Te Aka Whai Ora
Māori Health Authority

Iwi-Māori Partnership Board Health Profile:
Te Tiratū

Volume Two 2024

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Volume Two

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Te kupu takamua

Foreword

Te kupu takamua – Foreword

We are pleased to present Volume Two of the Iwi-Māori Partnership Board Health Profiles. Together with Volume One, completed in late 2023, these two reports represent the most up-to-date snapshot of Māori health for the health sector.

We acknowledge the legacy of work associated with Māori-led health data reporting to date, from the seminal *Hauora* series to *Tatau Kahukura* and the *2015 District Health Board Māori Health Profiles*, this volume continues the commitment to excellence that Māori communities and whānau both need and deserve.

Volume One includes key demographic information, mauri ora (overall health status), whānau ora (healthy families) and wai ora (healthy environments) indicators specific to each Iwi-Māori Partnership Board. Volume Two presents additional indicators focused on Te Aka Whai Ora-identified health priority areas including kahu taurima (early years), māuiuitanga taumaha (long-term conditions), mate pukupuku (cancer), oranga hinengaro (mental health and addictions) and ko ētahi atu tohu pūnaha (other system indicators) specific to each Iwi-Māori Partnership Board.

The data presented within these profiles are a dimension of 'whānau voice'. They represent Māori stories and Māori lived experience and should be valued as a taonga for the health system to use and respond to as part of the broader commitment to Te Tiriti o Waitangi and equity. The data presented in these profiles also require contextualisation - they are a starting point for Iwi-Māori Partnership Boards to interpret, together with other sources of information, and decide how best to respond to the needs (and rights) of the whānau within their rohe.

As the health sector transforms itself, Iwi-Māori Partnership Boards will play a pivotal role in understanding how the health sector is performing to meet the needs and aspirations of whānau in their area. This profile completes a commitment from Te Aka Whai Ora and Health New Zealand - Te Whatu Ora to provide Iwi-Māori Partnership Boards with data analysed from a Kaupapa Māori epidemiology positioning. As Te Aka Whai Ora as an entity is disestablished, the commitment from Health New Zealand - Te Whatu Ora to continue this important work remains.

We thank everyone who has contributed to both volumes of the profiles and hope that this commitment to excellence in Māori health continues - mō āke tonu atu.

Ngā mihi,

Tipa Mahuta

Waikato, Maniapoto, Ngāpuhi

Te Kaihautū (Board Chair)

Te Aka Whai Ora

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Av	Average
BMI	Body mass index
CABG	Coronary artery bypass graft
CI	Confidence interval
COPD	Chronic obstructive pulmonary disease
Dec	December
DHB	District Health Board
DMFT	Decayed, missing, or filled teeth
ED	Emergency department
GP	General practitioner
HbA1c	Glycated haemoglobin
HISO	Health Information Standards Organisation
HPV	Human papillomavirus
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification
IMPB	Iwi-Māori Partnership Board
Jan	January
K10	Kessler Psychological Distress Scale
LMC	Lead Maternity Carer
NGO	Non-Governmental Organisation
NHI	National Health Index
NIR	National Immunisation Register
NMDS	National Minimum Dataset
NNPAC	National Non-Admitted Patient Collection
No	Number
NSAIDs	Non-steroidal anti-inflammatory drugs
NZ	Aotearoa/New Zealand

NZCR	New Zealand Cancer Registry
NZHS	New Zealand Health Survey
NZDep2018	New Zealand Index of Deprivation 2018
Pacific	Pacific people(s)
Pae Ora Act	Pae Ora (Healthy Futures) Act 2022
PHO	Primary Health Organisation
PMMRC	Perinatal and Maternal Mortality Review Committee
PRIMHD	Programme for the Integration of Mental Health Data
RR	Rate ratio
SA2	Statistical area level 2
Sep	September
SSRIs	Selective serotonin reuptake inhibitors
StatsNZ	Statistics New Zealand
SUDI	Sudden unexpected death in infancy
TKHM	Te Kupenga Hauora Māori
VDR	Virtual Diabetes Register
Wai 2575	Wai 2575 Health Services and Outcomes Kaupapa Inquiry
WCTO	Well Child Tamariki Ora
WHO	World Health Organization

Kuputaka Māori – Māori Glossary

Aotearoa	New Zealand
Hapori Māori	Māori communities
Hapū	Sub-tribe
Hauora Māori	Māori health
Iwi	Tribe
Kahu taurima	Early years
Kaupapa Māori	Māori initiative, approach, topic, agenda, principle, ideology
Ko ētahi atu tohu pūnaha	Other system indicators
Kuputaka Māori	Māori glossary
Manatū Hauora	Ministry of Health
Mate pukupuku	Cancer
Māori	Indigenous people(s) of Aotearoa New Zealand
Māuiuitanga taumaha	Long-term conditions
Mauri ora	Overall health status
Mō āke tonu atu	Forever
Ngā āpitihanga	Appendices
Ngā kupu whakamihi	Acknowledgements
Ngā mihi	Greetings
Oranga hinengaro	Mental health and addictions
Pae ora	Healthy futures
Rangatahi	Youth
Rārangi papatau	List of figures
Rārangi tīporo	List of abbreviations, acronyms & initialisms
Rārangi tūtohi	List of tables
Rohe	Region
Tamariki Māori	Māori children
Taonga	Treasure
Tatau Kahukura	Māori Health Chartbook 2015
Te Aka Whai Ora	Māori Health Authority
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Te Kupenga Hauora Māori	Department of Māori Health, Faculty of Medical and Health Sciences, The University of Auckland
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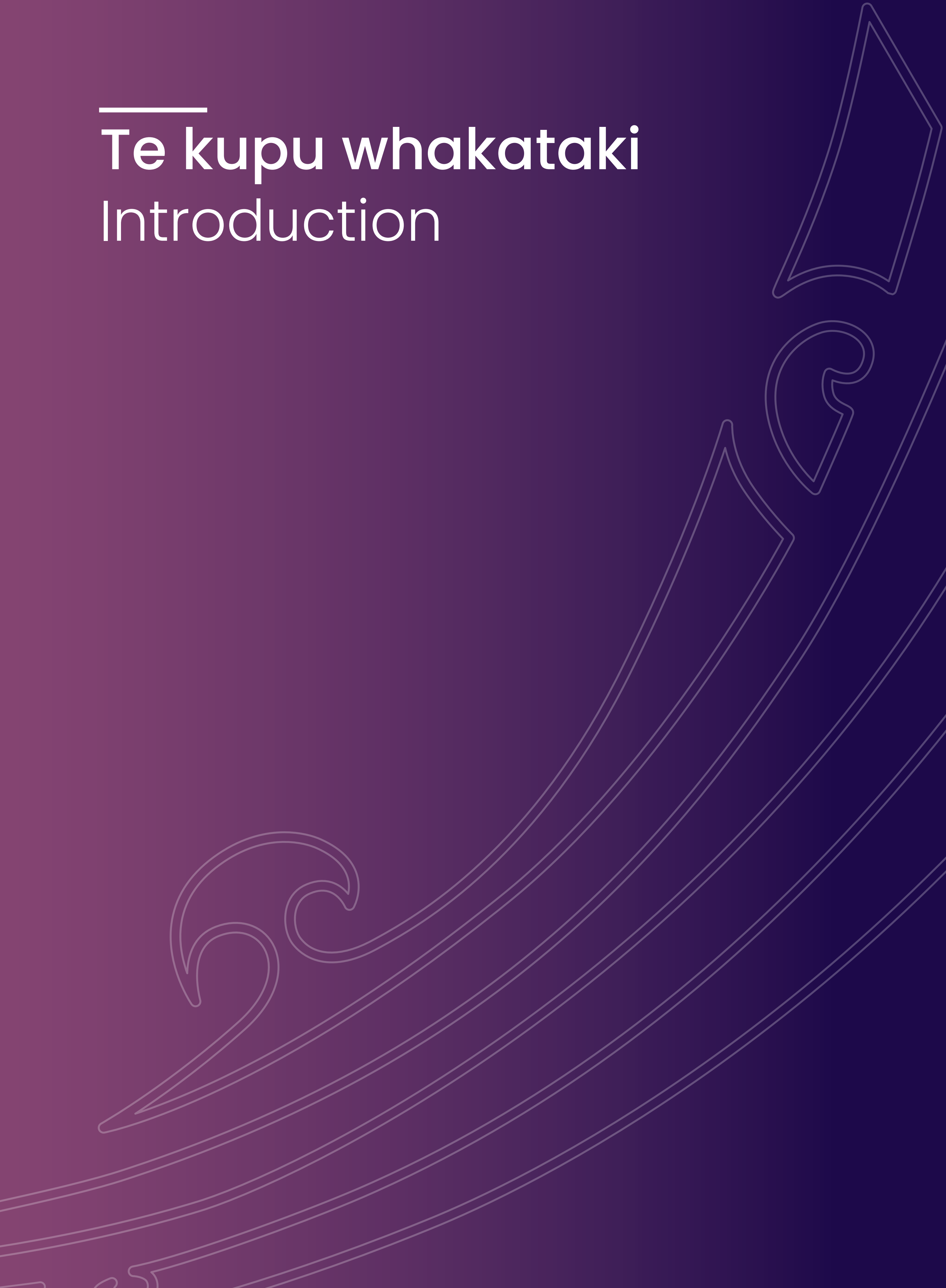
Te rārangi tohutoro	References
Te Rau Hinengaro	New Zealand Mental Health Survey 2004
Te Rōpū Rangahau Hauora a Eru Pōmare	Eru Pomare Māori Health Research Centre, The University of Otago
Te Tiriti o Waitangi	Treaty of Waitangi
Te Whatu Ora	Health New Zealand
Wāhine Māori	Māori women
Wai ora	Healthy environments
Whakamaua	Māori Health Action Plan: 2020-2025
Whānau	Family
Whānau ora	Healthy families

Te kupu whakataki
Introduction



1. Te kupu whakataki – Introduction

1.1. Overview of Iwi-Māori Partnership Boards

One of the three purposes of the Pae Ora (Healthy Futures) Act 2022 (Pae Ora Act) is to “achieve equity in health outcomes among New Zealand’s (NZ) population groups, including by striving to eliminate health disparities, in particular for Māori”. Iwi-Māori Partnership Boards (IMPBs) are an important legislated mechanism for the Crown to give effect to the principles of Te Tiriti o Waitangi (the Treaty of Waitangi). The Pae Ora Act requires Health New Zealand (Te Whatu Ora) and the Māori Health Authority (Te Aka Whai Ora) to engage with IMPBs.

The purpose of IMPBs is to represent local Māori perspectives on:

a) the needs and aspirations of Māori in relation to hauora Māori outcomes; and

b) how the health sector is performing in relation to those needs and aspirations; and

c) the design and delivery of services and public health interventions within localities.

The Pae Ora Act sets out the criteria for recognition of an organisation as an IMPB. The criteria ensure the Boards are broadly representative of all Māori within the relevant area and include;

a) that the proposed boundaries of the area covered by the organisation do not overlap with the boundaries of any area covered by any other IMPB;

b) that the organisation has taken reasonable steps to engage with relevant Māori communities and groups; and

c) the organisation must demonstrate that it has the capacity and capability to perform the necessary functions of IMPBs as set out in the Act, and that the organisation can represent and be accountable to hapori Māori (Māori communities).

Once the Board of Te Aka Whai Ora[1] is satisfied that an organisation has met the criteria for recognition, they advise the Minister of Health who then recommends the making of an Order in Council so that the organisation can be listed as an IMPB (under Schedule 4 of the Pae Ora Act). On the advice of the Te Aka Whai Ora Board, the Minister of Health can also recommend an Order in Council to vary or remove an IMPB from Schedule 4 of the Pae Ora Act. An important feature of IMPBs is that they can renegotiate boundaries between each other as and when works for the collective. Such is the case for any emerging organisation who must consult with neighbouring IMPBs should their intended boundary result in overlap. This ensures the self-determination of communities, and strategic alignment with community need.

As at May 2024, 15 IMPBs were listed in Schedule 4, as shown in Figure 1.

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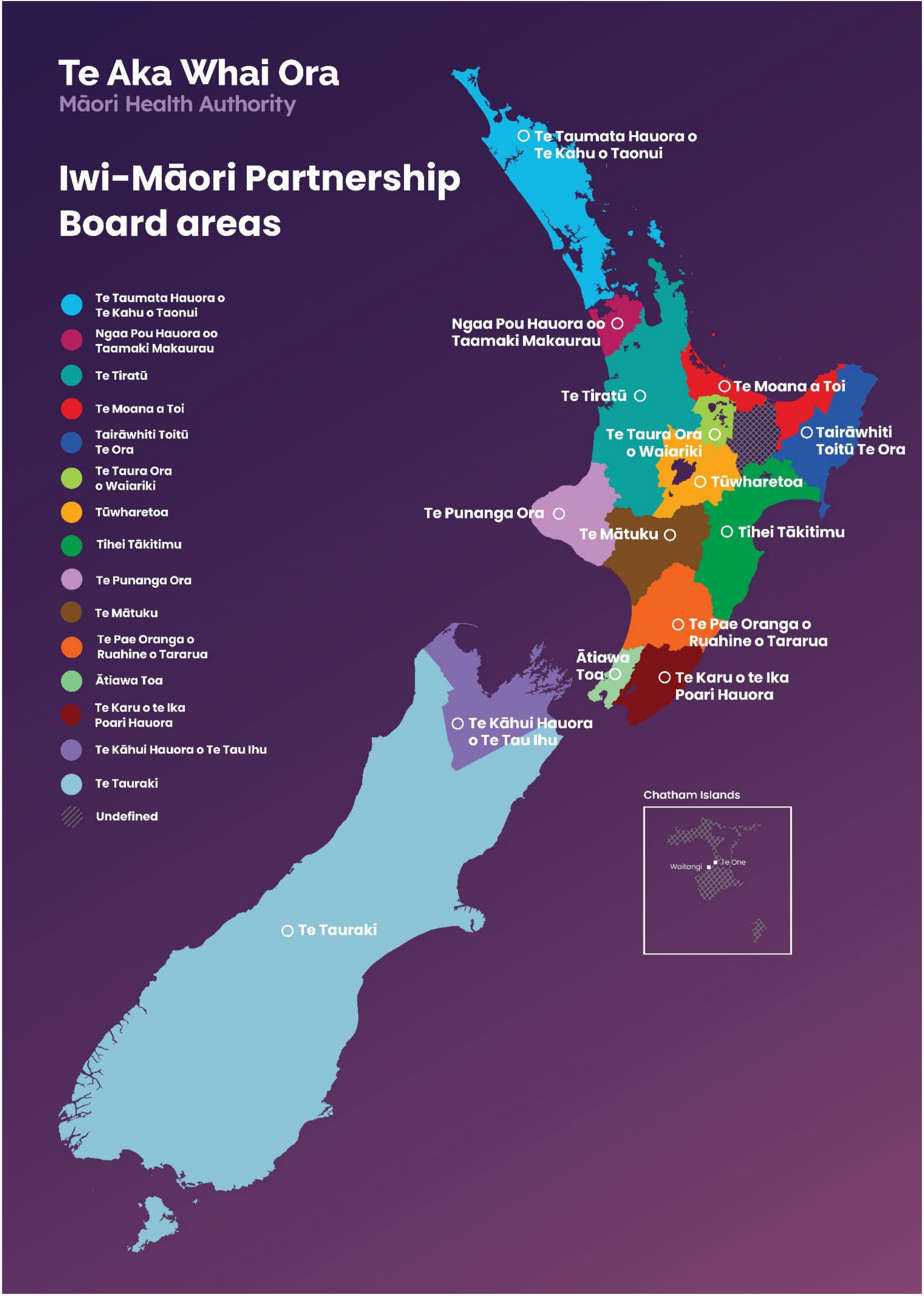
[1] Note: From 1 July 2024 the role of recognising IMPBs currently carried out by the Te Aka Whai Ora Board will be carried out by the Director-General of Health, who will then advise the Minister of Health.

Figure 1 – Map of Iwi-Māori Partnership Board areas



1.2. Purpose & audience for this report

Under the Pae Ora Act, Te Aka Whai Ora must take reasonable steps to support IMPBs to achieve their purpose, including by providing administrative, analytical, or financial support where needed; and providing sufficient and timely information. These data profiles have been prepared for each IMPB formed in 2023, as part of a commitment by Te Aka Whai Ora to provide IMPBs with health information to inform priorities and actions.

Te Aka Whai Ora has produced these profiles, together with support from Te Whatu Ora, to provide IMPBs with a baseline snapshot of the health of Māori in their rohe (region). These profiles are limited to the data sources and indicators currently available in the government health system, and may not capture all aspects of hauora Māori, determinants of wellbeing, or government responsibility.

1.3. Positioning

This profile has been drafted from a Kaupapa Māori research and epidemiology positioning (Simmonds, Robson et al. 2008). This positioning includes:

- a commitment to high quality ethnicity data reporting and analysis (that includes understanding how ethnicity data are collected and recorded and the implications of these factors on data quality from various sources);
- a commitment to using appropriate comparator groupings (or not) within ethnic data comparisons (that reflect Te Tiriti o Waitangi/rights-based and equity appropriate interpretations) (Harris, Paine et al. 2022), and;
- a strengths-based interpretation of data that rejects ‘victim-blame’ or ‘cultural-deficit’ interpretations of any data presented (Curtis 2016).

It is important to note that the identification of inequities between Māori and non-Māori is not a signal of Māori failure or shortcomings. Rather, a Kaupapa Māori positioning foregrounds racism, privilege and power imbalances as the fundamental drivers of ethnic inequities in health for Māori compared to non-Māori (Curtis, Jones et al. 2023).

The data presented in this profile require contextualisation - they are a starting point for IMPBs to interpret, together with other sources of information, and decide how best to respond to the needs (and rights) of their specific population. Although quantitative in nature, the data presented within these profiles are a dimension of ‘whānau voice’. They represent Māori stories and Māori lived experience and should be valued as a taonga for the health system to use and respond to as part of the broader commitment to Te Tiriti o Waitangi and equity.

1.4. Understanding Māori health and health inequities

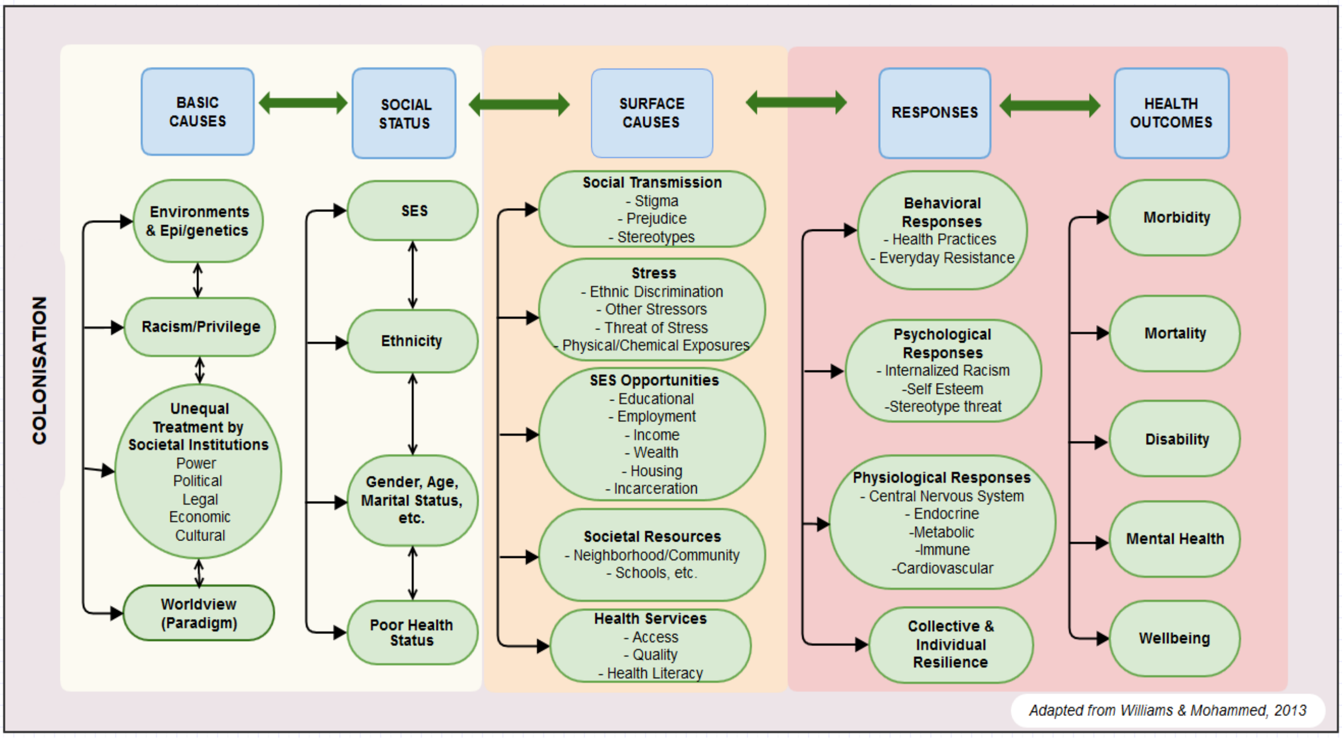
It is important to have a common understanding on what the fundamental drivers of Māori health and health inequities are in order to respond appropriately. A helpful framework is the ‘Te Kupenga Hauora Māori (TKHM) modified model’ (Curtis, Jones et al. 2023) - a Māori model that draws upon international theorisation on the causation of ethnic health inequities (Figure 2). The TKHM modified model outlines a framework to understand the causes of Māori:non-Māori health inequities within an Aotearoa and Indigenous specific context.

The framework emphasises the importance of distinguishing *basic* causes from *surface* (or intervening causes). Overall, changes in *basic* causes create important changes in health *outcomes*. *Social status* categories are created, and reinforced, by *basic* causes. *Social status* categories considered to have particular relevance to Māori health outcomes include: *ethnicity, socio-economic status, gender, age*, and *poor health status*. In the TKHM modified model, *surface causes* represent a number of intervening mechanisms that link *social status* categories such as *ethnicity*, to *health outcomes*. Important intervening mechanisms include: *stress*, *socio-economic opportunities*, *societal resources*, *health services* and *social transmission*. Health *outcomes* reflect the mechanisms by which differences in health status and therefore health inequities are observed or measured. For example, health can vary with respect to *morbidity* (ill health), *mortality* (death rates), presence or absence of *disability*, *mental health* and generalised *wellbeing*.

The TKHM modified model foregrounds colonisation as a key determinant of health inequities underpinning all levels from *basic* to *surface* causes. In doing so, the model acknowledges the historical trauma of colonisation whilst also foregrounding the ongoing contemporary effects of colonisation in today’s society. It is not a simple, unidirectional relationship between causes at different levels - but rather there is a dynamic interplay between causes and pathways. Worldviews and positioning are also a basic cause, and privilege alongside racism plays a causative role in Māori health inequities.

Explanations define solutions. Therefore, a conceptual framework can support the understanding of fundamental causes of Indigenous and Māori health inequities and how best to respond to those inequities once they have been identified. Many of the routine data that are collected and reported in Aotearoa, including in this report, focus on the downstream surface causes. It is important to understand that many of these indicators are outcomes/consequences of structural processes of marginalisation that we do not properly measure, and that intervention needs to occur upstream to achieve health equity for Māori.

Figure 2 – Te Kupenga Hauora Māori modified model for explaining Indigenous/ethnic determinants of health



Source: Curtis, Jones et al. 2023

1.5. Scope for these profiles

These profiles are the first reports which specifically focus on data related to IMPBs. These profiles focus on key population demographic data, indicators reflecting key socio-economic determinants of wellbeing, health status and health services indicators. Not every health issue or determinant is included. These IMPB profiles are presented in two volumes:

- Volume One - contains key demographic data and projections, overall life expectancy and health outcomes measures, and indicators relating to whānau wellbeing and socio-economic and environmental determinants of wellbeing.
- Volume Two - contains health service utilisation and outcomes measures, with a focus on the four health priority areas identified in the 2022 Te Aka Whai Ora Māori Health Priorities Report (Curtis E, Loring B et al. 2022): the first 1000 days, cancer, long-term conditions, and mental health.

1.5.1. Why focus on these health areas?

The four health priorities identified by Te Aka Whai Ora relate to the largest causes of avoidable death and illness for Māori, and also represent the greatest potential for government policy and health system intervention. All of these health issues have been insufficiently addressed over the last decades, and while we have provided a list of health issues to focus on, how these issues are addressed is crucial to success. Above all, we must ensure that the process of change benefits and occurs in partnership with Māori whānau, hapū, iwi and communities.

Beyond these four priorities, we also acknowledge that there are other conditions, though not necessarily major contributors on an absolute scale, that are leading causes of relative inequity for Māori, including rheumatic heart disease, viral hepatitis, cardiomyopathy, hypertensive heart disease, bronchiectasis and drug use disorder (Ministry of Health 2013).

Importantly, improving Māori hauora and realising Māori rights requires a focus beyond individual health conditions. Many of the health challenges share common causes, common system failures and affect the same whānau. It is important to move beyond a narrow focus on specific conditions to the system enablers which also need to be changed. Addressing the four health priorities for Māori requires actions in a core set of synergistic domains:

1. Māori governance that is empowered to govern,
2. Implementation of evidence-based policies for prevention,
3. Integrated whānau-centred services at all levels of the system,
4. Primary care that works for Māori,
5. A culturally-safe workforce, including a strengthened Māori workforce, and
6. Universal responsibility of the whole health sector for monitoring performance by ethnicity and requirement to act upon results.

1.5.2. Where else can we find Māori health data?

These reports are by no means exhaustive, and IMPBs may wish to also refer to other sources of information available through respective government agencies for more in-depth data related to areas such as education, social development, environment, employment or housing. We are limited to currently available data, which may not reflect all indicators of importance to IMPBs, and not all data (for example, on uncommon health conditions) can be meaningfully disaggregated by ethnicity to the level of IMPBs. These IMPB profiles are intended to be used in conjunction with other sources of publicly available health system reporting by the Ministry of Health, Te Whatu Ora, the Health Quality and Safety Commission, Statistics New Zealand (StatsNZ) and other agencies.

There have also been a number of previous sources of reporting specifically on Māori health, which IMPBs may wish to refer to for additional information relevant to their area, including trends over time. Some of these key sources include:

Whakamaua Dashboard[2]

This online dashboard presents quantitative measures which assess system performance against the four objectives of Whakamaua: Māori Health Action Plan 2020-2025. From 2023, the Whakamaua dashboard contains some indicators disaggregated by IMPB. These data for IMPBs use the Health Service Utilisation population as the denominator, which differs slightly from the Census population denominator chosen in these IMPB profiles. The Whakamaua dashboard compares Māori data to non-Māori non-Pacific data.

WAI 2575 Māori Health Trends Report[3]

This report was compiled by the Ministry of Health in 2019, to inform the Wai 2575 Health Services and Outcomes Kaupapa Inquiry (Wai 2575). The report shows changes of Māori health over the years 1990-2015. Most data are presented at a national level, for Māori compared to non-Māori, and Māori compared to non-Māori non-Pacific, although some variables are available at a District Health Board (DHB) level.

A Window on the Quality of Aotearoa New Zealand's Health Care 2019 - a view on Māori health equity[4]

A Window on the Quality of Aotearoa New Zealand’s Health Care 2019 - a view on Māori health equity was compiled by the Health Quality & Safety Commission and highlights a number of areas where change is needed in the health system. The report is divided into three chapters. The first analyses inequity between how Māori and non-Māori access and receive health services, and the effects on equity of improvement activities in our system. The second chapter asks why these inequities exist, and the third chapter addresses opportunities for improvement.

2015 District Health Board Māori Health Profiles[5]

The 2015 District Health Board Māori Health Profiles were produced by Te Rōpū Rangahau Hauora a Eru Pōmare at the University of Otago in Wellington. The District Health Board Māori Health Profiles present a snapshot of Māori health compared with non-Māori across a range of health and disability-related indicators. They can create a picture of the health status of a DHB’s population at a given time and allow some comparison of trends over time. The profiles are available as word and pdf documents, and Excel tables containing data from the profiles together with national rates for most indicators.

Tatau Kahukura: Māori health statistics[6]

Statistical profiles on Māori health compiled by the Ministry of Health, most recently completed in 2015. Presents Māori compared to non-Māori national level data for a range of health indicators (socio-economic determinants, risk factors, health services and health outcomes), and data are age-standardised to the 2001 Māori population.

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[2] https://minhealthnz.shinyapps.io/WhakamauaDashboard/

[3] https://www.health.govt.nz/publication/wai-2575-maori-health-trends-report

[4] https://www.hqsc.govt.nz/resources/resource-library/a-window-on-the-quality-of-aotearoa-new-zealands-health-care-2019-a-view-on-maori-health-equity-2/

[5] https://www.health.govt.nz/publication/dhb-maori-health-profiles

[6] https://www.health.govt.nz/our-work/populations/maori-health/tatau-kahukura-maori-health-statistics

Hauora: Māori Standards of Health IV: A study of the years 2000-2005[7]

Hauora: Māori Standards of Health IV, published in 2007, is the most recent edition in the Hauora series, produced by Te Rōpū Rangahau Hauora a Eru Pōmare, and covers the period 2000 to 2005. Careful consideration has been given to the manner in which evidence has been presented and the commentaries are rightly written from Māori perspectives. The first three chapters situate health statistics within the broader context, including the theoretical, demographic and socio-economic contexts. This is followed by chapters on mortality, public hospitalisations, cancer and mental health. This volume of Hauora also includes a number of topic-based chapters from invited authors, including chapters on cardiovascular disease; diabetes; respiratory disease; oral health; disability; sleep problems; occupational safety and health; health in prisons; and the National Primary Medical Care Survey.

To maximise consistency and make it easier for IMPBs to assess how various indicators in their rohe are tracking over time, we have endeavoured to replicate the scope and approach taken in the 2015 District Health Board Māori Health Profiles as closely as possible. There are some minor variations in statistical methods, definitions and geographical boundaries for some indicators, which mean that exact comparison with these earlier profiles is not always possible.

1.6. Data sources

The data presented in this report come from routinely collected national government health datasets and routine national surveys. The main data sources for this report are:

- National Maternity Collection
- National Immunisation Register
- Community Oral Health Service data
- National Minimum Dataset
- Mortality Collection
- 2018 Census of Population and Dwellings
- New Zealand Health Survey
- Virtual Diabetes Register
- New Zealand Cancer Registry
- Cancer screening programme data from the National Screening Unit
- National Non-Admitted Patient Collection
- Programme for the Integration of Mental Health Data

Data are presented for Māori and non-Māori residents, using the geographical boundaries in each dataset which most closely correspond to the boundaries of the IMPB. For some measures, the closest available match at this time has been the boundaries of the former DHBs covering the IMPB rohe. Where an IMPB area encompasses more than one former DHB, data are presented separately for each DHB area, to provide a sense of variation for Māori within the IMPB.

When selecting which years of data to present, the most recent year range with complete, verified data has been chosen. Different data sources go through different processes of verification and for some data (e.g. deaths) there is a longer delay to make sure that all deaths have been accurately recorded with the correct cause.

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[7] https://www.otago.ac.nz/wellington/departments/publichealth/research-groups-in-the-department-of-public-health/erupomare/research/hauora-maori-standards-of-health-iv-a-study-of-the-years-2000-2005

1.7. How to understand this report

The technical appendix at the end of this report contains further information to help users interpret the data presented. This includes a basic explanation of how to interpret the tables provided. There is also a description of key methods, including age-standardisation, comparator groups and statistical calculations. The appendix also contains a description of the quality of ethnicity data in each data source used in this profile, and how this may affect the accuracy of information for Māori. Further technical details are provided about the methods and data sources used to compile these reports, so that the methods can be replicated by others.

1.8. About Te Tiratū

Te Tiratū IMPB was home to an estimate of 113,641 Māori in 2023[8] and consists of the geographic area of the former Waikato DHB. While there may be some minor differences (see technical appendix for more details on how IMPB areas were calculated in this report), Figure 3 shows that the health planning area of Te Tiratū aligns very closely with the boundary of the former Waikato DHB. In this report, where data is presented for the IMPB, it has been mapped to SA2 geographic areas, and where data has been presented for the DHB, it is mapped to DHB boundaries.

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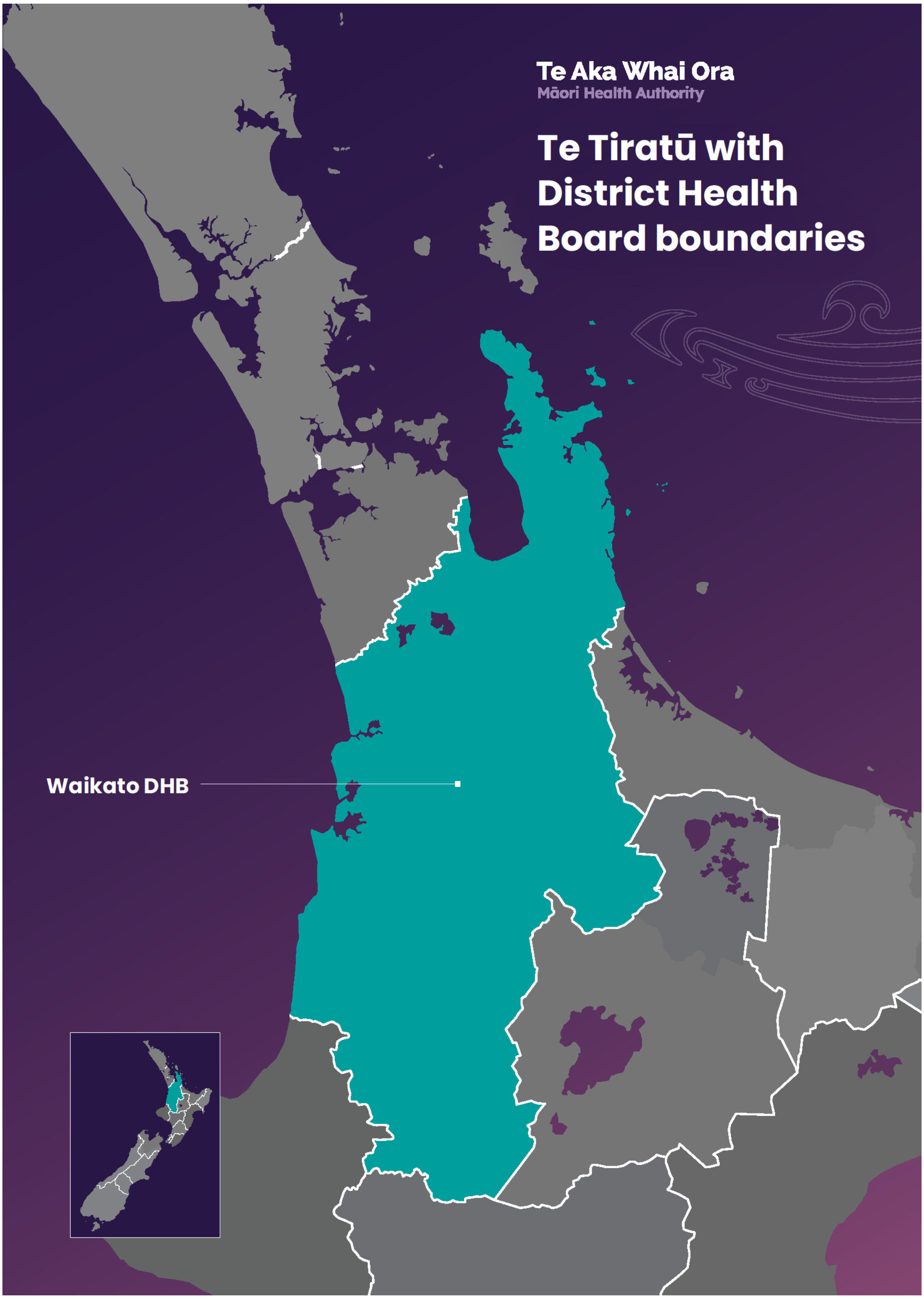
[8] Volume Two of the IMPB profiles uses an updated methodology for calculating IMPB health planning areas, so this population estimate may differ from the estimate provided in 2023 in Volume One. Please see the technical appendix for more details about the refinements to the approach.

Figure 3 – Map of Te Tiratū with DHB boundaries, 2023



Kahu taurima

Early years

2. Kahu taurima – Early years

The 1,000 days between pregnancy and a child's second birthday offer a unique window of opportunity to shape healthier and more prosperous futures. There is increasing evidence that factors during this 1,000-day window, including nutrition, stress, health, and relationships can have a profound impact on a child's ability to grow and learn. Many of the key causes of Māori illness and death such as obesity, heart disease, and mental health problems have their origins in early life (Moore 2017).

There are missed opportunities to deliver appropriate care and support for Māori women and children during this critical 1,000-day window. This includes actions to improve access to the positive determinants of health, and reduce exposure to the harmful determinants of health, including poverty, poor housing, unsafe environments, harmful foods and beverages, and substances such as tobacco. Nationally, three[9] of the nine measures of child poverty increased for the year ending June 2023, compared to 2022, and 21.5% of tamariki Māori lived in households experiencing material hardship (Statistics New Zealand 2024).

Volume One of this IMPB profile highlighted data on some of these key determinants of social, economic, and cultural wellbeing. This chapter will delve further into some of the key health system data relating to performance for Māori in these critical early years.

2.1. Maternal and infant mortality

Nationally, maternal and infant mortality are higher for Māori than non-Māori (Dawson, Jaye et al. 2019, Ministry of Health 2019). The numbers of these devastating deaths each year are too small to present for individual IMPBs, but national data highlights the importance of this issue for Māori. In their 2022 report, the government's Perinatal and Maternal Mortality Review Committee (PMMRC) noted that death rates and disparities have not decreased since reports began in 2007, and NZ continues to tolerate a system which fails Māori women and babies (Perinatal and Maternal Mortality Review Committee 2022).

Suicide is the leading cause of maternal mortality in NZ. Wāhine Māori were 2.9 times more likely to die by suicide as a direct result of maternal mortality than women of NZ European ethnicity in the 2006–2020 period (Perinatal and Maternal Mortality Review Committee 2022). Premature birth is the second leading cause of perinatal mortality after congenital abnormalities (Perinatal and Maternal Mortality Review Committee 2022). The leading causes of avoidable deaths in Māori children are all amenable to prevention including prematurity, sudden unexpected death in infancy (SUDI), respiratory disease and "external causes" (accident, injury and assault) (Mills, Reid et al. 2012).

The PMMRC makes a comprehensive set of recommendations (Perinatal and Maternal Mortality Review Committee 2022), including for government agencies, Te Whatu Ora districts, and health professionals/regulatory bodies, and these provide a very relevant guide for action at IMPB level. Priority recommendations include mandatory cultural safety training for all people working in antenatal and infant care, improving antenatal care/screening, communication/coordination, maternal mental health, SUDI prevention, and ethnicity data collection and analysis. They call for a particular focus on improving services for young mothers, recognising socioeconomic deprivation as a key independent risk factor for premature birth, and better identifying and addressing modifiable risk factors during pregnancy. Many of the most urgent recommendations from the 2022 PMMRC report are the same recommendations the committee has made in previous reports, indicating that action has not yet been taken.

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[9] There were increases in the percentages of children living in material hardship, severe material hardship and in low-income households that had an after-housing-costs income that was less than 50 percent of the baseline year's median after-housing-costs equivalised disposable household income.

2.2. Births

In 2022, there were 2,036 Māori babies born in Waikato DHB, making up 37.3% of all babies born in the DHB (Table 1).

Table 1 – Births, Waikato DHB, 2022

Indicator	Māori		non-Māori
	Number	% of all live births	Number
Births	2,036	37.3	3,429

Source: National Maternity Collection, Ministry of Health: Maternity Qlik.

Being born with either an abnormally low or high birthweight is associated with a higher risk of a range of health outcomes (Hassan, Jahanfar et al. 2021, Magnusson, Laivuori et al. 2021). Between 2018 and 2022, 7.6% of Māori babies in Waikato DHB had low birthweight (<2,500g) and 2.6% had high birthweight (>4,500g). Māori babies were 1.2 times more likely than non-Māori to be born prematurely (Table 2).

Table 2 – Birthweight and gestation, Waikato DHB, 2018 to 2022

Indicator	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	% of live births (95% CI)		Av. no. per year	% of live births (95% CI)			
Low birthweight	163	7.6	(6.5, 8.8)	264	7.7	(6.7, 8.6)	1.00	(0.98, 1.01)
High birthweight	55	2.6	(1.9, 3.2)	91	2.6	(2.1, 3.2)	**0.97**	**(0.96, 0.98)**
Preterm	182	8.5	(7.3, 9.7)	241	7.0	(6.1, 7.9)	**1.22**	**(1.20, 1.23)**

Source: National Maternity Collection, Ministry of Health: Maternity Qlik.
Notes: Low birthweight is less than 2,500g. High birthweight is greater than or equal to 4,500g. Preterm is less than 37 weeks gestation. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

2.3. Antenatal and well child services

Early access to high quality antenatal care is important to ensure the optimum wellbeing of mothers and babies. Between 2018 and 2022 in Waikato DHB, 61.2% of Māori women were enrolled with a Lead Maternity Carer in their first trimester (before 14 weeks of pregnancy), meaning four in 10 pregnant Māori women missed out on this fundamental intervention (Table 3). Māori were 0.7 times as likely than non-Māori in Waikato DHB to receive antenatal care in the first trimester of pregnancy.

Table 3 – Enrolment with Lead Maternity Carer in first trimester of pregnancy, Waikato DHB, 2018 to 2022

Indicator	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	% of live births (95% CI)		Av. no. per year	% of live births (95% CI)			
First trimester registration	1,310	61.2	(57.8, 64.5)	2,865	83.1	(80.1, 86.2)	**0.74**	**(0.72, 0.75)**

Source: National Maternity Collection, Ministry of Health: Maternity Qlik.
Note: First trimester is defined as conception up until 14 weeks of pregnancy. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

In 2022, only 60.2% of Māori babies in Waikato DHB were enrolled with a primary care provider by the time they were three months old, compared to 91.6% of non-Māori babies (Table 4).

Table 4 – Newborn enrolment with primary health care, Waikato DHB, 2022

Indicator	Period	Māori		non-Māori	
		Number	%	Number	%
Newborns enrolled with a Primary Health Organisation (PHO) by three months old	Sep to Dec 2022	240	60.2	1,479	91.6

Source: Well Child/Tamariki Ora Indicators, Ministry of Health, March 2023.
Notes: Numerator source: PHO Enrolments. Denominator source: National Immunisation Register.

Breastfeeding is associated with many short- and long-term health benefits (Binns, Lee et al. 2016). Of those babies who were reviewed by their Lead Maternity Carer at two weeks of age, 63.0% of Māori babies in Waikato DHB were exclusively or fully breastfed at two weeks old compared to 69.0% of non-Māori babies (Table 5).

Table 5 – Breastfeeding at two weeks of age, Waikato DHB, 2022

Indicator	Period	Māori		non-Māori	
		Number	%	Number	%
Infants are exclusively or fully breastfed at two weeks old	Jan to Dec 2022	1,289	63.0	2,359	69.0

Source: Well Child/Tamariki Ora Indicators, Ministry of Health, March 2023. National Maternity Collection, Ministry of Health: Maternity Qlik.

Table 6 shows the numbers and percentages of tamariki Māori fully immunised with the core publicly funded immunisations, in Waikato DHB in 2022, according to each key milestone in the National Immunisation Schedule. Māori immunisation rates are lower than non-Māori at every milestone age. At 18 months of age, less than half of Māori (40.6%) were fully vaccinated (compared to 68.8% of non-Māori), which is especially concerning for diseases such as measles for which both vaccine doses are due before 18 months. By five years of age (a full year after the last vaccination on the young child immunisation schedule), only 61.4% of Māori in Waikato DHB were fully immunised compared to 77.4% for non-Māori.

Table 6 – Children fully immunised by each milestone age, Waikato DHB, January to December 2022

Milestone age	**Māori**		**non-Māori**		**Māori/non-Māori rate ratio (95% CI)**	
	No. immunised	% immunised	No. immunised	% immunised		
6 months	741	37.4	2,769	69.2	**0.54**	**(0.51, 0.57)**
8 months	1,276	62.2	3,487	86.1	**0.72**	**(0.70, 0.75)**
12 months	1,565	75.3	3,762	90.5	**0.83**	**(0.81, 0.85)**
18 months	799	40.6	2,778	68.8	**0.59**	**(0.56, 0.63)**
2 years	1,187	61.2	3,264	83.3	**0.73**	**(0.71, 0.76)**
5 years	1,368	61.4	2,988	77.4	**0.79**	**(0.76, 0.82)**

Source: National Immunisation Register, Te Whatu Ora.
Notes: Fully immunised is defined as children who had completed all their age-appropriate immunisations by the time they turned the milestone age. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

2.4. Oral health

Oral health care for children is free in NZ, and all children should be enrolled with their local community oral health service as soon as possible after birth. Usually, midwives and child health nurses support the enrolment of all children with their local oral health service. In 2021 in Waikato DHB, 57.4% of Māori children aged 0-4 years were enrolled with community oral health services, compared to 68.8% of non-Māori children (Table 7).

Table 7 – Enrolment with community oral health services for children aged 0 to 4 years of age, Waikato DHB, January to December 2021

Indicator	**Māori**		**non-Māori**	
	Number	%	Number	%
Children aged 0-4 years enrolled with the community oral health service	6,394	57.4	12,431	68.8

Source: Well Child/Tamariki Ora Indicators, Ministry of Health, March 2023.
Notes: Numerator source: DHB reporting. Denominator source: StatsNZ population projections.

However, being enrolled with a community oral health service does not mean care is received. In 2022 in Waikato DHB, only 48.9% of eligible Māori five-year-olds, and 54.0% of Māori Year 8 students, were examined by the community oral health service (Table 8). This compares to 52.9% of eligible non-Māori five-year-olds, and 83.7% of non-Māori Year 8 students.

Table 8 – Children attending community oral health services at age 5 or in Year 8, Waikato DHB, 2022

Age group	**Māori**			**non-Māori**		
	No. eligible	No. examined	% examined	No. eligible	No. examined	% examined
Age 5	2,270	1,109	48.9	3,640	1,925	52.9
Year 8	2,400	1,296	54.0	3,960	3,314	83.7

Source: For number eligible: StatsNZ population projection for 2022. For number examined: Community Oral Health Service, Ministry of Health.

Of those children who were examined, 62.7% of Māori 5-year-olds had decayed teeth (1.8 times the rate for non-Māori 5-year-olds). Of the portion of eligible Year 8 students who were seen by the community oral health service, 23.1% had decayed teeth (Table 9). However, caution is needed when applying these rates to all Māori children, as a large percentage of tamariki Māori in Waikato DHB did not receive community oral health services and are therefore not included in these data.

Table 9 – Oral health status of children attending community oral health services at age 5 or in Year 8, Waikato DHB, 2022

Age group	**Māori**				**non-Māori**				**Māori/non-Māori rate ratio for having caries (95% CI)**	
	No. with caries	% with caries (95% CI)		mean no. of DMFT	No. with caries	% with caries (95% CI)		mean no. of DMFT		
Age 5	695	62.7	(58.0, 67.3)	3.03	681	35.4	(32.7, 38.0)	1.42	**1.77**	**(1.71, 1.84)**
Year 8	299	23.1	(20.5, 25.7)	1.01	755	22.8	(21.2, 24.4)	0.53	1.01	(0.99, 1.04)

Source: Community Oral Health Service, Ministry of Health.
Notes: Dental caries are tooth decay. DMFT is decayed, missing, or filled teeth. Fluoridated and non-fluoridated water is combined. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

2.5. Avoidable hospitalisations

Potentially avoidable hospitalisations are those admissions which could have been prevented by primary care, public health, or social policy interventions. Between July 2022 to June 2023 in Waikato DHB, there were 2,340 potentially avoidable hospitalisations in Māori children aged one month to 14 years (Table 10). The rate of potentially avoidable hospitalisations was 1.1 times higher for Māori children than non-Māori children.

Table 10 – Potentially avoidable hospitalisations for children aged 1 month to 14 years, Waikato DHB, July 2022 to June 2023

	Māori			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Number	Age-standardised rate per 100,000 (95% CI)		Number	Age-standardised rate per 100,000 (95% CI)			
Total	2,340	6,959	(6,677, 7,241)	3,364	6,128	(5,921, 6,336)	**1.14**	**(1.08, 1.19)**

Source: NMDS, Ministry of Health.
Note: Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māuiuitanga taumaha
Long-term conditions

3. Māuiuitanga taumaha – Long-term conditions

A small group of long-term noncommunicable conditions: diabetes, cardiovascular disease, chronic respiratory disease, and stroke, not only form the leading causes of death and disability for Māori, but often coexist in the same people, and share common modifiable risk factors. These long-term conditions are highly preventable, and Māori experience higher rates of exposure to the leading causes of these conditions, namely tobacco, obesogenic environments, unhealthy diets, and alcohol. These risk factors are strongly patterned by social, commercial, and environmental determinants such as poverty, food availability and marketing, social exclusion, and racism.

Tobacco alone causes 22.6% of Māori deaths (Walsh and Wright 2020). Compared to non-Māori non-Pacific, 28.4% of the gap in life expectancy for Māori men and 32.9% of gap in life expectancy for Māori women is due to smoking attributable deaths (Walsh and Wright 2020). There is great potential in NZ to implement internationally recommended evidence-based interventions (World Health Organization 2023) on shared risk factors, especially tobacco, alcohol and unhealthy diet (including addressing the commercial determinants of obesogenic environments).

Nationally, coronary disease is the leading contributor to the life expectancy gap between Māori and non-Māori non-Pacific people (Walsh 2023). Diabetes is the third leading contributor to the Māori life expectancy gap and chronic obstructive pulmonary disease (COPD) is the fourth. Ischaemic heart disease, COPD, diabetes, and cerebrovascular disease (stroke) are four of the five leading causes of death for Māori nationally, as well as leading causes of potentially avoidable deaths (those deaths considered amenable to high-quality healthcare, preventable through public health interventions, or both) and Māori die at much higher rates from all of these conditions than non-Māori. See Volume One of this IMPB profile for more information about the leading causes for specific geographic regions.

Not only do Māori experience higher rates of morbidity and mortality from these long-term conditions, but Māori suffer earlier onset of illness and disability. For example, nationally Māori develop diabetes up to 10 years younger and progress earlier to more serious disease, yet are less likely to receive appropriate HbA1c monitoring and appropriate diabetes-related renal-screening tests than non-Māori (Health Quality and Safety Commission 2019).

3.1. Tobacco

According to the NZ Census 2018, 30.5% of Māori aged 15 years and over (31.4% of Māori women and 29.6% of Māori men) in Waikato DHB were regular (daily) smokers (Table 11). Compared to non-Māori in Waikato DHB, Māori were 2.5 times as likely to be regular smokers. Māori women were 3.1 times more likely than non-Māori women to smoke regularly, and Māori men were 2.1 times more likely than non-Māori men.

Table 11 – Cigarette smoking status, aged 15 years and over, Waikato DHB, 2018

Smoking status	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Number	%	(95% CI)	Number	%	(95% CI)		
Female								
Regular smoker	10,344	31.4	(30.7, 32.0)	12,723	10.1	(9.9, 10.3)	**3.09**	**(3.02, 3.17)**
Ex-smoker	8,001	22.0	(21.5, 22.5)	27,612	16.5	(16.3, 16.8)	**1.33**	**(1.30, 1.36)**
Never smoked	15,342	46.6	(45.9, 47.4)	89,838	73.3	(72.7, 73.9)	**0.64**	**(0.63, 0.64)**
Male								
Regular smoker	8,991	29.6	(28.9, 30.2)	15,870	13.9	(13.7, 14.2)	**2.12**	**(2.08, 2.17)**
Ex-smoker	6,654	19.8	(19.3, 20.3)	31,446	18.4	(18.1, 18.6)	**1.08**	**(1.05, 1.10)**
Never smoked	15,774	50.7	(49.9, 51.5)	77,469	67.7	(67.1, 68.2)	**0.75**	**(0.74, 0.76)**
Total								
Regular smoker	19,338	30.5	(30.1, 30.9)	28,590	12.0	(11.9, 12.2)	**2.53**	**(2.49, 2.57)**
Ex-smoker	14,661	20.9	(20.6, 21.3)	59,052	17.4	(17.3, 17.6)	**1.20**	**(1.18, 1.22)**
Never smoked	31,116	48.6	(48.0, 49.2)	167,304	70.5	(70.1, 70.9)	**0.69**	**(0.68, 0.70)**

Source: 2018 Census, StatsNZ.
Notes: Regular smokers smoke one or more cigarettes per day. Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

For rangatahi aged 15 to 19 years, 14.2 % of Māori (13.5% of Māori females and 14.8% of Māori males) in Waikato DHB were regular smokers (Table 12). These rates were 3.0 times higher than for non-Māori females and 2.4 times higher than for non-Māori males, respectively.

Table 12 – Cigarette smoking status, aged 15 to 19 years old, Waikato DHB, 2018

Smoking status	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Number	%	(95% CI)	Number	%	(95% CI)		
Female								
Regular smoker	591	13.5	(12.4, 14.5)	390	4.5	(4.1, 5.0)	**2.98**	**(2.63, 3.37)**
Ex-smoker	159	3.6	(3.1, 4.2)	159	1.8	(1.6, 2.1)	**1.96**	**(1.58, 2.44)**
Never smoked	3,642	82.9	(80.2, 85.6)	8,079	93.6	(91.6, 95.7)	**0.89**	**(0.87, 0.90)**
Male								
Regular smoker	684	14.8	(13.7, 15.9)	546	6.1	(5.6, 6.6)	**2.42**	**(2.17, 2.69)**
Ex-smoker	135	2.9	(2.4, 3.4)	189	2.1	(1.8, 2.4)	**1.38**	**(1.11, 1.71)**
Never smoked	3,792	82.2	(79.6, 84.8)	8,175	91.8	(89.8, 93.8)	**0.90**	**(0.88, 0.91)**
Total								
Regular smoker	1,275	14.2	(13.4, 14.9)	933	5.3	(5.0, 5.7)	**2.66**	**(2.46, 2.88)**
Ex-smoker	294	3.3	(2.9, 3.6)	348	2.0	(1.8, 2.2)	**1.65**	**(1.41, 1.92)**
Never smoked	7,434	82.6	(80.7, 84.4)	16,251	92.7	(91.3, 94.1)	**0.89**	**(0.88, 0.90)**

Source: 2018 Census, StatsNZ.

Notes: Regular smokers smoke one or more cigarettes per day. Percentages are not age-standardised. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Vapes or e-cigarettes heat a liquid, turning it into a vapour that the user breathes in. They may or may not contain nicotine and may be flavoured. Evidence shows that vaping poses only a small fraction of the risks of smoking and switching from smoking to vaping conveys substantial health benefits (McNeill, Brose et al. 2018). However, vaping is not risk-free, and should not be encouraged in non-smokers (particularly young people who are non-smokers). Vaping has been associated with various physical and behavioural health risks, and its full health effects, including on learning and brain development in young people, are not known (Becker and Rice 2022).

Based on data from the New Zealand Health Survey (NZHS), in Waikato DHB between 2017 and 2022, 7.7% of Māori aged 15 years and over were vaping on a daily basis, a rate 1.7 times higher than non-Māori (Table 13). DHB-level data is not available on vaping among young people (separately to adult-level data). However, national survey data of Year 10 students in 2022 showed that while youth vaping and smoking were both declining for young people in NZ overall, vaping was increasing for Māori young people (Action for Smokefree 2025 (ASH) 2022). Compared to 2021, daily vaping increased a statistically significant amount for Māori participants (19.1% in 2021 to 21.7% in 2022), especially for Māori girls (21.3% to 25.2%).

Table 13 – Prevalence of daily vaping/e-cigarettes use, aged 15 years and over, Waikato DHB, 2017 to 2022

Sex	**Māori**		**non-Māori**		**Māori/non-Māori rate ratio (95% CI)**	
	%	(95% CI)	%	(95% CI)		
Female	8.0	(4.8, 12.5)	4.2	(2.8, 6.1)	**1.92**	**(1.15, 3.22)**
Male	6.9	(4.5, 10.1)	4.8	(2.6, 8.0)	1.45*	(0.76, 2.76)
Total	7.7	(5.8, 9.9)	4.5	(3.3, 6.1)	**1.68**	**(1.11, 2.53)**

Source: New Zealand Health Survey, Ministry of Health.
Notes: Daily electronic cigarette users (aged 15+ years) use electronic cigarettes or a vaping device at least once a day.
An asterisk (*) shows a relative standard error between 30% to 100%. Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

3.2. Overweight and obesity

A healthy body size is recognised as important for good health and wellbeing. Evidence shows that obese children and adults are at greater risk of short- and long-term health consequences (Ministry of Health 2023). Body mass index (BMI) provides a useful population-level indicator of excess body weight, and is used internationally to classify underweight, overweight and obesity. It should be noted that BMI does not distinguish between weight associated with muscle and weight associated with fat. However, it is considered to be a good estimate of increased risk of health conditions associated with obesity (World Health Organization 2006).

Based on findings from the NZHS, between 2017 and 2021, 77.6% of Māori (aged ≥15 years) in Waikato DHB were overweight or obese (Table 14), and 47.8% were obese (51.5% for Māori women and 44.5% for Māori men) (Table 15). Māori women were 1.6 times more likely to be obese than non-Māori women, and Māori men were 1.5 times more likely to be obese than non-Māori men.

Table 14 – Prevalence of overweight or obese, aged 15 years and over, Waikato DHB, 2017 to 2021

Sex	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	%	(95% CI)	%	(95% CI)		
Female	77.3	(70.3, 83.4)	60.9	(56.4, 65.2)	**1.24**	**(1.14, 1.35)**
Male	78.2	(72.8, 82.9)	65.3	(61.9, 68.6)	**1.16**	**(1.07, 1.25)**
Total	77.6	(73.4, 81.5)	62.7	(60.1, 65.2)	**1.20**	**(1.14, 1.26)**

Source: New Zealand Health Survey, Ministry of Health.
Notes: BMI greater than 25.0 (or equivalent for <18 years). Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Table 15 – Prevalence of overweight (but not obese) and obese, aged 15 years and over, Waikato DHB, 2017 to 2021

Body Size	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	%	(95% CI)	%	(95% CI)		
Overweight (but not obese)						
Female	25.9	(19.7, 32.8)	28.0	(24.5, 31.6)	0.91	(0.72, 1.13)
Male	33.7	(26.4, 41.6)	35.4	(31.5, 39.5)	0.90	(0.73, 1.12)
Total	29.8	(24.8, 35.1)	31.4	(28.9, 33.9)	0.90	(0.78, 1.05)
Obese						
Female	51.5	(45.5, 57.4)	32.9	(28.3, 37.7)	**1.56**	**(1.33, 1.82)**
Male	44.5	(38.0, 51.1)	29.9	(25.6, 34.4)	**1.48**	**(1.26, 1.74)**
Total	47.8	(43.2, 52.4)	31.3	(28.4, 34.3)	**1.52**	**(1.38, 1.68)**

Source: New Zealand Health Survey, Ministry of Health.
Notes: Overweight (but not obese): BMI of 25.0-29.9 (or equivalent for <18 years); Obese: BMI greater than 25.0 (or equivalent for <18 years). Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

3.3. Cardiovascular disease

Between 2020 and 2023, Māori in Waikato DHB were 2.1 times more likely than non-Māori to be hospitalised for circulatory system diseases (Table 16). This includes hospitalisations from conditions such as rheumatic fever, high blood pressure, ischemic heart disease, strokes, and other forms of heart disease. An average of 3,907 Māori per year in Waikato DHB were hospitalised from circulatory diseases.

Table 16 – Hospitalisations for circulatory system disease, aged 25 years and over, Waikato DHB, July 2020 to June 2023

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	1,873	4,338	(4,141, 4,534)	6,655	2,034	(1,985, 2,083)	**2.13**	**(2.03, 2.24)**
Male	2,032	5,493	(5,254, 5,732)	8,227	2,687	(2,629, 2,746)	**2.04**	**(1.95, 2.14)**
Total	3,907	4,883	(4,730, 5,036)	14,882	2,346	(2,308, 2,384)	**2.08**	**(2.01, 2.15)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 codes: I00-I99. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Looking more specifically at ischemic heart disease, Māori in Waikato DHB were significantly more likely than non-Māori to be admitted for ischaemic heart disease (1.3 times), angiography (1.6 times) and acute coronary syndrome (1.3 times) (Table 17). However, these data show that Māori are not significantly more likely than non-Māori to get angioplasty or coronary artery bypass grafts (CABGs) (with the exception of Māori women, who are 1.7 times more likely to receive angioplasty than non-Māori women in Waikato DHB).

These data suggest that Māori may receive lower rates of intervention/treatment for their ischemic heart disease, than non-Māori. The data in this report do not tell us whether Māori are receiving appropriate levels of treatment. New Zealand-wide research has found that Māori do receive lower rates of angioplasty or CABGs than would be expected taking into account the number of heart attacks (Sandiford, Bramley et al. 2015). This lower intervention rate, together with the higher Māori death rate from cardiovascular disease, has raised questions about health care access barriers and ethnic biases in clinical decision making (Curtis, Harwood et al. 2010). An Auckland review of intervention rates in people with a heart attack who received angiography, suggests most of the ethnic difference in angioplasty and CABGs may be explained by differences in disease type and comorbidities (Sandiford, El-Jack et al. 2015) - Māori patients present with a pattern of ischaemic heart disease that is less amenable to angioplasty, and higher comorbidities make CABGs less suitable. However, it is not clear whether this pattern is true for Māori in the rest of the country, and it is important to continue to investigate whether Māori with ischemic heart disease are receiving the interventions they need.

Table 17 – Hospitalisations for ischaemic heart disease indicators, aged 25 years and over, Waikato DHB, July 2020 to June 2023

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Ischaemic heart disease [1]								
Female	116	254.3	(208.0, 300.6)	525	138.6	(126.8, 150.4)	**1.84**	**(1.50, 2.24)**
Male	166	442.4	(375.1, 509.7)	1,067	379.5	(356.7, 402.3)	1.17	(0.99, 1.37)
Total	282	342.9	(302.9, 382.9)	1,592	255.8	(243.2, 268.4)	**1.34**	**(1.18, 1.52)**
Angiography procedures [2]								
Female	131	302.9	(251.1, 354.7)	467	146.4	(133.1, 159.7)	**2.07**	**(1.71, 2.51)**
Male	185	515.7	(441.4, 590.0)	911	350.6	(327.8, 373.4)	**1.47**	**(1.26, 1.72)**
Total	317	403.7	(359.2, 448.2)	1,378	246.0	(233.0, 259.0)	**1.64**	**(1.45, 1.85)**
Angioplasty procedures [3]								
Female	31	75.7	(49.2, 102.2)	166	44.3	(37.6, 51.0)	**1.71**	**(1.17, 2.50)**
Male	61	165.7	(124.0, 207.4)	435	166.4	(150.8, 182.0)	1.00	(0.76, 1.30)
Total	92	117.9	(93.8, 142.0)	601	103.8	(95.5, 112.1)	1.14	(0.91, 1.41)
Coronary Artery Bypass Grafts [4]								
Female	13	27.0	(12.3, 41.7)	50	17.4	(12.6, 22.2)	1.55	(0.84, 2.85)
Male	41	112.0	(77.7, 146.3)	220	85.5	(74.2, 96.8)	1.31	(0.94, 1.83)
Total	54	67.3	(49.4, 85.2)	270	50.5	(44.5, 56.5)	1.33	(0.99, 1.78)
Acute coronary syndrome [5]								
Female	84	184.9	(145.4, 224.4)	370	93.5	(84.0, 103.0)	**1.98**	**(1.56, 2.50)**
Male	112	299.2	(243.7, 354.7)	757	271.0	(251.7, 290.3)	1.10	(0.91, 1.35)
Total	196	238.6	(205.2, 272.0)	1,128	179.9	(169.4, 190.4)	**1.33**	**(1.14, 1.54)**

Source: NMDS, Te Whatu Ora.

Notes: ICD-10 codes: [1] I20 – I25; [2] 38215-00, 38218-00, 38218-01, 38218-02, 59900-00, 59900-01, 59900-02, 38200-00, 38203-00, 38206-00; [3] 35304-00, 35305-00, 35310-00, 35310-01, 35310-02, 38300-00, 38303-00, 38306-00, 38306-01, 38306-02, 38309-00, 38312-00, 38312-01, 38315-00, 38318-00, 38318-01, 90218-00, 90218-01, 90218-02, 90218-03; [4] 38497-00 – 38497-07, 38500-00 – 38500-04, 38503-00 – 38503-04, 90201-00 – 90201-03; [5] I20.0, I21 – I24. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori in Waikato DHB were 5.3 times more likely than non-Māori to be hospitalised for heart failure (4.9 times higher for Māori women and 5.6 times higher for Māori men) (Table 18).

Table 18 – Hospitalisations for heart failure, aged 25 years and over, Waikato DHB, July 2020 to June 2023

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	137	279.5	(232.6, 326.4)	342	56.9	(50.9, 62.9)	**4.91**	**(4.03, 5.99)**
Male	235	626.3	(546.2, 706.4)	453	112.6	(102.2, 123.0)	**5.56**	**(4.75, 6.51)**
Total	371	444.5	(399.3, 489.7)	795	83.8	(78.0, 89.6)	**5.31**	**(4.69, 6.00)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 code: I50. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori in Waikato DHB were 2.0 times more likely than non-Māori to be hospitalised for stroke (2.5 times higher for Māori women and 1.6 times higher for Māori men) (Table 19).

Table 19 – Hospitalisations for stroke, aged 25 years and over, Waikato DHB, July 2020 to June 2023

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	163	367.0	(310.6, 423.4)	558	147.7	(135.4, 160.0)	**2.48**	**(2.09, 2.96)**
Male	103	272.9	(220.3, 325.5)	580	173.7	(159.6, 187.8)	**1.57**	**(1.27, 1.94)**
Total	267	324.3	(285.4, 363.2)	1,139	160.1	(150.8, 169.4)	**2.03**	**(1.77, 2.31)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 codes: I60 – I69. These data in ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori in Waikato DHB were 2.6 times more likely than non-Māori to be hospitalised for hypertensive disease (disease related to high blood pressure) (Table 20). The rate for Māori women was 2.4 times and Māori men was 2.8 times that of non-Māori women and men respectively.

Table 20 – Hospitalisations for hypertensive disease, aged 25 years and over, Waikato DHB, July 2020 to June 2023

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	29	78.8	(50.3, 107.3)	95	32.7	(26.1, 39.3)	**2.41**	**(1.59, 3.64)**
Male	26	75.5	(46.7, 104.3)	68	27.0	(20.6, 33.4)	**2.80**	**(1.78, 4.39)**
Total	56	76.9	(56.7, 97.1)	163	29.9	(25.3, 34.5)	**2.57**	**(1.89, 3.48)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 codes: I10 – I15. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori in Waikato DHB were also 3.1 times more likely (3.7 times for Māori women and 2.9 times for Māori men), than non-Māori to die from circulatory disease before the age of 75 years (Table 21). On average, there were 84 premature Māori deaths each year from circulatory disease in Waikato DHB, between 2014 to 2018.

Table 21 – Early death from circulatory system disease, Waikato DHB, 2014 to 2018

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	31	40.1	(26.0, 54.2)	53	10.9	(8.0, 13.8)	**3.69**	**(2.37, 5.74)**
Male	53	75.9	(55.4, 96.4)	119	26.0	(21.3, 30.7)	**2.91**	**(2.11, 4.03)**
Total	84	57.0	(44.8, 69.2)	172	18.3	(15.6, 21.0)	**3.12**	**(2.40, 4.05)**

Source: Mortality Collections, Te Whatu Ora.
Notes: “Early deaths” are defined as those occurring under 75 years of age. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

3.4. Diabetes

Based on data held in the Virtual Diabetes Register (VDR), roughly 6,970 Māori (3,574 women and 3,396 men) aged ≥25 years in Waikato DHB had diabetes in 2022 (Table 22). After adjusting for differences in the population age structures, Māori in Waikato DHB were 1.9 times more likely than non-Māori to have diabetes.

The VDR contains data about people suspected as having diabetes, identified through their use of diabetes related health services (including hospital admissions and outpatient appointments, laboratory tests, and pharmaceutical dispensing). Diabetes prevalence estimates are based on the number of people alive and enrolled in a PHO, at 31 December of the year in question. There are some limitations to the quality of the VDR data. For example, it will miss people with diabetes who have died during the year, or who are not known to health services.

Table 22 – Diabetes prevalence, aged 25 years and over, Waikato DHB, 2022

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Number	%	(95% CI)	Number	%	(95% CI)		
Female	3,574	9.6	(9.3, 10.0)	9,679	5.2	(5.1, 5.3)	**1.85**	**(1.77, 1.94)**
Male	3,396	10.1	(9.8, 10.5)	10,796	5.2	(5.1, 5.4)	**1.93**	**(1.85, 2.01)**
Total	6,970	9.8	(9.6, 10.1)	20,475	5.2	(5.1, 5.3)	**1.89**	**(1.83, 1.95)**

Source: Virtual Diabetes Register, Ministry of Health.
Notes: Count Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Table 23 shows how many people with diabetes are receiving medication, regular monitoring (HbA1c blood tests), and screening for diabetes complications. Ideally, all people with diabetes should be receiving regular monitoring (with appropriate adjustments to treatment), and screening for complications such as renal (kidney) damage. In 2022, only 80.0% of Māori with diabetes in Waikato DHB were receiving regular HbA1c monitoring, and 56.6% were receiving the necessary screening for renal disease.

Māori in Waikato DHB were also significantly less likely (0.9 times) than non-Māori with diabetes to be regularly receiving diabetes medicines (Table 23). While not all people with diabetes require medication, those that do should take it regularly for optimum diabetes control. The presence of ethnic differences in medication receipt raises questions about the quality of care and access to appropriate treatment for Māori, especially when Māori with diabetes in Waikato have higher rates of preventable diabetes complications.

Table 23 – Diabetes medication use, monitoring of blood glucose and screening for renal disease, aged 25 years and over, Waikato DHB, 2022

Indicator	**Māori**				**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Number	%	Age-standardised rate per 100,000 (95% CI)		Number	Age-standardised rate per 100,000 (95% CI)			
People with diabetes regularly receiving metformin or insulin [1]									
Total	3,035	43.5	35,321	(33,271, 37,428)	10,156	39,379	(37,746, 41,036)	**0.90**	**(0.83, 0.96)**
People with diabetes having regular HbA1c monitoring [2]									
Total	5,574	80.0	72,472	(69,416, 75,590)	17,433	75,525	(73,276, 77,799)	0.96	(0.91, 1.01)
People with diabetes having regular screening for renal disease [3]									
Total	3,948	56.6	47,019	(44,712, 49,382)	12,346	46,456	(44,822, 48,111)	1.01	(0.95, 1.08)

Source: [1] Pharmaceutical Collection, Ministry of Health. [2],[3] Laboratory Collection, Ministry of Health.
Notes: Percentages are crude. Rates are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori:non-Māori inequities in access to diabetes medication (where required) is particularly concerning given that on average, each year 32 Māori with diabetes in Te Tiratū had a lower limb amputated (Table 24) and 1,162 Māori were hospitalised for renal failure (Table 25). Māori were 2.8 times more likely than non-Māori with diabetes have a lower limb amputation, and 2.7 times more likely to be hospitalised for renal failure.

Table 24 – Hospitalisations for lower limb amputations with concurrent diabetes, aged 15 years and over, Te Tiratū, 2019 to 2021

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Male	23	490.6	(221.1, 998.4)	41	143.1	(80.1, 328.9)	**3.43**	**(1.49, 7.90)**
Total	32	364.9	(194.2, 626.9)	56	131.8	(73.3, 228.7)	**2.77**	**(1.31, 5.84)**

Source: NMDS, Te Whatu Ora. Whakamaua Dashboard.
Notes: Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Table 25 – Hospitalisations for renal failure with concurrent diabetes, aged 15 years and over, Te Tiratū, 2019 to 2021

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	508	9,164	(7,849, 10,623)	667	3,274	(2,702, 3,922)	**2.80**	**(2.21, 3.54)**
Male	655	11,953	(10,169, 13,951)	1,136	4,450	(3,616, 5,409)	**2.69**	**(2.09, 3.45)**
Total	1,162	10,278	(9,243, 11,393)	1,802	3,791	(3,322, 4,303)	**2.71**	**(2.30, 3.20)**

Source: NMDS, Te Whatu Ora. Whakamaua Dashboard.
Notes: Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

3.5. Respiratory disease

Between 2020-2023, the highest hospitalisation rate for asthma in Waikato DHB was in Māori children. An average of 215 Māori children (≤14 years) per year in Waikato DHB were hospitalised for asthma – 1.9 times the rate of non-Māori children (Table 26). In each of the other age groups, asthma hospitalisations were also significantly higher for Māori compared to non-Māori.

Table 26 – Hospitalisations for asthma, all ages, Waikato DHB, July 2020 to June 2023

Sex and Age group	**Māori**			**Non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
0 to 14 years								
Female	83	514.7	(403.8, 625.6)	83	312.0	(244.7, 379.3)	**1.65**	**(1.22, 2.24)**
Male	132	772.9	(641.2, 904.6)	107	385.0	(311.9, 458.1)	**2.01**	**(1.56, 2.59)**
Total	215	648.2	(561.6, 734.8)	189	349.3	(299.5, 399.1)	**1.86**	**(1.53, 2.25)**
15 to 34 years								
Female	36	195.1	(131.4, 258.8)	35	84.3	(56.2, 112.4)	**2.31**	**(1.45, 3.69)**
Male	12	65.6	(29.0, 102.2)	13	32.5	(15.1, 49.9)	2.02	(0.93, 4.38)
Total	48	129.4	(92.9, 165.9)	48	58.0	(41.6, 74.4)	**2.23**	**(1.50, 3.32)**
35 to 64 years								
Female	44	254.0	(178.7, 329.3)	46	72.4	(51.6, 93.2)	**3.51**	**(2.32, 5.31)**
Male	21	128.0	(72.8, 183.2)	20	31.8	(18.0, 45.6)	**4.02**	**(2.18, 7.42)**
Total	64	193.8	(146.5, 241.1)	67	52.4	(39.8, 65.0)	**3.70**	**(2.63, 5.21)**
65 years and over								
Female	8	189.2	(58.1, 320.3)	31	78.2	(50.7, 105.7)	**2.42**	**(1.11, 5.26)**
Male	4	107.6	(0.0, 217.7)	15	39.2	(19.4, 59.0)	2.74	(0.88, 8.59)
Total	12	153.0	(65.2, 240.8)	46	59.4	(42.2, 76.6)	**2.58**	**(1.36, 4.90)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 codes: J45 – J46.These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori aged ≥45 years in Waikato DHB were 5.0 times more likely than non-Māori to be hospitalised for chronic obstructive pulmonary disease (COPD) (Table 27). COPD hospitalisations were 6.0 times higher for Māori women, and 3.8 times higher for Māori men, compared to non-Māori women and men in Waikato DHB. An average of 418 Māori aged ≥45 years were hospitalised for COPD in Waikato DHB each year between 2020-2023.

Table 27 – Hospitalisations for chronic obstructive pulmonary disease, aged 45 years and over, Waikato DHB, July 2020 to June 2023

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	267	1,502	(1,322, 1,682)	363	249.2	(223.6, 274.8)	**6.03**	**(5.15, 7.05)**
Male	151	979.4	(823.2, 1,136)	368	259.6	(233.1, 286.1)	**3.77**	**(3.13, 4.56)**
Total	418	1,257	(1,137, 1,378)	732	253.8	(235.4, 272.2)	**4.95**	**(4.40, 5.58)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 codes: J40 – J44.These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Hospitalisations for bronchiectasis were 4.5 times more common in Māori in Waikato DHB compared to non-Māori (Table 28). Bronchiectasis hospitalisations were 5.1 times higher for Māori women, and 3.9 times higher for Māori men, compared to non-Māori women and men in Waikato DHB.

Table 28 – Hospitalisations for bronchiectasis, all ages, Waikato DHB, July 2020 to June 2023

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	31	41.4	(26.9, 55.9)	45	8.1	(5.7, 10.5)	**5.09**	**(3.23, 8.03)**
Male	25	37.2	(22.5, 51.9)	49	9.5	(6.8, 12.2)	**3.91**	**(2.41, 6.34)**
Total	56	39.2	(28.9, 49.5)	95	8.8	(7.0, 10.6)	**4.46**	**(3.21, 6.21)**

Source: NMDS, Te Whatu Ora.
Notes: Excluding congenital bronchiectasis. ICD-10 code: J47. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

On average, there were 26 premature Māori deaths each year from respiratory disease in Waikato DHB, between 2014 to 2018 – a rate 3.2 times higher than non-Māori (Table 29). These do not include deaths from lung cancer, which will be covered separately in the following chapter.

Table 29 – Early death from respiratory disease, Waikato DHB, 2014 to 2018

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	15	18.5	(9.2, 27.8)	27	5.4	(3.3, 7.5)	**3.41**	**(1.81, 6.40)**
Male	11	14.8	(5.9, 23.7)	25	5.1	(3.1, 7.1)	**2.89**	**(1.41, 5.92)**
Total	26	16.8	(10.3, 23.3)	51	5.3	(3.9, 6.7)	**3.17**	**(1.98, 5.09)**

Source: Mortality Collections, Te Whatu Ora.
Notes: “Early deaths” are defined as those occurring under 75 years of age. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

3.6. Gout

Gout is the most common form of inflammatory arthritis, and is caused by an inflammatory response to monosodium urate crystals, which form in the presence of high urate in the blood (Jackson, Dalbeth et al. 2014). Patients typically experience recurrent flares of severe joint inflammation, which if not properly treated, over time can lead to tophi, chronic arthritis, and joint damage.

In 2022, 6,217 Māori (≥20 years) in Waikato DHB were identified as having gout, which affected more Māori men (n=4,593) than women (n=1,624) (Table 30). Māori in Waikato DHB were 2.4 times more likely than non-Māori to suffer from gout.

These data are based on people who have either been hospitalised with gout or prescribed a gout medication, who are enrolled with a Primary Health Organisation (PHO). These data will therefore not capture all people with gout – previous analysis has found that these data miss approximately 20% of people with gout (Jackson, Wright et al. 2012).

Table 30 – Gout prevalence, aged 20 years and over, Waikato DHB, 2022

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Number	%	(95% CI)	Number	%	(95% CI)		
Female	1,624	3.3	(3.1, 3.5)	3,640	1.1	(1.1, 1.2)	**2.89**	**(2.69, 3.10)**
Male	4,593	12.4	(12.0, 12.8)	12,154	5.3	(5.2, 5.5)	**2.32**	**(2.24, 2.41)**
Total	6,217	7.6	(7.4, 7.8)	15,794	3.2	(3.1, 3.3)	**2.39**	**(2.31, 2.47)**

Source: NMDS, Pharmaceutical Collection, PHO enrolments, Mortality Collection, New Zealand Cancer Registry, Ministry of Health.

Notes: Includes those enrolled with PHOs only. Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Appropriate treatment of gout is important to prevent permanent complications. Long-term urate-lowering therapy, such as allopurinol, is recommended to prevent gout flares and prevent tophus formation, bony erosions, and permanent disability in people with gout. Table 31 shows that only 39.9% Māori with gout in Waikato DHB were receiving regular urate-lowering therapy. This percentage is roughly the same as for non-Māori, however Māori with gout have earlier onset and more severe disease, so to achieve equitable care would require higher levels of urate-lowering therapy than non-Māori (Health Quality and Safety Commission 2024).

Gout flares can also be treated with non-steroidal anti-inflammatory drugs (NSAIDs). Although NSAIDs are effective at treating acute gout flares, these medicines have important side effects including kidney injury and peptic ulcer disease, and they should not be used long-term in gout without urate-lowering therapy. Table 31 shows that 14.6% of Māori with gout in Waikato DHB were prescribed NSAIDs without urate-lowering therapy (0.8 times lower than non-Māori). Some of these people with gout may have been prescribed a NSAID for a non-gout reason, however high rates of NSAID dispensing without urate-lowering therapy can also be a marker of inappropriate (and potentially harmful) gout treatment. These data do also not include people with gout using over-the-counter NSAIDs.

Table 31 – Gout treatment, aged 20 years and over, Waikato DHB, 2022

Indicator	Māori				non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Number	% of those with gout	Age-standardised rate per 100,000 (95% CI)		Number	Age-standardised rate per 100,000 (95% CI)			
People with gout who received urate-lowering therapy regularly									
Total	2,481	39.9	21,716	(20,137, 23,343)	6,897	21,381	(20,168, 22,616)	1.02	(0.93, 1.11)
People with gout given NSAIDs but not urate-lowering therapy									
Total	907	14.6	19,335	(17,222, 21,553)	2,384	25,901	(23,286, 28,597)	**0.75**	**(0.64, 0.87)**

Source: NMDS, Pharmaceutical Collection, PHO enrolments, Mortality Collection, New Zealand Cancer Registry, Ministry of Health.
Notes: Percentages are crude. Rates are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Māori are also much likely than non-Māori in Waikato DHB to be hospitalised for gout. Despite being 2.4 times more likely than non-Māori to be identified with gout (Table 30), Māori in Waikato DHB are 8.3 times more likely than non-Māori to be hospitalised for gout (Table 32) – 10.7 times for Māori women and 8.1 times for Māori men.

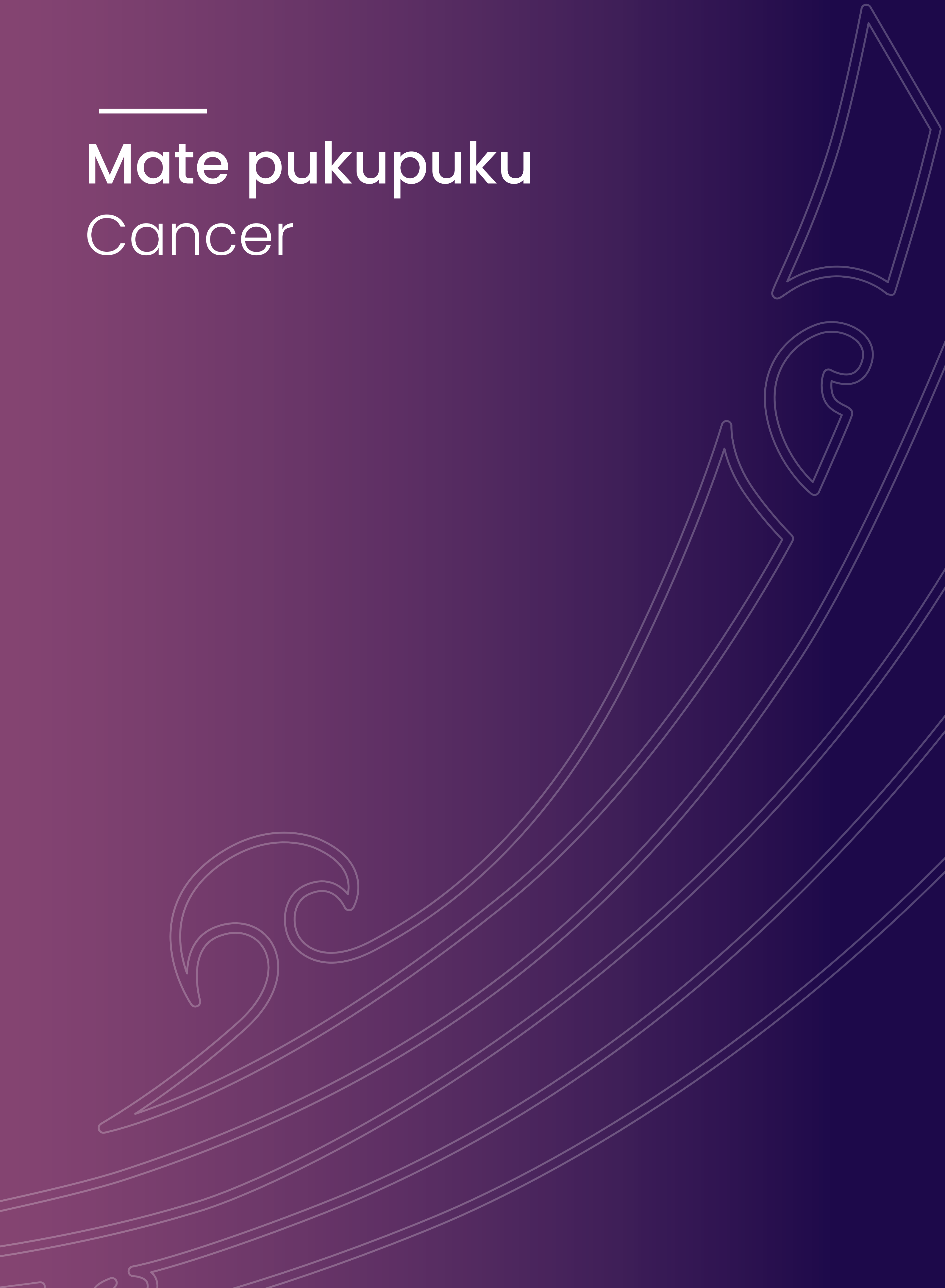
Table 32 – Hospitalisations for gout, aged 25 years and over, Waikato DHB, July 2020 to June 2023

Sex	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	17	37.7	(19.8, 55.6)	15	3.5	(1.7, 5.3)	**10.66**	**(5.30, 21.43)**
Male	56	193.0	(142.6, 243.4)	56	23.9	(17.7, 30.1)	**8.07**	**(5.58, 11.67)**
Total	73	112.5	(86.8, 138.2)	71	13.5	(10.4, 16.6)	**8.31**	**(6.00, 11.51)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 code: M10. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Mate pukupuku

Cancer



4. Mate pukupuku – Cancer

Cancer is a leading cause of illness and death for Māori, making up 25% of amenable mortality for Māori females and 10% for Māori males (Ministry of Health 2010). There are persisting disparities in cancer incidence, mortality and survival between Māori and non-Māori, with cancer making an important contribution to the life expectancy gap for Māori (Walsh and Grey 2019, Walsh 2023). Nationally between 2016 and 2020, compared to non-Māori, Māori were 1.2 times more likely to be diagnosed with cancer and 1.7 times more likely to die from cancer. Lung cancer alone contributes almost one year to the life expectancy gap between Māori and non-Māori non-Pacific women (Walsh and Grey 2019), and is the second leading cause of potentially avoidable death for Māori nationwide. Māori diagnosed with cancer are more likely to be diagnosed at a later stage, die (and to die sooner) than non-Māori with cancer (Gurney, Campbell et al. 2019).

The factors underpinning overall worse cancer incidence, mortality and survival for Māori are systemic. Broad health system actions that impact multiple cancers, such as improving access for Māori to prevention, timely diagnosis and appropriate treatment (regardless of income or place of residence), increased Māori control in cancer decision making and Māori-led services are crucial (Gurney, Robson et al. 2020).

More than two-thirds of all Māori cancer deaths occur from very poor-prognosis cancers. A key to reducing cancer deaths for Māori is by preventing the cancer in the first place (Gurney, Robson et al. 2020). More than half of the top 10 most common cancers and cancer deaths among Māori have known causal exposures that disproportionately impact Māori:

- tobacco exposure (lung and pancreatic cancers),
- infectious diseases (stomach and liver cancers),
- obesogenic environment/diet and obesity/diabetes mellitus (breast, uterine, colorectal, and pancreatic cancers), and
- familial genetic predisposition (stomach cancer).

Where prevention is not possible, or is unsuccessful, early detection can save lives if cancers are detected, when curative treatment is still possible. Screening programmes, such as breast, cervical and bowel screening, and hepatitis B & C surveillance, need to work much better for Māori. However, many of the most commonly diagnosed cancers among Māori are diagnosed outside of screening programmes. Diagnosis of these cancers principally relies on detection through primary care, so barriers to primary care for Māori need to be removed. Once cancer is diagnosed, the priority becomes ensuring access to timely best-practice treatment.

4.1. Cancer vaccines

Two common cancers, liver and cervix, can be largely prevented by childhood vaccinations which are already included in the free routine National Immunisation Schedule in NZ.

Globally, half of all liver cancers are caused by Hepatitis B infection (Zamor, deLemos et al. 2017). Hepatitis B is included in the routine infant immunisation schedule, and these immunisation data for Māori are presented in the Kahu Taurima chapter in this report.

Human papillomavirus (HPV) infection, which affects >80% of the population (Serrano, Brotons et al. 2018), causes virtually all cervical cancer, as well as causing some oropharyngeal (mouth, throat, tongue, and tonsils), vaginal, vulvar, penile, and anal cancers (Shapiro 2022). HPV vaccination has the potential to prevent 70% to 90% of all HPV-related cancers (Serrano, Brotons et al. 2018). The HPV vaccine is part of the routine NZ National Immunisation Schedule to be given to all 12-year-olds.

By 14 years of age, only 37.9% of Māori in Waikato DHB in June 2023 had been fully immunised for HPV, compared to 52.2% for non-Māori – 0.7 times less than non-Māori (Table 33).

Table 33 – Human papillomavirus (HPV) immunisation, 2009 birth cohort, Waikato DHB, June 2023

HPV immunisation	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	No. eligible	No. immunised	% immunised	No. eligible	No. immunised	% immunised		
First dose	2,134	1,184	55.5	4,549	3,086	67.8	**0.82**	**(0.78, 0.85)**
Final dose	2,134	809	37.9	4,549	2,372	52.2	**0.73**	**(0.68, 0.77)**

Source: National Immunisation Register, Te Whatu Ora
Notes: Percentages are crude (not age-standardised). Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

4.2. Cancer screening

Cancer screening checks people without any cancer symptoms, to look for pre-cancerous changes or cancer which can be treated if found early. NZ has three national cancer screening programmes: breast, cervical and bowel cancer.

In Waikato DHB in 2023, 52.8% of eligible Māori women aged 45 to 69 years had been screened for breast cancer in the previous two-year period, compared to 61.6% for non-Māori women (Table 34). Screening rates were lower for younger women than for older women.

Table 34 – Breast cancer screening two-year coverage, aged 45 to 69 years, Waikato DHB, December 2023

Breast screening by age group	Māori			non-Māori		
	No. screened	Eligible population	% screened	No. screened	Eligible population	% screened
45 to 49 years	1,439	2,930	49.1	5,967	10,295	58.0
50 to 54 years	1,552	2,930	53.0	6,935	11,545	60.1
55 to 59 years	1,401	2,620	53.5	6,845	11,190	61.2
60 to 64 years	1,297	2,400	54.0	7,312	11,655	62.7
65 to 69 years	987	1,760	56.1	6,980	10,565	66.1
Total	6,676	12,640	52.8	34,039	55,250	61.6

Source: National Screening Unit, Te Whatu Ora
Notes: Two-year coverage is defined as the proportion of women eligible for screening who have been screened in the previous two-year period. Percentages are crude (not age-standardised).

For cervical cancer, 56.9% of eligible Māori aged 25 to 69 years in Waikato DHB in 2023 were up-to-date with their cervical screening, compared to 67.8% of non-Māori (Table 35). In general, screening rates were lower for younger women, with only 47.6% of Māori aged 25 to 29 years up-to-date with cervical screening (compared to 54.9% for non-Māori).

Table 35 – Cervical cancer screening coverage, aged 25 to 69 years, Waikato DHB, December 2023

Up-to-date screening by age group	**Māori**			**non-Māori**		
	No. screened	Eligible population	% screened	No. screened	Eligible population	% screened
25 to 29 years	1,963	4,128	47.6	5,672	10,327	54.9
30 to 34 years	2,203	4,310	51.1	7,995	12,602	63.4
35 to 39 years	1,964	3,563	55.1	8,058	11,798	68.3
40 to 44 years	1,649	2,890	57.1	7,356	10,080	73.0
45 to 49 years	1,613	2,659	60.7	6,826	9,276	73.6
50 to 54 years	1,693	2,659	63.7	7,309	10,059	72.7
55 to 59 years	1,418	2,215	64.0	6,711	9,606	69.9
60 to 64 years	1,318	2,066	63.8	6,714	9,753	68.8
65 to 69 years	954	1,477	64.6	5,871	8,677	67.7
Total	14,775	25,968	56.9	62,512	92,179	67.8

Source: National Cervical Screening Programme Register, National Screening Unit, Te Whatu Ora
Notes: Percentages are crude (not age-standardised).

For bowel cancer, 40.6% of the eligible Māori population in Waikato DHB as at June 2023 had been screened, compared to 57.4% of non-Māori (Table 36). Bowel cancer screening rates are lower in the younger age groups, which also have the largest numbers of Māori who could benefit.

Table 36 – Bowel cancer screening participation, aged 50 to 74 years, Waikato DHB, June 2023

Participation by age group	**Māori**			**non-Māori**		
	No. screened	Eligible population	% screened	No. screened	Eligible population	% screened
50 to 54 years	659	2,053	32.1	Not eligible		
55 to 59 years	590	1,768	33.4	Not eligible		
60 to 64 years	1,890	4,721	40.0	12,609	23,883	52.8
65 to 69 years	1,337	2,995	44.6	11,323	19,539	58.0
70 to 74 years	1,073	2,129	50.4	12,600	20,268	62.2
Total	5,549	13,666	40.6	36,532	63,690	57.4

Source: National Screening Unit, Te Whatu Ora
Notes: Percentages are crude (not age-standardised).

4.3. Cancer diagnoses

Table 37 shows the most common types of cancer diagnosed in Waikato DHB between 2016 and 2020. For Māori in Waikato DHB, the most common types of cancer diagnosed were lung, breast, prostate and colorectal (bowel). Because of the small population size of a single DHB, just one to two cancers from a particular cause can have a large impact on the ranking of leading causes. For this reason, local cancer data should be interpreted together with the leading types of cancer for Māori nationally. Nationally, the most common types of cancer diagnosed in Māori were lung, breast, prostate and colorectal, the same as in Waikato DHB. An average of 363 cancers each year were diagnosed in Māori in Waikato DHB. Māori were 1.3 times more likely than non-Māori in Waikato DHB to be diagnosed with any type of cancer (1.4 times more likely for breast and 3.3 times for lung cancer).

Table 37 – Most common cancer registrations by site, all ages, Waikato DHB, 2016 to 2020

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Females								
All cancers	204	254.8	(219.3, 294.8)	875	181.3	(165.2, 198.7)	**1.41**	**(1.19, 1.67)**
Breast	61	80.0	(60.2, 104.4)	241	59.8	(50.8, 70.3)	1.34	(0.98, 1.82)
Lung	39	41.7	(29.4, 58.3)	80	11.3	(8.5, 15.5)	**3.68**	**(2.43, 5.59)**
Colorectal	16	19.5	(10.6, 33.3)	115	18.3	(13.8, 24.1)	1.07	(0.59, 1.92)
Uterus	14	19.1	(10.2, 32.9)	39	7.5	(5.0, 11.5)	**2.55**	**(1.32, 4.90)**
Males								
All cancers	159	221.1	(187.2, 259.7)	1,070	200.1	(184.6, 216.9)	1.10	(0.92, 1.32)
Prostate	37	46.3	(32.5, 64.7)	311	53.2	(46.8, 60.7)	0.87	(0.61, 1.23)
Lung	27	35.6	(23.5, 52.5)	84	12.2	(9.2, 16.5)	**2.93**	**(1.85, 4.64)**
Colorectal	17	24.4	(14.0, 39.9)	145	25.2	(20.1, 31.6)	0.97	(0.57, 1.65)
Leukaemia	9	12.8	(5.6, 25.4)	37	8.2	(4.6, 13.8)	1.55	(0.66, 3.64)
Total								
All cancers	363	238.7	(213.8, 265.8)	1945	190.1	(178.9, 201.9)	**1.26**	**(1.11, 1.42)**
Lung	66	39.0	(30.1, 50.1)	164	11.7	(9.6, 14.4)	**3.34**	**(2.45, 4.54)**
Breast	61	42.5	(32.1, 55.3)	244	30.9	(26.3, 36.2)	**1.38**	**(1.01, 1.87)**
Prostate	37	21.2	(14.9, 29.7)	311	25.8	(22.7, 29.4)	0.82	(0.58, 1.17)
Colorectal	33	21.9	(14.8, 31.4)	260	21.6	(18.2, 25.7)	1.01	(0.68, 1.50)

Source: New Zealand Cancer Registry, Ministry of Health.

Notes: Colorectal includes colon, rectum and rectosigmoid junction. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

4.4. Cancer deaths

Table 38 shows the most common types of cancer deaths in Waikato DHB between 2016 and 2020. For Māori in Waikato DHB, the most common causes of cancer deaths were lung, colorectal (bowel), breast and pancreas. Lung cancer was the most common cause of cancer death for Māori men and Māori women in Waikato DHB. Because of the small population size of a single DHB, just one to two deaths from a particular cancer can have a large impact on the ranking of leading causes. For this reason, local cancer deaths should be interpreted together with the leading types of cancer death for Māori nationally. Nationally, the most common types of cancer death in Māori were lung, colorectal, breast and pancreas, the same as in Waikato DHB. An average of 161 Māori each year died from cancer in Waikato DHB. Māori were 2.0 times more likely than non-Māori in Waikato DHB to die from any cancer, and 3.8 times more likely than non-Māori to die from lung cancer.

Table 38 – Most common cancer deaths by site, all ages, Waikato DHB, 2016 to 2020

Sex	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Females								
All cancers	83	92.6	(72.8, 116.6)	345	44.6	(38.3, 52.2)	**2.07**	**(1.58, 2.72)**
Lung	29	31.4	(20.9, 46.1)	61	8.2	(5.8, 12.0)	**3.85**	**(2.37, 6.25)**
Breast	10	12.0	(5.3, 23.7)	52	8.5	(5.7, 12.8)	1.41	(0.65, 3.05)
Colorectal	7	7.5	(2.7, 17.2)	49	6.0	(3.8, 9.7)	1.24	(0.50, 3.06)
Pancreas	6	6.2	(2.0, 15.3)	23	2.4	(1.3, 5.3)	2.55	(0.93, 6.97)
Males								
All cancers	78	104.5	(82.2, 131.5)	415	56.8	(49.8, 65.0)	**1.84**	**(1.42, 2.39)**
Lung	25	32.6	(21.0, 49.0)	67	8.9	(6.5, 12.7)	**3.66**	**(2.24, 5.99)**
Colorectal	7	10.3	(4.1, 21.7)	59	8.6	(5.9, 12.7)	1.20	(0.53, 2.71)
Prostate	7	9.0	(3.7, 19.3)	51	4.5	(3.2, 7.4)	1.98	(0.90, 4.36)
Liver	5	6.0	(1.8, 15.5)	12	2.0	(0.9, 4.9)	3.05	(0.97, 9.56)
Total								
All cancers	161	97.9	(82.9, 115.1)	760	50.3	(45.6, 55.6)	**1.95**	**(1.61, 2.35)**
Lung	54	32.0	(24.0, 42.3)	128	8.5	(6.8, 10.8)	**3.78**	**(2.68, 5.33)**
Colorectal	14	8.8	(4.7, 15.4)	108	7.2	(5.5, 9.7)	1.22	(0.67, 2.23)
Breast	10	6.5	(2.9, 12.6)	53	4.5	(3.0, 6.7)	1.45	(0.68, 3.08)
Pancreas	9	5.5	(2.5, 11.0)	46	2.8	(1.9, 4.5)	1.97	(0.93, 4.16)

Source: Mortality dataset, Ministry of Health.

Notes: Colorectal includes colon, rectum and rectosigmoid junction. Of the five-year period of data examined, cause of death data for 2019 is provisional and 2020 is preliminary; data for other years is considered complete, but subject to regular updates. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Oranga hinengaro

Mental health and addictions

5. Oranga hinengaro – Mental health and addictions

Mental health and substance use conditions, including anxiety and depression, alcohol use disorders, and schizophrenia, and related conditions such as traumatic brain injury, are all among the top ten contributors to overall health loss for Māori (Ministry of Health 2013). Māori are more likely to experience psychological distress and mental health and substance use conditions than non-Māori.

As was shown in Volume One, suicide was the fourth leading cause of potentially avoidable deaths for Māori between 2014 to 2018, and is a major contributor to the life expectancy gap between Māori and non-Māori non-Pacific (Walsh and Grey 2019). Māori experience poorer mental health care – they are less likely to receive pharmaceutical treatment in relation to need (Metcalfe, Beyene et al. 2018), and are more likely to be placed in seclusion (McLeod, King et al. 2017). Māori with mental health and substance use conditions also experience poorer physical health outcomes (Cunningham, Stanley et al. 2020), and experience higher levels of discrimination when accessing physical health services than non-Māori with mental health and substance use conditions (Cunningham, Imlach et al.).

Poor mental health is a consequence of many of the same drivers of other health inequities for Māori – racism, colonisation, intergenerational trauma, poverty, and cultural disconnection. The adverse effects of trauma may impact on mental, physical, social, emotional and spiritual wellbeing, and carry across generations (Krieger 2011). Violence and abuse are further downstream consequences of these causes, which contributes significantly to the higher rates of trauma for Māori. This includes physical and sexual violence, which over half of wāhine Māori experience during their lifetime (Fanslow, Robinson et al. 2010). A significantly higher proportion of Māori than non-Māori experience stress and difficulty in daily life, and experience social isolation (also considered as loneliness) and exclusion (Russell 2018). There is a strong positive relationship between individual mental wellbeing and whānau wellbeing for Māori.

Action to improve mental health cannot ignore the causes of distress in Māori lives, and just continue with more programmes to build “resilience” or provide treatment to cope with life stressors which could be removed by social policy changes. A whole-of-government approach to wellbeing to tackle social determinants and support prevention activities that impact on multiple outcomes for Māori is required (extending beyond mental health and addiction). Additional action is needed to address poverty, racism, and discrimination, and optimising the environment in the first 1,000 days. In the face of enormous harm to our communities from alcohol and other drug use, we need to act on international evidence for effective public health and legislative interventions. At the same time, work is needed to transform mental wellbeing services to meet the needs of Māori whānau.

5.1. Prevalence of mental health problems

The most reliable estimates of the prevalence of mental health problems come from the 2004 New Zealand Mental Health Survey Te Rau Hinengaro, which used a diagnostic interview tool to identify mental health conditions and addictions (Cunningham, Kvalsvig et al. 2018). This survey found that diagnosable mental disorders were present in half of Māori over their lifetime and nearly one third over the year prior to the survey (Baxter, Kingi et al. 2006). However, this is now 20 years old and out-of-date. The only recent estimates in NZ rely on self-report of doctor diagnosis (NZHS) or specialist health service contact (PRIMHD and NMDS) or medication dispensing. These sources will underestimate the prevalence of mental health conditions, as conditions which have not been diagnosed or for which specialist services or medication have not been received will not be identified (Cunningham, Kvalsvig et al. 2018). To understand the true burden of mental health needs for Māori, and assess whether the health care system is meeting these needs at each level, a new national population-based mental health prevalence survey is urgently required in NZ, designed and powered to answer key questions for Māori and using screening tools validated for Māori (Ellison-Loschmann L, Jeffreys M et al. 2024).

The NZHS uses the Kessler Psychological Distress Scale (K10) to assess survey participants' levels of psychological distress over the past month. The K10 is an internationally validated instrument for measuring psychological distress (specifically recent nervousness, restlessness, fatigue, and depression) in a population. Scores of 12 or more on the K10 are strongly correlated with having an anxiety or depressive disorder (Kessler, Barker et al. 2003), although it is increasingly recognised that it cannot be used to measure the need for mental health treatment in the population and that interpretation may vary by age group and between cultures (Blake, Farugia et al. 2023, Lehmann, Pilz et al. 2023).

Using collated data from the NZHS between 2017 and 2022, 16.0% of Māori respondents (≥15 years) in Waikato DHB had a K10 score of ≥12, indicating high or very high levels of psychological distress (Table 39). This was even higher for Māori women in Waikato DHB, 19.7% of whom experienced high/very high psychological distress. Māori in Waikato DHB were 1.7 times more likely than non-Māori to experience high/very high psychological distress.

Table 39 – Prevalence of high/very high psychological distress, aged 15 years and older, Waikato DHB, 2017 to 2022

	Māori		**non-Māori**		**Māori/non-Māori rate ratio (95% CI)**	
	%	(95% CI)	%	(95% CI)		
Female	19.7	(14.8, 25.5)	12.2	(9.6, 15.2)	**1.71**	**(1.30, 2.25)**
Male	13.0	(8.6, 18.5)	8.1	(5.6, 11.2)	1.56	(1.00, 2.44)
Total	16.0	(12.8, 19.6)	10.0	(8.5, 11.7)	**1.66**	**(1.30, 2.11)**

Source: New Zealand Health Survey, Ministry of Health

Notes: Psychological distress means having high or very high levels of psychological distress on the K10 scale, that is, a score of 12 or more. Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

The NZHS also asks participants whether they have ever been told by a doctor that they have depression or an anxiety disorder. Using collated data from the NZHS between 2017 and 2022, 24.5% of Māori respondents (≥15 years) in Waikato DHB reported they had been diagnosed with depression, and 18.1% with an anxiety disorder (Table 40). This was even higher for Māori women, with 29.9% reporting a diagnosis of depression and 24.1% of an anxiety disorder.

Table 40 – Prevalence of diagnosed mental health conditions (self-reported), aged 15 years and older, Waikato DHB, 2017 to 2022

	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	%	(95% CI)	%	(95% CI)		
Diagnosed depression						
Female	29.9	(24.3, 36.0)	23.8	(19.2, 28.9)	1.14	(0.87, 1.50)
Male	18.9	(13.3, 25.5)	13.5	(10.7, 16.6)	1.24	(0.87, 1.76)
Total	24.5	(20.1, 29.3)	18.6	(16.0, 21.4)	1.18	(0.95, 1.47)
Diagnosed anxiety disorder						
Female	24.1	(18.7, 30.2)	20.9	(15.5, 27.4)	1.15	(0.83, 1.59)
Male	12.0	(7.3, 18.4)	7.6	(5.7, 9.9)	1.32	(0.85, 2.05)
Total	18.1	(14.5, 22.1)	14.2	(11.5, 17.2)	1.20	(0.91, 1.59)

Source: New Zealand Health Survey, Ministry of Health.
Notes: Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

5.2. Use of alcohol and drugs

Hazardous drinking is a pattern of alcohol consumption that increases the risk of harmful consequences for the user or others, and it is assessed using a standard international questionnaire (Babor, Higgins-Biddle et al. 2001). Using collated data from the NZHS between 2017 to 2022, 35.3% of Māori respondents (≥15 years) in Waikato DHB (44.4% of Māori men, 26.3% of Māori women) were found to have a hazardous drinking pattern during the last year (Table 41). This was 1.8 times higher than the rate of hazardous drinking among non-Māori respondents in Waikato DHB.

Table 41 – Prevalence of hazardous drinking in past 12 months, aged 15 years and older, Waikato DHB, 2017 to 2022

	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	%	(95% CI)	%	(95% CI)		
Female	26.3	(21.4, 31.6)	11.6	(8.9, 14.8)	**2.25**	**(1.76, 2.87)**
Male	44.4	(36.3, 52.6)	29.4	(24.5, 34.6)	**1.54**	**(1.27, 1.87)**
Total	35.3	(30.4, 40.5)	20.2	(17.4, 23.3)	**1.75**	**(1.51, 2.02)**

Source: New Zealand Health Survey, Ministry of Health.
Notes: Hazardous drinking is a score of eight or more from the Alcohol Use Disorders Test (AUDIT) questionnaire. Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Heavy episodic drinking, or “binge drinking” is associated with a higher risk of experiencing alcohol-related acute harm but also developing chronic health complications. Using collated data from the NZHS between 2017 to 2022, 31.5% of Māori respondents (≥15 years) in Waikato DHB were binge drinking at least monthly, and 16.9% at least weekly (Table 42). These rates were 1.4 times and 1.5 times higher than for non-Māori respondents in Waikato DHB.

Table 42 – Prevalence of heavy episodic drinking in past 12 months, aged 15 years and older, Waikato DHB, 2017 to 2022

	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	%	(95% CI)	%	(95% CI)		
At least weekly						
Female	9.3	(6.6, 12.7)	5.3	(3.5, 7.6)	**1.84**	**(1.22, 2.78)**
Male	24.8	(17.8, 32.9)	17.8	(14.7, 21.2)	1.34	(0.96, 1.88)
Total	16.9	(13.1, 21.2)	11.2	(9.4, 13.1)	**1.46**	**(1.12, 1.90)**
At least monthly						
Female	24.2	(18.1, 31.2)	14.3	(11.1, 18.1)	**1.82**	**(1.31, 2.53)**
Male	38.7	(33.2, 44.5)	32.9	(29.3, 36.7)	**1.21**	**(1.04, 1.41)**
Total	31.5	(27.4, 35.8)	23.3	(21.1, 25.6)	**1.39**	**(1.21, 1.59)**

Source: New Zealand Health Survey, Ministry of Health.
Notes: Heavy episodic drinking ‘at least weekly’ is defined as having six or more drinks on one occasion weekly. Heavy episodic drinking ‘at least monthly’ is defined as having six or more drinks on one occasion monthly. Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Less data is available on the hazardous use of other drugs. Using collated data from the NZHS between 2017 to 2022, 30.6% of Māori respondents (≥15 years) in Waikato DHB reported they had used cannabis in the past 12 months, 2.1 times the rate for non-Māori (Table 43). However, these data do not tell us about harmful use.

Table 43 – Prevalence of cannabis use in past 12 months, aged 15 years and older, Waikato DHB, 2017 to 2022

	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	%	(95% CI)	%	(95% CI)		
Female	24.4	(20.0, 29.2)	10.1	(7.3, 13.5)	**2.33**	**(1.70, 3.18)**
Male	36.7	(29.1, 45.0)	18.6	(15.7, 21.9)	**1.95**	**(1.55, 2.46)**
Total	30.6	(25.8, 35.7)	14.4	(12.2, 16.7)	**2.09**	**(1.70, 2.58)**

Source: New Zealand Health Survey, Ministry of Health.
Notes: Percentages are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

5.3. Mental health and substance use-related hospitalisations

In addition to better measuring population mental health need through a prevalence survey, the health system needs to monitor and report measures which assess the full pathway of access to mental health care in NZ. This includes measuring access to diagnosis, referral and receipt of appropriate treatment and outcomes. Hospitalisations are one aspect of mental health care – most mental health care is provided in the community, as discussed later in this chapter.

Table 44 shows the hospitalisations for various mental health and substance use conditions in Waikato DHB between 2020 to 2023. These data show significantly higher rates of hospitalisations for most mental health and substance use conditions for Māori in Waikato DHB compared to non-Māori. Overall, Māori were 1.9 times more likely than non-Māori to be hospitalised for any type of mental or substance use disorder, 4.6 times for schizophrenia, 1.3 times for mood disorders, 1.7 times for substance/alcohol use and 1.3 times for stress-related and anxiety.

However, these data should be interpreted with caution. Diagnosis data in NZ tends to be more incomplete for mental health conditions than for other health conditions, and so mental health related hospitalisations may be underestimated (Cunningham, Kvalsvig et al. 2018).

Importantly, the hospitalisation data presented below do not tell us anything about appropriateness of care – for example, whether the level of hospital care received is sufficient/appropriate to meet Māori population needs, or whether ethnic differences in mental health hospitalisations reflect a failure to manage mental health and substance use conditions effectively for Māori in the community and primary care.

It is also important to bear in mind that the hospitalisations in Table 44 include emergency department (ED) stays of ≥3 hours (which may or may not progress to inpatient hospitalisation). ED stays of ≥3 hours may have a different profile (e.g. acute alcohol intoxication) to those people requiring an inpatient stay.

Table 44 – Hospitalisations for mental and substance use disorders, all ages, Waikato DHB, July 2020 to June 2023

	Māori			**Non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
All mental disorders [1]								
Female	468	765.3	(696.0, 834.6)	952	454.8	(425.9, 483.7)	**1.68**	**(1.51, 1.88)**
Male	491	842.7	(768.2, 917.2)	894	385.4	(360.1, 410.7)	**2.19**	**(1.96, 2.44)**
Total	960	801.9	(751.2, 852.6)	1,848	419.5	(400.4, 438.6)	**1.91**	**(1.77, 2.07)**
Schizophrenia [2]								
Female	151	243.7	(204.8, 282.6)	117	53.2	(43.6, 62.8)	**4.58**	**(3.60, 5.84)**
Male	240	422.5	(369.0, 476.0)	157	89.8	(75.7, 103.9)	**4.70**	**(3.85, 5.75)**
Total	391	331.6	(298.7, 364.5)	274	71.7	(63.2, 80.2)	**4.62**	**(3.96, 5.40)**
Mood (affective) disorders including bipolar and depression [3]								
Female	100	166.4	(133.7, 199.1)	256	126.3	(110.8, 141.8)	**1.32**	**(1.05, 1.66)**
Male	73	123.0	(94.7, 151.3)	224	96.5	(83.9, 109.1)	1.28	(0.98, 1.66)
Total	172	144.5	(122.9, 166.1)	481	111.3	(101.4, 121.2)	**1.30**	**(1.09, 1.55)**
Substance use and alcohol use [4]								
Female	90	155.5	(123.4, 187.6)	131	76.4	(63.3, 89.5)	**2.04**	**(1.56, 2.66)**
Male	99	175.1	(140.7, 209.5)	211	114.3	(98.9, 129.7)	**1.53**	**(1.21, 1.94)**
Total	189	165.1	(141.6, 188.6)	342	95.3	(85.2, 105.4)	**1.73**	**(1.45, 2.07)**
Stress-related and anxiety [5]								
Female	60	98.3	(73.4, 123.2)	157	86.2	(72.7, 99.7)	1.14	(0.85, 1.54)
Male	36	62.9	(42.4, 83.4)	69	36.4	(27.8, 45.0)	**1.73**	**(1.16, 2.59)**
Total	96	80.7	(64.6, 96.8)	226	61.4	(53.4, 69.4)	**1.31**	**(1.04, 1.67)**

Source: NMDS, Te Whatu Ora.

Notes: ICD-10 codes: [1] F00 – F99; [2] F20 – F29; [3] F30 – F39, F31, F32; [4] F10 – F19; [5] F40 – F48. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Between 2020 and 2023, Māori in Waikato DHB were 1.6 times more likely than non-Māori to be hospitalised for a traumatic brain injury (Table 45). An average of 243 Māori per year were hospitalised for traumatic brain injury in Waikato DHB.

Table 45 – Hospitalisations for traumatic brain injury, all ages, Waikato DHB, July 2020 to June 2023

	Māori			**Non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	98	159.7	(128.1, 191.3)	225	102.1	(88.8, 115.4)	1.56	(0.86, 2.26)
Male	145	245.9	(205.9, 285.9)	321	149.1	(132.8, 165.4)	**1.65**	**(1.05, 2.25)**
Total	243	202.6	(177.1, 228.1)	546	125.9	(115.3, 136.5)	**1.61**	**(1.11, 2.11)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 code: S06. These data include ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Between 2020 and 2023, Māori in Waikato DHB (aged 15 to 44 years) were 1.2 times more likely than non-Māori to be hospitalised for intentional self-harm (Table 46). An average of 225 Māori per year were hospitalised for intentional self-harm in Waikato DHB (150 women and 75 men).

Table 46 – Hospitalisations for intentional self-harm, aged 15 to 44 years, Waikato DHB, July 2020 to June 2023

	Māori			**Non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	150	584.1	(490.6, 677.6)	284	534.9	(472.7, 597.1)	1.09	(0.90, 1.33)
Male	75	294.9	(228.2, 361.6)	118	195.6	(160.4, 230.8)	**1.51**	**(1.13, 2.01)**
Total	225	436.4	(379.4, 493.4)	402	362.0	(326.6, 397.4)	**1.21**	**(1.02, 1.42)**

Source: NMDS, Te Whatu Ora.
Notes: ICD-10 codes: S00-T98 and X60-X84, Y870. These data include readmissions within two days and ED stays ≥3 hours. Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

5.4. Access to mental health care

The majority of care for mental health and substance use conditions is provided in primary and community care, through specialist services for more severe conditions (provided by health sector and non-government providers), and through primary care services for mild to moderate conditions. Ideally, data analysis is needed that allows us to understand what is happening for Māori in terms of mental health care across the continuum of care. Further analysis of data provided by specialist services into the PRIMHD data collection and of data provided by newly funded services for mild to moderate mental health conditions under the Access and Choice initiative (which included funding for community based Kaupapa Māori providers) will provide a fuller picture of service provision.

In terms of access to specialist outpatient services for mental health, Table 47 shows the number of young people (<25 years) referred to specialist mental health services who are seen within three weeks of referral. In 2022, this data shows that 84.4% of Māori in Waikato DHB who were referred to mental health services were seen within three weeks, and Māori were slightly more likely (1.1 times) than non-Māori referrals to be seen within three weeks. However, these data do not tell us anything about whether Māori who needed a referral actually received one. It is also not possible to assess from the data below whether Māori were more likely to be referred (and seen) for mental health care than non-Māori in Waikato DHB – which would be appropriate given all other evidence of higher Māori mental health need.

Table 47 – People under 25 years old seen by mental health services within three weeks of referral, Waikato DHB, 2018 to 2022

Year	Māori		non-Māori		Māori/non-Māori rate ratio (95% CI)	
	Number	%	Number	%		
2018	291	77.4	515	68.4	**1.13**	**(1.05, 1.22)**
2019	317	72.9	533	67.6	1.08	(1.00, 1.16)
2020	272	70.6	511	60.4	**1.17**	**(1.07, 1.27)**
2021	266	84.7	497	75.2	**1.13**	**(1.06, 1.20)**
2022	130	84.4	252	75.4	**1.12**	**(1.02, 1.23)**

Source: Health Quality & Safety Commission: Health System Indicators Framework sourced from PRIMHD.
Notes: Numerator: number of new clients aged under 25 seen within 3 weeks. Denominator: total new clients aged under 25. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

One measure of provision of mental health care which includes primary care is the prescription of medications. Selective serotonin reuptake inhibitors (SSRIs) are the most commonly prescribed antidepressant medication. Table 48 shows the number of people (≥15 years) in Waikato DHB who regularly received an SSRI or other reuptake inhibitor. In 2022, 2,969 Māori in Waikato DHB (1,001 men and 1,968 women) were regularly receiving one of these antidepressant medications – which equated to 3.8% of the Māori population aged 15 years and over. Despite all the other evidence suggesting a higher prevalence of depression among Māori in Waikato DHB than non-Māori, Māori were significantly less likely to receive regular medication compared to non-Māori. Medication is not the only treatment for depression, but this large ethnic difference in the rate of receiving antidepressant medication raises questions about access to and receipt of appropriate depression treatment for Māori in Waikato DHB. As noted above, further information about need-for and receipt-of the range of services for mental health care is needed to provide a more complete picture of the way in which need-for-care is being met for Māori in Waikato DHB.

Table 48 – People regularly dispensed an SSRI or other reuptake inhibitor, aged 15 years and older, Waikato DHB, 2022

	Māori				**non-Māori**		**Māori/non-Māori rate ratio (95% CI)**	
	Number	%	Age-standardised rate per 100,000 (95% CI)		Age-standardised rate per 100,000 (95% CI)			
Female	1,968	5.0	4,664	(4,451, 4,885)	9,486	(9,301, 9,673)	**0.49**	**(0.47, 0.52)**
Male	1,001	2.7	2,592	(2,428, 2,764)	4,591	(4,467, 4,716)	**0.56**	**(0.53, 0.61)**
Total	2,969	3.8	3,651	(3,515, 3,790)	7,034	(6,923, 7,146)	**0.52**	**(0.50, 0.54)**

Source: Pharmaceutical Collection, PHO enrolments.
Notes: SSRIs and other reuptake inhibiters are typically used as anti-depressant medications. Percentages are crude. Rates are age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Ko ētahi atu tohu pūnaha

Other system indicators

6. Ko ētahi atu tohu pūnaha – Other system indicators

6.1. Access to outpatient care

In terms of access to specialist outpatient appointments, Māori in Te Tiratū are much more likely to have a missed first specialist appointment than non-Māori (Table 49). In 2023, 12.7% of first specialist medical appointments and 16.7% of first surgical appointments for Māori were missed. This contrasts to only 3.7% of medical and 5.2% of surgical first specialist appointments missed for non-Māori in Te Tiratū. This adds further delays for Māori in accessing the operations and medical treatment they require and contributes to poorer health outcomes.

Table 49 – Missed First Specialist Appointments by service type, Te Tiratū, 2018 to 2023

Service Type and Year	Māori			non-Māori			Māori/non-Māori rate ratio (CI)	
	Number	%	(CI)	Number	%	(CI)		
Medical								
2018	857	21.5	(20.3, 22.8)	1093	7.6	(7.2, 4.3)	**2.83**	**(2.62, 3.06)**
2019	432	12.0	(10.9, 13.1)	503	3.9	(3.6, 4.9)	**3.08**	**(2.75, 3.44)**
2020	522	13.9	(12.9, 15.1)	631	4.5	(4.2, 4.2)	**3.09**	**(2.79, 3.42)**
2021	517	12.9	(11.9, 14.0)	665	3.9	(3.6, 4.3)	**3.31**	**(2.96, 3.69)**
2022	524	13.0	(12.0, 14.0)	648	4.0	(3.7, 4.0)	**3.25**	**(2.91, 3.62)**
2023	502	12.7	(11.7, 13.8)	586	3.7	(3.4, 7.0)	**3.43**	**(3.07, 3.84)**
Surgical								
2018	1424	18.4	(17.6, 19.3)	1943	6.7	(6.4, 7.0)	**2.75**	**(2.52, 2.99)**
2019	747	10.9	(10.2, 11.6)	874	3.2	(3.0, 3.4)	**3.41**	**(3.02, 3.84)**
2020	1185	17.2	(16.4, 18.1)	1374	5.2	(5.0, 5.5)	**3.31**	**(3.01, 3.63)**
2021	1350	18.7	(17.9, 19.7)	1723	6.5	(6.2, 6.8)	**2.88**	**(2.64, 3.13)**
2022	1248	17.1	(16.3, 18.0)	1490	5.7	(5.4, 6.0)	**3.00**	**(2.74, 3.28)**
2023	1231	16.7	(15.9, 17.6)	1313	5.2	(4.9, 5.5)	**3.21**	**(2.92, 3.53)**

Source: National Non-Admitted Patient Collection (NNPAC), Whakamaua Dashboard.
Notes: Denominator: all First Specialist Appointments. First Specialist Appointments are a patient's first visit to a specialist for advice about a health condition after referral from a GP of other health professional. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Table 50 shows the breakdown of these missed specialist appointments by age group. Missing a first specialist appointment was significantly more common for Māori compared to non-Māori, in every age group. Missing a first specialist appointment was highest for Māori under 50 years, indicating that more needs to be done to identify and remove barriers for accessing appointments for Māori in these age groups. In Te Tiratū in 2023, 19.0% aged 30 to 39 years, missed their first specialist appointment.

Table 50 – Missed First Specialist Appointments by age group, Te Tiratū, 2023

Age Group	**Māori**			**non-Māori**			**Māori/non-Māori rate ratio (CI)**	
	Number	%	(CI)	Number	%	(CI)		
0 to 9 years	385	17.8	(16.2, 19.5)	235	5.3	(4.7, 6.0)	**3.36**	**(3.06, 3.69)**
10 to 19 years	196	18.1	(15.9, 20.5)	131	5.7	(4.8, 6.7)	**3.18**	**(2.90, 3.47)**
20 to 29 years	212	17.2	(15.2, 19.4)	243	9.4	(8.3, 10.6)	**1.83**	**(1.70, 1.97)**
30 to 39 years	252	19.0	(17.0, 21.3)	310	8.1	(7.3, 9.0)	**2.35**	**(2.17, 2.53)**
40 to 49 years	212	18.4	(16.2, 20.7)	228	6.6	(5.8, 7.5)	**2.79**	**(2.56, 3.03)**
50 to 59 years	202	13.5	(11.9, 15.3)	210	4.5	(3.9, 5.1)	**3.00**	**(2.71, 3.32)**
60 to 69 years	170	9.9	(8.6, 11.4)	215	3.2	(2.8, 3.6)	**3.09**	**(2.74, 3.50)**
70 to 79 years	79	8.8	(7.1, 10.8)	191	2.3	(2.0, 2.7)	**3.83**	**(3.31, 4.42)**
80 to 89 years	25	9.5	(6.5, 13.7)	136	2.7	(2.3, 3.2)	**3.52**	**(3.08, 4.02)**

Source: National Non-Admitted Patient Collection (NNPAC), Whakamaua Dashboard.
Notes: Denominator: all First Specialist Appointments. First Specialist Appointments are a patient's first visit to a specialist for advice about a health condition after referral from a GP of other health professional. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

6.2. Hospitalisations: all-cause and potentially avoidable

In terms of hospitalisations for any cause, Māori in Waikato DHB have higher rates of hospitalisation than non-Māori. Between 2020 and 2023, there were an average of 27,320 Māori hospital admissions each year,1.2 times the rate of non-Māori in Waikato DHB (Table 51).

Table 51 – Hospitalisations for all-causes, all ages, Waikato DHB, July 2020 to June 2023

	Māori			Non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female	15,438	24,639	(24,251, 25,028)	46,121	20,917	(20,726, 21,108)	**1.18**	**(1.16, 1.20)**
Male	11,874	19,512	(19,161, 19,863)	39,416	16,210	(16,050, 16,370)	**1.20**	**(1.18, 1.23)**
Total	27,320	22,070	(21,808, 22,332)	85,555	18,543	(18,418, 18,667)	**1.19**	**(1.18, 1.20)**

Source: NMDS, Te Whatu Ora.
Notes: Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Potentially avoidable hospitalisations are those admissions which could have been prevented by primary care, public health, or social policy interventions. Among 15- to 24-year-olds, Māori were 1.3 times more likely than non-Māori to be hospitalised for a potentially avoidable cause (see Appendix for the list of conditions considered potentially avoidable). Between July 2022 to June 2023, 807 Māori aged 15 to 24 years in Waikato DHB had a potentially avoidable hospital admission (Table 52).

Table 52 – Potentially avoidable hospitalisations, aged 15 to 24 years, Waikato DHB, July 2022 to June 2023

	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Number	Age-standardised rate per 100,000 (95% CI)		Number	Age-standardised rate per 100,000 (95% CI)			
Total	807	3,900	(3,631, 4,170)	1,156	3,073	(2,896, 3,250)	**1.27**	**(1.16, 1.39)**

Source: NMDS, Ministry of Health.
Note: Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Ambulatory sensitive hospitalisations are those admissions which could have been potentially avoided through interventions in primary care. In adults aged 45 to 64 years, between July 2022 to June 2023 in Waikato DHB, 1,571 Māori had an ambulatory sensitive admission, 2.4 times higher than the rate for non-Māori in Waikato DHB (Table 53).

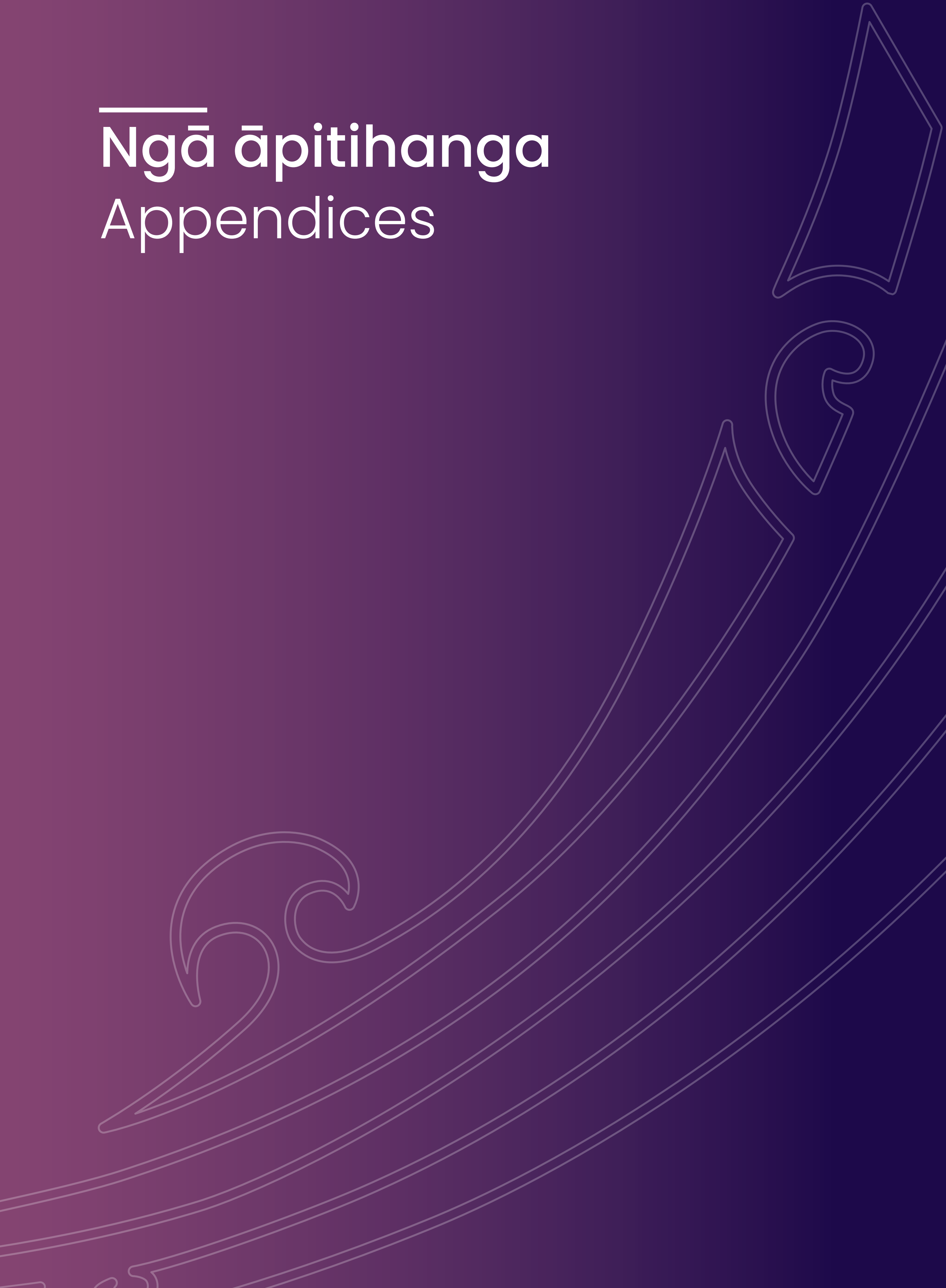
Table 53 – Ambulatory sensitive hospitalisations, aged 45 to 64 years, Waikato DHB, July 2022 to June 2023

	Māori			**non-Māori**			**Māori/non-Māori rate ratio (95% CI)**	
	Number	Age-standardised rate per 100,000 (95% CI)		Number	Age-standardised rate per 100,000 (95% CI)			
Total	1,571	7,054	(6,705, 7,403)	2,767	2,914	(2,806, 3,023)	**2.42**	**(2.28, 2.57)**

Source: NMDS, Ministry of Health.
Note: Age-standardised to the 2001 Māori Census Population. Ratios in **bold** show a statistically significant difference between Māori and non-Māori.

Ngā āpitihanga

Appendices



Appendix 1 – Technical notes

1. Explanation of statistical terms used in this report

95% confidence interval

Technical definition

A 95% confidence interval represents a range from a lower to an upper value that is likely to include the true average figure for the entire population. It suggests that if a similar sample of the total population was taken 100 times, the true value would be found within this range 95 times. This confidence interval can vary in size: a larger number of survey responses or participants, typically results in a narrower range, indicating more precise estimates, while a smaller number of responses may result in a broader range, indicating less certainty about the exact figure.

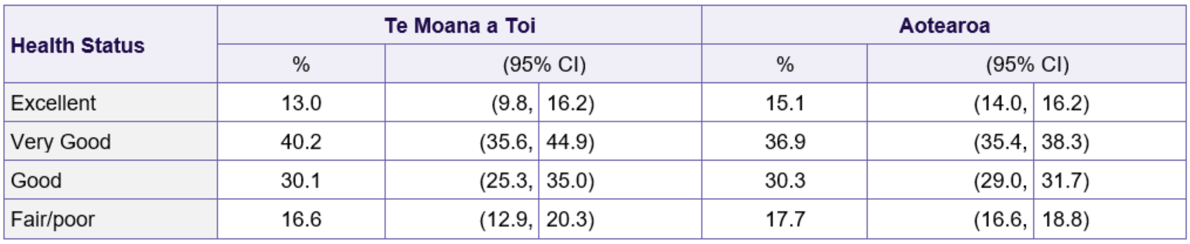
Plain English definition

When a health study gives a number, like how many people feel healthy, it's often not just one number but a range. This range is what's called a 95% confidence interval. It's like a safety net that says, 'We think the real number is in here.' And if we did the study over and over, 95 times out of 100, we'd get a number in this range. The more people we include in our sample, the smaller and more accurate this net becomes. So, if we ask only a few people, the net is wide, and we're less sure. If we ask a lot of people, the net gets tighter, and we're more sure we've got the right number.

Example from the report

In a survey assessing health status among residents of Te Moana a Toi[10] (see table below), 13.0% of the sampled Māori population considered their health to be 'Excellent'. However, this percentage is an estimate from a sample of people in Te Moana a Toi, not the entire population. The 95% confidence interval, shown in brackets as "(9.8,16.2)", indicates that there is a 95% probability that the actual percentage of all Māori residents who would rate their health as 'Excellent' falls within this range. If this survey were to be conducted 100 times with different sample groups, it is expected that 95 of those surveys would yield a true percentage that falls between 9.8% and 16.2%.

Table 6 - Health status reported by Māori aged 15 years and over, Te Moana a Toi, 2018



Health Status	Te Moana a Toi			Aotearoa		
	%	(95% CI)		%	(95% CI)	
Excellent	13.0	(9.8,	16.2)	15.1	(14.0,	16.2)
Very Good	40.2	(35.6,	44.9)	36.9	(35.4,	38.3)
Good	30.1	(25.3,	35.0)	30.3	(29.0,	31.7)
Fair/poor	16.6	(12.9,	20.3)	17.7	(16.6,	18.8)

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[10] The example tables in this technical appendix are all taken from the Te Moana a Toi IMPB profile Volume One and are presented purely as an example to facilitate understanding across all IMPB data profiles.

Age standardisation

Technical definition

Age-standardisation is a statistical method used to compare rates of events across different populations by adjusting for age differences in the two groups. This method is particularly useful when comparing health outcomes between groups like Māori and non-Māori, where there are significant differences in age distribution; for example only 8% of Māori are aged 65 and over in Te Moana a Toi compared with 26% of non-Māori (see the table below).

Because of these age differences, comparing crude rates (actual observed rates) can be misleading. By applying the age-specific rates from the populations being compared to a standard population, age-standardised rates provide a clearer comparison as if the populations had the same age distribution. Almost all data in this report has been age-standardised to the 2001 Māori population. Where crude rates are presented instead, this is noted beneath the table.

Table 2 – Population estimate by age group, Te Moana a Toi, 2023

Age group (years)	Māori			non-Māori		Total IMPB number
	Number	Age distribution	% of IMPB	Number	Age distribution	
0–14	20,255	30%		30,670	15%	50,925
15–24	12,285	18%		16,810	8%	29,095
25–44	16,465	24%		50,870	25%	67,335
45–64	13,030	19%		52,935	26%	65,965
65+	5,575	8%		51,760	26%	57,335
Total	**68,000**	**100%**	**25%**	**202,740**	**100%**	**270,740**

Plain English definition

Age-standardisation is a method used to compare health between two groups fairly. It adjusts the numbers to consider how young or old the people in each group are. This way, when looking at health data, it is more likely that any differences between the groups are not just because one has more young people or more old people. It helps give a more accurate picture of health when comparing two groups with a different spread of ages.

Example from the report

The table below shows an age-standardised rate of 28.4 per 100,000 per year ischaemic heart disease events among Bay of Plenty DHB Māori women between 2014 and 2018. Without age standardisation calculations, crude rates would be lower than 28.4 among Māori women. The lower rate would be simply because a larger proportion of the Māori population is younger and ischaemic heart disease is more frequent in older people.

Table 6 - Leading causes of death for Māori, all ages, Bay of Plenty DHB, 2014 to 2018

Cause	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female								
Ischaemic heart disease	19	28.4	(16.2, 45.5)	98	8.3	(6.2, 10.9)	**3.40**	**(1.95, 5.93)**

Rate ratios

Technical definition

Rate ratios, often referred to as relative risks, are a measure of the relationship between the occurrence of a certain event in two different groups, typically standardised for age (see section on age standardisation above) to allow fair comparison. It is the result of the rate of the event in the first group (for example, Māori) divided by the rate in the second group (non-Māori), which serves as the reference group. A rate ratio of 1 indicates parity between groups, above 1 indicates a higher rate in the first group, and below 1 indicates a lower rate. In general, the data presented in this report uses Māori as the first group and compares it with non-Māori as the second group.

Plain English definition

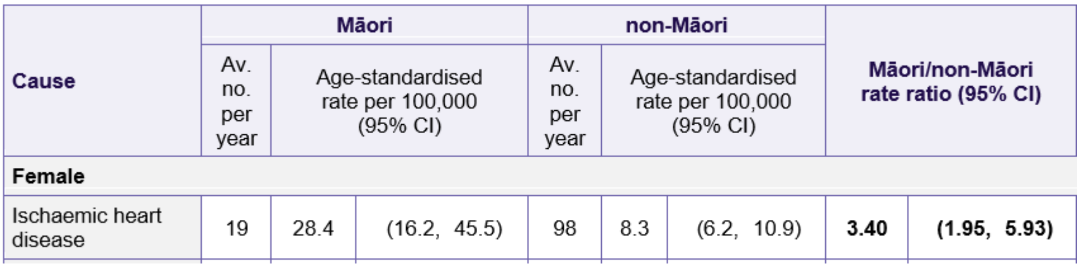
A rate ratio compares how common something, like a disease, is between two different groups of people, like Māori and non-Māori. If the ratio is exactly 1, both groups are equally affected. If it's higher than 1, it means that the first group, in this case Māori, has the event happen more often. If it's lower, Māori have it happen less often. It tells us the relative disparity between two groups.

Example from the report

In the table below, the rate ratio for ischemic heart disease is 3.40. This tells us that Māori females are more than three times as likely to suffer from this condition compared to non-Māori females after considering the age distribution in each group.

The 95% confidence interval (see section on confidence intervals above) of 1.95 to 5.93 for this rate ratio indicates that we are very sure that the true rate ratio is significantly different from 1, indicating a genuine disparity in risk between the two populations. In this report, a statistically significant difference between groups is evident when the confidence interval for the rate ratio does not cross 1. These results are shown in **bold** type.

Table 6 - Leading causes of death for Māori, all ages, Bay of Plenty DHB, 2014 to 2018



Cause	Māori			non-Māori			Māori/non-Māori rate ratio (95% CI)	
	Av. no. per year	Age-standardised rate per 100,000 (95% CI)		Av. no. per year	Age-standardised rate per 100,000 (95% CI)			
Female								
Ischaemic heart disease	19	28.4	(16.2, 45.5)	98	8.3	(6.2, 10.9)	**3.40**	**(1.95, 5.93)**

2. Key methods and quality limitations of key data sources

This section describes in more detail the specific methods used, and key limitations of, each of the main data sources used in this report.

Methods

Numerators

Data in this second volume of IMPB profiles are sourced from Te Whatu Ora, Manatū Hauora (the Ministry of Health), and Statistics New Zealand (StatsNZ). Where administrative data (e.g. national mortality data) are used, the most recent year range with complete, verified data has been chosen. Different data sources go through different processes of verification and for some data (e.g. deaths) there is a longer delay to make sure that all deaths have been accurately recorded with the correct cause. For events that are not common (such as deaths or hospitalisations for specific causes), three to five-years' worth of data have been analysed together, to provide a better chance of detecting statistically significant differences between groups. Census data were taken from the 2018 Census, which is the most recent Census with data released for use.

Denominators

StatsNZ mid-year (at 30 June) estimated resident population was used as denominator data in the calculation of population rates for deaths, hospitalisations, immunisation, screening, and most health service utilisation. For smoking, the denominator is the people for whom there is a response from the census dataset for the question asked ('people stated'). In the NZHS data, the denominator is the number of respondents from whom data is available for the particular question.

Ethnicity data

Ethnicity data quality

Although high quality ethnicity data are critical for Māori health improvement, ethnicity data quality in the health sector remains poor (Harris, Paine et al. 2022). It is the responsibility of the entire health system to collect, record and report ethnicity data in the ways set out in the HISO 10001:2017 Ethnicity Data Protocols (Ministry of Health 2017). Despite the protocols being in existence for nearly 20 years, there is evidence that they are not being adhered to and Māori have continued to be systematically undercounted (Cormack D and McLeod M 2010, Harris, Paine et al. 2022). Self-identified ethnicity recorded on the Census is considered to be the "gold-standard" for ethnicity data, so this is used as the denominator for most variables in this report.

To understand what impact the ethnicity data quality is likely to have, on the accuracy of the results presented in this report, we need to consider the ethnicity data quality in both the numerator and the denominator. For some measures, it may underestimate the true number of, or rate of, a particular outcome for Māori. The potential impact of ethnicity data weaknesses is discussed for each data source later in this Appendix.

Ethnicity classification

When analysing data, there are different ways to classify people who report multiple ethnicities. The two main ways are *total response (overlapping) output* and *prioritised output.* In total response output, each respondent is counted in each of the ethnic groups they reported. So, individuals who indicate more than one ethnic group are counted more than once, and the sum of the ethnic group populations will exceed the total population of NZ. For example, using total response classification, a death from lung cancer in an individual who identifies as Māori and New Zealand European, will be reported as a lung cancer death for both ethnicities.

In prioritised output, each respondent is allocated to a single ethnic group using a prioritisation order, with Māori first, to ensure that ethnic groups of policy importance or of small size, are not swamped by the New Zealand European ethnic group. Under this method, a person is classified as Māori if any one of their recorded ethnicities are Māori. For example, using prioritised classification, a death from lung cancer in a person recorded as both Māori and New Zealand European, would be counted as a lung cancer death for Māori, and not in non-Māori.

In this report wherever possible, prioritised ethnicity classification was used when people identified with more than one ethnic group.

Comparison group

Indicators compare Māori with non-Māori. Non-Māori includes all people who do not identify as Māori and represent a comparative or reference group. This is a common approach to measuring Māori health equity. Paine et al. (Paine, Cormack et al. 2020) note that, “the use of Māori/non-Māori analyses acknowledged the fundamental nature of our relationship with the Crown affirmed in Te Tiriti o Waitangi“ (p193). Additionally, a Māori/non-Māori analysis is often the more straightforward practically in the context of data quality and statistical power limitations and provides a non-overlapping comparison group. The limitations of this approach relate to difficulty in conceptualising non-Māori as a group which includes a number of different ethnic groups. Also, Māori/non-Māori comparisons will often underestimate inequities between Māori and NZ European in part because of the inclusion of Pacific in the non-Māori group (who more often have similar health and socioeconomic experiences to Māori).

Age-standardised and crude rates

This report uses direct age-standardisation; most rates (unless noted otherwise) are standardised to the 2001 Census Māori population. Where data were not available with sufficient age group breakdown to allow age standardisation, or data for a specific age were presented, crude rates were calculated. In this case, caution should be taken when comparing Māori with non-Māori results. Crude rates accurately portray a situation in each population, but make comparisons difficult, because they do not consider the different age distributions in each of the populations (e.g. the Māori population is much younger than the non-Māori population). Rates were not calculated for counts fewer than five in data from national collections.

Confidence intervals

This report has endeavoured where possible to provide local data specific to IMPBs and their relevant DHB areas. Some of these areas have small populations. As the size of the group becomes smaller, the confidence interval (CI) becomes wider, and there is less certainty about the rate. This means the degree of confidence and certainty about the numbers diminishes for rohe (regions) with smaller populations. Thinking of the data as 'indicative' rather than precise is important in these rohe, as well as considering Māori-specific regional and national data, which will have greater certainty around rates, because of the larger sample size.

When the CIs of two groups do not overlap, the difference in rates between the groups is considered statistically significant. Sometimes, even when there are overlapping CIs, the difference between the groups may be statistically significant. Determining that would require further statistical testing which has not been undertaken for this report.

Rate ratios

Age-standardised rate ratios are used in this report to compare age-standardised rates between Māori and non-Māori. The rate ratio (RR) is equal to the age-standardised Māori rate divided by the age-standardised non-Māori rate. The non-Māori population is used as the reference population. For example, an age-standardised RR of 1.5 means that the rate is 50 percent higher (or 1.5 times as high) in Māori than in non-Māori, after taking into account the different age structures of these two populations. This report gives rate ratios and their 95 percent CIs. In this profile, if the CI of the rate ratio does not include the number 1, the ratio is said to be statistically significant. Differences presented in this profile in **bold** are statistically significant.

Geographical alignment between IMPB and DHB areas

This report has endeavoured to report data specific to each IMPB health planning area and has used several slightly different methods to do this in different chapters of the report.

Since Volume One of the IMPB profiles was published in late 2023, we have refined the method for estimating IMPB population estimates. Volume Two of the IMPB profiles uses more recent population estimates for IMPB health areas (undertaken by Manatū Hauora in February 2024). There will be some differences in the new IMPB population estimates from those presented in Volume One of the profiles, related to the different allocation of SA2 geographies (including how "emerging" IMPB health areas are assigned), different population download dates, and more recent year of source data for SA2 identification.

For most measures, the IMPB population has been calculated using the sum of the main DHBs it contains. So, for example IMPB mortality data for Te Taumata Hauora o Te Kahu o Taonui will include all of Northland, Auckland and Waitematā DHBs, even though that includes communities such as Ōtāhuhu which are not part of the IMPB.

For data on missed First Specialist Appointments and diabetes complications, the population for an IMPB has been calculated using geographies (SA2 areas or Territorial Authority/Local Boards) that are smaller than the previous DHB districts, to be able to better align with the IMPB health planning areas. This means the Te Taura Ora o Waiariki and Tūwharetoa IMPBs have been able to be split out separately, and Ōtāhuhu has been included as part of Ngaa Pou Hauora oo Taamaki Makaurau, rather than Te Taumata Hauora o Te Kahu o Taonui (historically Ōtāhuhu was part of Auckland DHB rather than Counties Manukau DHB, so the Auckland Council Local Board Māngere-Ōtāhuhu spanned the boundary between the DHBs)[11]. In some cases, for example at the Nelson-Marlborough/Te Tauraki border, the IMPB health planning area did not align completely with SA2 areas.

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[11] Ōtāhuhu has a population of approximately 16,000 people, the majority of whom identify as Pacific and Asian (Indian). The area is classified as NZDep2018 deciles 9&10 – the most socio-economically challenged areas.

Additionally, births data for Te Taura Ora o Waiariki and Tūwharetoa IMPBs is presented using both approaches – the DHB level data (from the Ministry of Health source which is more accurate for Māori, but unable to be reported by smaller areas) and Territorial Authority level data for Rotorua and Taupo separately (using the births registration database, which undercounts Māori babies more than the Ministry of Health data).

Data sources

Births, maternity care, breastfeeding and newborn primary care enrolment

Data on births, maternity care, breastfeeding and newborn primary care enrolment come from the National Maternity Collection. This is collated by the Ministry of Health from data supplied by districts, Lead Maternity Carers and other claimants from the Primary Maternity Services Notice. In addition, the Well Child Tamariki Ora (WCTO) programme collects data on the delivery of universal health services to children under five years old and their whānau in New Zealand, including from WCTO service providers, who enter data into their information systems. The quality of these data were poor and inconsistent, and not considered safe or reliable to present for these IMPB profiles.

Additionally, for Te Taura Ora o Waiariki and Tūwharetoa IMPBs the number of births is also presented from the birth registration data collected by the Department of Internal Affairs, under the provisions of the Births, Deaths, Marriages, and Relationships Registration Act 1995. These data were not presented for other IMPBs as it has been found to undercount Māori births more than the National Maternity Collection (Te Whatu Ora - Health New Zealand 2024). It was however the only database which could be disaggregated to geographical areas smaller than a DHB, so it is presented alongside DHB level data for Te Taura Ora o Waiariki and Tūwharetoa.

Immunisation

Immunisation data comes from the National Immunisation Register (NIR), which collected immunisation details of New Zealand children born since 2005. It was replaced by the Aotearoa Immunisation Register in December 2023. The NIR was updated weekly, but the reliability of the data depended on timely and accurate data entry from providers. The NIR might have undercounted immunisation coverage for Māori children due to factors like lower primary care enrolment rates or higher use of outreach, meaning Māori children's immunisations were less likely to be captured consistently, with potential gaps in data linking between different immunisation providers. Despite these limitations, a 2021 study found that the sensitivity of the NIR was 92% and its specificity was 81% when compared with parent-held health-record books (Howe, Chisholm et al. 2021).

Oral health service data

As part of their contract with Te Whatu Ora, community oral health services are required to report information on patient demographics, oral health status, and treatments provided, using ethnicity as recorded in the NHI.

Hospitalisations

Hospitalisations come from the National Minimum Dataset (NMDS), a national collection that stores information on hospital discharges from public and some private hospitals in New Zealand. It includes data on inpatients and day patients, and some data on publicly funded events from private hospitals. For most hospitalisations data presented in this report, emergency department stays of longer than 3 hours are included as a hospitalisation. This needs to be taken into account when comparing rates with sources that exclude these types of admissions. In this report, data were suppressed when there were fewer than an average of one event per year during the time period analysed.

The accuracy of ethnicity data in the NMDS has improved over time, however multiple analyses have found that hospitalisations for Māori continue to be undercounted in the NMDS, with the magnitude of the undercount in the range of 5-15%, varying by age (Cormack 2010, Scott, Clark et al. 2018). The undercounting of Māori hospital discharges has implications for accurately monitoring Māori health status, service utilisation, and health inequities. Undercounting events in the Māori population leads to underestimation of the actual frequency of events in this group while overestimating their frequency in other populations.

Smoking

Smoking data comes from the 2018 Census of Population and Dwellings. Due to changes in the 2018 Census methodology and lower than anticipated response rates, as described further below, time series data for census variables should be interpreted with care. The 2018 Census was the first ‘digital-first’ census undertaken in Aotearoa, as a part of modernising and streamlining the census process. Unfortunately, the 2018 Census had a very low response rate overall, and especially for Māori and Pacific peoples - approximately 68% for Māori and 65% for Pacific peoples. Adjustments were made to improve the quality of the data (for example, using data from previous censuses and other administrative datasets), and the overall quality of the 2018 Census data is now considered moderate/good. However, the adjustments do not affect the Māori and non-Māori population in the same way. For example, in the 2018 Census, 29% or more of the ethnicity data for Māori came from other sources. This means that the ethnicity data in the 2018 Census for Māori is not of the same quality as the data for the NZ European ethnic population, for example, which had only 11.5% of their responses from these other sources.

In terms of the data presented in Volume Two of the IMPB profiles, cigarette smoking self-response data from the 2018 Census was used in a statistical model combined with data from the 2013 Census to predict what the missing data would have been (called imputation). StatsNZ has provided quality ratings for the 2018 Census data to help users determine how to interpret the data for each variable. Along with StatsNZ’s own quality ratings, they also engaged an External Data Quality Panel which included Māori population experts, who provided their assessment of the census data quality. The cigarette smoking status results for Māori were particularly impacted by the 2018 Census. Further details on the adjustment methods used in the 2018 Census can be found online via StatsNZ[12]. The External Data Quality Panel noted that smoking among Māori may be overestimated by 1.0% in the 2018 Census. In addition, small geographic area results may be unreliable. Kawerau and Wairoa Districts were highlighted as examples of biased results in regions and territorial authorities due to high non-response rates in 2018. The overall message from the ratings is that the data can provide insights into the situation for Māori whānau, but it should be seen as indicative rather than precise.

StatsNZ apply confidentiality rules to census data to protect the confidentiality of individuals, families, households, dwellings, and undertakings in 2018 Census data. Counts are calculated using a method called fixed random rounding to base 3, and suppression of ‘sensitive’ counts less than six, where tables report multiple geographic variables and/or small populations. This means individual figures may not

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[12] https://www.stats.govt.nz/assets/Uploads/Reports/Final-report-of-the-2018-Census-External-Data-Quality-Panel/Downloads/Final-report-of-the-2018-Census-External-Data-Quality-Panel-corrected.pdf

always sum to stated totals[13].

New Zealand Health Survey

Data on vaping, body size, mental health problems and alcohol and cannabis use come from the New Zealand Health Survey (NZHS). The NZHS is a nationally representative survey conducted and reported annually by the Ministry of Health. It provides valuable information on the health and well-being of the population and collects data on a wide range of health topics, such as health status, health behaviours, healthcare utilisation, and sociodemographic factors. Using a representative sample of approximately 14,000 adults (15 and older) and 5,000 children (14 and younger), the survey involves face-to-face interviews with participants from all regions of the country, with oversampling of Māori, Pacific, and Asian populations to ensure adequate representation (Ministry of Health 2023).

The NZHS sample is sufficiently large to provide national estimates for the Māori population. To provide Māori estimates for smaller geographic areas, multiple years of NZHS survey data have been combined. The NZHS relies mostly (except for body size which is measured) on self-reported data; this can be subject to recall bias or social desirability bias.

Mortality data

Information on deaths come from the National Mortality Collection. This classifies the underlying cause of death for all deaths registered in NZ. NZ is currently using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) classification and the World Health Organization (WHO) ICD Rules and Guidelines for Mortality Coding. Mortality data are presented for Māori and non-Māori. In each data set, a person was classified as Māori if any one of their recorded ethnicities was Māori. The year range of 2016 to 2020 was used for cancer deaths, and 2014 to 2018 for deaths from other causes, as verified mortality data records were not available for later years at the time of writing. Deaths referred to the coroner for example can take more than two years to be fully investigated. In this report, data were suppressed when there were fewer than an average of one event per year during the time period analysed.

The DHB of residence was determined from the domicile code attached to the death registration (so even if a person passed away at a tertiary hospital outside their home region, their death would be recorded as one in their home DHB). In tables presenting data on causes of death, data is not presented where there were fewer than five Māori events during the period represented by the data. There are several different methods of classifying causes of death as “potentially avoidable”, “preventable” or “amenable”. The ICD-10-AM codes used for potentially avoidable death tables in this report are listed in the next Appendix.

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[13] More info on Census confidentiality rules: Applying confidentiality rules to 2018 Census data and summary of changes since 2013 | Stats NZ

Virtual Diabetes Register

Diabetes data comes from the Virtual Diabetes Register (VDR), a national database that estimates the prevalence of diabetes in NZ. It uses data from various sources, including:

1. National Health Index (NHI) numbers
2. Hospital admissions data for diabetes-related conditions, based on ICD-10-AM diagnosis codes
3. Outpatient attendance data for diabetes education, management, and retinal screening
4. Pharmaceutical claims data for specific diabetes medications
5. Laboratory test claims data for HbA1c and albumin/creatinine ratio tests

The VDR algorithm identifies individuals as having diabetes if they meet specified criteria within a calendar year and were enrolled in a PHO at 31 December of the reported year (Te Whatu Ora - Health New Zealand 2023).

The VDR may underestimate the true prevalence of diabetes, especially for Māori, as it only captures individuals who have been diagnosed and have interacted with the healthcare system. People with undiagnosed diabetes or those who do not regularly access healthcare services may not be included in the VDR. In the quarter ending December 2023, the PHO enrolment rate for the Māori population was only 85%, significantly lower than the total population enrolment rate of 97% (Te Whatu Ora - Health New Zealand 2023). This lower PHO enrolment rate for Māori is likely to lead the VDR to underestimate the prevalence of diabetes in the Māori population. Furthermore, even when enrolled in a PHO, Māori are less likely to access services due to barriers such as cost and transport, adding another likely cause of underestimating the true prevalence of diabetes among Māori. PHO enrolment data has also been noted to undercount Māori enrolled due to inaccuracies in ethnicity data.

National Non-Admitted Patient Collection (NNPAC)

Data on outpatient care comes from the National Non-Admitted Patient Collection (NNPAC), a national dataset that collects information on outpatient and emergency department events in New Zealand. The ethnicity data in NNPAC is sourced from the NHI database, rather than being collected directly during healthcare events. As stated previously, misclassification of those with Māori ethnicity has been noted in the NHI database. This has led to undercounting of the actual number of health events for Māori.

New Zealand Cancer Registry Data

Cancer diagnoses come from the New Zealand Cancer Registry (NZCR), a national collection of data on all primary cancers diagnosed in New Zealand, excluding squamous and basal cell skin cancers. The NZCR primarily relies on pathology reports to identify new cancer cases. In this report, data were suppressed when there were fewer than an average of one event per year during the time period analysed.

Ethnicity data in the NZCR is sourced from various datasets, including the NHI, NMDS and National Mortality Collection. The reliability of ethnicity data in the NZCR has improved over time, but some limitations persist. Some cancer registrations have missing ethnicity data or staging data (Seneviratne, Campbell et al. 2014), Māori are more likely to be misclassified as non-Māori in the NZCR compared to other ethnic groups. Analyses using data linkage have demonstrated that Māori cancer registrations have been undercounted in the NZCR, with the extent of undercounting varying over time and by age group. The NZCR has implemented a new ethnicity data protocol to address these issues since 2009. The protocol uses an algorithm that assigns ethnicity based on information from multiple data sources, including the NHI, NMDS, and Mortality Collection. This approach aims to improve the accuracy of ethnicity data for Māori and other ethnic groups, although some limitations may still exist.

Cancer Screening Data

Cancer screening data comes from data collected directly by the screening programmes, managed by the National Screening Unit in Te Whatu Ora. Ethnicity comes from the NHI. Population denominator data is sourced from Statistics New Zealand 2018 Census Population Projections 2023 update. The denominator is the projected population for the mid-point of the monitoring period. For example, this means that for the two-year period ending Dec 2023, the denominator is the projected population for Dec 2022.

PRIMHD

Data on wait times for specialist mental health appointments is drawn from the Programme for the Integration of Mental Health Data (PRIMHD) system, a national database that integrates mental health and addiction service activity and outcome data from multiple sources, including the former DHBs and Non-Governmental Organisations (NGOs) that provide publicly funded services. It does not collect mental health data from the private sector. PRIMHD collects ethnicity data from DHBs, gathered during interactions between service users and healthcare providers. The reliability of PRIMHD data for Māori is affected by inconsistencies in ethnicity data collection practices across the health sector. This is likely to result in the undercounting and misclassification of Māori individuals.

Appendix 2 – ICD-10-AM Codes

The International Classification of Diseases (ICD-10-AM) codes used for calculation of ambulatory care sensitive hospitalisations are presented below.

Table 54 – Ambulatory care sensitive hospitalisation ICD-10-AM codes

Condition	ICD-10-AM Code
Angina and chest pain*	I20, R072-74
Congestive heart failure*	I50, J81
Hypertensive disease*	I10-13, I15, I674
Myocardial infarction*	I21-23, I241
Other ischaemic heart disease*	I25, I240, I248-49
Rheumatic fever/heart disease	I00-02, I05-09
Dental conditions	K02, K04-05
Cellulitis	H000, H010, J340, L01-04, L08, L980
Dermatitis and eczema	L20-30
Constipation	K590
Gastroenteritis/dehydration	A02-09, K529, R11
Gastro-oesophageal reflux disease (GORD)	K21
Nutrition deficiency and anaemia	D50-D53, E40-46, E50-56, E58-61, E63, M833*
Peptic ulcer*	K25-28
Asthma	J45-46, R062§
Bronchiectasis*	J47
Chronic obstructive pulmonary disease (COPD)*	J44
Lower respiratory infections§	J22
Pneumonia	J13-16, J18
Upper and ENT respiratory infections	H65-67, J00-04, J06
Vaccine preventable MMR†	B05-06, B26, P350
Other vaccine preventable disease‡	A33-37, A80, A403, B16, B18
Cervical cancer*	C53
Diabetes*	E10-11, E13-14, E162
Epilepsy*	G40-41, O15, R560, R568
Kidney/urinary infection¶	N10, N12, N136, N309, N390
Sexually transmitted infections*	A50-60, A63, A64, M023, N341
Stroke*	I61, I63-66

Source: Ministry of Health

Notes: An inpatient hospital event is identified as an ASH event if the hospital admission is acute, the patient is aged 0 to 4 or 45 to 64 years, and the event primary diagnosis is included in the list of ASH conditions (ICD-10-AM Eighth Edition and DRG version 7). Elective events for dental conditions are included.

§ Aged 0 to 4 years. ‡ Aged 6 months to 14 years. †Aged 15 months to 14 years. * Aged 15 years and over.

The International Classification of Diseases (ICD-10-AM) codes used for calculation of potentially avoidable hospitalisations are presented below.

Table 55 – Potentially avoidable hospitalisation ICD-10-AM codes

Group	Condition	ICD-10-AM Code
Cardiovascular diseases	Acute rheumatic fever	I00, I02
	Chronic rheumatic heart diseases	I05-09
Dental conditions	Dental caries	K02
	Diseases of pulp and periapical tissues	K04
Dermatological conditions	Dermatitis and eczema	L20-21, L22[‡], L23-30
	Skin infections	H000, H010, J340, L00-05, L08, L980
Diabetes complications	Diabetes complications	E10-11, E13-14, E162
Epilepsy	Epilepsy	G40-41, O15, R568
Gastrointestinal diseases	Constipation	K590
	Gastroenteritis/dehydration	A00-09, R11, K529
	Gastro-oesophageal reflux disease	K21
	Peptic ulcer*	K25-28*
Kidney, urinary tract infection	Kidney, urinary tract infection[†]	N10, N12, N136, N300, N309, N390
Meningococcal infection	Meningococcal infection	A390-95, A398-99
Nutrition deficiency and anaemia	Anaemia	D50-53
	Nutritional deficiency	E40-46, E50-56, E58-61, E63-64, M833[‡]
Other non-injury conditions	Other non-injury conditions	A87, A403, B34 G01-03, M86
Otitis media	Otitis media	H65-67
Respiratory conditions	Asthma, Wheezing	J45-46, R062
	Bronchitis, Bronchiolitis and Bronchiectasis	J20, J21[‡], J47
	Lower respiratory tract infection (LRTI)	J22
	Pneumonia	J12, J15-16, J18, J69, J851
	Upper respiratory and ENT infections	J00-04, J06, J050
Sexually transmitted infections (STIs)	Sexually transmitted infections (STIs)	A50-60, A63-64, M023, N341
Vaccine-preventable diseases	Chronic viral hepatitis	B180-82
	Diphtheria	A36
	Hepatitis A	B150, B159
	Hepatitis B	B160-62, B169
	Hepatitis C	B171

	Influenza and related pneumonia, meningitis	G000, J09-11, J13-14
	Measles	B050-54, B058-59
	Mumps	B260-63, B268-69
	Poliomyelitis	A80
	Rubella	B06, M014, P350
	Tetanus	A33[‡], A34-35
	Tuberculosis	A15-19
	Varicella	B010-12, B018-19
	Whooping cough	A370-71, A378-79

Source: Ministry of Health.
Notes: ICD-10-AM Eighth Edition.
† 5 years old and over.
‡ 0 to 14 years.
* 0 to 15 years.

Appendix 3 – Māori 2001 Population

The table below shows the 2001 Māori population standard used for age-standardisation in this report, including the weightings applied to each age group.

Table 56 – 2001 Census total Māori population

Age group (years)	2001 Census total Māori population	Weighting
0–4	67,404	12.81
5–9	66,186	12.58
10–14	62,838	11.94
15–19	49,587	9.42
20–24	42,153	8.01
25–29	40,218	7.64
30–34	39,231	7.46
35–39	38,412	7.30
40–44	32,832	6.24
45–49	25,101	4.77
50–54	19,335	3.67
55–59	13,740	2.61
60–64	11,424	2.17
65–69	8043	1.53
70–74	5046	0.96
75–79	2736	0.52
80–84	1251	0.24
85+	699	0.13

Te rārangi tohutoro

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