KPI Programme
Mental Health and Addiction
Aotearoa New Zealand

Premature mortality among people using secondary mental health and addiction services in Aotearoa New Zealand

Scoping a key performance indicator

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Equally Well

Acknowledgements

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Scope and purpose of this report

This report presents the results of work commissioned by the Mental Health and Addiction Key Performance Indicator (KPI) Sponsor Group to investigate the feasibility of developing a key performance indicator for mental health and addiction services based on premature mortality among people using services.

For the purposes of this work, premature mortality is defined as mortality prior to the age of 65. This definition has been chosen because of the incompleteness of information about mental health service use among people aged 65 and over in New Zealand. We have also explored mortality prior to age 75 where the data is available.

This report presents the methods used and the results of analyses. We have presented both relative and absolute measures of difference between people using mental health services and the general population. Standardised mortality rate ratios are presented to show relative differences. Absolute age standardised mortality rates are also compared. Data are presented in graphical form in the main body of the report and in tabular form in Appendix 1.

Premature mortality is separately explored by gender, ethnicity (Māori and non-Māori), and DHB. Results are also presented separately for all cause mortality, mortality from natural (non-external) causes, and suicide mortality.

In order to compare to previous New Zealand work in this area,[1] we also present some exploration of differences between those with a psychosis diagnosis and other service users, and differences in estimates by length of time since service contact, and after exclusion of people whose service contact occurs only in the context of terminal medical conditions.

This report includes three appendices: tables containing the main results; the SAS code used to produce the estimates; and finally, a review of the international literature on measures of physical health as performance indicators for mental health and addiction services.

The report is intended as a starting point for discussions around the expansion of the KPI Programme to include measures of physical health as performance indicators for mental health and addiction services.

We are happy to discuss the findings of this report. Please contact Ruth Cunningham in the first instance with any queries at Ruth.Cunningham@otago.ac.nz

[1] Cunningham R, Peterson D, Sarfati D, Stanley J, Collings S. Premature mortality in adults using New Zealand psychiatric services. New Zealand Medical Journal. 2014;127(1394).

Methods and definitions

Data sources

Deidentified data were obtained directly from the Ministry of Health, with records containing an encrypted NHI for linking of datasets. Data from 1 July 2010 to 30 June 2015 were extracted from PRIMHD and mortality collections, along with demographic information on date of birth, sex, ethnicity, and DHB of domicile.

Mental health and addiction service user population

The mental health and addiction service user population included anyone who had an interaction (face to face contact including audio-visual, see appendix for codes used) with DHB specialist mental health and addiction services in the relevant fiscal year or in either of the two previous fiscal years, and who were alive at the start of the current year. We included only those who were aged 18-64 at the midpoint of the relevant fiscal year. We excluded those who had an organic, developmental, or intellectual disability diagnosis without any other mental health diagnosis (see appendix for codes). We included all those who did not have any diagnosis recorded, because of the well-established problem of missing data in the classification table for PRIMHD.[2] This produced a "mental health service use" population for each fiscal year for 2011 to 2015.

Premature mortality

We have defined premature mortality as death prior to age 65. [3] We linked our population to mortality data, and for each fiscal year (from 2011-2015) counted the number who died in that year. Deaths were further classified into suicide and natural (non-external) causes (see appendix for codes).[4]

Ethnicity

Ethnicity was sourced from health data (the NHI record) and was recorded in total response format (individuals could belong to more than one ethnic group). The only ethnic classification used in this report is Māori / non-Māori, which are exclusive groupings.

Calculating rates and rate ratios

Rates of premature mortality are presented as age standardised rates for the mental health and addiction service use and general populations and as mortality rate ratios (the ratio of these two rates).

Mortality rates were calculated by dividing the number of deaths in a fiscal year by the total population for the relevant age/sex/ethnic group for that fiscal year. For the mental health and addiction service use population, the total population at risk was calculated by summing all individuals who had used mental health and addiction services in that year or the two years prior (as

[2] Ministry of Health. PRIMHD Classification (Diagnosis) Data – Summary and Metadata v 1.6 prepared August 2019. Wellington: Ministry of Health; 2019.
[3] Some studies define premature mortality as death prior to age 75. Due to the poor coverage of PRIMHD data for ages 65 and over we are not able to use this definition (although see sensitivity analyses which apply this definition to selected DHBs that have high coverage of mental health care for age 65 and over in PRIMHD)
[4] Note: in the cause of death analyses non-suicide external causes (accidents and homicides) are not included, but these deaths are included in all cause mortality calculations.

defined above). For the general population the total population counts were sourced from official Stats NZ population estimates (the Estimated Resident Population as at 30 June). The general population included all people living in New Zealand, including mental health and addiction service users.

All rates have been age standardised to allow comparison between populations with different age structures. **Age-standardised mortality rates** (SMRs) were calculated using the World Health Organisation standard population weightings.

The age standardised mortality rate for those using mental health and addiction services was divided by the age standardised mortality rate for the general population to provide a **Rate Ratio.** Rate ratios of greater than 1 mean that mortality was higher in the mental health population than in the general population, with larger ratios indicating a greater relative difference in premature mortality between the mental health and general populations.

For most comparisons in this report we have averaged rates across the entire study period 2011 to 2015 and then calculated the rate ratio from the averaged rates.

See Appendix 1 for further information about the methods used including the SAS code.

Results

Overall premature mortality for mental health and addiction service use population

The following figures show the age standardised premature mortality rates and premature mortality rate ratio (age standardised mortality rate for mental health and addiction service users / age standardised mortality rate for general population) by cause of death.

Figure 1 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, 2011-2015 shows the age standardised premature mortality rates for the mental health and addiction service use and general populations. An advantage of this presentation is that it allows us to see the difference in absolute mortality rates between groups. For all cause mortality, and for suicide and medical deaths, the rates of premature mortality are higher in the mental health and addiction service use population than the general population.

Figure 2 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups) shows an alternative way of presenting these data: the premature mortality rate ratio for the mental health and addiction service use population compared to the general population. Overall, individuals using mental health and addiction services were more than 3.5 times as likely to die from any cause as individuals in the general population. Mental health and addiction service users were three times as likely to die from medical causes as the general population and more than 8 times as likely to die by suicide.

These two different ways of presenting the data highlight different aspects of the results. From Figure 1 the majority of premature deaths among people using mental health and addiction services are due to medical causes. Figure 2 shows that the difference in mortality rates between people

using mental health and addiction services and the general population is greatest for mortality due to suicide.

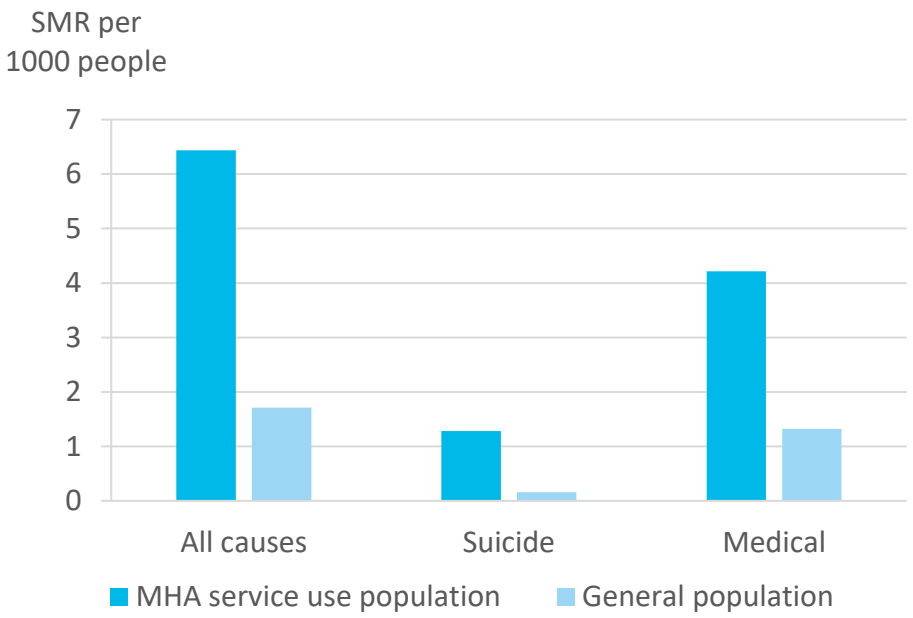

Figure 1 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, 2011-2015

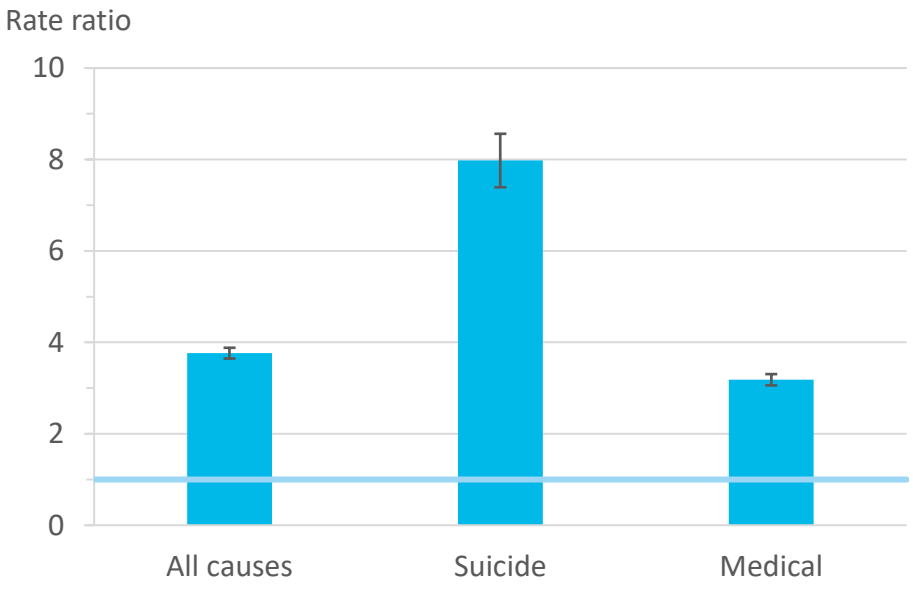

Figure 2 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Premature mortality among mental health and addiction service users by gender

Figure 3 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and gender, 2011-2015. and Figure 4 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). show the absolute (SMR, Figure 3 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and gender, 2011-2015.) and relative (rate ratio, Figure 4 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).) differences between premature mortality in the mental health and addiction service use and general populations by gender. Overall, death rates are higher in men than in women across all three cause of death categories in both the mental health and general populations. However, the premature mortality rate ratio was similar for males and females, suggesting that the excess all cause mortality risk experienced by mental health and addiction service users is similar for males and females. The same is true for deaths from medical causes. For deaths by suicide, however, the ratio is larger for females, i.e. the gap in suicide risk between mental health and addiction service uses and the general population is larger for females than for males.

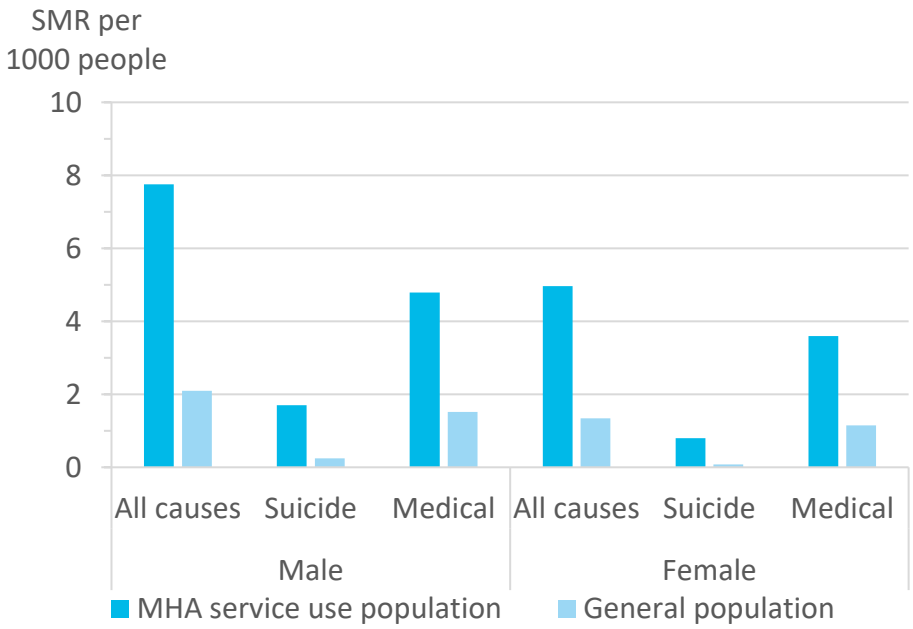

Figure 3 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and gender, 2011-2015.

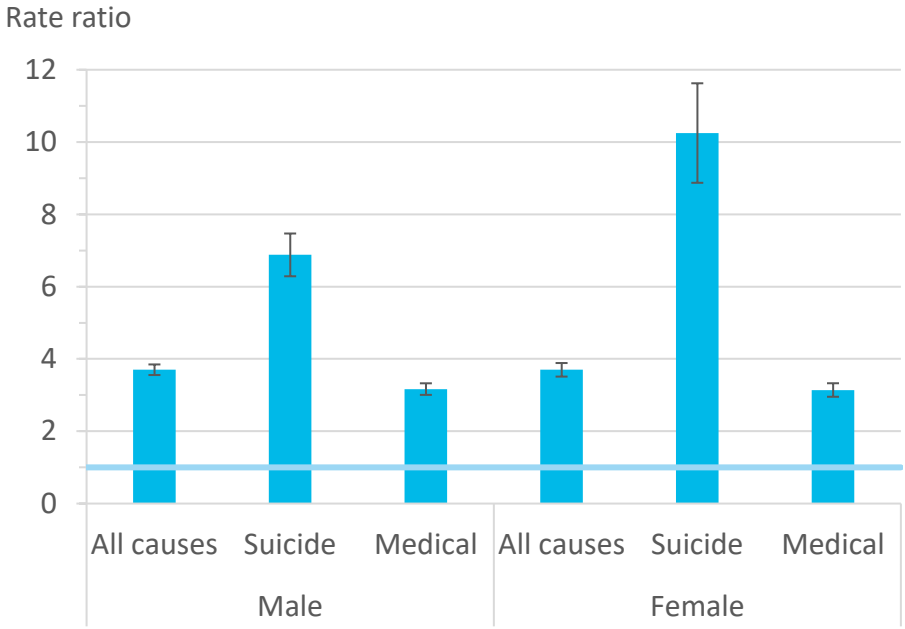

Figure 4 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Premature mortality by ethnicity

Figure 5 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and Māori ethnicity, 2011-2015. and Figure 6. Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups) show the absolute (Figure 5 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and Māori ethnicity, 2011-2015.) and relative (Figure 6. Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups)) differences in premature between Māori and non-Māori. For all cause mortality, suicide, and medical causes of death, the rates of premature mortality are higher among Māori service users than non-Māori. Figure 6. Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups)Figure 5 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and Māori ethnicity, 2011-2015. shows that the relative difference in premature mortality between mental health and addiction services users and the general population is higher for non-Māori than for Māori. This is likely to be due to the higher rates of premature mortality among Māori compared to the non-Māori in the general population.

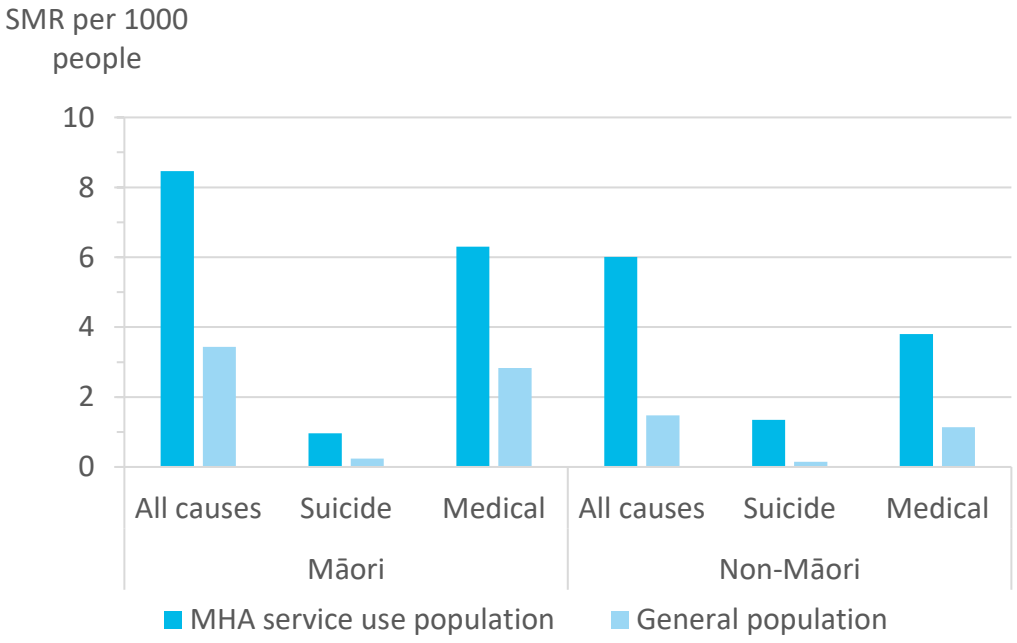

Figure 5 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death and Māori ethnicity, 2011-2015.

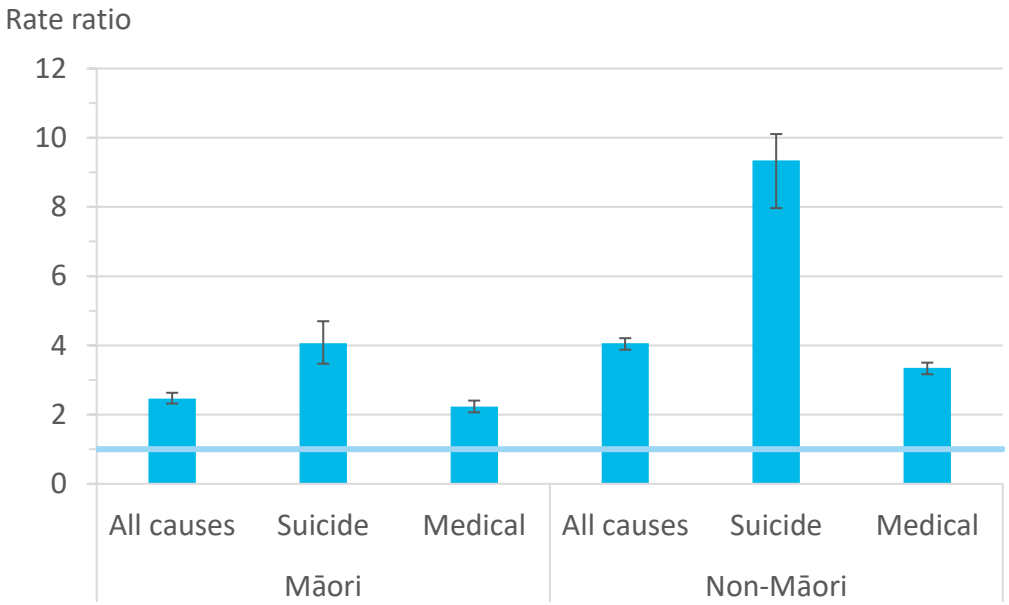

Figure 6. Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Premature mortality among recent users of mental health and addiction services by ethnicity and gender

Figure 7 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, Māori ethnicity, and gender, 2011-2015. and Figure 8 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, Māori ethnicity, and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). show the absolute (Figure 7 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, Māori ethnicity, and gender, 2011-2015.) and relative (Figure 8 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, Māori ethnicity, and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).) differences in premature mortality between the mental health and addiction service use and general population, by Māori ethnicity and gender. Overall, premature mortality rates are highest in Māori males and lowest in non-Māori females. Across all four gender-ethnicity groups, mental health and addiction service users have higher premature mortality rates than the general population for all three cause of death groups. The relative differences between the mental health and general populations (rate ratio, Figure 8 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, Māori ethnicity, and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).) is similar for all four gender-ethnicity groups for all cause mortality and medical causes of death, but for suicide it varies between gender-ethnicity groups, being highest in non-Māori females and lowest in Māori males.

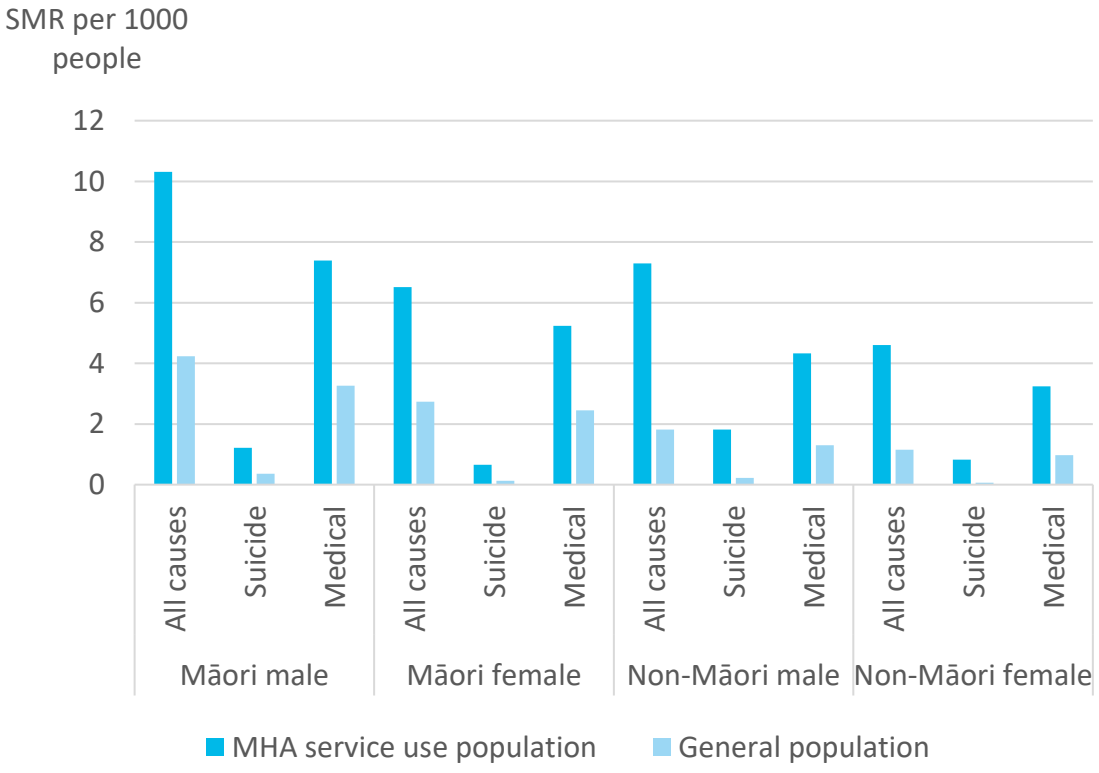

Figure 7 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, Māori ethnicity, and gender, 2011-2015.

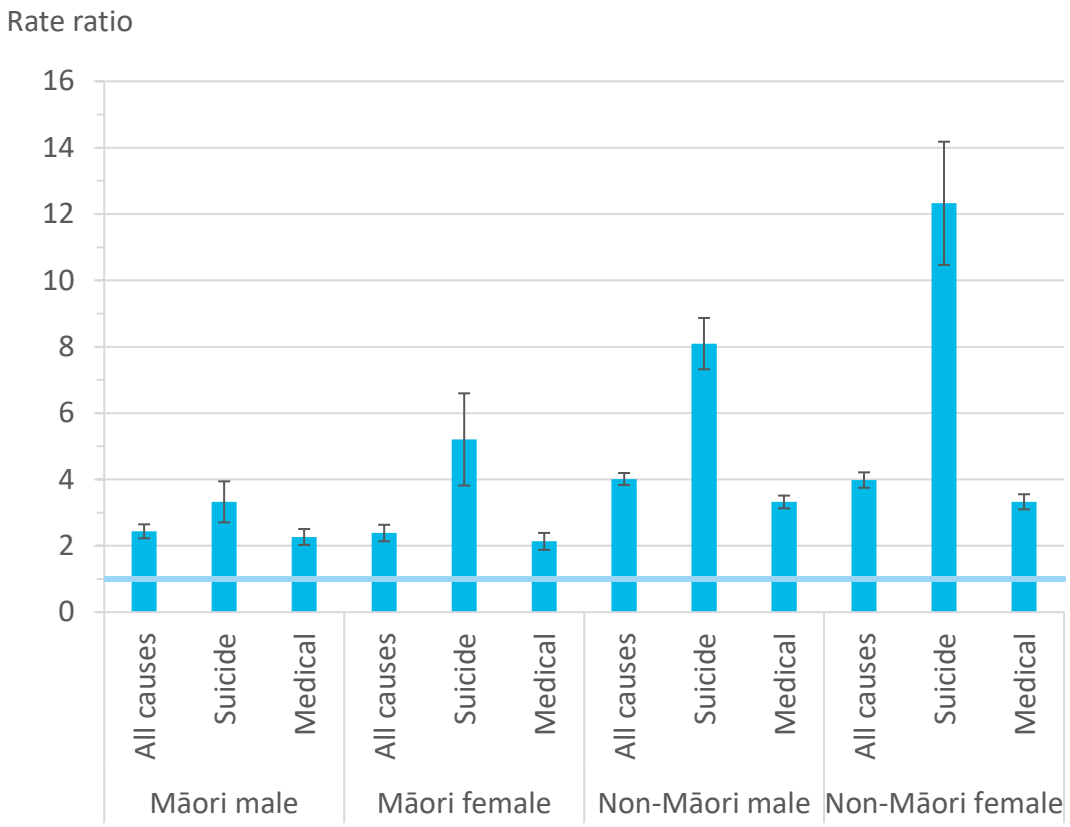

Figure 8 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, Māori ethnicity, and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Premature mortality among mental health service users with a diagnosis of functional psychosis

Figure 9 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services with a diagnosis of functional psychosis (dark green) and general population (light green) by cause of death and gender, 2011-2015. to Figure 12 Age standardised premature mortality rate ratios (RR), mental health and addiction service users with a diagnosis of functional psychosis compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). explore rates of premature mortality in the group of recent mental health service users who have a recorded diagnosis (including provisional diagnoses) of functional (non-organic) psychosis. The ICD codes used to define the psychosis group can be found in the appendix.

Figure 9 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services with a diagnosis of functional psychosis (dark green) and general population (light green) by cause of death and gender, 2011-2015. shows the absolute rates of premature mortality for mental health and addiction service users with psychosis compared to the general population, by gender. For both males and females and for all cause of death categories, the rates of premature mortality are higher in the psychosis population than in the general population. Figure 10 Age standardised premature mortality rate ratios (RR), mental health and addiction service users with a diagnosis of functional psychosis compared to general population, by cause of death and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). shows the relative differences in premature mortality rates between the psychosis and general populations, by gender. The pattern is similar to that of the total mental health user population (Figure 4 Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).) with the relative differences for all cause mortality and medical deaths being similar for males and females, but for suicide the relative difference between the psychosis and general populations is larger for females than for males.

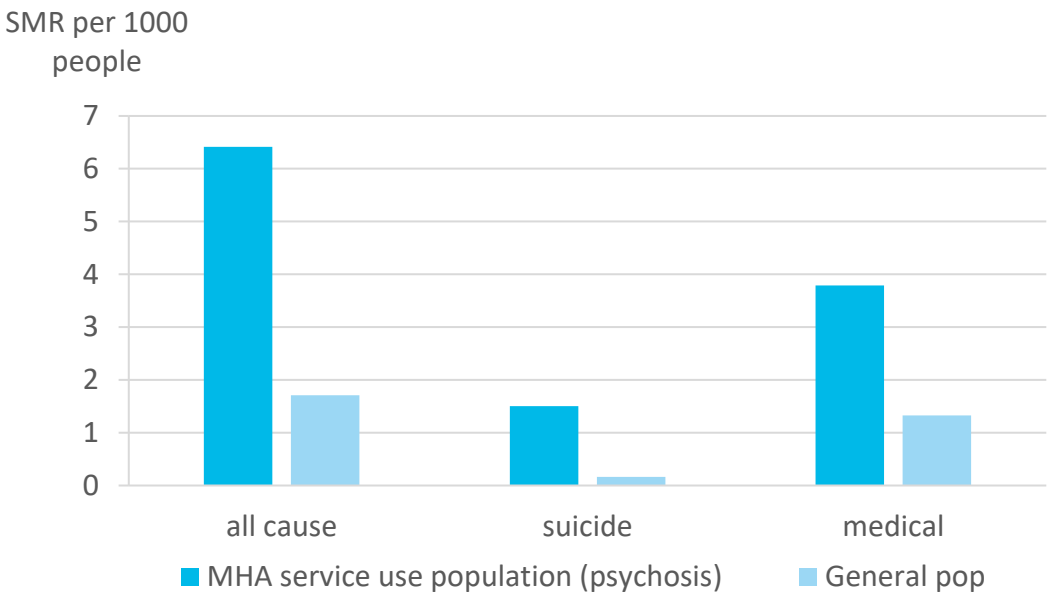

Figure 9 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services with a diagnosis of functional psychosis (dark green) and general population (light green) by cause of death and gender, 2011-2015.

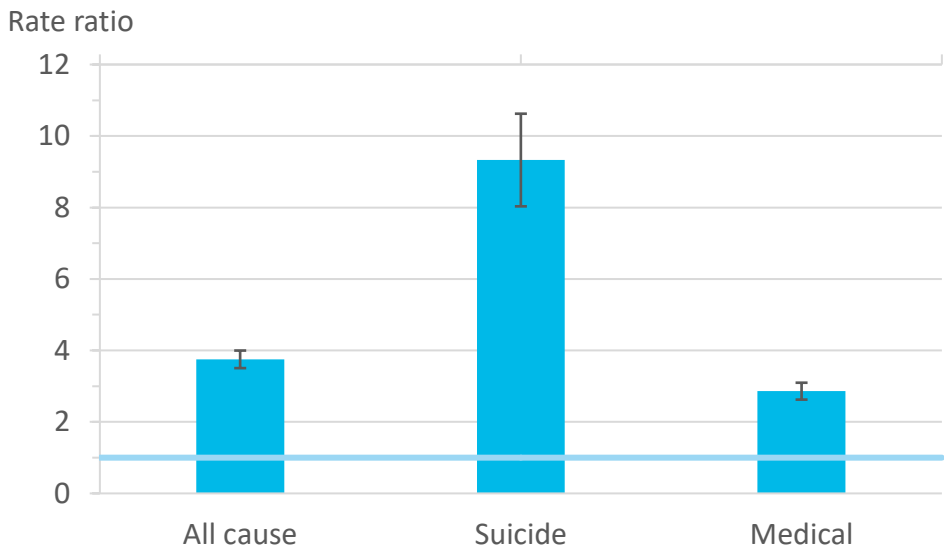

Figure 10 Age standardised premature mortality rate ratios (RR), mental health and addiction service users with a diagnosis of functional psychosis compared to general population, by cause of death and gender, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Figure 11 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services with a diagnosis of functional psychosis (dark green) and general population (light green) by cause of death and Māori ethnicity, 2011-2015. shows the absolute rates of premature mortality for mental health and addiction service users with psychosis compared to the general population, for Māori and non-Māori. For both Māori and non-Māori and for all cause of death categories, the rates of premature mortality are higher in the psychosis population than in the general population. Figure 12 Age standardised premature mortality rate ratios (RR), mental health and addiction service users with a diagnosis of functional psychosis compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). shows the relative differences in premature mortality rates between the psychosis and general populations, for Māori and non-Māori. Again, the pattern is similar to that of the total mental health user population (Figure 6. Age standardised premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups)) with the relative differences for all cause mortality and medical deaths being similar for Māori and non-Māori, but for suicide, the relative difference between the psychosis and general populations is smaller for Māori than for non-Māori.

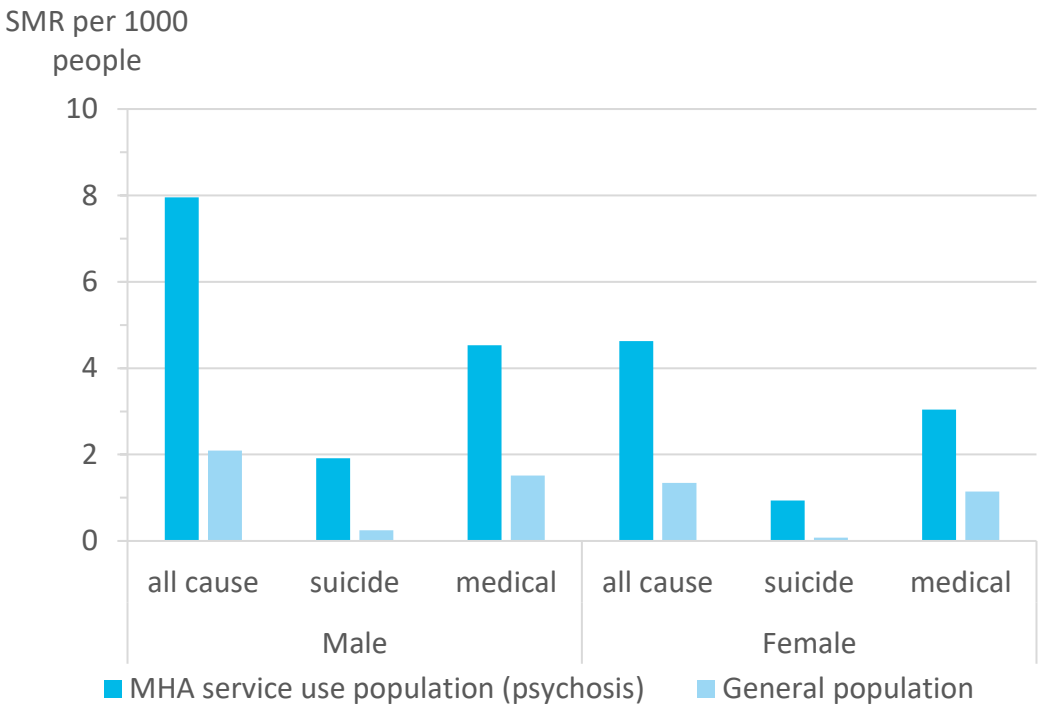

Figure 11 Age standardised premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services with a diagnosis of functional psychosis (dark green) and general population (light green) by cause of death and Māori ethnicity, 2011-2015.

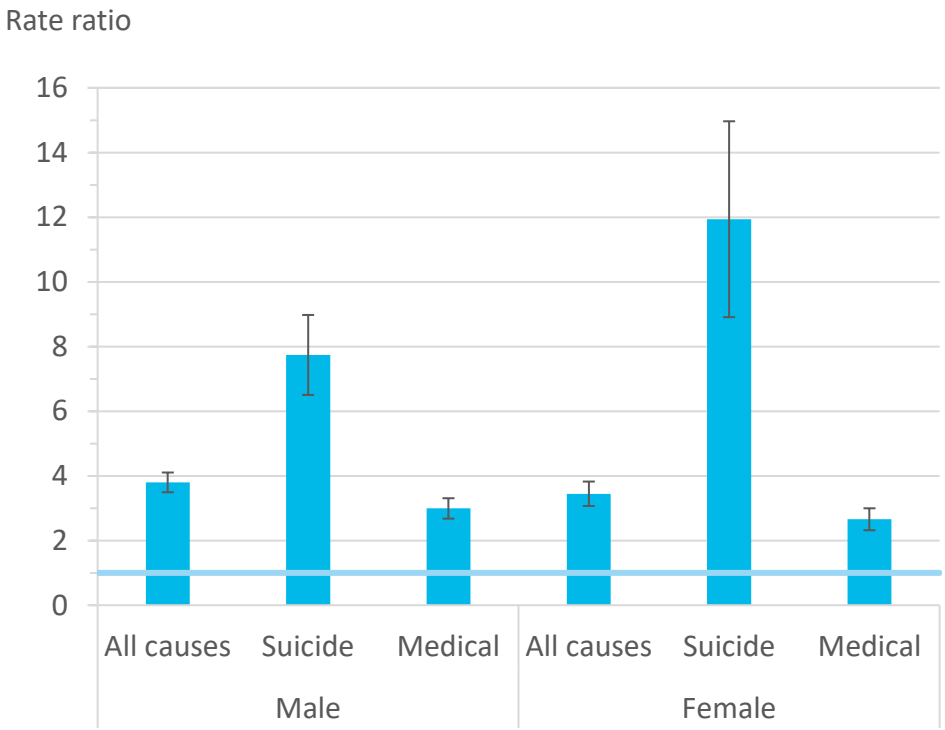

Figure 12 Age standardised premature mortality rate ratios (RR), mental health and addiction service users with a diagnosis of functional psychosis compared to general population, by cause of death and Māori ethnicity, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Premature mortality of people in contact with mental health and addiction services by DHB

Figure 13 Age standardised all cause premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by District Health Board (DHB), 2011-2015. and Figure 14 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by District Health Board (DHB), 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). show absolute and relative mortality differences between the mental health and addiction service use and general population by DHB.

The age standardised premature mortality rates for mental health and addiction service users vary between DHBs, with the highest rate (Lakes) being around 1.6 times as high as the lowest rate (Nelson Marlborough). In contrast, there is more variability in the age standardised mortality rates for the general population, with the highest rate (Tairāwhiti) being nearly double the lowest rate (Waitemata). This variation in general population rates will be due to the differing ethnic and socioeconomic profiles of the DHB populations.

The large variation in rate ratios (Figure 14) by DHB is likely driven by the difference in general population mortality rates more than differences in mental health and addiction service use population rates.

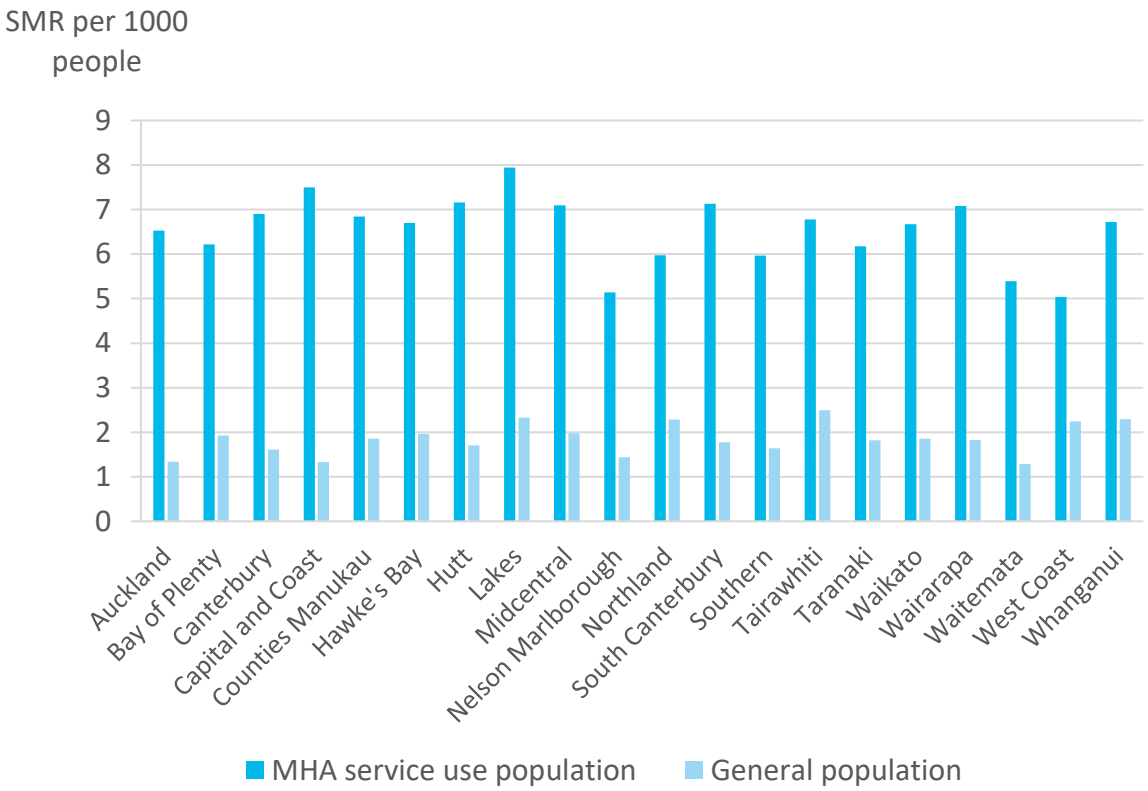

Figure 13 Age standardised all cause premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by District Health Board (DHB), 2011-2015.

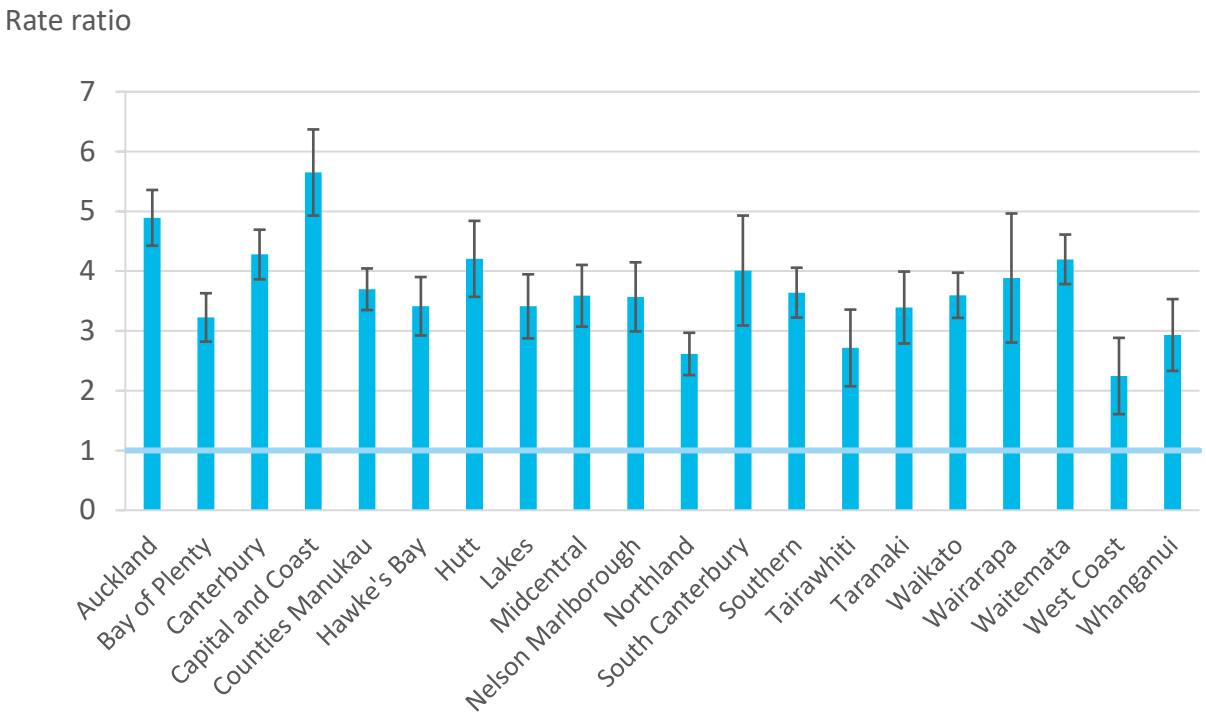

Figure 14 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by District Health Board (DHB), 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups).

Premature mortality: deaths before 65 compared to deaths before 75

Figure 15 Age standardised all cause premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, gender, and definition of premature mortality, 2011-2015. Population is restricted to the Northern and Midland DHB regions. and Figure 16 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, gender, and definition of premature mortality, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). Population is restricted to the Northern and Midland DHB regions. show the absolute and relative differences between premature all cause mortality rates among people using mental health and addiction services compared to the general population, for two different definitions of premature mortality: death before age 65 (as used throughout the rest of this report) and death before age 75 (a more standard definition of premature mortality). For these figures, the cohort was restricted to the Northern and Midland DHB regions only, where data for older peoples mental health and addiction services is included in PRIMHD. The DHBs that make up the Northern and Midland DHB regions are Northland, Waitemata, Auckland, Counties Manukau, Waikato, Bay of Plenty, Lakes, Tairāwhiti and Taranaki. Premature mortality rates for males, females and the total population females are higher when using a 'death before 75' definition of premature mortality, for both mental health and addiction service use and the general population. However, the relative differences between mental health and addiction service use and the general population (rate ratio, Figure 16 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, gender, and definition of premature mortality, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). Population is restricted to the Northern and Midland DHB regions.) are very similar for both definitions of premature mortality.

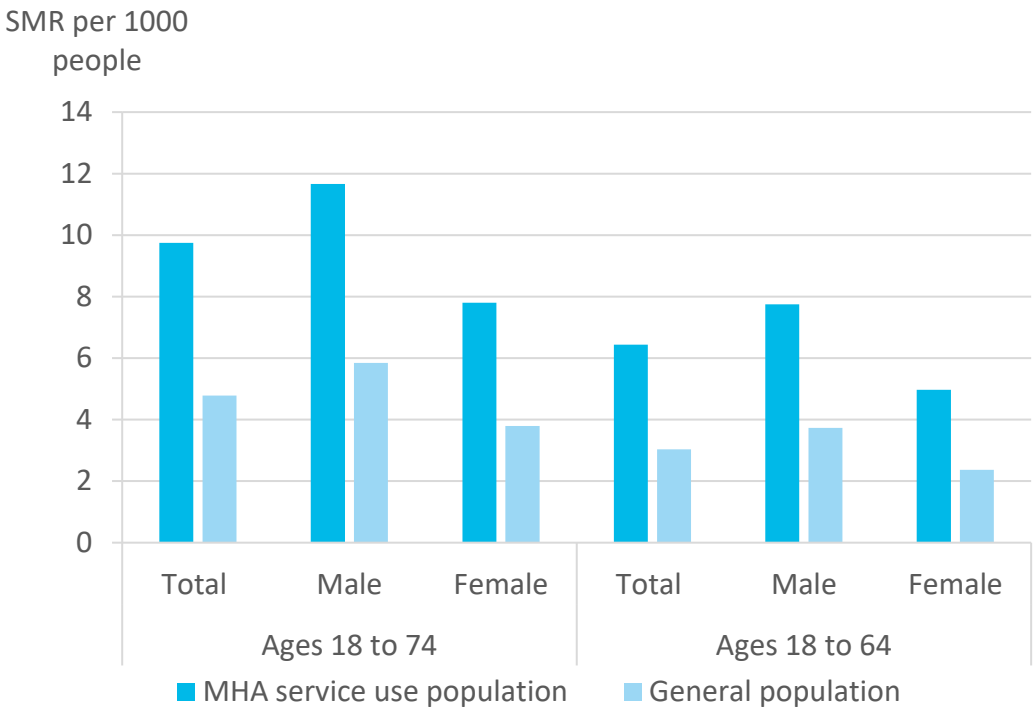

Figure 15 Age standardised all cause premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services (dark green) and general population (light green) by cause of death, gender, and definition of premature mortality, 2011-2015. Population is restricted to the Northern and Midland DHB regions.

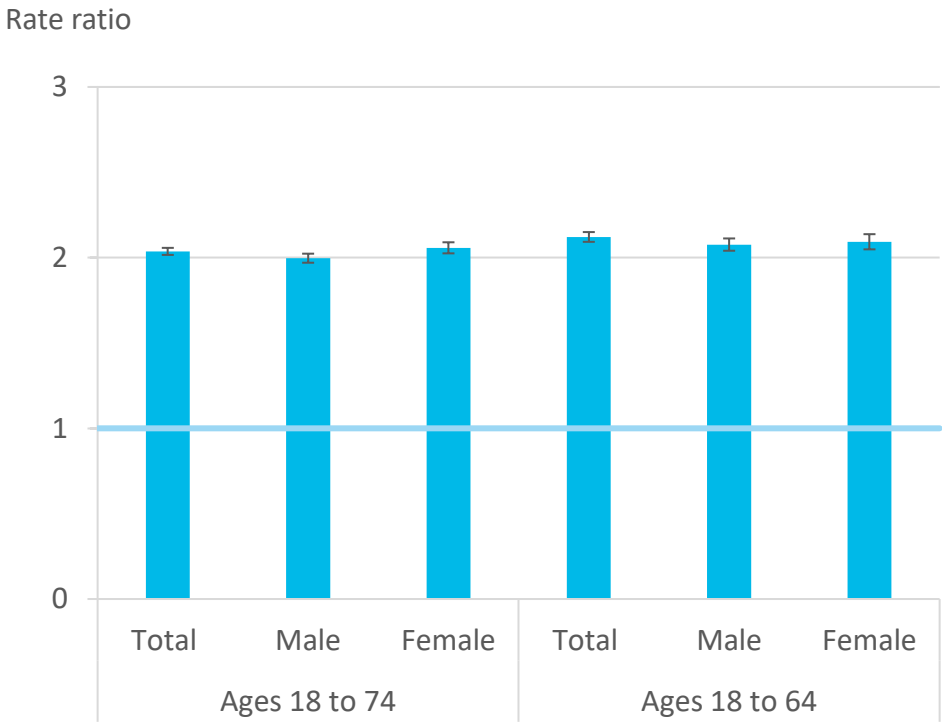

Figure 16 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by cause of death, gender, and definition of premature mortality, 2011-2015, with 95% confidence intervals. Dotted line represents a RR of 1 (no difference between groups). Population is restricted to the Northern and Midland DHB regions.

Definition of mental health and addiction service use population

In this project we have defined the mental health and addiction service use population as all individuals having contact with DHB mental health and addiction services in the current fiscal year or either of the two previous fiscal years. The age standardised premature mortality rates for the mental health and addiction service use population are higher than those observed in previous similar work[5], and the difference between the general mental health population and the psychosis population is smaller than in previous work. We think that this might be due to slight differences in the way the mental health and addiction service use population has been defined.

To test this, we varied our definitions for the mental health and addiction service use population in two ways to bring it closer to the definition used in previous work:

- We excluded individuals who are likely to be using services in connection with end of life care for a medical condition ('terminal service use'). This was done by excluding people who died within 90 days of their first ever mental health and addiction service contact (unless they died by suicide/other psychiatric cause or had a history of schizophrenia or bipolar - those people were still included)
- We changed the 'look back' period that we use to identify mental health service users from 2 years (current year or either of 2 previous years) to 6 years (current year or any of the 6 previous years).

Excluding individuals with terminal service use only and lengthening the look back period from 2 to 6 years decreases the premature mortality rate in the mental health population (the reduction is larger for the general mental health population than for the psychosis population).

The table below shows the age standardised premature mortality rates and rate ratios (relative difference) for the total mental health service use population and the subset of that population with a diagnosis of functional psychosis. Rates and ratios are shown for four different definitions of the mental health and addiction service use population:

- Two year 'look back' period (our original definition, used throughout this report)
- Two year look back period, terminal service use excluded
- Six year look back period
- Six year look back period, terminal service use excluded.

The final definition (six year look back period, excluding people with only terminal service use) is closest to the definition that we used in previous work and the premature mortality rates produced from that definition are closer to rates from our previous work.

[5] Cunningham R, Peterson D, Sarfati D, Stanley J, Collings S. Premature mortality in adults using New Zealand psychiatric services. New Zealand Medical Journal. 2014;127(1394).

Table 1 Age standardised premature mortality rates (per 1,000 people) for 2015 fiscal year

	All MHA service users			Psychosis population only		
	MHA pop	General pop	RR	MHA pop	General pop	RR
2 year look back (original definition)	5.9	1.7	3.6	6.6	1.7	3.9
2 year look back, excl terminal service use	5.5	1.7	3.3	6.5	1.7	3.9
6 year look back	4.9	1.7	3.0	6.0	1.7	3.6
6 year look back, excl terminal service use	4.7	1.7	2.8	6.0	1.7	3.6

Appendix 1: Coding information and SAS code

Sheree Gibb, Vivienne Rijnberg

PRIMHD codes used to define mental health and addiction service user population

The mental health and addiction service user population was defined as anyone who had a record in PRIMHD in the relevant year that met the following criteria:

Organisation type was 001 (District Health Board)

and

Activity setting was **not** PH, SM, or WR (phone and written contacts)

and

Activity type code was **not** T35 (did not attend)

Codes used to exclude ID and organic diagnoses

We removed people from the mental health and addiction service user population if they had an organic, developmental or intellectual disability diagnosis in PRIMHD and no other mental health diagnoses. Clinical codes used to define organic and intellectual disability were:

ICD-10: F00-09, F70-79, F80-89

DSM-IV / ICD-9: 290.0-290.9, 292.0-292.9, 293.0-293.9, 294.0-294.9, 310.0-310.9, 315.0-315.9, 317, 318.0-318.2, 319

Codes used to define mortality subgroups

Suicide: X60-69, X70-79, X80-84

Other external causes: V00-99, W00-99, Y00-98, X00-59, X85-X89 (note this is not used in the current version of the report)

Medical: All ICD-10 codes not listed above

Codes used to define psychosis population

We defined people as having a psychosis diagnosis if they ever had a diagnosis recorded in PRIMHD with one of the following codes:

ICD-10: F10.5, F11.5, F12.5, F13.5, F14.5, F15.5, F16.5, F17.5, F18.5, F19.5, F20, F22-25, F28-31, F32.3, F33.3

DSM-IV / ICD-9: 291.3, 291.8, 291.9, 292.1, 295, 296.0, 296.1, 296.24, 296.34, 296.4, 296.5, 296.6, 296.7, 296.8, 296.9, 298.8, 298.9

Dataset descriptions

The SAS file is attached. What follows below are descriptions of the datasets referred to in the code.

premort_nhi

This data set contains details of all clients with an activity start date in PRIMHD between 1 July 2008 and 31 December 2016. There is one row per person. To analyse a specific fiscal year, include all clients with a start date in that fiscal year or the prior two fiscal years.
The variables needed are:

- Unique patient identifier (PremMortID)
- Date of birth (dob)
- Date of death (dod)
- Current gender code (gend)
- Current domicile code (dom)
- Ethnic code 1 (ethnicg1)
- Ethnic code 2 (ethnicg2)
- Ethnic code 3 (ethnicg3)

premort_mhactivitydays

This data set contains all activities in the activity days table in PRIMHD with a start date between 1 July 2008 and 31 December 2016. There is one row per activity. To analyse a specific fiscal year, include all activities with a start date in that fiscal year or the prior two fiscal years for patients identified.

The variables needed are

- A unique patient identifier (PremMortID)
- Organisation type code (organisation_type)
- Activity type code (activity_type_code)
- Activity setting code (activity_setting_code)
- Activity start date (activity_start_date)
- Activity end date (activity_end_date)

premort_mhclassification

For all the clients identified in premort_nhi, this dataset contains each classification with a start date between 1 July 2008 and 31 Dec 2016 (all available). There is one row per diagnoses.

The code requires the following variables:

- Unique patient identifier (PremMortID)
- Clinical code (clinical_code)

premort_allmortality

This dataset includes all deaths registered between 2008 and 2016. To review mortality for a specific fiscal year, only deaths for that specific fiscal year are required.
The variables required are:

- Unique patient identifier (PremMortID)
- Death date (dod)
- Underlying cause of death (diagnosis type “D”) (icda)

dom_2_nzdep

This dataset allows you to match a resident DHB code to the domicile code of a person. There should be one row per domicile code.

The variables needed are:
Domicile code (dom)
DHB code (DHB)

dhbcodes

This table matches the DHB code to a DHB name. There is one row per DHB code.

The variables needed are:
DHB code (Three_Digit_Code)
DHB name (NAME)

Appendix 2: Tables of results

The mental health and addiction service use population for this study

Table 2 Total mental health and addiction service use population (person years) pooled over 5 years 2011-2015 shows the mental health and addiction service use population identified for this work and the distribution by age, gender and ethnicity, as well as the total number of deaths over the five-year period. The population is spread across the age groups, but young people are overrepresented with nearly half under 35. There are slightly more men than women, and nearly one quarter are Māori. A total of 4547 deaths of current or recent mental health and addiction service users occurred over the five-year period, predominantly from medical (non-external) causes

Table 2 Total mental health and addiction service use population (person years) pooled over 5 years 2011-2015

		N	%
Age	18-24	190163	23.9
	25-34	193740	24.4
	35-44	180916	22.8
	45-54	147589	18.6
	55-64	81700	10.3
Gender	Female	370381	46.6
	Male	423727	53.4
Ethnicity	Māori	197823	24.9
	Non-Māori	596285	75.1
Deaths	Total	4547	0.6
	Suicide	998	0.1
	Medical causes	2841	0.4

Absolute and relative measures of differences in premature mortality

The following tables show the absolute and relative rates of premature mortality for the mental health and addiction service population, as shown in the figures in the body of the report.

In each section the first table shows the age standardised mortality rates for the mental health and addiction service use and general population and the absolute rate differences between the groups, and the second table shows the relative differences in mortality rates between the mental health and addiction service use population and the general population. Rate ratios greater than 1 indicate that the mental health and addiction service use population had a higher rate of premature mortality than the general population.

Total mental health population results

Table 3 Age Standardised Mortality Rates (SMR) per 1,000 people per year for mental health and addiction service users and the general population, 2011-2015, by cause of death shows the age standardised mortality rates for the mental health and addiction service use and general population by cause of death, for the total populations and for gender and ethnic groups. For all causes of mortality and for all groups using mental health and addiction services, mortality rates were higher among those using services than among the general population. For both the mental health and addiction service use and the general population, premature mortality rates from medical causes were higher than rates from self-inflicted deaths. The absolute differences in mortality rates were greater for medical deaths than suicide deaths and were greater for men than women and Māori than non-Māori.

Table 3 Age Standardised Mortality Rates (SMR) per 1,000 people per year for mental health and addiction service users and the general population, 2011-2015, by cause of death

	All cause mortality			Suicide			Medical causes		
	MHA pop	General pop	Rate difference	MHA pop	General pop	Rate difference	MHA pop	General pop	Rate difference
Total population	6.43	1.71	4.72	1.28	0.16	1.12	4.22	1.33	2.89
Male	7.75	2.09	5.66	1.70	0.25	1.46	4.79	1.51	3.28
Female	4.97	1.34	3.62	0.80	0.08	0.72	3.60	1.15	2.45
Māori	8.47	3.43	5.03	0.97	0.24	0.73	6.31	2.83	3.47
Non-Māori	6.01	1.48	4.53	1.35	0.14	1.20	3.81	1.14	2.67
Māori male	10.31	4.23	6.08	1.21	0.36	0.85	7.38	3.26	4.13
Māori female	6.51	2.73	3.78	0.66	0.13	0.53	5.24	2.45	2.78
Non-Māori male	7.29	1.82	5.48	1.82	0.22	1.59	4.33	1.30	3.02
Non-Māori female	4.60	1.16	3.45	0.82	0.07	0.75	3.24	0.98	2.27

Table 4 Age Standardised Mortality Rate Ratios for the use population compared to the general population, by cause of death, gender, and ethnicityTable 4 Age Standardised Mortality Rate Ratios for the use population compared to the general population, by cause of death, gender, and ethnicity shows the relative differences in mortality rates between the mental health and addiction service use population and the general population. The rate of premature mortality from all causes was 3.76 times as high among the mental health and addiction service use population than the general population. In contrast to the absolute differences, the relative differences between the mental health and addiction service use population and the general population were greater for suicide deaths than medical deaths, and greater for non-Māori than Māori.

Table 4 Age Standardised Mortality Rate Ratios for the use population compared to the general population, by cause of death, gender, and ethnicity

	All cause mortality			Suicide			Medical causes		
	Rate ratio	95% ci lower	95% ci upper	Rate ratio	95% ci lower	95% ci upper	Rate ratio	95% ci lower	95% ci upper
Total population	3.76	3.65	3.89	7.98	7.39	8.61	3.18	3.06	3.31
Male	3.70	3.55	3.85	6.88	6.29	7.53	3.17	3.01	3.33
Female	3.70	3.51	3.90	10.25	8.87	11.84	3.14	2.95	3.34
Māori	2.47	2.30	2.64	4.06	3.43	4.82	2.23	2.05	2.42
Non-Māori	4.06	3.92	4.21	9.34	8.58	10.17	3.35	3.20	3.51
Māori male	2.44	2.23	2.67	3.33	2.71	4.08	2.27	2.03	2.53
Māori female	2.39	2.14	2.66	5.21	3.82	7.10	2.13	1.88	2.42
Non-Māori male	4.01	3.83	4.20	8.10	7.32	8.95	3.32	3.13	3.53
Non-Māori female	3.98	3.75	4.23	12.32	10.47	14.51	3.33	3.10	3.57

Users with a diagnosis of functional psychosis

The following tables explore rates of premature mortality in the group of recent mental health and addiction service users who have a recorded diagnosis (including provisional diagnoses) of psychosis.

Table 5 Age Standardised Mortality Rates (SMR) per 1,000 people per year for mental health and addiction service users with a diagnosis of functional psychosis and the general population, 2011-2015, by cause of death shows the absolute rates for this group and rate differences between this group and the general population, and Table 6 Age Standardised Mortality Rate Ratios for the mental health and addiction service use population with a diagnosis of functional psychosis compared to the general population, by cause of death, gender and ethnicityTable 6 Age Standardised Mortality Rate Ratios for the mental health and addiction service use population with a diagnosis of functional psychosis compared to the general population, by cause of death, gender and ethnicity shows the relative differences between those with a psychosis diagnosis and the general population.

Table 5 Age Standardised Mortality Rates (SMR) per 1,000 people per year for mental health and addiction service users with a diagnosis of functional psychosis and the general population, 2011-2015, by cause of death

	All cause mortality			Suicide			Medical causes		
	MHA pop	General pop	Rate difference	MHA pop	General pop	Rate difference	MHA pop	General pop	Rate difference
Total population	6.41	1.71	4.70	1.50	0.16	1.34	3.79	1.33	2.47
Male	7.96	2.09	5.86	1.92	0.25	1.67	4.53	1.51	3.02
Female	4.63	1.34	3.28	0.93	0.08	0.86	3.04	1.15	1.90
Māori	9.54	3.43	6.11	1.13	0.24	0.89	6.91	2.83	4.08
Non-Māori	6.01	1.48	4.53	1.35	0.14	1.20	3.81	1.14	2.67

Table 6 Age Standardised Mortality Rate Ratios for the mental health and addiction service use population with a diagnosis of functional psychosis compared to the general population, by cause of death, gender and ethnicity

	Rate ratio	95% ci lower	95% ci upper	Rate ratio	95% ci lower	95% ci upper	Rate ratio	95% ci lower	95% ci upper
Total population	3.87	3.60	4.16	9.39	8.00	11.02	2.97	2.71	3.25
Male	3.89	3.56	4.24	7.61	6.33	9.16	3.10	2.77	3.48
Female	3.54	3.12	4.02	12.09	8.71	16.79	2.73	2.36	3.16
Māori	2.81	2.48	3.19	4.87	3.52	6.72	2.43	2.09	2.84
Non-Māori	3.89	3.55	4.25	11.18	9.28	13.48	2.75	2.46	3.09

Premature mortality definitions: deaths prior to age 65 compared to deaths prior to age 75

The following tables explore the impact of the definition of premature mortality used (the use of deaths before age 65 as a definition of premature deaths), by comparing the results using this definition with the results using the more standard definition of deaths under age 75. For these tables the cohort was restricted to the Northern and Midland DHB regions only where data for older peoples mental health and addiction services is included in PRIMHD. The DHBs that make up the Northern and Midland DHB regions are Northland, Waitemata, Auckland, Counties Manukau, Waikato, Bay of Plenty, Lakes, Tairāwhiti and Taranaki.

Table 7 Age Standardised Mortality Rates (SMR) per 1,000 people per year for mental health and addiction service users in the Northern and Midland DHB regions , 2011-2015, by cause of death

	All cause mortality			Suicide			Medical causes		
	MHA pop	General pop	Rate difference	MHA pop	General pop	Rate difference	MHA pop	General pop	Rate difference
Death before age 75									
Total population	9.75	4.78	4.96	1.26	0.27	1.00	7.47	4.11	3.36
Male	11.67	5.84	5.82	1.70	0.42	1.28	8.61	4.82	3.79
Female	7.80	3.79	4.01	0.78	0.13	0.65	6.39	3.44	2.95
Death before age 65									
Total population	6.43	3.03	3.40	1.28	0.28	1.00	4.22	2.36	1.85
Male	7.75	3.73	4.02	1.70	0.43	1.27	4.79	2.72	2.07
Female	4.97	2.37	2.59	0.80	0.14	0.67	3.60	2.03	1.57

Table 8 Age Standardised Mortality Rate Ratios for the mental health and addiction service use population compared to the general population, comparing risk of deaths prior to 65 and death prior to 75 in the Northern and Midland DHB regions

	All cause mortality			Suicide			Medical causes		
	Rate ratio	95% ci lower	95% ci upper	Rate ratio	95% ci lower	95% ci upper	Rate ratio	95% ci lower	95% ci upper
Death before age 75									
Total population	2.04	2.02	2.06	4.72	4.51	4.93	1.82	1.80	1.84
Male	2.00	1.97	2.02	4.08	3.88	4.29	1.78	1.76	1.81
Female	2.06	2.03	2.09	6.08	5.56	6.63	1.86	1.83	1.89
Death before age 65									
Total population	2.12	2.09	2.15	4.59	4.39	4.80	1.78	1.76	1.81
Male	2.08	2.04	2.11	3.95	3.75	4.16	1.76	1.73	1.80
Female	2.09	2.05	2.14	5.91	5.40	6.46	1.77	1.73	1.81

Rates and rate ratios of premature mortality by DHB

Table 9 Age standardised all cause premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services and general population by District Health Board (DHB), 2011-2015. and Table 10 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by District Health Board (DHB), 2011-2015. , with 95% confidence intervals. show the absolute rates and rate differences, and the rate ratios for each DHB separately. The standardised rate of premature mortality among mental health and addiction service users varies between 5.04 deaths per 1000 people per year on the West Coast and 7.95 deaths per 1000 people per year in Lakes DHB. In contrast, there is more variability in the standardised mortality rates between DHBs for the general population, with the rate in Tairāwhiti of 2.5 premature deaths per 1000 people per year being nearly double that of Waitemata DHB with 1.29 premature deaths per 1000 people per year. The large variation in rate ratios by DHB (Table 10 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by District Health Board (DHB), 2011-2015. , with 95% confidence intervals.) is therefore driven by the difference in general population mortality rates more than differences in user population rates.

Table 9 Age standardised all cause premature mortality rates (SMR) per 1,000 people per year, population using mental health and addiction services and general population by District Health Board (DHB), 2011-2015.

	MHA pop	General pop	Rate difference
Auckland	6.53	1.33	5.19
Bay of Plenty	6.22	1.93	4.29
Canterbury	6.90	1.61	5.29
Capital and Coast	7.50	1.33	6.17
Counties Manukau	6.85	1.85	4.99
Hawke's Bay	6.70	1.96	4.74
Hutt	7.16	1.70	5.46
Lakes	7.95	2.33	5.62
Midcentral	7.09	1.98	5.12
Nelson Marlborough	5.14	1.44	3.70
Northland	5.97	2.28	3.69
South Canterbury	7.13	1.78	5.35
Southern	5.97	1.64	4.33
Tairāwhiti	6.78	2.50	4.28
Taranaki	6.17	1.82	4.35
Waikato	6.67	1.86	4.81
Wairarapa	7.08	1.82	5.26
Waitemata	5.39	1.29	4.11
West Coast	5.04	2.25	2.80
Whanganui	6.72	2.29	4.43

Table 10 Age standardised all cause premature mortality rate ratios (RR), mental health and addiction service use compared to general population, by District Health Board (DHB), 2011-2015. , with 95% confidence intervals.

	Rate ratio	95% CI lower	95% CI upper
Auckland	4.89	4.42	5.41
Bay of Plenty	3.22	2.82	3.69
Canterbury	4.28	3.86	4.74
Capital and Coast	5.65	4.93	6.48
Counties Manukau	3.70	3.35	4.08
Hawke's Bay	3.41	2.92	3.98
Hutt	4.21	3.57	4.95
Lakes	3.41	2.88	4.05
Midcentral	3.59	3.07	4.19
Nelson Marlborough	3.57	2.99	4.26
Northland	2.61	2.26	3.02
South Canterbury	4.01	3.09	5.20
Southern	3.64	3.22	4.11
Tairāwhiti	2.72	2.07	3.55
Taranaki	3.39	2.79	4.12
Waikato	3.60	3.22	4.02
Wairarapa	3.89	2.81	5.38
Waitemata	4.20	3.78	4.66
West Coast	2.24	1.61	3.14
Whanganui	2.93	2.33	3.69

Appendix 3: Service quality indicators for mental health services of the physical health of people using services: a brief review of international practice

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September 2019

This review seeks to understand the international context for using physical health indicators in assessing quality. It provides a brief overview of major published reviews of quality indicators, indicating any physical health indicators included. It then reviews the approach other jurisdictions similar to New Zealand have taken to including physical health indicators as a part of quality improvement programmes.

Background

The physical health of people using mental health services is an important area – highlighted by the recent Lancet Psychiatry Commission. Premature mortality among this group is well documented. Performance indicators form an important part of health service quality improvement frameworks and provide opportunities for identifying ways to improve service outcomes. Many health systems internationally now include performance indicators for mental health services, but few of these include indicators which relate to the physical health of those using services. Health service quality indicators can focus on structure, process or outcomes of services. In mental health, most indicators focus on process aspects, and far fewer on outcomes.

The Organization for Economic and Community Development's Health Care Quality Indicators Project (OECD– HCQI) was one of the first efforts to identify measures for international benchmarking of quality of mental health care (Hermann, 2006). An international expert panel used consensus measures to assess potential measures on importance, scientific soundness, and feasibility, while also taking into account the need to capture the important elements of diverse mental health systems. From 134 candidate measures which had already been implemented in OECD member countries using administrative data, a set of 12 measures with moderate to high scores on the desired attributes were identified using a consensus process. Of these twelve measures, 11 related to process (across the domains of treatment, continuity and coordination). Only one related to outcomes, and this was mortality for persons with severe psychiatric disorders (based on a Canadian measure (McEwan, 2001)), measured as Standardised Mortality Rate for persons with specified severe psychiatric disorders using linked health care and mortality data. The potential for linkage-based measures to be extended to the educational or criminal-justice outcomes of mental health care is also discussed.

The International Initiative for Mental Health Leadership (IIMHL) has published several reviews of measures of mental health service quality. A 2013 review of mental health care quality indicators from IIMHL (Fisher, 2013) reviewed 29 programmes from 11 countries and 2 cross national quality improvement programmes, incorporating a total of 656 measures of care quality. Seventeen domains, with 80 subdomains, were independently identified and the measures categorised within these domains. The two domains relevant to physical health are general medical care and outcome assessment (which includes mortality). Within general medical care, 3 indicators of preventive care and screening were identified, no indicators of care for chronic conditions, and 6 "other" indicators

(not specified). Under outcome assessment, 17 indicators of mortality were identified (which may include indicators of suicide mortality only) and no indicators of general health status. Phase two of the IIMHL process involved collapsing the identified indicators into 10 domains and 36 measurement concepts which were transferable across jurisdictions, and a Delphi process was used to rate measurement concepts on validity and importance (Parameswaran, 2015). Using this process, death rates were rated as one of the most important and valid measures for assessing mental health service quality (rates 4th highest on validity and 5th on importance).

More recently, a 2018 forum paper in World Psychiatry (Kilbourne, 2018) on measuring and improving quality in mental health care does not have a specific focus on physical health, although it notes there is evidence for process factors in mental health and addictions services leading to reduced mortality. This review highlights the importance of leveraging existing electronic data, assessing structure, process and outcome measures, and regular monitoring of outcomes.

The American Psychiatric Association (APA) has compiled a database of available Mental Health Performance Measures which includes a number of physical health measures relating to the process of offering care. There are no measures of physical health outcomes (including mortality). The process measures include:

- Assistance with smoking and tobacco use cessation
- Preventive screening and counselling on weight, healthy diet and exercise
- Screening for unhealthy alcohol use
- Heart Sound Examination for Depressed Inpatients
- Cardiovascular monitoring for people with cardiovascular disease and schizophrenia (SMC)
- Cardiovascular health screening for people with schizophrenia or bipolar disorder who are prescribed antipsychotic medications
- Mental health: the percentage of patients aged 40 years and over with schizophrenia, bipolar affective disorder and other psychoses who have a record of total cholesterol:HDL ratio in the preceding 15 months
- Mental health: the percentage of patients with schizophrenia, bipolar affective disorder and other psychoses who have a record of blood pressure in the preceding 15 months
- Mental health: the percentage of patients aged 40 years and over with schizophrenia, bipolar affective disorder and other psychoses who have a record of blood glucose or HbA1c in the preceding 15 months
- Diabetes screening for people with schizophrenia or bipolar disorder who are prescribed antipsychotic medications (SSD)

More information can be found at: https://www.psychiatry.org/psychiatrists/practice/quality-improvement/mental-health-performance-measures

Using mortality as a measure of mental health service outcomes, either focusing specifically on suicide mortality, or looking at all cause mortality across the population using mental health and addiction services, has been identified as a potential area for assessing the effectiveness of mental health services. Other measures of physical health and physical health care have also been identified by IIMHL and the APA which may be adaptable to the New Zealand context.

International models – are these measures of physical health being used in practice?

Many countries and states have programmes for assessing and improving the quality of mental health care. What follows is a brief overview of the use of physical health measures in England, Scotland, Canada, and Australia.

England

Measurement of the excess *under 75 mortality rate in adults with serious mental illness* is included in the NHS Outcomes Framework (indicator 1.5i). This sits under Domain 1 of the Outcomes framework: Preventing people from dying prematurely.

The measure is defined as: "The ratio (expressed as a percentage) of the observed number of deaths in adults in contact with secondary mental health services to the expected number of deaths in that population based on age and gender-specific mortality rates in the general population in England."

"The mental health mortality rate is directly standardised by age and sex to England's population. England's populations used are the ONS mid-year population estimates. For all financial years the mid-year population estimates based on the 2011 Census are used. The mental health population is defined as anyone who has been in contact with the secondary mental health services in the current financial year or in either of the two previous financial years who is alive at the beginning of the current financial year."

Adults aged 18-74 (inclusive) in the indicator year are included.

The results are presented broken down by gender, age, region, and cause of death (cancer, cardiovascular disease, respiratory disease and liver disease).

More information can be found at: https://files.digital.nhs.uk/69/92C9C6/NHSOF_Domain_1_S.pdf

https://files.digital.nhs.uk/AE/D1091E/NHSOF_1.5.i_I00665_Q.pdf

Scotland

The 2018 Scottish Mental Health Quality Indicators include several measures of physical health among people using mental health services including:

- E3: BMI measured
- Eq1: Standardised (age-sex standardised) mortality rate
- Eq3: annual health checks

"The mental health population is defined as any inpatient between ages 18 and 74 who has been discharged in the current financial year or in either of the 2 previous financial years who is alive at the beginning of the current financial year."

More information is available here: https://www.gov.scot/publications/mental-health-quality-indicators-background-secondary-definitions/pages/8/

Presentation of results: https://www.isdscotland.org/Health-Topics/Quality-Indicators/Mental-Health-Quality-Indicator-Profile/Publications/2019-02-05/Progress/

Canada

The set of indicators recently published by the Canadian Mental Health Commission in 2015 includes suicide mortality (but not all cause or natural cause mortality). It does however include: *unmet need*

for general health care among people with common mental health conditions (in Stigma section) – data from community health survey (self-reported "I needed care but I didn't get it").

More information can be found at:

https://www.mentalhealthcommission.ca/English/resources/mhcc-reports/mental-health-indicators-canada

It is notable that a previous Canadian resource for mental health services monitoring did include mortality as a measure of service effectiveness (McEwan 2001).

http://publications.gc.ca/collections/collection_2015/sc-hc/H39-566-2001-eng.pdf

Australia

A number of different sets of performance indicators that appear to be in use in Australia were identified.

The Australian Commission on Safety and Quality in Health Care have produced national standards for mental health services (published in 2018) which includes a 'comprehensive care' standard which explicitly includes assessment of and care for physical health needs. The actions are designed to align with elements of the Equally Well Consensus Statement produces by the Australian National Mental health Commission. Consideration of physical health conditions is explicitly built into standards for screening, clinical assessment, and development and delivery of comprehensive care plans.

More information is available at: https://www.safetyandquality.gov.au/sites/default/files/2019-05/nsqhs-standards-user-guide-for-health-services-providing-care-for-people-with-mental-health-issues_0.pdf

Other identified frameworks include the 2013 document Key Performance Indicators for Public Mental health Services published by the Australian Health Ministers which does not include any specific physical health measures.

https://www.aihw.gov.au/getmedia/f9bb1a07-a43b-458a-9b73-64ef19d8aedd/Key-Performance-Indicators-for-Australian-Public-Mental-Health-Services-Third-Edition.pdf.aspx

The Western Australia Mental Health Commission Mental Health Outcomes Indicators report includes health, wellbeing and recovery outcome area which includes physical health, but the indicators specified focus on process. The indicators are:

- Individuals, families and carers are supported to explore and address their physical health, social, emotional and mental wellbeing needs
- Individuals, families and carers are supported to have collaborative, equal partnerships with their GPs and other health/mental health practitioners
- Individuals, families and carers experience increased hope and optimism about their recovery
- Relevant cultural understanding shapes the provision of supports and services to help Aboriginal, LGBTI6 and CALD7 people's health wellbeing and recovery

https://www.mhc.wa.gov.au/media/1662/mh-outcomes-indicators-and-examples-of-evidence-final.pdf

Future directions for New Zealand

It will be feasible to develop an indicator of premature mortality for those in contact with mental health services, based on the England and Scotland measures (and this is further explored in the main report).

Consideration could also be given to process indicators of physical health care including screening, cardiovascular risk assessment, and blood glucose measurement. Currently this data is not collected by secondary services. Consideration could be given to collecting this data via the PRIMHD data set. Alternatively, this monitoring could occur in primary care.

Future sources of data should also be considered. For example, the InterRAI-MH includes measures of physical health which could be used in developing indicators if it were to be more widely introduced. InterRAI-MH is already being used to evaluate inpatient mental health service quality in Canada (Perlman, 2013).

Potential to link existing (and future) mental health service process measures to outcomes including mortality to assess the relationship between these measures and outcomes (eg does guideline compliant care lead to better outcomes), and the effectiveness of monitoring of these process measures (does monitoring improve compliance and is this associated with improving outcomes over time?) (Kilbourne, 2018).

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