Title: Changes in life expectancy and life span equality during the COVID-19 epidemic in Japan up to 2022.

Running title: Demographic impact of COVID-19 pandemic in Japan

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Abstract

Objectives: To evaluate the impact of COVID-19 on life expectancy in Japan through demographic analyses.

Methods: We evaluated the relationship between the life expectancy gap from 2020–21 and 2021–22 and COVID-19 epidemic size at prefectural level. We also conducted age- and cause-specific decomposition of life expectancy change. Trends in life span equality from 2000–22 were evaluated at the national level.

Results: Prefectural analysis of 2021–22 life expectancy change and annual per-population COVID-19 cases, person-days in intensive care, and reported COVID-19 deaths showed no significant correlations, unlike our analysis from 2020–21. However, decomposition analysis revealed substantial life expectancy shortening attributable to the population over 35 years old. It also showed large increases in causes of death such as cardiovascular or respiratory disorders as well as COVID-19. Whole-population life span equality declined in 2020 but increased in 2021 and 2022 despite the shorter life expectancy.

Conclusions: Discrepancy between life expectancy change and COVID-19 statistics in 2022 suggests the growing ascertainment bias of COVID-19. The increased contribution of cardiovascular disorders to life expectancy shortening is an alarming sign for the future. Life span equality changes in 2021 and 2022 can probably be attributed to increased mortality among older people.

Keywords: COVID-19; life expectancy; Arriaga Method; life span equality; Japan

Highlights

- Life expectancy change was not correlated with COVID-19 epidemic activity in 2022
- Older people made the biggest contribution to shorter life expectancy
- Cardiovascular disorders contributed substantially to shortening of life expectancy
- Life span equality increased in 2021 and 2022 despite shorter life expectancy

Introduction

Since the start of the COVID-19 pandemic in Wuhan, China in November 2019, evidence of the pandemic's impact on mortality has accumulated globally, with substantial geographical heterogeneity. [1–6] Global studies suggest that from January 1st, 2020 to December 31st, 2021, excess deaths worldwide were in the range of 14.9–15.9 million, with a large proportion attributed to India and the United States. [3,4] Published studies suggest that the global life expectancy change was −1.6 years from

2019 to 2021, when many countries showed bounce-backs from the shortening in 2020. However, other countries faced sustained shortening into 2021. [4–6]

It is now several years since the emergence of COVID-19, and the evaluation of the mortality impact of the condition has become more difficult for several reasons. One reason is changes in the official COVID-19 statistics, which are provided by public health agencies around the world and reflect epidemic activity. These are now less rigorous than in 2020, because most countries have gradually diminished their effort either to control the spread of COVID-19 or to maintain a meticulous surveillance system. Another reason is the change in the nature of deaths associated with COVID-19 since the introduction of vaccines against the disease in late 2020. The direct mortality impact of COVID-19 has been alleviated by these vaccines, but a substantial proportion of deaths are caused indirectly through complications such as cardiovascular disorders, or by limited access to healthcare services when the healthcare capacity or ambulance system were overwhelmed by the increased case load pressure of COVID-19.[5,7–15] The ongoing emergence of SARS-CoV-2 variants with a high capability of immune evasion and transmission may have worsened the health impact of COVID-19, but understanding the true burden has remained a challenging task.[16,17]

Direct approaches to estimating the mortality impact of COVID-19 are therefore challenging, including in Japan. There, the epidemic size of COVID-19 was greatest upon the emergence of SARS-CoV-2 Omicron (B.1.1.529) lineage variants. In line with other regions, Japan has been severely affected by COVID-19 in terms of excess mortality and life expectancy shortening. [1,3–5,14,18–21] The updated estimates by the National Institute of Population and Social Security Research suggest that life expectancy at birth has shortened for two consecutive years, from 84.58 years in 2021 to 84.10 in 2022 for the total population. However, it is not clear whether the cause-specific impact of this shortening has changed since 2021. It is also not clear how the contribution of cardiovascular, respiratory, and neoplastic disorders in 2021 have changed.[18] From a demographic perspective, the change in life span equality during and since the COVID-19 pandemic is also interesting. One measure of life span equality, or, evenness of life span, is the logarithm of the inverse of life table entropy. Global and historical demographic analysis suggests that the trends in life expectancy at birth and life span equality have been in line with each other. [22,23] However, this might not be the case when the age–mortality structure changes drastically. For example, during the COVID-19 epidemic in Japan, the mortality increase in 2021 contributed substantially to shorter life expectancy. [18]

To examine the demographic impact of the COVID-19 epidemic in 2022 in Japan, we investigated the relationship between reported COVID-19 burden at the prefectural level and life expectancy. We also decomposed the year-on-year life expectancy change from 2019–22 by age groups and major causes of death, and evaluated the lifetime loss by age and life span equality during the COVID-19 epidemic.

Methods

Epidemiological data

We used the data on deaths and exposure-to-risk populations available in the Japanese Mortality Database (JMD), which was available for the whole of Japan and by prefecture.[24] Death counts by cause of death and age group were obtained from the vital statistics published by the Ministry of Health, Labour and Welfare of Japan.[24] In line with a previous study, we categorized major causes of death using the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) into the top nine major cause categories (based on death counts by cause in 2022), and aggregated the remainder into a single group, to give a total of ten groups.[18] The epidemiological data for COVID-19 were retrieved from the open-access data provided by the Ministry of Health, Labour and Welfare. [24]

Calculation of period life table

For subsequent use for age- and cause-specific decomposition of life expectancy gaps, we re-calculated period life tables from 2000 to 2022 for the whole of Japan and for all prefectures as described before. [18,24] We obtained age group-specific mortality m_x using death counts and exposure-to-risk population in each age group x. Using m_x and a_x, the average length of time to death in deceased individuals in age group x, we calculated q_x, the probability of death in age group x as:

$$q_x = \begin{cases} \dfrac{m_x\, w_x}{1 + (w_x - a_x)\, m_x}, & x = 0, 1\text{–}4, 5\text{–}9, \ldots 95\text{–}99, \\ 1, & x = 100+, \end{cases}$$

where w_x is the time interval of age group x. Starting from an initial population

$$l_0 = 100{,}000,$$

l_x can be obtained by iteratively applying the formula:

$$l_{x+1} = l_x(1 - q_x),$$

for age groups $x = 0, 1\text{–}4, 5\text{–}9, \ldots 100+$ (in years). Using l_x and a_x values,

$$L_x = w_x l_{x+1} + a_x d_x = w_x l_{x+1} + a_x l_x q_x,$$

$$T_x = \sum_{i=x}^{100+} L_i,$$

where L_x is the person-years spent in age group x, $d_x = l_x q_x$ is the number of deaths in age group x, and T_x is the person-years of life remaining for those in age group x. The life expectancy of age group x, e_x, is then calculated as:

$$e_x = \frac{T_x}{l_x},$$

and the life expectancy at birth is calculated as $e_0 = T_0/l_0$.

Life expectancy change and COVID-19 statistics at the prefectural level

Three COVID-19 statistics at prefectural level were used for this analysis: (i) annual number of COVID-19 cases, (ii) annual number of person-days in intensive care because of COVID-19, and (iii) annual number of documented deaths due to COVID-19. Using each of the COVID-19 indicators as an explanatory variable, we used linear regression analysis to predict the year-on-year life expectancy change as the dependent variable for 2020–21 and 2021–22.

Decomposition of annual life expectancy change by age and cause of death

In line with a recent study, we used the Arriaga method for age- and cause-specific decomposition of life expectancy change. [18,25] The total contribution of age group x to the life expectancy change (in years), denoted as C_x, can be described as:

$$C_x = \left[\frac{l_x^{2020}}{l_0}\left(\frac{L_x^{2021}}{l_x^{2021}} - \frac{L_x^{2020}}{l_x^{2020}}\right)\right] + \left[\frac{T_{x+1}^{2021}}{l_0}\left(\frac{l_x^{2020}}{l_x^{2021}} - \frac{l_{x+1}^{2020}}{l_{x+1}^{2021}}\right)\right]. \qquad (1)$$

We then decomposed C_x into cause-specific contributions:

$$C_x^i = C_x \left[\frac{R_x^{i,2021} m_x^{2021} - R_x^{i,2020} m_x^{2020}}{m_x^{2021} - m_x^{2020}}\right], \quad (2)$$

where C_x^i is the contribution of cause of death i in age group x, R_x^i is the proportion of deaths in age group x associated with cause i, and m_x is the overall mortality rate in age group x.

Life span equality h

We used a measure of life span equality h, which was derived from life table entropy $\bar{H}$. [22,26,27] Life table entropy $\bar{H}(t)$ is a measure of variation, or inequality, in life span at time t that is defined as:

$$\bar{H}(t) = -\frac{\int_0^\infty l(x,t)\ln\big(l(x,t)\big)\,dx}{\int_0^\infty l(x,t)dx} = \frac{e^\dagger(0,t)}{e_0(t)},$$

where $e^\dagger(0,t)$ is the special case of:

$$e^\dagger(x,t) = -\frac{\int_x^\infty l(a,t)\ln\big(l(a,t)\big)\,da}{l(x,t)} = \frac{\int_x^\infty d(x,t)e(x,t)dx}{l(x,t)},$$

which is the life disparity, or the life expectancy loss after birth, and e_0 is the life expectancy at birth. Using $\bar{H}(t)$, life span equality $h(t)$ is defined as:

$$h(t) = -\log\big(\bar{H}(t)\big).$$

Note that, contrary to $\bar{H}(t)$, the value of $h(t)$ is the measure of life span equality. We used a 1×1 year life table provided by JMD to calculate $h(t)$ from 2000 to 2022 for total, male, and female populations, and evaluated the relationship between $h(t)$ and life expectancy at birth, $e_0(t)$, for each of these populations. [28]

Aburto et al. [22] described the variation of $h(t)$ over time as:

$$\frac{\partial h}{\partial t} = -\frac{\frac{\partial \bar{H}}{\partial t}}{\bar{H}} = \int_0^\infty w(x,t)W_h(x,t)\rho(x,t)dx,$$

where

$$\rho(x,t) = -\frac{\frac{\partial \mu(x,t)}{\partial t}}{\mu(x,t)} = -\frac{\partial}{\partial t}\log\big(\mu(x,t)\big)$$

is the mortality improvement in age x over time,

$$w(x,t) = \mu(x,t)l(x,t)e(x,t) = d(x,t)e(x,t)$$

is the weight of the contribution of $\rho(x,t)$ to life expectancy change in age x, and

$$W_h(x,t) = \frac{1}{e_0} - \frac{1}{e^\dagger}\big(H(x,t) + \bar{H}(x,t) - 1\big) = \frac{1}{e_0} - \frac{1}{e^\dagger}\left(\int_0^x \mu(x,t)dx + \frac{e^\dagger(x,t)}{e(x,t)} - 1\right).$$

Thus, $w(x,t)W_h(x,t)$ can be considered as the weight, or sensitivity, of $h(t)$ to $\rho(x,t)$ at age x. We calculated $w(x,t)W_h(x,t)$ and the threshold age a^H that satisfies $W_h(a^H,t) = 0$ for $t = 2000, 2001, \ldots, 2022$. These results were compared with year-on-year mortality improvement, i.e., $r(x,t) = \log\big(\mu(a,t)\big) - \log\big(\mu(a,t+1)\big)$, which is analogous to $\rho(x, t)$ as described above. We calculated the values such as $h(t)$, $\bar{H}(t)$, and a^H in a discretized manner regarding ages, which has been previously described elsewhere.[22,27]

Software

All analyses used R version 4.2.2. [29]

Results

The life expectancy at birth in Japan for the total, male, and female populations from 2019–2022 is shown in Supplementary Table 1. These results were based on abridged life tables that we re-calculated for use in Arriaga decomposition, but which are almost identical to results provided by JMD. The life expectancy of the total population decreased by 0.49 years, from 84.59 to 84.10 from 2021–22. A decrease in life expectancy was also seen from 2020–21 of 0.15 years (from 84.74 to 84.59 years). However, the magnitude of the shortening was greater in 2021–22. The shortening of life expectancy at birth for both male and female populations also increased from 2021–22, by 0.43 years for men (from 81.49 to 81.06 years) and 0.50 years for women (from 87.62 to 87.12 years).

Figure 1 shows life expectancy changes in the total population by prefecture in 2019–20, 2020–21, and 2021–22. Following the drastic change from an overall increasing trend in 2019–20 to a sharply decreasing trend in 2020–21, all but one prefecture saw a decline in life expectancy from 2021–22. In 2022, the greatest decrease in life expectancy was seen in Iwate (1.00 years), and the only prefecture where life expectancy continued to increase was Nagasaki (0.05 years). The prefecture-level life expectancy changes of the male and female populations were largely consistent with that for the total population (for the details, see Supplementary Data).

Figure 2 shows the correlation between reported COVID-19 burden and life expectancy changes at the prefectural level. Combined with the linear regression results shown in Table 1, there was no obvious correlation between annual reported cases, person-days in intensive care, and death due to COVID-19 in 2021–22. However, this was contrary to the findings from 2020–21.

Figure 3 shows the results of the Arriaga decomposition of life expectancy change by age groups and major causes of death. An aggregated summary by age groups and causes of death is shown in Supplementary Figures 1 and 2. There was a clear negative contribution among the older population in 2020–21, and this negative contribution was even bigger in 2021–22. The age range of the group contributing to the reduction also widened in 2021–22 to as low as 30–34 years.

Figure 3 also shows the contributions of major causes of death by age groups. The negative contribution of COVID-19 among the older population expanded substantially in 2021–22. The total contribution by all ages grew from −0.095 years in 2020–21 to −0.131 years in 2021–22. In addition to COVID-19, the negative contribution of cardiovascular causes also grew considerably in 2021–22, especially among those over 50 years old. The total contribution of cardiovascular death was −0.091 years in 2022, which was a consistent and substantial reduction compared with +0.073 years in 2020 and −0.003 years in 2021. The negative contribution of "other" causes (the remaining causes of death beyond the top nine major categories) also increased substantially in 2021–22 among the population over 50 years old, with a total of −0.139 years across all age groups. There was a clear decrease in the contribution of respiratory and neoplastic disorders, and other causes from 2020–21 to 2021–22 (see Supplementary Data for detailed results). Results from the decomposition analysis for the male and female populations were similar to that of the total population (Supplementary Data and Supplementary Figures 3 and 4).

The values of $h(t)$ as an indicator of life span equality for the total population from 2000 to 2022 are shown in Figure 4. Panel (A) shows that h largely increased consistently up to 2019, except in 2011 when an exceptional number of casualties occurred due to the earthquake and tsunami that hit eastern Japan. That increasing trend was halted in 2020 when the COVID-19 pandemic started, but has resumed since 2021. The values of $h(t)$ for the female and male populations showed very similar patterns to those for the total population (Supplementary Figures 5 and 6). Panel (B) in Figure 4 shows the relationship between $h(t)$ and life expectancy at birth from 2000 to 2022. A decrease in $h(t)$ was seen in 2020 for the first time since 2011, and was followed by an increase in 2021 and 2022 despite the shortening of life expectancy at birth.

To see how the overall dynamics of $h(t)$ from 2020 to 2022 can be explained by mortality improvements by age for this period (in relation to a^H), we calculated curves of $w(x,t)W_h(x,t)$ across ages for 2021 and 2022. We also evaluated the year-on-year mortality improvement $r(x,t)$ from 2020 to 2022 for the total population (Supplementary Figure 6). The curves of $w(x,t)W_h(x,t)$ for 2021 and 2022 were very similar, although there was a slight shift toward the younger ages in the negative part of the curve for the older population. As for $r(x,t)$, $r(x,2020)$ above $x = a^H$ lay in the positive range, whereas $r(x,2021)$ and $r(x,2022)$ mostly lay in the negative range for the age range. For ages younger than $x = a^H$, the signs of $r(x, 2020)$, $r(x, 2021)$, and $r(x, 2022)$ were inconsistent across different ages, suggesting that increased mortality among those older than a^H clearly contributed to the increase of $h(t)$ in 2021 and 2022 (see Supplementary Figures 7 and 8 for results on the female and male populations).

Discussion

Our study showed the pattern of deaths in Japan during the COVID-19 epidemic (up to 2022) through demographic information. The main finding was the growing impact of the older population and cardiovascular deaths on the shortening of life expectancy, which was considerable from 2021 to 2022. The lack of significant correlations between life expectancy change and epidemiological indicators of the COVID-19 burden from 2022 is also a concern. This finding may be linked to the low detection of COVID-19 cases and associated deaths, which is supported by our results about the age- and cause-specific contributions to life expectancy change. The increasing trend in life span equality despite the life expectancy shortening may also be related to the substantial increase in mortality among the older population.

There were two key findings from our study. The first was that all age groups over 30 years old contributed to the shortening of life expectancy in 2022, as shown in

Figure 3 and Supplementary Figure 1. However, compared with the overall shortening attributed to age groups over 50 in 2021, the negative impact was more diffuse across ages. This finding is similar to what was observed in 2020–21 in countries in Eastern Europe, though the underlying situations in these countries, such as types of circulating SARS-CoV-2 variants, vaccine coverage, and healthcare situations, would have been quite different from that in Japan from 2021–22. [5] In Japan, the population-wide vaccine coverage of the second dose of mRNA vaccines (BNT162b2 [Pfizer/BioNTech] and mRNA-1273 [Moderna] vaccines) was around 80% by the end of 2021, and the coverage of the third dose also increased from around 15% at the end of 2021 to 68% by the end of 2022. [24] Despite this high vaccination rate, we found substantial mortality caused by COVID-19 in Japan among wider age groups in 2022. This was not fully captured by COVID-19 statistics, as seen in our prefectural analyses (Figure 2 and Table 1).

Another key finding was the substantial growth in the negative contribution of cardiovascular disorders to life expectancy shortening, especially among populations over 50 years old (Figure 3 and Supplementary Figure 2). This was not surprising, because published studies have shown an elevated risk of cardiovascular diseases associated with COVID-19.[12–14,30] However, to our knowledge, our study is the first to have quantified the magnitude of life expectancy shortening in Japan caused by cardiovascular deaths in 2022. The negative change in contributions by respiratory causes from 2021 to 2022 and the consistently negative trend in contributions by neoplastic disorders since 2020 are also of note. In addition to COVID-19-associated conditions, these findings may be attributable to an array of factors including changes in hospital attendance. [18] There is a gap between these findings and the global and regional cause-specific contributions to life expectancy change from 2019–21. Further update on this issue is warranted to evaluate changes in life expectancy change by causes of death. The increase in the contribution of remaining causes of death is mostly explained by the increase in deaths due to senility, which increased by around 20,000 in 2021 and 27,000 in 2022. [24]

The changes in life span equality during the COVID-19 pandemic were also of note. Our result highlights the undesirable increase in life span equality despite the shortening of life expectancy at birth. This was in line with the substantial negative contribution by the older population to life expectancy changes in the same period, highlighted by the Arriaga decomposition results. These findings add to demographic case studies on the historical relationship between life expectancy and life span equality. [22,23]

Our study had some limitations. First, we could not examine the relationship between COVID-19 and other causes of death in detail at the prefectural level, because data on prefectural death count stratified by age and cause of death are not openly accessible. Detailed analysis of prefectural data would have provided insights on geographic heterogeneity, and we hope to explore this in future. Second, we ignored geographic and temporal variation in the ascertainment bias for COVID-19 statistics. We sufficiently met our key focus to be confident about the true mortality burden of COVID-19, but these factors could have biased our analysis of the relationship between prefectural COVID-19 statistics and life expectancy change. Third, we did not consider the fluctuation in the coverage of death registrations in Japan from 2019–22. However, it is unlikely that we missed a large proportion of deaths that would substantially affect our results, because the completeness of death registration is reported to be 90–99% in Japan. [24]

In conclusion, our demographic analysis showed the impact of the COVID-19 epidemic up to 2022, when the epidemic grew substantially larger. The demographic burden of the pandemic increased more in 2022 than in 2021 or before, but the COVID-19 burden reported by epidemiological surveillance failed to capture this trend. This is probably due to both the shrinking coverage of epidemiological surveillance and the growing impact of COVID-19-associated deaths caused by complications such as cardiovascular disorders. We also showed an undesirable increase in life span equality due to disproportionately higher mortality among older people. Our study therefore provides valuable insights into the mortality impact of the COVID-19 epidemic in Japan, which can now only be captured by indirect measures such as demographic analysis in the absence of meticulous epidemiological surveillance.

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Conflict of interest

We declare that we have no conflicts of interest.

Ethical approval statement

Ethical approval was not required because none of the data used in this study included any personally identifiable information.

Data availability

We used openly accessible COVID-19 statistics from the website of the Ministry of Health, Labour and Welfare, and life tables and related statistics from the website of National Institute of Population and Social Security Research. The supplementary files include the datasets used in this study, and also the results of our numerical analyses.

None of the data used in this study contained personally identifiable information.

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Figure 1. Life expectancy changes from 2019–20, 2020–21, and 2021–22 by prefecture.
Changes from (A) 2019–20, (B) 2020–21, and (C) 2021–22 are shown. In each panel, bars in blue show positive changes, and red bars show negative changes. Prefectures are shown in ascending order by life expectancy change in 2021–22.

Figure 2. Correlation between life expectancy changes and COVID-19 burden from official statistics.
Correlation between life expectancy changes and the reported numbers of (A) annual COVID-19 cases, (B) person-days in intensive care due to COVID-19, and (C) deaths due to COVID-19 are shown. The variables on the x-axis are log-scaled in all panels. In each panel, individual prefectures are shown as black triangles for 2020–21 data, or red dots for 2021–22 data. The horizontal dashed line corresponds to “no year-on-year life expectancy change”.

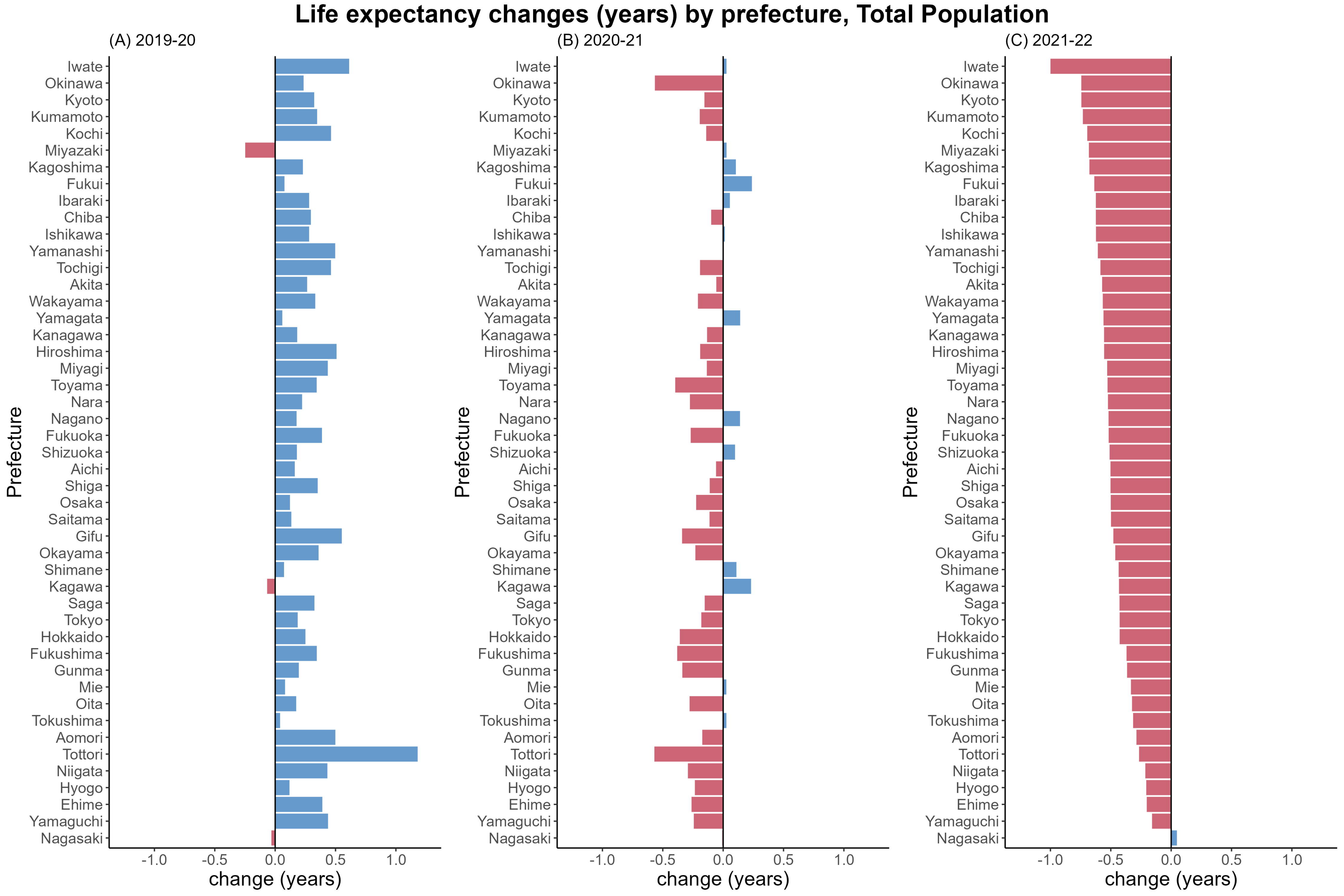
Figure 3. Arriaga decomposition of life expectancy change by major cause of death and age group, for the total population of Japan.
Decomposed contribution by age for (A) 2019–20, (B) 2020–21, (C) 2021–22 are shown in each panel. The key to the colors of bars for each major cause are shown in the panel below the plots. Bars representing major causes with a positive contribution to life expectancy are stacked on the right-hand side, and those making negative contributions are stacked on the left-hand side.

Figure 4. The trend in life span equality from 2000 to 2022, for the total population of Japan.
Panel (A) shows the dynamics of life span equality by time from 2000 to 2022. Panel (B) shows the same dynamics in relation to life expectancy for the same period, and the years corresponding to the red dots are noted within the figure.

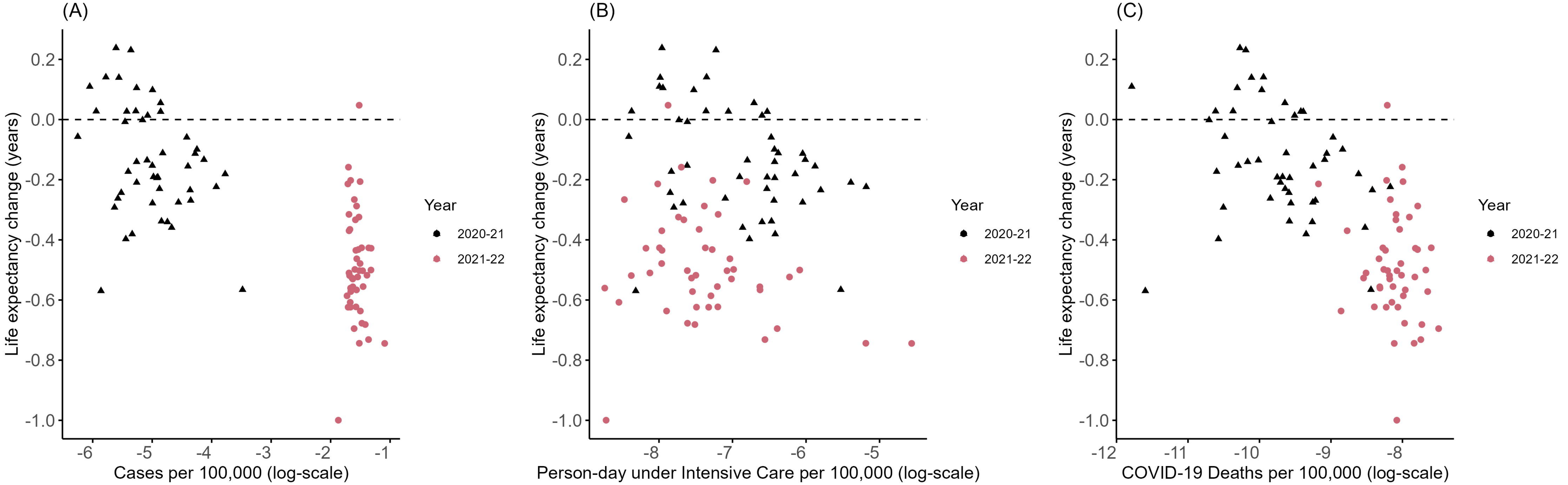
Table 1. Life expectancy change and COVID-19 statistics: summary of linear regression analysis.

COVID-19 data (log-scale)	Year	Coefficient (95% CI*)	Intercept (95% CI)
Cases	2020-21	-0.104 (-0.189, -0.018)	-0.655 (-1.086, -0.224)
	2021-22	-0.104 (-0.496, 0.288)	-0.652 (-1.266, -0.037)
Person-days in intensive care	2020-21	-0.082 (-0.144, -0.021)	-0.704 (-1.132, -0.277)
	2021-22	-0.053 (-0.117, 0.011)	-0.879 (-1.353, -0.405)
Death	2020-21	-0.067 (-0.137, -0.002)	-0.789 (-1.464, -0.114)
	2021-22	-0.105 (-0.269, 0.060)	-1.338 (-2.671, -0.057)

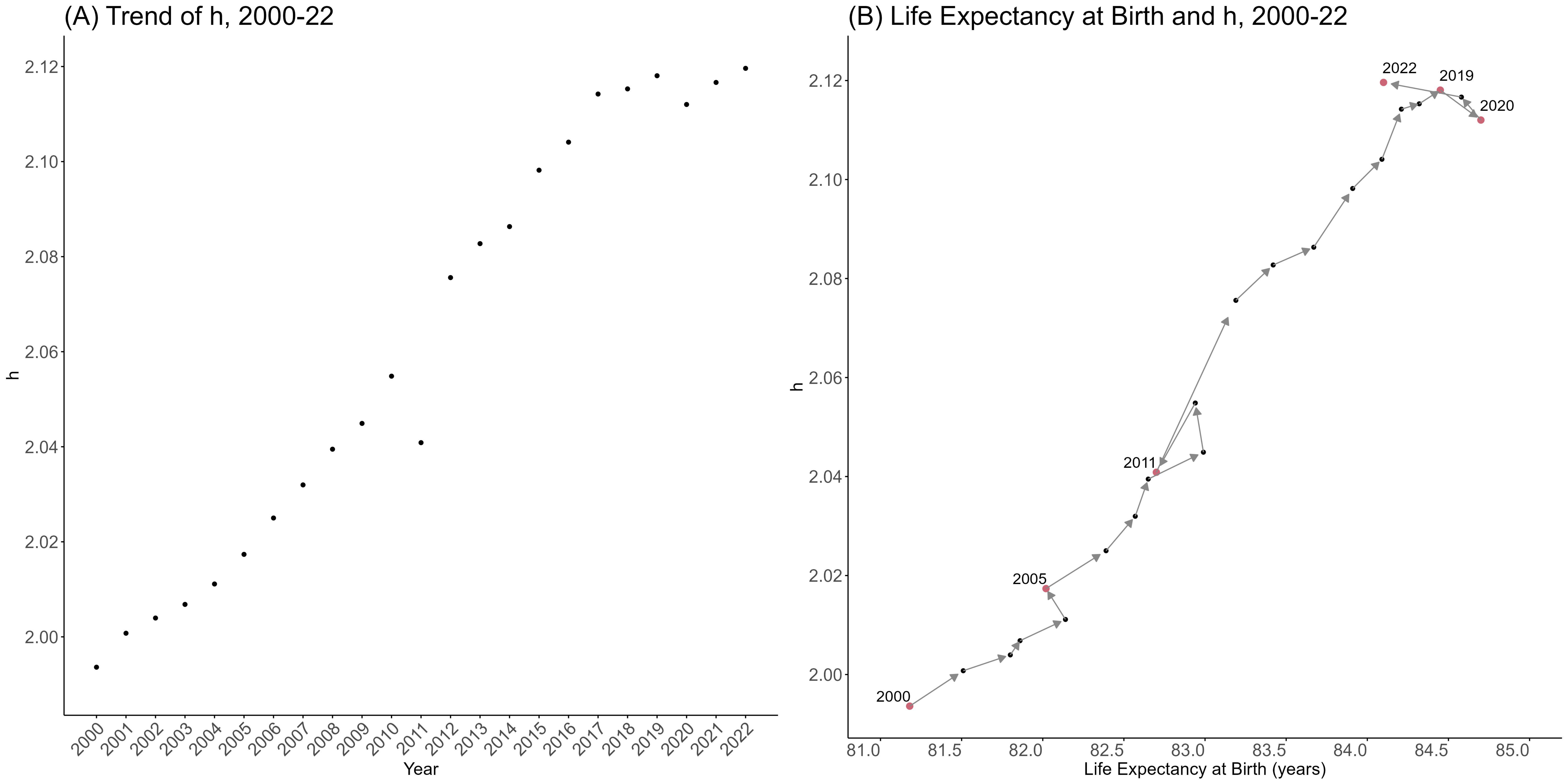
*CI, confidence interval


Life expectancy changes (years) by prefecture, Total Population
(A) 2019-20
(B) 2020-21
(C) 2021-22
Prefecture
Iwate
Okinawa
Kyoto
Kumamoto
Kochi
Miyazaki
Kagoshima
Fukui
Ibaraki
Chiba
Ishikawa
Yamanashi
Tochigi
Akita
Wakayama
Yamagata
Kanagawa
Hiroshima
Miyagi
Toyama
Nara
Nagano
Fukuoka
Shizuoka
Aichi
Shiga
Osaka
Saitama
Gifu
Okayama
Shimane
Kagawa
Saga
Tokyo
Hokkaido
Fukushima
Gunma
Mie
Oita
Tokushima
Aomori
Tottori
Niigata
Hyogo
Ehime
Yamaguchi
Nagasaki
-1.0
-0.5
0.0
0.5
1.0
change (years)

Life expectancy changes (years) and reported COVID-19 burden by prefecture




(A) 2019-20
(B) 2020-21
(C) 2021-22
100+
95-99
90-94
85-89
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
1-4
0
Age
-0.10
-0.08
-0.06
-0.04
-0.02
0.00
0.02
0.04
0.06
0.08
0.10
Change in Life Expectancy (years)
Cause of Death
Neoplastic
Cardiovascular
Respiratory
External
Nervous
Digestive
Genitourinary or Renal
COVID-19
Mental
Others


(A) Trend of h, 2000-22
h
Year
2.00
2.02
2.04
2.06
2.08
2.10
2.12
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
(B) Life Expectancy at Birth and h, 2000-22
h
Life Expectancy at Birth (years)
81.0
81.5
82.0
82.5
83.0
83.5
84.0
84.5
85.0
2000
2005
2011
2019
2020
2022