencies
- translation of competencies into workforce and service estimates
- exploring the policy implications of these workforce and services estimates.

Furber et al. state that the ideal workforce includes not only the professionals most commonly associated with mental health, such as psychologists, psychiatrists, social workers, and mental health nurses but also workers from other sectors such as education and employment, and from other occupations, such as youth workers and teachers. This workforce will include people with varying levels of training, from lay people and peer workers through to specialised mental health professionals.

A recently published review entitled *The Economic Case for the Prevention of Mental Illness* [32] described the role of economic evidence and highlighted areas where there is already a good economic argument for interventions. The authors point out that economic arguments can be a powerful complement to the moral imperative for investing in prevention of mental illness because, given the finite resources available to them, governments and health service providers have to make difficult choices about their spending.

The authors of this review[33] took a life course perspective and identified the following areas where there is a strong economic evidence base for action: identifying and treating depression in expectant and new mothers; parenting programmes, both universal and for parents of children at high risk of mental health problems; school-based interventions; and workplace interventions, both at the organisational and individual levels. There was some evidence for the cost-effectiveness of suicide prevention interventions and interventions to tackle isolation and loneliness in older age.

Good health practice

The first step to getting help for a mental health problem is recognition of the problem and its nature. Young people and their supporters (i.e. family, friends, teachers and workmates) need to know about the early changes produced by mental disorders, the best kinds of help that are available, and how to access this help. They also need to know how to provide first aid and ongoing help to someone with a mental health problem because friends and family are often the first people to be consulted. This knowledge and skills has been termed “metal health literacy”.[34,35]

A 2007 review[36] reported on what was known at that time about the mental health literacy of young people and their supporters, and areas where there are deficiencies, and examined ways in which mental health literacy could be improved. The review found that young people often cannot recognise mental illness and many do not have positive attitudes to medication and, while they have slightly more positive attitudes to professional help in general, their personal preferences tend to be to speak to a family member or friend if they have a mental health problem. Parents of young people also may not recognise mental illness or the value of professional help, and prefer informal and more general sources of help to mental health services.

The review found that there had been relatively few studies of interventions to improve the mental health literacy and skills of young people, and even fewer studies that had done evaluations well. The review authors identified one randomised controlled trial (RCT) and 11 other studies. Interventions generally improved knowledge and attitudes, one study found an impact on help seeking for depression,[37] and two others reported increased help-seeking intentions. The review authors suggested that the effectiveness of future interventions could be enhanced by using specific health promotion models when developing interventions, and they cited a review[38] that had found that there are seven important components of successful mass media health campaigns.

Two reviews that assessed studies of school-based mental health literacy programmes for students,[39,40] and one that assessed mental health literacy programmes for teachers,[41] found little high quality evidence that such programmes have an impact on knowledge, attitudes or help-seeking behaviour.

Barriers to help-seeking for mental health problems

Although mental health disorders and suicidal thoughts and behaviours are common in young people, the majority of young people with these difficulties do not seek help from health services, instead preferring to handle their problems alone or talk to friends and relatives.[42] A study that was part of the World Mental Health International College Student (WMH-ICS) initiative conducted a web-based survey of 13,984 first-year students in eight countries across the world (including Australia and the US) to examine barriers to future help-seeking and the associations of clinical characteristics with these barriers.[43] Only a quarter of the all the students indicated that they would definitely seek help in the event of a future emotional problem. Of the three-quarters who would not definitely seek help, more than a quarter (28.6%) met the criteria for at least one mental disorders over the previous 12 months, most commonly major depressive disorder (18.6%) and generalised anxiety disorder (16.1%), and 8.8% reported 12-month suicidal ideation and 7.8% a 12-month suicide plan.

Barriers to treatment reported by the students who would not definitely seek help were most commonly attitudinal rather than structural. The most important barrier was preference to handle the problem alone (rated as "important" or "very important" by 56.4%), followed by wanting to talk to friends or relatives instead (48%), being too embarrassed to seek help (32.2%), cost (24.1%), and problems with time, transportation or scheduling (22.6%).

Because mental illness is a stigmatised condition, people with mental illness are prone to self-stigma, internalising society's negative stereotypes, and prejudices about people like them. These feelings can reduce help seeking and treatment adherence. Interventions to reduce self-stigma have been developed, but there is a lack of good quality evidence that they are effective.[44,45]

Getting young men to seek help for mental health problems

Young men, particularly those belonging to indigenous or ethnic minority groups, are the least likely demographic group to seek help from mental health professionals, yet this group has a greater need for such help, because the onset of mental illness most commonly occurs in young adulthood and young men have high rates of suicide.[34,35] Barriers to professional help seeking identified in the research literature include denial of emotions and low mental health literacy;[35] problems with interpreting, managing and communicating distress; lack of social support; embarrassment, fear and shame; the stigma associated with mental illness and using mental health services; macho ideals of self-reliance and denial of emotions; and thoughts of suicide.[34,35]

Research on attitudinal barriers to help seeking has indicated that young men are less likely to seek help if they or their families have stoic or negative attitudes to mental health services; they have had previous negative experiences with seeking help; they have fears about confidentiality; or they lack social support. Young men often deal with mental health difficulties through alcohol and drugs or aggressive behaviour rather than by seeking help, especially in cultures that encourage masculine ideals of self-reliance and denial of emotions.[34]

Intimate partners are often an important source of support for young men. An Australian study[46] asked men who had contact with a mental health service about their pathway to care and future help seeking intentions. Ninety-six percent reported that their decision to seek help was influenced to some degree by others, and intimate partners were the most influential. Thirty-seven percent indicated that, without this prompting, they would not have sought help at all. The study authors suggested that interventions that aim to boost the capabilities of wives and partners to encourage their men to seek help for mental health problems could be useful. They listed the following skills that intimate partners could develop:

listening skills that encourage disclosure, acknowledging concerns, providing information about services, and destigmatising mental health problems and services.

Barriers to help-seeking for minority groups

Some groups of young people may face additional barriers, and have been recognised as having significant unmet need for mental health care. A 2015 review[47] looked at 62 studies (24 qualitative and 38 quantitative, of variable quality) that examined barriers and/or facilitators to mental health care among young people who were Aboriginal and Torres Strait Islander (3 studies), culturally and linguistically diverse (n=1), lesbian, gay, bisexual, transgender, queer, or intersex (LGBTQI, n=4), homeless (n=14), had substance use issues (n=24), or lived in rural and remote areas (n=16). The findings of this review generally indicated that the barriers to accessing mental health services faced by these groups were similar to the barriers that have been recognised to affect all young people, but some may be experienced to a greater degree.

Barriers shared by all six groups in the review included lack of awareness of services, stigma/shame around seeking help, poor motivation for treatment, beliefs antagonistic to seeking help (e.g. self-sufficiency), fear of one's needs not being met, reliance on informal supports, peer pressure, lack of support for treatment, concerns about confidentiality, trust and anonymity, negative past experiences with services, limited treatment options, treatment cost, and waiting lists.[47]

As well as barriers related to young people themselves, there may also be service-related barriers: services may be difficult to access, have long waiting lists, be too far away or have inflexible hours.[34,35,48]

E-mental health interventions

Young people spend a lot of time on the internet interacting with their peers and searching for information so the internet has become a common way of delivering mental health interventions (e-mental health interventions).[49] Online interventions can reach young people who would not access traditional mental health services because of distance, cost, embarrassment and other barriers and they provide a solution to the problem of lack of capacity in traditional mental health services.[49] Young people are comfortable about searching for mental health information online, and they appreciate the anonymity and 24/7 availability of internet mental health sites,[49] but a 2014 review[50] found little high quality evidence that online mental health services effectively facilitate seeking help from face-to-face services. The internet can, however, enable easy ongoing communication between young people and mental health professionals once service contact has been established.[49]

A 2018 rapid review undertaken by Te Pou o te Whakaaro Nui[51] of e-mental health interventions for mild-to-moderate mental health issues, particularly anxiety and depression, identified 43 systematic reviews and meta-analyses of the effectiveness of e-mental health interventions, plus an existing rapid review published by the Mental Health Commission of Canada.[52] The review authors reported that it was generally difficult to isolate individual effects because the analyses in the reviews often incorporated a mix of intervention features and control conditions.

The rapid review found that the following interventions had moderate-to-large effects (compared to control conditions):

- computerised cognitive behaviour therapy (CBT) interventions on youth anxiety and depression outcomes
- computerised CBT interventions on adult anxiety outcomes
- mobile messages on youth alcohol consumption (from one study of a 12-week text messaging intervention)
- game-based interventions on youth and adult and depression
- virtual reality exposure therapy on adult social anxiety disorder.

Small-to-moderate effects were found for:

- computerised CBT interventions on adult depression outcomes
- mobile or smartphone applications on adult and youth depression and anxiety outcomes
- computerised acceptance and commitment therapy and mindfulness on adult depression outcomes.

The systematic reviews indicated that effect sizes are influenced by whether there is clinician or other guidance, length of intervention, and whether intervention effects are compared to waitlist or treatment as usual. Guided interventions generally appeared to have greater effects on outcomes than unguided interventions, in part because unguided interventions often have high dropout rates, but smartphone apps that did not involve human contact appeared to have a greater effect on depression than those that did.

Reviews' findings indicated that computerised and internet-based interventions had little or no effect on measures of substance use, suicidal thoughts, or resiliency.

Te Pou o te Whakaaro Nui conducted an additional brief literature review focussed on four particular population groups: children, youth, indigenous populations, and prisoners.[51] This review found that there have been many trials of e-mental health interventions for youth populations but few for children so there is a relatively stronger evidence base for youth interventions. There has been some research on use of SPARX (a computerised CBT intervention) by Māori youth but no research focussing on outcomes for Pacific peoples.

The conclusions of the rapid review were that the evidence indicates some positive results from e-mental health interventions, especially from computerised CBT for youth and adults, but more high quality RCTs are needed and future research should aim to determine the effectiveness of e-mental health interventions on psychosocial outcomes, cost-effectiveness, children, indigenous peoples, and prisoners.[51]

A recent health technology assessment for Health Quality Ontario[50] evaluated the effectiveness of Internet-delivered CBT (iCBT), a structured, goal-oriented CBT delivered via the internet, which may be either guided, when the patient communicates with a regulated health care professional, or unguided, when the patient is not supported by a regulated health care professional.

It found that, compared to waiting list, guided iCBT is effective and probably results in symptom improvement in mild to moderate major depression and social phobia, and may improve the symptoms of anxiety disorder and panic disorder. The assessment authors were uncertain whether iCBT was as effective as individual or group face-to-face CBT but they stated that it represented good value for money, offered users control over the time, pace and location of therapy, and provided access to therapy for people unable to access it otherwise due to cost, time or health limitations.

Social networking sites (SNSs) such as Facebook have been used to deliver youth-focussed mental health interventions and a small number of studies have investigated the effectiveness, suitability, and safety of these types of interventions.[53] These studies suggest that young people find SNS interventions highly usable, engaging and supportive, but there is no good quality evidence that such interventions reduce young people's mental health symptoms.[53]

Online peer support is often used as an adjunct to e-mental health interventions. A 2015 systematic review[54] found a lack of high quality studies examining the effectiveness of online peer-to-peer support for young people (aged 12–25 years).

Face-to-face mental health services in primary care

When young people do seek professional help for mental health problems, they tend to go to people they already know and trust, for example school counsellors or general practitioners.[35] It is important that these people have the skills to recognise and refer young people who need mental health services.

Around 80% of New Zealand secondary school students visit a healthcare provider at least once a year.[55] This regular attendance gives health practitioners the chance to screen for mental health and substance use disorders during visits for physical complaints and recognise problems that might otherwise go undetected.[56] Whether such screening improves the detection, management or outcomes of mental disorders in young people is uncertain.[56,57] Research is currently in progress in New Zealand exploring the utility, feasibility, and acceptability of YouthCHAT, an electronic, multi-item screening tool developed in 2016 to assess mental health and risk behaviour concerns among youth.[58]

In New Zealand, the Ministry of Health has allocated DHBs funds to provide primary mental health services for youth (YPMHS) with the expectation that such services will deal with young people aged 12–19 years with high prevalence mental health conditions, such as mild-to-moderate anxiety, depression, alcohol and drug problems, and coexisting problems with medically unexplained symptoms.[59] The DHBs have taken a variety of approaches to providing YPMHSs, including expanding the age range of existing primary mental health services, adapting existing primary mental health services for youth, expanding existing NGO or community-based services, and developing new services, for example psychologists in schools or NGO youth services, and funding youth specific services such as youth one-stop shops.[59]

A 2013 review[60] found that patients greatly prefer psychological treatment to medication, and the review authors concluded that, since psychological treatment has similar efficacy to medication for anxiety and depression, health services should increase access to evidence-based psychological treatment. The psychological therapy with the highest evidence of effectiveness is CBT.[61] For the common mental disorders anxiety and depression, cognitive and behavioural interventions have enduring effects that reduce risk of symptoms returning following treatment termination.[62]

There is evidence that medication is effective for youth with moderate-to severe anxiety and depression, but it should be used in conjunction with psychological therapy.[63]

Co-occurring substance use is common among young people with mental health disorders, and young people with mental health issues and substance use have worse outcomes than those with mental health issues alone.[64,65] There is a consensus that integrated treatment that treats both substance use and mental illness concurrently is superior to separate treatment plans for the individual disorders,[64,66,67] and there is emerging evidence from a few controlled trials of combined pharmacotherapy and behavioural interventions conducted in adolescents with substance use disorders together with other mental health disorders (major depressive disorder and ADHD).[64]

What makes a service youth-friendly?

Youth mental health services need to be acceptable to young people to increase young people’s engagement with services. A 2019 literature review entitled *What makes mental health and substance use services youth friendly?*[68] identified 28 relevant studies and classified features of youth-friendly mental health services (YFMHS) under four headings: organization and policy characteristics, environment characteristics, service provider characteristics, and treatment/service characteristics. A core value across all four categories was the youth voice. The review authors stated that youth should be involved in planning, implementation and delivery of services. They should also be involved in designing the environment, be engaged as staff members, and their feedback should be incorporated in services.

Youth mental health services should be integrated with other services including physical health services, and vocational and social services.[68] They should be confidential, inclusive and non-stigmatising and promoted via technological platforms.[68] They should provide services for young people up to the age of 25 because the onset of most of the adult forms of mental illness occurs within discrete time band from the early teens to the mid-twenties, peaking in the early twenties, and late adolescence is therefore a particularly bad time to have to transition between child and adolescent mental health services and adult mental health services.[15,69]

Youth mental health services should have colourful and appealing décor and provide information materials.[68] They should be welcoming, use informal communication styles, and use a variety of ways to establish rapport with youth.[68] They need to be accessible, affordable, have flexible hours, and offer individualised and innovative treatment options.[68]

Early intervention in psychosis

Young people with emerging, potentially severe or complex mental disorders, especially psychoses, mood, personality and substance use disorders need specialist mental health services which should ideally provide integrated mental health, substance use, and vocational recovery services.[70]

The emergence of a first episode of psychosis, with symptoms such as delusions (fixed false beliefs), hallucinations and disorganised speech or behaviour, is often preceded by a stage in which a young person becomes more socially withdrawn, performs worse at school or at work, and becomes more distressed or agitated.[71] Family members and primary healthcare providers need to be aware of the significance of these signs because early identification and treatment is likely to reduce the burden of disease. Early treatment of psychosis is important not only to reduce immediate distress but also to potentially improve long-term outcomes and reduce the prevalence of psychotic disorders.[71,72] Although there is currently a lack of high quality evidence that interventions in the prodromal stage of psychosis prevent transition to psychosis, this is because most intervention trials in this field have been quite small (fewer than 50 participants is each trial arm) and suffered from various methodological shortcomings, and selective reporting.[73]

Drug treatments should be used with care, wherever possible using the minimum effective dose of atypical or second-generation antipsychotics. Psychosocial interventions should be an integral part of care to reduce or ameliorate the secondary consequences of psychosis, such as disengagement with education or work, strained relationships with family and friends, substance use, and suicide.[71]

Lifestyle advice for young people with mental health problems

Young people with mental health problems should be encouraged to pursue healthy lifestyles. Exercise can reduce symptoms of depression[74] and can reduce psychiatric symptoms and improve cognition in people with schizophrenia.[75] Observational studies suggest that fruit, vegetables, fish, and whole grains may be associated with a reduced depression risk, although there is a lack of high quality evidence that dietary interventions reduce depressive symptoms in people who are already depressed.[76,77]

Avoiding alcohol abuse is sensible because having alcohol problems as well as depression is associated with worse depression-related outcomes with respect to recovery from depression, suicide/death risk, social functioning and healthcare utilization.[78] (This evidence comes largely from studies of psychiatric inpatients with severe alcohol problems.[78]) Giving people with anxiety and/or depression alternative coping strategies may reduce the risk of them developing a substance use disorder as a result of using alcohol and/or drugs to self-medicate.[79]

Young people who have had an episode of psychosis should be supported to stop using cannabis because continuing predicts worse outcomes, including greater relapse rates, longer hospital admissions, and more severe positive symptoms.[80]

Equity

Mental wellbeing and common mental disorders are both shaped to a great extent by people's social, economic and environmental circumstances and this is reflected in disparities between different population groups in many different indicators of mental health, both in New Zealand and internationally.[81,82]

A 2018 report commissioned for the Mental Health and Addiction Inquiry[83] collated previously unpublished information (from the Integrated Data Infrastructure (IDI), managed by Statistics New Zealand) on the mental health and mental health service use of the groups of particular interest to the Inquiry, focussing on comparisons between groups. The report found the same patterns of service use in all the measures used: primary and secondary mental healthcare, alcohol and drug hospitalisations, and self-harm.

Key points from this report were:

- Young people aged 13–24 had slightly higher rates of outpatient secondary, but not primary, service use (and slightly lower rate of inpatient service use) compared to 25–64 year olds
- Young people aged 13–24 had higher rates of hospitalisation for self-harm
- Across all measures, rates of service use increased with increasing NZDep quintile
- Females had higher rates of self-harm, ED visits and GP mental health visits (especially primary care psychologist sessions) than males, but lower rates on all other measures of service use
- Māori had higher rates of service use across all measures
- Pacific people had rates of service use that were similar to those of non-Pacific people
- Asian people had lower rates of service use across all measures
- People living with a same-sex partner had higher rates of service use across most measures
- Older people aged 65+, refugees, and people living in rural areas had lower rates of service use
- Recently released prisoners had substantially higher rates of service use across all measures.

Data from the New Zealand Health Survey 2015/16, which asked respondents to answer ten questions about common symptoms of anxiety and depression experienced over the last four weeks indicated a clear pattern of increasing distress with increasing deprivation, but there was no clear pattern by deprivation in the percentage of the population who were dispensed mental health pharmaceuticals as levels were similar across all deprivation levels. The report's authors suggested that these findings could possibly indicate that there is over-treatment in the least deprived deciles and under treatment in the most, and that factors such as access, cost and cultural acceptability of medication might be involved.[83] At all levels of distress, Māori and Pacific people used less medication.[83]

The report's authors stated that to examine unmet need more thoroughly they would need more reliable estimates of the prevalence of mental distress and mental disorder and that lack of up-to-date prevalence estimates is one of the largest gaps in New Zealand's mental health data.[83]

Reducing disparities in mental health requires action on the social determinants of health across multiple sectors: health, education, justice, employment, welfare, transport, and housing.[81]

It has long been argued that Te Tiriti o Waitangi obliges the Crown to protect Māori health, involve Māori in the design and delivery of health services, and ensure that Māori have the same level of health as everyone else.[84-86] The recent Health Services and Outcomes Kaupapa Inquiry found that the Crown's failure to adequately resource Māori primary health organisations, and to govern the primary health care system in a way that properly supports them to design and deliver primary health care to their communities, is a serious breach of Te Tiriti.[86]

The recent report of the Government Inquiry into Mental Health and Addiction[87] highlighted that current services dealing with mental health and addiction among Māori had been hampered by stigmatisation, an over-reliance on medication, overt racism and a lack of understanding of Māori world views and notions of wellbeing.

A 2016 literature review undertaken for the Te Whānau o Waipareira Trust[88] found that there is a large body of knowledge on the differences between Māori and Western perspectives on wellbeing, and how this affects the care of Māori with mental illness, but much less on the exact principles behind kaupapa Māori services and their efficacy in improving Māori mental health. The review identified several mental health service initiatives that employ kaupapa Māori psychological therapies, including the Wairua Tangata Programme in Hawke's Bay; [89] He Kākano, a specialist mental health team within CAMHS in South Auckland;[90] SPARX, a culturally relevant computerised cognitive behavioural therapy programme;[91] and a Māori adaptation of an existing cognitive behavioural therapy-based guided self-management intervention for near-threshold mental health syndromes in primary care.[92]

The review found that although there are few examples of critical appraisal of kaupapa Māori services in the literature, it was possible to identify some common success factors: adapting traditional practices to better reflect Māori values, involving elders in care planning, broadening therapy to include traditional healers or rongoā, ensuring easy access and low service costs, and supporting holistic wellbeing.[88]

Guidelines, evidence-based reviews, New Zealand publications, and other relevant publications and websites

New Zealand publications and websites

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6. Substance use

This section on substance use pertains to indicators regarding alcohol, tobacco and electronic cigarette (e-cigarette), cannabis, and amphetamine use in young people.

While drinking any alcohol can be potentially harmful, both patterns of drinking and the total volume consumed indicate more harmful alcohol use.[1] These patterns can lead to serious health and personal problems that have flow-on effects on other people.[1] Alcohol use while operating machinery, driving, or using other drugs or medicines is risky and can result in major harm.[2] Alcohol intake guidelines encourage low-risk drinking in the general population where it occurs at all, while they also recommend that children and young people under-18 years and people who are pregnant (or planning to get pregnant) not drink any alcohol.[1]

Smoking harms individuals and can cause diseases and illnesses and also puts people who do not smoke at risk through exposure to second-hand smoke.[3] The Ministry of Health has set an aspirational goal for reducing tobacco use in the Smokefree Aotearoa 2025 strategy, that is: reduce the prevalence of daily smoking to 10%.[4]

This section presents information on the prevalence of substance use as collected by the New Zealand Health Survey (NZ Health Survey), presents information on alcohol-related hospitalisations using data from the National Minimum Dataset (NMDS), and information on the use of alcohol and drug services from the Programme for the Integration of Mental Health Data (PRIMHD).

Data sources and methods

Indicators

Consumption of one or more drinks containing alcohol in past year in young people
Heavy episodic drinking in young people
Tobacco use (current smoking and ex-smoking) in young people
Tobacco smoking behaviours (smoking frequency in current smokers and heavy daily smoking) in young people
Electronic cigarette (e-cigarette) smoking in young people
Cannabis use in young people
Amphetamine use in young people

Numerator(s):	Sum of the weights for the respondents in the group
Denominator:	Sum of the weights for all respondents/population group

Definitions

Young people are 15–24 years old.
Heavy episodic drinking is the consumption of 6+ drinks on one occasion at specified intervals (e.g. monthly, weekly or daily).
Current smoking is smoking at least monthly, and as having smoked more than 100 cigarettes in their lifetime. The 100-cigarette threshold limits the indicator to people with established tobacco use. *Ex-smoking* is having smoked more than 100 cigarettes in a lifetime and as having stopped smoking more than one month ago.
Heavy daily smoking is defined as where respondents aged 15+ years of age both "daily smokers" and smoke at least 21 cigarettes every day.
Cannabis and *amphetamine use* in young people is where those substances were used for recreational or non–medical purposes (e.g. to get high), in the last 12 months.

Data source:

NZ Health Survey (2006–2017 or latest available) as published by the Ministry of Health

Additional information

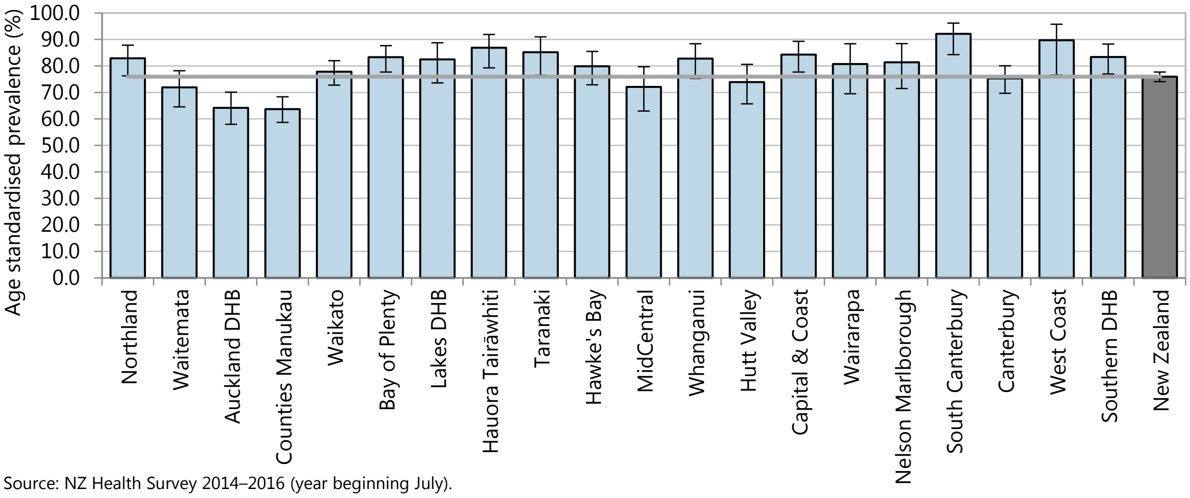
Demographic information for 15–24 year olds was not available at the time of analysis. Prevalence rates for pooled years were calculated using NZ Health Surveys: 2014, 2015, and 2016.
Note that, in the case of cannabis and amphetamine use indicators, item non-response was adjusted for in the calculation of the weights.
Survey years (beginning July) are referred to by the year of data collection beginning (for example, Survey 2017/18 will be referred to as Survey 2017). For more information on the NZ Health Survey, please refer either to the Ministry of Health website (https://www.health.govt.nz) or to appendices in this report.

Alcohol use

Figure 6-1 presents the percentage of young people who consumed at least one drink containing alcohol in the past year by DHB, as recorded in NZ Health Surveys 2014–2016.

When compared with the national percentage, a significantly higher percentage of young people had an alcoholic drink in the past year in Southern DHB.

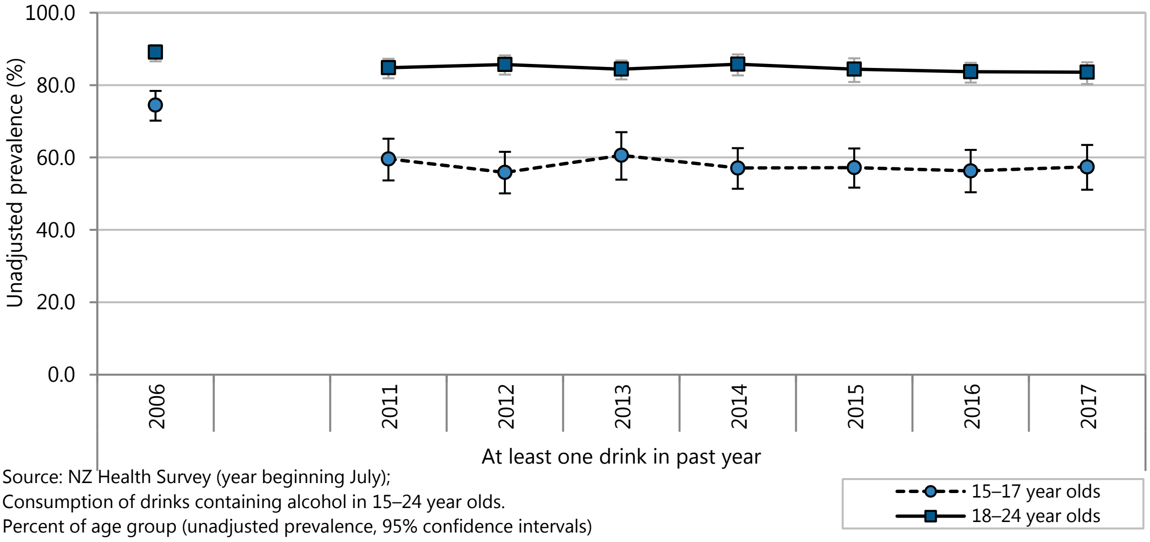
Figure 6-1. Alcohol use in young people, by district health board, NZ Health Survey 2014–2016



Source: NZ Health Survey 2014–2016 (year beginning July).
Young people (15–24 year olds) who consumed at least one drink containing alcohol in the past year.
Percent of age group (Age standardised prevalence, 95% confidence intervals)

The percentage of young people who consumed at least one drink containing alcohol in the past year is presented in Figure 6-2 for each NZ Health Survey. Around 57% of young people under-18 years old had consumed alcohol in the past year, which was significantly lower than the rate in 2006 when three quarters of under-18 year olds had consumed alcohol in the past year. The percentage of 18–24 years who consumed alcohol in the past year was consistently higher than the rate of their younger peers at around 84-86% since 2011.

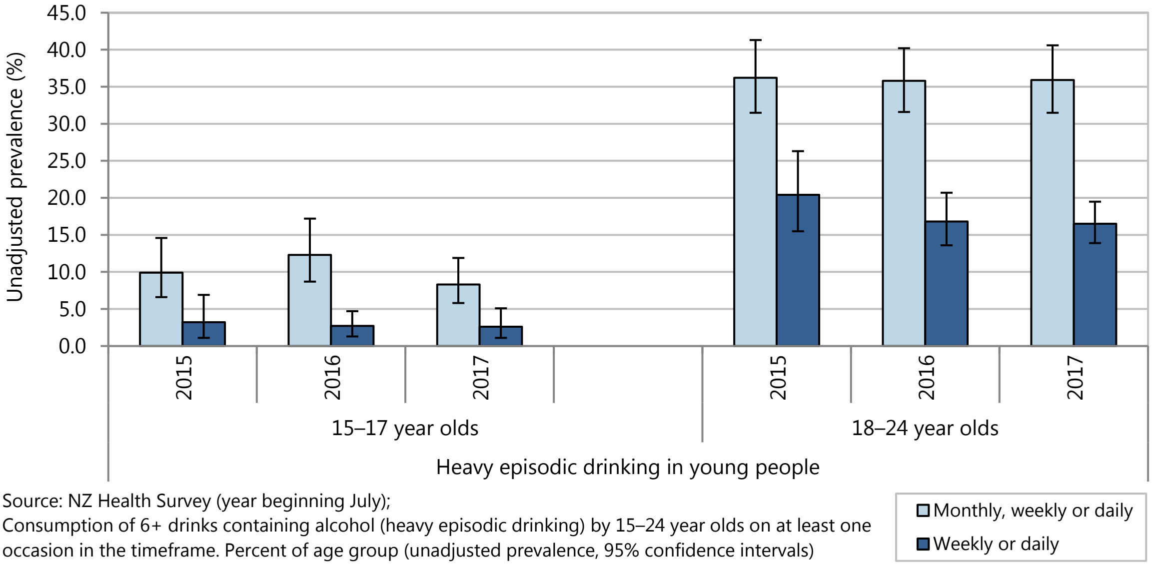
Figure 6-2. Alcohol use in young people, by survey year, New Zealand, NZ Health Survey 2006–2017



Source: NZ Health Survey (year beginning July);
Consumption of drinks containing alcohol in 15–24 year olds.
Percent of age group (unadjusted prevalence, 95% confidence intervals)

The prevalence of young people who engaged in heavy episodic drinking is shown in Figure 6-3 by age group. In 2017, 8% of young people under-18 years old engaged in heavy episodic drinking on at least one occasion in the past month, and just under half of those people did so at a frequency of weekly or daily. The percentage of 18–24 years who engaged in heavy episodic drinking at least monthly has been stable over time at 36%. However, those who did so at a frequency of least weekly has been decreasing since 2015.

Figure 6-3. Heavy episodic drinking in young people, by survey year, New Zealand, NZ Health Survey 2015–2017

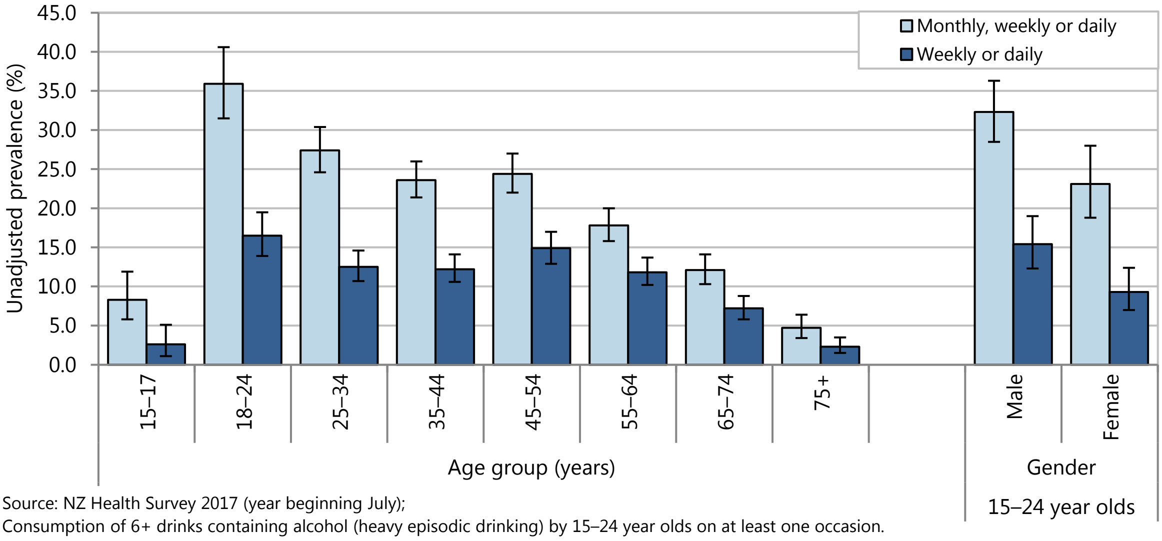


Source: NZ Health Survey (year beginning July);
Consumption of 6+ drinks containing alcohol (heavy episodic drinking) by 15–24 year olds on at least one occasion in the timeframe. Percent of age group (unadjusted prevalence, 95% confidence intervals)

Figure 6-4 presents heavy episodic drinking behaviours in young people in comparison to other age groups for 2017 and also presents a breakdown for young people by gender. The percentage who engage in heavy drinking at least monthly is higher in18–24 year olds than in older age groups. The percentage of 18–24 year olds who drink heavily more frequently (daily or weekly) is similar to the percentage of 45–54 year olds who do so, but higher than the percentages in other age groups. The percentage of 15–17 year olds who drank heavily at least weekly was similar to the percentage of people aged 75 and over, and much lower than the percentages n other age groups.

Young women had percentage half those of their male peers for both frequency categories of heavy episodic drinking (Figure 6-4).

Figure 6-4. Heavy episodic drinking, by age group or by demographic factor, New Zealand, NZ Health Survey 2017



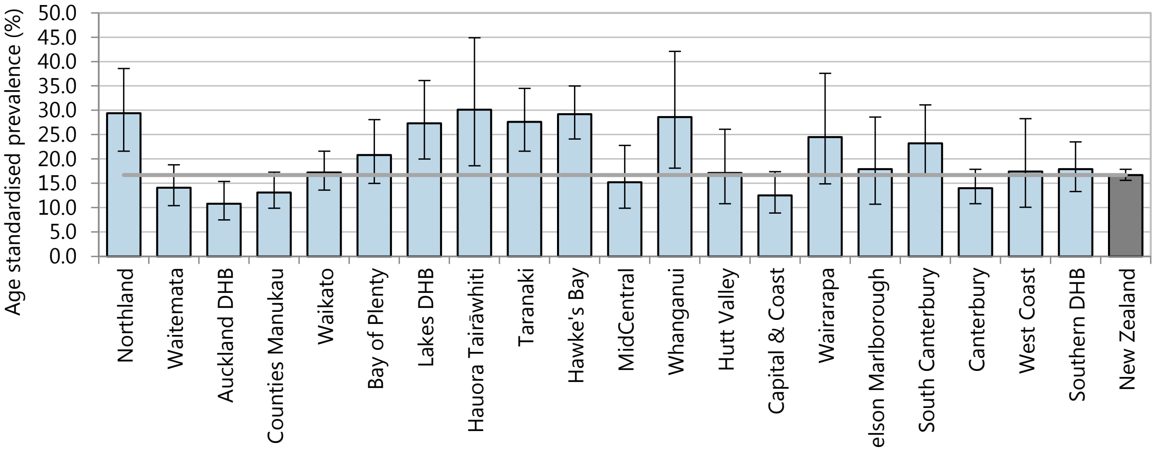
Source: NZ Health Survey 2017 (year beginning July);
Consumption of 6+ drinks containing alcohol (heavy episodic drinking) by 15–24 year olds on at least one occasion.
Percent of age group (unadjusted prevalence, 95% confidence intervals)

Tobacco and e-cigarette use

Figure 6-5 presents the percentage of young people 15–24 years old in each DHB who met the definition of being current smokers in the NZ Health Survey.

The percentage of young people who smoked tobacco in Southern DHB was not significantly different from the national percentage.

Figure 6-5. Smoking status in young people, by district health board, NZ Health Survey 2014–2016



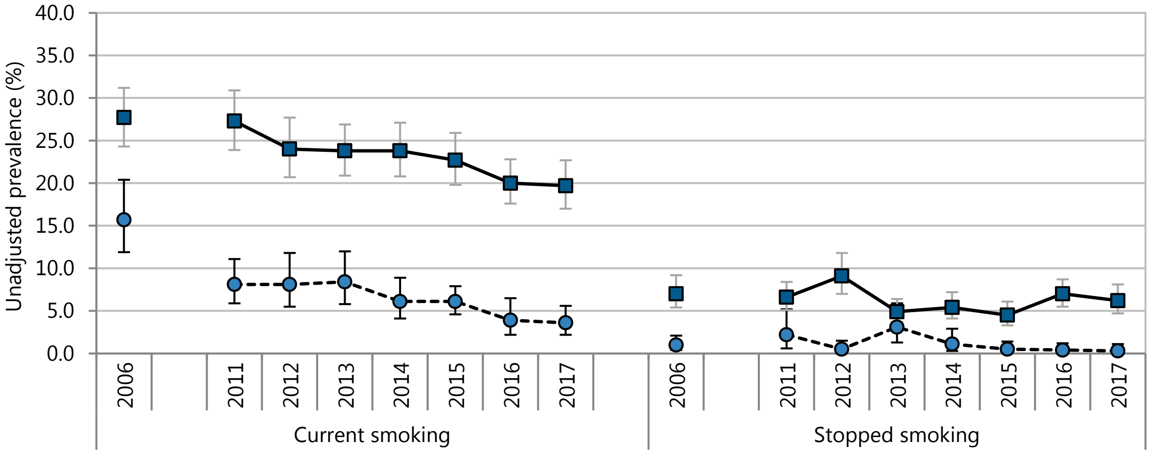
Source: NZ Health Survey 2014–2016 (year beginning July).
Current tobacco cigarette smoking in 15–24 year olds.
Percent of age group (Age standardised prevalence, 95% confidence intervals)

The percentage of young people who were current smokers is presented in Figure 6-6 by survey year and by age group. Smoking rates for both 15–17 and 18–24 year olds have been decreasing since 2006. The prevalence of smoking in 18–24 year olds has been consistently higher than in 15–17 year olds, and was around 20% in 2016 and 2017.

The percentage of 18–24 year olds who stopped smoking has increased in more recent years when compared to 2015. The rate of smoking cessation in 15–17 year olds has been nearly since 2015.

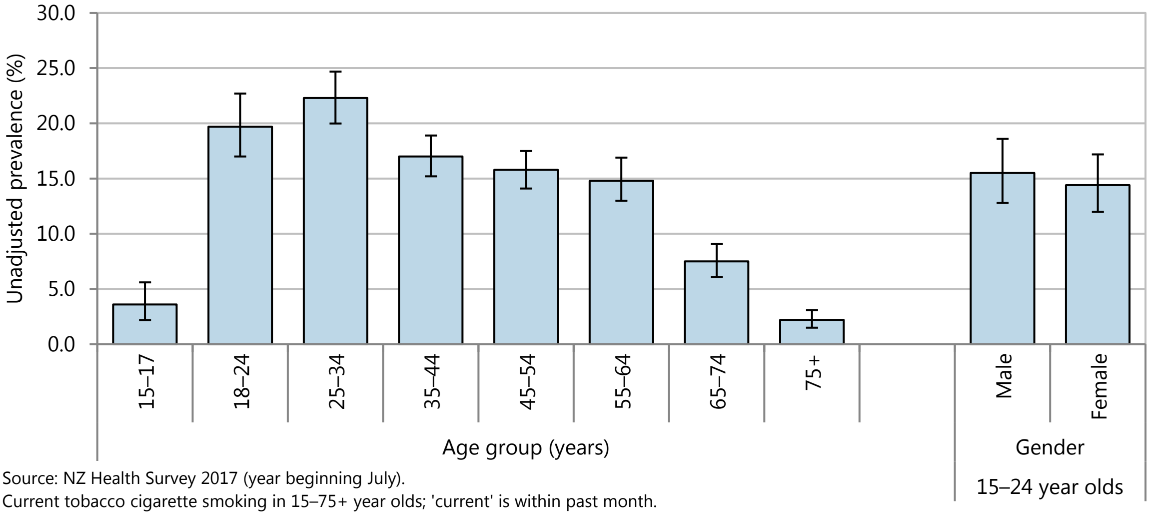
Figure 6-7 presents, in the context of other age groups, the percentage of young people in 2017 who smoked and presents a breakdown for young people by gender. When compared with peers between 25–34 years of age, 18–24 year olds had a lower percent of people who smoked. When compared to age groups 35 years and over, 18–24 year olds had a higher percent of people who smoked. Percentages in 15–24 year olds by gender were similar.

Figure 6-6. Smoking status in young people, by survey year, New Zealand, NZ Health Survey 2006–2017



Source: NZ Health Survey(year beginning July);
Percent of age group (unadjusted prevalence, 95% confidence intervals)

Figure 6-7. Smoking behaviours, by age group or by demographic factor, New Zealand, NZ Health Survey 2017



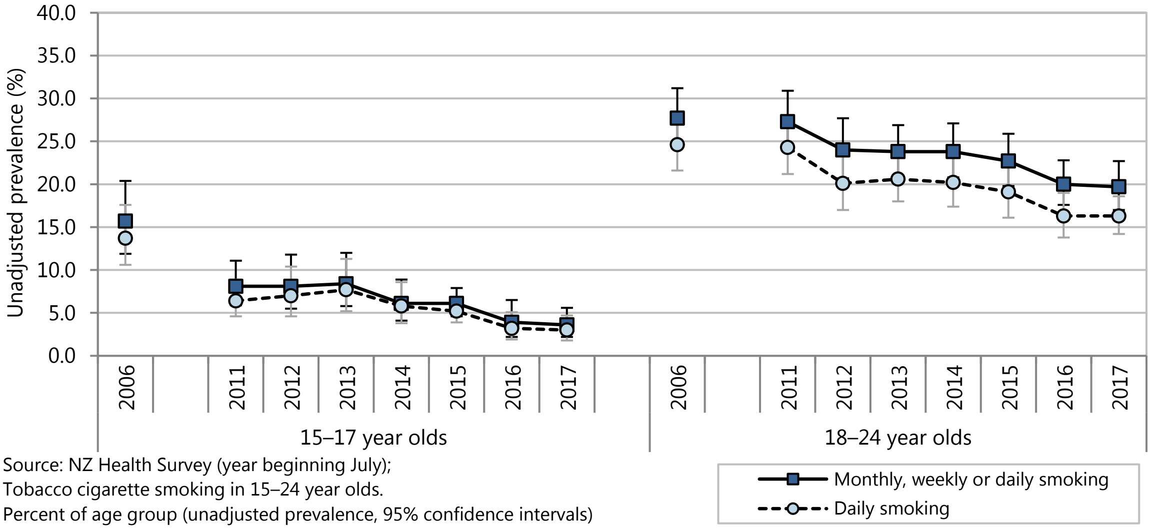
Source: NZ Health Survey 2017 (year beginning July).
Current tobacco cigarette smoking in 15–75+ year olds; 'current' is within past month.
Percent of age group (unadjusted prevalence, 95% confidence intervals)

The smoking behaviours of young people are shown in more detail Figure 6-8 according to frequency of smoking by survey year. Of the 15–17 year olds who smoked at least monthly, nearly all smoked at a frequency of daily, which was at 3% in 2017. Compared to their younger peers, a larger gap is seen between those 18–24 year olds who smoked at a frequency of least monthly and those who smoked daily. Both the percentages for smoking at least monthly and smoking daily have been decreasing since 2006.

Daily smoking percentages in 15–17 year olds met the Smokefree Aotearoa 2025 goal of reducing daily smoking to 10%, while percentages in 18–24 year olds were 6% higher than the goal in 2016–2017.

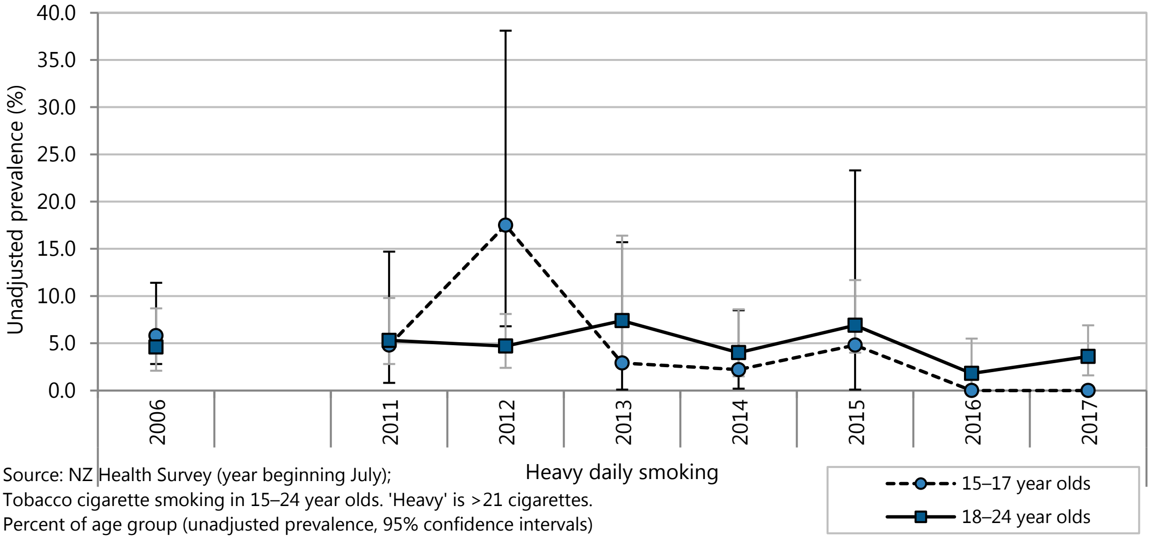
In 2017, 4% of 18–24 year olds smoked heavily (more than 21 cigarettes per day) which is similar to rates seen in other years since 2006 (Figure 6-9).

Figure 6-8. Smoking behaviours in young people, by survey year, New Zealand, NZ Health Survey 2006–2017



Source: NZ Health Survey (year beginning July);
Tobacco cigarette smoking in 15–24 year olds.
Percent of age group (unadjusted prevalence, 95% confidence intervals)

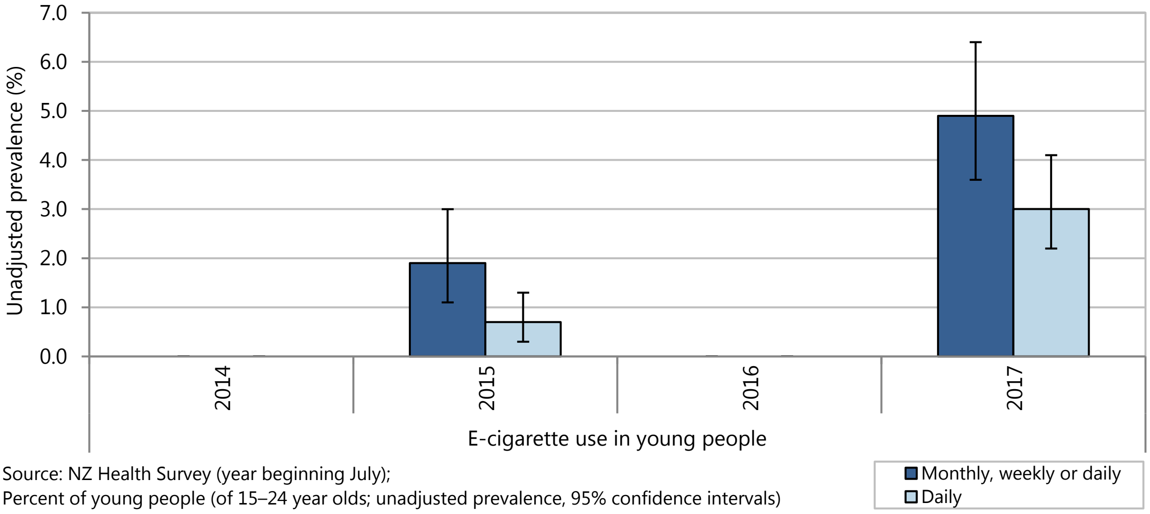
Figure 6-9. Heavy smoking in young people, by survey year, New Zealand, NZ Health Surveys 2006–2017



Source: NZ Health Survey (year beginning July);
Tobacco cigarette smoking in 15–24 year olds. 'Heavy' is >21 cigarettes.
Percent of age group (unadjusted prevalence, 95% confidence intervals)

Information on e-cigarette use has been available from NZ Health Surveys since 2014. Figure 6-10 shows e-cigarette use in young people at both frequencies of at least monthly and daily have increased significantly from 2015 to 2017

Figure 6-10. E-cigarette use in young people, by survey year, New Zealand, NZ Health Surveys 2006–2017



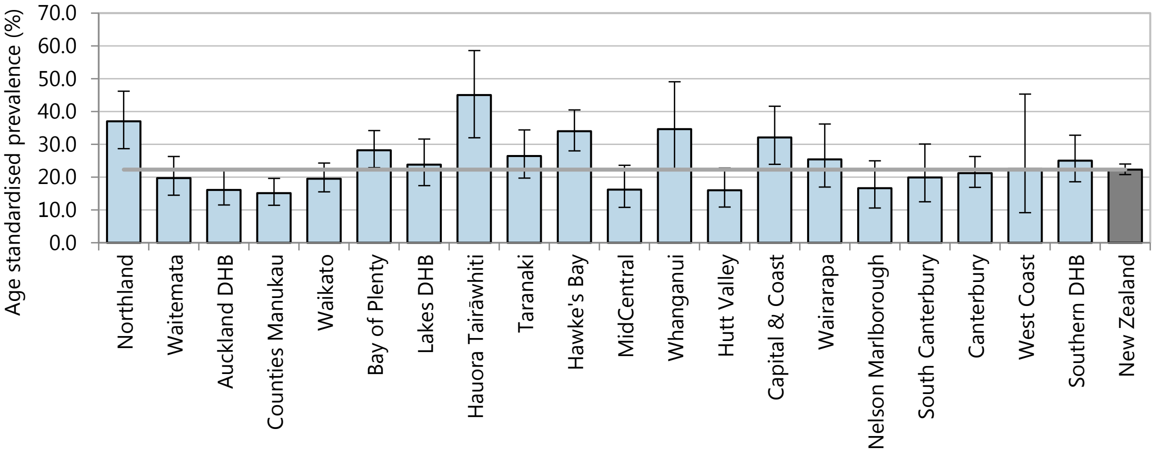
Source: NZ Health Survey (year beginning July);
Percent of young people (of 15–24 year olds; unadjusted prevalence, 95% confidence intervals)

Cannabis and amphetamine use

Figure 6-11 presents the percentage of young people (15–24 years old) who reported using cannabis for recreational purposes by DHB during 2014–2016.

The percentage of young people who reported using cannabis recreationally in Southern DHB was not significantly different from the national percentage.

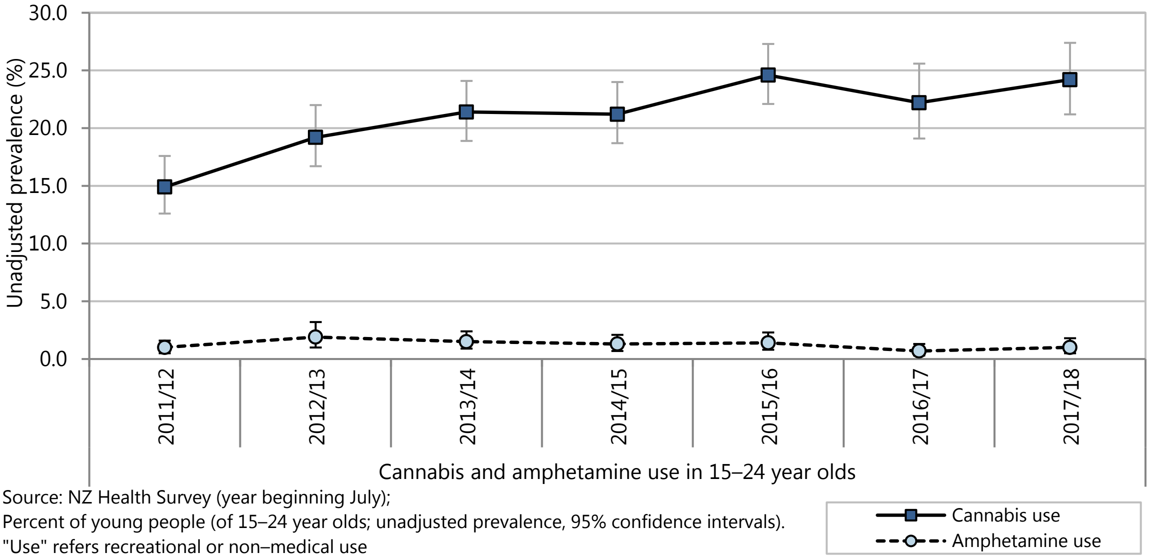
Figure 6-11. Cannabis use in young people, by district health board, NZ Health Survey 2014–2016



Source: NZ Health Survey 2014–2016 (year beginning July). Cannabis use in young people.
Percent of young people (of 15–24 year olds; Age standardised prevalence, 95% confidence intervals).
"Use" refers recreational or non–medical use

Figure 6-12 presents the trends in the proportions of young people (15–24 year olds) who reported using cannabis and using amphetamines for recreational purposes in over the past year, in the NZ Health Surveys 2011–2017. The percentage of young people who used cannabis recreationally has increased overall since 2011 from 15% to 24%. The percentage of people who used amphetamines has remained relatively stable since 2011 at around 1%.

Figure 6-12. Cannabis and amphetamine use in 15–24 year olds, by survey year, New Zealand, NZ Health Survey 2006–2017



Source: NZ Health Survey (year beginning July);
Percent of young people (of 15–24 year olds; unadjusted prevalence, 95% confidence intervals).
"Use" refers recreational or non–medical use

Alcohol-related hospitalisations

Data sources and methods

Indicators

Alcohol-related hospitalisations in 15–24 year olds
Hospitalisations for 15–24 year olds with ICD-9-CM or ICD-10-AM alcohol-related diagnosis in any of their first 15 diagnostic codes or first 10 external cause codes (excluding cases where there was an Emergency Medicine Specialty code on discharge).

Data source

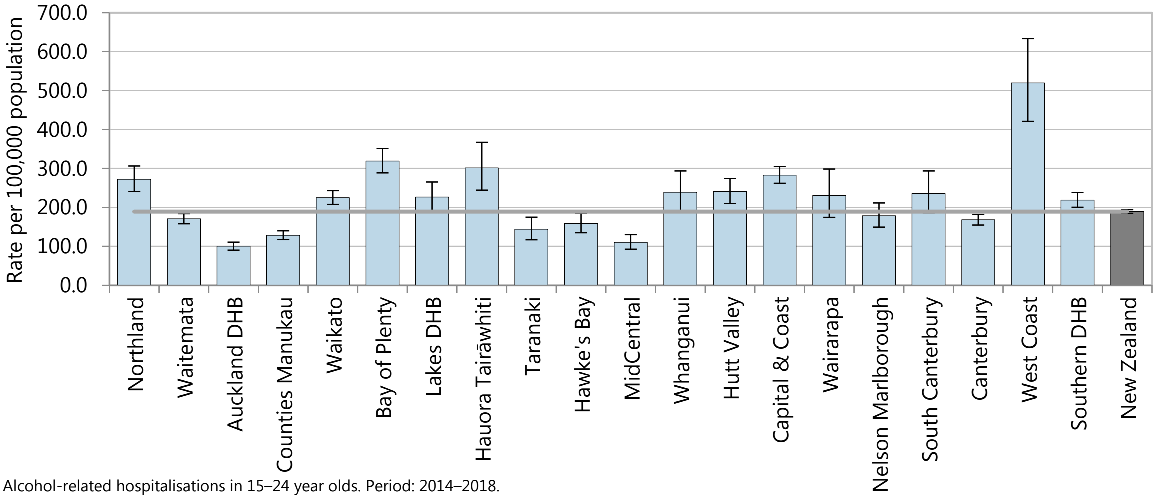
Numerator(s):	National Minimum Dataset (NMDS)
Denominator:	NZCYES Estimated Resident Population

Additional information

As outlined in the appendices, in order to ensure comparability over time, all cases with an emergency department specialty code on discharge were excluded.
It is likely that there is a significant undercount of alcohol-related hospitalisations, as identification relies on alcohol being listed as a contributory cause at the time of discharge, as well as coders assigning alcohol-related diagnoses and external cause codes in cases where alcohol contributed to but was not the sole reason for admission.
An overview of these datasets, and outline of their data limitations, are provided in the appendices for review before interpreting any patterns

Alcohol-related hospitalisation rates by District Health Board for the period 2014–2018 are presented (DHB) in Figure 6-13.

Figure 6-13. Alcohol-related hospitalisations in 15–24 year olds, by district health board, 2014–2018



Alcohol-related hospitalisations in 15–24 year olds. Period: 2014–2018.
Numerator: NMDS (ED cases excluded),
Denominator: NZCYES Estimated Resident Population.

In the five years from 2014–2018 there were 6,037 alcohol-related hospitalisations of 15–24 year olds (Table 6-1). Acute intoxication was the most common of the individual primary alcohol-related diagnoses.

In the injuries and poisonings diagnostic group, the most common injuries were to upper limbs (one in five) or traumatic brain injuries (one in ten) while the most common poisonings were by 4-aminophenol derivatives such as paracetamol (one in ten), or by antidepressants. ‘Other poisoning’ was also common and mostly comprised of poisoning by other drugs (many of which were antipsychotics, neuroleptics, antiepileptics, sedative-hypnotics, or opioids).

Of the primary diagnoses that were mental and behavioural, mood disorders (including depression and bipolar disorder) were one of the most common, followed by schizophrenia. The majority of 'other' mental and behavioural disorders were schizotypal and delusional disorders.

Acute pancreatitis and gastritis were leading primary diagnoses in the other conditions and primary diagnoses group.

Table 6-1. Alcohol-related hospitalisations in 15–24 year olds, by listed primary diagnosis, New Zealand 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
Young people aged 15–24 years old				
Alcohol-related hospital admissions, 2014–2018				
New Zealand				
Total alcohol-related hospitalisations	6,037	1,207	189.51	100.0
Injury and poisoning				
Traumatic brain injuries	325	65	10.20	11.2
Fracture skull or facial bones	143	29	4.49	4.9
Superficial head injury	39	8	1.22	1.3
Other head injuries	168	34	5.27	5.8
Injuries to thorax (including rib fractures)	78	16	2.45	2.7
Injuries to abdomen, lower back, and pelvis	139	28	4.36	4.8
Injuries to upper limb	613	123	19.24	21.2
Fractured femur	27	5	0.85	0.9
Injuries to lower limbs, other	272	54	8.54	9.4
Other injuries	117	23	3.67	4.0
Toxic effect of alcohol	83	17	2.61	2.9
Poisoning: 4-aminophenol derivatives	295	59	9.26	10.2
Poisoning: antidepressants	188	38	5.90	6.5
Poisoning: benzodiazepines	45	9	1.41	1.6
Other poisoning	364	73	11.43	12.6
Total injury and poisoning	2,896	579	90.91	100.0
Mental and behavioural disorders				
Acute intoxication due to use of alcohol	627	125	19.68	27.3
Other mental and behavioural disorders due to use of alcohol	244	49	7.66	10.6
Depression, bipolar, and other mood disorders	364	73	11.43	15.9
Schizophrenia	287	57	9.01	12.5
Borderline personality disorder	138	28	4.33	6.0
Due to use of cannabinoids	98	20	3.08	4.3
Adjustment disorders	80	16	2.51	3.5
Due to use of other stimulants	62	12	1.95	2.7
Post-traumatic stress disorder (PTSD)	46	9	1.44	2.0
Other mental and behavioural disorders	347	69	10.89	15.1
Total mental and behavioural disorders	2,293	459	71.98	100.0
Other conditions and primary diagnoses				
Acute pancreatitis	146	29	4.58	17.2
Gastritis	146	29	4.58	17.2
Type 1 diabetes mellitus with acidosis	62	12	1.95	7.3
Convulsions, not otherwise specified	47	9	1.48	5.5
Suicidal ideation	41	8	1.29	4.8
Epilepsy	32	6	1.00	3.8
All other primary diagnoses	374	75	11.74	44.1
Total other conditions and primary diagnoses	848	170	26.62	100.0

Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population. *Includes withdrawal state and withdrawal state with delirium

Table 6-2 presents alcohol-related hospitalisations in 15–24 year olds by the listed external cause. Intentional self-harm was the most common of all individual primary external causes of hospitalisation, of which a small proportion were poisoning by alcohol. Injury by falls, inanimate mechanical forces, assault and driving cars were other common causes of alcohol-related hospitalisation.

Table 6-2. Alcohol-related hospitalisations in 15–24 year olds, by listed external cause, New Zealand 2014–2018

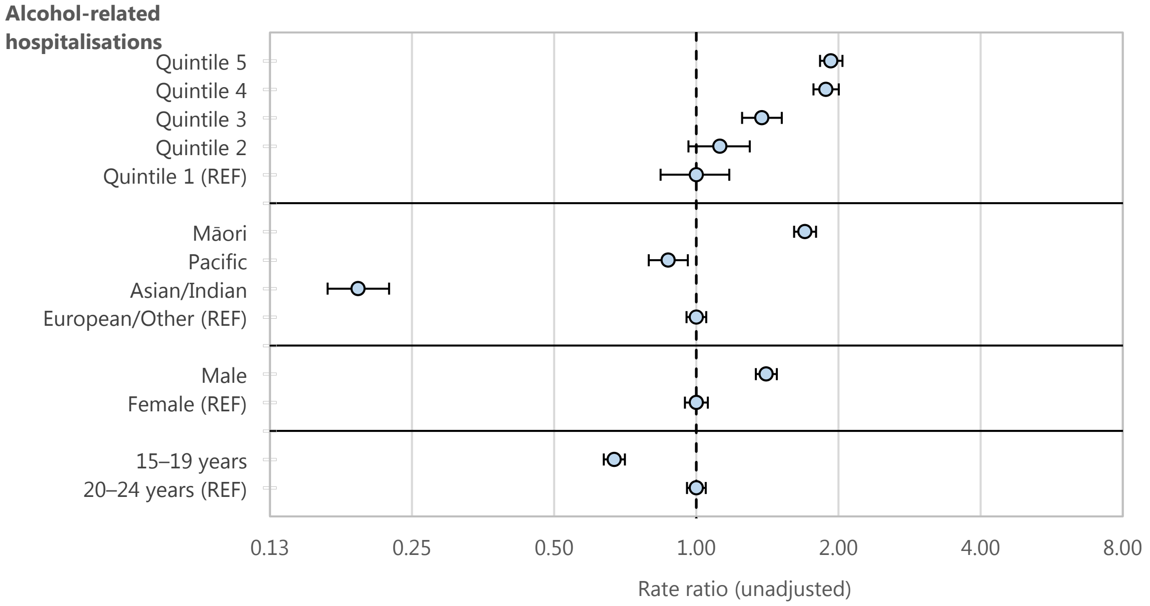
Primary external cause	Number	Annual average	Rate per 100,000 population	%
Young people aged 15–24 years old				
Alcohol-related hospitalisations, 2014–2018				
New Zealand				
Total alcohol-related hospitalisations*	6,037	1,207	189.51	100.0
Hospitalisations by listed primary external cause				
Intentional self-harm	1,056	211	33.15	17.5
Poisoning: alcohol, intentional	72	14	2.26	1.2
Falls	463	93	14.53	7.7
Mechanical forces: inanimate	377	75	11.83	6.2
Assault	377	75	11.83	6.2
Transport: car occupant, driver	222	44	6.97	3.7
Transport: car occupant, passenger	117	23	3.67	1.9
Transport: pedestrian	57	11	1.79	0.9
Events of undetermined intent†	56	11	1.76	0.9
Poisoning	55	11	1.73	0.9
Mechanical forces: animate	40	8	1.26	0.7
Transport: other accidents	29	6	0.91	0.5
Transport: motorcyclist	29	6	0.91	0.5
Poisoning: alcohol, accidental	26	5	0.82	0.4
Transport: pedal cyclist	23	5	0.72	0.4
Transport: other car occupant	22	4	0.69	0.4
Thermal injury	18	4	0.57	0.3
Poisoning: alcohol, undetermined intent	13	3	0.41	0.2
Other external cause listed	578	116	18.14	9.6
No external cause listed	2,407	481	75.56	39.9

Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population. *Includes non-injury admissions. †Includes events involving poisoning, firearms, hot vapours or objects, and blunt or sharp objects

Figure 6-14 presents for 15–24 year olds alcohol-related hospitalisations by demographic factor. The unadjusted rate ratio presents the gap, if any, between the groups and the reference group. The following associations were observed, bearing in mind that this univariate (unadjusted) analysis does not quantify the independent effect of each factor.

- Hospitalisation rates were nearly twice as high for young people who lived in areas with the highest NZDep2013 scores (quintiles 4 and 5) compared with young people living in areas with the lowest score (quintile 1).
- The hospitalisation rate for Asian/Indian young people was much lower than those young people belonging to any of the other ethnic groups. Compared to hospitalisation rates for European/Other young people, rates for Pacific young people were significantly lower while rates for Māori young people were significantly higher.
- Rates for young men were higher than those for young women.
- Rates were significantly lower for young people aged 15–19 years than for those aged 20–24 years.

Figure 6-14. Alcohol-related hospitalisations in 15–24 year olds, by demographic factors, New Zealand 2014–2018



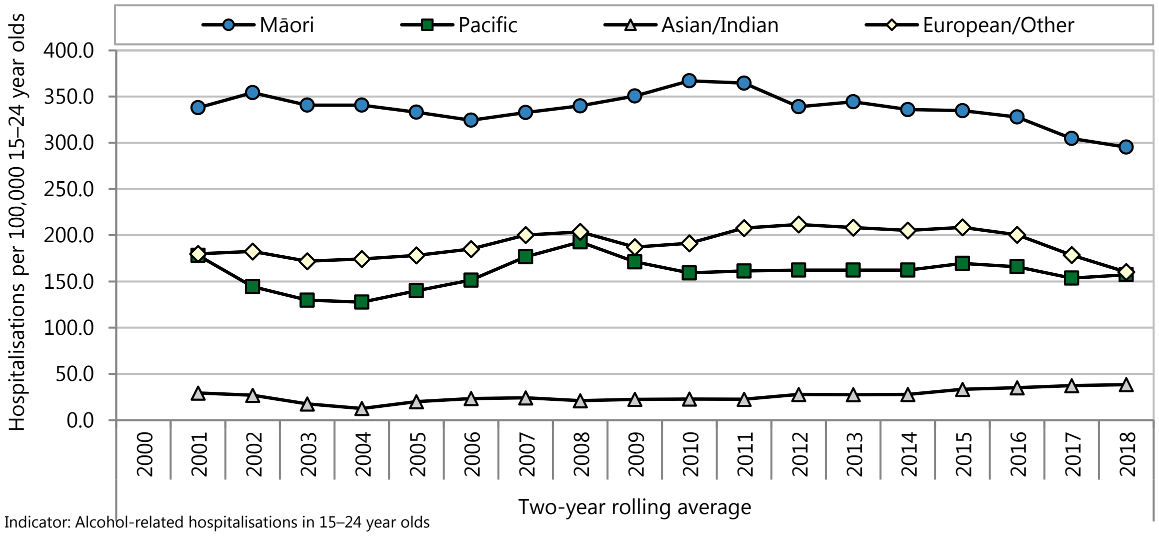
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population. Period: 2014–2018.
15–24 year olds. Rate ratios are unadjusted, REF: reference group, Ethnicity: level 1 prioritised,
Quintile: NZDep2013 (1 = least deprived)

Two-year rolling averages for alcohol-related hospitalisations in 15–24 year olds are presented in Figure 6-15 by year and by ethnicity and in Figure 6-16 by NZDep13 quintile.

Since 2000, rates for Māori young people have decreased overall while rates for European/Other young people have decreased since 2015 (Figure 6-15). Rates for Asian/Indian young people have marginally increased overall since 2004.

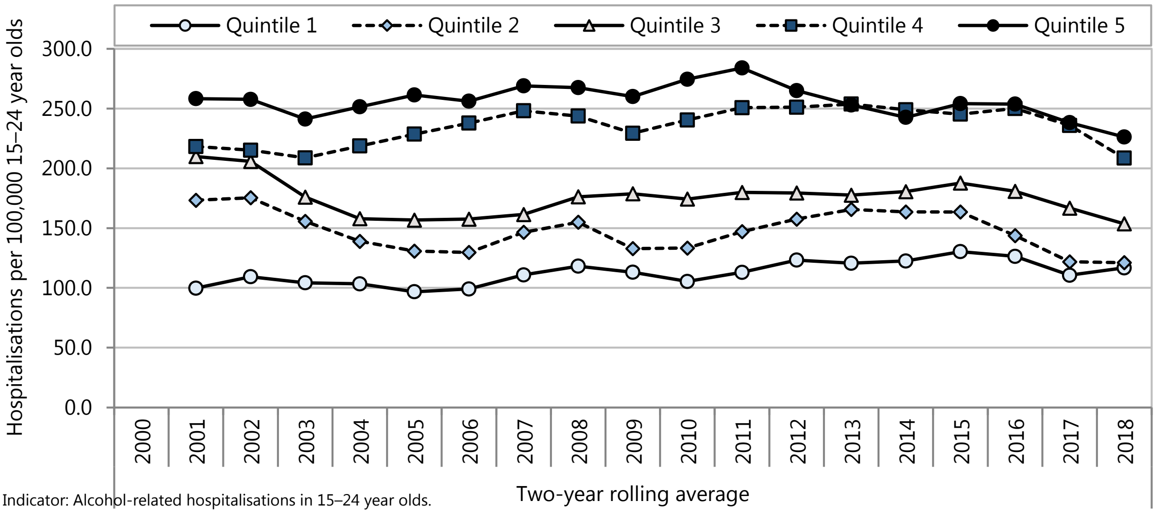
The difference between young people in areas with in the lowest deprivation score (quintile 1) and those in areas with the highest deprivation score (quintile 5) has been narrowing since 2000; rates have increased overall for those in quintile 1 and decreased overall for those in quintile 5 (Figure 6-16). The gap between quintile 2 and quintile 1 as nearly closed in recent years, as has the gap between quintile 4 and 5.

Figure 6-15. Alcohol-related hospitalisations in 15–24 year olds, by year and ethnicity, New Zealand 2000–2018



Indicator: Alcohol-related hospitalisations in 15–24 year olds
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population.
Ethnicity is prioritised ethnicity. Rates subject to small number variation, particularly Asian/Indian

Figure 6-16. Alcohol-related hospitalisations in 15–24 year olds, by year and NZ Deprivation Index quintile, New Zealand 2000–2018

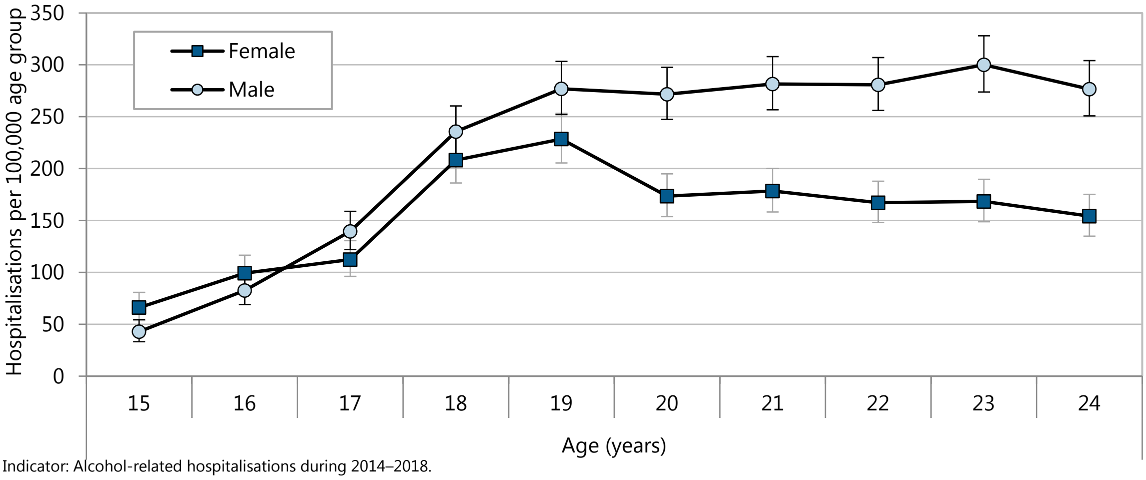


Indicator: Alcohol-related hospitalisations in 15–24 year olds.
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population.
Rates are subject to small number variation, particularly Asian/Indian

Figure 6-17 provides a breakdown by age and gender for alcohol-related hospitalisations for the pooled period 2014–2018 while Figure 6-18 presents alcohol-related hospitalisations for 15–24 year olds by calendar year and gender. Rates for young women are marginally higher than young men at 15–16 years of age while rates for young men are significantly higher than those for young women from the age of 19 onwards (Figure 6-17).

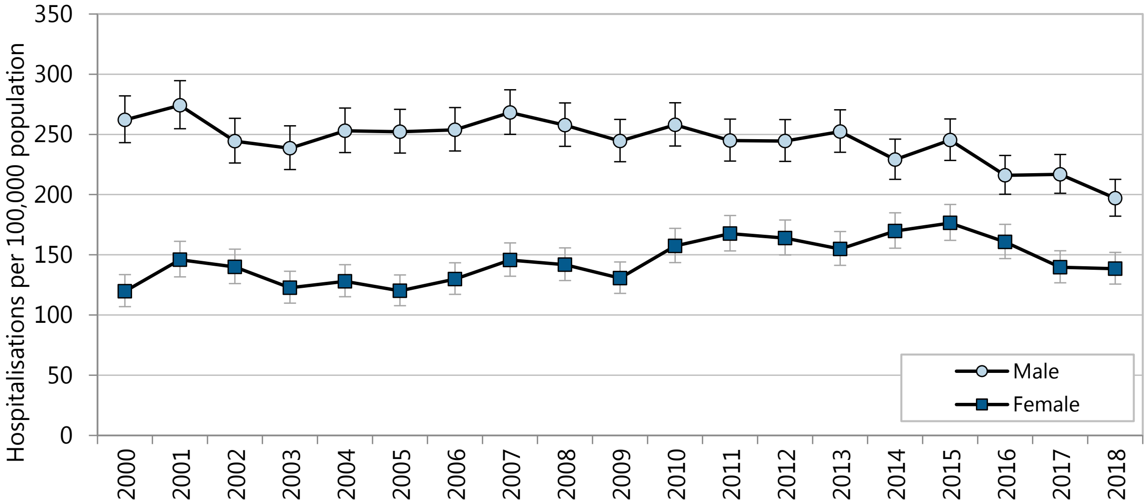
Since 2000, rates for female 15–24 year olds have increased overall and rates for male 15–24 year olds have decreased. While male young people continue to experience a higher rate of hospitalisation, the gap between males and females has been narrower in recent year when compared to the early 2000s.

Figure 6-17. Alcohol-related hospitalisations in 15–24 year olds, by age and gender New Zealand 2014–2018



Indicator: Alcohol-related hospitalisations during 2014–2018.
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population

Figure 6-18. Alcohol-related hospitalisations in 15–24 year olds, by year and gender New Zealand 2000–2018



Indicator: Alcohol-related hospitalisations in 15–24 year olds.
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population

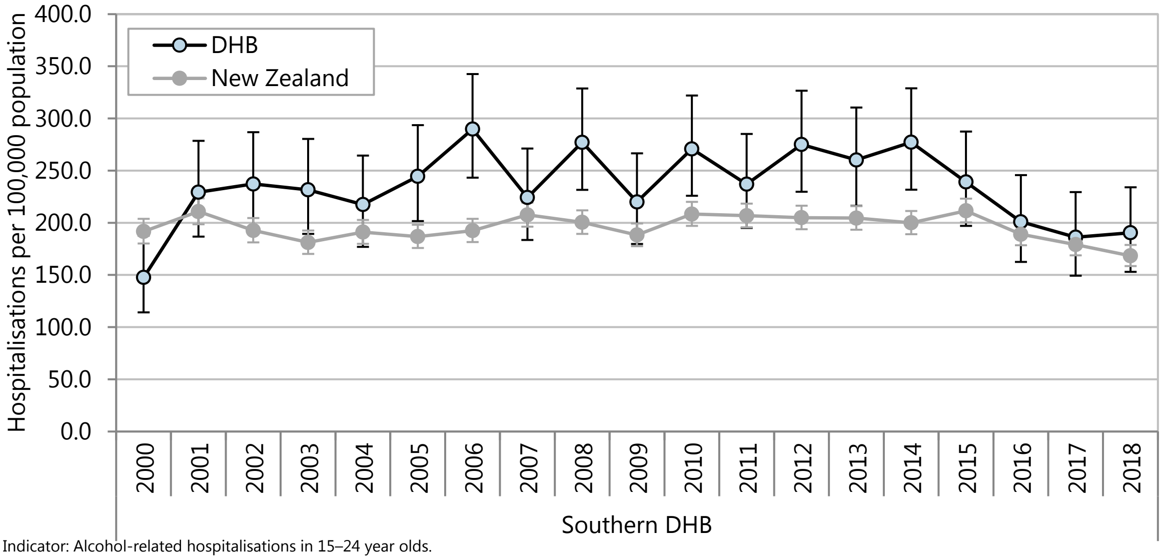
Table 6-3. Alcohol-related hospitalisations in 15–24 year olds, by district health board, Southern DHB vs New Zealand 2014–2018

DHB/Area	Number	Annual average	Rate per 100,000 population	Rate ratio	95% CI
Hospitalisations of 15–24 year olds, 2014–2018					
Alcohol-related hospitalisations					
Southern DHB	517	103	218.8	1.15	1.06–1.26
Otago	404	81	245.0	1.29	1.17–1.43
Southland	113	23	158.2	0.83	0.69–1.01
New Zealand	6,037	1,207	189.5	1.00	

Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population. Rate ratios are unadjusted

Figure 6-19 and Figure 6-20 present alcohol-related hospitalisations of 15–24 year olds in the Southern DHB and the Otago and Southland areas over time for the period 2000–2018. Since 2014, rates for alcohol-related hospitalisations in Southern DHB have declined. Rates in the Otago area have been variable since 2000 while rates in Southland have decreased overall since 2008.

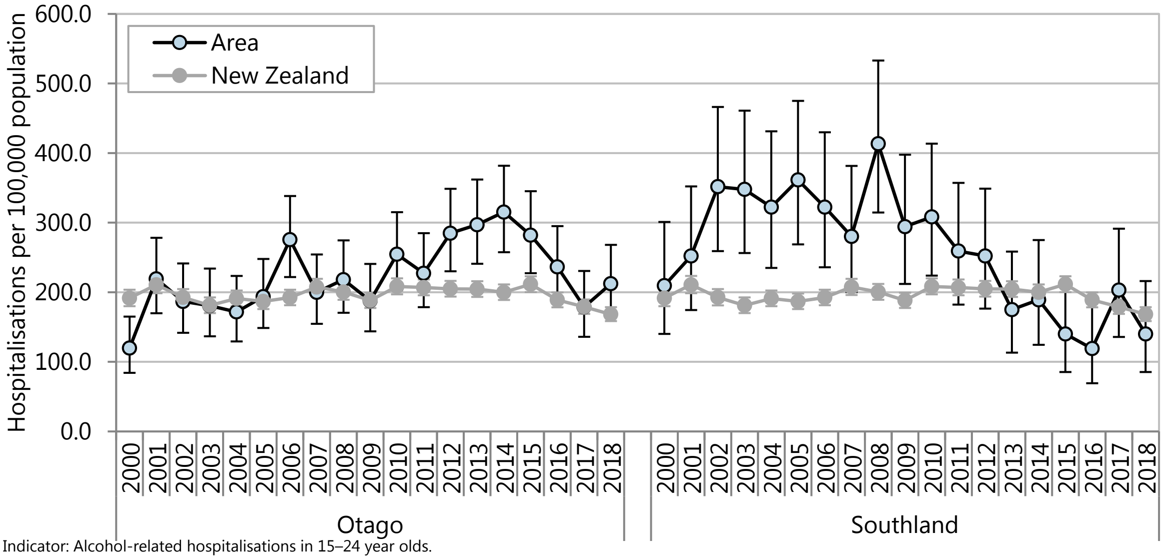
Figure 6-19. Alcohol-related hospitalisations in 15–24 year olds, Southern DHB vs New Zealand 2000–2018



Indicator: Alcohol-related hospitalisations in 15–24 year olds.
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population

Southern DHB had a marginally but significantly higher alcohol-related hospitalisation rate for 15–24 year olds compared to the national rate (Figure 6-19, Table 6-3). The alcohol-related hospitalisation rate was significantly higher than the national rate in the Otago area of Southern DHB and not significantly different from the national rate in Southland area (Figure 6-20, Table 6-3).

Figure 6-20. Alcohol-related hospitalisations in 15–24 year olds, Otago and Southland areas vs New Zealand 2000–2018



Indicator: Alcohol-related hospitalisations in 15–24 year olds.
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population

Use of alcohol and drug services

This section presents data on the use of alcohol and drug services from PRIMHD.

Data Sources and Methods

Indicator

Number of 0–24 year olds accessing alcohol and drug services

Data sources

Numerator: PRIMHD (Programme for the Integration of Mental Health Data)

Denominator: NZCYES estimated resident population

Additional information

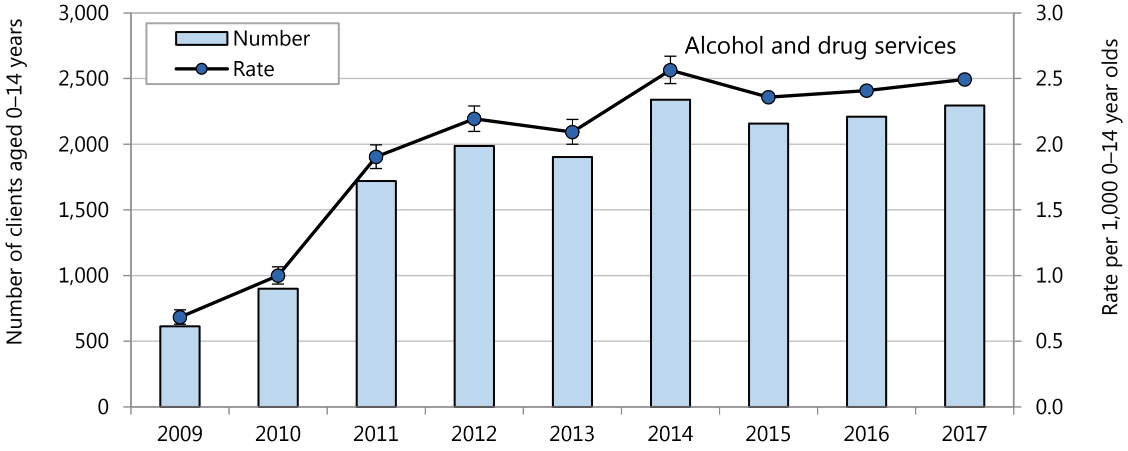
PRIMHD is the Ministry of Health's national database covering the provision of publicly funded secondary mental health and alcohol and drug services. Commencing on 1 July 2008, it integrates information from the previous Mental Health Information National Collection (MHINC) and the MH-SMART data collection. It includes secondary inpatient, outpatient and community care provided by hospitals and non-Government organisations (although data from NGOs is incomplete, particularly in the earlier years of the database).

The analyses that used data from PRIMHD have counted numbers of individual clients, rather than numbers of contacts, so each client was counted only once in each category that they appeared in. A particular client may have been counted in more than one age group, year or DHB category. For example, the same client may have been seen in several different years, or lived in more than one DHB during the same year, or have been seen both as a 14 year old and as a 15 year old in the same year (and so have been counted in both the 0–14 and 15–24 years age categories for that year). This means that the sum of the category totals may be greater than the overall total.

Children and young people seen by alcohol and drug services in New Zealand

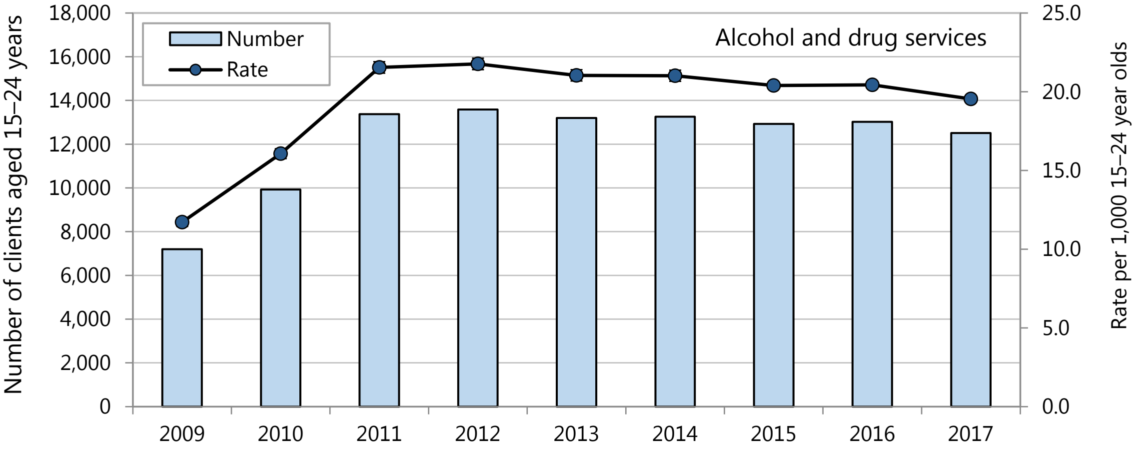
The rate at which 0–14 year olds were seen by alcohol and drug services increased fairly steadily over the period 2009–2014 but changed little thereafter (Figure 6-21) while the rate for 15–24 year olds decreased slightly from 2011 onwards (Figure 6-22). The rate at which 15–24 year olds were seen by alcohol and drug services in 2017 was almost eight times the 0–14 year old rate.

Figure 6-21. Clients aged 0–14 years seen by alcohol and drug services, New Zealand 2009–2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Each client is counted once in each year they attended

Figure 6-22. Clients aged 15–24 years seen by alcohol and drug services, New Zealand 2009–2017



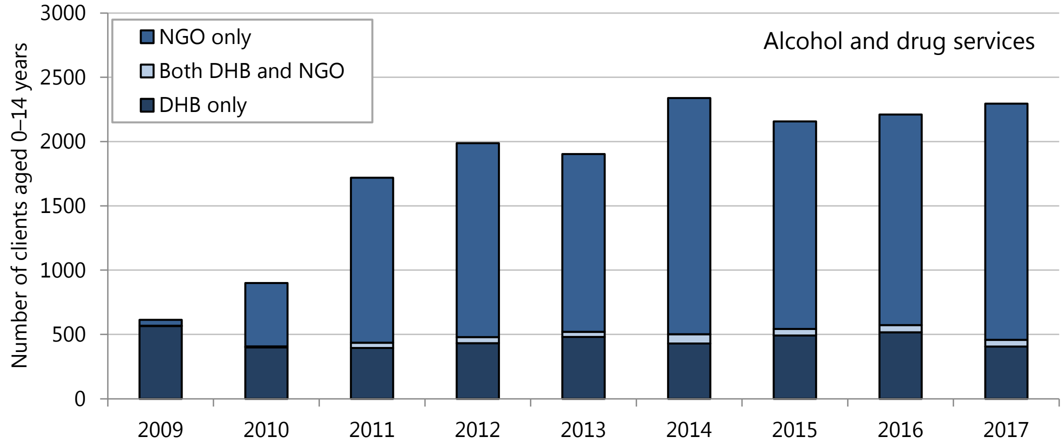
Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Each client is counted once in each year they attended

During 2009–2017, most of the 0–14 year olds who were seen by alcohol and drug services received accessed services provided by NGOs, but some received care from services provided by district health boards (Figure 6-23). Over the period 2009–2017, the numbers of 0–14 year old clients seen by district health boards remained almost constant but the number seen by NGOs increased until 2014 after which it changed little. The apparently small numbers seen by NGOs in the earlier years of the period may be the result of these organisations not uploading all their contact records to PRIMHD rather than a true indication of the number of clients seen.

From 2011 onwards, the numbers of 15–24 year olds who received alcohol and drug services from a DHB provider decreased while the number who received services from an NGO provider increased (Figure 6-24).

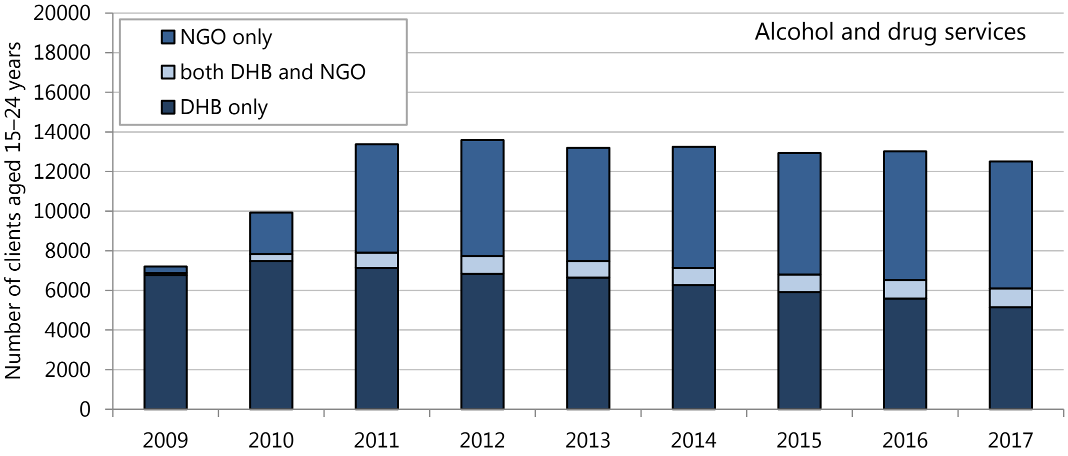
Very few children and few young people received alcohol and drug services from both a DHB and an NGO provider.

Figure 6-23. Clients aged 0–14 years seen by alcohol and drug services, by service provider, New Zealand 2009–2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Each client is counted once in each year they attended

Figure 6-24. Clients aged 15–24 years seen by alcohol and drug services, by service provider, New Zealand 2009–2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Each client is counted once in each year they attended

Table 6-4. Clients aged 0–24 years seen by alcohol and services, by age group and team type seen, New Zealand 2017

Clients aged 0–24 years seen by alcohol and drug services, New Zealand 2017				
	0–14 years		15–24 years	
	Number	%	Number	%
Total	2295	100.0	12513	100.0
Service provider				
DHB only	406	17.7	5146	41.1
both DHB and NGO	52	2.3	953	7.6
NGO only	1837	80.0	6414	51.3
Service setting				
Outpatient only	2249	98.0	12088	96.6
both outpatient and inpatient	11	0.5	401	3.2
Inpatient only	35	1.5	24	0.2
Team type seen				
Alcohol and Drug Team only	1985	86.49	11674	93.29
Both Alcohol and Drug Team and Co-Existing Problems Teams	14	0.61	156	1.25
Co-Existing Problems Team only	296	12.90	683	5.46

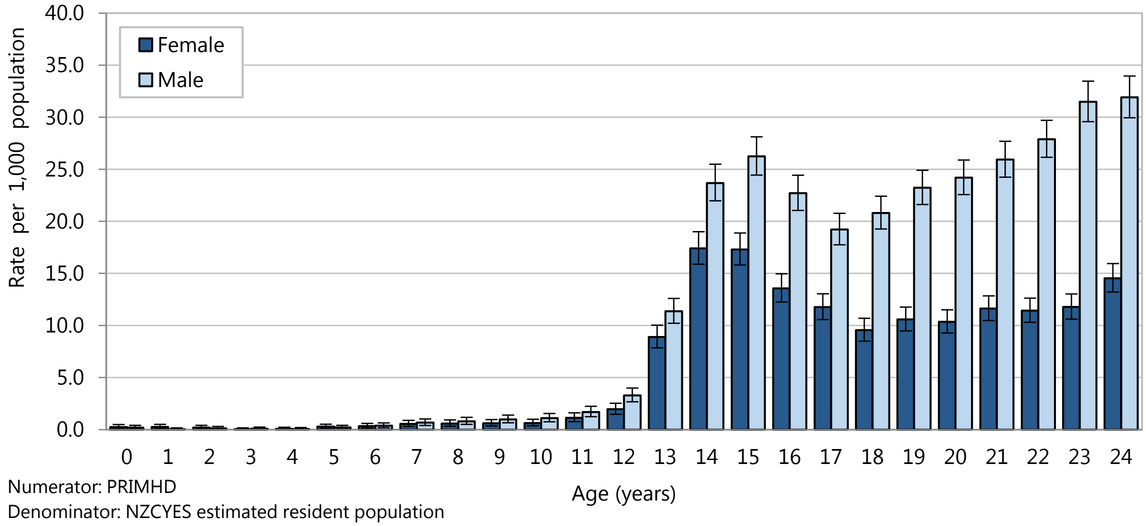
Source: PRIMHD. Note: some clients were seen by more than one team type. Co-existing problems teams see people with coexisting problems of mental illness and alcohol and drug use.

Most of the 0–14 year olds who were seen by alcohol and drug services in 2017 were seen only by services provided by NGOs and the vast majority received their care as outpatients only (Table 6-4). The majority were seen by an alcohol and drug team, but some were seen by a co-existing problems team (a team that deals with clients who have mental illness as well as alcohol and drug problems).

The proportion of 15–24 year clients who accessed alcohol and drug services from DHB providers was considerably higher than the proportion of 0–14 year olds who did so but more 15–24 year olds accessed NGO than DHB alcohol and drug services. Most 15–24 year olds received care from alcohol and drug services as outpatients only but around 3% received some or all of their care as inpatients. Most were seen by an alcohol and drug team, but some were seen by a co-existing problems team (a team that deals with clients who have mental illness as well as alcohol and drug problems).

Rates of contact with alcohol and drug services were very low for both male and female children (Figure 6-25). Rates for both males and females climbed steeply from around 12 years to peak at around age 15 years. The female rate then fell until 18 years, after which it increased only slightly with increasing age. The male rate fell from age 15 to age 17 years than increased steadily with increasing age. From age 14 years, the male rate was considerably higher than the female rate, and, from age 18, more than the double female rate.

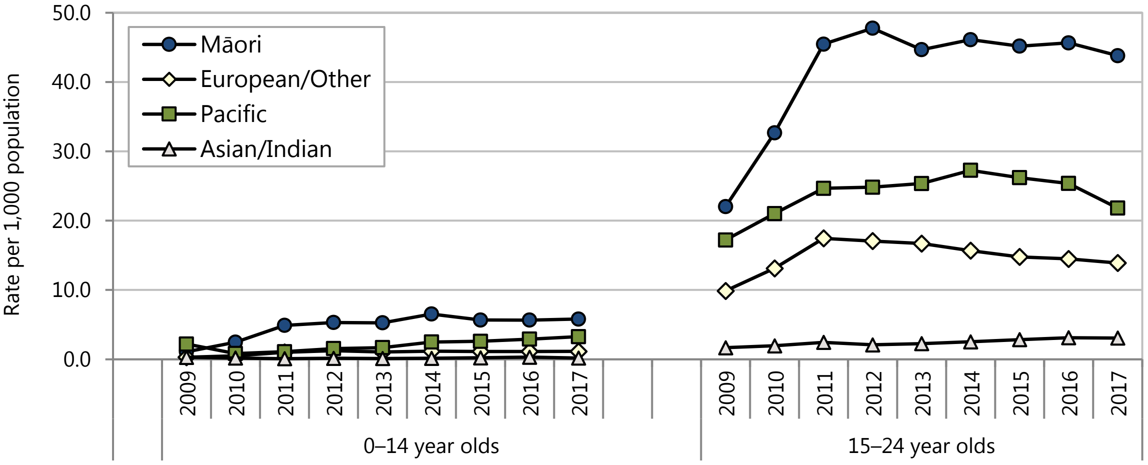
Figure 6-25. Clients aged 0–24 years seen by alcohol and drug services, by age at first contact of year, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are age specific and per 1,000 population
Age is derived from first contact in year

Alcohol and drug services

Figure 6-26. Clients aged 0–24 years seen by alcohol and drug services, by age group and ethnicity, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are age specific and per 1,000 population
Ethnicity is level 1 prioritised

Alcohol and drug services

Rates of contact with alcohol and drug services were substantially higher for Māori children and young people than those of other ethnic groups throughout 2011–2017 while those for Asian children and young people were substantially lower (Figure 6-26).

From 2011 onwards, rates of contact with alcohol and drug services for Māori and European/Other 0–14 year olds were stable. Rates for Pacific and Asian/Indian were more variable, but it should be noted that these rates are based on relatively small numbers (Figure 6-26).

Rates of contact with alcohol and drug services declined slightly for Māori, European/Other and Pacific 15–24 year olds from 2014 onwards but increased for Asian/Indian 15–24 year olds (Figure 6-26).

In 2017, there were marked differences in rates of alcohol and drug services utilisation by deprivation level, by ethnicity and by gender in both the 0–14 and the 15–24 years age groups (Table 6-5). There was a clear gradient by deprivation with rates increasing with increasing deprivation. The concentration of 0–14 year old alcohol and drug services clients in the highest deprivation quintile was particularly striking: the rate for the most deprived quintile was eleven times the rate for the least deprived quintile. Differences between deprivation quintiles were statistically significant except between Quintile 2 and Quintile 3.

Compared to the 0–14 year olds rates for the European/Other ethnic group, the corresponding rates for the Māori and Pacific ethnic groups were significantly higher and those for the Asian/Indian ethnic group significantly lower (Table 6-5). The Māori 0–14 years rate was five times the European/Other rate and the Pacific rate was almost three times the European/Other rate. The MELAA 0–14 year olds rate was lower than the European/Other rate but, due to small numbers, this difference was not statistically significant.

In the 15–24 years age group, the Māori and Pacific rates were significantly higher than the European/Other rate while the Asian/Indian and MELAA rates were significantly lower (Table 6-5).

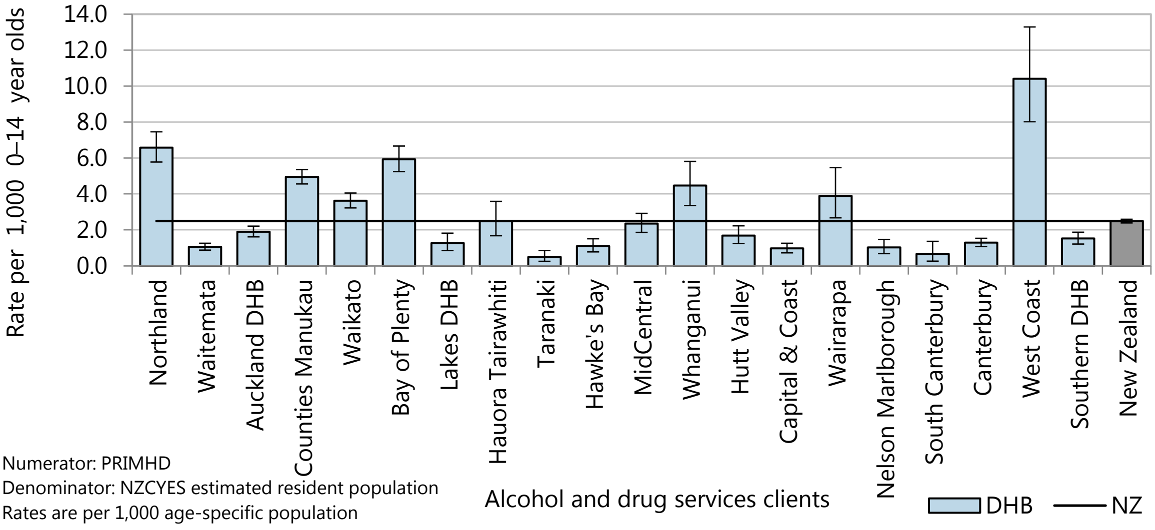
The male rates were significantly higher than the female rates in both age groups, but the difference was greater in the 15–24 years age group where the male rate was double the female rate (Table 6-5).

Table 6-5. Clients aged 0–24 years seen by alcohol and drug services, by age group and demographic variable, New Zealand 2017

Variable	Number	Rate per 1,000 population	Rate ratio	95% CI
Clients aged 0–14 years seen by alcohol and drug services, New Zealand 2017				
NZDep2013 index of deprivation quintile				
Quintile 1 (least deprived)	101	0.55	1.00	
Quintile 2	166	1.00	1.82	1.42–2.33
Quintile 3	258	1.49	2.69	2.14–3.39
Quintile 4	490	2.56	4.64	3.75–5.75
Quintile 5 (most deprived)	1279	6.19	11.23	9.17–13.75
Prioritised ethnicity				
Māori	1412	5.81	5.07	4.60–5.59
Pacific	295	3.27	2.85	2.47–3.28
Asian/Indian	20	0.18	0.16	0.10–0.25
MELAA	10	0.78	0.68	0.36–1.27
European/Other	558	1.15	1.00	
Gender				
Male	1351	2.86	1.36	1.25–1.48
Female	944	2.11	1.00	
Clients aged 15–24 years seen by alcohol and drug services, New Zealand 2017				
NZDep2013 index of deprivation quintile				
Quintile 1 (least deprived)	967	8.49	1.00	
Quintile 2	1396	12.94	1.52	1.40–1.65
Quintile 3	1831	15.51	1.83	1.69–1.97
Quintile 4	3075	22.44	2.64	2.46–2.84
Quintile 5 (most deprived)	5229	31.97	3.76	3.52–4.03
Prioritised ethnicity				
Māori	5888	43.81	3.13	3.02–3.25
Pacific	1258	21.81	1.56	1.47–1.66
Asian/Indian	298	3.07	0.22	0.20–0.25
MELAA	98	10.25	0.73	0.60–0.89
European/Other	4954	13.99	1.00	
Gender				
Male	8537	26.08	2.05	1.98–2.13
Female	3975	12.70	1.00	

Numerator: PRIMHD, Denominator: NZCYES Estimated Resident Population. Rates are per 1000 age-specific population. Rate ratios are unadjusted. Ethnicity is level 1 prioritised.

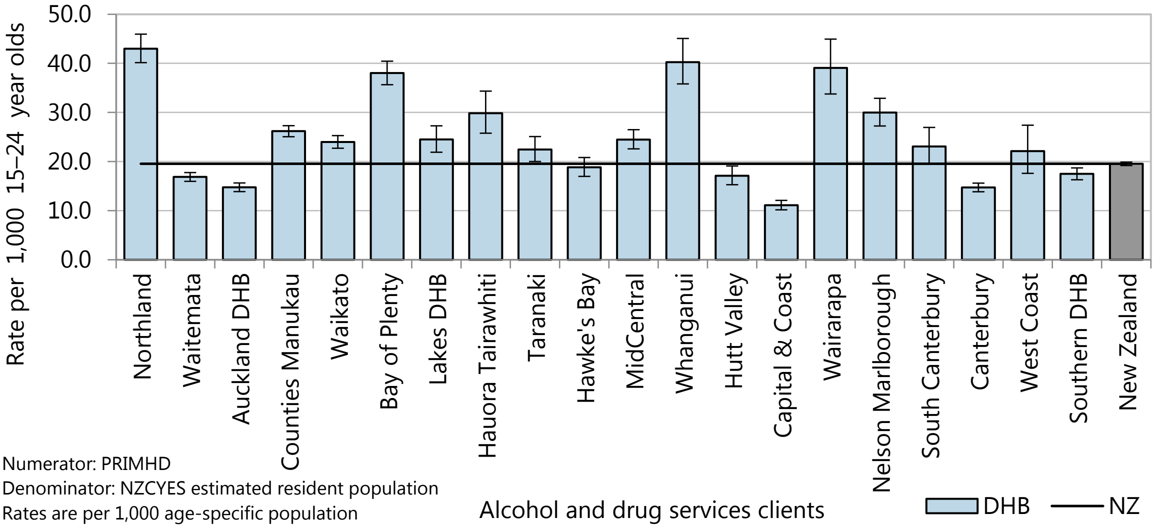
Figure 6-27. Clients aged 0–14 years seen by alcohol and drug services, by district health board, New Zealand 2017



Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are per 1,000 age-specific population

In 2017, the alcohol and drug service access rates for both 0–14 year olds and 15–24 year olds in Southern DHB were significantly lower than the corresponding national rates (Figure 6-27, Figure 6-28, Table 6-6).

Figure 6-28. Clients aged 15–24 years seen by alcohol and drug services, by district health board, New Zealand 2017



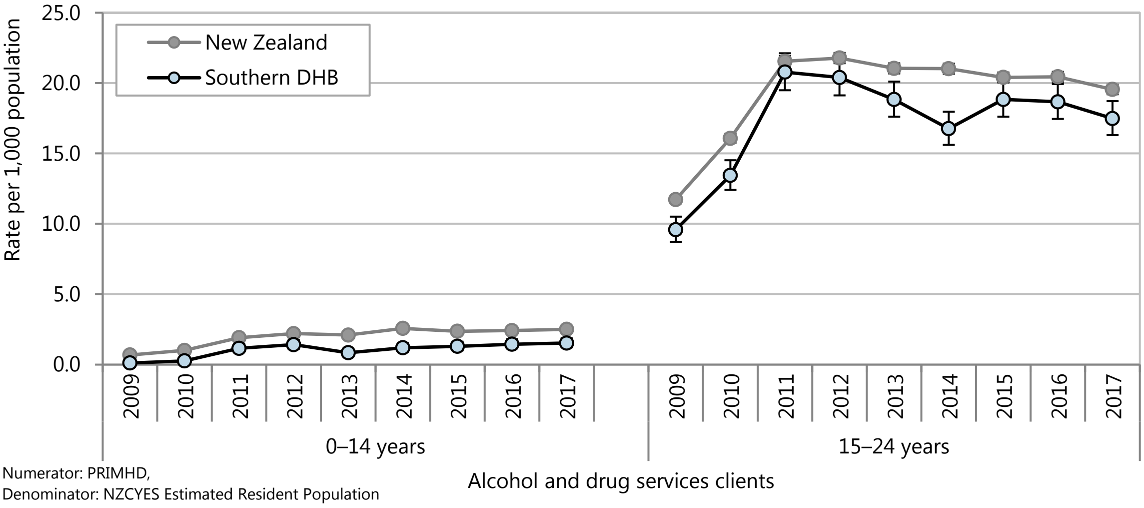
Numerator: PRIMHD
Denominator: NZCYES estimated resident population
Rates are per 1,000 age-specific population

Table 6-6. Clients aged 0–24 years seen by alcohol and drug services, Southern DHB vs New Zealand 2017

DHB	Number	Rate per 1,000 population	Rate ratio	95% CI
Clients seen by alcohol and drug services in 2017				
0–14 year olds				
Southern DHB	87	1.52	0.61	0.49–0.76
New Zealand	2,295	2.49	1.00	
15–24 year olds				
Southern DHB	826	17.48	0.89	0.83–0.96
New Zealand	12,513	19.54	1.00	

Numerator: PRIMHD, Denominator: NZCYES Estimated Resident Population. Rates are per 1,000 age-specific population. Rate ratios are unadjusted

Figure 6-29. Clients seen by alcohol and drug services, 0–14 years and 15–24 years, Southern DHB vs New Zealand 2009–2017



Numerator: PRIMHD,
Denominator: NZCYES Estimated Resident Population
Rates are age-specific

The alcohol and drug services access rates in Southern DHB during 2009–2017 for both 0–14 and 15–24 year olds were consistently a little lower than the corresponding New Zealand rates but showed similar patterns over time from 2011 onwards, being fairly steady in the 0–14 years age group, and decreasing slightly in the 15–24 years age group (Figure 6-29).

Table 6-7. Clients aged 0–24 years seen by alcohol and drug services, by age group and demographic variable, Southern District Health Board, 2017

Clients aged 0–24 years seen by alcohol and drug services, Southern District Health Board, 2017				
	0–14 years		15–24 years	
	Number	%	Number	%
Total	87	100.0	826	100.0
NZDep2013 index of deprivation quintile				
Quintile 1 (least deprived)	10	11.5	91	11.0
Quintile 2	13	14.9	133	16.1
Quintile 3	14	16.1	188	22.8
Quintile 4	29	33.3	223	27.0
Quintile 5 (most deprived)	21	24.1	191	23.1
Prioritised ethnicity				
Māori	32	36.8	243	29.4
Pacific	<5	s	26	3.1
Asian/Indian	0	0.0	9	1.1
MELAA	0	0.0	<5	s
European/Other	53	60.9	544	65.9
Gender				
Male	48	55.2	551	66.7
Female	39	44.8	275	33.3

Source: PRIMHD. Ethnicity is level 1 prioritised. Percentages are the percentages of the total number of clients in the age group seen in the DHB

The children and young people seen by alcohol and drug services in Southern DHB in 2017 lived in all deprivation quintiles (Table 6-7). The majority belonged to the European/Other ethnic group and most of the rest were Māori. Few were of Pacific, Asian/Indian or MELAA ethnicity. There were more males than females in both age groups, but the gender difference was greater in the older age group.

Table 6-8. Clients aged 0–24 years seen by alcohol and drug services, by age group and service provider or service setting, Southern District Health Board, 2017

Clients aged 0–24 years seen by alcohol and drug services, Southern District Health Board, 2017				
	0–14 years		15–24 years	
	Number	%	Number	%
Total	87	100.0	826	100.0
Service provider				
DHB only	0	0.0	189	22.9
both DHB and NGO	0	0.0	40	4.8
NGO only	87	100.0	597	72.3
Service setting				
Outpatient only	83	95.4	799	96.7
both outpatient and inpatient	< 5	s	26	3.1
Inpatient only	0	0.0	< 5	s

Source: PRIMHD

All of the 0–14 year olds who were seen by alcohol and drug services in Southern DHB in 2017 were seen by services provided by NGOs, as were over three quarters of the 15–24 year olds (Table 6-8). The vast majority of both 0–14 year olds and 15–24 year olds who were seen by alcohol and drug services received their care as outpatients only.

Evidence for good practice

Cigarette smoking

Cigarette smoking is a leading cause of preventable disease and death in New Zealand.[5] It contributes to inequalities in health between Māori and European/Other people and between higher and lower socioeconomic groups.[6-9] Most lifetime smokers started smoking in late adolescence and young adulthood therefore young people are a key target for smoking prevention and cessation interventions.[10]

Equity

The prevalence of smoking differs between different ethnic groups and different levels of neighbourhood deprivation. The 2009 New Zealand Tobacco Use Survey indicated that the prevalence of smoking in 15–19 year olds living in the most deprived neighbourhoods was three times that in those living in the least (31% vs. 10%).[11] The prevalence in Māori 15–19 year olds was more than double that in European/Other (38% vs. 17%) while the prevalence in Asian 15–19 year olds was a quarter of that in European/Other (4% vs. 17%).[11] The 2018 Healthy Lifestyles Survey found that the mean age of smoking initiation among adult ever smokers was lowest in Māori (14.1 years) as was the age of taking up daily smoking (16.7 years).[10]

Internationally, socioeconomic deprivation is the common factor among groups with high smoking rates: people who are long-term unemployed, homeless, mentally ill, prisoners, single parents, and ethnic minorities.[12,13]

Tackling inequalities in smoking is crucial to reducing health inequalities. A 2014 systematic review[14] conducted as part of the European project *Tackling socioeconomic inequalities in smoking*[15] aimed to assess all the available evidence on the impact of tobacco control interventions/policies on socioeconomic inequalities in youth (aged 11–25 years) smoking.

The review identified 38 studies that evaluated the equity impact of 40 interventions/policies. Twenty-eight studies were population-based observational studies, two were intervention-based and observational studies (studying the same group before and after intervention), and eight were intervention-based experimental studies (six RCTs and two quasi-experimental trials). Thirty-five studies assessed population-level tobacco control interventions/policies, and three individual level smoking cessation support and/or smokefree homes interventions. Equity impact was assessed as positive (i.e. reduced inequality), neutral (no difference in effects by socioeconomic status (SES)), negative (increased inequality), mixed (variable equity impact) or unclear. Equity effects were positive in seven studies, neutral in 16, negative in 12, mixed in four and unclear in one. The seven studies with positive impacts on equity were all conducted in the US. They addressed pricing/taxes (four studies), age-of-sale laws (two studies) and text messaging cessation support (one study). One UK study, of a school-based intervention, *A Stop Smoking in Schools Trial (ASSIST),* found mixed equity effects (neutral and positive). Most neutral equity studies had benefits for all SES groups. The main conclusion from this review was that price/tax increases had the most consistently positive impact on equity.

Young Māori women have very high smoking rates (38% of 15–24 year olds in the 2013 census).[16] The Ministry of Health initiated a project *Addressing the challenge of young Māori women who smoke* to find out about the barriers that make it hard for young Māori women to quit smoking.[17] The first phase of the project involved reviewing the evidence on smoking cessation, analysing data from the Statistics New Zealand's Integrated Data Infrastructure to gain insights into the lives of young Māori women smokers, and meeting with young Māori women to listen to their stories about their lives and their relationship with smoking.[17] The second phase of the project involved applying the insights gained to co-designing services to better match the lives and needs of young Māori women who smoke.[17]

The data analysis (logistic regression) indicated that by far the factor most predictive of a young Māori woman being a regular smoker was living with at least one other adult smoker.[18] Other significant factors included receiving an unemployment or domestic purposes benefit, and having no secondary school qualifications.[18] The factors most predictive of being non-smoker were getting a level 3 or 4 qualification at secondary school, living in a quintile 1 (least deprived) neighbourhood and living in a household with internet access.[18] Young Māori women who were ex-smokers were more likely than regular smokers or never smokers to live alone, to have children, and to have a partner.[18]

Some of the key insights gained from the young women interviewed in phase one were:[19]

- Smoking can be a big part big part of young Māori women's family, social, school and work lives as many of their whānau, friends, schoolmates and workmates smoke
- Smoking offers stress relief, a social time with friends and time out from young children
- Framing quitting as a medical issue for the individual is not in accord with a kaupapa Māori approach to helping people
- Many are not aware of smoking cessation services, and if they have used them they have not been effective
- Women are afraid of withdrawal symptoms and gaining weight if they quit
- Women want to be good role models for their children
- Smoking is probably not the biggest problem in a young woman's life
- Trying to get someone to quit without addressing the wider conditions and circumstances in their life is likely to be counterproductive and alienating.

In the second phase of the project, four providers with a good reputation for delivering services to Māori were supported to design prototype initiatives that drew on the insights gained in phase one, and on their knowledge and experience regarding smoking cessation in young Māori women.[20] Some of the providers involved young Māori women in the design process. Māori evaluators worked alongside the providers and the evaluation team held several team hui to compare data and experiences from across providers and prototypes.[20]

Fifty-four young women participated in the prototypes.[20] Across all four service providers, key elements in the prototypes that supported smoking cessation were:[20]

- taking a holistic wellbeing approach
- reframing quitting in the context of living well
- making non-smoking more social and fun than smoking
- being responsive to the women's needs and priorities
- using culture as a connector and enabler.

Key prototype implementation and practice principles and practice elements included:[20]

- perseverance in seeking out and engaging wāhine
- extending a "warm invitation"
- getting to know wāhine, their needs and motivations
- being wāhine-focused and led by the needs and priorities of wāhine
- including te ao Māori components
- staying connected and maintaining an open-door policy
- providing a social and supportive environment
- using aspirational goal-setting and planning processes
- deliberately focusing on building the self-efficacy of wāhine
- providing flexible and responsive support
- using highly skilled facilitators
- having supportive leadership encouraging staff to be innovative.

Across all four providers considerations for future use of co-design were:[20]

- strong provider leadership and provider commitment to the co-design, testing, reflection and evaluation processes
- retaining the Ministry's partnership approach
- retaining the evaluation and co-design mentoring and support
- new funding to support the co-design and prototype implementation
- documenting and exploring what "good" co-design looks likes in Māori contexts.

The key conclusion from the project was that the Ministry and health service providers need to abandon "smoking cessation services", which are single-issue, focussed on individuals, and one-size-fits-all, and move towards services that take a holistic wellbeing approach, are wāhine-led and focus on the complex mix of challenges and issues that wāhine need to address, rather than emphasising smoking cessation as the priority first up.[20] Such services need to replace the social activity that goes with being a smoker, through positive support networks, fun activities and smokefree environments.[20] All of the prototypes took more time and resource than current smoking cessation models and contracts allow due to their more intensive and relational ways of working.[20]

Pacific young people face some of the same social pressures as Māori that make it harder for them not to smoke, particularly the higher prevalence of smoking and socioeconomic deprivation in their communities compared to communities predominantly of European ethnicity, and cultural values around sharing and gift giving which can make it hard to refuse an offered cigarette.[21] A qualitative study that interviewed young people to explore the concept of "informed choice" in relation to smoking initiation found that Māori and Pacific participants had a lower awareness of the risks of smoking, and were less certain that smoking was a temporary part of their lives, than New Zealand European participants.[21] They were also less likely to reflect critically on the tobacco industry's role in addicting them and others to a lethal product.[21] Despite acknowledging their lack of knowledge about the risks, and the social factors that led them into smoking, most participants asserted that they had made an independent adult choice to smoke.[21]

Prevention

There is a vast literature on preventing smoking in young people. The 2012 report of the US Surgeon General, *Preventing Tobacco Use Among Youth and Young Adults*[22] runs to 899 pages.

A young person's decision to smoke or not is affected by factors within themselves (e.g. personality, self-efficacy, emotions, beliefs and attitudes), within their social situation (e.g. whether smoking is normal in their social circle) and within the wider environment (e.g. how easily cigarettes are available and where you are allowed to smoke).[22] The relative importance of these factors changes as young people mature. Adolescents are especially susceptible to peer pressure, and their cognitive, social and emotional regulation skills are not fully developed.[22]

Smoking prevention interventions can take place at various levels: the regulatory and policy level; the whole population level; the small social environments level, such as families, healthcare settings and schools; and the special groups level.[22]

At the regulation and policy level, interventions well supported by evidence include taxation to increase prices; prohibition of smoking in workplaces and public indoor spaces;[22] in cars with children,[23,24] and in all spaces in early childhood centres, schools and tertiary education campuses,[25] prohibition of cigarette sales to minors and cigarette vending machines; bans on tobacco advertising, point-of-sale displays and other types of promotion (such as sponsorship of events, sale or distribution of branded items and competitions encouraging tobacco use in exchange for prizes); and plain cigarette packaging with health warnings including pictures.[22]

Interventions at the population level included mass media campaigns and multi-component community interventions. The US Surgeon General's report[22] found convincing evidence that mass media anti-smoking campaigns can reduce youth smoking but that certain factors and conditions are required for their success: formative research in the development of campaign messages, and sufficient intensity and duration of exposure. Formative research involves public health practitioners defining the community of interest, determining how to access that community, and describing the attributes of the community that are relevant to the public health issue.[26,27]

Factors that increase the effectiveness of anti-smoking advertisements include eliciting a strong emotional response through personal testimonies and visceral images of the health effects of smoking, messages that empower young people to refuse offers of cigarettes, presentation by credible celebrities who young people can relate to, and portraying the deceptiveness of tobacco companies.[22,28]

Mass media campaigns are rarely implemented in isolation from other anti-smoking interventions and it is difficult to collect high quality evidence for their effectiveness. A 2017 Cochrane review on mass media interventions for preventing smoking in young people[29] identified only eight studies meeting their inclusion criteria (seven controlled trials and one interrupted time-series analysis), only one of which was published after 2010. Although the review authors did not consider these studies to be of high quality, but at high risk of bias, they represented the most methodologically rigorous studies published on this topic up until June 2016. Three of the eight studies, assessed as providing only very low quality evidence, showed statistically and clinically significant reductions for smoking uptake in young people. Common features of the successful campaigns included using multiple channels (TV, radio, newspapers, magazines), combined school and media components (posters in schools or school-based curricula, or both), and repeated exposure to campaign messages delivered consecutively over at least three years to the same cohort of students. The review authors noted that future campaigns and research need to target media outlets popular with young people, such as Facebook, Instagram, Snapchat and Twitter.

Community interventions use a coordinated approach with multiple components and aim to reach all community members. They include components such as tobacco age-of-purchase laws, smoke free public places, school programmes and mass media campaigns. A 2011 Cochrane review[30] of community interventions for preventing smoking in young people identified 25 controlled trials, ten of which were associated with a reduction in smoking uptake among young people. Common features of the ten successful interventions were: nine included school based multi-component interventions delivered by school teachers and other faculty members, six involved parents, eight lasted longer than 12 months, and nine were based on the social influences or social learning theory (the other used the social development model).

Interventions at the level of small social environments can target healthcare services, schools, and families. A 2020 systematic review for the US Preventive Services Taskforce (USPSTF)[31] looked at interventions in primary care to discourage the use of tobacco products (including electronic nicotine delivery systems or e-cigarettes) by children and adolescents. The review identified 14 trials of behavioural interventions, all conducted in the US, with the mean age of participants ranging from seven to 17 years. Trial settings included primary care clinics, dental clinics, homes, and a school. Interventions used a range of strategies, most commonly print materials (as all or part of the intervention), followed by face-to-face encounters. Also used were telephone support or booster calls, internet-based interventions, and interactive computer programs. Meta-analysis of data from 13 trials indicated a statistically significantly reduced smoking initiation compared with controls at seven to 36 months' follow-up (7.4% vs 9.2%, RR 0.82, 95% CI 0.73 to 0.92). The USPSTF recommends that primary care clinicians provide interventions, including education or brief counselling, to prevent initiation of tobacco use among school-aged children and adolescents.[32]

There have been a great many studies of school-based interventions for smoking prevention. The 2013 Cochrane review[33] on this topic included 134 RCTs involving 428,293 students. The review reported that researchers have studied five types of interventions: information-only curricula, social competence curricula, social influence curricula, combined social competence and social influence curricula, and multimodal programmes that combine curricular approaches with wider initiatives within and beyond the school.

The review assessed studies in three groups according to their outcome measures: the Pure Prevention Group consisting of studies which followed cohorts of never smokers over time, the Change In Smoking Behaviour Group, and the Point Prevalence Of Smoking Group. The Pure Prevention Group could be expected to provide the clearest indication of whether interventions prevented smoking. Pooling the results of all 49 trials in this group indicated no significant overall effect at follow-up of a year or less, but at longest follow-up a reduction of 12% in risk of taking up smoking (OR 0.88, 95% CI 0.82 to 0.96). Within the Pure Prevention Group, the only intervention categories that showed statistically significant positive results were the combined social competence and social influence curricula (at all time points) and the social competence curricula (only after longer than one year). The results from the Change In Smoking Behaviour Group, and the Point Prevalence Of Smoking Group did not show statistically significant results in favour of the intervention groups.

Social competence curricula aim to help adolescents to refuse offers to smoke by improving their general social competence.[33] They include teaching social and life skills such as problem-solving and decision-making, cognitive skills or resisting media or interpersonal influences, increased self-control and self-esteem, coping strategies for stress, and general social and assertive skills.[33] Social influence curricula aim to increase adolescents' awareness of social influences promoting tobacco use and teach them to deal with peer pressure and high risk situations, and how to refuse attempts to persuade them to smoke, both direct and indirect.[33]

A 2014 Cochrane review[34] found no evidence that school tobacco policies prevent smoking initiation in adolescents. The one RCT identified found no effect. The review authors also described 24 observational studies, most of which reported no differences in students' smoking prevalence between schools with formal tobacco policies and those without.

There have been a few RCTs of incentives for preventing smoking initiation, particularly the "Smokefree Class Competition" (SFC) which was widely implemented in schools throughout Europe, and allowed classes where 90% or more of the students were smokefree after six months to enter a competition for small to moderately sized prizes.[35] A 2017 Cochrane review[35] assessed the results of seven trials of the SFC and one other trial and found no evidence that incentive programmes are effective however the review authors stated that it is possible other incentive programmes that offered rewards to individuals could be more successful.

Families are a major influence on the likelihood of an adolescent smoking. Getting parents to quit smoking is a very effective way of reducing the chances that their child will become a smoker. A prospective cohort study[36] carried out in the control group of the Hutchinson Smoking Prevention Project in the US found that children's odds of smoking at age 17/18 years were reduced by 39% when both parents quit smoking, and by 71% when both parents had never smoked. Improving family relationships and decreasing family stress has many benefits, not limited to reducing tobacco use. The 2015 Cochrane review[37] on family-based programmes for preventing smoking by children and adolescents identified 27 RCTs. The family-based interventions were of various kinds. They typically addressed family functioning in order to prevent multiple risky behaviours including tobacco and substance use.

The review considered the trials in two groups: those that compared a family-based intervention to no intervention or usual care, and those that compared a family-based intervention to a school-based intervention provided to all trial participants.

Pooled data from the nine studies with no intervention controls that reported smoking uptake among baseline non-smokers indicated a significant reduction in smoking behaviour in the intervention arms (RR 0.76, 95% CI 0.68 to 0.84). Data from two studies comparing combined family plus school intervention to a school intervention only in baseline non-smokers also indicated a positive effect (RR 0.85, 95% CI 0.75 to 0.96), as did a similar study not restricted to never smokers. No studies indicated any adverse effects and the review authors concluded that there was moderate quality evidence that family-based interventions can help prevent children and adolescents from starting to smoke. They also stated that the common feature of the effective high intensity interventions was encouraging authoritative parenting (interest in and care for the adolescent, often with rule setting).

Youth mentoring, in which a caring individual develops a personal relationship with a young person and provides consistent companionship, support, and guidance aimed at developing their competence and character, might help young people from smoking, but there is a lack of evidence for its effectiveness. A 2013 systematic review[38] identified only four RCTs addressing this issue. Three were underpowered and only one found that mentoring prevented or reduced tobacco use.

Indigenous populations have higher smoking rates than majority populations in other countries besides New Zealand. A 2012 Cochrane review[39] did not identify any conclusive evidence for smoking prevention interventions for indigenous youth. Only two studies met the review's inclusion criteria. A recently published systematic review[40] aimed to identify the types of risk and protective factors that have been shown to influence smoking behaviour among Indigenous adolescents and young adults aged between 10 and 24 years in Australia, Canada, New Zealand, and the US, to inform tobacco control policies and programmes for these groups. The review included 55 descriptive studies, both quantitative (n = 41) and qualitative (n= 14), including 11 from New Zealand. Individual-level influences on smoking and non-smoking behaviour included increasing age, mental health, physical activity, attitudes to smoking and knowledge of risks, and other substance use. Family were major influences, especially their smoking or non-smoking behaviours and attitudes, quality of family relationships, and family socioeconomic status. Environmental influences were smoke-free spaces, secondhand smoke exposure, high visibility of smoking, antismoking campaigns and health warnings. Some studies noted price, access and cultural tobacco use (especially in American Indians).

Overall, this review found that most of the influences identified as affecting indigenous youth smoking were the same as those for other population groups. The review authors stated that the literature generally has a deficit focus, identifying few protective factors, and that most studies also included non-indigenous participants, or were sub-analyses of whole population surveys. They stated that more research is needed, especially research that takes a strengths-based approach and examines issues of identity and cultural participation. They noted the connections between smoking and poorer mental health and disengagement from education and suggested that programmes should have a broader focus on wellbeing and that it is necessary to address the broader determinants of smoking, including the enduring effects of colonisation, socioeconomic challenges, education and employment opportunities, and self-determination.

A 2020 systematic review[41] assessed the evidence base for substance use prevention programmes for indigenous adolescents in the US, Canada, Australia and New Zealand. The review identified 26 eligible studies and rated five as methodologically strong, seven as moderate, and 14 as weak. Eighteen were conducted in the US, six in Australia, two in Canada and none in New Zealand. Only two measured a true prevention outcome (substance use initiation). Other outcomes measured by included studies were substance use frequency (19 studies), substance-related knowledge (n=10), attitudes towards substance use (n=5), and intention to use (n= 2). All except one of the programmes were either cultural adaptations of mainstream programmes or cultural-based programmes. Most were delivered in schools, either solely or combined with family and community elements. All except five were delivered to a completely indigenous group of participants.

The review authors considered that programmes were beneficial if there were beneficial effects on more than 50% of the substance-related outcomes measured in the study. By this criterion, fourteen programmes were beneficial. The beneficial programmes all used a combination of skill development, cultural knowledge enhancement, and/or substance education. Most were developed with the local Indigenous community, which the review authors stated was in accord with international guidelines (the UN Declaration on the Rights of Indigenous Peoples[42]) and previous research demonstrating the importance of Indigenous ownership for effective programme development. The review authors concluded that substance use prevention programmes have the potential to produce beneficial substance use related outcomes for Indigenous adolescents but so far the published research lacks the methodological rigour to provide conclusive evidence for the effectiveness of such programmes.

Smoking is much more prevalent in young people with mental health problems, especially disruptive behaviour disorders (such as oppositional defiant disorder, conduct disorder, and attention-deficit/hyperactivity disorder (ADHD)), major depressive disorders, and drug and alcohol use disorders, than in the general population of young people.[43-45] The reasons for this are unknown but likely include a combination of chance, common vulnerability to both smoking and psychiatric disorders due to family, genetic or environmental factors, self-medication and neurobiology.[43]

Longitudinal studies indicate that, except for ADHD and anxiety disorders, the onset of smoking generally occurs before the onset of psychiatric disorders.[46] A 2011 review found a lack of research on smoking prevention interventions for young people with, or at risk of, mental health problems.[44]

Smoking cessation

According to the Health Promotion Agency's Youth Insights Survey of Year 10 students, nearly half of young people who are currently smoking want to stop.[47]

While there is a lot of evidence on what works for adults who wish to quit smoking, there is only limited evidence on what works for young people. A 2017 Cochrane review[48] on tobacco cessation interventions for young people aged under 20 years identified 41 relevant trials with follow-up times of six months or longer (25 individually RCTs and 15 cluster RCTs). The review authors judged most of these to be at high or unclear risk of bias in at least one domain. The majority of trials assessed forms of individual or group counselling, with or without extra self-help materials. Eight studies assessed primarily computer or messaging interventions, and four small studies assessed pharmacological interventions (nicotine patches or gum, or bupropion). Meta-analyses indicated a clearly beneficial effect only for group counselling although they did not preclude the possibility of beneficial effects for the other types of interventions. The review authors stated that their certainty regarding the findings from all their analyses was low or very low, mostly because of the clinical heterogeneity of the interventions, imprecision in the effect size estimates due to small numbers of study participants, and issues with risk of bias. (Clinical heterogeneity is differences in participant characteristics, intervention characteristics, and types or timing of outcome measurements.[49])

Evidence from studies of adult smokers indicates that combined use of behavioural treatments, such as individual, group and telephone counselling, and pharmacotherapy is associated with the highest quitting rates, but that several of these treatments are also effective when used alone.[50-52] Nevertheless, most smokers who quit do so on their own.[11,51,53,54] The *2009 New Zealand Tobacco Use Survey*[11] indicated that roughly a third of recent quit attempters had used products or advice on their most recent quit attempt, most commonly nicotine replacement therapy (about one in five) and Quitline (about one in six).

The *New Zealand guidelines for helping people to stop smoking*[55] state that all health care workers should follow the ABC pathway: **A**sk about and document every person's smoking status, give **B**rief advice to stop to every person who smokes, and strongly encourage every person who smokes to use **C**essation support and offer to help them access it.

Effective behavioural and psychological strategies for smoking cessation include behavioural therapy, cognitive behavioural therapy, motivational interviewing, acceptance and commitment therapy, and incentive-based interventions.[56] These strategies can be delivered to either individuals or groups in various ways: by clinicians, counsellors, telephone or computer.[56] Behavioural and psychological interventions are generally more effective when they are more intensive, with more contact time and more sessions[56] but brief interventions delivered by clinicians are also supported by the evidence.[57,58] The evidence for the effectiveness of behavioural studies comes almost entirely from studies in adults. A 2017 review of tobacco cessation interventions for young people found that the only intervention with evidence of effectiveness was group counselling. This finding was based on meta-analysis of data from nine RCTs, none of which reported a statistically significant effect individually. Eight reported a risk ratio greater than one, but sample sizes were generally small and confidence intervals wide.

Behavioural therapy approaches aim to give smokers practical strategies to avoid/cope with triggers, manage cravings, and reduce withdrawal symptoms.[56] Continued engagement with, and adherence to, therapy can be promoted by addressing skill building, self-management of withdrawal symptoms, accepting social support, and managing associated health issues such as moodiness, stress, and other substance use, particularly alcohol use.[51]

Cognitive behavioural therapy aims to change smoking behaviour through addressing the interactions between thoughts, emotions and behaviour.[59] Motivational interviewing aims to help people explore and resolve ambivalence about making a behaviour change, and is typically used with people who are not yet ready to quit smoking.[60] Counsellors used techniques including expressing empathy, actively listening, reflecting back what they have heard, and building self-efficacy.[60] Acceptance and commitment therapy aims to help people to accept intense physical sensations (e.g. nicotine withdrawal) and the emotions and thoughts that go with them (e.g. sadness, anxiety and desire to smoke) and to articulate what is most important to them (e.g. good health, being a good role model for their children) so that these values can motivate and support desired behaviour (quitting smoking).[56,61]

A 2019 Cochrane review[62] found that there is high certainty evidence from 33 RCTs that incentives, such as cash payments or vouchers improve smoking cessation rates, and that the improvement appears to be sustained beyond the period when incentives were provided. This review included 10 trials in pregnant women, which indicated that incentives more than doubled quit rates in this population. Incentive programmes are used in New Zealand, for example the Southern Stop Smoking Service has incentive programmes for pregnant women and for parents and family members who smoke in the primary home of a child who has recently been admitted to hospital for a tobacco-associated health issue.[63]

Behavioural therapies can be delivered effectively through face-to-face counselling, either individually or in groups, brief clinical interventions, and through technology, such as telephone counselling, mobile phone interventions, and web-based interventions.[56] Tailored self-help materials that are based on specific characteristics or concerns of smokers produce modest increases in quitting rates, are much less expensive than medication or multi-session counselling, and have the potential to reach a higher proportion of smokers.[56,64]

Providing behavioural therapies to either individuals or groups outside healthcare settings can make these interventions more accessible. A 2014 Cochrane review[65] of workplace interventions for smoking cessation found strong evidence that some workplace interventions directed at individuals, including individual and group counselling, pharmacological treatment to overcome nicotine addiction, and multi-component interventions targeting smoking cessation as the primary or only outcome, can increase the likelihood of quitting smoking. All these interventions were found to be as effective in workplaces as in other settings.

Quitline services (telephone-based counselling) are available in many countries, including New Zealand. They typically ask people about their smoking history, provide brief counselling, mail self-help materials, and refer users to community resources. They can also provide in-depth counselling and pro-active call backs for some users, and offer support with use of medication for smoking cessation.[66] A 2019 Cochrane review[67] found that there was moderate certainty evidence that proactive telephone counselling (when the counsellor initiates contact) increased people's chances of quitting smoking, both for smokers who had called quitlines (from 7% to 10%), and for smokers who had signed up for telephone counselling in other ways (from 11% to 14%). Real-time video smoking cessation counselling (e.g. via Skype or FaceTime) has been studied but a 2019 Cochrane review[68] on this topic found that so far there is very little evidence for its effectiveness. The review authors identified only two RCTs which compared video to telephone counselling, neither of which found a significant difference.

Mobile phone interventions are a way to reach many young people at relatively low cost. The 2019 Cochrane review[69] of any type of mobile phone intervention for smoking cessation identified 26 mostly high quality RCTs that had measured smoking outcomes at six months or longer. The review found moderate certainty evidence from 13 trials that automated text messaging interventions were more effective than minimal smoking cessation support, increasing quit rates by around 50% (RR 1.54, 95% CI 1.19 to 2.00), and moderate certainty evidence from four trials that messaging when added to other smoking cessation interventions was more effective than the other interventions alone, increasing quit rates by around 60% (RR 1.59, 95% CI 1.09 to 2.33). Although five RCTs of smart phone interventions were identified, these provided insufficient evidence to indicate that smartphone interventions are effective. The review authors stated that further research is need to determine which elements and components of mobile phone interventions are most effective.

A cost-effectiveness analysis of the UK RCT of the mobile phone intervention txt2stop estimated that text based support produced an extra 58 quitters per 1,000 enrolled smokers at a cost per quitter of £278 (roughly $NZ 500).[70] Text based support was assessed as being cost-saving if future NHS costs averted were included in the analysis.[70]

Internet-based smoking cessations also have the potential to reach a large number of people at low cost and can be tailored to mimic the individualisation of one-to-one counselling.[71] A 2017 Cochrane review[71] identified 67 RCTs of internet–based interventions but only four of these were conducted in adolescents or young adults and suitable for meta-analysis. The trials had used various comparators to the internet-based interventions so the review authors pooled trials results in groups according to whether they had compared: (1) an internet intervention to a non-active intervention (e.g. printed self-help guides), (2) an internet intervention to an active control (e.g. face-to-face counselling), (3) an internet intervention plus behavioural support to an internet intervention alone, or (4) one internet intervention with another. The authors stated that the results of their meta-analyses should be interpreted with caution as some of the studies were at high risk of bias. Their conclusions were that the evidence from trials in adults suggests that interactive and tailored internet-based interventions (with or without additional behavioural support) are moderately more effective than non-active controls after six months or more but that there is no evidence that internet interventions are more effective than other active smoking cessation interventions. They were unable to draw any conclusions about the effectiveness of internet interventions in young people.

Another systematic review and meta-analysis, the 2019 review by McCrabb et al.,[72] assessed 45 RCTs of internet–based interventions for adults to determine how the behaviour change techniques (BCTs) used affect internet-based intervention effectiveness. Behaviour change techniques were coded using the 93 BCT taxonomy.[73] On average, intervention groups used significantly more BCTs than comparison groups. Behaviour change techniques from the domains goals and planning, social support, natural consequences, comparison of outcomes, reward and threat, and regulation were significantly associated with increased intervention effectiveness, both short and long term, compared to comparison arms that did not include the domain.

New Zealand young people are heavy users of social media.[74] A 2019 survey reported that, on average, young people aged 13–24 have used 4.8 social media platforms. YouTube, Facebook and Instagram were the top three platforms, used by 93%, 87% and 82% of survey respondents, respectively.[74] Social media tools enable the use of social interactions to engage many young people in smoking cessation interventions and to foster socially supportive communities for quitting smoking and staying smokefree.[75]

The 2017 systematic review by Naslund et al.[75] identified seven studies of social media smoking cessation interventions (four RCTs, one quasi-experimental study and three pilot or initial feasibility studies). Three involved young adults and four involved adults of all ages. Four studies used Facebook and two used Twitter. Six of the seven studies recruited participants via online or Facebook advertisements. Studies used tailored content, targeted reminders and moderated discussions to promote participant engagement. Five studies reported smoking-related outcomes such as self-reported increased abstinence, reduction in relapse, and more quit attempts. Two of these verified smoking abstinence biochemically using exhaled carbon monoxide and/or salivary cotinine but the one that was a RCT[76] did not find any statistically significant differences in the prevalence of validated abstinence between the control group and either the WhatsApp or Facebook intervention groups, at either two- or six-month follow-up. This RCT did find that significantly fewer participants in the WhatsApp group than in the control group reported relapse at two- and six-month follow-up.

The review authors concluded that social media interventions for smoking cessation are feasible and acceptable and have the potential to support population-wide smoking cessation efforts. They stated that future research needs to overcome substantial methodological and practical challenges related to participant engagement and retention, measuring and sustaining clinically meaningful outcomes, and identifying underlying behavioural mechanisms that could inform the scalability of smoking cessation efforts across diverse social media platforms. They also stated that the costs and cost-effectiveness of social media interventions need to be considered and that health researchers should collaborate with researchers in other disciplines including computer science, engineering, data science, marketing and communication, and take into account the perspectives and preferences of patients and families who use social media.

The later (2019) review by Thrul et al.[77] included 12 studies of eight independent social media smoking cessation interventions, four of which were also included in the review by Naslund et al.[75] The 12 studies included three RCTs, four feasibility or pilot studies and five that were secondary data analyses of existing studies or other social media pages and/or websites. One RCT assessed the *Tobacco Status Project,*[78] a 90-day Facebook intervention for young adult smokers. This trial found significantly higher biologically verified 7-day point prevalence abstinence in the intervention group at the 3-month follow-up (8.3% vs. 3.2%) but, at 12-month follow-up, there were no significant differences in verified or self-reported abstinence, smoking reduction, or quit attempts. Another RCT of a Twitter intervention *Tweet2Quit*[79] reported significantly higher self-reported sustained abstinence at 60 days in the intervention group (40% vs. 20%, $p = 0.017$) The third RCT was the WhatsApp and Facebook trial[76] referred to in the discussion of the review by Naslund et al.[75] Although it included some different studies to the review by Naslund et al.,[75] the later review[77] reached similar conclusions: that social media interventions hold promise for helping smokers to quit. The authors stated that participant engagement is important and that future research needs to determine effective strategies to promote user engagement and to investigate which types of engagement (e.g. active or passive) are more likely to lead to sustained quitting.

Addiction to the nicotine in cigarettes makes it hard for smokers to quit. When addicted smokers attempt to stop smoking they experience withdrawal symptoms including irritability, anxiety, cravings, poor concentration, hunger and weight gain.[80] Smoking cessation medications reduce the physical symptoms from nicotine withdrawal, allowing smokers to focus on the behavioural and psychological aspects of quitting.[80] They also desensitise nicotine receptors, thereby eliminating or greatly reducing the immediate reinforcement obtained from the rapid absorption of nicotine from tobacco smoke.[80]

The smoking cessation medications approved by the Ministry of Health and available in New Zealand are nicotine replacement therapy, bupropion, nortriptyline and varenicline.[55] Nicotine replacement therapy is the only medication recommended for people aged 12 to 18 years.[81]

Nicotine replacement therapy (NRT) comes in various forms: as patches, gum, lozenges, inhalator, and mouth spray. Only the first three are subsidised (if supplied on prescription or via the Quit Card Programme).[55] All can be purchased over the counter from supermarkets or pharmacies.[55] There is high quality evidence from more than 100 RCTs of the various types of NRT vs. placebo that all of the forms of NRT approved by the Ministry of Health increase the rate of quitting by 50% to 60%, whether or not additional support is provided.[82] This corresponds to successful quit rates of 160 per 1,000 with NRT vs. 100 per 1,000 for placebo, and 230 per 1,000 for NRT plus intensive behavioural support vs. 150 per 1,000 with intensive behavioural support alone.[82]

The 2019 Cochrane review[83] on comparisons between different doses, duration and modes of delivery for NRT found high-certainty evidence that using combination NRT (e.g. a patch plus either gum or lozenge) increased the chances of a person successfully quitting compared to using a single type of NRT (by 15 to 36%), that higher nicotine dose gum works better than low dose gum, and that there is no difference in effect between different types of NRT. This review found some evidence that using NRT before quit day as well as after may be more effective than only using it after, but the authors stated that further research is needed to strengthen this finding. This evidence comes mostly from studies in adult smokers.[82,83] There is a lack of evidence for the effectiveness of NRT in adolescents.[48] A 2019 review[84] identified only five trials of NRT in young people aged from 10 years to the early twenties, and meta-analysis of the trials' results did not indicate a significant effect on smoking cessation.

Bupropion (Zyban) and nortriptyline are antidepressants, available in New Zealand only on prescription and fully subsidised.[81] The rationale for using antidepressants to aid smoking cessation is that a history of depression is more common in smokers than non-smokers and antidepressants may substitute for the anti-depressant effects of nicotine, and some antidepressants may act on the brain to inhibit neural pathways or block receptors that are associated with nicotine addiction.[85] A 2019 Cochrane review found high certainty evidence from meta-analysis of data from 46 RCTs that bupropion increased smoking cessation rates by around 60% (RR 1.64, 95% CI 1.52 to 1.77) corresponding to around seven more people successfully quitting for every 100 quit attempters (18 per 100 with bupropion vs. 11 per 110 with placebo). There was also high certainty evidence that bupropion was associated with adverse events, particularly psychiatric adverse events, and that people given bupropion were more likely to discontinue treatment than those given a placebo. The review found some evidence, from six trials, that nortriptyline is also effective in increasing smoking cessation rates but no clear evidence that any other antidepressants are effective. The evidence did not indicate a difference in effectiveness between bupropion and nortriptyline or NRT but it did suggest that bupropion was less effective than varenicline (discussed in the next paragraph). There is limited evidence from a few small RCTs that the efficacy of bupropion in adolescents is similar to that in adults.[84]

Varenicline (Champix) is a partial nicotine receptor agonist.[86] It both reduces the urge to smoke and decreases the reward experienced from smoking. In New Zealand it is available only on prescription and subsidised only by special authority for patients who are enrolled in a comprehensive support and counselling programme and who have previously tried and failed to quit with either: at least two trials of NRT at least one of which was accompanied by comprehensive advice on optimal use of NRT; or use of bupropion or nortriptyline.[87] Unsubsidised, it will cost a person around NZD$150 to $200 for a 12 week course, plus the cost of the consultation (if any) to obtain the prescription.[88]

A 2016 Cochrane review[86] found high quality evidence from 27 RCTs that varenicline at standard doses increases smoking cessation rates long term (at six months or more) between two- and three-fold compared to attempting to quit without pharmacological support (RR 2.24, 95% CI 2.06 to 2.4). Lower doses were also found to be effective, and were associated with fewer adverse events. The same review found high quality evidence from five RCTs that varenicline is more effective than bupropion (RR 1.39, 95% CI 1.25 to 1.54) and moderate quality evidence from eight RCTs that is more effective than NRT (RR 1.25, 95% CI 1.14 to 1.37). The most frequently reported adverse effect of varenicline was nausea. This was mostly mild-to-moderate, and tended to decrease over time.

Electronic cigarettes (ECs) are battery-powered devices that heat a liquid into an aerosol (vapour) for inhalation.[89] The vaping liquid usually consists of propylene glycol, glycerol, and flavours, with or without nicotine.[89] Data from the 2017/18 New Zealand Smoking Monitor indicates that a very high proportion (92%) of 18–24 year olds who are current or ex- tobacco smokers have tried using an e-cigarette.[90] Across all age groups, recent quit attempters, (defined as those who smoked regularly in the last three months, smoked daily in the last three days and had made a quit attempt lasting 24 hours or longer in the last three months,) were most likely to be daily or weekly users of e-cigarettes. Thirty-two percent of recent quit attempters were daily users, compared to seven percent of smokers not trying to quit, and 22% of smokers who were serious quitters (those who smoked regularly in the last three months but had smoked less than one cigarette daily or not at all in the last 30 days).

There is some debate about whether vaping is an effective pathway to quitting smoking, as well as uncertainty about the long term health effects of vaping and concerns that addiction to nicotine as a result of vaping is a gateway to regular cigarette smoking, especially for young people.[91-93] There is a scientific consensus that vaping exposes users to far fewer toxic substances than regular cigarette use and so can be recommended to tobacco smokers as a harm reduction intervention (provided they make a complete switch from regular to electronic cigarettes).[92,94,95]

The evidence regarding ECs for smoking cessation is limited. The 2016 Cochrane review[96] identified only three RCTs (one conducted in New Zealand), two of which were suitable for meta-analysis. Both these trials compared nicotine ECs with placebo non-nicotine ECs and both used early EC models with low nicotine content and poor battery life. Meta-analysis of their results indicated that participants using a nicotine EC were more likely to have abstained from smoking for at least six months than participants receiving a placebo EC (RR 2.29, 95% CI 1.05 to 4.96). Four percent of those who received a placebo quit, vs. 9% of those who received nicotine ECs. The review authors rated this evidence as low quality because of imprecision due the small number of trials. The third

RCT compared nicotine ECs to nicotine patches and found no significant difference in six-month abstinence rates, but the wide confidence interval did not preclude the possibility a of clinically important difference (RR 1.26, 95% CI 0.68 to 2.34). The most frequently reported adverse effects of ECs were mouth and throat irritation, which tended to reduce with time. The review authors noted that more RCTs of ECs were underway.

Another meta-analysis of the same two RCTs identified in the Cochrane review,[96] by El Dib et al.,[97] found a non-significant increase in smoking cessation for nicotine ECs compared with placebo ECs (RR 2.03, 95% CI, 0.94 to 4.38). The difference is due to a difference in methodology: the Cochrane review[96] considered participants with missing data as smokers and included them in the meta-analysis, giving a sample size of 662 whereas El Dib et al.[97] omitted them, and so had a sample size of 481.[56,92]

Around the world, governments have taken a variety of approaches to regulating electronic cigarettes.[98] The New Zealand government has recently passed the *Smokefree Environments and Regulated Products (Vaping) Amendment Bill*[99] which will come into force in November 2020 to regulate vaping and smokeless tobacco products.[100] The Bill aims to strike a balance between allowing smokers to use vaping as a harm reduction tool, while preventing nicotine containing products from being marketed or sold to young people.[101] It will prohibit advertising of vaping products and ban their sale to people under the age of 18.[100,102] It will also limit the sale of flavours to specialist stores, allowing retailers such as dairies, petrol stations and supermarkets to sell only mint, menthol and tobacco; ban vaping in cars with children, and in workplaces, schools and early childhood centres; and has some safety provisions.[100,102]

Smokers are commonly advised that the best way to stop smoking is to quit abruptly on a designated quit day rather than gradually reducing their smoking over time, however the 2019 Cochrane review[103] of smoking reduction interventions found moderate-certainty evidence from 22 studies that neither approach produced superior quit rates. The evidence regarding reduction-to-quit versus no treatment was inconclusive and of low certainty. The review found that reduction-to-quit interventions may be more effective when pharmacotherapy is used as an aid (low-certainty evidence), particularly fast-acting NRT or varenicline (moderate-certainty evidence). There was little evidence of serious adverse effects prior to quitting in reduction-to-quit interventions. Many studies did not report on significant adverse effects, and most of those that did found either no adverse effects or no difference in adverse effects between trial arms, but two trials that assessed the effect of adding fast-acting NRT to a reduction-to-quit intervention found more adverse events in the NRT group. These were mild, and generally of the kind known to be associated with NRT.

Smoking-related Guidelines, evidence-based reviews, New Zealand publications, and other relevant publications and websites

A list of publications relevant to tobacco and e-cigarette use by young people is provided below. The list does not included publications dealing only with smoking in pregnancy, which can be found in the 2017 report in this series.

New Zealand guidelines

- Ministry of Health. 2019. **Ka Pū te Ruha, ka Hao te Rangatahi - Good practice guidance for stop smoking services.** https://www.health.govt.nz/publication/ka-pu-te-ruha-ka-hao-te-rangatahi-good-practice-guidance-stop-smoking-services
- Ministry of Health. 2018. **Vaping and smokeless tobacco: position statement on vaping.** https://www.health.govt.nz/our-work/preventative-health-wellness/tobacco-control/vaping-and-smokeless-tobacco
- Ministry of Health. 2018. **Contacting patients to offer brief advice to quit smoking.** https://www.health.govt.nz/our-work/preventative-health-wellness/tobacco-control/tobacco-control-information-practitioners/contacting-patients-offer-brief-advice-quit-smoking

- Ministry of Health. 2016**. Electronic Cigarettes: Information for health care workers.** https://www.health.govt.nz/system/files/documents/pages/electronic-cigarettes-information-health-care-workers-oct16v2.pdf

- Ministry of Health. 2016. **Vaping products – information for stop smoking services.** https://www.health.govt.nz/system/files/documents/pages/vaping-information-for-stop-smoking-services-june-2018.pdf

- Ministry of Health. 2014. **The New Zealand Guidelines for Helping People to Stop Smoking.** https://www.health.govt.nz/publication/new-zealand-guidelines-helping-people-stop-smoking

- Ministry of Health. 2014. **Background and Recommendations of the New Zealand Guidelines** for Helping People to Stop Smoking. https://www.health.govt.nz/system/files/documents/publications/background-recommendations-new-zealand-guidelines-for-helping-stop-smoking-mar15-v2.pdf

- Ministry of Health. 2014. **Guide to Prescribing Nicotine Replacement Therapy (NRT).** https://www.health.govt.nz/publication/new-zealand-guidelines-helping-people-stop-smoking

- Ministry of Health. 2014. **Well Child / Tamariki Ora Programme Practitioner Handbook: Supporting families and whānau to promote their child's health and development.** http://www.health.govt.nz/publication/well-child-tamariki-ora-programme-practitioner-handbook-2013 (the handbook has some sections on smoking and smoking cessation)

- Ministry of Health. 2014. **The ABC Pathway: Key messages for frontline health care workers.** https://www.health.govt.nz/publication/new-zealand-guidelines-helping-people-stop-smoking

- Ministry of Health. 2012. **Guidelines for Implementing the Prohibition on the Display of Tobacco Products 2012: Information for sellers of tobacco products and Smoke-free Enforcement Officers.** http://www.health.govt.nz/publication/guidelines-implementing-prohibition-display-tobaccoproducts

Other New Zealand publications

- Lucas N, Gurram N, Thimasarn-Anwar T. 2020**. Smoking and vaping behaviours among 14 and 15-year-olds: Results from the 2018 Youth Insights Survey**. Wellington: Health Promotion Agency/Te Hiringa Hauora Research and Evaluation Unit. https://www.hpa.org.nz/research-library/research-publications/smoking-and-vaping-behaviours-among-14-and-15-year-olds-results-from-the-2018-youth-insights-survey

- Walker, N., Parag, V., Wong, S. F., et al. 2020. **Use of e-cigarettes and smoked tobacco in youth aged 14–15 years in New Zealand: findings from repeated cross-sectional studies (2014–19)**. *The Lancet Public Health*. https://doi.org/10.1016/S2468-2667(19)30241-5

- Strickett E, Robertson L, Waa A, et al. 2020. **A Qualitative Analysis of Māori and Pacific people's Experiences of Using Electronic Nicotine Delivery Systems (ENDS)**. *Nicotine & Tobacco Research*. https://doi.org/10.1093/ntr/ntaa087

- ITC Project. 2020. **Standardised packaging for tobacco products in New Zealand: Evidence of policy impact from the international tobacco control policy evaluation project**. https://www.otago.ac.nz/wellington/departments/publichealth/research/otago735056.pdf

- ITC Project. 2020. **Awareness and support for New Zealand's Smokefree 2025 goal and key measures to achieve it: ITC New Zealand and ITC Cross-Country Findings**. https://aspire2025.files.wordpress.com/2020/07/itc-data-briefing-sf2025-asap-support-_final.pdf

- Wehipeihana N, Were L, Goodwin D, et al. 2019. **Addressing the Challenges of Young Māori Women Who Smoke: A developmental evaluation of the phase two demonstration project. Evaluation report.** Wellington: Ministry of Health https://www.health.govt.nz/system/files/documents/publications/addressing-challenges-young-maori-women-smoke-nov18.pdf

- Gurram N, Martin G. 2019. **Disparities in age of smoking initiation and transition to daily smoking in New Zealand**. Wellington: Health Promotion Agency.

https://www.hpa.org.nz/sites/default/files/Disparities%20related%20to%20the%20age%20of%20smoking%20initiation%20and%20transition%20into%20daily%20smoking%20in%20New%20Zealand.pdf

- Houghton F, Duncan B, Houghton S, et al. 2019. **Responding to health inequities in New Zealand: the potential of dissuasive cigarettes**. Journal of Primary Health Care, 11(4) 311-14. https://doi.org/10.1071/HC19013
- Guiney H, Oakly A, Martin G. 2019. **E-cigarette use and perceptions among current and ex-smokers in New Zealand**. Wellington: Health Promotion Agency. https://www.hpa.org.nz/sites/default/files/Final%20Report%20-%20E-cigarette%20use%20and%20perceptions%20among%20current%20and%20ex-smokers%20in%20NZ_Jan%202019_0.pdf
- Robertson L, Marsh L. 2019. **Estimating the effect of a potential policy to restrict tobacco retail availability in New Zealand**. *Tobacco Control,* 28(4) 466-68. https://doi.org/10.1136/tobaccocontrol-2018-054491
- Bateman J, Robertson L, Marsh L, et al. 2019. **New Zealand tobacco retailers’ understandings of and attitudes towards selling Electronic Nicotine Delivery Systems: a qualitative exploration**. Tobacco Control, tobaccocontrol-2019-055173. https://doi.org/10.1136/tobaccocontrol-2019-055173
- Wamamili B, Wallace-Bell M, Richardson A, et al. 2019. **Cigarette smoking among university students aged 18-24 years in New Zealand: results of the first (baseline) of two national surveys**. *BMJ open,* 9(12) e032590-e90. https://doi.org/10.1136/bmjopen-2019-032590
- Ball, J., Sim, D., Edwards, R. 2018. **Why has adolescent smoking declined dramatically? Trend analysis using repeat cross-sectional data from New Zealand 2002–2015**. BMJ Open 2018;8:e020320. https://doi.org/10.1136/bmjopen-2017-020320
- Ball, J., Sim, D., Edwards, R. (2018) **Addressing ethnic disparities in adolescent smoking: Is reducing exposure to smoking in the home a key?** *Nicotine & Tobacco Research*, nty053, https://doi.org/10.1093/ntr/nty053
- Ministry of Health. 2017. **Exploring why young Māori women smoke: Taking a new approach to understanding the experiences of people in our communities.** https://www.health.govt.nz/system/files/documents/pages/exploring-why-young-maori-women-smoke-final-10october2017.pdf
- Ministry of Health. 2017. **Young Māori women who smoke: technical report.** https://www.health.govt.nz/system/files/documents/pages/mws-analytics-technical-report-june-2017.pdf
- Ministry of Health. 2017. **Young Māori women who smoke: a journey of discovery through data.** https://www.health.govt.nz/system/files/documents/pages/mws-analytics-single-page-summary-june2017.pdf
- Ministry of Health. 2017. **How-to guide to undertaking analysis: learnings from the project on young Māori women who smoke.** https://www.health.govt.nz/system/files/documents/pages/mwsanalytics_how-to_guide_to_undertaking_analysis_june2017.pdf
- Ball J, Hoek J, Tautolo ES, et al. 2017. **New Zealand policy experts' appraisal of interventions to reduce smoking in young adults: a qualitative investigation**. BMJ open, 7(12) e017837-e37. https://doi.org/10.1136/bmjopen-2017-017837
- Marsh L, Iosua E, McGee R, et al. 2017. **New Zealand adolescents’ discouragement of smoking among their peers**. *Australian and New Zealand Journal of Public Health,* 41(5) 497-501. https://doi.org/10.1111/1753-6405.12698
- Muriwai E. 2016. Smoking, not our tikanga: **An analysis of Māori identity and smoking behaviour**. M.Sc. thesis, University of Auckland, Auckland. https://researchspace.auckland.ac.nz/handle/2292/29480

- Gifford H, Tautolo E-S, Erick S, et al. 2016. **A qualitative analysis of Māori and Pacific smokers' views on informed choice and smoking**. BMJ open, 6(5) e011415-e15. http://dx.doi.org//10.1136/bmjopen-2016-011415

- Gendall P, Hoek J, Edwards R, et al. 2016. **Effect of Exposure to Smoking in Movies on Young Adult Smoking in New Zealand**. PloS one, 11(3) e0148692-e92. https://doi.org/10.1371/journal.pone.0148692

International guidelines

- U.S. Department of Health and Human Services. 2020. **Smoking Cessation. A Report of the Surgeon General**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. https://www.ncbi.nlm.nih.gov/books/NBK555591/

- National Institute for Health and Care Excellence. 2018. **Stop smoking interventions and services**. NICE guideline [NG92]. https://www.nice.org.uk/guidance/ng92

- National Academies of Sciences, Engineering, and Medicine. **2018. Public health consequences of e-cigarettes**. Washington, DC: National Academies Press. https://www.nap.edu/catalog/24952/public-health-consequences-of-e-cigarettes

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- Harvey J, Chadi N, Canadian Paediatric Society Adolescent Health Committee. 2016. **Preventing smoking in children and adolescents: Recommendations for practice and policy**. *Paediatrics & child health,* 21(4) 209-21. https://doi.org/10.1093/pch/21.4.209

- Harvey J, Chadi N. 2016. **Strategies to promote smoking cessation among adolescents**. *Paediatrics & child health,* 21(4) 201-8. https://doi.org/10.1093/pch/21.4.201

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- U.S. Department of Health and Human Services. 2016. **E-Cigarette use among youth and young adults. A report of the Surgeon General**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. https://www.ncbi.nlm.nih.gov/books/NBK538680/

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- Berg RC, Underland V. 2012. **NIPH systematic reviews: Executive summaries. The effectiveness of primary interventions to prevent the use of tobacco, alcohol and other drugs among children and adolescents**. Oslo, Norway: Knowledge Centre for the Health Services at the Norwegian Institute of Public Health (NIPH). https://pubmed.ncbi.nlm.nih.gov/29320003/

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- World Health Organization. 2010. **The alcohol, smoking and substance involvement screening test (ASSIST): Manual for use in primary care.** http://whqlibdoc.who.int/publications/2010/9789241599382_eng.pdf

- National Institute for Health and Care Excellence. 2010. **School-based interventions to prevent smoking (PH 23).** http://publications.nice.org.uk/school-basedinterventions-to-prevent-smoking-ph23

- Fiore MC JC, Baker TB, et al. 2008. **Treating tobacco use and dependence: 2008 update. Clinical practice guideline**. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service. https://www.ncbi.nlm.nih.gov/books/NBK63952/
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- National Institute for Health and Care Excellence. 2007. **Varenicline for smoking cessation. Technology appraisal guidance [TA123]**. https://www.nice.org.uk/guidance/ta123/chapter/1-Guidance
- National Institute for Health and Care Excellence. 2007. **Smoking: workplace interventions.** https://www.nice.org.uk/guidance/ph5

Evidence-based reviews

- Selph S, Patnode C, Bailey SR, et al. 2020. **Primary care-relevant interventions for tobacco and nicotine use prevention and cessation in children and adolescents: Updated evidence report and systematic review for the US Preventive Services Task Force**. *JAMA,* 323(16) 1599-608. https://doi.org/10.1001/jama.2020.3332
- Sargent JD, Unger JB, Leventhal AM. 2020. **Recommendations from the USPSTF for prevention and cessation of tobacco use in children and adolescents**. *JAMA,* 323(16) 1563-64. https://doi.org/10.1001/jama.2019.22312 (Highlights the main points from the review above)
- Owens DK, Davidson KW, Krist AH, et al. 2020. **Primary care interventions for prevention and cessation of tobacco use in children and adolescents: US Preventive Services Task Force recommendation statement**. *JAMA,* 323(16) 1590-98. https://doi.org/10.1001/jama.2020.4679
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- Howes S, Hartmann-Boyce J, Livingstone-Banks J, et al. 2020. **Antidepressants for smoking cessation**. *The Cochrane database of systematic reviews,*(4). https://doi.org/10.1002/14651858.CD000031.pub5
- Hartmann-Boyce J, Hong B, Livingstone-Banks J, et al. 2019. **Additional behavioural support as an adjunct to pharmacotherapy for smoking cessation**. *The Cochrane database of systematic reviews,*(6). https://doi.org/10.1002/14651858.CD009670.pub4
- Carson-Chahhoud KV, Livingstone-Banks J, Sharrad KJ, et al. 2019. **Community pharmacy personnel interventions for smoking cessation**. *The Cochrane database of systematic reviews,*(10). https://doi.org/10.1002/14651858.CD003698.pub3
- Lindson N, Klemperer E, Hong B, et al. 2019. **Smoking reduction interventions for smoking cessation**. *The Cochrane database of systematic reviews,*(9). https://doi.org/10.1002/14651858.CD013183.pub2
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- Lindson N, Thompson TP, Ferrey A, et al. 2019. **Motivational interviewing for smoking cessation**. *The Cochrane database of systematic reviews,*(7). https://doi.org/10.1002/14651858.CD006936.pub4
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- Stead LF, Carroll AJ, Lancaster T. 2017. **Group behaviour therapy programmes for smoking cessation**. *The Cochrane database of systematic reviews,*(3). https://doi.org/10.1002/14651858.CD001007.pub3
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- Fanshawe TR, Halliwell W, Lindson N, et al. 2017. **Tobacco cessation interventions for young people**. *The Cochrane database of systematic reviews,*(11). https://doi.org/10.1002/14651858.CD003289.pub6
- Denison E, Underland V, Mosdøl A, et al. 2017. **Cognitive therapies for smoking cessation: A systematic review**. Oslo, Norway: Knowledge Centre for the Health Services at The Norwegian Institute of Public Health (NIPH). https://www.ncbi.nlm.nih.gov/books/NBK482098/pdf/Bookshelf_NBK482098.pdf
- Taylor GMJ, Dalili MN, Semwal M, et al. 2017. **Internet-based interventions for smoking cessation**. *The Cochrane database of systematic reviews,* (9). https://doi.org/10.1002/14651858.CD007078.pub5
- Carson-Chahhoud KV, Ameer F, Sayehmiri K, et al. 2017. **Mass media interventions for preventing smoking in young people**. *The Cochrane Database of Systematic Reviews,*(6). https://doi.org/10.1002/14651858.CD001006.pub3
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- Hartmann-Boyce J, McRobbie H, Bullen C, et al. 2016. **Electronic cigarettes for smoking cessation**. *The Cochrane database of systematic reviews,*(9). https://doi.org/10.1002/14651858.CD010216.pub3
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- West R, Raw M, McNeill A, et al. 2015. **Health-care interventions to promote and assist tobacco cessation: a review of efficacy, effectiveness and affordability for use in national guideline development**. Addiction, 110(9) 1388-403. https://doi.org/10.1111/add.12998

- Hoffman SJ, Tan C. 2015. **Overview of systematic reviews on the health-related effects of government tobacco control policies**. *BMC Public Health,* 15 744. https://doi.org/10.1186/s12889-015-2041-6
- Thomas RE, Baker PR, Thomas BC, et al. 2015. **Family-based programmes for preventing smoking by children and adolescents**. *The Cochrane database of systematic reviews,*(2). https://doi.org/10.1002/14651858.CD004493.pub3
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Other relevant publications

- World Health Organization. 2019. **WHO global report on trends in prevalence of tobacco use 2000-2025, third edition.** https://www.who.int/publications-detail/who-global-report-on-trends-in-prevalence-of-tobacco-use-2000-2025-third-edition#.Xfs0LB84eYU.twitter
- UNESCO, United Nations Office on Drugs and Crime, WHO. 2017. **Good policy and practice in health education: Education sector responses to the use of alcohol, tobacco and drugs**. Paris: UNESCO. https://www.who.int/publications/i/item/9789231002113
- U.S. Department of Health and Human Services. 2006. **The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General.** http://www.ncbi.nlm.nih.gov/books/NBK44324/

Websites

- Ministry of Health, Health Promotion Agency. 2019. Vaping Facts. https://www.vapingfacts.health.nz/

Alcohol and drug related Guidelines, evidence-based reviews, New Zealand publications, and other relevant publications and websites

A list of publications relevant to alcohol and drug use by young people is provided below. The rapid review in this report provides overview of alcohol use in young people in New Zealand and ways to address alcohol abuse.

New Zealand guidelines

- Ministry of Health. 2014. **Transition planning guidelines for infant, child and adolescent mental health/alcohol and other drugs services 2014.** Wellington: Ministry of Health. https://www.health.govt.nz/publication/transition-planning-guidelines-infant-child-and-adolescent-mental-health-alcohol-and-other-drugs
- Ministry of Health. 2011. **Youth Forensic Services Development Guidance for the health and disability sector on the development of specialist forensic mental health, alcohol and other drug, and intellectual disability services for young people involved in New Zealand's justice system.** Wellington: Ministry of Health. https://www.health.govt.nz/publication/youth-forensic-services-development

New Zealand publications and websites

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7. Safety and security

Assault, neglect or maltreatment

All children aged under 18 years have a right to grow "in a family environment of happiness, love and understanding" and have "protection from sexual exploitation, abuse and economic exploitation" under the United Nations Convention on the Rights of the Child (UNCROC),[1] ratified by New Zealand in 1993.[2] Cases of child assault, neglect and maltreatment continue to infringe on the rights of children and continue to be serious, international public health issues.[3,4]

The extent to which children and young people are safe from maltreatment and violence is strongly associated with several risk and protective factors at the levels, including: social, cultural and economic factors; community factors; parent and whānau factors; and individual factors.[5-8] Child maltreatment is defined as any "act of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child".[9] Acts of "commission" can involve harming a child physically, psychologically/emotionally (such as through yelling, shaming or exposing a child to violence towards others), sexually, or through ill treatment.[10] As of June 2007, parental force and physical punishment "for the purpose of correction" has been illegal.[11] Physical punishment has been shown to be ineffective as a disciplinary method[12,13] and associated with the compromised developmental, social and emotional potential of children as well as undermining parent-child relationships.[13-16] Child neglect (or acts of "omission") can involve failing to meet a child's physical, medical, supervisory, appropriate care, and emotional needs.[10]

Monitoring child safety with respect for the sensitivity of the phenomenon and for the privacy of children can be achieved via de-identified data.[17] There are limitations of understanding the phenomenon via this means, including that it may underestimate the injury hospitalisations caused by parents or caregivers, underestimate prevalence of child maltreatment, and have potential reporting bias with the diagnoses being more readily used for children perceived to be at risk.[3,17-19]

The following section reviews deaths and hospitalisations of New Zealand 0–24 year olds that involved injuries due to assault, neglect or maltreatment, using data from the National Minimum Dataset and the National Mortality Collection.

Data sources and methods

Indicator(s)

Hospitalisations for injuries arising from the assault, neglect, or maltreatment

Hospitalisations for 0–24 year olds with a primary diagnosis of injury and an intentional injury external cause code in any of the first 10 external cause codes.

Data source(s):

Numerator:	National Minimum Dataset (NMDS)
Denominator:	NZCYES estimated resident population

Additional information

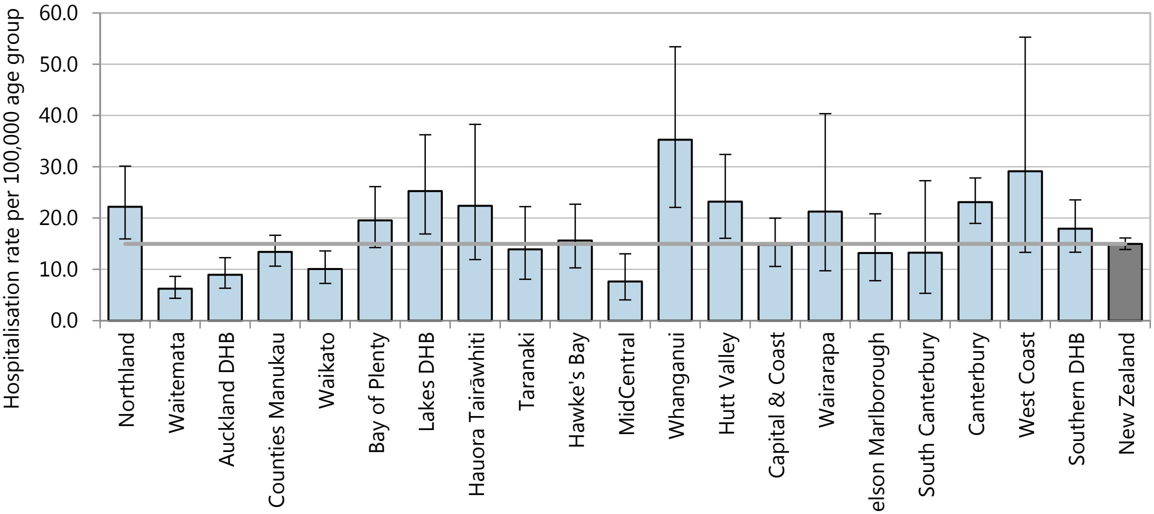
As outlined in the appendices, in order to ensure comparability over time, all cases with an emergency department specialty code on discharge were excluded for most of the information provided in this section, as were admissions with a primary diagnosis outside of the injury range.

Hospitalisations due to assault, neglect or maltreatment

Hospitalisation rates for injuries arising from assault, neglect or maltreatment are presented by District Health Board (DHB) in Figure 7-1 for 0–14 year olds and in Figure 7-2 for 15–24 year olds.

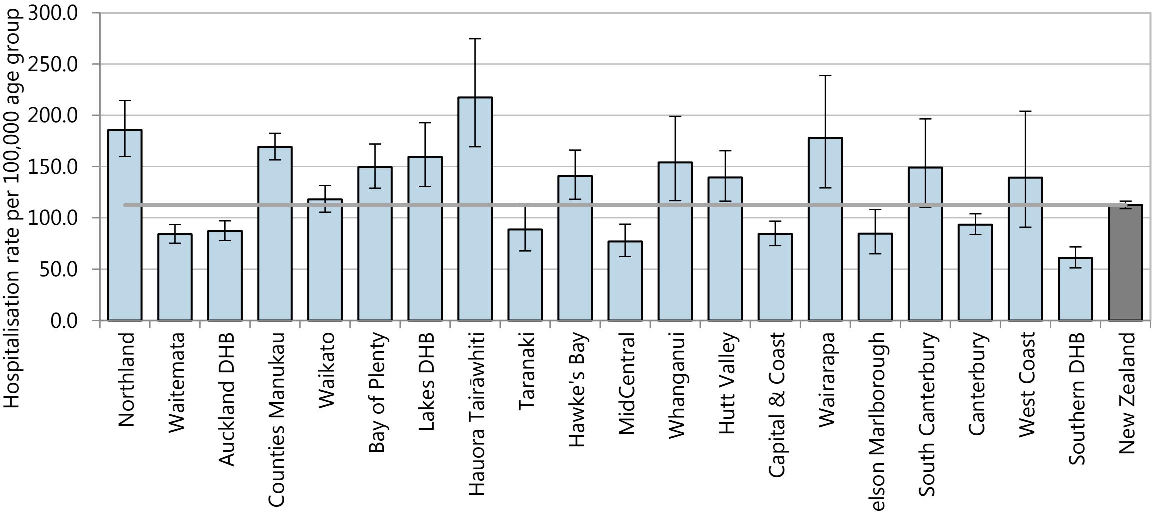
When compared with the national rate, the hospitalisation rate for injuries due to assault, neglect or maltreatment in Southern DHB was not significantly different for 0–14 year olds (Figure 7-1) (although marginally higher in the Southland region of the DHB, as shown in Table 7-1), and significantly lower for 15–24 year olds (Figure 7-2).

Figure 7-1. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds, by district health board, 2014–2018



Indicator: Injuries arising from assault, neglect, or maltreatment in children (0–14 year olds)
Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population

Figure 7-2. Hospitalisations due to injuries arising from assault in 15–24 year olds, by district health board, 2014–2018



Indicator: Injuries arising from assault in young people (15–24 year olds)
Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population

Table 7-1. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds, by year, Southern DHB vs New Zealand 2014–2018

DHB	Number	Annual average	Rate per 100,000 population	Rate ratio	95% CI
Hospitalisations of 0–14 year olds, 2014–2018					
Injuries arising from assault, neglect, or maltreatment					
Southern DHB	51	10	17.92	1.20	0.90–1.59
Otago	23	5	13.91	0.93	0.61–1.41
Southland	28	6	23.46	1.57	1.07–2.29
New Zealand	687	137	14.97	1.00	

Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population. Rate ratios are unadjusted

Table 7-2. Hospitalisations due to injuries arising from assault in 15–24 year olds, by year, Southern DHB vs New Zealand 2014–2018

DHB	Number	Annual average	Rate per 100,000 population	Rate ratio	95% CI
Hospitalisations of 15–24 year olds, 2014–2018					
Injuries arising from assault					
Southern DHB	144	29	60.93	0.54	0.46–0.64
Otago	89	18	53.97	0.48	0.39–0.59
Southland	55	11	77.01	0.68	0.52–0.89
New Zealand	3,589	718	112.67	1.00	

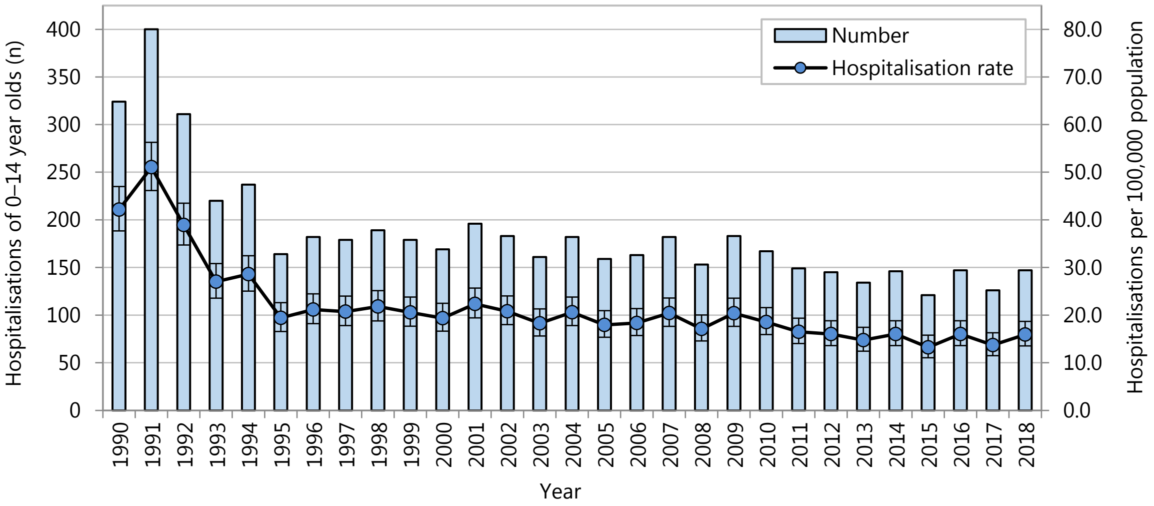
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population. Rate ratios are unadjusted

Figure 7-3 presents hospitalisations of 0–14 year olds due to injuries arising from assault, neglect or maltreatment in New Zealand over the period 1990–2018. There was sharp decline in the hospitalisations of 0–14 year olds between 1990 and 1995 followed by a relatively stable rate at around 20 hospitalisations per 100,000 children up to the year 2000.

Historically reporting on hospitalisations for assault, neglect or maltreatment has excluded hospital events treated primarily by emergency medicine. This exclusion arose from the variation in reporting practices, specifically where treatment continues beyond three hours thereby requiring admission to a ward from the emergency department.[20] Figure 7-5 presents the number of hospitalisations by ED status. The remainder of this section is limited to hospitalisations where the patient had been discharged from an inpatient ward.

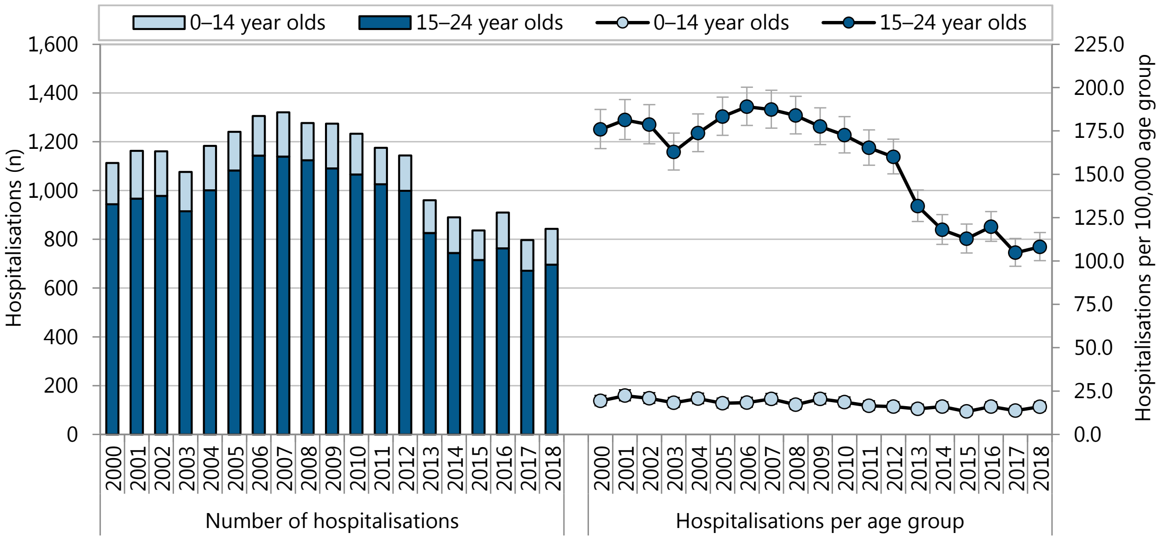
Figure 7-4 shows hospitalisations due to injuries arising from assault in both 0–14 year olds and 15–24 year olds from 2000–2018. Since 2000, both age groups have seen an overall decline in their hospitalisation rates. Young people (15–24 year olds) consistently experienced larger number of hospitalisations for assault when compared to their younger peers (nearly 700 compared to 147 respectively in 2018), and experienced a significantly higher hospitalisation rate per 100,000 age group (a rate of 108 in 2018).

Figure 7-3. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds, by year, New Zealand 1990–2018



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

Figure 7-4. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds and in 15–24 year olds, by year, New Zealand 2000–2018

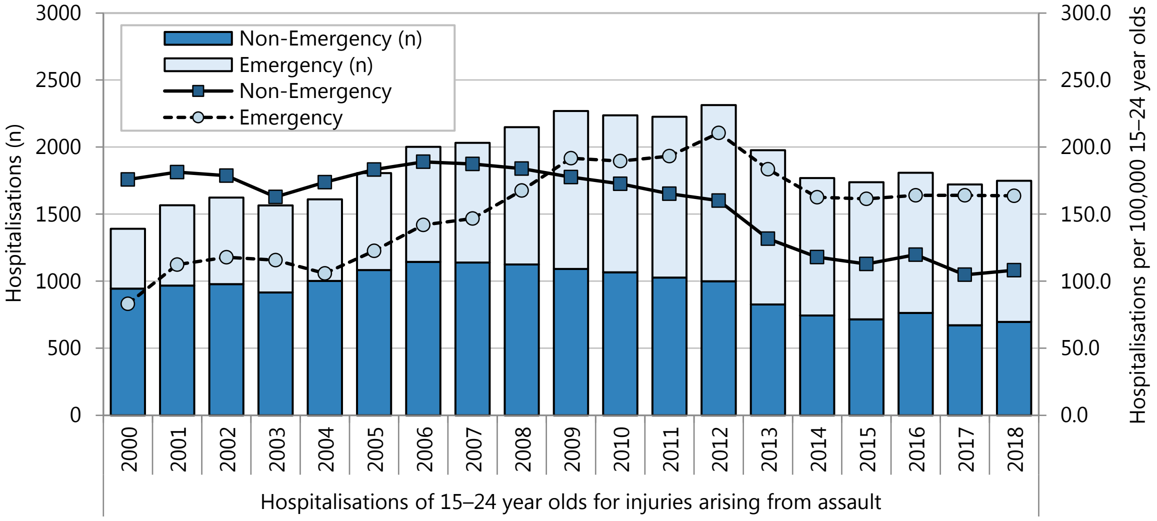


Indicator: Injuries arising from assault, neglect, or maltreatment in children and young people
Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population

In the five years from 2014–2018 there were 687 hospitalisations of 0–14 year olds for injuries arising from assault, neglect or maltreatment, and there were 3,589 hospitalisations of 15–24 year olds (Table 7-3).

In both children and young people, the most common injuries sustained in hospitalisations as a result of assault, neglect or maltreatment were head injuries, of which traumatic brain injuries were the most common in children (117 hospitalisations) and fractures to the skull or facial bones were the most common in young people (1,464 hospitalisations) (Table 7-3).

Figure 7-5. Hospitalisations due to injuries arising from assault in 15–24 year olds, by year and admission type, New Zealand 2000–2018



Numerator: NMDS, Denominator: NZCYES Estimated Resident Population

Table 7-3. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds, by nature of injury, New Zealand 2014–2018

Primary diagnosis	Number	Annual average	Rate per 100,000 population	%
New Zealand				
Hospitalisations for injuries arising from the assault, neglect, or maltreatment, 2014–2018				
0–14 year olds				
Traumatic brain injuries	117	23	2.55	17.0
Superficial head injury	87	17	1.90	12.7
Fracture skull or facial bones	52	10	1.13	7.6
Other head injuries	73	15	1.59	10.6
Injuries to thorax (including rib fractures)	21	4	0.46	3.1
Injuries to abdomen, lower back, and pelvis	53	11	1.16	7.7
Injuries to upper limb	79	16	1.72	11.5
Fractured femur	9	2	0.20	1.3
Other injuries to lower limbs	40	8	0.87	5.8
Maltreatment	96	19	2.09	14.0
Other injuries	0	..	..	..
Total	687	137	14.97	100
15–24 year olds				
Fracture skull or facial bones	1,464	293	89.99	40.8
Traumatic brain injuries	379	76	23.30	10.6
Superficial head injury	79	16	4.86	2.2
Other head injuries	367	73	22.56	10.2
Injuries to the neck	60	12	3.69	1.7
Injuries to thorax (including rib fractures)	129	26	7.93	3.6
Injuries to abdomen, lower back, and pelvis	230	46	14.14	6.4
Injuries to upper limb	668	134	41.06	18.6
Fractured femur	5	1	0.31	0.1
Other injuries to lower limb	148	30	9.10	4.1
Burns of external or multiple body sites	10	2	0.61	0.3
Poisoning by drugs, medicaments and biological substances	17	3	1.04	0.5
Maltreatment	5	1	0.31	0.1
Other injuries	28	6	1.72	0.8
Total	3,589	718	220.61	100

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

Table 7-4 and Table 7-5 present a breakdown by five age groups of the primary diagnoses in hospitalisations of children and young people for injuries arising from assault, neglect or maltreatment.

Of the 101 hospitalisations in under-25 year olds with a primary diagnosis of maltreatment (Table 7-3), nearly three quarters were in 0–4 year olds (Table 7-4). Over one in five hospitalisations of under-5 year olds had maltreatment as a primary diagnosis and over one in five had traumatic brain injury (Table 7-4). Over two in five hospitalisations in young people between 15–18 and 20–24 years of age had fractures to the skull or facial bones as a primary diagnosis (Table 7-5).

Table 7-4. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds, by age groups and nature of injury, New Zealand 2014–2018

Primary diagnosis	2014–2018 (n)	Annual average	Rate per 100,000 population	%
New Zealand				
Hospitalisations for injuries arising from the assault, neglect, or maltreatment of children, 2014–2018				
0–4 year olds				
Traumatic brain injury	74	15	4.58	22.3
Superficial head injury	55	11	3.40	16.6
Fracture skull or facial bones	9	2	0.56	2.7
Other head injuries	21	4	1.30	6.3
Injuries to upper limb	35	7	2.17	10.5
Injuries to abdomen, lower back, and pelvis	18	4	1.11	5.4
(Other) Injuries to lower limbs	11	2	0.68	3.3
Maltreatment	74	15	4.58	22.3
Other injuries*	35	7	2.17	10.5
Total	332	66	20.55	100.0
5–9 year olds				
Superficial head injury	12	2	0.79	10.4
Fracture skull or facial bones	5	1	0.33	4.3
Traumatic brain injury	5	1	0.33	4.3
Other head injuries	18	4	1.19	15.7
Injuries to upper limb	16	3	1.05	13.9
Injuries to abdomen, lower back, and pelvis	16	3	1.05	13.9
(Other) Injuries to lower limbs	13	3	0.86	11.3
Maltreatment	15	3	0.99	13.0
Other injuries*	15	3	0.99	13.0
Total	115	23	7.58	100.0
10–14 year olds				
Fracture skull or facial bones	38	8	2.61	15.8
Traumatic brain injury	38	8	2.61	15.8
Superficial head injury	20	4	1.38	8.3
Other head injuries	34	7	2.34	14.2
Injuries to upper limb	28	6	1.93	11.7
Injuries to abdomen, lower back, and pelvis	19	4	1.31	7.9
(Other) Injuries to lower limbs	16	3	1.10	6.7
Maltreatment	7	1	0.48	2.9
Other injuries*	40	8	2.75	16.3
Total	240	48	16.50	100.0

Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population; * Other injuries includes injuries to thorax, rib fractures and femur fractures. Small number suppression applied

Table 7-5. Hospitalisations due to injuries arising from assault in 15–24 year olds, by age groups and nature of injury, New Zealand 2014–2018

Primary diagnosis	2014–2018 (n)	Annual average	Rate per 100,000 population	%
New Zealand				
Hospitalisations for injuries arising from the assault of young people, 2014–2018				
15–19 year olds				
Fracture skull or facial bones	546	109	68.05	39.1
Traumatic brain injuries	149	30	18.57	10.7
Superficial head injury	37	7	4.61	2.7
Other head injuries	148	30	18.45	10.6
Injuries to the neck	32	6	3.99	2.3
Injuries to thorax (including rib fractures)	49	10	6.11	3.5
Injuries to abdomen, lower back, and pelvis	95	19	11.84	6.8
Injuries to upper limb	255	51	31.78	18.3
Fractured femur	<5	s	s	s
Other injuries to lower limb	52	10	6.48	3.7
Burns of external or multiple body sites	<5	s	s	s
Poisoning by drugs, medicaments and biological substances	11	2	1.37	0.8
Maltreatment	<5	s	s	s
Other injuries	16	3	1.99	1.1
Total	1,396	279	173.99	100.0
20–24 year olds				
Fracture skull or facial bones	918	184	111.34	41.9
Traumatic brain injuries	230	46	27.89	10.5
Superficial head injury	42	8	5.09	1.9
Other head injuries	219	44	26.56	10.0
Injuries to the neck	28	6	3.40	1.3
Injuries to thorax (including rib fractures)	80	16	9.70	3.6
Injuries to abdomen, lower back, and pelvis	135	27	16.37	6.2
Injuries to upper limb	413	83	50.09	18.8
Fractured femur	<5	s	s	s
Other injuries to lower limb	96	19	11.64	4.4
Burns of external or multiple body sites	6	1	0.73	0.3
Poisoning by drugs, medicaments and biological substances	12	2	1.46	0.5
Maltreatment	<5	s	s	s
Other injuries	12	2	1.46	0.5
Total	2,193	439	265.97	100.0

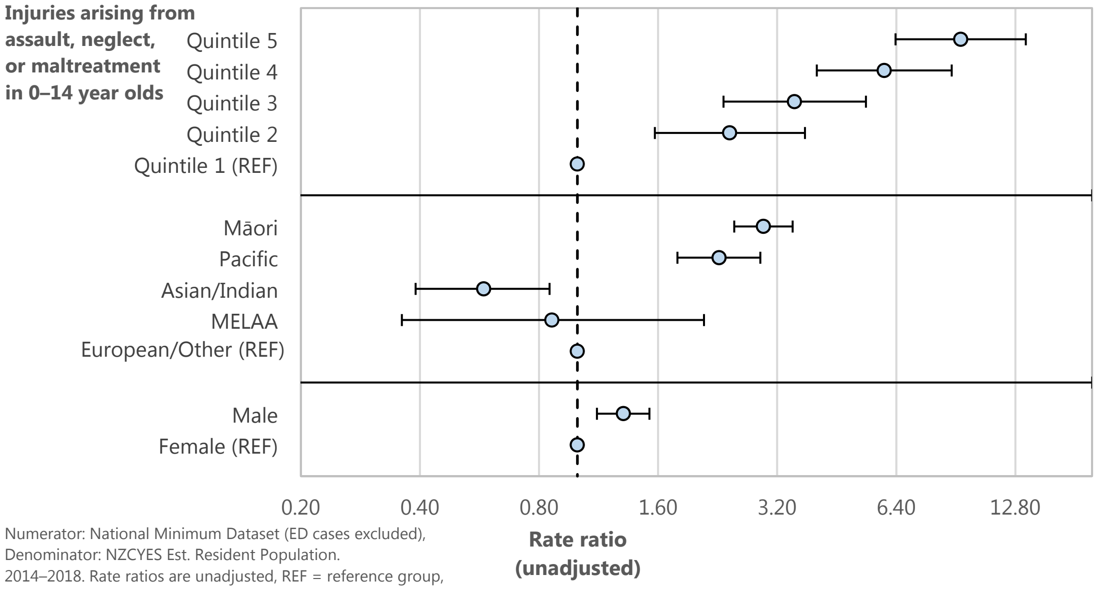
Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Estimated Resident Population. Small number suppression applied

Figure 7-6 and Figure 7-7 present for 0–14 and 15–24 year olds hospitalisations due to injuries arising from assault, neglect, or maltreatment by demographic factor. The unadjusted rate ratio presents the gap, if any, between the groups and the reference group. The following associations were observed, bearing in mind that this univariate analysis does not quantify the independent effect of each factor.

- Hospitalisation rates were over nine times higher for children who lived in areas with the highest NZDep2013 score (quintile 5) compared with children living in areas with the lowest score (quintile 1) (Figure 7-6). Rates were nearly four times higher for young people living in areas with the highest deprivation score compared to their peers of the same age in the lowest deprivation score (Figure 7-7).
- Hospitalisation rates for Asian/Indian children and young people were less than half that of European/Other children and young people (Figure 7-6; Figure 7-7). Hospitalisation rates for Māori children and young people were nearly three times the hospitalisation rate of European/Other children, and with the rate for Pacific individuals over two times (Figure 7-6; Figure 7-7). Rates for MELAA children were marginally but not significantly lower than European/Other while rates for MELAA young people were significantly higher than their European/Other peers.

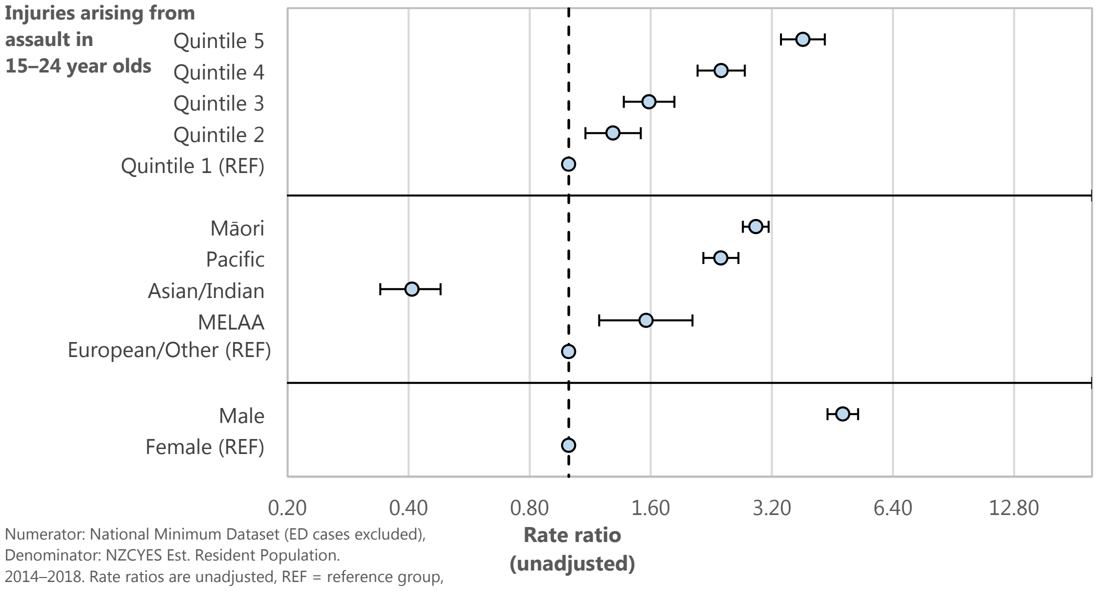
- Rates by gender saw a marginally higher rate for male children (Figure 7-6) while this gap was wider in young people, with boys seeing a rate nearly five times that of girls (Figure 7-7).

Figure 7-6. Hospitalisations due to injuries arising from assault, neglect, or maltreatment in 0–14 year olds, by demographic factor, New Zealand 2014–2018



Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Est. Resident Population. 2014–2018. Rate ratios are unadjusted, REF = reference group, Ethnicity is level 1 prioritised, Quintile is NZDep2013 (1 = least; 5 = most deprived)

Figure 7-7. Hospitalisations due to injuries arising from assault 15–24 year olds, by demographic factor, New Zealand 2014–2018

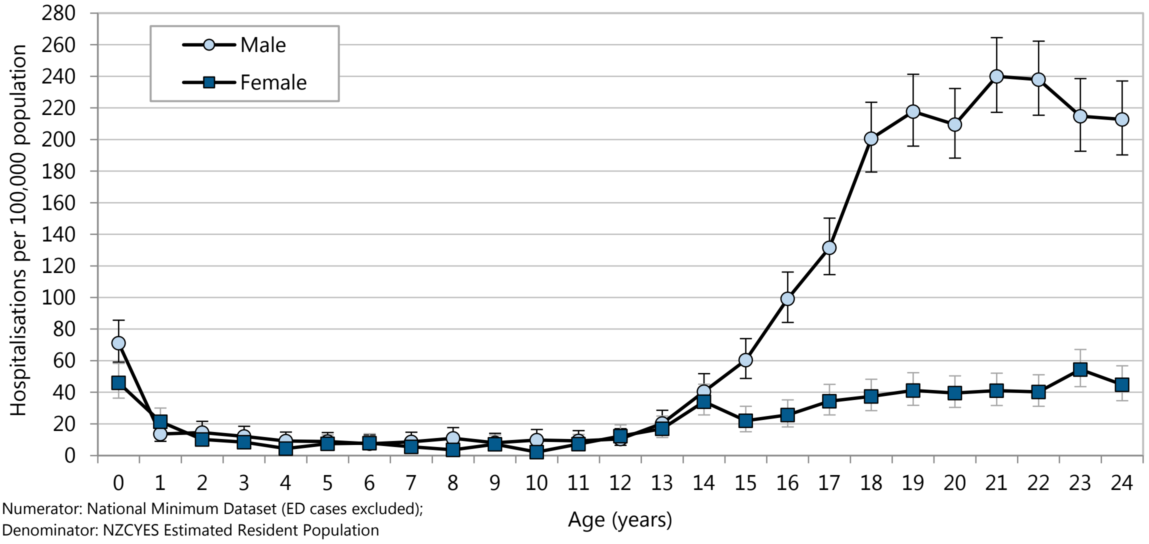


Numerator: National Minimum Dataset (ED cases excluded), Denominator: NZCYES Est. Resident Population. 2014–2018. Rate ratios are unadjusted, REF = reference group, Ethnicity is level 1 prioritised, Quintile is NZDep2013 (1 = least; 5 = most deprived)

Figure 7-8 provides a breakdown by year of age and sex for the hospitalisation rate for injuries arising from assault, neglect and maltreatment in under-25 year olds for the pooled period 2014–2018. Hospitalisation rates were highest for infants relative to other children before rates increasing for both girls and boys at ages 13–14. Rates by gender are similar between boys and girls until the age of 15 when male young people experience a higher rate than female young people and a steep increase between ages 13–18.

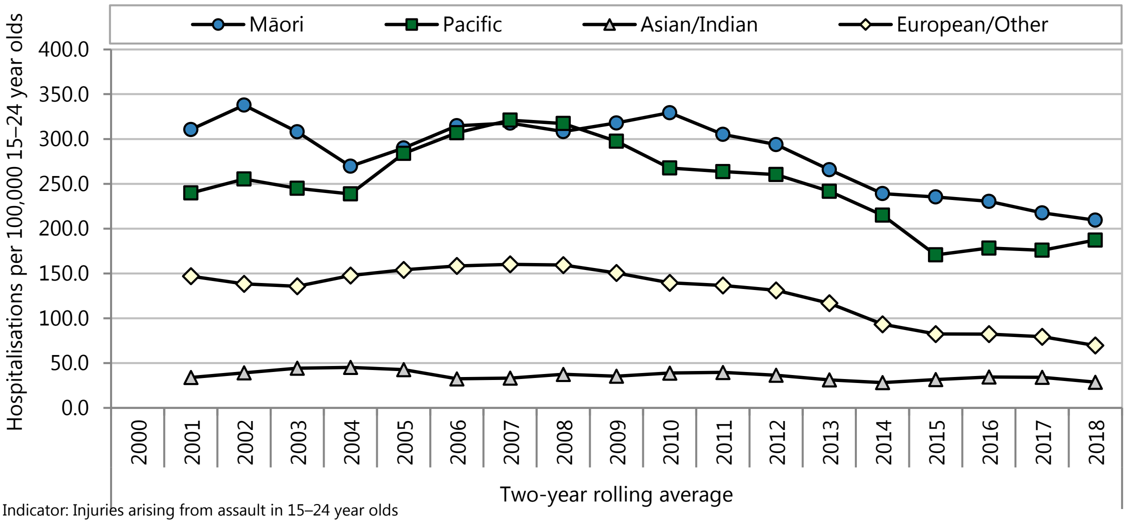
While hospitalisations by ethnicity for 0–14 year olds were too small in number to allow for meaningful comparison over time, hospitalisations for young people are presented by ethnicity in Figure 7-9 as a two-year rolling average. For all ethnic groups, rates have decreased since 2000 and most significantly for Māori young people.

Figure 7-8. Hospitalisations due to injuries arising from assault, neglect, or maltreatment of 0–24 year olds, by age and sex, New Zealand 2014–2018



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

Figure 7-9. Hospitalisations due to injuries arising from assault in 15–24 year olds, by year and ethnicity, New Zealand 2000–2018



Indicator: Injuries arising from assault in 15–24 year olds
Numerator: NMDS (ED cases excluded), Denominator: NZCYES Estimated Resident Population.
Ethnicity is prioritised ethnicity. Rates suppressed for MELAA

Deaths due to assault

This subsection provides information on deaths of 15–24 year olds where assault has been documented as an underlying cause of death. Information on assault-related deaths of under-15 year olds is provided in last year's NZCYES report on the *Health and wellbeing of under-15 year olds*.[21]

Data sources and methods

Deaths of young people due to assault
Deaths of 15–24 year olds documented with assault as an underlying cause of death

Data sources

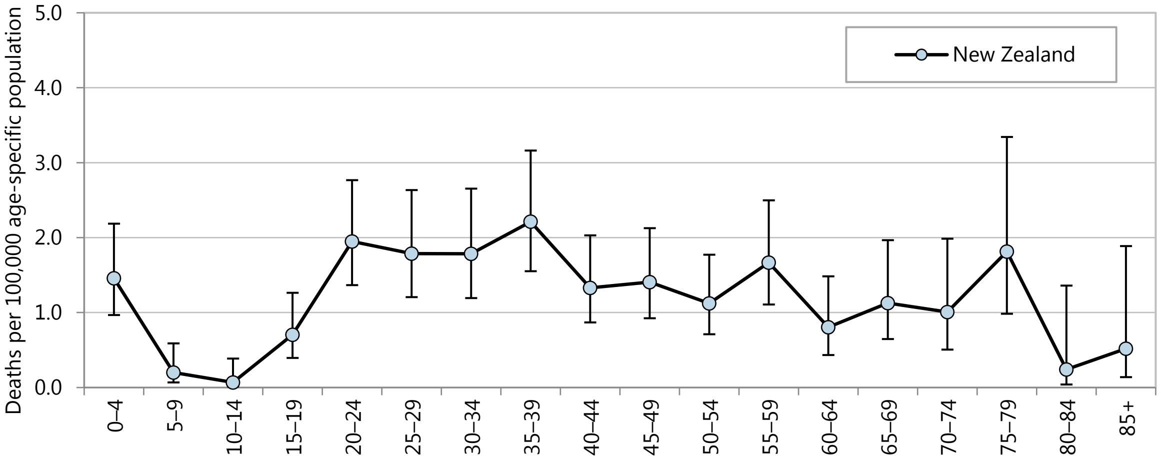
Numerator(s): Deaths: National Mortality Collection (MORT)
Denominator(s): NZCYES estimated resident population

Additional information

Note 1. Codes: intentional injury ICD-10-AM X85–Y09; ICD-9-CM E960–E969, E979, E999.1
Note 2. Because of the low incidence of deaths due to assault, many regional or demographic comparisons did not deliver statistically meaningful results.

From 2012–2016 there were 275 people of all ages who died from injuries arising from assault in Aotearoa. The only significant difference between age groups was a lower rate in childhood and adolescence, from 5 years to 19 years old. All other age groups shared similar rates of assault death when statistical error is taken into account (Figure 7-10).

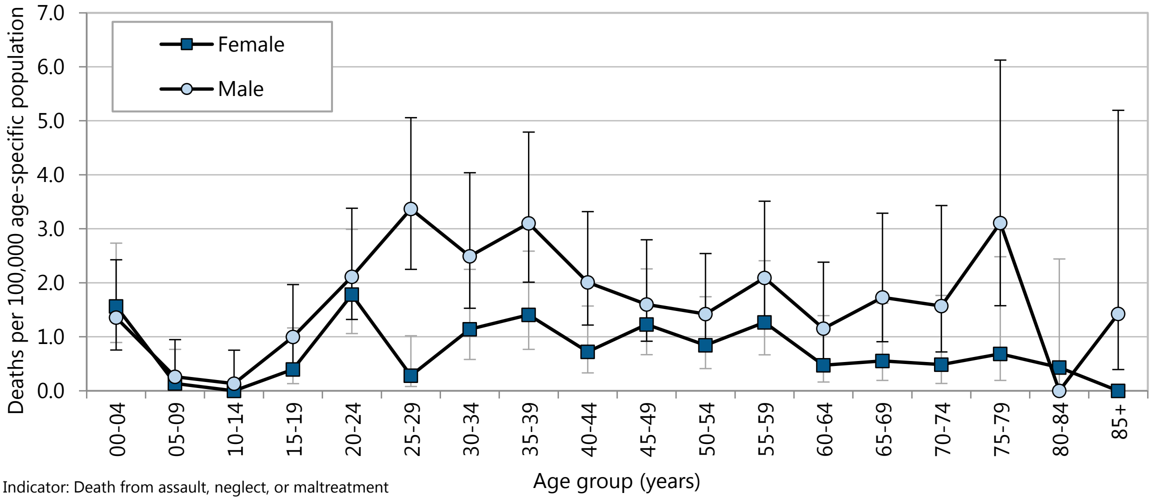
Figure 7-10. Deaths due to injuries arising from across all age groups, New Zealand 2012–2016



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

Although males consistently had an apparently higher rate of assault deaths than females in the same period, this difference was only statistically different in the 25–29 year olds age group (From 2012–2016 there were 275 people of all ages who died from injuries arising from assault in Aotearoa. The only significant difference between age groups was a lower rate in childhood and adolescence, from 5 years to 19 years old. All other age groups shared similar rates of assault death when statistical error is taken into account (Figure 7-11).

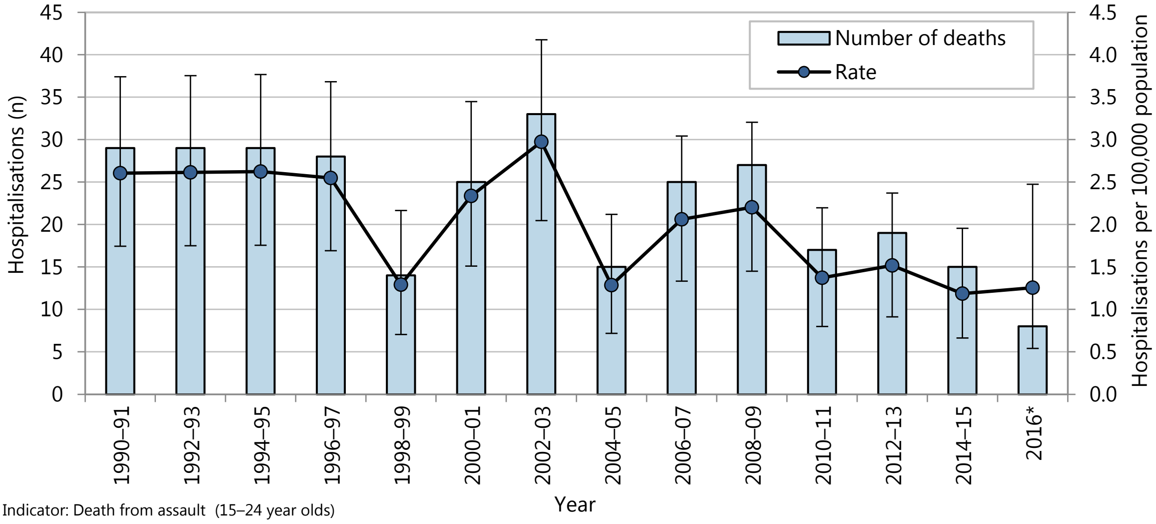
Figure 7-11 Deaths due to injuries arising from across all age groups, by gender, New Zealand 2012–2016



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

The assault-related death rate amongst young people aged 15–24 years in New Zealand was consistent at around 2.6 deaths per 100,000 age-specific population through much of the 1990s. Since then the rate has appeared to decline to between 1.5 and 2 deaths per 100,000, although the usual caveats about statistical error remain (Figure 7-12)

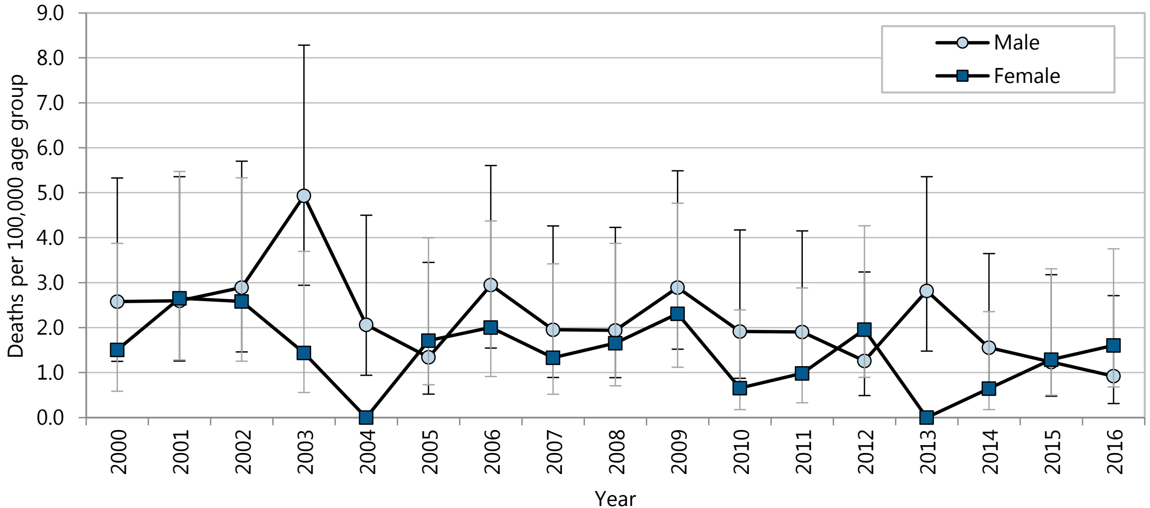
Figure 7-12 Deaths due to assault in 15–24 year olds, New Zealand 1990–2016



Indicator: Death from assault (15–24 year olds)
Numerator: National Mortality Collection, Denominator: NZCYES Estimated Resident Population.
Year is year of death registration.
* Values are per two year period, with exception of 2016

From 2000–2016 there were 184 deaths of 15–24 year olds as a result of assault. There was no significant difference between assault-related death rates for males and females on a year-by-year basis in that period (Figure 7-13).

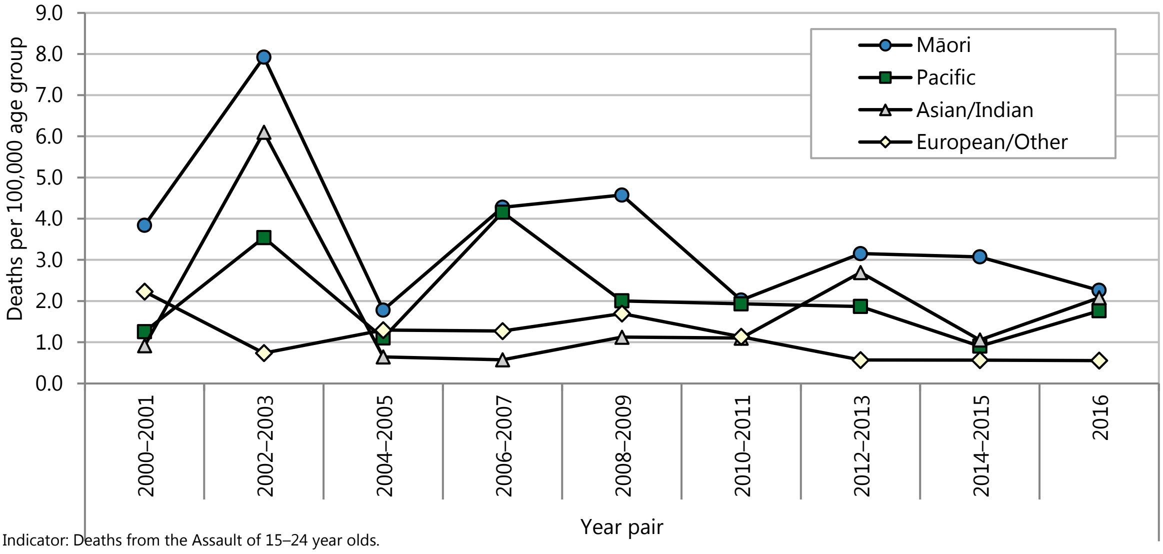
Figure 7-13 Deaths due to assault in 15–24 year olds by gender, New Zealand 2000–2016



Indicator: Deaths from the Assault of 15–24 year olds.
Numerator: National Mortality Collection, Denominator: NZCYES Estimated Resident Population

In the same period, the observed higher rates of Māori deaths due to assault were still statistically similar to other ethnic groups on a trend basis (Figure 7-14). When viewed on an aggregate basis, however, Māori had a statistically significant rate ratio of three times the rate of assault deaths for people identifying as being of European ethnicity. Pacific young people also had a higher rate of assault death than European/Other. Young people in the most deprived deprivation index quintile had a significantly higher rate of assault deaths than those in the least deprived quintile, and males also had a higher rate of assault deaths than females (Table 7-6).

Figure 7-14 Deaths due to assault in 15–24 year olds by ethnicity, New Zealand 2000–2016



Indicator: Deaths from the Assault of 15–24 year olds.
Numerator: National Mortality Collection, Denominator: NZCYES Estimated Resident Population

Table 7-6. Deaths due to assault in 15–24 year olds by deprivation, ethnicity, and gender, New Zealand 2000–2016

Variable	Rate	Rate ratio	95% CI	Variable	Rate	Rate ratio	95% CI
Assault deaths, 2000–2016							
Young people aged 15–24 years							
NZ Deprivation Index decile				Prioritised ethnicity			
Quintile 1	1.13	1.00		Māori	3.67	3.21	2.31–4.46
Quintile 2	0.77	0.68	0.33–1.37	Pacific	2.05	1.79	1.05–3.05
Quintile 3	1.56	1.39	0.78–2.46	Asian/Indian	1.71	1.50	0.94–2.38
Quintile 4	1.69	1.49	0.86–2.59	European/Other	1.14	1.00	
Quintile 5	3.20	2.83	1.72–4.66				
Gender							
Female	1.42	1.00		Male	2.19	1.55	1.15–2.08

Numerator: National Mortality Collection. Denominator: NZCYES Estimated Resident Population

Over half of the assault deaths in the National Collection had no information about the perpetrator and their relationship to the deceased, and a further 13% listed an unspecified person. Of the remaining deaths the perpetrator was most frequently an acquaintance, friend, spouse or domestic partner of the deceased. (Table 7-7)

Almost 40% of deaths from assault used sharp objects to inflict the mortal injuries, with the next most common method being bodily force (e.g. punching or kicking) at 13%. Of those sharp objects, 50% were unidentified but almost 40% were identified as knives. More young people in that period were killed specifically with knives than via the general “bodily force” category.

Table 7-7 External factors in deaths from assault in young people, by selected external factors, New Zealand 2000–2016

Primary diagnosis	Number	Annual average
New Zealand 15–24 Year old		
External factor related to assault		
Relationship of perpetrator to deceased person		
No information available	98	53.3
Unspecified person	24	13.0
Acquaintance/friend	20	10.9
Spouse/domestic partner	17	9.2
Other specified person	10	5.4
Parent or other family member	8	2.7
Other person known or unknown	7	3.8
Total assault deaths	184	100
Weapon used to inflict death		
Sharp object	73	39.7
Bodily force	24	13.0
Firearm	21	11.4
Blunt object	20	10.9
Hanging, strangulation and suffocation	14	7.6
Thermal, drowning, or chemicals	9	4.9
Crashing of motor vehicle	9	4.9
Other	14	7.6
Total weapons specified	184	100
Sharp object used to inflict death		
Knife	29	39.7
"Sharp object" (no further information)	36	49.3
Other sharp objects	8	11.0
Total sharp objects used	73	100

Numerator: National Mortality Collection. Denominator: NZCYES Estimated Resident Population

Deaths from assault during the period 2000–2016 in each DHB did not generally show significant differences from the national rate of 1.8 per 100,000 young people. While Northland DHB (RR 3.0; 95%CI 1.83–4.95) and Counties Manukau (RR 1.7; 95%CI 1.21–2.45) did have significantly higher rates than national the confidence intervals overlap with those of most other DHBs because of the low incidence of deaths caused by assault. It should be noted that even this small statistical difference is the result of aggregating data from an unusually broad timeframe. Results should be interpreted with caution due to low numbers and wide time frame.

Evidence for good practice

This evidence for good practice relates to preventing violence by children and young people and some of its associated behaviours. It is followed by list of recommended reading for further information. While it is beyond the scope of this evidence for good practice, interventions for youth violence are also required in cases where individuals develop violent and aggressive behaviours (in addition to preventive initiatives) and a brief sub-section will summarise some international recommendations.[22]

For information pertaining to protecting children and young people from experiencing violence and abuse, please refer to the previous NZCYES report on the *Health and wellbeing of under-15 year olds*.[23]

Understanding violence by children and young people

Violent behaviours and weapon-carrying in youth are better understood in context of the increased developmental and contextual vulnerability that comes with being a young person in our societies.[22]

Environmental, individual and situational factors that have strong relationships with the occurrence of youth violence include (but are not limited to): income and social inequality (and their flow-on effects on community trust and resources);[22,24] parental aggression or receiving maltreatment or physical abuse (especially harsh physical punishment for discipline in childhood);[24,25] parental neglect or having poor supervision in childhood;[24] participating in bullying;[24] weapon-carrying;[24,26] delinquent behaviour and history of arrest;[22] gang membership;[22] child maltreatment;[27] and use of alcohol or other substances.[22,26,27]

Other environmental factors that impact on the prevalence of youth violence in a population are low levels of: community organisation, community resources, social trust, and social capital negatively influence the social and emotional skills and behaviours of children and young people and are associated with increased violence in young people.[22,24] The World Health Organization[22] also recognises, upon increasing evidence, that high unemployment, high neighbourhood deprivation, and weakened social welfare programmes also appear to be associated with increased interpersonal violence. Societal and cultural normalisation of violence as a method of coping, seeking redress, and responding to challenging environments can reinforce violent behaviour in young people.[22,26,28,29] Where social support is low or absent in their lives, the level of influence that contextual factors have on children and young people can remain unchecked.[24]

During youth, individual factors such as exposure to adversity, exposure to forms of violence and maltreatment, and fear of violence in institutions and places of community may result in aggressive behaviours in individuals and thus their use of violence and uptake of knife- or weapon-carrying.[22,27] In Europe, weapon-carrying (e.g. knives) is associated with increased youth violence (physical fighting) and increased likelihood of being seriously injured among youth who do get into physical fights.[22] Consuming alcohol at an early age, regularly and to excess has a critical role in increasing the likelihood of youth violence (both experiencing or perpetrating).[22] Children who feel unwanted by their parents are at increased risk of violence in childhood and youth.[28]

Factors that are situational to interpersonal interactions involving youth also influence the risk of violence, such as whether those involved are under the influence of alcohol, whether they are carrying weapons, and how many people are present (whether individuals are involved or in a group).[24] In many cases, alcohol-related violence occurs in proximity to bars and nightclubs.[22]

Preventing violence by children and young people

The similarities between youth violence risk factors and its consequences highlight how important it is to addressing the behaviour through a root-cause approach.[22] For example, some of the consequences of youth violence include (but are not limited to): risky health behaviours, such as alcohol, tobacco, and drug misuse; future experiences of violence as victim and/or perpetrator; eroded social trust and sense of community safety; and increased inequity.[22,24] Sustained and systematic approaches are well-positioned to address the underlying causes of and legitimising factors that underpin violent attitudes and behaviours during youth.[22]

Work to prevent youth violence should both address risk factors and strengthen protective factors from early in life.[22] At an individual level, factors that are associated with preventing youth violence include: strong, safe, and stable parent-child and parent-youth relationships;[22,26] positive peer relationships;[22] good attachments to school and communities;[22] good access to social support;[22] good self-esteem;[22] and good social and life skills.[22,26]

Prevention programmes or preventive initiatives recognised by the World Health Organization and others as being effective for reducing youth violence include those that:

- strengthen the life, emotional and social skills of children;[22,26,28,30]
- improve parenting skills and parent-child and parent-youth relationships[22,25,26,28]
- addressing the availability and misuse of alcohol (such as modifying drinking environments);[26]
- preventing and addressing bullying in schools;[22]
- and intensive treatment programmes for young offenders and problem-orientated policing.[22]

Scientifically credible prevention strategies (strategies which can potentially impact multiple forms of violence) can be designed to:

- reduce access to weapons and means of violence;[22,26-28,30]
- promote gender equity;[26-28,30]
- engage the health sector in violence prevention;[28]
- provide good mental health, emergency and social services pertaining to violence and response to violence (such as child protection, social housing, welfare income-replacement entitlements);[28]
- reduce economic inequality and concentrated poverty.[24,27,28,30]

Recommended prevention programmes and features

Initiatives early in life

When delivered to children and whānau in the early years of life, prevention programmes have potential to establish helpful attitudes, behaviours and skills for the course of children's lifetimes.[28] When balancing the increased benefits to the lives of youth and wider society with the decreased individual, community, and societal costs of violence, there is a case for early prevention programmes for children to be implemented widely.[22]

Features of these early prevention programmes include teaching skills regarding emotional competencies, teaching interpersonal skills that are non-violent and alternative to conflict, and providing broader life skills that support young people to secure employment and avoid poverty and criminal activity.[22,29] These early prevention programmes can be delivered universally (for all children) of targeted to children at higher risk and are often delivered in school settings.[28] Programmes that strengthen life, emotional and social skills in children are also associated with addressing other risk and protective factors, such as reducing alcohol- and substance-misuse,[22] and improving school, employment and health outcomes.[22,26]

Of the types of social skill programmes, preschool enrichment programmes and social development programmes are recognised by the World Health Organization as having the most robust evidence base suggesting their effectiveness for violence prevention.[24,26] Social development programmes target managing anger and improving problem-solving and conflict-resolution, prosocial attitudes (empathy) and knowledge about healthy relationships.[22,28,29] These social development programmes appear to result in improved empathy, positive results on addressing violence-legitimising beliefs, and reduced frequency in weapon-carrying.[22]

Pre-school enrichment programmes (classroom sessions on arts, language and mathematics for children in combination with a parenting programme and ongoing whānau support) of high-quality and for at-risk children have showed positive results in the social development and behaviour of children in England and positive results on the reduction of child abuse and crime in youth.[22,26]

School-based programmes are well-positioned to address the circulation of social and cultural norms in young people before they are become well-established, particularly those pertaining to gender.[26] The *World report on violence and health*[24] recognises that school-based programmes are more effective where they are long-term and take a whole-of-school (curriculum, policy, pastoral support, and classroom sessions) approach and have young people participating in programme development and delivery. For more information on school-based programmes as they related to mental health promotion in schools, please refer to the review topic of the current report.

Initiatives delivered to parents and whānau

It is recognised in several international reports that programmes and strategies that establish safe, stable, and nurturing relationships have an established evidence base for youth violence reduction.[26-28]

Parenting programmes often provide support and information to parent and caregivers with a focus on helping parents adapt to the needs of the child and respond to the child's behaviour underpinned by a better understanding of child development and capabilities.[22] These programmes are often targeted to whānau identified as high-risk for negative outcomes.[22] Examples of parenting programmes showing positive results, including results of reduced violent and aggressive behaviours, are the Triple P programme (short-term evidence) and Nurse-Family Partnership (some long-term evidence).[22,26,30] Te Whānau Pou Toru is a version of the Triple P programme adapted for the New Zealand cultural context and has shown positive results in improved child behaviour, reduced parent-child conflict, and greater parental confidence in responding to children.[25] Results from Te Whānau Pou Toru show its effectiveness for Māori.[25]

Other opportunities for initiatives

Other programmes should support parent-child or parent-youth relationships, contexts of neighbourhood deprivation and inequality, and address cultural norms that legitimise violence.[22] More evidence on programmes that challenge the social and culturally norms that underpin the emotions, attitudes and behaviours that can lead to violence and subsequently make them socially acceptable.[22] The association between alcohol and youth violence suggests that the norms around alcohol consumption and its expected effects can serve to encourage and legitimise aggressive and violent behaviour in youth who are under the influence of alcohol.[26]

For more examples of initiatives, the World Health Organization's *Handbook for the documentation of interpersonal violence prevention programmes* provides an extensive list describing various prevention and intervention examples.[31]

Initiatives specific to preventing violence disproportionately experienced by gender minorities

The report *Violence prevention: the evidence* details that programmes with participants of all genders that are designed to reduce violence against women can target gender stereotypes, perspectives about masculinity, and the appropriateness of aggression and violence in relationships.[26] It is advised by this international report that interventions to reduce violence towards gender minorities also needs to engage men.[26]

The World Health Organization regards some programmes targeting gender-related violence as leading to positive results,[26,28] including the Safe Dates programme in the United States and Canada.[26] It is also advised that inter-sectoral efforts to address violence experienced by gender minorities appear to be more effective than direct and single-focused efforts.[28]

Initiatives targeting the environment and circumstances in which youth socialise

The World Health Organization acknowledges that some evidence suggests urban design strategies designed to improve the employment, health and economic prospects of a community have positive impacts on reducing the risk of violence in the area.[22] Urban design that can reduce violence and fear of violence can feature green space (grass and trees) in inner-city urban areas, and good access to social and economic opportunities.[22] Current evidence shows that situational crime prevention measures (increased street lighting and closed-circuit cameras) have little to no effect on violent crime while they may impact other crime (such as theft).[22]

Community hotspots (such as schools) and settings where alcohol is consumed (bars, nightclubs, and more) can also be made safer and more nurturing, thus preventing bullying and reducing violent attitudes and behaviours.[22]

Approaches that address alcohol availability and misuse suggest that setting minimum prices for alcoholic beverages and increased regulation and enforcement for alcohol consumption can be effective for flow-on decreases in youth violence.[22] Other factors identified as potential contributors to violence in settings where alcohol is consumed include: low comfort levels associated with limited seating and over-crowding, poor access to late-night transport.[26] In Australia, modifications to drinking environments that were associated with the largest reduction in arguments, verbal abuse, and aggression were improved comfort, increased public transport, and fewer highly drunk men.[26] The Safer Bars programme in Canada, which strengthens the skills of bar staff to manage and reduce aggression and serve alcohol responsibly, has reported reductions in aggression.[26]

The Trelleborg Project in Sweden developed and implemented a school curriculum on alcohol and drug use and information materials for parents in combination with policies on alcohol and drugs in schools and the community.[26] The Project reported reductions in alcohol consumption (including excessive drinking and frequency) and in assaults.[26]

Community-level initiatives

Multicomponent interventions that combine social interventions at the community level and also problem-orientated policing report positive results.[22] Problem-orientated policing involves a range of local services, such as health, police and social services, examining a specific problem and developing tailored solutions to it.[22] More evidence on problem-orientated policing is needed to ascertain its effectiveness.[22]

Regulation around the access and carrying of knives show some promise but require further study and evaluation.[22] Much of the evidence on youth violence interventions are from studies conducted in North America, and the findings in the North American context may not be generalisable to Aotearoa.[22]

Interventions for problematic behaviours

There is little evidence about interventions that are effective at engaging with youth who already utilise violence, employ aggressive behaviours or engage in weapon-carrying.[22]

While results have been inconsistent, some evidence recognised by the World Health Organization shows that multisystemic therapy for behaviour change in high-risk youth (with serious anti-social or criminal behaviours) has seen a reduction in their violence, aggression and substance use.[22,24] Multisystemic therapy involves intensive family and community-based treatment by a team of highlyqualified professionals that focuses on both helping whānau support and respond to the young person's problematic behaviours and helping the young person cope with family, peer, school, and community issues and strengthen their protective factors.[22] Some programmes targeted towards youth offending that have been implemented in New Zealand have used multisystemic therapy, such as Reducing Youth Offending Programme or RYOP (Auckland) and Te Hurihanga (Hamilton).[32] Results from the RYOP showed a positive effect on participants, through reductions in offending and reoffending, the majority of whom identified as Māori or Pacific.[32]

In New Zealand, community-based specialist treatment programmes appear to be effective at reducing sexual reoffending in adolescents who have engaged in sexual violence.[32,33] However, equity issues arose in this programme; Māori youth did not participate in this treatment because other programmes were considered by staff to be more suitable for their needs.[33] Furthermore, Pacific youth were more likely to drop out of these programmes and doing so was associated with where a statutory agency or agencies withdrew involvement or withdrew funding support for the individual's participation in the treatment programme.[33]

New Zealand evidence on interventions targeting gang-related violence in rangatahi Māori shows that working in tandem with the New Zealand Police to deliver strengths-based interventions led to positive results in reducing inter-group violence, reducing alcohol and drug consumption in rangatahi, increasing enrolments in educational courses and healthy lifestyle behaviours, and changing group norms and values.[34] The interventions delivered to different groups involved, for example: the provision of a boxing gym, a kickboxing class, a breakfast programme for the younger siblings of rangatahi, and course-work for trade jobs.[34]

The World Health Organization cautions that, of the evidence on interventions for addressing gang violence, zero-tolerance approaches have been shown to have little to no effect on gang-related violence and the approaches may exacerbate problems.[22] Programmes that are multicomponent (combine enforcement in combination with addressing social factors) report some successful findings and emphasise the importance of the following key components to an effective multicomponent programme: community mobilisation, social interventions, educational and employment opportunities, organisational change for effectiveness, and monitoring young people involved in gangs.[22]

Mentorship programmes can provide a young person with regular opportunities to receive advice, support and friendship by a caring role model outside their existing informal support network.[22,24] While they are not widely evaluated,[24] a community-based mentorship programme in the United States of America titled *Big Brothers/Big Sisters* shows positive results in school performance, parent-child relationships, and reduced antisocial behaviour in children and young people who were mentored (compared with non-mentored peers).[22]

Of the above mentioned prevention and intervention programmes, those that immediately affect the problem of youth violence include problem-orientated policing and making drinking environments safer while those that have long-term and likely more sustainable effects are parenting programmes and social and life skills training for young people.[26]

The *World report on violence and health* advises that the following programmes, among others, are not effective at reducing youth violence and recidivism: training regarding the safe use of guns and trying youth offenders in adult courts; and individual counselling.[24]

Implications for the health sector

Intersectoral collaboration

A root-cause and life-course approach to preventing youth violence will require systematic and coordinated inter-sectoral and inter-agency partnership with information sharing.[22]

The Ministries of Health, Education, Justice, and Social Development and also the New Zealand Police and Department of Corrections are responsible for helping children thrive, protecting them and providing safeguards for their wellbeing.[35] Focal points of multisectoral coordination mechanisms should be strengthened for smoother inter-sectoral working and service delivery.[27]

Health services can also be an appropriate contact point for initiating prevention and intervention programmes.[27] While the health sector may take on more of a lead role in coordinating and implementing violence prevention programmes, sectors such as education, housing, social welfare, sports and recreation, and law enforcement should be involved.[28] The level of involvement of these sectors will be contingent on the violence being addressed and its associated risk factors.[28]

While many cases of assault and violence may not be reported to the police, many of those involved in cases of violence and assault require health care in the form of emergency department treatment, hospital admission, and victim support.[22,28] Health professionals have opportunity to identify, monitor, and provide support in cases of interpersonal violence.[28]

Data sharing between the health sector and law enforcement is critical to a better understanding youth violence.[22] Fairer criminal justice systems contribute to violence deterrence and sophisticated, effective policing employs evidence-based strategies to de-escalate aggression and prevent violent behaviours from happening.[28] Appropriate data collection and sharing with relevant entities can identify where programmes can be targeted and can be used to evaluate those programmes.[22]

Intervention design and approach

While a deficit-approach to interpreting information on youth violence can have some explanatory value about context, it is important to approach the youth violence from a strengths-based approach to disrupt the risk of self-fulfilling prophecy through better understanding the protective factors against youth violence.[36] The health system can be well-placed to collect information on both the risks and protective factors associated with youth violence to enhance understanding and support more effective prevention and intervention.

Children and youth should be encouraged to participate in the development of policies and programmes designed for them.[27] The then Principal Advisor in the Ministry of Justice, New Zealand, advised that initiatives targeting violent offending should have strong involvement of local community in provision.[32]

Health service provision and advocacy for population health

The health sector is well-positioned to play an advocacy role in: awareness-raising about the importance of violence prevention; awareness-raising about the importance of environments in society, the community or whānau being safe and nurturing (and thus that settings should be appropriately modified to better support safety); highlighting the important role of social and economic policies in the prevalence of youth violence; emphasising that equity has an important relationship with youth violence; and the importance of inter-sectoral, inter-organisational information sharing and collaboration in addressing youth violence in ways that are multi-component and more effective.[22] Health professionals can provide patients with information and health promotion messages (for example about alcohol use, behaviour change and respectful sexual relations).[27]

The health sector needs to have a strong awareness of and response to addressing interpersonal violence so as to identify potential need proactively and when opportunity arises while also having appropriate services with sufficient capacity available.[27] Health professionals need to be aware that children and young people may respond to past victimisation in ways that can be incorrectly diagnosed as attention deficit hyperactivity disorder and conduct disorders.[27] Health professionals also need to be aware that violent behaviour is associated with other health risks (such as alcohol and substance misuse, tobacco smoking, and unsafe sex).[27]

The health sector should coordinate patient access to multisectoral services for those who could potentially benefit from violence intervention support (such as employment, housing, and social services).[27]

Equity

Programmes addressing cultural and social norms must be tailored to be appropriate for and responsive to population sub-groups.[26,27] In New Zealand, approaches must respond to the determinants of violent assaults and re-offending so to respond better to the needs of vulnerable children, tamariki & rangatahi Māori, and Pacific children and youth.[35]

Tamariki and rangatahi Māori are more likely to experience some risk indicators for violence and offending than their Pākehā peers.[35] They are more likely to live in concentrated poverty than their Pākehā peers, less likely to complete all years of school, and more likely to face challenges in accessing services.[35]

The causes underpinning rangatahi Māori offending, including the challenges faced by rangatahi and their whānau, can be understood through Professor Sir Mason Durie's wellness model of Te Pae Mahutonga, including:

- Mauri ora: tackling deprivation and cultural racism and strengthening social systems so they are appropriate for and responsive to Māori through genuine partnership.[35]
- Te ōranga: ensuring participation in society, including tackling vulnerability, marginalisation and segregation (e.g. Māori are less likely to live in areas that are least deprived).[35]
- Toiora: addressing some of the challenging life experiences and health-related lifestyles of whānau and rangatahi, including addressing instability, abuse, or violence in the home, strengthening the relationship tamariki and rangatahi have with their whānau, addressing alcohol consumption in rangatahi Māori.[35]

Children and young people in seemingly impossible circumstances need appropriate support and understanding that addresses the "trapped lifestyles" in which they are situated and which compromise their wellbeing while also increasing vulnerability to offending.[35]

The *Pacific pathways to the prevention of sexual violence: Full report* details the protective factors (often underpinned by cultural values and understandings) against sexual violence identified for Pacific communities.[37] Some of these protective factors in Pacific communities are quality time allocated to instilling values in children, strong sibling relationships, social disapproval and collective redress in response to offences, and safe connections and supportive communities.[37]

Guidelines, evidence-based reviews, New Zealand publications, and other relevant publications and websites

Further NZCYES reading

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New Zealand guidelines and publications

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International guidelines

- World Health Organization. 2016. **INSPIRE: Seven strategies for Ending Violence Against Children**. Luxembourg: World Health Organization. https://www.who.int/violence_injury_prevention/violence/inspire/en/
- National Institute for Health and Care Excellence. 2017. **Child abuse and neglect**. London: National Institute for Health and Care Excellence. https://www.nice.org.uk/Guidance/ng76
- Chief Secretary to the Treasury. 2009. **Every Child Matters: statutory guidance.** London: The Stationery Office. https://www.gov.uk/government/publications/every-child-matters-statutory-guidance
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Evidence-based reviews

- Mytton JA, DiGuiseppi C, Gough D, et al. 2006. **School-based secondary prevention programmes for preventing violence**. Cochrane Database of Systematic Reviews,(3). https://doi.org/10.1002/14651858.CD004606.pub2

Websites

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Suicide and self-harm

Suicide is a significant public health problem in New Zealand, and the youth suicide rate in New Zealand is one of the highest among OECD countries.[38,39] A death is classified as suicide after coronial inquiry.[38] The impact of deaths by suicide is long-lasting and far-reaching, affecting lives of many people in Aotearoa including individuals, whānau, friends, peers, colleagues, hapū, iwi and wider communities.[40]

Suicide attempts and non-suicidal self-harm are significant health issues among young people. Both are indicators of distress and both are risk factors for death from suicide.[41] Such events are not uncommon. The Youth'12 survey (a national repeated cross-sectional study of the health and wellbeing of New Zealand secondary school students) found that 4.5% of students had attempted suicide at least once in the previous 12 months, and almost one-quarter (24%) of students had deliberately hurt themselves, without suicide ideation in the previous 12 months.[41] Approximately 30% of students who attempted suicide had made 3 or more suicide attempts in the previous 12 months. Half (49.3%) of the students reporting self-harm reported 2 or more of these events in the previous 12 months.[41]

The following section uses information from the National Minimum Dataset and the National Mortality Collection to provide an overview of mortality from suicide and hospital discharges for intentional self-harm among 10–24 year olds.

Data sources and methods

Indicator(s)

1. Deaths from suicide among 10–24 year olds
2. Acute admissions to hospital for intentional self-harm among 10–24 year olds

Data source(s):

Numerator:	National Mortality Collection (MORT; deaths from suicide) National Minimum Dataset (NMDS; hospitalisations for intentional self-harm)
Denominator:	NZCYES Estimated Resident Population (with linear interpolation between Census years and extrapolation beyond being used to calculate denominators between Census years)

Additional information

ICD coding, such as ICD-10-AM, does not distinguish between suicidal and non-suicidal intentional self-harm. Deaths from self-harm are usually reported as due to intentional self-harm, as there usually appears to have been a suicidal intent. Intent (suicidal or non-suicidal) often cannot be easily determined for hospitalisations. Many acts of intentional self-harm, suicidal or not, do not result in death nor in admission to a hospital.

Analyses are limited to ages 10 to 24 years due to the uncertainty around intention of, and comprehension of implications of, self-harming in younger children.[42]

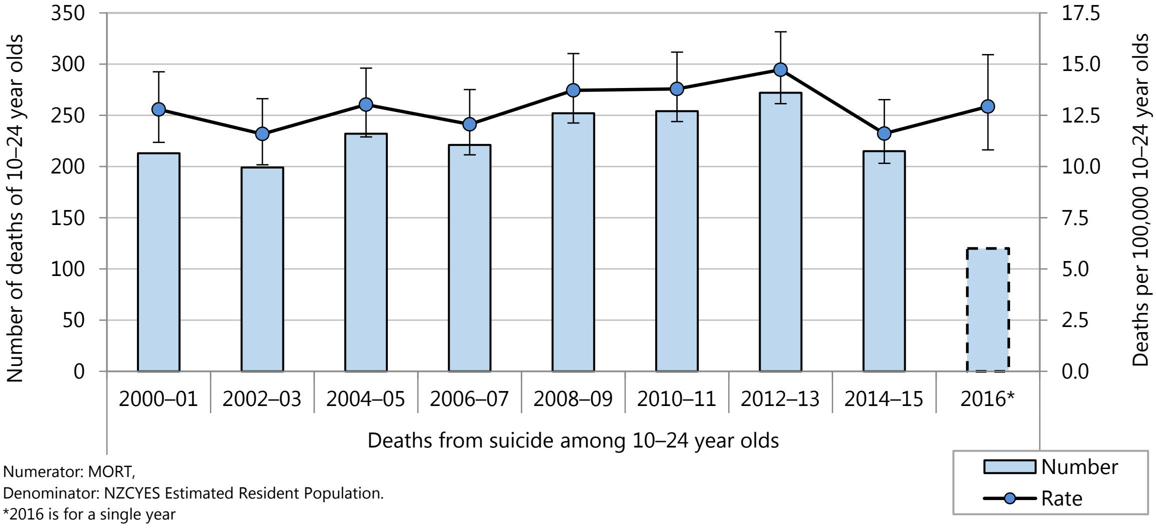
Intentional self-harm hospitalisations: diagnosis of injury or poisoning and any external cause codes of X60–X84 (ICD-10 AM codes).

Unless stated otherwise, only acute admissions to hospital for intentional self-harm have been presented.

Suicide

During the period from 2012 to 2016 the ages at death from suicide ranged from nine to 24 years. The analysis presented in this chapter has been limited to individuals aged from 10 to 24 years. On average during 2000 to 2016, 116 children and young people aged 10–24 years died each year as the result of suicide. Over this period, suicide rates have remained steady at around 13 deaths per 100,000 10–24 year olds (Figure 7-15).

Figure 7-15. Deaths from suicide among 10–24 year olds, New Zealand 2000–2016



Numerator: MORT,
Denominator: NZCYES Estimated Resident Population.
*2016 is for a single year

There were 607 deaths of 10–24 year olds due to suicide in the five years 2012 to 2016. Table 7-8 presents the rate ratios of suicide deaths during this period by selected demographic factors. This unadjusted rate ratio presents the gap, if any, between the groups and the reference group, although this univariate analysis does not quantify the independent effect of each factor.

Over 94% of the suicide deaths of under-25 year olds in 2012–2016 were among 15–24 year olds. The suicide rate for males were more than double that of females in this period. Compared to 10–24 year olds of European/Other ethnicity, Asian/Indian 10–24 year olds had a significantly lower rate of suicide, Pacific 10–24 year olds had a similar rate, and Māori 10–24 year olds had a rate that was twice as high. There were fewer than five suicide deaths among MELAA 10–24 year olds in this time period. Rates of suicide increased with increasing residential NZDep2013 deprivation scores. Compared with rates for 10–24 year olds residing in areas with low deprivation scores (quintile 1), rates were 1.5 times as high for those in quintile 3 areas and more than twice as high for those residing in areas with moderate-to-high deprivation scores rates (Quintiles 4 and 5; Rate ratio of 2.1 and 2.3 respectively).

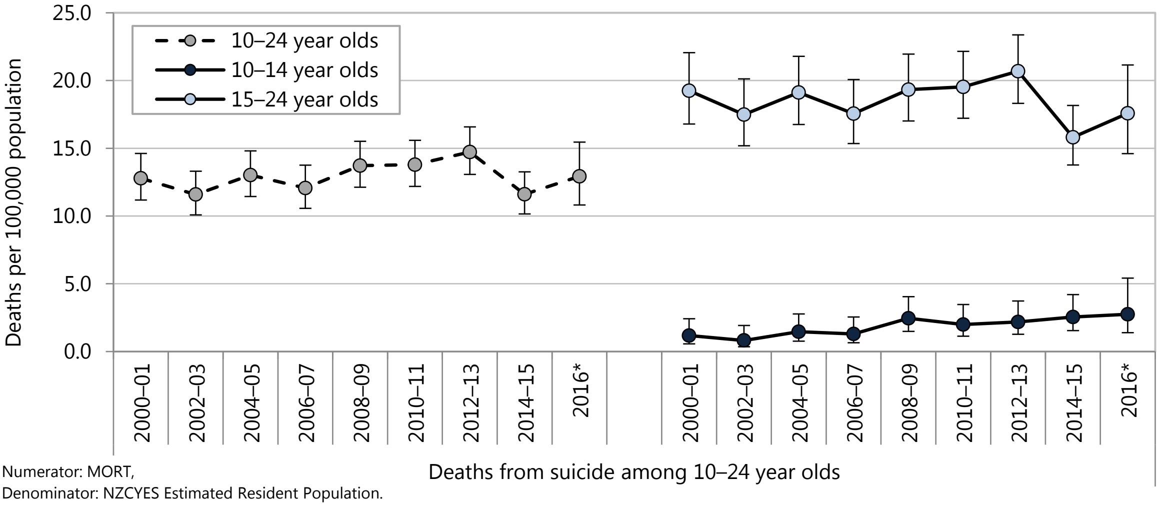
Table 7-8. Deaths from suicide among 10–24 year olds, by demographic factors, New Zealand 2012–2016

Variable	n	Rate per 100,000 10–24 year olds	Rate ratio	95% CI
Deaths from suicide among 10–24 year olds				
NZDep2013 Index of deprivation quintile				
Quintile 1 (least deprived)	67	7.77	1.00	
Quintile 2	72	8.97	1.15	0.83–1.61
Quintile 3	102	11.85	1.52	1.12–2.07
Quintile 4	160	16.52	2.12	1.60–2.83
Quintile 5 (most deprived)	205	18.10	2.33	1.77–3.07
Prioritised ethnicity				
Māori	244	24.24	2.25	1.89–2.67
Pacific	57	13.61	1.26	0.95–1.68
Asian/Indian	30	4.80	0.45	0.31–0.65
MELAA	<5	s	s	s
European/Other	273	10.77	1.00	
Gender				
Female	185	8.17	1.00	
Male	422	17.86	2.19	1.84–2.60
Age group				
10–14 years	36	2.44		
15–24 years	571	18.11		

Numerator: MORT, Denominator: NZCYES Estimated Resident Population. Period: 2012–2016. Rate ratios are unadjusted

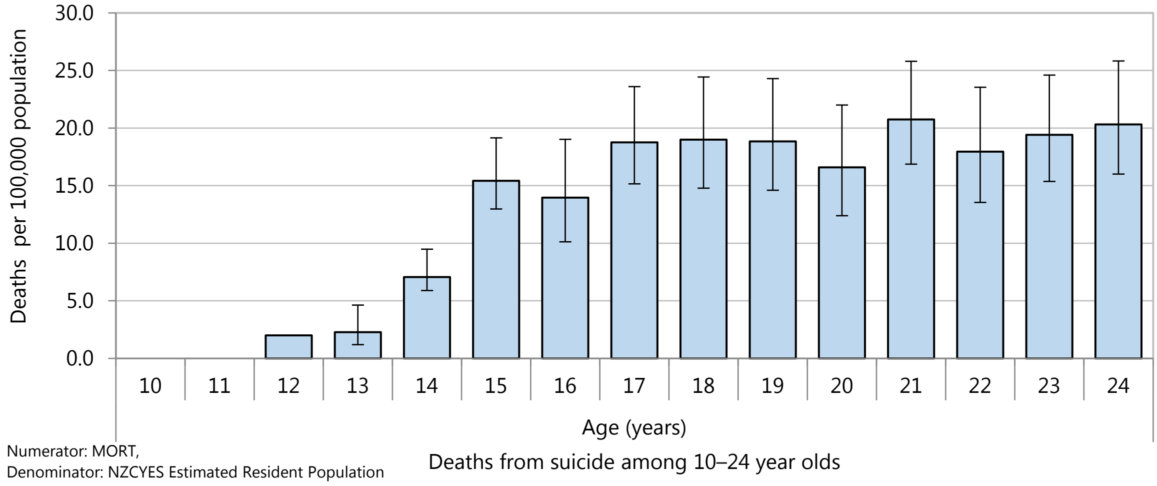
Figure 7-16 presents trends in suicide death rates over the period 2000 to 2016. The rate of suicide deaths among 15–24 year olds varied over this period. Suicide rates for 10–14 year olds were considerably lower than those for 15–24 year olds, but 92 children aged 10–14 years died from suicide during this 17-year period. Figure 7-17 presents the rates of suicide deaths by age. There were 15 deaths among children aged 10–13 years (Figure 7-17). Death rates increased with increasing age up till around age 15 years, after which they varied little.

Figure 7-16. Deaths from suicide among 10–24 year olds, by age group, New Zealand 2000–2016



Numerator: MORT,
Denominator: NZCYES Estimated Resident Population.
*2016 is for a single year

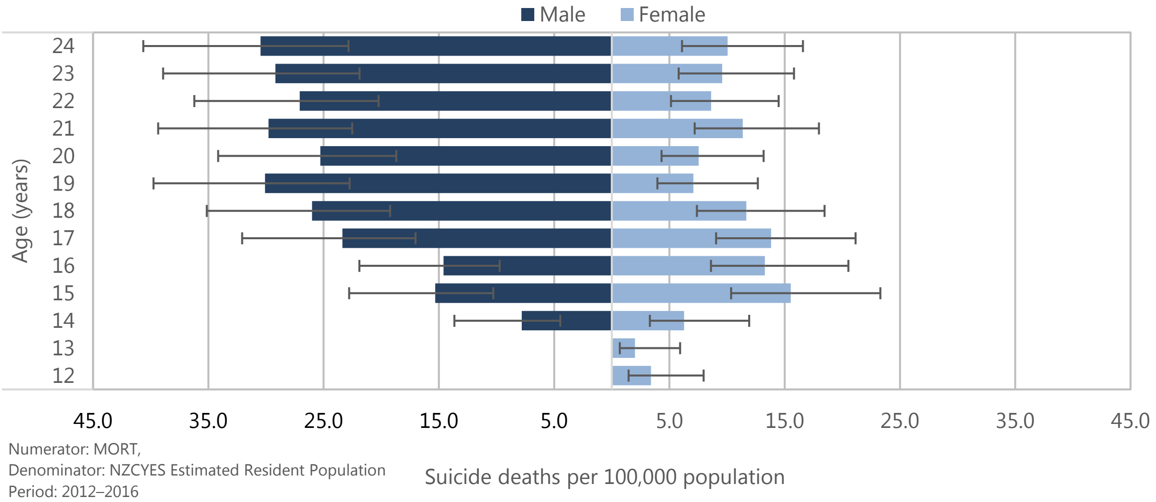
Figure 7-17. Deaths from suicide in 10–24 year olds, by age, New Zealand 2012–2016



Numerator: MORT,
Denominator: NZCYES Estimated Resident Population
Period: 2012–2016
Rates suppressed for those aged under 12 years due to small numbers

During 2012–2015, rates of suicide were higher for females than for males in under-15 year olds; male suicide rates were higher than female suicide rates in all other age groups (Figure 7-18).

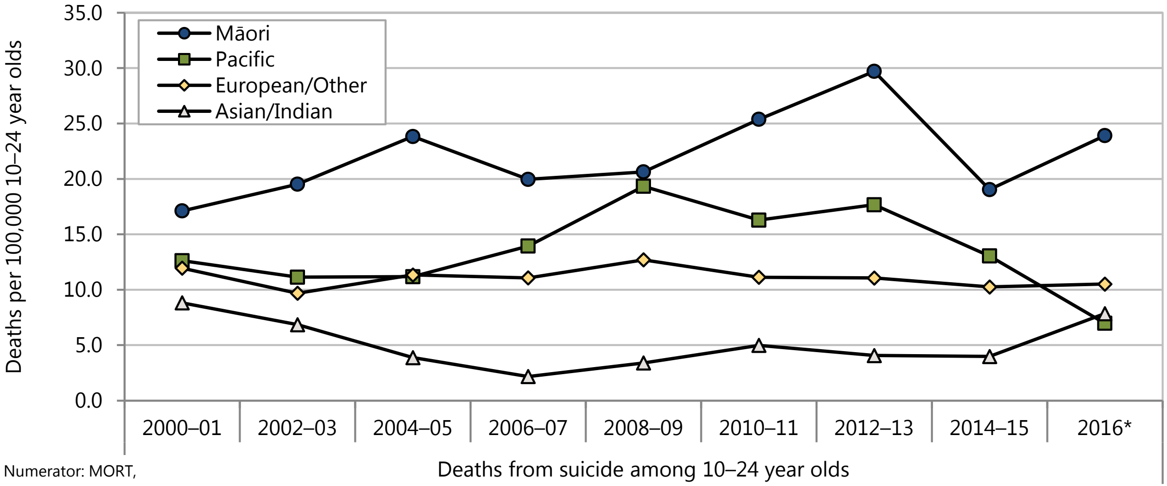
Figure 7-18. Deaths from suicide among 10–24 year olds, by age and gender, New Zealand 2012–2016



Numerator: MORT,
Denominator: NZCYES Estimated Resident Population
Period: 2012–2016
Rates suppressed for under-12 year olds and for males aged 12 and 13 years due to small numbers

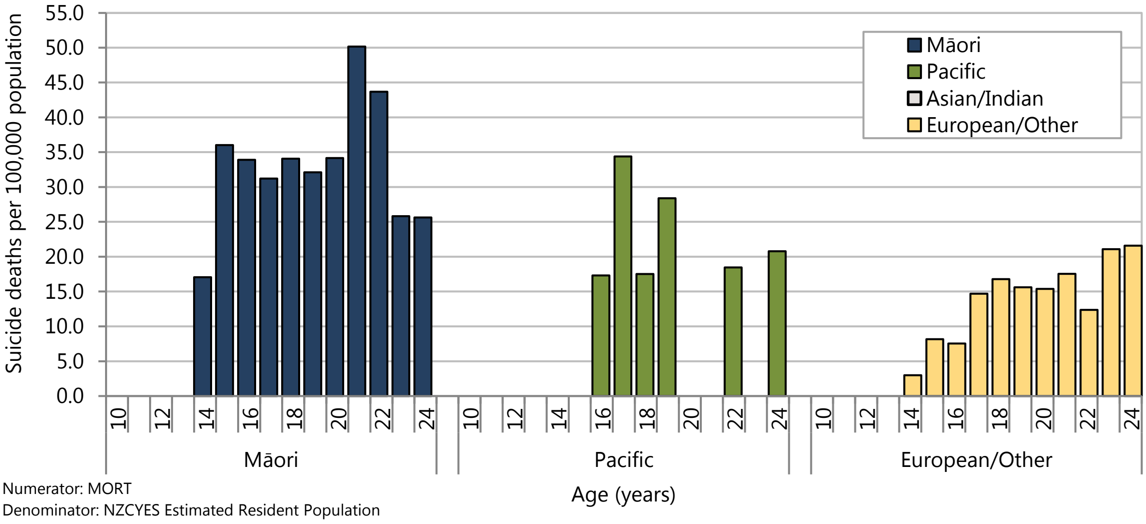
Rates of suicide have increased among Māori 10–24 year olds and have remained fairly steady or declined for the other ethnic groups over the period 2000 to 2016, as shown in Figure 7-19. Rates for Māori were consistently higher than the rates for the other ethnic groups. The ages at which rates of suicide were highest during 2012–2016 varied between the ethnic groups (Figure 7-19). The highest suicide rate was at age 21 years for Māori and 17 years for Pacific, while the highest rates were for European/Other were at ages 23 and 24 years. (Figure 7-20)

Figure 7-19. Deaths from suicide in 10–24 year olds, by prioritised ethnicity, New Zealand 2000–2016



Numerator: MORT,
Denominator: NZCYES Estimated Resident Population.
*2016 is for a single year. Ethnicity is Level 1 prioritised

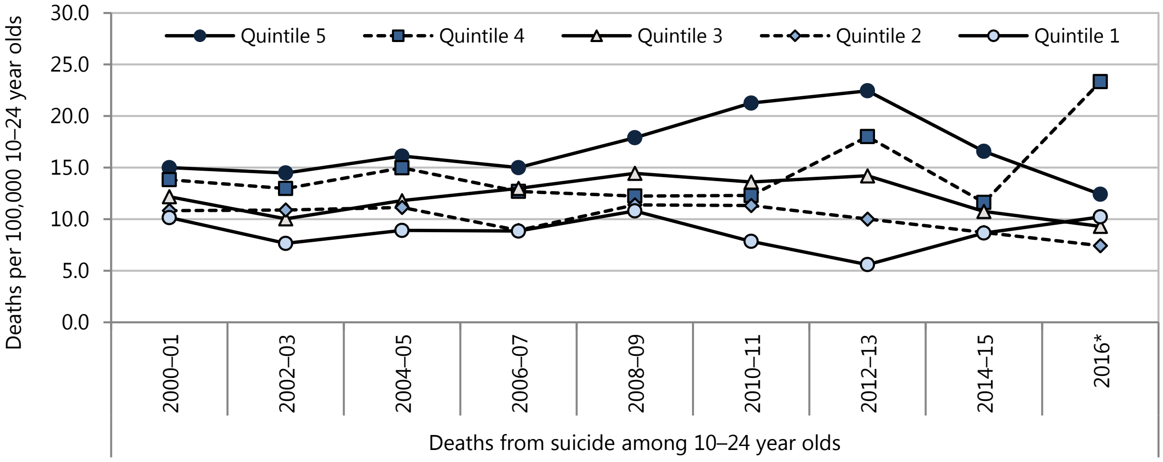
Figure 7-20. Deaths from suicide among 10–24 year olds, by age and prioritised ethnicity, New Zealand 2012–2016



Numerator: MORT
Denominator: NZCYES Estimated Resident Population
Period: 2012–2016. Ethnicity is Level 1 prioritised
Rates subject to small number variation, and suppressed for under 13 year olds and Asian/Indian due to small numbers

Suicide rates for 10–24 year olds increased with increasing deprivation score of the residential area (Figure 7-21). Over the period 2000 to 2016, there have been on average 13 suicide deaths per year among 10–24 year olds who resided in areas with low deprivation score (quintile 1). There has been a slight decrease overall, with year on year variation, in suicide rates among 10–24 year olds in quintile 2 to quintile 4 areas (Figure 7-21). Among 10–24 year olds that resided in areas with high deprivation scores (quintile 5), suicide rates increased from 15.0 per 100,000 10–24 year olds in 2000–2001 to a peak of 22.4 suicide deaths per 100,000 10–24 year olds in 2012–2013. The pattern in quintiles 4 and 5 in 2016 possibly reflects year on year variation; the sum of suicide deaths in these two quintiles in 2016 is similar to the total number in previous years.

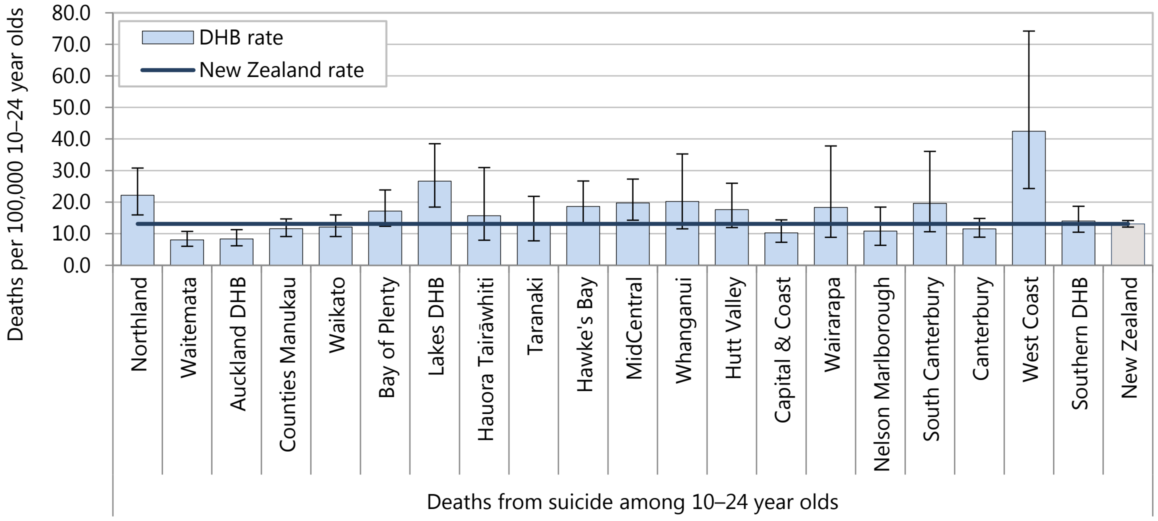
Figure 7-21. Deaths from suicide in 10–24 year olds, by NZ Deprivation Index quintile, New Zealand 2000–2016



Numerator: MORT,
Denominator: NZCYES Estimated Resident Population.
2016 is for a single year. Quintile: NZDep2013 Index of deprivation (1= least deprived; 5 = most deprived)

Figure 7-22 and Table 7-9 present the suicide rates by residential district health board between 2012 and 2016 compared to the rate for New Zealand as a whole. Comparison of rates between DHBs must be interpreted with caution due to year-by-year variation in numbers.

Figure 7-22. Suicide rates among 10–24 year olds, by district health board, New Zealand 2012–2016



Numerator: MORT Denominator: NZCYES Estimated Resident Population
Period: 2012–2016

During this period, rates of suicide among 10–24 year olds in Southern DHB were not significantly different from the New Zealand rate (Figure 7-22, Table 7-9).

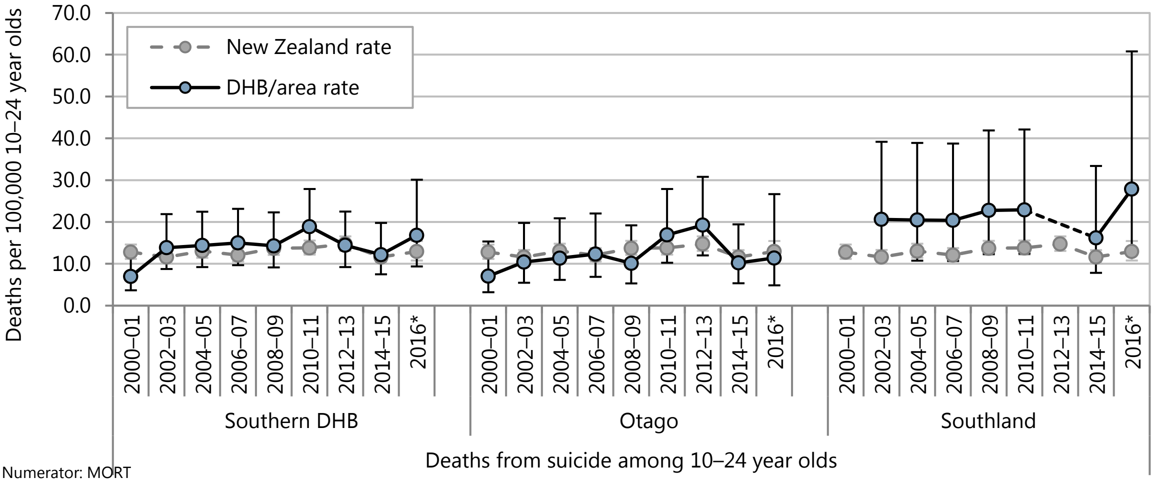
Table 7-9. Deaths from suicide in 10–24 year olds, by district health board, Southern DHB vs New Zealand 2012–2016

DHB/Area	n	Annual average (n)	Rate per 100,000 population	Rate ratio	95% CI
Deaths from suicide in 2012–2016					
10–24 year olds					
Southern DHB	46	9	14.00	1.07	0.79–1.44
Otago	31	6	14.07	1.07	0.75–1.54
Southland	15	3	13.86	1.06	0.63–1.76
New Zealand	607	121	13.12	1.00	

Numerator: MORT, Denominator: NZCYES Estimated Resident Population. Period: 2012–2016. Rate ratios are unadjusted

In Southern DHB, Otago and Southland the number of deaths from suicide have varied year on year during 2000–2016 (Figure 7-23)

Figure 7-23. Deaths from suicide among 10–24 year olds, by year, Southern DHB vs New Zealand 2000–2016



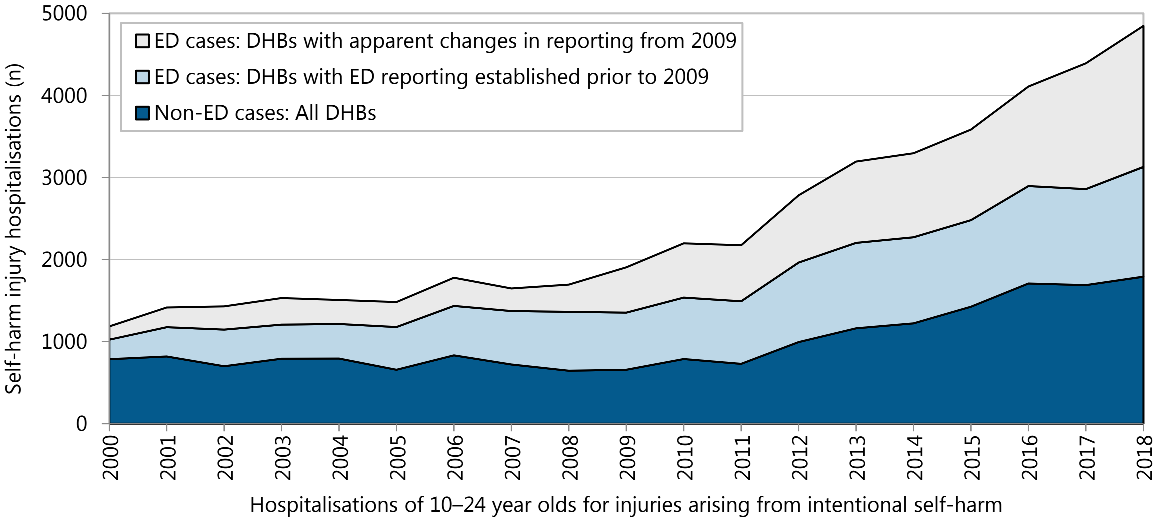
Numerator: MORT
Denominator: NZCYES Estimated Resident Population
*2016 is for a single year. Rates for Southland suppressed in 2000–2001 and 20012–2013 due to small numbers

Intentional self-harm hospitalisations

There were around 20,000 acute admissions to hospital of under-25 year olds for injuries arising from intentional self-harm in New Zealand during 2014 to 2018. The ages of those admitted ranged from five to 24 years. This chapter presents analyses that have been limited to acute admissions to hospital where the individual was aged between 10 and 24 years, and they include both emergency department (ED) and non-emergency events (discharged from hospital following continued assessment/treatment and includes Mental Health inpatient stays). Previous reports on hospitalisations for intentional self-harm have excluded hospital events treated primarily by emergency medicine. This exclusion arose from the variation in reporting practices between DHBs, specifically in relation to whether the requirement that when assessment and/or treatment is for three or more hours it should be counted as an admission applied to patients seen only in the ED.[20] Since 1 July 2012 all DHBs have reported events where patients were discharged under an emergency department (ED) specialty code after a short stay in a consistent way.[38] In this report the NZCYES therefore presents both ED included and ED excluded data.

Figure 7-24 presents the number of self-harm hospitalisations, by ED status and change in reporting practice.

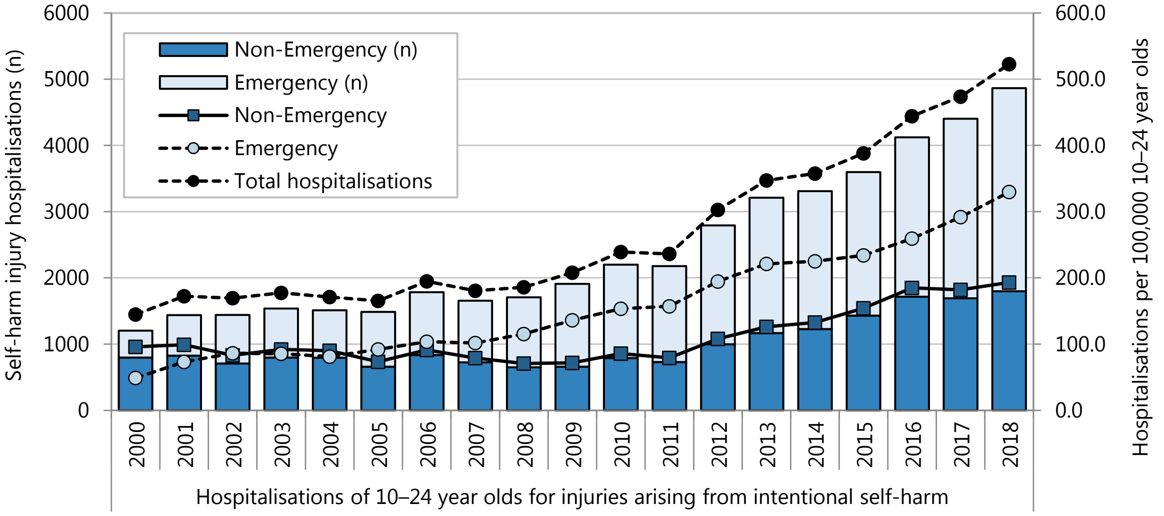
Figure 7-24. Number of hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by year, ED status and reporting practice, New Zealand 2000–2018



Source: NMDS (Acute admissions only).
ED cases: Health specialty code on discharge of M05–M08

The number of acute admissions of 10–24 year olds to hospital for injuries arising from intentional self-harm has increased over the period 2000–2018. The rate of self-harm hospitalisation of 10–24 year olds has increased over this period for both non-emergency and emergency events, but more so for emergency events (Figure 7-25).

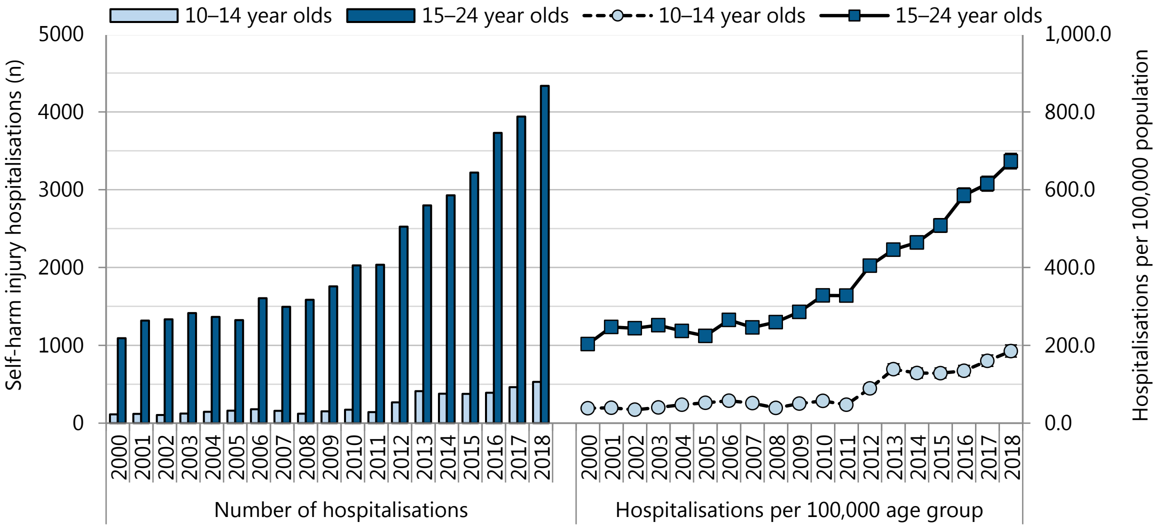
Figure 7-25. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by ED status, New Zealand 2000–2018



Numerator: NMDS (Acute admissions only), Denominator: NZCYES Estimated Resident Population

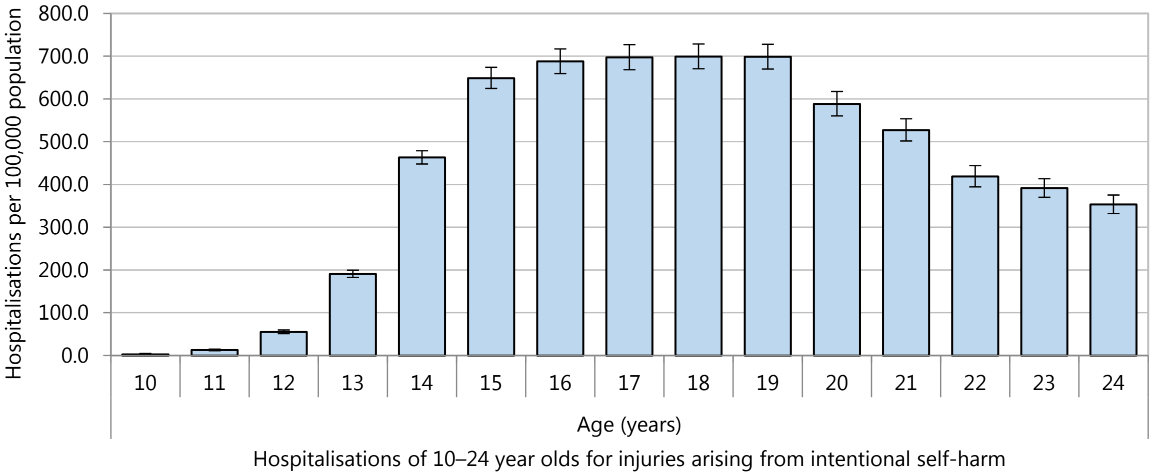
Numbers and rates of hospitalisation increased for 10–14 year olds and for 15–24 year olds over the period 2000 to 2018 (Figure 7-26). Hospitalisation rates were higher for 15–24 year olds than for under-15 year olds throughout the period (Figure 7-26). Very few of the self-harm hospitalisations were for children aged under-11 years. The highest hospitalisation rates during 2014–2018 were for 17 to 19 year olds (Figure 7-27).

Figure 7-26. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by age group, New Zealand 2000–2018



Numerator: NMDS (Acute admissions, ED cases included), Denominator: NZCYES Estimated Resident Population

Figure 7-27. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by age, New Zealand 2014–2018

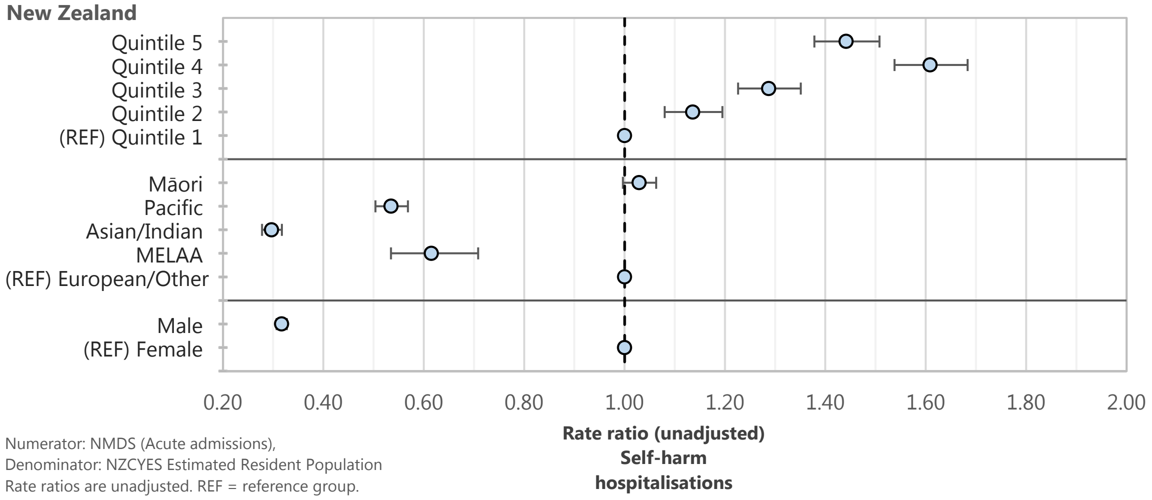


Numerator: NMDS (Acute admissions, ED cases included)
Denominator: NZCYES Estimated Resident Population. Period: 2014–2018

In the five years between 2014 and 2018 there were around 20,000 hospitalisations for self-harm related injuries among 10–24 year olds. Figure 7-28 presents the rate ratio of self-harm hospitalisations during this period by selected demographic factor. This unadjusted rate ratio presents the gap, if any, between the groups and the reference group, although this univariate analysis does not quantify the independent effect of each factor.

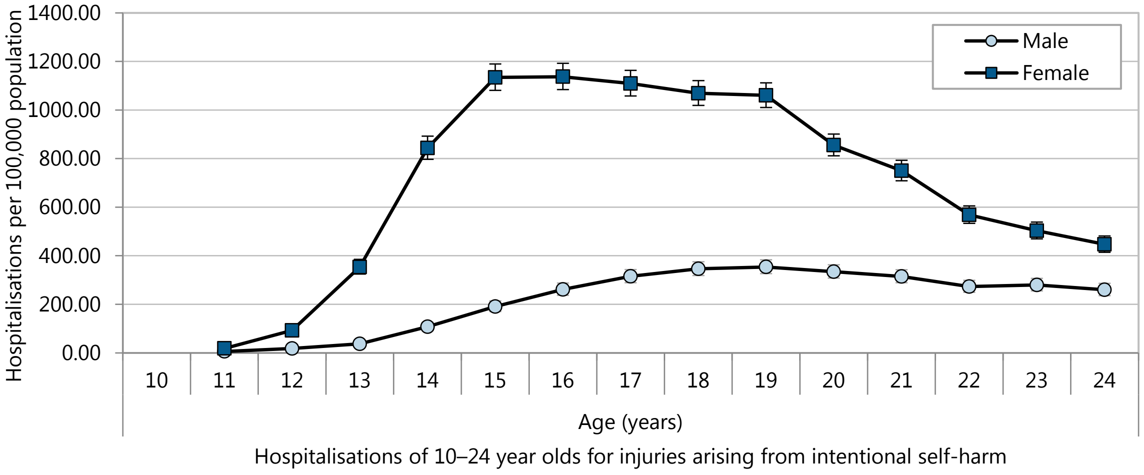
Hospitalisation rates for females were more than three times those for males. Hospitalisation rates for 10–24 year olds of Pacific, Asian/Indian, or MELAA ethnicity were significantly lower than the hospitalisation rates of European/Other 10–24 year olds, while the Māori rates was similar (Figure 7-28). During this period, self-harm hospitalisation rates increased with increasing residential NZDep2013 deprivation scores (Figure 7-28). Rates for those residing in areas with moderate-to-high deprivation scores rates (quintile 4 and 5) were around 1.5 times the rate for 10–24 year olds residing in areas with low deprivation scores (quintile 1) (Figure 7-28).

Figure 7-28. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by demographic factors, New Zealand 2014–2018



Numerator: NMDS (Acute admissions),
Denominator: NZCYES Estimated Resident Population
Rate ratios are unadjusted. REF = reference group.
Ethnicity: Level 1 prioritised. Quintile: NZDep2013 Index of deprivation (1=least deprived; 5=most deprived)

Figure 7-29. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by age and gender, New Zealand 2014–2018

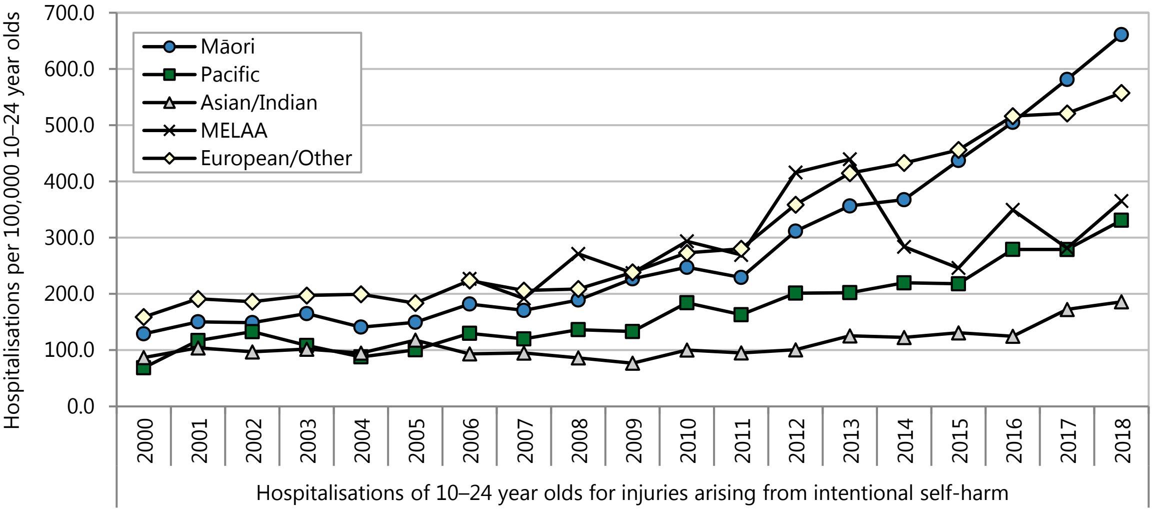


Numerator: NMDS (Acute admissions, ED cases included), Denominator: NZCYES Estimated Resident Population
Period: 2014–2018. Rates suppressed for 10 year olds due to small numbers

Females had higher self-harm hospitalisation rates than males at all ages (Figure 7-29). The ages with the highest rates of self-harm among females were 15 and 16 years, and 18–19 years for males

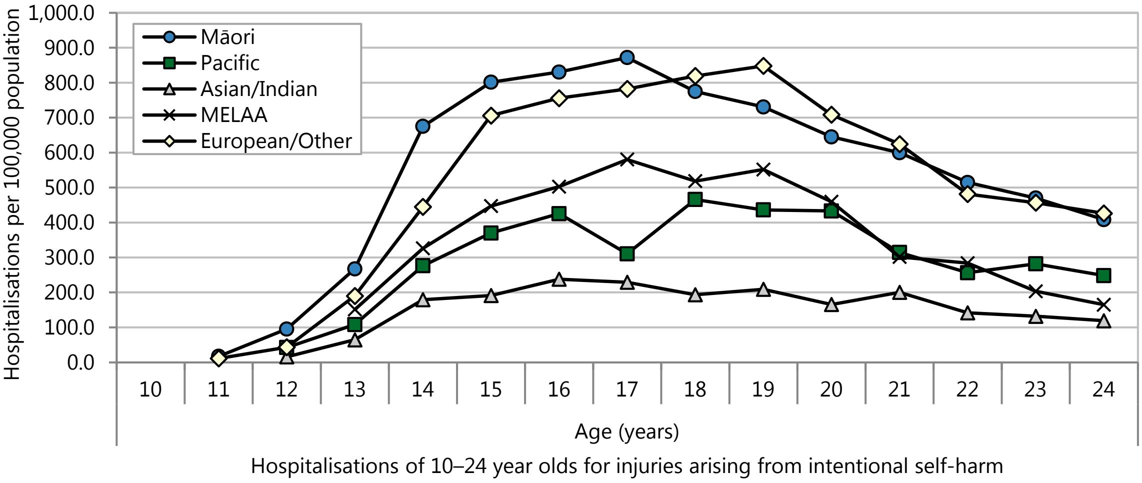
Self-harm hospitalisation rates have increased in all ethnic groups over the period 2000 to 2018, as shown in Figure 7-30. Rates for European/Other and Māori young people were consistently higher than the rates for the other ethnic groups. The ages with the highest rates of suicide varied slightly between the ethnic groups (Figure 7-31). The highest self-harm hospitalisation rates for Māori were at age 17 years, compared with 18 years for Pacific, and 19 years for European/Other.

Figure 7-30. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by prioritised ethnicity, New Zealand 2000–2018



Numerator: NMDS (includes ED cases)
Denominator: NZCYES Estimated Resident Population

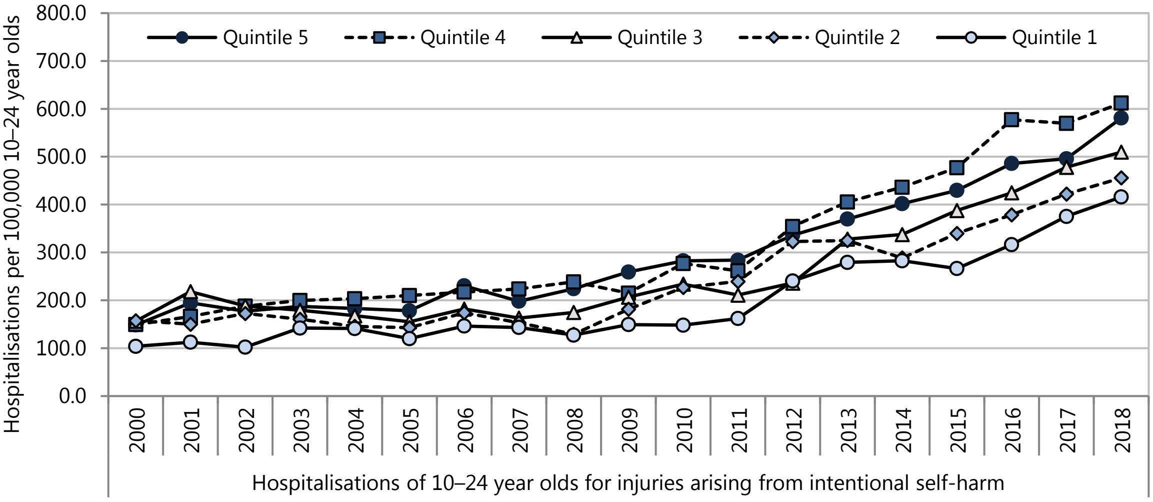
Figure 7-31. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by age and ethnicity, New Zealand 2014–2018



Numerator: NMDS (Acute admissions, ED cases included), Denominator: NZCYES Estimated Resident Population
Period: 2014–2018. Rates suppressed for 10 year olds due to small numbers

Hospitalisations for self-harm increased with increasing deprivation score of the residential area from quintile 1 to quintile 4. Over the period 2000 to 2018, the lowest self-harm hospitalisation rates were among 10–24 year olds who lived in areas with the lowest deprivation scores (quintile 1). There has been an overall increase, with year on year variation, in hospitalisation rates for all deprivation quintiles, to more or less the same degree (Figure 7-32). Over the period 2000–2018, the hospitalisation rates were generally highest for 10–24 year olds who lived in quintile 4 areas (moderately high deprivation).

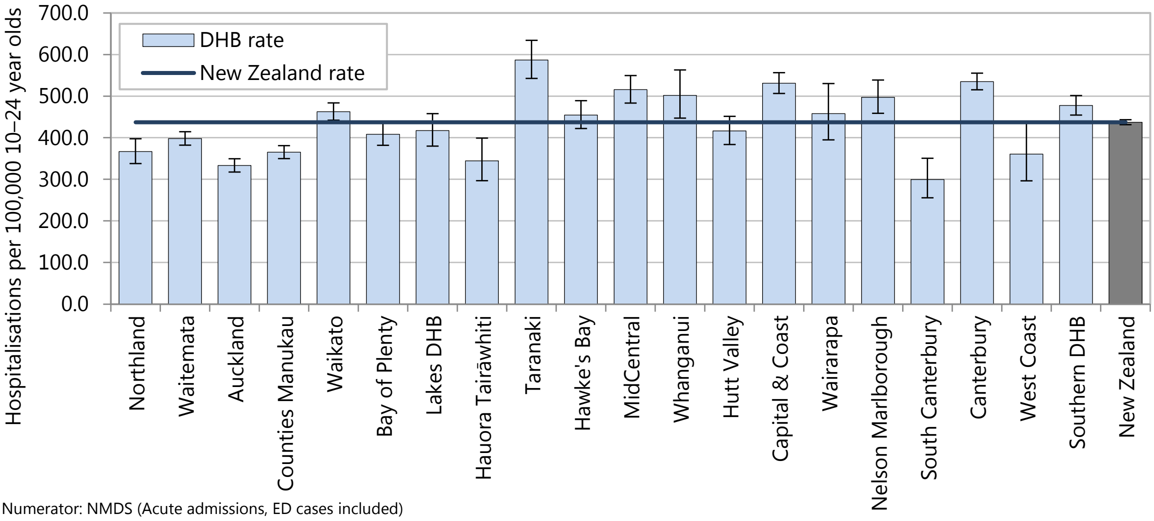
Figure 7-32. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by year and NZ Deprivation Index quintile, New Zealand 2000–2018



Numerator: NMDS (includes ED cases)
Denominator: NZCYES Estimated Resident Population

Figure 7-33 and Table 7-10 present the hospitalisation rates for injuries arising from intentional self-harm by residential district health board between 2014 and 2018 in comparison to the rate for New Zealand as a whole. During this period, the hospitalisation rate among 10–24 year olds in Southern DHB was slightly but significantly higher than the New Zealand rate (Table 7-10).

Figure 7-33. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by district health board, New Zealand 2014–2018



Numerator: NMDS (Acute admissions, ED cases included)
Denominator: NZCYES Estimated Resident Population
Period: 2014–2018

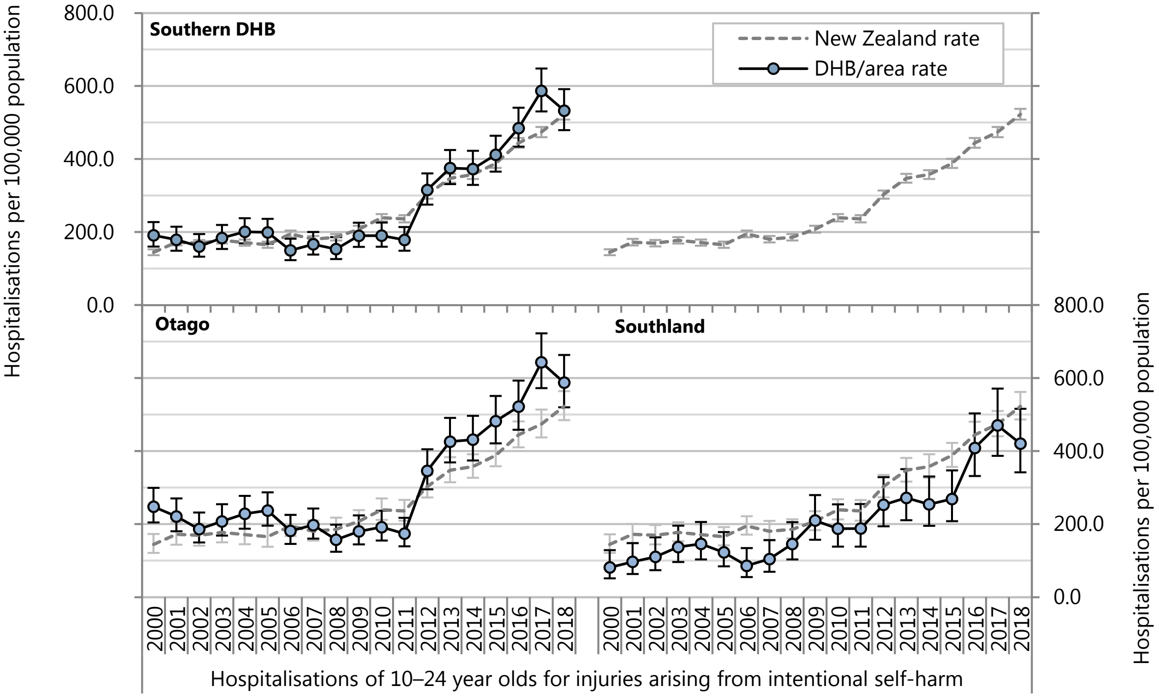
Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm

Table 7-10. Hospitalisations of 10–24 year olds for injuries arising from intentional self-harm, by district health board, Southern DHB vs New Zealand 2014–2018

DHB/Area	Number	Annual average	Rate per 100,000 population	Rate ratio	95% CI
Hospitalisations of 10–24 year olds during 2014–2018					
Injuries arising from intentional self-harm					
Southern DHB	1,562	312	477.44	1.09	1.04–1.15
Otago	1,170	234	532.98	1.22	1.15–1.29
Southland	392	78	364.17	0.83	0.75–0.92
New Zealand	20,293	4,059	437.35	1.00	

Numerator: NMDS (Acute admissions, ED cases included), Denominator: NZCYES Estimated Resident Population. Hospitalisations per 100,000 age-specific population. Rate ratios are unadjusted

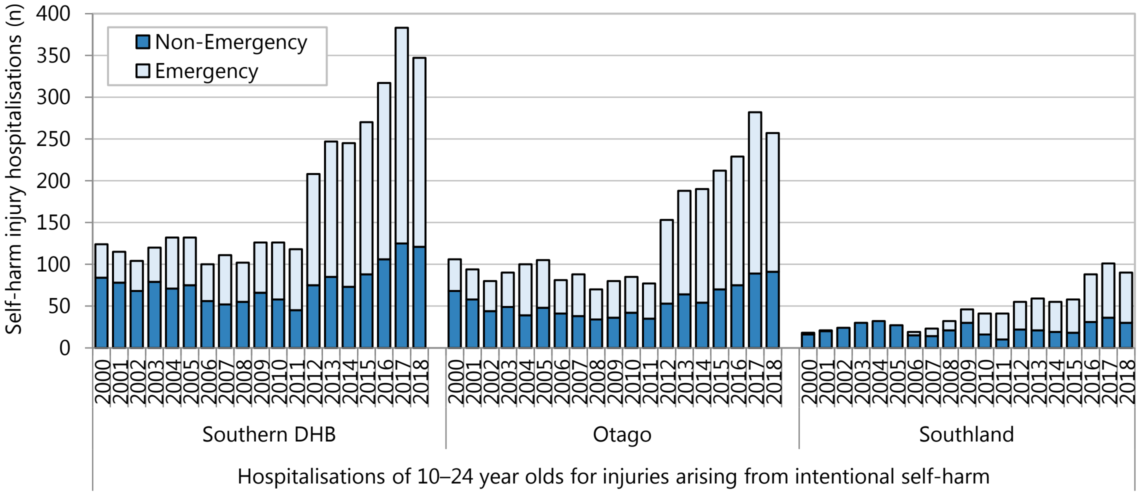
Figure 7-34. Hospitalisations of 10–24 year olds for intentional self-harm, by year, Southern DHB vs New Zealand 2000–2018



Numerator: NMDS (Acute admissions, ED cases included)
Denominator: NZCYES Estimated Resident Population

The rate of hospitalisations for injuries arising from intentional self-harm has increased from 2011 onwards in Southern DHB and in Otago (Figure 7-34). The hospitalisation rates in Southland have increased overall during the period 2000 to 2018 (Figure 7-34). These increases are largely the result of increasing numbers of emergency self-harm cases within the DHB as a whole, and in Otago and Southland (Figure 7-35).

Figure 7-35. Hospitalisations of 10–24 year olds for intentional self-harm, by year and ED status, Southern DHB 2000–2018



Source: NMDS (Acute admissions only)

Evidence for good practice

The impacts of self-harm and suicide are felt by whānau, schools, colleagues, and communities[43] and these health indicators are major public health concerns for low-, middle- and high-income countries.[44,45] Globally, self-harm is more prevalent in teenagers than in other age groups[46] and suicide is the second leading cause of death in young people.[44-47] Self-harm prevention and reduction is critical to the United Nations Sustainable Development Goal 2030 number 3.4: "reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being."[43,48] While statistics indicate some of the prevalence of self-harm-related experiences in young people, there are many more who experience self-harm ideation or try self-harming behaviours who do not present to services.[43,45,46] Among the general public, for each person recorded as having died by suicide there are an estimated twenty others who attempted to end their life.[43,44]

The following Evidence for Good Practice provides a brief overview of literature available on self-harm and suicide in young people. For further information about evidence on mental health conditions and general interventions for mental wellbeing, please refer to the Evidence for Good Practice and mental health in-depth topic in the Mental Health section of this report.

The umbrella category of intentional self-harm (including suicide) will be referred to henceforth as "self-harm". When reading the literature on self-harm prevention, it is important to note that self-harm may or may not have a fatal intent.[49]

Protective and risk factors

While there are many risk and protective factors associated with self-harm, the help-seeking behaviours of individuals for experiences of self-harm ideation can be compromised by stigma, taboo, silence, and cultural norms.[43,50,51] There is a difference between an individual experiencing thoughts or feelings that are associated with self-harm (such as feeling trapped) and an individual experiencing factors that increase their likelihood of those thoughts and feelings being translated into self-harm behaviours (such as personality factors, exposure to how other people cope with emotions, or other factors listed below).[46]

Self-harm can be multi-causal and underlying risk or protective factors associated with self-harm ideation and self-harm can be at various levels. [44,46] Such levels include but are not limited to:

- social and cultural (e.g. norms in the wider social environment, including family, friends, and the media, pertaining to managing emotions and help-seeking behaviours; the cultural appropriateness of mental health services),[46,50]

- social and economic disadvantage (e.g. poverty and socioeconomic status),[46,47,52]
- relational (e.g. ease of making new friends),[46]
- family- and whānau-related (e.g. adaptive or maladaptive parenting),[46]
- biological (e.g. seratonin balance),[46]
- physiological (e.g. chronic pain),[47]
- personality-related (e.g. impulsivity) or cognitive and skill-based (e.g. strengths of social problem-solving skills),[44,46]
- psychological (e.g. having a diagnosable mental disorder)[46] or emotional (e.g. acute emotional distress to stressors),[44,47]
- experiential (e.g. exposure to adverse events in early and/or recent life or exposure to other people self-harming)[46] and
- identity-related (e.g. people of lesbian, gay, bisexual and/or transgender identity).[46,51,53,54]

A stable, protective and emotionally supportive environment set up by whānau in a whole-family approach is important for the mental and developmental wellbeing of all children.[55] Important protective factors against suicide and suicide ideation that are identified in New Zealand literature include: good whānau relationships and community connectedness and support; a sense of secure cultural identity and an ability to deal with difficulties; access to secure housing; stable employment; and access to help.[54] Another protective factor against suicide is where children and young people have been engaged with in ways where they have strengthened their problem-solving, coping and life skills.[43,51]

Some other specific risk indicators include but are not limited to: poverty, violence, substance use, early pregnancy, and minority or group status.[56] All substance use disorders are associated with an increase risk of suicide.[51]

Important risk factors for suicide identified in New Zealand literature (some of which are also highlighted in international literature) are: a sense of isolation;[54] a history of mental illness;[46,54] experiences of trauma[54,57] (especially child sexual abuse)[57] and/or bullying;[46,54] early use of alcohol and drugs;[57] whānau experiences of a number of biopsychosocial stressors;[57] and access to means of suicide.[54] In addition to the risk factors described, the strongest predictor of suicide is a prior suicide attempt.[43] A New Zealand research project that undertook a file audit of child and adolescent mental health services in South Auckland concluded that previous history of deliberate self-harm was an important factor in increased suicide risk.[57]

These factors can be fuelled by individuals' experiences of images in the media, gender norms and contrast perceived between their lived reality and their aspirations.[52] Furthermore, an suicide ideation and behaviours are understood as arising from the accumulation of multiple risk factors and experiences, rather than a single event.[57] The South Auckland study found that children and adolescents in families who are struggling with a number of biopsychosocial stressors are at increased risk of presenting to mental health services and those individuals who experience suicide ideation more commonly experience these difficulties when compared to their peers who do not experience suicidal ideation.[57]

Prevention

Interventions can be universal (cover the population as a whole), selective (focused groups or communities who are at higher risk) or indicated (focused on individuals who are known to be vulnerable to self-harm or have tried self-harming behaviours).[43] The Every Life Matters He Tapu te Oranga o ia tangata Suicide Prevention Strategy identifies two key outcomes for its prevention framework, including wellbeing for all and a reduced suicide rate.[54]

A list of values and collective ways of working are identified as being necessary to underpinning the implementation of Every Life Matters framework:[54]

- Mahi tahi – Working together
- Hautūtanga Māori – Māori leadership
- Poipoi wairua – Trauma-informed
- Mauri ora – healthy individuals
- Whānau ora – whānau, family and community-centred
- Wai ora – healthy environments
- Rangatiratanga – people powered
- Whakamana tāngata – treating people with dignity

Effective action towards reducing the prevalence of suicide requires a coordinated multi-sectoral strategy for both the general population and more vulnerable communities.[43,47] Governments are well-positioned to organise an approach to suicide prevention and response that is collaborative and multisectoral, including for example education, social welfare, the media, and more.[43]

Impacts of self-harm prevention efforts may be seen in the short-term with regard to goals of reducing self-harm and self-harm ideation and attempts in the population.[43] Some short-term positive progress that can be observed includes but is not limited to: more responsible reporting in the media; stronger knowledge and improved attitudes and practices of health professionals; increased help-seeking behaviours for accessing and utilising formal services.[43]

There should be interventions for protecting and promoting the health of all children and adolescents.[56] Children and adolescents need to be supported to develop cognitive, emotional and social resources that can provide foundations for flourishing in their lives with good health and wellbeing.[52] Interventions should enhance skills and resilience and also reduce exposure to risk factors while empowering young people and their whānau and communities.[56] For example, population-based measures to prevent self-harm and suicide can: work to strengthen self-esteem, problem-solving, stress management and emotional skills, and interpersonal skills in children and young people; mitigate against exposure to adverse events, discrimination and bullying; support children's and young people's resilience against adversity; and promote help-seeking behaviours.[44,46,58]

As a part of suicide prevention, every individual and whānau should feel that their lives matter through:[54]

- "whakapapa – having a strong identity, knowing where they come from and where they belong.
- tūmanako – having self-worth and being optimistic about their future
- whanaungatanga–being connected with others: friends, whānau and families, and wider communities
- atawhaitanga – receiving support that responds to their distress with compassion, respect and understanding, and supports healing and recovery
- kia mōhio, kia mārama – knowing where and how to access support
- mauri tau – having easy access to support that recognises and responds to their needs when they are affected by suicide."

Interventions should be designed with and for children and adolescents and also in ways that are intersectoral.[56] School-based mental health awareness and skills training interventions have been effective for suicide prevention.[51] Peer-support programmes for young people and designed with the participation of young people can be an appropriate intervention in low-resource contexts.[51]

The availability of effective prevention strategies should be well promoted in the population, as should responsible media reporting of self-harm.[47,58] Media professionals and outlets should avoid presenting cases of suicide in a glamourised or sensationalised light and instead increase the reporting of cases of help-seeking, coping and also work to spread awareness and address stigma.[43]

Services for self-harm prevention that are appropriate for adolescents should be easily identifiable (and clear about eligibility criteria, and any adolescent-specific confidentiality considerations) to avoid confusion at times of distress and better ease pathways into treatment.[50] Healthcare systems should better incorporate suicide prevention as a central component of care.[44] A range of help pathways and intervention options should be provided so that support can be accessible earlier for those who could benefit.[54]

Stigma around suicide ideation and stigma around managing mental and emotional problems and seeking help can be a barrier to children and adolescents seeking formal services, this can be more of a barrier for some culture than others.[48,50,59] It is critical to understand and appropriately engage with communities and their perceptions and attitudes towards health, and especially those pertaining to suicide, so as to foster supportive community environments that encourage help-seeking behaviour.[51] In their community engagement publication,[51] WHO lists factors that should be considered so as to better understand the community and better understand opportunities for community engagement, including preferred communication channels and prominent media in the community, access to health services within the community, and access to means of suicide.

Engaging communities is an important area of self-harm prevention, because they play a critical role in addressing isolation and providing social support to individuals while also providing a setting for addressing stigma and improving knowledge and awareness.[44,48,58] Strategies should be tailored to these local communities.[43] Initial preparation for engaging within communities has several steps, those being: know the community and foster a supportive community environment; consider current community features, such as scale, population, services and information available; define broad goals; form a steering committee; identify key stakeholders (such as politicians and health professionals); choose an engagement technique for the first steering group meeting; plan and organise the first steering group meeting.[51] It is recommended that the steering group meeting involve a mapping exercise to understand the impact suicide has on the community and identify issues for prevention while reflecting on questions such as: where are formal services situated (medical, social and educational) and do they have services for managing suicide; where are alcoholic beverages available; where are the current gaps in services?[51] Following which, a community action plan should be developed for mapping and mobilising resources with SMARTER goals.[51] WHO's *Preventing suicide: Community Engagement Toolkit* suggests many examples of community engagement planning and mobilisation.[51]

Gatekeepers can provide a more welcoming connection to formal services for those individuals and whānau who are hesitant about seeking formal services relevant to self-harm and suicide, who have social norms that are less encouraging about seeking help in formal services, and/or who prefers to address mental health needs within community and kinship networks.[50] Gatekeepers can be officials from schools, churches, or organisations known and respected by ethnic minority communities and ethnic minority youth.[50] A key feature of successful community engagement for preventing suicide is good leadership by prominent members of a community (who act as gatekeepers for identifying those who could benefit from suicide prevention services).[51]

Campaigns that are locally organised and in the local media with the appearance of community champions (a distinguished or recognised person to the community) usually work well to disseminate information about self-harm and its prevention.[51] Champions who live in the community are often seen as more trustworthy than people not known to the community.[51] Education and health also have opportunity to establish community champions and other awareness-raising initiatives.[43]

Awareness-raising interventions targeted for the community can include awareness-raising and sensitisation through providing information on: suicide, suicide prevention, risk and protective factors of suicide, groups more vulnerable to suicide, and the role of communities in suicide prevention.[51] Information dissemination could take place via social media or traditional media (such as television or radio) campaigns, workshops, symposia, training sessions, webinars, posters, billboards, roadshows, theatre and street plays.[51] The media play an important role in community awareness-raising, as do champions who speak about suicide and suicide prevention.[51]

Work can be done to limit young people's access to the means that are more commonly used for self-harm, and restricting access to means of suicide has shown to be effective,[51] for example by placing limits on the paracetamol pack sizes available for purchase by young people or reducing access to firearms or putting barriers on bridges.[43,44,46,47,58] Due to the involvement of alcohol in self-harm behaviours and the association of substance use disorders in suicide risk, comprehensive suicide prevention strategies should include policy to reduce harmful alcohol use.[58]

It is also important for policy-makers and intervention designers to note that restricting access to self-harm and suicide methods does not address the underlying factors for why an individual may harm themselves or take their life.[46] Restricting access to self-harm methods may increase uptake of other methods unless the underlying factors behind these acts are addressed.[46]

The World Health Organization’s *LIVE LIFE* strategic approach for preventing suicide provides a foundation on which suicide prevention work could be based and the core interventions it would feature, those being: restricting access to methods of suicide; engaging with the media for responsible reporting; strengthening life skills in children and young people; and developing opportunities for early engagement, identification and follow-up with children and young people and also the people in their lives, and after bereavement.[43]

Equity

Different individuals have different levels of advantage and disadvantage and different approaches and resources must be employed for suicide prevention and intervention.[54]

Children and young people affected disproportionately by poorer mental health experiences and outcomes include those in disadvantaged minority groups, including indigenous[47] and migrant individuals,[52] sexual[46,47] and gender minorities,[46,47,53] adolescent parents,[52] young unemployed individuals,[47] infants and children exposed to maltreatment and neglect,[47] and individuals exposed to conflict and natural disasters.[47] Socially and economically disadvantaged circumstances impact negatively on the individuals and whānau living in them, adversely affecting parenting and child development in ways that can contribute to self-harm ideation.[47,52]

In a research project exploring the contemporary views on Māori and suicide, mental illness was not a common theme in the thinking on Māori in relation to suicide, in contrast to Pākehā psychiatric discourse and literature.[60] Dominant themes in Māori discourse on suicide pertain to the interaction between cultural and historical processes, some of which are: acculturative stress; personal, institutional and structural racism; and social and material deprivation.[60] Identity and connectedness were identified as important factors impacting on youth suicide, for example how many Māori young people have been isolated from familial and cultural identity and knowledge in combination with little access to strengthen those connections and also address the sense of personal irrelevance and lack of purpose that can arise from having to assimilate into modern mainstream New Zealand society.[60]

Social conditions of political disempowerment (such as colonisation and loss of ownership over traditional lands), social disadvantage (such as poverty, unemployment, poor housing), and systemic processes that compromise the equitable participation of Māori in society (including institutional racism) have impacts on the unequal distribution of determinants of health and, subsequently, the unequal distribution of health outcomes such as suicide.[60]

Formal services should be able to represent minority ethnic groups, have cultural competence for effective outreach and service provision, and have staff available for where individuals prefer to seek help from a professional of their ethnic identity.[50] These factors can have large impacts on the help-seeking behaviours of individuals of minority ethnic groups as well as their service selection, satisfaction with services, and their likelihood of continuing to utilise those services for treatment.[50] Work should be done to engage communities; tailored engagement with and buy-in from communities is critical for indigenous groups.[44]

In the Every Life Matters framework, district health boards have been tasked with developing and maintaining population-based suicide prevention plans with key stakeholders that employ culturally-appropriate interventions that support general wellbeing and focus on the needs of those at higher risk.[54] Community-led work should be supported, especially those being accessed by more vulnerable groups (such as Māori, Pacific, rainbow, rural, and boys/men).[54] DHBs should strengthen sharing of learnings, best practices, and innovations.[54]

International and New Zealand literature highlights that people of diverse sexual orientation, gender identity, and sex characteristics (SOGISC) identities experience higher rates of self-harm ideation and acts than the general population.[53] For transgender and non-binary communities, evidence shows an association between experiences of discrimination and attempting suicide.[53] Improving service competence to respond to the needs and aspirations of people in the SOGISC community could be very important to improving wellbeing outcomes for these communities.[53] Evidence shows that whānau support of transgender and non-binary individuals is a protective factor against suicide attempts by these individuals.[53] There is opportunity to explore ways in which whānau support can be strengthened and increased in the population as a protective factor for more individuals within these communities.[53] Some actions that can be taken in the health sector to improve interventions, services and service delivery for transgender and non-binary people include but are not limited to: providing training and resources that strengthen cultural appropriateness and respect for gender diversity; including transgender and non-binary in documents and policies; simplifying processes for people to have health records that are accurately in accordance with how they identify; supporting initiatives led by transgender and non-binary communities.[53]

Some barriers that impact more on some groups than others include time, transport and geographical barriers, a lack of service prevalence in some areas, as well as stigma.[49] Digital psychological interventions for adolescents experiencing high levels of psychological distress can be a means through which some common barriers to access can be overcome for these groups (where children and adolescents have access to these devices).[49] With smartphone and computer digital interventions, there is more flexibility for the user to choose when and where to use it.[49]

Some young people may be more vulnerable which can be compounded by experiencing employment-related and living conditions that are stressful and by a hesitation to seek help from employers.[51] In a context of policy directions in the 1990s based on the trickle-down economics theory of welfare to support an export-led recovery from the recent recession, New Zealand saw an increase in youth suicide.[61] Worker suicide can be prevented through having the workplace act as a supportive gateway and a forum for providing practical guidance on mental health in the workplace and on how workers can support colleagues experiencing suicidal thoughts.[51]

Responsible reporting of cases of suicide in the media has been effective in reducing imitation suicide rates in more vulnerable groups.[51]

Selective and indicated interventions

The World Health Organization continues to develop an open-access programme of evidence-informed work on adolescent mental health.[44,56] Mental Health GAP Action Programme (mhGAP) provides guidance for non-specialist settings on the assessment and management of mental, neurological and substance use conditions with consideration of adolescents and modules on self-harm/suicide.[56] Helping Adolescents Thrive (HAT) will provide guidance on health promotion and prevention interventions (using various platforms) specific for adolescents.[52,56] Early Adolescent Skills for Emotions (EASE) provides guidance on young adolescents with high distress and impaired functioning.[56] Sustainable Technology for Adolescents to Reduce Stress (STARS) is being developed as a human-centred digital intervention for older adolescents that will be global and adaptable.[49,56]

While WHO recommends interventions by type of condition or disorder (e.g. depression, psychoses, substance use), it recommends Cognitive Behavioural Therapy (CBT) and Parent Skills Training as therapies appropriate for mental and behavioural disorders (generally) in children and adolescents.[49]

Interventions for mental, neurological, and substance use disorders that are delivered to children and adolescents should incorporate: an assessment of the needs of carers; an exploration of existing available resources within the whānau, school or community; an exploration of whether the individual is experiencing any adverse events (such as violence or neglect); providing opportunities for adolescents to attend alone and, where they do attend with a carer and provide opportunities for them to express themselves in private.[49]

Systematic follow-up has been shown to be effective in suicide prevention and provides an opportunity to ensure that psychosocial support is being provided to the person at risk.[51]

In the aftermath of a person dying by suicide, plans for providing training and healing support to those affected can prevent suicide clusters.[51]

Other aspects to prevention

Because several factors can influence rates of self-harm and death by suicide, and these factors can fluctuated over time, it is more useful to refer to multiple indicators of success in a prevention strategy and a "programme logic" approach may be useful.[1] Multiple data sources and methods (routine sources such as hospital admissions, as well as surveys and interviews) should be utilised and strengthened to track progress towards goals. It is important that work be done to strengthen data collection of self-harm ideation, self-harm attempts and deaths by suicide.[5] A programme logic approach as it could be applied to the goal of preventing suicide is described in WHO's guidance titled National suicide prevention strategies: progress, examples and indicators.[43]

To facilitate teamwork and collaboration within and across services, work needs to be done to improve communication channels and timeliness, make clear the roles of each stakeholder involved in the larger suicide prevention strategy. Training needs to be undertaken of both specialised and non-specialised professionals (including teachers and community mental health service providers) across various sectors to develop their competence about appropriate assessment and response to mental, neurological and substance disorders and self-harm and their context-specific factors. Training should be up-to-date with fluctuations in factors and context so services can continue to be appropriate.

The areas of health and education need to have strong collaborative working relationships for developing and implementing effective prevention activities as well as delivering emotional and life-skills training for children and young people and awareness-raising and skill-building of whānau.

It is important that local barriers to preventing suicide are identified.[6] It is through education settings that children and young people can be reached so as to better include them in designing prevention programmes. Children and young people are well-placed to identify risk and protective factors in their community and thus can be important contributors to designing interventions aimed at them.

In future, research investment should focus on the effective translation of research findings into suicide prevention programmes.

Guidelines, evidence-based reviews, New Zealand publications, and other relevant publications and websites

New Zealand guidelines

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8. Cancer

The term cancer covers over 200 conditions, all characterised by uncontrolled growth and division of abnormal cells within the body.[1,2] Cancers are usually named for the organs or tissues in which they originated but they may also be named for the type of cell that formed them.[2] Cancer cells often form solid tumours although cancers that begin in the blood-forming tissue in the bone marrow (e.g. leukaemias) may not.[2] Cancers are malignant which means that they can invade nearby tissues, and spread via the bloodstream or lymphatic system to other parts of the body.[2] This spread is known as metastasis. Once a cancer has metastasised it becomes much more difficult to control.[2]

Cancer in children is rare compared to cancer in adults: less than one percent of cancers diagnosed each year in New Zealand occur in children aged under-15 years.[3] Nevertheless, cancer is the second most common cause of death in 1–14 year olds (after traffic accidents) and about one in 500 children will be diagnosed with cancer before the age of 15 years.[3]

The types of cancer that occur in children are very different to those seen in adults.[3] The most common type of cancer in children is leukaemia, which accounts for around one third of all cases, followed by central nervous system tumours, and then lymphomas.[3]

In adolescents aged 15–19, the most common types of cancer are lymphoma and leukaemia while in young adults aged 20–24 years the most common types are melanoma, carcinomas, and germ cell and trophoblastic neoplasms.[4]

This section presents cancer notifications and cancer incidence rates for New Zealand children and young people aged 0–24 years using data from the New Zealand Cancer Registry, deaths from cancer from the National Mortality Collection, and cancer-related hospitalisations from the National Minimum Dataset.

Data sources and methods

Indicators

Cancer incidence
Cancer mortality
Cancer hospitalisations

Data source(s)

Numerators:	Incidence: Notifications to the New Zealand Cancer Registry (NZCR) Mortality: National Mortality Collection (MORT)) Hospitalisations: National Minimum Dataset (NMDS)
Denominator:	NZCYES Estimated Resident Population

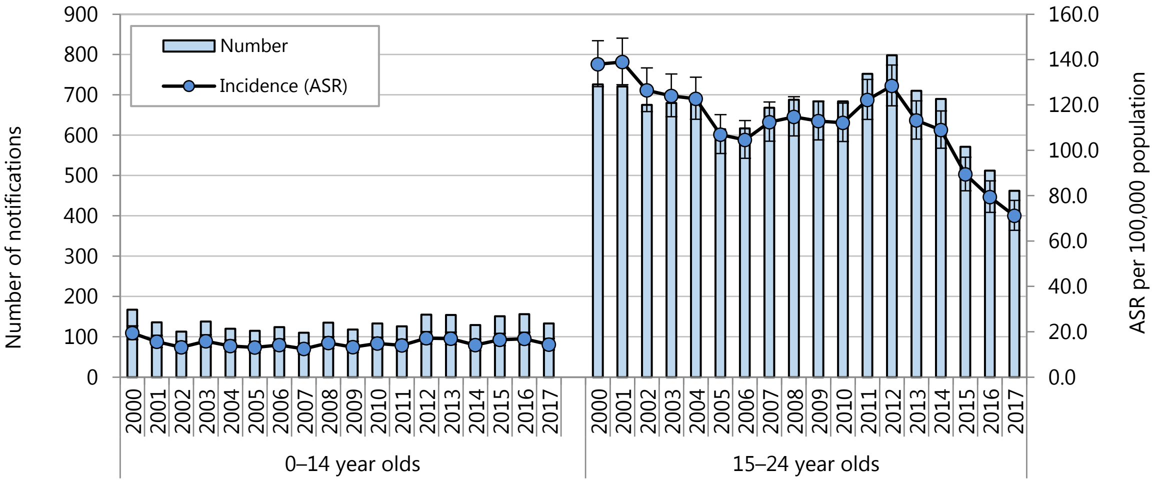
Additional information

The New Zealand Cancer Registry records all primary cancers diagnosed in New Zealand, except squamous cell and basal cell skin cancers, and secondary cancers where the primary cancer is unknown. It registers cancers once, in the year of their first known diagnosis. There were a few instances where an individual had multiple registrations for the same cancer, but only one registration for each cancer has been kept. Year is the registration year. Age is age at date of diagnosis. Rates are age-standardised, unless stated otherwise. The ICD-10AM codes used to identify cancer types are listed in the appendices.

Cancer rates and trends

The vast majority of children and young people notified to the cancer registry in 2000–2017 had only one notification. The New Zealand Cancer Registry includes cancer notifications, and notifications of in-situ neoplasms. Notifications for New Zealand children aged 0–14 years were steady over the period 2000–2017, with an average of around 130 notifications each year, corresponding to an age-standardised rate (ASR) of less than 20 per 100,000 (Figure 8-1). Almost all notifications for 0–14 year olds were for cancer. There were very few notifications for in-situ neoplasms in 0–14 year olds in any year, and in some years there were none.

Figure 8-1. Notifications to NZ Cancer Registry for 0–24 year olds, by age group and year, New Zealand 2000–2017

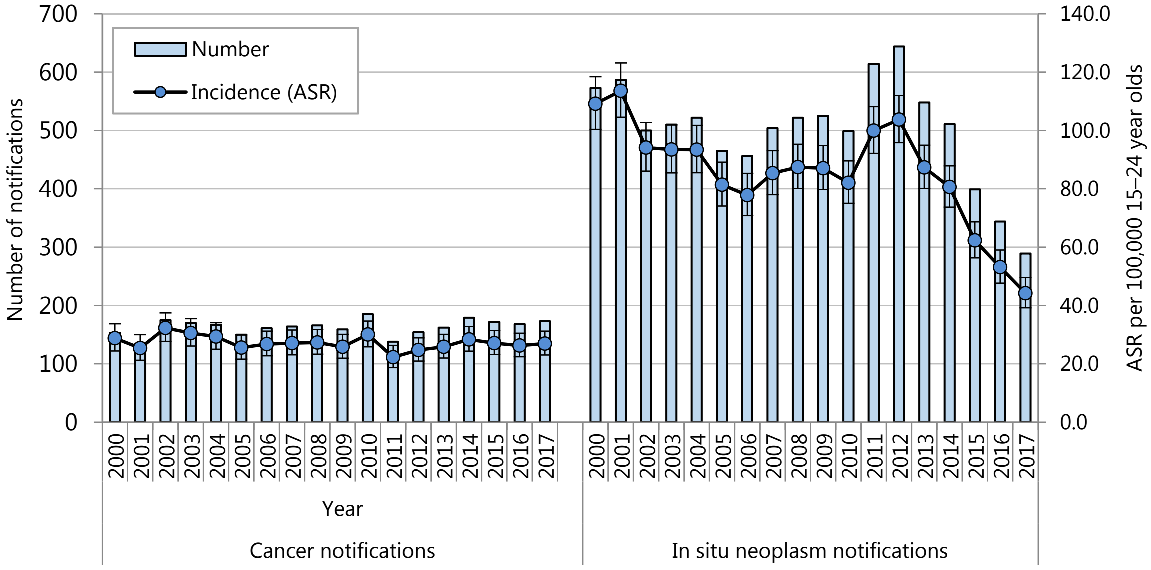


Numerator: National Cancer Registry
Denominator: NZCYES estimated resident population
ASR = Age standardised rate (standardised to 2013 NZ Census population)
All notifications (including in situ)

Young people had many more notifications than children and there was a marked downward trend from 2012 onwards (Figure 8-1). As shown in Figure 8-2, this was due to a fall in notifications for carcinoma in situ, which were almost all notifications of carcinoma in situ of the cervix.

There was little change in numbers and rates of notifications for cancer in young people over this time. There were, on average, around 160 notifications of cancer in 15–24 year olds each year from 2000–2017, corresponding to an ASR of around 27 per 100,0000 (Figure 8-2).

Figure 8-2. Notifications to NZ Cancer Registry for 15–24 year olds, by type and year, New Zealand 2000–2017



Numerator: National Cancer Registry
Denominator: Statistics NZ Estimated Resident Population
ASR = Age standardised rate (standardised to 2013 NZ Census population)
Cancer includes all malignant tumours and other neoplasms of uncertain/unknown behaviour

Cancer incidence in children and young people in Aotearoa varied with age (Table 8-1). Incidence was lowest in 5–9 and 10–14 year olds who had rates around half that of 0–4 year olds. Rates for 5–9 and 10–14 year olds were significantly lower than those for the other age groups in the table. These differences arise partly because there are types of cancer that occur almost exclusively in very young children, particularly embryonal tumours such as neuroblastoma (a tumour of nerve cells that can occur in various parts of the body) and retinoblastoma (eye), and also because the incidence of leukaemia is higher in young children. Cancer incidence rises in the teenage and young adult years as types of cancer rarely seen in children become more prevalent, particularly Hodgkin lymphoma, testicular cancer and melanoma. Although males had somewhat higher cancer incidence than females in all age groups, male rates were not statistically significantly higher than female rates in any age group.

There were almost no notifications of in-situ neoplasms in children aged 0–14 years. The notifications of in-situ neoplasms in 15–24 year olds were almost entirely notifications of in-situ carcinoma of the cervix in young women aged 20–24 years (Table 8-1, Table 8-2).

Table 8-1. Cancer incidence in 0–24 year olds, by age group and sex, New Zealand 2013–2017

Age (years)	Number	Annual average	Incidence rate per 100,000 population	95% CI
Cancer notifications during 2013–2017				
New Zealand				
0–4	351	70	21.98	19.74–24.41
5–9	190	38	12.57	10.84–14.49
10–14	179	36	12.23	10.50–14.15
15–19	317	63	20.31	18.14–22.67
20–24	537	107	33.39	30.62–36.33
Males				
0–4	198	40	24.13	20.88–27.73
5–9	115	23	14.86	12.27–17.83
10–14	95	19	12.66	10.24–15.48
15–19	186	37	23.20	19.98–26.78
20–24	282	56	34.60	30.68–38.89
Females				
0–4	153	31	19.72	16.72–23.10
5–9	75	15	10.16	7.99–12.74
10–14	84	17	11.77	9.39–14.57
15–19	131	26	17.26	14.43–20.48
20–24	255	51	32.14	28.31–36.33

Numerator: National Cancer Registry; Denominator: NZCYES Estimated Resident Population. Rates are age-specific. Cancer includes all malignant neoplasms and neoplasms of uncertain/unknown behaviour but not in-situ neoplasms. Incidence is new registrations.

Table 8-2. Incidence of in-situ neoplasms in 15–24 year olds, by age group and sex, New Zealand 2013–2017

Age (years)	Number	Annual average	Incidence per 100,000 population	95% CI
In-situ neoplasms notifications during 2013–2017				
New Zealand				
15–19	51	10	3.27	2.43–4.30
20–24	2040	408	126.83	121.38–132.45
Males				
15–19	7	1	0.87	0.35–1.80
20–24	10	2	1.23	0.59–2.26
Females				
15–19	44	9	5.80	4.21–7.78
20–24	2030	406	255.82	244.81–267.20

Numerators: National Cancer Registry; Denominator: NZCYES Estimated Resident Population. Rates are age-specific. Incidence by new registrations.

Mortality rates for cancer in children and young people in Aotearoa for 2012–2016 followed a similar pattern to incidence rates, being lowest in the age group with the lowest cancer incidence, the 10–14 years group (Table 8-3). There were more male deaths than female in the 0–4 years and 15–19 years age groups although the corresponding mortality rates were not statistically significantly different (Table 8-3).

Table 8-3. Cancer mortality in 0–24 year olds, by age group and sex, New Zealand 2012–2016

Age (years)	Number	Annual average	Deaths per 100,000 population	95% CI
Cancer deaths during 2012–2016				
New Zealand				
0–4	53	11	3.36	2.52–4.39
5–9	41	8	2.72	1.95–3.69
10–14	29	6	1.97	1.32–2.83
15–19	63	13	4.03	3.10–5.16
20–24	69	14	4.34	3.37–5.49
Males				
0–4	36	7	4.44	3.11–6.15
5–9	21	4	2.72	1.69–4.16
10–14	16	3	2.12	1.21–3.44
15–19	40	8	4.99	3.57–6.80
20–24	35	7	4.35	3.03–6.04
Females				
0–4	17	3	2.22	1.29–3.55
5–9	20	4	2.72	1.66–4.20
10–14	13	3	1.81	0.96–3.09
15–19	23	5	3.03	1.92–4.54
20–24	34	7	4.33	2.99–6.04

Numerator: National Mortality Collection; Denominator: NZCYES Estimated Resident Population. Rates are age-specific. Cancer includes all malignant neoplasms and neoplasms of uncertain/unknown behaviour but not in-situ neoplasms. Mortality by underlying cause of death.

The rate of hospitalisations for cancer among New Zealand children and young people during 2014–2018 was highest in the 0–4 years age group and lowest in the 20–24 years age group (Table 8-4). The hospitalisation rates for males were significantly higher than those for females in the 0–4 years, 5–9 years and 15–19 years age groups. The numbers of hospitalisations for cancer are many times the numbers of new cases in each category because cancer treatment for a child or young person typically involves multiple hospitalisations over a long period of time.

Table 8-4. Cancer hospitalisations in 0–24 year olds, by age group and sex, New Zealand 2014–2018

Age (years)	Number	Annual average	Hospitalisations per 100,000 population	95% CI
Cancer hospitalisations during 2014–2018				
New Zealand				
0–4	2857	571	176.87	170.44–183.48
5–9	1976	395	130.18	124.50–136.05
10–14	1705	341	117.22	111.73–122.92
15–19	1700	340	108.97	103.85–114.28
20–24	1611	322	99.11	94.33–104.07
Males				
0–4	1676	335	201.76	192.21–211.66
5–9	1209	242	155.56	146.92–164.59
10–14	887	177	119.04	111.33–127.14
15–19	948	190	118.15	110.75–125.92
20–24	851	170	103.22	96.40–110.39
Females				
0–4	1181	236	150.52	142.06–159.36
5–9	767	153	103.55	96.35–111.14
10–14	818	164	115.32	107.55–123.50
15–19	752	150	99.25	92.28–106.60
20–24	760	152	94.89	88.26–101.88

Numerator; NMDS; Denominator: NZCYES Estimated Resident Population. Rates are age-specific. Cancer includes all malignant neoplasms and neoplasms of uncertain/unknown behaviour but not in-situ neoplasms.

Approximately half of cancer notifications in children (0–14 year olds) are cancers of lymphoid, haematopoietic and related tissue, most commonly leukaemia (Table 8-5). The next most common type of cancer in this age group is cancers of the brain (Table 8-5)

About a third of cancers in young people (15–24 year olds) are cancers of lymphoid, haematopoietic and related tissue, and there are more lymphomas than leukaemias (Table 8-6). The next most common cancers in this age group are cancers of male genital organs (predominantly cancers of the testis), digestive organs (including the appendix, colon, liver and stomach) and skin (nearly all melanoma)(Table 8-6). The number of notifications of carcinoma in situ in young people is much greater than the number of cancer notifications. Almost all notifications of carcinoma in situ in this age group are of carcinoma in situ of the cervix in young women aged 20–24 years.

Table 8-5. Cancer notifications and incidence for 0–14 year olds, by cancer group, New Zealand, 2013–2017

Cancer type	Number	Percentage of total	ASR per 100,000 population	95% CI
Cancer notifications in New Zealand during 2013–2017				
0–14 year olds				
All Cancers	720	100.0	15.69	14.56–16.88
Lymphoid, haematopoietic and related tissue	349	48.5	7.60	6.82–8.44
Leukaemia	*245*	*34.0*	*5.32*	*4.68–6.03*
Acute lymphoblastic leukaemia	*202*	*28.1*	*4.38*	*3.8–5.03*
Acute myeloblastic leukaemia	*19*	*2.6*	*0.42*	*0.25–0.65*
Other lymphoid leukaemia	*<5*	*s*	*s*	*s*
Other myeloid leukaemia	*9*	*1.3*	*0.20*	*0.09–0.38*
Other leukaemias of specified or unspecified cell type	*14*	*1.9*	*0.30*	*0.17–0.51*
Lymphomas	*72*	*10.0*	*1.58*	*1.24–1.99*
Hodgkin lymphoma	*36*	*5.0*	*0.80*	*0.56–1.1*
Burkitt lymphoma	*21*	*2.9*	*0.46*	*0.28–0.7*
Other non-Hodgkin lymphoma	*15*	*2.1*	*0.33*	*0.18–0.54*
Other and unspecified neoplasms of lymphoid, haematopoietic and related tissue	*32*	*4.4*	*0.69*	*0.47–0.98*
Brain, other parts of the central nervous system, and eye	139	19.3	3.02	2.54–3.56
Brain and meninges	*104*	*14.4*	*2.26*	*1.85–2.74*
Retina, other parts of eye and surroundings	*22*	*3.1*	*0.47*	*0.30–0.72*
Spinal cord, cranial nerves and other parts of CNS	*13*	*1.8*	*0.28*	*0.15–0.48*
Mesothelial and soft tissue	*53*	*7.4*	*1.15*	*0.86–1.51*
Bones, joints and articular cartilage	42	5.8	0.93	0.67–1.26
Urinary tract	37	5.1	0.80	0.56–1.1
Thyroid and other endocrine glands	35	4.9	0.76	0.53–1.05
Digestive organs	25	3.5	0.55	0.35–0.81
Lip, oral cavity and pharynx	10	1.4	0.22	0.11–0.41
Skin	8	1.1	0.18	0.08–0.35
Female genital organs	7	1.0	0.32	0.13–0.65
Neoplasms of uncertain or unknown behaviour	7	1.0	0.15	0.06–0.32
Respiratory system and intrathoracic organs	<5	s	s	
Male genital organs	<5	s	s	
Breast	<5	s	s	
Secondary malignant neoplasm of other and unspecified sites	<5	s	s	

Source: Numerator: National Cancer Registry; Denominator: NZCYES Estimated Resident Population
Cancer includes all malignant tumours and other neoplasms of uncertain/unknown behaviour, but excludes carcinoma in situ
ASR = Age standardised rate (standardised to 2013 NZ Census population)

Table 8-6. Cancer notifications and incidence for 15–24 year olds, by cancer group, New Zealand, 2013–2017

Cancer type	Notifications (*n*)	Percentage of total	ASR per 100,000 population	95% CI
Notifications in New Zealand during 2013–2017				
15–24 year olds				
Cancer notifications				
Total	854	100	26.87	25.10–28.74
Lymphoid, haematopoietic and related tissue	260	30	8.20	7.23–9.26
Lymphomas	*162*	*19*	*5.10*	*4.35–5.95*
Hodgkin lymphoma	*112*	*13*	*3.53*	*2.90–4.24*
Burkitt lymphoma	*11*	*1*	*0.35*	*0.17–0.62*
Other non-Hodgkin lymphomas	*39*	*5*	*1.23*	*0.87–1.68*
Leukaemias	*91*	*11*	*2.88*	*2.32–3.53*
Acute lymphoblastic leukaemia	*44*	*5*	*1.39*	*1.01–1.87*
Acute myeloblastic leukaemia	*16*	*2*	*0.51*	*0.29–0.82*
Other myeloid leukaemia	*22*	*3*	*0.69*	*0.43–1.05*
Other leukaemias of specified or unspecified cell type	*9*	*1*	*0.28*	*0.13–0.54*
Other neoplasms of lymphoid, haematopoietic and related tissue	*7*	*1*	*0.22*	*0.09–0.45*
Male genital organs*	111	13	6.85	5.64–8.25
*Testis**	94	11	5.80	4.69–7.10
*Other male genital**	17	2	0.53	0.31–0.85
Digestive organs	103	12	3.25	2.65–3.94
Skin	82	10	2.57	2.05–3.19
Thyroid and other endocrine glands	70	8	2.20	1.71–2.77
Brain, other parts of the central nervous system, and eye	58	7	1.82	1.38–2.36
Female genital organs*	46	5	2.93	2.15–3.91
Bones, joints and articular cartilage	39	5	1.24	0.88–1.69
Mesothelial and soft tissue	25	3	0.79	0.51–1.17
Lip, oral cavity and pharynx	19	2	0.60	0.36–0.93
Breast*	18	2	1.14	0.68–1.81
Respiratory system and intrathoracic organs	11	1	0.35	0.17–0.62
Urinary tract	7	1	0.22	0.09–0.45
Neoplasms of uncertain or unknown behaviour	<5	s	s	
Secondary malignant neoplasm of other and unspecified sites	<5	s	s	
Carcinoma in-situ notifications				
Total in-situ neoplasms	2,091	100	65.29	62.52–68.15
In-situ neoplasm of cervix*	2,020	97	127.85	122.34–133.55
Melanoma in-situ	46	2	1.45	1.06–1.93
Other/unspecified in-situ neoplasm of female genital organs*	21	1	1.34	0.83–2.04
In-situ other/unspecified digestive organs	<5	s	s	
Other/unspecified in-situ neoplasm	<5	s	s	

Source: Numerator: National Cancer Registry; Denominator: NZCYES Estimated Resident Population
Cancer includes all malignant tumours and other neoplasms of uncertain/unknown behaviour
ASR = Age standardised rate (standardised to 2013 NZ Census population)
* = Sex specific rates

The rates of cancer notifications for children aged 0–14 years in all five ethnic groups were not significantly different from one another (Table 8-7). For young people aged 15–24 years, cancer notification rates for the Māori, Pacific, MELAA and European /Other ethnic groups were not significantly different from one another, but the rate for the Asian/Indian ethnic group was significantly lower than those for the Māori, Pacific and European/Other ethnic groups (Table 8-7).

The rates of cancer notifications in different deprivation groups were generally not significantly different from one another in either children or young people (Table 8-8).

Table 8-7. Cancer notifications for children and young people, by ethnicity and age group, New Zealand, 2013–2017

Ethnicity	Notifications (*n*)	Crude rate per 100,000 population	95% CI	Rate Ratio	95% CI
Cancer notifications in New Zealand during 2013–2017					
0–14 year olds					
Māori	182	15.29	13.15–17.68	1.00	0.84–1.19
Pacific	85	19.10	15.25–23.61	1.25	0.99–1.58
MELAA	16	26.34	15.05–42.78	1.72	1.04–2.84
Asian/Indian	70	13.38	10.43–16.90	0.87	0.68–1.13
European	365	15.30	13.77–16.95	1.00	
15–24 year olds					
Māori	196	29.91	25.86–34.40	1.08	0.92–1.28
Pacific	83	29.72	23.67–36.85	1.08	0.85–1.36
MELAA	10	21.91	10.49–40.29	0.79	0.42–1.48
Asian/Indian	66	13.87	10.72–17.64	0.50	0.39–0.65
European	478	27.64	25.21–30.23	1.00	

Numerator: National Cancer Registry; Denominator: NZCYES Estimated Resident Population.
Ethnicity is level 1 prioritised
Cancer includes other neoplasms of uncertain/unknown behaviour.

Table 8-8. Cancer notifications for children and young people, by deprivation quintile and age group, New Zealand, 2013–2017

NZDep 2013	Notifications (*n*)	Crude rate per 100,000 population	Rate 95% CI	Rate Ratio	95% CI
Cancer notifications in New Zealand during 2013–2017					
0–14 year olds					
Quintile 1 (least deprived)	124	13.81	11.49–16.46	1.00	
Quintile 2	114	13.90	11.46–16.70	1.01	0.78–1.30
Quintile 3	126	14.60	12.16–17.38	1.06	0.83–1.35
Quintile 4	153	16.11	13.65–18.87	1.17	0.92–1.48
Quintile 5	196	18.82	16.28–21.65	1.36	1.09–1.71
15–24 year olds					
Quintile 1 (least deprived)	156	28.15	23.91–32.94	1.00	
Quintile 2	142	26.67	22.46–31.44	0.95	0.75–1.19
Quintile 3	164	27.95	23.83–32.57	0.99	0.80–1.24
Quintile 4	150	21.96	18.58–25.76	0.78	0.62–0.98
Quintile 5	238	29.29	25.68–33.26	1.04	0.85–1.27

Numerator: National Cancer Registry; Denominator: NZCYES NZ Estimated Resident Population
Cancer includes neoplasms of unknown/uncertain behaviour

Rates of cancer notifications in children and young people in the period 2013–2017 were not significantly different from the corresponding national rates in any of the district health boards (Table 8-9, Table 8-10).

Table 8-9. Cancer notifications and incidence for 0–14 year olds, by district health board, New Zealand, 2013–17

District health board	Notifications (*n*)	Annual average	ASR per 100,000 population	Rate ratio	95% CI
Cancer notifications during 2013–2107					
0–14 year olds					
Northland	35	7	18.98	1.21	0.84–1.75
Waitemata	89	18	15.25	0.97	0.78–1.21
Auckland	67	13	15.69	1.00	0.78–1.29
Counties Manukau	98	20	16.23	1.03	0.84–1.28
Waikato	54	11	12.95	0.83	0.64–1.07
Bay of Plenty	33	7	14.50	0.92	0.66–1.29
Lakes	22	4	19.05	1.21	0.76–1.93
Tairawhiti	9	2	15.58	0.99	0.52–1.91
Taranaki	16	3	13.26	0.85	0.54–1.34
Hawke's Bay	28	6	16.19	1.03	0.70–1.51
MidCentral	23	5	13.47	0.86	0.58–1.26
Whanganui	8	2	12.52	0.80	0.43–1.49
Hutt Valley	27	5	18.24	1.16	0.77–1.76
Capital & Coast	52	10	18.69	1.19	0.88–1.61
Wairarapa	4	1	9.46	0.60	0.28–1.29
Nelson Marlborough	16	3	12.14	0.77	0.50–1.20
South Canterbury	11	2	20.87	1.33	0.67–2.63
Canterbury	76	15	15.99	1.02	0.80–1.29
West Coast	7	1	22.98	1.47	0.60–3.59
Southern	38	8	13.38	0.85	0.63–1.16
New Zealand	720	144	15.69	1.00	

Source: Numerator: National Cancer Registry; Denominator: NZCYES Estimated Resident Population. Cancer includes all malignant tumours and other neoplasms of uncertain/unknown behaviour. ASR = Age standardised rate (standardised to 2013 NZ Census population) per 100,000 population

Table 8-10. Cancer notifications and incidence for 15–24 year olds, by district health board, New Zealand, 2013–17

District health board	Notifications (*n*)	Annual average	ASR per 100,000 population	Rate ratio	95% CI
Cancer notifications during 2013–2017					
15–24 year olds					
Northland	31	6	32.63	1.21	0.82–1.80
Waitemata	110	22	27.97	1.04	0.85–1.27
Auckland	85	17	22.42	0.83	0.68–1.03
Counties Manukau	99	20	25.47	0.95	0.77–1.16
Waikato	65	13	23.59	0.88	0.69–1.11
Bay of Plenty	35	7	27.54	1.02	0.73–1.44
Lakes	20	4	29.95	1.11	0.70–1.78
Hauora Tairawhiti	10	2	31.30	1.16	0.59–2.28
Taranaki	23	5	33.94	1.26	0.80–2.01
Hawke's Bay	31	6	32.53	1.21	0.82–1.79
MidCentral	37	7	29.30	1.09	0.77–1.54
Whanganui	13	3	35.20	1.31	0.70–2.45
Hutt Valley	22	4	23.81	0.89	0.59–1.32
Capital & Coast	68	14	28.22	1.05	0.82–1.35
Wairarapa	7	1	28.47	1.06	0.49–2.29
Nelson Marlborough	19	4	27.14	1.01	0.64–1.60
South Canterbury	16	3	50.94	1.90	0.97–3.69
Canterbury	91	18	25.23	0.94	0.76–1.16
West Coast	10	2	54.40	2.02	0.85–4.81
Southern	58	12	24.39	0.91	0.70–1.17
New Zealand	854	171	26.87	1.00	

Source: Numerator: National Cancer Registry; Denominator: NZCYES Estimated Resident Population. Cancer includes all malignant tumours and other neoplasms of uncertain/unknown behaviour. ASR = Age standardised rate (standardised to 2013 NZ Census population) per 100,000 population

Evidence for good practice

Equity

Equity in cancer outcomes is one of the four main goals of the New Zealand Cancer Action Plan 2019–2029.[5] The plan states that the Ministry of Health will honour the Crown's special relationship with Māori under Te Tiriti o Waitangi, and the United Nations Declaration on the Rights of Indigenous Peoples, and undertake specific actions to ensure equitable outcomes for tangata whenua.[5] The plan also states that the Ministry has prioritised achieving equity for Pacific peoples.[5]

Overall, cancer incidence in Māori children is no different to that in non-Māori children.[3] Data from the New Zealand Children's Cancer Registry (NZCCR) for the period 2000–2009 indicated no significant differences in five-year child cancer survival by ethnicity; overall five-year relative survival was 76.9% for Maori, 81.4% for Pacific Peoples, and 81.7% for non-Māori /non-Pacific Peoples.[6] For acute lymphoblastic leukaemia, the most common type of childhood leukaemia, five year relative survival was almost identical across the three prioritised ethnic groups: 89.8% for Maori, 88.0% for Pacific Peoples, and 89.4% for non-Māori /non-Pacific Peoples.[6]

More recent data from the NZCCR indicated that, for children diagnosed with cancer between 1/1/2010 and 31/12/2014, with follow up to 31/12/2017, survival for those living in the most deprived areas was comparable to that of those living in the least deprived areas (83.2% vs. 83.9%).[7] Māori and Pacific children had slightly lower survival rates than non-Māori non-Pacific children but the differences were not statistically significant.[7] There was no difference in survival rates between New Zealand's two specialist paediatric oncology centres (in Auckland and Christchurch), and children who had to travel outside their region for some or all of their treatment had comparable survival to children who lived in Auckland or Christchurch.[7]

Overall adolescent and young adult (AYA) cancer incidence during 2000–2009 was also much the same across the three prioritised ethnic groups, but there were significant ethnic differences for some particular types of cancer.[4] Melanoma incidence was much higher for non-Māori non-Pacific peoples than for Māori or Pacific Peoples (almost ten times the rate for Māori).[4] The incidence of leukaemia in Pacific AYAs was around double that in non-Māori non-Pacific AYAs, while the incidence of bone tumours in Māori AYAs was around double that in non-Māori non-Pacific AYAs.[4] There was a very high incidence of gastric cancer in Māori AYAs, likely resulting from mutations in E-cadherin gene known to be carried in some Māori families, and the targeted screening for gastric cancer that has been carried out in those families.[4]

There were ethnic differences in AYA cancer survival during 2000–2009 by prioritised ethnicity but these differences need to be interpreted with caution as the numbers of cases are small and there are a number of factors that may explain some of the differences.[4] For example, a higher proportion of non-Māori non-Pacific AYA with cancer were diagnosed with melanoma and lymphomas, cancers which have higher survival rates.[4] Māori survival rates for acute lymphoblastic leukaemia and bone tumours were considerably worse than the comparable rates for non-Māori non-Pacific Peoples (45% vs. 67% and 37% vs. 52%, respectively) although these differences were not statistically significant.

While there is little ethnic or socio-economic inequity in children's and young people's cancer incidence or mortality, there are ethnic and socio-economic disparities in adult cancer incidence, mortality and survival.[8] In 2010–2012 Māori adults aged 25 and over had a total cancers registration rate one-and-a-quarter that of non-Māori (RR 1.25, CI 1.21–1.28) and a total cancer mortality rate over one-and-three-quarters that of non-Māori (RR 1.79, CI 1.72–1.87).[9] For some cancers, there are actions that young people can take to reduce their later life risk, and these actions could contribute to reducing disparities in adult cancer incidence. Some of these will be discussed in the next section.[9]

Prevention

The vast majority of childhood cancers, unlike adult cancers, are not known to be preventable and are not related to environmental or lifestyle factors.[10] There is evidence that almost half of childhood cancers might have a pre-natal origin.[11]

At least 10% of all childhood cancers are believed to result from genetic predisposition.[12] Hereditary cancer syndromes probably cause around 40–60 % of CNS tumours and retinoblastoma.[13] A DNA sequencing study[14] of 1120 cancer patients aged less than 20 years found that 8.5% of them had germline (i.e. heritable) mutations in known cancer predisposition genes. There are many different familial cancer predisposition syndromes associated with different types of childhood cancer, with various modes of inheritance (e.g. autosomal recessive, autosomal dominant, x-linked).[12] Children affected with one of these syndromes have a much higher risk of developing cancer than other children[12] and hereditary cancer syndromes account for most of the increased risk of cancer among first degree relatives of children with cancer.[13]

It is important to identify cancer predisposition syndromes because they have implications for both the affected child and their relatives, who can benefit from genetic counselling and testing, cancer screening, and involvement in research studies.[15] Signs that can suggest the presence of a cancer predisposition syndrome in a child include tumour type, bilateral tumours in paired organs, multifocal tumours, multiple primary cancers, features in the family history, and physical or developmental manifestations, for example congenital anomalies or dysmorphic features, developmental delay, skin abnormalities, macrocephaly and benign tumours or polyps.[15,16]

While there is little scope for prevention of child cancer in the general population, there are some avenues for reducing the risk of developing cancer in later life through adopting healthy lifestyle behaviours while still young.

The New Zealand Cancer Action Plan 2019–2029 lists actions to reduce the incidence of cancer.[5] Those most relevant to childhood and adolescence are:[17]

- Becoming smoke free
- Encouraging and supporting healthy living
- Preventing infections that increase cancer risk
- Reducing harmful sun exposure to reduce skin cancers.

Cigarette smoking is by far the leading preventable cause of both getting cancer and dying from cancer. It has been estimated to cause around one third of all cancer deaths in Australia[18] and the US.[19] Other factors, such as diet, alcohol, obesity, and infection are each estimated to cause around 5% of potentially preventable cancer deaths.[18,19] Information relating to smoking prevention and cessation can be found in the substance use chapter of this report.

Promoting healthy lifestyles in children and young people is addressed in Chapter 4 in the 2019 report in this series.[20]

There are some infectious agents, including viruses, bacteria, and parasites that can cause cancer or increase the risk of developing cancer.[21] There are also some infections that weaken the immune system making it harder for the body to fight off cancer causing infections, and some infections that cause chronic inflammation, which may lead to cancer.[21] Chronic infections have been estimated to cause around 15% of cancers worldwide and around 5% in countries such as Aotearoa, Australia, Canada and the US.[22] Infections of this kind which occur in Aotearoa and are preventable, treatable, or curable include hepatitis B and C (liver cancer), HIV (various cancers), human papilloma viruses (cervical cancer), and *Helicobacter pylori* (stomach cancer).[5,21]

Immunisations for hepatitis B and human papilloma viruses (HPV) are included in the New Zealand Immunisation Schedule.[23] The 9-valent HPV vaccine, Gardasil®9, provides protection against nine types of HPV, seven that cause HPV-related cancers and two that cause genital warts, and it can prevent 92% of cancers attributable to HPV.[24] Information on evidence-based strategies for increasing immunisation uptake is provided in the 2018 report in this series.[25]

Cervical screening allows pre-cancerous changes in cervical tissue to be detected and removed.[26] There is good evidence that regular screening reduces both the incidence of invasive cancer and mortality due to cervical cancer.[26] A 2019 review[27] commissioned by the Ministry of Health aimed to identify effective ways of communicating with young Māori, Pacific and Asian young women about participating in the National Cervical Screening Programme. The review was based on a rapid literature review and nine focus groups with young Māori, Pacific and Asian women aged 20 to 30 years (three groups for each of the three ethnicities). The findings from the focus groups were generally in accord with those from the literature.

The main findings from the review were:

- Young women need more information on the importance and relevance of screening
- Talking about cervical screening should be normalised so young women are not too shy or embarrassed to ask about it
- Screening needs to be free and easily accessible. Provision of transport and appointments outside usual working hours would be helpful
- Positive experiences of the health system are important. Staff should be kind and gentle
- Young women want to see themselves represented in promotional material
- There should be a multi-level approach to information provision across a range of platforms including social media
- Information should be simple and relatable
- Information sources should be trustworthy.

Women can be tested for HPV using self-collected vaginal samples.[28] A recent study[28] used kaupapa Māori methods to explore the potential acceptability of HPV self-testing for never/under-screened Māori women (self-reported no cervical screen in last four or more years, aged 25 or over). Although most survey participants were enrolled with a primary health organisation, and attended regularly, they did not attend for cervical screening, largely because of a desire for bodily autonomy and whakamā (embarrassment/shyness/reticence). Three out of four women reported that they would be likely or very likely to do an HPV self-test and nine out of ten reported being likely/very likely to attend follow-up if they received a positive HPV test result. Follow-up would involve having a vaginal examination for cytology or colposcopy, but women said that knowing something needed to be done would be a good motivator. Both the women and the health care practitioners stressed the importance of health literacy, cultural competence, and empathetic support. The findings of this study indicate that culturally competent introduction of HPV self-testing could reach many never or under screened Māori women and potentially prevent deaths from cervical cancer.

Hepatitis C, hepatitis B and HIV are blood-borne viruses and can be transmitted through sharing needles when injecting recreational drugs or through getting tattoos or piercings from people who do not sterilise their equipment.[29-31] There are no national regulations for businesses or individuals that offer tattoos or piercings, but the Health Act 1956[32] empowers territorial authorities to improve and protect public health by ascertaining any conditions that may be injurious to health. Some territorial authorities, including Auckland, New Plymouth, Napier, Timaru and Dunedin have implemented by-laws and licensing requirements for tattooing or skin piercing.[33]

Aotearoa has a needle exchange programme for injecting drug users funded by the Ministry of Health. It operates through a network of dedicated outlets and pharmacy based exchanges throughout the country and an online shop.[34]

Pregnant women can transmit hepatitis C, hepatitis B and HIV to their children. New Zealand women are offered antenatal blood tests for hepatitis B and HIV and, if these infections are identified, there are effective ways to prevent the baby from becoming infected.[35-37]

Treatment for hepatitis B and hepatitis C is effective in reducing the risk of developing liver cancer, [38-40] but people may not be aware they need treatment because chronic infection often doesn't produce any symptoms until liver damage is advanced.[41,42] Education programmes about the benefits of being tested for hepatitis B and/or C need be targeted both at the general population and at high risk groups (people of Māori, Pacific or Asian ethnicity who were not fully vaccinated against Hepatitis B as infants; people from places where hepatitis B and C infection is common, including Asia, the Pacific Islands, Africa, the Middle East, southern Europe or the northern or eastern parts of New Zealand's North Island; children and young people in state care; people who live with, or have had sex with, a person with hepatitis B; people who have had unsterile tattooing, sex workers, people with other sexually transmitted infections, people who have injected drugs, prisoners, and men who have had sex with men).[43,44]

Simple educational interventions can increase people's knowledge about hepatitis B and C, and more complex multi-modal educational interventions may cause behavioural change such as increased rates of testing, vaccination (against hepatitis B), and treatment.[45,46]

A New Zealand study[47] conducted as a series of community hui with 52 adult Mongrel Mob members, affiliates and whānau in Dunedin, Lower Hutt and Turangi, assessed participants' viral hepatitis infection status, level of knowledge, and liver health risk factors. Gang members and their associates are at high risk of hepatitis B and C due to high rates of incarceration, intravenous drug use and uncertified tattooing. The study identified two cases of hepatitis B, confirmed high levels of risk factors and poor associated knowledge, and found a significant association between lack of knowledge and presence of specific risk factors.

Unprotected sex can result in infection with HPV, hepatitis B, and HIV (as well as other infections, not associated with cancer).[48,49] There is good evidence that male condom use reduces transmission of HIV[50] and limited evidence that it reduces transmission of HPV[51] and hepatitis B (although this might depend on the material the condom is made of).[52,53]

Interventions to increase condom use have addressed access to condoms, condom use behaviours, condom design, and condom-related legislation. There have been well over 100 RCTs of interventions to increase condom use, but, although the results of these trials are generally consistent with modest benefits, there is little reliable evidence for the effectiveness of these interventions. This is because the trials have mostly been of poor quality. Eighty-five percent of the 139 trials included in a 2011 systematic review[54] used self-reported condom use as an outcome measure, and only 10 trials reported the outcome "any sexually transmitted infection".

Chronic infection with *Helicobacter pylori* increases a person's risk of developing non-cardia stomach cancer almost six-fold.[55] Worldwide, around 50% of people are estimated to be infected, with most acquiring the infection in childhood.[56,57] The prevalence is higher in the developing world and there is an association with inadequate sanitation practices, low social class, and crowded or high-density living conditions.[56] A 1996 study conducted in South Auckland found evidence of *H. pylori* infection in 7% of European, 21% of Māori and 48% of Pacific 11–12 year old children.[58]

Infection with *H. pylori* rarely causes problems for children and there is no good evidence that treatment to eliminate *H. pylori* has health benefits for individual children[59] therefore the international consensus recommends against a test-and-treat strategy for children.[60] A 2015 Cochrane review[61] found limited moderate quality evidence (mostly from trials in Asia) that testing healthy asymptomatic adults and treating those infected to eradicate *H. pylori* reduced the incidence of gastric cancer by around one third. A cost-utility analysis of an *H. pylori* serology-based screening programme for adults in Aotearoa[62] concluded that such a programme would be cost effective for the Māori population (and could be expected to be cost-effective for the Pacific population) but would be only marginally cost-effective for the European/Other population.

Exposure to ultraviolet radiation (UV) from the sun is a cause of all major types of skin cancer.[63] High exposure to sunlight during childhood is a major determinant of melanoma risk, but adult sun exposure is also a factor.[64] Getting sunburnt in childhood has been estimated to double a person's risk of getting melanoma later in life.[64,65] Migrant studies, which have compared melanoma rates in people of European ethnicity born in a sunny country such as Australia, Aotearoa, or Israel with rates in people who migrated there from a less sunny country after childhood consistently indicate that greater childhood sun exposure increases melanoma risk.[64,66,67]

Sun protection strategies can be targeted at individuals, schools, health service providers and communities. For individuals, the US Surgeon General recommends:[68]

- Wearing tightly woven protective clothing that adequately covers the arms, torso, and legs.
- Wearing a hat that provides adequate shade to the whole of the head.

- Seeking shade whenever possible.
- Avoiding outdoor activities during periods of peak sunlight (such as midday).
- Using sunscreen (in conjunction with other sun protection behaviours).

Schools and early childhood centres should promote sun protection behaviours through education, behavioural interventions and environmental and policy changes.[68] Clinicians should counsel young patients with fair skin to minimise their UV light exposure.[68] Local and central governments need to increase opportunities for sun protection in outdoor settings; inform citizens so they can make informed healthy choices about UV exposure; support sun protection strategies in schools via policies, building design and curricula; include sun safety in workplace health and safety requirements; support shade planning in land use developments; regulate indoor tanning; and strengthen research, surveillance, monitoring and evaluation relating to skin cancer prevention.[68]

There is little high quality evidence that sunscreens prevent skin cancer and there are methodological and ethical difficulties in conducting research on this issue.[69-71] It is especially difficult to gather evidence for the effect of sunscreen use on the development of melanoma, the most deadly type of skin cancer, because its relative rarity means that prospective studies need a very large number of participants (as well as many years of follow up) to have a chance of finding statistically significant results.[70] The most well-known study, and the only RCT, is the Nambour RCT[72] conducted in Queensland from 1992 which randomly assigned 1621 adults aged 25–75 years to daily or discretionary sunscreen application to head and arms in combination with 30 mg beta carotene or placebo supplements until 1996. By 2006, 11 new primary melanomas had been identified in the daily sunscreen group, and 22 in the discretionary group, representing a hazard ratio (HR) of 0.50; 95% CI, 0.24 to 1.02; $p = .051$. There were fewer invasive melanomas in the daily sunscreen group: 3 vs. 11, HR 0.27; 95% CI, 0.08 to 0.97.

There is some evidence that people use sunscreen so they can spend longer in the sun so increasing their total sun exposure[73] and that the thickness of sunscreen that people typically apply to themselves is much less than that needed to achieve the level of sun protection specified on the sunscreen bottle.[74] People often use sunscreen as their primary skin prevention strategy, although in experts' sun-protection hierarchies sunscreen generally ranks third, after shade seeking and protective clothing.[75] A series of surveys over five summers in Western Australia from 2006/07 to 2010/12 asked respondents: "If you were going to advise someone on how to protect their skin from the sun, what would you tell them was the single most important thing to do?"[75] Sunscreen was by far the most frequently nominated sun protection strategy, mentioned by an average of 71%. Protective clothing was nominated by 16% and staying out of the sun and wearing a hat each by 4%.[75] Nomination of sunscreen increased significantly over the study period.[75] They study authors stated that people need to be made aware of the limitations of sunscreen as a sole sun protection strategy.

Data from the Australian Melanoma Family Study was used to conduct a case-control study[76] to assess whether there was an association between sunscreen use in childhood and early adulthood and risk of melanoma before age 40 years, and determine the factors associated with sunscreen use among children and young adults. The study found that both childhood sunscreen use and lifetime sunscreen use were significantly associated with a decreased risk of cutaneous melanoma among young adults.[76] People who regularly used sunscreen in childhood were more likely to be female, and to have higher levels of education, fairer skin, and a greater history of blistering sunburns.[76]

A 2018 review of behavioural counselling for skin cancer prevention for the US Preventive Services Task Force [77], looked at interventions delivered in primary care settings, judged to be feasible for implementation in primary care, or available for referral from primary care. The review found that interventions were associated with small-to-modest increases in parent-reported use of children's sun protection behaviours, such as using sunscreen, wearing protective clothing, and avoiding mid-day sun (6 trials, 4252 participants) but not with consistent reductions in parent-reported sunburn in children (3 trials, $n = 2508$).[77]

A systematic review of qualitative studies[78] commissioned by the Centre for Public Health Excellence at the National Institute for Health and Clinical Excellence (NICE) in the UK aimed to understand elements that may contribute to the success or not of skin cancer prevention messaging and its uptake by the public. The review synthesised the findings of 15 studies using the Health Belief Model[79] as a conceptual framework. The results indicated that most people believed their susceptibility to skin cancer, and its severity, as low. Although they acknowledged the benefits of adopting behaviour change, there were significant barriers to doing so, including perceptions that a tan was healthy and attractive, and that covering up or using sunscreen was a hassle. The review authors stated that health education will need to address these beliefs when encouraging preventative behaviour.

Environmental sun protection strategies can be complementary to educational strategies directed at individuals.[80] They include, for example, creating shaded areas, distributing sunscreen, and using school-based policies to restrict outdoor activities during peak hours of UV radiation.[80]

A recent (2020) review of studies of environmental adaptations targeted on sun safety behaviours and skin cancer prevention in relation to children and adolescents identified eight studies that were RCTs or quasi-experimental studies (with a control group) and performed a qualitative synthesis of the results of seven of them. Proactive provision of free sunscreen was the most studied intervention (four studies), followed by an adaptation of the physical environment (shade provision, three studies) and provision of UV protective clothing and accessories for children attending daycare (one study). Outcomes measured included socio-cognitive determinants (desire to have a tan, knowledge and awareness), exposure to UV radiation, shade-seeking behaviour, and other sun-safety behaviours, sunburn incidence and development of new nevi (moles). Five studies found significant effects of environmental interventions, assessed after, on average, one year (range four months to three years), particularly for shade-seeking behaviour and incidence of nevi. There were no effects evident on socio-cognitive determinants, other sun safety behaviours, exposure to UV radiation, and sunburn incidence. Overall, the review authors considered that shade provision showed the most promising results.

The World Health Organization classified artificial tanning sunbeds as carcinogenic in 2009.[81] Sunbed use is especially hazardous for young people. A 2011 study [82] estimated that one in six (16%) melanoma cases diagnosed in Australia at ages 18–29 years could be prevented by avoiding sunbed use, and that sunbed use was the cause of three quarters (76%) of melanomas that occurred in people aged 18–29 years who had ever used a sunbed. The risks were greater with greater use, an earlier age at first use, and for earlier onset disease.[82] Commercial sunbeds are now banned in Australia.[83]

In 2017, the Government made it illegal for sunbed operators to allow under-18 year olds to use a sunbed[84] however in February 2020 mystery shoppers aged under 18 employed by Consumer NZ (and funded by the Ministry of Health) were allowed to access sunbeds in six out of 20 operators they visited.[85] One operator has been reported to have been fined.[85]

Treatment

Cancer treatment is complex, going on for months or years. Common types of treatment are chemotherapy, radiation therapy, and surgery (for solid tumours).[86] Bone marrow or stem cell transplant and immunotherapy are other cancer treatments.[86]

There are two specialist child cancer centres, in Auckland and Christchurch.[87] These also treat some adolescents with cancer. Children who live outside these cities can be treated using a shared-care model which involves paediatric oncologists from one of the cancer centres liaising with paediatricians at the hospital nearest the child's home, so that as much treatment as possible can be given from the local hospital.[87] There are six adolescent and young adult cancer services for 12–24 year olds, based in Dunedin, Christchurch, Wellington, Palmerston North, Hamilton, and Auckland.[88] Like the child cancer centres, they work with local hospitals to enable care to be delivered as close to home as possible.

There is evidence that higher volume hospitals, higher case volume providers, and specialised hospitals produce better outcomes for child cancer patients.[89,90] It is only practical and cost-effective to establish a specialist cancer centre when there are enough patients.[91] The European Society for Paediatric Oncology has stated that a centre of excellence for child cancer would normally see at least 30 new patients per year, although some see many more.[91] That some cancer patients have to travel considerable distances to access cancer care is a consequence of Aotearoa's geography and relatively small population.

The UK's National Institute for Health and Care Excellence (NICE) guideline *Improving outcomes in children and young people with cancer*[92,93] makes the following recommendations for cancer services for children and young people:

- care should be coordinated across the whole national health system and be as close to home as possible
- multidisciplinary teams should provide cancer care
- all children and young people should have a clearly defined key worker
- care should be appropriate for the child's or young person's age and type of cancer
- time in the operating theatre and a children's anaesthetist should be available when needed
- children and young people should be offered the chance to take part in research trials
- cancer networks should make sure there are enough specialist staff.

The AYA Cancer Network Aotearoa standards of care of adolescent and young adults (AYA) with cancer[94] group key components for best practice into three categories: the cancer trajectory, developmentally appropriate care, and institutional support.

The standards related to the cancer trajectory[94] address prevention and early identification; referral to the right expertise; the diagnostic process; the treatment plan; participation in research and clinical trials; fertility preservation; palliative care and survivorship. The standards for developmentally appropriate care[94] address psychosocial assessment and care; developmental milestones; caring for whānau, partners and the community; identification of, and intensive support for, AYA patients at risk of non-adherence; self-management; transition across services; confidentiality, rights, respect and trust; and care coordination. The standards for institutional support[94] address governance and clinical leadership; workforce development; youth participation in the development, implementation and evaluation of cancer care programmes and services; age appropriate environments; and clinical performance and monitoring.

Adolescents and young adults with cancer are at risk of delayed diagnosis. Reasons for this include lack of awareness of cancer symptoms; reluctance to seek medical help due to anxiety, embarrassment and fear; problems accessing healthcare, such as lack of transport; and difficulties communicating with their doctor.[94] A 2016 systematic review[95] of 60 studies found that people from lower socioeconomic groups have lower levels of cancer knowledge, especially regarding non-specific cancer symptoms such as fatigue and weight loss, and more fearful and fatalistic beliefs about cancer, and that these factors are associated with delays in seeking medical help.

There is some evidence that educational interventions can increase adolescents' cancer awareness.[96] There is some evidence, mostly from studies that have looked at rates of diagnosis of cancers common in adults, that public education campaigns, combined with guidelines for doctors, decrease delays in cancer diagnosis.[97] It is difficult to produce good evidence that earlier diagnosis leads to better survival rates, because observational studies addressing this issue are affected by many types of bias, for example due to aggressive, fast growing cancers, which tend to have a poorer prognosis, being more likely to be diagnosed quickly, and it is unethical to conduct RCTs in which some patients receive a delayed diagnosis.[93,97]

Treatment for cancer can have significant adverse effects including fatigue, body aches, nausea and vomiting, loss of appetite, hair loss, mouth infections and painful ulcers, bruising or bleeding, diarrhoea, constipation, weight loss, weight gain (particularly associated with treatment with steroids), sore or reddened skin (from radiotherapy), and vulnerability to infection (neutropenia).[98]

Cancer treatment can potentially impair fertility in the short or the long term. Health professionals should provide their patients with full information about fertility risks, and fertility preservation options (pre-treatment oocyte and embryo freezing for females and sperm freezing for males).[99]

Survivors of childhood and young adult cancer can experience adverse effects from their cancer treatment decades after it has ended.[100,101] These can affect almost all body systems and organs.[102] The Childhood Cancer Survivor Study, which compared the health of childhood and young adult cancer survivors aged 35 or more years at their last follow up with that of their siblings found that the survivors were five times more likely to have had a heart attack, seven times more likely to have had a stroke, and eleven times more likely to have experienced congestive heart failure.[103] By age 50 years, 22% of survivors had two or more severe, disabling, life-threatening, or fatal health conditions compared with 4.3% of siblings.[103] These conditions were most commonly due to cardiovascular, pulmonary, hepatic, renal, and gonadal dysfunction, along with subsequent malignant neoplasms.[103]

Currently there is a lack of high quality evidence that that long-term follow-up care improves the health of survivors of child and young adult cancer, or to indicate how best to organise follow-up care, but the international expert consensus is that survivors should receive age appropriate education about the possible long-term effects of their cancer treatment and the importance of long-term follow-up care.[104,105] Several organisations have developed guidelines on follow-up care and the International Late Effects of Childhood Cancer Guideline Harmonization Group (IGHG) initiative has attempted to harmonise and standardise care recommendations across these organisations and the countries they represent.[101,106]

A study that interviewed the paediatric medical director and clinical nurse consultant from all 11 long term follow-up clinics at tertiary referral paediatric oncology units across Australia and Aotearoa [107] found that there was no consistency across clinics, with each having developed its own model of care shaped by local resources, staff interest/expertise, and institutional policy, and variably employing international guidelines. Study participants unanimously identified limited options for transferring older survivors out of paediatrics and insufficient funding as the key challenge to providing best practice long term follow-up care. Only one clinic retained survivors irrespective of age and level of risk. The rest discharged all survivors to primary or adult care.

Support

Being diagnosed with cancer, and receiving cancer treatment, have major impacts on the emotional, social, and spiritual wellbeing of children and adolescents, and of their siblings and whānau.[17,108-110] It limits almost all of the activities that are part of normal life. Families face many practical issues including needing time away from work, travel costs, living away from home, and caring for siblings.[93]

Psychosocial support for the whole whānau is a key function of cancer services for children and young people.[108] Key points in the cancer journey where psychological and social support needs should be assessed are:[111]

- at diagnosis
- during treatment
- at the end of treatment
- during long-term follow-up
- at relapse
- during palliative care
- following bereavement (for families and carers).

Assessment of psychosocial support needs should include:[111]

- patient information needs and coping skills that are age-appropriate
- family information needs and coping skills
- financial support
- practical support
- social and cultural circumstances
- educational and employment needs

- the needs of siblings
- relationships with peers
- spiritual needs.

The Psychosocial Standards of Care Project for Childhood Cancer (PSCPCC) involved a group of paediatric oncology psychosocial professionals collaborating with a larger interdisciplinary group of experts and stakeholders to develop evidence-and consensus- based standards for paediatric psychosocial care.[108] Fifteen standards were developed. (Links to these can be found in the evidence-based reviews section below, under Newburger P et al. 2015.)

High quality evidence of beneficial effects, such as improvement in quality of life, reduction in the burden of treatment, or reduced resource expenditure, was found for four standards: psychosocial assessment during cancer treatment and in survivorship; neurocognitive monitoring for children at risk of neuropsychological deficits due to cancer treatments; psychosocial support for patients and families throughout the cancer journey (and psychiatric care if needed); and psychological support for painful procedures. There was moderate quality evidence for assessment of financial issues; addressing mental health issues of parents; anticipatory guidance and psychoeducation (telling patients and families what to expect to empower them, assist them with day to day disease management and decision-making, and enhance their psychological adaptation to the illness); facilitating children and young people’s social interactions; supportive services for siblings; assessment and monitoring of treatment adherence; early integration of palliative care; and bereavement support.

There was mixed moderate and high quality evidence that child and adolescent cancer survivors are at risk of impaired social relationships, lower educational and vocational achievement, and lower quality of life due to psychological distress, medical late effects of cancer treatment or financial hardship, and also that they drink and smoke to the same degree as their peers, despite their increased risk of developing a subsequent cancer.[110] This evidence provides the rationale for psychosocial follow-up in survivorship being one of the standards of psychosocial care, rather than any direct evidence that including psychosocial care in survivorship care is beneficial. There was a lack of evidence on how to best engage young adult cancer survivors in long term follow-up care.[110]

There was moderate quality evidence for open, respectful communication and collaboration among medical and psychosocial professionals, and low or indirect evidence for allowing psychosocial professionals to access medical records and document reports of patient and/or family impact of illness, of assessments conducted, nature and impact of psychosocial services provided, monitoring of illness status, and treatment plans (in accordance with the legal requirements for such records); and requiring specialised training and credentialing for paediatric oncology psychosocial professionals. Low quality evidence was found for support for school re-entry and preparatory information for invasive medical procedures although the PSCPCC strongly recommended both of these.[108]

Approximately 50–60% of all children treated for cancer, and almost 100% of children treated for a malignant brain tumour, are likely to experience some form of neurocognitive dysfunction as a result of intensive neurotoxic treatments, particularly cranial radiation, intrathecal methotrexate or cytarabine, and steroids.[112] Children diagnosed before the age of three years are most at risk.[113] This dysfunction can manifest long after treatment ends as deficits in thinking, learning, emotional regulation, and memory skills, and have significant implications for long-term academic, vocational, and social success.[112] Some neurobehavioural difficulties are potentially amenable to intervention so there can be benefits from identifying them early, before they affect day to day functioning.[112] Children at highest risk of late effects should receive formal neuropsychological evaluation, and children at moderate risk should have screening assessments.[112]

Strategies to remediate cognitive dysfunction include both educational and pharmacological interventions.[113] Most US cancer services have school reintegration programmes but these vary widely from state to state.[113] These have been little studied and it is reportedly challenging to involve parents and children in studies because parents are overwhelmed with their immediate responsibilities.[113] There have been a few small trials of social skills training that have shown benefits for survivors of CNS tumours.[113] There have also been a few small studies of cognitive skills training interventions, some of which showed short term benefits.[113] There have been several RCTs of methylphenidate, a drug commonly used for attention deficit disorder, including one small trial[114] that found significant improvements in attention and behaviour (but not on a measure of academic skills) after one year on the medication.[113] There is a lack of evidence that interventions for cognitive dysfunction have any long term impact on health-related quality of life, or social and vocational outcomes, as the few studies that have been done have been small and assessed effects after a year or less.

There have been very few studies evaluating psychosocial interventions specifically for adolescents and young adults with cancer.[115,116] A 2015 review[115] identified only five RCTs published since 2008, three of which were small pilot studies. Three trials assessed face-to-face interventions, one a CD-ROM, and one a computer video game. The behaviours encouraged most commonly, by four of the interventions, were active/effective coping, self-efficacy and control (locus of control, the degree to which a person believes they have control over the outcome of events in their lives). Other behaviours encouraged were communication about treatment preferences and adherence to treatment regimens. Outcome measures most commonly related to coping and quality of life, and were generally self-reported after one to three months. Only one study had significant positive findings for the research variables of interest. The others had mixed findings.

An earlier 2009 review[116] identified only four small studies, only one of which reported a significant effects (compared to a waitlist control group). This pilot RCT assessed the effects of two sessions of individual counselling on psychosexual development and found increased cancer-specific knowledge regarding sexual issues; improved body image; lessened anxiety about sexual and romantic relationships; and decreased overall level of psychological distress.[117]

Guidelines, evidence-based reviews, New Zealand publications, and other relevant publications and websites

New Zealand guidelines

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- Ministry of Health. 2012. **Protecting Children with Cancer from Measles.** https://www.health.govt.nz/publication/protecting-children-cancer-measles
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- New Zealand Guidelines Group (NZGG). 2009. **Suspected Cancer in Primary Care: Guidelines for investigation, referral and reducing ethnic disparities.** https://www.health.govt.nz/publication/suspected-cancer-primary-care-guidelines-investigation-referral-and-reducing-ethnic-disparities
- **The National Child Cancer Network guidelines** include over 200 specific guidelines related to treatment and overall supportive care and management for children in New Zealand who have been diagnosed with cancer. The aim of these guidelines is to harmonise treatment of childhood cancer across our country. https://www.starship.org.nz/guidelines/browse?sp=national-child-cancer-network
- AYA Cancer Network Aotearoa. **Resources and clinical guidance information.** This page provides links to a variety of national and international resources and guidelines, for both young people (mostly) and health professionals. https://ayacancernetwork.org.nz/age-appropriate-environments

International guidelines

- Cancer Council Australia. 2020. **Clinical practice guidelines for the diagnosis and management of melanoma**. https://wiki.cancer.org.au/australia/Guidelines:Melanoma
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- Association of Pediatric Hematology/Oncology Nurses. **Evidence-based practice**. https://aphon.org/education/evidence-based-practice This site has links to many evidence-based guidelines relevant to aspects of care for children and young people with cancer. Topics covered include: chemotherapy-induced nausea and vomiting, lumbar puncture, Clostridium difficile in recipients of stem cell transplants, fatigue, mucositis, platelet transfusion, febrile neutropenia, sedation for painful procedures, fertility preservation, palliative care, anorexia, constipation, and infection control.
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9. Appendices

Appendix 1: Evidence for good practice

For most indicators in this report there is a section devoted to evidence for good practice. These sections comprise evidence summaries, references and links. They are intended to provide readers with background information on important child and youth health issues and their implications for equity, and information on effective interventions to prevent and/or manage these issues. They are also intended to assist readers to compare practices and policies in New Zealand with those in similar English-speaking countries, particularly Australia, the UK, Canada and the US, and to provide entry points into the research literature to make it easy for readers to find more detailed information if they so wish.

The lists of publications include New Zealand policy documents such as Ministry of Health Strategies and Toolkits, New Zealand and international guidelines, evidence-based reviews, and selected publications relating to recent research done in New Zealand. Evidence-based systematic reviews, the best known of which are those produced by the Cochrane Collaboration, collate all of the available evidence relevant to a particular health intervention that meets pre-specified eligibility criteria, evaluate it in a rigorous manner, and publish the resulting synthesis of the evidence in a format that allows readers to quickly evaluate the effectiveness of the intervention and the strength of the evidence. Evidence-based guidelines are based on the findings of systematic reviews and other research studies, and, in areas where there is a lack of research evidence, the consensus of experts. All these publications should support health services planners and health professionals to use the principles of evidence-based medicine (EBM), that is, to solve problems by using the best available research evidence together with clinical experience and patients' values.[1]

Methodology used in preparing the evidence for good practice sections

New Zealand policy documents and publications

Relevant Ministry of Health (or where appropriate, other Government Agency) policy documents and strategies were identified through scanning the relevant sections on the Ministry website and using Google.com to search the Ministry of Health or New Zealand Government websites for key words and phrases. (An example of a site-specific Google search would be searching for: ("immunisation" OR "vaccination") site:.health.govt.nz.)

Other New Zealand publications and guidelines were identified through the websites of relevant agencies, for example, the Mental Health Foundation, the Health Promotion Agency, the Health Quality and Safety Commission, or Starship.

New Zealand research publications were identified through PubMed, Māori Health Review and the New Zealand Medical Journal.

Evidence for good practice

The publications that form the basis for the text in these sections, and the publications listed after them, are mostly evidence-based guidelines and systematic reviews. Evidence-based guidelines are normally based on a collection of systematic reviews, some of which may have been carried out specifically to inform the guideline.

The databases listed below were searched for reviews assessing the effectiveness of population level interventions to prevent and/or manage issues covered in this report. These databases were chosen because of the high calibre of the institutions maintaining them. The search strategy concentrated on systematic reviews that attempted to synthesise all of the available research evidence, with the aim of achieving the broadest possible coverage of the relevant literature. In general, only literature from the last three years was searched, unless there was a lack of more recent information. Individual trials and protocols were not specifically sought but if there was no other relevant information available, an attempt was made to locate individual research reports or recommendations. It is hoped that that, although the lists of references provided are not completely comprehensive, they will nevertheless provide a useful starting point for DHBs wishing to explore strategies for addressing particular child and youth health issues.

Evidence-Based Medicine Reviews
This database allows simultaneous searching of seven EBM resources including the Cochrane Database of Systematic Reviews and other resources from the Cochrane collaboration; The Database of Reviews of Effects (DARE), Health Technology Assessments (HTA) and the NHS Economic Evaluation Database (NHSEED); and the ACP Journal Club.

National Institute for Health and Clinical Excellence (NICE) http://www.nice.org.uk
This is an independent organisation based in the United Kingdom, which provides national guidance on the promotion of good health and the prevention and treatment of ill health.

The Agency for Healthcare Research and Quality. This is the US Federal government's agency charged with improving the quality and safety of the American healthcare system. It contracts institutions in the US in Canada to serve as Evidence-based Practice Centers (EPCs) and review all relevant scientific literature on a wide spectrum of clinical and health services topics to produce evidence-based reports. EPCs also produce technical reports on methodological topics and other types of evidence synthesis-related reports. These can be found at: https://www.ahrq.gov/research/findings/index.html .

The Community Guide. The Guide to Community Preventive Services (The Community Guide) is a collection of evidence-based findings of the Community Preventive Services Task Force (CPSTF), an independent, non-federal panel of public health and prevention experts established by the U.S. Department of Health and Human Services in 1996. The CPSTF issues findings based on systematic reviews of effectiveness and economic evidence that are conducted with a methodology developed by the Community Guide Office. https://www.thecommunityguide.org

Centre for Reviews and Dissemination (CRD) https://www.york.ac.uk/crd/
This is a department of the University of York in the UK. It undertakes systematic reviews on a wide range of health care topics and it maintains the DARE and NHS EED databases. Due to cessation of funding, no new records have been added to these databases since March 2015.

PubMed, Medline and Scopus were also used to identify systematic reviews and other relevant research from the peer-reviewed literature.

In addition to these databases the websites of the World Health Organization, and government health departments in Australia, the UK, the US, and Canada, often yielded relevant guidance, as did the sites of international clinical collaborations such as the European Cystic Fibrosis Society and the International Society for Pediatric and Adolescent Diabetes.

Appendix 2: Statistical methods

Counts of events

Most of the data presented in this report are counts of events, such as hospitalisations and deaths, and rates which represent the number of these events per head of population in a certain time period. The rates are mostly crude age-specific rates, calculated by dividing the number of events, such as hospitalisations or deaths, in a particular age group by the corresponding “at-risk” population in the same age group and then multiplying the result by a constant (such as 100,000) to derive the rate. Age-specific rates are commonly expressed per 1,000 or per 100,000 population.

One of the reasons people are interested in, for example, how 0–4 year olds were diagnosed with leukaemia last year, is to get some idea of how many there might be next year. The number diagnosed varies from year to year in an apparently random way, as does the rate derived from this number.

Confidence intervals are a statistical tool which can be used to indicate the range of variation that occurs in the number of randomly occurring discrete events that occur per unit of measurement (which may be time, space or mass).[2] It is usual to use 95% confidence intervals, which indicate that there is a 95% probability that the number of random events that occur with a particular probability in a given time period will be within the range of the confidence limits.

Confidence intervals for rates of events are derived from a mathematical model known as the Poisson distribution and they assign more uncertainty (represented by wider confidence intervals) to rates for rare (i.e. lower probability) events than to those for more common events.[2] This model is in accord with experience. When numbers of cases are small, rates can vary widely from year to year. If you had one case of a rare disease this year is quite possible you might have two next year, representing a doubling of the rate, but if you had a thousand cases of a more common disease this year, you would be unlikely to have two thousand next year (although this also indicates a doubling of last year’s rate).

For this report confidence intervals for rates of events have been calculated using Byar’s approximation, as shown below.[3,4]

The 95% confidence interval limits for a rate *r* are given by:

$$r_{lower} = \frac{O_{lower}}{n} \quad \text{where } O_{lower} = O \times \left(1 - \frac{1}{9 \times O} - \frac{z_{\alpha/2}}{3 \times \sqrt{O}}\right)$$

$$r_{upper} = \frac{O_{upper}}{n} \quad \text{where } O_{upper} = (O + 1) \times \left(1 - \frac{1}{9 \times (O+1)} + \frac{z_{\alpha/2}}{3 \times \sqrt{(O+1)}}\right)$$

where O is the observed count of events, and n is the number of people in the relevant population group. For 95% confidence intervals, $\alpha = 0.05$, and $z_{\alpha/2} = 1.96$ (i.e. the 97.5th percentile value from the Standard Normal distribution).

To compare rates between individual DHBs and the nation as a whole, or between different demographic groups in New Zealand, tables in this report often include rate ratios. The rate ratio is the rate for one particular category divided by the rate for a category chosen as the reference category, for example the rate for Hawke’s Bay divided by the national rate. Rate ratios calculated this way are properly known as crude or unadjusted rate ratios, because their calculation does not take into account differences in population demographic structure between the two categories being compared.

The rate ratio, $\widehat{RR}$, is calculated as follows:

$$\widehat{RR} = \frac{A_1/N_1}{A_0/N_0}$$

where A_1 is the number of events in the category being compared, N_1 is the population (denominator) for the category being compared, A_0 is the number of events in the reference category, and N_0 is the denominator for the reference category.

The upper and lower limits of the confidence intervals for the rate ratio have been calculated using the following formulae:[5]

$\widehat{RR}_{lower} = \exp\{\ln(\widehat{RR}) - z_{\alpha/2} \times \widehat{SD}[\ln(\widehat{RR})]\}$ $\widehat{RR}_{upper} = \exp\{\ln(\widehat{RR}) + z_{\alpha/2} \times \widehat{SD}[\ln(\widehat{RR})]\}$

and $\widehat{SD}[\ln(\widehat{RR})] = \sqrt{(\frac{1}{A_1} - \frac{1}{N_1} + \frac{1}{A_0} - \frac{1}{N_0})}$

For 95% confidence intervals, α = 0.05, and $z_{\alpha/2} = 1.96$ (i.e. the 97.5th percentile value from the Standard Normal distribution).

When the 95% confidence interval for a rate ratio does not include the value 1, the rate in the comparison group is interpreted as being significantly different from that in the reference group.

Age standardisation

Rates for cancer registrations and deaths in the wider age categories (0–14 years and 15–24 years) in this report have been age-standardised using the direct method.

Comparing rates of disease between different population groups is problematic for diseases such as cancer which have very different incidence rates in different age bands, when the populations being compared have different age structures (i.e. different proportions of the population in the different age bands). To make comparisons fairer, an age standardised rate can be calculated for each group giving the overall rate that would have occurred in that group, if its age structure had been the same as that of a standard population (i.e. if it had the same proportion of people in each age band as the standard population). A directly age-standardised rate (DSR) is a weighted average of the rates in each age band (the age-specific rates) where the weights are the proportion of the population in that age band in the standard population. Details of the calculation are provided below.

$$DSR = \frac{1}{\sum_i w_i} \times \sum_i \frac{w_i\, O_i}{n_i}$$

where w_i is the number, or proportion, of individuals in the standard population in age band *i*, O_i is the observed count in the population in age band *i, and* n_i is the observed denominator for the population-period-at-risk in age band *i*.

For the cancer rates presented in this report, the standard populations used for 0–14 years and 15–24 years age groups were (respectively) the populations of 0–14 year olds (in three age bands: 0–4, 5–9 and 10–14 years) and 15–24 year olds (in two age bands: 15–19 and 20–24 years) at the 2013 New Zealand census.

Confidence intervals for the age standardised rates in this report were calculated using the method developed by Dobson et al.[6], which assumes that the numbers of events (e.g. cancer diagnoses) in each age band have Poisson distributions. The formulae used for the upper and lower limits of the confidence intervals were as follows.[4]

$$DSR_{lower} = DSR + \sqrt{\frac{Var\,(DSR)}{Var(O)}} \times (O_{lower} - O)$$

$$DSR_{upper} = DSR + \sqrt{\frac{Var\,(DSR)}{Var(O)}} \times (O_{upper} - O)$$

where *O* is the total number of observed events in the population, and the upper and lower limits of this count (O_{upper} and O_{lower}) were calculated using Byars's approximation, as follows:

$$O_{lower} = O \times \left(1 - \frac{1}{9 \times O} - \frac{z_{\alpha/2}}{3 \times \sqrt{O}}\right)$$

$$O_{upper} = (O + 1) \times \left(1 - \frac{1}{9 \times (O + 1)} + \frac{z_{\alpha/2}}{3 \times \sqrt{(O + 1)}}\right)$$

and *Var (DSR),* the variance of the *DSR,* and *Var (O),* the variance of the observed count*,* were estimated by:

$$Var(DSR) = \frac{1}{(\sum_i w_i)^2} \times \sum_i \frac{w_i^2 O_i}{n_i^2} \qquad Var(O) = \sum_i O_i$$

where w_i is the number, or proportion, of individuals in the standard population in age band *i,* O_i is the observed count in the population in age band *i, and* n_i is the observed denominator for the population-period-at-risk in age band *i.*

For 95% confidence intervals, $\alpha = 0.05$, and $z_{\alpha/2} = 1.96$ (i.e. the 97.5th percentile value from the Standard Normal distribution).

Proportions

Some of the data in presented these reports are proportions, for example, the proportion of babies who are fully breastfed at six weeks of age, or the proportion of 18–24 year olds who are current daily tobacco smokers. It is common practice to use data from a subset of the population to estimate the proportion of the whole population who have the characteristic of interest. The subset may be large, as in the case of six week old babies, most of whom are seen by a Well Child provider and have their breastfeeding status recorded, or small, for example the number of 15–24 year olds living in South Canterbury who took part in the 2016/17 New Zealand Health Survey.

Proportions are commonly expressed as percentages, for example:

$$\%\ \textit{of babies fully breastfed at 6 weeks} = \frac{number\ of\ babies\ fully\ breastfed\ at\ 6\ weeks}{number\ of\ babies\ whose\ breastfeeding\ status\ at\ 6\ weeks\ is\ known} \times 100$$

For the purposes of estimating 95% confidence intervals, the subset of the population used to estimate the proportion in the total population is regarded as a random sample of people from the total population, who can either have, or not have, the characteristic of interest (such as smoking at least once a day).

In this situation the 95% confidence interval is the range of values that has a 95% probability of including the value of the proportion for the whole population. It quantifies the uncertainty resulting from random variation in the estimation of the population proportion. The width of the 95% confidence interval depends on the sample size (larger samples yield more precise estimates) and the degree of variability in the phenomenon being measured.

For this report, upper and lower confidence interval limits for proportions were calculated using the Wilson Score method,[4,7,8] as follows:

$$p_{lower} = \frac{\left(2O + z^2 - z\sqrt{z^2 + 4Oq}\right)}{2(n + z^2)} \qquad p_{upper} = \frac{\left(2O + z^2 + z\sqrt{z^2 + 4Oq}\right)}{2(n + z^2)}$$

Where *O* is the observed number of individuals having the specified characteristic; n is the total number of individuals in the sample; and *q* is the proportion without the specified characteristic. ($q = 1 - p$ where $p = \frac{O}{n}$ the proportion of individuals with the characteristic.)

Confidence intervals calculated by this method are also used to provide an indication of the imprecision that arises from natural variation, such as that which occurs from year to year, in proportions derived from complete datasets such as mortality registers and the NMDS.

Statistical significance testing in this report

When tests of statistical significance have been applied in a particular section, the statistical significance of the associations presented has been signalled in the text with the words significant, or not significant. Where the words significant or not significant do not appear in the text, then the associations described do not imply statistical significance or non-significance.

Appendix 3: Data Sources

This report contains information derived from several national administrative datasets and population surveys. These are described briefly below, and limitations to be aware of when interpreting results drawn from these sources are outlined.

National Mortality Collection

The National Mortality Collection (MORT) is a dataset managed by the Ministry of Health which contains information on the underlying cause, or causes, of death along with basic demographic data for all deaths registered in New Zealand since 1988.[9] Fetal and infant death data are a subset of the Mortality Collection, and records in this subset have additional information on factors such as birth weight and gestational age.[9] Each of the approximately 34,000 deaths occurring in New Zealand each year is coded manually by Ministry of Health staff. For most deaths the Medical Certificate of Cause of Death provides the information required, although coders also have access to information from other sources such as Coronial Services, Police, NZ Transport Agency, the New Zealand Cancer Registry (NZCR), the Institute of Environmental Science and Research (ESR), and Water Safety NZ.[10]

National Minimum Dataset

The National Minimum Dataset (NMDS) is the national hospital discharge dataset and is maintained by the Ministry of Health. It is used for policy formation, performance monitoring, and research purposes, and it provides key information about the delivery of hospital inpatient and day patient health services both nationally and on a provider basis. It is also used for funding purposes.[11]

Each record in the NMDS covers one hospital discharge event and includes principal and additional diagnoses, procedures, external causes of injury, length of stay and sub-specialty codes, and patient demographic information such as age, ethnicity and usual area of residence. Data have been submitted by public hospitals electronically since the original NMDS was implemented in 1993. The private hospital discharge information for publicly funded events has been collected since 1997. The current NMDS was introduced in 1999.[11]

Birth Registration Dataset

Under the provisions of the Births, Deaths, Marriages, and Relationships Registration Act 1995, every birth occurring in New Zealand must be registered.[12]

Since 1995 all New Zealand hospitals and delivering midwives have been required to notify the Department of Internal Affairs (DIA) within five working days of the birth of a live or stillborn baby.[12] This applies to stillborn babies born at or more than 20 weeks gestation, or weighing 400g or more. Prior to 1995, only stillborn babies reaching more than 28 weeks of gestation required birth notification.[12]

Information on the hospital's notification form includes maternal age, ethnicity, multiple birth status, and the baby's sex, birth weight and gestational age.[12] Parents must also jointly complete a birth registration form as soon as reasonable practicable after the birth, and within two years of delivery, which duplicates the above information with the exception of birth weight and gestational age.[12]

Once the DIA has received a notification of a birth from the hospital or midwife and from the parents the information from the two notifications is merged into a single entry.[12] Stats NZ publish birth statistics derived from the birth registrations supplied by the DIA.[12]

New Zealand Health Survey

The Ministry of Health's New Zealand Health Survey (NZ Health Survey) became an annual survey in 2011. The survey is conducted by interviewing a carefully selected sample of adults and children's parents or caregivers, and uses a core set of questions that cover a range of health-specific indicator areas, including health behaviours, conditions and use of health services.[13] Table 9-1 presents the number of participants selected for each NZ Health Survey conducted and the corresponding coverage rate (an indication of the extent to which the population was involved in the survey).

Table 9-1. Number of survey participants and coverage, New Zealand Health Survey

Survey year (1 July–30 June)	Adults (15 years and over)		Children (0–14 year olds)	
	n	Coverage (%)	*n*	Coverage (%)
New Zealand Health Survey				
2006/2007	12,488	59	4,921	67
2011/2012	12,370	54	4,478	68
2012/2013	13,009	59	4,485	69
2013/2014	13,309	54	4,699	63
2014/2015	13,497	59	4,754	69
2015/2016	13,781	67	4721	76
2016/2017	13,598	63	4,668	73
2017/2018	13,869	61	4723	74
2018/2019	13,572	62	4503	71

Source: New Zealand Health Survey Methodology reports 2006/07–2018/19

The NZ Health Survey reports present comparisons between population groups as adjusted rate ratios to take account of the potential influence of other demographic factors on comparisons between particular demographic groups.[14] Gender comparisons are adjusted for age, ethnic comparisons are adjusted for age and gender, and deprivation comparisons are adjusted for age, sex and ethnicity.[13]

The NZ Health Survey reports presents information on the prevalence each surveyed condition (or health-related behaviour) as unadjusted estimated prevalence rates which indicate the proportion (or percentage) of people with the condition of interest.[14] The calculation of estimated prevalence rates from the survey data is complex because different groups in the population have different chances of being selected to participate in the survey.[14] This is by design with the aim of

- reducing interviewer travel costs through clustering respondents geographically
- ensuring sufficient respondents from all regions of interest (including small regions), and from important sub-populations (especially Māori, Pacific and Asian) to allow adequate estimates to be made.

When calculating estimated prevalence rates, adjustments are made to take account of people in different population groups having differing chances of being selected to participate in the survey, and different rates of non-response to particular survey questions.[14] Further information on the prevalence estimates, methodology and interpretation of the NZ Health Survey is available on the NZ Health Survey pages on the Ministry of Health website: https://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/surveys/new-zealand-health-survey

PRIMHD

PRIMHD (Programme for the Integration of Mental Health Data; pronounced “primed”) is the Ministry of Health’s dataset that contains information on mental health and addiction service activity and outcomes for people using these services.[15] The district health boards (DHBs) and non-governmental organisations (NGOs) working in mental health provide data on client referrals, service activities, provider teams, and client demographic details to the Ministry for inclusion in the dataset. DHBs also provide data on client outcomes in the form of Health of the Nation Outcome Scales (HoNOS) and DHB information on legal status and diagnosis.[16] Since 2015, all community–based outpatient adult addiction service have been required to collect and report to PRIMHD data on the Alcohol and Drug Outcome Measure (ADOM), a set of 20 questions for tāngata whai ora (service users) responses to which are collected at specific stages in the treatment journey.[17] PRIMHD does not include information on primary mental health services provided by general practitioners (GPs) or Primary Health Organisations (PHOs).

The Ministry of Health’s *NGO Guide to PRIMHD*[18] explains that the information gathered is intended to improve mental health service delivery for service users and that it is also intended to provide a single rich data source of national mental health & addiction (MH&A) information that can be used for multiple purposes by a range of different stakeholders including the Ministry, DHBs and NGOs. Further information about PRIMHD is available on the Ministry of Health's website: http://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/collections/primhd-mental-health-data

Data limitations

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

Clinical coding accuracy and coding changes over time

The quality of data submitted to the administrative national datasets may vary. While the data for the MORT and the Birth Registration Dataset are coded by single agencies, the clinical information held in the NMDS is entered by health providers before being collated by the Ministry of Health.

In a 2001 review of the quality of coding in the data submitted to the NMDS, 2,708 events were audited over ten sites during a three-month period. Overall the audit found that 22% of events required a change in coding, although the changes required included changes at a detailed level. Changes to the principal diagnosis involved 11% of events, to additional diagnoses 23%, and to procedure coding, 11%. There were 1,625 external causes of injury codes, of which 15% were re-coded differently.[19] These findings were similar to an audit undertaken a year previously. While the potential for such coding errors must be taken into consideration when interpreting the findings of this report, the average 16% error rate indicated by the 2001 review may be an overestimate as, in the majority of the analyses undertaken in this report, only the principal diagnosis has been used to determine the reason for admission.

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

From 1988 until 1999, clinical information in the NMDS was coded using versions of the ICD-9 classification system. From July 1999 onwards, the ICD-10-AM classification system has been used. Back and forward mapping between the two systems is possible using predefined algorithms,[19] and for most conditions there is a good correspondence between ICD-9 and ICD-10-AM codes. Care should still be taken when interpreting time series analyses which include data from both time periods as some conditions may not be directly comparable between the two coding systems.

Variation in reporting hospitalisations to the NMDS

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

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

Further information on the details of the inconsistencies can be found in earlier reports by the NZCYES www.otago.ac.nz/ncyes

Changes in the way ethnicity information has been recorded over time

Due to inconsistencies in the way ethnicity information was recorded in the health sector, and in census data before 1996, all ethnic group specific analyses in this report are for the year 1996 onwards. See Appendix 4 for a brief review of the changes in the recording of ethnicity information over the past 35 years in New Zealand.

Appendix 4: Demographic factors

Ethnicity data

Because of inconsistencies in the manner in which ethnicity information in New Zealand was collected prior to 1996, all ethnic group specific analyses presented in this report are for the 1996 year onwards, and reflect self-identified concepts of ethnicity. Details of the changes made in the census question on ethnicity, and why they were made, can be found in the Statistics New Zealand publication *Final report of a review of the official ethnicity statistical standard 2009.*[20]

Unless otherwise specified, prioritised ethnic group has been used to ensure that each health event is only counted once. Despite significant improvements in the quality of ethnicity data in New Zealand's national health collections since 1996, care must still be taken when interpreting the ethnic-specific rates as it is still possible that Māori and Pacific children and young people have been slightly undercounted in our national data collections.

Socioeconomic deprivation

The NZ index of deprivation (NZDep) was first created using information from the 1991 census, and has been updated following each census. It is a small area index of social and material deprivation, and is used as a proxy for socioeconomic status. The main concept underpinning small area indices of deprivation is that the socioeconomic environment in which a person lives can confer risks or benefits which may be independent of that person's own social position within a community.[21] Small area indices are aggregate measures, providing information about the wider socioeconomic environment in which a person lives, rather than information about their personal socioeconomic status.

The latest index used by NZCYES, NZDep2013[22], combines nine variables from the 2013 census to reflect eight dimensions of material and social deprivation, as shown in Table 9-2. Each variable represents a standardised proportion of people living in an area who lack a defined material or social resource. These are combined to give a score representing the average degree of deprivation experienced by people in that area. Individual area scores are ranked and placed on an ordinal scale from 1 to 10, and decile 1 is defined as the least deprived 10% of small areas and decile 10 as the most deprived 10% of small areas.[22]

The advantage of the NZDep2013 is its ability to assign measures of socioeconomic status to the older population, the unemployed and to children, to whom income and occupational measures often don't apply, as well as to provide proxy measures of socioeconomic status for large datasets when other demographic information is lacking. Small area indices have limitations, however, as not all individuals in a particular area are accurately represented by their area's aggregate score. While this may be less of a problem for very affluent or very deprived neighbourhoods, in average areas, aggregate measures may be much less predictive of individual socioeconomic status.[21] Despite these limitations, the NZDep2013 has been shown to be predictive of mortality and morbidity from a number of diseases in New Zealand.

Table 9-2. Variables used in the NZDep2013

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

*Equivalence scales are methods used to control for differences in household composition[22] †Unemployed people were those who, during the week ended 3 March 2013, were without a paid job, were available for work, and had actively sought work in the past four weeks[22] ‡Single parent family is one parent with dependent children,

Appendix 5: Clinical codes

The following are the codes associated with the conditions presented in this report.

	Primary diagnosis	ICD-10-AM	ICD-9-CM
Vaccine-targeted diseases			
	Diphtheria	A36	032
	Tetanus	A33, A34, A35	037, 771.3
	Pertussis	A37	033
	Polio (poliomyelitis)	A80	045
	(Acute) Hepatitis B	B16	070
	Haemophilus influenzae	B96.3	041.5, 038.41
	Pneumococcal disease	J13, A40.3, B95.3	481, 038.2
	Measles	B05	055
	Mumps	B26	072
	Rubella	B06	056
	Gastroenteritis: Rotaviral	A08.0	008.61
	Gastroenteritis: other viral	A08	008.6, 008.8
	Gastroenteritis: non-viral	A00–A07	001–008
	Gastroenteritis: Other or NOS	A09	009
	Meningitis: bacterial	G00, G01	320
	Meningitis: viral, other, NOS	A87, G02, G03	321, 322, 047
	Meningococcal disease	A39	036
	Tuberculosis	A15–A19	010–018
	Varicella	B01	052
	Other vaccine preventable diseases	P35.0, M01.4	771.0
Dental conditions			
	Dental caries	K02	
	Disorders of tooth development/eruption	K00	
	Embedded/ impacted teeth	K01	
	Other diseases of the teeth hard tissue	K03	
	Diseases of the pulp/periapical tissue	K04	
	Gingivitis/periodontal diseases	K05	
	Other disorders of the gingiva/edentulous alveolar ridge	K06	
	Dentofacial anomalies/malocclusion	K07	
	Other disorders of the teeth or supporting structures	K08	
Injury (external cause codes)			
	Assault	X85–Y09, Y87.1	
	By spouse or domestic partner	*codes with a 5th digit of 0*	
	By parent	*codes with a 5th digit of 1*	
	By other family member	*codes with a 5th digit of 2*	
	By carer	*codes with a 5th digit of 3*	
	By acquaintance or friend	*codes with a 5th digit of 4*	
	By official authorities	*codes with a 5th digit of 5*	
	By person unknown to the victim	*codes with a 5th digit of 6*	
	By multiple persons unknown to the victim	*codes with a 5th digit of 7*	
	By other specified person	*codes with a 5th digit of 8*	
	By unspecified person	*codes with a 5th digit of 9*	
Mental Health conditions			
	Organic mental disorders	F0	
	Postconcussional syndrome	*F072*	
	Other organic mental disorders	*All other F0 codes*	
	Mental and behavioural (M+B) disorders due to harmful use of alcohol	F10	
	Acute intoxication	*F100*	
	Other M+B disorders due to harmful use of alcohol	*All other F10 codes*	
	M+B disorders due to harmful use of cannabinoids	F12	
	Psychosis due to cannabinoids	*F125*	
	Other M+B disorders due to use of cannabinoids	*All other F12 codes*	
	M+B disorders due to other or multiple psychoactive substances	F11, F13–F19	
	Psychotic disorder due to other or multiple psychoactive substances	*F11 and F13–F19 codes*	

	with a 4th digit of 5
Other M+B disorders due to other or multiple psychoactive substances	*All other F11 and F13–F19 codes*
Schizophrenia, schizotypal and delusional disorders	F20–F29
Schizophrenia	*F20*
Acute and transient psychotic disorders	*F23*
Unspecified non-organic psychosis	*F29*
Schizoaffective disorders	*F25*
Other delusional and psychotic disorders	*All other F2 codes*
Mood disorders	F3
Bipolar affective disorder	*F31*
Depressive episode	*F32*
Recurrent depressive episode	*F33*
Other mood disorders	*All other F3 codes*
Neurotic, stress-related and somatoform disorders	F4
Anxiety disorders	F40, F41
Post-traumatic stress disorder	*F43.1*
Adjustment disorder	*F43.2*
Other reaction to stress	*All other F43 codes*
Dissociative convulsions	*F44.5*
Other Neurotic, stress-related and somatoform disorders	*All other F4 codes*
Eating disorders	F50
Anorexia nervosa	*F500, F501*
Other eating disorders	*All other F50 codes*
Personality disorders	F6
Borderline Personality disorder	*F6031*
Other personality disorders	*All other F6 codes*
Disorders of psychological development	F8
Childhood autism	F840
Other disorders of psychological development	*All other F8 codes*
Behavioural and emotional disorders with onset usually in childhood or adolescence	F90–F98
Other mental and behavioural disorders	All other F codes

Cancer

Cancer	All C codes and D37–D48
Lip, oral cavity and pharynx	C00–C14
Digestive organs	C15–C26
Stomach	*C16*
Appendix	*C181*
Colon (except appendix)	*All other C18*
Liver	*C22*
Other digestive organs	*All other C15–C26*
Respiratory and intrathoracic organs	C30–C39
Bones, joints and articular cartilage	C40–C41
Scapula and long bones of upper limb	*C400*
Long bones of lower limb	*C402*
Bones of skull and face	*C410*
Other bones, joints and articular cartilage	*All other C40–C41*
Skin	C43–C44
Melanoma	*C43*
Other skin cancers	*C44*
Mesothelial and soft tissue	C45–C49
Breast	C50
Female genital organs	C51–C58
Ovary	*C56*
Cervix	*C539*
Other female genital organs	*All other C51–C58*
Male genital organs	C60–C63
Prostate	*C621*

Testis	*C629*
Other male genital	*All other C60–C63*
Urinary tract	C64–C68
Kidney	*C64, C65*
Other urinary tract	*C66–C68*
Eye, brain and other parts of the central nervous system	C69–C72
Retina, other parts of eye and surroundings	*C69*
Brain and meninges	*C70, C71*
Spinal cord, cranial nerves and other parts of CNS	*C72*
Thyroid and other endocrine glands	C73–C75
Thyroid	*C73*
Adrenal	*C74*
Other endocrine glands and related structures	*C75*
Malignant neoplasm of ill-defined, secondary and unspecified sites	C76–C80
Lymphoid, haemopoietic and related tissue	C81–C96
Lymphomas	*C81–C86*
Hodgkin lymphoma	*C81*
Burkitt lymphoma	*C837*
Other non-Hodgkin lymphomas	*All other C81–C86*
Leukaemias	*C91–C96*
Acute lymphoblastic leukaemia	*C910*
Other lymphoid leukaemia	*All other C91*
Acute myeloblastic leukaemia	*C920*
Other myeloid leukaemia	*All other C92*
Other leukaemias of specified or unspecified type	*C93–C95*
Other and unspecified neoplasms of lymphoid, haemopoietic and related tissue	*C96*
Multifocal and unisystemic Langerhans-cell histiocytosis	*C965*
Unifocal Langerhans-cell histiocytosis	*C966*
Other neoplasms of lymphoid, haemopoietic and related tissue	*All other C81–C96*
Malignant neoplasms of independent (multiple) primary sites	C97

Neoplasms of unknown or uncertain behaviour	D37–D48
Myelodysplastic syndrome	*D46*
Other neoplasms of unknown or uncertain behaviour of lymphoid, haemopoietic and related tissue	*D47*
Other neoplasms of unknown or uncertain behaviour	*All other D37–D48*

In-situ neoplasms	D00–D09
Oral cavity, oesophagus and stomach	*D00*
Other and unspecified digestive organs	*D01*
Melanoma in-situ	*D03*
Cervix	*D06*
Other/unspecified female genital organs	*D070–D073*
Other/unspecified in-situ neoplasm	*All other D00–D09*

Appendix 6: NZ Health Survey questions

Information presented in this report that was sourced from the NZ Health survey was collected with the following questions, as published by the Ministry of Health.

Substance use questions

Indicator: Past-year drinkers

Question A3.24: Have you had a drink containing alcohol in the last year?
Yes / No

Indicator: Heavy episodic drinking

Question A3.24: Have you had a drink containing alcohol in the last year?
Yes / No
Question A3.25: How often do you have a drink containing alcohol?
Monthly or less / Up to 4 times a month / Up to 3 times a week / 4 or more times a week
Question A3.26a*: Looking at this picture showcard, how many drinks containing alcohol do you have on a typical day when you are drinking?
'By one drink, I now mean one standard drink, that is, one can or stubbie of beer, half a large bottle of beer, one small glass of wine or one shot of spirits. The picture showcard can help you estimate the number of standard drinks you have drunk. It shows some examples of the number of standard drinks in different alcoholic drinks.' *A show-card was used to illustrate the number of standard drinks in various common beverages
1 or 2 / 3 or 4 / 5 or 6 / 7 to 9 / 10 to 11 / 12 or more
Question A3.27a: How often do you have six or more standard drinks on one occasion?
Never / Less than monthly / Monthly / Weekly / Daily or almost daily

Indicator: Current smokers and monthly smokers and daily smokers

Question A3.13: Have you ever smoked cigarettes or tobacco at all, even just a few puffs? Please include pipes and cigars.
Yes / No
Question A3.14: Have you ever smoked a total of more than 100 cigarettes in your whole life?
Yes / No
Question A3.15: How often do you now smoke?
You don't smoke now / At least once a day / At least once a week / At least once a month / Less often than once a month

Indicator: Ex-smokers

Question A3.16: How long ago did you stop smoking?
Within the last month / 1 month to 3 months ago / 4 months to 6 months ago / 7 to 12 months ago / 1 to 2 years ago / 2 to 5 years ago / Longer than 5 years ago

Indicator: Heavy smokers

Question A3.18: On average, how many cigarettes do you smoke a day?
Less than 1 per day / 1–5 per day / 6–10 per day / 11–15 per day / 16–20 per day / 21–25 per day / 26–30 per day / 31 or more a day

Indicator: Electronic cigarette users (monthly and daily)

Question A3.21a: Have you ever tried an electronic cigarette, even just a puff or 'vape'?
Yes / No
Question A3.21b: How often do you now use electronic cigarettes?
You don't use them now / At least once a day / At least once a week / At least once a month / Less often than once a month

Indicator: Illicit drug use

Question A3.36a*: In the last 12 months, have you used any of the following drugs for recreational or non-medical purposes, or to get high? [Multiple responses possible]
Cannabis / Ecstasy / Amphetamines / Stimulants / Codeine, morphine, methadone, oxycodone, pethidine / Sedatives / Hallucinogens / Cocaine / Heroin, opium, homebake / Other / No, none of the above / I don't know / I don't want to answer

Mental health questions

Indicator: Psychological distress

Question A4.13: During the past 4 weeks, how often did you feel tired out for no good reason – would you say all of the time, most of the time, some of the time, a little of the time, or none of the time?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.14: During the past 4 weeks, how often did you feel nervous – all of the time, most of the time, some of the time, a little of the time, or none of the time?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.15: During the past 4 weeks, how often did you feel so nervous that nothing could calm you down?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.16: During the past 4 weeks, how often did you feel hopeless?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.17: During the past 4 weeks, how often did you feel restless or fidgety?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.18: During the past 4 weeks, how often did you feel so restless you could not sit still?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.19: During the past 4 weeks, how often did you feel depressed?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.20: How often did you feel so depressed that nothing could cheer you up?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.21: During the past 4 weeks, how often did you feel that everything was an effort?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)
Question A4.22: During the past 4 weeks, how often did you feel worthless?
All of the time (score 4) / Most of the time (score 3) / Some of the time (score 2) / A little of the time (score 1) / None of the time (score 0)

Indicator: Depression

Question A1.23: Have you ever been told by a doctor that you have depression?
Yes / No

Indicator: Bipolar disorder

Question A1.25: Have you ever been told by a doctor that you have bipolar disorder, which is sometimes called manic depression?
Yes / No

Indicator: Anxiety disorder

Question A1.27: Have you ever been told by a doctor that you have anxiety disorder? This includes panic attacks, phobia, post-traumatic stress disorder, and obsessive compulsive disorder?
Yes / No
Source: New Zealand Health Survey Annual Data Explorer 2017/18

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