



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

Japan

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

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Acronyms

DALY	disability-adjusted life year
GDP	gross domestic product
MHLW	Ministry of Health, Labour and Welfare
NHCE	National Health Care Expenditure
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 older, 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, 2019).

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 Japan. 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.

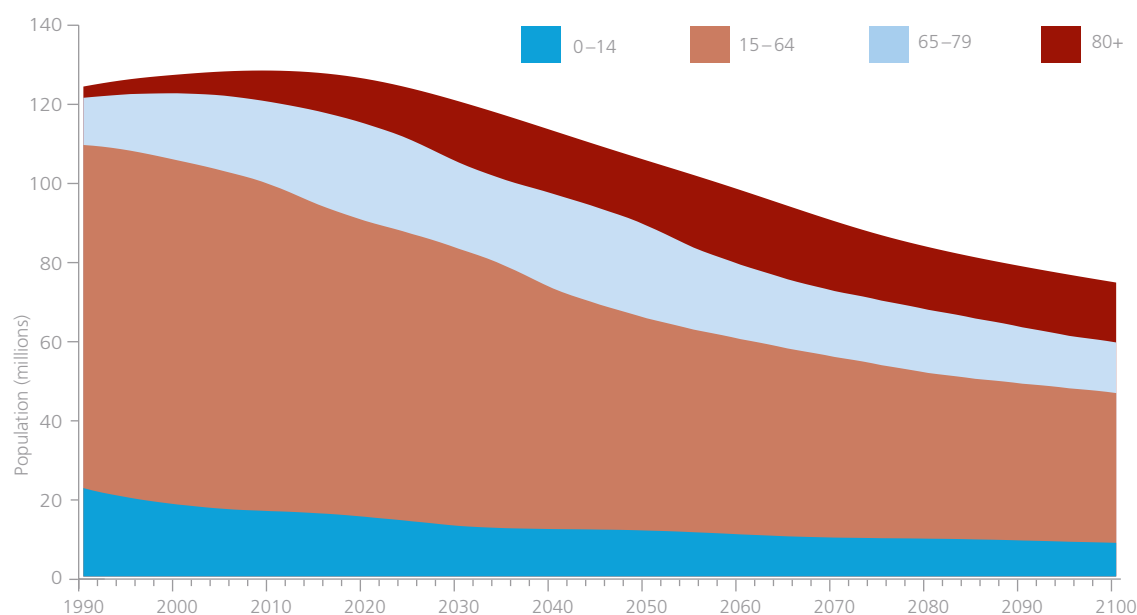
Population ageing, health and health spending in Japan

2020 Population	2020 Share of the population 65 years and above	2018 Total health expenditure per capita (USD)	2018 Total health expenditure as a share of GDP	2017 Life expectancy (years)	2016 Healthy life expectancy (at birth years)
126.5 million	28.4%	4 504	10.9%	84.2	74.7

Japan is a 'super-aged' society, with a high share of the population 65 years of age or above

Japan has the world's oldest population, with 28.4% of the population 65 years of age or older and 9.0% over 80 years of age – up from 5.6% and <1% respectively in 1960 (UN, 2019). These shares will continue to rise and by 2060 an estimated 38.3% of the population will be over 65 years of age and 19.2% will be in the oldest age groups. At the same time, Japan has the lowest fertility rate in the Organisation for Economic Co-operation and Development (OECD) and the total population in Japan is expected to fall by more than 20% between 2020 and 2060 (Figure 1). This will cause the economic old-age dependency ratio (ratio of population aged over 65 to population aged 20–64 years) to rise from 52% in 2020 (up from 8.8% in 1960) to 83.3% in 2060 (UN, 2019).

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



Source: UN, 2019.

Japan has seen substantial improvements in life expectancy, partly due to effective public health interventions and improved health care treatments

Japan has seen one of the largest increases in life expectancy globally in the past six decades. Since 1960, life expectancy at birth has risen by 16.5 years and was the highest in the world in 2017 at 84.2 years (87.3 years for women and 81.1 years for men) (Ikeda et al., 2011; OECD, 2020). These gains were initially driven by a rapid fall in deaths from communicable diseases, followed by a substantial decline in mortality from cardiovascular diseases, in particular stroke (Ikeda et al., 2011). These successes have been linked to a complex interplay of non-health factors, such as rising prosperity, peace, political stability, improved housing and social norms, as well as the introduction of universal health insurance, good sanitation and hygiene, effective public health interventions (e.g. salt awareness campaigns), healthy diets and improved access to treatments (e.g. antihypertensive medication) (Ikeda et al., 2011; Sakamoto et al., 2018).

Healthy life expectancy at birth has risen from 70.4 years in 1990 to 73.9 years in 2015 (71.5 years for men and 76.3 years for women), with the gap between health-adjusted life expectancy and life expectancy remaining at approximately 9 years (Nomura et al., 2017). While deaths from strokes, heart diseases and lower respiratory infections declined in this period, mortality from age-related illnesses including Alzheimer's and dementias has risen by almost 50% and these are now among the leading causes of death in Japan (Nomura et al., 2017; IHME, 2018). Disability-adjusted life years (DALYs) have also decreased since 1990, but the rate of decline has slowed since 2005 and some evidence suggests morbidity in Japan may be expanding (Nomura et al., 2017).

Health spending per capita and as a share of GDP in Japan has increased over the last decade

Japan has a universal health insurance system that provides comprehensive coverage to all residents. The majority of health insurance coverage comes from two schemes: employees' health insurance, which covers the employed, including public sector workers; and the national health insurance scheme for the self-employed and unemployed, including retired persons (Sakamoto et al., 2018). In 2008, an additional, independent insurance scheme, the late-stage medical care system for the elderly, was introduced to provide coverage for those aged 75 years and above (Sakamoto et al., 2018). This scheme aims to reduce financial pressure on other schemes due to the costs associated with providing care to people of these ages, with 50% of programme funding from tax revenues, 10% beneficiaries' contributions and the remainder transfers from other health plans (Sakamoto et al., 2018). In addition, although not explored in this study, long-term care insurance, was introduced in 2000 to cover long-term care and social services predominantly from social insurance rather than taxation.

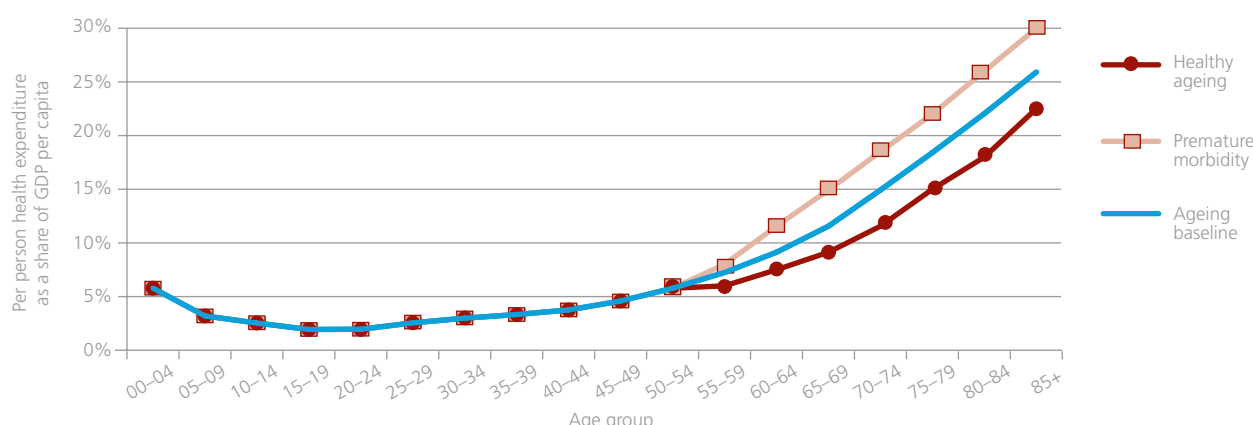
Japan's health system is largely funded through public sources, with 84.1% of total health expenditure (THE) from public sources in 2017. THE as a share of gross domestic product (GDP) has risen substantially since 1995, from 6.3% to 10.9% in 2018, due to an increase in health spending coupled with modest economic growth (Ikeda et al., 2011; Sakamoto et al., 2018). Measured on a per capita basis, health expenditures have increased by more than 50% since 2010, reaching USD 4 766 in 2018, slightly above the OECD average (Sakamoto et al., 2018).

How will population ageing in Japan affect health expenditure trends?

Health expenditure in Japan generally increases with age

Using data on THE for 2017 from the Ministry of Health, Labour and Welfare (MHLW), we are able to assess the relationship between calendar age and per person health spending in Japan (Figure 2; solid blue line) (MHLW, 2019). As expected, health expenditures 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 capita health expenditure for an average 80-year-old is more than 11 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 18.6%, slightly more than Germany (16.2%) and the Netherlands (16.1%), but less than the UK (24%) (all based on 2016 data) (EU Working Group on Ageing Populations and Sustainability, 2018). Expenditure data for Japan is not disaggregated for the oldest age groups (90 years of age and over); however, it is worth noting that in many countries per capita health expenditure often peaks for the 80–89-year age group, before declining slightly for the very oldest (Williams et al., 2019).

Figure 2. Per person public health expenditure by age group (baseline and two alternative scenarios), 2017, Japan



Source: MHLW, 2019.

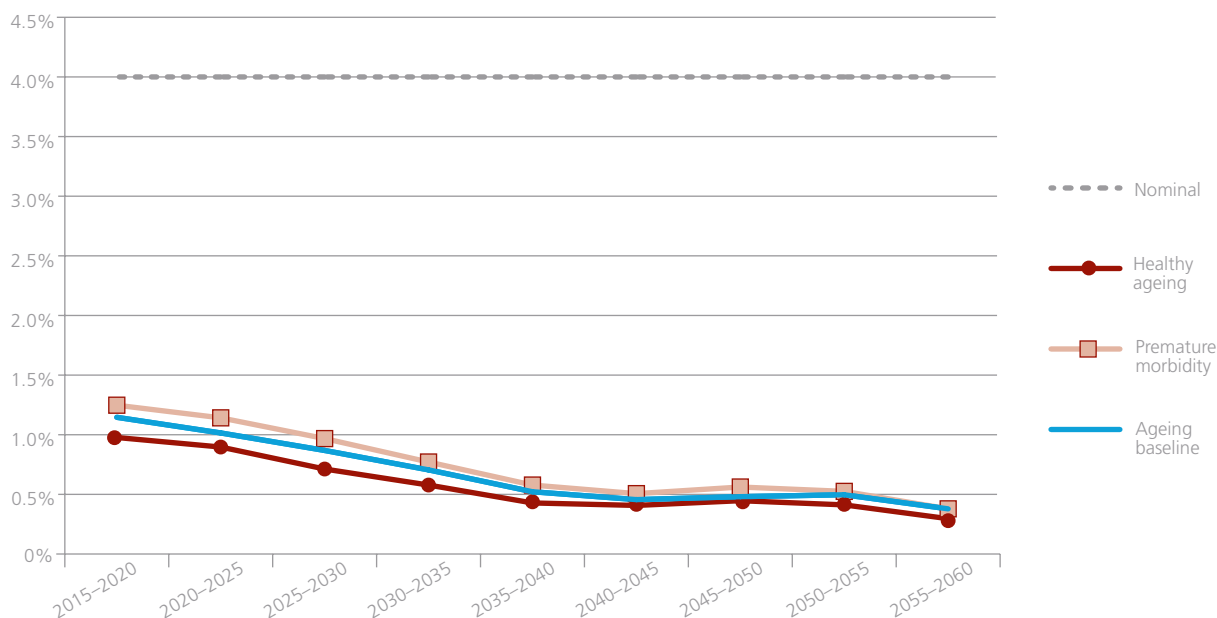
Growth in health expenditure due to population ageing in Japan is expected to be relatively low through 2060

Using 2017 per person spending levels by age (Figure 2, solid blue line), we project the contribution of population ageing to health care expenditure growth through 2060 for Japan (Figure 3). Our projections indicate that the additional growth in average annual per person health care spending attributable to population ageing has already peaked at 1.1 percentage point per year between 2015 and 2020, and will now steadily decline to 0.38 percentage points per year in 2060.

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 4% in Japan from 2011–17 (WHO, 2020). From this, one could infer that population ageing in Japan accounts for less than one quarter of per person health spending growth, with the remaining expected growth driven by prices, volume of care and technology.



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



Source: Authors' calculations.

Population ageing is expected to slowly increase health spending as a share of the economy between now and 2060

The projections above imply that population ageing in Japan will result in an increase in health expenditures as a share of GDP by 2.59 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 0.06 percentage points of GDP per year (Figure 4).

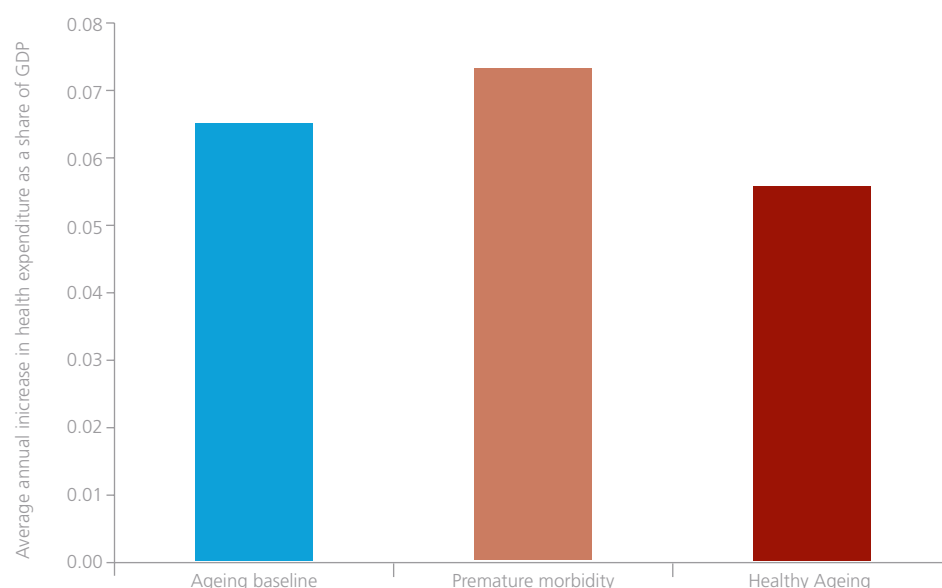
Overall, the estimates suggest that population ageing is likely to contribute modestly to annual health spending growth in Japan in the coming decades.

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 has already peaked at 1.2 percentage points per year between 2015 and 2020, and will steadily decline to 0.38 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 2.92 percentage points between 2020 and 2060. This represents an increase of 0.33 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 0.07 percentage points per year (Figure 4).

Figure 4. Average annual increase in public health expenditures as a share of GDP in Japan 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.

Under a **healthy ageing** scenario, where people age in better health, the additional growth in average annual per person spending attributable to population ageing has peaked at 0.98 percentage points per year between 2015 and 2020, before declining to 0.30 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 2.22 percentage points between 2020 and 2060; this is 0.37 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 would see health spending consume 0.70 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 0.02% of GDP per year over the next 40 years. While this seems small, based on 2018 GDP estimates, it would amount to savings of just over USD 41.5 billion in 2060, an average of just over USD 1 billion per year 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 Japan will result in an increase in health expenditures as a share of GDP by 2.59 percentage points between 2020 and 2060, an average increase of 0.06 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 Japan. 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 it is 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 2.92 percentage points between 2020 and 2060, but healthy ageing would see growth of 2.22 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.

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Annex: Data and methods for population ageing projections

Data on health spending by age group were obtained from official statistics on National Health Care Expenditure (NHCE) in 2017 published by the Ministry of Health, Labour and Welfare (MHLW) (MHLW, 2019). The data capture all health care expenditures, including out-of-pocket expenditure, less spending on long-term 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 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 Japan, 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 et al, 2020).

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 Japan 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 Japanese spending data.

For model 3, we assume the reverse scenario: people ageing in better health means prevention and delay in the 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 Japan by assuming that health spending for each age group from 55–60 years and over is equivalent to baseline 2017 health expenditures for the respective age group 5 years younger (Figure 2, line with circle).

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