Health Needs Assessment - Mental Health and Addiction Service Utilisation

Waikato District Health Board

March 2017

National Institute of Demographic and Economic Analysis
Te Rūnanga Tātari Tatauranga
THE UNIVERSITY OF WAIKATO

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Health Needs Assessment Part 1- Mental Health and Addiction Service Utilisation

Commissioned by the Waikato District Health Board

March 2017

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Acronyms and Abbreviations

AoD	Alcohol and Drugs
CAU	Census Area Unit
DALY	Disability Adjusted Life Year
DHB	District Health Board
ERP	Estimated resident population
HNA	Health Needs Assessment
GP	General Practice
LGBT	Lesbian Gay Bisexual Transgender
MH	Mental Health
MH&A	Mental Health and Addictions
MoH	Ministry of Health
NEET	Not in Employment, Education or Training
NGO	Non Government Organisation
NHI	National Health Index
NIDEA	National Institute of Demographic and Economic Analysis
NMDS	National Minimum Dataset
NZDep	New Zealand Deprivation Index
NZHIS	New Zealand Health Information Service
PRIMHD	Programme for the Integration of Mental Health Data
TA or TLA	Territorial Authority or Territorial Local Authority
WHO	World Health Organisation

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1 Introduction

1.1 Background

In 2016/2017 the Waikato District Health Board (DHB) is undertaking a significant programme of work to review the Mental Health and Addiction (MH&A) Service, and to consider new models of care within the region. Aims of this programme of work include: putting people in the centre of the Waikato DHB MH&A Service; improving outcomes for service users and family/whānau; working with the MH&A sector; and ensuring cross-sector stakeholder representation and engagement.

The following four priority areas are described for this programme:

- Child & Youth Mental Health
- Adult Mental Health
- Adult Addictions
- Mental Health and Addictions for Older People.

Reviewing the models of care and the overall delivery of MH&A services in the Waikato DHB region represents a significant and timely opportunity to improve wellbeing outcomes for the Waikato DHB population. Further, this approach is an important step towards addressing government and public expectations about how services respond to people with mental health and addictions issues. The MH&A programme of work will involve the development of strategy and plans for each of the priorities populations described. In turn, these plans will focus on the coordination, support and implementation of a set of related projects and activities to deliver outcomes and benefits related to Waikato DHB's strategic imperatives.

The MH&A programme of work is governed by a Sector Steering Group, chaired by the Clinical Director: Strategy and Funding, and formed in mid 2016.

1.2 Initiation of this Health Needs Assessment

In order to inform the review of the region's MH&A Service, in February 2016 the Disability Support Advisory Committee of the Waikato DHB approved the development of a comprehensive MH&A Health Needs Assessment (HNA). It was recognised that a specific MH&A needs assessment, focused on the Waikato DHB region, would support: informed planning decisions and

prioritisation; assist the reform of the models of care; and allow the strategic consideration of service development to meet future changes in the DHB population.

In August, 2016, the chair of the MH&A Sector Steering Group, supported by other Steering Group members and in association with direction from the DHB Board, defined the scope of the proposed needs assessment. Further, the specific scope of this particular document – to consider service utilisation patterns – was defined. Data was gathered for these analyses between September and December, 2016.

1.3 Strategic alignment

1.3.1 Waikato DHB priorities

The Waikato DHB undertook a strategy refresh process in 2016, describing the DHB's vision for healthy people, excellent care; and a mission to 'enable us all to manage our health and well-being, and to provide excellent care through smarter, innovative delivery' (Waikato DHB, 2016). This strategy also recognised the need to provide health and care services quickly, expertly and in a caring and fair way, and the described priorities are provided in Table 1.1.

Table 1.1: Waikato DHB priorities (2016)

Strategic Imperative	Priority
Health equity for high needs populations - Oranga	• Radical improvement in Māori health outcomes by eliminating health inequities for Māori • Eliminate health inequities for people in rural communities • Remove barriers for people experiencing disabilities • Enable a workforce to deliver culturally appropriate services
Safe, quality health services for all - Haumaru	• Deliver high quality, timely safe care based on a culture of accountability, responsibility, continuous improvement, and innovation • Prioritise fit-for-purpose care environments • Early intervention for services in need • Ensure appropriate services are delivered to meet the needs of our populations at all stages of their lives
People centred services - Manaaki	• Utilise the expertise of communities, providers, agencies, and specialists in the design of health and care services • Provide care and services that are respectful and responsive to individual and whānau needs and values • Enable a culture of professional cooperation to deliver services • Promote health services and information to our diverse population to increase health literacy
Effective and efficient care and services - Ratonga a iwi	• Live within our means • Achieve and maintain a sustainable workforce • Redesign services to be effective and efficient without compromising the care delivered • Enable a culture of innovation to achieve excellence in health and care services

Strategic Imperative	Priority
A centre of excellence in learning, training, research and innovation – Pae taumata	• Build close and enduring relationships with local, national, and international education providers • Attract doctors, nurses, and allied health staff to the Waikato through high quality training and research • Cultivate a culture of innovation, research, learning, and training across the organisation • Foster a research environment that is responsive to the needs of our population
Productive partnerships - Whanaketanga	• Incorporate te Tiriti o Waitangi in everything we do • Authentic collaboration with partner agencies and communities • Focus on effective community interventions using community development and prevention strategies • Work towards integration between health and social care services

Waikato DHB documentation also describes the need to understand the population health profile of our region in order to focus on where we can make the greatest gains in terms of our strategic outcomes, as well as for planning and prioritisation of programmes at an operational level.

This documentation, and the related Health Needs Assessment process (as described in section 1.4), aligns to the current strategic imperatives, priorities, and operational effort of the Waikato DHB.

1.3.2 National priorities

Mental health is a priority health area for the New Zealand Government. The most recent assessment of health loss through the New Zealand Burden of Diseases determined that mental health and dementia are growing challenges, and neuropsychiatric disorders are now the leading cause of health loss, accounting for 19 per cent of total Disability Adjusted Life Years (DALYs; Ministry of Health, 2016b). Dementia has risen to become the fifth-ranked cause of health loss in females and thirteenth in males. Providing better care for people living with mental illness, addiction and dementia – including care for their physical health – is recognised as a growing challenge for the health and social sectors (Ministry of Health, 2016b). Globally, mental illness accounts for 15 per cent of the total burden of disease in the developed world, and depression is predicted to become the second leading cause of disability in the world by 2020 (World Health Organisation, 2001).

Responding to mental health and addiction needs in our population has been the focus of a number of government policies and programmes. Most recent strategies include: 'Rising to the Challenge: The Mental Health and Addiction Service Development Plan 2012–2017' (Ministry of Health, 2012); 'Blueprint II: Improving mental health and wellbeing for all New Zealanders: How things need to be' (Mental Health Commission 2012a); and 'Blueprint II: Improving mental health

and wellbeing for all New Zealanders: Making change happen' (Mental Health Commission 2012b).

While there remains attention on improving mental health and addiction services, there is also understanding that there remains variability in service delivery around the country, and that important inequities exist – particularly for Māori. Compared to non-Māori, Māori are more likely to experience some mental health and addiction issues (Oakley Browne et al 2006), and are more likely to experience inpatient admission, seclusion and compulsory treatment (Ministry of Health 2012a).

In 2002, the Ministry of Health's Te Puawaitanga Māori Mental Health National Strategic Framework aimed to provide support for DHBs to plan and deliver services that are appropriate for tangata whai ora (people who are the subject of care, assessment and treatment in mental health; Ministry of Health 2000), and their whānau. Mental health concerns are recognised by the New Zealand Ministry of Health (and other sectors) as a high priority within Māori wellbeing, and there are known important management and support for tangata whai ora that take into account a Māori cultural context (Ministry of Health, 2002).

Other areas of focus within the national documentation include:

- access to effective primary care for MH&A need
- integration between primary and specialist (secondary and tertiary) services
- quality of MH&A service delivery
- support for those with co-existing mental health and addiction problems, and those with co-existing mental health issues and chronic illness/disabilities
- youth suicide
- variation in access to services especially for children and youth
- waiting times for access to mental health and addiction services
- increased system performance and effective use of resources
- integration between DHB provider arm services and those provided by Non-Government Organisations (NGOs).

These directions are underpinned by a continued emphasis on recovery and wellness, with an additional focus on building resilience to effectively deal with future adversity, and on building partnerships across the whole of government and across health, education and social sectors (MH&A strategy from the New Zealand Ministry of Health). Attention to mental health need therefore also requires an understanding of broader Government priorities such as:

- the Prime Minister's Youth Mental Health Project

- the Drivers of Crime work programme, with a focus on conduct disorders and alcohol and other drugs
- implementation of the Suicide Prevention Action Plan
- Vulnerable Children and the work of Oranga Tamariki
- Whānau Ora initiatives, and
- Welfare Reforms.

This document is focused on the data regarding mental health service utilisation in the Waikato DHB, which relates to national strategic priorities such as the use of population-based evidence, and the consideration of access to services and equity of care. Authors of this report are mindful that the findings presented here need to be considered within the broader context of the Health Needs Assessment approach, which takes into account quality of care and the relationships across sectors, as well as the national context.

1.4 The Health Needs Assessment approach

A health needs assessment (HNA) is an analysis of a population's demand and need for health services, with the following aims in order to provide for improved health and equity:

1. Understanding the needs of the population.
2. Understanding the demands of the system, where there are specific gaps, and how resources need to be allocated or reallocated according to needs.
3. Understanding the experience of care in order to improve quality and safety.

Health Needs Assessments typically involve epidemiological, qualitative, and comparative methods to describe health needs of a population, where health 'need' is that which can benefit from health care or from wider social and environmental changes (Wright, Williams, & Wilkinson, 1998, Coster, 2000). Distinguishing between individual needs and wider population-based need is important in the planning and provision of health services. A systematic approach to assessing how health services are used can support better use of resources and identify inequities (Wright, Williams, & Wilkinson, 1998; Stevens & Gillam, 1998). In the New Zealand context, HNAs have been used to help create a picture of the health status of District Health Board (DHB) populations at a given time, and to support service development. While described as a MH&A 'Health Needs Assessment' this document focuses on those aspects of MH&A need within the Waikato DHB that required service utilisation in 2015. Using this snapshot of service utilisation, accompanied by understanding of population demographics and the broad determinants of mental health, this document presents the best evidence available regarding the current demands on the mental health system in the Waikato DHB region.

1.5 Purpose, objectives and scope of this document

This report is entitled 'Health Needs Assessment - Mental Health and Addiction Service Utilisation'. The overall aim agreed for this analysis was to detail the current service delivery within mental health and addictions, and to forecast potential future service requirements for the DHB population through to the year 2033.

This objectives of this report are to:

- describe the demographic characteristics of the current Waikato DHB population, and the projected DHB population to 2023 and 2033. These projections are useful for further consideration of service delivery by the Waikato DHB and will be used in future HNA, including those focused on other areas of health need and/or specific populations;
- consider the broader determinants of mental wellbeing within the Waikato DHB population, with consideration of health 'need' and the intersection with social, economic and education sectors;
- provide information on secondary and tertiary MH&A service utilisation for both the DHB provider arm and the NGO sector across the Waikato DHB and to provide this information by age, ethnicity and locality wherever relevant/possible;
- describe the potential future mental health and addictions service needs (within the secondary and tertiary services) according to population projections;
- provide information on primary MH&A care across the Waikato DHB and to provide this information by age, ethnicity and locality wherever relevant/possible; and
- consider specifically the issues of suicide and intentional self-harm within the Waikato DHB region.

1.5.1 Structure of this document

The findings of this HNA are summarised in the key points at the beginning of each chapter. The focus areas of this report are as follows:

- Chapter 2 describes the data accessed and analysed for this report, and the potential limitations of its use
- Chapter 3 describes the current resident population of the Waikato DHB region, as determined in the 2015 Census of the New Zealand population. This chapter also describes the projected changes in the population through to 2023 and 2033, with a particular emphasis on changes by age, sex, ethnicity and location of residence
- Chapter 4 focuses on the determinants of mental health and wellbeing for the Waikato DHB population, particularly those related to the social, economic and education sectors

- Chapter 5 describes utilization of secondary MH&A services in the Waikato DHB region, according to analyses of the Programme for the Integration of Mental Health Data (PRIMHD) database. This chapter considers utilization rates for MH&A services in 2015 by particular activity types, and looks at utilization by age, sex, ethnicity and geographic location. Further, projections of utilization rates are determined to 2023 and 2033
- Chapter 6 describes utilization of primary MH&A care in the Waikato DHB in 2015, utilizing pharmaceutical data
- Chapter 7 considers suicide and self-harm hospitalization.

It is anticipated that the information in the report will provide robust, high quality evidence to inform Waikato DHB's work into the model of care for MH&A services, and also to consider implications of future demographic changes with respect to responding appropriately to population needs and emerging issues.

1.6 Important considerations regarding scope and approach

The key components of an assessment of health needs include understanding of population demographics, socioeconomic status, health status, incidence and prevalence, services provided and views of community and stakeholders. This document represents components of a comprehensive MH&A Health Needs Assessment for the Waikato DHB. The first component (Chapters 3 and 4) assesses the Waikato DHB population - current and projected, and broader determinants of mental health amongst the Waikato DHB population. Secondly, Chapters 5 and 6 focus on secondary care service utilisation, and consider potential utilisation rates for MH&A services projected to 2023 and 2033. The third component of the HNA presented here (Chapters 7 and 8) reviews the best available data regarding primary care utilisation for MH&A in the Waikato DHB, as well as information on suicide and self harm.

A further, and important, part of this MH&A HNA considers the views of MH&A stakeholders – particularly service providers. This component is not included in this document. At the time of writing, semi-structured interviews with key stakeholders to assess opportunities and challenges to the existing model of care had begun, and a draft questionnaire for GPs was in development. Interviews and focus groups with tangata whai ora themselves are to be conducted in 2017, depending on the broader work programme.

The following limitations of this document are important considerations to be taken into account:

- the data used are limited to routinely collected administrative data, provided by MH&A secondary care providers as well as pharmaceutical dispensation claims. Utilisation patterns and rates are provided. These cannot be interpreted as descriptions of population need because of (but not restricted to) the following issues:
    - unmet need will not be represented in these analyses – particularly those tangata whai ora that cannot/do not access primary care, pharmaceuticals, or secondary care
    - in addition to under-delivery, it is not possible to assess over-delivery
- the scope of this document excludes qualitative research, evaluations or other measures. The descriptive data presents an epidemiological snapshot but does not (and cannot) answer questions relating to 'what is missing', 'why does this occur' or 'what is the best way of addressing this pattern'. Therefore, ongoing discussion of the analyses presented here will generate further questions and knowledge gaps that may require additional research and/or analyses
- the quality of analysis of the routinely collected data (such as PRIMHD and pharmaceutical information) used in this document is dependent on the accuracy and consistency of these datasets, including the quality and completeness of data entry across service providers and the accuracy of key variables such as age and ethnicity. Further detailed limitations of the specific data sets used are described in each relevant chapter.
- up to date prevalence data of MH&A issues is not available, and therefore gaps between determined 'need' and delivery of care cannot be assessed. The most comprehensive review of MH&A population prevalence, Te Rau Hinengaro: the New Zealand Mental Health Survey was conducted in 2009 and collected information from adults aged 16 years and over. There is no recent population prevalence information available, and there is also no information available on child and youth MH&A prevalence from this source. Additional prevalence data has been sought in the literature where relevant.
- data analysed predominantly focuses on service utilisation only for the year 2015, and therefore a subject to particular issues that may have occurred in that calendar year as well as particular dataset practices at that time
- the analyses presented here are provided in order to assist the Waikato DHB and the MH&A Sector Steering Group. The format and content of the report is designed for these stakeholders but may need adapting to make it more digestible for a wider range of users.
- where possible, Māori/non-Māori analyses are conducted to consider the equity gap in service utilisation, however the approach taken in this document does not take an indigenous knowledge or matauranga Māori framework – outside of the scope for this particular project.

2 Data sources

The analysis and findings presented in this report are based on the analysis of data extracted from various sources, as described in this chapter.

2.1 Population estimates and projections

The following census and related population data were sourced from the NZ.Stat online portal of Statistics New Zealand and from the Ministry of Health (MoH):

1. *Estimated resident population* (ERP) numbers for 2015 (based on the 2013 Census) for the Waikato DHB area disaggregated by Territorial Authority (TA) area, sex (male, female, total), ethnic group (Māori and non-Māori) and age (0-14, 15-24, 25-44, 45-64, 65-74, 75+ years). Population estimates give the best available measure of the size and composition of the population usually living in an area. Estimates are derived from the latest census data, adjusted for net census undercount, residents temporarily overseas on census night, and births, deaths, and migration since the census (Statistics New Zealand, 2012).
2. *Projected population* numbers in 2023 and 2033 (2013 Census based, 2016 update) disaggregated by Territorial Authority (TA) area, sex (male, female, total), ethnic group (Māori and non-Māori) and age (0-14, 15-24, 25-44, 45-64, 65-74 and 75+ years).
   It should be noted that population projections are not forecasts, but are estimations of what the situation will be if the assumptions on which they are based prevail. Three alternative series (designated low, medium, and high) are produced by Statistics New Zealand for each area unit using different fertility, mortality, and migration assumptions:
   - Low series: Assuming low fertility, high mortality and low net migration
   - Medium Series: Assuming medium fertility, medium mortality and medium net migration
   - High Series: Assuming high fertility, low mortality and high net migration

   It is conventional to see the medium series projections as the 'most likely' scenario. The low and high series provide an indication of the likely lower and upper parameters of change, and allow users to assess the impact on population size and structure resulting from more conservative and optimistic demographic scenarios, respectively. Projections resulting from the medium series scenario have been presented in this report.

2.2 Determinants of mental wellbeing data

The following data were sourced from Statistics New Zealand (Infoshare and NZ.Stat portals):

- Youth NEET by Regional Council by Age (Annual-Dec)
- Labour Force Status by Ethnic Group by Regional Council (Annual-Dec) (Table Ref HLF191AA)
- Labour Force Status by Total Response Ethnic Group and Age Group (Annual-Dec) (Table Ref HLF184AA)
- General Social Survey: Overall Life Satisfaction by Housing Satisfaction and Housing Problems, by region (2012)
- General Social Survey: Overall Life Satisfaction by Income Adequacy, by region (2008)
- General Social Survey: Overall Life Satisfaction by Social Isolation, by region (2012)
- General Social Survey: Overall Life Satisfaction by Self Rated Health, by region (2012)
- Total family income (grouped) by family type, for families in occupied private dwellings, 2006 and 2013 Censuses (RC, TA, AU)
- Total personal income (grouped) by age group and sex, for the census usually resident population count aged 15 years and over, 2006 and 2013 Censuses (RC, TA, AU)
- Tenure holder and ethnic group (grouped total responses) by sex, for the census usually resident population count aged 15 years and over, 2001, 2006 and 2013 Censuses (RC, TA, AU)
- Tenure of household, for households in occupied private dwellings, 2001, 2006 and 2013 Censuses (RC, TA, AU)
- Tenure holder by age group and sex, for the census usually resident population count aged 15 years and over, 2001, 2006 and 2013 Censuses (RC, TA, AU)
- Highest qualification and ethnic group (grouped total responses) by sex, for the census usually resident population count aged 15 years and over, 2006 and 2013 Censuses (RC, TA, AU)
- Highest secondary school qualification by age group and sex, for the census usually resident population count aged 15 years and over, 2013 Census (RC, TA, AU).

The date of the data collected for the consideration of the determinants of mental wellbeing (particularly using the Census 2013) differs slightly from the 2015 utilisation of services focus in this report. In addition, for some data sources the geographical boundary of the data collected does not match exactly with that of the Waikato DHB region.

Further details of the survey and Census data extracted and analysed in this report is provided in Chapter 4.

2.3 Secondary mental health and addiction services data

The PRIMHD (Programme for the Integration of Mental Health Data) database of the Ministry of Health collects and stores all recorded information on the secondary care Mental Health and Drugs and Alcohol services (mental health/AoD) funded by the government (National Collections & Reporting, National Health Board). The primary purpose is to integrate data on mental health service provision and outcomes into a single national collection. The PRIMHD system, which went live on 1 July 2008, combines data from two prior systems: Mental Health Information National Collection (MHINC) and Mental Health – Standard Measures of Assessment and Recovery (MH-SMART). Note that the PRIMHD data includes only publically funded mental health and addictions services (and not those funded privately/through insurance etc.).

The MoH extracted a unit record dataset for the 2015 calendar year from the PRIMHD database in September 2016 using specifications provided by NIDEA, University of Waikato. Diagnostic data was provided, coded to DSM-IV or ICD codes, with some upcoding required.
Key demographic variables utilized to consider secondary MH&A service utilization include:

1. Age

Age data has been calculated as on 30 June 2015 and grouped into broad age groupings:
0-14 years, 15-24 years, 25-44 years, 45-64 years, 65-84 years and 85+ years.

2. Ethnicity

A mutually exclusive Māori/non-Māori ethnic identification has been used in this report. This ethnic identification utilises ethnicity data prioritized to one broad ethnic identity (European, Māori, Pacific, Asian and Other) for each person (for further discussion of the prioritization ethnic identity see Ministry of Health, 2008).

3. Socioeconomic status

The area-level measure of socio-economic status used for this report is the 2013 New Zealand Index of Deprivation (NZDep2013) which combines Census data relating to income, home ownership, employment, qualifications, family structure, housing, access to transport and communications to estimate the relative socioeconomic deprivation of small geographic area (see Appendix Table 1). The NZDep2013 ordinal scale ranges from 1 to 10, where 1 represents the areas with the least socio-economic deprivation and 10 the areas with the most socio-economic deprivation. It is important to note that NZDep2013 deprivation scores apply to geographic areas rather than individual people. For the purpose of this report, NZDep quintiles are used, combining NZDep 9 & 10 as the most deprived quintile, while NZDep 1 & 2 together represent the areas of least socio-economic deprivation.

Further details of the data extracted and analysed in this report is provided in Chapter 5.

2.4 Pharmacy data

The Waikato DHB extracted the unit record data for GP prescribed medication related to mental health and addiction issues in November 2016 from the National Pharmaceutical data warehouse with the following specifications:

- Only prescriptions dispensed either by a Waikato DHB funded pharmacy or to a patient resident in the Waikato DHB area over the 2015 calendar year.
- Prescriptions related to the specific pharmaceuticals within the following pharmaceutical groups: antidepressant, antipsychotic, sedatives/relaxants, mood stabilizers, dementia treatment. Specific medications analysed are provided in Section 6.1, and these medications were selected following with the input of our clinical advisors.
- NHI-linked data was not available for this report, and therefore analyses were completed per calendar quarter of 2015

Refer to Chapter 6 for further details of the pharmaceutical data extracted and the methodology for these analyses in this report.

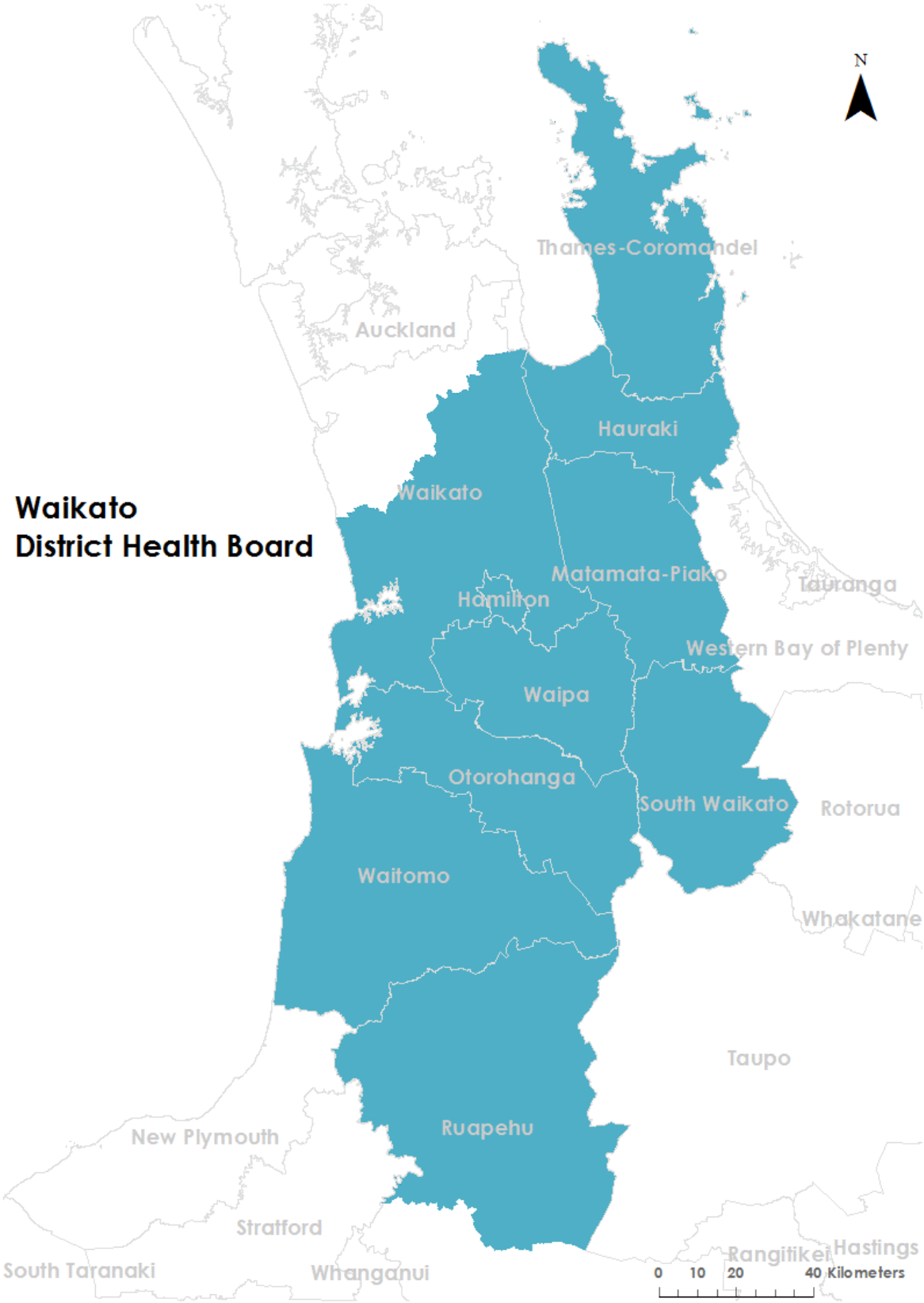
2.5 Suicide data

Provisional Waikato DHB suicide data were requested for the period 1 July 2007 to 30 June 2016 from the Coronial services of the Ministry of Justice. The dataset received included some active cases which were suspected suicides and as such were provisional pending the Coroner's official findings, and data received was tabulated and aggregated by age group and sex and ethnic group.

National and some DHB level suicide data (including standardised rates) were sourced from the Ministry of Health:

- Suicide Facts: Deaths and intentional self-harm hospitalisations 2013: accompanying tables (published November 2016)

3 Resident population: Current and projected



Key points

- The Waikato DHB population is geographically diverse, and this DHB serves an estimated population of around 390,700 usually resident (in 2015) across ten territorial authority (TA) areas. The most populated TA is Hamilton City, and the least populated TA served by Waikato DHB is Ruapehu (Waikato DHB boundaries include two thirds of the Ruapehu TA population).
- There are 49 per cent of the DHB population that are male, and 51 per cent female although this sex ratio differs across the TAs of the Waikato DHB region.
- The population aged less than 25 years in the Waikato DHB area (36 per cent) is slightly higher than that estimated for New Zealand, as is the proportion aged 65 years or older (15 per cent). Hamilton City has the youngest age profile followed by the Waikato, Waitomo and Otorohanga Districts, while Thames-Coromandel and Hauraki Districts have the oldest age structures.
- The Waikato DHB population has a greater proportion of Māori (23 per cent) compared to the national population, and the Māori population is a youthful one - more than half aged less than 25 years and 5 per cent aged 65 years or more.
- There are 3 per cent of the Waikato DHB population with ethnic identification within the Pacific ethnic group, and 8 per cent Asian. The Pacific population age structure is also youthful, while more than a third of the Asian population is aged 25-44 years.
- A greater proportion of the Waikato DHB population live in area-level socioeconomic deprivation, compared to the New Zealand population as a whole. More than half of the South Waikato (64 per cent), Ruapehu (58 per cent) and Hauraki (53 per cent) populations are living in the most deprived NZDep quintile.
- The Waikato DHB resident population is projected to experience an overall increase (under the medium series assumptions) of 22 per cent over the 18-year period from 2015 to 2033. Approximately 60 per cent of the DHB's population growth over this period occurs in Hamilton City alone, whereas the population size of Ruapehu, Waitomo and South Waikato are expected to decline.
- Over the next 18 years, the younger aged Waikato DHB population is likely to either increase only marginally or decline, while the proportion of the population aged 65+ years is expected to increase substantially. Through numerical and structural ageing, the proportion of 65+ year olds among the DHB's resident population is projected to increase from 15 per cent in 2015 to 22 per cent by 2033.
- Over the 2015-2033 period, only the Hamilton, Waikato and Waipa TA areas in the DHB are expected to experience gains in every age group. In Ruapehu, Waitomo, South Waikato and Thames Coromandel, all projected growth over the next 18 years is confined to the two oldest age groups (65-74 and 75+ years).

- There are important projected increases for the Māori, Pacific and Asian populations of the Waikato DHB to 2033. The growth expected in the Māori population contributes maximally to the DHB's estimated population increase (+36,400 residents or 43 per cent of the population increase), followed by Asian population increases (one-third of the DHB's population growth over this time period).
- By 2033, 26 per cent of the Waikato DHB population are expected to identify as Māori.
- For those identified as Māori, Pacific and Asian, the population is projected to increase in all age groups over 2015-2033. By 2033, three in five children aged 0-14 years in the Waikato DHB are likely to be either Māori, Pacific or Asian; while 22 per cent of those aged 65+ years are identified as either Māori, Pacific or Asian.

3.1 Resident population profile 2015

The Waikato DHB funds and provides healthcare services to an estimated population of around 390,700 usually resident across one of the ten territorial authority (TA) areas as shown in Figure 3.1. Seven of these ten TA areas are located completely within the Waikato DHB boundary while some parts (as defined by the census area units or CAUs) of the Waikato, Hauraki and Ruapehu Districts have services provided and/or funded by other DHBs.

Figure 3.1 Waikato DHB estimated resident population in 2015 by Territorial Authority (TA) area

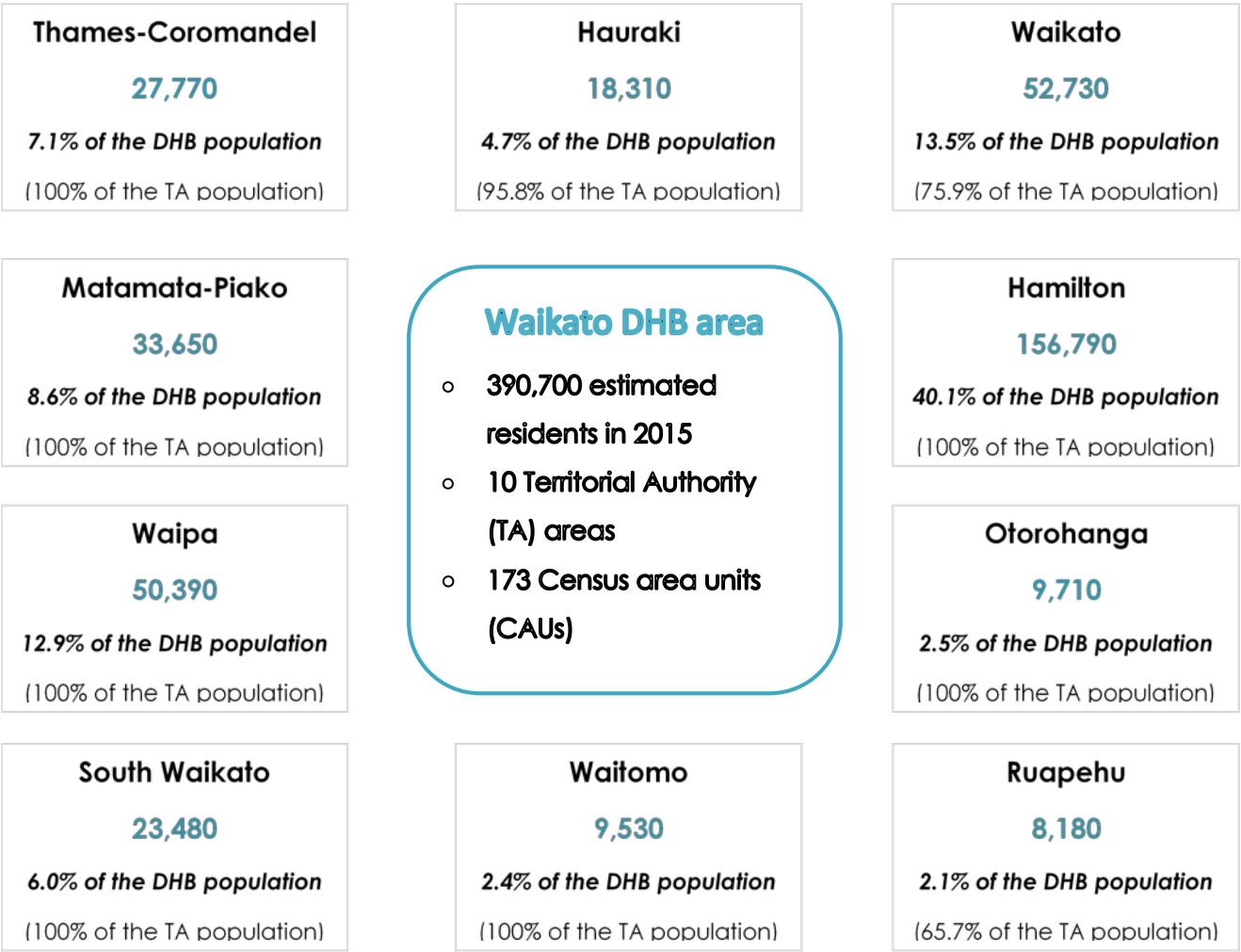
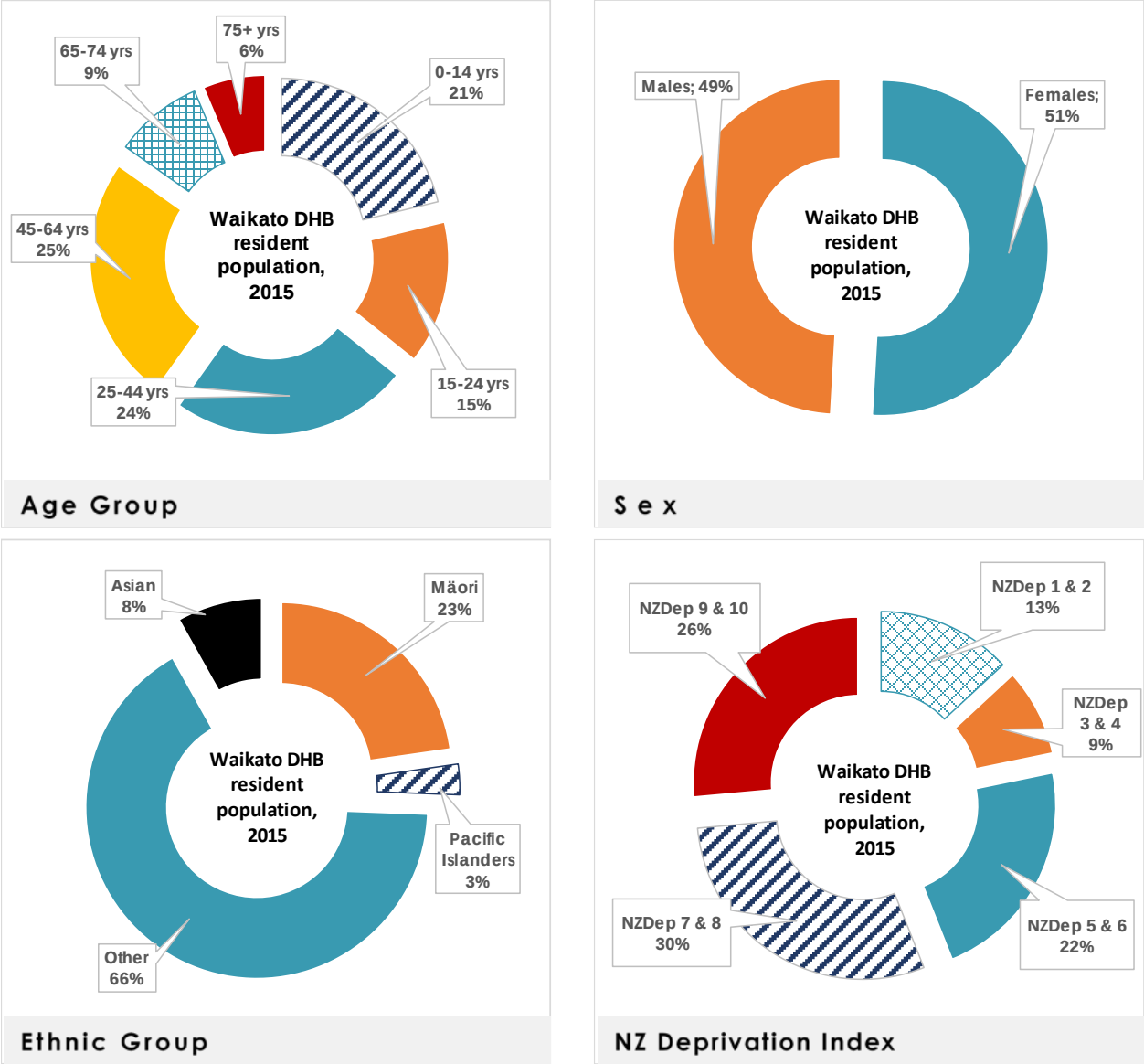


Figure 3.2 shows the demographic characteristics (age group, sex, prioritized ethnic group and NZ Deprivation Index) of the estimated population resident in the Waikato DHB area in 2015. The 2013 New Zealand Index of Deprivation (NZDep2013) used in this report is developed by Otago University and combines Census data relating to income, home ownership, employment, qualifications, family structure, housing, access to transport and communications to estimate the relative socioeconomic deprivation of an area (see Appendix Table 1). The NZDep2013 ordinal scale ranges from 1 to 10, where 1 represents the areas with the least deprived and 10 the most

deprived areas. It is important to note that NZDep2013 deprivation scores apply to areas rather than individual people. For the purpose of this report, NZDep 9 & 10 have been combined to represent areas of highest deprivation while NZDep 1 & 2 together represent areas with least socio-economic deprivation.

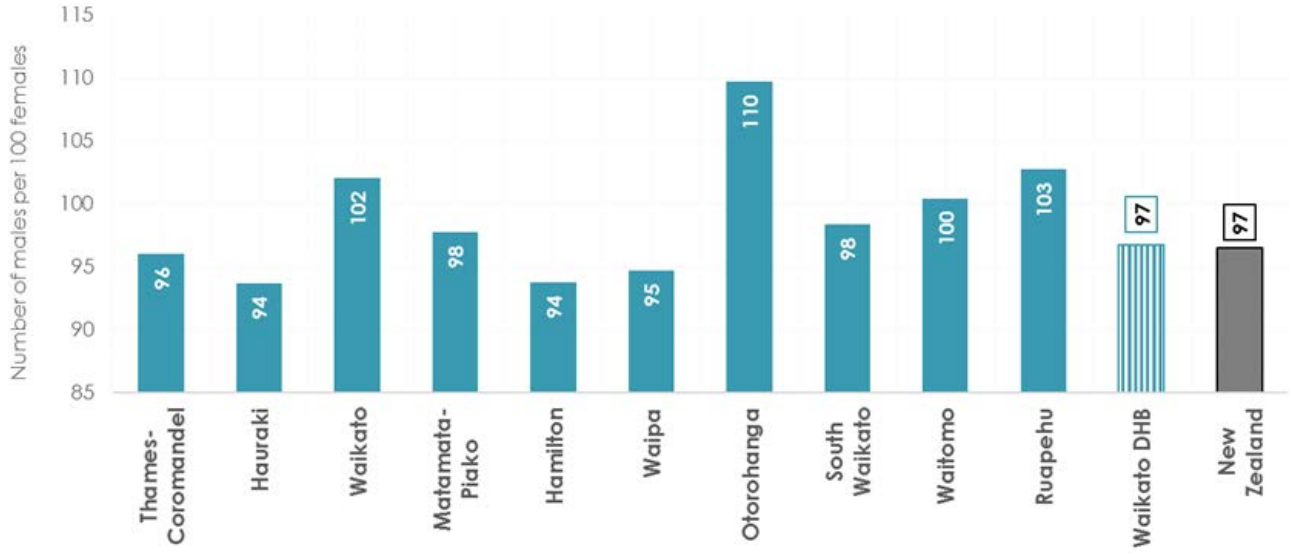
Figure 3.2 Demographic profile of the resident population of Waikato DHB area, 2015



3.1.1 Sex profile

The sex profile of the population living in the Waikato DHB area is the same as that seen nationally, with 97 men for every 100 females (across all age groups). When disaggregated by TA of residence however the pattern changes. Figure 3.3 shows the sex ratio (number of males per 100 females) in each of TA areas. Otorohanga has a particularly high sex ratio with 110 males for every 100 females resident in the area as estimated for 2015, while there are 94 males for every 100 females in Hamilton and Hauraki areas.

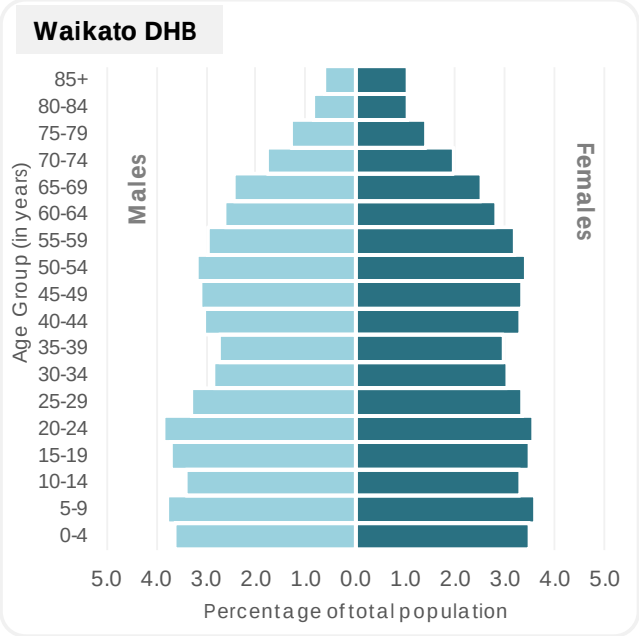
Figure 3.3 Sex ratio (number of males per 100 females) in each of the TA areas within the Waikato DHB area, 2015

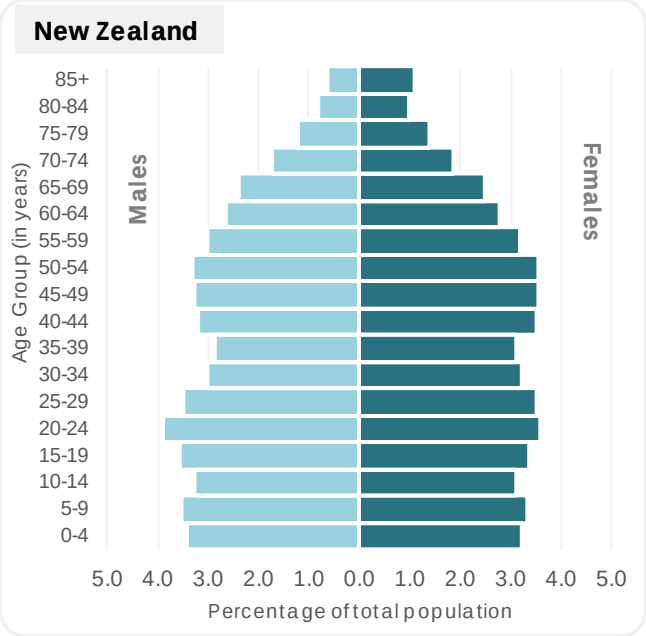


3.1.2 Age profile

Figure 3.4 shows the age-sex structure of the population resident in the Waikato DHB area compared to the national population as estimated in 2015. The two age-sex structures are fairly similar with the proportion aged 65 years or more in the Waikato DHB (15.0 per cent) only marginally higher than the national average of 14.5 per cent. The population aged less than 25 years in the Waikato DHB area (35.8 per cent) is also slightly higher than that estimated for total New Zealand (34.3 per cent).

Figure 3.4 Age-sex structure of Waikato DHB resident population compared to total New Zealand, 2015



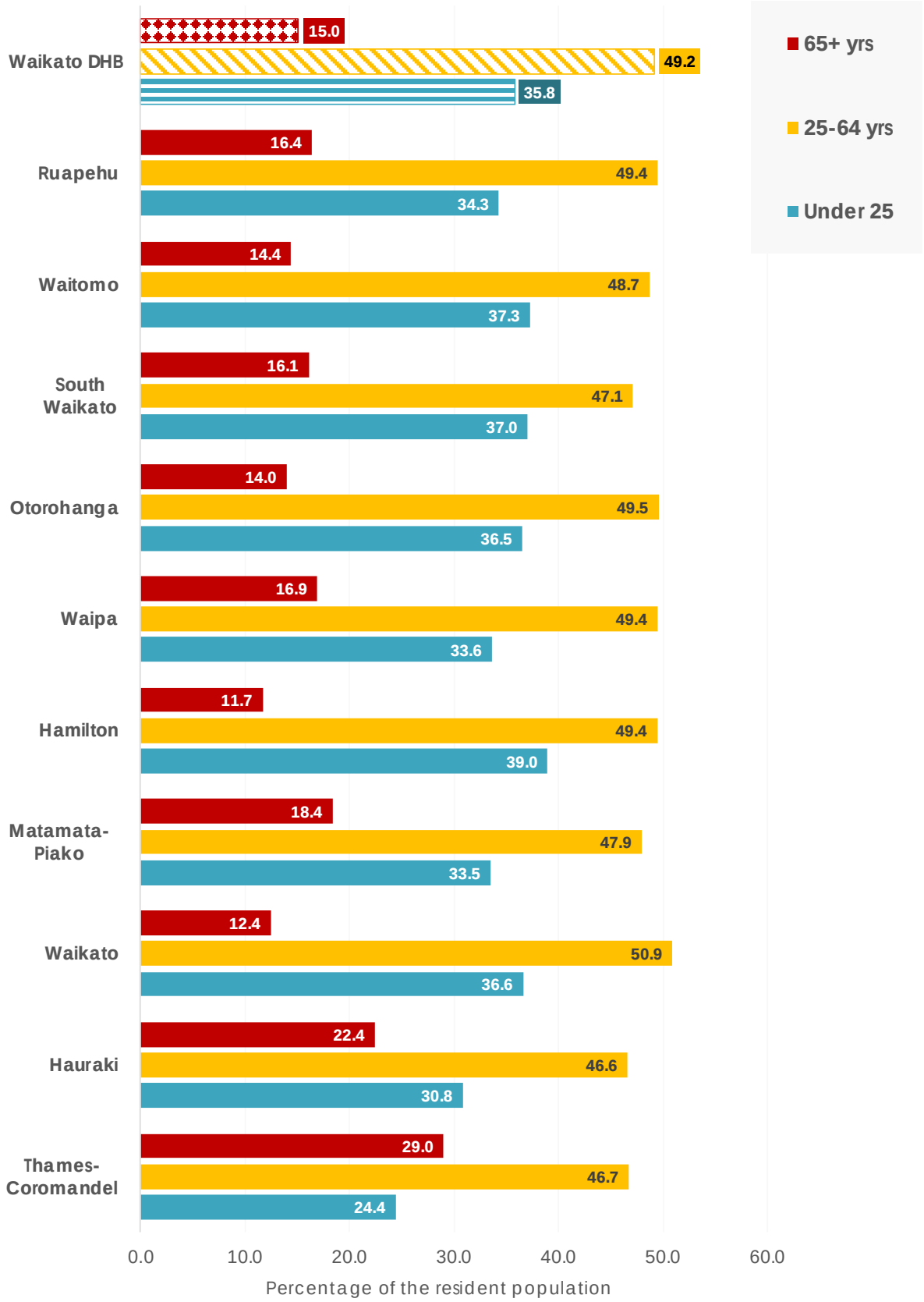


Percent aged 0-14 years	21.2%
Percent aged 15-24 years	14.6%
Percent aged 25-44 years	24.6%
Percent aged 45-64 years	24.6%
Percent aged 65-74 years	8.7%
Percent aged 75+ years	6.3%

Percent aged 0-14 years	19.9%
Percent aged 15-24 years	14.4%
Percent aged 25-44 years	25.9%
Percent aged 45-64 years	25.3%
Percent aged 65-74 years	8.4%
Percent aged 75+ years	6.1%

Figure 3.5 shows the age distribution in three broad age bands (under 25, 25-64 and 65+ years) of the population resident in each of the TA areas that fall within the Waikato DHB boundary. Six of the ten TA areas have a higher proportion of 65+ year olds in their resident population than the DHB average of 15.0 per cent - Thames-Coromandel, Hauraki, Matamata-Piako, Waipa, Ruapehu and South Waikato. The Thames-Coromandel and Hauraki Districts have the oldest age structures with approximately one in four residents aged 65 years or more. Hamilton City has the youngest age profile with two in five aged less than 25 years. Higher proportion of under 25 year olds are also seen in South Waikato, Waikato and Waitomo Districts.

Figure 3.5 Age distribution (broad age groups) of the resident population in each of the TA areas within the Waikato DHB boundary, 2015

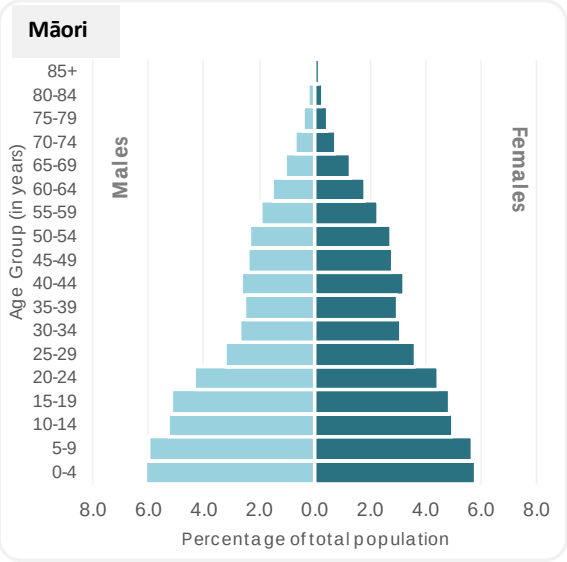


3.1.3 Ethnic profile

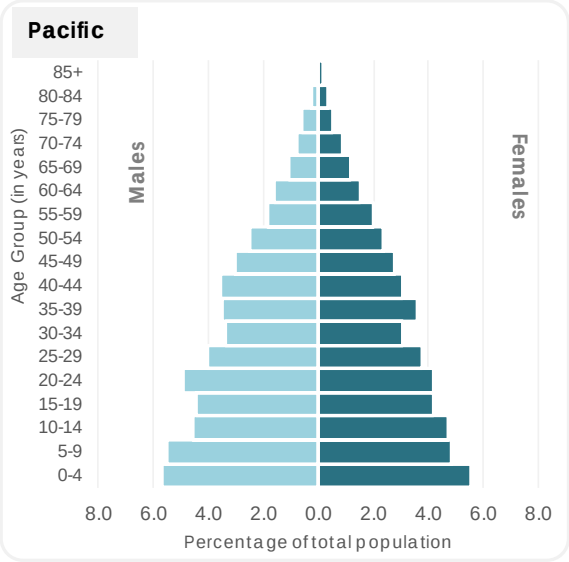
Waikato DHB provides funding and services to a population with a higher proportion of Māori (22.7 per cent) compared to the national Māori population proportion of 15.7 per cent. On the other hand, the proportion of Pacific and Asian resident in the DHB area (2.9 and 8.2 per cent respectively) is lower compared to the national average for these ethnic groups (6.4 and 12.9 per cent).

Figure 3.6 shows the 2015 age-sex profile of the four broad ethnic groups – Māori, Pacific, Asian and Other – prioritized according to the approach common in health sector data to ensure that every person is counted only once, even if they identify with more than one ethnicity. The relative youthfulness of the DHB's population is very much contributed to by the extremely youthful Māori and Pacific population groups. The Māori population living in the Waikato DHB area has the youngest age structure with more than half (52.6 per cent) aged less than 25 years and only 5.4 per cent aged 65 years or more. In comparison, the residual population group 'Other', which makes up two-thirds of the DHB population (and includes the most common 'European' ethnic category), has a much older age profile with only 29.1 per cent aged less than 25 years and close to one-fifth (19.8 per cent) aged 65+ years. The Pacific population has an age structure very similar to the Māori population whereas the Asian population resident in the DHB area has a very different age-sex structure compared to the other three ethnic groups. The significant 'wings' on the Asian population at 20-24 years are likely to reflect education-related migration. More than a third (36.5 per cent) of the Asian population is aged 25-44 years, whereas this age group makes up 23 to 28 per cent of the population among the other three broad ethnic groups.

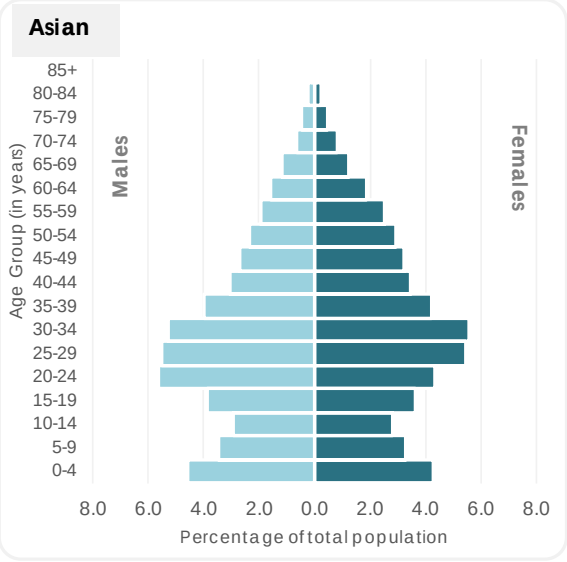
Figure 3.6 Age-sex structure of the Waikato DHB resident population disaggregated by prioritised ethnic group, 2015



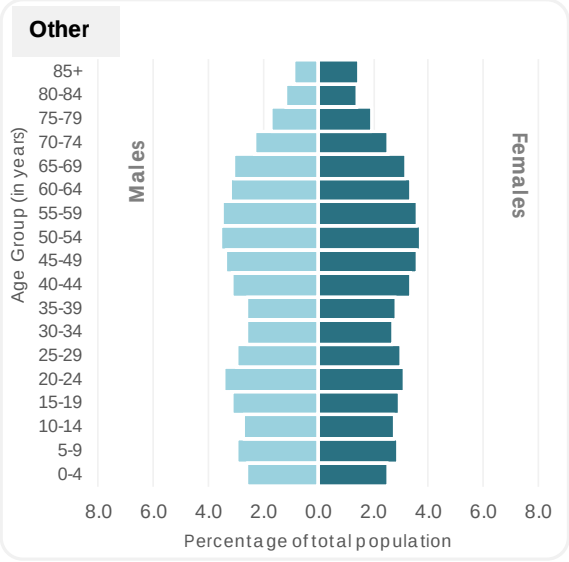
Percent aged 0-14 years	33.8
Percent aged 15-24 years	18.8
Percent aged 25-44 years	24.0
Percent aged 45-64 years	17.9
Percent aged 65-74 years	3.8
Percent aged 75+ years	1.6



Percent aged 0-14 years	30.9
Percent aged 15-24 years	17.8
Percent aged 25-44 years	27.9
Percent aged 45-64 years	17.6
Percent aged 65-74 years	3.9
Percent aged 75+ years	2.1



Percent aged 0-14 years	21.3
Percent aged 15-24 years	17.5
Percent aged 25-44 years	36.5
Percent aged 45-64 years	19.1
Percent aged 65-74 years	3.9
Percent aged 75+ years	1.6



Percent aged 0-14 years	16.4
Percent aged 15-24 years	12.7
Percent aged 25-44 years	23.2
Percent aged 45-64 years	27.9
Percent aged 65-74 years	11.2
Percent aged 75+ years	8.6

3.1.4 Socioeconomic profile

More than one quarter (26.4 per cent) of the DHB's resident population live in relatively high area-level socio-economic deprivation (NZDep quintile 5 or deciles 9 and 10). This is greater than the national average of 21.9 per cent in the same area-level deprivation. Figure 3.7 shows the proportion of each Waikato DHB TA area's resident population who live in areas of high socio-economic deprivation (NZDep indices 9 and 10), while Figure 3.8 shows the spatial distribution of the resident population of the Waikato DHB area at the CAU level across the five NZDep groupings.

More than half of the South Waikato (64.2 per cent), Ruapehu (58.2 per cent) and Hauraki (53.1 per cent) populations are living in significant area-level deprivation, and these areas have the greatest proportions of their resident population living in deprivation within the Waikato DHB. Waitomo and Otorohanga also have higher proportions of their population living in area-level deprivation than the DHB average of 26.4 per cent.

Figure 3.7 Proportion of the resident population of each TA within the Waikato DHB living in areas of high socio-economic deprivation (NZDep2013 indices 9 and 10)

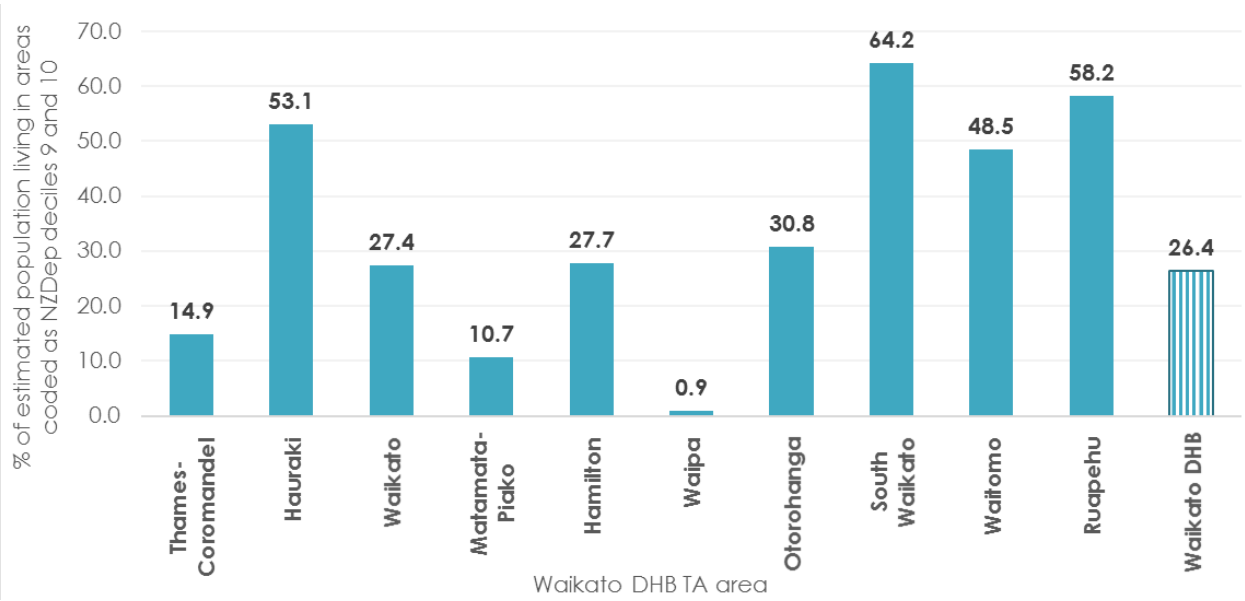
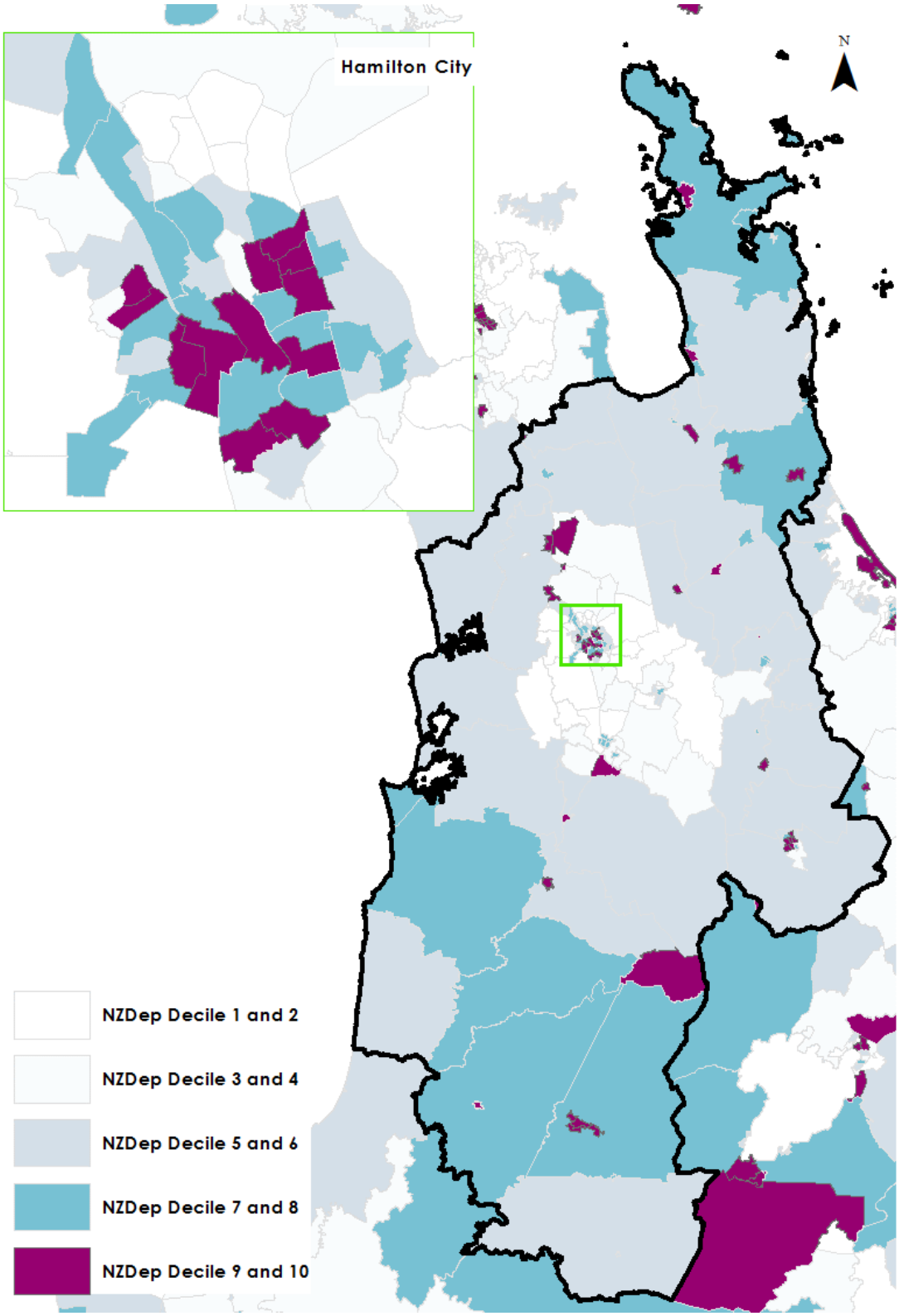


Figure 3.8 Spatial distribution of the resident population by the 2013 NZ Deprivation index, Waikato DHB area, 2015

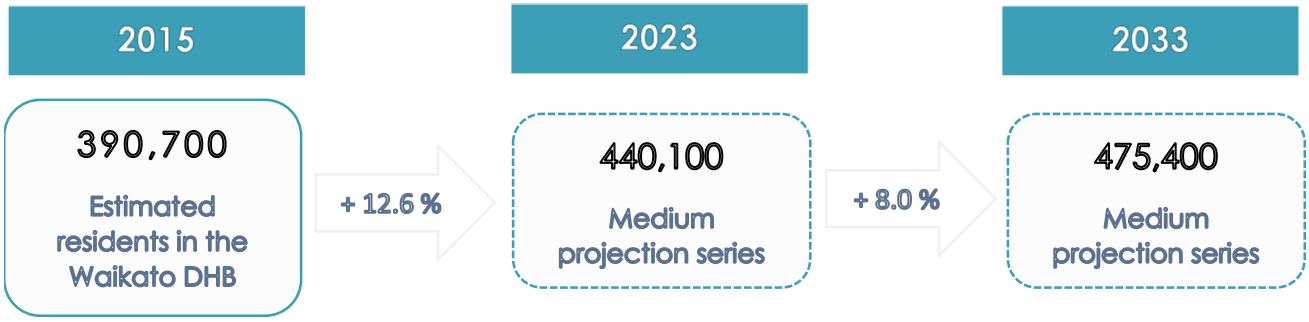


3.2 Projected changes in population, 2015-2023 and 2015-2033

This section looks at the projected resident population of the Waikato DHB area over the next 18 years. As noted earlier, population projections are not forecasts but are estimations of what the situation will be if the assumptions on which they are based, prevail. Under the medium series assumptions (as described in Section 2.1), the population of the Waikato DHB area is likely to increase by 12.6 per cent over the eight-year period 2015-2023 and by another 8.0 per cent over the subsequent ten-year period, 2023-2033. This equates to an overall increase of 21.7 per cent over the 18-year period from 2015 to 2033.

The average annual rate of population growth over the initial eight-year period (2015-203) is approximately +1.6 per cent after which the growth rate slows down to an average of around +0.8 per cent annually over the decade from 2023-2033.

Figure 3.9 Projected change in the Waikato DHB resident population (medium series projections)



3.2.1 Projected changes by Territorial Authority area

The estimated changes in the resident population of the DHB are not uniformly distributed across its constituent TA areas as seen in Figure 3.10 and Figure 3.11. Over the next 18 years, the overall population numbers are projected to increase in seven TA areas within the Waikato DHB boundary whereas the numbers are likely to decline in the remaining three, namely, Ruapehu, Waitomo and South Waikato. Over the 2015-2033 period, increases in population numbers expected in three TA areas, Hamilton, Waikato and Waipa, account for almost all of the projected growth for the whole Waikato DHB area (see Figure 3.11). Hamilton City alone is likely to account for approximately 60 per cent of the DHB's population growth over this 18-year period.

Figure 3.10 Projected change in resident population of each TA within the Waikato DHB boundary

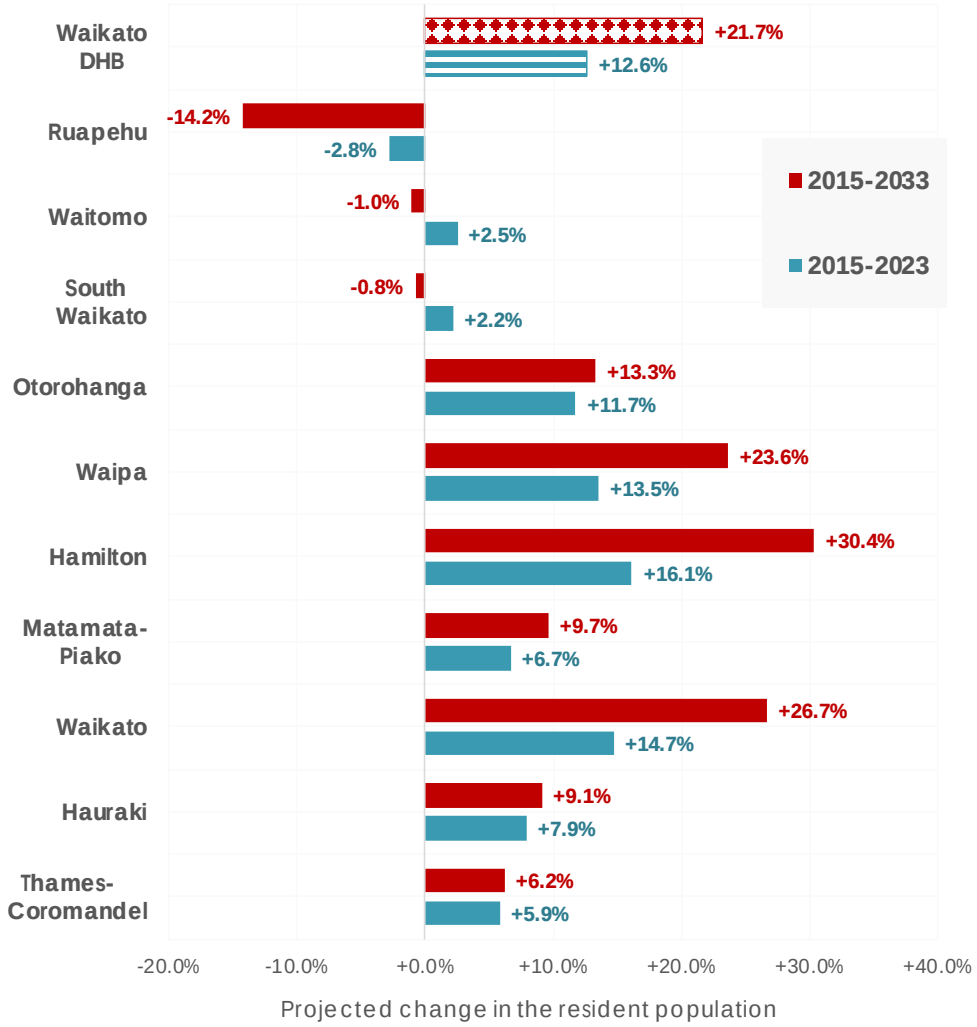
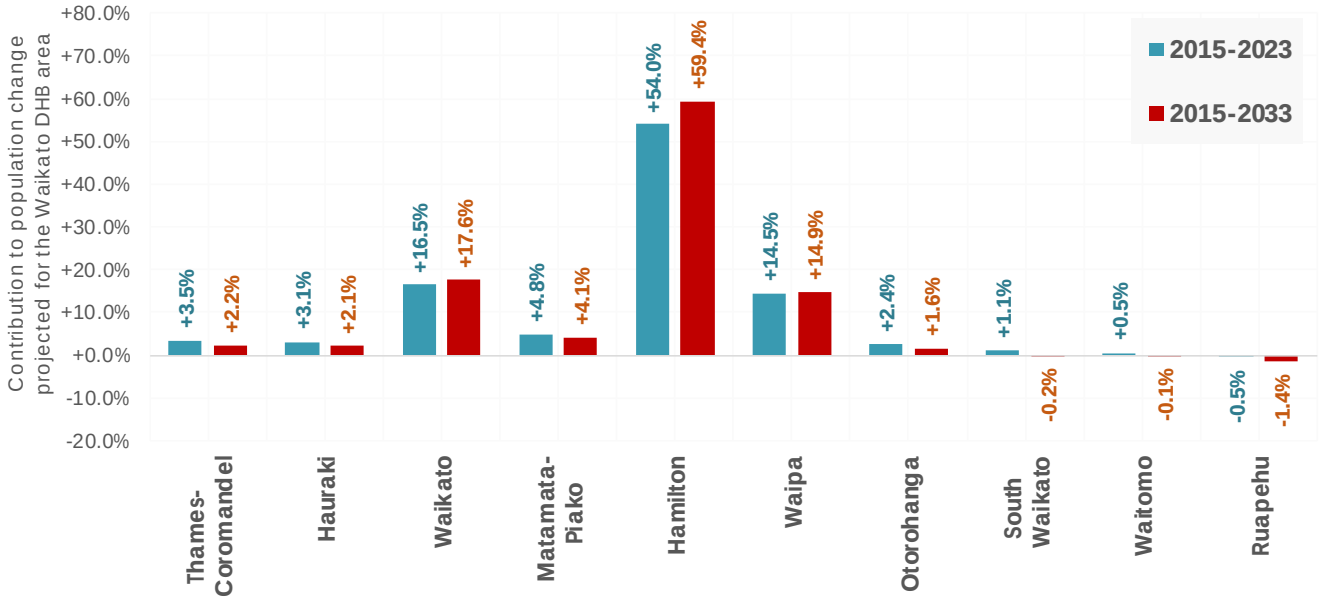


Figure 3.11 Contribution (of each TA area) to population change in the Waikato DHB area, 2015-2023 and 2015-2033



3.2.2 Projected changes by age group

The projected population growth in the Waikato DHB area across the broad age groups over the next 18 years is very similar to that expected nationally (see Figure 3.12). The population at younger ages is likely to either increase only marginally or decline, while those in the older 65+ year age groups expected to increase substantially. Over the 2015-2033 period, the number of 65+ year olds in the DHB's resident population is projected to increase by approximately 76.7 per cent, similar to the increase projected nationally. In terms of numbers, there are likely to be an additional 44,900 people aged 65+ years resident in the Waikato DHB area in 2033 compared to 2015. The two oldest age groups will account for more than half (+53.0 per cent) of the total population growth projected for the DHB over the 2015-2033 period (see Figure 3.13). The other age group contributing more substantially to the overall population increase across the DHB (over a quarter or +25.8 per cent) is those aged 25-44 years.

Figure 3.12 Numerical change by broad age groups over 2015-2023 and 2015-2033, Waikato DHB and total New Zealand

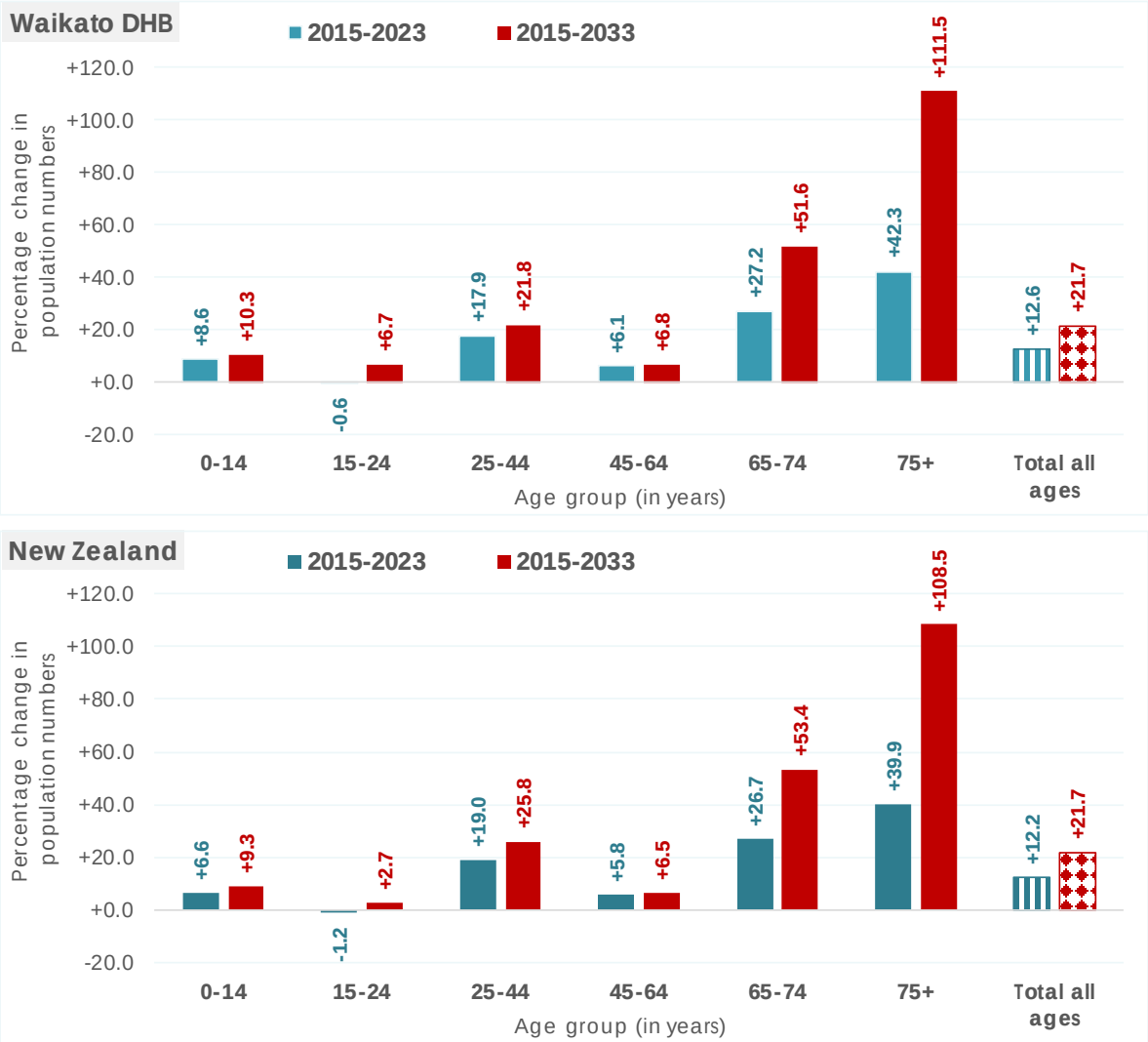
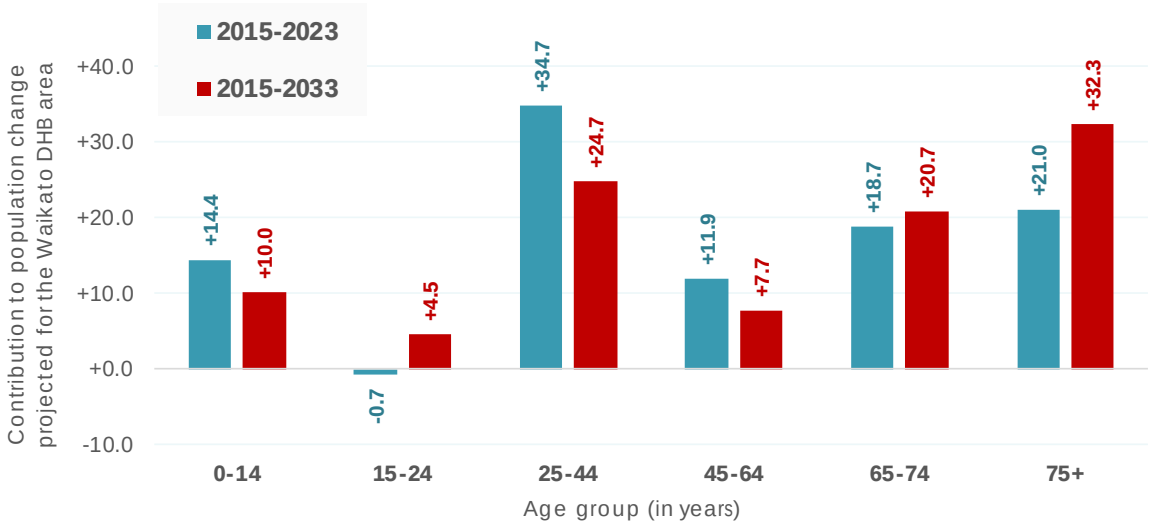


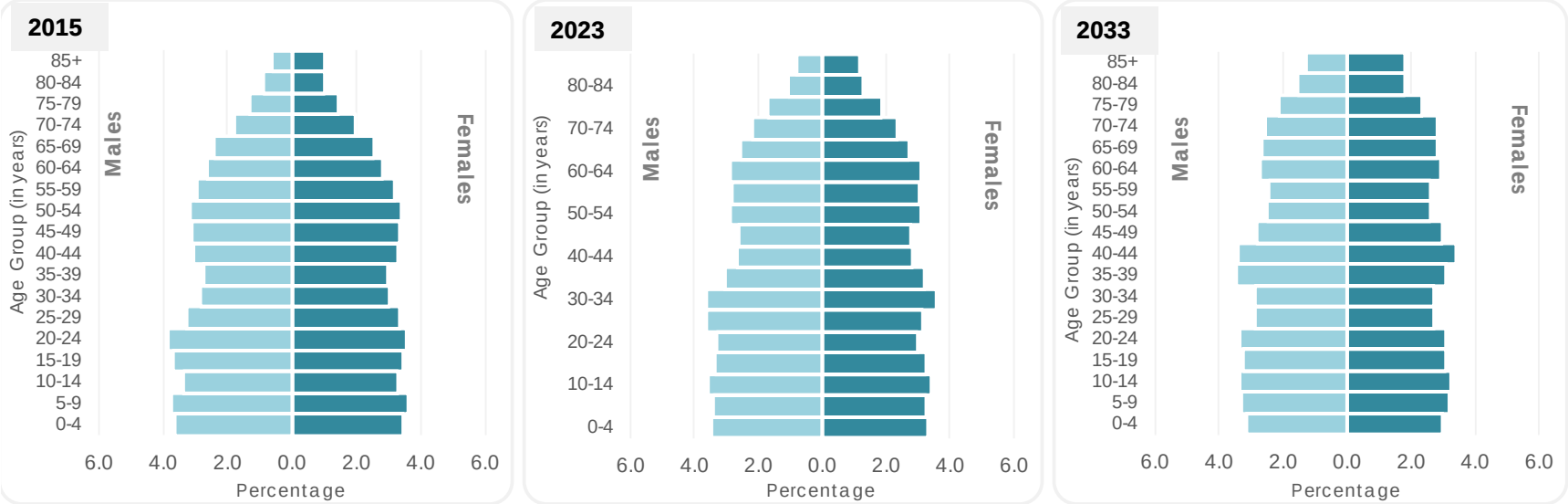
Figure 3.13 Contribution (of each broad age group) to population change in the Waikato DHB area, 2015-2023 and 2015-2033



The 'ageing' of a population is the result of two different types of ageing: numerical and structural. Numerical ageing of the population is the increase in the actual numbers of aged persons which was shown in Figure 3.12. The primary cause of numerical ageing is declining mortality. That is, as the life expectancy increases, the number of older people increases. On the other hand, structural ageing, which is shown in Figure 3.14, is the increase in the proportion of older persons. Its primary cause is fertility decline, which leads to a relatively smaller proportion of young people. The proportion of 65+ year olds among the DHB's resident population is projected to increase from 15.0 per cent in 2015 to 21.8 per cent by 2033.

Figure 3.14 Structural change by age group over 2015-2023 and 2015-2033, Waikato DHB resident population

Waikato DHB population



	2015		2023		2033	
	Waikato DHB	New Zealand	Waikato DHB	New Zealand	Waikato DHB	New Zealand
Percent aged 0-14 years	**21.2**	19.9	**20.4**	18.9	**19.2**	17.8
Percent aged 15-24 years	**14.6**	14.4	**12.9**	12.7	**12.8**	12.1
Percent aged 25-44 years	**24.6**	25.9	**25.7**	27.4	**24.6**	26.8
Percent aged 45-64 years	**24.6**	25.3	**23.2**	23.9	**21.6**	22.2
Percent aged 65-74 years	**8.7**	8.4	**9.8**	9.5	**10.9**	10.6
Percent aged 75+ years	**6.3**	6.1	**7.9**	7.6	**10.9**	10.5

Table 3.1 shows the numerical change projected in the resident population of each TA area within the Waikato DHB area disaggregated by broad age groups. Over the 2015-2033 period, only the Hamilton, Waikato and Waipa TA areas in the DHB are expected to experience gains in every age group. In four TA areas, Ruapehu, Waitomo, South Waikato and Thames Coromandel, all projected growth over the next 18 years is confined to the two oldest age groups (65-74 and 75+ years) with numbers likely to decline in all groups aged less than 65 years. All the TAs are projected to experience substantial growth in both numbers and proportions at 65+ years, with this growth accounting for all growth (and/or offsetting decline) in all but Hamilton City, Waikato and Waipa.

Table 3.1: Projected change by major age groups in each TA across the Waikato DHB area, 2015-2023 and 2015-2033

	2015 - 2023						
Waikato DHB TA area	0-14 years	15-24 years	25-44 years	45-64 years	65-74 years	75+ years	Total all ages
Thames-Coromandel	-1.4 ↓	-3.8 ↓	+6.0 ↑	-5.2 ↓	+8.7 ↑	+47.9 ↑	+5.9 ↑
Hauraki	+6.2 ↑	-22.9 ↓	+20.4 ↑	-4.0 ↓	+15.6 ↑	+46.9 ↑	+7.9 ↑
Waikato	+3.9 ↑	+8.0 ↑	+19.3 ↑	+11.3 ↑	+34.2 ↑	+55.4 ↑	+14.7 ↑
Matamata-Piako	+5.9 ↑	-11.5 ↓	+11.3 ↑	-0.1 ↔	+21.2 ↑	+29.3 ↑	+6.7 ↑
Hamilton	+14.4 ↑	+5.1 ↑	+20.2 ↑	+12.0 ↑	+33.0 ↑	+35.2 ↑	+16.1 ↑
Waipa	+7.4 ↑	-0.2 ↔	+20.6 ↑	+6.8 ↑	+29.0 ↑	+39.6 ↑	+13.5 ↑
Otorohanga	+15.3 ↑	-1.3 ↓	+16.8 ↑	+0.4 ↔	+21.2 ↑	+44.6 ↑	+11.7 ↑
South Waikato	+0.9 ↔	-24.8 ↓	+7.8 ↑	-0.5 ↔	+16.7 ↑	+32.9 ↑	+2.2 ↑
Waitomo	-2.1 ↓	-10.7 ↓	+12.4 ↑	-7.7 ↓	+22.4 ↑	+21.2 ↑	+2.5 ↑
Ruapehu	-3.2 ↓	-16.1 ↓	+3.3 ↑	-16.6 ↓	+21.4 ↑	+12.0 ↑	-2.8 ↓
Waikato DHB*	**+8.6** ↑	**-0.6** ↓	**+17.9** ↑	**+6.1** ↑	**+27.2** ↑	**+42.3** ↑	**+12.6** ↑

	2015 - 2033						
Waikato DHB TA area	0-14 years	15-24 years	25-44 years	45-64 years	65-74 years	75+ years	Total all ages
Thames-Coromandel	-10.2 ↓	-10.6 ↓	-15.4 ↓	-15.4 ↓	+6.8 ↑	+108.6 ↑	+6.2 ↑
Hauraki	+0.8 ↔	-16.2 ↓	-14.6 ↓	-14.6 ↓	+31.4 ↑	+106.1 ↑	+9.1 ↑
Waikato	+8.7 ↑	+7.4 ↑	+12.0 ↑	+12.0 ↑	+78.5 ↑	+162.0 ↑	+26.7 ↑
Matamata-Piako	+0.7 ↔	-7.7 ↓	-7.9 ↓	-7.9 ↓	+46.6 ↑	+76.9 ↑	+9.7 ↑
Hamilton	+20.4 ↑	+17.8 ↑	+26.5 ↑	+26.5 ↑	+62.8 ↑	+108.2 ↑	+30.4 ↑
Waipa	+10.8 ↑	+3.9 ↑	+2.8 ↑	+2.8 ↑	+63.9 ↑	+108.5 ↑	+23.6 ↑
Otorohanga	+12.8 ↑	+18.8 ↑	-11.1 ↓	-11.1 ↓	+32.9 ↑	+121.8 ↑	+13.3 ↑
South Waikato	-11.2 ↓	-23.3 ↓	-13.4 ↓	-13.4 ↓	+39.6 ↑	+81.3 ↑	-0.8 ↔
Waitomo	-9.8 ↓	-10.7 ↓	-22.4 ↓	-22.4 ↓	+35.3 ↑	+78.8 ↑	-1.0 ↓
Ruapehu	-21.7 ↓	-22.0 ↓	-36.3 ↓	-36.3 ↓	+9.9 ↑	+80.2 ↑	-14.2 ↓
Waikato DHB*	**+10.3** ↑	**+6.7** ↑	**+21.8** ↑	**+6.8** ↑	**+51.6** ↑	**+111.5** ↑	**+21.7** ↑

↓ Decline in population ↑ Increase in population ↔ No notable change (between +1.0 % and -1.0 %)

*Based on 2016 projections update by Statistics New Zealand customised for the MoH. The TA level projections are based on the 2016 projections update sourced from NZ.Stat portal.

3.2.3 Projected change by ethnicity

In order to accurately understand the ethnic profile of populations, it is important to also understand the complexity of ethnicity data outputs and the context of ethnic identification, particularly in Aotearoa New Zealand. Projecting populations based on ethnic identification, and understanding the limitations and interpretation of such projections, is even more challenging. For example, many such projections involve a high degree of rounding of numbers, and, for some groups, low reliability of data by age because of small cell sizes. The following projections have many such limitations and therefore should be read as indicative only.

Figure 3.15 shows that the residual ethnic group 'Other' (which includes NZ European and other 'European' ethnic identification groupings) is projected to grow only slightly (5.2 per cent over 2015-2033). The projected increases for the Pacific and Asian populations (59.8 and 88.4 per cent respectively) are substantially larger, in part reflecting their smaller bases. The resident Māori population of the DHB is also projected to experience an important increase (41.0 per cent) over this 18-year period.

Figure 3.16 looks at the contribution of these projected changes in each ethnic group to the DHB's overall population growth over the 2015-2033 period. The growth expected in the Māori population contributes maximally (43.0 per cent) to the DHB's estimated population increase (+36,400 residents), followed by Asian population increases (one-third of the DHB's population growth over 2015-2033 which equates to approximately 28,200 additional residents over the next 18 years).

Figure 3.15 Percentage change by prioritised ethnic group over 2015-2023 and 2015-2033, Waikato DHB resident population (medium series projections)

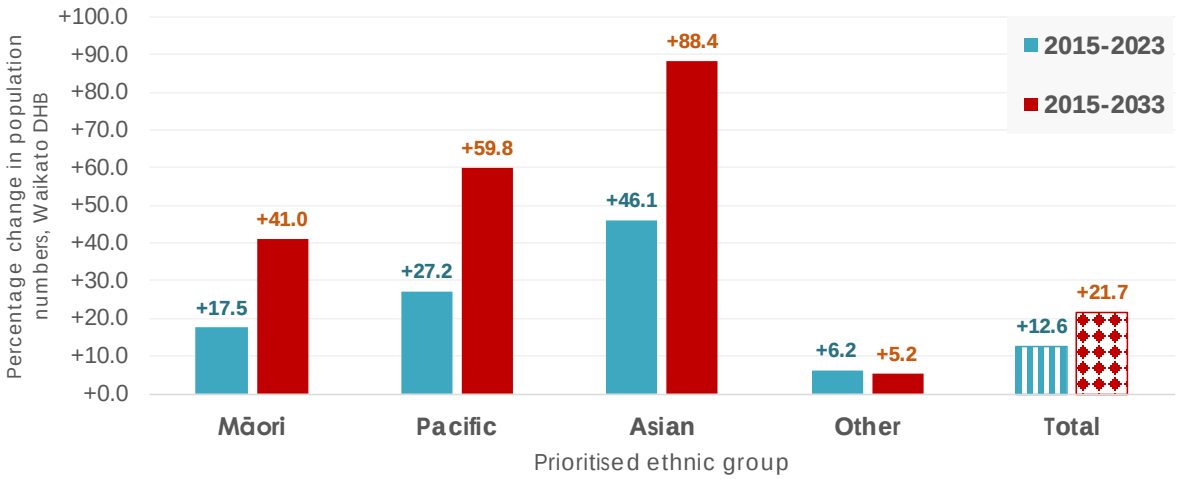
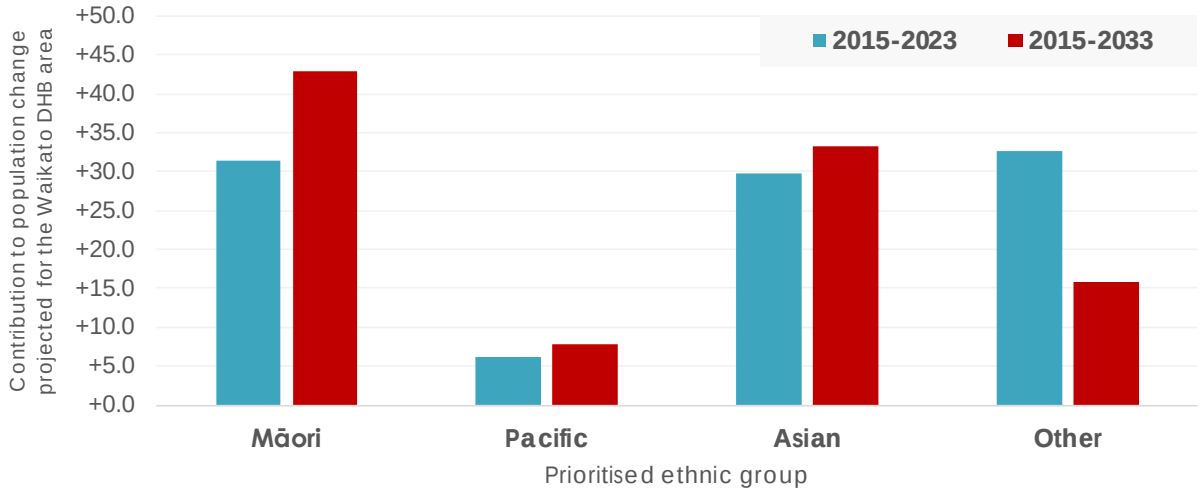


Figure 3.16 Contribution (of each prioritised ethnic group) to population change in the Waikato DHB area, 2015-2023 and 2015-2033



As a result of the projected numerical increase, the ethnic profile of the resident population of the Waikato DHB is also likely to change slightly over the next 18 years (see Figure 3.17). The Māori and Asian share of the population is estimated to increase from 22.7 and 8.2 per cent in 2015 to 26.3 and 12.6 per cent respectively by 2033. Although the residual Other ethnic group will continue to account for the majority of the DHB's population, the population share of this group is projected to decline from 66.3 per cent in 2015 to 57.3 per cent by 2033.

Figure 3.17 Structural change by prioritised ethnic group over 2015-2023 and 2015-2033, Waikato DHB resident population (medium series projections)

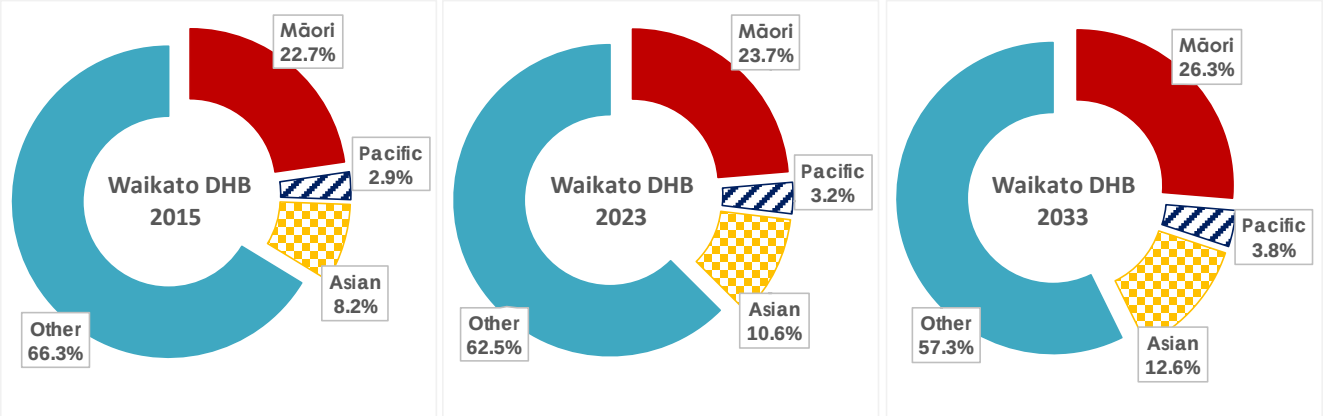


Figure 3.18 considers the numerical change projected over 2015-2023 and 2015-2033 in each age group for the four prioritised ethnic groups and Figure 3.19 shows the corresponding structural changes expected. Over the next 18 years, the population numbers across the DHB area for the residual 'Other' group are projected to mostly decline at all age groups less than 65 years (small increase likely in the 25-44 year group). The population is likely to increase notably only in the two oldest age groups, 65-74 and 75+ years (an overall increase of around 58 per cent projected in the number of 'Other' 65+ year olds by 2033).

For those identified as Māori, Pacific and Asian, the population is projected to increase in all age groups over 2015-2033. However, the increase in population numbers at the two oldest age groups are much more substantial for these three ethnic groups than estimated for 'Other'. The number of 65+ years is projected to increase by an estimated 160 percent among Māori (2.6 times the population in 2015), 215 per cent among Pacific (3.1 times the population in 2015) and 334 per cent among Asian (4.3 times the population in 2015).

These projected changes in the population numbers will slightly change the ethnic composition within each age group as shown in Figure 3.19. Although the residual 'Other' group will continue to account for the greatest proportion of the Waikato DHB population over time, its share within each age group is projected to decline over the next 18 years. By 2033, three in five (59.2 per cent) children aged 0-14 years across the DHB area are likely to be either Māori, Pacific or Asian compared to less than half (48.6 per cent) in 2015. This structural change is even more substantial among youth (15-24 years).

The ethnic composition of the population of the DHB aged more than 65 years is also projected to see a notable change over the 2015-2033 period. In 2015, 12.4 per cent of those aged 65+ years are identified as either Māori, Pacific or Asian and this proportion is likely to increase to 21.6 per cent by 2033.

Figure 3.18 Numerical change by age group over 2015-2023 and 2015-2033 for each prioritised ethnic group, Waikato DHB resident population

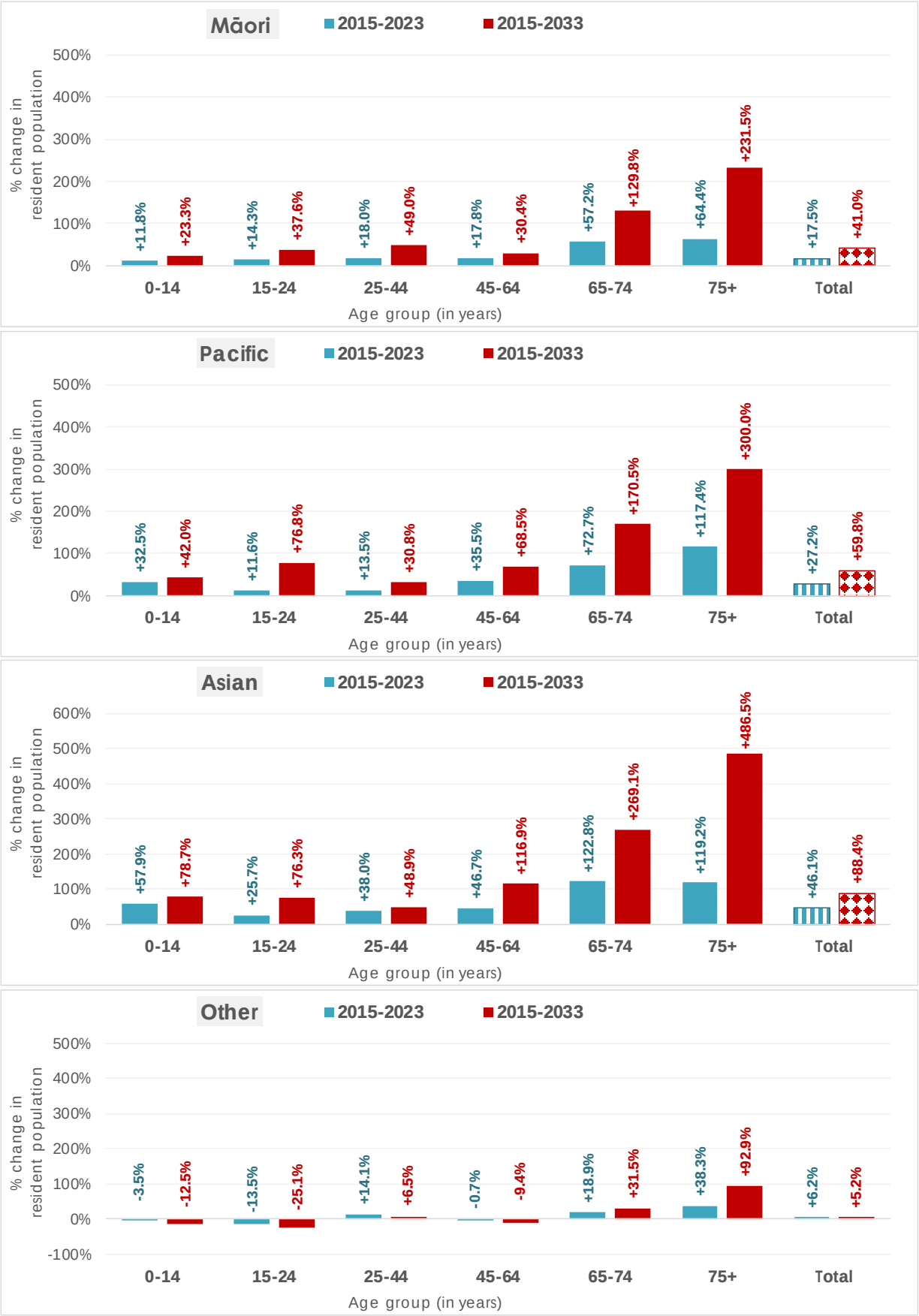
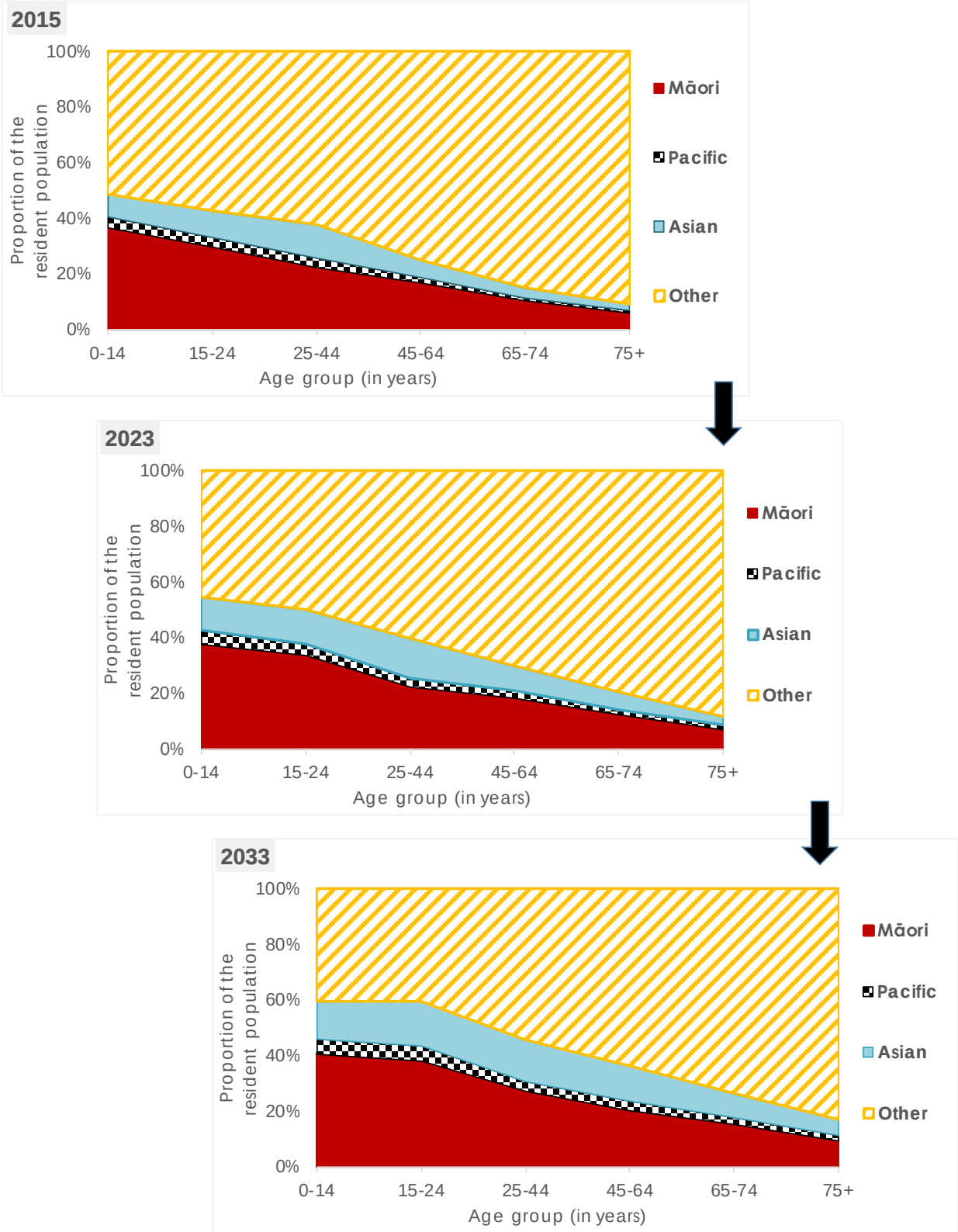


Figure 3.19 Structural change by age group over 2015-2023 and 2015-2033 for each prioritised ethnic group, Waikato DHB resident population



4 Determinants of Mental Health and Wellbeing

Key points

- Mental health and wellbeing is a fundamental pillar for communities, critical to indigenous models of health, and crucial area for societal investment. Recent analyses consider that neuropsychiatric conditions now account for almost one fifth of health loss in New Zealand, and these conditions are particularly important amongst youth and younger adults.
- Because of the complexity of causation with respect to mental illness and addictions, a life-course approach to considering risk (and protective) factors is important. This approach is able to take into account both acute and accumulated biological and environmental impacts, as well as critical and sensitive time periods for exposure (such as the first 1000 days), and access to quality diagnosis, support and management.
- Mental illness is both contributed to, and a contributing factor for, poor physical health and reduced productivity in terms of employment, education and participation in whānau, communities and society. There is an important gradient between social deprivation, disadvantage, and the prevalence of mental illness, both in New Zealand and internationally; and in New Zealand important inequities in mental health occur – particularly for Māori and Pacific communities, and those that who identify as a gender or sexual minority.
- In the Waikato DHB many of the likely broader risk factors for mental health, and targets for mental wellbeing, are difficult to quantify at a population level utilising existing datasets and within the scope of this report. However it is possible to focus on key aspects of the determinants of mental health for the Waikato DHB population.
- People with serious mental illness frequently live with high levels of comorbid physical conditions, and the complexity of multiple diagnoses is most commonly experienced by Māori and Pacific people, and those who face greater socioeconomic deprivation.
- Poverty and material hardship, including financial debt, are key risk factors for mental illness, as is socio-economic deprivation. The median income in the Waikato DHB region is slightly lower than that of the New Zealand population as a whole, and the lowest median income level is found in the Hauraki, Thames-Coromandel, South Waikato and Ruapehu TAs. The median family income is also lower in the Waikato DHB region compared to across New Zealand, with the exception of the Waikato and Waipa TAs.
- Overcrowding, housing quality, tenure, housing insecurity and homelessness have all been linked to chronic stress and negative mental health outcomes. As seen nationally, approximately half of the Waikato DHB population aged 15+ years are home owners, although home ownership is less common in the Hamilton, Waitomo and Ruapehu TAs.

- People with mental illness and addictions face high rates of job loss, unemployment and labour force non-participation, which also impacts on mental wellbeing and the other determinants of health. Discrimination in the employment and labour force sector is also a barrier for wellbeing for those with mental illness and addictions. In the Waikato DHB region, a greater proportion of 15-24 year olds (compared to the New Zealand proportion) are not in employment, education or training (NEET). In 2015, 5 per cent of the total Waikato DHB population was unemployed. Higher rates of unemployment are experienced by Māori compared to non-Māori in the Waikato DHB, and Māori experience greater fluctuations in unemployment rate – or less secure employment.
- There is a strong link between mental health, educational retention and achievement. A greater proportion of Māori and non-Māori adults in the Waikato DHB (compared to New Zealand as a whole) do not have any educational qualifications. Over 40 per cent of Māori adults in six TAs of the Waikato DHB have not been enabled to access educational qualifications.
- The stigma of mental illness has serious impacts on the lives of those with poor mental health and people with mental illness and addiction commonly face social exclusion. Importantly in Aotearoa/New Zealand people with mental illness and addiction can also face isolation from cultural networks and supports.

4.1 Definition of mental wellbeing

Mental health is a fundamental pillar for health and wellbeing. This is acknowledged in many definitions of health, including that of the World Health Organization (WHO, 1948), and aspects of mental health (such as hinengaro and wairua) are integral to traditional holistic Māori and Pacific models of wellbeing, including 'Te Whare Tapa Wha' and 'Fono Fale' (Durie, 1984; Puloto-Endeman).

Mental health is described by the World Health Organization (WHO) as "a state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization, 2014). However, the term 'mental health' is also frequently used to refer to a person or population's condition with regard to emotional and psychological health. States of mental health range from 'flourishing' mental health to mental illness and disorders; with a breadth of states in between.

Wellbeing is a related term; however it does not have a commonly accepted definition. Researchers have argued that wellbeing should be thought of as a state in which individuals are able to flourish and have the resources and resilience to manage life's challenges (Dodge, Daly, Huyton, & Sanders, 2012). Importantly, the lack of a clinical diagnosis of a mental illness does not indicate flourishing mental health (Allen, Balfour, Bell, & Marmot, 2014).

4.2 Cost to society of poor mental health

Flourishing mental health is vital for population wellbeing and the social and economic prosperity of society (Barry, 2009). Mental health and wellbeing is therefore a crucial area for societal investment. There is growing recognition of the burden of ill health caused by mental illness and its cost – both personally and societally. Mental illness and poor mental wellbeing severely impact people's lives, their families and have significant negative impacts on society.

Data from the 2016 Ministry of Health report "Health Loss in New Zealand 1990–2013: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study" (Ministry of Health, 2016b) indicate that neuropsychiatric[1] conditions now account for almost one fifth of health loss in New Zealand (19 per cent of Disability Adjusted Life Years – DALY). Notably, neuropsychiatric health conditions are the most significant health concern amongst youth (15 to 24 year olds) and younger adults (25 to 44 year olds); these disorders contribute 35 per cent and 31 per cent respectively, of all health lost (DALY) by these age groups (Ministry of Health, 2016b). A review of

[1] Neuropsychiatric conditions include neurologic conditions, mental illness and substance abuse/addiction disorders. However, the classification prioritises conditions in the following way: injuries, cancers, infections, vascular disorders and lastly organ systems. Therefore, traumatic brain injuries are classified as injury, primary brain cancers are classified as cancer, meningitis classified as infection and stroke is classified as a cardiovascular disorder. (Ministry of Health, 2016b)

health loss data over time, indicate the impact on health loss from neuropsychiatric disorders is slowly increasing in the New Zealand population, in contrast to the majority of other groups of disorders (Ministry of Health, 2016b).

In addition to the significant personal cost from mental health and addiction disorders, these disorders have a considerable financial cost to society. The societal cost to New Zealand due to serious mental illness and addictions was estimated at $NZ17 billion in 2014 (Sweeney & Shui, 2016). The economic cost due to comorbid physical conditions and premature death was estimated to add a further $NZ6.2 billion to this cost (Sweeney & Shui, 2016).

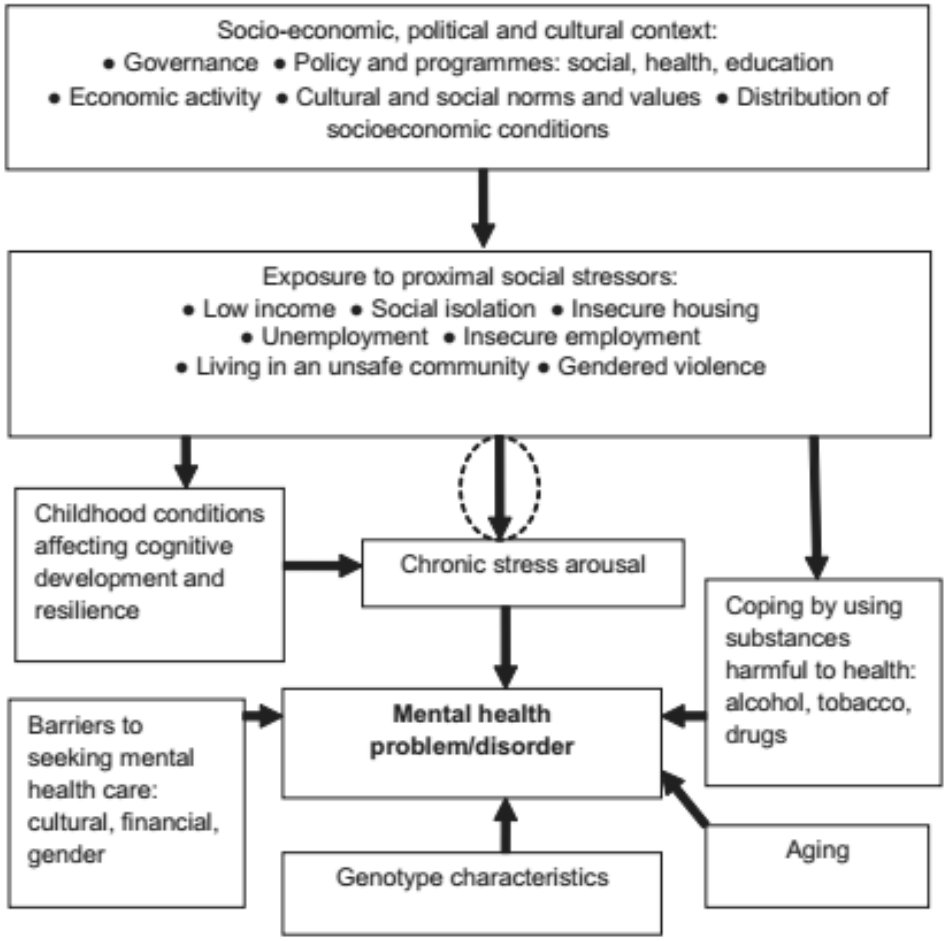
4.3 The causes of mental illness

The causes of mental illness are complicated and multifactorial. They can be conceptualised at multiple levels; an individual's genetics, the environment in which a person lives and works, and the social, political and economic influences which shape our environment and society (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Fisher & Baum, 2010; Manseau, 2014). Trauma and stress of any form, particularly chronic stressors, increase the risk of the development of mental illness (Fisher & Baum, 2010; Manseau, 2014; Sederer, 2016). Risk factors for mental illness are typically not disorder specific, but relate to the development of most forms of mental illness and substance abuse (Fisher & Baum, 2010). Furthermore, the presence of risk factors for mental illness does not determine than an individual will develop a mental illness, conversely mental health disorders can develop in the absence of any identifiable stressor or trauma. Furthermore, many people experience sub-threshold mental disorders, which mean poor mental health and a lack of wellbeing that does not reach the threshold for a clinical diagnosis of a mental illness. Notably, sub-threshold mental disorders affect a far larger proportion of the population than severe mental illness.

Figure 4.1 provides a framework to conceptualise the factors which influence mental health and wellbeing. These factors are multi-directional, intertwined and include aspects of both the physical and social environments. For example, mental illness is both contributed to by, and a contributing factor for both poor physical health and reduced productivity in terms of employment, education and participation in whānau, communities and society. (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016) Figure 4.1 demonstrates that the causes of mental illness most commonly cited in popular discourse – trauma, genetic predisposition and drug and alcohol use – only acknowledge some of the factors that influence the development of mental illness. A comprehensive understanding of the causes of mental illness must not only incorporate the role of genetics and substance abuse, but also the barriers to accessing early mental health care, proximal stressors such as isolation, poor housing, poverty, occupation, violence and safety and of course the wider environment and socio-political landscape, including social norms and discrimination, social policy, education, health and

welfare which influence the burden of proximal stressors. (Fisher & Baum, 2010; Manseau, 2014; Sederer, 2016)

Figure 4.1 Factors influencing individual onset of a mental health problem/disorder (adapted from Commission on the Social Determinants of Health) (Fisher & Baum, 2010)



This model of causation is reinforced by data which show a strong gradient between social deprivation and the prevalence of mental illness, both in New Zealand and internationally (Allen et al., 2014; Fisher & Baum, 2010; Manseau, 2014; Oakley Browne, Wells, Scott, & (eds), 2006). Proximal stressors, including social deprivation and poverty, are understood to set up chronic states of stress, which may be punctuated by acute points of anxiety and stress, such as times of crisis including job loss or redundancy (Fisher & Baum, 2010). Exposure to these stresses may come in addition to less education, less exposure to positive coping mechanisms and problem solving skills, and having fewer resources which can mean the potential to suffer greater social consequences from a crisis (Fisher & Baum, 2010). Gender is also important; mental disorders are more common in women, as women are affected differently by social, economic and environmental factors compared with men and often suffer greater social disadvantage (Borrell et al., 2014; Strandh, Hammarström, Nilsson, Nordenmark, & Russel, 2013). Data from Te Rau Hinengaro: The New Zealand Mental Health Survey indicate that the prevalence of mental illness

is higher for people who are disadvantaged in New Zealand (Oakley Browne et al., 2006). This relationship exists with multiple measures of disadvantage: educational qualification, equivalised household income or the New Zealand Deprivation index (Oakley Browne et al., 2006). Additionally, the New Zealand Health Survey found that psychological distress and hazardous alcohol consumption follow a gradient and are more prevalent among people living in the most deprived deciles (Ministry of Health, 2016a).

Genetic predisposition for mental illness should also be considered in terms of environmental factors, given the role of the environment and exposures in altering the expression of genes through epigenetic mechanisms (Sederer, 2016). Furthermore, the use of alcohol and other drugs is common as a coping mechanism for chronic stress and trauma, and once again should be seen in the context of other environmental influences on mental health (Fisher & Baum, 2010).

It is also crucial to acknowledge the increased prevalence of mental illness among some specific groups of the population in New Zealand, namely Māori (Clark et al., 2011; Oakley Browne et al., 2006) and people who identify as a gender or sexual minority (Clark et al., 2014; Semlyen, King, Varney, & Hagger-Johnson, 2016). There remains a difference in the prevalence of mental illness between each of these groups and the general population, even when accounting for socioeconomic deprivation and differences in the population structures (Meyer, 2007; Semlyen et al., 2016). The disparity in mental health outcomes for these groups is largely due to the stress of experiencing both objective and perceived stigma, prejudice and discrimination (Harris et al., 2006; Hatzenbuehler, Phelan, & Link, 2013; Meyer, 2007; Schmitt, Branscombe, Postmes, & Garcia, 2014). International research shows that mental health outcomes are better for people of gender and sexual minorities when living in areas where social policies provide protection for their rights, such as employment non-discrimination policies (Hatzenbuehler et al., 2013). In a New Zealand context, data from the New Zealand Health Survey indicate that Māori are more likely to report experiencing racism (physical or verbal attacks or unfair treatment) than non-Māori people, and that there is a dose-response relationship between exposure to racism and a number of health outcome measures, including measures of mental health (Harris et al., 2006). Furthermore, the impact of discrimination on mental health outcomes has been shown to be greater for people who are socially and economically disadvantaged (Schmitt et al., 2014).

Mental health outcomes are heavily influenced by exposures and experiences in early life, particularly the first 1,000 days of life (from conception until approximately two years of age) (Allen et al., 2014; Braveman, 2014; Faculty of Public Health and Mental Health Foundation, 2016; Furber et al., 2015; Moore & West, 2016). Numerous studies have shown that exposure to chronic stress or trauma in childhood increases an individual's vulnerability to mental illness as an adult (Faculty of Public Health and Mental Health Foundation, 2016; Fisher & Baum, 2010) and that multiple toxic exposures and sources of disadvantage have a cumulative negative effect (Allen

et al., 2014). Notably, 75 per cent of mental illness presents before the age of 24 (Faculty of Public Health and Mental Health Foundation, 2016) and emotional health as a child is one of the most important predictors of life satisfaction as an adult (Layard, Clark, Cornaglia, Powdthavee, & Vernoit, 2014). Consequently, it is important to take a life-course approach to addressing the causes of mental illness and implementing preventive strategies: i.e. evaluate and address exposures and experiences, including social and economic stressors and their cumulative effects as causes of mental ill health (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Furber et al., 2015; Layard et al., 2014; Moore & West, 2016). This approach is particularly important given the increasing evidence that poverty and other social and economic stressors not only lead to poor mental health, but the impact of mental illness and developmental problems creates intergenerational cycles of disadvantage and ill health (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Manseau, 2014).

The development of mental illness is most commonly discussed in terms of an individual or population's risks and vulnerabilities. However, it is important to consider protective factors in addition to markers of risk and vulnerability. At present the there is a limited body of academic literature investigating and discussing protective factors for mental health and wellbeing; particularly in comparison to that detailing risk factors and vulnerability. What is known is that both external, environmental factors and internal factors are important in reducing the risk of mental illness. A review of data from the 2001 New Zealand Youth Health Survey found that strong connection to family and the belief that one's family are caring and supportive was a protective factor against suicidality among adolescent Māori in New Zealand (Clark et al., 2011). Other studies have shown the importance of caring friends and non-parental adults (Borowsky, Taliaferro, & McMorris, 2013), employment (Viner et al., 2012), family connectedness (Viner et al., 2012), and safe school environments (Fleming, Merry, Robinson, Denny, & Watson, 2007) as factors that reduce the risk of youth mental illness. Within workplaces, job security and a sense of control act as protective factors against mental illness for employees (Allen et al., 2014).

Resilience is a concept related to protective factors, but refers to the attributes and characteristics of an individual, such as emotional regulation and problem solving skills, that allow a person to weather challenging circumstances (Hjemdal, Friborg, Stiles, Rosenvinge, & Martinussen, 2006). High levels of resilience are recognised as protective against the development of mental illness and are associated with flourishing population wellbeing (Faculty of Public Health and Mental Health Foundation, 2016; Fisher & Baum, 2010; Hjemdal et al., 2006) and there is ongoing research investigating ways to increase resilience in individuals, and the population (Fisher & Baum, 2010).

4.4 The determinants of mental health in the Waikato DHB region

The purpose of this report is primarily to inform a review of the model of care for mental health services and the development of inter-sectoral preventative strategies for the Waikato District Health Board. Many of the risk factors for the development of mental illness are difficult to quantify at a population level (e.g. discrimination, poor parental attachment, dysfunctional families). Consequently, this next section first considers physical health comorbidities and then looks at the social, economic and environmental factors using population level data where available. The analysis are presented for the Waikato Region or Waikato DHB (boundaries as defined by Statistics New Zealand) and further disaggregated to the TA level where possible. A brief literature review of each key determinant, with a focus on New Zealand-relevant information, is also provided.

4.4.1 Physical health

New Zealand and international data indicate that people with mental illness have a higher burden of physical health conditions. People with serious mental illness frequently live with high levels of comorbid physical conditions and have shorter lives (Chang et al., 2011; Lawrence, Hancock, & Kisely, 2013; Piatt, Munetz, & Ritter, 2010; Sweeney & Shui, 2016). Additionally, the impact of mental illness on physical health disproportionately impacts some groups in society, namely Māori and Pacific people and people who face greater socioeconomic deprivation (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Mental Health Commission, 2012; Morton et al., 2010; Morton et al., 2012).

There are multiple reasons for this disparity, including the adverse effects of psychiatric medications on physical health, the higher prevalence of risk factor behaviours for chronic disease (e.g. smoking), a higher likelihood of death or injury from violence, accidents and suicide and poorer access to health services or fewer resources to undertake treatment (Cunningham, Sarfati, Peterson, Stanley, & Collings, 2014; Sweeney & Shui, 2016; Thornicroft, 2011). Once again this relationship is bi-directional, with mental illness both increasing the risk of poor physical health and poor physical health negatively influencing one's mental health and wellbeing.

Data from Te Rau Hinengaro - The New Zealand Mental Health Survey, indicate that in New Zealand adults with a mental illness have a higher prevalence of chronic pain, cardiovascular disease, hypertension and respiratory conditions (Scott, Oakley Browne, Mcgee, & Elisabeth Wells, 2006). The results of this survey also indicate people with mental illness have a higher prevalence of risk factors associated with physical ill health; such as smoking, obesity and hazardous alcohol consumption (Scott et al., 2006). In fact, people with mental illness are known to be some of the

highest consumers of tobacco (Ashton, Rigby, & Galletly, 2014; Tobias, Templeton, & Collings, 2008) and New Zealand indicate that 33 per cent of cigarettes consumed in New Zealand in 2008 were consumed by people with a mental health disorder (Tobias et al., 2008).

Shorter life expectancies are also an unwanted outcome for people with mental illness. A 2014 review of adults who had accessed secondary mental health services in New Zealand found that the standardised mortality rate was twice that of the general population (Cunningham et al., 2014). Most deaths were due to "natural causes", predominantly cancer and cardiovascular disease, however suicide and accidents were also more common compared to the general population (Cunningham et al., 2014).

Figure 4.2 shows the relationship between self-reported physical health and life satisfaction for New Zealanders and residents of the Waikato DHB region based on data from the New Zealand General Social Survey. The data indicate a strong association between self-rated health and life satisfaction. Similar levels of life satisfaction was reported within the Waikato DHB and New Zealand populations for people who reported 'good/fair' or 'excellent/very good' health. However, life satisfaction was considerably higher among people in the Waikato DHB region with poor self-rated health compared to the general population; 78.6 per cent of Waikato DHB residents with poor health reported they were 'very satisfied/satisfied' with their lives, compared with only 51.5 per cent of all New Zealanders who reported poor health.

Figure 4.2 Self-rated life satisfaction by self-rated health for residents aged 15 years or more, Waikato region and total New Zealand

Source: Statistics New Zealand dataset (General Social Survey) 'Overall Life Satisfaction by Self-rated Health, by region (2012)'

4.4.2 Poverty

Material poverty has been shown to be strongly associated with the development of mental illness and lower states of wellbeing. This relationship is bi-directional; poverty both increases the risk of developing a mental illness and mental illness increases the risk of an individual becoming impoverished (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Manseau, 2014; Murali & Oyebode, 2004). When considering poverty as a cause of mental illness, financial debt is one of the strongest risk factors (Jenkins et al., 2009). Research has shown a dose response between financial debt and the development of mental illness (Jenkins et al., 2008). Furthermore, strong social welfare systems have been shown to act as a protective factor against the impact of poverty and unemployment on the development of mental illness (Allen et al., 2014; Manseau, 2014). Additionally, living in areas of high social deprivation has been found to be deleterious to mental health outcomes, even after adjustment for individual or household level poverty (Manseau, 2014).

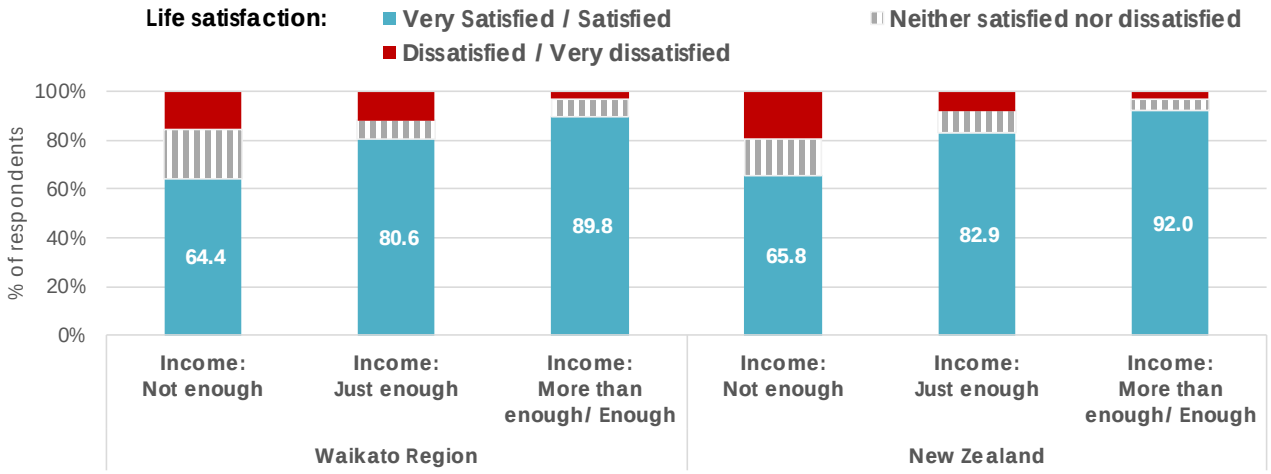
There is also emerging evidence to indicate that relative poverty, or wealth inequality, influences the development of mental illness due to its impact on social exclusion and stigma (Murali & Oyebode, 2004; Pickett & Wilkinson, 2010). Consequently, the prevalence of mental illness follows a strong social gradient, with mental illness increasing with greater levels of economic hardship (Allen et al., 2014; Fisher & Baum, 2010; Manseau, 2014; Murali & Oyebode, 2004). This trend is seen in New Zealand data. The 2015/16 New Zealand Health Survey shows that psychological distress and hazardous alcohol consumption increase with neighbourhood deprivation (Ministry of Health, 2016a). Te Rau Hinengaro - The New Zealand Mental Health Survey found that common mental health problems are more prevalent among people who experience greater disadvantage using a number of different measures: lower educational qualification, lower equivalised household income or area deprivation (Oakley Browne et al., 2006).

It is also crucial to note that exposure to poverty in childhood has a much greater negative impact on mental health outcomes compared with exposure to poverty in later life (Braveman, 2014; Manseau, 2014).

Data from the New Zealand General Social Survey indicate that income adequacy and life satisfaction show a strong correlation. Data from both the Waikato DHB region and the New Zealand population show that life satisfaction is more likely to be rated higher for people who rate their income as ‘enough’ or ‘more than enough’, compared with ‘just enough’ or ‘not enough’ (Figure 4.3). Self-report of ‘not enough’ income was associated with a higher proportion of people also reporting that they were ‘dissatisfied’ or ‘very dissatisfied’ with life. However, even for those people who rate their income as ‘not enough’ 64.4 per cent of Waikato DHB residents and 65.8 per cent of all New Zealanders report that they are satisfied or very satisfied with their lives. Compared to the New Zealand population, Waikato DHB residents with ‘not enough’

income were more likely to report favourable life satisfaction, with a higher proportion of people reporting they were 'neither satisfied or dissatisfied' rather than 'dissatisfied' or 'very dissatisfied'.

Figure 4.3 Self-rated life satisfaction by income adequacy for residents aged 15 years or more, Waikato DHB region and total New Zealand



Source: Statistics New Zealand dataset (General Social Survey) 'Overall Life Satisfaction by Income Adequacy, by region (2008)'

The median personal income for people aged 15 years and over in New Zealand is $28,500 per annum (Figure 4.5). For people resident in the Waikato DHB region, the median income is slightly lower at $27,900 per annum as recorded at the 2013 Census. Disaggregation by TA indicates that residents in four of the ten TAs had a median personal income similar or greater than the New Zealand median. However, of the remaining six TAs, residents of Hauraki, Thames-Coromandel, South Waikato and Ruapehu, had a median personal income of less than $25,000 per annum.

Figure 4.4 Median personal income for people aged 15 years and over resident in the Waikato DHB region and New Zealand (2013 Census)

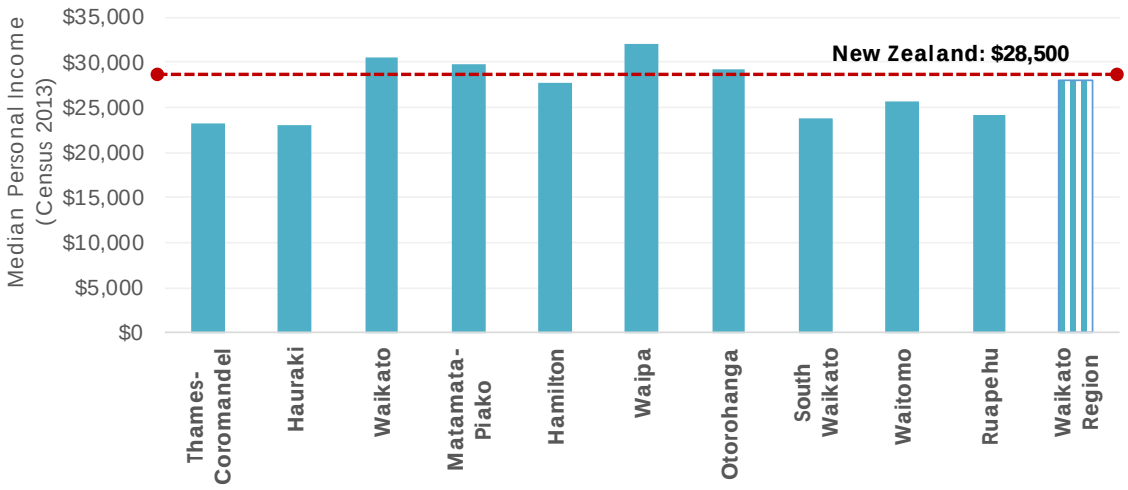
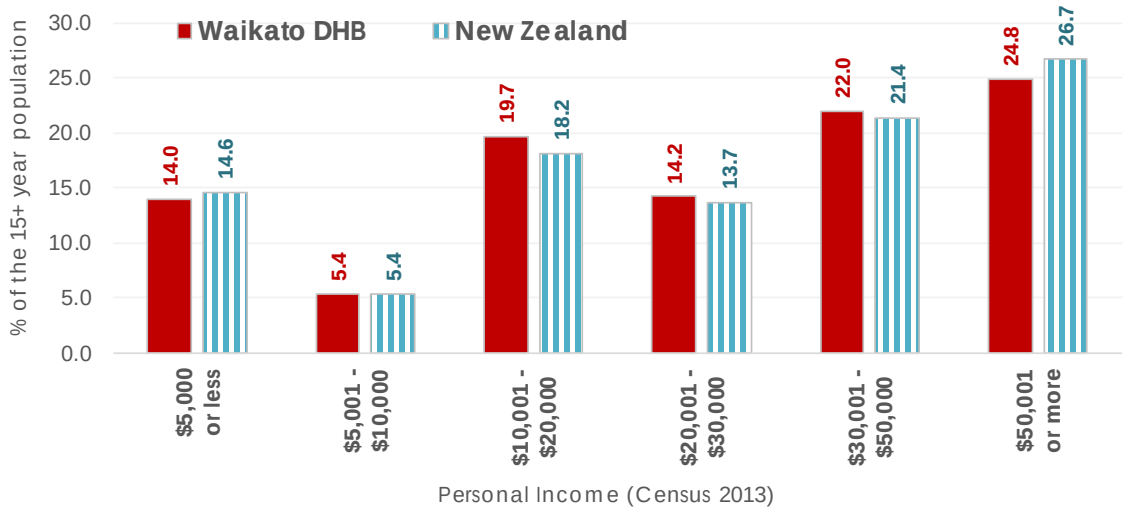


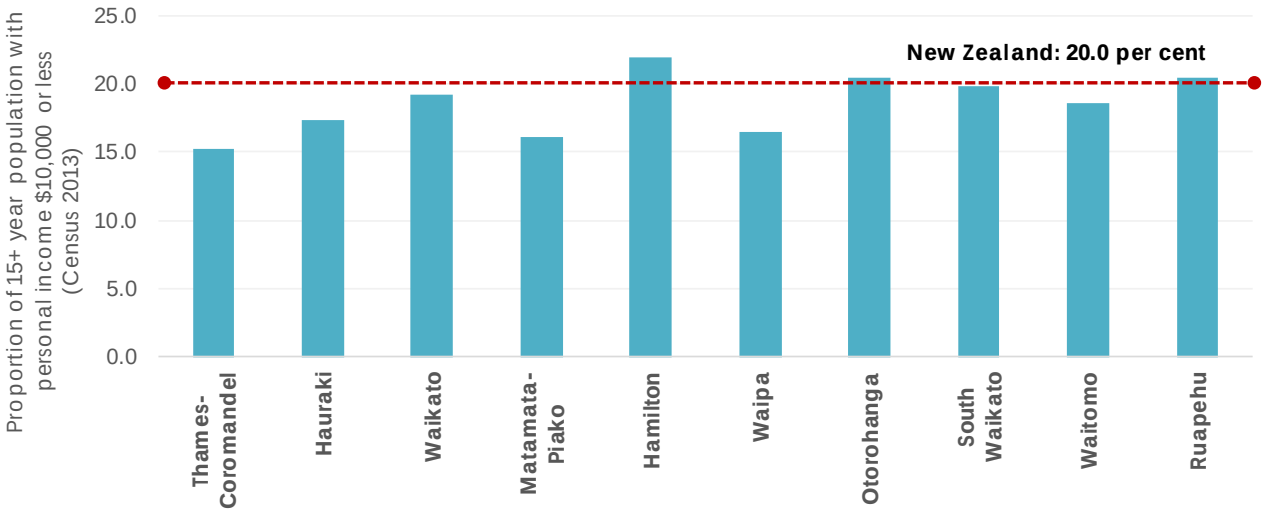
Figure 4.5 indicates the proportion of residents 15 years and over in the Waikato DHB area and New Zealand with personal incomes within each income band (based on 2013 Census data). Compared to the national average, Waikato DHB residents were slightly less likely to have a personal income over $50,000. However, the proportion of residents earning in each income band was overall similar between Waikato DHB residents and the wider New Zealand population.

Figure 4.5 Personal income for residents aged 15 years and over in the Waikato DHB region and New Zealand (2013 Census)



In New Zealand, 20 per cent of people aged 15 years and over have a personal income of less than $10,000 per annum (Figure 4.6). Within the TAs of the Waikato DHB region, a higher proportion of residents earn less than $10,000 per annum in Hamilton City (partly contributed to by the large student population of the city) and the Otorohanga and Ruapehu districts.

Figure 4.6 Proportion of Waikato DHB residents (aged 15 years+) with personal income less than $10,000 disaggregated by TA area (2013 Census)



The median family income for New Zealand is $72,700 per annum. This is lower in Waikato DHB region, with a median family income of $69,000. Within the Waikato DHB region, the median family income exceeded the national median in only two TAs: Waikato and Waipa.

Figure 4.7 Median family income in the Waikato DHB region and disaggregated by TA area (2013 Census)

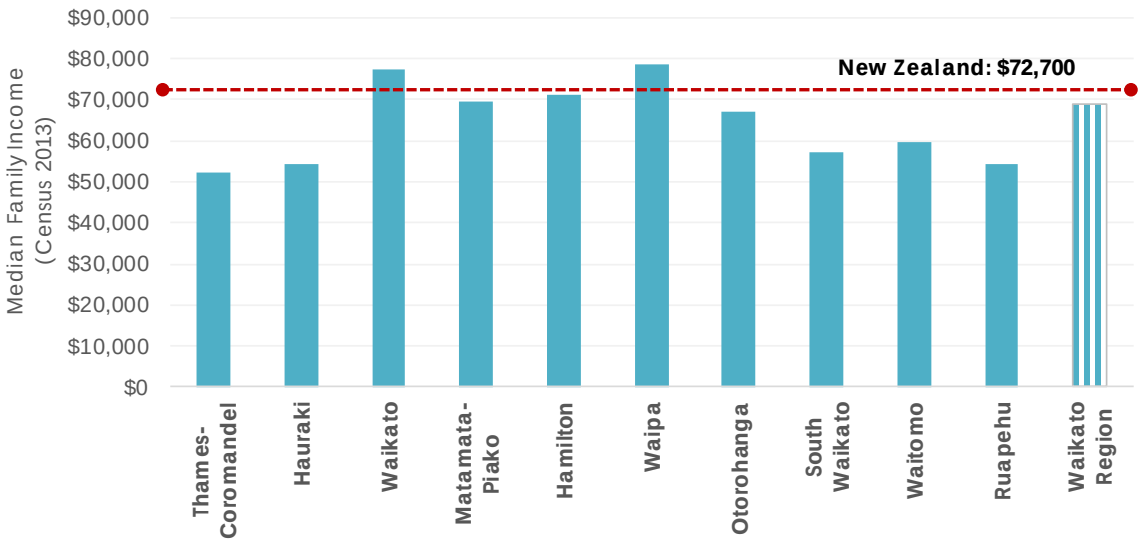


Figure 4.8 outlines the total family income for residents aged over 15 years in the Waikato DHB area and total New Zealand. Notably, fewer families in the Waikato DHB have a family income of $100,001 per annum compared to national data. A breakdown of family income by territorial authority within the Waikato DHB area (Figure 4.9) shows the proportion of families with a household income of less than $50,000 per annum. Nationally, 32.6 per cent of families have an income of less than $50,000 per annum. However, within the Waikato DHB area, this figure is higher for most TAs and notably over 40 per cent of families in Thames-Coromandel, Hauraki, South Waikato and Ruapehu districts have a household income of less than $50,000.

Figure 4.8 Median family income for residents aged 15 years and older resident in Waikato DHB and New Zealand (2013 Census)

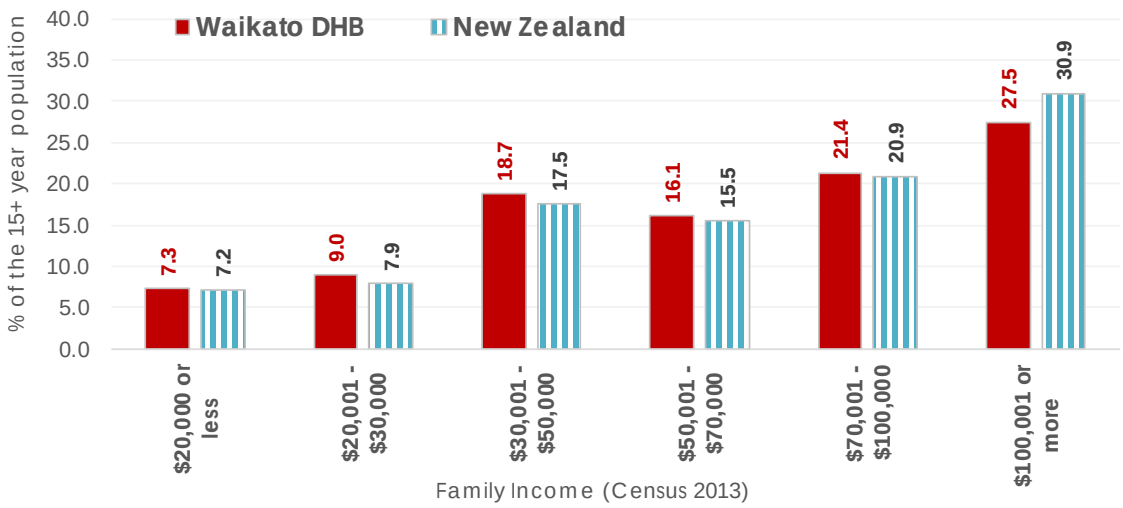
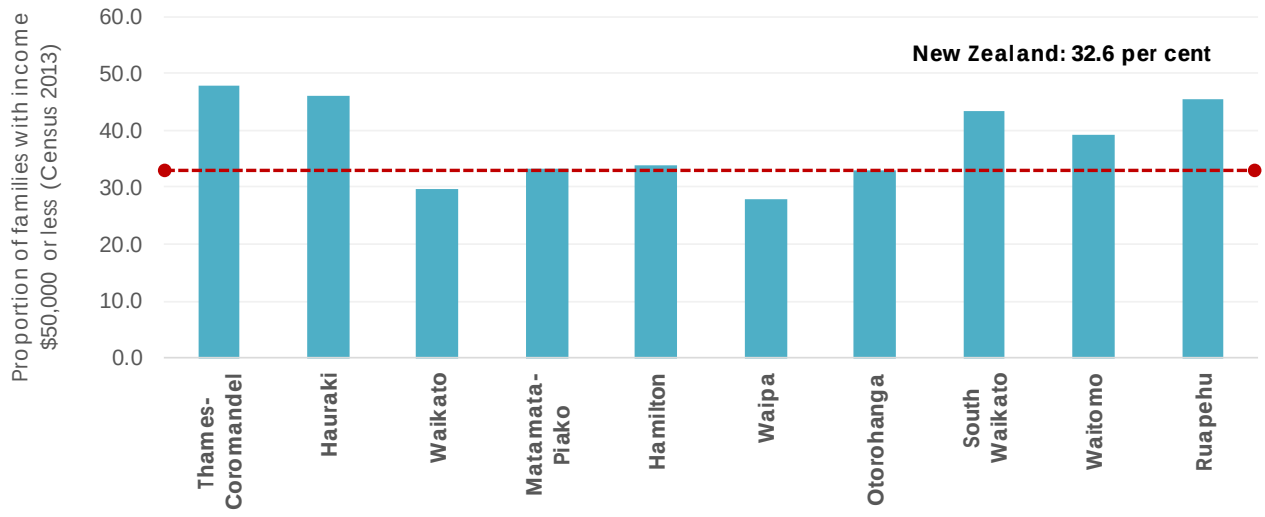


Figure 4.9 Proportion of families in the Waikato DHB area with an income of less than $50,000 per annum disaggregated by TA area (2013 Census)



4.4.3 Housing

Housing is one of the many proximal stressors for which there is strong evidence of an association with mental health outcomes (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Pierse, Carter, Bierre, Law, & Howden-Chapman, 2016; Sederer, 2016). Overcrowding, housing quality, tenure, housing insecurity and homelessness, have all been linked to chronic stress and negative impacts on mental health outcomes (Fazel, Geddes, & Kushel, 2014; Fisher & Baum, 2010; Johnson & Chamberlain, 2011; Pierse et al., 2016). Safe and affordable housing is now well recognised as a key policy area for good population mental health (Sederer, 2016).

Cold, damp and unsuitable homes have significant impacts not only on physical health, but also mental health. This is mediated by the negative impact of poor housing on quality of life, physical ill health and the stigma and stress of poor housing conditions (Faculty of Public Health and Mental Health Foundation, 2016; Howden-Chapman, Keall, Conlon, & Chapman, 2015). Quality of housing is particularly important for the very young and the very old, who are estimated to spend up to 90 per cent of their time at home (Howden-Chapman et al., 2015).

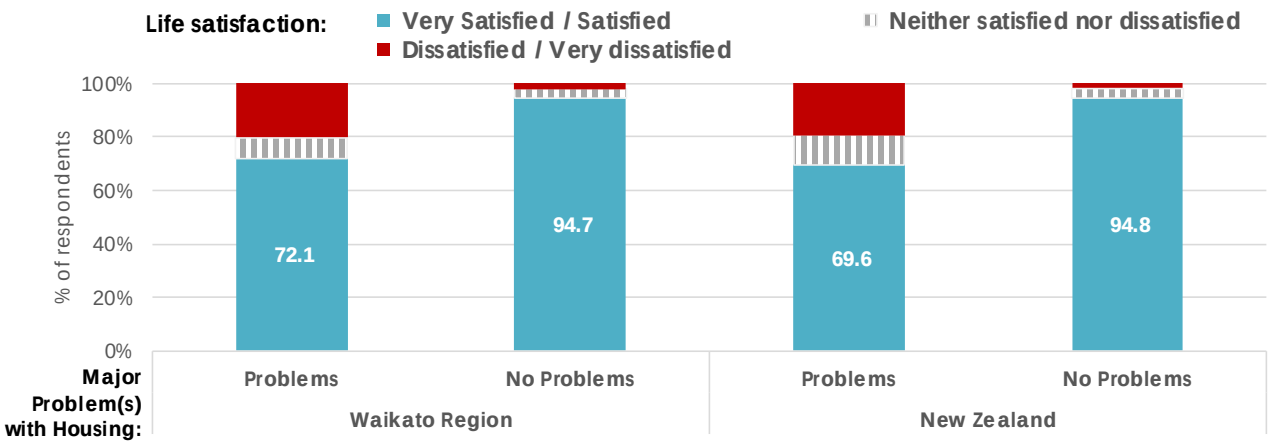
Household crowding is also a significant determinant of mental health, and crowded home conditions have been linked with chronic stress and family violence (Allen et al., 2014). Additionally, household overcrowding is strongly linked with insecure tenure, particularly rental accommodation (Pierse et al., 2016). Housing security, in terms of both tenure and affordability, are also important considerations. Loss of control over housing decisions, through either an inability to meet costs or forced relocation for renters, is a significant stressor for many households, particularly those on low incomes (Sederer, 2016). Updated population-based analyses of

overcrowding in the Waikato DHB, subsequent to the 2006 Census, was not available at the time of writing of this report.

At the extreme end of housing stress is homelessness. A situation that affects a relatively small proportion of the population, but one that both causes and is caused by mental illness and substance abuse (Fazel et al., 2014; Johnson & Chamberlain, 2011). Homelessness is also associated with significantly reduced life expectancy (Fazel et al., 2014). The prevalence of mental health and addiction problems amongst homeless people is known to be higher than in the community (Fazel, Khosla, Doll, & Geddes, 2008). However, accurate prevalence information, including for New Zealand, is not known. A 2008 meta-analysis of homeless people in high-income western countries found the population prevalence of multiple mental illnesses well above community prevalence estimates: alcohol dependence 37.9 per cent, drug dependence 24.4 per cent and psychosis 12.7 per cent (Fazel et al., 2008).

Data from the 2012 New Zealand General Social Survey indicate an association between self-reported major housing problems and life satisfaction (Figure 4.10). Higher levels of life satisfaction were more common among New Zealanders who did not identify major problems with their houses. Only minor differences were noted in the levels of life satisfaction for people with and without major housing problems in Waikato DHB compared to the rest of New Zealand.

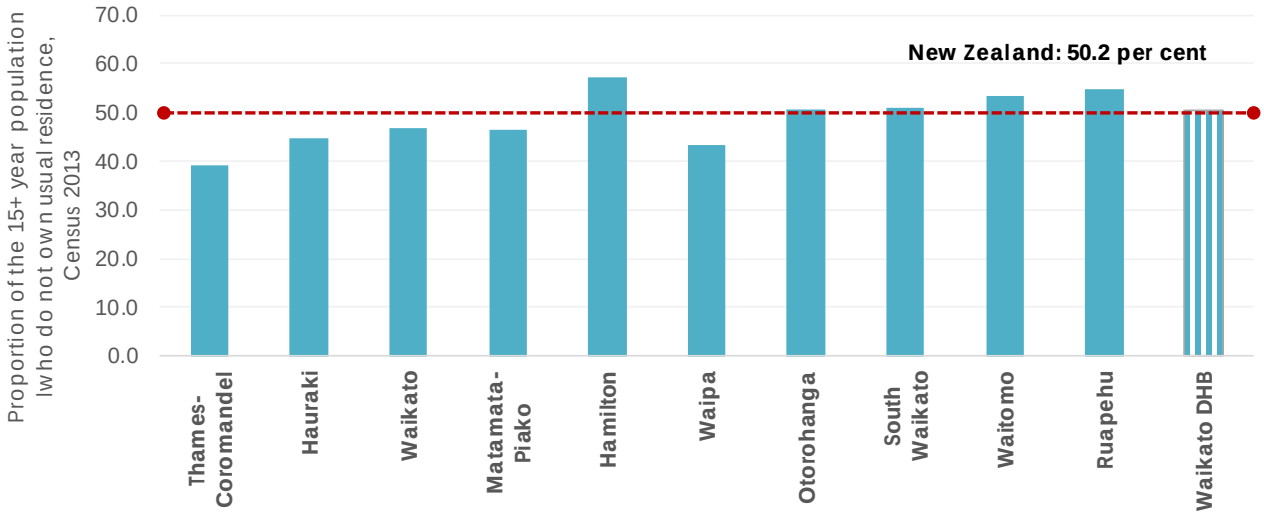
Figure 4.10 Self-reported major problems with housing and life satisfaction for residents of the Waikato region and New Zealand.



Source: Statistics New Zealand dataset (General Social Survey) Overall Life Satisfaction by Housing Satisfaction and Housing Problems, by region (2012)'

Throughout New Zealand just over half (50.2 per cent) of New Zealanders aged 15 years and over do not own (or partly own) their usual residence as recorded at the 2013 Census. The Waikato DHB region as a whole has similar rates of different housing tenure types compared with the New Zealand population (Figure 4.11). However, when disaggregated by TA, home ownership is less common in the Hamilton, Waitomo and Ruapehu districts of the Waikato region compared with nationally. Of all Waikato DHB TAs, home ownership was least common for residents of Hamilton.

Figure 4.11 Proportion of Waikato DHB residents aged 15 years and over who do not own their usual residence disaggregated by TA area, 2013 Census



4.4.4 Employment

People with mental illness are some of the most socially and economically marginalised in our communities (Waghorn & Lloyd, 2005). This pattern is particularly apparent when one considers the high rates of unemployment and labour force non-participation for people with mental illness (Waghorn & Lloyd, 2005). As with other determinants discussed in this report, employment is both a driver of mental illness and a consequence.

Unemployment has wide reaching effects. It has negative impacts on income levels, housing affordability, social inclusion and also one's purpose, identity and personal sense of value (Huxley & Thornicroft, 2003; Waghorn & Lloyd, 2005). This of course has serious implications for individuals and whānau affected by mental illness, and also wider society when one considers both the social and economic costs (Harvey, Henderson, Lelliott, & Hotopf, 2009; Sharac, Mccrone, Clement, & Thornicroft, 2010).

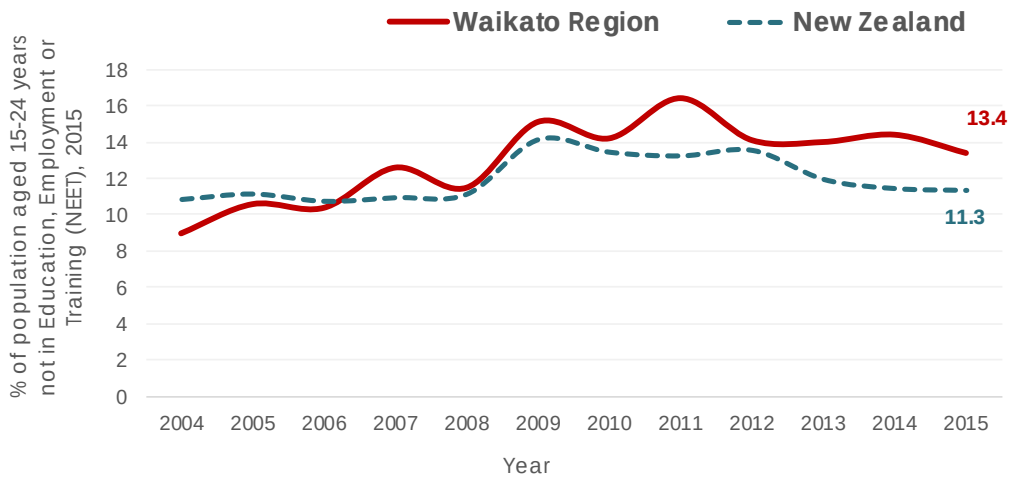
People with mental illness who are in paid employment have a greater likelihood than the general population of being in part-time, low-status, poorly paid, low control and insecure work (Allen et al., 2014; Faculty of Public Health and Mental Health Foundation, 2016; Huxley & Thornicroft, 2003; Sharac et al., 2010). Notably, job security and a sense of control in the workplace have been shown to act as protective factors against mental illness for employees (Allen et al., 2014). Job loss has also been found to be strongly correlated with mental illness, particularly depressive and anxiety disorders (Allen et al., 2014); this is unsurprising given that mental health disorders are a leading cause of absenteeism in high income countries (Harvey et al., 2009). Data from the New Zealand General Social Survey reflect the patterns seen in international literature: New Zealanders with mental illness are less likely to be in employment and

there is an inverse relationship between the severity of mental health disability and the likelihood of unemployment (Mental Health Commission, 2011).

A large contributor to the disparity in employment rates between those with and without mental illness is thought to be the stigma and discrimination faced by people with mental illness (Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012; Peterson, Pere, Sheehan, & Surgenor, 2007), which is still prevalent in our society (Corrigan et al., 2012; Corrigan & Watson, 2002; Hatzenbuehler et al., 2013). A 2007 survey of people with mental illness in New Zealand found that 34 per cent of respondents reported they had experienced some form of discrimination when seeking employment (Peterson et al., 2007). Unsurprisingly, a study from Australia indicate that for people with psychotic illnesses a lack of employment is listed among their highest concerns, along with personal finances and social isolation (Carr & Waghorn, 2013).

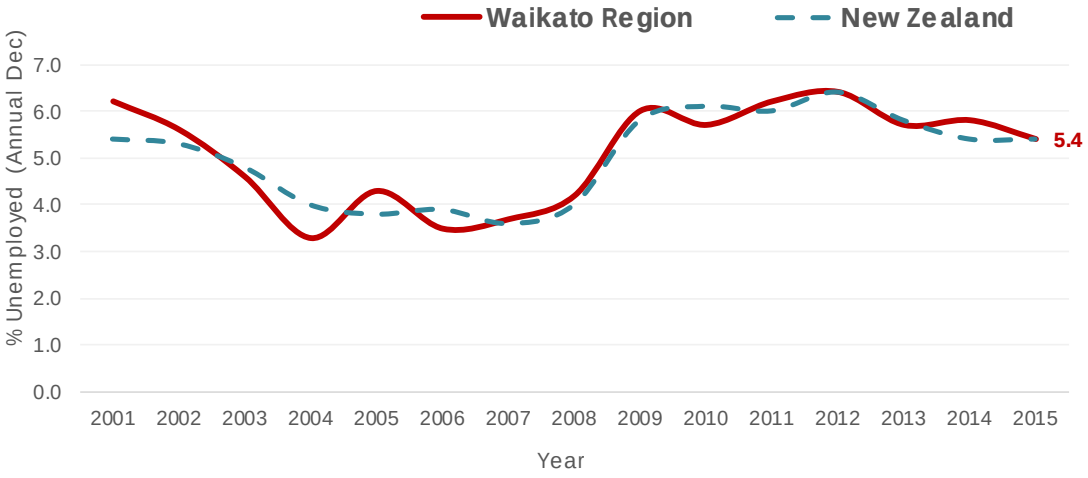
Figure 4.12 depicts the proportion of youth aged 15 to 24 years old not in employment, education or training (NEET) in the Waikato DHB region and New Zealand. The figure shows that rates have fluctuated over this time. However, the most recent figures (2015) indicate that the NEET rate in Waikato DHB (13.4 per cent) is higher than the national rate (11.3 per cent).

Figure 4.12 Proportion of the 15-24 year population not in education, employment or training (NEET), Waikato DHB region and New Zealand



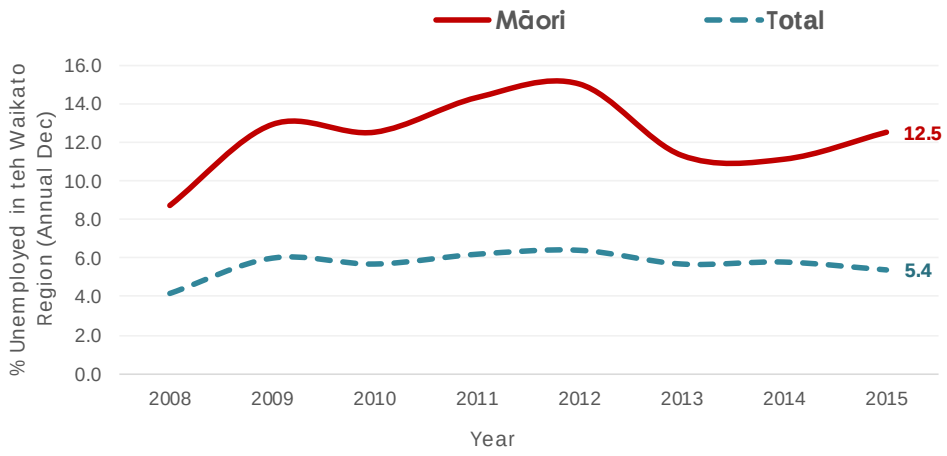
Unemployment rates for Waikato have largely followed national trends for the last 15 years (Figure 4.13). The most recent figures (2015) indicate that unemployment rates for Waikato DHB and New Zealand are comparable. In 2015, 5.4 per cent of the Waikato DHB population (aged 15+ years) was unemployed.

Figure 4.13 Unemployment rate for Waikato DHB region and New Zealand



In the Waikato DHB region, as with other parts of New Zealand, unemployment disproportionately impacts Māori. Figure 4.14 illustrates that in the Waikato DHB region Māori have higher rates of unemployment compared with non-Māori and have greater fluctuations in employment rates compared with non-Māori.

Figure 4.14 Unemployment rate for Māori and the total population in the Waikato Region



4.4.5 Education

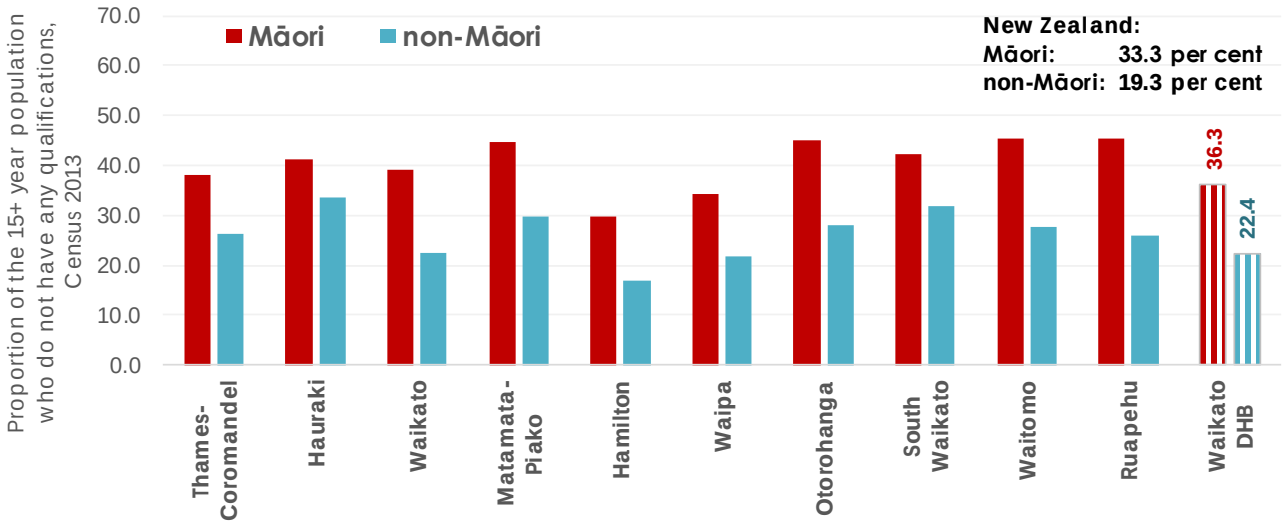
Education and mental health have strong reciprocal impacts on one another (Samavi, Bakhtari, & Nakhodaei, 2016). The majority of mental illness first presents in childhood, adolescence or early adulthood and often has profound impacts on school and tertiary studies (Cornaglia, Crivellaro, & McNally, 2015; Faculty of Public Health and Mental Health Foundation, 2016; Jaycox et al., 2009). This has significant implications for future employment and career prospects.

There is a strong link between poor mental health and lower educational achievement and educational drop out (Cornaglia et al., 2015; Jaycox et al., 2009). Mental illness is thought to lead to poorer education attainment because of its impact on stress, anxiety and a reduction in beliefs of self-efficacy (Cornaglia et al., 2015). Conversely, educational success is believed to improve mental health and wellbeing (Samavi et al., 2016). A 2009 longitudinal study of college students in the United States found poorer mental health at the outset of tertiary studies predicted lower academic achievement and increased dropout rates (Eisenberg, Golberstein, & Hunt, 2009). This pattern was particularly pronounced for students with anxiety disorders (Eisenberg et al., 2009).

New Zealand data is consistent with the international literature. Te Rau Hinengaro - The New Zealand Mental Health Survey (2006) found a strong gradient for both the prevalence of mental illness and the severity of mental illness based on educational attainment. This pattern was also seen in the results of the New Zealand General Social Survey, which found that people with symptoms of mental distress had lower levels of schooling and were less likely to have a higher education (Mental Health Commission, 2011).

Data from the 2013 Census indicate Māori are less likely than non-Māori to attain any formal education qualification (Figure 4.15). This pattern is also seen in the Waikato DHB region: 22.4 per cent of non-Māori had no formal qualifications, compared with 36.3 per cent of Māori. In Waikato, the proportion of people without any formal qualifications was lowest in Hamilton. Notably, in six TAs of the Waikato DHB region the proportion of Māori without any formal qualifications was above 40 per cent of the population.

Figure 4.15 Educational attainment for Māori and non-Māori in the Waikato DHB area disaggregated by TA area (Census 2013)



4.4.6 Social participation

A lack of social contacts and feelings of isolation are common consequences of mental health disorders, due to both the nature of the disorder and also because of the discrimination faced by people with mental illness (Corrigan & Watson, 2002; El-Badri & Mellsop, 2007; Huxley & Thornicroft, 2003).

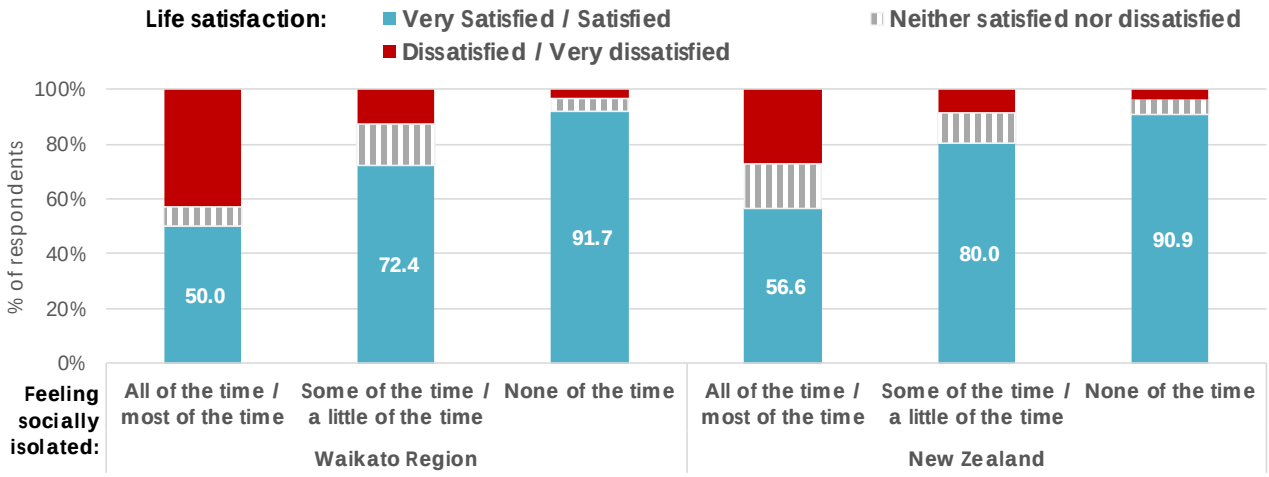
The stigma alone of mental illness is believed to have serious impacts on the lives of those with poor mental health (Corrigan et al., 2012) and people with mental illness are some of the most socially excluded in our society (Huxley & Thornicroft, 2003). Stigma is also of particular concern given the increasing evidence that social participation is crucial for recovery from mental illness (Ramon, Healy, & Renouf, 2007). Importantly in Aotearoa/New Zealand people with mental illness and addiction can also face isolation from cultural networks and supports, including those related to whānau, hapū and iwi. Access to cultural connections and a sense of belonging are important components of both mental health recovery and resilience to mental health risk.

Research indicates that people with mental illness are less likely to report having a close friend or someone they can turn to for help in a crisis (Huxley & Thornicroft, 2003). Data from the New Zealand General Social Survey shows an inverse relationship between loneliness and both a sense of wellbeing and life satisfaction (Mental Health Commission, 2011). However, once again, this relationship is bi-directional and loneliness and isolation have been linked to the development of depression, poor mental health, alcohol dependence and suicidal behaviours (Allen et al., 2014; Courtin & Knapp, 2015; Huxley & Thornicroft, 2003; Statistics New Zealand, 2013). This is particularly of concern for young children who are more vulnerable to toxic social or physical environments (Braveman, 2014; Moore & West, 2016; Simpson et al., 2016) and for elderly people who

frequently have shrinking social circles and health and disability concerns which can make socialising outside of the home difficult (Allen et al., 2014).

Data from the New Zealand General Social Survey show a clear relationship between increasing social isolation and dissatisfaction with one's life (Figure 4.16). Data indicate that the Waikato DHB region and the New Zealand population show similar patterns, with exception to the results for people who report high levels of social isolation. Amongst people who report that they were frequently lonely, those who lived in the Waikato DHB region were more likely to also report a high level of dissatisfaction with their lives (42.9 per cent) compared to the New Zealand population (27.1 per cent).

Figure 4.16 Self-reported social isolation and life satisfaction for residents of the Waikato DHB region and New Zealand



Source: Statistics New Zealand dataset (General Social Survey) 'Overall Life Satisfaction by Social Isolation, by region (2012)'

5 Secondary Mental Health and Drug & Alcohol service utilisation data

Key points

Data analysed in this chapter related to the 18,220 individuals recorded in the Programme for the Integration of Mental Health Data (PRIMHD) in 2015. These tangata whaiora accessed a secondary mental health/AoD service funded by the Waikato DHB in 2015, and/or lived in the Waikato DHB area in 2015. Of these individuals, 14, 984 residents lived in the Waikato DHB area. Of those not living in the Waikato DHB, but funded by the Waikato DHB (3,236 individuals), the majority were aged 25-44 years, were living in the wider Midland area, and were provided services by Non-Government Organisations (NGOs) in an outpatient or community setting.

Utilisation of services

- In 2015, there were a total of 318,439 activity types or service provision activities recorded in PRIMHD for clients whose allocated TA of residence was within the Waikato DHB boundary. These activities represent 14,984 tangata whaiora.
- Of the 14,984 tangata whaiora residing in the Waikato DHB area, 97 per cent received an activity type coded within PRIMHD as a 'contact' service provided in outpatient and community setting (not requiring hospitalisation); 3 per cent received a 'bed-night' service provided in an inpatient hospital or residential care setting; and a very small proportion were coded as 'seclusion' activity type.
- Of the 14,953 tangata whaiora residing in the Waikato DHB area that received a 'contact' outpatient/community service, an average of 20.6 contacts were received per client in 2015: 39 per cent of these outpatient activity types were individual treatment attendances with the client; 15 per cent were co-ordination contacts and 14 per cent were contacts with family/whānau.
- Two-thirds of the services/activities delivered in an outpatient/community setting required face-to-face or in-person contact with client or the whānau – an annual average of 15.6 face-to-face contacts per client. On average, around nine contacts per client were non-face-to-face (via telephone/written correspondence/text messages).
- Of the 1, 938 clients that received a 'bed-night' service, there were an average of 67.6 bed-nights received per client in 2015 (an average of 13.4 bed-nights per client episode)
- 69 per cent of the bed-nights utilised in 2015 were in a community based 'residential' rehabilitative MH/AoD setting. With an average of 21 bed-nights utilised per episode of care, each of the 800 tangata whaiora in this residential setting utilised around 112.4 bed-nights in 2015. This residential setting therefore required the greatest number of bed-nights per tangata whaiora. 29.5 per cent of bed-nights were in a hospital setting where clients were an

'inpatient' for treatment of MH/AoD issues. These bed-nights were delivered to more clients (1,169) and each of these episodes of care required an average of 8.3 bed-nights, with each client utilising 33 bed-nights on average. There were 433 clients (1.4 per cent of bed-night activity unit types) delivered bed-night activities in a 'Community' setting (all 'Crisis respite care occupied bed nights' – average of 2.5 bed-nights per episode); and 0.6 per cent of bed-nights were delivered in an 'Onsite' setting (mostly substance abuse residential services – 9.4 bed-nights per episode on average).

- The provider arm of the DHB delivered a little over half of the outpatient as well as the inpatient activities/services recorded in PRIMHD in 2015 (56.3 and 54.1 per cent, respectively). The remaining half were delivered by the NGO/Community sector. Services requiring seclusion were only delivered by the DHB's provider arm.
- Of all bed-nights, 71 per cent were provided by the NGO/Community sector (in a residential setting), the remainder delivered by the DHB's provider arm were provided in a hospital setting.
- 'Contact' activities, delivered in an outpatient /community setting, accounted for 97 per cent of bother the DHB provider arm and the NGO sector activities, and irrespective of the service provider, 'contact' activities involved an average of 13 face-to-face contacts and seven telephone/written/text message contacts for each tangata whaiora.

Demographic profile of users

- Of all Waikato DHB resident tangata whaiora in the PRIMHD dataset in 2015, 60 per cent were aged 15-44 years (compared to 39 per cent in this age range in the total Waikato DHB resident population). The prioritised ethnic identification of 35 per cent of all Waikato DHB-resident tangata whaiora in PRIMHD in 2015 was Māori, while 23 per cent of the total resident population are Māori. This is likely to reflect both an over-representation of Māori in the utilisation data as well as the age structure of the tangata whaiora.
- The sex profile of tangata whaiora in 2015 coded in the Mental Health service type within PRIMHD (and not only in AoD), is the same as the total resident population - 51 per cent females and 49 per cent males.
- An over representation of males (66 per cent) and Māori (44 per cent) is seen particularly for the utilisation patterns focused on the AoD service types.

Utilisation rates

- In 2015, approximately 384 residents per 10,000 utilised secondary mental health services. The overall utilisation rate was higher among men (413 per 10,000) compared to women (355 per 10,000).

- Age-specific rates were highest for those aged 15-24 years, with no difference between the female- and male-specific rates in this age group.
- In the 0-14 year, 25-44 year and 45-64 year age groups, the male-specific rate was higher than the female-specific utilisation rate. In those aged 65-74 years and 75+ years, the female-specific utilisation rate was higher than that seen for males.
- The overall utilisation rates are greater across all age groups for those that are coded within the MH services (not coded only for AoD services) compared to those that are coded within the AoD services (not coded only for MH services).
- The highest age- and sex-specific utilisation rate within the MH services (those that are not coded only for AoD services) is seen for female youth (aged 15-24 years). The highest age- and sex-specific utilisation rate within the AoD services (those that are not coded only for MH services) is seen for male adults (aged 25-44 years).
- The overall utilisation rate of secondary MH/AoD services is slightly higher for the DHB's provider arm (279 per 10,000 residents) compared to NGO/Community services (219 per 10,000). Substantially higher utilisation rates are seen in the DHB provider arm (compared to the NGO/Community sector) for those residents 65 years and older, and particularly those aged 75+ years.
- Utilisation rates are highest among Māori residents (546 per 10,000) and lowest for Asian (103 per 10,000). This pattern is the same across all age groups with the exception of children aged 0-14 years, where the highest utilisation patterns are seen among the Other ethnic group, 263 per 10,000.Within the Māori and Pacific ethnic groups, utilisation rates are higher for males compared to females. In the Asian and Other (predominantly European) ethnic groups, male utilisation rates are lower than females, or the sex-specific rates are similar.
- Utilisation rates are notably higher for residents within the Ruapehu, South Waikato and Hauraki TAs of the DHB. Importantly, the highest proportion of the Waikato DHB resident population living in area-level socioeconomic deprivation are also found in the South Waikato, Ruapehu, and Hauraki TAs Of all TAs, Otorohanga has the lowest MH/AoD utilisation rate followed by Matamata-Piako.
- 383 residents per 10,000 utilised secondary MH/AOD services in an outpatient/community setting. Each client on average utilised 20.6 outpatient contacts annually (on average 15.6 face-to-face contacts and 9.1 contacts via telephone/written communication/texting). Access rates were higher for males (412 per 10,000) than females (355 per 10,000) across all age groups except youth (similar rates among males and females) and those aged 65+ years (higher rates for females). On average, a slighter greater number of contacts were provided annually to females compared to males.
- By age group, the highest number of outpatient/community contacts were for the 45-64 year age group and in this age group women had notably more outpatient contacts than men.

- By ethnicity, the rate of outpatient/community utilisation is much higher for Māori residents, than for non-Māori and this difference is seen across all age groups except the youngest (0-14) and the oldest (75+) – noting very small sample sizes in the older Māori service user populations. For those aged 25-44 years, the utilisation rate for Māori is more than 2.2 times that of non-Māori (931 per 10,000 compared to 414 per 10,000). The number of outpatient contacts follows the same age-related trend, with an average of 22.1 contacts per Māori client. The contact type (face-to-face vs telephone etc) is similar for Māori and non-Māori.
- BY TA, outpatient/community utilisation was greatest in Ruapehu (582 per 10,000), Hauraki (488 per 10,000) and South Waikato (474 per 10,000).
- 50 residents per 10,000 living in the Waikato DHB area utilised MH/AoD 'bed-night' services and this rate was higher for males (54 per 10,000) than females (45 per 10,000).
- On average each client accessing the MH/AoD 'bed-night' services in 2015 utilised 67.6 bed-nights, with more bed-nights utilised by males compared to females. On average 30 residents per 10,000 utilised bed-nights in an Inpatient setting (hospital) and 20 residents per 10,000 in a Residential (community) setting. On average, 33 bed-nights were utilised annually by clients in an Inpatient (hospital) setting and 112.4 bed-nights were utilised per client in a residential facility.
- By ethnicity, Māori had substantially higher utilisation rates than non-Māori of 'bed-night' services, particularly for those residents aged between 15 and 64 years.
- By TA, higher than the DHB average 'bed-night' utilisation rates were seen in Ruapehu (67 per 10,000), Thames-Coromandel (61 per 10,000) and Hamilton (58 per 10,000). When disaggregated by inpatient and residential setting, the average number of inpatient bed-nights per client recorded in 2015 was highest for those residing in Hamilton while the average number of residential bed-nights per client was highest for those residing in Ruapehu, Waitomo and South Waikato.
- In 2015, approximately two per 10,000 residents of the Waikato DHB area utilised the seclusion services in 2015.

Projected utilisation patterns

- Assuming all else stays constant (such as access to the determinants of mental wellbeing, and service delivery models), utilisation rates can be mapped onto the resident population projections for the Waikato DHB through to 2023 and 2033.
- Over the eight-year period from 2015-2023, approximately 1,864 additional people are projected to access secondary MH/AoD services, which is an overall increase of 12 per cent.
- Over the eighteen-year period from 2015-2033 an additional 3,469 tangata whaiora are estimated to utilise MH and AoD services, an overall increase of 23 per cent. The number of 75+ year olds utilising these services is projected to more than double over 2015-2033. Those

aged 25-44 years and those aged 65+ will account for three-quarters of the projected growth in tangata whaiora numbers across the DHB region over the 2015-2033 period.

- The number of Māori residents utilising secondary MH/AoD services is projected to increase by 18 per cent over 2015-2023, compared to 10 per cent for non-Māori, and by 44 per cent for Māori from 2015-2033 (compared to 13 per cent for non-Māori from 2015-2033). This pattern is seen across all age groups. An increase of 898 Māori tangata whaiora is expected by 2023, and an increase in 2,173 by 2033, with the biggest increase seen in the 25-44 year old age group, and important increases in those over the age of 65 years. Numerically, the estimated increase for Māori is around 1.7 times more than that for non-Māori.
- Tangata whaiora residing in Hamilton, Waikato and Waipa are projected to account for almost all of the increased utilisation from 2015-2033 for the DHB region, with population growth in these three TAs offsetting the notable decline in client numbers estimated for the TAs of Ruapehu, South Waikato and Waitomo.

Diagnostic data

- 29.9 per cent of the total tangata whaiora (4,482 clients) for 2015 have a diagnostic code available in PRIMHD. 88.5 per cent of these had only one diagnostic category or group assigned.
- The most common diagnostic categories provided for these tangata whaiora are mood disorder (29 per cent of those for whom a diagnosis was available), schizophrenia/psychotic disorders (20 per cent); mental disorders not otherwise specified (19 per cent); anxiety disorders (14.5 per cent); and substance-related disorders (9.5 per cent).

5.1 PRIMHD data extraction

The key data source used for this section is the Programme for the Integration of Mental Health Data (PRIMHD) provided by the Ministry of Health. The database does not include any data related to primary mental health care such as that provided by general practitioners; nor does it contain any information on unmet need – those with a mental illness and/or addiction who do not access care and/or face unsurmountable barriers to the delivery of care. Therefore the scope of utilisation data in this chapter is limited to those receiving secondary services (i.e., individuals with moderate to serious mental health issues – particularly with respect to residential or inpatient care), and utilisation rates rather than prevalence data, though they are overlapping issues. Further limitations of the PRIMHD dataset apply to this report. For example, data entry to PRIMHD from the mental health NGO/Community sector is in its early stages, and therefore is unlikely to be complete.

The unit record database retrieved from the PRIMHD database in September 2016 using specifications provided by NIDEA, University of Waikato, contained secondary care data for 379,612 inpatient, outpatient or community based services provided in 2015 (calendar year, January to December) to tangata whaiora[2]/consumers who satisfied either one or both of the following conditions:

- accessed a secondary mental health/AoD service funded by the Waikato DHB in 2015;
- lived in the Waikato DHB area in 2015.

Variables used (Ministry of Health, 2015):

1. *Master Encrypted HCU ID* - This is the healthcare user's NHI number which has been encrypted for anonymity. A client is likely to access the mental health/AoD services more than once over a given time period and therefore this unique identifier was used in the analysis to count the number of individual clients.
2. *Sex*
3. *Prioritised Ethnic Group* - A mutually exclusive Māori/non-Māori classification has been used in this report. The Māori category includes all individuals recorded as Māori, either alone or in combination with some other ethnic group. Tangata whaiora for whom ethnicity was not recorded are included in the overall analysis but excluded from all analysis involving disaggregation by ethnicity.
4. *Age* – The age of the clients accessing services in 2015 has been calculated as on 30 June 2015 and grouped into broad age groupings – 0-14, 15-24, 25-44, 45-64, 65-84 and 85+ years. Within the wider mental health system, those aged 0 to 14 are defined as children; 15 to 17

[2] The 'tangata whaiora' term is used in this report to refer to the person who is the subject of care, assessment and treatment processes in mental health. The term consumer and client is also used.

year olds as youth, and those aged 18 years and older as adults (Mental Health Commission, 1998). However, for the purposes of comparison and the grouping of available census data at the subnational level, 15 to 19 years olds are often grouped into the same category along with those aged 20-24 years.

5. *DHB Domicile* - The District Health Board area in which the client resided at the time of contact with the mental health service or health event.
6. *TLA Domicile* – The Territorial Authority (TA) area in which the client was resident in 2015 as recorded at the time of contact with the mental health/AoD service. In case the recorded TA of domicile of an individual tangata whaiora/client changed over the 2015 year, the TA of usual residence for that client was allocated using the following rules:
   - In cases of multiple contacts over the year, the TA where the client lived for the maximum duration (derived from the activity start date) was assigned as the primary TA of domicile.
   - In cases of only two contacts (each contact having a different TA of domicile recorded) or in cases of more than two contacts where there was no one TA where the client lived for the most duration of time (derived from the activity start date), the TA of domicile recorded at the first contact in 2015 was taken as the primary TA of residence.
7. *Funding DHB* – The DHB funding the mental health/AoD service provided.
8. *Organisation Name* - The organisation providing the service, broadly categorised as 'DHB' (services provided by the 21 DHBs across New Zealand) and 'Other' (services provided by Non-Government Organisations or a Charitable Trust or Incorporated Society).
9. *Team Type* - A person or discrete grouping of people based in a particular location, who provide mental health care in an inpatient or community setting. Teams are grouped into categories by the New Zealand Health Information Service (NZHIS) according to their primary function.
10. *Activity Unit Type* - This describes the grouping assigned to the Activity / Service Type: Bed-night, Contact, Seclusion and Leave.
    - 'Bednight'[3]: These are the services provided in an inpatient setting in a hospital (or residential setting in case of these inpatient services delivered by NGOs), to people in need of close observation, intensive investigation or intervention. For services provided by the DHB, the activity type categorised as 'Bednight' is the inpatient or hospitalisation data which is recorded in the National Minimum Dataset (NMDS) as well as PRIMHD for mental health/AoD services.[4]
    - Contact: These are the services provided in outpatient and community settings (not requiring hospitalization).

[3] Throughout this document, "'bednight'" is used to describe the Activity Type 'bednight' listing in PRIMHD, while "bed-night" is used to describe the actual bed-nights utilised by tangata whaiora

[4] The National Minimum Dataset (NMDS) is a national collection of public and private hospital discharge information, including coded clinical data for inpatients and day patients. It is assumed that all the hospitalisation data recorded in NMDS is also recorded in PRIMHD.

- Seclusion: The placing of a tangata whaiora/consumer, at any time and for any duration, alone in a room or area from which they cannot freely exit. [5]
- Leave: The absence of a tangata whaiora/consumer from the healthcare/support facility to which they were most recently admitted/entered. Leave is reported only where that tangata whaiora/consumer is absent at midnight and is entered instead of the bed night for that period of leave. This activity type has been excluded from the analysis presented in this report.

11. *Activity Unit Count* - Gives the number of actual bed-nights for each client treated in an inpatient or residential setting.
12. *Activity Type* - Classifies the type of healthcare activity provided to the tangata whaiora/ consumer (see Appendix Table for the list of all Activity Types).
13. *Activity Setting* - Indicates the type of physical setting or contact channel that the activity was provided in, or in other words, it describes the type of setting the health tangata whaiora/consumer was accessing service in.
14. *Activity Start Date* – The date the client commenced accessing the mental health/AoD service.
15. *Activity End Date* – The date when the client ceased receiving the mental health/AoD service.

Of the 379,612 rows of secondary mental health/AoD activity data received from the MoH for the 2015 year:

- 30,595 were excluded (Activity types, T35: Did not attend and T37: On Leave)[6]
- 1,555 rows of data were for activity type code 'TCR' were used to get the count of number of bed-nights occupied by clients in an inpatient or residential setting. The TCR records are created in the PRIMHD database where an organisation submits leave and bed-night records that overlap. The TCR records are therefore generated to have a negative activity unit count equal to the length of the leave record. This is to enable accurate count of number of bed-nights in cases where organisations are unable to stop bed-nights records being recorded even while a client is on leave.

The remaining 347,462 rows of activity data for clients who in the year 2015 either lived in the Waikato DHB area or received at least one WDHB funded secondary health mental health/AoD

[5] There will be overlap between the 'bednight' and 'seclusion' Activity Unit Type as seclusion activities will have occurred during an inpatient stay

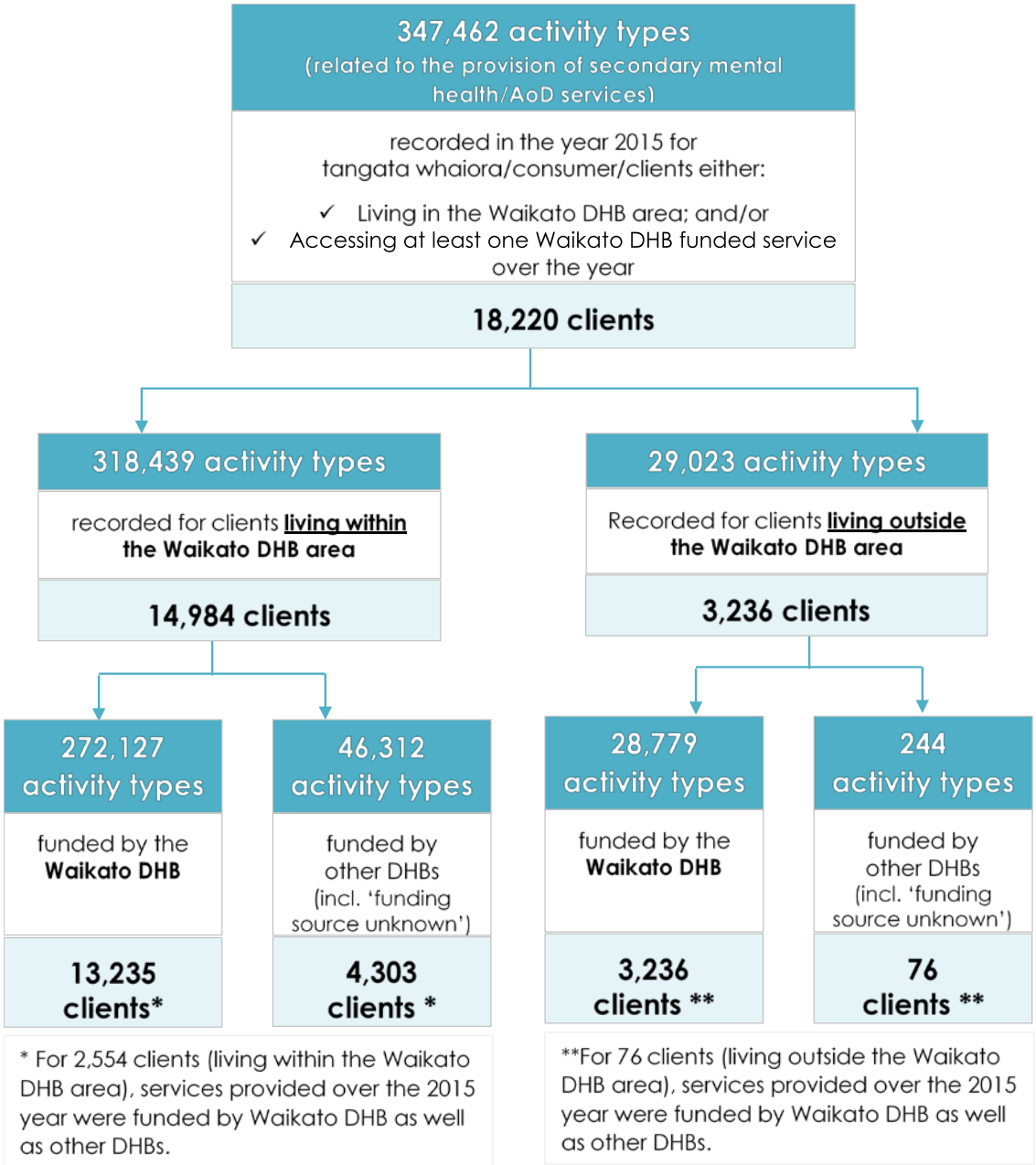
[6] T35: Did not attend - The tangata whaiora/consumer did not participate in a pre-arranged meeting, appointment, programme or activity.

T37: On Leave - The absence of a tangata whaiora/consumer from the healthcare/support facility to which they were most recently admitted/entered. Leave is reported only where that tangata whaiora/consumer is absent at midnight and is entered instead of the bed night for that period of leave

service were analysed as shown in Figure 5.1. The TA of domicile of the clients and the funding DHB for the 347,462 activity types recorded in 2015, are shown in Appendix Table 6.

Out of the total 18,220 individuals accessing services in 2015[7], approximately four-fifths (79.6 per cent or 14, 984 residents) lived in the Waikato DHB area. For the remaining 3,236 people whose allocated TA of domicile did not fall within the Waikato DHB boundary, there were 29,023 activity types recorded out of which, almost all were funded by the Waikato DHB (99.1 per cent or 28,779 activity types).

Figure 5.1: Secondary MH/AoD service provision activities delivered in 2015 disaggregated by funding DHB (Waikato and Other) and TA of domicile of the clients (living within and outside the Waikato DHB area)



[7] Individuals who satisfied either one or both of the following conditions: accessed a secondary mental health/AoD service funded by the Waikato DHB in 2015; or lived in the Waikato DHB area in 2015.

Table 5.1 and Table 5.2 provide the demographic profile (TA of residence, age and broad ethnic group) of the non-Waikato DHB domicile clients (3,236 individuals) funded by the DHB in 2015. The majority of these tangata whaiora are aged 25-44 years (43.2 per cent); belong to the prioritised ethnic grouping 'Other' (57.0 per cent); and are from the wider Midland area (34.6 per cent).

Table 5.1: TA of usual residence of clients not resident in the Waikato DHB area but utilising MH/AoD services funded by the Waikato DHB in 2015

TA of usual residence	Activity types recorded, 2015		Clients, 2015	
Far North/Whangarei/Kaipara	251	*0.9*	53	*1.6*
Auckland Region	4,962	*17.2*	657	*20.3*
Midlle part of North Island (Taupo to Palmerston North, excl TAs within Waikato DHB area)	8,467	*29.4*	1,120	*34.6*
South of North Island (Tararua to South Wairarapa)	4,305	*15.0*	869	*26.9*
South Island	10,704	*37.2*	513	*15.9*
Overseas	90	*0.3*	24	*0.7*
Total activities/clients living outside WDHB area funded by the DHB	**28,779**	*100.0*	**3,236**	*100.0*

Table 5.2: Age and prioritised ethnic group of clients not resident in the Waikato DHB area but utilising MH/AoD services funded by the Waikato DHB in 2015

Age Group	No. of clients	%	Ethnic Group	No. of clients	%
0-14 years	127	*3.9*	Māori	1,159	*35.8*
15-24 years	854	*26.4*	Pacific	120	*3.7*
25-44 years	1,397	*43.2*	Asian	67	*2.1*
45-64 years	796	*24.6*	Other	1,846	*57.0*
65-74 years	46	*1.4*	Not Recorded	44	*1.4*
75+ years	16	*0.5*			
	3,236	*100.0*		**3,236**	*100.0*

Figure 5.2 considers in more detail the 28,779 activity types funded by the Waikato DHB for tangata whaiora whose allocated TA of domicile fell outside the DHB boundary by disaggregating the data by service provider (provider arm of the DHB or NGOs). Appendix Table 7 provides a description of the activity types funded by Waikato DHB in 2015 for clients not usually resident within its boundary, disaggregated by service provider. A substantial majority (85.5 per cent) of these activities or services were provided by NGOs (see Appendix Table 8 for the list of these service providers).

Figure 5.2: Secondary MH/AoD activities/services funded by Waikato DHB for clients not usually resident in the Waikato DHB area disaggregated by service provider, 2015

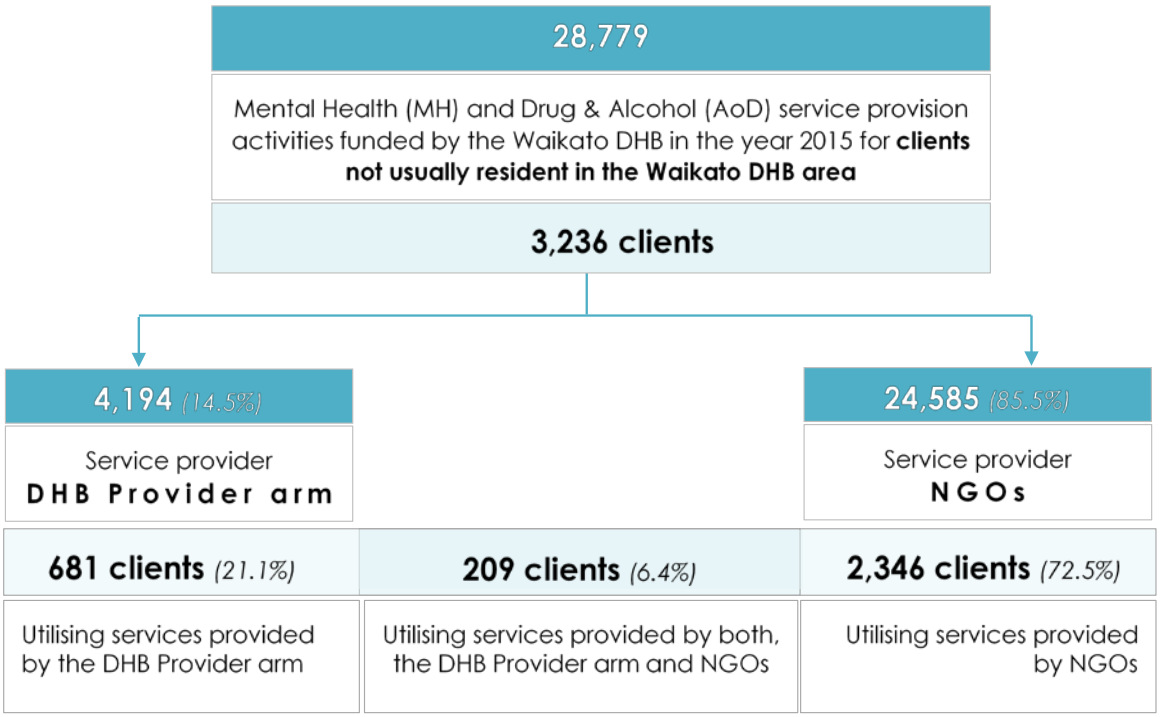
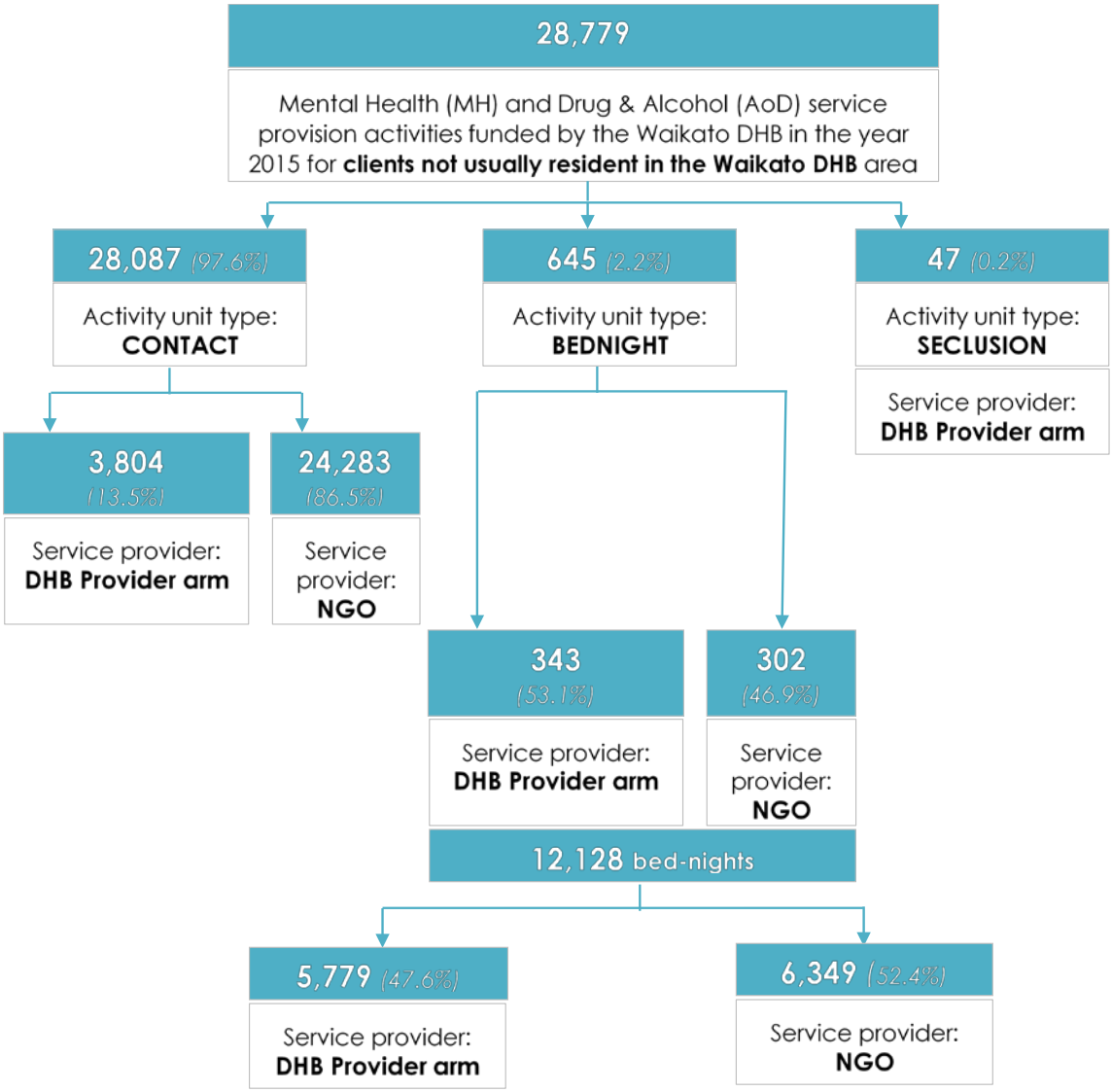


Figure 5.3 further disaggregates these 28,779 activities/services provided to non-Waikato DHB domicile clients by activity unit type. The three activity unit types recorded in the PRIMHD dataset are – Contact (activities/services delivered in an outpatient/community setting), 'Bed-night' (activities/services provided in an inpatient or residential setting) and Seclusion (services requiring the placement of client alone in a room or area from which they cannot freely exit). Almost all (97.6 per cent) were activities/services delivered in an outpatient or community setting. The majority (86.5 per cent) of these outpatient services to non-Waikato DHB clients were provided by NGOs (refer to Appendix Table 8 for the list of these service providers).

Of the 645 'bed-night' activity unit types recorded, just over half (53.1 per cent) were delivered by the provider arm of the DHB. These 645 instances of inpatient/residential care services equate to a total of 12,128 bed-nights (18.8 per episode of inpatient/residential care) funded by the Waikato DHB for clients not usually resident within its boundary.

Figure 5.3: Secondary MH/AoD activities/services funded by Waikato DHB for clients not usually resident in the Waikato DHB area disaggregated by activity unit type and service provider, 2015

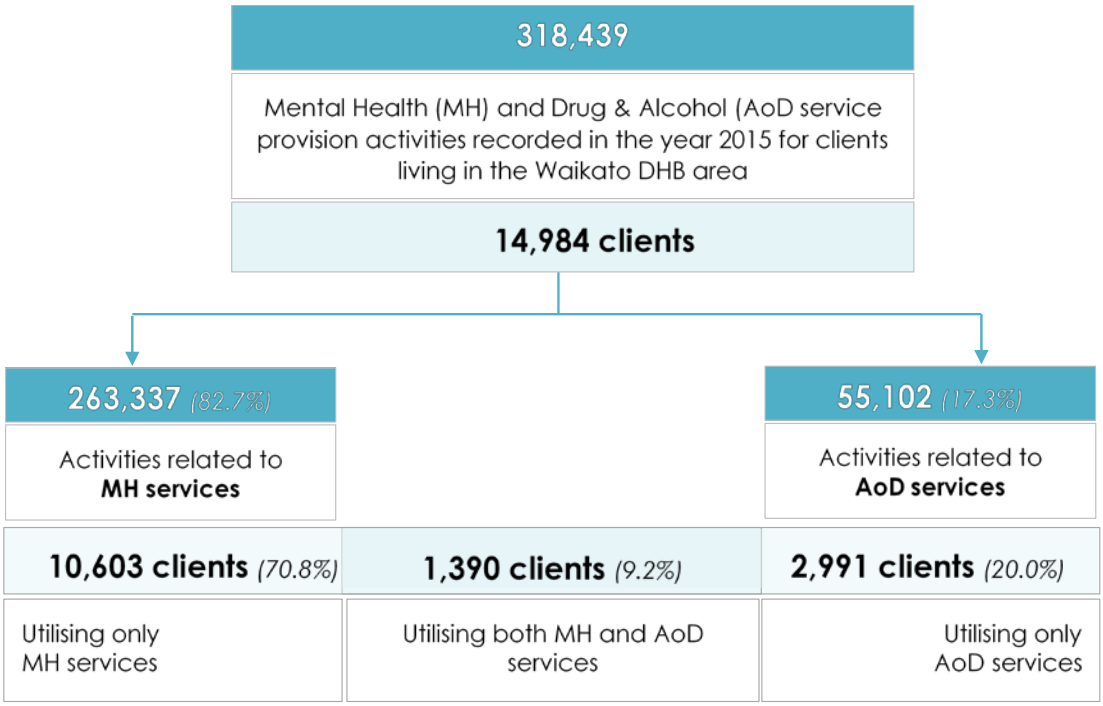


5.2 Profile of services delivered in 2015

The following analyses considers the profile of the secondary mental health services delivered in 2015 to clients usually resident within the Waikato DHB boundary: utilization patterns according to the activity types and service delivery profile as well as the demographic profile of the tangata whaiora using these services.

In 2015, there were a total of 318,439 activity types or service provision activities recorded for clients whose allocated TA of residence was within the Waikato DHB boundary. Of these, the majority (82.7 per cent) were coded within PRIMHD as services relating (primarily) to mental health care and the remaining (17.3 per cent) were coded within PRIMHD as addiction related services. There were 9 per cent recorded in both mental health and addiction services (see Figure 5.4). The proportions of these tangata whaiora within mental health and/or addiction services provided in this data are likely to be a function of the ability to code more than one (mental health or addiction) service type within the PRIMHD database, rather than the specifics of the delivery of care. A total of individual 14,984 clients/tangata whaiora/consumers utilised these secondary MH and AoD services across the DHB area.[8]

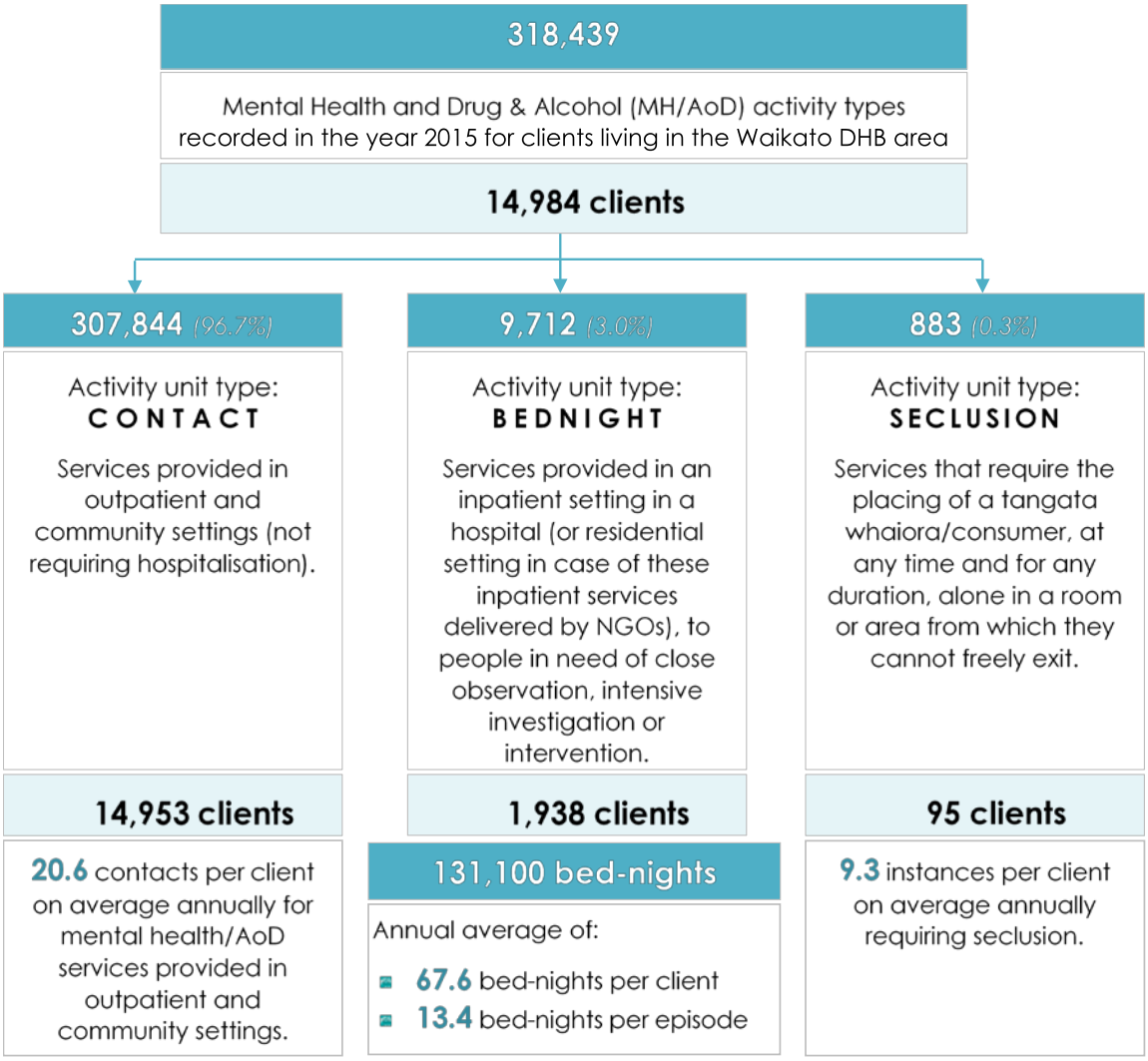
Figure 5.4: MH/AoD service provision activities recorded in 2015 and the number of clients (living in the Waikato DHB area) utilising these services



[8] Activities were coded as Drug & Alcohol (AoD) using the following criteria: Records with an Activity Type Code <> T35 AND (Activity Type Code equal to any of T16, T17, T18, T19, T20, T48 OR Team Type Code equal to any of 03,11). Refer to Appendix Tables 9 and 10 for descriptions of the Activity type and Team type codes respectively in the PRIMHD dataset.

Within the PRIMHD dataset, the 'activity type' describes the type of activity/service (also referred to as service provision activities) provided to the tangata whaiora/consumer. Figure 5.5 shows the activity unit type (Contact, Bed-night or Seclusion) of the 318,439 MH/AoD service provision activities recorded in 2015 for clients usually resident in the Waikato DHB area. It should be noted that clients are likely to use a mix of outpatient/community based and inpatient services over the year and therefore the number of clients for each activity unit type are not mutually exclusive. Appendix Table 11 provides a description of all activity types delivered in 2015, disaggregated by activity unit type.

Figure 5.5: MH/AoD service provision activities recorded in 2015 disaggregated by activity unit type



A substantial majority (96.7 per cent, 307,844 activity types) of the service provision activities recorded in 2015 were of the activity unit type 'Contact', that is, services delivered in an outpatient/community setting. This equates to around 20.6 contacts per tangata whaiora/client annually. Appendix Table 11 shows that almost two-fifths (38.6 per cent) of these outpatient activity types were individual treatment attendances with the client; 14.8 per cent were co-ordination contacts and 13.6 per cent were contacts with family/whānau. These three activity types account for over two-thirds of the 'Contact' services delivered in 2015.

The 'activity setting' variable in the PRIMHD dataset indicates the type of physical setting or contact channel that the activity was provided in. That is, it describes the type of setting the health tangata whaiora/consumer was accessing service in. Figure 5.6 disaggregates the 307,844 Contact activity types into two categories – activities/services which require face-to-face or in-person contact with clients or family/whānau, and non-face-to-face coordination activities where the contact channel was telephone, written correspondence, text messages etc. See Table 5.3 for the activity setting for the recorded service provision activities in 2015. Two-thirds (65.6 per cent) of the services/activities delivered in an outpatient/community setting required face-to-face or in-person contact with client or the whānau – an annual average of 15.6 face-to-face contacts per client. On average, around nine contacts per client were non-face-to-face (via telephone/written correspondence/text messages).

Figure 5.6: Activity unit type 'Contact' disaggregated by activity setting

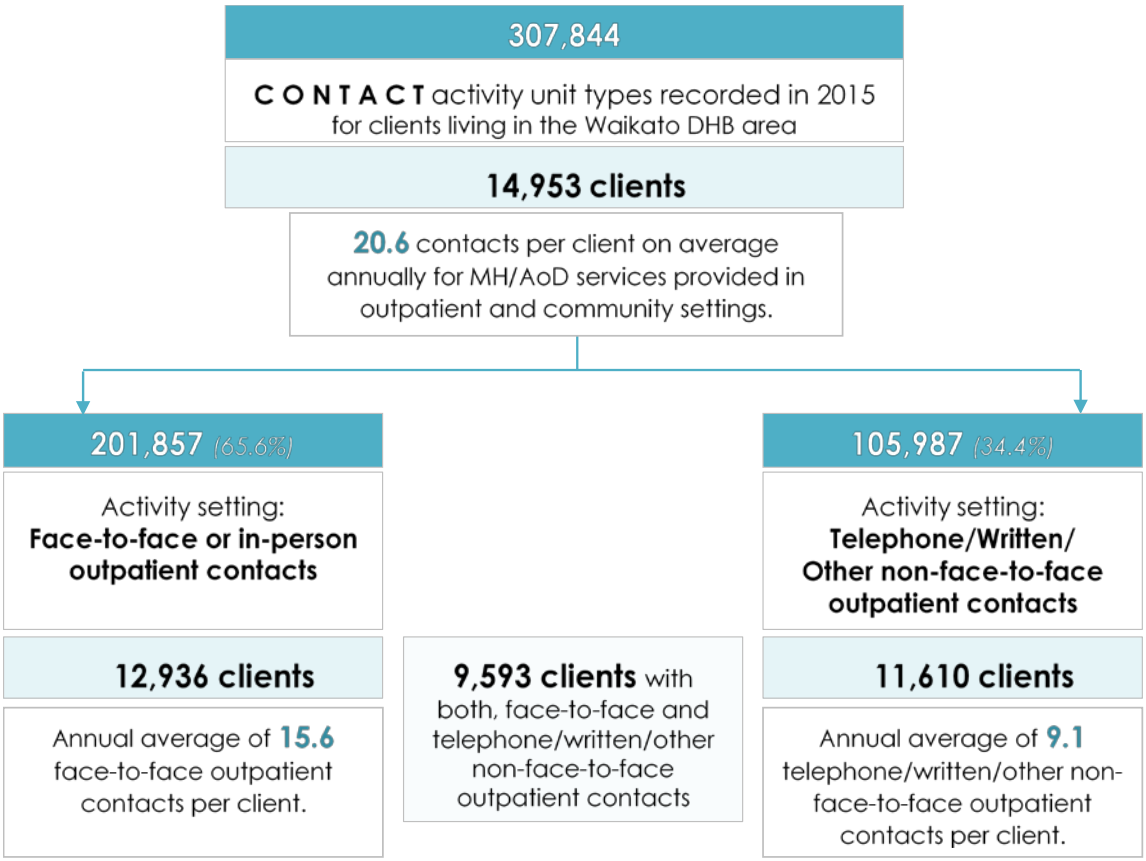


Table 5.3: Activity setting for the outpatient contacts recorded in 2015

Activity Setting	Contacts	%
Onsite	93,812	*46.5*
Community	40,468	*20.0*
Domiciliary	30,149	*14.9*
Māori cultural setting	15,446	*7.7*
Inpatient	5,746	*2.8*
Residential	4,466	*2.2*
Prison	4,054	*2.0*
Education Sector	2,161	*1.1*
Emergency Department	1,805	*0.9*
Court	1,361	*0.7*
Police	1,223	*0.6*
Non-psychiatric	445	*0.2*
Primary Care	399	*0.2*
Day tangata whaiora/consumer setting	214	*0.1*
Youth Justice Residential Facility	108	*0.1*
Face-to-Face outpatient contacts	201,857	*100.0*

Activity Setting	Contacts	%
Telephone	85,978	*81.1*
Written correspondence	12,301	*11.6*
SMS text messaging	7,582	*7.2*
Audio Visual	61	*0.1*
Other Social Media/E-therapy	65	*0.1*
Telephone/Written/Other non-face-to-face outpatient contacts	105,987	*100.0*

The 9,712 recorded instances of services provided in an inpatient or residential setting (Figure 5.5) equate to a total of 131,100 bed-nights utilised by 1,938 individuals in 2015 – an annual average of 67.6 bed-nights per client or 13.4 bed-nights per episode of care. Figure 5.7 disaggregates the bed-nights by the activity setting – Residential, Inpatient, Community or Onsite. More than two-thirds (68.6 per cent) of the bed-nights utilised in 2015 were in a community based residential rehabilitative MH/AoD setting. With an average of 21.0 bed-nights utilised per episode of care, each client utilised around 112.4 bed-nights in 2015 in a residential setting.

Of the total bed-nights utilised, 29.5 per cent were in a hospital where the client was an inpatient for treatment of MH/AoD issues. Each instance of hospitalisation or episode of care required an average of 8.3 bed-nights, and each client requiring inpatient care, on average, utilised around 33.0 bed-nights in 2015.

Bed-night activity unit types delivered in a 'Community' setting (1.4 per cent of the total bed-nights in 2015) were all 'Crisis respite care occupied bed nights', which are defined as short-term care for a person requiring support in an urgent situation as an alternative to admission to an acute mental health service.

Bed-night activity unit types delivered in an 'Onsite' setting are of two types:

- Onsite Substance abuse residential service occupied bed nights (96.8 per cent) - Time spent by a tangata whaiora/consumer in a substance abuse residential service. These 24-hour care and treatment services are provided to people with particular requirements unable to be met in less structured or supported settings.

- Planned respite care occupied bed nights (3.2 per cent) - Time spent by a tangata whaiora/consumer in a respite care service or receiving home based respite care. For use by people who require a short break from their usual living situation (usually planned).

Figure 5.7: Activity type 'Bednight' disaggregated by activity setting

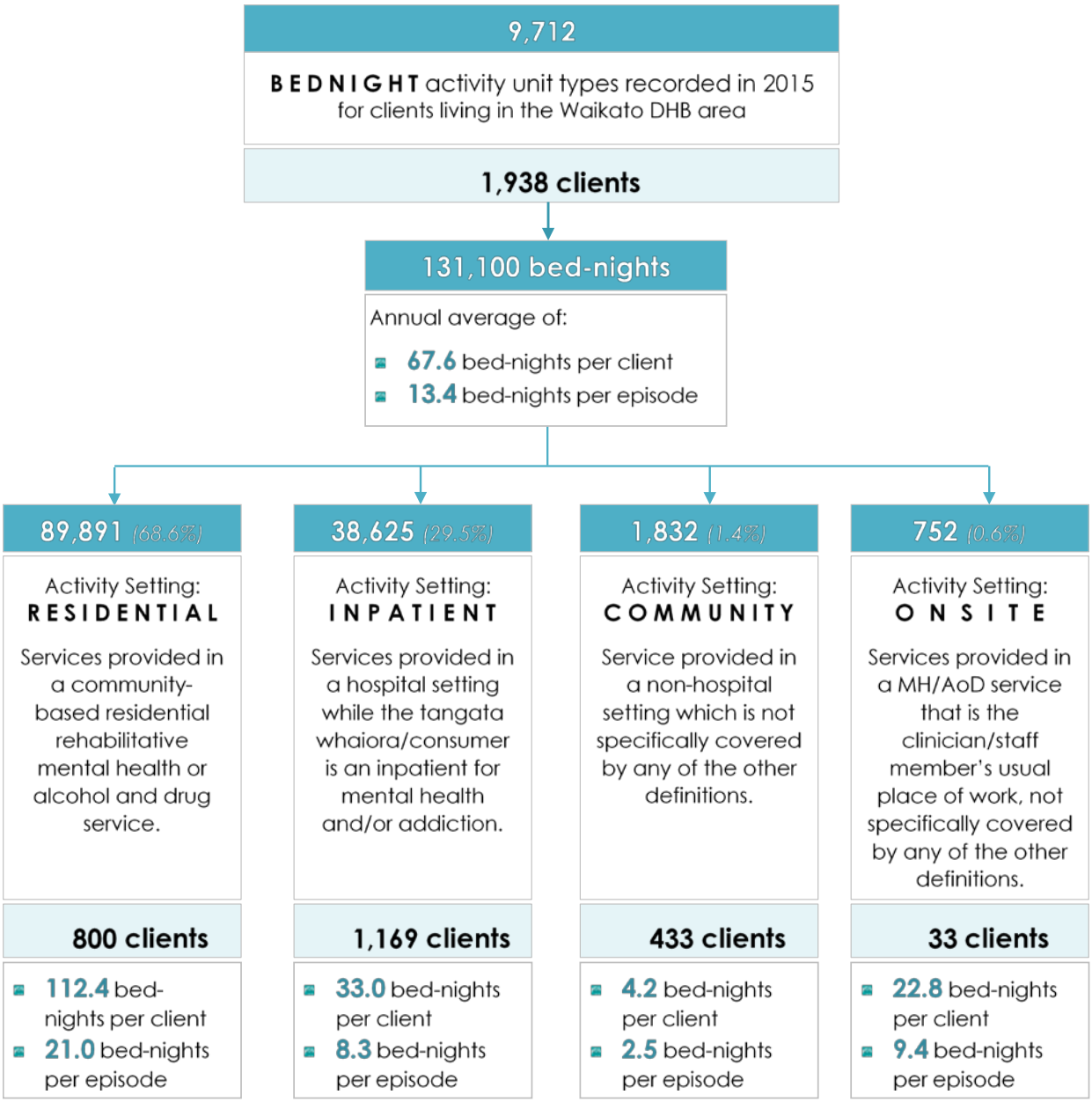


Figure 5.8 disaggregates the 318,439 service provision activities utilised in 2015 by Waikato DHB residents first by activity unit type, and then by service provider and activity setting. The provider arm of the DHB delivered a little over half of the outpatient as well as the inpatient activities/services in 2015 (56.3 and 54.1 per cent, respectively). Services requiring seclusion were only delivered by the DHB's provider arm. Of the 131,100 bed-nights utilised in 2015, the majority (71.0 per cent) were provided by NGOs and almost all these (96.5 per cent) were in a residential

setting. Of the bed-nights provided by the DHB's provider arm, 95.1 per cent were in a hospital setting.

Figure 5.8: MH/AoD service provision activities disaggregated by activity unit type and then by service provider and activity setting

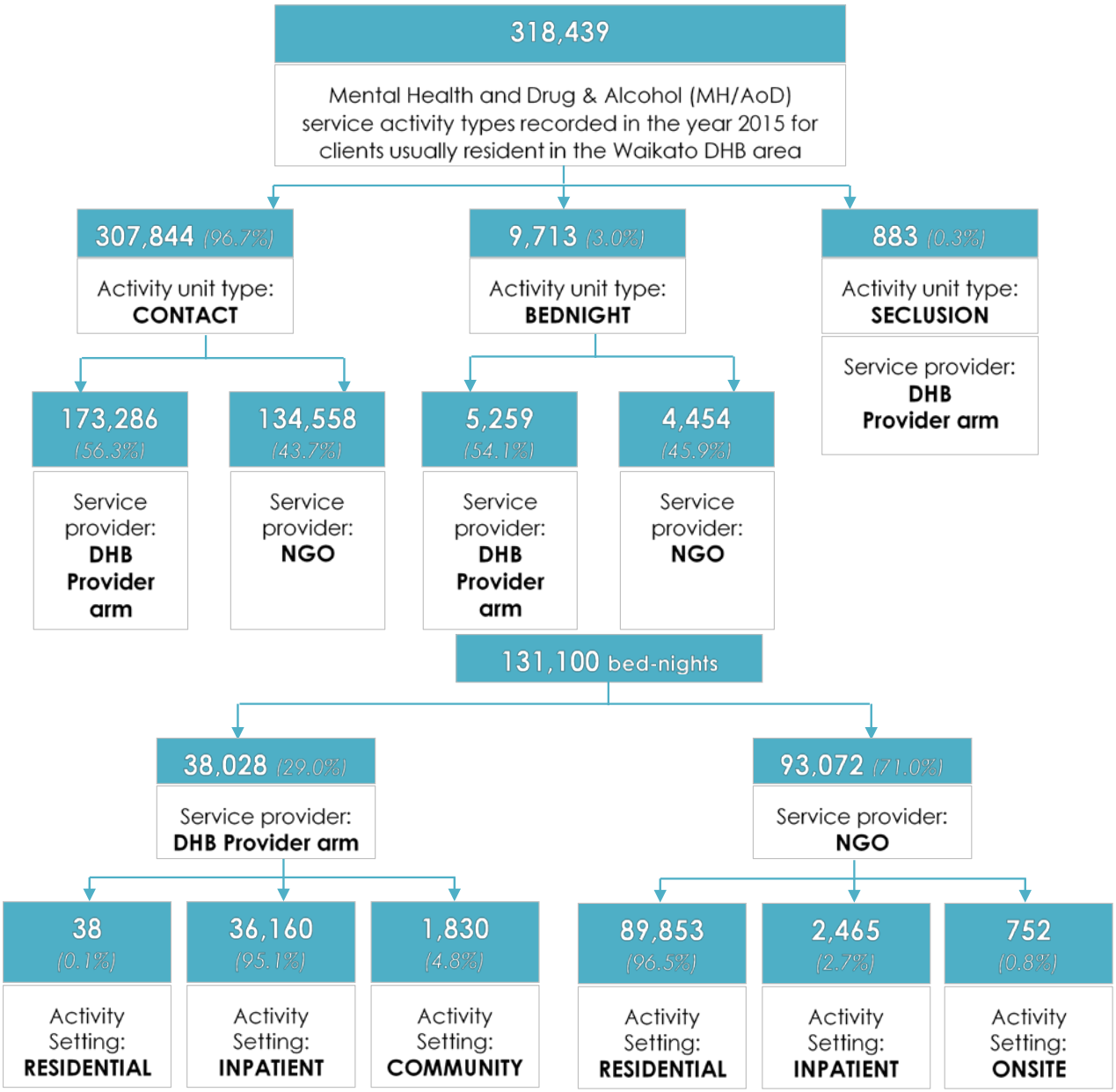
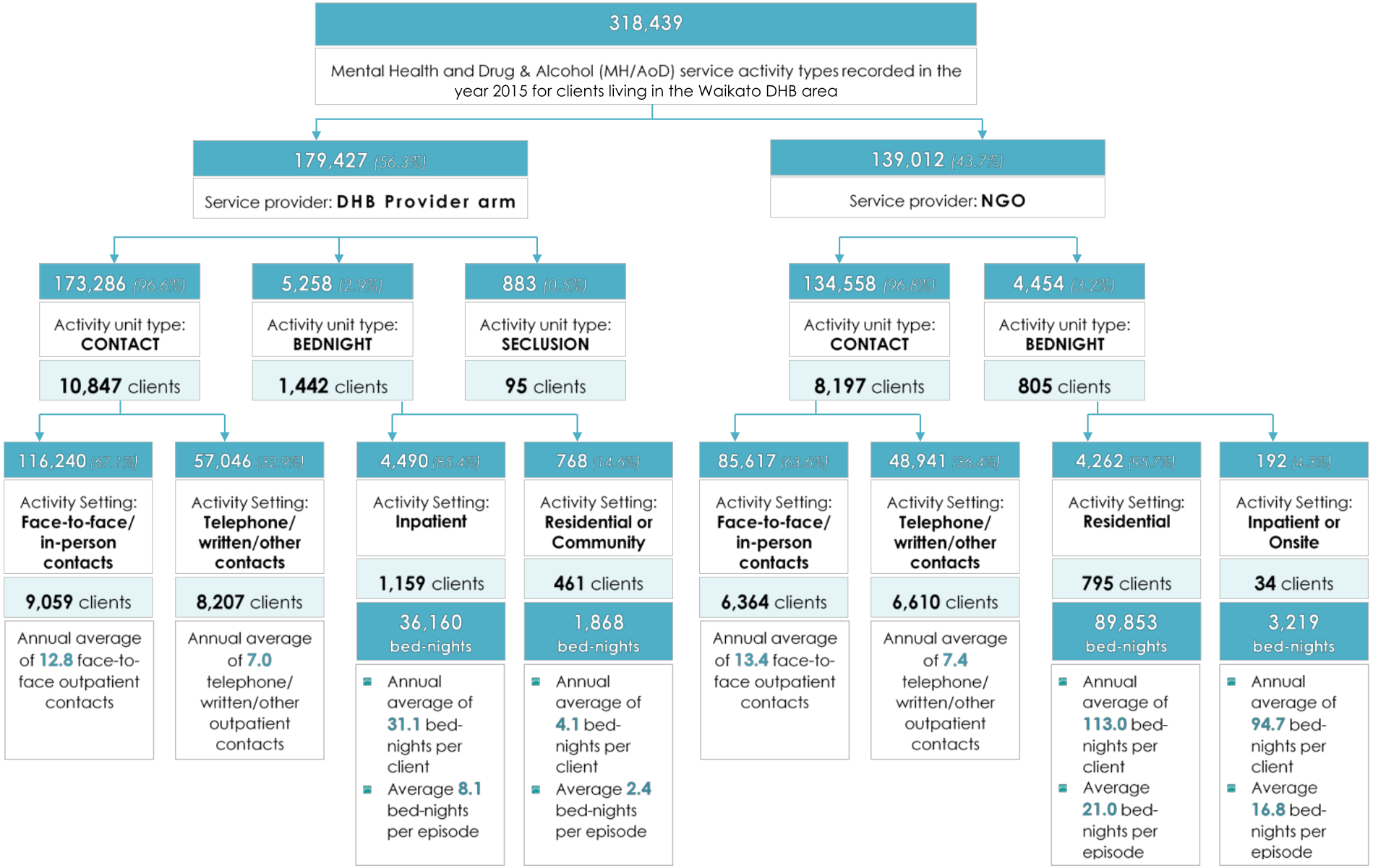


Figure 5.9 disaggregates the 318,439 service provision activities utilised in 2015 by Waikato DHB residents first by the service provider and then provides specific information on the activities provided to tangata whaiora. Irrespective of the service provider, activities/services delivered in

2015 in an outpatient/community setting accounted for approximately 97 per cent of all activity types recorded. Also irrespective of whether the DHB provider arm or NGO provider delivery, on average each 'contact' client received 12-13 face-to-face contacts and seven contacts via telephone/written communication/text messaging.

Figure 5.9: MH/AoD service provision activities disaggregated by service provider and then by activity unit type and activity setting



5.3 Demographic profile of secondary service users in 2015

This section focuses on the 14,984 residents of the Waikato DHB area who were recorded as utilising secondary MH/AoD services in PRIMHD in 2015. Figure 5.10 shows the age group, sex and prioritised ethnic group of these tangata whaiora and Figure 5.11 disaggregates these data by whether the service utilised was for mental health or addiction issues. It should be noted that the previous limitations of coding within PRIMHD with respect to primary mental health, primary addiction, or dual diagnosis clients apply. In addition, as there were some tangata whaiora who were included in both MH and AoD, each of these categories in Figure 5.11 are not mutually exclusive. The focus of this section is on age, sex and ethnicity. An analysis of the socioeconomic status of these tangata whaiora in PRIMHD is not possible because of the inaccuracies of using a TA NZDep score compared to the finer Census Area Unit (CAU) – not possible for these analyses due to the small numbers at this level.

Of all Waikato DHB resident tangata whaiora utilising secondary care services in 2015, 60 per cent were aged 15-44 years (compared to 39 per cent in this age range in the total Waikato DHB resident population in 2015 – see Figure 3.2), and a further 20 per cent aged 45-64 years (compared to 25 per cent in this age range in the total population). A slightly higher proportion of tangata whaiora in 2015 in the PRIMHD data set were male (57 per cent) compared to female (43 per cent), while the total resident population were 51 per cent female and 49 per cent male. The prioritised ethnic identification of 35 per cent of all Waikato DHB-resident tangata whaiora in PRIMHD in 2015 was Māori, while 23 per cent of the total resident population are Māori. This is likely to reflect both an over-representation of Māori in this utilisation analysis, as well as the age structure of the tangata whaiora. The same proportion of both tangata whaiora and the total Waikato DHB population were identified as Pacific (3 per cent), while a smaller proportion of Asian are seen in the tangata whaiora data (2 per cent) compared to the total population (8 per cent). The Other ethnic group (which comprises predominately European) make up 60 per cent of the tangata whaiora in both the MH and AoD services in PRIMHD in 2015, and 66 per cent of the total Waikato DHB resident population. The age, sex and ethnic profile of those tangata whaiora coded in the Mental Health service type category in PRIMHD is similar to the combined Mental Health and AoD services picture. Some noted differences are that for tangata whaiora in 2015 coded in the Mental Health service type, the sex profile is the same as the total resident population - 51 per cent females and 49 per cent males, compared to 57 per cent and 43 per cent in Figure 5.10. The over representation of males (66 per cent) and Māori (44 per cent) is seen particularly for the utilisation patterns focused on the AoD service types (Figure 5.11).

Figure 5.10: Age group, sex and prioritised ethnic group of Waikato DHB resident tangata whaiora utilising secondary mental health services in 2015

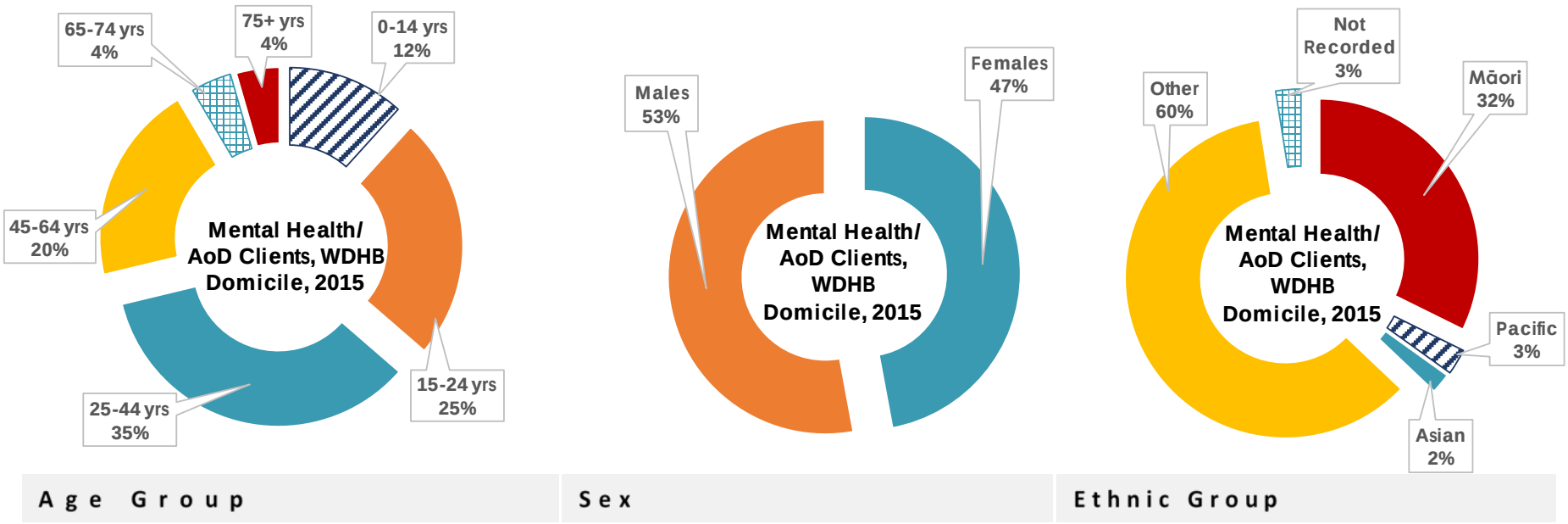
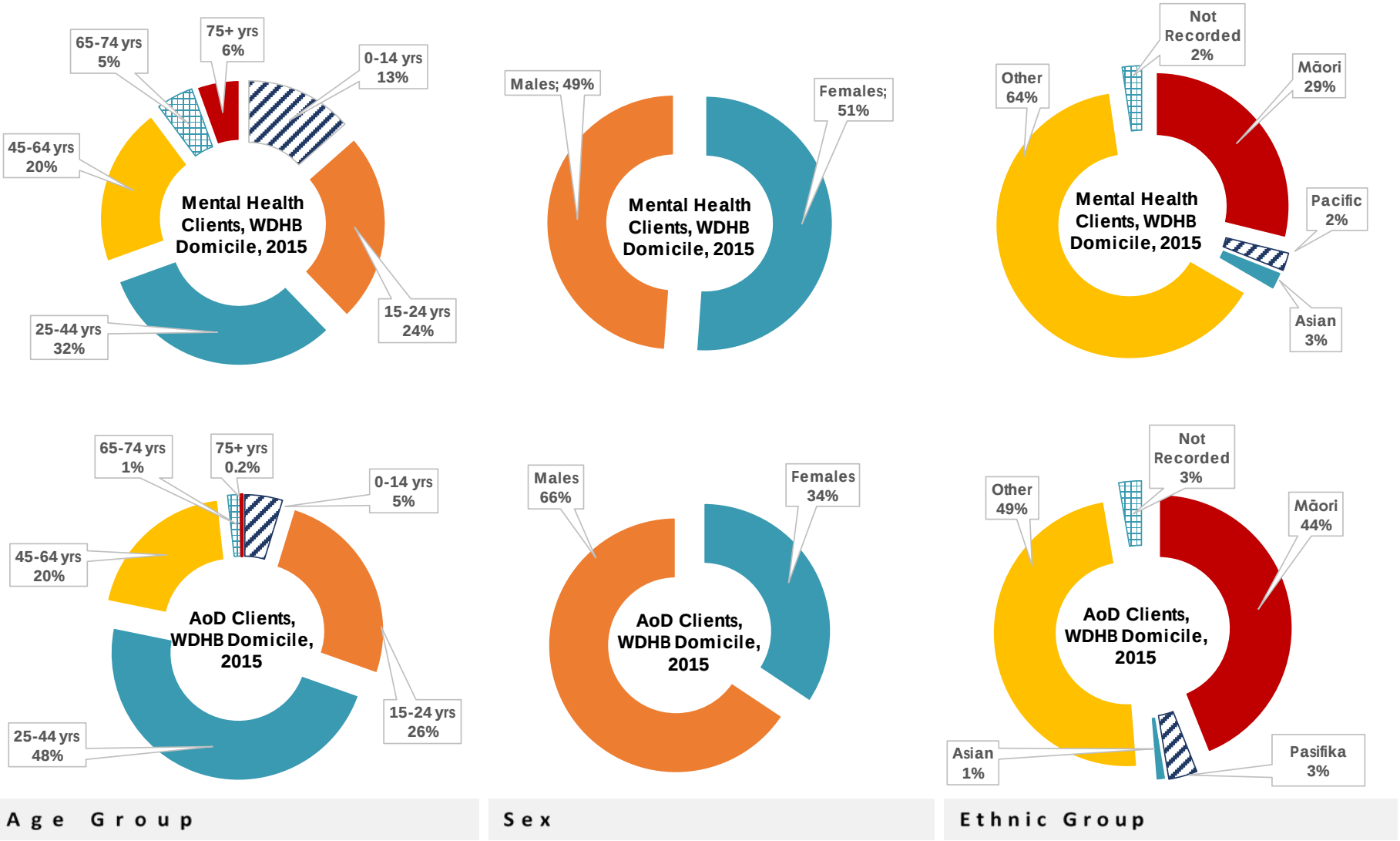


Figure 5.11: Age group, sex and prioritised ethnic group of the Waikato DHB-resident tangata whaiora utilising secondary mental health services in 2015 - by service type (Mental health and/or AoD)



5.4 Utilisation rates of service users in 2015

The utilisation rate evaluates a population group's access to one of more MH/AoD services relative to their size. The utilisation rates were calculated for the three activity unit types:

Contact: services provided in an outpatient/community setting (not requiring hospitalisation/overnight stay) further disaggregated by face-to-face contacts and telephone/written correspondence/other non-face-to-face contacts.

Bed-night: number of actual bed-nights recorded for each activity type 'bednight'[9] further disaggregated by residential and inpatient[10].

Seclusion: services requiring placement of a client at any time and for any duration, alone in a room or area from which they cannot freely exit.

The age-specific utilisation rates were calculated for each TA within the Waikato DHB area as follows:

Population access rate for age group *x*

$$= \frac{\textbf{No. of clients of sex } s \textbf{ ethnic group } g \textbf{ resident in TA } t \textbf{ utilising activity unit type } z \textbf{ in 2015}}{\textbf{No. of estimated residents of sex } y \textbf{ ethnic group } g \textbf{ resident in TA } t \textbf{ in 2015}}$$

Average number of services used per client annually

$$= \frac{\textbf{No. of services of activity unit type } z \textbf{ utilised in 2015 by clients of sex } s \textbf{ and ethnic group } g \textbf{ resident in TA } t}{\textbf{Number of clients of sex } s \textbf{ and ethnic group } g \textbf{ resident in TA } t \textbf{ utilising activity unit type } z \textbf{ in 2015}}$$

Where,

x = age groups: 0-14, 15-24, 25-44, 45-64, 65-74 and 75+ years

s = sex: males, females

g = prioritised ethnic group: Māori, non-Māori

z = activity unit type: contact, bed-nights, seclusion

t = TA of domicile

[9] Number of bed-nights = Sum of activity unit count for all recorded activities where the activity type is 'bednight' with bed-night counts adjustments coded under activity type code 'TCR' taken into account.

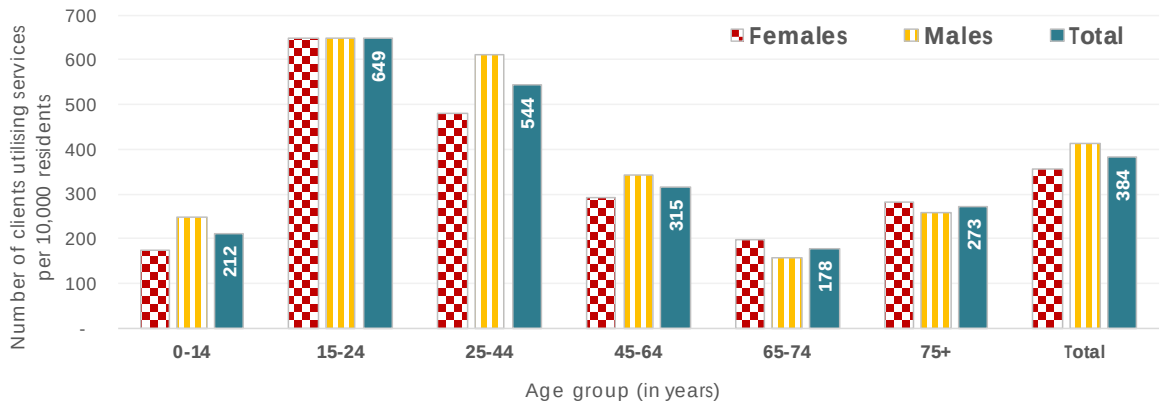
[10] Throughout this document, "'bednight'" is used to describe the Activity Type 'bednight' listing in PRIMHD, while "bed-night" is used to describe the actual bed-nights utilised by tangata whaiora

5.4.1 Overall, age-specific and service-specific utilisation rates

In 2015, approximately 384 per 10,000 residents in the Waikato DHB area utilised secondary mental health services. The overall utilisation rate was higher among men (413 per 10,000) compared to women (355 per 10,000).

When disaggregated by age group, the utilisation rate is highest among youth aged 15-24 years (649 per 10,000); and male and female youth had the same rates of MH/AoD service utilisation. The utilisation rate among the younger working age population of 25-44 year olds is also relatively high (544 per 10,000), with the difference between rates seen for men and women (612 per 10,000 for men compared to 480 per 10,000 for women) – a greater absolute difference in sex-specific rates compared to any other age group, although the male-specific rate was also higher than the female-specific rate for those aged 0-14 years and 45-64 years. In the two oldest age groups, the female-specific rate was higher than that of males.

Figure 5.12: Age specific MH/AoD utilisation rates (number of clients per 10,000 resident population) disaggregated by sex, Waikato DHB, 2015

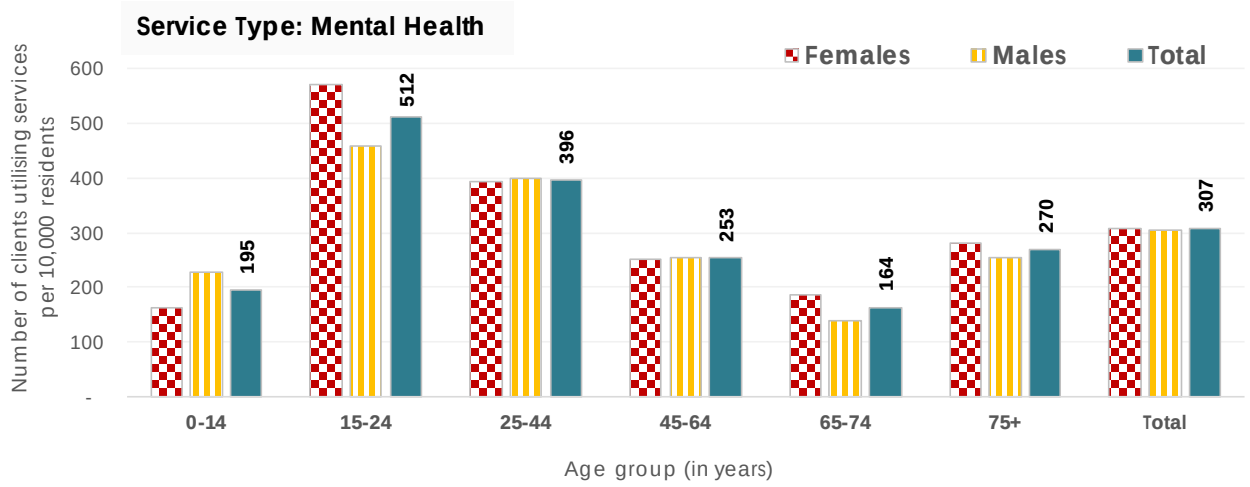


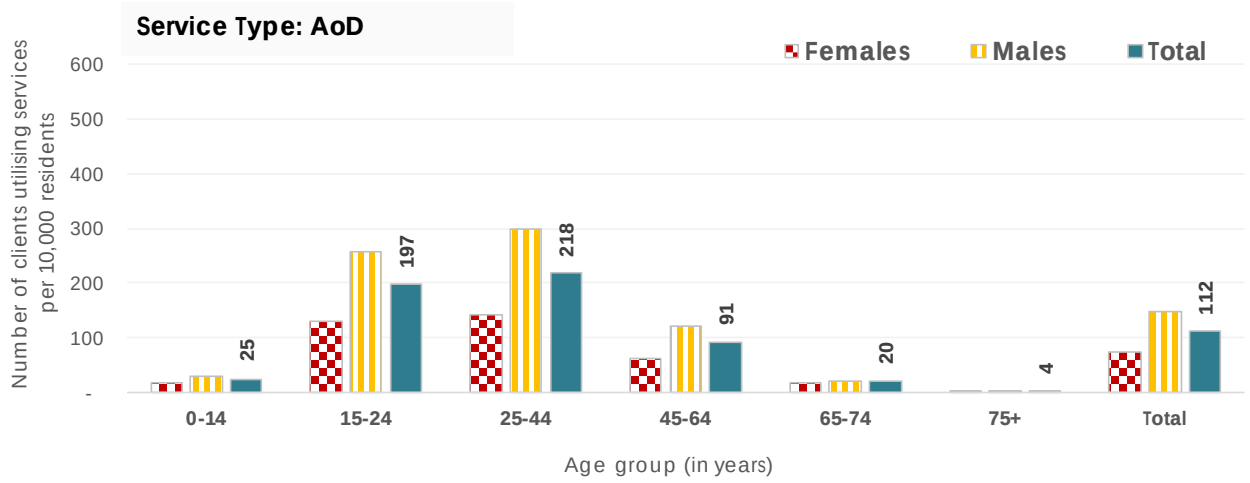
The utilisation rate pattern are different when disaggregated by the service type (Mental Health or AoD) as shown in Figure 5.13. As noted earlier, this data separation is dependent on the input and coding processes in PRIMHD and subject to particular limitations. In addition, in a given year clients can access services for both mental health as well as addiction issues and therefore the rates shown in Figure 5.13 are not mutually exclusive.

As seen earlier in this chapter with respect to the service utilisation activities, the utilisation rates for Mental Health services (those that are not coded only within AoD in PRIMHD) are substantially higher than for AoD services, 307 per 10,000 for all ages in MH compared to 112 per 10,000 for all ages in AoD. As expected, utilisation rates within the AoD services (and not only within MH) are particularly low for those aged 0-14 years and 65+ years. The highest age- and sex-specific utilisation rate within the MH services is seen for female youth (aged 15-24 years; 570 per 10,000). The highest age- and sex-specific utilisation rate within the AoD services is seen for male adults

(aged 25-44 years; 298 per 10,000 compared to approximately half this rate -143 per 10,000 for females of the same age group). The utilisation rates for all age groups in the AoD services are greater for male than female (or there is no sex-specific difference). Among youth (aged 15-24 years), female-specific utilisation rates are greater than male within Mental Health service types, while the reverse is true in AoD services – male youth utilisation rates are higher than female.

Figure 5.13: Overall age specific utilisation rates disaggregated by sex and service type





5.4.2 Utilisation rates within the DHB provider arm services and the NGO/Community sector

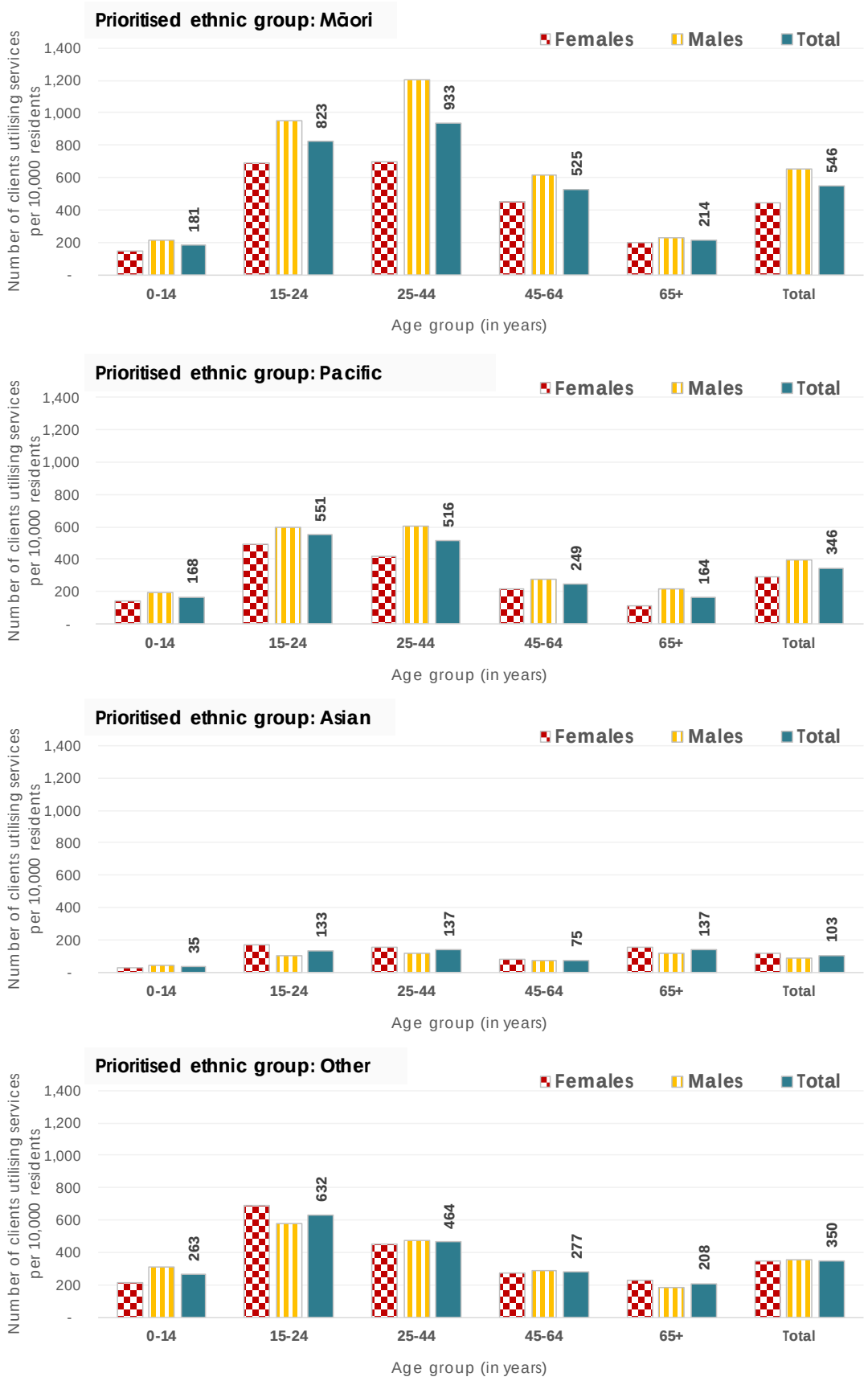
Figure 5.14 shows the age-specific utilisation rates in 2015 disaggregated by service provider (DHB provider arm or NGO/Community providers). The overall utilisation rate of secondary MH/AoD services is higher for the DHB's provider arm with 279 per 10,000 residents accessing DHB services compared to 219 per 10,000 for NGO/Community services. Men have slightly higher access rates than women and this difference is more apparent in the utilisation rates for NGO/community-provided services. Substantially higher utilisation rates are seen in the DHB provider arm (compared to the NGO/Community sector) for those residents 65 years and older, and this is particularly true for those residents aged 75+ years. The sex-specific utilisation rates are similar for both service provider groups across the ages, except among youth where rates for males are higher for NGO provided services compared to females. The opposite sex-specific utilisation (females greater than males) is seen for rates of service utilisation by youth in the DHB provider arm.

Figure 5.14: Overall age specific utilisation rates disaggregated by sex and service provider, Waikato DHB, 2015

5.4.3 Ethnic-specific utilisation rates

In Figure 5.15 the age-specific utilisation rates are compared for the four prioritised ethnic groups: Māori, Pacific, Asian and Other. The utilisation of secondary MH/AoD services is highest among Māori residents (546 per 10,000) and lowest for Asian (103 per 10,000). Compared to the Māori, Pacific and Asian ethnic groups, the utilisation rate for children (0-14 years) is highest among the Other ethnic group, 263 per 10,000. Among all other age groups, Māori have the highest utilisation rates. Within the Māori and Pacific ethnic groups, utilisation rates are higher for males compared to females. In the Asian and Other ethnic groups, males rates are lower than females, or the sex-specific rates are similar. The age-specific utilisation patterns are similar in all four broad ethnic groups with higher rates noted among youth and the younger working age populations (15-24 and 25-44 years).

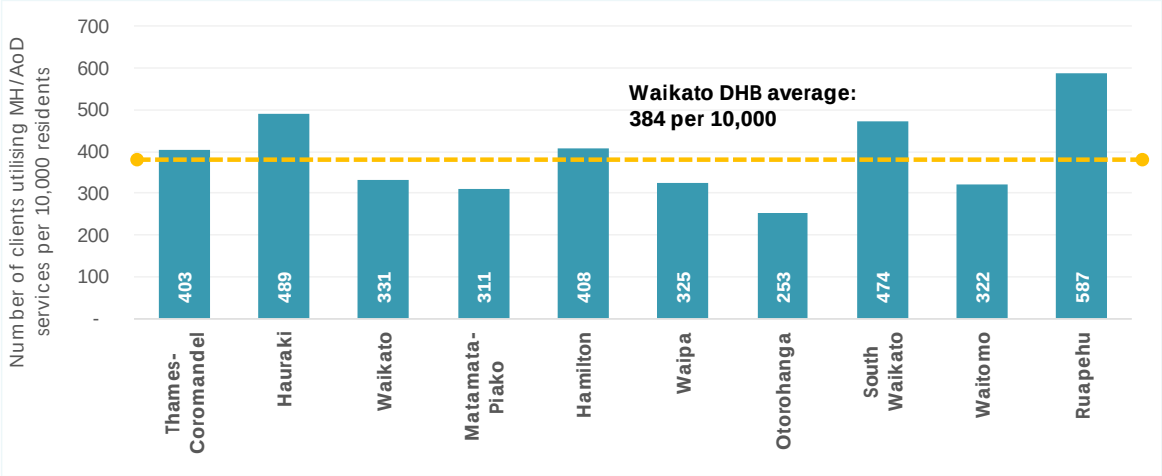
Figure 5.15: Overall age specific utilisation rates disaggregated by sex and prioritised ethnic group, Waikato DHB, 2015



5.4.4 Utilisation rates across the Territorial Authorities of the Waikato DHB

Utilisation of secondary MH/AoD services is notably higher than the Waikato DHB average in three of the ten TA areas within the Waikato DHB boundary – Ruapehu, South Waikato and Hauraki (see Figure 5.16). Otorohanga has the lowest rate followed by Matamata-Piako. Appendix Figure 11 compares the age-specific utilisation patterns for these TA areas. The overall pattern of utilisation is similar is all TA areas with higher rates noted among 15-24 and 25-44 year olds.

Figure 5.16: Overall utilisation rates of MH/AoD services disaggregated by TA of domicile



As described in Section 4, The TAs of Ruapehu, South Waikato and Hauraki are also commonly those found to have a greater proportion of the population living without access to the broader determinants of mental health such as low income, insecure or un-employment, and less educational attainment. Importantly, and as described in Section 3 and shown in Figure 3.7, the highest proportion of the Waikato DHB resident population living in area-level socioeconomic deprivation are also found in the South Waikato, Ruapehu, and Hauraki TAs.

5.4.5 Utilisation rates for the activity unit type 'Contact' (outpatient services)

This section looks at the utilisation patterns for secondary MH/AoD services delivered in an outpatient/community setting. Two measures of utilisation are presented for 2015: number of clients per 10,000 residents of the Waikato DHB area accessing these outpatient services; and number of outpatient services (measured by the activity types recorded) utilised per client annually. The utilisation rates for outpatient services have also been disaggregated by the following activity settings:

- Face-to-face (or in-person) outpatient contacts; and
- Telephone/Written/Other non-face-to-face outpatient contacts.

As shown in Figure 5.17, around 383 residents per 10,000 utilised DHB funded secondary MH/AOD services in an outpatient/community setting. Each client on average utilised 20.6 outpatient contacts annually (see Figure 5.18). Access rates were higher for males (412 per 10,000) than females (355 per 10,000), and this was noted for all age groups except youth (similar rates among males and females) and those aged 65+ years (higher rates for females). On average, a slighter greater number of contacts were provided annually to females (21.2 per client) compared to males (20.1 per client). This pattern was consistent for all age groups (except the 25-44 year group where utilisation is similar).

Figure 5.17: Age specific utilisation rates of outpatient services/contacts, Waikato DHB, 2015

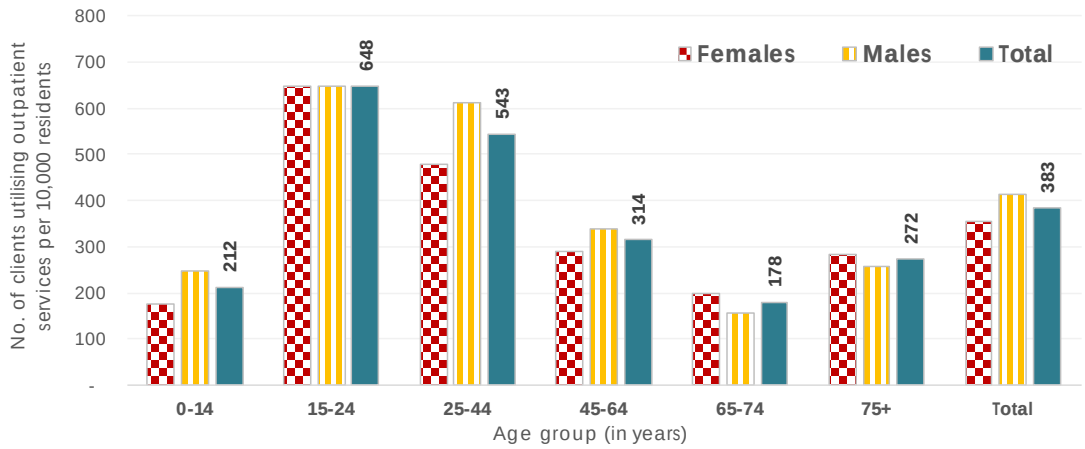
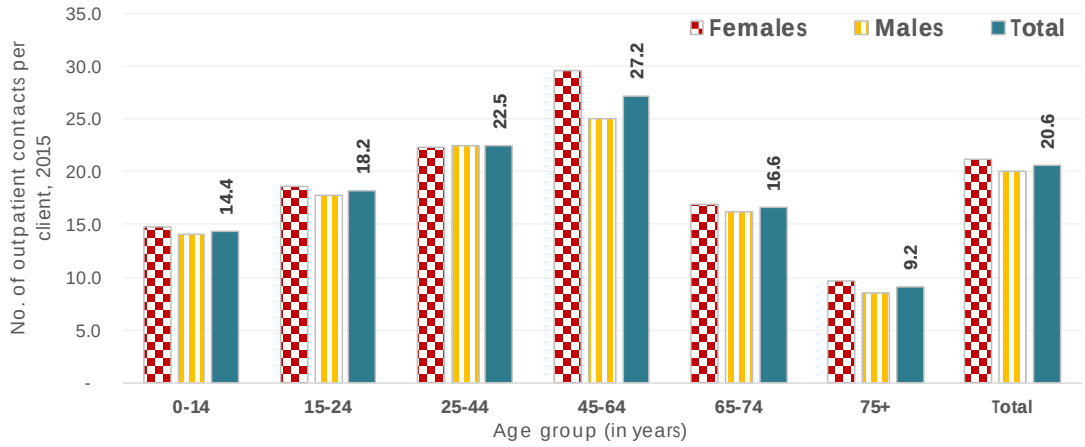


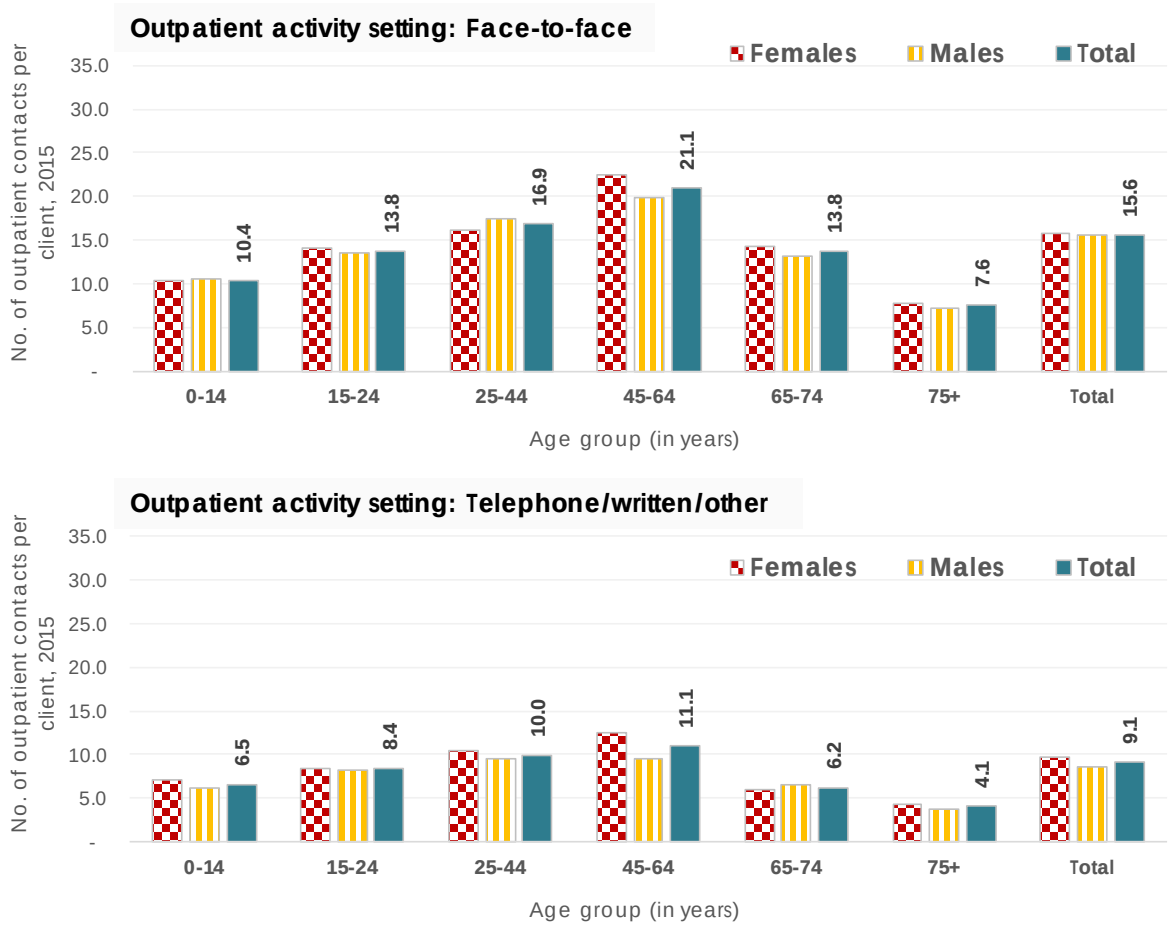
Figure 5.18: Average number of outpatient services/contacts utilised per client



Outpatient utilisation rates by activity setting

Figure 5.19 shows the number of outpatient contacts with each client in 2015 disaggregated by activity setting; that is, whether the contact was face-to-face or via telephone/written communication/texting. Each client who accessed secondary MH/AoD services in 2015 had on average 15.6 face-to-face contacts and 9.1 contacts via telephone/written communication/texting. There is no notable difference between males and females in the utilisation of face-to-face outpatient contacts; on the other hand, females received slightly more non-face-to-face contacts than males in 2015. As seen in Figure 5.18, the highest number of outpatient contacts was provided to those aged 45-64 years (27.2 per client in 2015) and in this age group women had notably more outpatient contacts (irrespective of where the activity setting was face-to-face or not) than men (see Figure 5.19).

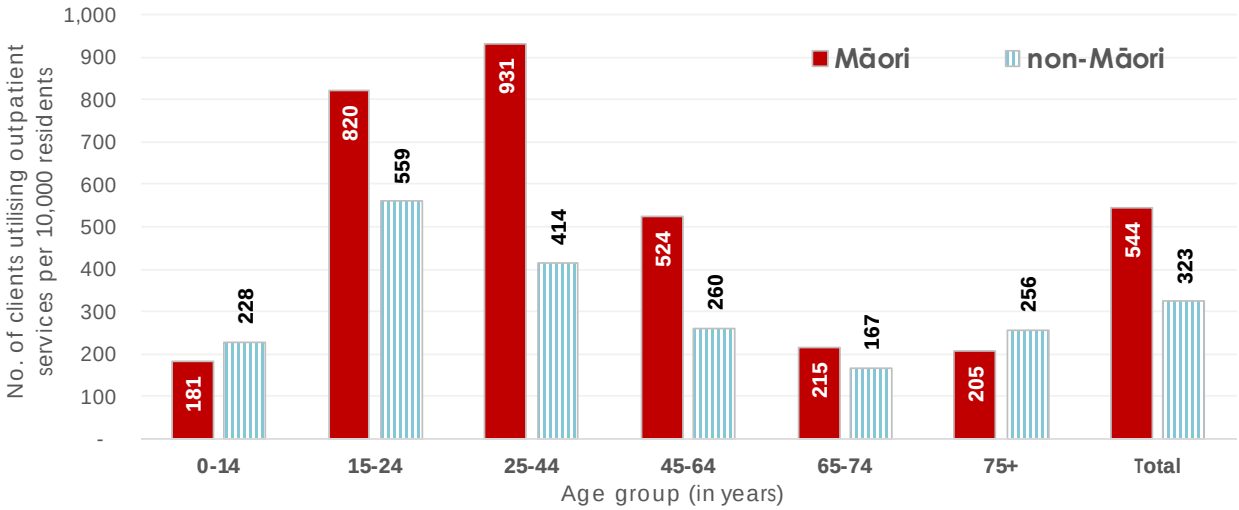
Figure 5.19: Number of outpatient contacts/services utlilised per client disaggregated by activity setting, Waikato DHB, 2015



Outpatient/community utilisation rates for Māori and non-Māori

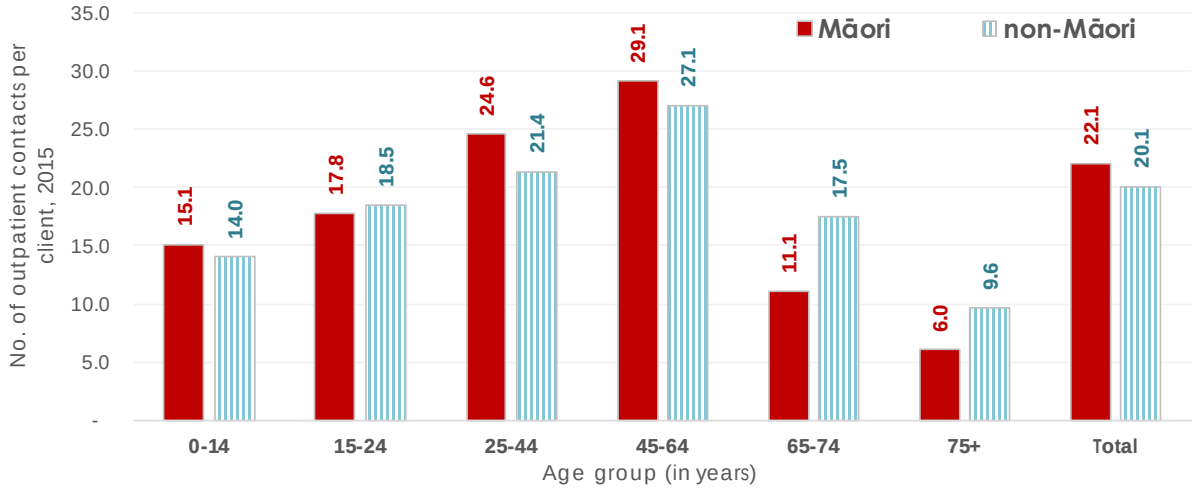
This section compares the age-specific utilisation rate for MH/AoD services delivered in an outpatient/community setting for Māori and non-Māori as recorded in 2015 (see Figure 5.20). The rate is much higher for Māori residents, 544 per 10,000 than it is for non-Māori (323 per 10,000) and this difference was seen across all age groups except the youngest (0-14) and the oldest (75+) where the non-Māori rate of utilisation is higher. It should be noted here that the number of Māori aged more than 65+ years accessing MH/AoD services in 2015 is very small, and therefore the utilisation rates for 65-74 and 75+ year olds in this ethnic group should be treated with caution. The most pronounced disparity in utilisation is among the young working age population where the rate for Māori is more than 2.2 times higher than it is for non-Māori (931 per 10,000 compared to 414 per 10,000).

Figure 5.20: Age specific utilisation rates for outpatient contacts/services disaggregated by Māori and non-Māori, Waikato DHB, 2015



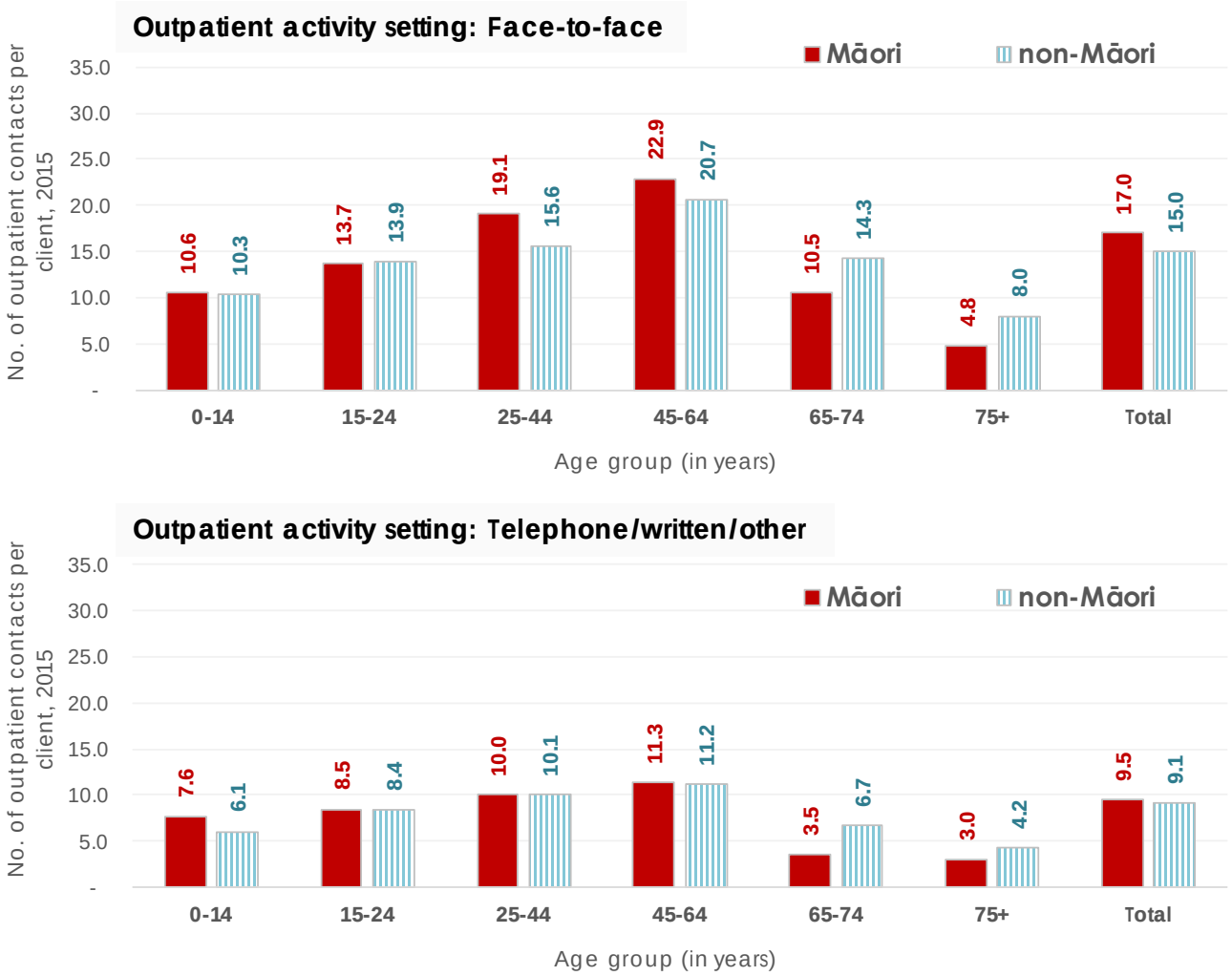
The number of outpatient contacts utilised per client is 2015 is slightly higher among Māori clients, 22.1 compared to 20.1 for non-Māori (Figure 5.21). This pattern is consistent across the younger age groups, whereas in the two oldest age groups, non-Māori utilised a notably higher number of outpatient contacts than Māori clients.

Figure 5.21: Number of outpatient contacts/services utilised per client disaggregated by Māori and non-Māori, Waikato DHB, 2015



The number of outpatient contacts per client for Māori and non-Māori are disaggregated by activity setting in Figure 5.22. The number of contacts via telephone/written communication/texting recorded per client in 2015 is similar for both ethnic groups, whereas Māori utilised slightly more face-to face contacts than non-Māori (17.0 per client compared to 15.0 per client). This pattern is consistent across all groups aged less than 65 years. Irrespective of activity setting, non-Māori utilised more outpatient contacts in 2015 than Māori for the 65-74 and 75+ year age groups.

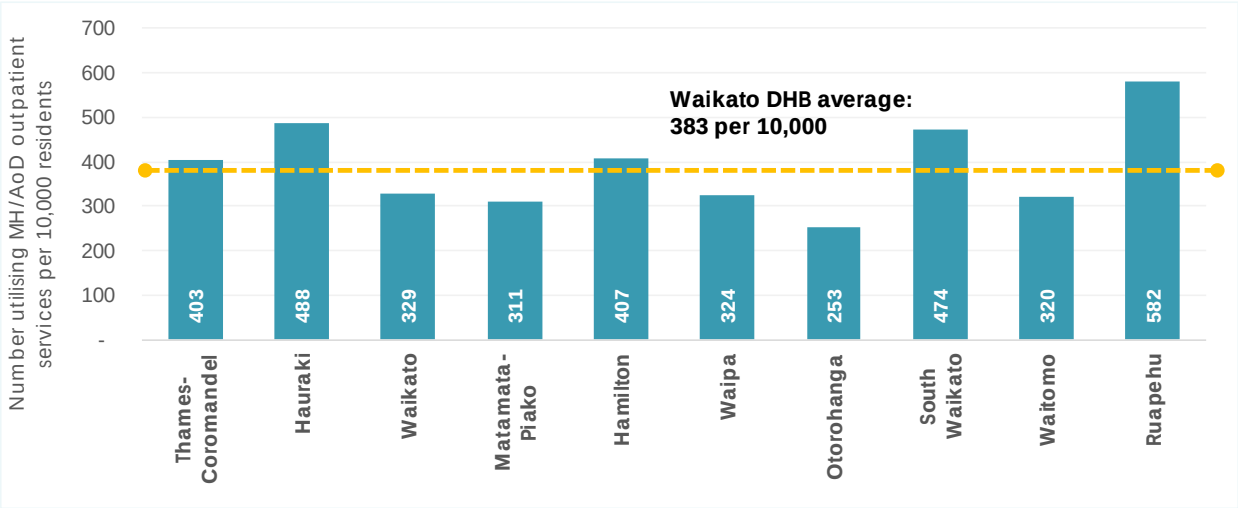
Figure 5.22: Number of outpatient contacts/services utlilised per client disaggregated by activity setting, Māori and non-Māori, Waikato DHB, 2015



Outpatient/community utilisation rates by TA of domicile

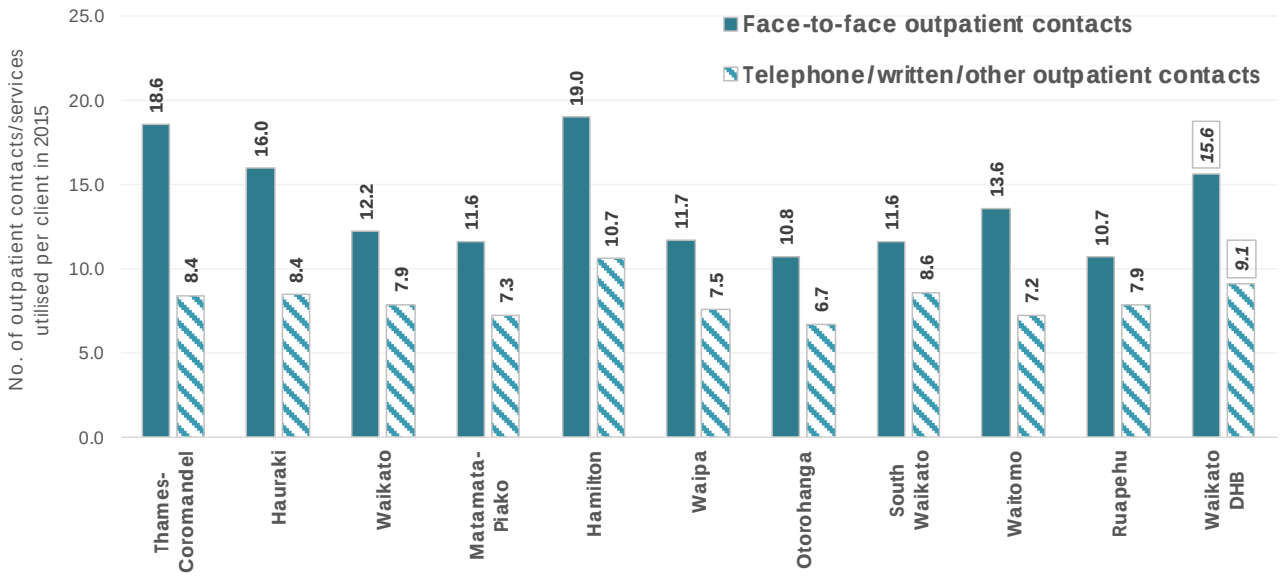
Figure 5.23 disaggregates the overall utilisation rates for MH/AoD services delivered in an outpatient/community setting, by the TA area of domicile of the client. The age specific utilisation rates in each TA area are included in Appendix Figure 12. Community/outpatient utilisation in 2015 was notably higher than the DHB average rate in Ruapehu (582 per 10,000), Hauraki (488 per 10,000) and South Waikato (474 per 10,000). The lowest utilisation rates were noted for Otorohanga and Matamata-Piako. This matches that seen for all PRIMHD data, and also matches the analyses of area-level deprivation across the Waikato DHB, with greater proportions of the population living in areas of high deprivation also located in Ruapehu, Hauraki and South Waikato.

Figure 5.23: Overall utilisation rates for outpatient contacts/services disaggregated by TA of domicile, Waikato DHB, 2015



The number of outpatient contacts per client recorded in 2015 for each TA area is disaggregated by the activity setting in Figure 5.24. Compared to the DHB average of 15.6 face-to-face outpatient contacts per client, Hamilton and Thames-Coromandel TAs had higher rates (19.0 and 18.6 per client respectively). The number of non-face-to-face outpatient contacts per client were lower than the DHB average of 9.1 per client across all TA areas with the exception of Hamilton City (10.7 contacts via telephone/written communication/texting in 2015).

Figure 5.24: Number of outpatient contacts/services utlilised per client disaggregated by activity setting and TA of domicile, Waikato DHB, 2015



5.4.6 Utilisation rates for the activity unit type 'Bednight'

This section looks at the utilisation patterns for activity type 'bednight'[11] - secondary MH/AoD services delivered in an inpatient setting in a hospital (or residential setting in case of these inpatient services delivered by NGOs), to people in need of close observation, intensive investigation or intervention. Two measures of utilisation are presented for 2015: number of clients per 10,000 residents of the Waikato DHB area accessing these 'bednight' activity types; and number of actual bed-nights[8] utilised per client annually. The utilisation rates for inpatient services have also been disaggregated by activity setting as follows:

- Inpatient (Services provided in a hospital setting while the client is an inpatient for mental health and/or addiction); and
- Residential (Services provided in a community-based residential rehabilitative mental health or alcohol and drug service.

This chapter therefore is able to consider differences between the tangata whaiora within these activity settings in 2015 – noting that these categories are not mutually exclusive.

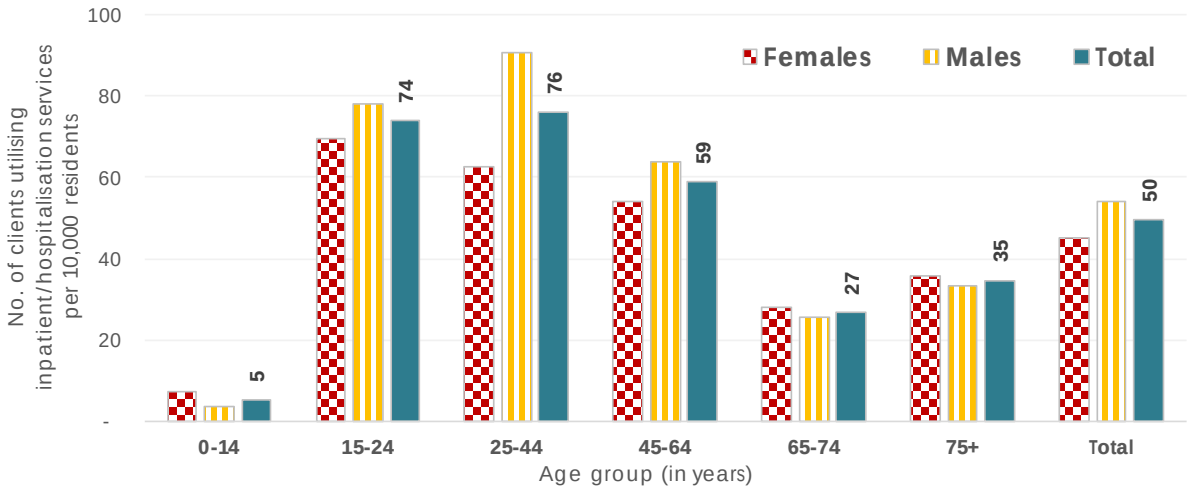
Very few 'bednight' activity type (around 2.0 per cent) were in the activity settings 'Community' or 'Onsite' and these have been excluded where the data were disaggregated by activity setting.

As shown in Figure 5.25, around 50 residents per 10,000 living in the Waikato DHB area utilised MH/AoD 'bednight' services and this rate was higher for males (54 per 10,000) then females (45 per 10,000).

Age-specific 'bednight' activity type utilisation rates are higher for males across all youth and middle age groups, and higher for females in those aged 0-14 and 65+ years. The rate of utilisation for MH/AoD 'bednight' activity types was highest among youth (15-24 years) and the young working age population (25-44 years). The difference in utilisation rate between males and females is most pronounced in the 25-44 year age group (90 per 10,000 for men compared to only 62 per 10,000 for women).

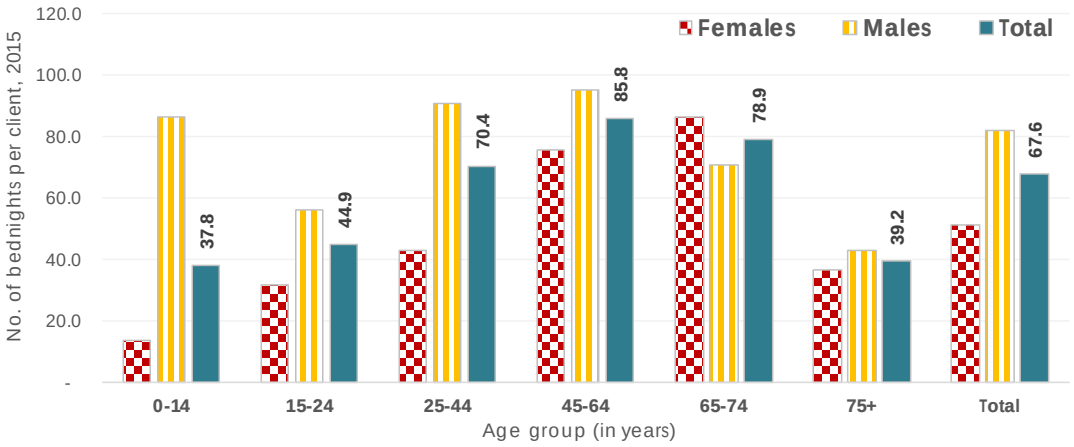
Figure 5.25: Age specific utilisation rates (number of clients utilising MH/AoD services per 10,000 resident population) for 'bednight' contacts, Waikato DHB, 2015

[11] Throughout this document, "'bednight'" is used to describe the Activity Type 'bednight' listing in PRIMHD, while "bed-night" is used to describe the actual bed-nights utilised by tangata whaiora



On average each client accessing the MH/AoD 'bednight' activity type services in 2015 utilised 67.6 actual bed-nights in 2015 (see Figure 5.26) with males utilising more bed-nights (81.7) then females (51.3). This pattern of higher utilisation of actual bed-nights by males is seen across all age groups except for those aged 65-74 years. Very few children (30 girls and 15 boys aged 0-14 years) utilised the activity type 'bednight' services in 2015 and therefore the rates (number of actual bed-nights per client) should be treated with caution.

Figure 5.26: Number of bed-nights per client, Waikato DHB, 2015

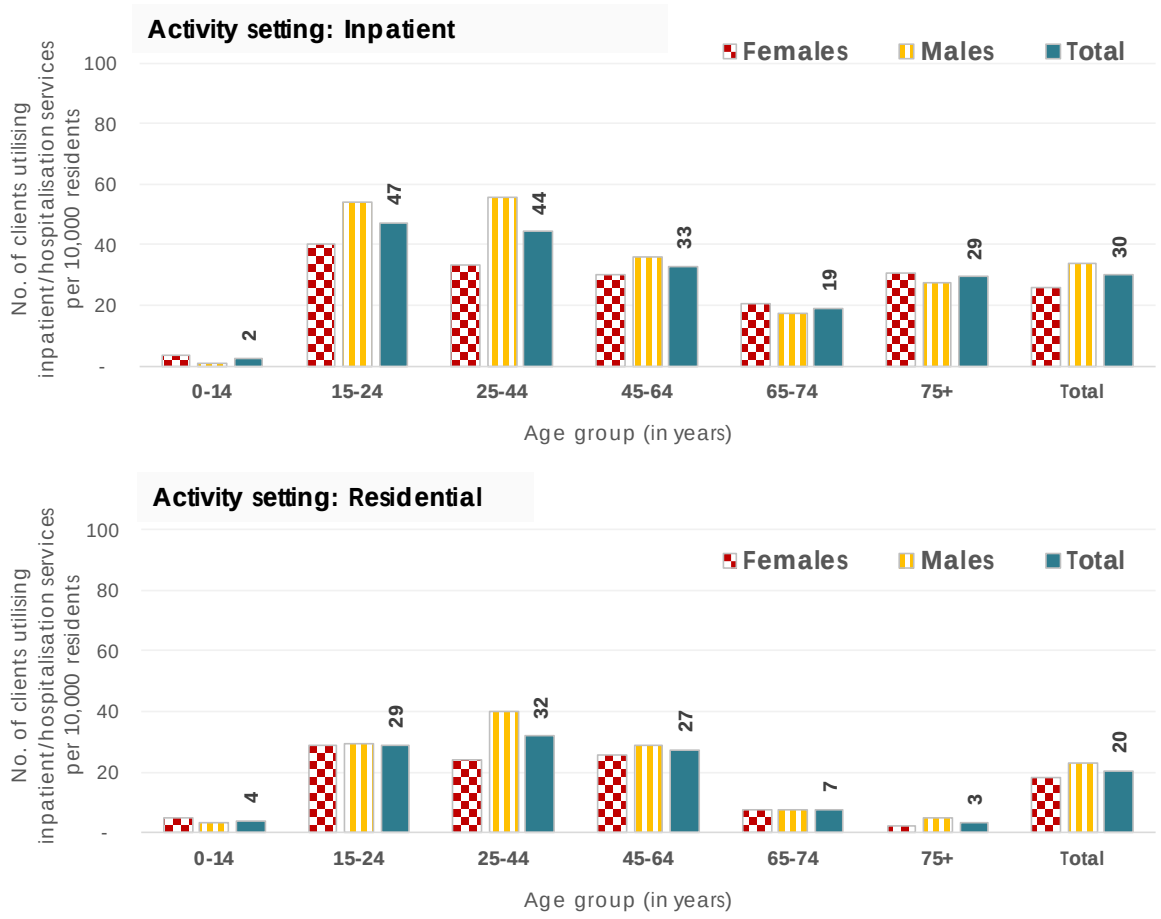


'Bednight' utilisation rates by activity setting

Figure 5.27 disaggregates the age-specific utilisation rates of 'bednight' MH/AoD activity types by the activity setting (Inpatient or Residential). On average 30 residents per 10,000 utilised 'bed-night' activity types in an Inpatient setting (hospital) and 20 residents per 10,000 in a Residential setting. It should be noted that these two rates are not mutually exclusive as clients can access 'bednight' services in both activity settings in any given year. In addition, it is likely that those tangata whaiora requiring 'bednight' activity types within an Inpatient setting are a quite different service population to those within a Residential setting. Irrespective of the kind of setting, utilisation rate was higher among men and this pattern was mostly mirrored across all groups aged between 15 and 64 years. For the two oldest age groups (65-74 and 75+), the utilisation rate

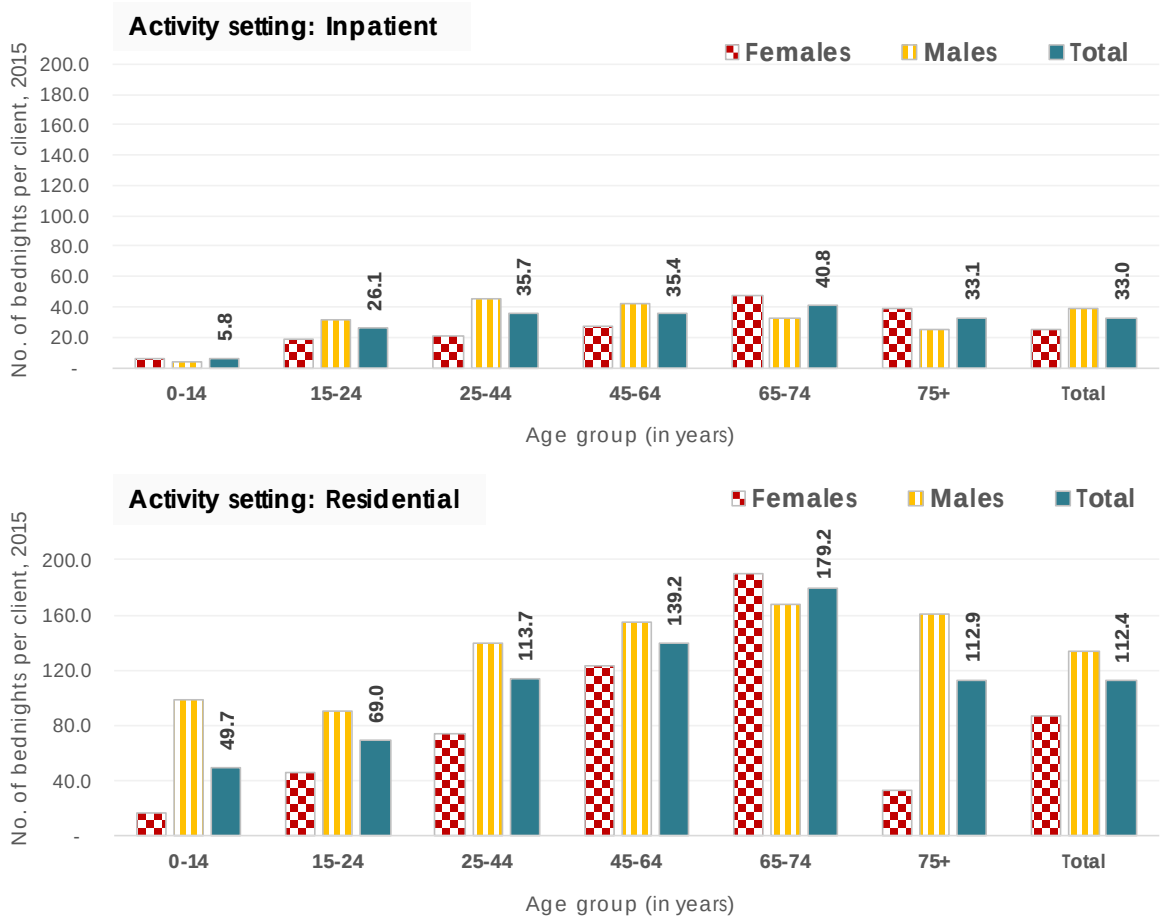
is much higher for 'bednight' activity types provided in an Inpatient (hospital) setting. Moreover, in these age groups, the rate was higher for women. Very few clients aged 65+ years accessed inpatient services in a residential facility and therefore the utilisation rates for the two oldest age groups in this activity setting (Residential) should be treated with caution.

Figure 5.27: Age specific utilisation rates for 'bednight' activity type contacts disaggregated by activity setting, Waikato DHB, 2015



The number of actual bed-nights utilised per client in 2015 is disaggregated by the activity setting in Figure 5.28. On average, 33 actual bed-nights were utilised annually by clients in an Inpatient (hospital) setting and this rate is fairly consistent across the groups aged more than 25 years. The utilisation of bed-nights in an Inpatient setting was relatively lower among those aged 15-24 years (26.1 per client annually). As noted earlier very few children (0-14 years) utilised 'bednight' activity types in 2015 and therefore the utilisation rates among this age group should be treated with caution. For 'bednight' activity types delivered in a residential facility, on average 112.4 actual bed-nights were utilised per client in 2015 with this utilisation increasing with age. Very few people aged 65+ years accessed these services and therefore these utilisation patterns for the oldest two age groups should be treated with caution.

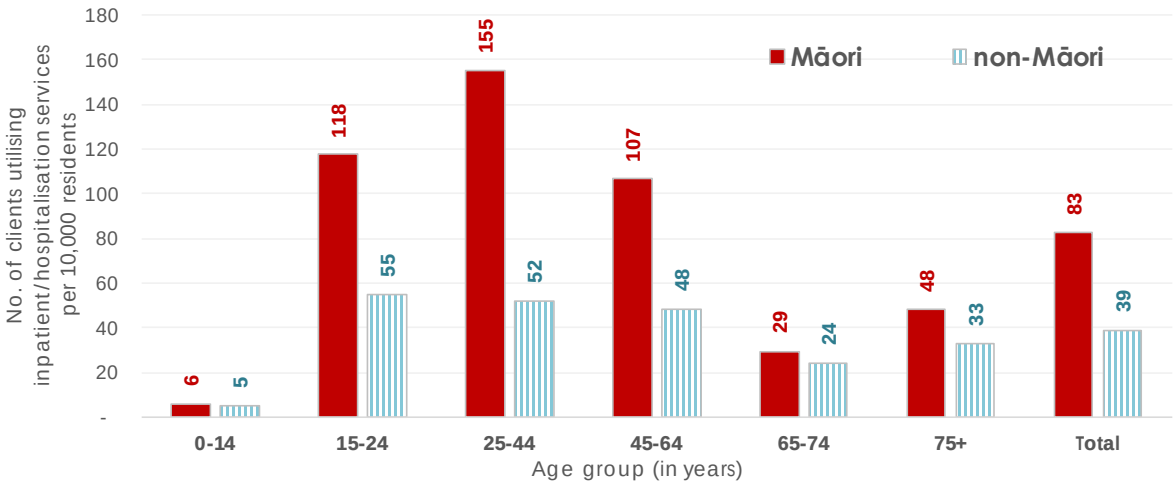
Figure 5.28: Number of actual bed-nights per client disaggregated by activity setting, Waikato DHB, 2015



'Bednight' utilisation rates for Māori and non-Māori

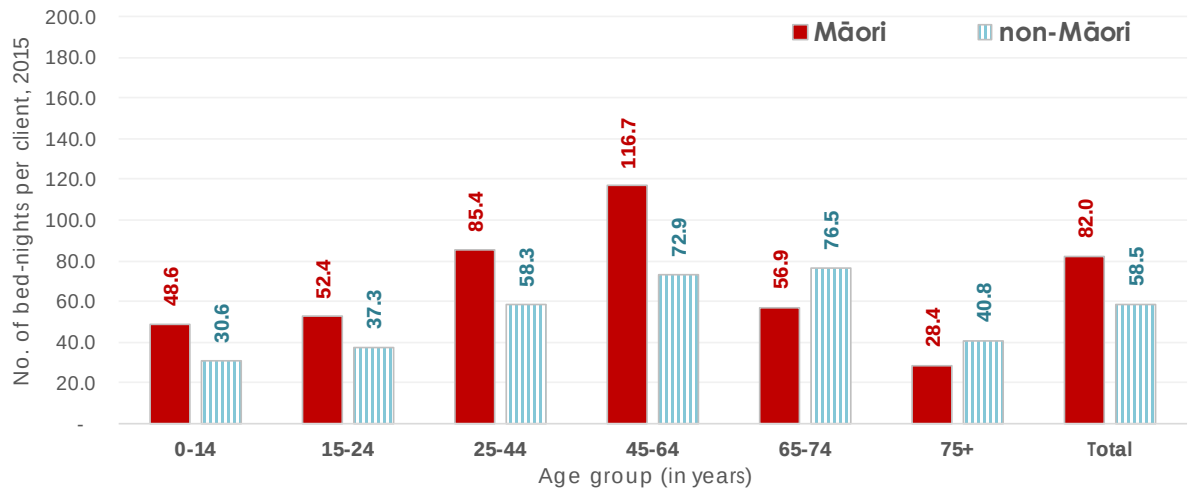
Figure 5.29 compares the age-specific utilisation of 'bednight' MH/AoD activity types for Māori and non-Māori as recorded in 2015. Overall, 83 per 10,000 Māori residents across the DHB accessed these 'bednight' services requiring close observation, intensive investigation or intervention compared to only 39 per 10,000 among non-Māori. Irrespective of age, Māori had substantially higher rates than non-Māori. The disparity between the two ethnic groupings is most marked in the young working age population of 25-44 year olds: Māori were three times more likely to require MH/AoD 'bednight' services than non-Māori (155 per 10,000 compared to only 52 per 10,000).

Figure 5.29: Age specific utilisation rates for 'bednight' activity types disaggregated by Māori and non-Māori, Waikato DHB, 2015



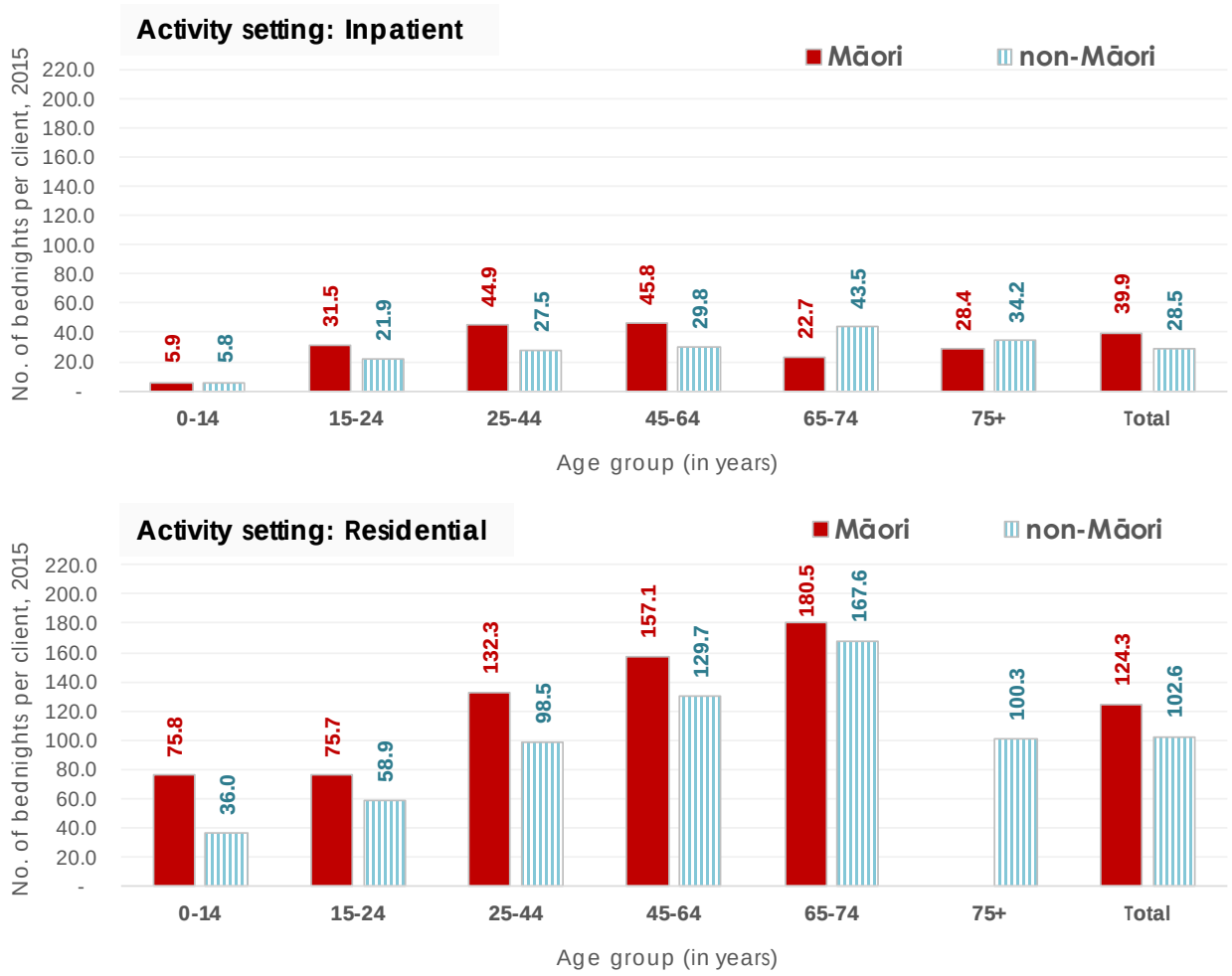
Looking at the utilisation of actual bed-nights per client in 2015 (Figure 5.30), across all young and middle age groups, Māori clients utilised more actual bed-nights than non-Māori (82 bed-nights per Māori client compared to 58.5 for non-Māori). The average number of actual bed-nights utilised by non-Māori clients is higher than Māori for those aged 65-74 and 75+ years. However, it should be noted that very few Māori residents aged 65+ years utilised 'bednight' services in 2015; and therefore, the rates (bed-nights per client) for the 65-74 and 75+ year olds for this ethnic group should be treated with caution.

Figure 5.30: Number of bed-nights per client disaggregated by Māori and non-Māori, Waikato DHB, 2015



When disaggregated by activity setting (see Figure 5.31), the pattern of utilisation of bed-nights between Māori and non-Māori remains consistent to the overall rate noted previously, with Māori utilising more bed-nights annually than non-Māori for residents aged between 15 and 64 years.

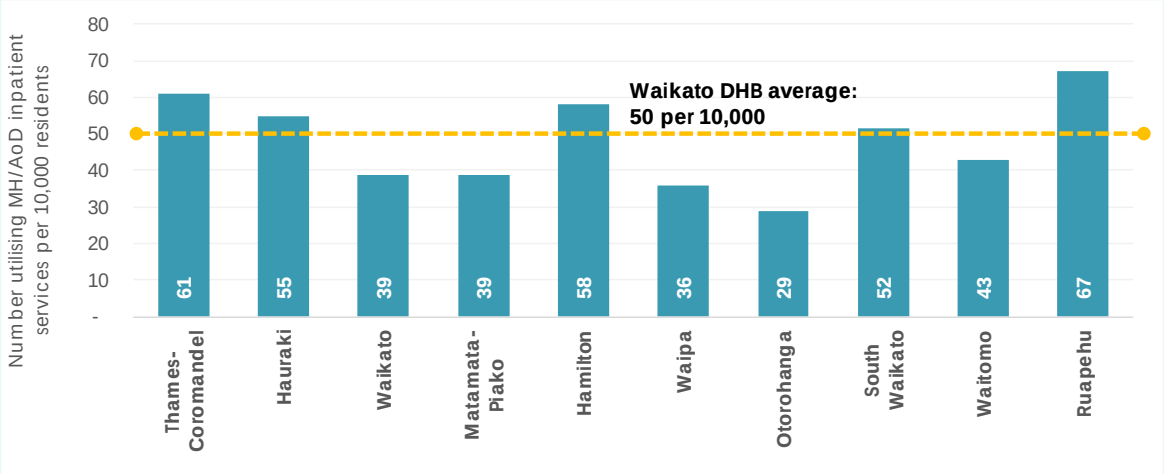
Figure 5.31: Number of bed-nights per client disaggregated by activity setting, Māori and non-Māori Waikato DHB, 2015



'Bednight' utilisation rates by TA of domicile

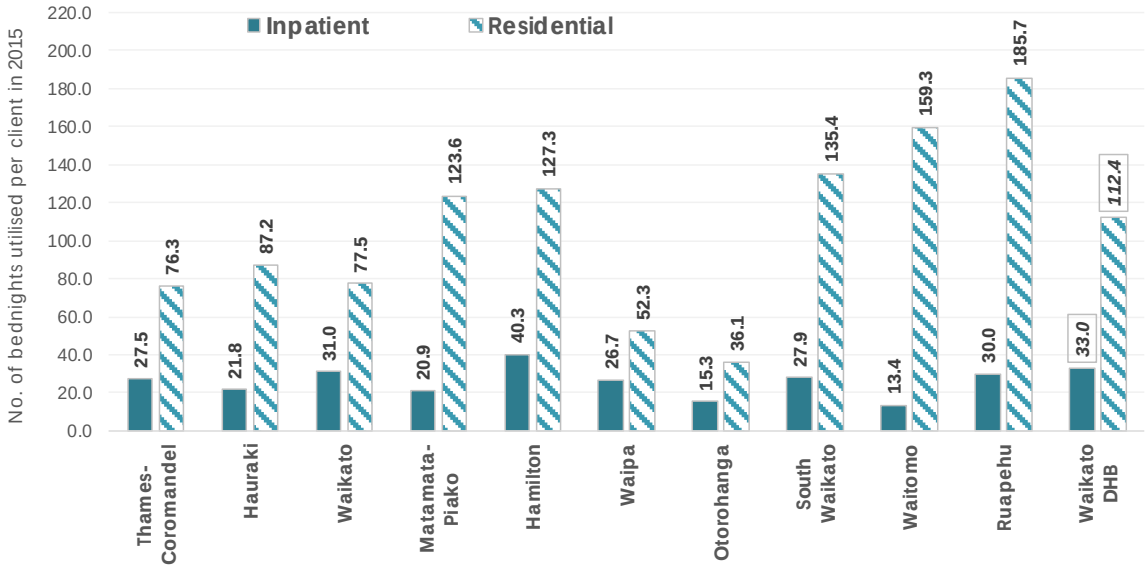
The overall utilisation rates for MH/AoD 'bednight' activity types delivered in 2015 are disaggregated by TA area of domicile in Figure 5.32. The age-specific utilisation rates are included in Appendix Figure 13. The TA rates were notably higher than the DHB average in three TA areas – Ruapehu (67 per 10,000), Thames-Coromandel (61 per 10,000) and Hamilton (58 per 10,000). The lowest rates were recorded for the Otorohanga and Waipa districts. These are slightly different TA's than described regarding the utilisation patterns of the 'contact' outpatient/community care.

Figure 5.32: 'Bednight' utilisation rates disaggregated by TA of domicile, Waikato DHB, 2015



For 'bednight' activity types delivered in an inpatient hospital setting, the average number of actual inpatient bed-nights per client recorded in 2015 was highest for those residing in Hamilton (40.3 actual bed-nights per client compared to the DHB average of 33 per client). For 'bednight' services in a residential facility, the number of actual bed-nights utilised per client was relatively high in Ruapehu (185.7 per client), Waitomo (159.3 per client) and South Waikato (135.4 per client) and lowest in Otorohanga and Waipa.

Figure 5.33: Number of bed-nights per client disaggregated by activity setting and TA of domicile, Waikato DHB, 2015



5.4.7 Activity unit type 'Seclusion'

This section examines the utilisation rates for MH/AoD services that require the placing of a tangata whaiora/consumer, at any time and for any duration, alone in a room or area from which they cannot

freely exit. It should be noted that the number of residents requiring seclusion services was very low (95 people in 2015) and therefore the age-specific utilisation rates, especially when disaggregated by ethnic group, should be treated with caution.

In 2015, approximately two per 10,000 residents of the Waikato DHB area utilised the seclusion services (see Figure 5.34), and this rate was considerably higher for men (four per 10,000) than women (one per 10,000). These services were only required for clients aged between 15 and 64 years with highest rates seen among youth and the young working age population. On average, each client received a seclusion service around 9.3 times annually, with men utilising slightly more seclusion contacts than women (see Figure 5.35).

Figure 5.34: Age specific utilisation rates (number of clients utilising MH/AoD services per 10,000 resident population) for seclusion services, Waikato DHB, 2015

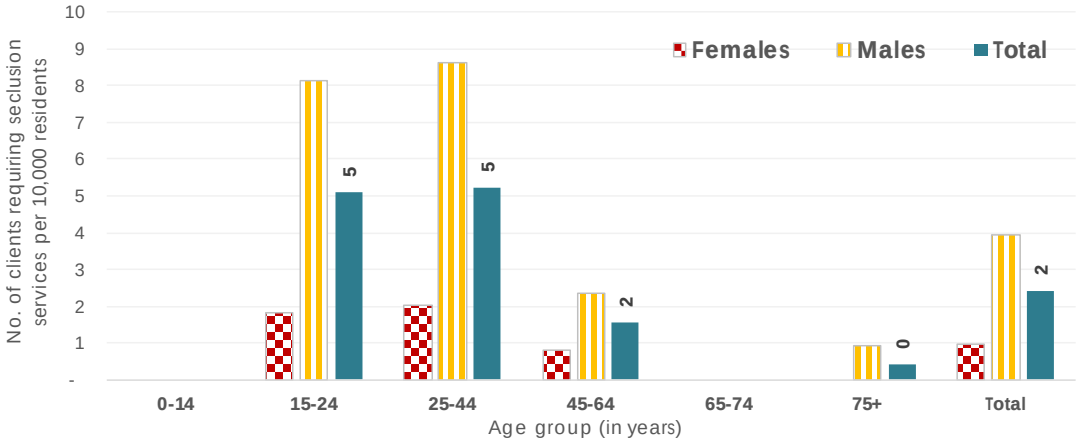
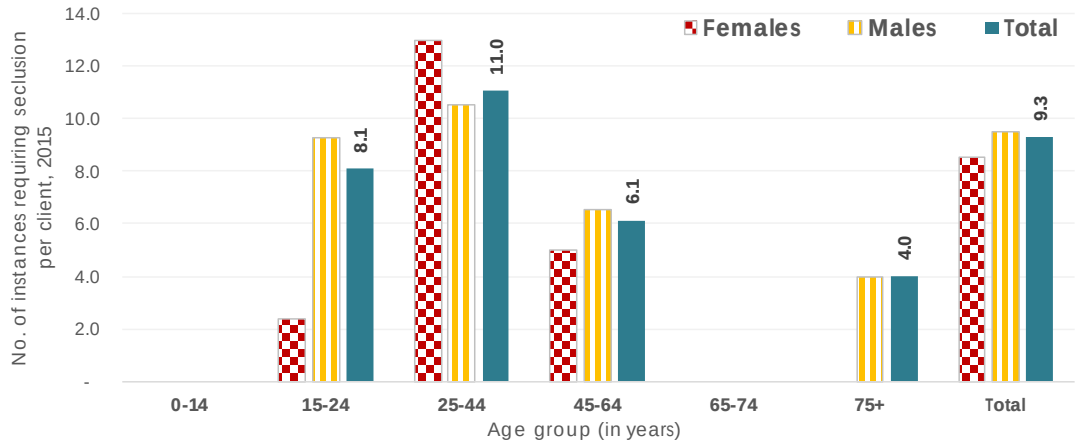


Figure 5.35: Number of services/contacts requiring seclusion per client, Waikato DHB, 2015



Seclusion rates for Māori and non-Māori

When disaggregated by ethnic group (please note before mentioned caution around small numbers), the overall seclusion rate was higher for Māori (57 per 10,000) then it was for non-Māori (37 per 10,000). Māori clients also, on average, needed more number of seclusion contacts (11.6 per client) then non-Māori (5.7 per client).

Figure 5.36: Age specific utilisation rates for services/contacts requiring seclusion disaggregated by Māori and non-Māori, Waikato DHB, 2015

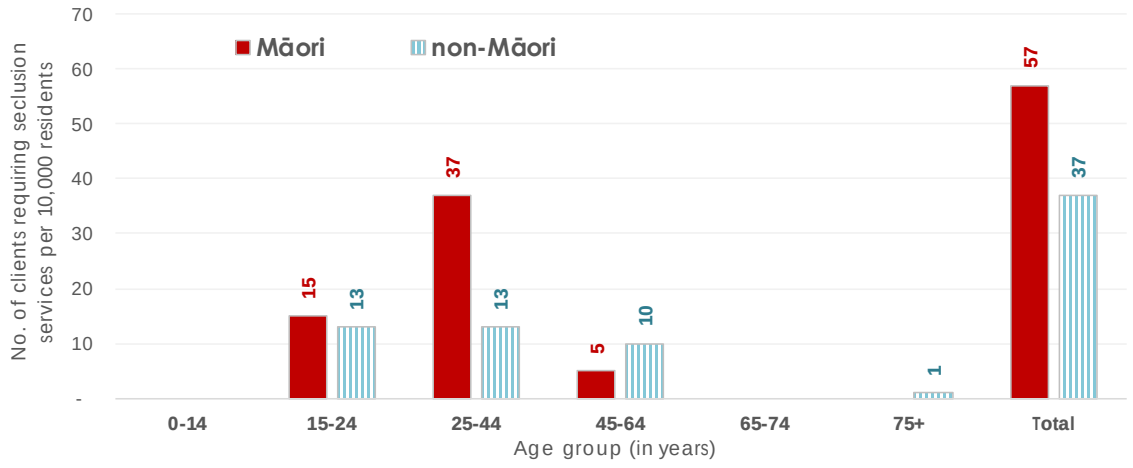
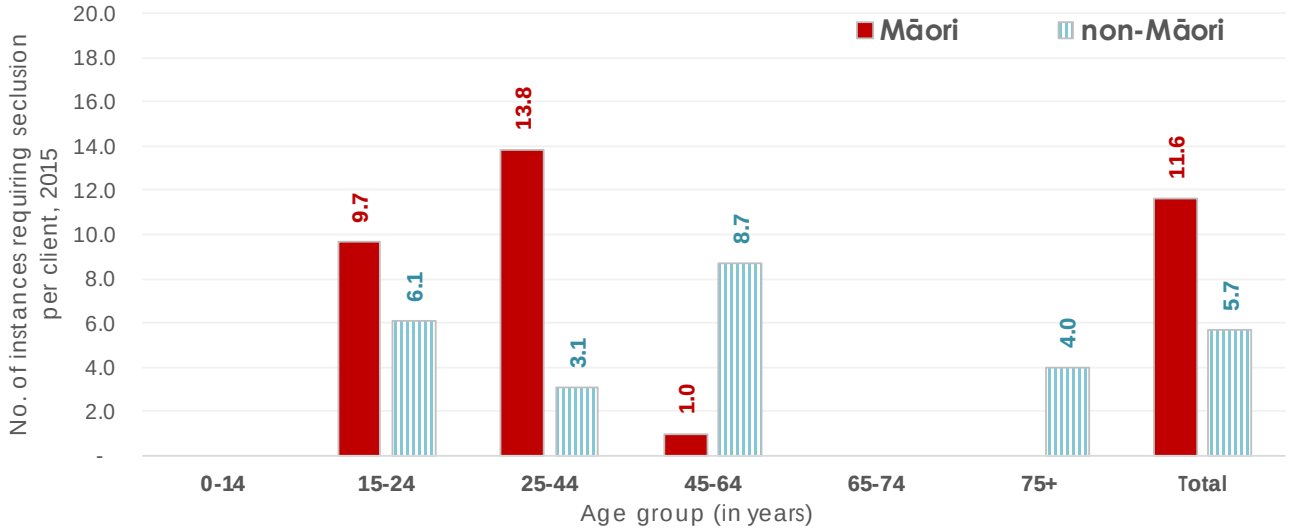


Figure 5.37: Number of services/contacts requiring seclusion per client disaggregated by Māori and non-Māori, Waikato DHB, 2015



5.5 Projected utilisation, 2023 and 2033

This section applies the age-specific utilisation rates recorded in 2015, disaggregated by sex and the broad ethnic grouping of Māori and non-Māori, to the projected resident population of Waikato DHB in 2023 and 2033 to get an estimate of number of clients likely to access the secondary MH/AoD services over the next eighteen years. It should be noted that the projection estimates presented here are based on the assumption that the 2015 utilisation rates will remain the same over the 2015-2033 period. Consequently, all projected changes in utilisation numbers are solely a result of demographic changes likely to occur in the resident population over the

next eighteen years and assume no changes in the service delivery patterns or patterns of access to the broader determinants of mental wellbeing.

In 2015, there were 377 (2.5 percent of the total 14,984) clients who utilised MH/AoD services with no ethnic group recorded in the PRIMHD database. For the purpose of analysis presented in this section, these 377 individuals have been randomly assigned to the Māori or non-Māori ethnic grouping based on the age and ethnic grouping of the remaining 97.5 per cent or 14,607 clients. Consequently, all projections in this section are calculated based on the 2015 age-specific utilisation rates of 4,956 Māori and 10,994 non-Māori clients disaggregated by sex.

The utilisation projections have also been carried out for the TA areas within the Waikato DHB boundary. It should be noted that the population projections for the total Waikato DHB area are based on the 2016 update of estimates provided by Statistics New Zealand to the MoH and the TA level estimates are a 2015 projections update sourced from the New Zealand Statistics portal.

All estimates of future utilisation are presented using the medium series projection scenario assuming medium fertility, medium mortality and medium net migration.

5.5.1 Overall projected utilisation of MH/AoD services

Figure 5.38 and Table 5.4 show the number of residents of the Waikato DHB area, disaggregated by broad age groups, projected to utilise secondary MH/AoD services in 2023 and 2033. The underlying detailed projection numbers (by five-year age groups and sex) are given in Appendix Table 12 and Appendix Table 13.

2015-2023

Over this eight-year period, approximately 1,864 additional people are projected to access secondary MH/AoD services, which is an overall increase of 12.4 per cent. The biggest numerical increase is expected in the 25-44 year age group with 1,000 additional tangata whaiora utilising services – this accounts for well over half of the total increase in tangata whaiora numbers projected for the DHB. The 65+ year age group is likely to account for around 24 per cent of the overall increase in tangata whaiora numbers (442 additional people utilising).

2015-2033

Over this extended eighteen-year period, an additional 3,469 residents are estimated to utilise MH and AoD services by 2033, which equates to an overall increase of 23.2 per cent. The projected age-specific increase in number of tangata whaiora follows a similar pattern as seen in the 2015-2023 period with small increases estimated for the younger age groups and the numbers for the

65+ year groups increasing much more substantially. The number of 75+ year olds utilising secondary MH/AoD services is projected to more than double over 2015-2033.

By 2033, an additional 1,500 people aged 25-44 years are likely to access the MH/AoD services and this age group will account for over 43.2 per cent of the total increase in tangata whaiora numbers projected for the DHB. The 65+ year age group, with approximately 1,070 additional tangata whaiora by 2033, will account for almost 40.0 per cent of the overall increase in tangata whaiora numbers estimated for the DHB. These two age groups, the young working age population and the elderly will jointly account for three-quarters of the projected growth in tangata whaiora numbers across the DHB region over the 2015-2033 period.

Figure 5.38: Projected percentage change in the number of clients utilising secondary MH/AoD services across the WDHB area; 2015-2023 and 2015-2033

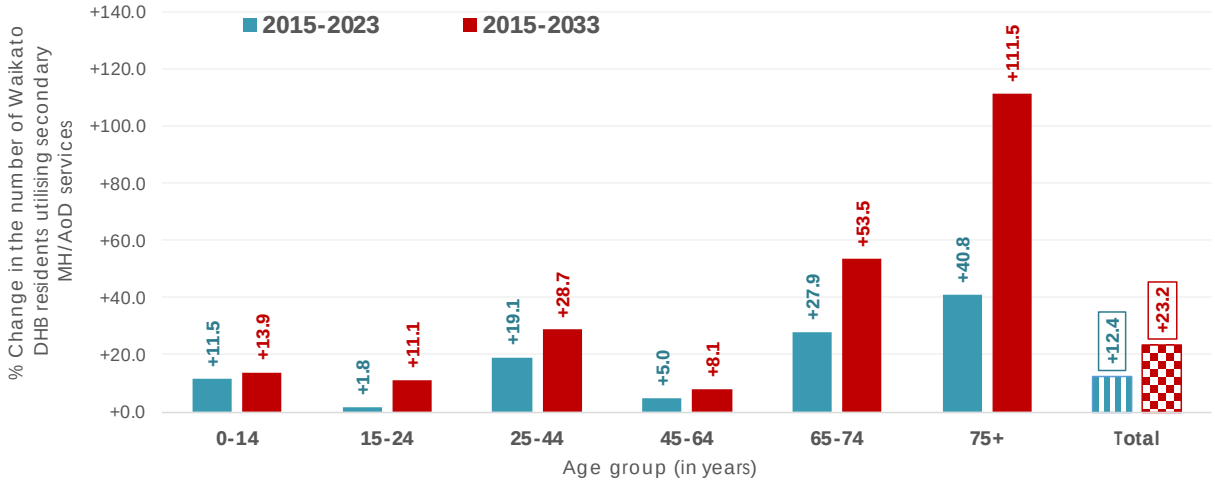


Table 5.4: Projected age-specific utilisation of MH/AoD services by clients living in the Waikato DHB area; 2023 and 2033 (medium series projections)

Age group (in years)	No. utilising secondary MH/AoD services in 2015	Number estimated to utilise secondary MH/AoD services		Projected change in client numbers	
		2023	2033	2015-2023	2015-2033
0-14	1,753	1,954	1,997	+201	+244
15-24	3,697	3,764	4,107	+67	+410
25-44	5,225	6,225	6,724	+1,000	+1,499
45-64	3,033	3,186	3,278	+153	+245
65-74	607	776	932	+169	+325
75+	669	942	1,415	+273	+746
Total	**14,984**	**16,848**	**18,453**	+1,864	+3,469

5.5.2 Projected utilisation by ethnic group

Figure 5.39 and Figure 5.40 disaggregate the percentage increase in number of tangata whaiora projected to utilise secondary MH/AoD services, by Māori and non-Māori, for the periods 2015-2023 and 2015-2033. Table 5.5 gives the projected utilisation numbers on which these figures are based. The underlying detailed projection numbers (by five-year age groups and sex) for Māori and non-Māori are given in Appendix Table 14 and Appendix Table 15respectively.

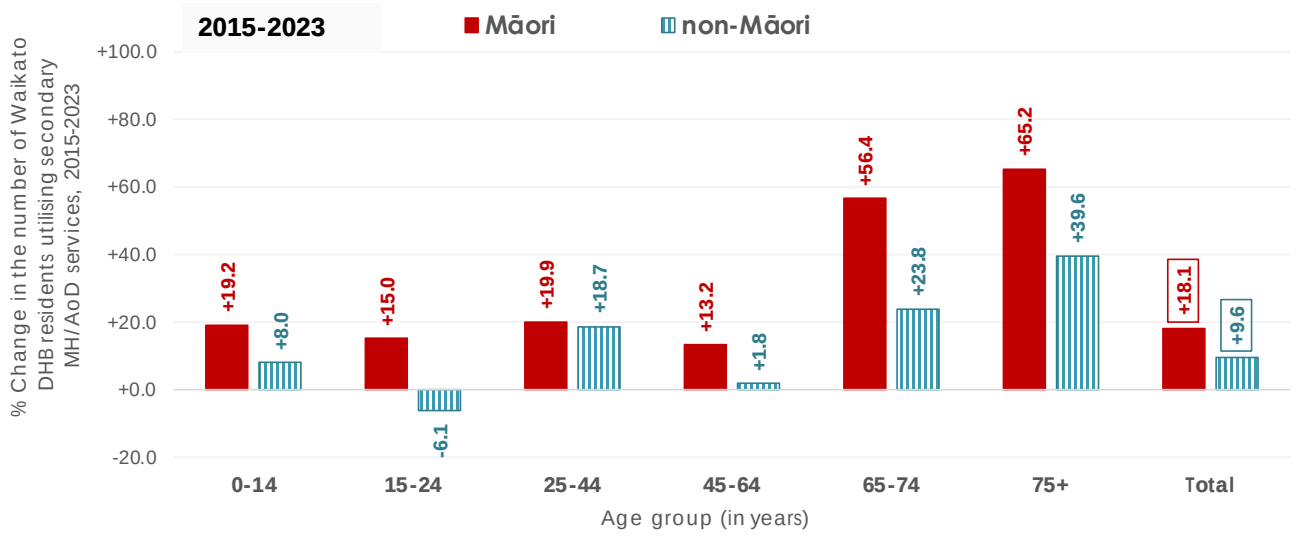
2015-2023

The number of Māori residents utilising the secondary MH/AoD services is projected to increase at a much higher rate, 18.1 per cent over 2015-2023, than it is for non-Māori (9.6 per cent) and this pattern is seen across all age groups. Māori tangata whaiora numbers are projected to increase across all age groups, which the number of non-Māori tangata whaiora is likely to either decline or experience very small increases at the younger ages (less than 65 years). At the older ages (65+ years), the increases estimated for Māori are much more substantial than they are for non-Māori.

For both ethnic groups, the biggest numerical increases are expected in the 25-44 year group, accounting for 45.2 per cent of the overall increase in Māori tangata whaiora (406 of the additional 898 clients estimated) and 61.5 per cent for non-Māori (594 of the additional 966 tangata whaiora estimated).

For the Māori ethnic group, although the increase in number of tangata whaiora aged 65+ years is likely to be substantial as seen in Figure 5.39, the increase in number of tangata whaiora from this age group only accounts for 7.2 per cent of the additional 898 Māori tangata whaiora utilising services by 2023. On the other hand among non-Māori, 39.1 per cent of the 966 additional tangata whaiora estimated by 2033 will be aged 65 years or more. In other words, numerically, the majority of the projected increase in tangata whaiora numbers for Māori is among the younger ages and that for non-Māori is among the elderly.

Figure 5.39: Projected percentage increase in the number of Māori and non-Māori tangata whaiora utilising secondary MH/AoD services across the WDHB area; 2015-2023



2015-2033

Similar to the findings noted above, the projected increase in the number of Māori residents utilising the secondary MH/AoD services is around 43.8 per cent, much higher than that estimated for non-Māori (12.9 per cent). Numerically, the estimated increase for Māori (2,173 additional clients by 2033) is around 1.7 times more than that for non-Māori (1,296 additional tangata whaiora).

Although an increase in tangata whaiora numbers are expected across all age groups for Māori, the number of 65+ year olds is likely to more than double (109 in 2015 to around 285 by 2033, an overall increase of 161.4 per cent). The increase in tangata whaiora numbers projected for the 25-44 year group will account for more than half of the overall projected increase in Māori tangata whaiora (1,089 of the total 2,173 additional people utilising by 2033).

In the case of non-Māori, the numbers at younger ages (less than 65 years) are projected to increase very slightly or even decline. The estimated increase in tangata whaiora numbers at the two oldest age groups (an additional 895 people aged 65+ years by 2033) will account for around 69 per cent of the overall projected increase in non-Māori tangata whaiora over this eighteen-year period (Figure 5.40 and Table 5.5).

Figure 5.40: Projected percentage increase in the number of Māori and non-Māori tangata whaiora utilising secondary MH/AoD services across the WDHB area; 2015-2033

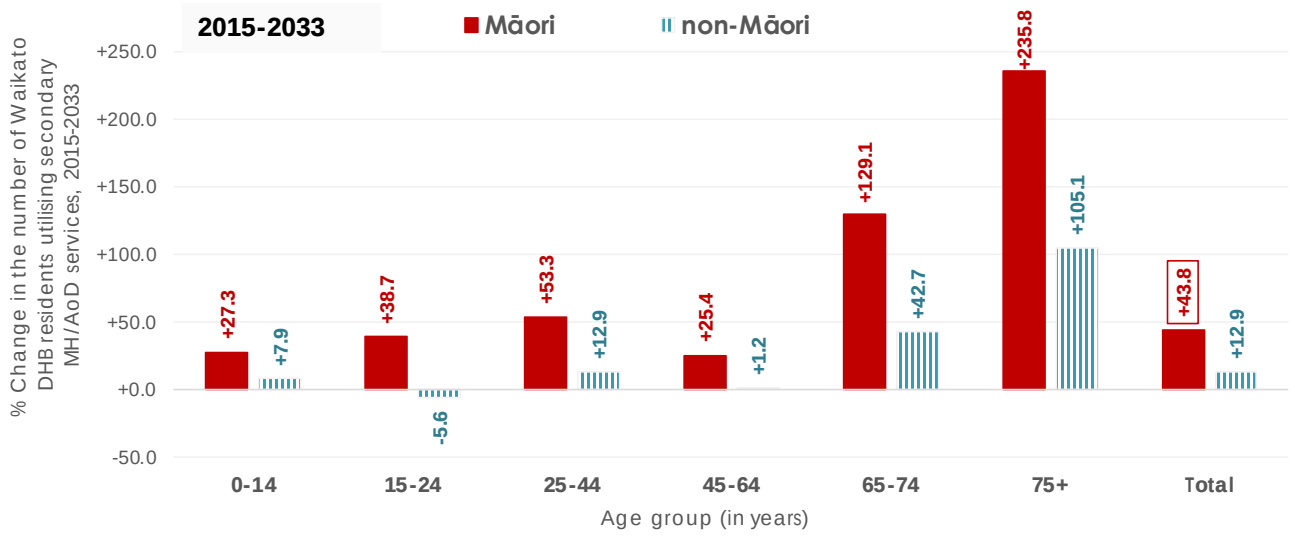


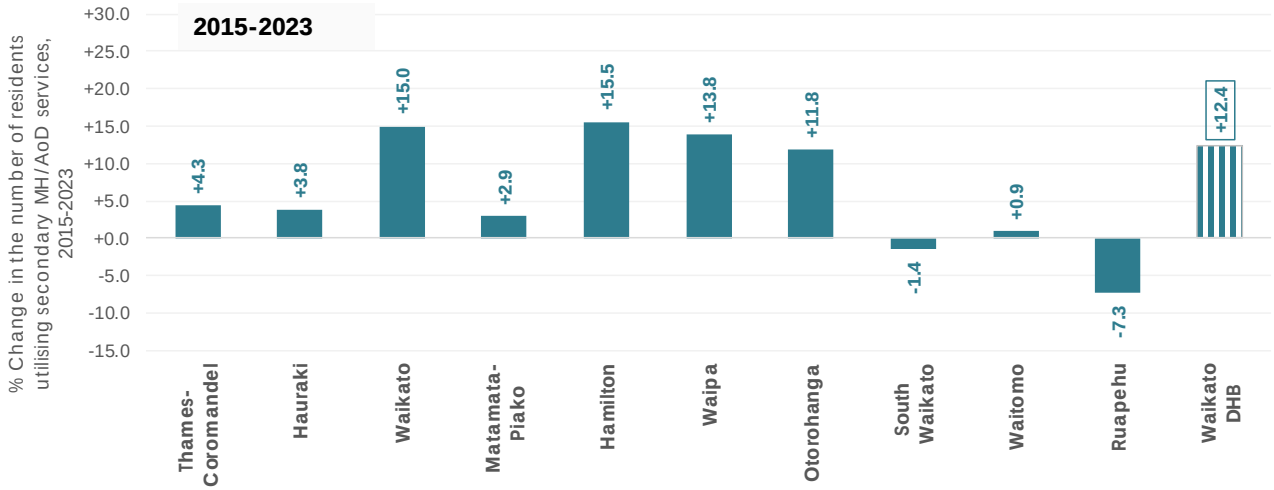
Table 5.5: Projected age-specific utilisation of MH/AoD services by Māori and non-Māori tangata whaiora living in the Waikato DHB area; 2023 and 2033 (medium series projections)

	Māori					non-Māori				
Age group (in years)	No. utilising services in 2015	Number estimated to utilise secondary MH/AoD services		Projected change in client numbers		No. utilising services in 2015	Number estimated to utilise secondary MH/AoD services		Projected change in client numbers	
		2023	2033	2015-2023	2015-2033		2023	2033	2015-2023	2015-2033
0-14	545	650	694	+105	+149	1,208	1,305	1,303	+97	+95
15-24	1,396	1,605	1,936	+209	+540	2,301	2,160	2,171	-141	-130
25-44	2,042	2,448	3,131	+406	+1,089	3,183	3,777	3,593	+594	+410
45-64	864	978	1,083	+114	+219	2,169	2,207	2,194	+38	+25
65-74	76	119	174	+43	+98	531	657	758	+126	+227
75+	33	55	111	+22	+78	636	888	1,304	+252	+668
Total	**4,956**	**5,854**	**7,129**	+898	+2,173	**10,028**	**10,994**	**11,324**	+966	+1,296

5.5.3 Projected utilisation by TA of domicile

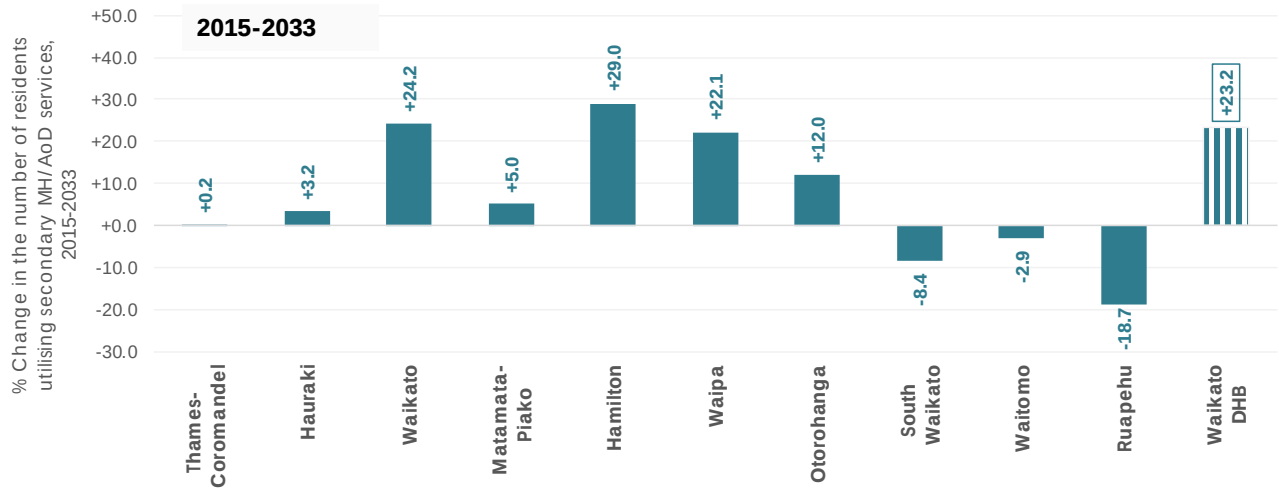
Figure 5.41 and Figure 5.42 compare the projected percentage increase in the number of clients across the TA areas within the Waikato DHB boundary. The overall projected increase of 12.4 per cent over the 2015-2023 period (1,864 additional residents utilising services) is not distributed uniformly across the ten TA areas of the DHB. The number of clients is likely to increase in seven TAs, and either decline or experience very marginal increases in the remaining three (Ruapehu, South Waikato and Waitomo) as seen in Figure 5.41. The increases expected in Hamilton, Waikato and Waipa would account for approximately 94 per cent of the overall increase in tangata whaiora numbers projected for the DHB over the 2015-2023 period.

Figure 5.41: Projected percentage change in the number of tangata whaiora utilising secondary MH/AoD services across the WDHB area disaggregated by TA of domicile; 2015-2023



Looking at the extended 2015-2033 period, the increase in number of residents utilising MH/AoD services in Hamilton, Waikato and Waipa would account for almost all the increase projected for the DHB, with some of the increase in these three TAs offsetting the notable decline in client numbers estimated for Ruapehu, South Waikato and Waitomo.

Figure 5.42: Projected percentage change in the number of tangata whaiora utilising secondary MH/AoD services across the WDHB area disaggregated by TA of domicile; 2015-2033



5.6 Diagnostic data within PRIMHD, 2015

Only limited diagnostic data was available for this report.

As per the Mental Health and Addiction: Service use 2012/13 report published online by the Ministry of Health (Ministry of Health, 2016)), a clinician is not required to enter a diagnosis within the PRIMHD database within the first three months of treatment. This means that there is likely to be no diagnosis data recorded for a large number of clients who only received short-term treatment (although this practice is not necessarily standardised across the DHB provider and NGO/Community provider arms). For those tangata whaiora where there is diagnosis information added in the first 3 months of care, many service organisations submit a large number of non-specific diagnoses such as 'diagnosis deferred', 'no specific diagnosis' to PRIMHD during this time. These codes do not provide specific diagnostic information and therefore have been removed from the analyses in this section. In addition, the practice of entering diagnosis codes into the PRIMHD dataset is only common for the DHB provider arm. Therefore, of the 14,984 individuals living in the Waikato DHB area who utilised services in 2015, the MH/AOD related diagnoses were available only for those tangata whaiora for whom the DHB provider arm provided their services, and for those who were involved with the service for 3 months or more. This resulted in diagnostic data available for 4,482 clients (29.9 per cent of the total tangata whaiora for 2015). As the data for only the 2015 year were extracted and analysed, it is not possible to accurately measure what proportion of these 4,482 clients were in long-term care. As shown in Table 5.6, 88.5 per cent of the 4,482 clients with diagnosis recorded in PRIMHD database had only one diagnostic category or group assigned.

Table 5.6: Diagnostic groupings (PRIMHD dataset, 2015); Waikato DHB tangata whaiora

No. of diagnostic groups (the client is coded for in the PRIMHD database)	No. of clients	%
1	3,965	88.5
2	427	9.5
3	73	1.6
4 or more	17	0.4
	4,482	100.0

The diagnoses recorded were grouped into broad groupings as listed in Table 5.7. The most frequent diagnosis coded was those within the 'mood disorder' grouping, as identified for 1,289 tangata whaiora (or 28.7 per cent of those for whom a diagnosis was available). The next most frequent diagnoses were schizophrenia/psychotic disorders (20 per cent); mental disorders not otherwise specified (19 per cent); anxiety disorders (14.5 per cent); and substance-related disorders (9.5 per cent). Of these diagnostic groups, mood disorders and anxiety disorders were more common in females compared to males.

As a single tangata whaiora can be coded into more than one diagnostic group and therefore the total number of diagnoses assigned in the three tables (5,111) is greater than the actual 4,482 individuals for whom the diagnosis is recorded in PRIMHD.

Table 5.7: Number of male and female clients in each diagnostic grouping; 2015 PRIMHD data for Waikato DHB

Diagnostic group	Females	Males	Total
Mood Disorders	771	518	1,289
Schizophrenia/Psychotic Disorders	300	606	906
Mental disorder, not otherwise specified	420	448	868
Anxiety Disorders	430	220	650
Substance-Related Disorders	138	290	428
Infancy/Childhood/Adolescence Disorders	81	205	286
Delirium/Dementia/Amnestic/Cognitive Disorders	111	119	230
Adjustment Disorders	96	79	175
Personality Disorders	96	62	158
Eating disorders	62	1	63
Mental Disorders Due to Medical Condition	12	21	33
Somatoform Disorders	6	4	10
Dissociative Disorders	5	3	8
Impulse-Control Disorders	0	3	3
Sexual/Gender Identity Disorders	2	1	3
Sleep Disorders	0	1	1
	2,530	2,581	**5,111**

Diagnostic data is disaggregated by age and ethnic group (Māori/non-Māori) in Table 5.8 and Table 5.9 respectively. Tangata whaiora diagnosed within the most common diagnostic groups

can be seen to cluster around the middle age groups (15-64 years), as expected from the utilisation patterns seen earlier in this chapter. An exception to this is those tangata whaiora diagnostic within the 'mental disorder not otherwise specified' group, who are more likely to be younger.

Table 5.8: Number of clients in each diagnostic grouping disaggregated by age; 2015 PRIMHD data for Waikato DHB

Diagnostic group	0-14	15-24	25-44	45-64	65-74	75+	Total
Mood Disorders	19	280	459	360	96	75	1,289
Schizophrenia/Psychotic Disorders	1	155	429	271	35	15	906
Mental disorder, not otherwise specified	163	256	246	94	47	62	868
Anxiety Disorders	56	189	226	114	35	30	650
Substance-Related Disorders	5	120	179	120	3	1	428
Infancy/Childhood/Adolescence Disorders	153	86	23	22	2	0	286
Delirium/Dementia/Amnestic/Cognitive Disorders	0	2	0	20	50	158	230
Adjustment Disorders	17	53	52	27	10	16	175
Personality Disorders	1	50	73	30	3	1	158
Eating disorders	6	28	22	7	0	0	63
Mental Disorders Due to Medical Condition	1	1	6	13	5	7	33
Somatoform Disorders	0	5	3	2	0	0	10
Dissociative Disorders	1	2	4	0	1	0	8
Impulse-Control Disorders	0	1	2	0	0	0	3
Sexual/Gender Identity Disorders	0	2	1	0	0	0	3
Sleep Disorders	1	0	0	0	0	0	1
	424	1,230	1,725	1,080	287	365	**5,111**

Of the 5,111 diagnoses assigned (to the 4822 tangata whaiora), 28.7 per cent are assigned to a tangata whaiora identified as Māori (Table 5.9). Particularly high proportions of those tangata whaiora assigned within the schizophrenia/psychoses diagnostic group are identified as Māori (almost the same number as non-Māori).

Table 5.9: Number of Māori and non-Māori clients in each diagnostic grouping; 2015 PRIMHD data for Waikato DHB

Diagnostic group	Māori	non-Māori	Total
Mood Disorders	287	1002	1,289
Schizophrenia/Psychotic Disorders	448	458	906
Mental disorder, not otherwise specified	246	622	868
Anxiety Disorders	148	502	650
Substance-Related Disorders	147	281	428
Infancy/Childhood/Adolescence Disorders	62	224	286
Delirium/Dementia/Amnestic/Cognitive Disorders	32	198	230
Adjustment Disorders	43	132	175
Personality Disorders	39	119	158
Eating disorders	2	61	63
Mental Disorders Due to Medical Condition	7	26	33
Somatoform Disorders	1	9	10
Dissociative Disorders	1	7	8
Impulse-Control Disorders	2	1	3
Sexual/Gender Identity Disorders	1	2	3
Sleep Disorders	1	0	1
	1,467	3,644	**5,111**

6 Dispensed pharmaceutical prescription data

Key points

Data indicate that in the Waikato DHB area, dispensing of primary care prescriptions for mental health medications increase with age and are more frequently dispensed for female patients. However, ADHD medication is an exception to this trend. The dispensing of ADHD medication decreases with age and is more common in males.

With the exception of some age brackets for specific medications, GP prescriptions are less likely to be dispensed for Māori (compared to non- Māori) for all groups of mental health medications in this analysis: anti-depressants, anti-psychotics, sedatives/relaxants, mood stabilisers, ADHD treatment and dementia management. Important exceptions to this trend are that: Māori men aged 75 years old and over received a considerably higher rate of GP prescriptions for anti-psychotic medications compared with non-Māori men of the same age group; and dispensing of dementia specific medications is more common for Māori than non-Māori amongst males aged 65 to 74 years old.

There are also some differences in prescription dispensing by TA of domicile.

There are a number of possible explanations that could drive different prescription dispensing patterns: differences in the prevalence of mental illness, different approaches to the management of mental health in primary care, differential access to primary care services and prescription dispensing including the cost and accessibility of primary care and pharmacy in some locations, differential access to specialist mental health services (impacting on primary care) and differences in the community attitudes and beliefs about health services, mental illness and its treatment.

Antidepressants

- The most common antidepressants prescribed in 2015 by GPs in the Waikato DHB were citalopram, amitriptyline and fluoxetine.
- Overall, GP prescribing rates for antidepressants within the Waikato DHB are estimated at 639 per 10,000 population. These prescription rates are the lowest amongst those aged 0-14 years, but increase with age and are the highest in the 75+ age group (1,431 per 10,000).
- By ethnicity, the rate of GP prescriptions for antidepressants is estimated to be lower for Māori compared to non-Māori. This trend is seen for both males and females, and across all age groups, but is most pronounced for women aged 75+ years.

Antipsychotics

- Quetiapine is the most common anti-psychotic medication prescribed by GPs in the Waikato DHB area.
- Overall, GP prescribing rates for anti-psychotics within the Waikato DHB are estimated at 127 per 10,000 population. There is a higher anti-psychotic prescribing rate seen for those aged 75+ years.
- By ethnicity, anti-psychotic prescribing rates for non-Māori (136 per 10,000) are greater than those for Māori (96 per 10,000). However, this pattern does not hold across all age groups. For those aged 24-64 years, rates of anti-psychotic prescribing for Māori are greater than those for non-Māori.

Sedatives and relaxants

- Over 60% of sedatives and relaxant GP prescriptions in 2015 in the Waikato DHB region were for Zopiclone
- Overall, GP prescribing rates for sedatives and relaxants within the Waikato DHB are estimated at 317 per 10,000 population. Prescribing rates for sedatives and relaxants increase with advancing age and are higher among females, compared with males, across all age groups. Non-Māori have a higher rate of sedative/relaxant prescriptions than Māori throughout the Waikato across all age groups.

Other medications

- Lithium prescriptions in 2015 were uncommon.
- The majority of ADHD-related prescriptions (for those aged 0-24 years) were for a form of methylphenidate, and ADHD medication prescribing rates were higher for males compared to females. Overall prescribing rates for ADHD medication were 67 per 10,000. Māori were less likely to be prescribed ADHD medications compared to non-Māori.
- The prescribing of dementia specific medications in the Waikato region by GPs remains relatively uncommon, with the majority of prescriptions analysed for Donepezil. As expected, dementia prescription rates increase with age, and these medications are also more commonly prescribed for females.

6.1 Data extraction

The pharmaceutical data was extracted by the Waikato DHB in November 2016 based on the following criteria:

All prescriptions dispensed in the calendar year 2015 (Jan to Dec) by a pharmacy based in and funded by Waikato DHB and/or prescriptions dispensed to clients living in the Waikato DHB area (usual residence recorded at the time of dispensing of the medications).

Following consultation with the advisors involved in this project, the list of drugs described in Table 6.1 were selected for review.

Table 6.1: Mental health medications grouped by category of use

Antidepressants	Antipsychotics	Sedatives/relaxants
Amitriptyline	Amisulpride	Alprazolam
Citalopram hydrobromide	Aripiprazole	Buspirone hydrochloride
Citalopram hydrobromide (Celapram)	Chlorpromazine hydrochloride	Clonazepam
Clomipramine hydrochloride	Clozapine	Diazepam
Dothiepin hydrochloride	Flupenthixol decanoate	Lorazepam
Doxepin hydrochloride	Fluphenazine decanoate	Oxazepam
Escitalopram	Haloperidol	Temazepam
Fluoxetine hydrochloride	Haloperidol decanoate	Zopiclone
Imipramine hydrochloride	Levomepromazine hydrochloride	
Maprotiline hydrochloride	Levomepromazine maleate	**Mood stabiliser**
Mianserin hydrochloride	Olanzapine	Lithium carbonate
Mirtazapine	Paliperidone	
Moclobemide	Pericyazine	**Dementia**
Nortriptyline hydrochloride	Pipothiazine palmitate	Donepezil hydrochloride
Paroxetine hydrochloride	Quetiapine	Rivastigmine
Phenelzine sulphate	Risperidone	
Sertraline	Trifluoperazine hydrochloride	**ADHD**
Tranylcypromine sulphate	Ziprasidone	Atomoxetine
Venlafaxine	Zuclopenthixol decanoate	Dexamfetamine sulfate
	Zuclopenthixol hydrochloride	Methylphenidate hydrochloride

291,287 rows of data were received for all pharmaceutical drugs dispensed over the 2015 calendar year to either patients who lived within the Waikato DHB boundary or were funded by the Waikato DHB. The dataset had the following variables:

1. *PEC form number* – This is unique number generated by each pharmacy when a prescription is processed for dispensing. By combining the PEC number with the pharmacy name, it is possible to generate a unique code for each individual prescription that is dispensed.
2. *Dispensing pharmacy* – Name of the pharmacy dispensing the medication(s).
3. *Date dispensed.*

4. *GP name if listed* – Name of the General Practitioner prescribing the medication. In cases where the GP name is missing, it is assumed that the prescription was prescribed by a secondary care provider and therefore excluded from the analysis.
5. *Area Unit of domicile* – The census area unit in which the client was resident in 2015 as recorded at the time the medication was dispensed.
6. *TA of domicile* - The Territorial Authority (TA) area in which the client was resident in 2015 as recorded at the time the medication was dispensed.
7. *Chemical name* – of the medication dispensed.
8. *Sex* - of the client.
9. *Age* – of the client on the day the medication was dispensed.
10. *Prioritised Ethnic Group - a* mutually exclusive Māori, Pacific and Other prioritised ethnicity classification.

The following rows of data were excluded from the analysis:

- 16,436 rows for medications dispensed to clients living outside the Waikato DHB area or where the TA of residence is missing.
- 49,698 rows where the name of the prescribing GP was missing. These were assumed to be medications prescribed by secondary care providers.
- 408 rows which were marked as duplicates (instances where the PEC form number, date medication was dispensed, chemical name of the medication dispensed, age, sex and ethnicity of the client, and the prescribing GP were found to be identical).

Of the 224,745 rows remaining, a chemical group was assigned to each unique chemical name as per the grouping shown in Table 6.1 (Anti-depressants, Anti-psychotics, Sedatives/relaxants, Mood stabilisers, Dementia and ADHD).

There were 10,382 instances where more than one medication from a particular chemical grouping (for example, two types of anti-depressants; Amitriptyline and Venlafaxine) was prescribed within a prescription. For each of these prescriptions, only one instance (row) of medication (within a chemical group) was retained and others deleted as duplicates. This was done to avoid people being counted more than once within the same prescription and same chemical group.

The remaining 215,502 rows of data were grouped into quarters based on the date the prescription was dispensed at the pharmacy (Jan-Mar, Apr-Jun, Jul-Sep and Oct-Dec). To ensure that a person was counted only once each quarter the following steps were carried out:

Step one All rows of data where all of the following variables were identical were considered to be duplicates and therefore deleted:

- Quarter when the medication was dispensed
- Pharmacy
- Chemical group
- Demographic characteristics of the client - Area unit of domicile, age, sex and ethnic group
- GP prescribing the medication

180,204 rows of data remained after this step-one de-duplication process.

Step two All rows of data where the following variables were identical were considered to be duplicates and therefore deleted:

- Quarter when the medication was dispensed
- Chemical name
- Demographic characteristics of the client - Area unit of domicile, age, sex and ethnic group
- GP prescribing the medication

The remaining 177,162 rows of data were used for the analysis presented in this section. For each chemical group, an average was taken across the four quarters to get an estimate of the number of clients being prescribed mental health-related medication within the primary care sector.

To consider the potential primary care utilisation rates (per 10, 000 population) by age, sex and prioritised ethnicity, these estimates of the number of people prescribed mental health drugs in primary care were disaggregated by these demographic characteristics (using the prescribing data) and then considered according to the resident population.

In this report, this estimation of people dispensed primary care medication is used as a proxy for primary care utilisation for the management of mental health and the pattern of prescribing for mental illness by GPs. There are however important limitations to these analyses and therefore these data must be interpreted with caution. Firstly, because NHI-linked pharmaceutical prescription data was not available, it was not possible to determine the actual number of people for whom prescriptions were provided. The de-duplication and quarterly averaging processes undertaken with this data were an attempt to approximate individuals without the availability of an unique ID. Secondly, there is likely to be important unmet need in primary care, particularly for those with mental health concerns. Those within our community who are unable to access high quality, appropriate and effective primary care are missing in these analyses, as are those for whom pharmaceuticals were prescribed but not dispensed. Finally, we recognise that people with mental health needs within primary care do not necessarily require prescription

medication for the effective management of their mental health, and also that some of the medications reviewed in this report may be prescribed for non-mental health related concerns.

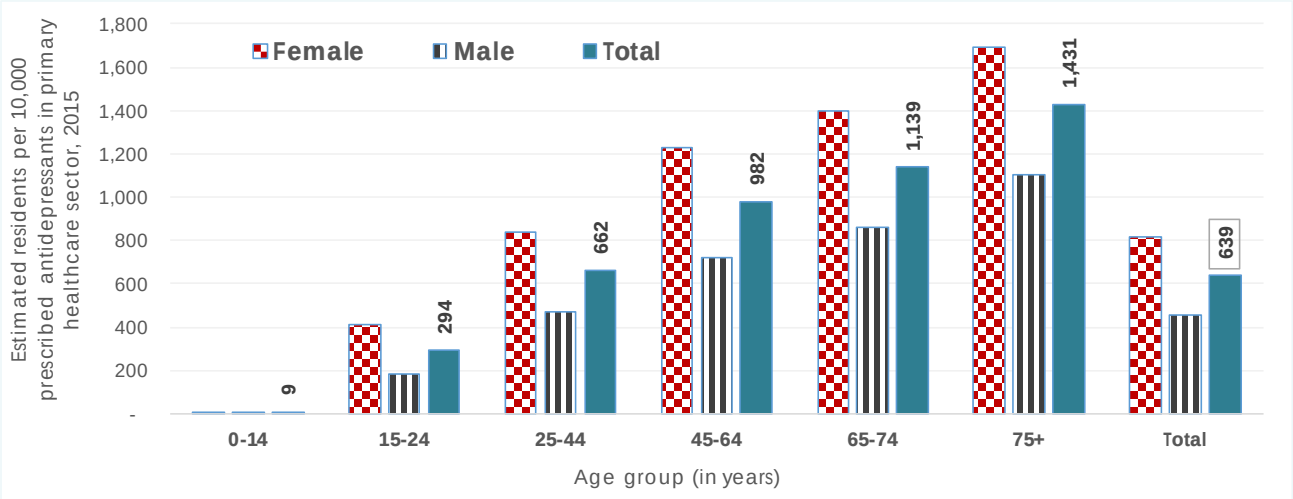
Despite these limitations, the following sections review the pharmaceutical prescription data for the Waikato DHB population, by category of use, as described in Table 6.1. These data instead provide a platform for generating hypotheses regarding the care and treatment of mental illness in primary care. Given the limitations of the dataset and the lack of accurate prevalence data to compare community prescribing rates with, no assumptions are made in this report regarding the 'correct' rate of prescribing (to indicate quality of care for example) for each medication category, rather this report describes the best estimate of the 2015 utilisation patterns.

6.2 Anti-depressant prescribing patterns, 2015

Anti-depressants are used most commonly for depression and other mood disorders but also in the treatment of many conditions, including anxiety, chronic pain disorders and arthritis. An estimate of the average number of Waikato DHB residents prescribed antidepressants per quarter of 2015, using the methodology of this report, is 24,948. The most common anti-depressant prescriptions were citalopram, amitriptyline and fluoxetine - each accounting for approximately 15-20 per cent of anti-depressant prescriptions in the Waikato DHB.

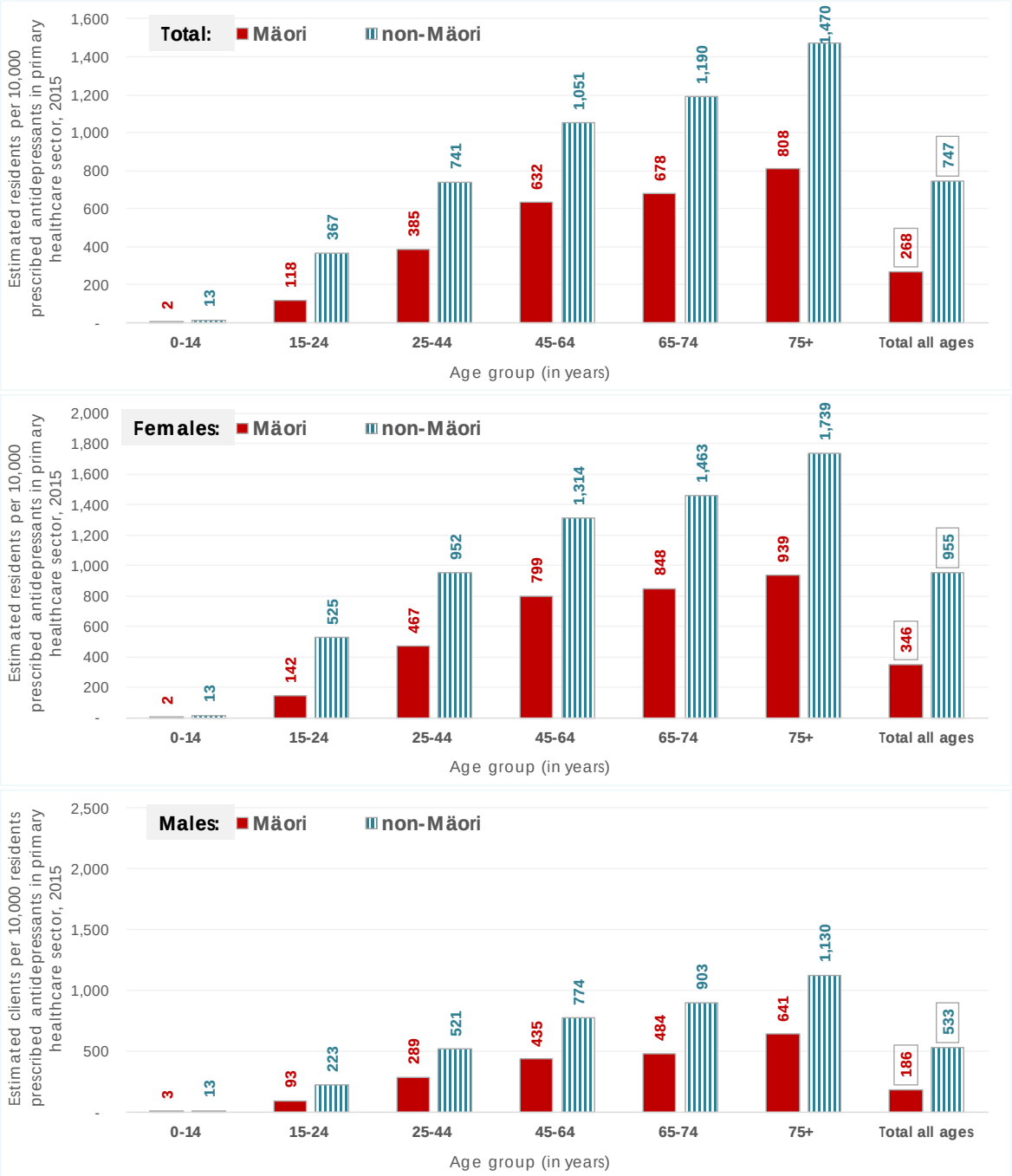
Figure 6.1 shows an estimation of the number of residents per 10,000 population in the Waikato DHB who have been dispensed anti-depressant prescriptions. The overall rate of dispensed prescription by GPs in 2015 is estimated at 639 per 10,000. Dispensed prescription rates for antidepressants are lowest amongst those aged 0-14 years, but increase with age and peak in the 75+ age group (1,431 per 10,000). At all age groups, the dispensed prescription rate for antidepressants is higher for females than males in the Waikato DHB area.

Figure 6.1: Estimated residents per 10,000 population dispensed anti-depressant prescriptions in the primary health care sector, Waikato DHB, 2015



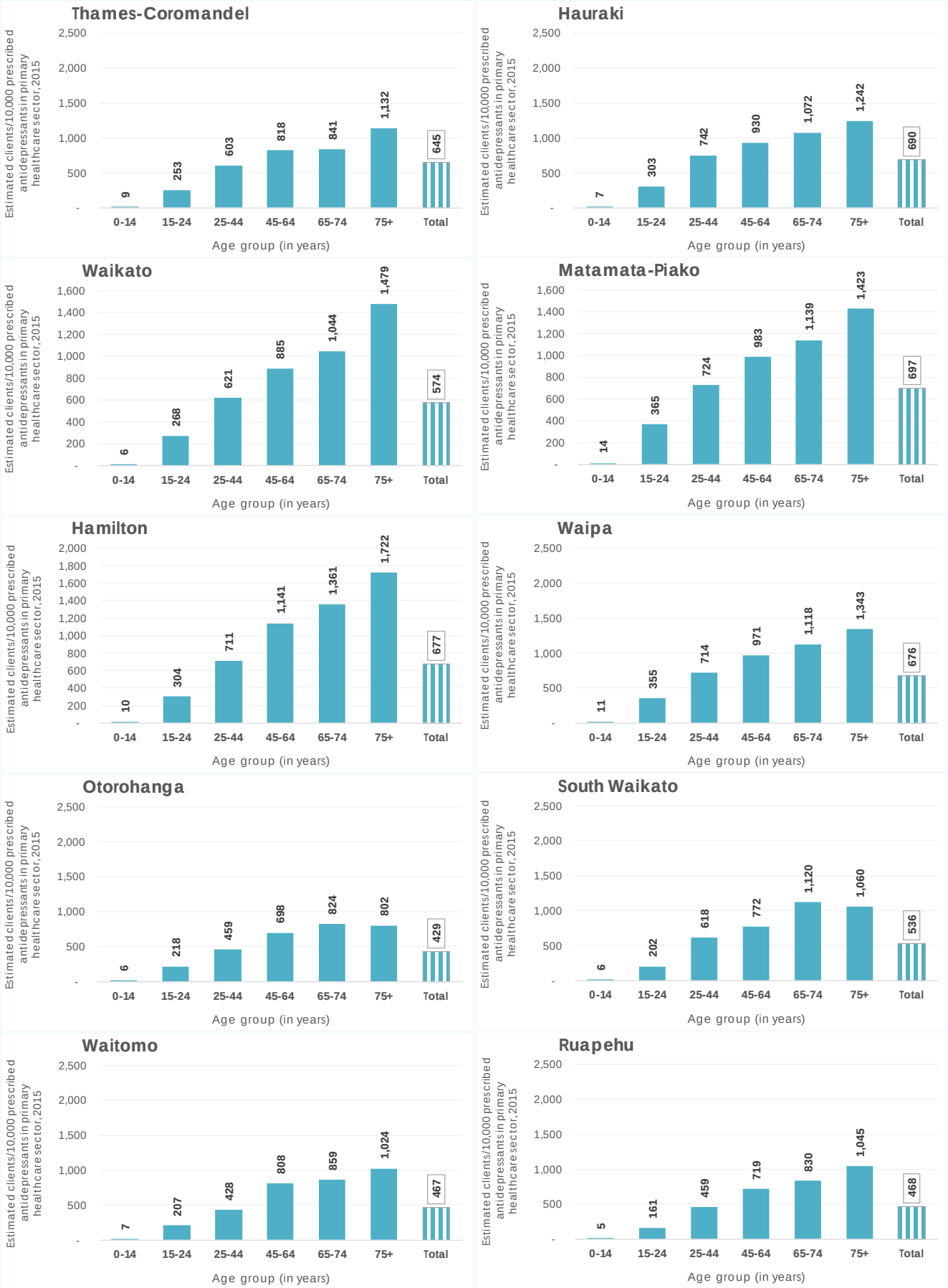
Disaggregation of anti-depressant dispensed prescription data by ethnicity and by sex is provided in Figure 6.2. These analyses shows that the estimated anti-depressant prescription rate for Māori (268 per 10,000) is lower than that for non-Māori (747 per 10,000) in the Waikato DHB area in 2015. This trend is seen for both males and females, and across all age groups. However the difference in Māori and non-Māori anti-depressant dispensed prescription rates is most pronounced for women aged 75+: the dispensed prescription rate for non-Māori women is estimated at almost twice that of Māori women in this age group.

Figure 6.2: Estimated Māori and non-Māori residents per 10,000 population dispensed anti-depressant prescriptions in the primary health care sector, Waikato DHB, 2015



Estimates for anti-depressant dispensed prescription rates in primary care are disaggregated by TA of domicile in Figure 6.3, and there is some variation in these estimated dispensed prescription rates by geographic area. The lowest overall anti-depressant dispensed prescription rate was seen in Otorohanga (429 residents per 10,000 population) and the highest in Matamata-Piako (697 residents per 10,000 population). The greatest variation in dispensed prescription rates across the TA areas is for people aged 75+ years. Among this age group, the anti-depressant dispensed prescription rate in Hamilton is over twice that of the dispensed prescription rate in Otorohanga.

Figure 6.3: Estimated clients per 10,000 population dispensed anti-depressant prescriptions in the primary health care sector, disaggregated by TA of domicile, Waikato DHB, 2015



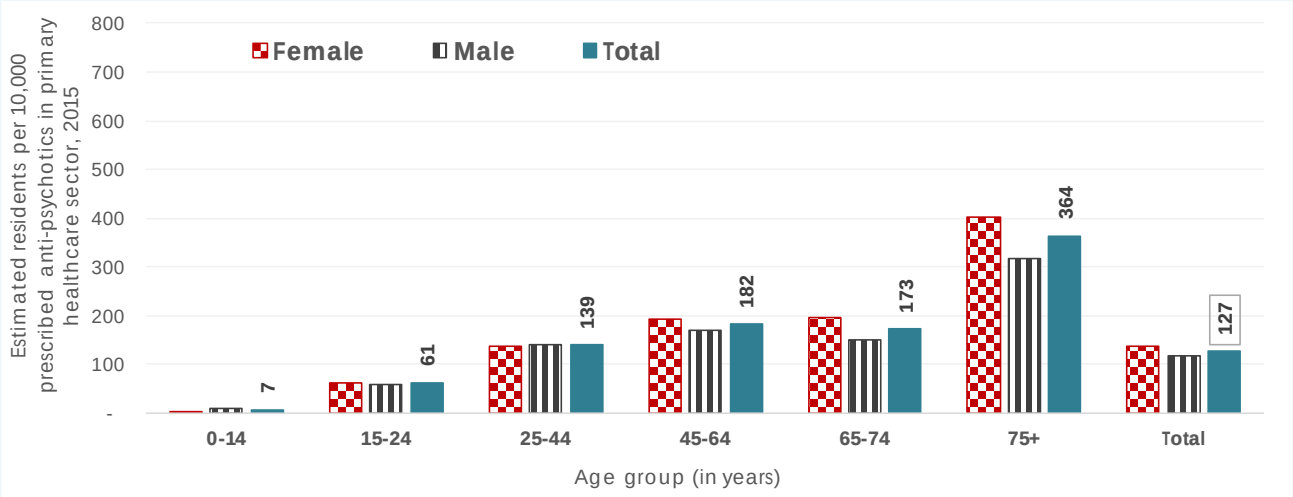
6.3 Anti-psychotics prescribing patterns, 2015

Anti-psychotic medications are used in the treatment of psychotic disorders, namely schizophrenia and bipolar disorder. However, there is increasing use of these medications in the treatment of non-psychotic mental health disorders, such as agitation with dementia, depression, and some anxiety disorders.

The overall estimate of dispensed prescriptions for anti-psychotics by GPs per quarter for the Waikato DHB in 2015 was for 4,970 people (all age groups) and 893 people estimated over the age of 75+ years. Of those considered in this analysis, Quetiapine was the most common anti-psychotic medication dispensed from GP prescriptions in the Waikato DHB area across all age groups. Risperidone, Olanzapine and Haloperidol were the next most commonly prescribed anti-psychotics.

Overall, GP dispensed prescription rates for anti-psychotics within the Waikato DHB are estimated at 127 per 10,000 population as seen in Figure 6.4, and these dispensed prescription rates are similar for those aged 15-74 years. There is a slightly higher dispensed prescription rate for females than males in these age groups. There is a higher anti-psychotic dispensed prescription rate seen for those aged 75+ years, and in this age group the differences in dispensed prescription rates by sex are much more apparent in this age group. These age and sex-related anti-psychotic dispensed prescription patterns may reflect the broader use of the medications in this category.

Figure 6.4: Estimated residents per 10,000 population dispensed anti-psychotic prescriptions in the primary health care sector, Waikato DHB, 2015



The dispensing of anti-psychotic prescriptions for Māori and non-Māori in the Waikato region is shown in Figure 6.5. Overall, anti-psychotic dispensed prescription rates for non-Māori (136 per 10,000) are greater than those for Māori (96 per 10,000), and this pattern is particularly evident for those aged 75+ years. However, this pattern does not hold across all age groups. For those aged 24-64 years, rates of anti-psychotic dispensed prescription for Māori are greater than those for

non-Māori. Estimates for the dispensed prescription patterns for Māori and non-Māori are similar for females as they are for the overall population, with dispensed prescription rates for non-Māori females greater than those for Māori females, and this pattern particularly evident for those aged 75+ years. For those females aged 24-64 years, rates of anti-psychotic dispensed prescription for Māori are greater than those for non-Māori (Figure 6.9). The pattern is slightly different for males, Māori males aged 25-64 years and (particularly) 75+ years have higher anti-psychotic dispensed prescription rates than non-Māori males (the opposite pattern for women of the same age group).

Figure 6.5: Estimated Māori and non-Māori residents per 10,000 population dispensed anti-psychotic prescriptions in the primary health care sector, Waikato DHB, 2015

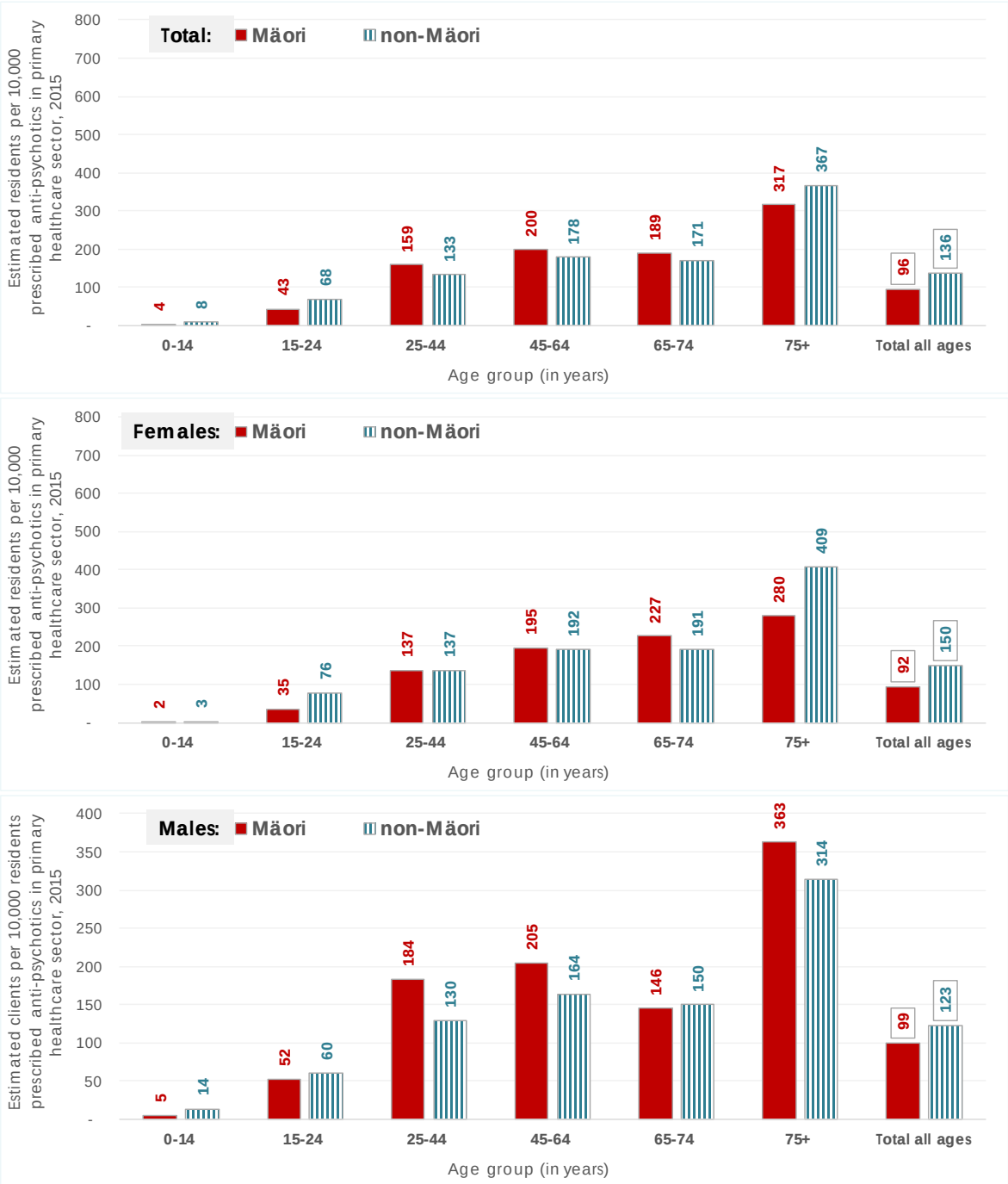
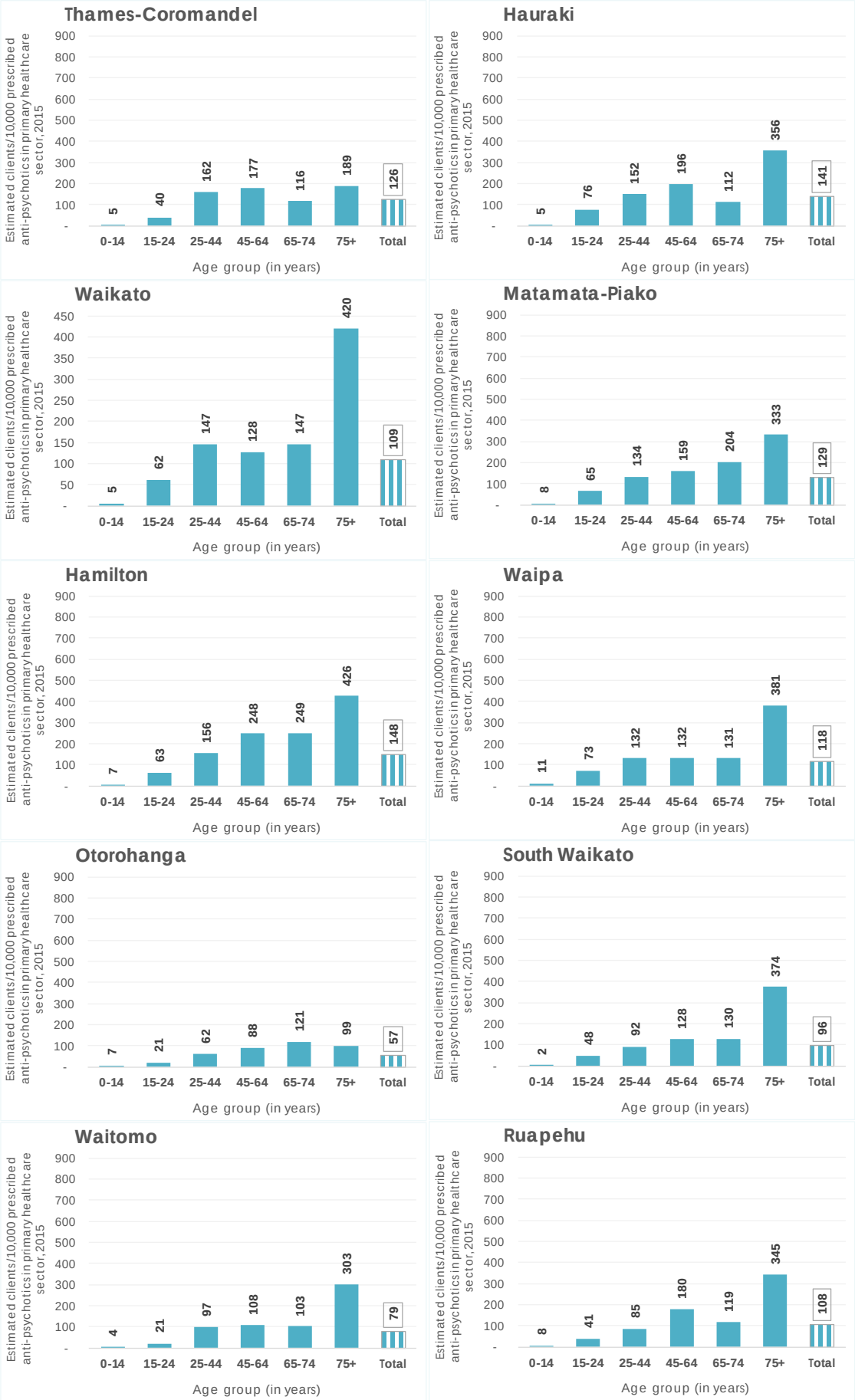


Figure 6.6: Estimated residents per 10,000 population dispensed anti-psychotic prescriptions in the primary health care sector disaggregated by TA of domicile, Waikato DHB, 2015



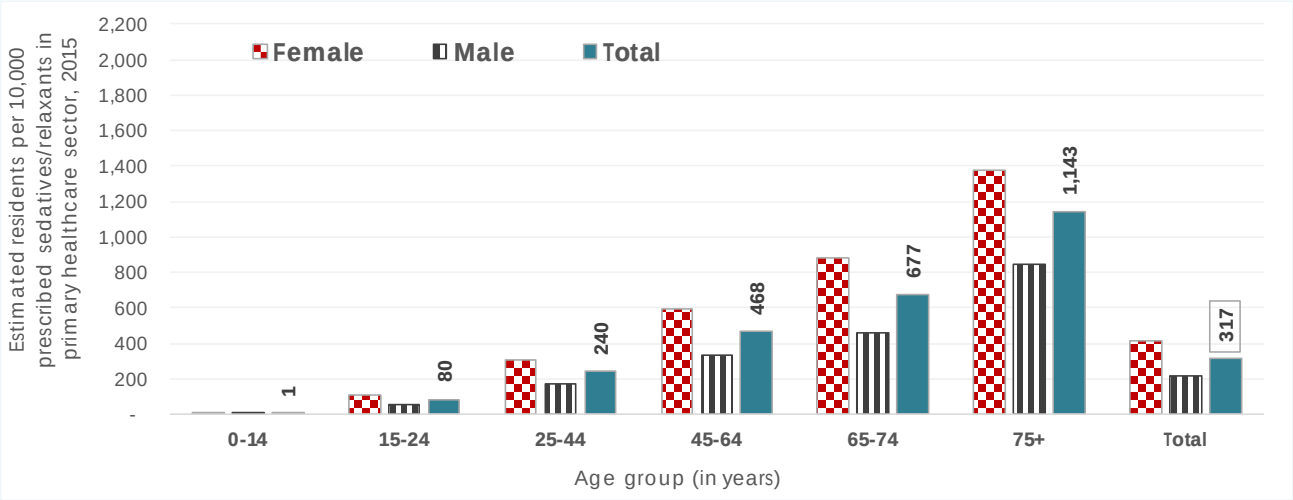
Anti-psychotic dispensed prescription rates vary by TA area (Figure 6.6). The lowest overall anti-psychotic dispensed prescription rate was seen in Otorohanga (57 residents per 10,000 population). Both Hamilton and Hauraki districts had over three times this rate of anti-psychotic dispensed prescriptions (148 and 141 residents per 10,000 population respectively).

6.4 Sedatives and relaxants prescribing patterns, 2015

Sedatives and relaxants are most commonly used in the treatment of anxiety and sleep disorders. In 2015, an estimated 12,390 people per quarter were dispensed prescriptions for sedatives and relaxants in the Waikato region. Over 60 per cent of these prescriptions were for Zopiclone.

Figure 6.7 shows the dispensed prescription patterns for sedatives and relaxants in the Waikato by age and sex. Overall, GP dispensed prescription rates for sedatives and relaxants within the Waikato DHB are estimated at 317 per 10,000 population. Prescribing rates for sedatives and relaxants increase with advancing age and are higher among females, compared with males, across all age groups.

Figure 6.7: Estimated residents per 10,000 population dispensed sedative/relaxant prescriptions in the primary health care sector, Waikato DHB, 2015



These estimated primary care dispensing data indicate that non-Māori have a higher rate of sedative/relaxant prescriptions than Māori throughout the Waikato; this pattern is seen across all age groups (Figure 6.8). Further disaggregation of the data by sex reveals that the difference in dispensed prescription rates for Māori and non-Māori is most pronounced for females. In particular, there is a large difference in the dispensed prescription rates of sedatives/relaxants between Māori and non-Māori women aged 75+ years (noting the smaller sample size for Māori at this age group).

Figure 6.8: Estimated Māori and non-Māori residents per 10,000 population dispensed sedative/relaxant prescriptions in the primary health care sector, Waikato DHB, 2015.

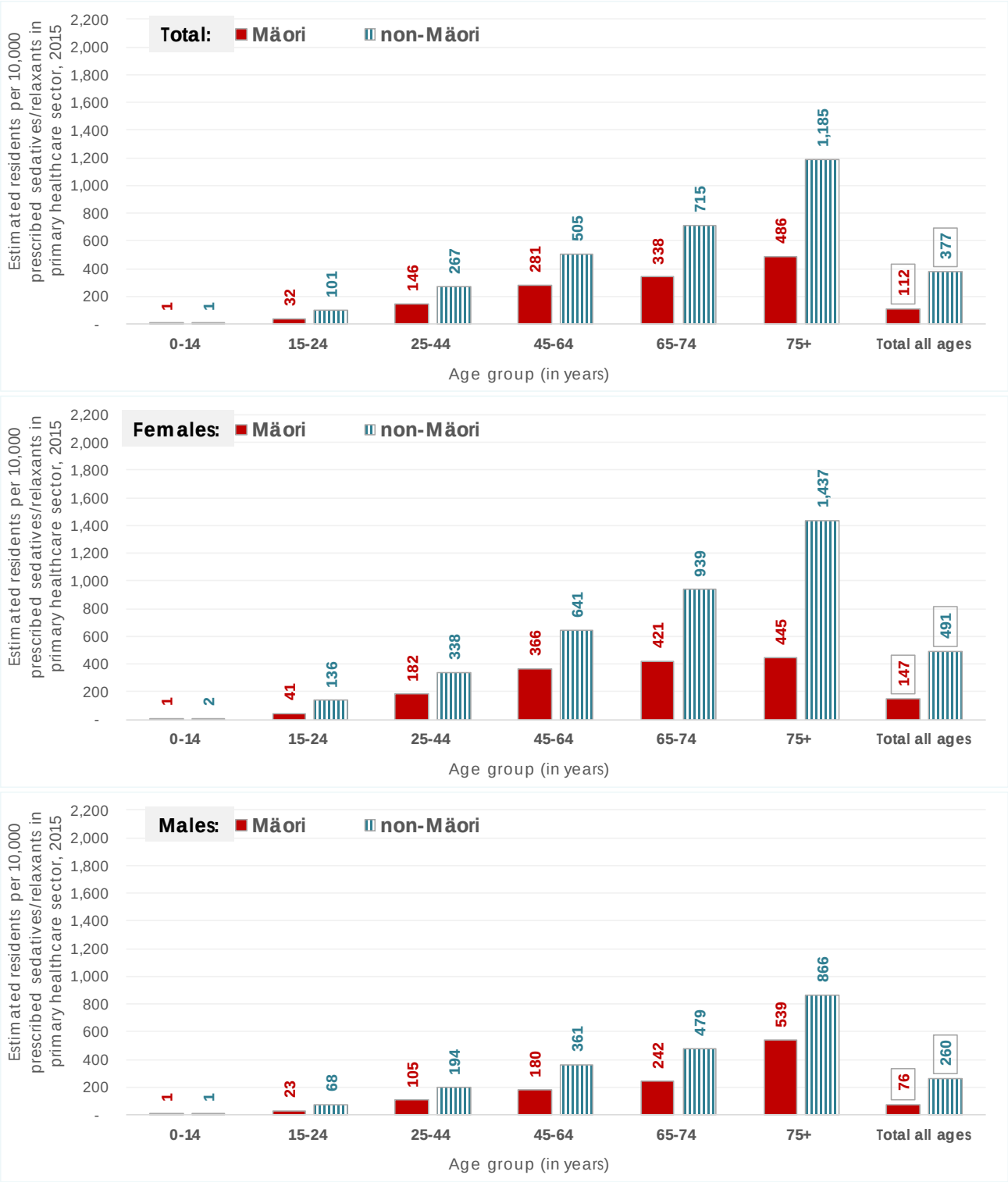
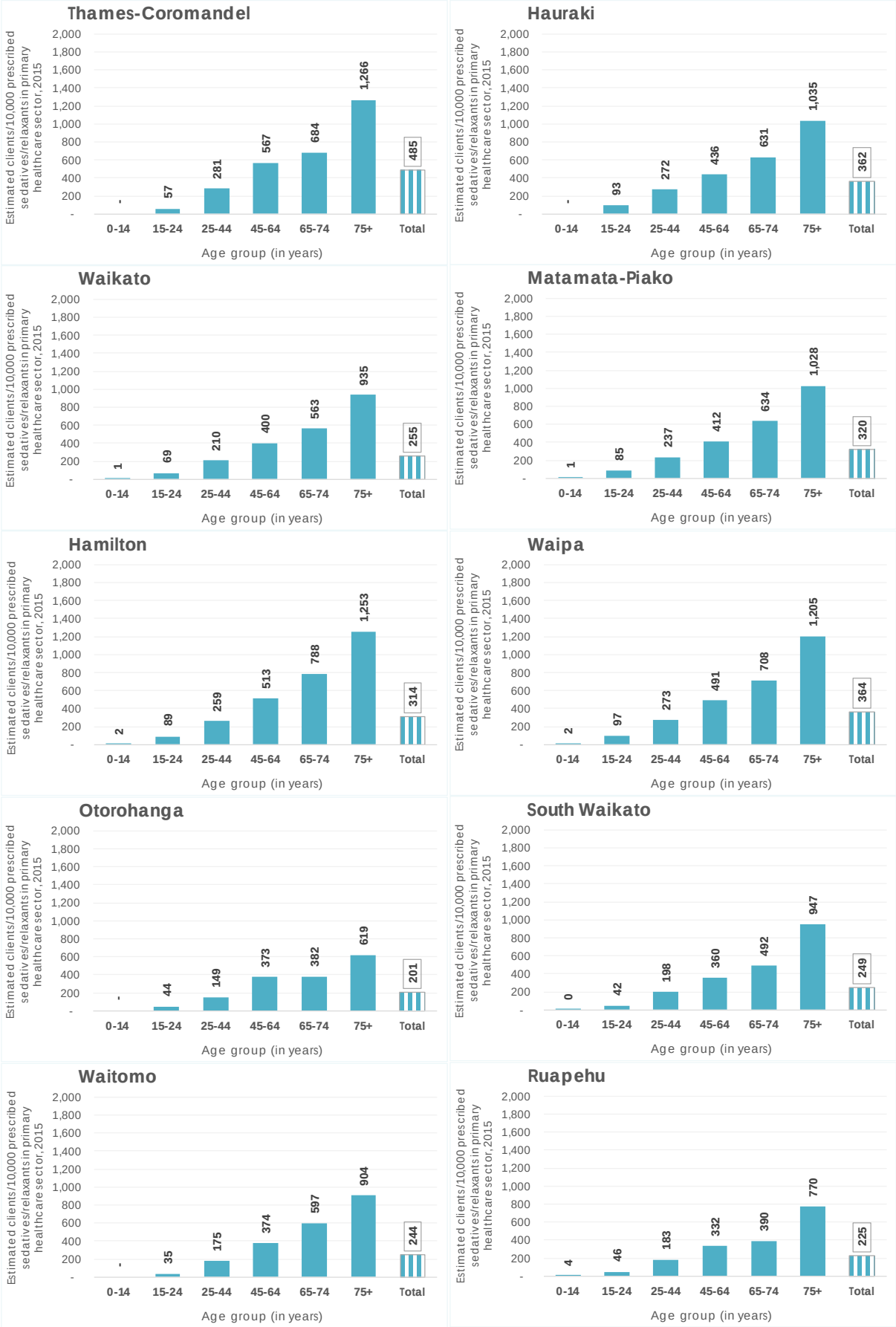


Figure 6.9: Estimated residents per 10,000 population dispensed sedative/relaxant prescriptions in the primary health care sector disaggregated by TA of domicile, Waikato DHB, 2015



Disaggregation of sedative/relaxant dispensed prescription data for the Waikato by TA show that there is variation by geographic area (Figure 6.9). Overall dispensed prescription rates for sedatives and relaxants were lowest in Otorohanga and highest in the Thames-Coromandel region.

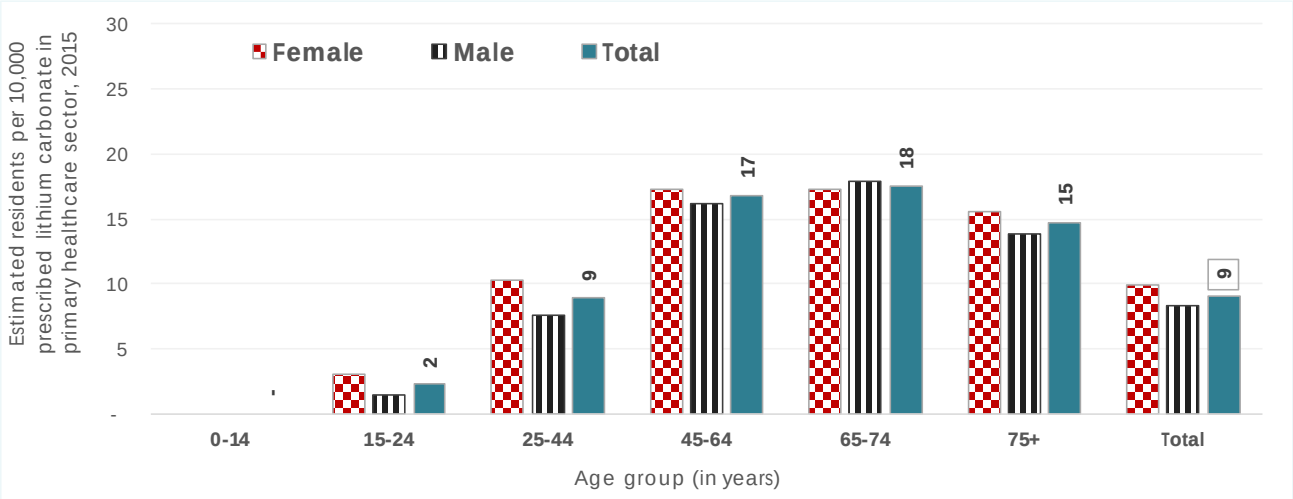
6.5 Mood stabiliser prescribing patterns, 2015

Lithium carbonate is a mood stabiliser used in the treatment of bipolar affective disorder. It is a relatively uncommonly used medication in the Waikato region.

In 2015, there were an estimated 395 people per quarter dispensed lithium carbonate by GPs in the Waikato DHB. It is important to appreciate the relatively small number of patients prescribed lithium carbonate in the Waikato region when considering prescription rates.

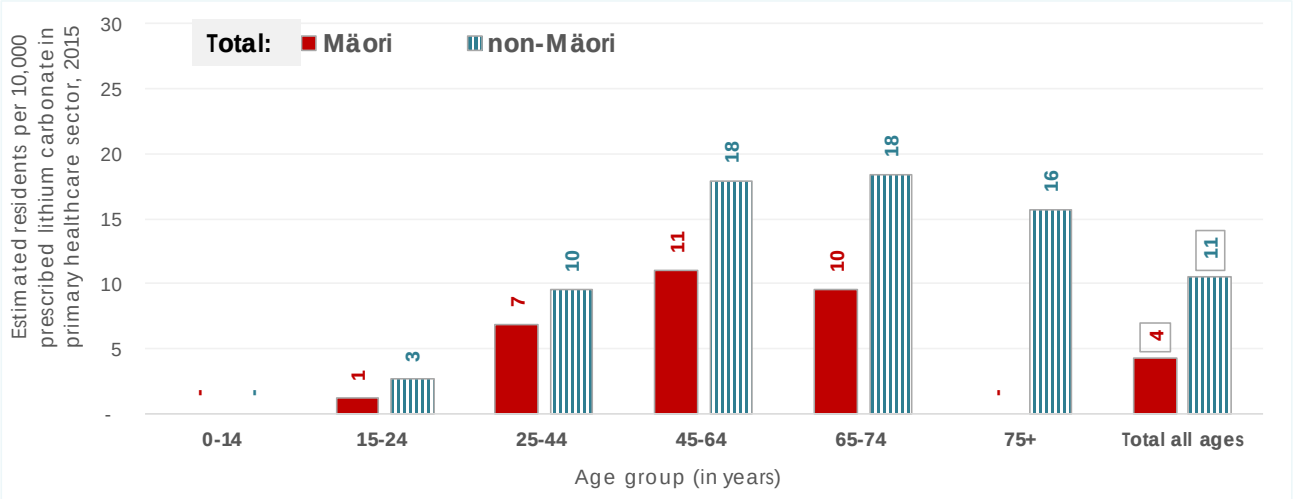
Figure 6.10 shows the age and sex of people prescribed lithium carbonate in the Waikato region during 2015. Across the Waikato DHB area, a slightly greater rate of lithium prescribing was found for females compared to males.

Figure 6.10: Estimated residents per 10,000 population dispensed lithium carbonate prescriptions in the primary health care sector, Waikato DHB, 2015



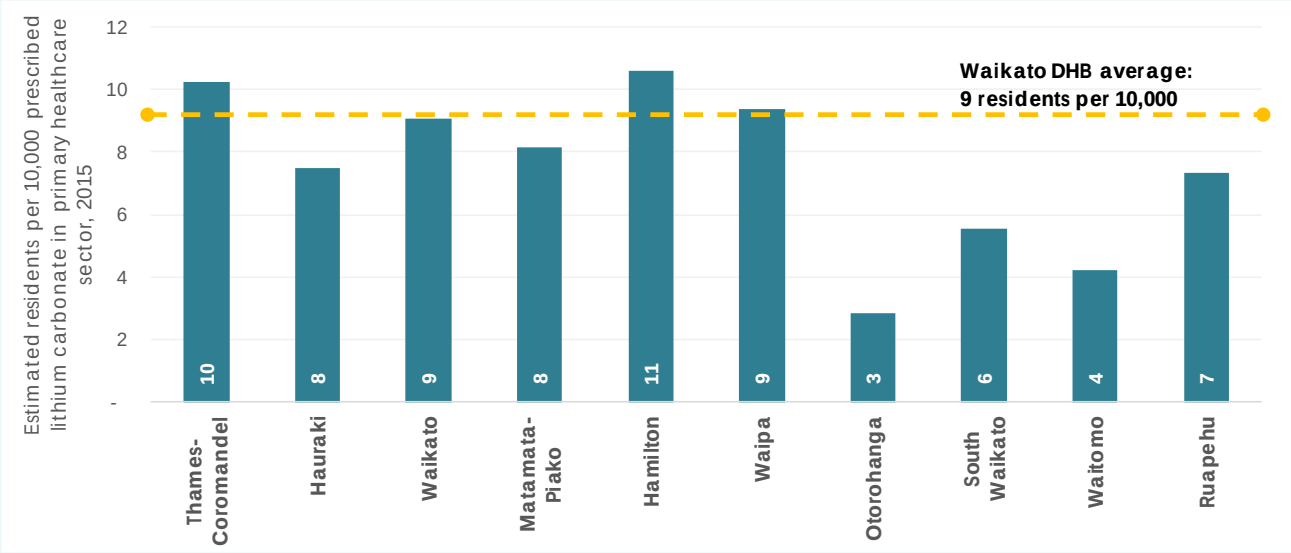
Across all age groups, Māori are less likely to be dispensed lithium carbonate prescriptions compared with non-Māori (Figure 6.11).

Figure 6.11: Estimated Māori and non-Māori residents per 10,000 population dispensed lithium carbonate prescriptions in the primary health care sector, Waikato DHB, 2015



The highest rate of dispensed prescriptions for lithium carbonate was recorded in Hamilton city and the lowest in Otorohanga and Waitomo districts (Figure 6.12).

Figure 6.12: Estimated residents per 10,000 population dispensed lithium carbonate prescriptions in the primary health care sector disaggregated by TA of domicile, Waikato DHB, 2015

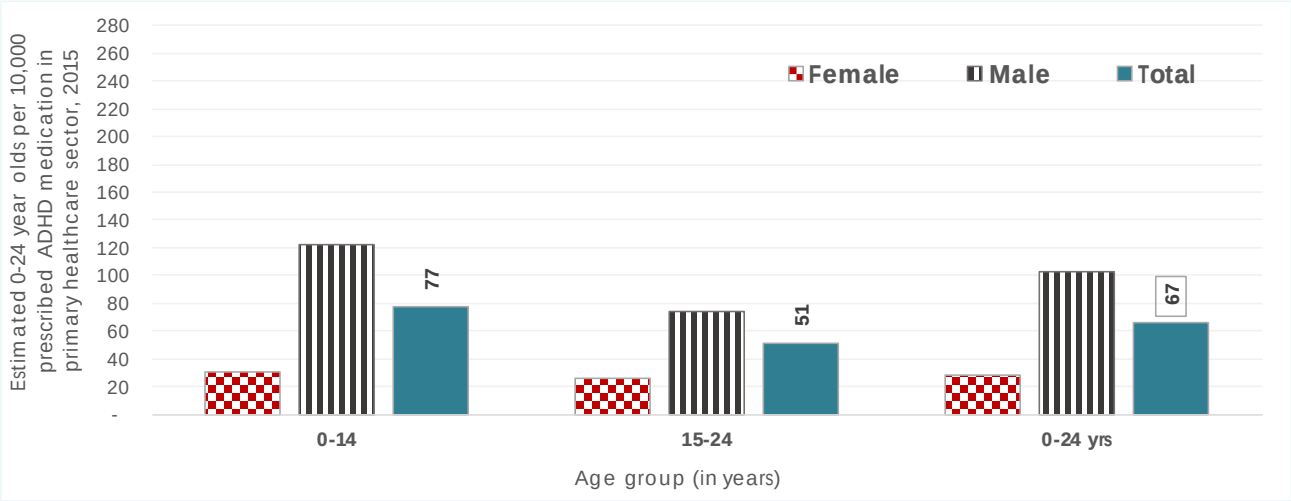


6.6 ADHD-related prescribing patterns, 2015

In 2015, in the Waikato region there was an estimated 931 people per quarter who received prescriptions from GPs for medications typically used to manage the symptoms of ADHD. The clear majority (over 90%) of these prescriptions were for a form of methylphenidate.

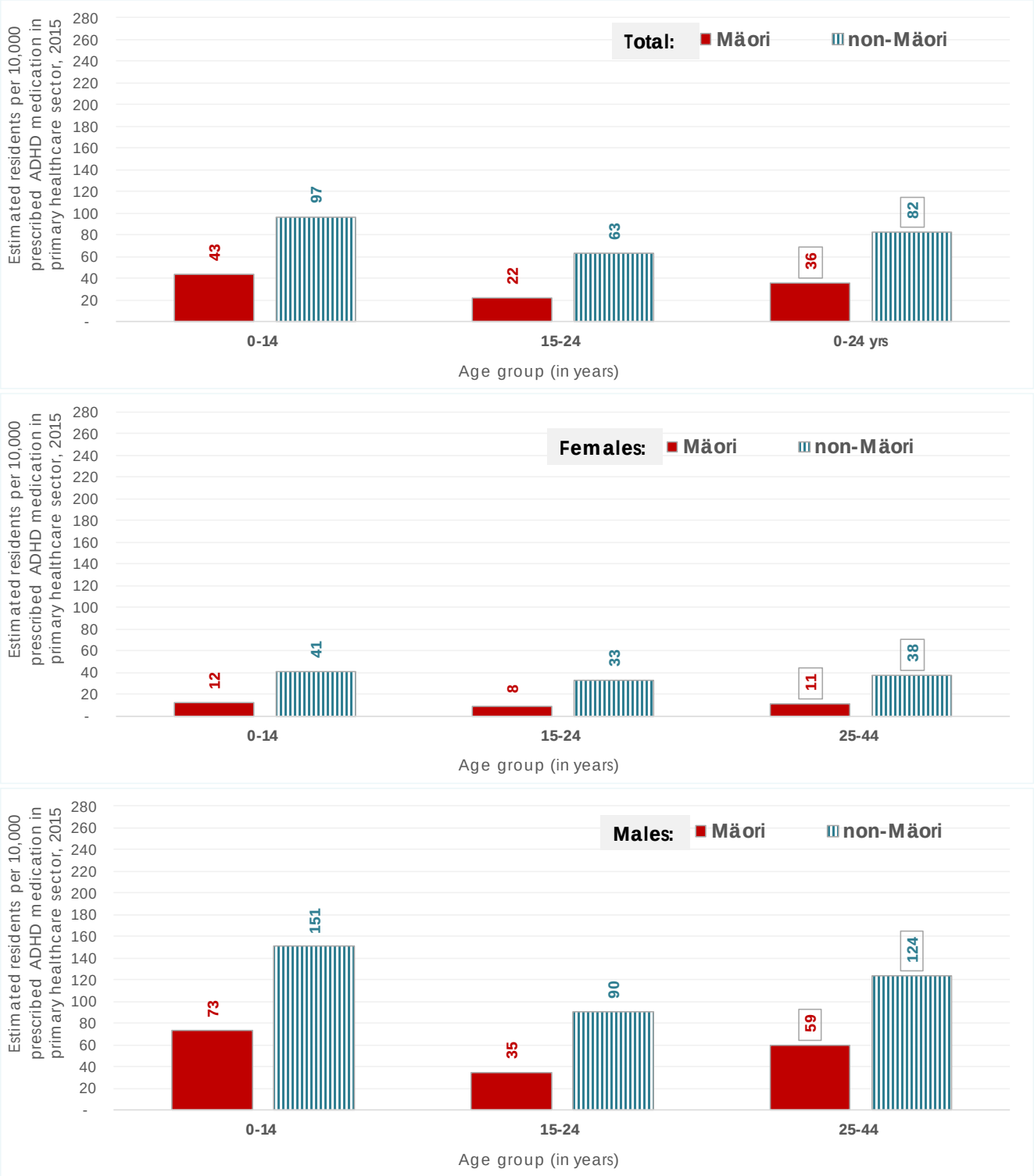
Figure 6.13 shows the distribution of ADHD medication dispensed for children and youth by sex. ADHD medication prescribing is higher for males in both age groups.

Figure 6.13: Estimated 0-24 year olds per 10,000 population dispensed ADHD prescriptions in the primary healthcare sector, Waikato DHB, 2015



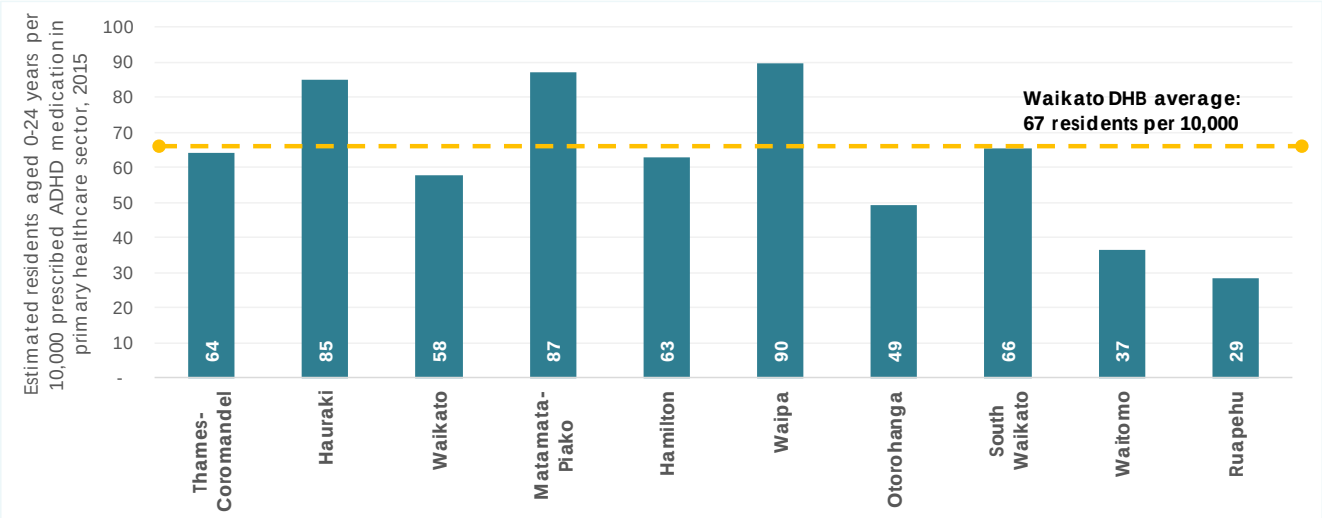
Disaggregation of ADHD medication dispensing data by ethnicity (Figure 6.14) shows that Māori were less likely to be dispensed ADHD prescriptions compared to non-Māori. This pattern is seen for both males and females, for both children and youth.

Figure 6.14: Estimated Māori and non-Māori residents per 10,000 population dispensed ADHD prescriptions in the primary health care sector, Waikato DHB, 2015



Estimates of dispensed GP prescriptions for ADHD medication also shows considerable variation by TA region (Figure 6.15). The lowest prescribing rates were seen in the Ruapehu district and the highest in the Waipa district.

Figure 6.15: Estimated 0-24 year olds per 10,000 population prescribed ADHD medication in the primary health care sector, disaggregated by TA of domicile, Waikato DHB, 2015

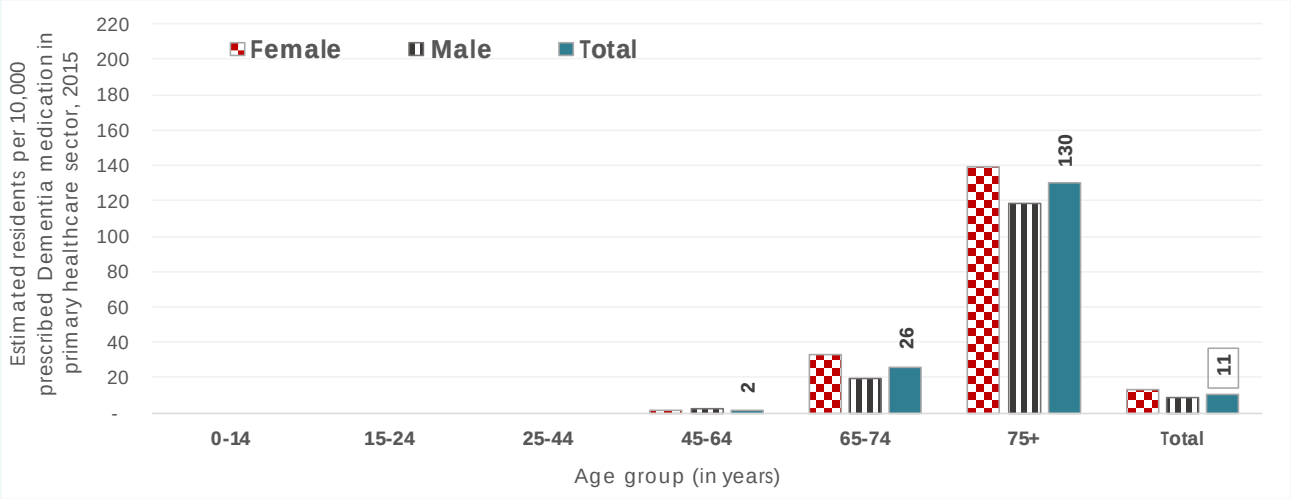


6.7 Dementia prescribing patterns, 2015

The dispensing of GP prescriptions for dementia medications in the Waikato region remains relatively uncommon. In 2015 there were an estimated 425 people prescribed dementia specific medications by GPs across the Waikato, per quarter. The vast majority (over 90 per cent) of these prescriptions were for Donepezil.

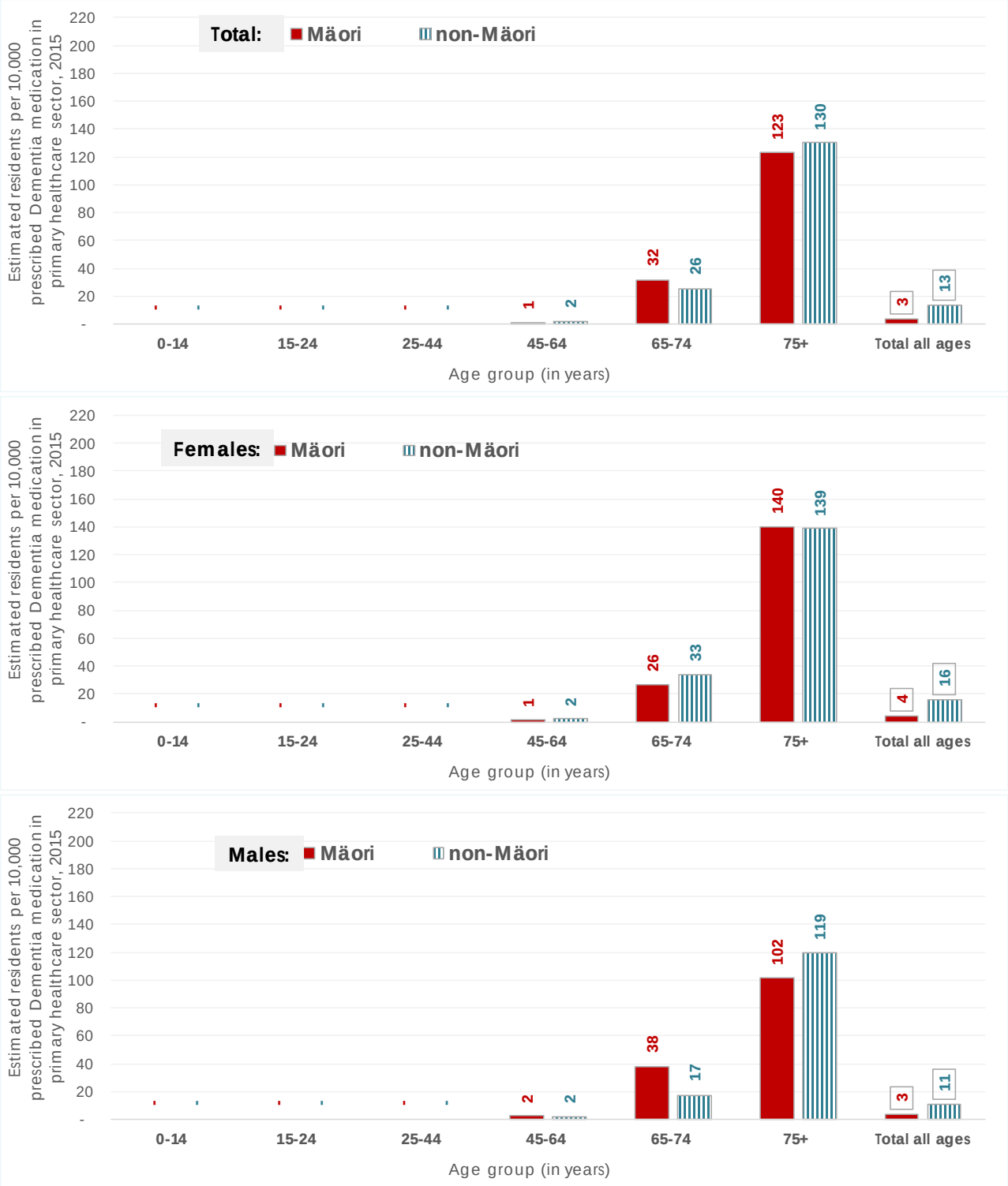
The distribution of dispensed dementia prescriptions is shown by age bracket in Figure 6.16. As expected, estimated dispensed prescription rates increase with advancing age. Few GP prescriptions for dementia medications are dispensed across the Waikato for people less than 65 years old. GP prescriptions for dementia medications are more commonly dispensed for females in both the 65-74 year old and 75+ age brackets.

Figure 6.16: Estimated residents per 10,000 population dispensed dementia prescriptions in the primary health care sector, Waikato DHB, 2015



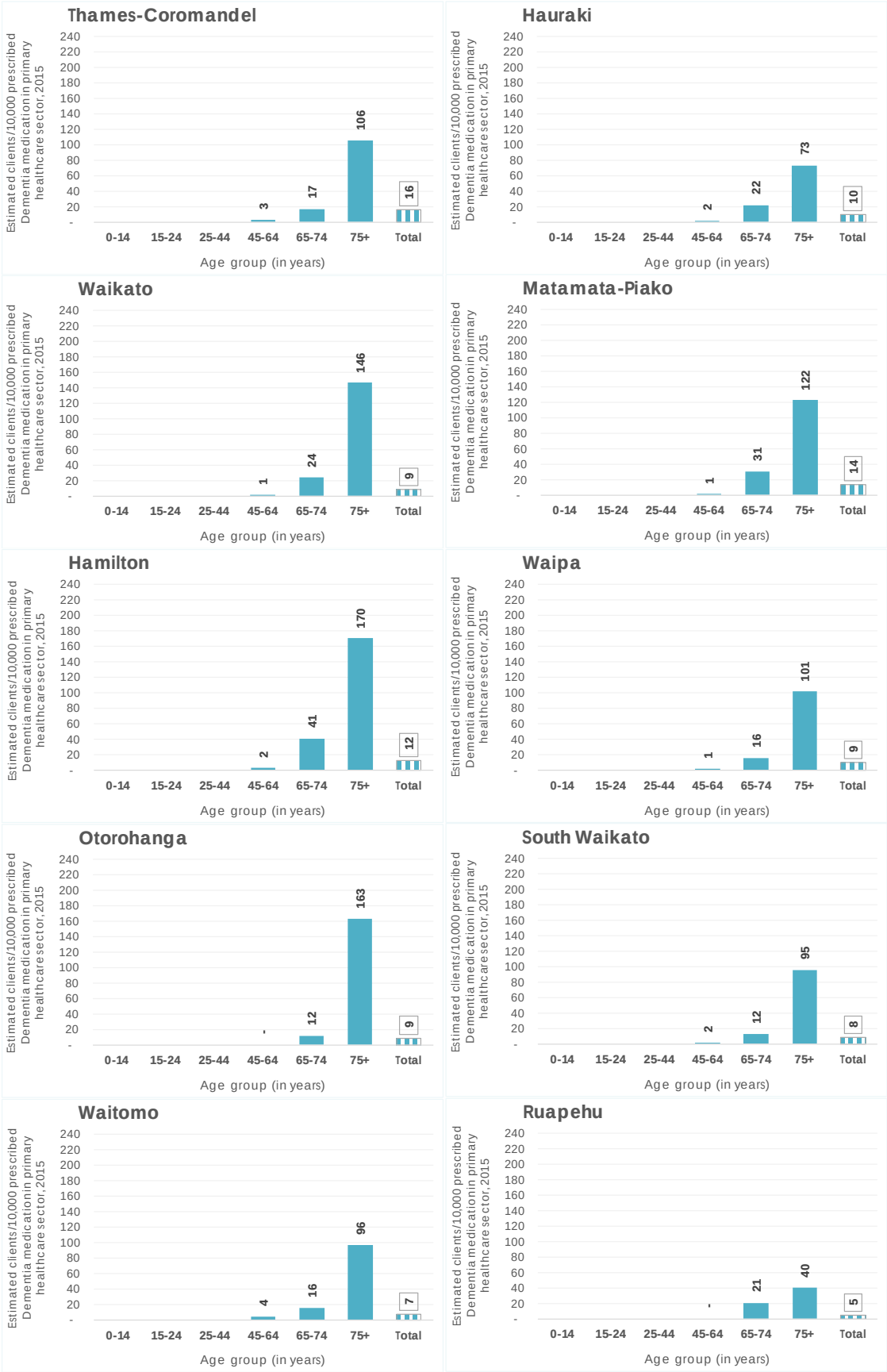
In total, a lower rate of GP prescriptions for dementia medications are dispensed for Māori compared with non-Māori patients (Figure 6.17).

Figure 6.17: Estimated Māori and non-Māori residents per 10,000 population prescribed dementia medications in the primary health care sector, Waikato DHB, 2015



As with other mental health medications, some variation in prescribing rates are seen by TA (Figure 6.18), however overall the rates are small.

Figure 6.18: Estimated residents per 10,000 population dispensed dementia prescriptions in the primary health care sector, disaggregated by TA of domicile, Waikato DHB, 2015



7 Suicide and intentional self-harm hospitalisation data

Suicide is defined as death resulting from intentional self-harm due to poisoning or injury. Self-harm is a related phenomenon, where injury or poisoning do not result in death, and a fatal outcome may or may not have been the intention. Suicide and self-harm are indicators of the mental health of a population. They are also significant contributors to injury and illness in a population and carry a significant cost to whānau, communities and wider society (Ministry of Social Development, 2016).

In New Zealand all suspected suicides must be referred to the coroner for formal case review and ruling on the cause of death (Ministry of Justice, 2016). Only cases determined by the coroner to meet the criteria of a suicide are included in national suicide data. (Ministry of Justice, 2016). The New Zealand coronial service also has strict guidelines for media regarding what aspects of a suicide or suspected suicide are allowed to be published, (Ministry of Justice, 2016) due to the relationship between some aspects of suicide reporting and triggering of suicides, known as the "Papageno effect" (Niederkrotenthaler et al., 2010).

7.1 Risk factors for suicide

Suicide typically occurs when a crisis, or perceived crisis, overwhelms an individual's resources to cope (Ryan, 2015). However, despite decades of research into suicide and self-harm, it remains difficult, if not impossible, to disentangle the causes of suicide for individual cases (Ferrari et al., 2014).

Suicidal behaviours are associated with psychological distress and hopelessness which are frequently coupled with mental illness and substance abuse (Haw & Hawton, 2015; Li, Page, Martin, & Taylor, 2011; Ryan, 2015; Sara, 2015). Suicidal behaviour is also known to increase with exposure to trauma and negative life events, including social deprivation (Haw & Hawton, 2015). Suicide follows a gradient based on multiple measures of deprivation: lower education levels, less income and unemployment (Clark et al., 2011; Fleming et al., 2007; Haw & Hawton, 2015; Li et al., 2011; Ministry of Health, 2016c; Oakley Browne et al., 2006). Exposure to trauma, adversity and deprivation in childhood is particularly harmful (Haw & Hawton, 2015). Suicide risk is also known to be higher amongst people with a family history of suicide and in people who are exposed to suicide through the attempted or completed suicide of family or friends (Haw & Hawton, 2015). Personality factors have also been implicated, and suicidal behaviour is more common in people with pessimistic, aggressive, perfectionist (Haw & Hawton, 2015) or impulsive (Gvion, Levi-Belz, Hadlaczky, & Apter, 2015; Haw & Hawton, 2015) personality types. Notably, impulsivity is common among people with Attention Deficit Hyperactivity Disorder (ADHD) and people exposed to high

levels of prenatal alcohol (Clarke & Gibbard, 2003; Lan et al., 2015; Mattson, Crocker, & Nguyen, 2011). Demographic factors also influence suicide rates; suicides are common among males, (Li et al., 2011; Ministry of Health, 2016c) youth (15 to 24 year olds) (Ministry of Health, 2016c; Ministry of Social Development, 2016) and among people of Māori of Pacific ethnicity (Ministry of Health, 2016c; Ministry of Social Development, 2016; Oakley Browne et al., 2006; Simpson et al., 2016). However, a history of previous self-harm remains one of the strongest predictors of future suicide attempts (Haw & Hawton, 2015; Hawton, i Comabella, Haw, & Saunders, 2013).

There is a strong link between mental illness and suicide and self-harm (Ferrari et al., 2014). However, this link is complex and heavily influenced by social and cultural factors (Sara, 2015). There is a general consensus that not all suicides are carried out by people with a mental illness. Suicide may occur in people who do not meet the criteria for a mental illness but have deep mental anguish, fear, shame or guilt – often referred to as "psychache" (Pridmore, Ahmadi, & Reddy, 2012). However, there is much debate as to what proportion of suicides are carried out by people with mental illness, and what proportion are due to mental illness (Ferrari et al., 2014; Pridmore, 2014; Sara, 2015). It has been argued that suicide may be caused by mental illness or another single stressor (e.g. shame or humiliation), but is more likely to occur due to multiple stressors, one of which may be a mental illness (Pridmore, Auchincloss, & Walter, 2015).

Estimates for the proportion of people who commit suicide with a mental illness ranges from as low as 50 per cent of suicides (Pridmore, 2014) to as high as 98 per cent (Brådvik, Mattisson, Bogren, & Nettelbladt, 2010; Haw & Hawton, 2015). These figures are highly debated due to the difficulty of determining and identifying suicides in addition to the limitations of "psychological autopsy" – a method for determining the causes, including mental illness, that contribute to a suicide (Pridmore, 2014). Despite this debate, there is clear evidence that multiple mental illnesses are associated with an increased risk of suicidal behaviour, including: depression, bipolar affective disorder, schizophrenia, anorexia, anxiety disorders, alcohol and substance abuse, ADHD and personality disorders (Brådvik et al., 2010; Chesney, Goodwin, & Fazel, 2014; Ferrari et al., 2014; Lan et al., 2015). Reviews of psychological autopsies indicate that depressive illnesses account for the largest proportion of suicides attributed to mental illness in part due to the high prevalence of depressive disorders amongst the population (Brådvik et al., 2010; Hawton et al., 2013). Increased severity of depression is also associated with an increased risk of suicide (Brådvik et al., 2010; Ferrari et al., 2014; Hawton et al., 2013).

There is no single risk factor or cluster of risk factors that can accurately predict suicidal behaviour in an individual (Haw & Hawton, 2015; Mulder, 2011). Suicide is a rare event and the vast majority of people with mental illness do not commit suicide (Haw & Hawton, 2015; Pridmore, 2014). In fact, suicide risk assessments of mental health patients have been shown to have a low predictive value for suicidal behaviour (Haw & Hawton, 2015; Mulder, 2011; Pridmore, 2014).

Additionally, while the rate of suicide is greater amongst "high risk" groups of the population, the majority of suicides occur among people in the "moderate or low risk" groups, due to the relative size of these groups (Pitman & Caine, 2012). Consequently, strategies that effectively reduce the risk of suicide among the wider population are more likely to have a significant impact on suicide rates – a situation known as the "prevention paradox (Pitman & Caine, 2012). This concept provides support for a "targeted universalism" approach – where strategies are applied across the population with greater levels of supports and services to groups at high risk. Furthermore, many risk factors are outside of the health system, and remain difficult for the health system alone to combat (Ryan, 2015); therefore prevention must involve multiagency collaboration to increase access to high quality mental health and alcohol and drug services and to also address the social and economic conditions that contribute to suicide. (Pitman & Caine, 2012).

7.2 Self-harm hospitalisation in New Zealand

Hospitalisation for intentional self-harm is a marker of population mental health and an indicator of wider health service needs caused by mental illness and poor wellbeing. As noted above, intentional self-harm is one of the strongest indicators of future suicidal behaviour (Haw & Hawton, 2015; Hawton et al., 2013).

The following data relate to admissions to New Zealand hospitals in 2013 due to intentional self-harm. These data have several limitations. Firstly, these data do not include cases that were treated and discharged directly from emergency departments or primary care organisations, such as general practice or accident and emergency clinics. The Ministry of Health estimates that at least half of all self-harm presentations to emergency departments do not result in inpatient hospitalisation. (Ministry of Health, 2016c) These data relate to total number of hospitalisations, but does not provide an indication of the total number of people who were admitted due to self-harm. Furthermore, these data do not provide any details regarding the severity of injury, such as length of stay or treatment requirements.

Ministry of Health figures show that in 2013 there were 7,267 hospitalisations in New Zealand for intentional self-harm; a rate of 176.7 hospitalisations per 100,000 population (Ministry of Health, 2016c). The rate of hospitalisations for females (246.9 per 100,000 females) was greater than twice that of males (107.1 per 100,000 males) (Ministry of Health, 2016c). By age, hospitalisation rates were highest for youth aged 15 to 24 years old (456.0 per 100,000 population); a total of 2,866 hospitalisations (Ministry of Health, 2016c). Notably, approximately 75 per cent of admissions for this age group were for females (Ministry of Health, 2016c).

When disaggregated by both sex and age, the highest rate of hospitalisation for females is amongst people aged 15 to 19 years of age (912.6 per 100,000 population) and for males is amongst people aged 20 to 24 years of age (229.8 per 100,000 population).

Hospitalisations for intentional self-harm are more common among females, however this trend is reversed for suicides, where males have higher rates (Ministry of Health, 2016c; Ministry of Social Development, 2016). In 2012, there were 15 hospitalisations for self-harm among females for every female suicide. However among males, there were 2.6 self-harm hospitalisations for every male suicide (Ministry of Social Development, 2016).

The data also indicate that hospitalisation in New Zealand due to self-harm is more common for people of Māori ethnicity. The age-standardised rates for self-harm hospitalisation in New Zealand are 197.7 per 100,000 population for Māori and 172.2 per 100,000 population for non-Māori.

As with rates of mental illness and suicide, intentional self-harm rates differ based on social deprivation. In New Zealand, self-harm hospitalisation rates are the highest among people living in the two highest deprivation deciles (226.3 per 100,000 population) and lowest for people living in areas with the two least social deprived deciles (128.0 per 100,000) (Ministry of Health, 2016c).

7.3 Suicide reporting in New Zealand

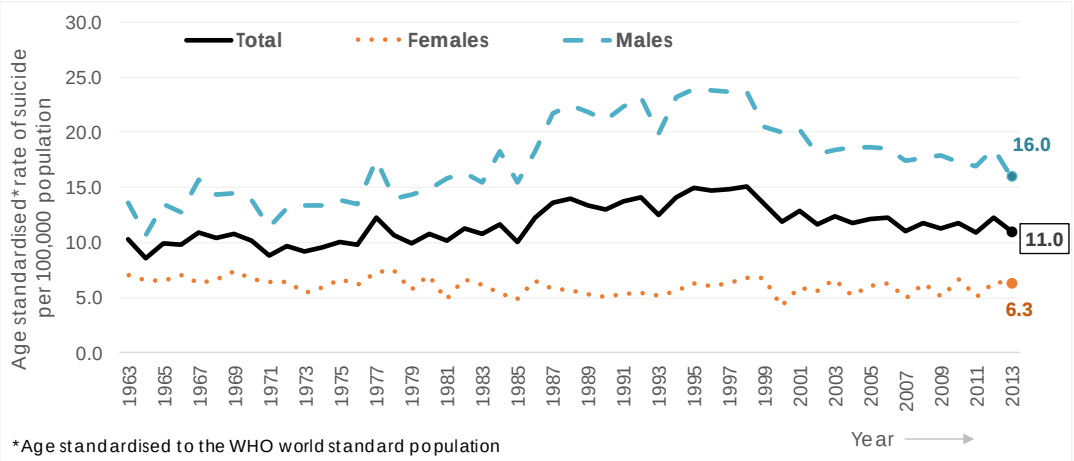
It is well recognised that there are multiple limitations with suicide data. Suicides are likely to be under-reported due to the difficulty of determining an individual's intent in taking their own life and other social factors that may inhibit reporting, including cultural stigma and medico-legal implications for health practitioners involved in caring for individuals who have suicided (Chesney et al., 2014; Ferrari et al., 2014). Additionally, it is unclear what proportion of deaths due to an undetermined cause or injuries may be suicides (Brådvik et al., 2010).

Furthermore, suicide is a relatively rare event and consequently trends across regions in New Zealand and other sociodemographic groups must be cautiously interpreted. The comparison of international data must also be undertaken with care as the processes for confirming a suicide differ greatly across countries, as do social and cultural beliefs and the stigma of suicide which impact on suicide reporting (Ministry of Health, 2016c; OECD, 2016).

Data indicate that 508 people died by suicide in New Zealand in 2013; suicide accounts for 1.7 per cent of all deaths in New Zealand in 2013 (Ministry of Health, 2016c). The overall rate of suicide for the New Zealand population in 2013 was 11.0 suicides per 100,000 population (Figure 7.1). In keeping with international trends (Chesney et al., 2014; Haw & Hawton, 2015; Hawton et al., 2013) suicide is more common among males than females in New Zealand (Ministry of Health,

2016c; Oakley Browne et al., 2006). In 2013, there were 143 suicides for females (6.3 per 100,000 population) and 365 male suicides (16.0 per 100,000 population) (Ministry of Health, 2016c).

Figure 7.1: Age-standardised suicide rate for New Zealand by sex, 1963 to 2013.



Disaggregated by age, suicide data indicate that suicide rates are highest among people aged 15 to 24 years old and lowest for people aged over 65 years old. A closer look at youth rates shows a considerable difference between suicide rates for males and females of this age group (Figure 7.2). It is also important to note that despite the rate of suicide being much higher for youth in New Zealand, approximately 80 per cent of suicides in New Zealand occur among people who are outside of this age bracket (Simpson et al., 2016). Further, when additional analyses are conducted of the older age groups in smaller age brackets, higher suicide rates than those for youth can be seen for the elderly (Statistics New Zealand, 2016).

Figure 7.2: Age-specific suicide rate for New Zealand youth (15 to 24 years old), by sex, 1963 to 2013.

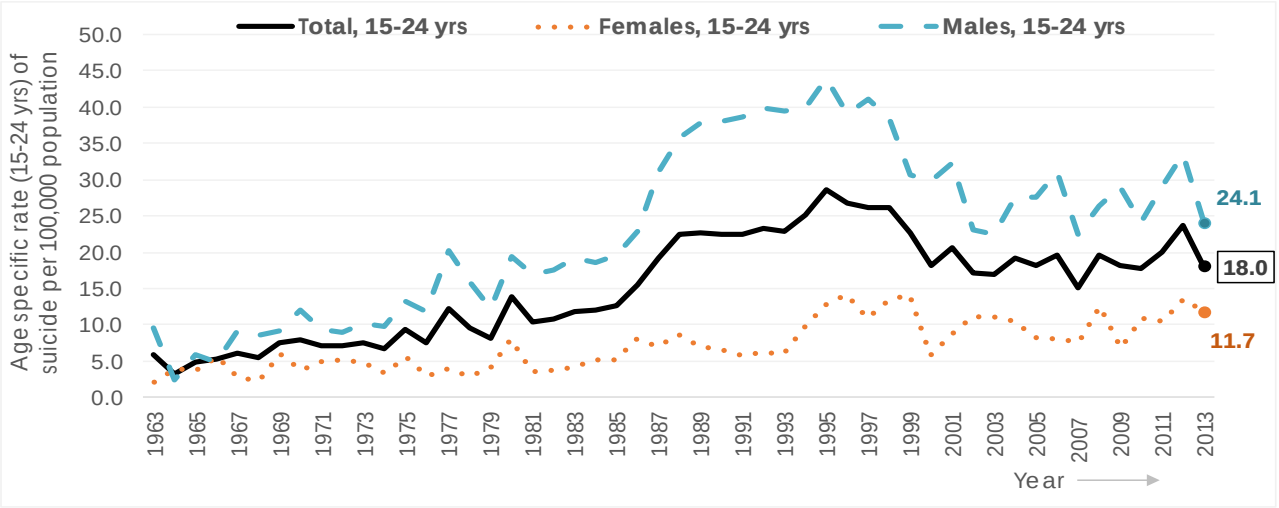
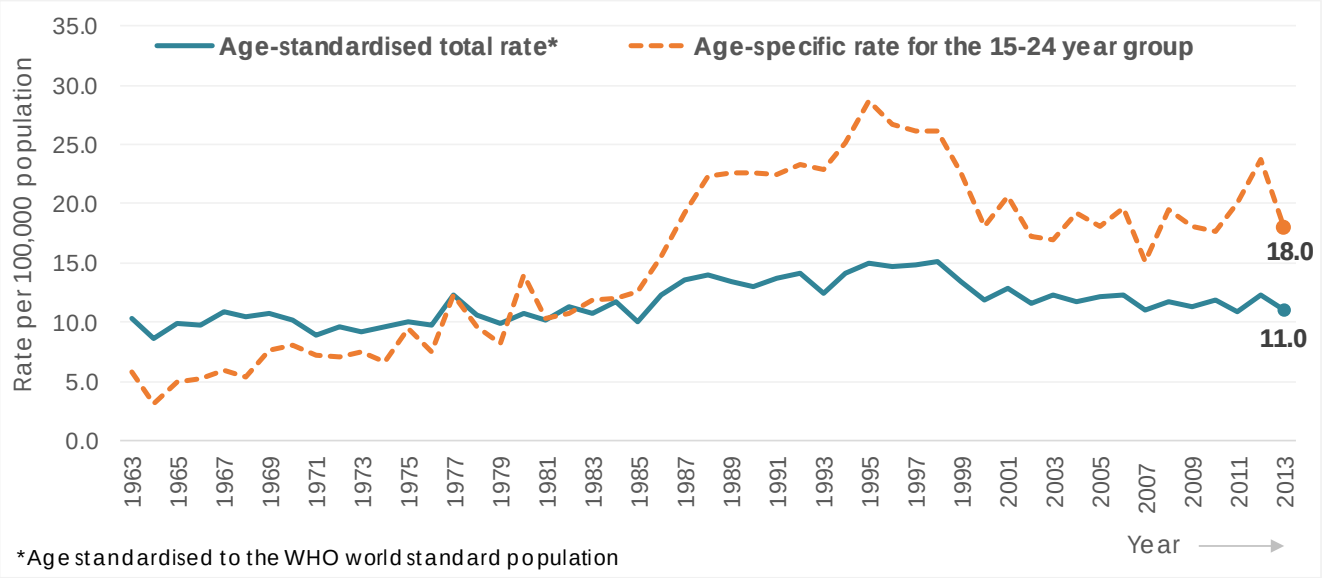


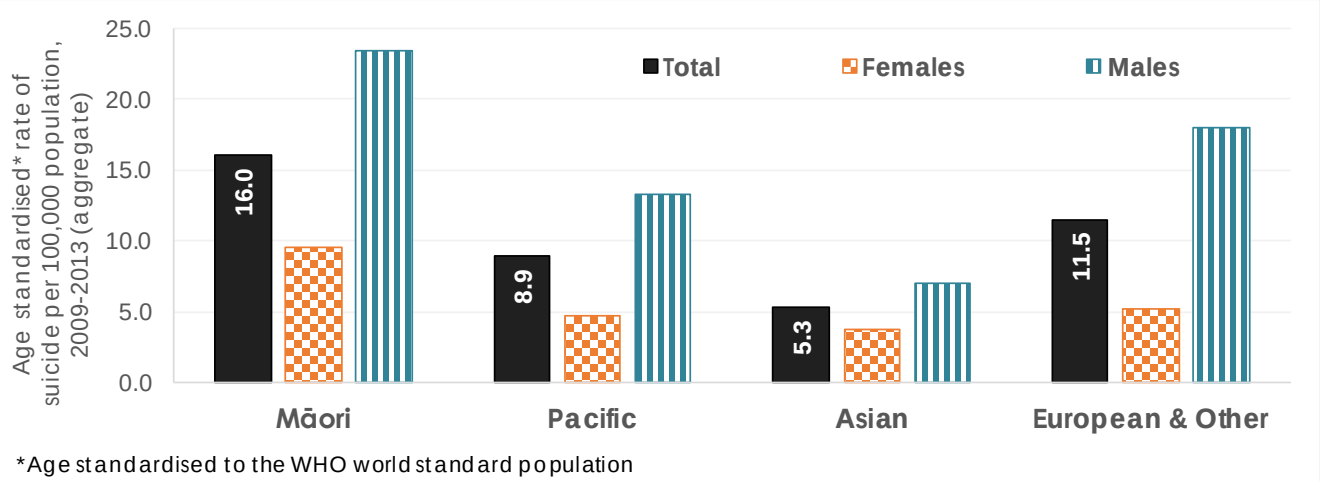
Figure 7.3 shows the difference in suicide rates for the total New Zealand population (age standardised) compared to the youth population between 1963 and 2013. The figure indicates that the youth rate has risen to overtake the general population rate and has remained higher since the mid 1980's.

Figure 7.3: Age-standardised suicide rate and the age-specific suicide rate for youth (15-24 years) in New Zealand, 1963-2013



Suicide rates in New Zealand differ by ethnicity (Ministry of Health, 2016c; Oakley Browne et al., 2006)In New Zealand suicide rates are highest for Māori and lowest among people of Asian ethnicities (Figure 7.4). The high rate of Māori suicide (compared with non-Māori rates) has been consistent for many years (Ministry of Health, 2016c) Figure 7.4 also indicates that when disaggregated by both sex and ethnicity; both Māori males and females have a higher rate of suicide than other ethnic groups in New Zealand. Notably, Māori male youth (15 to 24 years old) are the demographic most at risk of suicide (Ministry of Health, 2016c)

Figure 7.4: Age-standardised rate of suicide in New Zealand by ethnicity and sex (aggregated data for 2009-2013)



Environmental conditions, including social deprivation are known to influence suicide rates (Ferrari et al., 2014; Goldney, 2015; Haw & Hawton, 2015; Hawton et al., 2013; Oakley Browne et al., 2006; Pridmore, 2014; Ryan, 2015) This pattern is reflected in New Zealand data. In 2013, suicide rates were higher in populations with greater social deprivation; the suicide rate was twice as high among people living in areas of greatest deprivation (deciles 9 and 10) compared with people in areas of least deprivation (deciles 1 and 2) (Ministry of Health, 2016c) Even more striking, there were four times as many suicides among youth aged 15 to 24 years living in the most deprived areas compared to youth living in the most affluent areas. Data from 2013 indicate that suicide is slightly more common among people living in rural areas (12.5 per 100,000 population) compared with people in urban areas (10.8 per 100,000 population).

Using aggregated suicide data from 2009 to 2013, Table 7.1 outlines the differences in total population (age-standardised) and youth-specific suicide rates by District Health Board. There is considerable variation in suicide rates by DHB. These data also indicate that both the total population suicide rate and the youth suicide rate for Waikato DHB are comparable with the national rates.

Table 7.1: Age-standardised suicide rate and youth suicide rate for New Zealand, by DHB (aggregated 2009-2013 data)

DHB region	Total rate[1]	CI	Youth (15-24 years) rate[2]	CI
Northland	14.8	(11.2–18.5)	33.9	(18.7–49.1)
Waitemata	9.4	(7.9–10.9)	12.8	(8.0–17.5)
Auckland	8.4	(6.9–9.9)	12.9	(8.1–17.8)
Counties Manukau	10.4	(8.7–12.1)	22.8	(16.4–29.2)
Waikato	**11.3**	**(9.3–13.3)**	**18.2**	**(11.5–24.9)**
Lakes	16.7	(11.9–21.5)	32.9	(14.8–51.0)
Bay of Plenty	15.9	(12.6–19.2)	33.3	(20.1–46.6)
Tairāwhiti	12.7	(6.4–19.0)	22	(0.6–43.4)
Hawke's Bay	14.4	(10.8–18.0)	28.8	(14.8–42.8)
Taranaki	13.4	(9.5–17.4)	15.7	(3.5–28.0)
MidCentral	15.2	(11.8–18.7)	29.5	(17.0–41.9)
Whanganui	13.6	(8.2–19.1)	15	(-0.8–30.8)
Capital & Coast	7.7	(5.9–9.5)	13.6	(7.3–20.0)
Hutt Valley	11.7	(8.5–14.9)	19.8	(8.1–31.6)
Wairarapa	20	(11.3–28.8)	38.5	(5.4–71.5)
Nelson Marlborough	10	(7.0–12.9)	14.5	(3.2–25.8)
West Coast	14	(6.5–21.5)	21	(-6.0–48.0)
Canterbury	12	(10.3–13.8)	16.6	(11.0–22.2)
South Canterbury	19.1	(12.1–26.2)	59.6	(24.4–94.8)
Southern	13.6	(11.2–16.0)	21.2	(13.5–29.0)
National	**11.5**	**(11.0–12.2)**	**19.9**	**(17.8–22.0)**

Rates were calculated based on the total number of suicides between 2009 and 2013. The denominator population for the national suicide rate is the aggregated estimated national resident population for
Confidence intervals (CI) are for 99% confidence (lower limit–upper limit).

1 Rates are expressed per 100,000 population and age standardised to the WHO World Standard Populatio

2 Rates are age specific, expressed as deaths per 100,000 population.

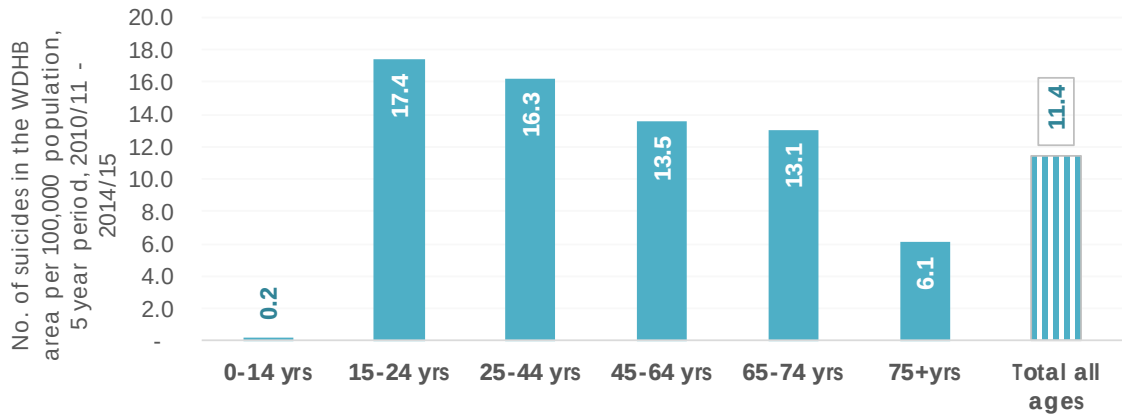
Source: MoH Publication "Suicide Facts: Deaths and intentional self harm hospitalisations 2013"

As discussed, international comparison of suicide rates must be undertaken with caution (Ministry of Health, 2016c). Current data indicate that suicide rates for both males and females in New Zealand are only marginally above the median for OECD countries (Ministry of Health, 2016c). However, New Zealand youth suicide rates compare poorly to other OECD countries. 2013 data show that New Zealand's female youth suicide rate (11.7 per 100,000 population) was the highest of all OECD countries with available data and the male youth suicide rate for New Zealand (24.1 per 100,000 population) ranked third highest (Ministry of Health, 2016c).

7.4 Suicide data, Waikato DHB

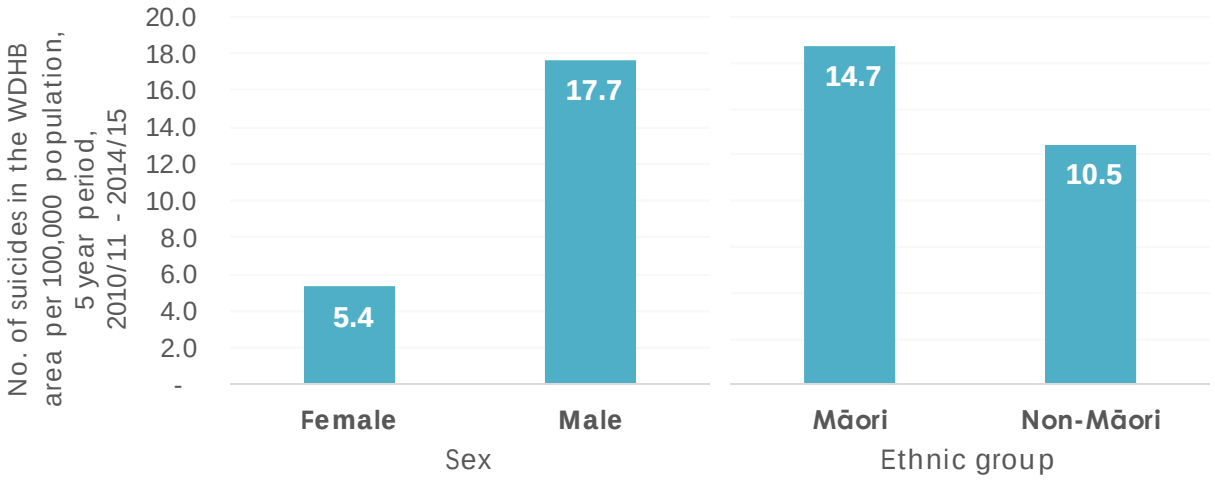
Using Coronial data aggregated suicide data for Waikato DHB over the five year period from 2010-2015 (as described in Section 2.5), the total suicide rate for Waikato DHB was 11.4 per 100,000 population (Figure 7.5) – with the greatest rate seen in the youth population (aged 15-24 years).

Figure 7.5: Number of suicides in the Waikato DHB area per 100,000 population (average taken over the five year period 2010/11 to 2014/15)



When the overall suicide rate in the Waikato DHB in this time period is considered by sex and ethnicity, it is clear that the rate for males is higher than for females, and the rate for Māori was greater than that seen for non-Māori.

Figure 7.6: Number of suicides in the Waikato DHB area per 100,000 population disaggregated by sex and ethnic group (Māori, non-Māori) (average taken over the five year period 2010/11 to 2014/15)



8 Conclusion

It is crucial that mental health is given "parity of esteem" (Faculty of Public Health and Mental Health Foundation, 2016) with physical health. Not only because mental health and physical health are inextricably linked, but because of the impact that mental ill health causes. These impacts are significant and wide reaching; affecting individuals, whānau, communities and wider society through both social and economic costs. In the New Zealand context, the contribution of poor mental wellbeing to health, educational and social inequities is key.

The causes of mental illness are complex and intertwined. These causes can be generally conceptualised in terms of psychological trauma and stress. However these stressors can take a multitude of different forms, such as isolation, poverty, neglect or abuse, racism and unemployment. (Allen et al., 2014; Fisher & Baum, 2010; Manseau, 2014; Sederer, 2016). Consequently, the prevalence of mental illness follows a clear social gradient with a greater prevalence among people who experience greater economic deprivation. Exposure to multiple stressors has a cumulative impact on the development of mental illness and notably, children are much more vulnerable to stressors than adults.

This report has made use of the best available quantitative data, within the scope of this review, to consider utilisation of MH&A services by our population in 2015. Mental wellbeing is an important current priority for the Waikato DHB, and the review of this utilisation data is timely with respect to the review of MH&A models of care. Using this snapshot of service utilisation, accompanied by understanding of population demographics and the broad determinants of mental health, this document presents the best evidence available regarding the current demands on the mental health system in the Waikato DHB region.

Considerable variation in exposure to stressors associated with the development of mental illness and poor wellbeing has been demonstrated according to key Waikato communities, particularly those defined by age, gender, ethnicity and domicile of residence. This report has also demonstrated differences in utilisation rates for primary care (using pharmaceutical data as a proxy) and secondary care services, for both the DHB provider arm and the NGO sector. Greater understanding of the current demographic characteristics of the Waikato DHB population, and the projected DHB population to 2023 and 2033, has also been provided.

It is crucial to recognise that the key drivers for mental illness are largely social and economic inequalities that are amenable to policy change. (Braveman, 2014; Fisher & Baum, 2010; Manseau, 2014) Consequently, mental illness is, as at least in part, preventable and investment in the early years of life has the greatest potential to reduce the burden of mental illness and improve population wellbeing in our society.

The combination of these analyses contributes to evidence regarding the potential future mental health and addictions service needs according to population projections, further contributing to discussions and development of: more effective and targeted population prevention; early intervention; and new models of care.

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Appendices

Appendix Table 1: Census data variables used to calculate NZDep13

Dimension of deprivation	Description of Variable (in order of decreasing weight in the index)
Communication	People aged <65 with no access to the Internet at home
Income	People aged 18-64 receiving a means tested benefit
Income	People living in equivalised* households with income below an income threshold
Employment	People aged 18-64 unemployed
Qualifications	People aged 18-64 without any qualifications
Owned home	People not living in own home
Support	People aged <65 living in a single parent family
Living space	People living in equivalised* households below a bedroom occupancy threshold
Transport	People with no access to a car

**Equivalisation: methods used to control for household composition*

Appendix Table 2: Estimated population in 2015 of the Waikato DHB area disaggregated by sex and TA of residence

		2015 Estimated resident population						
		0-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65-74 yrs	75+ yrs	Total
Thames-Coromandel	Female	2,230	1,075	2,385	4,415	2,450	1,625	14,180
	Male	2,200	1,290	2,330	3,855	2,460	1,495	13,620
	Total	4,410	2,360	4,735	8,235	4,905	3,145	**27,770**
Hauraki	Female	1,775	1,010	1,850	2,670	1,230	925	9,450
	Male	1,805	1,070	1,555	2,450	1,170	780	8,850
	Total	3,580	2,060	3,405	5,125	2,385	1,715	**18,310**
Waikato	Female	6,040	3,210	6,310	7,280	2,065	1,245	26,100
	Male	6,410	3,665	5,980	7,310	2,160	1,125	26,630
	Total	12,395	6,895	12,300	14,530	4,205	2,345	**52,730**
Matamata-Piako	Female	3,435	2,005	3,810	4,510	1,685	1,625	17,010
	Male	3,590	2,315	3,630	4,230	1,590	1,280	16,620
	Total	6,990	4,270	7,420	8,710	3,275	2,900	**33,650**
Hamilton	Female	16,135	13,945	22,700	17,740	5,535	4,745	80,930
	Male	16,915	14,050	21,065	15,815	4,765	3,130	75,850
	Total	33,030	28,055	43,800	33,675	10,345	7,930	**156,790**
Waipa	Female	5,115	3,105	5,970	7,115	2,480	2,105	25,900
	Male	5,340	3,365	5,340	6,580	2,245	1,620	24,530
	Total	10,450	6,485	11,235	13,670	4,735	3,775	**50,390**
Otorohanga	Female	1,175	485	1,120	1,170	395	260	4,630
	Male	1,180	700	1,280	1,265	450	250	5,080
	Total	2,350	1,195	2,380	2,430	850	505	**9,710**
South Waikato	Female	2,685	1,490	2,720	3,045	1,105	785	11,840
	Male	2,735	1,730	2,365	2,940	1,130	745	11,650
	Total	5,450	3,245	5,075	5,990	2,220	1,550	**23,480**
Waitomo	Female	1,095	580	1,115	1,255	410	285	4,760
	Male	1,220	620	1,060	1,195	435	230	4,780
	Total	2,340	1,210	2,180	2,460	850	520	**9,530**
Ruapehu	Female	880	445	910	1,130	415	250	4,040
	Male	945	565	875	1,090	435	225	4,150
	Total	1,825	980	1,785	2,260	840	500	**8,180**
Waikato DHB	Female	40,530	27,370	48,860	50,390	17,780	13,910	198,800
	Male	42,360	29,400	45,460	46,760	16,840	10,950	191,800
	Total	82,890	56,770	94,310	97,140	34,630	24,880	**390,600**

Appendix Table 3: Estimated population in 2015 of the Waikato DHB area disaggregated by age and prioritised ethnic group

		2015 Estimated resident population						
		0-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65-74 yrs	75+ yrs	Total
Māori	Female	14,570	8,250	11,480	8,590	1,810	840	45,500
	Male	15,400	8,430	9,880	7,330	1,580	650	43,300
	Total	29,970	16,660	21,360	15,900	3,410	1,490	**88,800**
Pacific (excl Maori)	Female	1,690	940	1,500	960	230	120	5,450
	Male	1,770	1,050	1,620	1,010	210	110	5,800
	Total	3,460	1,980	3,120	1,970	440	240	**11,200**
Asian (excl Maori & Pasifika)	Female	3,290	2,530	5,960	3,360	650	260	16,000
	Male	3,460	3,030	5,680	2,730	580	260	15,800
	Total	6,750	5,570	11,650	6,080	1,230	520	**31,800**
Other	Female	21,220	15,360	30,250	37,410	15,050	12,790	132,100
	Male	21,680	16,250	28,840	35,770	14,300	10,000	126,800
	Total	42,900	31,610	59,110	73,160	29,340	22,780	**258,900**
Total	Female	40,530	27,370	48,860	50,390	17,780	13,910	198,800
	Male	42,360	29,400	45,460	46,760	16,840	10,950	191,800
	Total	82,890	56,770	94,310	97,140	34,630	24,880	**390,600**

Appendix Table 4: Projected population in 2023 of the Waikato DHB area disaggregated by sex and TA of residence

		2023 Projected resident population (medium series projections)						
		0-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65-74 yrs	75+ yrs	Total
Thames-Coromandel	Female	1,990	1,025	2,130	4,045	2,575	2,455	14,210
	Male	2,060	1,120	2,200	3,500	2,565	2,095	13,510
	Total	4,005	2,140	4,345	7,515	5,150	4,565	**27,730**
Hauraki	Female	1,635	690	1,755	2,430	1,360	1,360	9,260
	Male	1,695	730	1,595	2,220	1,300	1,135	8,680
	Total	3,310	1,435	3,350	4,635	2,645	2,520	**17,950**
Waikato	Female	5,750	3,325	6,410	7,715	2,750	1,900	27,850
	Male	5,930	3,530	6,945	7,695	2,720	1,645	28,600
	Total	11,670	6,900	13,425	15,420	5,470	3,535	**56,480**
Matamata-Piako	Female	3,445	1,655	3,910	4,355	1,960	2,105	17,440
	Male	3,635	1,930	3,930	3,975	1,955	1,695	17,090
	Total	7,075	3,620	7,820	8,345	3,905	3,800	**34,550**
Hamilton	Female	17,600	14,170	24,940	19,045	7,375	6,190	89,280
	Male	18,380	13,920	24,500	17,210	6,190	4,570	84,870
	Total	36,015	28,050	49,455	36,255	13,575	10,810	**174,130**
Waipa	Female	4,955	2,930	6,215	7,465	3,105	2,940	27,650
	Male	5,225	3,135	6,065	6,720	2,900	2,325	26,360
	Total	10,160	6,065	12,290	14,155	6,025	5,270	**53,990**
Otorohanga	Female	1,110	445	1,115	1,110	515	370	4,660
	Male	1,190	600	1,185	1,200	475	395	5,020
	Total	2,275	1,045	2,305	2,305	1,000	745	**9,700**
South Waikato	Female	2,535	1,065	2,595	2,930	1,290	1,110	11,530
	Male	2,675	1,275	2,440	2,735	1,280	995	11,390
	Total	5,155	2,330	5,060	5,685	2,555	2,135	**22,910**
Waitomo	Female	960	445	1,075	1,080	550	345	4,450
	Male	1,060	560	1,030	1,085	505	310	4,540
	Total	2,025	1,015	2,080	2,170	1,030	655	**8,990**
Ruapehu	Female	805	370	775	910	520	325	3,710
	Male	860	385	800	885	520	300	3,770
	Total	1,660	760	1,610	1,790	1,035	625	**7,490**
Waikato DHB	Female	41,740	26,620	51,900	51,940	22,320	19,440	213,900
	Male	43,630	27,730	51,700	48,100	20,730	15,760	207,600
	Total	85,370	54,360	103,580	100,030	43,040	35,220	**421,600**

Note: The Waikato DHB projections are based on the 2015 update of projection estimates provided by Statistics New Zealand to the MoH. The TA level projections are based on the 2014 update of population projections sourced from the NZ.Stats portal of Statistics New Zealand.

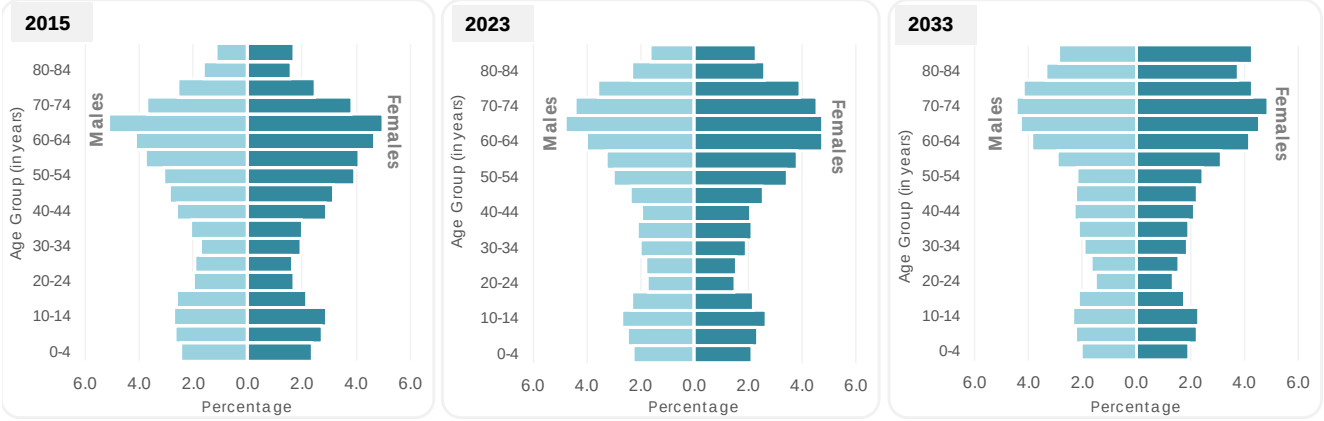
Appendix Table 5: Projected population in 2033 of the Waikato DHB area disaggregated by sex and TA of residence

		2033 Projected resident population (medium series projections)						
		0-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65-74 yrs	75+ yrs	Total
Thames-Coromandel	Female	1,775	865	2,060	3,305	2,590	3,385	13,990
	Male	1,835	1,015	2,205	3,090	2,395	2,855	13,380
	Total	3,640	1,850	4,260	6,415	4,995	6,215	**27,380**
Hauraki	Female	1,440	695	1,605	1,955	1,495	1,875	9,060
	Male	1,510	690	1,425	1,760	1,440	1,565	8,400
	Total	2,990	1,365	3,035	3,685	2,935	3,430	**17,450**
Waikato	Female	5,950	3,060	7,040	7,385	3,580	3,115	30,180
	Male	6,065	3,320	7,760	7,750	3,545	2,725	31,120
	Total	11,945	6,350	14,825	15,110	7,140	5,840	**61,300**
Matamata-Piako	Female	3,235	1,610	3,790	3,750	2,435	2,790	17,590
	Male	3,470	1,975	4,000	3,405	2,225	2,340	17,400
	Total	6,745	3,575	7,800	7,130	4,640	5,135	**34,990**
Hamilton	Female	18,210	15,655	26,095	20,780	8,815	9,505	99,140
	Male	18,880	15,690	26,810	19,240	7,510	7,120	95,060
	Total	37,140	31,295	52,855	39,910	16,370	16,535	**194,190**
Waipa	Female	5,000	2,815	6,505	6,970	4,005	4,360	29,580
	Male	5,275	3,110	6,705	6,215	3,550	3,520	28,320
	Total	10,265	5,880	13,145	13,210	7,545	7,825	**57,820**
Otorohanga	Female	960	465	980	955	510	590	4,460
	Male	1,045	655	1,065	940	550	525	4,800
	Total	1,995	1,130	2,060	1,880	1,060	1,110	**9,270**
South Waikato	Female	2,205	1,030	2,300	2,410	1,490	1,495	10,940
	Male	2,330	1,190	2,310	2,155	1,480	1,330	10,810
	Total	4,530	2,225	4,610	4,530	2,970	2,825	**21,740**
Waitomo	Female	855	355	940	835	565	540	4,110
	Male	905	490	1,030	815	555	440	4,220
	Total	1,780	850	1,970	1,645	1,125	990	**8,330**
Ruapehu	Female	625	305	695	580	460	520	3,200
	Male	695	365	740	590	460	475	3,320
	Total	1,330	685	1,435	1,205	915	990	**6,530**
Waikato DHB	Female	41,220	27,480	53,040	49,680	26,380	28,530	226,300
	Male	43,010	29,050	54,890	46,690	24,070	23,070	220,800
	Total	84,240	56,530	107,940	96,360	50,450	51,610	**447,100**

Note: The Waikato DHB projections are based on the 2015 update of projection estimates provided by Statistics New Zealand to the MoH. The TA level projections are based on the 2014 update of population projections sourced from the NZ.Stats portal of Statistics New Zealand.

Appendix Figure 1 Age-sex profile of the resident population of the Thames-Coromandel TA within the Waikato DHB area, 2015, 2023 and 2033

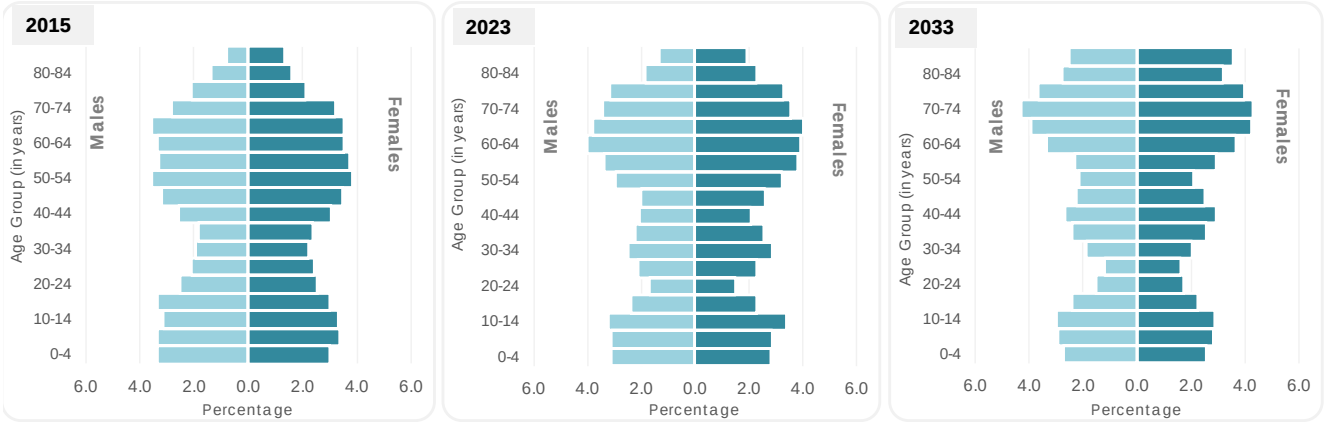
Thames-Coromandel



	2015		2023		2033	
	Thames-Coromandel	Waikato DHB	Thames-Coromandel	Waikato DHB	Thames-Coromandel	Waikato DHB
Percent aged 0-14 years	16.0	21.3	14.6	20.2	13.2	18.8
Percent aged 15-24 years	8.5	14.3	7.7	12.9	6.9	12.6
Percent aged 25-44 years	17.0	24.4	15.6	24.6	15.6	24.1
Percent aged 45-64 years	29.8	24.9	27.2	23.7	23.4	21.6
Percent aged 65-74 years	17.7	8.8	18.5	10.2	18.2	11.3
Percent aged 75+ years	11.2	6.4	16.4	8.3	22.8	11.5

Appendix Figure 2 Age-sex profile of the resident population of the Hauraki TA within the Waikato DHB area, 2015, 2023 and 2033

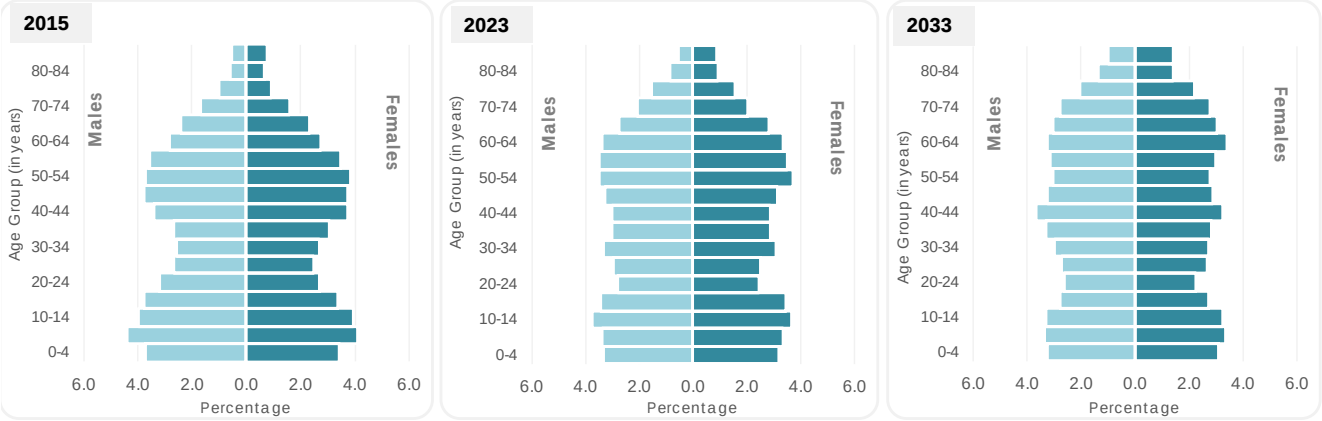
Hauraki



	2015		2023		2033	
	Hauraki	Waikato DHB	Hauraki	Waikato DHB	Hauraki	Waikato DHB
Percent aged 0-14 years	19.6	21.3	18.6	20.2	16.9	18.8
Percent aged 15-24 years	11.4	14.3	7.9	12.9	7.9	12.6
Percent aged 25-44 years	18.6	24.4	18.7	24.6	17.4	24.1
Percent aged 45-64 years	28.0	24.9	25.9	23.7	21.3	21.6
Percent aged 65-74 years	13.1	8.8	14.8	10.2	16.8	11.3
Percent aged 75+ years	9.3	6.4	13.9	8.3	19.7	11.5

Appendix Figure 3 Age-sex profile of the resident population of the Waikato TA within the Waikato DHB area, 2015, 2023 and 2033

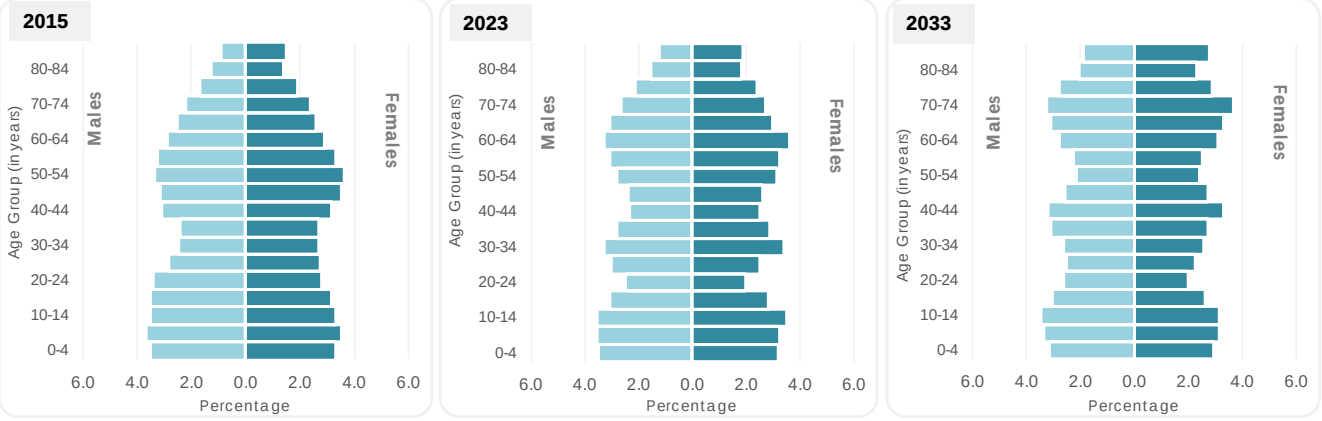
Waikato



	2015		2023		2033	
	Waikato	Waikato DHB	Waikato	Waikato DHB	Waikato	Waikato DHB
Percent aged 0-14 years	23.6	21.3	20.7	20.2	19.6	18.8
Percent aged 15-24 years	13.0	14.3	12.1	12.9	10.4	12.6
Percent aged 25-44 years	23.3	24.4	23.6	24.6	24.1	24.1
Percent aged 45-64 years	27.7	24.9	27.3	23.7	24.7	21.6
Percent aged 65-74 years	8.0	8.8	9.7	10.2	11.6	11.3
Percent aged 75+ years	4.5	6.4	6.3	8.3	9.5	11.5

Appendix Figure 4 Age-sex profile of the resident population of the Matamata-Piako TA within the Waikato DHB area, 2015, 2023 and 2033

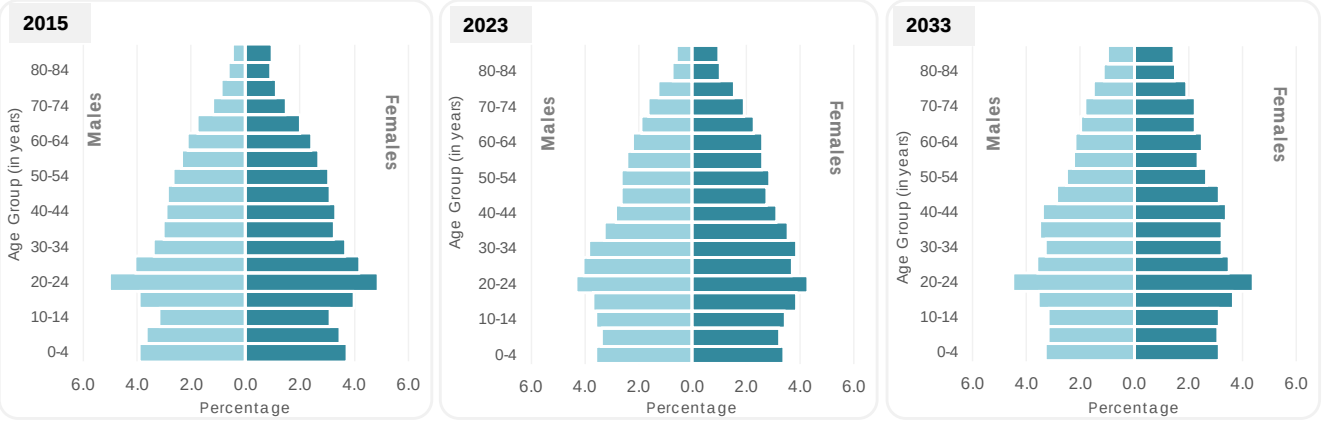
Matamata-Piako



	2015		2023		2033	
	Matamata-Piako	Waikato DHB	Matamata-Piako	Waikato DHB	Matamata-Piako	Waikato DHB
Percent aged 0-14 years	20.9	21.3	20.5	20.2	19.2	18.8
Percent aged 15-24 years	12.8	14.3	10.4	12.9	10.2	12.6
Percent aged 25-44 years	22.1	24.4	22.7	24.6	22.3	24.1
Percent aged 45-64 years	26.0	24.9	24.1	23.7	20.4	21.6
Percent aged 65-74 years	9.7	8.8	11.3	10.2	13.3	11.3
Percent aged 75+ years	8.6	6.4	11.0	8.3	14.7	11.5

Appendix Figure 5 Age-sex profile of the resident population of the Hamilton TA within the Waikato DHB area, 2015, 2023 and 2033

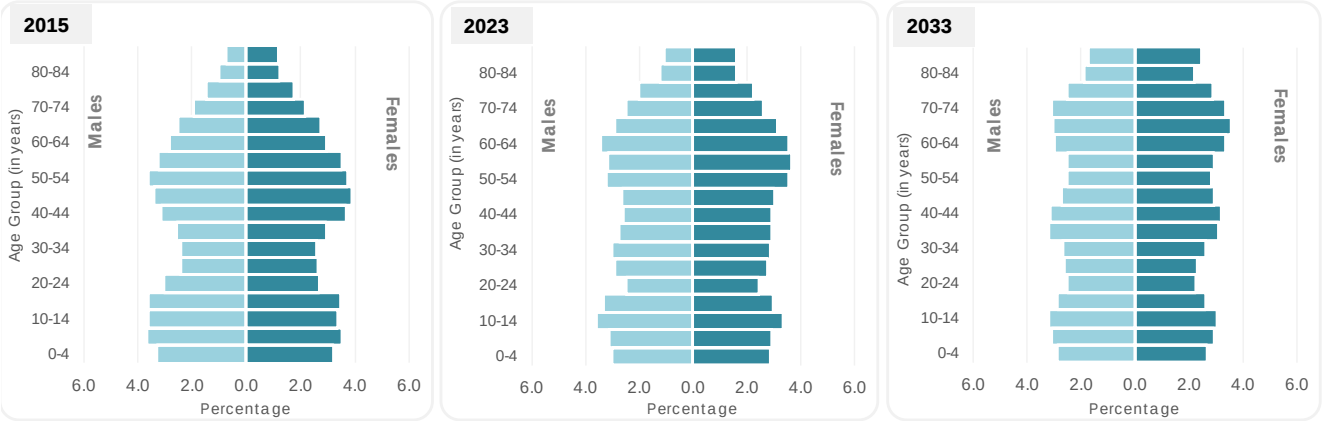
Hamilton



	2015		2023		2033	
	Hamilton	Waikato DHB	Hamilton	Waikato DHB	Hamilton	Waikato DHB
Percent aged 0-14 years	21.1	21.3	20.7	20.2	19.1	18.8
Percent aged 15-24 years	17.9	14.3	16.1	12.9	16.1	12.6
Percent aged 25-44 years	27.9	24.4	28.4	24.6	27.2	24.1
Percent aged 45-64 years	21.4	24.9	20.8	23.7	20.6	21.6
Percent aged 65-74 years	6.6	8.8	7.8	10.2	8.4	11.3
Percent aged 75+ years	5.0	6.4	6.2	8.3	8.6	11.5

Appendix Figure 6 Age-sex profile of the resident population of the Waipa TA within the Waikato DHB area, 2015, 2023 and 2033

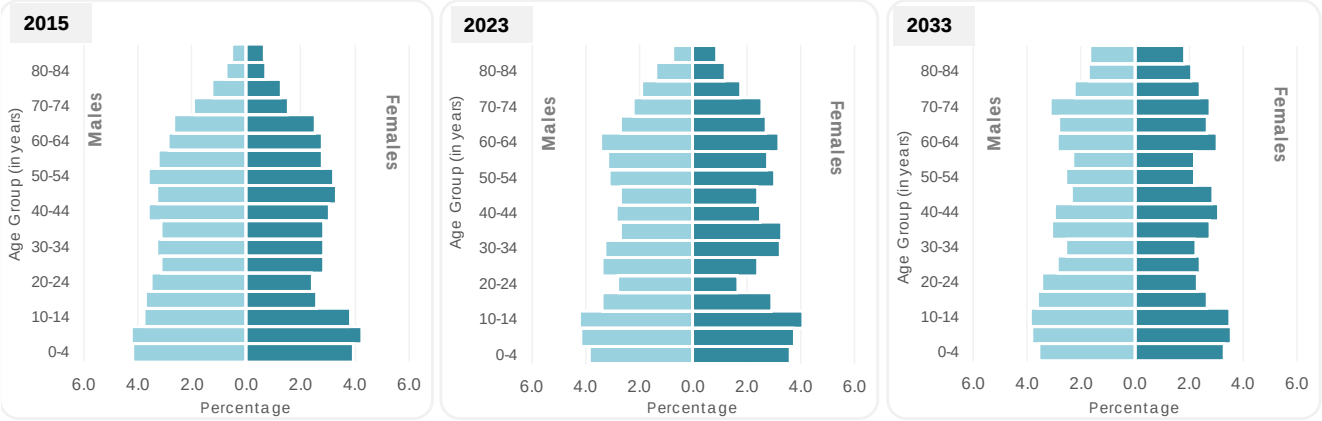
Waipa



	2015		2023		2033	
	Waipa	Waikato DHB	Waipa	Waikato DHB	Waipa	Waikato DHB
Percent aged 0-14 years	20.7	21.3	18.9	20.2	17.8	18.8
Percent aged 15-24 years	12.8	14.3	11.2	12.9	10.2	12.6
Percent aged 25-44 years	22.4	24.4	22.7	24.6	22.8	24.1
Percent aged 45-64 years	27.2	24.9	26.3	23.7	22.8	21.6
Percent aged 65-74 years	9.4	8.8	11.1	10.2	13.1	11.3
Percent aged 75+ years	7.4	6.4	9.8	8.3	13.6	11.5

Appendix Figure 7 Age-sex profile of the resident population of the Otorohanga TA within the Waikato DHB area, 2015, 2023 and 2033

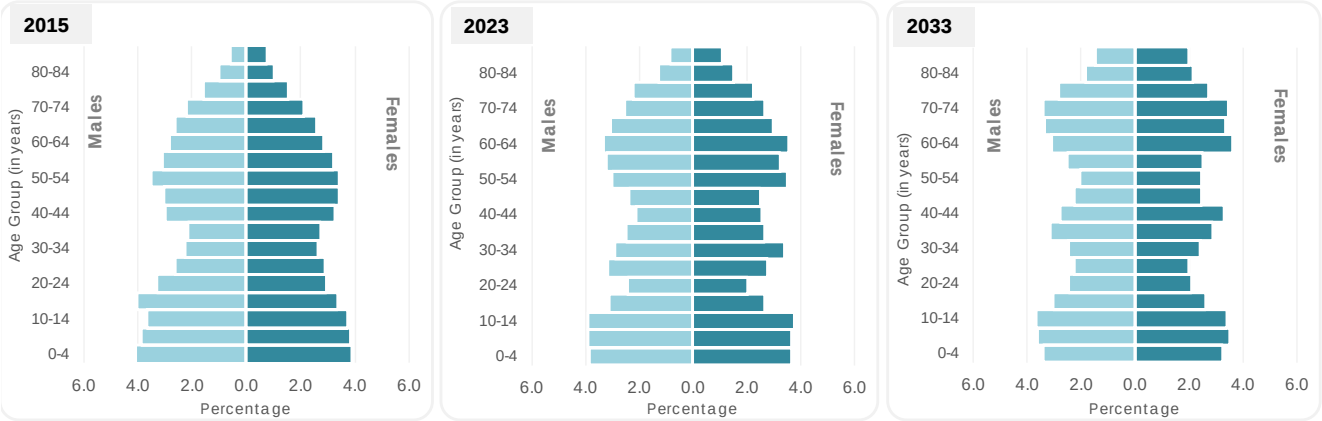
Otorohanga



	2015		2023		2033	
	Otorohanga	Waikato DHB	Otorohanga	Waikato DHB	Otorohanga	Waikato DHB
Percent aged 0-14 years	24.3	21.3	23.7	20.2	21.6	18.8
Percent aged 15-24 years	12.2	14.3	10.8	12.9	12.1	12.6
Percent aged 25-44 years	24.7	24.4	23.7	24.6	22.1	24.1
Percent aged 45-64 years	25.1	24.9	23.8	23.7	20.4	21.6
Percent aged 65-74 years	8.7	8.8	10.2	10.2	11.4	11.3
Percent aged 75+ years	5.3	6.4	7.9	8.3	12.0	11.5

Appendix Figure 8 Age-sex profile of the resident population of the South Waikato TA within the Waikato DHB area, 2015, 2023 and 2033

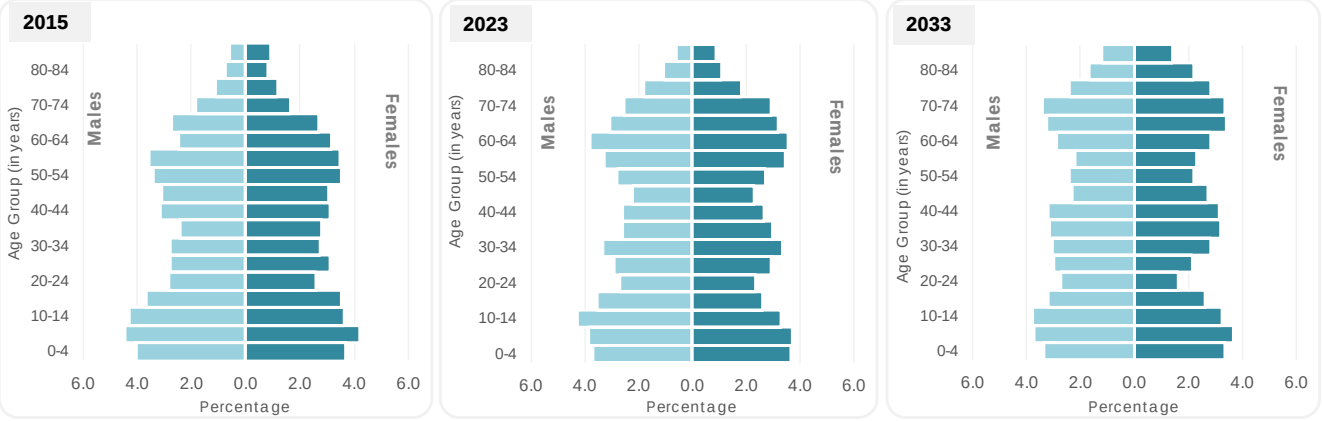
South Waikato



	2015		2023		2033	
	South Waikato	Waikato DHB	South Waikato	Waikato DHB	South Waikato	Waikato DHB
Percent aged 0-14 years	23.1	21.3	22.7	20.2	20.9	18.8
Percent aged 15-24 years	13.7	14.3	10.2	12.9	10.2	12.6
Percent aged 25-44 years	21.7	24.4	22.0	24.6	21.2	24.1
Percent aged 45-64 years	25.5	24.9	24.7	23.7	21.0	21.6
Percent aged 65-74 years	9.5	8.8	11.2	10.2	13.7	11.3
Percent aged 75+ years	6.5	6.4	9.2	8.3	13.0	11.5

Appendix Figure 9 Age-sex profile of the resident population of the Waitomo TA within the Waikato DHB area, 2015, 2023 and 2033

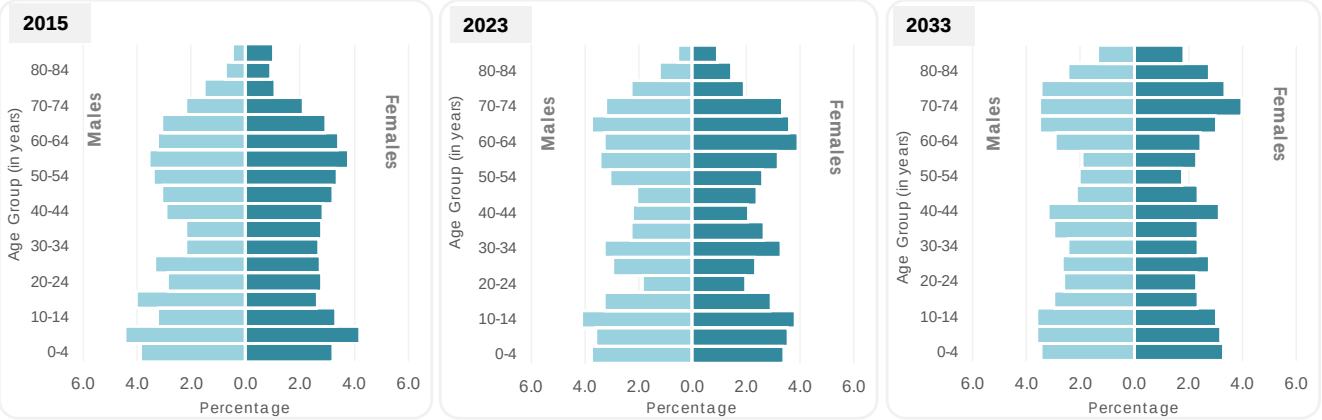
Waitomo



	2015		2023		2033	
	Waitomo	Waikato DHB	Waitomo	Waikato DHB	Waitomo	Waikato DHB
Percent aged 0-14 years	24.3	21.3	22.5	20.2	21.1	18.8
Percent aged 15-24 years	12.6	14.3	11.2	12.9	10.1	12.6
Percent aged 25-44 years	22.8	24.4	23.4	24.6	23.6	24.1
Percent aged 45-64 years	25.7	24.9	24.1	23.7	19.8	21.6
Percent aged 65-74 years	8.9	8.8	11.7	10.2	13.4	11.3
Percent aged 75+ years	5.4	6.4	7.3	8.3	11.8	11.5

Appendix Figure 10 Age-sex profile of the resident population of the Ruapehu TA within the Waikato DHB area, 2015, 2023 and 2033

Ruapehu



	2015		2023		2033	
	Ruapehu	Waikato DHB	Ruapehu	Waikato DHB	Ruapehu	Waikato DHB
Percent aged 0-14 years	22.3	21.3	22.2	20.2	20.2	18.8
Percent aged 15-24 years	12.3	14.3	10.1	12.9	10.3	12.6
Percent aged 25-44 years	21.8	24.4	21.0	24.6	22.0	24.1
Percent aged 45-64 years	27.1	24.9	24.0	23.7	17.9	21.6
Percent aged 65-74 years	10.4	8.8	13.9	10.2	14.1	11.3
Percent aged 75+ years	5.8	6.4	8.3	8.3	15.2	11.5

Appendix Table 6: Secondary MH/AoD service provision activities delivered in 2015 disaggregated by funding DHB and DHB of domicile of the clients

		Funding Source				Total recorded activity types** in 2015
		Waikato DHB	North Island DHBs (excl Waikato)	South Island DHBs	Unknown*	
Domicile of client***	Waikato DHB area	272,127	44,481	647	1,184	**318,439**
		85.5%	*14.0%*	*0.2%*	*0.4%*	*100.0%*
	North Island DHBs (excl Waikato DHB)	17,985	235	-	6	18,226
		98.7%	*1.3%*	*0.0%*	*0.03%*	*100.0%*
	South Island DHBs	10,704	-	3	-	10,707
		100.0%	*0.0%*	*0.03%*	*0.00%*	*100.0%*
	Overseas	90	-	-	-	90
		100.0%	*0.0%*	*0.0%*	*0.0%*	*100.0%*
		300,906	44,716	650	1,190	**347,462**

* Of the 1,190 service activities for which the funding DHB could not be determined, more than two-thirds (67.8%) were for clients who received one or more Waikato DHB funded mental health or AoD service sometime over the 2015 calendar year.

Appendix Table 7: List of activity types funded by Waikato DHB in 2015 for clients not usually resident within its boundary disaggregated by service provider

Activity Type	DHB Provider arm	NGOs	Total	%
Community Support Contacts		11,052	11,052	38.4
Individual treatment attendances: family/whānau not present	1,374	7,201	8,575	29.8
Care/liaison co-ordination contacts	626	2,633	3,259	11.3
Triage and/or Screening	568	492	1,060	3.7
Contact with family/whānau, consumer not present	92	806	898	3.1
Contact with family/whānau, tangata whaiora/consumer present	118	662	780	2.7
Group programme session attendances	367	377	744	2.6
Mental health crisis attendances	523	22	545	1.9
Day activity programme attendances		410	410	1.4
Forensic step down occupied bed nights	39	188	227	0.8
minimum secure inpatient occupied bed nights	114	33	147	0.5
Residential facility with responsive night support occupied bed nights		132	132	0.5
Māori specific interventions only		122	122	0.4
Advocacy		104	104	0.4
Substance abuse residential service occupied bed nights		97	97	0.3
Integrated Māori and clinical interventions	19	75	94	0.3
Substance abuse detoxification attendances (social)	53	26	79	0.3
Psychiatric disability rehabilitation occupied bed nights	65		65	0.2
Mental health acute inpatient or equivalent occupied bed nights	59		59	0.2
Seclusion	47		47	0.2
Mental health intensive care inpatient or equivalent occupied bed nights	46		46	0.2
Peer Support		42	42	0.1
Day treatment programme attendances		41	41	0.1
medium secure inpatient occupied bed nights	38		38	0.1
Court liaison attendances		35	35	0.1
Crisis respite care occupied bed nights	21	2	23	0.1
Support for family/whānau		21	21	0.1
Work opportunity/Employment/Vocational	11	9	20	0.1
Completed needs assessment	10		10	0.0
Methadone treatment specialist service attendances	4		4	0.0
Planned respite care occupied bed nights		3	3	0.0
Total activity types funded for non-WDHB domicile clients in 2015	**4,194**	**24,585**	**28,779**	**100.0**

Appendix Table 8: Service providers for the activity types funded by Waikato DHB in 2015 for clients not resident within the DHB boundary

	Service Provider	CONTACT	BEDNIGHT	SECLUSION	TOTAL	%
Waikato DHB Provider arm		343	3,804	47	4,194	14.6
NGOs/Charitable Trust or Incorporated Society	Stepping Stone Trust	9,995	99	-	10,094	35.1
	Keys Living Choices	5,354	-	-	5,354	18.6
	Care NZ (Est 1954) Limited	4,361	-	-	4,361	15.2
	Hauora Waikato Maori Mental Health Services	1,136	44	-	1,180	4.1
	Nga Ringa Awhina	1,141	-	-	1,141	4.0
	The Salvation Army New Zealand Trust	459	125	-	584	2.0
	Te Korowai Hauora o Hauraki Incorporated	408	-	-	408	1.4
	Progress to Health	390	-	-	390	1.4
	Solora Limited	342	-	-	342	1.2
	Alcohol & Drug Community Support Trust	159	-	-	159	0.6
	Pai Ake Solutions Limited	120	-	-	120	0.4
	Taumarunui Community Kokiri Trust	108	-	-	108	0.4
	Stepping Out Hauraki Incorporated	98	-	-	98	0.3
	Waahi Whaanui Trust	66	-	-	66	0.2
	The Waikato Clinical Psychology Educational Trust	44	-	-	44	0.2
	Cambridge Community Agencies Network Charitable Trust	42	-	-	42	0.1
	Centre 401 Trust	31	-	-	31	0.1
	K'aute Pasifika Trust	18	-	-	18	0.1
	The Higher Ground Drug Rehabilitation Trust	11	7	-	18	0.1
	Te Awhi Whanau Charitable Trust	-	12	-	12	0.0
	Emerge Aotearoa Limited	-	9	-	9	0.0
	Healthcare of New Zealand Limited	-	3	-	3	0.0
	Richmond Services Limited	-	3	-	3	0.0
	Total activity types funded for non-WDHB domicile clients in 2015	**24,626**	**4,106**	**47**	**28,779**	**100.0**

Appendix Table 9: Activity type codes recorded in the PRIMHD database

Activity Type Code	Description
T01	Mental health crisis attendances
T02	Mental health intensive care inpatient or equivalent occupied bed nights
T03	Mental health acute inpatient or equivalent occupied bed nights
T04	Mental health sub-acute inpatient or equivalent occupied bed nights
T05	Crisis respite care occupied bed nights
T07	Group programme session attendances
T08	Care/liaison co-ordination contacts
T10	Completed needs assessment
T11	maximum secure inpatient occupied bed nights
T12	medium secure inpatient occupied bed nights
T13	minimum secure inpatient occupied bed nights
T15	Forensic step down occupied bed nights
T16	Court liaison attendances
T17	Substance abuse Withdrawal management/detoxification occupied bed nights (medical)
T18	Substance abuse detoxification attendances (social)
T19	Methadone treatment specialist service attendances
T20	Substance abuse residential service occupied bed nights
T21	Psychiatric disability rehabilitation occupied bed nights
T22	Day treatment programme attendances
T23	Day activity programme attendances
T24	Work opportunity/Employment/Vocational
T27	Residential facility with responsive night support occupied bed nights
T28	Residential facility with awake night support occupied bed nights
T29	Community residential occupied bed nights
T30	Planned respite care occupied bed nights
T32	Contact with family/whānau, consumer not present
T33	Seclusion
T34	ECT
T35	Did not attend
T36	Contact with family/whānau, tangata whaiora/consumer present
T37	On leave
T38	Māori specific interventions only
T39	Integrated Māori and clinical interventions
T41	Other cultural specific activity
T42	Individual treatment attendances: family/whānau not present
T43	Community Support Contacts
T44	Advocacy
T45	Peer Support
T46	Triage and/or Screening
T47	Support for family/whānau
T48	Co-existing disorders residential service occupied bed nights
T49	Support for Children of Parents with Mental Illness and Addictions (COPMIA)

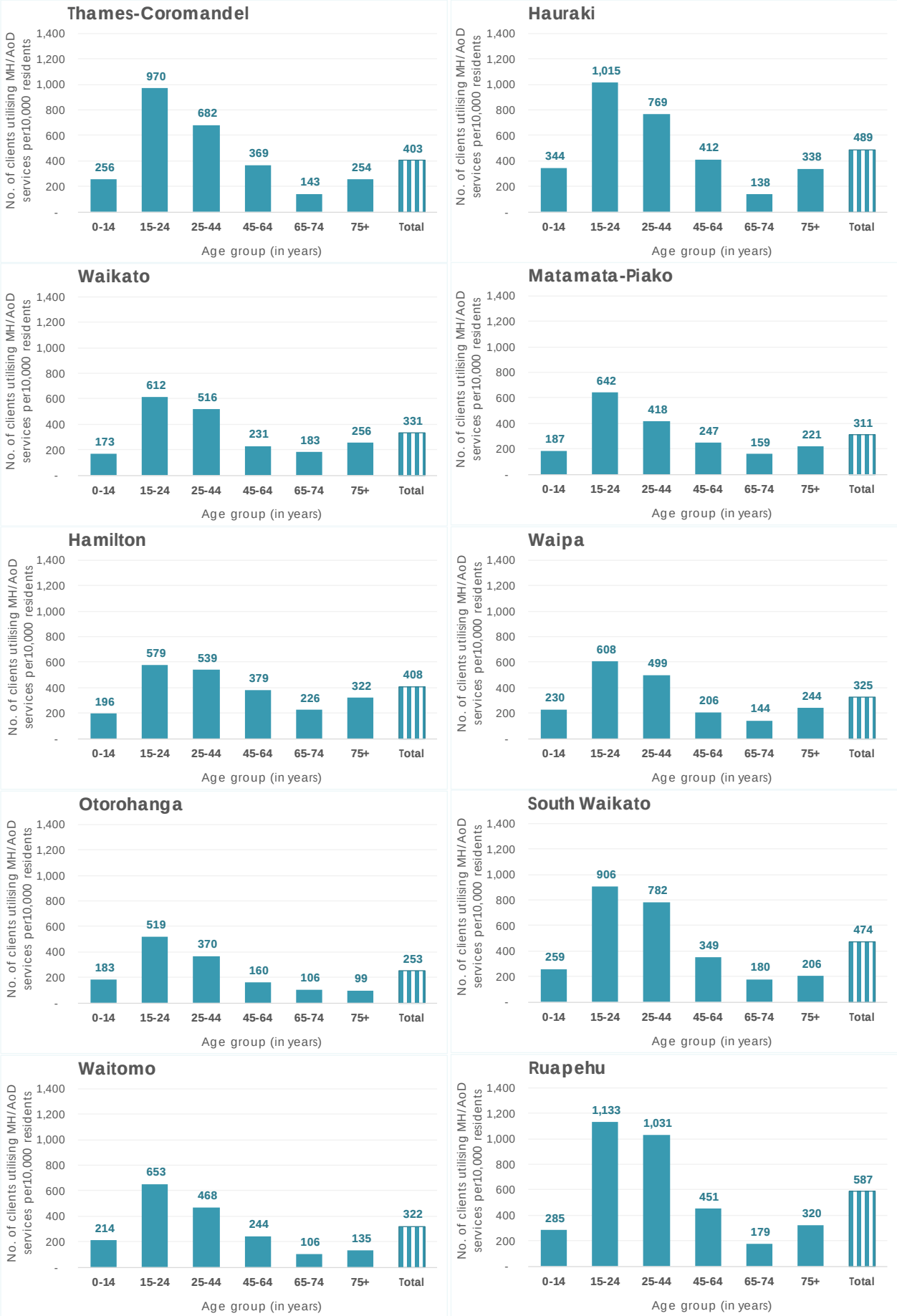
Appendix Table 10: Team type codes recorded in the PRIMHD database

Team Type Code	Description
1	Inpatient Team
2	Community Team
3	Alcohol and Drug Team
5	Forensic Team
8	Residential / Accommodation Team
9	Community Skills Enhancement Team
11	Co-Existing Problems Team
12	Intellectual Disability Dual Diagnosis Team
14	Specialty Team
15	Maternal Mental Health Team
16	Eating Disorder Team
17	Needs Assessment and Service Coordination Team
25	Early Intervention Team

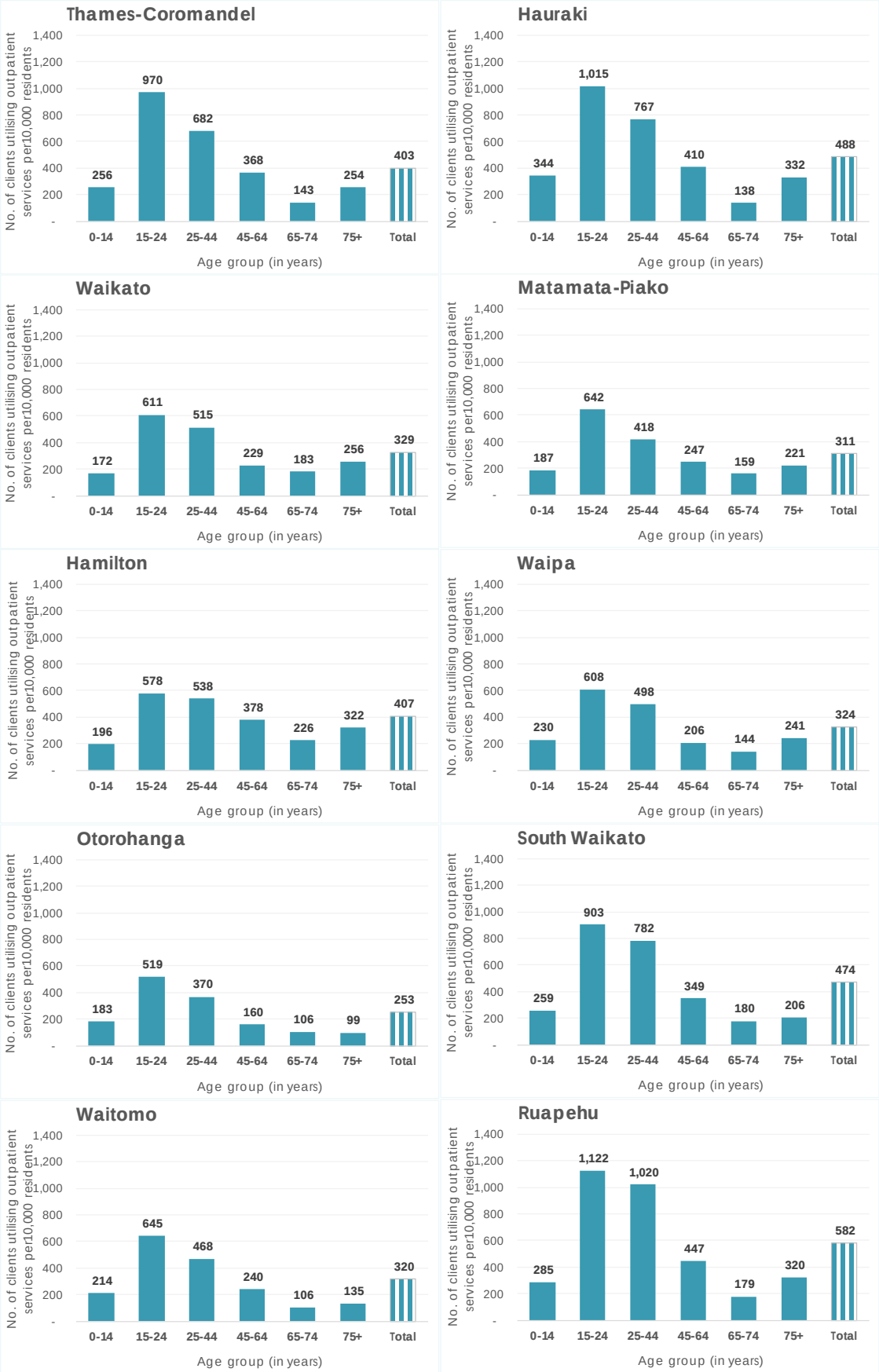
Appendix Table 11: Activities/services delivered in 2015 to people usually resident in the Waikato DHB area disaggregated by activity unit type

	Activity Type	Count	%
Contact	Individual treatment attendances: family/whānau not present	118,754	38.6
	Care/liaison co-ordination contacts	45,621	14.8
	Community Support Contacts	24,418	7.9
	Contact with family/whānau, tangata whaiora/consumer present	23,421	7.6
	Contact with family/whānau, consumer not present	18,334	6.0
	Group programme session attendances	15,814	5.1
	Triage and/or Screening	14,314	4.6
	Mental health crisis attendances	12,325	4.0
	Day activity programme attendances	10,118	3.3
	Work opportunity/Employment/Vocational	8,793	2.9
	Substance abuse detoxification attendances (social)	6,137	2.0
	Peer Support	2,958	1.0
	Integrated Māori and clinical interventions	2,489	0.8
	Advocacy	905	0.3
	Māori specific interventions only	875	0.3
	Completed needs assessment	585	0.2
	Day treatment programme attendances	576	0.2
	Forensic step down occupied bed nights	470	0.2
	ECT	306	0.1
	Substance abuse Withdrawal management/detoxification occupied bed nights (medical)	276	0.1
	Support for family/whānau	231	0.1
	Methadone treatment specialist service attendances	94	0.0
	Other cultural specific activity	29	0.0
	Support for Children of Parents with Mental Illness and Addictions (COPMIA)	1	0.0
	Total activities/services delivered in an outpatient/community setting:	***307,844***	***100.0***
Bednight	Mental health acute inpatient or equivalent occupied bed nights	2,675	27.5
	Residential facility with responsive night support occupied bed nights	1,590	16.4
	Residential facility with awake night support occupied bed nights	1,183	12.2
	Mental health intensive care inpatient or equivalent occupied bed nights	1,091	11.2
	Crisis respite care occupied bed nights	861	8.9
	Planned respite care occupied bed nights	767	7.9
	Substance abuse residential service occupied bed nights	554	5.7
	minimum secure inpatient occupied bed nights	350	3.6
	Court liaison attendances	236	2.4
	medium secure inpatient occupied bed nights	212	2.2
	Psychiatric disability rehabilitation occupied bed nights	131	1.3
	Mental health sub-acute inpatient or equivalent occupied bed nights	42	0.4
	maximum secure inpatient occupied bed nights	13	0.1
	Community residential occupied bed nights	5	0.1
	Co-existing disorders residential service occupied bed nights	2	0.0
	Total activities/services delivered in an inpatient/residential setting:	***9,712***	***100.0***
Seclusion		***883***	***100.0***
	Total activities/services utilised in 2015 by people resident in the Waikato DHB area:	**318,439**	

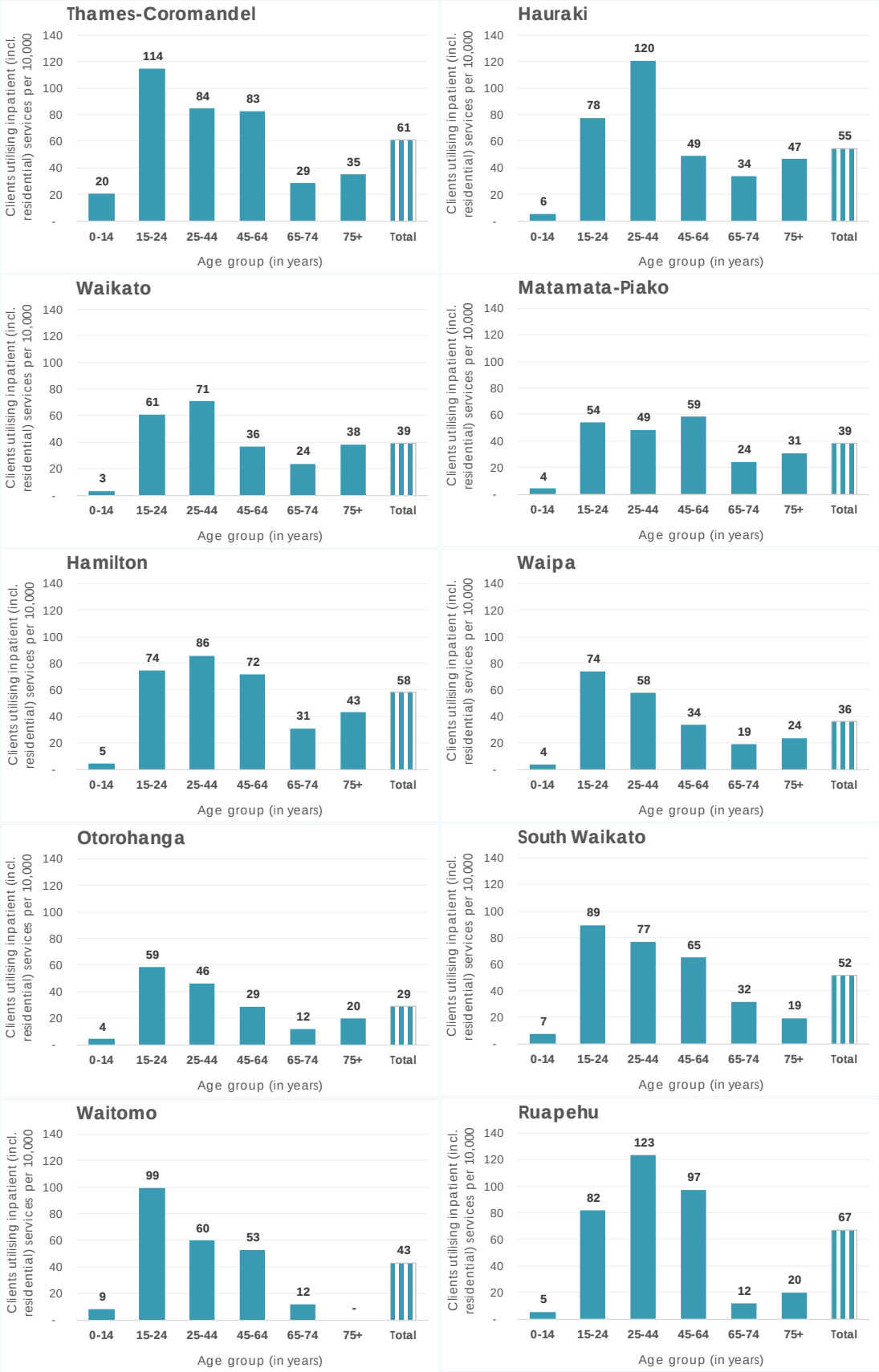
Appendix Figure 11: Overall age specific utilisation rates disaggregated by TA of domicile, Waikato DHB, 2015



Appendix Figure 12: Age specific utilisation rates for outpatient contacts/services disaggregated by TA of domicile, Waikato DHB, 2015



Appendix Figure 13: Age specific utilisation rates for contacts requiring inpatient treatment or hospitalisation disaggregated by TA of domicile, Waikato DHB, 2015



Appendix Table 12: Projected age-specific utilisation of secondary MH/AoD services by male residents living in the Waikato DHB area: 2023 and 2033 (medium series projections)

Total- Males					
Age group (in years)	No. utilising secondary MH/AoD services in 2015	Number estimated to utilise secondary MH/AoD services		Estimated change in number utilising MH/AoD services	
		2023	2033	2015-2023	2015-2033
0-4	67	73	69	+06	+02
5-9	397	401	420	+04	+23
10-14	581	689	699	+108	+118
15-19	918	951	1,021	+33	+103
20-24	996	1,008	1,155	+12	+159
25-29	858	1,099	1,064	+241	+206
30-34	708	998	980	+290	+272
35-39	633	772	1,005	+139	+372
40-44	649	644	894	-05	+245
45-49	581	568	662	-13	+81
50-54	477	492	472	+15	-05
55-59	332	361	347	+29	+15
60-64	193	238	241	+45	+48
65-69	139	168	189	+29	+50
70-74	119	164	214	+45	+95
75-79	113	171	228	+58	+115
80-84	94	131	201	+37	+107
85+	74	106	187	+32	+113
Total	**7,929**	**9,033**	**10,047**	**+1,104**	**+2,118**

Appendix Table 13: Projected age-specific utilisation of secondary MH/AoD services by female residents living in the Waikato DHB area: 2023 and 2033 (medium series projections)

Total- Females					
Age group (in years)	No. utilising secondary MH/AoD services in 2015	Number estimated to utilise secondary MH/AoD services		Estimated change in number utilising MH/AoD services	
		2023	2033	2015-2023	2015-2033
0-4	30	32	31	+02	+01
5-9	177	178	185	+01	+08
10-14	501	582	594	+81	+93
15-19	1,023	1,072	1,110	+49	+87
20-24	760	734	821	-26	+61
25-29	723	773	756	+50	+33
30-34	568	748	645	+180	+77
35-39	585	705	752	+120	+167
40-44	501	487	629	-14	+128
45-49	492	469	547	-23	+55
50-54	412	430	399	+18	-13
55-59	324	351	326	+27	+02
60-64	222	277	283	+55	+61
65-69	213	260	290	+47	+77
70-74	136	184	238	+48	+102
75-79	132	197	260	+65	+128
80-84	118	165	249	+47	+131
85+	138	173	289	+35	+151
Total	**7,055**	**7,815**	**8,406**	**+760**	**+1,351**

Appendix Table 14: Projected age-specific utilisation of secondary MH/AoD services by Māori living in the Waikato DHB area: 2023 and 2033 (medium series projections)

	Māori - Males					Māori - Females				
Age group (in years)	No. utilising services in 2015	Number estimated to utilise secondary MH/AoD services		Estimated change in number utilising		No. utilising services in 2015	Number estimated to utilise secondary MH/AoD services		Estimated change in number utilising	
		2023	2033	2015-2023	2015-2033		2023	2033	2015-2023	2015-2033
0-4	19	20	23	+01	+04	10	11	12	+01	+02
5-9	105	111	124	+06	+19	37	40	44	+03	+07
10-14	202	252	263	+50	+61	172	216	229	+44	+57
15-19	397	454	518	+57	+121	318	367	418	+49	+100
20-24	417	499	635	+82	+218	264	285	365	+21	+101
25-29	378	518	632	+140	+254	267	298	363	+31	+96
30-34	308	417	545	+109	+237	188	240	261	+52	+73
35-39	279	325	481	+46	+202	192	224	269	+32	+77
40-44	264	261	366	-03	+102	166	165	215	-01	+49
45-49	214	230	265	+16	+51	167	182	213	+15	+46
50-54	146	158	162	+12	+16	119	134	137	+15	+18
55-59	85	100	110	+15	+25	68	80	89	+12	+21
60-64	29	41	47	+12	+18	36	52	60	+16	+24
65-69	22	33	43	+11	+21	24	37	48	+13	+24
70-74	17	27	44	+10	+27	13	23	38	+10	+25
75-79	11	18	32	+07	+21	7	12	24	+05	+17
80-84	2	3	6	+01	+04	7	11	24	+04	+17
85+	3	5	14	+02	+11	3	5	11	+02	+08
Total	**2,898**	**3,472**	**4,309**	**+574**	**+1,411**	**2,058**	**2,382**	**2,820**	**+324**	**+762**

Appendix Table 15: Projected age-specific utilisation of secondary MH/AoD services by non-Māori living in the Waikato DHB area; 2023 and 2033 (medium series projections)

non-Māori - Males						non-Māori - Females				
Age group (in years)	No. utilising services in 2015	Number estimated to utilise secondary MH/AoD services		Estimated change in number utilising		No. utilising services in 2015	Number estimated to utilise secondary MH/AoD services		Estimated change in number utilising	
		2023	2033	2015-2023	2015-2033		2023	2033	2015-2023	2015-2033
0-4	48	52	45	+04	-03	20	22	19	+02	-01
5-9	292	290	296	-02	+04	140	138	141	-02	+01
10-14	379	436	436	+57	+57	329	366	366	+37	+37
15-19	521	497	503	-24	-18	705	705	692	+00	-13
20-24	579	509	520	-70	-59	496	449	456	-47	-40
25-29	480	582	431	+102	-49	456	474	393	+18	-63
30-34	400	581	435	+181	+35	380	508	384	+128	+04
35-39	354	447	524	+93	+170	393	481	483	+88	+90
40-44	385	383	528	-02	+143	335	322	414	-13	+79
45-49	367	338	397	-29	+30	325	287	334	-38	+09
50-54	331	334	310	+03	-21	293	296	262	+03	-31
55-59	247	261	237	+14	-10	256	270	237	+14	-19
60-64	164	196	195	+32	+31	186	225	222	+39	+36
65-69	117	136	147	+19	+30	189	223	242	+34	+53
70-74	102	137	169	+35	+67	123	161	200	+38	+77
75-79	102	153	196	+51	+94	125	184	237	+59	+112
80-84	92	128	195	+36	+103	111	154	225	+43	+114
85+	71	100	173	+29	+102	135	168	278	+33	+143
Total	**5,031**	**5,561**	**5,738**	**+530**	**+707**	**4,997**	**5,433**	**5,586**	**+436**	**+589**