



Life Expectancy in Counties Manukau

2018 Update

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**COUNTIES
MANUKAU**
HEALTH

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Executive Summary

The overall life expectancy at birth in Counties Manukau (CM) was 81.7 years in 2018. The improvement of 1.5 years in life expectancy from 2009 to 2018 was similar to the national average (1.4 years) over the same time period. There was an increase in life expectancy of 4.2 and 2.1 years for Maaori and Pacific people in CM respectively from 2009 to 2018 compared to an improvement of life expectancy of 0.9 years in the Non-Maaori, Non-Pacific group. However, looking at longer term trends, based on a three-year average trend that smooths out the sizable swings in life expectancy from year to year, from 2000-2002 to 2016-2018, there was only 1.6 years' improvement in LE for Pacific people living in CM compared to 4.1 years of LE gain for Maaori and 3.3 years gain for non-Maaori and non-Pacific groups. This lack of improvement for Pacific peoples is a significant concern. The most likely explanation for this is the very high obesity rates in Pacific people, and subsequent diabetes and other related conditions.

In 2018, the gap of life expectancy between Maaori (LE=75.3) and the Non-Maaori, Non-Pacific group in Counties Manukau (LE=84.0) was 9 years. The gap between Pacific (LE=76.6) and Non-Maaori, Non-Pacific was 7 years. Within the Non-Maaori, Non-Pacific group, the Asian life expectancy was 86.6 in 2018. The life expectancy gap between Maaori and the New Zealand European/Other group was 8 years. While this is a reduction in the gap for Maaori, it remains an unacceptable inequity and a breach of Te Tiriti o Waitangi commitments and responsibilities. The gap between Pacific and the New Zealand European/Other group was 7 years, an unacceptable inequity and as noted, worryingly static.

The latest Global Burden of Disease has confirmed New Zealand residents are living longer in healthy life years as well as longer in unhealthy life years. The improvement in healthy life expectancy has grown more slowly than the improvement in life expectancy. Multiple morbidity is likely to be increasingly common with continual improvement of survival faster than reduction in morbidity.

After describing in more detail life expectancy trends and related mortality data, this paper outlines potential actions to further improve healthy life expectancy and reduce equity gaps, to inform DHB planning. While this paper focuses primarily on life expectancy, we note that actions to improve *healthy* life expectancy need to address areas of ill health such as mental health and musculoskeletal conditions, which impact morbidity and quality of life to a greater extent than length of life per se, and the importance of investment early in the life course to provide equitable opportunities for positive life outcomes. These are important complementary considerations for DHB planning and prioritisation.

Methods

Life expectancy at birth in 2018 refers to the average number of years that a new born child is expected to live, if they were born in 2018 and experienced the 2018 age specific mortality rates over the rest of their life.

This update is based on the 2018 provisional mortality data supplied by the Ministry of Health. As in previous years, at the time of data extract (in this instance June 2019), the number of deaths in 2018 were not considered to be complete. The shortfall in infant deaths because of late registration means when those deaths are registered and included in next year's data, it is expected to decrease life expectancy estimates in the latest year by about 0.2-0.3 years, based on the degree of late registration historically. Therefore, the latest 2018 life expectancy estimate may be a slight over-estimate and should be interpreted as part of a longer term trend. It also means the trend figures here may differ slightly from previous reports.

The life expectancy estimates are calculated based on date of death in a calendar year rather than based on year of registration of death. The life expectancy estimates in this report are calculated using Chiang II (life table) methodology up to 90+ year age bands, similar to the methods used by Statistics New Zealand.

Computation of *healthy* life expectancy is complex. How ‘healthy’ life is defined is obviously a value judgement and will differ between people. Technical definitions are available for the methods used in the Global Burden of Disease (GBD) study which estimates healthy life years; these methods essentially draw on groups of people rating quality of life in various states of ill-health. Direct estimates for healthy life years are not available at a DHB level. For this report, estimates directly taken from the Global Burden of Disease study for New Zealand are used as a reference.¹

Life expectancy is a summary measure of mortality; age specific mortality rates are used to demonstrate mortality trends in specific age bands by ethnicity. The WHO population standard was used to calculate age standardised mortality rates.²

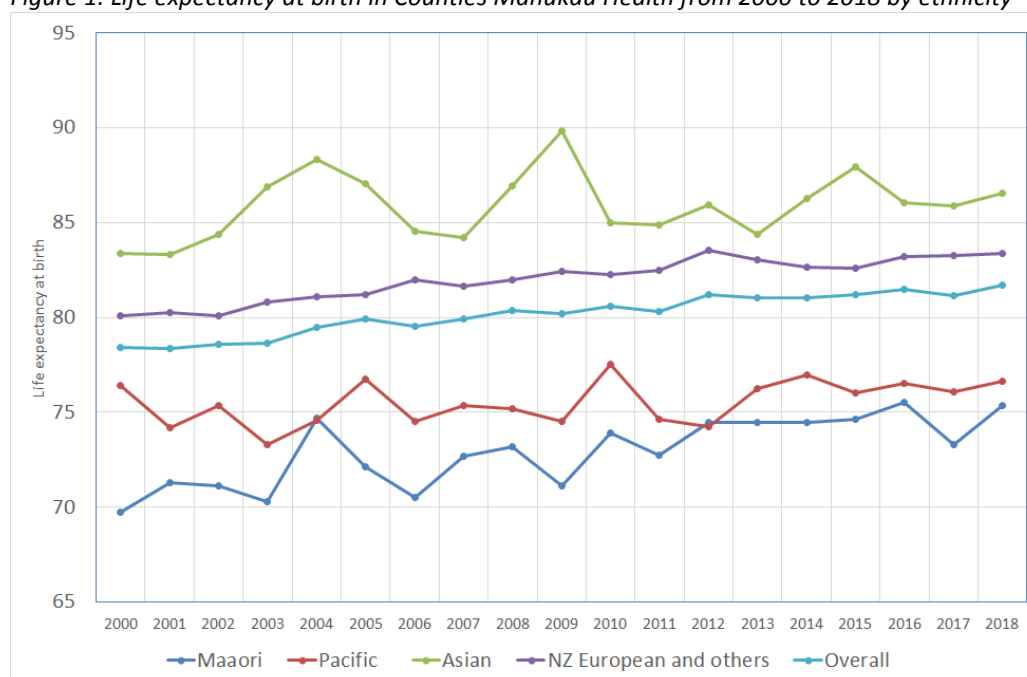
Results

Life Expectancy

The overall life expectancy at birth in Counties Manukau (CM) was 81.7 years in 2018. This represents an increase of 1.5 years from 2009 to 2018. There was an increase in life expectancy of 4.2 and 2.1 years for Maaori and Pacific people respectively from 2009 to 2018 compared to an improvement of life expectancy of 0.9 years in the Non-Maaori, Non-Pacific group.

In 2018, the gap of life expectancy between Maaori (LE=75.3) and the Non-Maaori, Non-Pacific group in Counties Manukau (LE=84.0) was 9 years. The gap between Pacific (LE=76.6) and Non-Maaori, Non-Pacific was 7 years. Within the Non-Maaori, Non-Pacific group, the Asian life expectancy was 86.6 in 2018. The high life expectancy experienced by Asian may be related to the ‘healthy migrant’ effect. The life expectancy gap between Maaori and the New Zealand European/ Other group was 8 years. The gap between Pacific and the New Zealand European/Other group was 7 years.

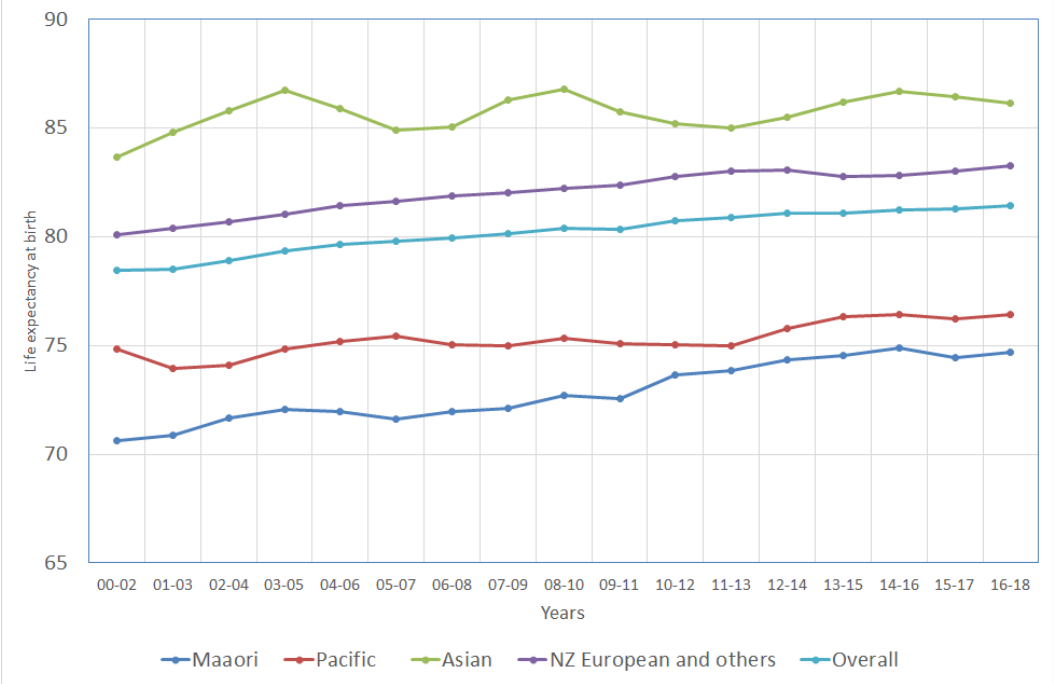
Figure 1: Life expectancy at birth in Counties Manukau Health from 2000 to 2018 by ethnicity



Data source: Mortality Collection, Ministry of Health (MOH); Estimated populations by DHB (2018 edition), Statistics New Zealand (SNZ)

Figure 2 provides a three-year average trend that smooths out the sizable swings in life expectancy from year to year. The closing of the gap between Maori and Pacific is a little more evident, as is the very slow closing of the gap to the European and Other population.

Figure 2: Life expectancy at birth in Counties Manukau Health from 2000 to 2018 by ethnicity (3 year average)

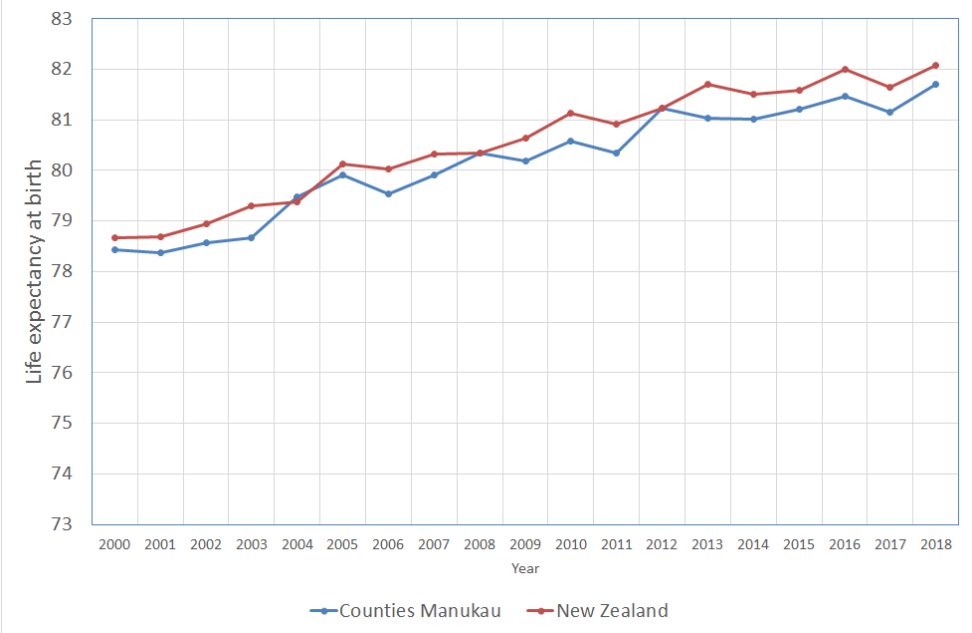


Data source: Mortality Collection, MOH; Estimated populations by DHB (2018 edition), SNZ

Looking at longer term trends based on the three-year average, from 2000-2002 to 2016-2018, there was only 1.6 years’ improvement in LE for Pacific people living in CM compared to 4.1 years of LE gain for Maori and 3.3 years gain for non-Maori and non-Pacific groups.

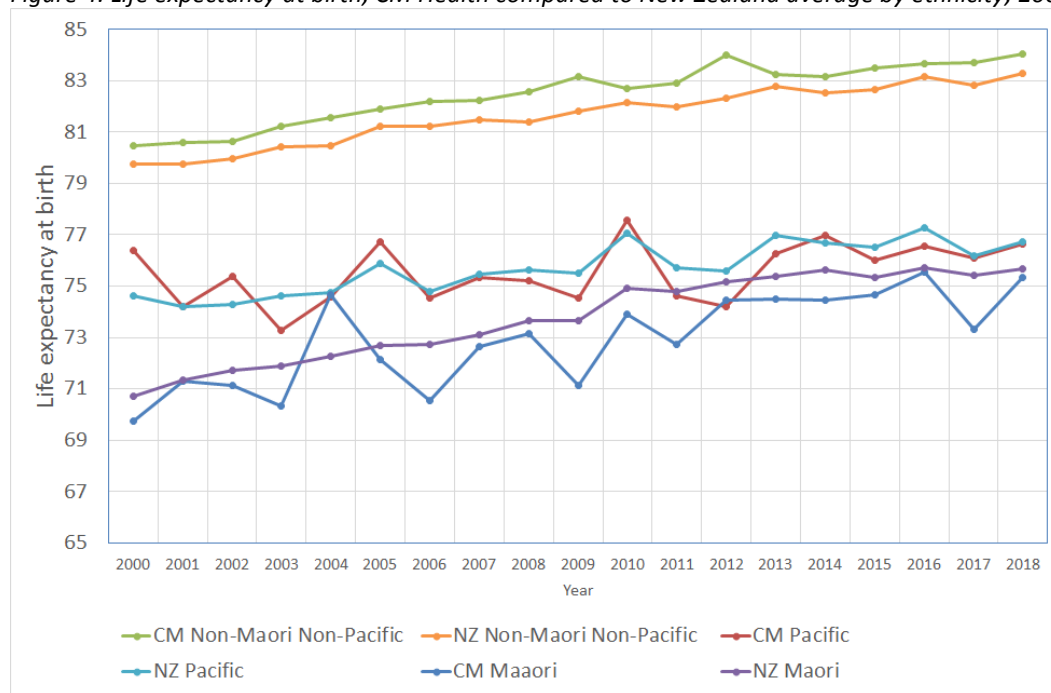
The improvement in life expectancy at birth in Counties Manukau is generally in parallel to New Zealand national trends overall, sitting slightly below as shown in Figure 3. Given the high levels of socioeconomic deprivation in CM, this is a higher rate than might have been expected.

Figure 3: Life expectancy at birth in Counties Manukau Health and in New Zealand overall from 2000 to 2018



Data source: Mortality Collection, MOH; Estimated populations by DHB (2018 edition), SNZ

Figure 4: Life expectancy at birth, CM Health compared to New Zealand average by ethnicity, 2000 to 2018

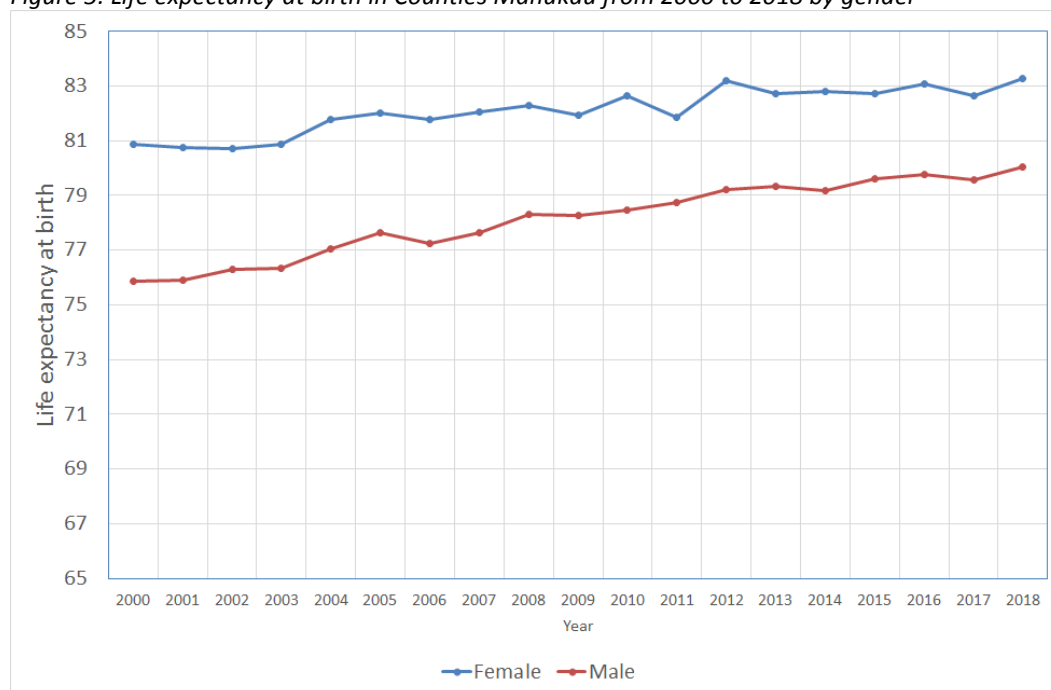


Data source: Mortality Collection, MOH; Estimated populations by DHB (2018 edition), SNZ

Consistent with previous reports, Non-Maori Non-Pacific people domiciled in CM have a marginally higher life expectancy compared to their national counterparts. However, Maori and Pacific life expectancy were marginally lower than the national counterparts (Figure 4).

The gender difference in life expectancy continues to narrow in Counties Manukau (Figure 5). This appears to relate to a slowing of improvement for women. The life expectancy at birth for males in Counties Manukau in 2018 was estimated to be 80.0 years compared to 83.3 years for females.

Figure 5: Life expectancy at birth in Counties Manukau from 2000 to 2018 by gender

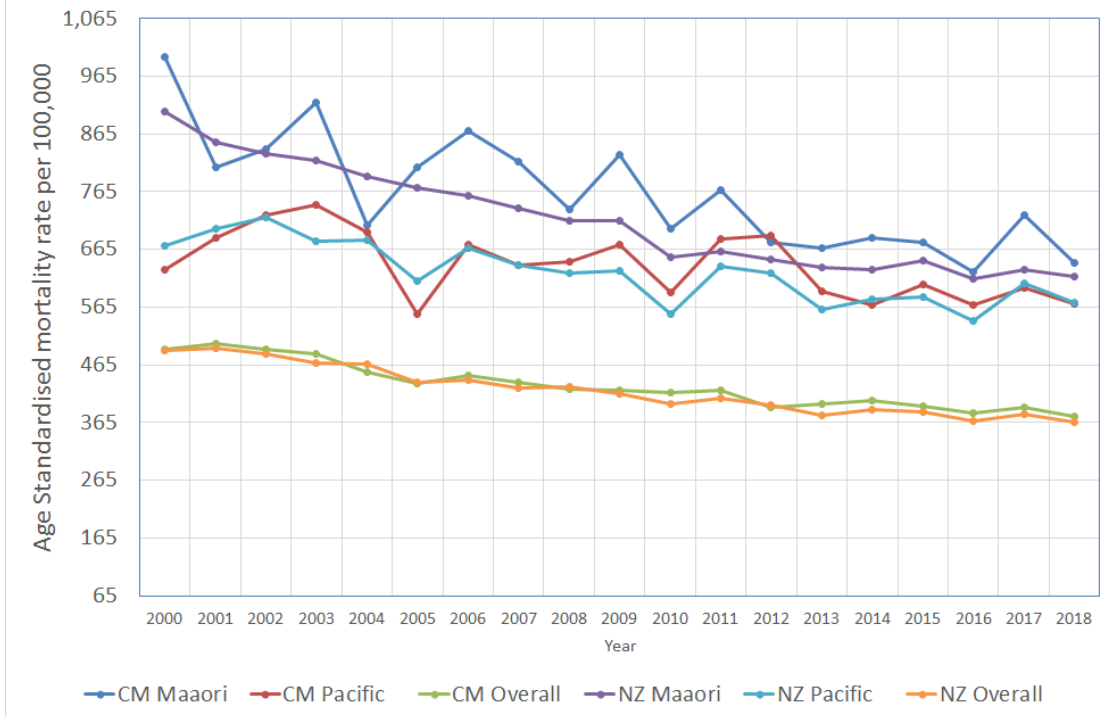


Data source: Mortality Collection, MOH; Estimated populations by DHB (2018 edition), SNZ

Age standardised mortality rate

Consistent with the life expectancy trends, age standardised mortality rates of CM Maaori, Pacific and overall parallel that of their New Zealand counterparts overall (Figure 6). Note of course the different aspect – lower is better for mortality, versus higher being better for life expectancy. Similar to life expectancy trends, the relatively modest fall in age standardised mortality rates for Pacific people in Counties Manukau is of concern. The most likely explanation for this is the very high obesity rates in Pacific people, and subsequent diabetes and other related conditions. Asian had the lowest age standardised mortality rate in CM, at 219 deaths per 100,000 population in 2018.

Figure 6: Age standardised mortality rates from 2000 to 2018 (direct method WHO standard population)



Data source: Mortality Collection, MOH; Estimated populations by DHB (2018 edition), SNZ

Age specific mortality rates

Age specific mortality analyses demonstrate that mortality in CM has been falling consistently across all age bands since 2000 except for 85 and over age group (Table 1). The increase in mortality in the 85-year-old group may also suggest people who were 85 in 2018 have more morbidities than the people who were 85 or above in 2000.

Table 1: Comparing age specific mortality rates in CM in selected time period between 2000 and 2018 (absolute difference in age specific rates per 100,000)

Overall CM			
Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018
00-14	● -32	● -40	● -48
15-24	● -8	● -19	● -24
25-34	● 7	● -35	● -27
35-44	● 18	● -19	● -38
45-54	● -28	● -48	● -40
55-64	● -42	● -44	● -240
65-74	● -44	● -207	● -687
75-84	● -473	● -552	● -1,485
85+	● 804	● 1,327	● 902
Age Standardised (WHO)	● -21	● -47	● -116

Table 2: Comparing age specific mortality rates in CM by ethnicity in selected time period between 2000 and 2018 (absolute difference in age specific rates per 100,000)

CM Maaori				CM Pacific			
Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018	Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018
00-14	● -31	● -82	● -55	00-14	● -36	● -46	● -61
15-24	● 7	● -59	● -78	15-24	● -41	● -24	● -34
25-34	● 67	● -45	● 39	25-34	● 32	● -70	● 0
35-44	● 78	● 51	● 47	35-44	● 47	● -10	● 52
45-54	● -190	● -353	● -320	45-54	● -6	● 27	● -8
55-64	● -200	● -183	● -536	55-64	● -69	● 114	● -474
65-74	● -625	● -1,267	● -1,633	65-74	● 249	● -479	● -206
75-84	● 1,665	● -901	● -5,274	75-84	● -1,425	● -1,709	● -1,714
85+	● -1,767	● -2,044	● -7,600	85+	● 1,932	● -3,218	● 7,468
Age Standardised (WHO)	● -27	● -187	● -356	Age Standardised (WHO)	● -21	● -102	● -59

CM Asian				CM NZ European and others			
Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018	Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018
00-14	● -42	● -2	● -3	00-14	● -24	● -20	● -50
15-24	● -28	● -1	● 11	15-24	● 24	● -7	● 4
25-34	● 29	● 5	● 25	25-34	● -48	● -24	● -67
35-44	● 0	● 27	● -40	35-44	● 6	● -54	● -78
45-54	● -11	● 15	● -57	45-54	● -6	● -35	● 0
55-64	● -42	● 23	● -139	55-64	● -2	● -63	● -166
65-74	● -124	● 94	● -429	65-74	● 18	● -76	● -706
75-84	● -891	● -1,088	● -485	75-84	● -409	● -344	● -1,438
85+	● -2,630	● 2,942	● -5,694	85+	● 1,460	● 2,102	● 1,542
Age Standardised (WHO)	● -61	● 4	● -89	Age Standardised (WHO)	● -9	● -25	● -109

Consistent with the Counties Manukau age specific mortality trend, there has been a consistent fall in age specific mortality in all age groups in New Zealand since 2000.

Table 3: Comparing age specific mortality rates in New Zealand in selected time period between 2000 and 2018 (absolute difference in age specific rates per 100,000)

Overall NZ			
Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018
00-14	● -5	● -15	● -29
15-24	● -2	● -13	● -21
25-34	● 6	● -11	● -34
35-44	● 0	● -10	● -22
45-54	● -17	● -27	● -59
55-64	● 8	● -31	● -235
65-74	● -92	● -305	● -825
75-84	● -308	● -670	● -1,441
85+	● 139	● -366	● -314
Age Standardised (WHO)	● -13	● -49	● -125

The increase in age specific mortality in CM are consistent with those seen for New Zealand for Maori aged 25-44 and Pacific people from 25-54, and are of concern (Table 4). Causes of death analyses may provide further insights into this pattern.

Table 4: Age specific mortality rates in New Zealand by ethnicity, selected time periods between 2000 and 2018 (absolute difference in age specific rates per 100,000)

NZ Maaori				NZ Pacific			
Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018	Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018
00-14	● -5	● -30	● -43	00-14	● -17	● -31	● -49
15-24	● -7	● -23	● -16	15-24	● -11	● -4	● -23
25-34	● 54	● 26	● 3	25-34	● -1	● -54	● 3
35-44	● 34	● 6	● -6	35-44	● 55	● 5	● 34
45-54	● -38	● -98	● -197	45-54	● 54	● 65	● -129
55-64	● 44	● -43	● -754	55-64	● 55	● -21	● -396
65-74	● -215	● -889	● -1,797	65-74	● 19	● -564	● -572
75-84	● -329	● -553	● -3,035	75-84	● -86	● -834	● -1,263
85+	● -1,099	● -2,681	● -3,174	85+	● 266	● 663	● 3,148
Age Standardised (WHO)	● -16	● -98	● -286	Age Standardised (WHO)	● 12	● -56	● -99

NZ Asian				New Zealand others			
Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018	Age	Change in mortality rate between 2013 and 2018	Change in mortality rate between 2009 and 2018	Change in mortality rate between 2000 and 2018
00-14	● -14	● -7	● -19	00-14	● 0	● -5	● -19
15-24	● 0	● 1	● -20	15-24	● 1	● -14	● -22
25-34	● 9	● 2	● -41	25-34	● -4	● -15	● -37
35-44	● 5	● -4	● -20	35-44	● -9	● -11	● -24
45-54	● -22	● -10	● -67	45-54	● -17	● -27	● -45
55-64	● -12	● -18	● -271	55-64	● 2	● -40	● -185
65-74	● -112	● -277	● -830	65-74	● -73	● -239	● -775
75-84	● -653	● -746	● -1,598	75-84	● -276	● -658	● -1,409
85+	● -2,909	● -1,161	● -5,431	85+	● 355	● -174	● -54
Age Standardised (WHO)	● -45	● -44	● -164	Age Standardised (WHO)	● -12	● -43	● -113

One of the key drivers of life expectancy is infant mortality. There has been a modest overall fall in age specific mortality rate in the first year of life from 2000-02 to 2016-18. However, Maaori and Pacific mortality rates at aged 0 to 1 in Counties Manukau were 43% and 20% higher than the national Maaori and Pacific rates in 2016-18. Overall, mortality rate at aged 0-1 in Counties Manukau were 48% higher than the national counterparts in 2016-18.

Figure 7: Age specific mortality rate at aged 0-1 by ethnicity in Counties Manukau (3 year average) per 100,000

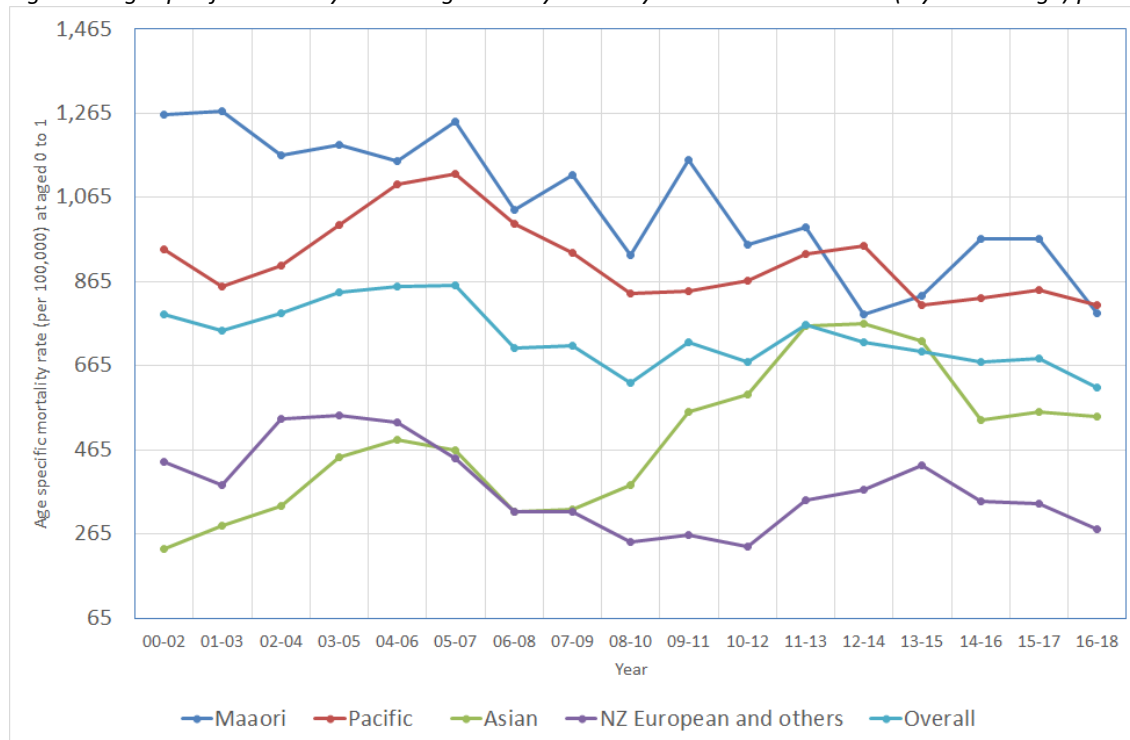
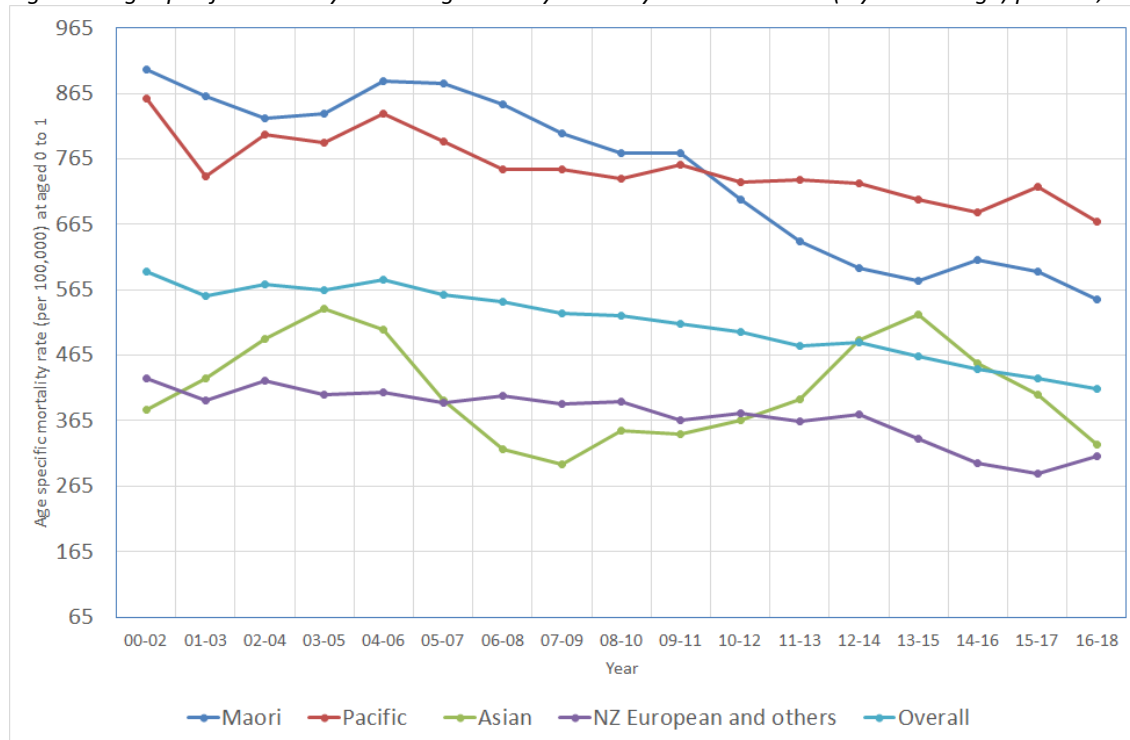


Figure 8: Age specific mortality rate at aged 0-1 by ethnicity in New Zealand (3 year average) per 100,000



Healthy Life Expectancy

The global burden of disease study has recently updated their life expectancy and healthy life expectancy estimates for 2017.¹ Results are only reported at the national level. While the rate of improvement in New Zealand for both life expectancy and healthy life expectancy from 1990 to 2013 is one of the fastest in the developed world, the rate of improvement in New Zealand lags behind that of Singapore. In 2017, Singapore had the highest estimated healthy life expectancy for both males and females in the world.

Table 5: Estimated Life expectancy and Healthy Life expectancy (HALE) at birth for selected countries in 1990 and 2017 for both gender combined

Country	Life expectancy at birth			Healthy Life expectancy at birth (HALE)		
	1990	2017	Improvement in 27 years	1990	2017	Improvement in 27 years
New Zealand	75.4 (75.2 to 75.5)	81.6 (81.2 to 82.1)	6.2	64.7 (61.6 to 67.3)	69.1 (65.4 to 72.2)	4.4
Japan	79.3 (79.3 to 79.3)	84.2 (84 to 84.4)	4.9	69.7 (66.9 to 72)	73.1 (69.9 to 75.9)	3.4
United Kingdom	75.8 (75.7 to 75.8)	81.2 (80.9 to 81.1)	5.4	65.7 (62.9 to 68.2)	69.3 (66 to 72.1)	3.6
Australia	76.9 (76.8 to 76.9)	82.4 (81.5 to 83.2)	5.5	66.1 (63 to 68.7)	70.2 (66.6 to 73.1)	4.1
Switzerland	77.8 (77.7 to 77.9)	84.0 (83.5 to 84.4)	6.2	67.1 (64.1 to 69.7)	72.0 (68.6 to 75)	4.9
United States	75.6 (75.6 to 75.6)	78.6 (78.4 to 78.8)	3.0	64.7 (61.6 to 67.4)	66.6 (63.3 to 69.5)	1.9
Singapore	76.1 (76 to 76.2)	84.8 (84.3 to 85.3)	8.7	67.1 (64.4 to 69.3)	74.2 (71.2 to 76.8)	7.1
China	68.7 (68.1 to 69.2)	77.1 (76.7 to 77.4)	8.4	60.9 (58.8 to 62.8)	68.1 (65.6 to 70.3)	7.2

Expansion of Morbidity

Consistent with previous reports and the vast majority of countries in the world, the improvement in estimated healthy life expectancy for NZ has grown more slowly than the improvement in life expectancy. This means both men and women are living longer with some degree of impairment of their health (as defined by the burden of disease work) than previously – on average in 2017 healthy life expectancy for women was approximately 13.5 years less than their life expectancy and men 10.4 years less, compared with 10.4 and 9.7 years in 1990 (Tables 2 & 3). This has important implications for health and disability service planning because the increased duration of unhealthy life years is associated with higher health service utilisation overall. Expansion of morbidity also raises questions about the optimal balance of investment in prevention, risk factor modifications and treatment related services. New Zealand Burden of Disease Study has highlighted mental health and musculoskeletal conditions as major causes of disability in New Zealand.³

Despite substantial health care spending in the United States with a predominant focus on the treatment end of illnesses, the improvement in both life expectancy and healthy life expectancy in that country has been very disappointing. Females in China had longer healthy life expectancy than females in United States, partly related to the fact that Chinese women have a very low smoking prevalence. This demonstrates the potential life years gain from a smoke free society compared to expensive high end medical interventions.

Table 6: Estimated Life expectancy at birth for selected countries by gender in 1990 and 2017

Country	Life expectancy at birth (females)			Life expectancy at birth (males)		
	1990	2017	Improvement in 27 years	1990	2017	Improvement in 27 years
New Zealand	78.1	83.6	5.5	72.8	78.4	5.6
Japan	82.2	87.2	5.0	76.2	81.1	4.9
United Kingdom	78.5	82.7	4.2	72.9	79.2	6.3
Australia	80.0	84.6	4.6	73.8	80.2	6.4
Switzerland	81.1	85.7	4.6	74.4	82.1	7.7
United States	79.0	81.1	2.1	72.1	76.1	4.0
Singapore	78.8	87.6	8.8	73.5	81.9	8.4
China	70.7	79.9	9.2	66.9	74.5	7.6

Table 7: Estimated healthy life expectancy at birth for selected countries by gender in 1990 and 2017

Country	Healthy Life expectancy at birth (females)			Healthy Life expectancy at birth (males)		
	1990	2017	Improvement in 27 years	1990	2017	Improvement in 27 years
New Zealand	66.3	70.1	3.8	63.1	68.0	4.9
Japan	71.2	74.6	3.4	68.0	71.4	3.4
United Kingdom	67.3	70.0	2.7	64.1	68.5	4.4
Australia	68.4	71.7	3.3	64.3	69.1	4.8
Switzerland	69.0	72.7	3.7	65.1	71.2	6.1
United States	66.8	67.9	1.1	62.6	65.3	2.7
Singapore	68.5	75.8	7.3	65.6	72.6	7.0
China	61.9	69.7	7.8	60.0	66.6	6.6

People living longer in unhealthy life years also means that people may survive longer with more complex morbidities - multi-morbidity is likely to be increasingly common.

Discussion

In order to continue to advance population health gain equitably, a range of coordinated and complementary approaches are needed. These approaches include structural or policy interventions that create healthier environments, that enable the healthy behaviours to be the easy option to take up, and behaviours once taken up that are sustainable.⁴ Legislation and regulations have been shown to be the most cost effective interventions to promote and protect health.⁵ Tobacco control, alcohol harm minimisation, improved nutrition and physical activity have been highlighted as areas with great potential to increase healthy life expectancy and narrow health inequities.⁴ Coordinated inter-sectoral actions that address the social and economic determinants of health along with health system responses will be needed to optimise the potential of healthy environmental policies.⁶

While life expectancy of Maaori in Counties Manukau has been improving faster than the European/Other group, there is still an 8 years' life expectancy gap. Actions to reduce smoking prevalence, and the prevention and management of cardiovascular and renal risk factors including diabetes are key areas to reduce amenable mortality.

Improvement of Pacific life expectancy has been minimal overall in the past 19 years; obesity, diabetes, tobacco smoking, cardiovascular risk factors remain the key areas on which to focus. The increase in age specific mortality in the young Maaori and Pacific people aged groups 25-54 may merit further investigation. Newly emerging adverse risk factors internationally could be considered, such as an increased prevalence of substance abuse.

The investment mix between primary prevention, risk factor modifications, treatment, and end of life care should ideally be considered as part of a continuum to limit planning within an isolated scope, without actively considering the potential trade-offs elsewhere.

Previous amenable mortality analyses reported that about half of all Maaori and Pacific deaths are potentially avoidable.⁷ The amendable proportions are likely significantly under reported because by definition, there is an assumption that all deaths beyond 75 were not preventable. However, a substantial proportion of recent life year gains come from reductions in mortality in those aged 75 or above. Recent Statistics NZ period life tables demonstrate that 75% of life years gained at birth between 2012-14 and 2016-2018 for females (and 80% for males), were related to the improvement of life expectancy after 75 years of age. Comparing life expectancy at birth and at age 75, between 2000-2002 and 2016-2018, the proportion of life year gains from reducing mortality over 75 years of age was less extreme, at 48% for females and 53% for males.

An average 75 year old female and male in New Zealand are estimated to live for 13.5 years and 12.0 years respectively.⁸ Many preventive and treatment interventions have an impact on mortality in people of older age groups; however, many recommendations for primary prevention and risk factor modification end at 75 years of age. For example, current guidelines deem cardiovascular risk factor management to be discretionary for people beyond 75 years of age, but invasive secondary and tertiary hospital treatments are often offered routinely for cardiovascular disease by default for people aged over 75 unless there are specific contra-indications.

The recent Global Burden of Disease Study reported an impressive improvement of healthy life years gained in Singapore.¹ There may be much learning from health systems in Singapore as well as the wider regulatory policies.

Potential actions to consider to further improve healthy life expectancy and reduce equity gaps may include:

Areas of interest	Possible role of government and/or Ministry of Health	Possible role for DHB
Tobacco control	<ul style="list-style-type: none"> • Further strengthening legislation and regulation including tobacco excise increases • Raising smoking age • Enhancing Smoke Free Environments Act • Guidelines/expectation that every health service contact is an opportunity to support behavioural change. 	<ul style="list-style-type: none"> • Engagement with local intersectoral work to enact smoke free policies (e.g. with Council and Local Boards) • Strong culturally appropriate smoking cessation support services • Enhanced evaluation and support of long-term outcomes of smoking cessation support services • Support primary health care to provide systematic cessation support • Support community leadership for a tobacco free generation
Nutrition/ Physical activity	<ul style="list-style-type: none"> • Sugar-sweetened beverage tax • Develop and implement healthy environment policies to promote physical activity and healthy eating • Limit marketing and sponsorship of unhealthy food and drinks to children • Optimise urban design to support behaviour 	<ul style="list-style-type: none"> • Support inter-sectoral stakeholders to further enhance healthy environments • Leadership by example in implementation of healthy food and drink policies • Encourage community settings to implement healthy food and drink policies
Optimising health service investment mix	<ul style="list-style-type: none"> • Provide leadership and infrastructure with mandate to support wider prioritisation decisions of health services • Better use of local and national data 	<ul style="list-style-type: none"> • Service planning to actively consider the entire person's journey and opportunity cost related to primary prevention, risk factor modifications, treatment, and end of life care
Limiting alcohol and substance abuse	<ul style="list-style-type: none"> • Legislation and regulation in reducing availability that is temporal, spatial and age based • Reduced advertising and sponsorship, particularly youth exposure 	<ul style="list-style-type: none"> • Enhancing linkage to rehab and support services • Further support system wide alcohol harm minimisation programme, including systematic implementation of alcohol harm reduction brief interventions • Consider further analyses on adverse trends in substance abuse • Better defining the roles of compulsory treatment
Clinical Guidelines	<ul style="list-style-type: none"> • Re-establish a clinical guidelines group • Implementation of guidelines supported by an electronic clinical pathway and information technology tools 	<ul style="list-style-type: none"> • Support clinical audits to inform quality improvement • Change management support to reduce unexplained service gaps • Participation in regional and national guideline development

	<p>capturing relevant clinical information aligned with clinical workflow to inform clinical decision making</p> <ul style="list-style-type: none"> • Increasing awareness and developing ways to prevent over-diagnosis and over-treatment, which represent opportunity costs for effective interventions as well as potential for harm⁹ 	
Active identification of service gaps of proven interventions	<ul style="list-style-type: none"> • National leadership in defining clinical actionable indicators • Health technology assessment and implementation 	<ul style="list-style-type: none"> • Better use of routine data • Participation in regional and national implementation planning
Reducing barriers to health services	<ul style="list-style-type: none"> • Review of primary care capitation weightings, co-payment amounts • Addressing health literacy demands across the system, and improving cultural competency resources 	<ul style="list-style-type: none"> • Consider reduction of costs barriers for target populations with a focus on equity such as co-payment, transport. • Publicly accessible list of primary care, afterhours and pharmaceutical dispensing fees

This paper focuses primarily on life expectancy, but we note that actions to improve *healthy* life expectancy need to address areas of ill health such as mental health and musculoskeletal conditions, which impact morbidity and quality of life to a greater extent than length of life per se, and the importance of investment early in the life course to provide equitable opportunities for positive life outcomes.

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