



The economics of healthy and active ageing series
New evidence for the Western Pacific Region
New Zealand

HOW WILL POPULATION AGEING AFFECT HEALTH EXPENDITURE TRENDS IN NEW ZEALAND AND WHAT ARE THE IMPLICATIONS IF PEOPLE AGE IN GOOD HEALTH?

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Acronyms

GDP	gross domestic product
OECD	Organisation for Economic Co-operation and Development
THE	total health expenditure
WHO	World Health Organization

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***“Changes
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Introduction

Countries around the world are experiencing population ageing in some form, with the share of older people in the population increasing (UN, 2019). This is driven by rising life expectancy, which results from declines in infant mortality, fertility and premature death. Low- and middle-income countries are experiencing some of the most rapid rates of increase in the number of people aged 65 years and over, while high-income countries are seeing a substantial rise in the number of the so-called ‘oldest old’ (people aged 80 years and above).

In the World Health Organization (WHO) Western Pacific Region, home to 1.9 billion people, substantial diversity exists in terms of the population age-mix. While 28.4% of the population in Japan in 2020 is estimated to be over 65 years of age, this falls to below 4% in other countries, including Papua New Guinea, Solomon Islands and Vanuatu. Overall, the share of the population aged over 65 years in the region is expected to more than double from 12.4% in 2020 to 28.4% in 2060, while the proportion of people aged over 80 years will see a four-fold increase from 2.3% to 9.6% over the same period (UN, 2020).

Changes in people’s needs due to population age-mix shifts have consequences for health and long-term care systems. Data from most countries show that, on average, older people have higher health expenditures than younger people. This often leads to the assumption that health expenditure growth will accelerate as older people make up an increasing share of the population, potentially challenging the sustainability of health systems. Yet, while providing appropriate health and social care to an increasing number of older persons does place additional pressure on the health system, (calendar) ageing is not the main driver of expenditure growth. Many argue instead that factors such as organization of care, technology, price regulation, proximity to death and health status are more important drivers of health care spending.

In this note we assess the role of population ageing as a determinant of future health expenditure growth in New Zealand. We also consider how ageing in better or worse health impacts these projections. Data and methods for the projections used in this report are outlined in the annex.

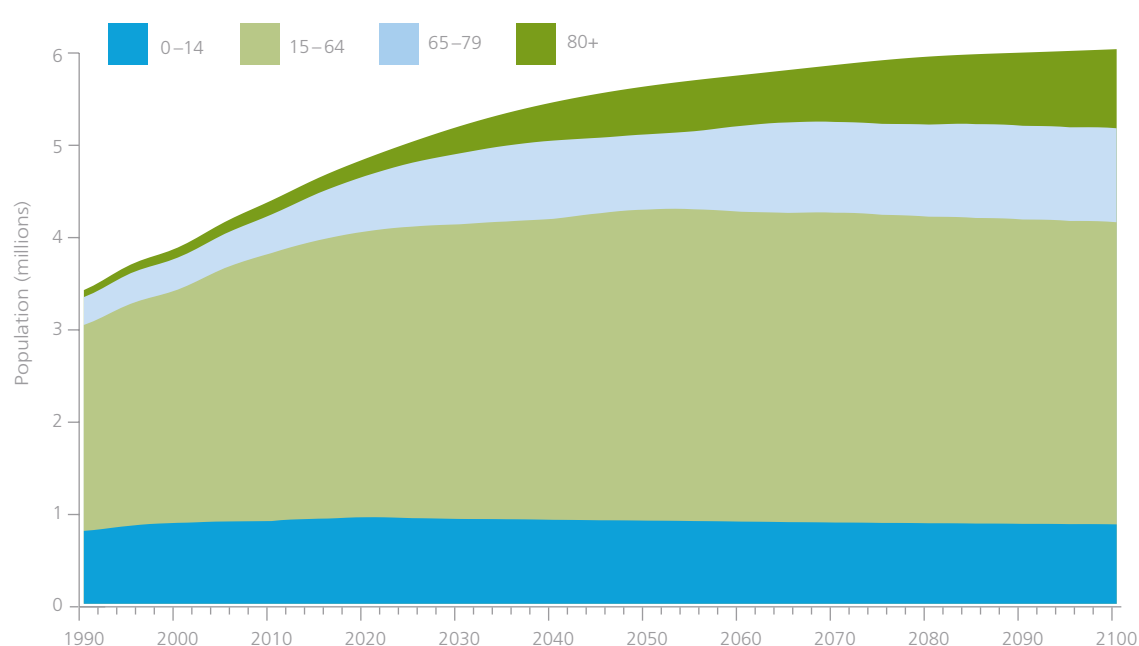
Population ageing, health and health spending in New Zealand

2020 Population	2020 Share of the population 65 years and above	2017 Total health expenditure per capita (USD)	2017 Total health expenditure as a share of GDP	2017 Life expectancy (years at birth)	2013 % of 65+ reporting a disability
4.8 million	16.4%	3 820	9.3%	81.9	59.0%

New Zealand's population is still relatively young, but the share of older people will increase in the coming decades

New Zealand's population is projected to increase by almost one-fifth over the next four decades, from 4.8 million in 2020 to 5.7 million in 2060 (UN, 2019). An estimated 16.4% of the population in 2020 was over 65 years of age, almost double the share in 1960 (8.6%). This is close to the Organisation for Economic Co-operation and Development (OECD) average (17.0%) and the proportion seen in Australia (16.2%). By 2060, the share of the population aged 65 years and older will increase substantially to reach 25.9%, while the proportion in the oldest age groups (80 years and over) will more than double (Figure 1). At the same time, the share of the population at working age (15–64 years) will remain stable, causing the economic old-age dependency ratio (ratio of population aged over 65 to population aged 20–64 years) to increase from 28.3% in 2020 to 48.6% in 2060.

Figure 1. Population age-mix in New Zealand, historical and projections, 1990–2100



Source: UN, 2019.

New Zealanders are living for longer than ever before, but time spent in poor health is increasing

Life expectancy at birth in New Zealand has increased by more than 10 years since 1960, reaching 81.9 years in 2017 (83.6 years for women and 80.2 years for men), although inequalities between European ethnic groups and Māori and Pacific people exist (OECD, 2020; World Bank, 2020). Women aged 65 years in 2017 can expect to live for another 21.7 years, while men aged 65 years can expect to live for another 19.6 years. Deaths from cardiovascular diseases and cancers in New Zealand have declined over the last four decades but remain relatively high for a high-income country. An increase in mortality from other conditions, often associated with older age, including dementia, Alzheimer's and Parkinson's disease has been seen (OECD, 2020). According to the 2013 disability survey, 18% of adults aged 15 years and above were defined as having a long-term disability that limited their ability to carry out day-to-day activities, a share that rose to 59% among people over 65 years (Stats NZ, 2014). Estimates from the Ministry of Health suggest that, although people are living longer, less of this time is spent in good health (Ministry of Health, 2013).

Health spending per capita in New Zealand has increased over the last decade

New Zealand has a predominantly tax-financed national health care system, which provides all residents with access to a comprehensive range of services at low or no cost (Gauld, 2020). In 2015, public spending accounted for 79.8% of total health expenditure (THE), above the OECD average of 73.0%, with direct out-of-pocket spending and voluntary health insurance accounting for the remainder (OECD, 2020). Public spending on health has increased every year since 2001 and amounted to USD 11.6 billion (NZD 16.8 billion) in 2017–18 (Ministry of Health, 2019). THE as a share of gross domestic product (GDP) was 9.3% in 2018, a proportion that has remained relatively stable since 2013 and is above the OECD average of 8.8% (OECD, 2020). Per person health spending increased by 29.0% between 2010 and 2018, to reach USD 3923 (NZD 5688), close to the OECD average of USD 3992 (NZD 5788) (OECD, 2020).

How will population ageing in New Zealand affect health expenditure trends?

Health expenditures in New Zealand generally increase with age

Using Ministry of Health expenditure data for 2001–02, we are able to assess the relationship between calendar age and per person public health spending in New Zealand (Figure 2, solid blue line; see annex for details on health spending data) (Bryant et al., 2014). While the data are from almost 20 years ago, previous work from other countries has shown that health spending by age generally remains relatively constant over time in a given country (Williams et al., 2019), suggesting the data will provide a reasonably accurate baseline for health spending projections.

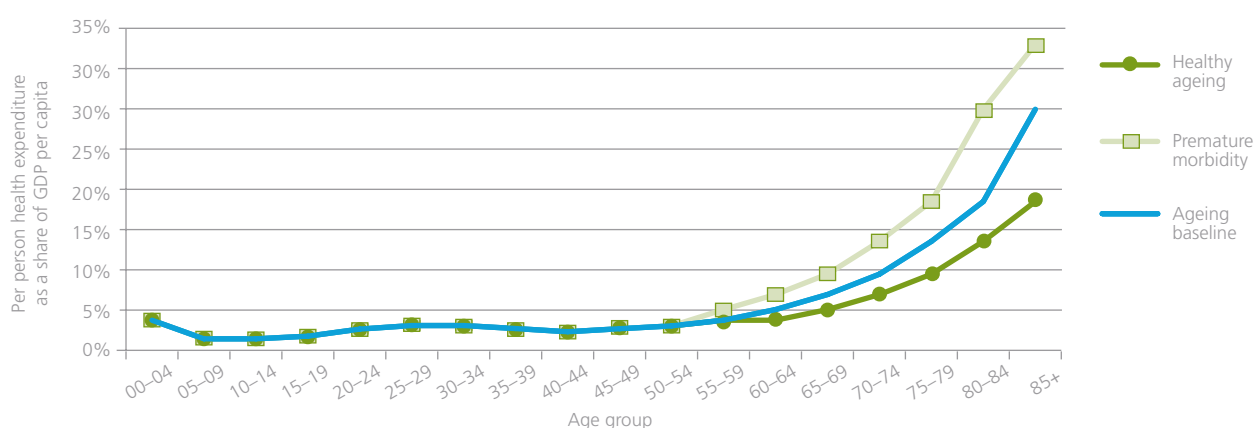
As expected, health expenditures in New Zealand are relatively high at birth until 1 year of age. At about 50 years of age, health expenditures start to steadily increase and continue to rise for all subsequent age groups. Per person health spending for an average 80-year-old is more than 7 times higher than for an average 20-year-old. For people aged 65 years and older, average per capita health spending as a share of GDP was 15.7%, less than (based on 2016 data) Australia (17.0%), Germany (16.2%), the Netherlands (16.1%) and the UK (24.0%) (EU Working Group on Ageing Populations and Sustainability, 2018; AIHW, 2020).

Growth in public health expenditures due to population ageing in New Zealand is expected to be relatively low through 2060

Using 2001–02 per person health spending levels by age (Figure 2, solid blue line), we project the contribution of population ageing to health care expenditure growth through 2060 for New Zealand (Figure 3). Our projections indicate that the additional growth in average annual per person health care spending attributable to population ageing is expected to peak at 1.18 percentage points per year between 2025 and 2030, before steadily declining to 0.33 percentage points per year in 2060 (Figure 3).

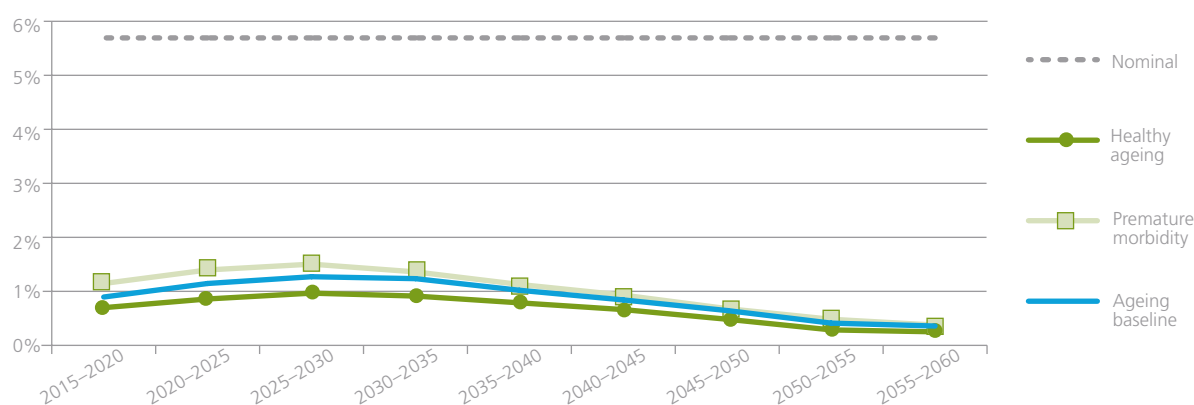
To place this in context, the average nominal per person annual growth rate in health expenditure due to all causes including population ageing (shown in Figure 3, grey dashed line) was approximately 5.3% in New Zealand from 2001–17 (WHO, 2020). From this, one could infer that population ageing in New Zealand accounts for less than one-fifth of per person health spending growth, with the remaining growth driven by prices, volume of care and technology.

Figure 2. Per person public health expenditure by age group (baseline and two alternative scenarios), 2001–2002, New Zealand



Source: Bryant et al., 2014.

Figure 3. Projected additional growth in per person public health expenditure attributable to population ageing, New Zealand, 2015–2060



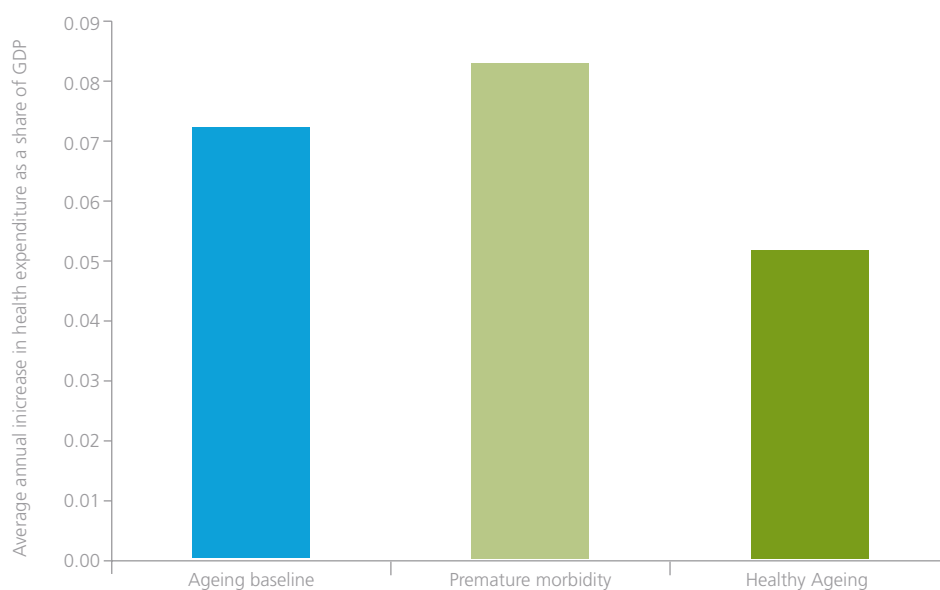
Source: Authors' calculations.

Population ageing on its own is expected to slowly (and only modestly) increase public health spending as a share of the economy between now and 2060

The projections above imply that population ageing in New Zealand will result in an increase in health expenditures as a share of GDP by 2.87 percentage points between 2020 and 2060. This is not an insignificant additional share of the economy; however, it is important to note that this increase will occur slowly. Over the 40-year period, the average increase in the share of the economy spent on health as a result of population ageing would be just over 0.07 percentage points per year (Figure 4).

Overall, the estimates suggest that population ageing is likely to contribute modestly to health spending growth in New Zealand in the coming decades.

Figure 4. *Average annual increase in public health expenditures as a share of GDP in New Zealand between 2020 and 2060 as a result of population ageing under current health expenditure by age patterns (baseline) and healthy ageing and premature morbidity scenarios*



Source: Authors' calculations.

Growth in health spending would be comparatively lower between 2020 and 2060 if people age in better health

In two hypothetical scenarios we project how future health expenditure growth will differ depending on whether people age in better or worse health than predicted, leading to lower or higher per capita health expenditures respectively than currently (see annex).

Under a *premature morbidity* scenario where people age in worse health, the additional growth in average annual per person spending attributable to population ageing would peak at 1.40 percentage points per year between 2025 and 2030, before declining to 0.35 percentage points per year in 2060 (Figure 3, line with square). This scenario would see population ageing increase health expenditures as a share of GDP by 3.31 percentage points between 2020 and 2060. This represents an increase of 0.44 percentage points above the projection using actual baseline health expenditures. Over the 40-year period, the average increase in the share of the economy spent on health as a result of population ageing under a premature morbidity scenario would be just over 0.08 percentage points per year (Figure 4).

Under a *healthy ageing* scenario where people age in better health, the additional growth in average annual per person spending attributable to population ageing would peak at 0.90 percentage points per year between 2025 and 2030, before declining to 0.23 percentage points per year in 2060 (Figure 3, line with circle). This scenario would see population ageing increase health expenditures as a share of GDP by 2.06 percentage points between 2020 and 2060; this is 0.81 percentage points lower than the projection using actual baseline health expenditures. Over the 40-year period, the average increase in the share of the economy spent on health as a result of population ageing under a healthy ageing scenario would be just over 0.05 percentage points per year (Figure 4).

Comparing the two scenarios, people ageing in good health in New Zealand would see health spending consume 1.25 fewer percentage points of GDP by 2060 than if people age in poor health. This suggests that investing in healthy ageing strategies may lead to savings of approximately 0.03% of GDP per year over the next 40 years. While this seems small, based on 2018 GDP estimates, it would amount to savings of approximately USD 2.5 billion in 2060, or USD 64 million per year if averaged over the next 40 years. However, it should be emphasized that these figures are based on hypothetical scenarios and should *not* be viewed as forecasts of savings in future health spending.

Discussion

Our analysis finds that population ageing in New Zealand will result in an increase in health expenditures as a share of GDP by 2.87 percentage points between 2020 and 2060, an average increase of just over 0.07 percentage points per year. This suggests that population ageing on its own is not, and will not become, the primary driver of growth in health expenditure in New Zealand. Nevertheless, our projections rely on current health expenditure patterns that reflect what has been achieved with the existing levels of health systems capacity and utilization rates. If per capita health spending levels for older age groups were to increase in the future, it is possible that the impact of population ageing in health expenditures may be greater than anticipated.

One factor that may cause health spending by age patterns to change in the future is the health of people at older ages. If the population on average ages in better health than currently, per person health spending for older age groups may be less than they are now. Conversely, people ageing in worse health may cause health expenditures for older age groups to be even higher. In recognition that variations in health status matter for spending by age patterns, we simulate two scenarios assuming healthy or unhealthy population ageing in the future. Our findings indicate that premature morbidity in the population would see health spending as a share of GDP increase by 3.31 percentage points between 2020 and 2060, but healthy ageing would see growth of 2.06 percentage points over the same period. This suggests that policies to promote healthy ageing can help to reduce growth in health spending as a result of population ageing.

References

- AIHW (2020). Health & welfare expenditure, 2015–2016. Canberra: Australian Institute of Health and Welfare, database (<https://www.aihw.gov.au/reports-data/health-welfare-overview/health-welfare-expenditure/data>, accessed 4 May 2020).
- Bryant J et al. (2014). Population ageing and government health expenditures in New Zealand, 1951–2051. New Zealand Treasury Working Paper 04/14.
- EU Working Group on Ageing Populations and Sustainability (2018). Unpublished data (shared with authors) on health spending by age group. Brussels: European Union.
- Gauld R (2020). New Zealand. New York: The Commonwealth Fund, International Health Care System Profiles (https://international.commonwealthfund.org/countries/new_zealand/, accessed 20 June 2020)
- Ministry of Health (2013). Health loss in New Zealand: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study, 2006–2016. Wellington: Ministry of Health. ([https://www.moh.govt.nz/notebook/nbbooks.nsf/0/F85C39E4495B9684CC257BD3006F6299/\\$file/health-loss-in-new-zealand-final.pdf](https://www.moh.govt.nz/notebook/nbbooks.nsf/0/F85C39E4495B9684CC257BD3006F6299/$file/health-loss-in-new-zealand-final.pdf), accessed 4 May 2020).
- Ministry of Health (2019). Budget 2019: Vote Health. Wellington, NZ: Ministry of Health website (<https://www.health.govt.nz/about-ministry/what-we-do/budget-2019-vote-health>, accessed 4 May 2020).
- OECD (2020). OECD.Stat. Paris: Organisation for Economic Cooperation and Development, database (<https://stats.oecd.org>, accessed 4 May 2020).
- Stats NZ (2014). Disability survey: 2013. Wellington, NZ (<https://www.stats.govt.nz/information-releases/disability-survey-2013>, accessed 14 November 2020).
- UN (2019). World Population Prospects 2019. New York: United Nations, Department of Economic and Social Affairs, Population Dynamics, custom data acquired via website (<https://population.un.org/wpp>, accessed 4 May 2020).
- WHO (2020). Global Health Expenditure Database. Geneva: World Health Organization (<https://apps.who.int/nha/database>, accessed 4 May 2020).
- Williams GA et al. (2019). Sustainable health financing with an ageing population: Will population ageing lead to uncontrolled health expenditure growth? Copenhagen: WHO European Observatory on Health Systems and Policies, The economics of healthy and active ageing series, Policy Brief 3 (<https://www.euro.who.int/en/about-us/partners/observatory/publications/policy-briefs-and-summaries/sustainable-health-financing-with-an-ageing-population-will-population-ageing-lead-to-uncontrolled-health-expenditure-growth-2019>, accessed 4 May 2020).
- World Bank (2020). Life expectancy at birth, total (years) – New Zealand. Washington, DC: World Bank Data (<https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=NZ>, accessed 4 May 2020).

Annex: Data and methods for population ageing projections

Ministry of Health data on per capita health spending by age group in 2001–02 were extracted from a New Zealand Treasury Working Paper (Bryant et al., 2014). The data capture all public expenditures on health care, including on public health, disability support services and primary, secondary and tertiary medical care. Per person health expenditures by age are divided by per person GDP to calculate health expenditures per capita as a share of GDP per capita by age group. Population projections by age for New Zealand were extracted from the United Nations Department of Economic and Social Affairs population projections website (UN, 2019).

In model 1 (*ageing baseline*), we isolate the contribution of population ageing to future health expenditure growth for New Zealand, by multiplying per person health expenditures for each age group by the respective age group's population size, with the resulting expenditure across all age groups added together; we then divide by the total population size. This leaves us with a per person health expenditure level which varies from year to year only due to changes in the age-mix of the population.

This model assumes that relative per person spending patterns by age remain constant. That is, any changes in other drivers of health care expenditures, such as prices, technology, quality and volume of care, affect all age groups equally in the future. Doing this allows us to isolate the effects of population ageing on expenditure trends. As a result, if people aged 65 years and over currently spend four times as much on health care as younger age groups, it is assumed that this continues in the future, even if the actual level of spending has increased. Historical data from other countries suggest this is a reasonable assumption (OECD, 2020; Williams, 2019).

In models 2 (*premature morbidity*) and 3 (*healthy ageing*) we adjust the baseline ageing model projections to simulate scenarios where people age in worse and better health respectively than indicated by current expenditure by age group. In model 2, older people age in worse health and therefore have a greater demand for and use a greater volume of health services. We assume that such an increase might occur because of an expansion of morbidity leading to the early onset of care for chronic conditions. In this scenario, we modify actual per person health expenditures in New Zealand by assuming that health spending for each age group from 55–60 years and until 80 years is equivalent to baseline 2016 health expenditures for the respective age group 5 years older (Figure 2, line with square). For example, health spending for 60–64-year-olds in this scenario would equal the actual spending of 65–69-year-olds from the baseline data. Spending for the 85 years and above age group relative to the 80–84 years age group in the hypothetical scenario is assumed to remain the same as in the actual New Zealand spending data.

For model 3, we assume the reverse scenario: people age in better health than now, leading to a delay in onset of chronic disease and disability, and thus a lower utilization of health care services and lower per capita health spending for older age groups than currently. We modify baseline per person health expenditures in New Zealand by assuming that health spending for each age group from 55–60 years and over is equivalent to baseline health expenditures for the respective age group 5 years younger (Figure 2, line with circle).

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