Health New Zealand
Te Whatu Ora

Life Expectancy in Aotearoa New Zealand: An Analysis of Socioeconomic, Geographic, Sex and Ethnic Variation from 2001 to 2022

Technical Report

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Planning, Funding and Outcomes

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Technical Reports are developed for the health sector and may be of interest to a wider audience.

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1 Introduction

Life expectancy is a key measure of the health status of a population. It is defined as the average number of years a baby born in a specific area or population is expected to live, assuming it experiences the current age-specific mortality rates of that area or population throughout its life.

However, it is important to note that mortality rates are not static and will likely change over time. Factors such as advancements in healthcare, changes in living conditions, and other socio-economic influences can alter mortality rates, impacting real-life expectancy. These changes often lead to improvements in survival rates and an increase in the actual number of years lived compared to initial projections. Despite this, life expectancy remains a valuable metric for assessing and comparing the overall health and well-being of different populations. It provides a snapshot of current health conditions and helps guide policy and resource allocation to improve health outcomes.

This report complements the Aotearoa New Zealand Health Status Report 2023 by detailing life expectancy trends over the past two decades and identifying inequities and improvements across various groups. It includes analyses by sex, ethnicity, and socioeconomic status, and extends to different geographical classifications, including rural areas, regions, districts, and Iwi-Māori Partnership Board areas.

The report further investigates the life expectancy gap, breaking it down by potentially avoidable causes of death to better understand the underlying factors contributing to the observed differences. Accompanied by technical appendices, this report serves as a comprehensive statistical resource on the dynamics of life expectancy in New Zealand.

1. Chiang, C. L. (1984). *The Life Table and Its Applications*. Malabar, FL: Robert E. Krieger Publishing Company.

1.1 Methodology

Life expectancy is calculated by constructing a current life table that applies age-specific mortality rates to a hypothetical cohort of new-borns. For period life expectancy, an abridged life table following the Chiang II[1] methodology extending to an upper age limit of 90 years and beyond was used, with mortality data sourced from the Ministry of Health and population data from Stats NZ. Life expectancy estimates were derived from either three-year rolling mortality data (2001 to 2022) or a five-year interval (2018 to 2022) to ensure more robust estimates for some small areas and populations.

Where ethnicity is presented, these are prioritised according to standard protocols[2]. Life expectancy gaps for Māori and Pacific peoples are calculated relative to non-Māori/non-Pacific (nMnP) groups. Where this is not the case, it is noted in the text. More details of the methodology can be found in Appendix 1.

1.2 Limitations of life expectancy as an indicator

Life expectancy is a key population health indicator and is important in highlighting inequities between groups, such as those observed among Māori and Pacific peoples in New Zealand. It can support greater understanding and knowledge about differential disease prevalence, risk factors, and the influence of social determinants on health outcomes. While this analysis is insightful and broadens our understanding of health inequities, it is important to note that it focuses on quantity of life rather than quality and is likely to not capture all the factors contributing to the observed inequities. Therefore, it does not fully capture the lived experience of people living with long-term chronic conditions. A deeper understanding of the figures reported here is achieved when one also factors in the interaction of the various determinants of health. For a more comprehensive discussion on life expectancy and its limitations please see Appendix 3.

2. Ministry of Health. 2017. HISO 10001:2017 *Ethnicity Data Protocols*. Wellington: Ministry of Health.

1.3 Decomposition analysis

Decomposition analysis[3] provides a method for understanding differences in life expectancy, revealing the various causes of death that contribute to the observed differences between groups. This approach is particularly useful for identifying factors within an ethnic group or across socio-economic strata. For example, it can be used to investigate the nearly 7-year life expectancy gap between Māori and the non-Māori/non-Pacific population. The causes of death contributing to a life expectancy gap can be interpreted as elevated mortality rates at younger ages for specific conditions.

For instance, a 0.9-year gap in life expectancy due to lung cancer among Māori can be interpreted as higher mortality rates at a younger age among Māori compared to the reference group, which in this case comprises the non-Māori/non-Pacific population.

An important aspect of this approach lies in its ability to contribute to our understanding of how healthcare systems and public health policies can be most effective. It highlights the impact of preventable diseases, environmental factors, and lifestyle choices on mortality rates, providing insights into how changes in these areas can lead to improvements in life expectancy. This analysis can be used for developing targeted health strategies aimed at reducing preventable deaths, particularly in underserved or high-risk populations.

Analysing life expectancy by diseases and risk factors is valuable, but it should be accompanied by broader considerations that address systemic issues and the social determinants of health. Solutions that focus solely on immediate health outcomes might inadvertently overlook the need for wider systemic changes. It is essential that interpretations of life expectancy extend beyond individual-level interventions to include societal-level reforms within the broader health system[4]. To address this requires comprehensive data collection and monitoring the performance of the entire health system. This kind of whole system overview would involve the comprehensive collection of health data across various demographics to identify and address inequities influenced by socio-economic factors, environmental conditions, and access to healthcare. Moreover, initiatives need to be aimed at improving health infrastructure, enhancing healthcare accessibility, and promoting health equity. These initiatives could include collaborating with community organisations, policymakers, and healthcare providers to implement reforms that improve living conditions, education, and economic opportunities, initiatives that can be crucial for enhancing overall health outcomes.

The integration of these broader systemic interventions with disease-specific and risk factor analyses allows for a more holistic understanding and approach to improving life expectancy. These efforts can not only lead to immediate health improvements but also to long-term, sustainable changes that address the root causes of health inequities within the health system.

3. Auger, N., Feuillet, P., Martel, S., Lo, E., Barry, A. D., & Harper, S. (2014). Mortality inequality in populations with equal life expectancy: Arriaga's decomposition method in SAS, Stata, and Excel. *Annals of Epidemiology*, 24(8), 575-580.e1. doi:10.1016/j.annepidem.2014.05.006
4. Curtis, E. T. (2017). *Actions to reduce the Māori life expectancy gap for Waitematā and Auckland DHBs.*

1.4 Avoidable mortality

Within the life expectancy decomposition sections, causes of death are defined using a classification known as 'potentially avoidable mortality'. Avoidable mortality[5] refers to deaths that, based on a single underlying cause, could potentially be avoided through effective public health measures and medical interventions. The causes included in the definition are defined and regularly updated by research institutions and through expert opinion. This concept encompasses three distinct categories: deaths are either preventable only, amenable only, or both preventable and amenable.

- **Preventable only:** These deaths could potentially be avoided through public health initiatives such as lifestyle interventions, environmental changes, and vaccination programmes.
- **Amenable only:** These deaths could potentially be prevented through timely and effective medical treatments and healthcare services.
- **Both preventable and amenable:** These deaths are potentially avoidable through a combination of both public health measures and medical interventions, highlighting the overlap where comprehensive health strategies can have a significant impact.

When analysed through the lens of potentially avoidable mortality, life expectancy gap decomposition becomes a valuable tool in public health. This approach focuses on understanding differences in life expectancy by examining deaths that could have been potentially avoided through effective public health interventions, access to healthcare, or changes in personal behaviours. By categorising causes of death as potentially avoidable, this method highlights specific areas where targeted interventions could reduce mortality and improve population health. It underscores the potential for population health gain through preventive measures and medical care, informing policymakers and healthcare providers where to focus their efforts for the greatest impact. A definition of the underlying conditions included in this measure can be found in Appendix 2.

1.5 Non-avoidable mortality classification

In this report, 'non-avoidable' refers to those deaths that fall outside the strict definition of avoidable mortality. It includes deaths that current medical and public health interventions may not be able to effectively prevent or treat, based on current medical technology and our present understanding of their direct causal pathways.

5. Avoidable mortality is not a definitive indicator. While categorical attribution is suitable for some avoidable causes, it oversimplifies conditions where counterfactuals matter. For these, it's better to model the preventable fraction of deaths under specific scenarios (e.g., association of smoking with lung cancer deaths)

This category typically includes deaths from genetic conditions without preventive options, diseases at advanced stages lacking effective treatments, such as advanced cancers, and fatal injuries from unavoidable accidents. However, it is crucial to recognise that broader social and economic determinants of health – such as income, education and housing, are not directly addressed under this classification. Historic and contemporary causes or influences on those determinants must also be considered, including the effectiveness – or ineffectiveness as a result of poor design, bias or discrimination – of public services for different groups of people.

While some deaths are categorised as non-avoidable with today's technology and medical knowledge, it is important to acknowledge that, in the long term, many inequities in mortality could potentially be eliminated through comprehensive government policies and intersectoral actions. Classifying deaths as non-avoidable should not detract from efforts to address preventable and treatable conditions but should highlight the current limits of healthcare and public health capabilities. For those using insights and data from this report, the term 'non-avoidable' must be approached with caution to prevent it from justifying underinvestment in health equity and obscuring the fact that many underlying causes of mortality and gaps in life expectancy are unjust and addressable[6].

1.6 Comparison with other life expectancy data

There are multiple methodologies and slight variations between methods for calculating life expectancy, and these can lead to variations in estimates. For example, one method might use the 85+ age group as the upper limit, while another might extend to 90+, affecting the precision of the life expectancy calculations for older populations. Additionally, slight differences in population estimates, such as those derived from different census data or demographic models, can influence the results. The handling of ethnicity also varies; some calculations may use total response ethnicity, where individuals are counted in every ethnic group they identify with, while others use prioritised ethnicity, where individuals are counted in a single, primary ethnic group. These methodological differences mean that the life expectancy estimates in this report might differ from those reported elsewhere.

6. Baker, G. Choose the right words: Misapplication of terms obscures inequities. *New Zealand Doctor* (2024). https://www.nzdoctor.co.nz/article/opinion/choose-right-words-misapplication-terms-obscures-inequities?mc_cid=b100bfb4f0

2 Overall Summary

Over the past two decades, New Zealand has seen a significant improvement in life expectancy overall and across various population groups, with progress made in reducing the life expectancy gap, particularly for Māori.

- Across the years covered in the report 2001-2022, overall life expectancy has improved from 81 to 84 years and from 77 years to 81 years for males.
- For individuals living in the least socioeconomically deprived areas in the country (Quintile 1), life expectancy stands at 86 years for females and 83 for males.
- Apart from very remote rural areas, life expectancy is consistent (81 to 83 years) across urban and rural parts of the country.
- Māori have experienced an increase in life expectancy, from approximately 72 years to 77 years.
- Life expectancy among Pacific peoples increased from around 74 years to 77 years, while the gap between Pacific and non-Māori, non-Pacific has remained the same.
- The Asian population consistently has the highest life expectancy, which increased from about 85 years to nearly 88 years.
- 'European and Other'[7] ethnicities saw life expectancy increase over the past two decades, from 80 to 83 years.
- The life expectancy gap between Māori and other ethnicities has been narrowing. It began at 8.3 years in 2001 to 2003 and had reduced to 6.6 years by 2020 to 2022, a 20% decrease.
- New Zealand was a positive outlier in terms of life expectancy during the COVID-19 pandemic. While global life expectancy declined by 1.6 years between 2019 and 2021 due to the pandemic, New Zealand was among the few countries that saw an increase.

7. 'European and Other' includes Europeans, MELAA and any other ethnicities outside of Māori, Asian and Pacific Peoples.

Figure 1: Longitudinal trends in life expectancy from 2001 to 2022, three-year aggregated estimate, New Zealand

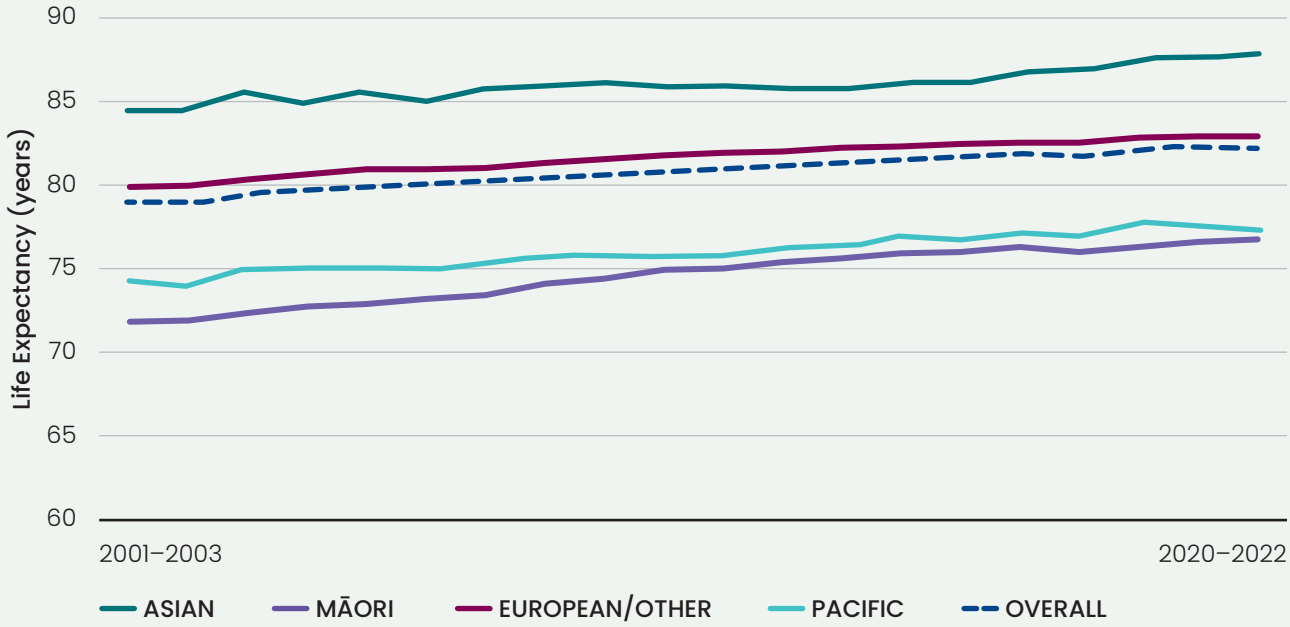
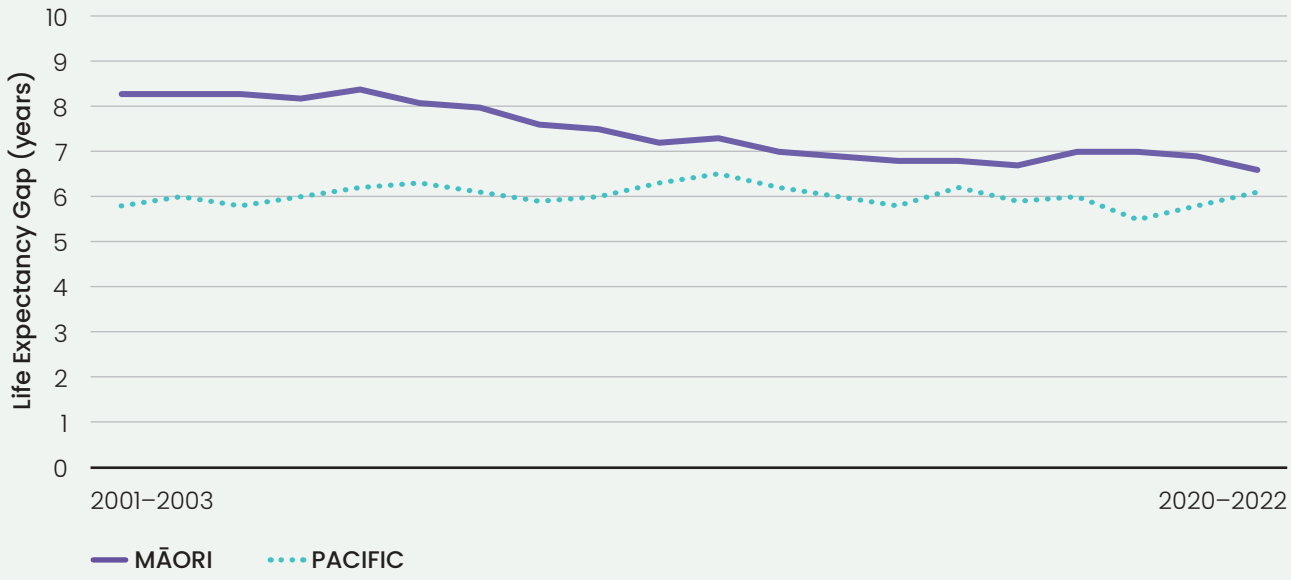


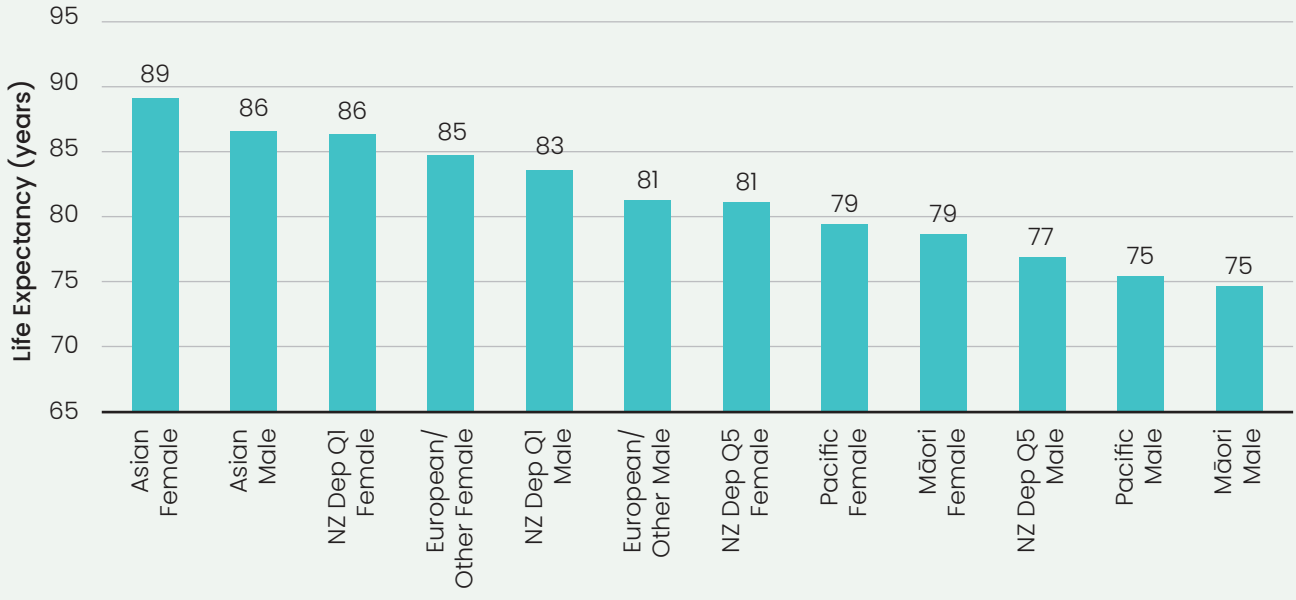
Figure 2: Longitudinal trends in the life expectancy gap for Māori and Pacific peoples compared with non-Māori/non-Pacific ethnicities from 2001 to 2022, three-year aggregated estimate, New Zealand



There are large inequities between population groups:

- Māori and Pacific peoples in lower socioeconomic quintiles have lower life expectancies compared to non-Māori/non-Pacific ethnicities in the same areas, especially in the most deprived quintiles.
- There's a gradient where life expectancy decreases as socioeconomic deprivation increases. Those living in areas with low levels of socioeconomic deprivation have a higher life expectancy than those in more deprived areas.
- Deprivation has a more pronounced negative effect on the life expectancy of males than females. Males experience lower life expectancy compared to females across all levels of deprivation, with the life expectancy differentials increasing as deprivation increases.
- Māori females are more impacted by deprivation than non-Māori/non-Pacific females, with the gap widening at higher levels of deprivation.
- There is a nearly 11-year gap in life expectancy between non-Māori/non-Pacific residing in the least socioeconomically deprived areas and Māori residing in the most socioeconomically deprived areas.
- Life expectancy varies across regions, with the Asian population consistently showing the highest figures.
- Life expectancy among rural populations is slightly lower than those residing in more urban areas[8], yet there is still geographical variation in life expectancy throughout some areas of New Zealand.
- There is a 4-year gap in life expectancy between those living in the most urban areas compared with the most rural.
- Despite an increase in life expectancy for Māori and Pacific people, the ethnic gap remains at around 7 years for Māori and 6 years for Pacific.
- Decomposition analysis shows potentially avoidable causes of death, such as lung cancer, diabetes, and coronary disease, contribute significantly to the life expectancy gap between Māori, Pacific, and non-Māori/non-Pacific populations.

Figure 3: Life expectancy by group(s) for the period 2018 to 2022 – New Zealand



8. Using a binary Urban/Rural classification from the Geographical Classification for Health.

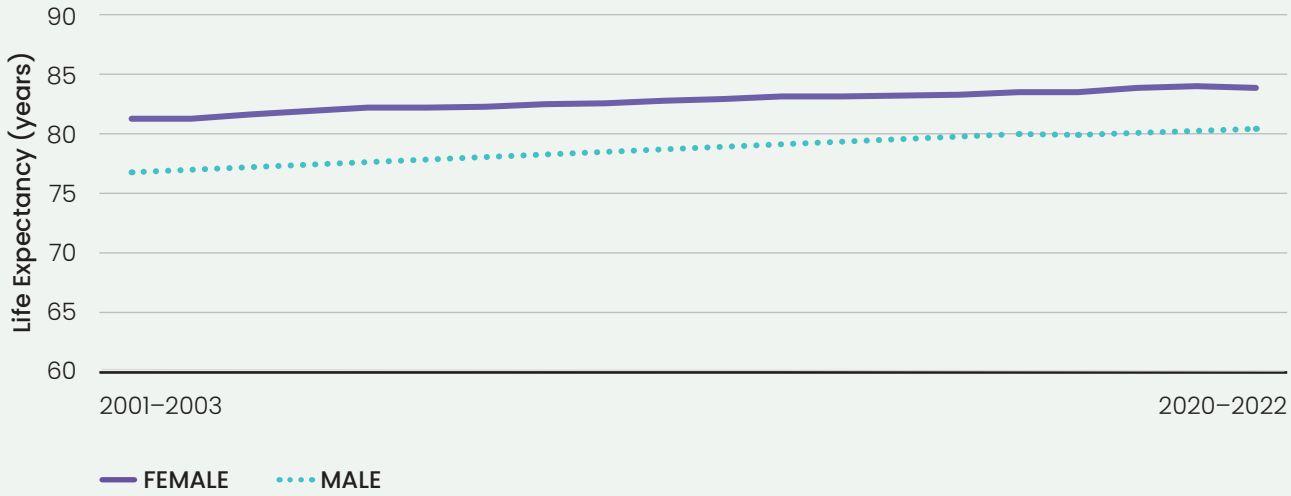
3 Life Expectancy by Sex – National

Life expectancy for New Zealand from 2001 to 2022 shows an increase for both females and males. Throughout the two decades, female life expectancy consistently remained higher than that of males.

Starting at 81.2 years for females and 76.7 years for males in 2001 to 2003, there was a gradual rise. By 2020 to 2022, life expectancy for females had increased to 84 years, while for males it had reached 80.5 years. The gap between female and male life expectancy has remained constant at around 3 1/2 to 4 years.

New Zealand was an outlier in terms of life expectancy rise during the COVID-19 pandemic. While global life expectancy declined by 1.6 years between 2019 and 2021 due to the pandemic, New Zealand was among the few countries that saw an increase[9]. This is attributed to the country's effective elimination strategy, which kept COVID-19 cases and deaths low until vaccines became widely available. Consequently, New Zealand experienced negative excess mortality during the first two years of the pandemic, meaning it had fewer deaths than expected based on past trends.

Figure 4: Longitudinal trends in life expectancy from 2001 to 2022 by sex, three-year aggregated estimate, New Zealand

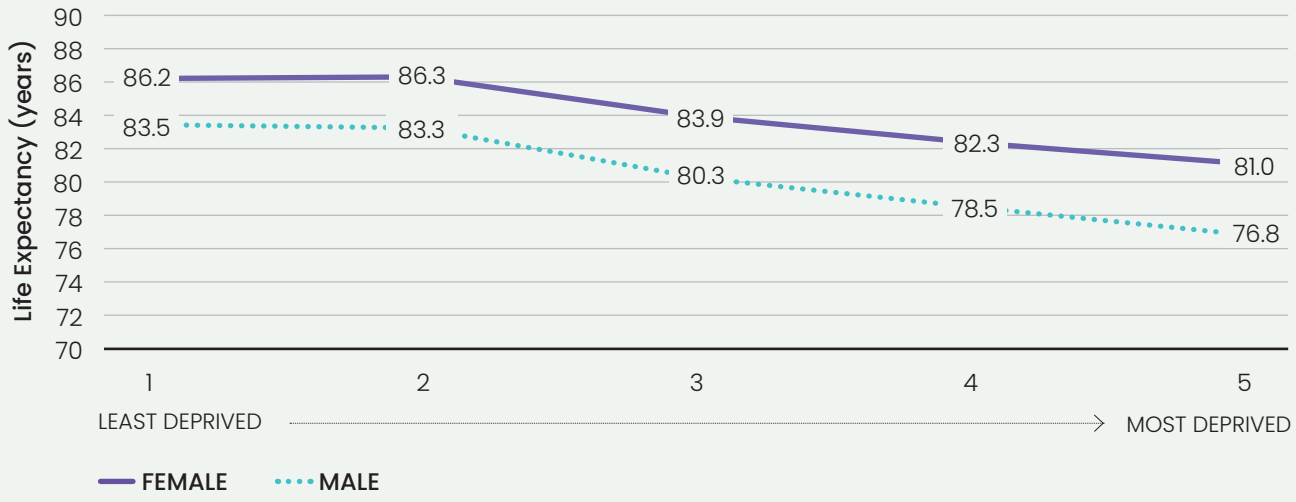


9. GBD 2021 Demographics Collaborators. Global age-sex-specific mortality, life expectancy, and population estimates in 204 countries and territories and 811 subnational locations, 1950-2021, and the impact of the COVID-19 pandemic: a comprehensive demographic analysis for the Global Burden of Disease Study 2021. *Lancet*. 2024 May 18;403(10440):1989-2056. doi: 10.1016/S0140-6736(24)00476-8. Epub 2024 Mar 11. PMID: 38484753; PMCID: PMC11126395.

3.1 Male/female life expectancy by socioeconomic status

Life expectancy for New Zealand by levels of socioeconomic deprivation[10] show a gradient, with life expectancy decreasing as the level of deprivation increases. For individuals in the least deprived group (Quintile 1), life expectancy stands at 86.2 years for females and 83.5 for males. However, life expectancy declines steadily across the deprivation spectrum, with the most deprived group (Quintile 5) showing a life expectancy of 81.0 years for females and 76.8 for males.

Figure 5: Life expectancy by socioeconomic status, male and female – 2018 to 2022



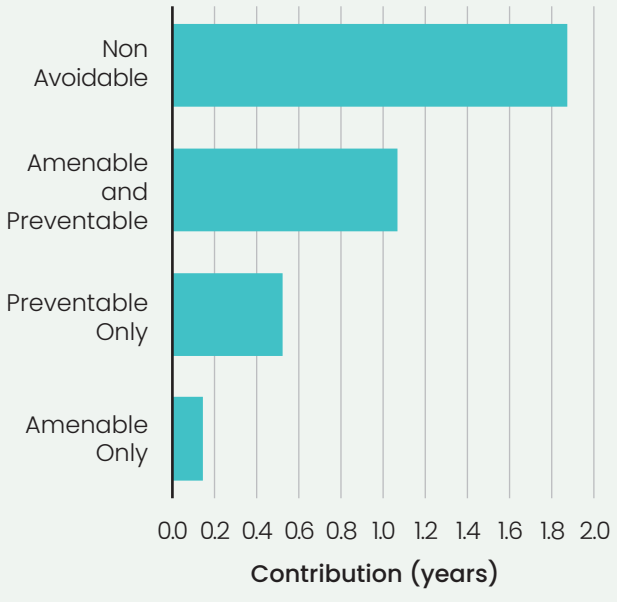
10. The New Zealand deprivation index has been used as a measure of socioeconomic status in this report. https://www.otago.ac.nz/wellington/research/groups/research-groups-in-the-department-of-public-health/hirp/socioeconomic-deprivation-indexes-nzdep-and-nzidep-department-of-public-health

3.2 Male/female life expectancy gap decomposition

The following analysis provides insight into the gap in life expectancy between males and females. Using decomposition methods, different categories of potentially avoidable causes of death are analysed and how these contribute to the observed life expectancy gap.

Deaths that were both potentially preventable and amenable contributed 1.1 years to the gap. The preventable-only category contributes approximately 0.5 years. Lastly, the amenable-only category makes a smaller contribution of 0.1 years. An additional 1.9 years is attributed to causes classified as potentially non-avoidable. Non-avoidable causes encompass deaths from genetic conditions, specific incurable or non-preventable diseases and age-related deterioration.

Figure 6: Decomposition of the gap in life expectancy by avoidable category – males compared with females, 2018 to 20, (3.6 years)



The leading categories of avoidable death contributing to the life expectancy gap are injuries and chronic conditions[11], both contributing 0.8 years. Avoidable deaths from substance use[12] contributes 0.1 years. While specific types of cancer do contribute to the gap, the overall impact of cancer on the gap is minimal when accounting for the offsetting effect of female-specific cancers that are considered potentially avoidable. Excluding these female-specific cancers, the contribution of cancer to the life expectancy gap in males is around 0.5 years.

TABLE 1: AVOIDABLE MORTALITY CATEGORIES CONTRIBUTING TO THE LIFE EXPECTANCY GAP BETWEEN MALES AND FEMALES, 2018 TO 2020

Avoidable category	Contribution (years)
Injuries	0.8
Chronic disorders	0.8
Substance use	0.1
Cancers	0.0
Infections	0.0
Infant death	0.0

11. Examples include but not limited to cerebrovascular disease, coronary disease, diabetes and hypertensive disease. See Appendix 2 for a full list of conditions.
12. Majority of conditions related to substance use are alcohol-related conditions.

The primary avoidable causes of death that impact the life expectancy gap in males include coronary disease, which contributes 0.6 years to the gap, followed by suicide at 0.4 years, and non-specific accidental injuries accounting for 0.3 years. The top 10 conditions and their respective contributions to the overall gap account for 1.7 years of the 3.5-year gap.

TABLE 2: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP BETWEEN MALES AND FEMALES, 2018 TO 2020

Avoidable category	Contribution (years)
Coronary disease	0.6
Suicide	0.4
Accidental injuries*	0.3
Land transport injuries	0.2
Diabetes	0.1
Colorectal cancer	0.1
Liver cancer	0.1
Oesophageal cancer	0.1
Alcohol related	0.1
Stomach cancer	0.1

*Includes injuries such as falls and homicide/assault

4 Life Expectancy by Geography

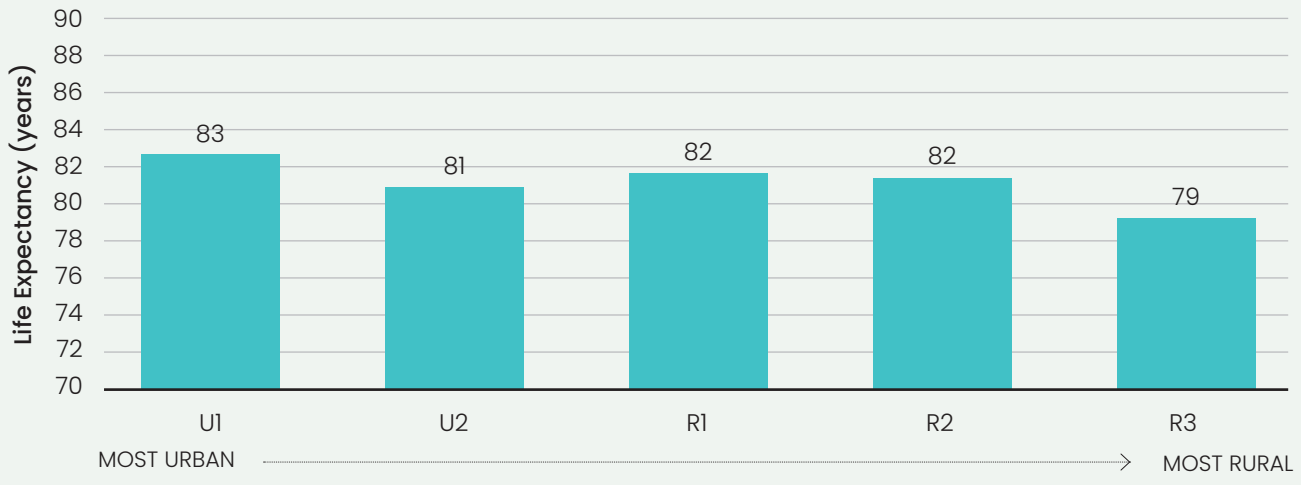
The following section reports on life expectancy by various geographical classifications. First by rurality, followed by the four Health New Zealand regions (Northern, Te Manawa Taki, Central and Te Waipounamu), by the former District Health Boards (now known as health districts) and finally by Iwi-Māori Partnership Boards (IMPB).

4.1 Life expectancy by rurality

Rural and urban classification has been defined using the Geographical Classification for Health (GCH). The GCH is comprised of five categories, two urban and three rural, that reflect degrees of reducing urban influence and increasing rurality.[13] U1 includes major centres and the surrounding zone and U2 covers large urban centres and the surrounding zone. The three rural categories range from R1 (closest to urban centres) to R3 (the most remote category). These categories can be collapsed into a rural-urban binary classification.

In the most urban areas, designated as U1, the overall life expectancy is 82.8 years. This is slightly lower in U2 areas, where life expectancy is 81.0 years. In rural areas, life expectancy is more consistent, with R1 and R2 categories both showing an overall figure of 82.0 years. However, the most rural areas, labelled R3, have a lower life expectancy of 79.3 years.

Figure 7: Life expectancy by urban and rural classification (GCH) – 2018 to 2022



13. Whitehead, J., Davie, G., de Graaf, B., Crengle, S., Fearnley, D., Smith, M., Lawrenson, R., & Nixon, G. Defining rural in Aotearoa New Zealand: A novel geographic classification for health purposes. *New Zealand Medical Journal. 2022*, Aug 5; 135(1559) ISSN 1175-8716

4.2 Life expectancy within regions

Across the Health New Zealand regions, the Asian population consistently has the highest life expectancy. In the Northern Region, life expectancy among the Asian population was 86.0 years in the 2001 to 2003 period and reached 87.9 years by 2020 to 2022. Similarly, in Te Waipounamu, the Asian population initially had a life expectancy of 84.6 years, which rises to 87.5 years over the same two decades.

Among Māori, there is an upward trend across all regions. This is particularly evident in the Northern and Central Regions, where Māori life expectancy has increased by approximately 5 years over the past two decades.

Life expectancy among Pacific peoples shows variability across regions and over time. In the Northern Region, life expectancy for this group initially shows an increase, but the trend plateaus in the most recent years.

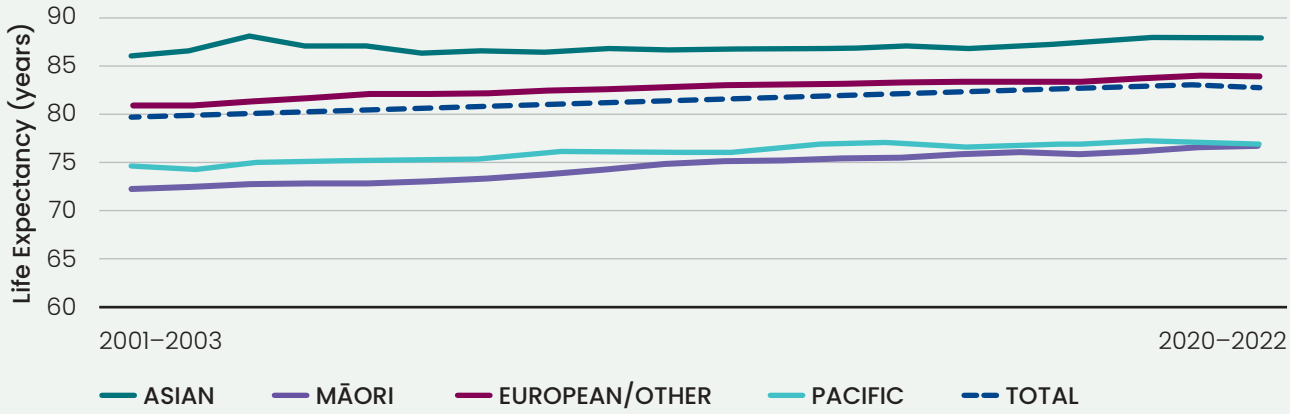
For European and Other ethnicities, a consistent increase in life expectancy across all regions is observed, though not as pronounced as that seen among the Asian population. This group's life expectancy in the Northern Region increased from 80.7 years to 84.0 years, which is comparable to that seen in the Central and Te Manawa Taki Region.

A summary for each region is presented below. A decomposition of the ethnic gaps in life expectancy by region can be found in Appendix 5.

Northern Region

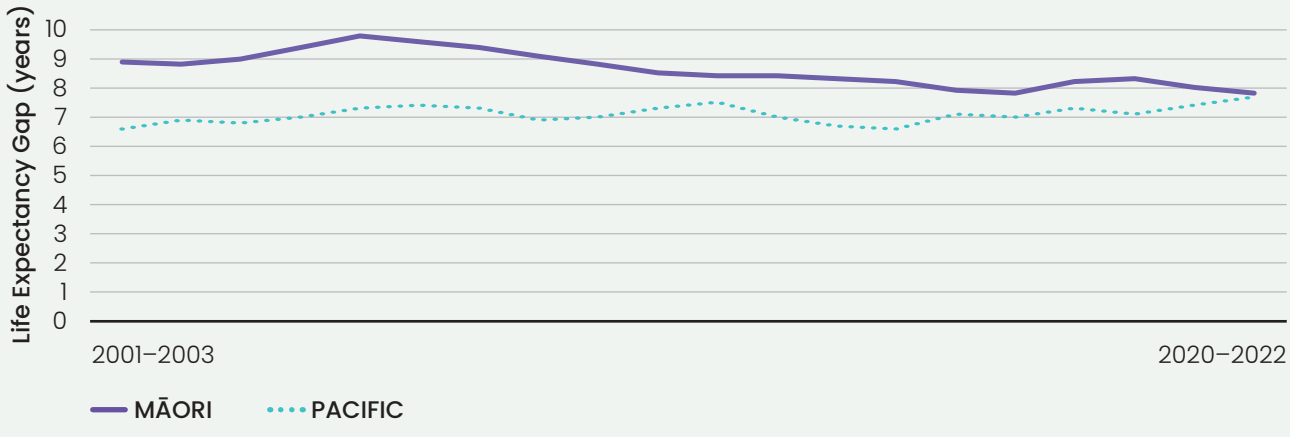
In the Northern Region, life expectancy among Māori increased from 72.1 years to 76.8 years. Among Pacific peoples, life expectancy showed some year-on-year fluctuations but maintained an upward trend, increasing from 74.4 years to 76.9 years. Among the Asian population, life expectancy increased from 86.0 years to 87.9 years. Finally, European and Other ethnicities saw their life expectancy increase from 80.7 years to 84.0 years.

Figure 8: Longitudinal trends in life expectancy from 2001 to 2022, three-year aggregated estimate, Northern Region



In the Northern Region, the life expectancy gap for Māori was 8.9 years in 2001 to 2003, which peaked at 9.8 years before decreasing to 7.8 years by 2020 to 2022. For Pacific peoples, the gap increased from 6.6 years to 7.7 years over this same period. These trends indicate that while there has been progress in reducing the life expectancy gap for Māori in the Northern Region, the gap for Pacific peoples has not shown a similar reduction.

Figure 9: Longitudinal trends in the life expectancy gap for Māori and Pacific from 2001 to 2022, three-year aggregated estimate, Northern Region

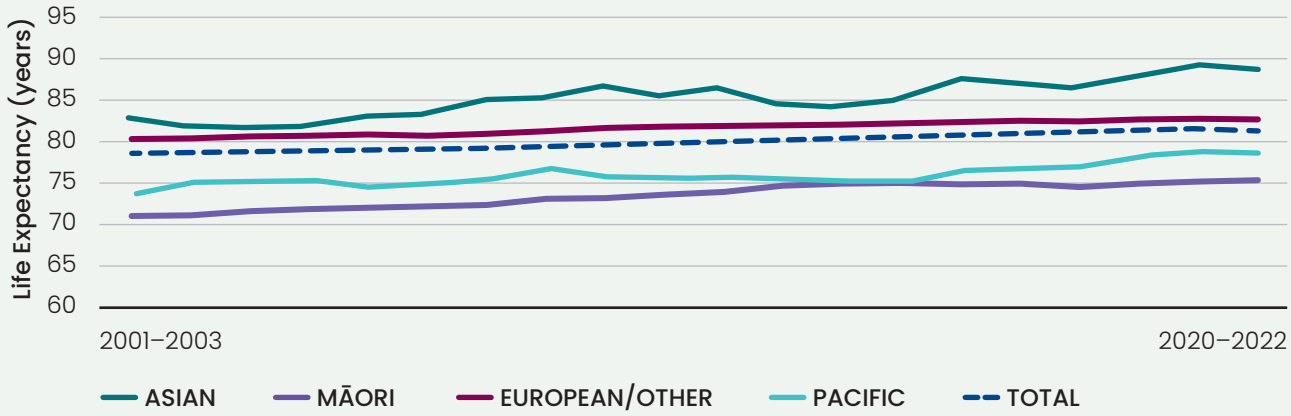


Te Manawa Taki

In Te Manawa Taki, life expectancy among Māori increased from 70.8 years to 75.5 years. Among Pacific peoples, life expectancy showed a similar upward trend, moving from 73.5 years to 78.7 years.

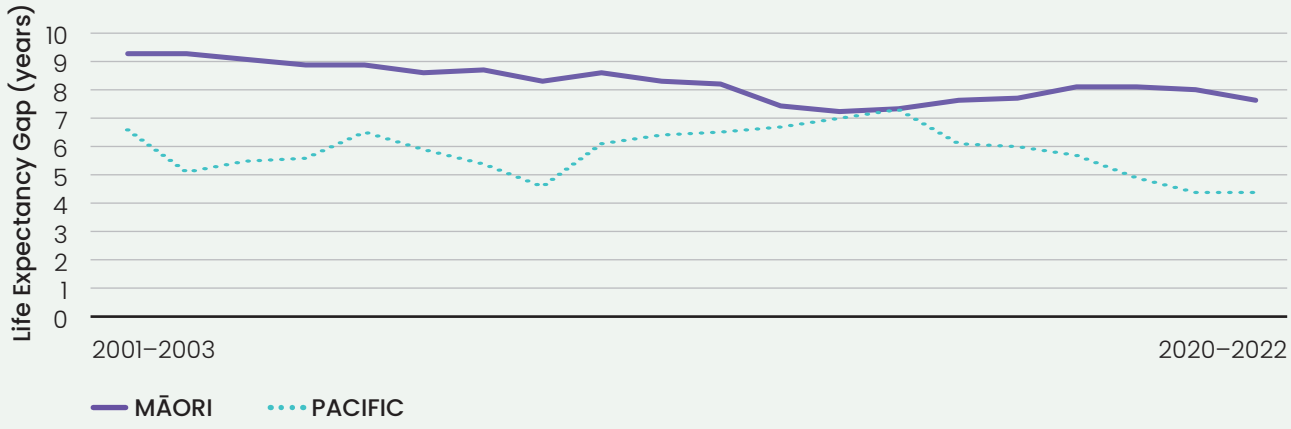
The Asian population experienced an increase from 82.9 years to 88.8 years. The European and Other group saw a slight rise in life expectancy, from 80.1 years to 82.8 years.

Figure 10: Longitudinal trends in life expectancy from 2001 to 2022, three-year aggregated estimate, Te Manawa Taki



In Te Manawa Taki, Māori had a life expectancy gap of 9.3 years in 2001 to 2003, which reduced to 7.6 years by 2020 to 2022. Among Pacific peoples, the life expectancy gap was 6.6 years in 2001 to 2003 and dropped to 4.4 years by 2020 to 2022. It's important to note that the population of Pacific peoples in this region is relatively small, and the life expectancy estimates are based on a small number of deaths. This can result in significant uncertainty about these estimates, which is reflected in the fluctuating gap.

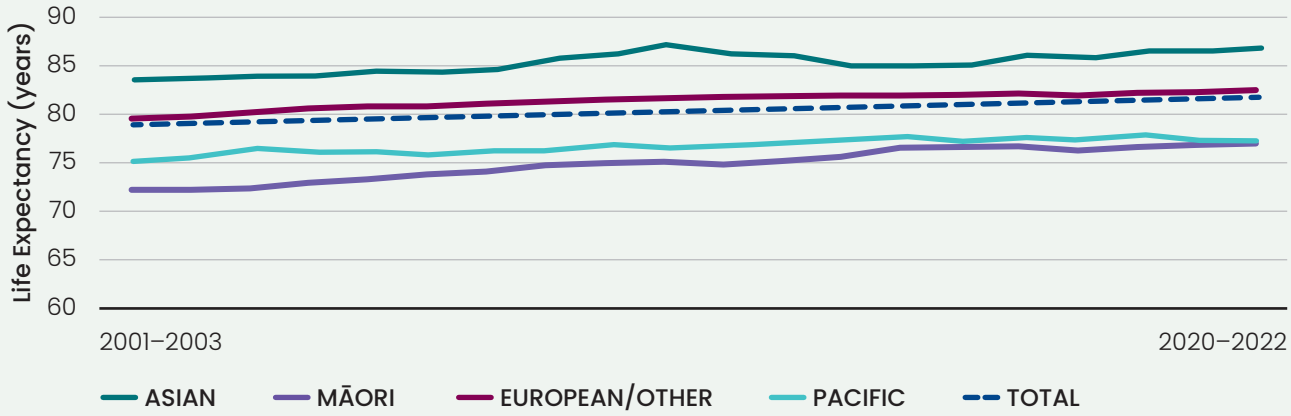
Figure 11: Longitudinal trends in the life expectancy gap for Māori and Pacific from 2001 to 2022, three-year aggregated estimate, Te Manawa Taki



Central Region

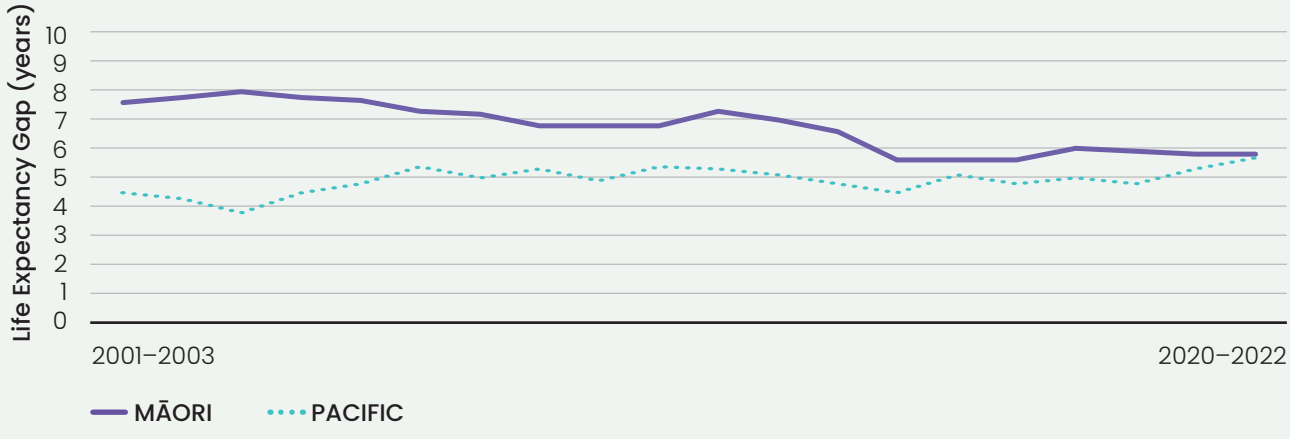
In the Central Region, Māori saw an increase in life expectancy from 72.0 years to 77.1 years. The life expectancy among Pacific peoples increased, from 75.1 years to 77.2 years. Life expectancy among the Asian population increased from about 83.4 years to 86.9 years. The European and Other groups also experienced an increase in life expectancy, from 79.4 years to over 82.6 years.

Figure 12: Longitudinal trends in life expectancy from 2001 to 2022, three-year aggregated estimate, Central Region



Māori in the Central Region experienced a decrease in the life expectancy gap from 7.6 years to 5.8 years over the two decades. In contrast, the gap for Pacific peoples was 4.5 years in 2001 to 2003 and slightly increased to 5.7 years by 2020 to 2022. This shows improvements for Māori in this region, with a gradual but less pronounced change, but slightly increasing gap among Pacific peoples.

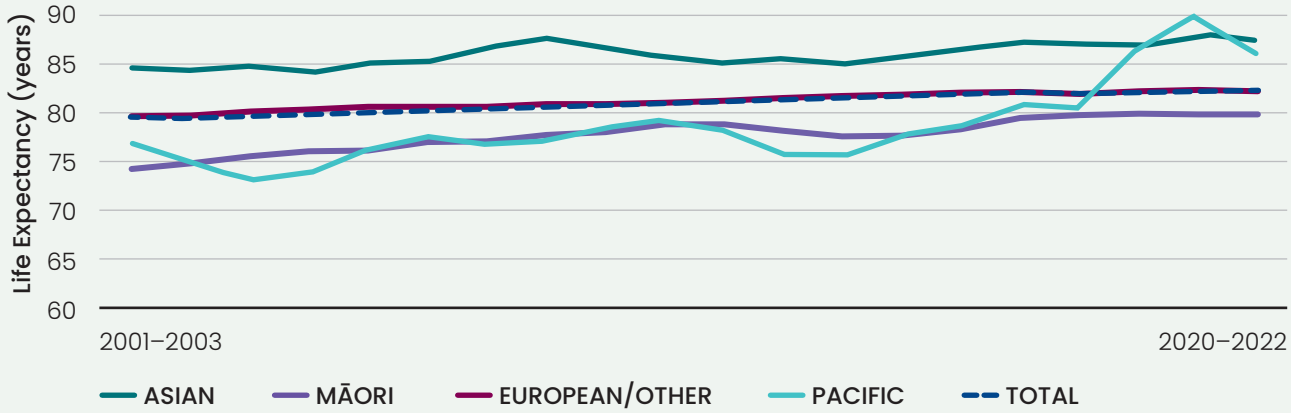
Figure 13: Longitudinal trends in the life expectancy gap for Māori and Pacific from 2001 to 2022, three-year aggregated estimate, Central Region



Te Waipounamu

In Te Waipounamu, life expectancy among Māori increased from 74.1 years to 80.0 years. Among Pacific peoples, life expectancy increased from 76.0 years to 82.3 years, however it's important to note that their population is relatively small in this region[14]. In the Asian population, life expectancy increased from 84.6 years to 87.5 years and in the European and Other population increased from 79.5 years to 82.4 years.

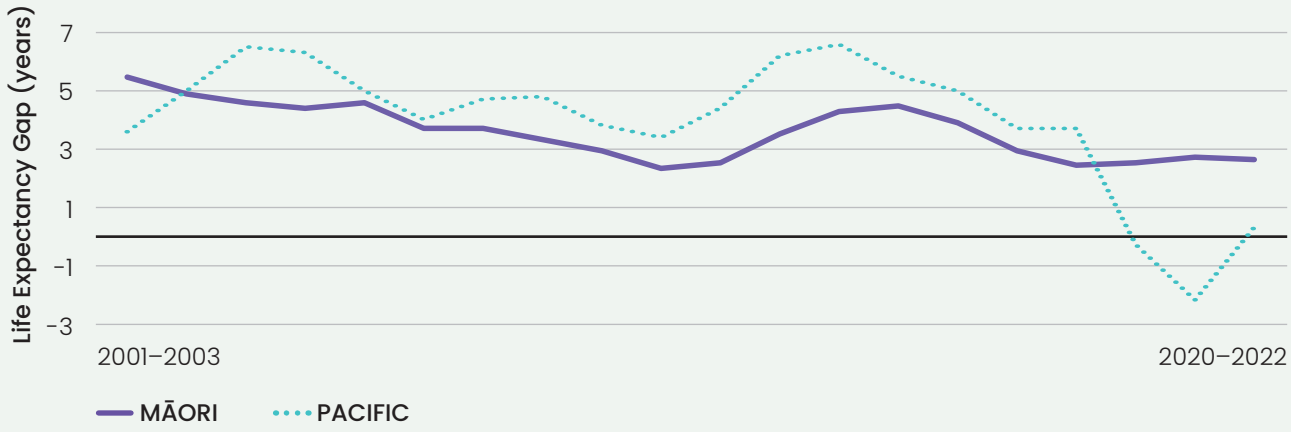
Figure 14: Longitudinal trends in life expectancy from 2001 to 2022, three-year aggregated estimate, Te Waipounamu



In Te Waipounamu, the life expectancy gap for Māori decreased from 5.5 years in 2001 to 2003 to 2.6 years in 2020 to 2022.

Among Pacific peoples, the life expectancy gap decreased from 3.6 years to 0.3 years in 2020 to 2022.

Figure 15: Longitudinal trends in the life expectancy gap for Māori and Pacific from 2001 to 2022, three-year aggregated estimate, Te Waipounamu



14. This smaller base could potentially lead to less stable or representative life expectancy estimates for Pacific peoples. Therefore, while the data can be encouraging, it should be interpreted with caution, acknowledging the potential influence of the smaller population size and number of deaths.

4.3 Life expectancy by district

This section presents life expectancy across the former District Health Boards (DHBs), now known as health districts. It aims to provide a more localised view of life expectancy across New Zealand for the period 2018 to 2022 highlighting regional differences.

Waitematā district had highest overall life expectancy at 84.4 years, closely followed by Auckland at 83.7 years. Within Māori, Nelson Marlborough had the highest life expectancy at 81.8 years and Northland had the lowest at 74.6 years.

TABLE 3: LIFE EXPECTANCY OVERALL BY DISTRICT – 2018 TO 2022

District	Asian	Māori	nMnP	European/ Other	Pacific	Total
Auckland	88.0	78.6	84.9	84.1	77.0	**83.7**
Bay of Plenty	89.6	75.7	83.8	83.6	80.5	**82.2**
Canterbury	86.7	79.8	82.8	82.5	81.2	**82.5**
Capital & Coast	86.7	78.6	83.9	83.5	76.7	**82.9**
Counties Manukau	87.3	75.8	84.3	83.5	76.8	**81.8**
Hawke's Bay	-	75.1	82.3	82.3	78.5	**80.7**
Hutt	86.9	77.3	82.7	82.2	77.8	**81.7**
Lakes	87.2	75.0	82.6	82.2	74.0	**80.2**
MidCentral	86.1	78.3	81.9	81.7	77.9	**81.2**
Nelson Marlborough	-	81.8	83.4	83.2	-	**83.2**
Northland	88.3	74.6	82.4	82.1	82.2	**80.2**
South Canterbury	87.4	79.1	81.4	81.1	-	**81.2**
Southern	88.9	80.8	82.5	82.3	80.7	**82.3**
Tairāwhiti	89.7	75.5	82.2	82.1	78.8	**79.0**
Taranaki	89.7	76.6	82.2	82.0	81.3	**81.4**
Waikato	87.0	74.8	83.0	82.6	78.7	**81.5**
Wairarapa	87.8	78.6	82.2	82.2	80.5	**81.8**
Waitematā	90.0	80.3	85.2	84.5	77.7	**84.4**
West Coast	87.0	78.1	80.3	80.0	-	**80.2**
Whanganui	90.0	75.5	80.5	80.3	-	**79.6**

Life expectancy by district – Male

There is variation in male life expectancy across the districts. In Auckland, Māori males have a life expectancy of 76.6 years, which is lower than the 82.3 years for non-Māori males. This pattern of Māori males having lower life expectancies than non-Māori males is seen across all districts.

Some districts have a narrower gap in life expectancy between Māori and non-Māori males. In Canterbury, the life expectancy for Māori males is 77.7 years, much closer to the 80.9 years for non-Māori males. Capital and Coast also show a similar trend with Māori males having a life expectancy of 78.7 years and 81.6 years for non-Māori males.

However, there are districts where the difference is more pronounced. In Counties Manukau, Māori males have a life expectancy of 74.1 years, lower than the 80.9 years for non-Māori males. Similarly, in Hawke's Bay, the life expectancy for Māori males is 72.6 years, compared to 80.5 years for non-Māori males.

In the Nelson Marlborough district, Māori males have a high life expectancy of 81.6 years, very similar to the 81.8 years for non-Māori males. In contrast, in Lakes and Northland districts, Māori males have life expectancies of 71.9 and 72.2 years respectively, which are considerably lower than those of non-Māori males in these areas.

TABLE 4: LIFE EXPECTANCY FOR MALES BY DISTRICT – 2018 TO 2022

District	Māori	nMnP	Non-Māori	Overall
Auckland	76.6	83.3	82.3	**81.9**
Bay of Plenty	73.2	81.7	81.6	**79.9**
Canterbury	77.7	81.0	80.9	**80.7**
Capital & Coast	78.7	82.1	81.6	**81.2**
Counties Manukau	74.1	82.6	80.9	**80.0**
Hawke's Bay	72.6	80.7	80.5	**78.8**
Hutt	75.2	81.4	80.9	**80.1**
Lakes	71.9	81.0	80.7	**78.1**
MidCentral	77.6	80.0	79.8	**79.3**
Nelson Marlborough	81.6	81.9	81.8	**81.6**
Northland	72.2	80.6	80.4	**78.1**
South Canterbury	75.7	79.9	79.8	**79.5**
Southern	79.0	80.6	80.6	**80.4**
Tairāwhiti	72.2	80.6	80.4	**76.6**
Taranaki	75.3	80.1	80.0	**79.3**
Waikato	72.6	81.1	80.9	**79.5**
Wairarapa	77.8	80.4	80.3	**79.9**
Waitematā	79.0	83.3	82.9	**82.5**
West Coast	75.8	78.1	78.1	**78.0**
Whanganui	72.3	77.8	77.8	**76.9**

Life Expectancy by District – Female

Female life expectancy varies across New Zealand health districts. In Auckland, Māori females have a life expectancy of 79.9 years, which is lower than the 85.5 years for non-Māori females. This trend of Māori females having lower life expectancies compared to non-Māori females is consistent across the districts.

However, some districts show a narrower gap in life expectancy. Canterbury, for instance, has a relatively high life expectancy for Māori females at 82.0 years, closely approaching the 84.3 years for non-Māori females.

In contrast, there are areas where the inequity in life expectancy is more pronounced.

In Counties Manukau, Māori females have a life expectancy of 77.0 years, lower than the 84.3 years for non-Māori females. Likewise, in Hawke's Bay, the life expectancy for Māori females is 77.2 years, compared to 83.8 years for non-Māori females.

Nelson Marlborough and South Canterbury have higher life expectancies for Māori females, at 82.5 and 82.4 years respectively, almost equal to those of non-Māori females in the same areas. Conversely, in Lakes and Northland districts, Māori females have life expectancies of 77.7 and 76.7 years respectively, which are considerably lower than those of non-Māori females.

TABLE 5: LIFE EXPECTANCY FOR FEMALES BY DISTRICT – 2018 TO 2022

District	Māori	nMnP	Non-Māori	Overall
Auckland	79.9	86.2	85.5	**85.1**
Bay of Plenty	77.8	85.6	85.6	**84.0**
Canterbury	82.0	84.3	84.3	**84.1**
Capital & Coast	79.4	85.3	84.8	**84.4**
Counties Manukau	77.0	85.8	84.3	**83.4**
Hawke's Bay	77.2	83.9	83.8	**82.5**
Hutt	78.9	83.8	83.6	**83.1**
Lakes	77.7	84.0	83.8	**82.2**
MidCentral	78.9	83.6	83.4	**82.8**
Nelson Marlborough	82.5	84.6	84.6	**84.5**
Northland	76.7	84.1	84.1	**82.1**
South Canterbury	82.4	82.9	82.9	**83.0**
Southern	82.8	84.2	84.1	**84.1**
Tairāwhiti	78.0	83.9	83.8	**81.1**
Taranaki	77.8	84.2	84.2	**83.3**
Waikato	76.7	84.7	84.6	**83.2**
Wairarapa	79.6	84.0	83.9	**83.5**
Waitematā	81.1	86.7	86.2	**85.9**
West Coast	79.4	82.4	82.4	**82.3**
Whanganui	78.3	83.3	83.3	**82.3**

4.4 Life expectancy by Iwi-Māori Partnership Boards

Iwi-Māori Partnership Boards (IMPB) empower Iwi, hapū, and whānau to exercise their rangatiratanga within their respective regions. By ensuring that the voices of tangata whenua are heard and reflected in local health services, they directly contribute to improving life expectancy. The following section provides life expectancy estimates for each IMPB.

Life expectancy by IMPB – Male

Male life expectancies by ethnicity across Iwi Māori Partnership Boards reveals differences between Māori and non-Māori males.

This trend of lower life expectancy for Māori males is consistent across different boards. In Tūwharetoa, the gap is most evident with Māori males having a life expectancy of 72.3 years compared to 81.8 years for non-Māori, a gap of 9.5 years. A similar pattern is observed in Te Tiratū where the life expectancy of Māori males is 72.2 years, lower than the 81.1 years for non-Māori. However, there are some exceptions where the gap narrows. For instance, in Te Kahui Hauora o Te Tau Ihu, Māori males have a life expectancy of 80.8 years, closely approaching the 82.0 years for non-Māori males.

TABLE 6: LIFE EXPECTANCY FOR MALES BY IMPB – 2018 TO 2022

IMPB	Māori	nMnP	Non-Māori	Overall
Ātiawa Toa	76.4	82.0	81.5	**80.9**
Ngaa Pou Hauora oo Taamaki Makaurau	74.3	82.6	80.9	**80.0**
Tairāwhiti Toitū Te Ora	72.1	80.5	80.3	**76.4**
Te Kahui Hauora o Te Tau Ihu	80.8	82.1	82.0	**81.7**
Te Karu o te Ika Poari Hauora	77.7	80.5	80.5	**80.1**
Te Mātuku	72.6	77.9	77.8	**77.0**
Te Moana a Toi	73.8	81.9	81.8	**80.3**
Te Pae Oranga o Ruahine o Tararua	77.9	80.0	79.9	**79.4**
Te Punanga Ora	75.3	80.2	80.1	**79.4**
Te Taumata Hauora o Te Kahu o Taonui	75.1	83.1	82.5	**81.7**
Te Taura Ora o Waiariki	71.8	80.4	80.0	**77.3**
Te Tauraki	78.0	80.8	80.7	**80.5**
Te Tiratū	72.8	81.2	81.1	**79.7**
Tihei Takitimu	73.0	80.8	80.7	**79.0**
Tūwharetoa	72.3	82.2	81.8	**79.6**

Life expectancy by IMPB – Female

The pattern of Māori females having lower life expectancies compared to the non-Māori population is consistently observed across different IMPBs. However, there are instances where the life expectancy of Māori females is closer to that of non-Māori females.

Life expectancy among Māori females in Te Kahui Hauora o Te Tau Ihu was 83.0 years, similar to non-Māori females at 84.7 years. Similarly, in Te Tauraki, Māori females have a life expectancy of 82.4 years, very close to the 84.2 years for non-Māori females.

TABLE 7: LIFE EXPECTANCY FOR FEMALES BY IMPB – 2018 TO 2022

IMPB	Māori	nMnP	Non-Māori	Overall
Ātiawa Toa	79.4	84.9	84.5	**84.1**
Ngaa Pou Hauora oo Taamaki Makaurau	77.2	85.9	84.3	**83.4**
Tairāwhiti Toitū Te Ora	78.1	83.6	83.6	**81.1**
Te Kahui Hauora o Te Tau Ihu	83.0	84.7	84.7	**84.6**
Te Karu o te Ika Poari Hauora	79.8	84.1	84.1	**83.6**
Te Mātuku	78.5	83.3	83.4	**82.4**
Te Moana a Toi	78.2	85.7	85.7	**84.3**
Te Pae Oranga o Ruahine o Tararua	79.4	83.7	83.4	**82.9**
Te Punanga Ora	77.8	84.2	84.3	**83.3**
Te Taumata Hauora o Te Kahu o Taonui	78.9	86.3	85.8	**85.1**
Te Taura Ora o Waiariki	77.2	83.5	83.3	**81.5**
Te Tauraki	82.4	84.2	84.2	**84.1**
Te Tiratū	76.8	84.8	84.7	**83.3**
Tihei Takitimu	77.5	84.0	83.9	**82.6**
Tūwharetoa	79.6	84.9	84.7	**83.8**

5 Life Expectancy by Ethnicity

The following presents a more detailed analysis of the most recent period of ethnic-specific life expectancy data for New Zealand. In addition, using decomposition methods, the gap in life expectancy for both Māori and Pacific peoples, is broken down by potentially avoidable causes of death.

This approach aims to quantify the contribution that different causes of death have on the life expectancy gaps among Māori and Pacific peoples.

For the period 2020 to 2022, Māori had a life expectancy of 76.8 years, with Pacific peoples slightly higher at 77.3 years. The Asian population had the highest life expectancy at 87.8 years, contributing to the overall national figure of 82.2 years.

When differentiated by sex and ethnicity, the life expectancy for Māori males is 74.8 years, with Māori females having a four-year higher life expectancy of 78.8 years. Pacific males have a life expectancy of 75.5 years, with Pacific females slightly higher at 79.2 years. The Asian population has the highest life expectancy, with males at 86.3 years and females at 89.1 years. For the European and Other ethnicities, life expectancy was 81.2 years for males and 84.7 years for females. Among the non-Māori/non-Pacific population, life expectancy is 81.7 years for males and 85.1 years for females.

In the **Northern Region**, the life expectancy for Māori is consistent with the national figure at 76.8 years, and Pacific peoples have a life expectancy of 76.9 years. The overall figure in this region is higher than the national figure at 82.9 years, influenced by the Asian population's high life expectancy of 87.9 years.

In **Te Manawa Taki**, life expectancy for Māori is 75.5 years, while Pacific peoples have a life expectancy of 78.7 years. The overall life expectancy for the region is 81.4 years, with the Asian population having the highest life expectancy at 88.8 years.

The **Central Region** had a life expectancy of 77.1 years for Māori and 77.2 years for Pacific peoples, both marginally higher than in the Northern Region. The overall life expectancy is 81.8 years, with the Asian population at 86.9 years, slightly lower than the Northern Region population.

Te Waipounamu had the highest life expectancy for Māori at 80.0 years and for Pacific peoples at 82.3 years. The region's overall life expectancy is 82.4 years. Among the Asian population, life expectancy was highest at 87.5 years.

TABLE 8: LIFE EXPECTANCY BY ETHNICITY AND REGION – 2020 TO 2022

Region	Māori	Pacific	Asian	Euro/Other	nMnP	Overall
Northern	76.8	76.9	87.9	84.0	84.6	**82.9**
Te Manawa Taki	75.5	78.7	88.8	82.8	83.1	**81.4**
Central	77.1	77.2	86.9	82.6	82.9	**81.8**
Te Waipounamu	80.0	82.3	87.5	82.4	82.6	**82.4**
New Zealand	**76.8**	**77.3**	**87.8**	**83.0**	**83.4**	**82.2**

TABLE 9: LIFE EXPECTANCY BY SEX AND ETHNICITY – 2020 TO 2022 – NEW ZEALAND

Sex	Māori	Pacific	Asian	Euro/Other	nMnP	Overall
Males	74.8	75.5	86.3	81.2	81.7	**80.5**
Females	78.8	79.2	89.1	84.7	85.1	**84.0**

5.1 Ethnic gap in life expectancy

Both Māori and Pacific peoples experience a life expectancy gap when compared to other ethnic groups. Overall, the life expectancy gap is 6.6 years for among Māori and 6.1 years among Pacific peoples when compared to the non-Māori/non-Pacific population. When assessed by sex and ethnicity, Māori males have a life expectancy gap of 6.9 years, while Māori females have a slightly smaller gap of 6.3 years. Among Pacific peoples, males have a gap of 6.2 years and females at 5.9 years.

TABLE 9: LIFE EXPECTANCY BY SEX AND ETHNICITY – 2020 TO 2022 – NEW ZEALAND

Sex	Māori gap	Pacific gap
Males	6.9	6.2
Female	6.3	5.9
Overall	**6.6**	**6.1**

Māori in the Northern Region have a 7.8-year gap in life expectancy, one of the highest in the country, followed by Pacific peoples with a 7.7-year gap.

In Te Manawa Taki, the life expectancy gap for among Māori is 7.6 years, slightly less than in the Northern Region. However, among Pacific peoples, the gap reduces to 4.4 years. Within the Central Region there's a decrease in the life expectancy gap. Here, Māori have a 5.8-year gap, while Pacific peoples have a 5.7-year gap. Te Waipounamu has the smallest life expectancy gaps, with Māori having a 2.6-year gap and Pacific peoples seeing an even smaller gap of 0.3 years. However, it's important to consider these numbers in light of the region's demographic profile.

TABLE 11: LIFE EXPECTANCY GAP BY ETHNICITY BY REGION – 2020 TO 2022

Region	Māori gap	Pacific gap
Northern	7.8	7.7
Te Manawa Taki	7.6	4.4
Central	5.8	5.7
Te Waipounamu	2.6	0.3
New Zealand	**6.6**	**6.1**

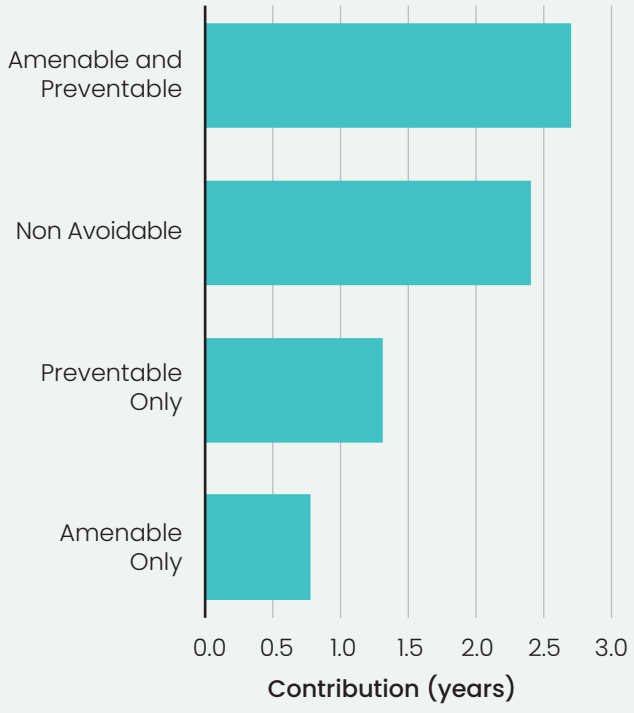
*Gap is Māori and Pacific compared with non-Māori/non-Pacific ethnicities

5.2 Ethnic life expectancy gap decomposition

Gap Decomposition – Māori Males

For the period 2018 to 2020[15], male life expectancy was 74.3 years, which was 7.2 years lower than the non-Māori/non-Pacific population at 81.5 years. Of the 7.2-year gap, 2.7 years can be attributed to conditions that are considered both amenable and preventable followed by 1.3 years from conditions considered preventable only and 0.8 years from conditions considered amenable only. An additional 2.4 years can be attributed to conditions that are considered non-avoidable.

Figure 16: Decomposition of the ethnic gap in life expectancy by avoidable category – Māori males compared with non-Māori/non-Pacific males, 2018 to 2020, (7.2 years)



The leading potentially avoidable causes of death contributing to the life expectancy gap among Māori males are coronary disease (1.0 year), lung cancer (0.6 years) and diabetes (0.5 years). A list of the top 10 conditions and their contribution to the gap are presented in Table 12. In total, these conditions contribute 3.9 years of the 7.2-year gap.

TABLE 12: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI MALES, 2018 TO 2020

Avoidable cause	Contribution (years)
Coronary disease	1.0
Lung cancer	0.6
Diabetes	0.5
Land transport injuries	0.4
Suicide	0.4
COPD*	0.3
Other accidental injuries	0.2
Liver cancer	0.2
Stroke	0.2
Valvular heart disease	0.1

*COPD – Chronic Obstructive Pulmonary Disease

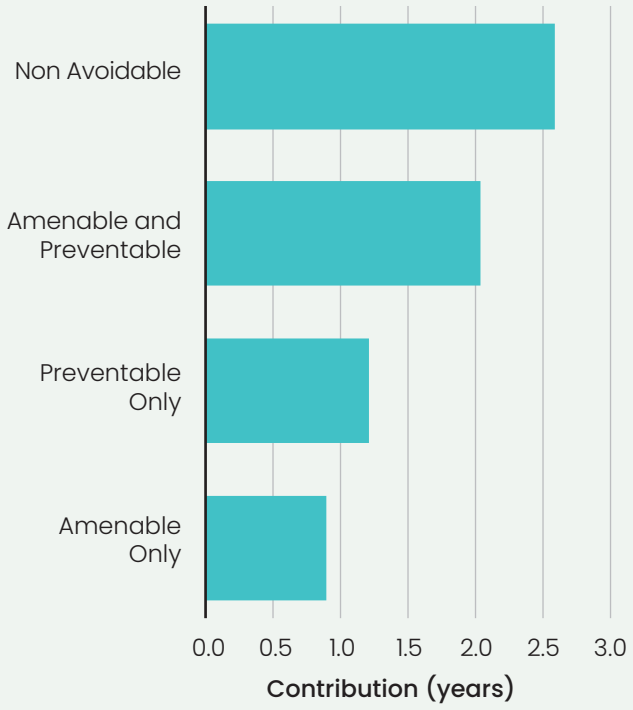
15. 2020 is the year with the most recent cause of death data available, as such the overall figure for life expectancy and the gap may differ slightly from estimates from more recent years where more recent data (with no cause of death) has been used.

Gap Decomposition – Māori Females

For the period 2018 to 2020, Māori females had a life expectancy of 78.2 years, 6.8 years lower than non-Māori/non-Pacific females, who had a life expectancy of 85.0 years.

Among Māori females, 2.0 years of the 6.8-year gap can be attributed to conditions that are considered both amenable and preventable followed by 1.2 years from conditions considered preventable only and 0.9 years from conditions considered amenable only. An additional 2.6 years can be attributed to conditions that are considered non-avoidable.

Figure 17: Decomposition of the ethnic gap in life expectancy by avoidable category – Māori females compared with non-Māori/ non-Pacific females, 2018 to 2020, (6.8 years)



The leading avoidable causes of death contributing to the life expectancy gap among Māori females are lung cancer (0.9 years), coronary disease (0.5 years) and Chronic Obstructive Pulmonary Disease (COPD) (0.4 years). A list of the top 10 conditions and their contribution to the gap are presented in Table 13. In total, these conditions contribute 3.3 years of the 6.8-year gap.

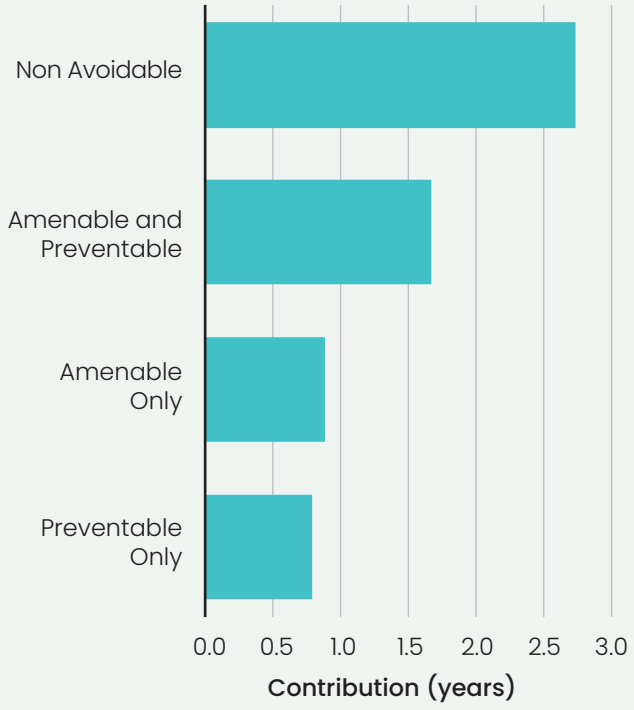
TABLE 13: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI FEMALES, 2018 TO 2020

Avoidable cause	Contribution (years)
Lung cancer	0.9
Coronary disease	0.5
COPD	0.4
Diabetes	0.4
Stroke	0.3
Suicide	0.2
Land transport injuries	0.2
Breast cancer	0.2
Valvular heart disease	0.2
Uterine cancer	0.1

Gap Decomposition – Pacific Males

During the 2018 to 2020 period, Pacific males in New Zealand had a life expectancy of 75.4 years, which was 6.1 years lower than the non-Māori/non-Pacific population, who had a life expectancy of 81.5 years. Of the 6.1-year gap, 1.7 years can be attributed to conditions that are considered both amenable and preventable followed by 0.9 years from conditions considered amenable only and 0.8 years from conditions considered preventable only. An additional 2.7 years can be attributed to conditions that are considered non-avoidable.

Figure 18: Decomposition of the ethnic gap in life expectancy by avoidable category – Pacific males compared with non-Māori/ non-Pacific males, 2018 to 20, (6.1 years)



The leading avoidable causes of death contributing to the life expectancy gap among Pacific males are coronary disease (1.0 years), diabetes (0.7 years) and lung cancer (0.4 years). A list of the top 10 conditions and their contribution to the gap are presented in Table 14. In total, these conditions contribute 3.2 years of the 6.1-year gap.

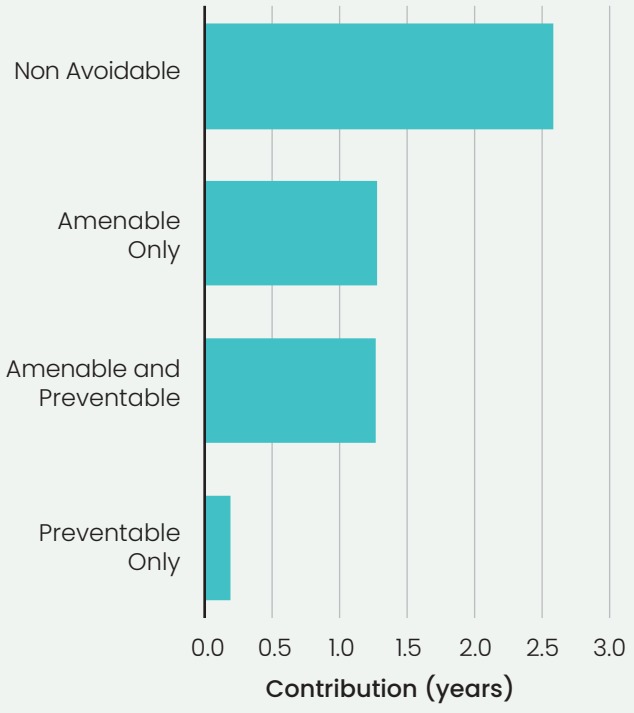
TABLE 14: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – PACIFIC MALES, 2018 TO 2020

Avoidable cause	Contribution (years)
Coronary disease	1.0
Diabetes	0.7
Lung cancer	0.4
Stroke	0.2
Perinatal period complications	0.2
Valvular heart disease	0.2
Liver cancer	0.1
Stomach cancer	0.1
Aortic aneurysm	0.1
Prostate cancer	0.1

Gap Decomposition – Pacific Females

For the period 2018 to 2020, Pacific females had a life expectancy of 79.7 years, which was 5.3 years lower than non-Māori/non-Pacific females at 85.0 years. Of the 5.3-year gap, 1.3 years can be attributed to conditions that are considered amenable only followed by an additional 1.3 years from conditions considered amenable and preventable and 0.2 years from conditions considered preventable only. An additional 2.6 years can be attributed to conditions that are considered non-avoidable.

Figure 19: Decomposition of the ethnic gap in life expectancy by avoidable category – Pacific females compared with non-Māori/non-Pacific females, 2018 to 2020, (5.3 years)



The leading avoidable causes of death contributing to the life expectancy gap among Pacific females are diabetes (0.7 years), coronary disease (0.4 years) and stroke (0.3 years). A list of the top 10 conditions and their contribution to the gap are presented in Table 15. In total, these conditions contribute 2.6 years of the 5.3-year gap.

TABLE 15: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – PACIFIC FEMALES, 2018 TO 2020

Avoidable cause	Contribution (years)
Diabetes	0.7
Coronary disease	0.4
Stroke	0.3
Uterine cancer	0.3
Breast cancer	0.2
Valvular heart disease	0.2
Lung cancer	0.2
Perinatal period complications	0.1
Stomach cancer	0.1
Hypertensive diseases	0.1

6 Life Expectancy Sub-Analysis: Socioeconomic Status, Rurality and Ethnicity

This section reports on life expectancy across ethnicity, socioeconomic status and rurality. Data across different deprivation quintiles and rurality classification shows variations in life expectancy among Māori, Pacific, and non-Māori/non-Pacific populations.

There is a correlation between socioeconomic status and life expectancy, illustrating that higher levels of deprivation are associated with lower life expectancy, particularly for Māori and Pacific peoples.

6.1 Life expectancy by socioeconomic status and ethnicity

Life expectancy in New Zealand by socioeconomic deprivation quintile and ethnicity reveals a relationship between socio-economic status and life expectancy, with differences among Māori, Pacific, and non-Māori/non-Pacific populations. In the least deprived quintile (Quintile 1), Māori have a life expectancy of 82.9 years, while for non-Māori/non-Pacific it is higher at 85.1 years (2.2 year gap). The overall life expectancy in this quintile is 84.8 years.

As deprivation levels increase, a decline in life expectancy becomes more evident, particularly among Māori. In Quintile 2, life expectancy for Māori decreases to 81.1 years. Among Pacific peoples, life expectancy is 79.8 years and remains higher for non-Māori/non-Pacific ethnicities at 85.2 years. The overall life expectancy in this quintile is 84.8 years, mirroring that of Quintile 1, suggesting a greater impact of deprivation on Māori and Pacific peoples.

In Quintile 3, a decrease in life expectancy with increasing levels of deprivation continues. Māori life expectancy drops to 77.6 years, and for Pacific peoples, it is 78.2 years, compared to 82.7 years for non-Māori/non-Pacific. The overall life expectancy in this quintile is 82.1 years, reflecting the widening inequities.

The inequity becomes larger in Quintile 4, where life expectancy among Māori is 76.7 years and 77.4 years for Pacific peoples, against 81.3 years for non-Māori/non-Pacific, with the overall life expectancy at 80.4 years. In the most deprived quintile (Quintile 5), Māori have a life expectancy of 74.2 years, and Pacific individuals 77.0 years, significantly lower than the 81.6 years for non-Māori/non-Pacific. The overall life expectancy in this quintile is the lowest at 78.9 years.

Comparing the life expectancy difference between Māori in the least deprived quintile and non-Māori/non-Pacific in the most deprived quintile, Māori in Quintile 1 have a life expectancy of 82.9 years, whereas non-Māori/non-Pacific in Quintile 5 have a life expectancy of 81.6 years. This comparison shows that Māori in the least deprived areas have a slightly higher life expectancy but only by 1.3 years compared to non-Māori/non-Pacific in the most deprived areas. Overall, there appears to be a direct relationship between socio-economic status and life expectancy, with Māori and Pacific peoples being more adversely affected than other ethnicities.

TABLE 16: LIFE EXPECTANCY BY ETHNICITY AND SOCIOECONOMIC QUINTILE – 2018 TO 2022

NZDep Quintile*	Māori	Pacific	nMnP	Overall
1 (Least deprived)	82.9	-	85.1	**84.8**
2	81.1	79.8	85.2	**84.8**
3	77.6	78.2	82.7	**82.1**
4	76.7	77.4	81.3	**80.4**
5 (Most deprived)	74.2	77.0	81.6	**78.9**

*Pacific not presented for Quintile 1 due to small number of deaths

Figure 20: Life expectancy by socioeconomic status, Māori and non-Māori/non-Pacific – 2018 to 2022

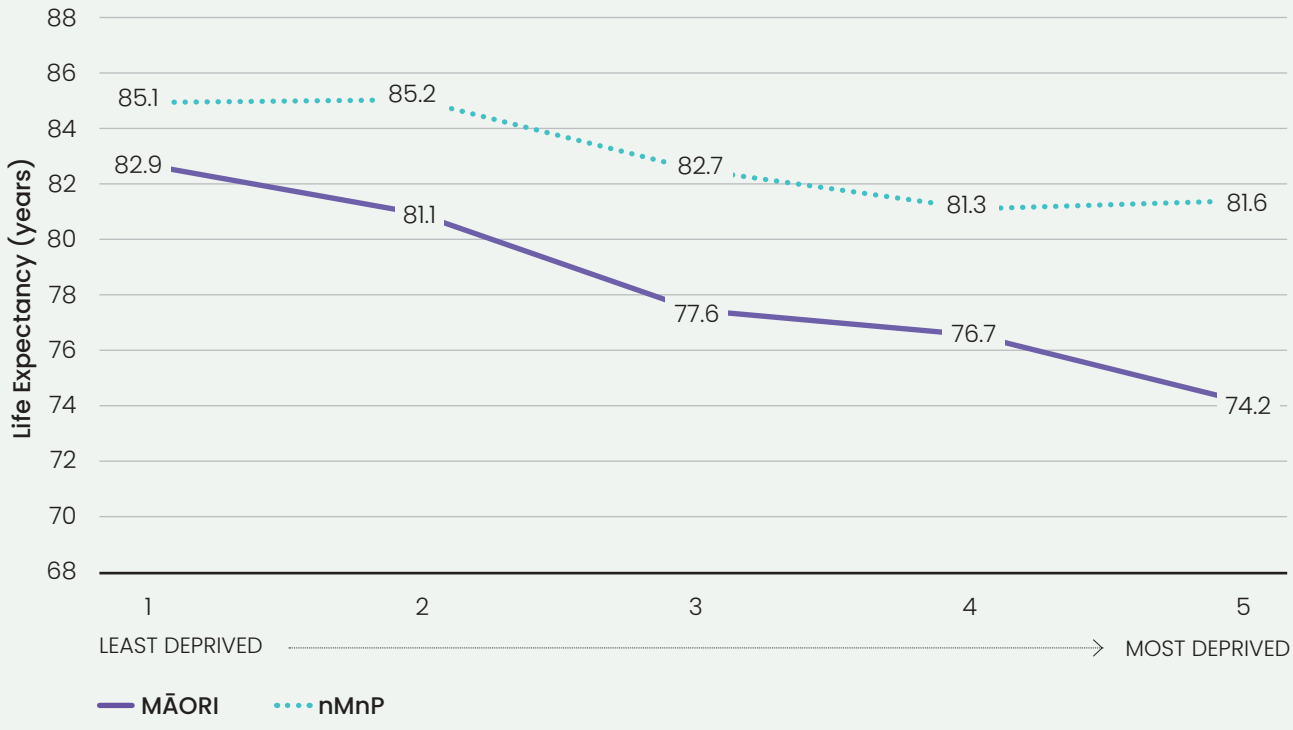


Figure 21: Life expectancy by socioeconomic status, Pacific and non-Māori/non-Pacific – 2018 to 2022

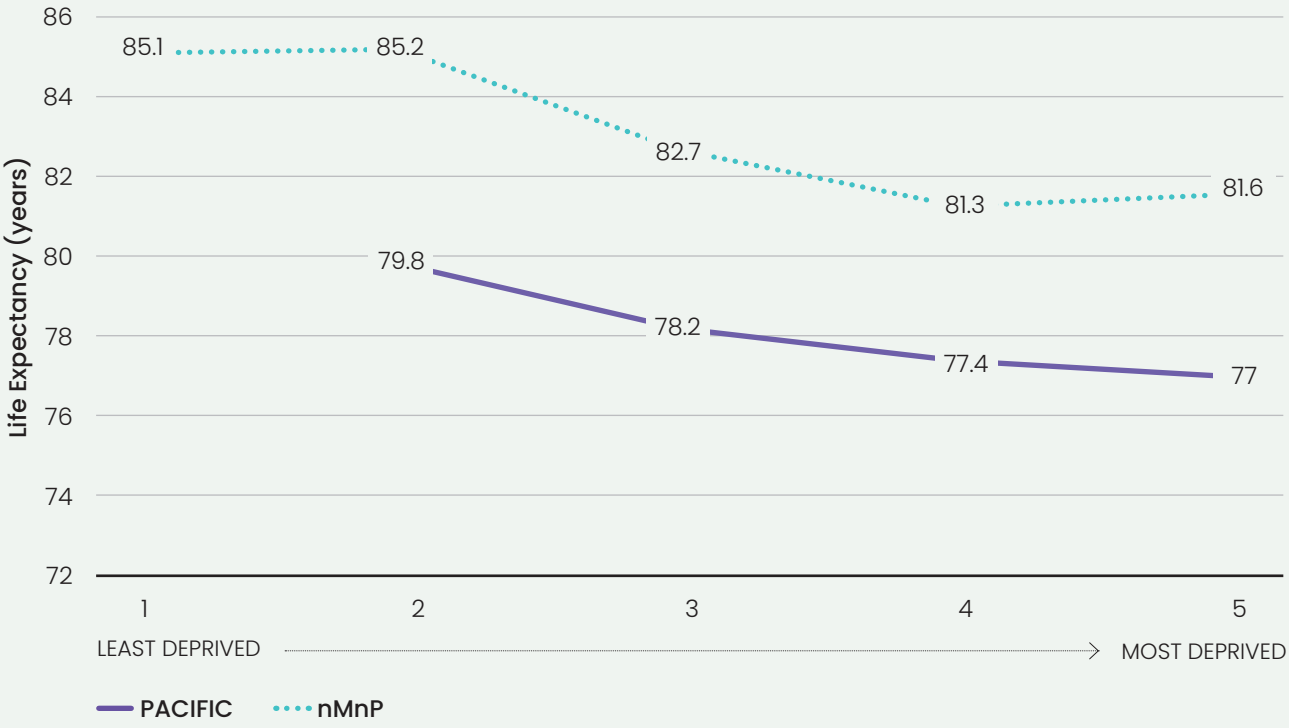
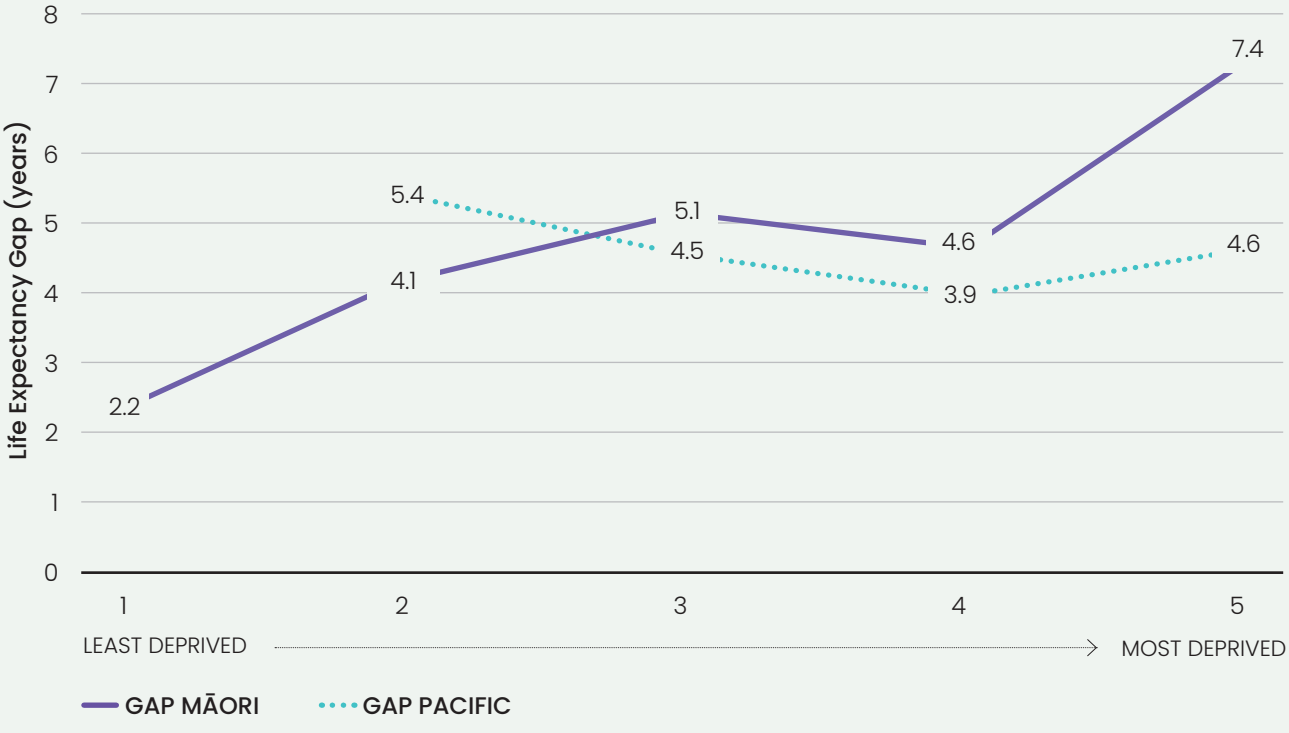


Figure 22: Life expectancy gap by socioeconomic status, Māori and Pacific – 2018 to 2022



Life expectancy Male Māori vs Male non-Māori/non-Pacific

Life expectancy by deprivation quintile, sex, and ethnicity, particularly between female Māori and non-Māori/non-Pacific populations, reveals an inequity impacted by socio-economic factors. In the least deprived quintile (Quintile 1), female Māori have a life expectancy of 85.0 years, compared to 86.5 years for non-Māori/non-Pacific females, resulting in a gap of 1.5 years.

In Quintile 2, the gap widens, with life expectancy for female Māori at 82.5 years, and higher for non-Māori/non-Pacific females at 86.6 years, increasing the gap to 4.1 years.

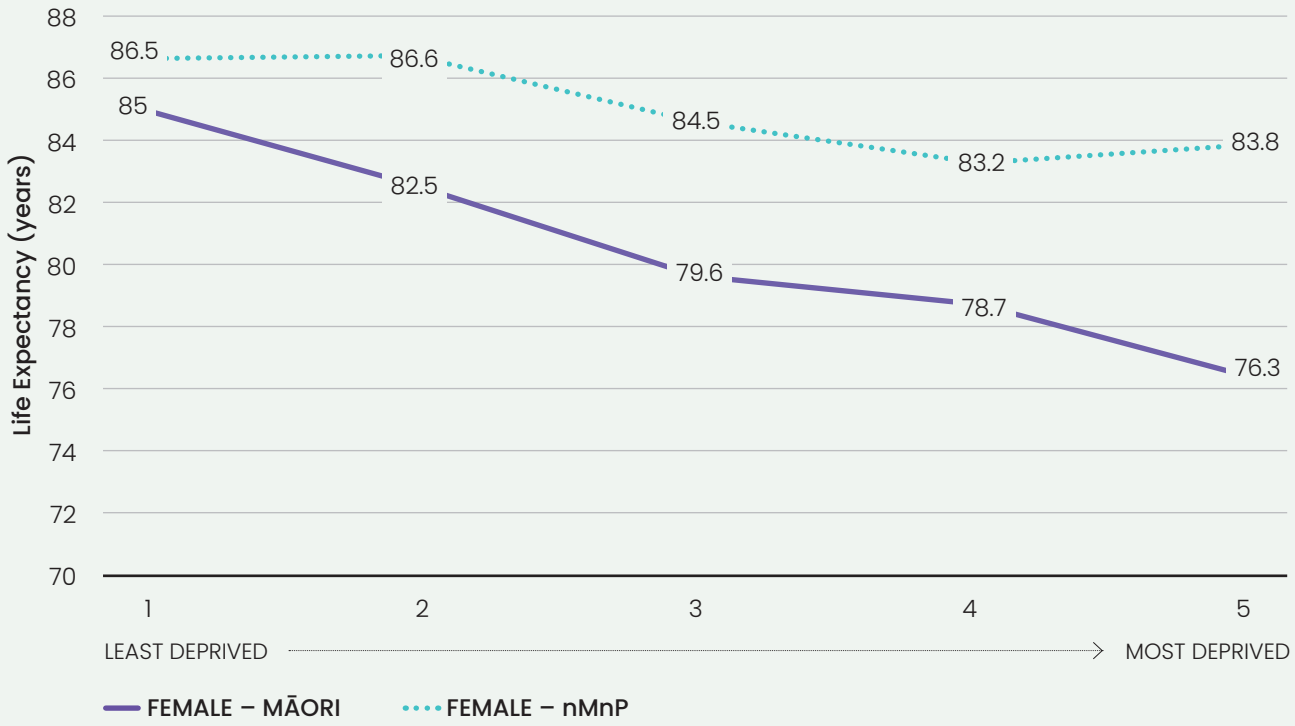
This inequity becomes larger in Quintile 3, where the life expectancy for female Māori decreases to 79.6 years, compared to 84.5 years for non-Māori/non-Pacific females, expanding the gap to 4.9 years.

In Quintile 4, the trend continues with female Māori life expectancy at 78.7 years, whereas it is 83.2 years for non-Māori/non-Pacific females, marking a gap of 4.5 years. The most significant difference is observed in the most deprived quintile (Quintile 5), where female Māori life expectancy drops to 76.3 years, considerably lower than the 83.8 years for non-Māori/non-Pacific females, highlighting the largest gap of 7.5 years.

TABLE 17: LIFE EXPECTANCY BY ETHNICITY AND SOCIOECONOMIC QUINTILE – FEMALES – 2018 TO 2022

NZDep Quintile	Female – Māori	Female – nMnP	Gap
1 (Least deprived)	85.0	86.5	**1.5**
2	82.5	86.6	**4.1**
3	79.6	84.5	**4.9**
4	78.7	83.2	**4.5**
5 (Most deprived)	76.3	83.8	**7.5**

Figure 23: Life expectancy by socioeconomic status, Females, Māori and non-Māori/non-Pacific – 2018 to 2022



Life expectancy Male Māori vs Male non-Māori/non-Pacific

Like females, life expectancy among males presents a similar pattern of inequities between Māori and non-Māori/non-Pacific populations across different deprivation quintiles. In the least deprived quintile (Quintile 1), Māori males have a life expectancy of 80.8 years, in contrast to 83.8 years for non-Māori/non-Pacific males, marking a gap of 3 years.

The gap between Māori and non-Māori/non-Pacific males widens as deprivation increases. In Quintile 2, the life expectancy for Māori males drops to 79.6 years, compared to 83.7 years for non-Māori/non-Pacific males, increasing the gap to 4.1 years. This trend is more pronounced in Quintile 3, where Māori male life expectancy further decreases to 75.6 years, while it stands at 81.0 years for non-Māori/non-Pacific males, expanding the gap to 5.4 years.

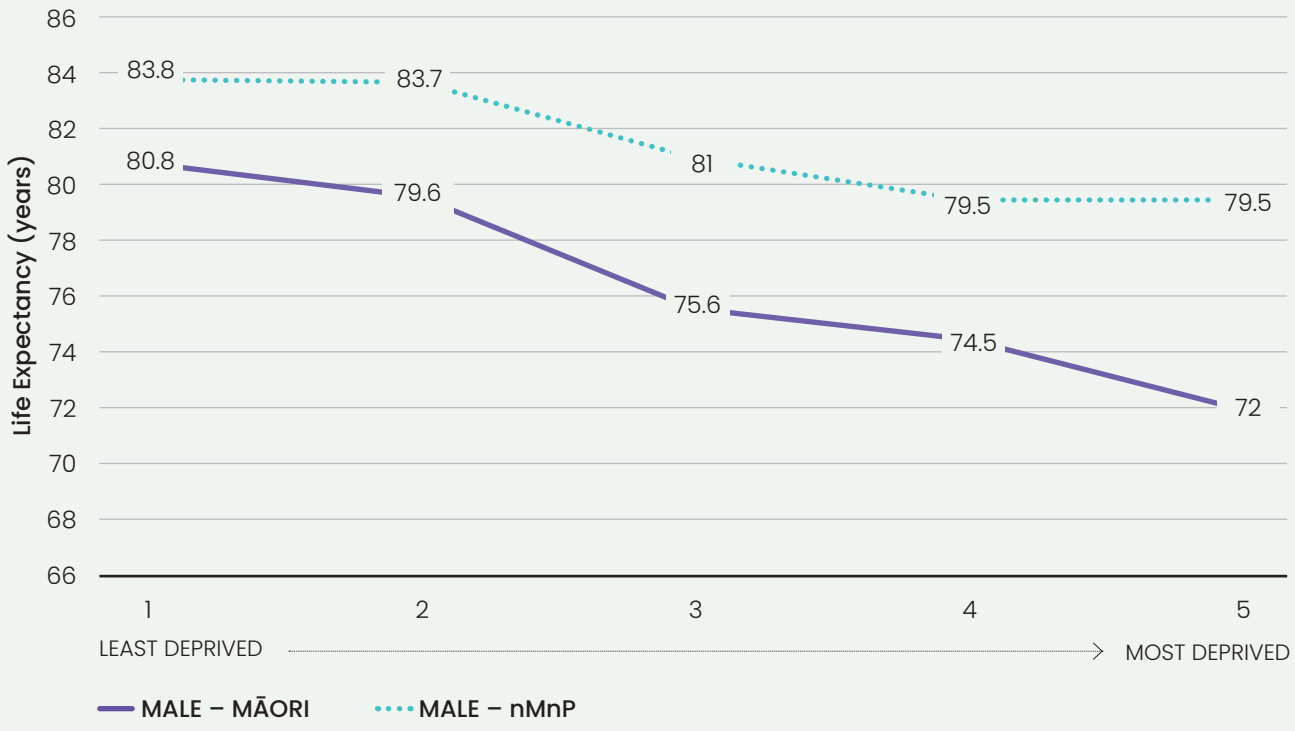
In Quintile 4, Māori males have a life expectancy of 74.5 years compared to 79.5 years for non-Māori/non-Pacific males, resulting in a gap of 5 years. In the most deprived quintile (Quintile 5), Māori males have a much lower life expectancy of 72.0 years, in contrast to 79.5 years for non-Māori/non-Pacific males, indicating the largest gap of 7.5 years.

When comparing life expectancy of males alongside females, a consistent trend emerges. Both male and female Māori show a decline in life expectancy as socio-economic deprivation increases. This trend is more marked among Māori compared to non-Māori and non-Pacific populations, especially in areas of higher deprivation.

TABLE 18: LIFE EXPECTANCY BY ETHNICITY AND SOCIOECONOMIC QUINTILE – MALES – 2018 TO 2022

NZDep Quintile	Male – Māori	Male – nMnP	Gap
1 (Least deprived)	80.8	83.8	**3**
2	79.6	83.7	**4.1**
3	75.6	81.0	**5.4**
4	74.5	79.5	**5**
5 (Most deprived)	72.0	79.5	**7.5**

Figure 24: Life expectancy by socioeconomic status, Males, Māori and non-Māori/non-Pacific – 2018 to 2022



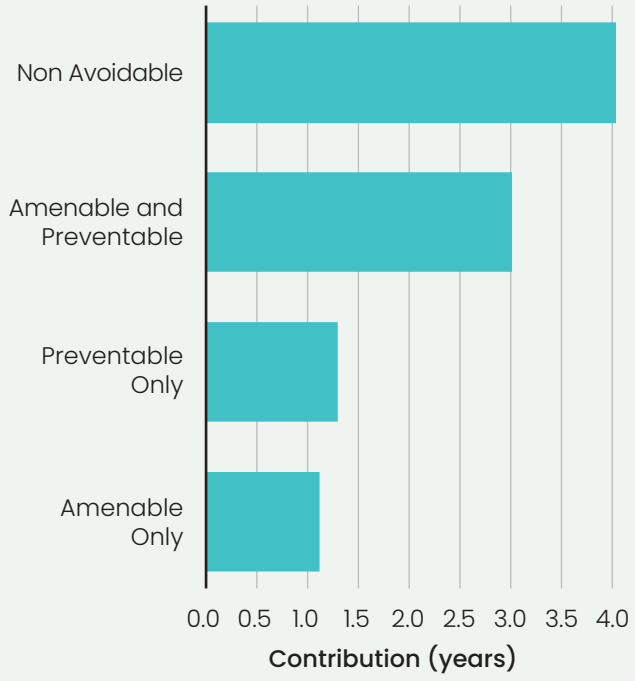
6.2 Life expectancy gap decomposition by socioeconomic status – Māori and non-Māori/ non-Pacific populations

The following section breaks down the observed differences in life expectancy for both Māori and non-Māori/non-Pacific populations by social-economic status and decomposes the gap by potentially avoidable causes of death. It specifically looks at the gap in life expectancy within ethnicities, among those in the least deprived vs most deprived quintiles.

Deprivation Gap – Māori

Deaths that are both amenable and preventable contribute 3.0 years to the gap. Preventable only causes of death account for a 1.3-year difference. Lastly, 1.1 years are due to causes that are only amenable to healthcare intervention alone.

Figure 25: Decomposition of the deprivation in life expectancy by avoidable category – Māori in Q1 to Māori in Q5, 2018 to 2020, (9.5 years)



The following outlines specific avoidable causes of death contributing to the life expectancy gap within Māori between the least and most deprived quintiles (Q1 and Q5). Coronary disease is the leading cause, accounting for a 0.9-year contribution to the gap followed by lung cancer that contributes 0.8 years. Diabetes is also shown to be a contributor, with a 0.4-year contribution to the gap. These top three conditions alone combine to account for 2.1 years of the 9 years difference in life expectancy.

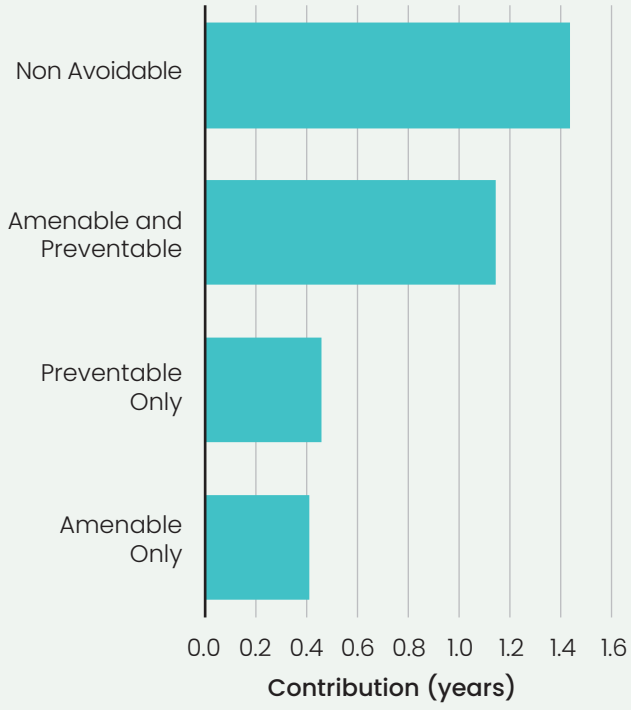
TABLE 19: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI IN Q1 TO MĀORI IN Q5, 2018 TO 2020

Avoidable cause	Contribution (years)
Coronary Disease	0.9
Lung Cancer	0.8
Diabetes	0.4
COPD	0.4
Injuries – Suicide	0.4
Injuries – Land Transport	0.3
Valvular Heart Disease	0.2
Stroke	0.2
Injuries – Other Accidental	0.1
Breast Cancer	0.1

Deprivation Gap – non-Māori/non-Pacific

The following outlines specific avoidable causes of death contributing to the life expectancy gap within the non-Māori/non-Pacific population between the least and most deprived quintiles (Q1 and Q5). The life expectancy gap includes a 1.1-year portion attributable to conditions that are both amenable and preventable. An additional 0.5-year contribution is due to causes considered preventable only. Finally, a 0.4-year contribution from conditions considered amenable only.

Figure 26: Decomposition of the deprivation in life expectancy by avoidable category – non-Māori/non-Pacific in Q1 to non-Māori/non-Pacific in Q5, 2018 to 2020, (3.5 years)



Looking at specific causes contributing to the gap, coronary disease is the primary avoidable cause contributing 0.4-years. This is followed by lung cancer and COPD, each contributing a 0.2-year to the gap. Together, the top 10 avoidable conditions contribute 1.4-years to the overall gap in life expectancy.

TABLE 20: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – NON-MĀORI/NON-PACIFIC IN Q1 TO NON-MĀORI/NON-PACIFIC IN Q5, 2018 TO 2020

Avoidable cause	Contribution (years)
Coronary disease	0.4
Lung cancer	0.2
COPD	0.2
Diabetes	0.1
Perinatal complications	0.1
Injuries – Suicide	0.1
Stroke	0.1
Colorectal cancer	0.1
Substance use – Alcohol	0.1
Injuries – Land transport	0.1

6.3 Life expectancy by ethnicity and rurality

For the period 2018 to 2022 life expectancy for urban Māori was 76.9 years and 76.0 years for rural Māori. Among the non-Māori/non-Pacific population, life expectancy among those living rurally was 82.8 years and 83.5 years among those living in urban areas.

Among Māori, there was a 3.6-year gap in those living in the most urban areas (U1 – 77.4 years) compared to those living in the most rural (R3 – 73.8). There was a nearly 10-year gap among non-Māori/non-Pacific living in the most urban areas compared with Māori living in the most rural areas.

TABLE 21: LIFE EXPECTANCY BY BROAD RURAL/URBAN CLASSIFICATION BY ETHNICITY

GCH Classification	Māori	nMnP	Gap
U1 (Most urban)	77.4	83.9	**6.5**
U2	76.1	82.1	**6.0**
R1	76.8	82.7	**5.9**
R2	75.4	83.2	**7.8**
R3 (Most rural)	73.8	82.1	**8.3**

TABLE 22: LIFE EXPECTANCY BY NARROW RURAL/URBAN CLASSIFICATION BY ETHNICITY

GCH Classification	Māori	nMnP	Gap
Urban (U1 and U2)	76.9	83.5	**6.6**
Rural (R1 to R3)	76.0	82.8	**6.8**

7 Appendices

7.1 Appendix 1 – Methods

Life Expectancy

The calculation of life expectancy requires the construction of a current life table – a table of information that breaks down the mortality experience of a population by age. The Chiang II[16] method for calculating life expectancy involves constructing abridged life tables where the variance of life expectancy is a function of the probability of survival. Life tables are an effective way of summarising the mortality experience of a population and can also be used to make statistical inferences and comparisons between the mortality experience of different populations.

For the calculation of period life expectancy, we utilised an abridged life table, extending to an upper age limit of 90 years and beyond. The data for this analysis were sourced from two primary repositories: mortality records provided by the Health New Zealand National Mortality Collection and population statistics from Stats NZ.

The life expectancy estimates are derived from mortality data spanning either a three-year period commencing at the period 2001 to 2002, to the most recent 2020 to 2022 or a more extended five-year interval (2018 to 2022). In selecting the data range for these estimates, we were guided by the need for robust, reliable estimates within the constraints of available information. As such, the shortest timeframe that still ensured the robustness of the findings was selected. However, it is important to note that due to the relatively small size of the population base within some areas, a degree of caution is warranted in their interpretation. To aid in clarity and contextual understanding, each life expectancy estimate is explicitly associated with the specific period it covers. As such, life expectancy estimates for the same population may vary slightly when different time periods are used. This is particularly important where life expectancy decomposition is presented as this analysis requires cause of death data which is often two to three years delayed.

An important component of the life expectancy calculation is the treatment of the final age group, in the case of this analysis 90+ was used. Unlike younger age groups, where the assumption of uniformly distributed deaths within each interval is reasonably valid, the 90+ group demands a different approach to account for the higher and more variable mortality rates. To address this the Chiang II method applies a specific formula to adjust for the declining survival probabilities in this group.

Where ethnicity is presented, this is prioritised as per standard ethnicity data protocols[17]. Urban/rural classification has been defined using the Geographic Classification for Health[18]. Deprivation has been defined using the New Zealand Index of Deprivation and has been defined at a Census Area Unit or Statistical Area 2 level[19]. For Māori and Pacific peoples, life expectancy gaps are calculated in relation to the combined non-Māori/non-Pacific groups unless otherwise noted.

16. https://iris.who.int/bitstream/handle/10665/62916/15736_eng.pdf
17. Ministry of Health. 2017. HISO 10001:2017 *Ethnicity Data Protocols*. Wellington: Ministry of Health.
18. Whitehead, J., Davie, G., de Graaf, B., Crengle, S., Fearnley, D., Smith, M., Lawrenson, R., & Nixon, G. Defining rural in Aotearoa New Zealand: A novel geographic classification for health purposes. *New Zealand Medical Journal*. 2022, Aug 5; 135(1559) ISSN 1175-8716
19. Atkinson J, Salmond C, Crampton P (2019). *NZDep2018 Index of Deprivation*, Final Research Report, December 2020. Wellington: University of Otago

Life expectancy gap decomposition:
To assess the impact of potentially avoidable causes of death on the life expectancy gap, the Arriaga method[20] – a life table decomposition technique accounting for both age and cause of death – was used. The analyses and calculations are based on official death data from the Health New Zealand National Mortality Collection, while population data are derived from official Stats NZ population estimates. Due to the time required for coronial processes to conclude, mortality data specifying the cause of death often faces delays of up to three years. Consequently, this analysis utilises coded mortality data from the period between 2018 and 2020 which is the most recent period available at the time this report was developed.

Decomposition analysis uses a single underlying cause of death classification, which simplifies the reality that multiple factors can contribute to a single death. This may result in an underestimation of the effects of some conditions contributing to, but not the final cause of death. Due to the previously mentioned delay in availability of cause of death information, the life expectancy figures used in the decomposition analysis may not be the most recent available but are the most recent that allows this type of gap analysis using cause of death.

Causes of death are divided into 50 potentially avoidable conditions. Avoidable deaths encompass those deemed amenable to high-quality healthcare, preventable through public health interventions, or both. A comprehensive list of these conditions, along with their corresponding ICD codes, is provided in appendix 2.

Most are limited to those under 75 years, except leukaemia which is only considered avoidable under the age of 45 years and external injuries which includes all ages.

It is important to note that at the time of analysis, the cause of death information was preliminary, with approximately 200 total deaths from 2019 and 2020 still under investigation by the coroner. Many of these are likely deaths associated with external causes. It is difficult to quantify the exact impact this would have on the cause specific decomposition. However, if a greater proportion of these deaths were among Māori compared with non-Māori, then it would be expected that the gap attributable to these specific conditions would be underestimated in this report.

The analysis presented for Pacific peoples in Te Manawa Taki and Te Waipounamu is based on fewer than 300 deaths within each region. It has been included for completeness; however, interpretation should be treated with caution based on the small numbers.

Decomposition analysis is organised by avoidable category and highlights the top ten causes contributing to the life expectancy gap. Due to rounding, some labels displayed on graphs or tables within the document may not add up to the total life expectancy gap mentioned in the text.

20. Arriaga E.E.: Measuring and explaining the change in life expectancies. *Demography* 1984; 21: pp. 83-96.

7.2 Appendix 2 – Avoidable mortality

Category	Cause[i]	ICD10 codes[ii]	Amenable[iii]	Preventable
Avoidable Cancers	Colon And Rectum	C18 – C21	●	●
	Female Breast	C50	●	●
	Liver	C22		●
	Melanoma	C43	●	●
	Oesophagus	C15		●
	Bone and Cartilage	C40 – C41	●	
	Cervical	C53	●	●
	Uterine	C54 – C55	●	
	Testis	C62	●	
	Thyroid	C73	●	
	Hodgkin Lymphoma	C81		
	Lip, Oral Cavity and Pharynx	C00-C1		●
	Mesothelioma	C45		●
	Acute Lymphoblastic Leukaemia (ages 0-44)	C91.0	●	
	Prostate	C61	●	
	Stomach	C16	●	●
	Trachea, Bronchus, Lung	C33 – C34		●
Avoidable Chronic and Cardiovascular diseases	Cerebrovascular Disease	I60 – I69	●	
	Coronary Disease	I20 – I25	●	●
	Diabetes	E10 – E14	●	●
	Hypertensive Diseases	I10 – I13	●	
	Pulmonary Embolism	I26	●	●
	Atrial Fibrillation and Flutter	I48	●	
	Heart Failure	I50	●	
	Aortic Aneurysm	I71		●
	Peptic ulcer	K25 – K27	●	
	Cholelithiasis	K80	●	
	Renal Failure	N17 – N19	●	
	Valvular Heart Disease	I01, I05 – I09, I33 – I37	●	
Avoidable Infant and Maternal	Complications Of Perinatal Period	P01 – P03, P05 – P94	●	
	Cardiac Septal Defect	Q21	●	
	Complications Of Pregnancy	O00 – O96, O98 – O99	●	

Category	Cause[i]	ICD10 codes[ii]	Amenable[iii]	Preventable
Avoidable Infections	TB	A15, A16, A17, A18, A19, B90	●	●
	Meningococcal	A39	●	
	Pneumococcal	A40.3, G00.1, J13	●	
	Hepatitis C	B171, B182	●	●
	HIV/AIDS	B20 – B24	●	●
Avoidable Injuries	Land Transport	V00, V01-V04, V06-V14, V16-V24, V26-V34, V36-V44, V46-V54, V56-V64, V66-V74, V76-V79, V80.0-V80.5, V80.7-V80.9, V82-V86, V87.0-V87.5, V87.7-V87.9, V88.0-V88.5, V88.7-V88.9, V89, V98-V99 (all ages)	●	●
	Other Injuries	Other Accidental – W00 – X59 (excluding W00 – W08, W18) (all ages)		●
		Accidental Falls On Same Level – W00 – W08, W18 (all ages)	●	●
		Fire: X00-X09 (all ages)	●	●
		Treatment injury: Y60 – Y82 (all ages)	●	●
		Homicide And Assault: X85 – Y09 (all ages)	●	●
	Suicide	X60 – X84 (all ages)	●	●
Avoidable Respiratory	COPD	J40 – J44	●	●
	Pneumonia	J12 – J18	●	
	Asthma	J45 – J46	●	
	Influenza	J09 – J11	●	●
Avoidable substance Use	Alcohol	F10, G312, G621, I426, K292, K70, K73, K741, K742, K746, K747, K748, K749, K860		●
Non-Avoidable[21]	Non-Avoidable	All other deaths not listed in the above in all age groups		

i. Groups used in cause specific decomposition.
ii. Includes all deaths in those aged 0-74 unless stated otherwise
iii. Amenable deaths have been aligned with definition published by the Ministry of Health in July 2016

21. While 'non-avoidable' deaths are those not included in the definition of avoidable mortality, this doesn't necessarily mean they couldn't have been prevented. The indicator categorises deaths based on specific criteria, focusing on groups of conditions rather than assessing each death individually. It's important to recognise the limitations of this approach: there may be preventable deaths classified as 'non-avoidable' because they don't meet the set criteria, and conversely, some deaths categorised as 'avoidable' might not have been preventable due to individual circumstances. Therefore, while useful, these indicators provide a general overview rather than a definitive assessment of each death's potential to be avoidable.

7.3 Appendix 3 – Life expectancy limitations

Life expectancy is a widely used indicator that provides valuable insights into the overall health status of a population. It serves as a gauge for the average time an individual is expected to live, based on current mortality rates. However, while life expectancy is a useful measure, it is important to consider its limitations when interpreting its implications for public health. The following considerations highlight some of the key aspects where life expectancy falls short as a comprehensive indicator of a population's health and well-being.

Quality of life not accounted for: Life expectancy measures quantity of life, not quality. It doesn't account for the years lived in poor health or with disability. Metrics like healthy life expectancy, Disability-Adjusted Life Year (DALY) or Quality-Adjusted Life Year (QALY) are seen as more comprehensive in this regard.

Limited in addressing chronic diseases: In many cases, life expectancy might not effectively reflect the burden of chronic diseases, which may not significantly shorten life but severely impact its quality. Chronic conditions like arthritis, diabetes, or mental health disorders can impact well-being.

Economic, social and historic factors: Life expectancy is significantly shaped by a range of broader social and economic factors, including education level, employment status, quality of housing, and the pervasive effects of discrimination. These factors collectively impact health outcomes and contribute to variations in longevity across different groups of people.

Not sensitive to short-term changes: Life expectancy is a long-term measure and may not sensitively reflect recent improvements or deteriorations in health care or public health. The nature of life expectancy and indeed public health is such that marked improvements in life expectancy will take years, sometimes even decades.

Doesn't address healthcare quality and access: It doesn't directly measure the effectiveness, accessibility, and quality of healthcare systems. Factors like healthcare availability, preventive care, and patient satisfaction are important considerations for a complete picture of health.

Another aspect that traditional life expectancy estimates overlook are indigenous and varied perspectives of health. When interpreting lifeexpectancy, it is important to consider the unique cultural, historical, and health-related contexts of different groups.

Cultural relevance and appropriateness: Some models and varied perspectives of health, such as Indigenous models, are often deeply rooted in the cultural, spiritual, and historical contexts of communities. These models provide a framework that is more culturally relevant and appropriate for assessing the health and well-being of different groups. For example, Māori perspectives emphasise the health of the whānau (family), hapū (subtribe), and Iwi (tribe) as integral to individual well-being. This communal approach to health, which extends to societal and environmental aspects, challenges the individual-centric focus of life expectancy metrics.

Addressing historical and systemic inequities: Some population groups often encounter unique health challenges shaped by historical and systemic inequities, including, but not limited to, the legacies of colonisation, displacement, and stigmatisation. These factors can impact health outcomes and life expectancy, necessitating a nuanced approach to health assessment that considers the often-complex societal constructs and historical injustices. Capturing the impact of these factors in health metrics remains challenging but essential for addressing these inequities in health outcomes and life expectancy.

Holistic understanding of health: Many indigenous models and perspectives of health among different groups emphasise a holistic view of health that integrates physical, mental, spiritual, and environmental well-being. This broader perspective is essential for accurately interpreting life expectancy figures, as it accounts for the multifaceted nature of health that extends beyond mere physical survival. As an example, for Māori, health perspectives are informed by traditional knowledge and practices, which include a deep connection to the land and ancestral wisdom. Understanding life expectancy within this context requires recognising the importance of these cultural elements in shaping health beliefs and practices among Māori.

Empowering indigenous communities: Incorporating indigenous and varied perspectives in health assessment not only respects but also empowers communities. It supports the right of people to self-determination in health care, ensuring that health measures and interventions are aligned with their values and needs. Acknowledging this principle is crucial when interpreting life expectancy, as it calls for health assessments and solutions that respect autonomy as well as different cultural practices and beliefs.

Considering health across all perspectives is not only respectful of cultural differences but also essential for a more accurate, comprehensive, and equitable assessment of health outcomes, including life expectancy, among different population groups.

The concurrent and interacting influences on health by the various determinants of health is also a factor that is difficult to capture within traditional life expectancy estimates. Intersectionality refers to how different aspects of a person's social and social identities (like ethnicity, gender, class, sexuality, ability, etc.) combine to create unique modes of discrimination and privilege[22]. In the context of life expectancy:

Compound inequities: Intersectionality reveals that health inequities are not just the sum of individual factors like ethnicity or gender but are often compounded in individuals who belong to multiple marginalised groups. For instance, the life expectancy of a Māori woman might be influenced by both racial and gender-based inequities.

22. Crenshaw, Kimberlé. "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory, and Antiracist Politics." *University of Chicago Legal Forum 1989*, no. 1 (1989): 139-167.

Complex socioeconomic dynamics: People at the intersection of multiple disadvantaged identities often face complex socioeconomic challenges, which can lead to poorer health outcomes and, consequently, lower life expectancy. These might include access to healthcare, employment opportunities, education, and safe living conditions.

Cultural and structural barriers: Intersectionality also highlights how cultural and structural barriers specific to certain groups can affect health. This includes systemic bias in the design and delivery of health services that lead to different levels of effectiveness for different groups, including across ethnicities), gender bias in medical research, or the stigma and discrimination faced by LGBTQ+ individuals or persons with disabilities, all of which can lead to differences in life expectancy.

Nuanced understanding of health needs: A one-size-fits-all approach in the design and delivery of health services (or in policy settings) may overlook the unique health needs of populations at various intersections. Recognising these intersections can lead to more tailored and effective health interventions.

By considering intersectionality, it becomes clear that that life expectancy cannot fully capture the nuanced and multi-layered experiences that different groups in society face. This approach emphasises the need for more comprehensive and inclusive health metrics that account for the diverse and intersecting identities of individuals within a population.

When interpreting the data presented in this document, it's important to be aware of an influencing factor known as the "healthy migrant effect". This phenomenon refers to an observed trend where immigrants tend to have better health outcomes, including a longer life expectancy, than the New Zealand-born population. In terms of life expectancy analysis, the healthy migrant effect has the potential to distort data. Specifically, it could lead to an inflated estimation of life expectancy for a given group, as the sample might be disproportionately composed of healthier individuals who have the capacity to migrate. This bias can further result in inequities when comparing health outcomes of migrant populations with those of native-born populations, potentially masking true health inequalities and issues that demand attention. The implications of the healthy migrant effect are expected to be particularly significant in regions with a substantial migrant population, such as the Northern Region. It's important to note that in this analysis, no adjustments have been made to account for this effect.

Finally, traditional life expectancy measures generally do not provide specific data for individuals with disabilities or serious mental illness. This exclusion is primarily due to the challenges in gathering comprehensive and consistent data for these groups. These populations may have distinct health profiles and risk factors that are not adequately captured in general life expectancy statistics. To accurately assess life expectancy in populations with disabilities or serious mental illness, specialised studies that focus on these groups are required. These studies would need to consider the unique health challenges, care needs, and societal factors impacting these individuals.

All the aforementioned points suggest that while life expectancy is a useful indicator, it should be considered alongside other measures to gain a comprehensive understanding of the health of a population. It is important to use a combination of indicators, including morbidity rates, quality of life measures, health equity metrics, and particularly incorporate indigenous models of health to assess health status more accurately and ensure you are capturing a complete picture of a populations health.

7.4 Appendix 4 – Ethnicity data

Ethnicity in New Zealand is self-identified, and individuals can choose more than one ethnicity. Prioritisation is based on the Ministry of Health's Ethnicity Data Protocols[23]. The ethnicity data used in this document is sourced from the national NHI (National Health Index) database. While NHI ethnicity data has known misclassification issues[24], it is still considered the best available source among health-related datasets.

In the 2018 Census, 11% of people identified with more than one ethnicity. Among those with a prioritised ethnicity of Māori, 54% also identified with another ethnicity; for 80% of these individuals, the other ethnicity mentioned was European. For those identifying as Pacific, 65% identified as Pacific only, while 18% also identified as Māori (including those who mentioned other ethnicities), hence their prioritised ethnicity is counted as Māori. An additional 13% identified as both Pacific and European.

For this report, we have used prioritised ethnicity, meaning each person is counted only once. In most cases, we have reported against four ethnic groups: Māori, Pacific, Asian, and European/Other. The European/Other category includes every group except for those identifying as Māori, Pacific, or Asian. It encompasses Middle Eastern, Latin American and African (MELAA), NZ European, Other European, Residual categories, Unknown, Unspecified, and Not Stated.

Ethnicity Data Recording for Māori: The way ethnicity data is collected can significantly impact the number of people identifying as Māori and those reported to have multiple ethnicities. Ethnicity data protocols have been in place for the health sector for nearly 20 years, and it is the responsibility of the entire health system to collect, record, and report ethnicity data as set out in these protocols. However, despite these protocols, Māori continue to be systematically undercounted. A recent study showed that one in five Māori (21%) were not identified as Māori on the NHI when compared to self-identified ethnicity recorded in the Census. The quality of ethnicity data is worse for Māori males than for Māori females, and it is particularly poor for those aged 20-24 years, where the NHI misses 30%, or almost one in three Māori[25].

In 2020, Stats NZ identified that Māori had been undercounted by 7% (50,000 people) in the 2013 Census and issued revised population figures dating back to 2006.

23. Ministry of Health. 2017. HISO 10001:2017 *Ethnicity Data Protocols*. Wellington: Ministry of Health.
24. Cormack, D. & McLeod, M. *Improving and maintaining quality in ethnicity data collections in the health and disability sector*. (Te Rōpū Rangahau Hauora a Eru Pōmare, Wellington School of Medicine and Health Sciences, University of Otago (Wellington), 2010).
25. Harris RB, Paine SJ, Atkinson J, Robson B, King P, Randle J, Mizdrak A, McLeod M. We still don't count: the undercounting and under-representation of Māori in health and disability sector data. *New Zealand Medical Journal* 2022;135(1567):54-64.

Misclassification of the Fijian-Indian Population: In New Zealand, data collection processes face a challenge with the misclassification of the Fijian-Indian population. This issue arises from complex ethnic categorisation processes, where Fijian-Indian individuals are often incorrectly classified, possibly under broader categories like 'Asian' or 'Pacific peoples.' This misclassification not only obscures the distinct health profiles and needs of the Fijian-Indian community but also impacts the accuracy of health statistics. Consequently, it becomes difficult to develop targeted health policies or interventions that effectively address the unique health concerns and cultural nuances of the Fijian-Indian population. Recognising and rectifying this misclassification is crucial, although it remains challenging.

7.5 Appendix 5 – Biological sex data

Section 3 reports on life expectancy differentiated by biological sex, as per the categorisation used within the mortality and population datasets relevant to this analysis. Although this report uses sex rather than gender, it is important to recognise that gender encompasses a broader classification. Gender is a personal and social identity that is self-determined and can include identities such as male, female, a combination of both, or neither, and can include non-binary identities. It should be noted that an individual's gender may differ from the sex assigned at birth and can also change over time. Furthermore, some individuals may not identify with any gender. Due to the complexities and lack of specific data relating to gender, our analysis is limited to data categorised solely by sex. We acknowledge the complexity and the wider spectrum of gender identity[26].

26. Te Whatu Ora – Health New Zealand. 2023. HISO 10046:2023 *Consumer Health Identity Standard*. Wellington: Te Whatu Ora – Health New Zealand.

7.6 Appendix 6 – Regional ethnicity gap decomposition

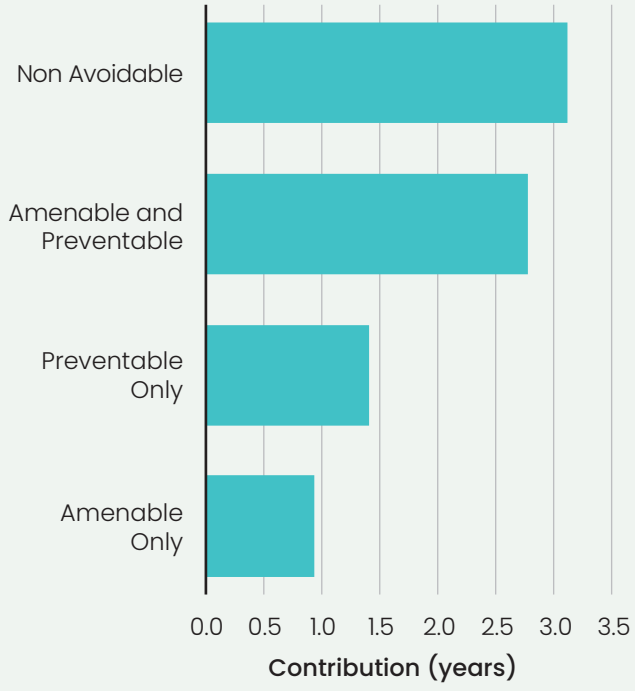
Northern Region

For the period 2018 to 2020 life expectancy among Māori was 76.2 and 77.4 years for Pacific peoples. For Māori this is 8.3 years lower than the non-Māori/non-Pacific population (84.5 years) and 7.1 years lower for Pacific peoples.

Māori

Among Māori, 2.8 years of the 8.3-year gap can be attributed to conditions that are considered both amenable and preventable followed by 1.4 years from conditions considered preventable only and 0.9 years from conditions considered amenable only. An additional 3.1 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 1: Decomposition of the ethnic gap in life expectancy by avoidable category – Māori compared with non-Māori/non-Pacific, 2018 to 2020, (8.3 years) – Northern Region



The leading avoidable causes of death contributing to the life expectancy gap among Māori are coronary disease (0.9 years), lung cancer (0.9 years) and diabetes (0.4 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 3.8 years of the 8.3-year gap.

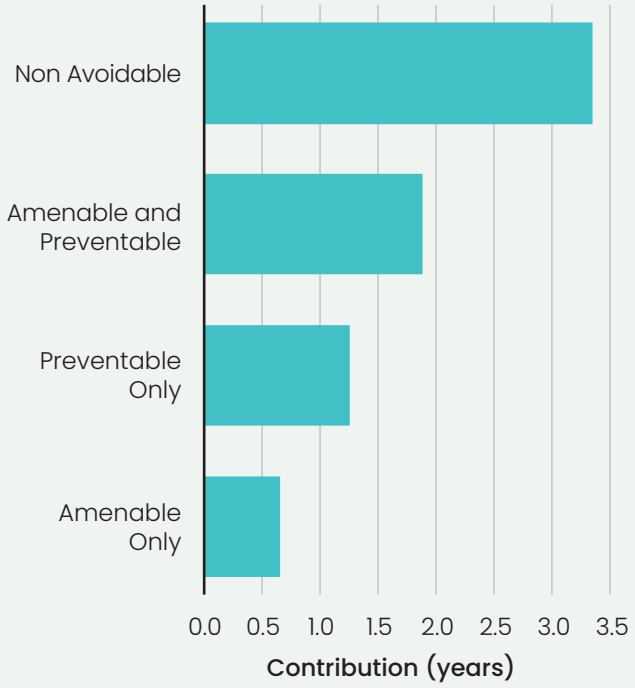
APPENDIX TABLE 1: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI COMPARED WITH NON MĀORI/NON-PACIFIC, 2018 TO 2020 – NORTHERN REGION

Avoidable cause	Contribution (years)
Coronary disease	0.9
Lung cancer	0.9
Diabetes	0.4
COPD	0.4
Land transport injuries	0.3
Suicide	0.3
Other accidental injuries	0.2
Stroke	0.2
Valvular heart disease	0.1
Stomach Cancer	0.1

Pacific peoples

Among Pacific peoples, 1.9 years of the 7.1-year gap can be attributed to conditions that are considered both amenable and preventable followed by 1.3 years from conditions considered amenable only and 0.7 years from conditions considered preventable only. An additional 3.4 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 2: Decomposition of the ethnic gap in life expectancy by avoidable category – Pacific peoples compared with non-Māori/ non-Pacific, 2018 to 2020, (7.1 years) – Northern Region



The leading avoidable causes of death contributing to the life expectancy gap among Pacific peoples are diabetes (0.8 years), coronary disease (0.7 years) and lung cancer (0.4 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 3.2 years of the 7.1-year gap.

APPENDIX TABLE 2: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – PACIFIC PEOPLES COMPARED WITH NON-MĀORI/NON-PACIFIC, 2018 TO 2020 – NORTHERN REGION

Avoidable cause	Contribution (years)
Diabetes	0.8
Coronary disease	0.7
Lung cancer	0.4
Stroke	0.3
Perinatal complications	0.3
Valvular heart disease	0.2
Uterine cancer	0.2
Female breast cancer	0.1
Stomach cancer	0.1
Liver cancer	0.1

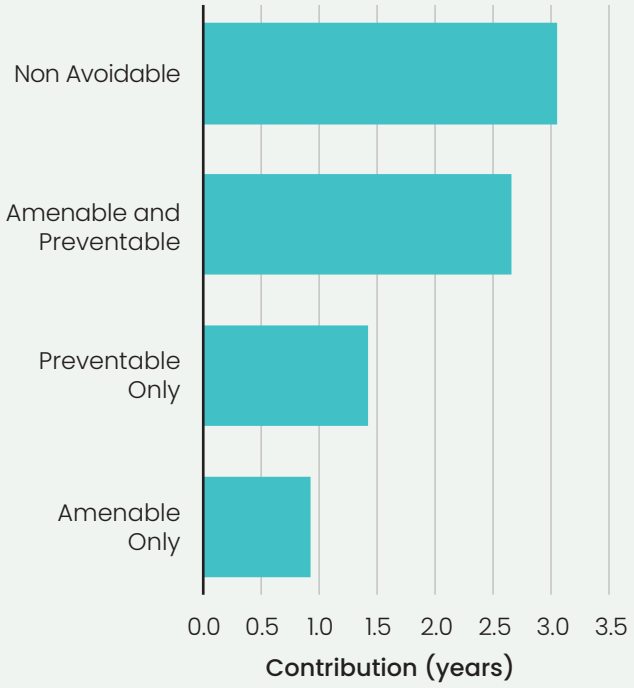
Te Manawa Taki

For the period 2018 to 2020 life expectancy for Māori was 75.0 and 78.2 years for Pacific Peoples. For Māori this is 8.1 years lower than the non-Māori/ non-Pacific population (83.1 years) and 4.9 years lower for Pacific peoples.

Māori

Among Māori, 2.7 years of the 8.1-year gap can be attributed to conditions that are considered both amenable and preventable followed by 1.4 years from conditions considered preventable only and 0.9 years from conditions considered amenable only. An additional 3.1 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 3: Decomposition of the ethnic gap in life expectancy by avoidable category – Māori compared with non-Māori/non-Pacific, 2018 to 2020, (8.1 years) – Te Manawa Taki



The leading avoidable causes of death contributing to the life expectancy gap among Māori are lung cancer (0.9 years), coronary disease (0.8 years) and diabetes (0.6 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 4.1 years of the 8.1-year gap.

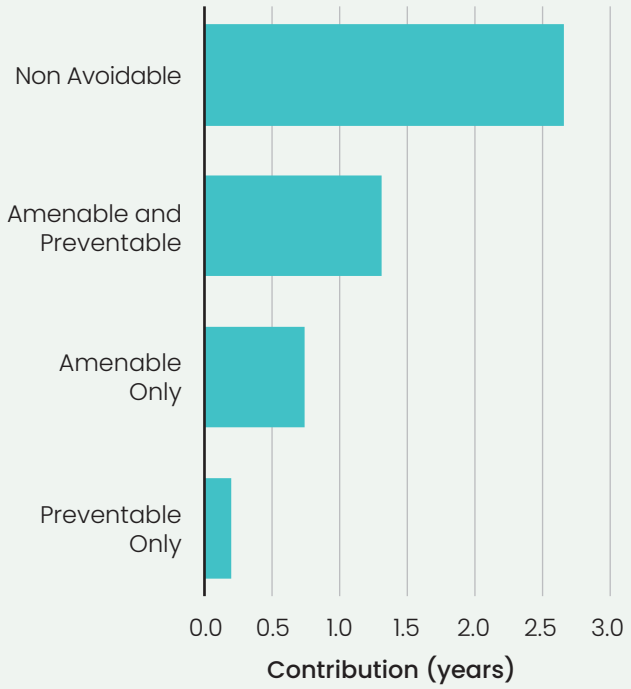
APPENDIX TABLE 3: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI COMPARED WITH NON-MĀORI/ NON-PACIFIC, 2018 TO 2020 – TE MANAWA TAKI

Avoidable cause	Contribution (years)
Lung cancer	0.9
Coronary disease	0.8
Diabetes	0.6
COPD	0.4
Land transport injuries	0.4
Stroke	0.3
Suicide	0.3
Valvular heart disease	0.2
Other accidental injuries	0.2
Breast cancer	0.1

Pacific peoples

Among Pacific peoples, 1.3 years of the 4.9-year gap can be attributed to conditions that are considered both amenable and preventable followed by 0.7 years from conditions considered amenable only and 0.2 years from conditions considered preventable only. An additional 2.7 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 4: Decomposition of the ethnic gap in life expectancy by avoidable category – Pacific peoples compared with non-Māori/non-Pacific, 2018 to 2020, (4.9 years) – Te Manawa Taki



The leading avoidable causes of death contributing to the life expectancy gap among Pacific peoples are coronary disease (0.7 years), diabetes (0.5 years) and stroke (0.2 years). A list of the top 10 conditions and their contribution to the gap is presented in the following table. In total, these conditions contribute 2.4 years of the 4.9-year gap.

APPENDIX TABLE 4: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – PACIFIC PEOPLES COMPARED WITH NON-MĀORI/NON-PACIFIC, 2018 TO 2020 – TE MANAWA TAKI

Avoidable cause	Contribution (years)
Coronary disease	0.7
Diabetes	0.5
Stroke	0.2
Colorectal cancer	0.2
Valvular heart disease	0.2
Atrial fibrillation	0.2
Land transport injuries	0.1
Lung cancer	0.1
Aortic aneurysm	0.1
COPD	0.1

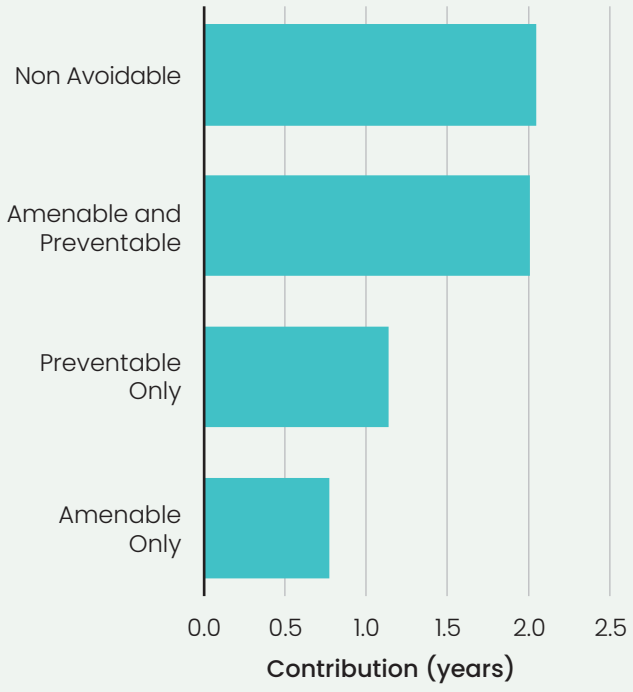
Central Region

For the period 2018 to 2020 the life expectancy for Māori was 76.7 and 77.9 years for Pacific peoples. For Māori this is 6.0 years lower than the non-Māori/non-Pacific population (82.6 years) and 4.8 years lower for Pacific peoples.

Māori

Among Māori, 2.0 years of the 6.0-year gap can be attributed to conditions that are considered both amenable and preventable followed by 1.1 years from conditions considered preventable only and 0.8 years from conditions considered amenable only. An additional 2.0 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 5: Decomposition of the ethnic gap in life expectancy by avoidable category – Māori compared with non-Māori/non-Pacific, 2018 to 2020, (6.0 years) – Central Region



The leading avoidable causes of death contributing to the life expectancy gap among Māori are coronary disease (0.7 years), lung cancer (0.6 years) and COPD (0.4 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 3.1 years of the 6.0-year gap.

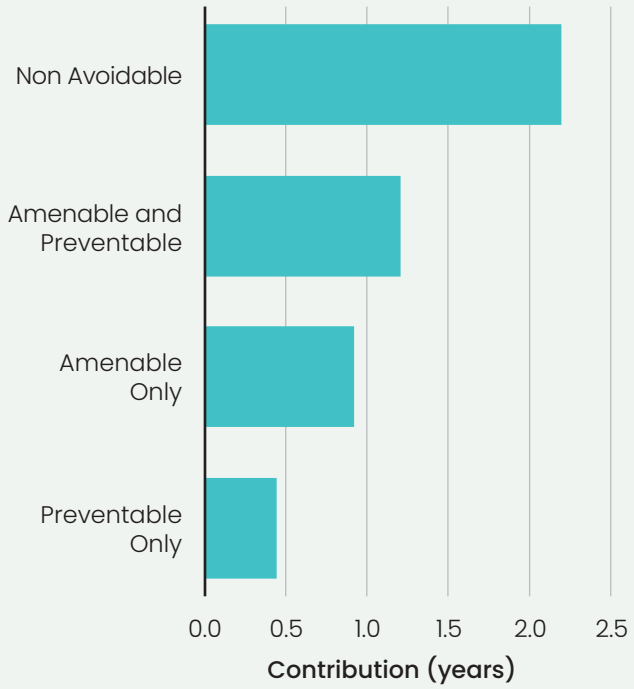
APPENDIX TABLE 5: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI COMPARED WITH NON-MĀORI/NON-PACIFIC, 2018 TO 2020 – CENTRAL REGION

Avoidable cause	Contribution (years)
Coronary disease	0.7
Lung cancer	0.6
COPD	0.4
Diabetes	0.3
Suicide	0.3
Stroke	0.2
Land transport injuries	0.2
Other accidental injuries	0.2
Valvular heart disease	0.2
Liver cancer	0.1

Pacific peoples

Among Pacific peoples, 1.2 years of the 4.8-year gap can be attributed to conditions that are considered both amenable and preventable followed by 0.9 years from conditions considered amenable only and 0.4 years from conditions considered preventable only. An additional 2.2 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 6: Decomposition of the ethnic gap in life expectancy by avoidable category – Pacific peoples compared with non-Māori/non-Pacific, 2018 to 2020, (4.8 years) – Central Region



The leading avoidable causes of death contributing to the life expectancy gap among Pacific peoples are coronary disease (0.7 years), diabetes (0.7 years) and stroke (0.3 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 2.5 years of the 4.8-year gap.

APPENDIX TABLE 6: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – PACIFIC PEOPLES COMPARED WITH NON-MĀORI/ NON-PACIFIC, 2018 TO 2020 – CENTRAL REGION

Avoidable cause	Contribution (years)
Coronary disease	0.7
Diabetes	0.7
Stroke	0.3
Lung cancer	0.2
Valvular heart disease	0.2
Hypertensive diseases	0.1
Stomach cancer	0.1
Liver cancer	0.1
Pneumonia	0.1
Other accidental injuries	0.1

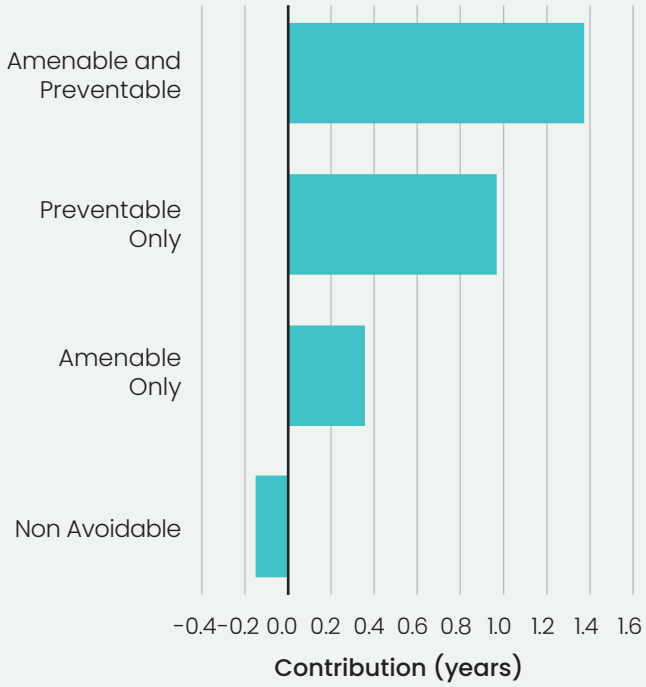
Te Waipounamu

For the period 2018 to 2020 life expectancy for Māori was 80.1 and 82.9 years for Pacific peoples. For Māori this is 2.5 years lower than the non-Māori/non-Pacific population (82.6 years) and 0.3 years higher for Pacific peoples.

Māori

Among Māori, 1.4 years of the 2.5-year gap can be attributed to conditions that are considered both amenable and preventable followed by 1.0 year from conditions considered preventable only and 0.4 years from conditions considered amenable only. An additional -0.1 years can be attributed to conditions that are considered non-avoidable.

Appendix Figure 7: Decomposition of the ethnic gap in life expectancy by avoidable category – Māori compared with non-Māori/non-Pacific, 2018 to 2020, (2.5 years) – Te Waipounamu



The leading avoidable causes of death contributing to the life expectancy gap among Māori are coronary disease (0.5 years), land transport injuries (0.3 years) and suicide (0.2 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 2.0 years of the 2.5-year gap.

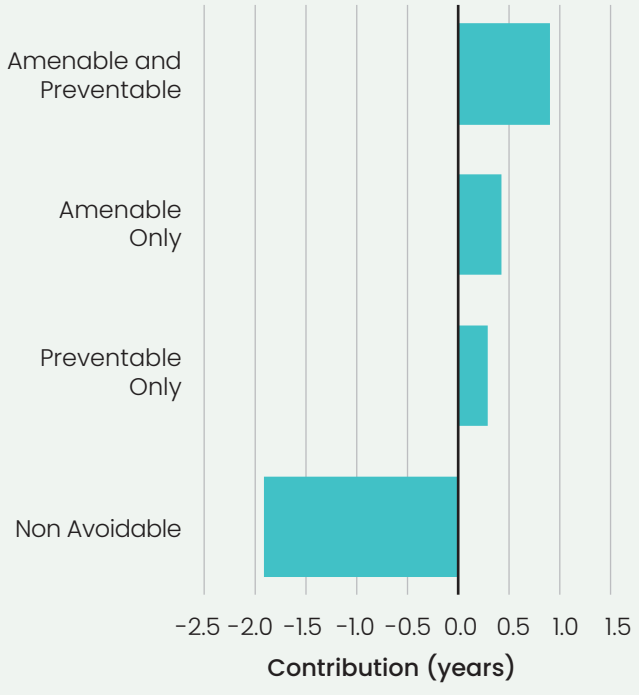
APPENDIX TABLE 7: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – MĀORI COMPARED WITH NON-MĀORI/NON-PACIFIC, 2018 TO 2020 – TE WAIPOUNAMU

Avoidable cause	Contribution (years)
Coronary disease	0.5
Land transport injuries	0.3
Suicide	0.2
Liver cancer	0.2
Diabetes	0.2
COPD	0.2
Stroke	0.2
Other accidental injuries	0.1
Valvular heart disease	0.1
Alcohol use	0.1

Pacific peoples

Among Pacific peoples, life expectancy is slightly higher compared to that of non-Māori/non-Pacific with only a 0.3-year gap. Even where the life expectancy of two populations is near equal, it's still possible to identify inequities relating to mortality and how these inequities offset each other. In this instance, Pacific peoples have lower rates of mortality from non-avoidable conditions that contribute -1.9 years to the gap. This is almost entirely offset by higher rates from conditions considered amenable and preventable (0.9 years) followed by 0.4 years from conditions considered amenable only and 0.3 years from conditions considered preventable only.

Appendix Figure 8: Decomposition of the ethnic gap in life expectancy by avoidable category – Pacific peoples compared with non-Māori/non-Pacific, 2018 to 2020, (-0.3 years) – Te Waipounamu



The leading avoidable causes of death and their contribution to the life expectancy gap among Pacific peoples are diabetes (0.4 years), lung cancer (0.2 years) and prostate cancer (0.1 years). A list of the top 10 conditions and their contribution to the gap are presented in the following table. In total, these conditions contribute 1.2 years to the total gap.

APPENDIX TABLE 8: TOP 10 AVOIDABLE CAUSES OF DEATH CONTRIBUTING TO THE LIFE EXPECTANCY GAP – PACIFIC PEOPLES COMPARED WITH NON-MĀORI/NON-PACIFIC, 2018 TO 2020 – TE WAIPOUNAMU

Avoidable cause	Contribution (years)
Diabetes	0.4
Lung cancer	0.2
Prostate cancer	0.1
Liver cancer	0.1
Breast cancer	0.1
Stomach cancer	0.1
Uterine cancer	0.1
Influenza	0.1
Valvular heart disease	0.1
Stroke	0.1

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